# APPENDIX H
# COMPLETE RESULTS OF THE PRELIMINARY RECOMMENDED PLAN EVALUATION

## INTRODUCTION

This appendix presents the complete evaluation results for the Preliminary Recommended Plan, which is documented in Chapter 4 of Volume II of the VISION 2050 plan report. Similar to the evaluation of the VISION 2050 alternatives, the evaluation of the Preliminary Plan was conducted based on the VISION 2050 plan objectives and evaluation criteria, set forth in Chapter 3 of Volume II. Given both evaluations used the same 50 evaluation criteria, which are intended to achieve the same VISION 2050 plan objectives, the evaluation for the Preliminary Plan does not repeat all of the discussion from the evaluation of the VISION 2050 alternatives related to the importance of a criterion or how a criterion was estimated. This background information can be found in Appendix F of Volume II, which documents the complete evaluation results of the alternatives.

As described in Chapter 4 of Volume II, the total regional household and employment growth under the Preliminary Plan is modestly higher than the Trend, which should be taken into account when comparing the results for some of the criteria. It should also be noted that the arterial street and highway system under the Trend presented in the Preliminary Plan evaluation was slightly modified from that presented in the alternatives evaluation. The Trend utilized for comparison to the Preliminary Plan reflects the addition and removal of some widenings and new facilities, as identified by the Commission's County Jurisdictional Highway Planning Committees. These modifications were incorporated into both the Preliminary Plan and the Trend to provide for a consistent comparison.

Appendix H is organized into four important themes for VISION 2050:

- Healthy Communities (Appendix H-1)
- Equitable Access (Appendix H-2)
- Cost and Financial Sustainability (Appendix H-3)
- Mobility (Appendix H-4)

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## CRITERION 1.1.1: NUMBER OF PEOPLE LIVING IN WALKABLE AREAS

The evaluation of the VISION 2050 alternatives noted that developing walkable neighborhoods can have numerous positive benefits to the health and vibrancy of communities in the Region, and compared the alternatives in terms of their walkability.[32] Like Alternative Plans I and II, the Preliminary Recommended Plan would result in more people living in walkable areas and more developed land that is walkable, as shown in Table H.1 and Maps H.1 through H.3. A more compact development pattern tends to be more walkable, and the Preliminary Plan, which includes higher-density development than the Trend and an emphasis on TOD, would result in additional areas identified as being walkable.

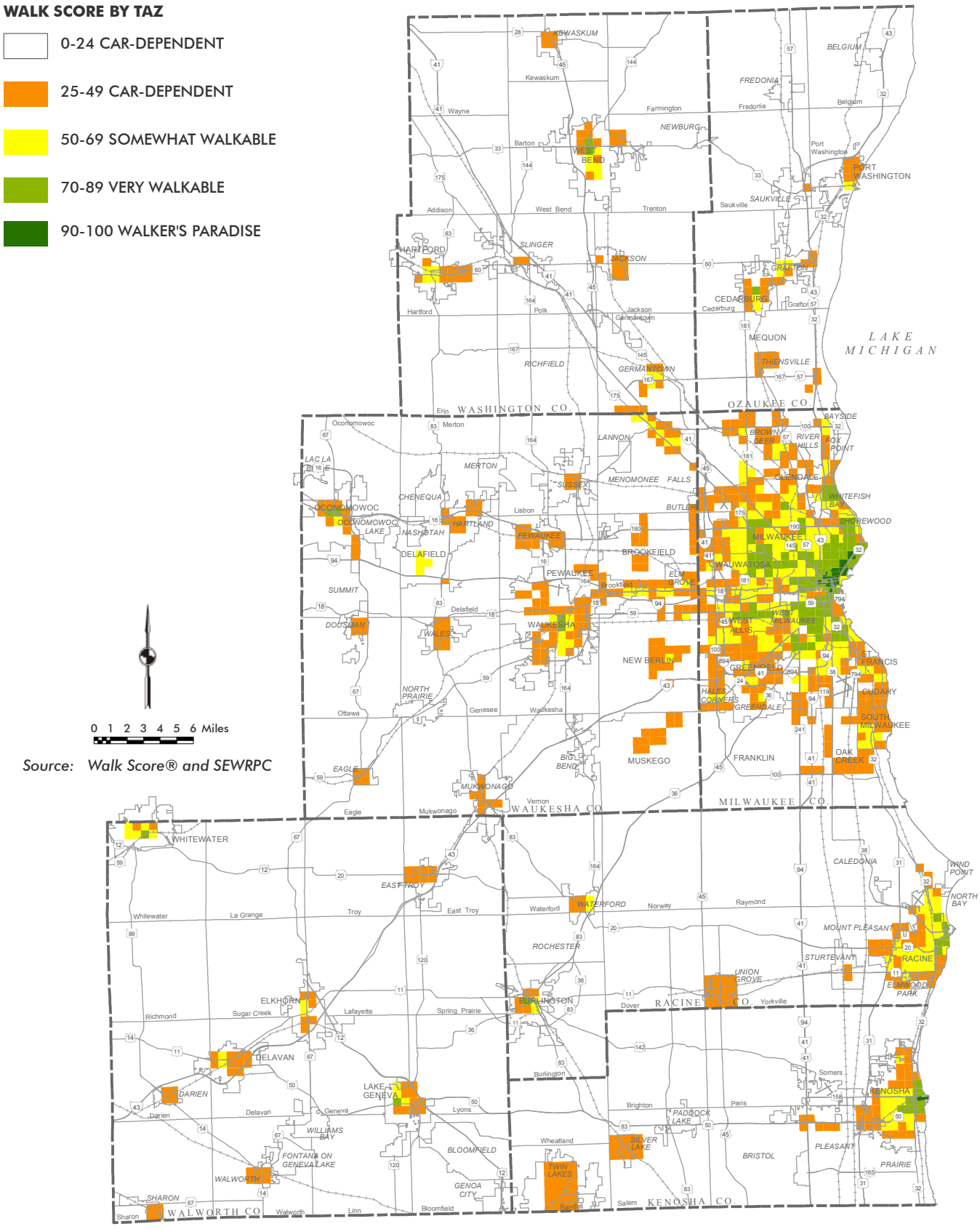
**Table H.1**
**Number of People Living in Walkable Areas**

| Plan | Population in Walkable Areas | Total Population | Percent of Total Population in Walkable Areas | Developed Land that is Walkable (Acres) | Total Developed Land (Acres) | Percent of Developed Land that is Walkable |
|---|---|---|---|---|---|---|
| Existing - 2010 | 702,600 | 2,020,000 | 34.8 | 56,400 | 467,000 | 12.1 |
| Trend - 2050 | 724,600 | 2,354,000 | 30.8 | 59,200 | 568,400 | 10.4 |
| Plan - 2050 | 844,000 | 2,389,200 | 35.3 | 73,300 | 527,500 | 13.9 |

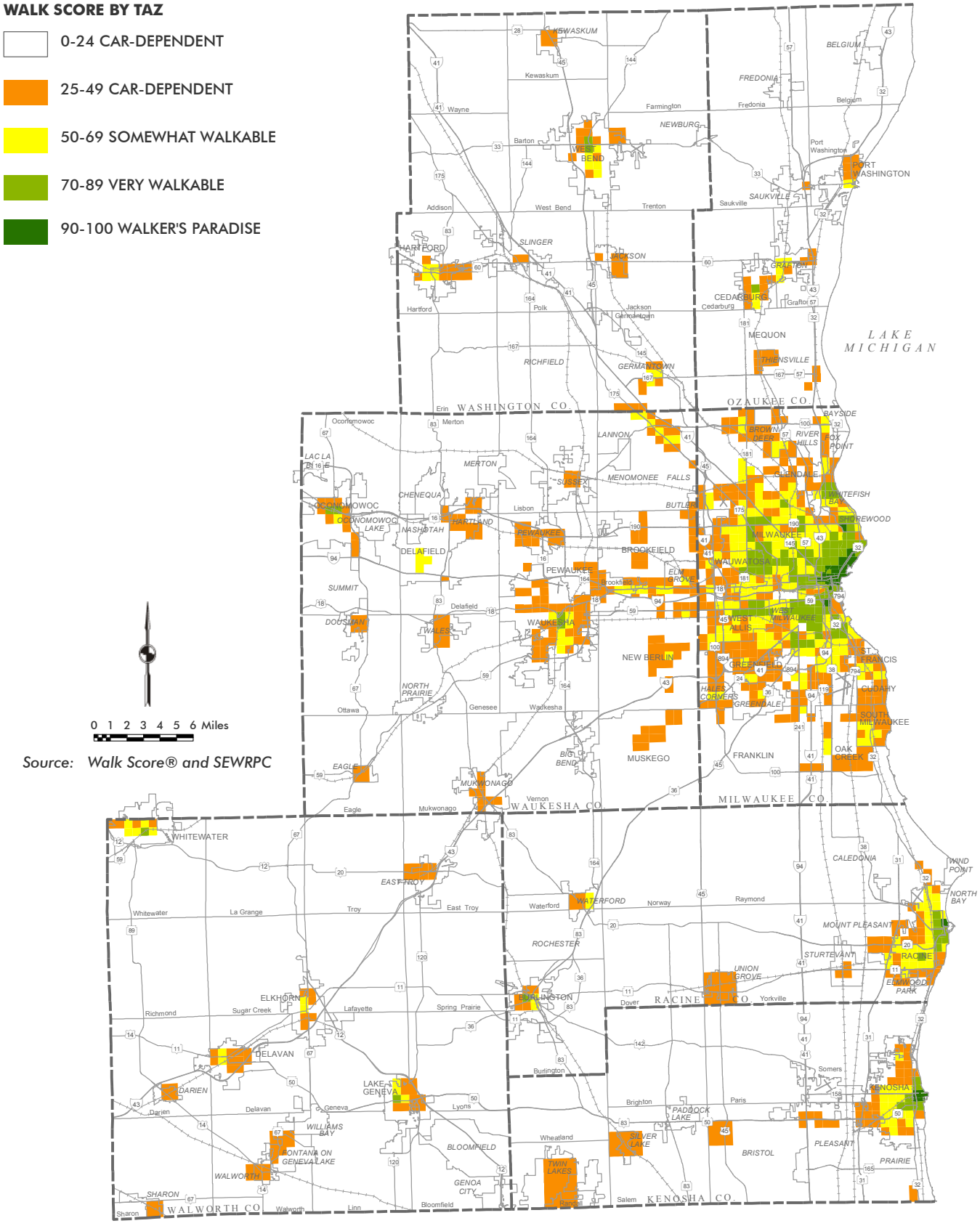
*Source: WalkScore® and SEWRPC*

[32] *The term "walkable" refers to the ease by which people can walk in an area to various destinations, such as schools, parks, retail services, and employment.*

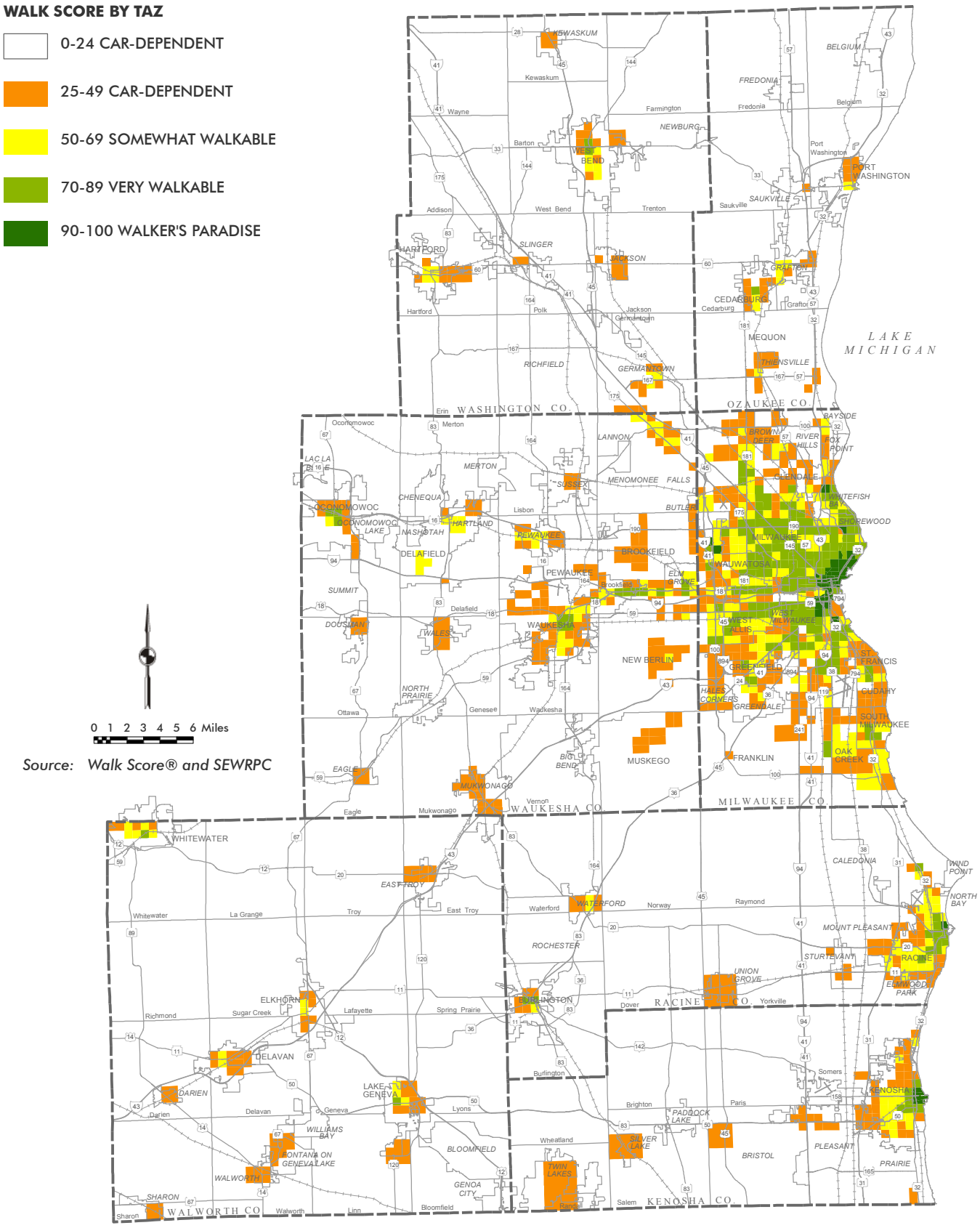
## Map H.1
## Walkability in the Region: Existing



## Map H.2
## Walkability in the Region: Trend



## Map H.3
## Walkability in the Region: Preliminary Recommended Plan



## CRITERION 1.1.2: POPULATION DENSITY

Population density (number of people per square mile) is a result of the residential development pattern. The Preliminary Recommended Plan has a higher-density development pattern than the Trend, which results in better performance under most of the evaluation criteria because public infrastructure and services can be provided more efficiently; alternatives to automobile travel can be more efficiently provided and receive greater use; and less agricultural land and open space would be converted to urban uses.

**Table H.2**
**Population Density**

| Plan | Residential Land (square miles) | Population | Population per Square Mile | Incremental Residential Land (square miles) | Population Change | Population per Square Mile of New Residential Development |
|---|---|---|---|---|---|---|
| Existing - 2010 | 400.9 | 2,020,000 | 5,038.7 | N/A | N/A | N/A |
| Trend - 2050 | 517.7 | 2,354,000 | 4,547.0 | 116.8 | 334,000 | 2,859.6 |
| Plan - 2050 | 459.7 | 2,389,200 | 5,197.3 | 58.8 | 369,200 | 6,278.9 |

*Source: SEWRPC*

## CRITERION 1.1.3: EMPLOYMENT DENSITY

Employment density under the Preliminary Recommended Plan is somewhat lower than under the Trend because of assumptions made regarding industrial jobs in preparing the Preliminary Plan. Continuing increases in efficiency in the industrial sector would result in decreased job density. This assumption was not included in the employment data prepared for the alternative plans. This resulted in higher job densities reported for the alternative plans, including the Trend. The job allocation pattern under the Preliminary Plan is similar to that of Alternative Plan II, with significant concentrations of jobs in rapid transit and commuter rail station areas.

### Table H.3
### Employment Density

| Plan | Employment Supporting Land (square miles) | Jobs | Employment per Square Mile | Incremental Employment Supporting Land (square miles) | Employment Change | Jobs per Square Mile for New Employment Supporting Development |
|---|---|---|---|---|---|---|
| Existing - 2010 | 128.1 | 1,176,600 | 9,185.0 | N/A | N/A | N/A |
| Trend - 2050 | 146.9 | 1,386,900 | 9,441.1 | 18.8 | 210,300 | 11,186.2 |
| Plan - 2050 | 151.6 | 1,405,700 | 9,272.4 | 23.5 | 229,100 | 9,748.9 |

*Source: SEWRPC*

## CRITERION 1.2.1: BICYCLE LEVEL OF SERVICE

Bicycle level of service (BLOS) refers to the degree of comfort that a bicyclist may experience when riding on a roadway. Both the Trend and Preliminary Recommended Plan would result in considerable improvement in BLOS compared to the existing network. BLOS in the Trend compared to the existing network is greatly improved due to the expectation that on-street bicycle accommodations would be added on all surface arterial streets and highways as they are resurfaced or reconstructed, where feasible. Like Alternative Plans I and II, the Preliminary Plan would result in a significant improvement to BLOS where enhanced bicycle facilities would be implemented in regional corridors, as the increased separation from vehicles and other traffic conditions would greatly reduce the discomfort that bicyclists might experience when riding on arterials in proximity to high traffic volumes and speeds.

Table H.4 includes the miles of each BLOS grade within each county and for the Region, as well as the distance weighted average BLOS grade for each county and for the Region under existing conditions, the Trend, and the Preliminary Plan. Maps H.4 through H.6 illustrate BLOS by arterial link under existing conditions, the Trend, and the Preliminary Plan. The Preliminary Plan includes 1,847 miles of arterials with BLOS grades of A or B, while the Trend includes 1,442 miles with grades A or B. Maps H.7 through H.9 illustrate BLOS by TAZ for the three networks, which aggregates the BLOS scores for arterial links, separate paths, and off-street paths within each TAZ using a weighted average.

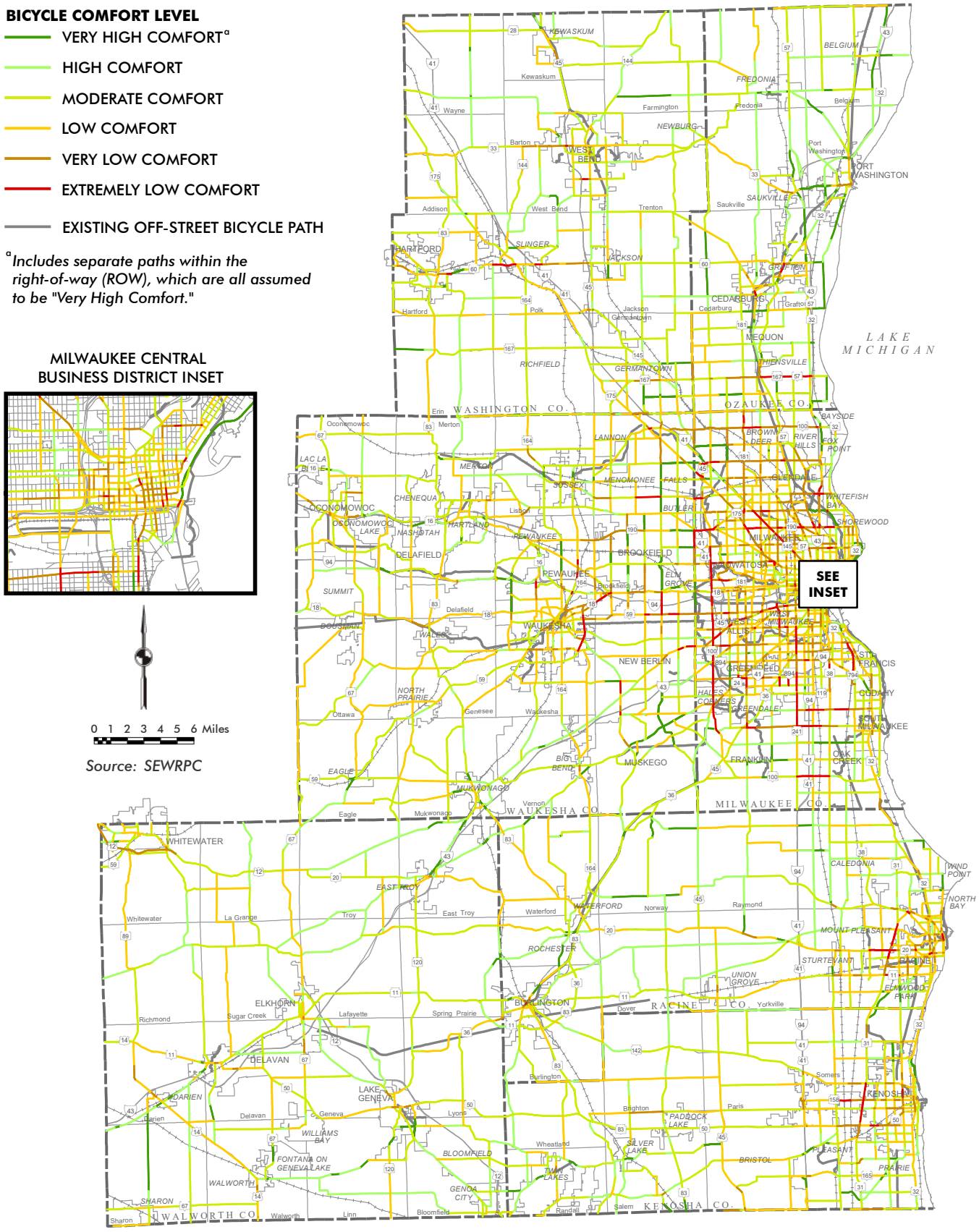
## Table H.4
## Bicycle Level of Service

| | County | Miles of Arterials by Bicycle Level of Service Grade | | | | | | Average Comfort Level[a] |
|---|---|---|---|---|---|---|---|---|
| | | Very High Comfort (BLOS A) | High Comfort (BLOS B) | Moderate Comfort (BLOS C) | Low Comfort (BLOS D) | Very Low Comfort (BLOS E) | Extremely Low Comfort (BLOS F) | |
| Existing - 2015 | Kenosha | 14 | 68 | 145 | 100 | 18 | 4 | C |
| | Milwaukee | 28 | 63 | 217 | 238 | 140 | 47 | D+ |
| | Ozaukee | 39 | 69 | 117 | 45 | 7 | 3 | C+ |
| | Racine | 22 | 115 | 152 | 118 | 15 | 4 | C |
| | Walworth | 20 | 126 | 175 | 92 | 9 | 0 | C |
| | Washington | 17 | 91 | 198 | 85 | 10 | 2 | C |
| | Waukesha | 47 | 91 | 296 | 244 | 34 | 9 | C |
| | Region | 187 | 624 | 1,299 | 923 | 232 | 70 | C |
| Trend - 2050 | Kenosha | 17 | 76 | 204 | 51 | 7 | 4 | C+ |
| | Milwaukee | 93 | 224 | 304 | 98 | 17 | 2 | C+ |
| | Ozaukee | 49 | 137 | 77 | 15 | 4 | 0 | B- |
| | Racine | 34 | 137 | 218 | 33 | 8 | 1 | B- |
| | Walworth | 38 | 179 | 191 | 13 | 0 | 0 | B- |
| | Washington | 34 | 155 | 195 | 30 | 3 | 0 | B- |
| | Waukesha | 56 | 214 | 319 | 113 | 23 | 5 | C+ |
| | Region | 321 | 1,121 | 1,508 | 354 | 62 | 12 | C+ |
| Plan - 2050 | Kenosha | 58 | 84 | 175 | 32 | 4 | 0 | B- |
| | Milwaukee | 234 | 201 | 226 | 68 | 7 | 1 | B |
| | Ozaukee | 76 | 138 | 59 | 9 | 1 | 0 | B |
| | Racine | 81 | 150 | 183 | 21 | 0 | 0 | B |
| | Walworth | 43 | 195 | 178 | 6 | 0 | 0 | B- |
| | Washington | 44 | 185 | 166 | 20 | 0 | 0 | B- |
| | Waukesha | 104 | 296 | 282 | 46 | 3 | 0 | B- |
| | Region | 640 | 1,249 | 1,269 | 202 | 15 | 1 | B- |

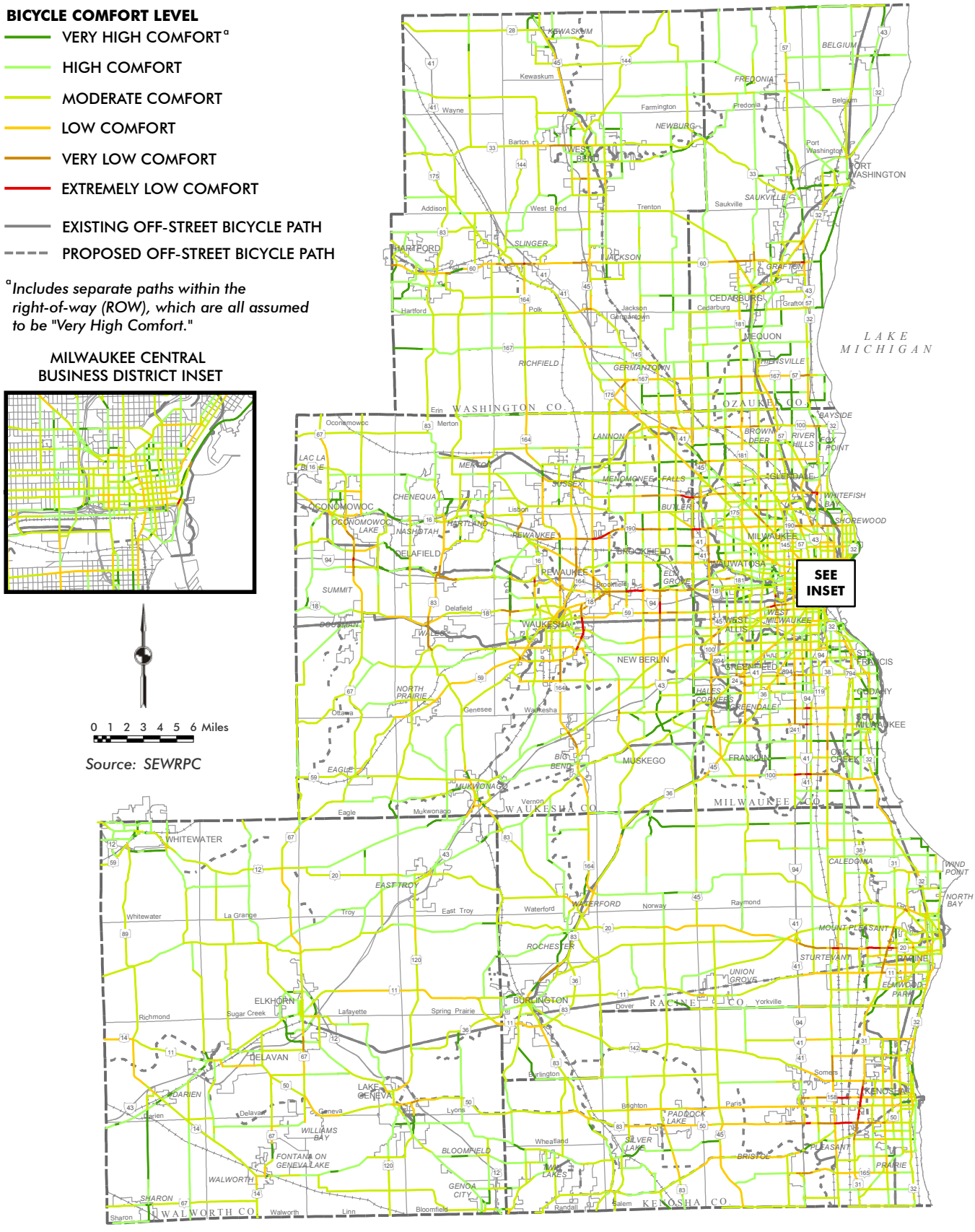
[a] *A distance weighted average was used to aggregate the BLOS scores for arterial links, separate paths, and off-street paths within each travel analysis zone (TAZ). Comfort level by county was calculated by using a weighted average of TAZs within each county.*

*Source: SEWRPC*

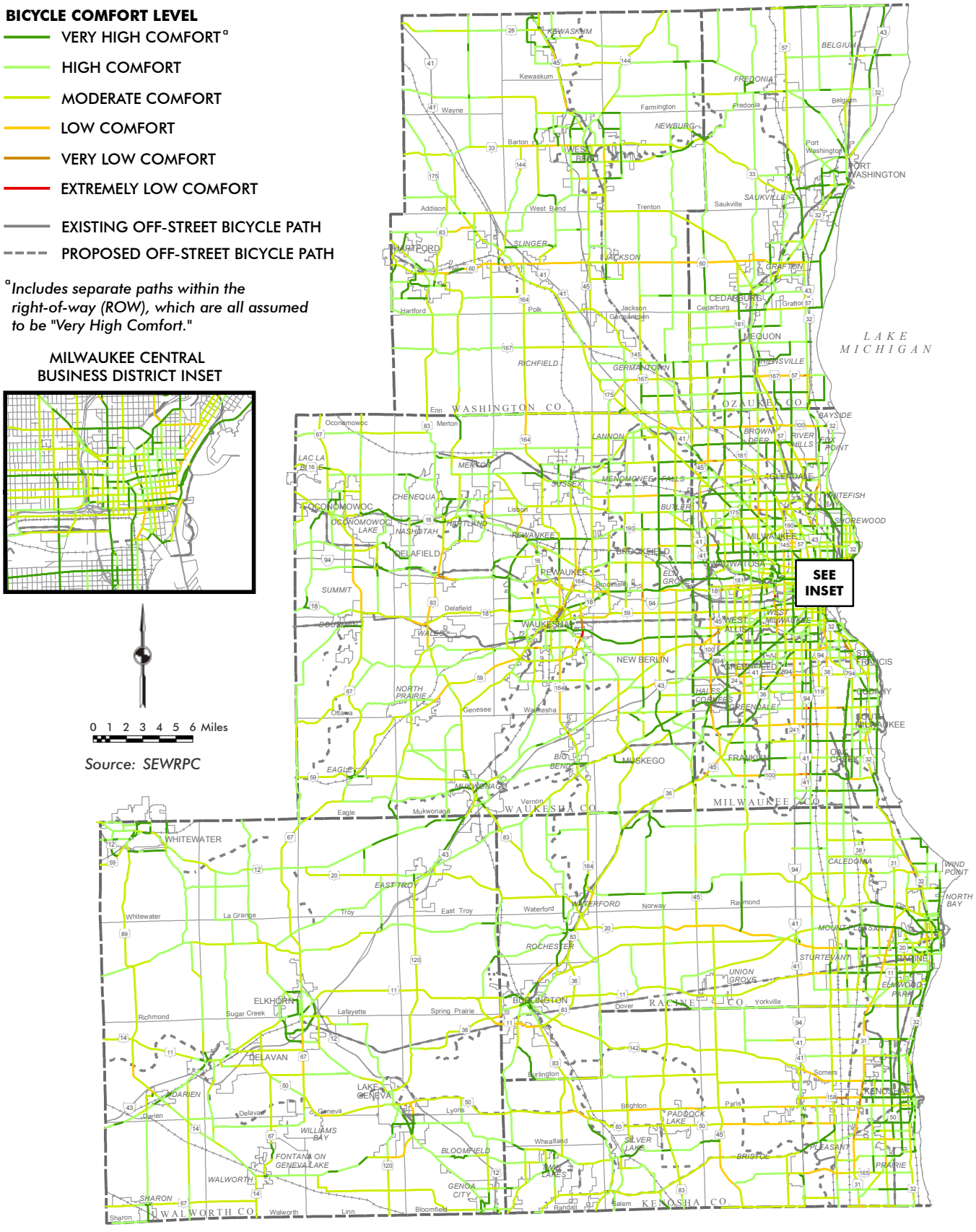
## Map H.4
## Bicycle Comfort Level for On-Street Bicycle Accommodations in the Region: Existing



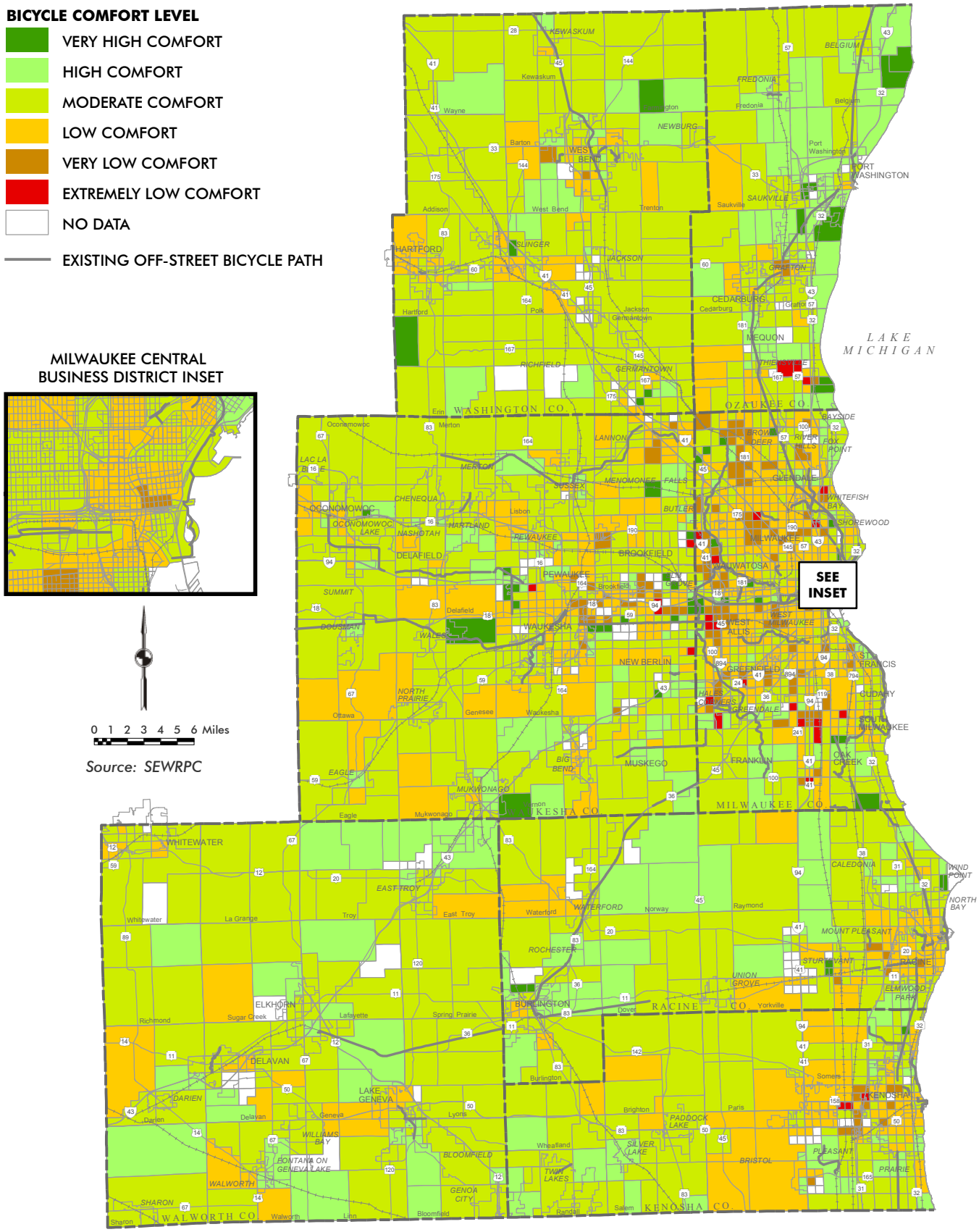
## Map H.5
## Bicycle Comfort Level for On-Street Bicycle Accommodations in the Region: Trend



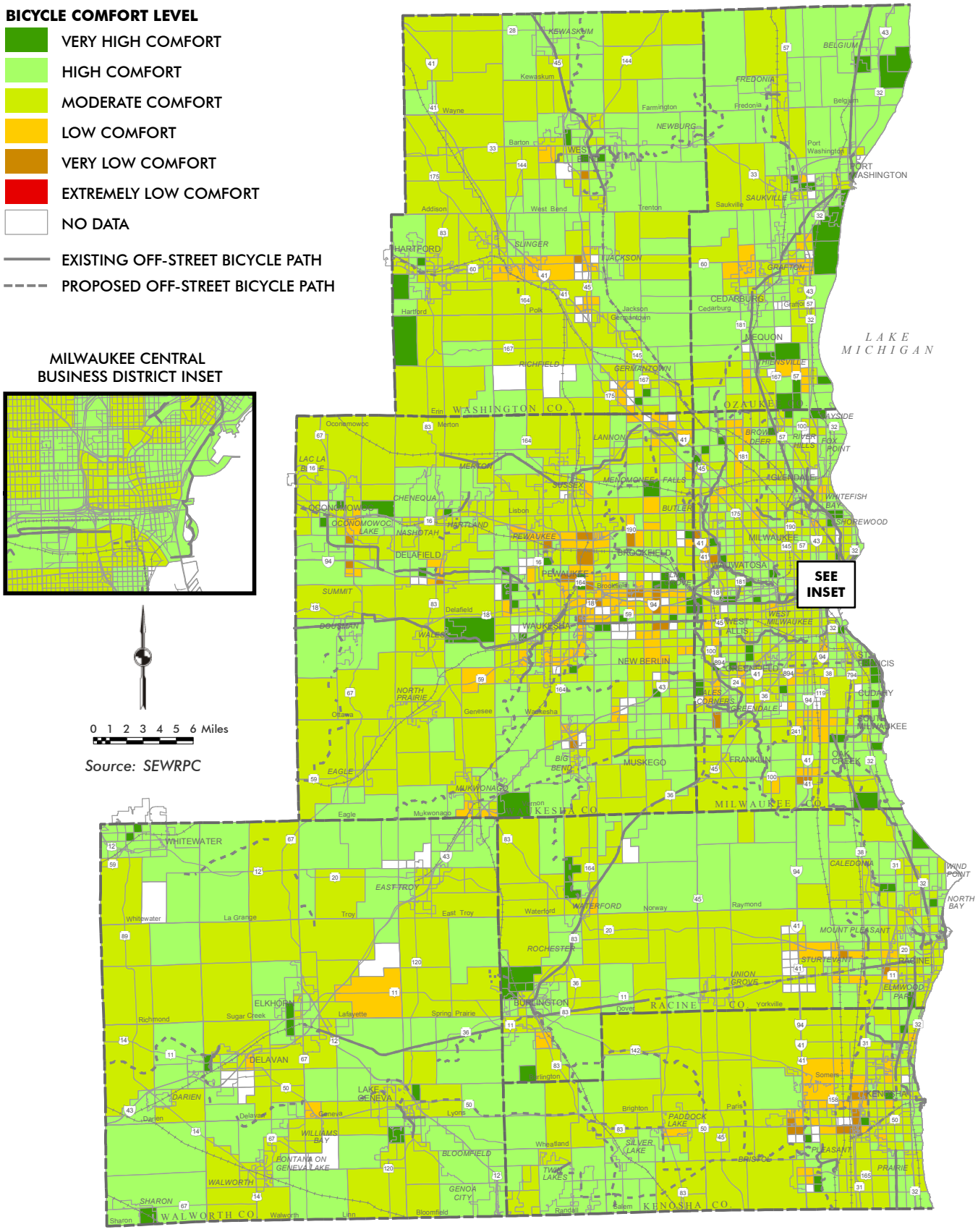
## Map H.6
## Bicycle Comfort Level for On-Street Bicycle Accommodations in the Region: Preliminary Recommended Plan



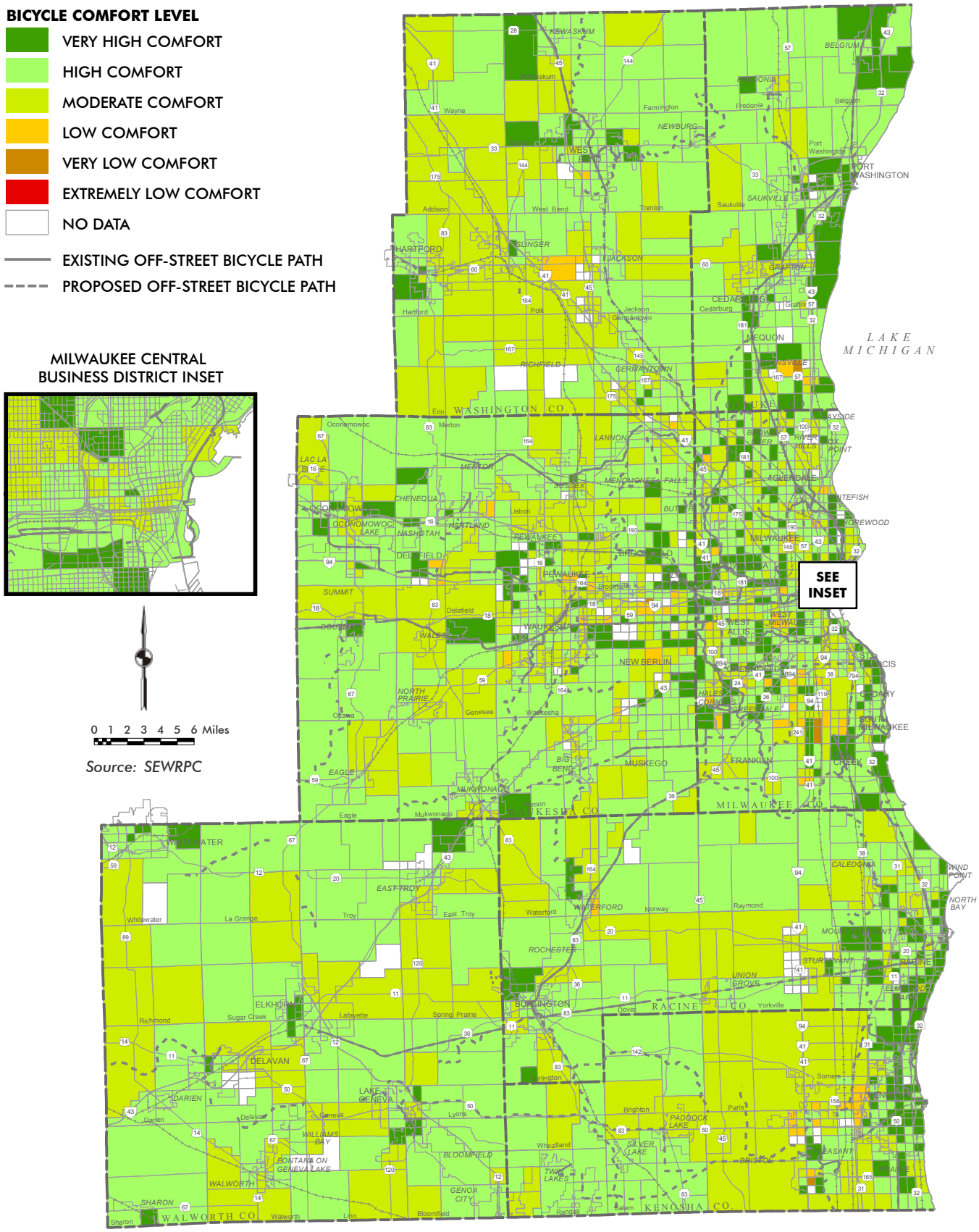
## Map H.7
## Bicycle Comfort Level by Travel Analysis Zone in the Region: Existing



## Map H.8
## Bicycle Comfort Level by Travel Analysis Zone in the Region: Trend



## Map H.9
## Bicycle Comfort Level by Travel Analysis Zone in the Region: Preliminary Recommended Plan

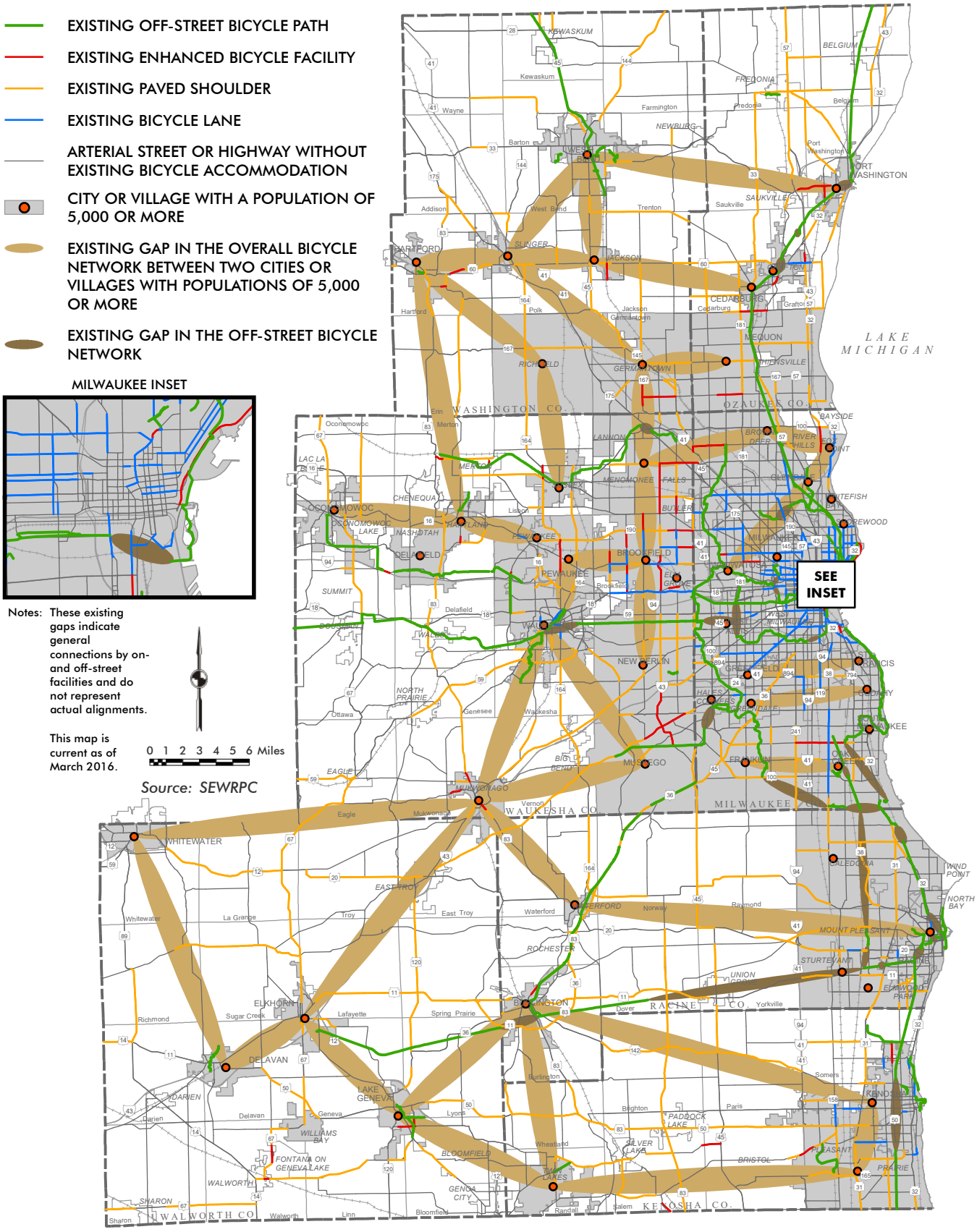


## CRITERION 1.2.2: BICYCLE NETWORK CONNECTIVITY

One of the analyses conducted during the alternatives stage involved assessing the connectivity of the existing bicycle network, and how well the alternatives would address any gaps in the network. Map H.10 presents the existing bicycle network connectivity and existing gaps identified in the bicycle network. Similar to the Trend and Alternative Plans I and II, the Preliminary Recommended Plan would address these gaps through provision of on- and off-street bicycle facilities. For on-street, the Preliminary Plan proposes implementing bicycle facilities, where feasible, when surface arterial streets and highways are resurfaced or reconstructed.[33] Unlike the Trend, the Preliminary Plan also proposes implementing enhanced bicycle facilities in regional corridors that connect several communities, which can improve on-street connectivity at a higher level by going beyond a standard bicycle lane, paved shoulder, or widened outside travel lane. For off-street, the Preliminary Plan proposes expansion of the off-street bicycle path system, which would further improve the connectivity of communities within the Region and improve bicycle travel within and between counties in the Region. Some existing paths have small gaps that require bicyclists to use streets to reach the next segment of the path. Although these streets make a connection, some streets may not be perceived as safe or comfortable for a bicyclist due to a lack of bicycle facilities, high vehicle volumes, and/or high vehicle speeds. These small gaps would be addressed in the Preliminary Plan either by constructing additional off-street path segments or by providing adequate on-street bicycle facilities for these connections.

[33] *There may be locations in urban environments where on-street bicycle accommodations may not be feasible. For example, where the right-of-way is restricted by two traffic lanes and two parking lanes, such as on Brady Street in the City of Milwaukee.*

## Map H.10
## Existing Bicycle Network Connectivity



## CRITERION 1.2.3: BENEFITS AND IMPACTS TO PUBLIC HEALTH

The evaluation of the VISION 2050 alternatives indicated the ways in which public health can be benefited or impacted by the Region's development pattern and transportation options. The Preliminary Recommended Plan was prepared in an attempt to maximize the benefits and minimize the impacts on public health. Recognizing that walking and biking on a regular basis can curb obesity-related health issues and has the potential to reduce healthcare costs related to caring for these conditions, the Preliminary Plan encourages active transportation through provision of well-connected infrastructure that makes it easier to bike and walk.

The improved connectivity over existing conditions under the Preliminary Plan would be in the form of on- and off-street bicycle facilities to address gaps in the regional bicycle network, including enhanced facilities in regional corridors, and by more compact development and more sidewalks. The more compact development under the Preliminary Plan would also improve biking and walking access by focusing on providing a mix of uses within short distances. In addition, the Preliminary Plan proposes significant transit improvements and expansion, which can have health benefits since public transit trips often begin and end by either walking or biking. By providing the additional alternative transportation options and more compact development pattern, the Preliminary Plan would also modestly improve emissions by limiting the need to drive and allowing for more green space that can absorb some pollution. Further, as discussed in Criterion 1.4.4, Federal standards on fuel and vehicle fuel economy and improved vehicle emissions controls have resulted in the significant reduction of vehicle-related air pollution, and transportation-related emissions are expected to continue to significantly decline into the future based on current Federal standards.

## CRITERION 1.3.1: REMAINING FARMLAND AND UNDEVELOPED LAND

Agricultural land use in the Region has decreased by 482 square miles since 1963. Despite this decrease, a large portion of the Region remains in agricultural use (about 1,156 square miles), and agriculture remains an important part of the regional economy. Table H.5 shows that some agricultural land would be expected to be converted to urban uses to accommodate projected regional growth under the Trend and Preliminary Recommended Plan, but much less agricultural land would be converted under the Preliminary Plan, including Class I and II soils (National Prime Farmlands) as classified by the U.S. Natural Resources Conservation Service.

### Table H.5
### Remaining Farmland and Undeveloped Land

| Plan | Agricultural Land (square miles) | Percent Change | Unused and Other Open Land (square miles) | Percent Change | Agricultural Land and Other Unused and Open Land Covered by Class I and II Soils (square miles) | Percent Change |
|---|---|---|---|---|---|---|
| Existing - 2010 | 1,156 | -- | 671 | -- | 887 | -- |
| Trend - 2050 | 1,078 | -6.7 | 592 | -11.7 | 828 | -6.7 |
| Plan - 2050 | 1,097 | -5.1 | 628 | -6.4 | 842 | -5.1 |

*Source: SEWRPC*

## CRITERION 1.3.2: IMPACTS TO NATURAL RESOURCE AREAS

Table H.6 compares the transportation system improvement impacts to natural resource areas in the Region under the Trend and Preliminary Recommended Plan. Specifically, impacts were estimated for primary and secondary environmental corridors, isolated natural resource areas, wetlands, natural areas, critical species habitat areas, Wisconsin Department of Natural Resources (DNR) managed lands[34] and Legacy Places,[35] lands protected by land trusts or other conservation lands, and prime agricultural areas (farmland with Class I or Class II soils).

- **Public Transit:** Public transit under the Preliminary Plan would not be expected to require the expansion of arterial street and highway or railroad right-of-ways, even with the proposed significant increases in public transit service. As a result, the proposed public transit system would not be expected to impact any of the Region's natural resource areas.

- **Arterial Streets and Highways:** While both the Trend and Preliminary Plan would be expected to have impacts to the Region's natural resource areas, the impacts are expected to be modest—typically representing less than 0.1 percent of the total area of natural resource areas. The Trend would be expected to have a greater impact on natural resource areas in the Region than the Preliminary Plan. It would have more capacity expansion due to the need to address the increased traffic resulting from less compact development and a decline in transit. There would be a modest decrease in impacts to natural resource areas under the Preliminary Plan—generally 3 to 9 percent less than the Trend, depending on the type of natural resource area—due to the greater emphasis on infill development and redevelopment and improvement and expansion of transit service.

[34] *The DNR has acquired large areas of park and open space lands in the Region and manages those lands for a variety of resource protection and recreational purposes.*

[35] *The DNR has identified Legacy Places that are critical for meeting Wisconsin's conservation and outdoor recreation needs through the year 2050. Source: Wisconsin Department of Natural Resources,* Wisconsin Land Legacy Report: An inventory of places to meet Wisconsin's future conservation and recreation needs, *2006.*

## Table H.6
## Transportation System Impacts to Natural Resource Areas

| Category | Trend (2050) | Plan (2050) |
|---|---|---|
| Environmental Corridors (Acres)[a] | | |
| Primary | 229.7 | 218.8 |
| Secondary | 65.2 | 51.5 |
| Isolated Natural Resource Areas | 43.1 | 39.0 |
| Other Natural Resource Areas (Acres)[b] | | |
| Wetlands | 171.9 | 158.6 |
| Natural Areas | 18.2 | 17.9 |
| Critical Species Habitat Areas | 2.0 | 1.8 |
| DNR Managed Lands | 40.2 | 39.9 |
| DNR Legacy Places | 132.3 | 126.3 |
| Land Trust or Other Conservation Organization Lands | 2.9 | 2.9 |
| Prime Agricultural Lands (Class I or Class II) | 718.6 | 694.9 |

[a] *Existing primary environmental corridors in the Region total about 311,900 acres, existing secondary environmental corridors total about 51,600 acres, and existing isolated natural resource areas total about 45,800 acres.*

[b] *Existing wetlands in the Region total about 201,700 acres, natural areas total about 64,600 acres, critical species habitat areas total about 19,800 acres, DNR managed lands total about 64,900 acres, DNR Legacy Places total about 137,800 acres, and land trust or other conservation organization lands total about 12,700 acres. Existing prime agricultural lands in the Region total about 567,900 acres.*

*Source: SEWRPC*

## CRITERION 1.4.1: PRESERVATION OF AREAS WITH HIGH GROUNDWATER RECHARGE POTENTIAL

The Preliminary Recommended Plan recognizes that groundwater is a key element of the Region's natural resource base, and the land use development pattern can affect the amount of recharge entering the groundwater system. Like Alternative Plans I and II, the Preliminary Plan would preserve more areas with high and very high groundwater recharge potential than the Trend. Of the existing 794 square miles of these areas, approximately 51 square miles would be converted to urban uses under the Trend, compared to 33 square miles under the Preliminary Plan. The result is that about 94 percent of the areas would be preserved under the Trend, compared to about 96 percent under the Preliminary Plan.

## CRITERION 1.4.2: IMPERVIOUS SURFACE

As discussed in the alternatives evaluation, impervious surfaces can have negative impacts on stormwater absorption and water quality. The percent of the Region's total land area covered by impervious surfaces is anticipated to increase by the year 2050 when compared to existing conditions, but the more compact development pattern under the Preliminary Recommended Plan would result in less impervious surface (11.2 percent of the Region) than the Trend (11.4 percent of the Region), as shown in Table H.7. The Preliminary Plan also proposes expanded implementation of green infrastructure for managing stormwater through infiltration (e.g., green roofs, porous pavements, rain gardens, and biofiltration and infiltration facilities), which can mitigate the impacts of impervious surfaces or reduce the amount of impervious surface beyond the Preliminary Plan levels estimated in this analysis.

From an individual watershed perspective, as impervious surfaces grow as a percentage of the overall land area within the watershed, significant declines in water quality can result. Table H.7 shows the watersheds with more than 25 percent of their area covered by impervious surfaces highlighted in orange, and watersheds with 10 to 25 percent of their area covered by impervious surfaces highlighted in yellow.

### Table H.7
### Impervious Surface

| Watershed | Total Acres | Existing (2010) | | Trend (2050) | | Plan (2050) | |
|---|---|---|---|---|---|---|---|
| | | Acres | Percent | Acres | Percent | Acres | Percent |
| Des Plaines River[a] | 85,989 | 5,676 | 6.6 | 7,741 | 9.0 | 7,749 | 9.0 |
| Fox River[a] | 598,280 | 46,192 | 7.7 | 54,414 | 9.1 | 53,246 | 8.9 |
| Kinnickinnic River | 16,239 | 5,895 | 36.3 | 6,056 | 37.3 | 6,084 | 37.5 |
| Menomonee River | 86,891 | 20,693 | 23.8 | 22,046 | 25.4 | 22,317 | 25.7 |
| Milwaukee River[a] | 277,550 | 30,797 | 11.1 | 35,175 | 12.7 | 34,264 | 12.3 |
| Oak Creek | 17,752 | 4,181 | 23.6 | 4,671 | 26.3 | 4,747 | 26.7 |
| Pike River | 32,913 | 4,665 | 14.2 | 6,080 | 18.5 | 6,050 | 18.4 |
| Rock River[a] | 390,889 | 23,766 | 6.1 | 28,198 | 7.2 | 27,124 | 6.9 |
| Root River | 126,082 | 14,560 | 11.5 | 16,660 | 13.2 | 16,677 | 13.2 |
| Sauk Creek[a] | 22,161 | 1,378 | 6.2 | 1,692 | 7.6 | 1,616 | 7.3 |
| Sheboygan River[a] | 6,944 | 285 | 4.1 | 320 | 4.6 | 385 | 5.5 |
| Lake Michigan Direct[a] | 59,738 | 11,575 | 19.4 | 12,831 | 21.5 | 12,888 | 21.6 |
| Region | 1,721,428 | 169,663 | 9.9 | 195,885 | 11.4 | 193,146 | 11.2 |

[a] *These watersheds extend beyond the borders of the Region. Only the portion of the watershed contained within the Region is included here.*

*Source: SEWRPC*

## CRITERION 1.4.3: ENERGY USE

As discussed during the evaluation of the VISION 2050 alternatives, energy use is impacted by technologies that make homes and transportation more energy efficient, individual actions to conserve energy, the development pattern, and the mode and technology used for transportation.

- **Building Type and Development Pattern:** Multifamily housing tends to be more energy efficient than single-family housing because multifamily housing units typically have shared ceilings/floors and walls. The Preliminary Recommended Plan proposes a more compact development pattern, which supports a greater number of multifamily housing units. The Preliminary Plan would add more multifamily housing units (42 percent of the new housing units) than the Trend (25 percent of the new housing units). Using these figures and data from the EIA, the average energy use per household added under the Preliminary Plan would be 102.1 million BTU per year, which is about 10 percent less than the Trend (111.8 million BTU per year).[36]

- **Transportation:** The vast majority of energy used by the transportation sector comes from petroleum fuels, including gasoline and diesel. Total petroleum fuel usage in the transportation sector is directly affected by vehicle fuel economy and VMT. Based on current Federal standards on vehicle fuel economy, vehicles are expected to become significantly more fuel efficient, which will significantly reduce transportation-related energy use. Given this expected downward trend, there is a relatively large difference between existing and future levels of energy use under both the Trend and Preliminary Plan. Existing transportation-related energy use is estimated to be about 124.1 million BTUs per household per year, which is significantly higher than the Trend (87.4 million BTUs in the year 2050) and Preliminary Plan (86.6 million BTUs in the year 2050). Between the Trend and Preliminary Plan, the differences are comparatively small, but the variations in the development pattern and transportation system still have an impact. In addition to supporting more multifamily housing, which tends to be more energy efficient, more compact development patterns also tend to have destinations closer to residents. This results in shorter auto trips, makes public transit a more viable alternative to driving, and also encourages biking and walking trips, all of which can reduce transportation-related energy use. The significant improvements to public transit in the Preliminary Plan would also result in more transit ridership and lower VMT.

[36] *It should be noted that home energy use under both the Trend and Preliminary Plan could be less than estimated given that new homes tend to be more energy efficient than older homes.*

## CRITERION 1.4.4: GREENHOUSE GAS EMISSIONS AND OTHER AIR POLLUTANTS

The alternatives evaluation noted that reducing air pollution caused by human activity is important to the health and welfare of the Region's residents and can reduce unintended economic impacts caused by the effects of air pollutants. The evaluation showed that, from a transportation perspective, Federal standards on the sulfur content in fuel and vehicle fuel economy and improved vehicle emissions controls have been the primary drivers in the reduction of vehicle-related air pollution in recent years. Based on current Federal standards, fuels are expected to continue to become cleaner and vehicles are expected to become more fuel efficient, resulting in the continued significant decline of transportation-related emissions.

Table H.8 presents existing and future levels for a range of transportation-related criteria pollutants, mobile source air toxics, and GHG emissions. Levels were estimated using MOVES2014, the U.S. Environmental Protection Agency (EPA) emission modeling system for transportation sources. Given the expected downward trend in transportation-related emissions, there is a relatively large difference between existing and future levels for several emission types under both the Trend and Preliminary Plan. Between the Trend and Preliminary Plan, the differences are comparatively small, but the variations in the development pattern and transportation system still have an impact. The Preliminary Plan would further reduce transportation-related GHG emissions by providing more transportation options as alternatives to driving and the more compact development patterns would also reduce the distance required to travel. This would reduce the length of auto trips, make public transit a more viable alternative to driving, and encourage biking and walking trips, all of which would reduce transportation-related emissions.

In addition, the added multifamily housing associated with the compact development pattern under the Preliminary Plan would reduce the amount of energy used by the Region's households, and in doing so would also reduce air pollutant emissions. About 24.7 tons of $CO_2$ (per year in the year 2050)[37] would be produced per household added under the Trend (25 percent multifamily housing units), based on structure type and the primary sources of energy used by electrical power plants in the Region. Compared to the Trend, the Preliminary Plan (having 42 percent multifamily housing units) would perform somewhat better at 22.5 tons of $CO_2$ produced per new household (per year in the year 2050).[38] The Trend and Preliminary Plan compare similarly regarding the amount of other GHG emissions and air pollutants produced by the energy used per new household.

*[37] The Trend $CO_2$ data has been revised from that presented under the alternatives evaluation to reflect updated information from the U.S. Environmental Protection Agency Power Profiler website.*

*[38] Emissions per housing unit are based on the end use energy consumed. End use refers to the energy content of electricity and other fuels at the point of use by customers, such as households.*

## Table H.8
## Transportation-Related Greenhouse Gas Emissions and Other Air Pollutants

| Pollutant Name | Type | Average Annual Emissions from Transportation Sources (tons) | | |
|---|---|---|---|---|
| | | Existing (2010) | Trend (2050) | Plan (2050) |
| Carbon Dioxide ($CO_2$) | GHG | 10,435,000 | 7,369,000 | 7,232,000 |
| Methane ($CH_4$) (in $CO_2$ equivalents) | GHG | 10,200 | 8,400 | 8,200 |
| Nitrous Oxide ($N_2O$) (in $CO_2$ equivalents) | GHG | 100,300 | 35,200 | 34,500 |
| Carbon Monoxide (CO) | Criteria | 124,200 | 26,400 | 26,000 |
| Fine Particulate Matter ($PM_{2.5}$) | Criteria | 1,382 | 231 | 226 |
| Sulfur Dioxide ($SO_2$) | Criteria and precursor for $PM_{2.5}$ | 182 | 54 | 53 |
| Nitrogen Oxides ($NO_x$) | Precursor for Ozone/$PM_{2.5}$ | 28,460 | 3,640 | 3,580 |
| Volatile Organic Compounds (VOC) | Precursor for Ozone/$PM_{2.5}$ | 12,740 | 2,120 | 2,070 |
| Acetaldehyde ($C_2H_4O$) | Air toxic | 150 | 30 | 30 |
| Acrolein ($C_3H_4O$) | Air toxic | 15 | 3 | 3 |
| Ammonia ($NH_3$) | Air toxic | 704 | 480 | 471 |
| Benzene ($C_6H_6$) | Air toxic | 309 | 33 | 32 |
| Butadiene ($C_4H_6$) | Air toxic | 47 | 4 | 3 |
| Formaldehyde ($CH_2O$) | Air toxic | 233 | 68 | 66 |

*Source: U.S. Environmental Protection Agency and SEWRPC*

## CRITERION 1.4.5: IMPACTS TO WATER RESOURCES AND WATER QUALITY

As discussed in the alternatives evaluation, significant surface water quality improvements have been made since passage of the Federal Clean Water Act in 1972. The land development pattern and transportation system investment under the Preliminary Recommended Plan is designed to have a positive impact on future improvements.

- **Impervious Surfaces:** Criterion 1.4.2 (Impervious Surfaces) discusses the impact of the growth of impervious surfaces on water quality. The amount of the Region's land area covered by impervious surfaces in 2050 would be less under the Preliminary Plan (11.2 percent) than under the Trend (11.4 percent). The difference is due to the Preliminary Plan's more compact development pattern, which could reduce the amount of pollutants delivered to some of the Region's streams, rivers, and lakes in stormwater runoff from impervious surfaces.

- **Areas with High Groundwater Recharge Potential:** About 40 percent of the Region's residents are dependent upon groundwater for their water supply, as discussed in Criterion 1.4.1 (Preservation of Areas with High Groundwater Recharge Potential). Some areas of the Region have higher potential for recharge of groundwater than others, and the land development pattern can affect the amount of recharge entering the groundwater system. The Preliminary Recommended Plan would preserve significantly more areas with high groundwater recharge potential than the Trend. Approximately 51 square miles (about 6 percent) of the total 794 square miles of areas with high and very high groundwater recharge potential would be converted to urban uses under the Trend, compared to 33 square miles (about 4 percent) under the Preliminary Plan.

- **Reducing the Use of Salt for De-icing:** In winter, salt spread on roads and parking lots can quickly lead to significant increases in salinity in nearby streams, rivers, wetlands, and lakes, and can also have long-term effects on groundwater. Many communities in the Region have adopted winter road maintenance practices that use road salt efficiently while maintaining safe driving conditions. Additional reductions in the amount of salt delivered to surface water and groundwater, while maintaining safety for vehicles and pedestrians, may come from other communities improving their application efficiency, reductions in de-icing salt applied to privately maintained impervious surfaces, and possible future development of more environmentally friendly and cost-effective alternatives to road salt.

  Future road salt use in the Region could also be affected by the increase in pavement surface associated with the Preliminary Plan's proposed widening at the time of the reconstruction of about 8 percent of the arterial streets and highways and the construction of new arterial facilities, representing about 2 percent of the arterial system. The Trend would be expected to have slightly more of an effect on salt use than the Preliminary Plan, as the Trend has slightly more proposed widenings than the Plan. Existing nonarterial (collector or land access street) streets would also increase over the next 35 years, although the more compact development pattern of the Preliminary Plan would result in about 12 percent fewer miles of nonarterial roadway than the Trend. The Preliminary Plan would also be expected to require fewer

surface parking lots (as more compact development and improved public transit lead to lower per capita demand for parking and more parking in covered parking garages). Therefore, the Preliminary Plan may result in less salt reaching the Region's streams, rivers, wetlands, and lakes, than the Trend.

## CRITERION 1.4.6: ABILITY TO ADDRESS ISSUES RELATED TO CLIMATE CHANGE

Under the alternatives evaluation, this criterion discussed the possible effects of climate change on Wisconsin and potential strategies for adapting to these effects. These effects and strategies are being investigated by the Wisconsin Initiative on Climate Change Impacts (WICCI), and the Southeastern Wisconsin Regional Planning Commission is collaborating with the effort. The ability of the alternatives to support these potential strategies was assessed during the alternatives evaluation. The Preliminary Recommended Plan would perform similarly to Alternative Plans I and II in that regard.

- **Preserving Areas with High Groundwater Recharge Potential and Minimizing Impervious Surfaces:** Preserving areas with high groundwater recharge potential and minimizing impervious surfaces would help mitigate flooding resulting from the projected increase in large storm events and improve water quality in the Region by promoting recharging of the groundwater system. The Preliminary Plan would support the Milwaukee Metropolitan Sewerage District in its efforts to preserve and create green infrastructure within its service area as it would convert less non-urban land area with high or very high groundwater recharge potential to urban uses than the Trend (see Criterion 1.4.1), and would result in less impervious surface area in the Region (see Criterion 1.4.2). The Preliminary Plan also encourages implementing sustainable development measures, such as green roofs, porous pavement, rain gardens, and biofiltration and infiltration facilities, to increase stormwater infiltration and reduce negative impacts on water quality.

- **Preserving Natural Resource Areas:** Preserving natural resource areas would help adapt to climate change in several ways, including providing storage and filtration of precipitation and runoff from large storm events. The Preliminary Plan would accommodate the Region's forecast growth with higher-density development than the Trend. This helps to preserve natural resource areas by requiring that less agricultural land and open space—which can function as habitat for native animal and plant species—be converted to urban uses. It also allows for more green space that can absorb pollution.

  Southeastern Wisconsin's natural resource areas would be impacted by expansion of the Region's arterial street and highway system, but the Preliminary Plan would result in slightly less natural resource areas experiencing transportation impacts than the Trend (see Criterion 1.3.2).

- **Reducing Greenhouse Gases and Other Air Pollutants:** Federal standards on fuel and vehicle fuel economy and improved vehicle emissions controls are expected to result in a significant decline in transportation-related emissions in the future, even with forecast increases in regional travel and traffic (see Criterion 1.4.4). The Preliminary Recommended Plan would further reduce, albeit somewhat modestly, greenhouse gas emissions and emissions of other air pollutants that have harmful health and environmental effects, specifically air pollutants such as nitrogen oxides ($NO_x$), volatile organic compounds (VOCs), and fine particulate matter ($PM_{2.5}$), which have harmful effects that would be enhanced in a warmer and wetter climate.

Walking and bicycling produce essentially no emissions, and public transit generally produces fewer emissions per trip than personal vehicles. The Preliminary Recommended Plan would result in more people living in walkable areas, provide a high-quality regional transit system, and provide a robust bicycle network, encouraging more travel by alternative travel modes (see Criteria 1.1.1, 1.2.1, 1.2.2, and 4.5.3).

- **Increasing Transportation System Resiliency to Flooding:** As noted in the alternatives evaluation, identifying streets, highways and other transportation facilities (e.g., bus stops and park-ride lots) that are susceptible to flooding, and identifying adjacent roadway facilities that could serve as alternative routes when flooding occurs, would help the Region's transportation system become more resilient with respect to the projected increase in frequency of large storm events. The Preliminary Plan proposes that the Commission staff initiate a study to identify transportation facilities in low-lying areas, such as within 1-percent-annual-probability (100-year recurrence interval) floodplains, and identify potential improvements that would help the regional transportation system become more resilient to flooding.

## CRITERION 1.4.7: OVERALL ENVIRONMENTAL SUSTAINABILITY

Environmental sustainability involves managing natural resources to meet the needs of present and future generations. In evaluating environmental sustainability related to the condition of the Region's natural resources, including water resources and air quality, the Preliminary Plan clearly performs better than the Trend. The Preliminary Plan's more compact development pattern results in fewer impacts on the Region's natural resources.

- **Natural and Agricultural Resource Areas:** The Region's future development pattern affects encroachment of urban development and transportation infrastructure on resources such as primary and secondary environmental corridors, isolated natural resource areas, wetlands, natural areas, critical species habit sites, and agricultural land.

  Under both the Trend and Preliminary Recommended Plan, new urban development would avoid environmentally significant lands, particularly primary environmental corridors. To the extent possible, new urban development would also avoid secondary environmental corridors and isolated natural resource areas. In addition, to the extent possible, new development would attempt to preserve other wetlands, woodlands, natural areas, critical species habitat sites, and park and open space sites outside of environmental corridors.

  The Preliminary Plan performs better than the Trend with respect to its impact on agricultural land. Incremental households and employment would not be added to farmland preservation areas identified in county farmland preservation plans under the Trend or Preliminary Plan; however, significantly more agricultural land outside of farmland preservation areas would be converted to urban uses under the Trend (77 square miles) than the Preliminary Plan (58 square miles).

  In terms of potential impacts directly related to the transportation system, both the Trend and Preliminary Plan would have a minimal impact on natural and agricultural resources (see Criterion 1.3.2). The Trend would have a slightly greater impact because the arterial street and highway network would experience greater expansion to address congestion levels under the Trend than under the Preliminary Plan.

- **Water Resources:** Both surface water and groundwater are susceptible to varying degrees of degradation due to land development patterns. The Preliminary Plan performs slightly better than the Trend in the amount of estimated impervious surface because of its more compact development pattern (see Criterion 1.4.2). The Des Plaines River and Fox River watersheds would be close to exceeding 10 percent impervious surface under the Trend, which could lead to declines in the biological integrity of streams. Impervious surface levels within these watersheds are somewhat lower under the Preliminary Plan.

  The Preliminary Plan also performs better than the Trend in preserving areas with high groundwater recharge potential. Approximately 51 square miles (about 6 percent) of areas with high and very high groundwater recharge potential would be converted to urban uses under the Trend, compared to 33 square miles (about 4 percent) under the Preliminary Plan.

- **Air Quality:** The Preliminary Recommended Plan would have a less negative impact on the Region's air quality than the Trend. Walking and bicycling produce essentially no greenhouse gas (GHG) emissions or emissions of other air pollutants, and public transit generally produces fewer emissions per trip than personal vehicles. Encouraging the use of these modes of transportation results in less air pollution produced in the Region. The compact development pattern of the Preliminary Plan results in more people living in walkable areas than the Trend. The Preliminary Plan also has higher-quality bicycle facilities and transit service than the Trend. Although the differences in transportation air pollutant emissions between the Trend and Preliminary Plan are modest—generally about 1 to 2 percent lower under the Preliminary Plan than the Trend—transportation emissions under both are projected to significantly decline from current levels due to Federal fuel and vehicle fuel economy standards and improved vehicle emissions controls, even with forecast increases in regional travel and traffic.

  In addition, the Preliminary Recommended Plan's more compact development pattern reduces emissions by providing more multifamily housing, which is more energy efficient than single-family housing, and therefore produces fewer emissions. The Trend would add fewer multifamily housing units (25 percent of new housing units) than the Preliminary Plan (42 percent).

  The Preliminary Plan also encourages incorporating environmental performance features into new residential and commercial building design to further reduce energy use and resulting emissions of GHGs and other pollutants. A report issued by the World Green Building Council indicates that new high environmental performance buildings could reduce energy use by 25 to 50 percent compared to new conventional buildings.

- **Adapting to Climate Change:** The possible effects of climate change on Wisconsin and potential strategies for adapting to these effects are being investigated by the Wisconsin Initiative on Climate Change Impacts (WICCI).[39] The Preliminary Plan would better support these potential adaption strategies than the Trend (see Criterion 1.4.6).

- **Sustainable Transportation Infrastructure:** The Preliminary Recommended Plan proposes significantly improved and expanded transit infrastructure. Increasing the use of transit, and other modes of transportation that provide an alternative to driving, produces numerous benefits related to environmental sustainability. While projected increases in transit ridership and non-motorized travel may be relatively modest with respect to their effect on total regional travel (see Criterion 4.1.1), the expanded transit infrastructure would provide the capacity to carry even more of the Region's residents. By increasing the capacity of the transportation system to handle more travel by alternative modes to the automobile, the system would be capable of producing even greater advances to the environmental sustainability of the Region.

[39] *SEWRPC is collaborating with this effort.*

## CRITERION 1.5.1: HOMES, BUSINESSES, LAND, AND PARKLAND ACQUIRED

The number of residential, business, and governmental/institutional buildings that potentially would be relocated, the number of historic buildings and sites that would be impacted, and the amount of right-of-way and parkland that potentially would be acquired as a result of transportation system improvements were estimated for the Trend and Preliminary Recommended Plan, as shown in Table H.9.

- **Public Transit:** Public transit under the Preliminary Plan would not be expected to require the expansion of arterial street and highway or railroad right-of-ways, even with the proposed significant increases in public transit service. As a result, the proposed public transit system would not be expected to require any building relocations or result in right-of-way or parkland impacts.

- **Arterial Streets and Highways:** The Trend would be expected to have a greater impact on buildings and parkland in the Region than the Preliminary Plan (note: no historic buildings or sites would be expected to be within the right-of-way of a new or widened arterial street or highway under the Trend or Preliminary Plan). The Trend would have more capacity expansion due to the need to address the increased traffic resulting from less compact development and a decline in transit under the Trend. There would be a modest decrease in the number of building relocations (about a 9.3 percent decrease), right-of-way acquisitions (a 6.6 percent decrease), and parkland acquisitions (a 2.3 percent decrease) under the Preliminary Plan compared to the Trend, due to the greater emphasis on infill development and redevelopment and improvement and expansion of transit service.

### Table H.9
### Homes, Businesses, Land, and Parkland Acquired

| Category | Trend (2050) | Plan (2050) |
|---|---|---|
| Estimated Right-of-Way Impacts (Acres) | 2,500.9 | 2,335.1 |
| Relocations | | |
| Residential | 298 | 269 |
| Businesses | 67 | 63 |
| Governmental/Institutional | 1 | 0 |
| Historic Buildings and Sites | | |
| Buildings | 0 | 0 |
| Sites | 0 | 0 |
| Parkland (Acres)[a] | | |
| State | 41.3 | 40.1 |
| County | 41.9 | 41.8 |
| Local | 42.8 | 41.1 |

[a] *Existing State parkland in the Region totals about 67,400 acres, existing county parkland totals about 31,400 acres, and existing local parkland totals about 24,700 acres.*

*Source: SEWRPC*

## CRITERION 1.6.1: CRASHES BY MODE

As discussed in the alternatives evaluation, many factors can contribute to the occurrence of vehicular crashes. It is not possible at the regional level—considering a 3,600-mile arterial street and highway network—to be able to consider all factors in projecting the number of crashes for each alternative. For the evaluation of the alternatives, the crashes for each VISION 2050 alternative were estimated by applying the estimated average existing crash rate to the future level of freeway and surface arterial vehicle-miles of travel under each VISION 2050 alternative. However, as requested by the Advisory Committee on Regional Transportation Planning, Commission staff made an attempt to estimate the number of future crashes based on the level of congestion on the year 2050 arterial street and highway system under the Trend and Preliminary Recommended Plan. As well, this Advisory Committee had requested that the Commission staff attempt to estimate the future number of crashes involving a fatality and serious injury, and these estimates are included here.

- **Vehicular Crashes:** As shown in Tables H.10 and H.11, the projected number of total crashes and crashes involving a fatality or serious injury under the Trend and the Preliminary Plan are very similar, varying by less than 3 percent. Taking into account the effect of the reduction in traffic congestion under the Trend and Preliminary Plan, the estimated number of total crashes and fatality/serious injury crashes would be slightly less than the crash estimates based strictly on the future level of vehicle-miles of travel—about 5 to 6 percent less for total crashes and about 1 to 2 percent less for fatality and serious injury crashes. It should be noted that these projected number of crashes under the Trend and Preliminary Plan are based on the existing roadway design and conditions of the Region's arterials, and does not account for the implementation of improved roadway design and safety measures, which would occur with roadway resurfacing and reconstruction. In addition, these projected number of crashes do not account for any future improvements in vehicle safety design and changes in safety laws and enforcement practices, which would particularly have an effect on the number of fatal and serious injury crashes.

- **Transit Crashes:** The data for the number of crashes that involve transit vehicles—buses and trains—are not readily available and because transit crashes represent a small proportion of the total number of crashes on arterial streets and highways, it is difficult to accurately estimate the total number crashes involving transit vehicles under the Trend and Preliminary Recommended Plan. It would be expected that the number of crashes involving transit vehicles would increase under the Preliminary Plan as transit service levels increases; however, crash rates would likely decrease particularly since fixed-guideway transit vehicles will be separated from traffic under the Preliminary Plan. Additionally, the increased use of transit under the Preliminary Plan would be expected to provide improvements in overall travel safety, as travel by public transit tends to be safer than travel by personal vehicle, and increased transit use results in fewer vehicles on the roadways (resulting in less opportunity for crashes).

## Table H.10
## Average Annual Total Crashes on Arterial Streets and Highways

| Based on Vehicle-Miles of Travel | | | |
|---|---|---|---|
| **Plan** | **Surface Arterials** | **Freeways** | **Total** |
| Existing - 2009 to 2013[a] | 25,200 | 4,300 | 29,500 |
| Trend - 2050 | 30,900 | 5,700 | 36,600 |
| Plan - 2050 | 30,300 | 5,700 | 36,000 |

| Based on Congestion Levels | | | |
|---|---|---|---|
| **Plan** | **Surface Arterials** | **Freeways** | **Total** |
| Existing - 2009 to 2013[a] | 25,200 | 4,300 | 29,500 |
| Trend - 2050 | 28,900 | 5,600 | 34,500 |
| Plan - 2050 | 28,500 | 5,700 | 34,200 |

[a] *The number and rate of existing crashes were estimated based on year 2009 through 2013 crash data available from the University of Wisconsin's Traffic Operations and Safety Laboratory (TOPS Lab). Due to the random nature of crashes, the frequency of crashes from year to year can fluctuate and it is possible that the number of crashes in one year may be higher or lower than a typical year. Thus, to avoid annual anomalies that can skew the analysis, the annual average of the number of crashes over the five-year period was used.*

*Source: SEWRPC*

## Table H.11
## Average Annual Crashes Involving Fatalities/ Serious Injuries on Arterial Streets and Highways

| Based on Vehicle-Miles of Travel | | | |
|---|---|---|---|
| **Plan** | **Surface Arterials** | **Freeways** | **Total** |
| Existing - 2009 to 2013[a] | 730 | 90 | 820 |
| Trend - 2050 | 890 | 120 | 1,010 |
| Plan - 2050 | 875 | 120 | 995 |

| Based on Congestion Levels | | | |
|---|---|---|---|
| **Plan** | **Surface Arterials** | **Freeways** | **Total** |
| Existing - 2009 to 2013[a] | 730 | 90 | 820 |
| Trend - 2050 | 885 | 115 | 1,000 |
| Plan - 2050 | 865 | 115 | 980 |

[a] *The number and rate of existing crashes were estimated based on year 2009 through 2013 crash data available from the University of Wisconsin's Traffic Operations and Safety Laboratory (TOPS Lab). Due to the random nature of crashes, the frequency of crashes from year to year can fluctuate and it is possible that the number of crashes in one year may be higher or lower than a typical year. Thus, to avoid annual anomalies that can skew the analysis, the annual average of the number of crashes over the five-year period was used.*

*Source: SEWRPC*

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## CRITERION 2.1.1: LEVEL OF ACCESSIBILITY TO JOBS AND ACTIVITY CENTERS FOR MINORITY POPULATIONS AND LOW-INCOME POPULATIONS BY MODE

As discussed in the alternatives evaluation, significant disparities exist between whites and minorities in the Region, particularly in the Milwaukee metropolitan area, with respect to educational attainment levels, per capita income, and poverty.[40] These disparities are more pronounced than in almost all other metro areas. Reducing these disparities requires significant action on many fronts. With respect to the transportation element of VISION 2050, the relevant actions primarily revolve around ensuring that the benefits and impacts of investments in the Region's transportation system are shared fairly and equitably and serve to reduce existing disparities between white and minority populations. One of the primary ways to measure this is to compare how well the Preliminary Recommended Plan improves the ability for existing minority populations and low-income[41] populations to reach jobs and other destinations. In addition, added since the alternatives evaluation, the criterion looks at how well the Preliminary Plan would improve the ability for two other existing transit-dependent populations—families with incomes less than twice the poverty level[42] and people with disabilities—to reach jobs and other destinations using transit. The transit and highway elements of the Preliminary Plan are designed in part to increase the level of accessibility by transit and automobile to jobs and other activity centers—such as retail centers, major parks, public technical colleges/universities, health care facilities, grocery stores, the Milwaukee Regional Medical Center (MRMC), and General Mitchell International Airport (GMIA)—for all residents of the Region, including for minority populations and low-income populations. The following sections describe the results of analyses to determine whether the existing minority populations and low-income populations would be expected to have improved accessibility to jobs and other activities by automobile and transit under the Preliminary Plan. In addition, a comparison is provided of the increases in transit accessibility to increases in highway accessibility for existing minority populations and low-income populations.

- **Improved Driving Accessibility to Jobs and Other Activities:** In Southeastern Wisconsin, the dominant mode of travel for all population groups is the automobile. For example, in Milwaukee County, minority populations use the automobile for 81 to 88 percent of their travel to and from work (depending on race or ethnicity), compared to 88 percent of the white population. Similarly, in Milwaukee County about 70 percent of travel by low-income populations to and from work is by automobile, compared to 89 percent for populations of higher income. Thus, improvements in accessibility by automobile to jobs and other activities would likely benefit a significant proportion of minority populations and low-income populations. The Region would generally be able to modestly improve accessibility via automobile with implementation of the highway improvements—new roadways and highway widenings—under both the Trend and Preliminary Plan.

[40] *These disparities are documented in SEWRPC Memorandum No. 221,* A Comparison of the Milwaukee Metropolitan Area to Its Peers.

[41] *For purposes of this criterion, a low-income person is defined as a person residing in a household with an income level at or below the poverty level (about $22,113 for a family of four in 2010).*

[42] *Studies have shown that families require an income of at least about twice the poverty level ($44,226 for a family of four in 2010) to be able to adequately meet their basic needs in food, clothing, shelter, and so forth.*

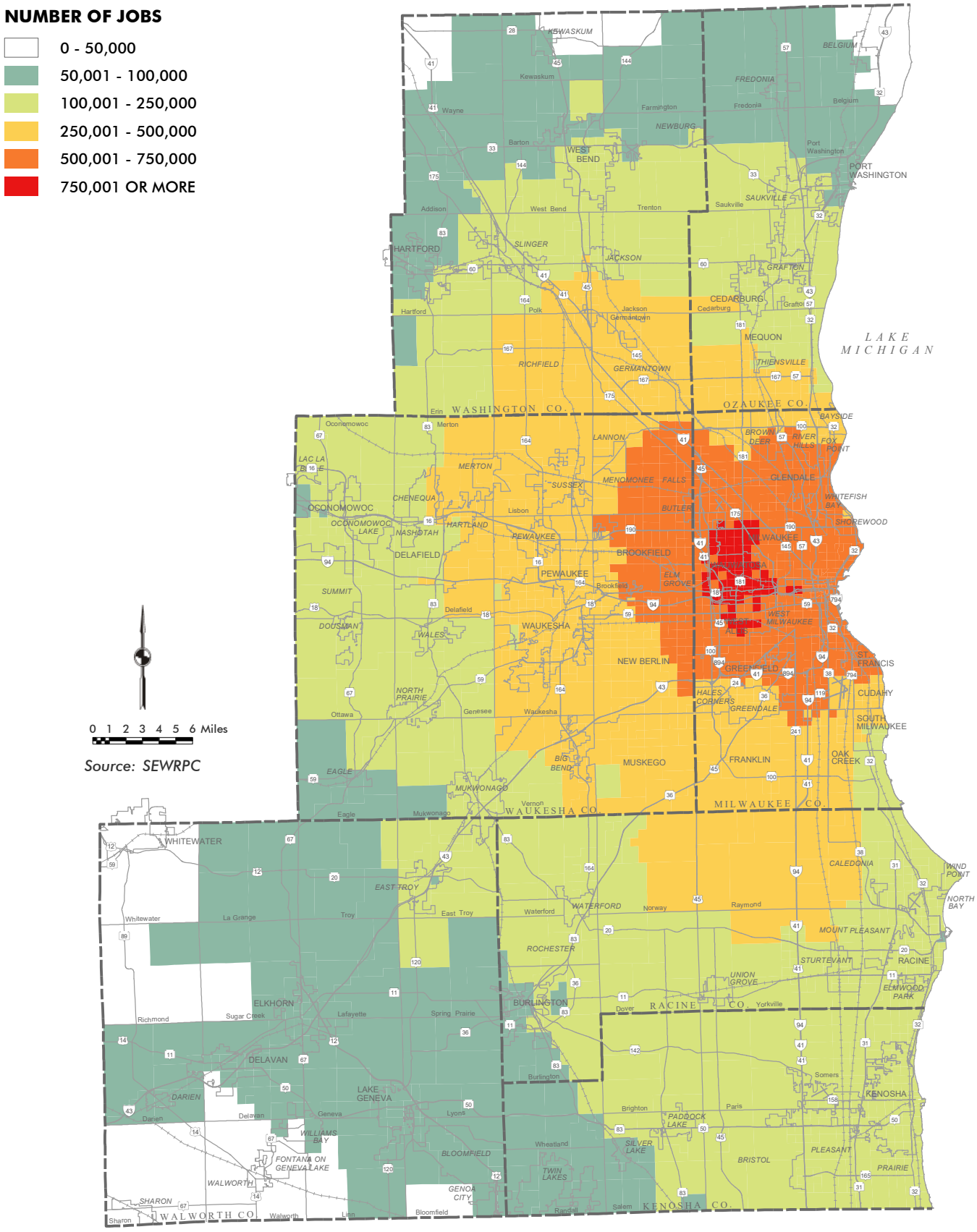
Should these improvements not be implemented, access to jobs and other activities using automobiles would be expected to decline for the residents of the Region, particularly residents in Milwaukee County, and as well for minority populations and low-income populations.

The number of jobs accessible in 30 minutes or fewer under existing conditions and for the Trend and Preliminary Plan is shown on Maps H.11 through H.13. These maps were compared to locations of existing minority populations and low-income populations, as shown on Maps H.14 and H.15. The highway improvements under the Trend and Preliminary Plan would modestly improve access to jobs for areas of existing concentrations of minority populations and low-income populations. Specifically, the highway improvements under the Trend and Preliminary Plan are projected to increase access to at least 500,000 jobs within 30 minutes by automobile for the existing minority population from about 70 percent of the minority population to about 73 percent, as shown in Table H.12. The Preliminary Plan would provide access to slightly more minorities (428,300 people) than the Trend (427,100 people). Similarly, the existing families in poverty with access to at least 500,000 jobs within 30 minutes by automobile would be expected to increase from 65 percent to about 69 percent. The Preliminary Plan would provide such access to slightly more families in poverty (36,100 families) than the Trend (36,000 families). The percentage of the existing minority population and families in poverty with access to at least 500,000 jobs within 30 minutes would be about 4 percent greater under both the Trend and Preliminary Plan than under existing conditions, compared to about 8 percent greater for the non-minority population and families not in poverty.

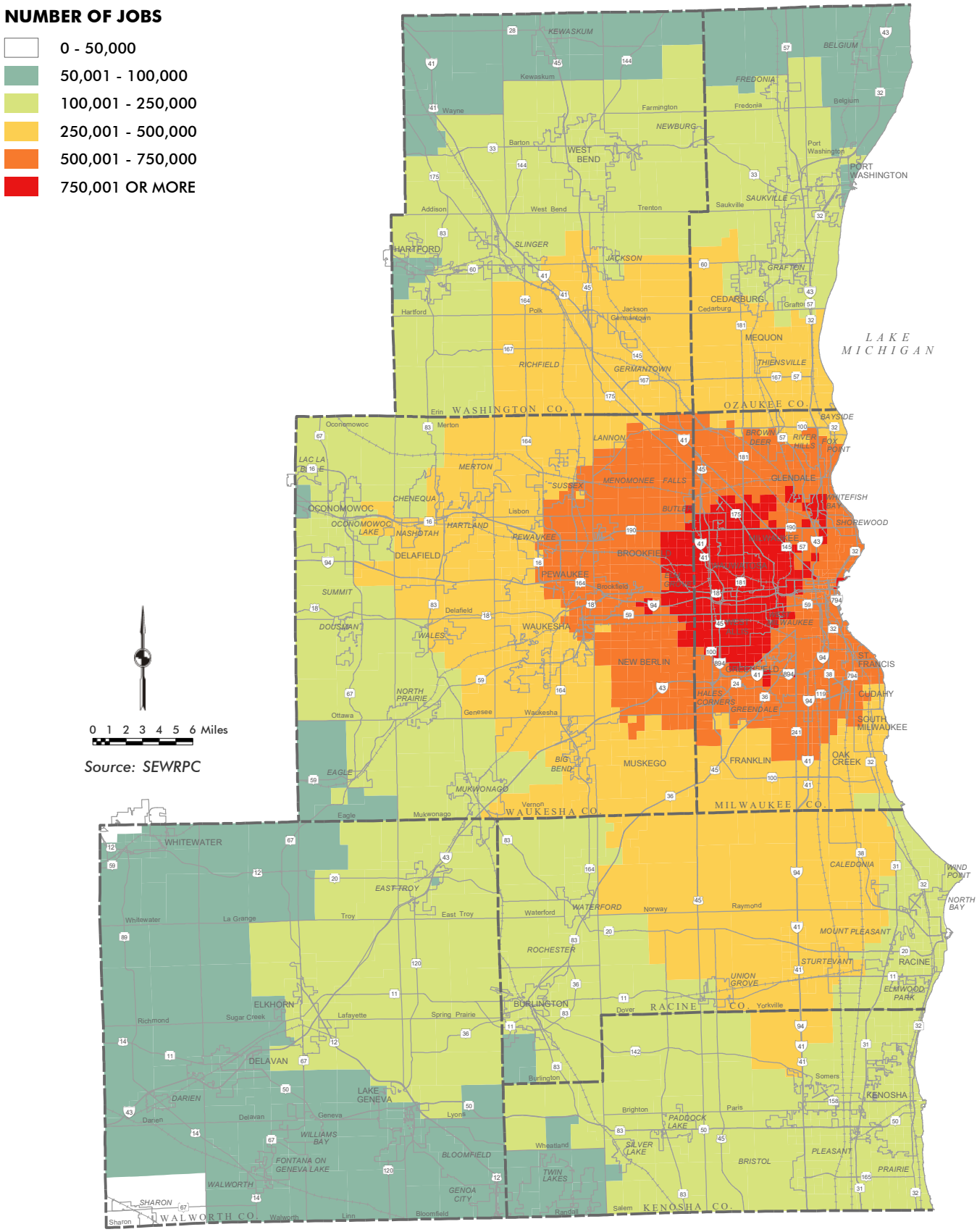
The estimated lower-wage jobs that would be accessible by automobile within 30 minutes under existing conditions, the Trend, and the Preliminary Plan are shown on Maps H.16 through H.18. Lower-wage jobs are estimated to represent about 32 percent of total jobs. Comparing these maps to areas of existing concentrations of minority populations and low-income populations (as shown on Maps H.14 and H.15) indicates that access to lower-wage jobs for these populations would improve with implementation of the highway improvements under the Trend and Preliminary Plan. As shown in Table H.13, it is projected that the existing minority population with access to at least 200,000 lower-wage jobs by automobile would increase from about 70 percent to about 73 percent under the Trend and Preliminary Plan, with the Preliminary Plan providing access to slightly more minorities (428,600 people) than the Trend (427,700 people). Similarly, the existing families in poverty with access to at least 200,000 lower-wage jobs by automobile would increase from about 64 percent to about 69 percent under the Trend and Preliminary Plan, with the Preliminary Plan providing access to slightly more families in poverty (36,100 families) than the Trend (36,000 families).

Criterion 4.2.1 (Travel Time to Important Places by Mode) includes an evaluation of access by automobile to various activity centers, including retail centers, major parks, public technical colleges/universities, health care facilities, grocery stores, MRMC, and GMIA. Based on this analysis, most of the Region's residents have reasonable access to these activity centers by automobile. As shown in Table H.14, nearly all (about 90 to 100 percent) of the existing minority population and families in poverty would have reasonable access by automobile

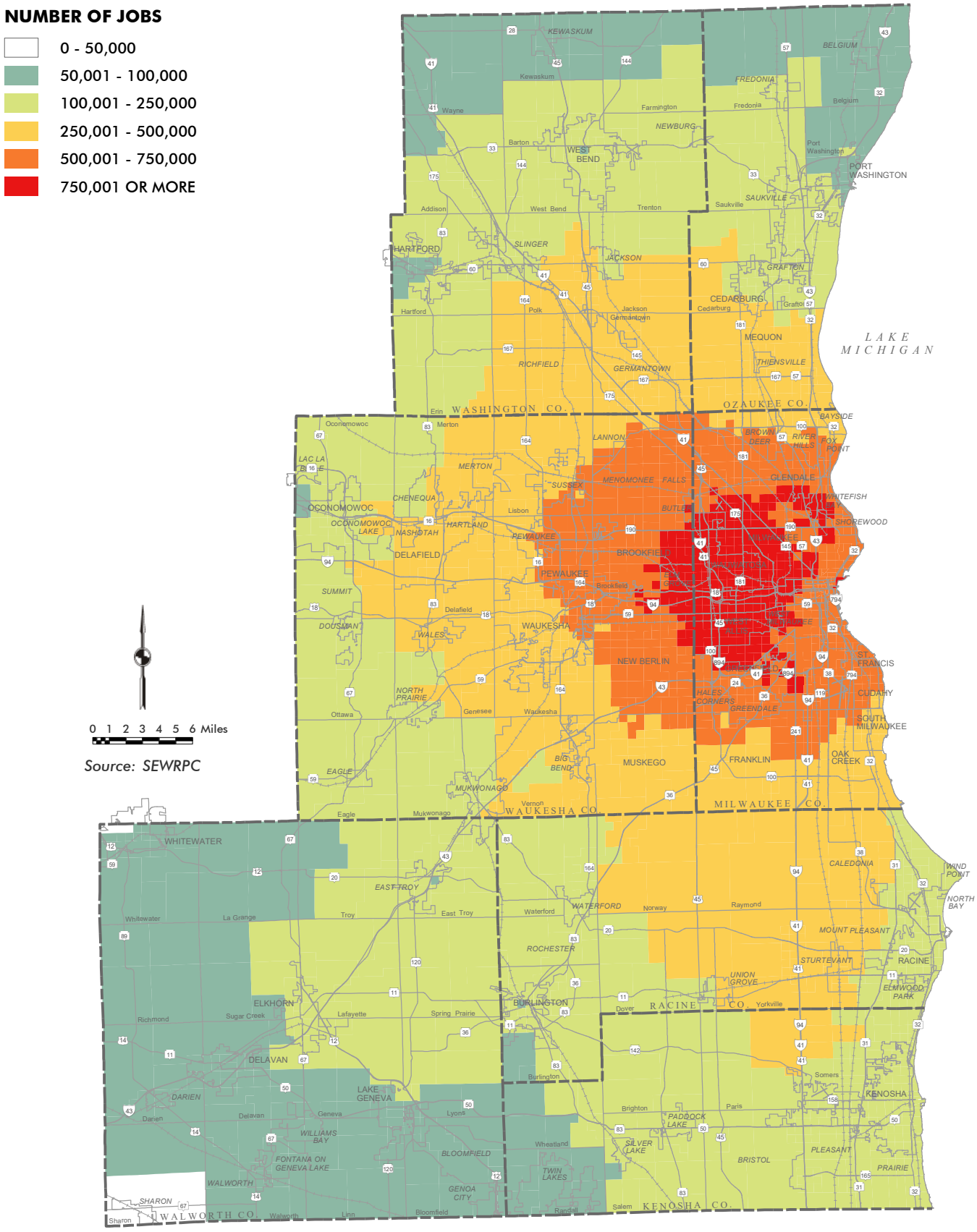
## Map H.11
## Jobs Accessible Within 30 Minutes by Automobile: Existing



## Map H.12
## Jobs Accessible Within 30 Minutes by Automobile: Trend



## Map H.13
## Jobs Accessible Within 30 Minutes by Automobile: Preliminary Recommended Plan

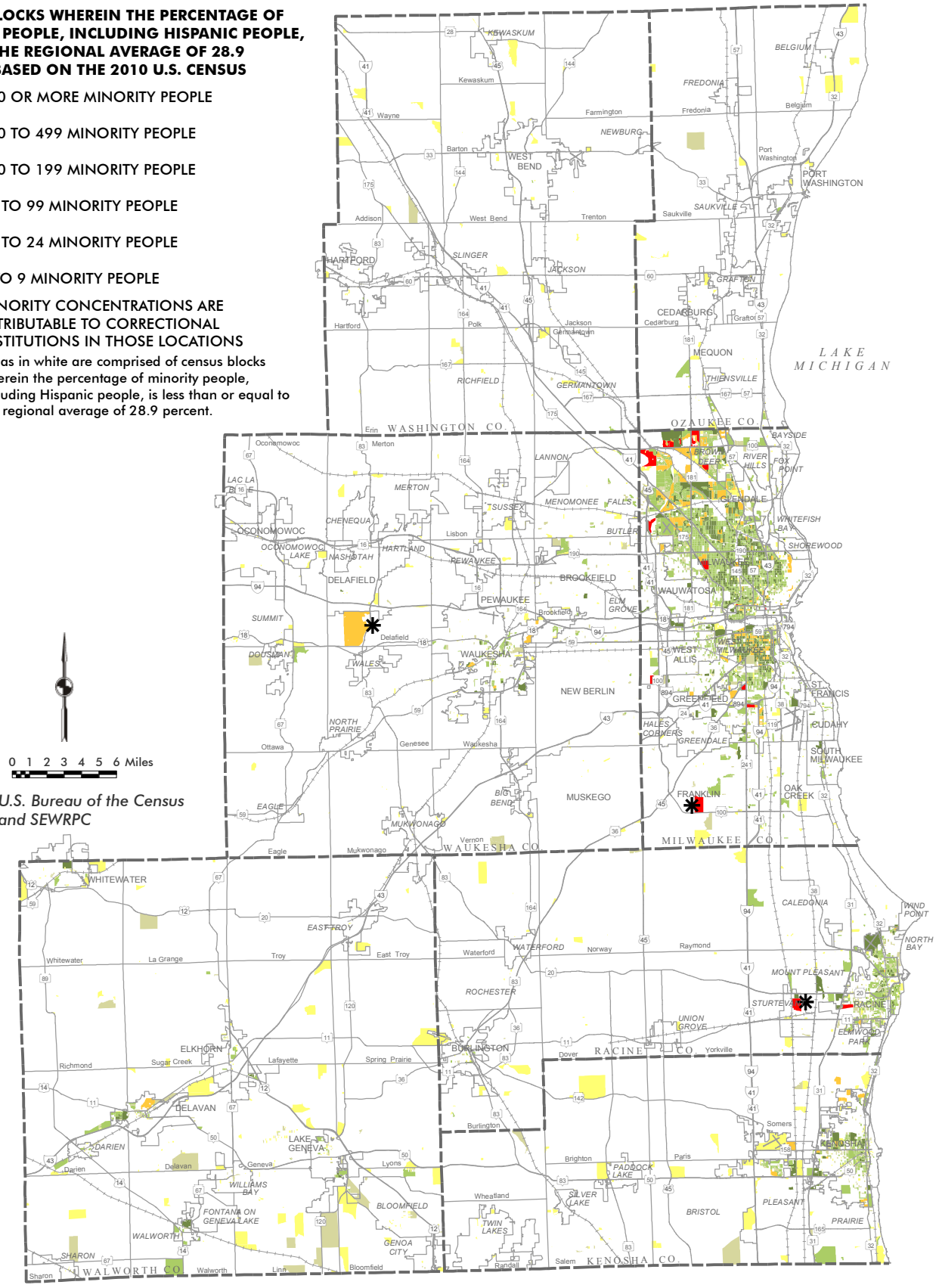


## Map H.14
## Concentrations of Total Minority Population in the Region: 2010

**CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS**

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.




*Source: U.S. Bureau of the Census and SEWRPC*

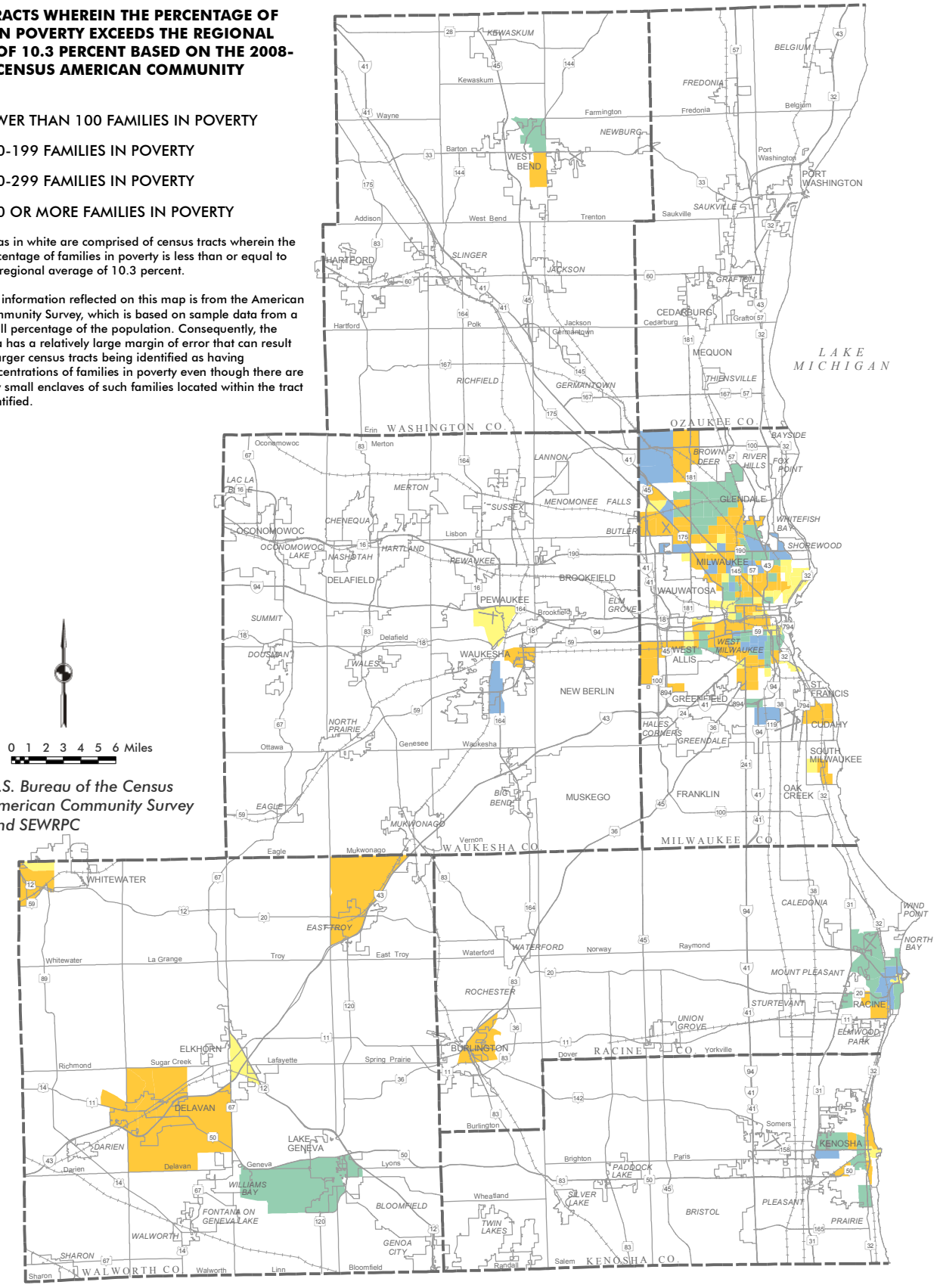
## Map H.15
## Concentrations of Families in Poverty in the Region: 2008-2012

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Table H.12
## Access to Jobs Within 30 Minutes by Automobile

**Minority Population[a]**

| Plan | 500,000 or More Jobs | | 250,000 or More Jobs | | 100,000 or More Jobs | | Total Minority Population |
|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | |
| Existing - 2010 | 407,700 | 69.9 | 467,500 | 80.2 | 562,900 | 96.6 | 582,900 |
| Trend - 2050 | 427,100 | 73.3 | 475,400 | 81.6 | 570,300 | 97.8 | 582,900 |
| Plan - 2050 | 428,300 | 73.5 | 476,400 | 81.7 | 569,600 | 97.7 | 582,900 |

**Families in Poverty[a]**

| Plan | 500,000 or More Jobs | | 250,000 or More Jobs | | 100,000 or More Jobs | | Total Families in Poverty |
|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | |
| Existing - 2010 | 33,800 | 64.6 | 38,800 | 74.2 | 49,000 | 93.7 | 52,300 |
| Trend - 2050 | 36,000 | 68.8 | 39,600 | 75.7 | 50,100 | 95.8 | 52,300 |
| Plan - 2050 | 36,100 | 69.0 | 39,600 | 75.7 | 50,000 | 95.6 | 52,300 |

*[a] Minority population is based on the 2010 U.S. Census and families in poverty are based on the 2008-2012 American Community Survey.*

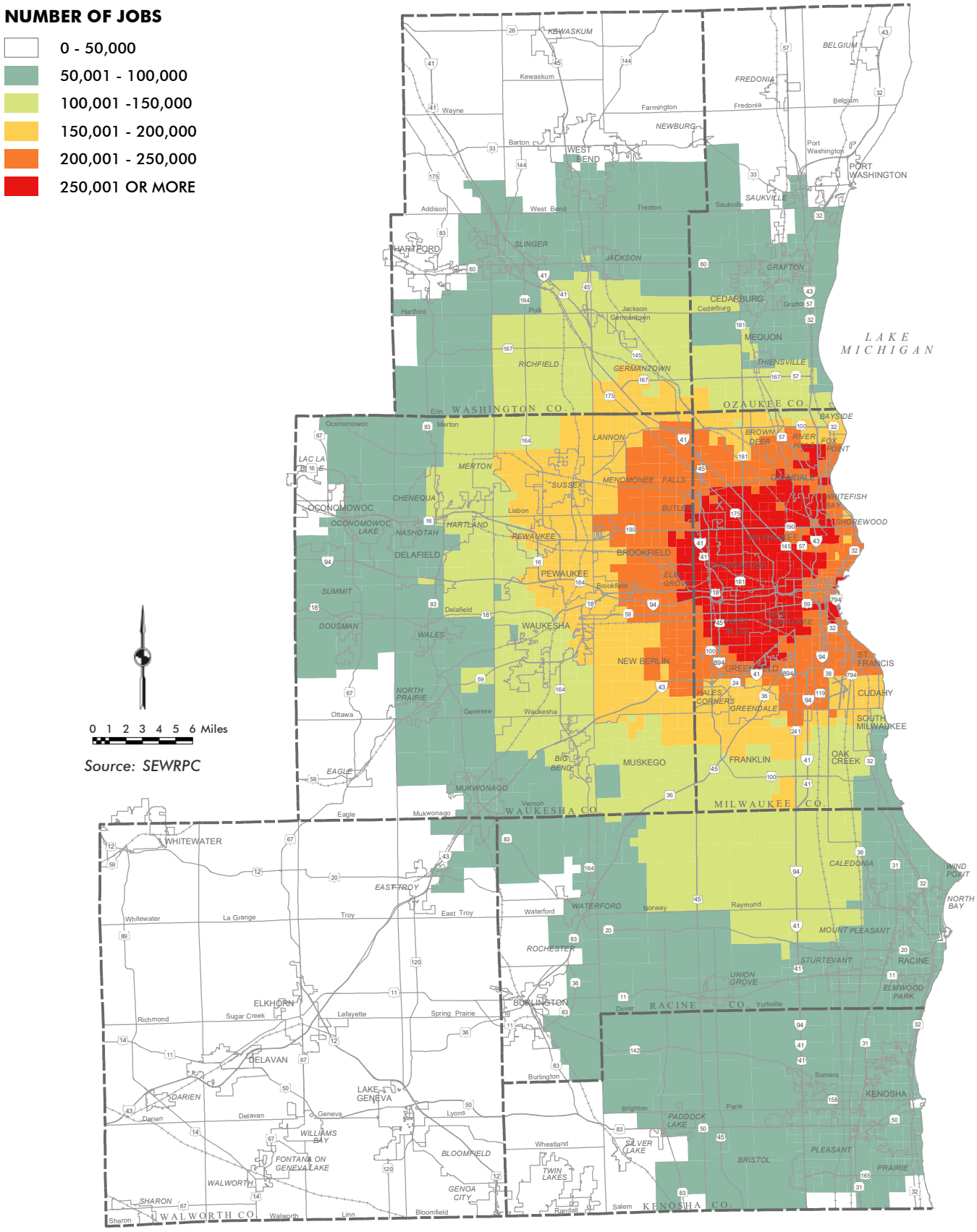
*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

to most of these activity centers under both the Trend and Preliminary Plan, with the Preliminary Plan providing minimally more access than the Trend.

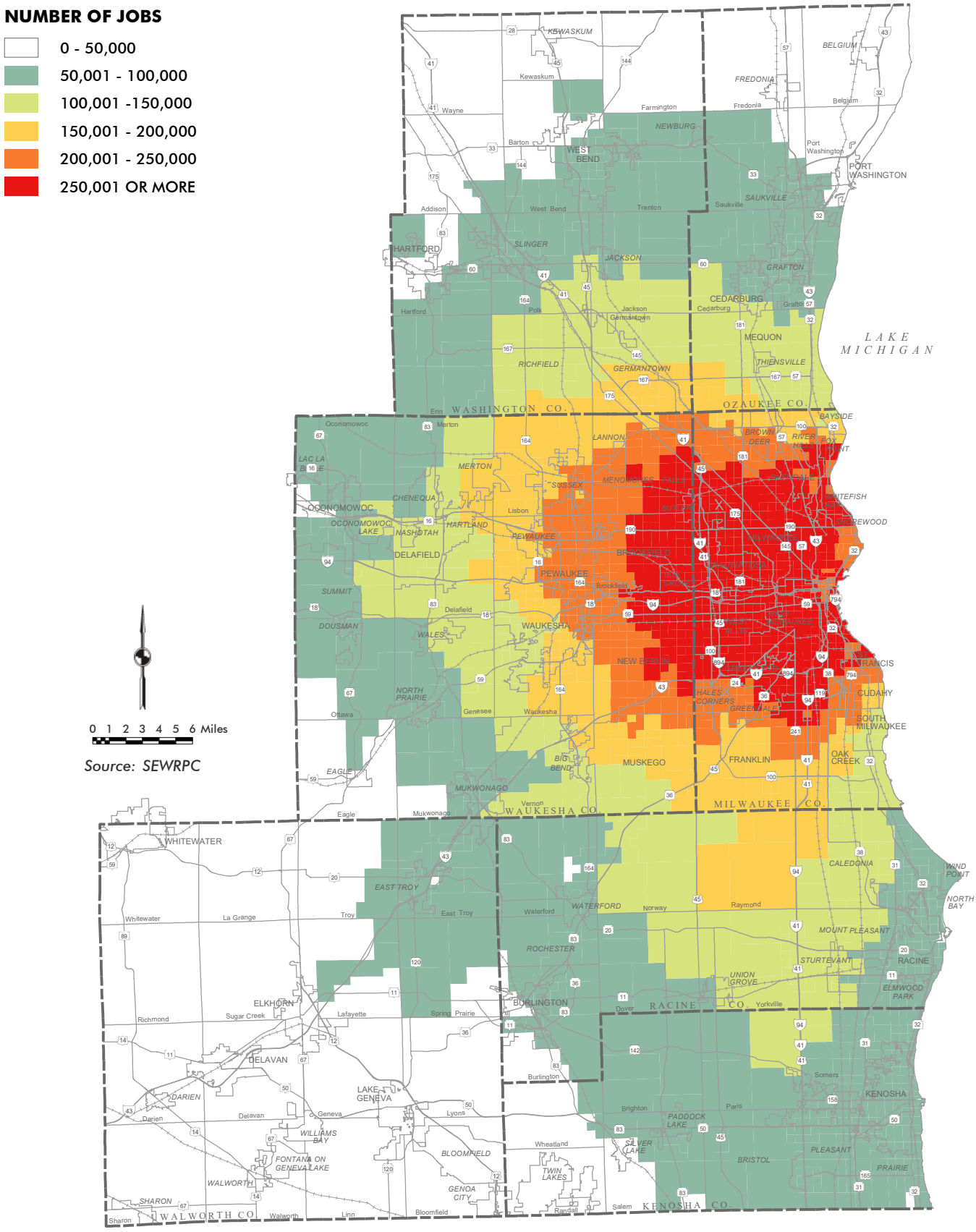
- **Improved Transit Accessibility to Jobs and Other Activities:** As discussed in the alternatives evaluation, although most minority residents use the automobile for their travel, they utilize public transit at a higher proportion relative to other modes of travel than the white populations in the Region. In Milwaukee County, about 4 to 13 percent of the minority population (depending on race or ethnicity) uses public transit to travel to and from work compared to 3 percent of the white population. Also in Milwaukee County, about 15 percent of the low-income population (residing in a family with income below the poverty level) uses public transit to travel to and from work compared to 5 percent of the population with higher wages. Another transit-dependent population group is people with disabilities, with about 10 percent of this population in Milwaukee County utilizing transit to and from work. Comparing the accessibility provided to employment and major activity centers under the Preliminary Plan to those of the Trend and existing conditions indicates that the Preliminary Plan significantly improves accessibility provided by transit, and many of the investments in transit are targeted in areas that would result in the minority populations, lower-income populations, and people with disabilities in the Region benefiting from these improvements.

  Maps H.19 through H.21 show those areas of the Region with the highest job densities that would be directly served by transit under existing conditions, the Trend, and the Preliminary Plan. As shown on these maps, the transit service areas under the Trend and Preliminary Plan would principally serve the areas of the Region with the highest density of jobs, with the transit service improvement and expansion under the Preliminary Plan providing access to more jobs than the Trend. Specifically, the Preliminary Plan would increase the number of jobs that would be served by transit from 734,000 jobs under current conditions to 1,010,000 jobs.

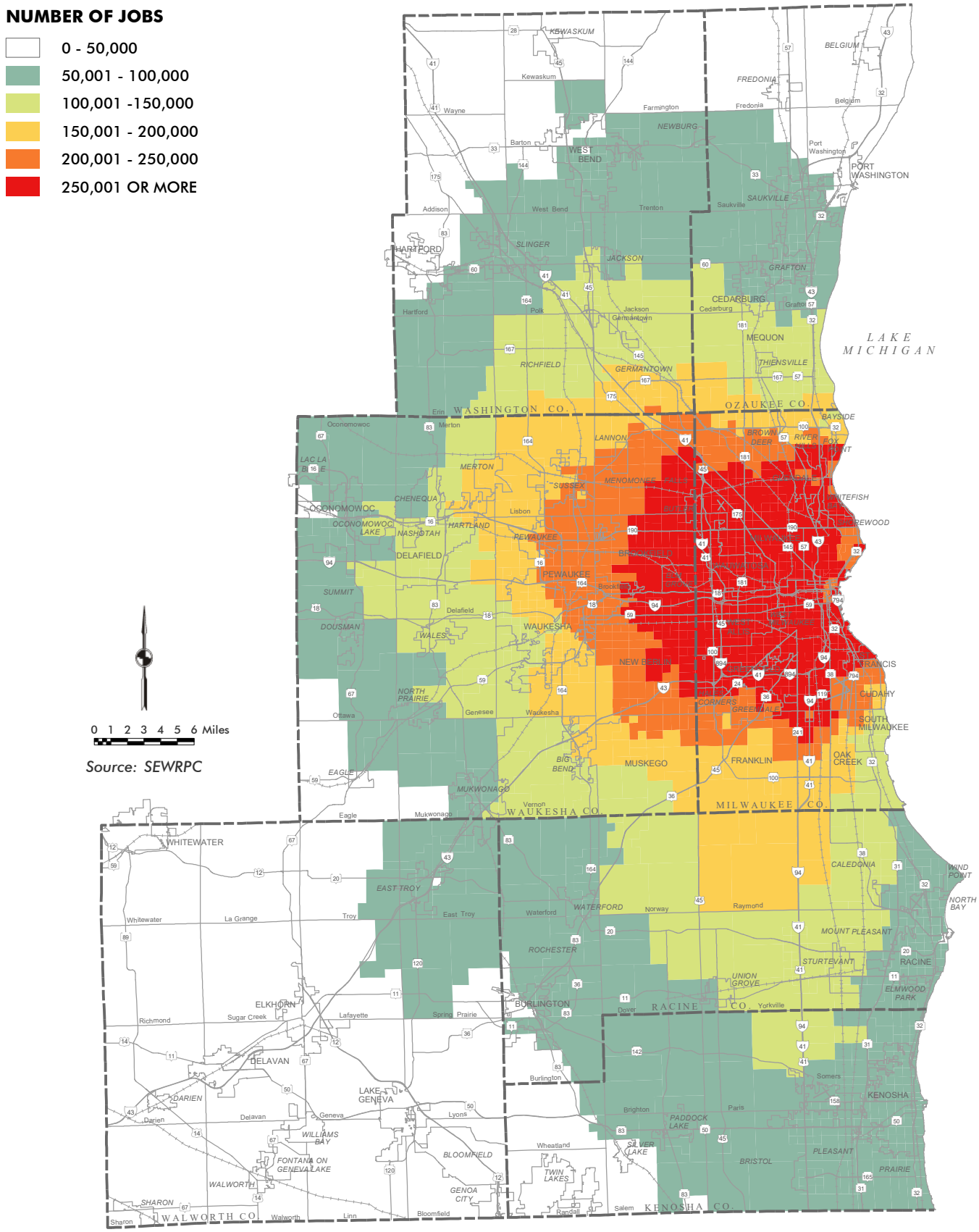
## Map H.16
## Lower-Wage Jobs Accessible Within 30 Minutes by Automobile: Existing



## Map H.17
## Lower-Wage Jobs Accessible Within 30 Minutes by Automobile: Trend



## Map H.18
## Lower-Wage Jobs Accessible Within 30 Minutes by Automobile: Preliminary Recommended Plan



## Table H.13
## Access to Lower-Wage Jobs Within 30 Minutes by Automobile

**Minority Population[a]**

| Plan | 200,000 or More Jobs | | 100,000 or More Jobs | | 50,000 or More Jobs | | Total Minority Population |
|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | |
| Existing - 2010 | 407,400 | 69.9 | 468,700 | 80.4 | 558,300 | 95.8 | 582,900 |
| Trend - 2050 | 427,700 | 73.4 | 475,800 | 81.6 | 563,500 | 96.7 | 582,900 |
| Plan - 2050 | 428,600 | 73.5 | 476,300 | 81.7 | 563,300 | 96.6 | 582,900 |

**Families in Poverty[a]**

| Plan | 200,000 or More Jobs | | 100,000 or More Jobs | | 50,000 or More Jobs | | Total Families in Poverty |
|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | |
| Existing - 2010 | 33,700 | 64.4 | 38,900 | 74.4 | 48,000 | 91.8 | 52,300 |
| Trend - 2050 | 36,000 | 68.8 | 39,600 | 75.7 | 49,200 | 94.1 | 52,300 |
| Plan - 2050 | 36,100 | 69.0 | 39,600 | 75.7 | 49,200 | 94.1 | 52,300 |

[a] *Minority population is based on the 2010 U.S. Census and families in poverty are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

## Table H.14
## Reasonable Access to Activity Centers by Automobile[a]

**Minority Population[b]**

| Activity Center | Existing (2010) | | Trend (2050) | | Plan (2050) | | Total Minority Population |
|---|---|---|---|---|---|---|---|
| | Population | Percent | Population | Percent | Population | Percent | |
| Retail Centers | 565,400 | 97.0 | 565,200 | 97.0 | 565,300 | 97.0 | 582,900 |
| Major Parks | 582,900 | 100.0 | 582,900 | 100.0 | 582,900 | 100.0 | 582,900 |
| Public Technical Colleges and Universities | 582,800 | 99.9 | 582,700 | 99.9 | 582,700 | 99.9 | 582,900 |
| Health Care Facilities | 581,800 | 99.8 | 582,900 | 100.0 | 582,900 | 100.0 | 582,900 |
| Grocery Stores | 582,900 | 100.0 | 582,900 | 100.0 | 582,900 | 100.0 | 582,900 |
| General Mitchell International Airport | 571,500 | 98.0 | 571,900 | 98.1 | 571,800 | 98.1 | 582,900 |
| Milwaukee Regional Medical Center | 531,000 | 91.1 | 537,900 | 92.3 | 538,100 | 92.3 | 582,900 |

**Families in Poverty[b]**

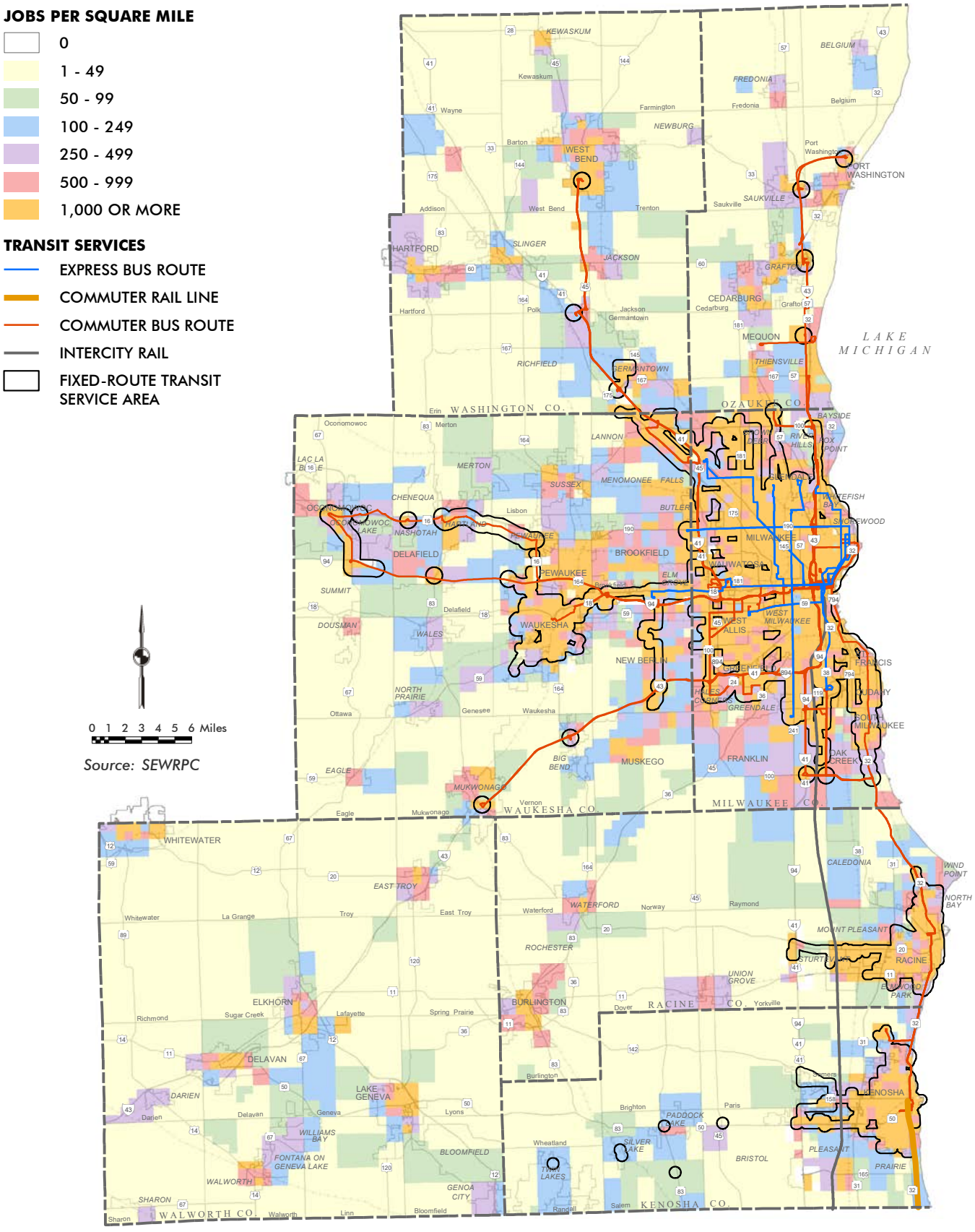
| Activity Center | Existing (2010) | | Trend (2050) | | Plan (2050) | | Total Families in Poverty |
|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | |
| Retail Centers | 49,300 | 94.3 | 49,200 | 94.1 | 49,200 | 94.1 | 52,300 |
| Major Parks | 52,300 | 100.0 | 52,300 | 100.0 | 52,300 | 100.0 | 52,300 |
| Public Technical Colleges and Universities | 52,300 | 100.0 | 52,300 | 100.0 | 52,300 | 100.0 | 52,300 |
| Health Care Facilities | 52,100 | 99.6 | 52,300 | 100.0 | 52,300 | 100.0 | 52,300 |
| Grocery Stores | 52,300 | 100.0 | 52,300 | 100.0 | 52,300 | 100.0 | 52,300 |
| General Mitchell International Airport | 50,100 | 95.8 | 50,200 | 96.0 | 50,200 | 96.0 | 52,300 |
| Milwaukee Regional Medical Center | 46,300 | 88.5 | 47,200 | 90.2 | 47,200 | 90.2 | 52,300 |

[a] *Reasonable access is defined as the ability to travel by automobile within 60 minutes to General Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.*

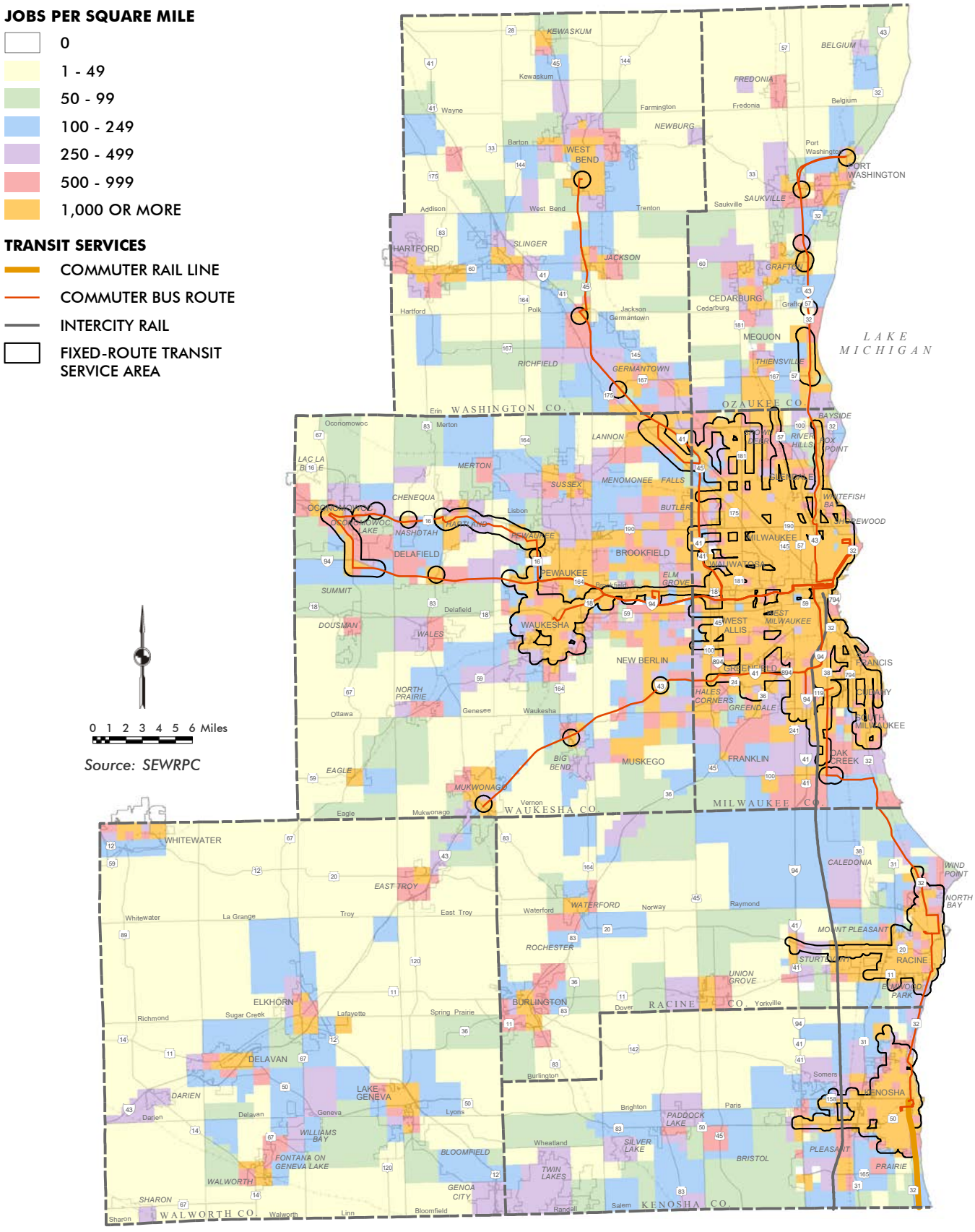
[b] *Minority population is based on the 2010 U.S. Census and families in poverty are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

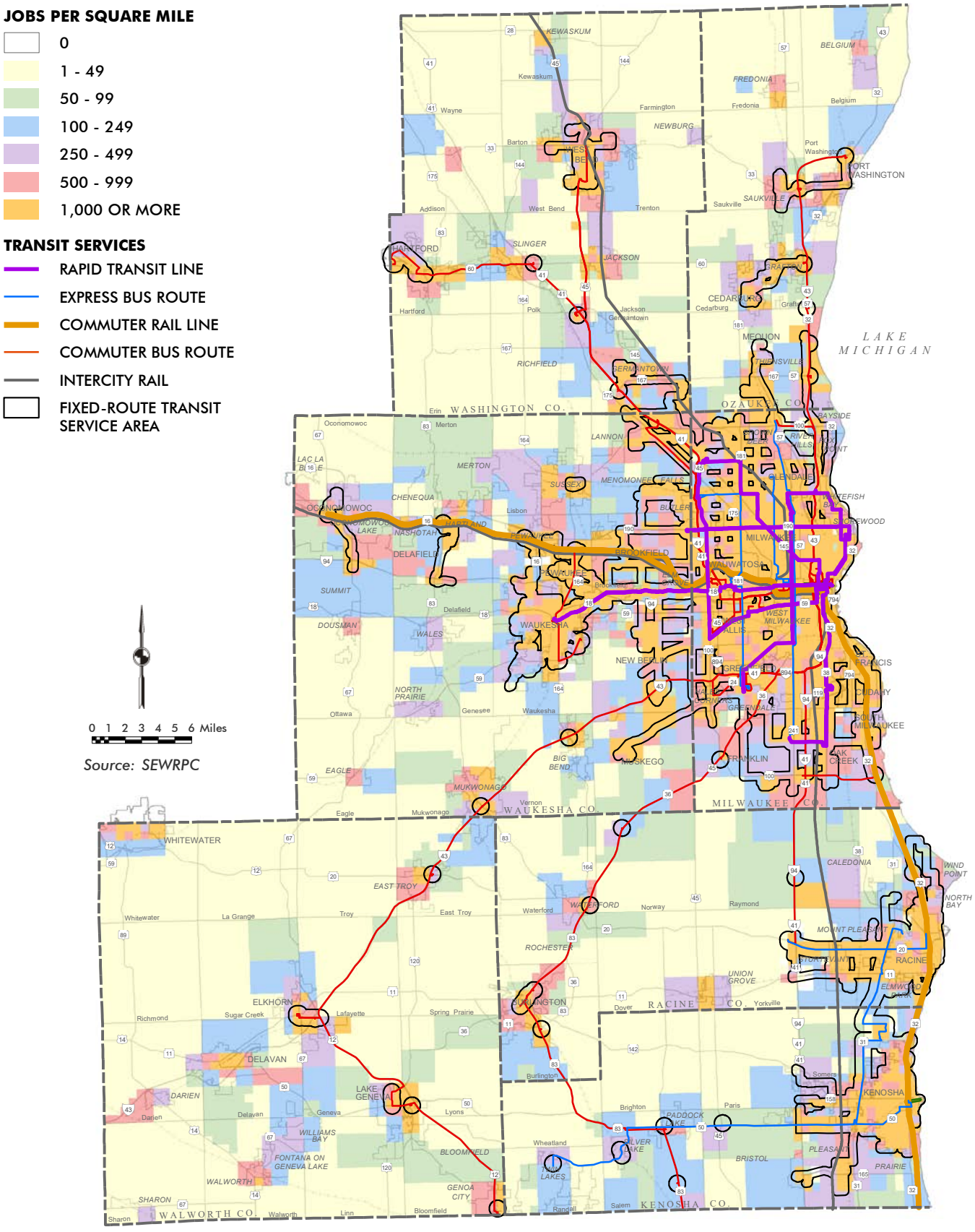
## Map H.19
## Comparison of Public Transit Element to Job Density: Existing



## Map H.20
## Comparison of Public Transit Element to Job Density: Trend



## Map H.21
## Comparison of Public Transit Element to Job Density: Preliminary Recommended Plan



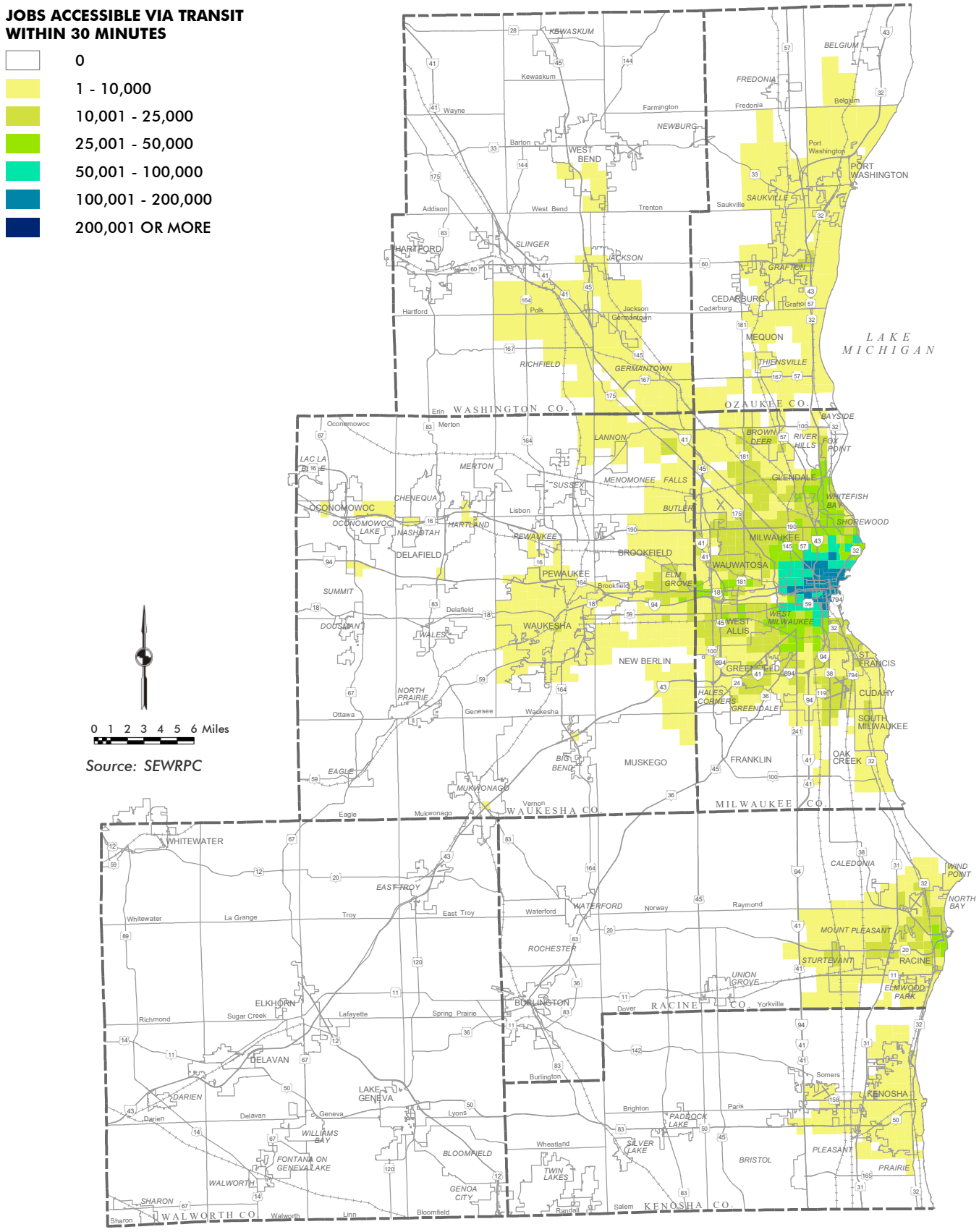
Maps H.22 through H.24 show the number of jobs that could be accessible within 30 minutes by transit under existing conditions, the Trend, and the Preliminary Plan. Comparing these maps to areas of existing concentrations of minority populations (Map H.14), lower-income populations (Map H.15 for families in poverty and Map H.25 for families with incomes less than twice the poverty level), and people with disabilities (Map H.26) indicates that access to jobs for these populations would improve significantly due to the improvement and expansion of transit service under the Preliminary Plan. As shown in Table H.15, the Preliminary Plan's proposed transit improvement and expansion (including rapid transit service) would provide access to at least 100,000 jobs within 30 minutes by transit to a significantly higher proportion of the existing minority population (16.9 percent), families in poverty (17.0 percent), families with incomes less than twice the poverty level (13.3 percent), and people with disabilities (11.8 percent) than the Trend (2.0 percent, 1.9 percent, 1.2 percent, and 1.2 percent, respectively).

As shown in Table H.16, the existing minority population with access to at least 100,000 jobs by transit would increase by about 14 percent under the Preliminary Plan, compared to about 8 percent for the non-minority population. The existing families in poverty with access to at least 100,000 jobs by transit would increase by about 14 percent and families with incomes less than twice the poverty level would increase by about 11 percent, compared to about 7 percent for families not in poverty and incomes higher than twice the poverty level. With respect to people with disabilities, access to 100,000 jobs by transit for both people with disabilities and without disabilities would increase by about 10 percent.

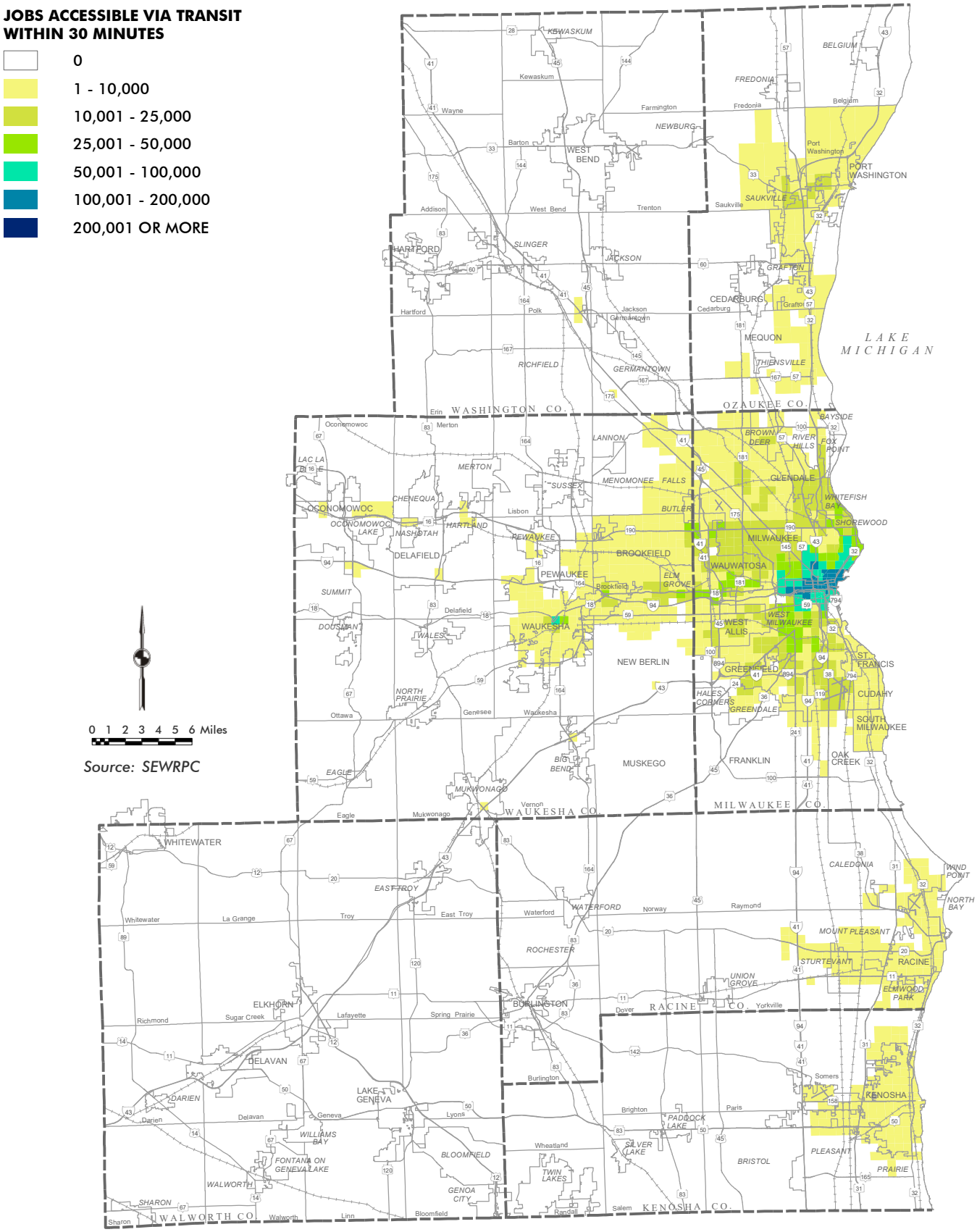
Maps H.27 through H.29 show the number of lower-wage jobs that would be accessible in 30 minutes under existing conditions, the Trend, and the Preliminary Plan. Lower-wage jobs are estimated to represent about 32 percent of total jobs in the Region. Comparing these maps to areas of existing concentrations of minority populations (Map H.14), lower-income populations (Map H.15 for families in poverty and Map H.25 for families with incomes less than twice the poverty level), and people with disabilities (Map H.26) shows that access to lower-wage jobs for these populations would improve significantly due to the improvement and expansion of transit service under the Preliminary Plan. As shown in Table H.17, it is projected that about 28 percent of the existing minority population would have access to at least 25,000 lower-wage jobs within 30 minutes by transit under the Preliminary Plan, compared to about 5 percent under the Trend. Similarly, it is projected that about 28 percent of the families in poverty and about 23 percent of families with incomes less than twice the poverty level would have access to at least 25,000 lower-wage jobs within 30 minutes by transit under the Preliminary Plan, compared to about 5 and 4 percent, respectively, under the Trend. With respect to people with disabilities, it is projected that about 20 percent of this population would have access to at least 25,000 lower-wage jobs within 30 minutes, compared to 3 percent under the Trend.

As described for Criterion 4.2.1 (Travel Time to Important Places by Mode), the substantial increases in transit service under the Preliminary Plan would provide access for more people to existing retail centers, major parks, public technical colleges/universities,

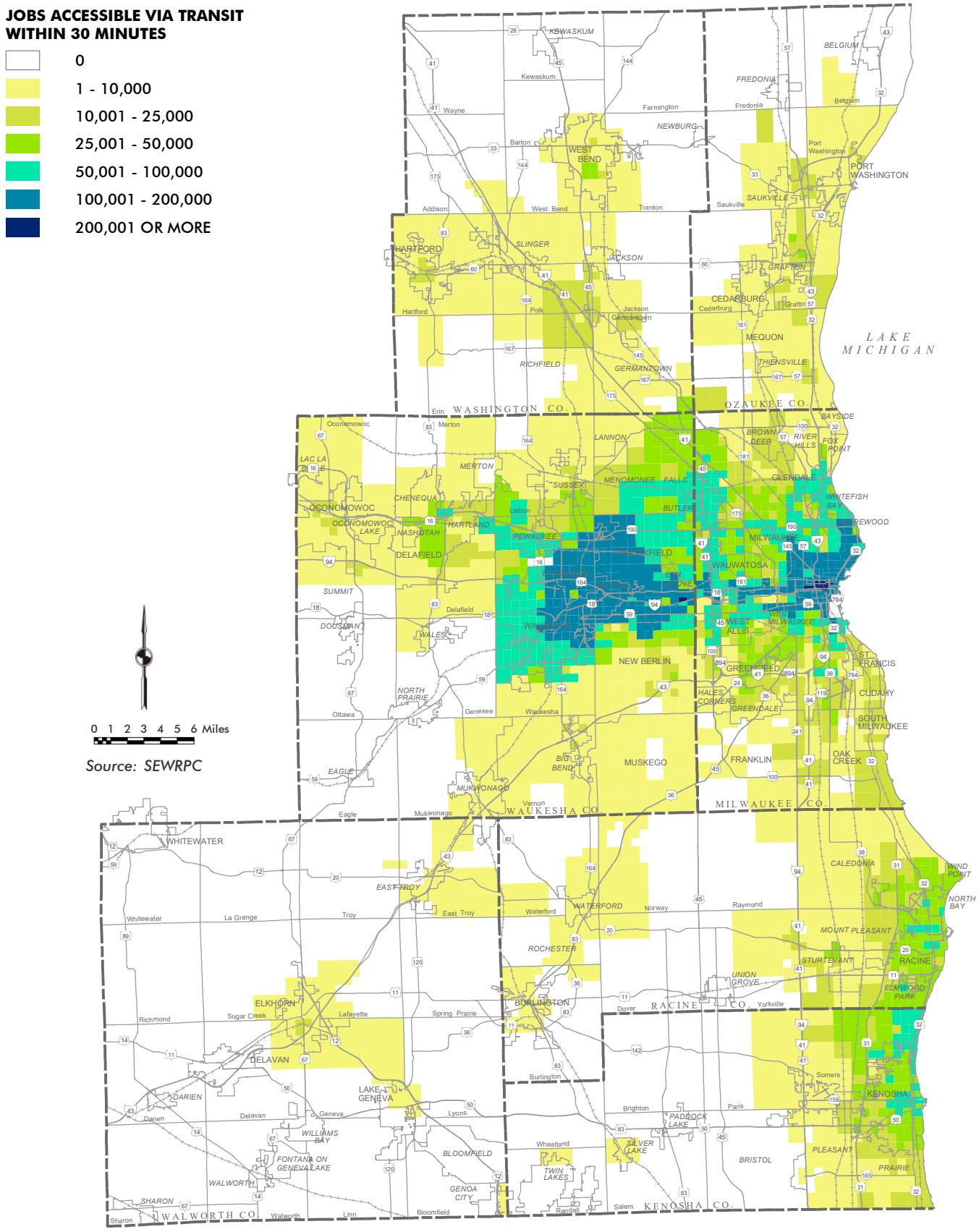
## Map H.22
## Jobs Accessible Within 30 Minutes by Transit: Existing



## Map H.23
## Jobs Accessible Within 30 Minutes by Transit: Trend



## Map H.24
## Jobs Accessible Within 30 Minutes by Transit: Preliminary Recommended Plan



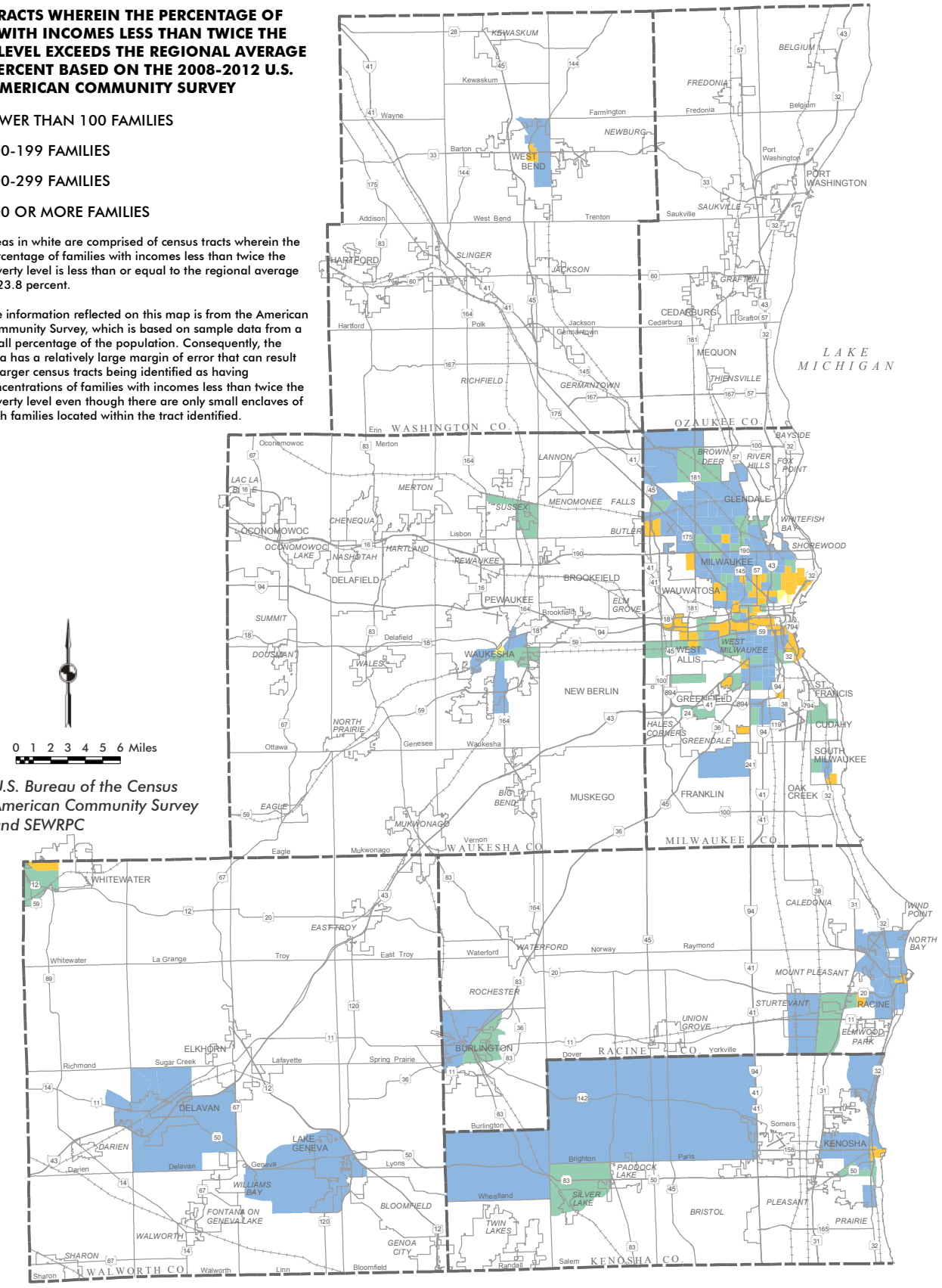
## Map H.25
## Concentrations of Families with Incomes Less Than Twice the Poverty Level: 2008-2012

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 23.8 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 23.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

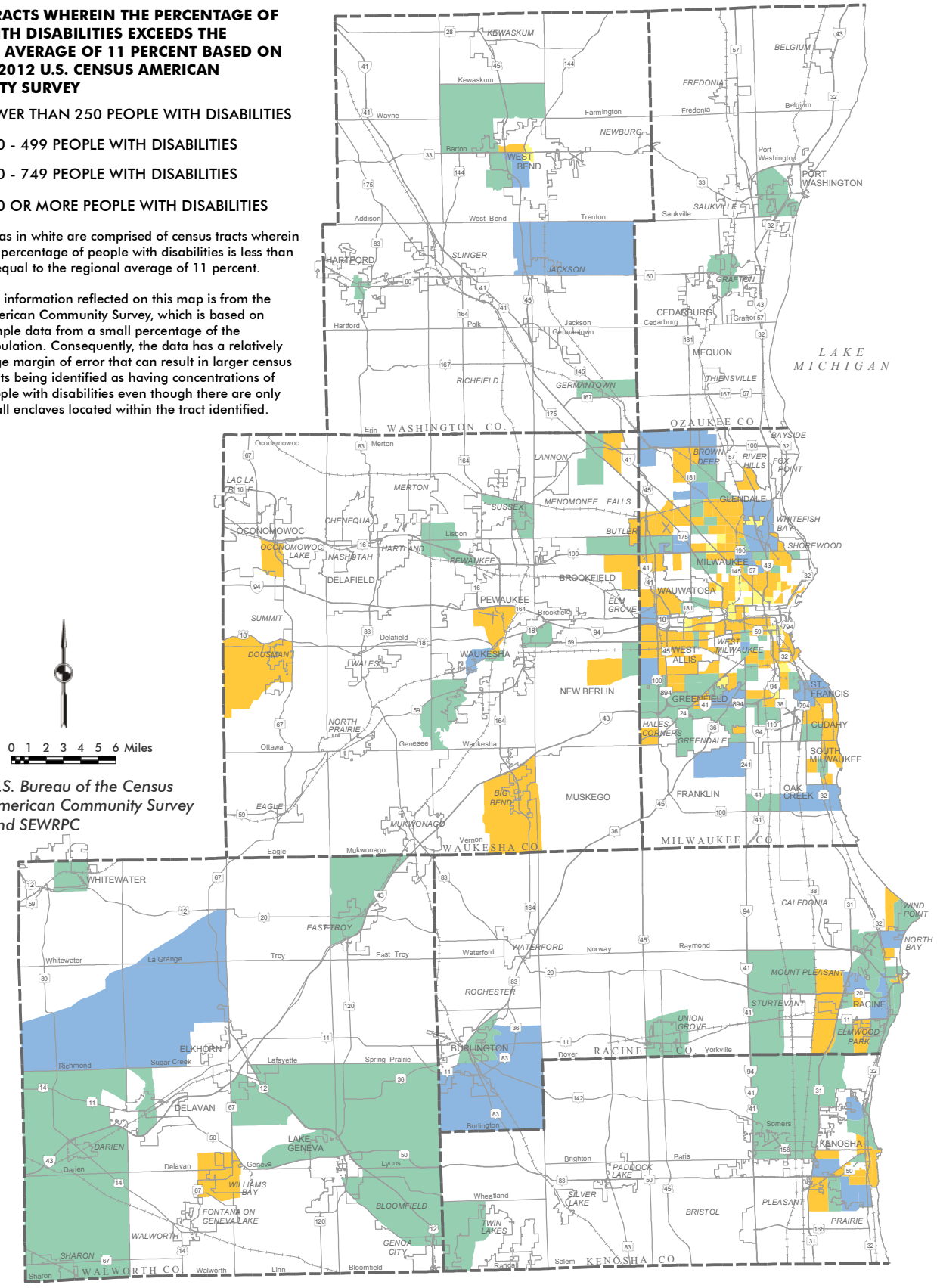
## Map H.26
## Concentrations of People with Disabilities: 2008-2012

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Table H.15
## Access to Jobs Within 30 Minutes by Transit

**Minority Population[a]**

| Plan | 100,000 or More Jobs | | 50,000 or More Jobs | | 10,000 or More Jobs | | Total Minority Population |
|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | |
| Existing - 2015 | 18,900 | 3.2 | 87,300 | 15.0 | 342,200 | 58.7 | 582,900 |
| Trend - 2050 | 11,700 | 2.0 | 47,600 | 8.2 | 255,600 | 43.8 | 582,900 |
| Plan - 2050 | 98,700 | 16.9 | 240,400 | 41.2 | 492,500 | 84.5 | 582,900 |

**Families in Poverty[a]**

| Plan | 100,000 or More Jobs | | 50,000 or More Jobs | | 10,000 or More Jobs | | Total Families in Poverty |
|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | |
| Existing - 2015 | 1,700 | 3.3 | 7,900 | 15.1 | 29,300 | 56.0 | 52,300 |
| Trend - 2050 | 1,000 | 1.9 | 4,200 | 8.0 | 22,000 | 42.1 | 52,300 |
| Plan - 2050 | 8,900 | 17.0 | 21,300 | 40.7 | 42,000 | 80.3 | 52,300 |

**Families with Incomes Less Than Twice the Poverty Level[a]**

| Plan | 100,000 or More Jobs | | 50,000 or More Jobs | | 10,000 or More Jobs | | Total Families with Incomes Less Than Twice the Poverty Level |
|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | |
| Existing - 2015 | 2,600 | 2.1 | 12,900 | 10.7 | 58,100 | 48.0 | 121,000 |
| Trend - 2050 | 1,400 | 1.2 | 6,800 | 5.6 | 43,200 | 35.7 | 121,000 |
| Plan - 2050 | 16,100 | 13.3 | 41,400 | 34.2 | 89,300 | 73.8 | 121,000 |

**People with Disabilities[a]**

| Plan | 100,000 or More Jobs | | 50,000 or More Jobs | | 10,000 or More Jobs | | Total Population with Disabilities |
|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | |
| Existing - 2015 | 4,300 | 1.9 | 15,600 | 7.1 | 80,700 | 36.6 | 220,600 |
| Trend - 2050 | 2,700 | 1.2 | 10,300 | 4.7 | 59,600 | 27.0 | 220,600 |
| Plan - 2050 | 26,000 | 11.8 | 63,900 | 29.0 | 144,800 | 65.6 | 220,600 |

[a] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

## Table H.16
## Additional Percent Having Access to 100,000 or More Jobs by Transit Under the Preliminary Recommended Plan

**Minorities[a]**

| Plan | Minority Population | Non-Minority Population |
|---|---|---|
| Plan - 2050 | 14 | 8 |

**Families in Poverty and with Incomes Less Than Twice the Poverty Level[a]**

| Plan | Families in Poverty | Families Not in Poverty | Families with Incomes Less Than Twice the Poverty Level | Families with Incomes More Than Twice the Poverty Level |
|---|---|---|---|---|
| Plan - 2050 | 14 | 7 | 11 | 7 |

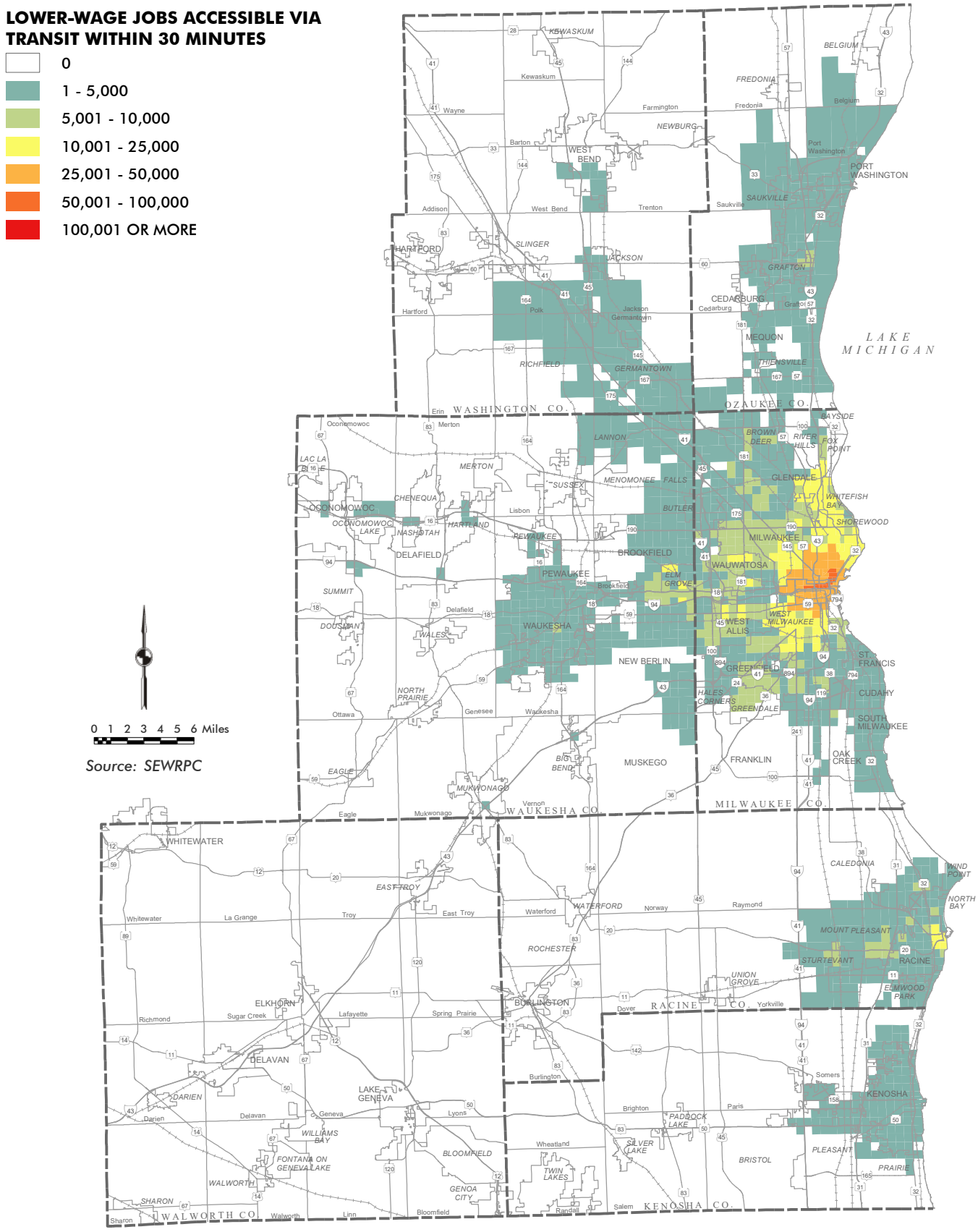
**People with Disabilities[a]**

| Plan | People with Disabilities | People Without Disabilities |
|---|---|---|
| Plan - 2050 | 10 | 10 |

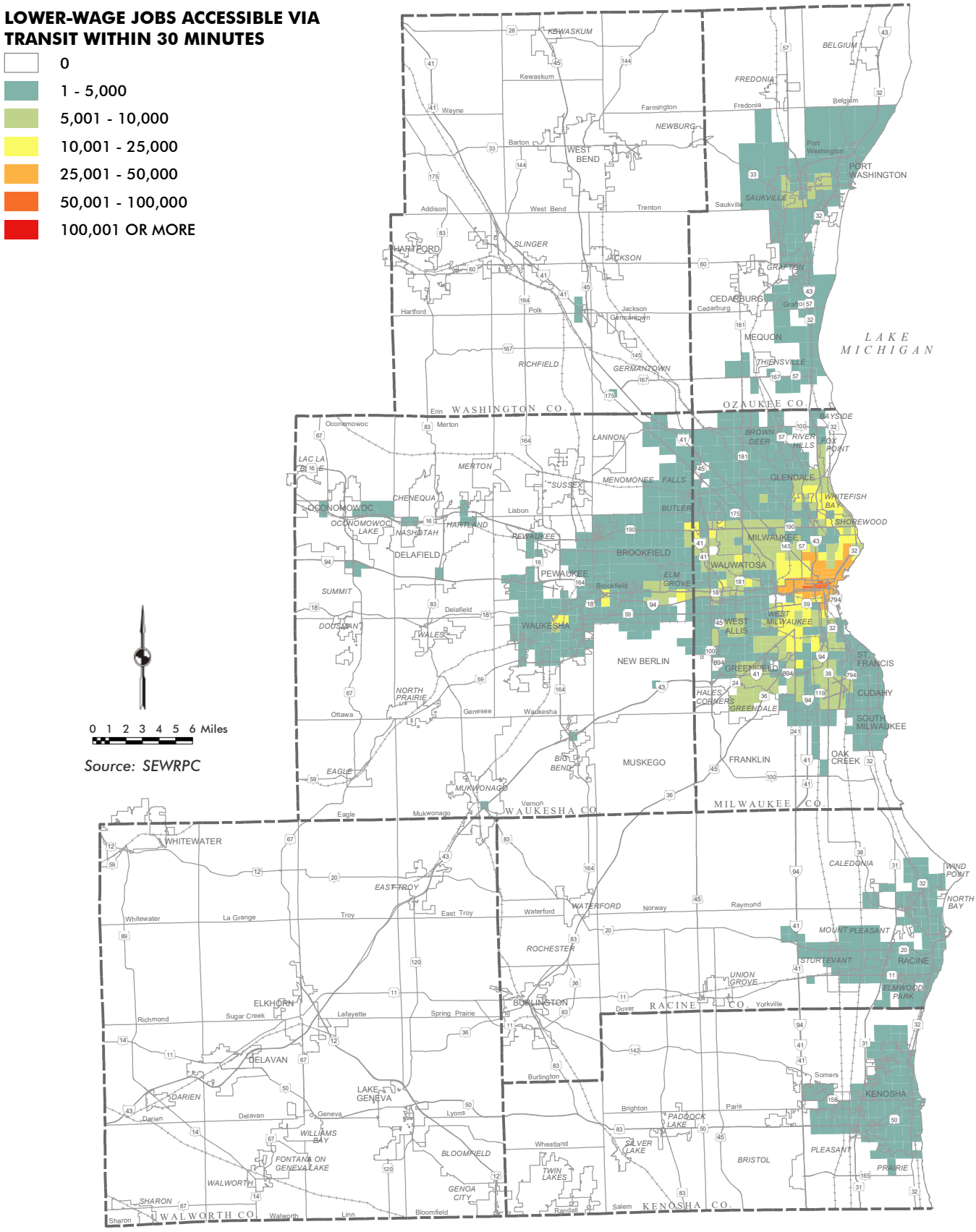
[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty, families not in poverty, families with incomes less than twice the poverty level, families with incomes more than twice the poverty level, people with disabilities, and people without disabilities are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

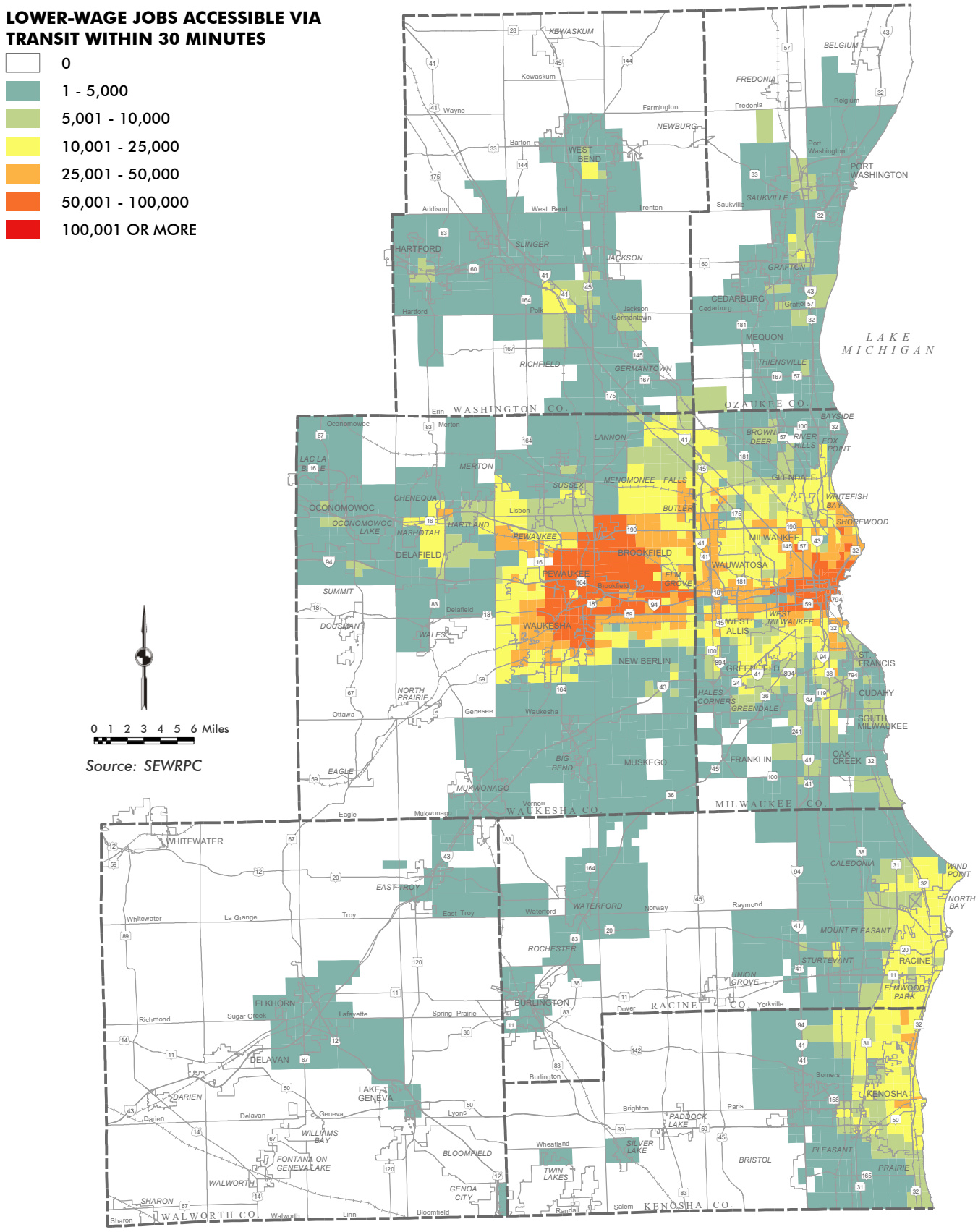
## Map H.27
## Lower-Wage Jobs Accessible Within 30 Minutes by Transit: Existing



## Map H.28
## Lower-Wage Jobs Accessible Within 30 Minutes by Transit: Trend



## Map H.29
## Lower-Wage Jobs Accessible Within 30 Minutes by Transit: Preliminary Recommended Plan



## Table H.17
## Access to Lower-Wage Jobs Within 30 Minutes by Transit

**Minority Population[a]**

| Plan | 25,000 or More Jobs | | 10,000 or More Jobs | | 5,000 or More Jobs | | Total Minority Population |
|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | |
| Existing - 2015 | 66,800 | 11.5 | 177,200 | 30.4 | 304,200 | 52.2 | 582,900 |
| Trend - 2050 | 28,700 | 4.9 | 106,900 | 18.3 | 226,800 | 38.9 | 582,900 |
| Plan - 2050 | 165,600 | 28.4 | 387,100 | 66.4 | 473,500 | 81.2 | 582,900 |

**Families in Poverty[a]**

| Plan | 25,000 or More Jobs | | 10,000 or More Jobs | | 5,000 or More Jobs | | Total Families in Poverty |
|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | |
| Existing - 2015 | 6,000 | 11.5 | 16,200 | 31.0 | 26,000 | 49.7 | 52,300 |
| Trend - 2050 | 2,600 | 5.0 | 9,700 | 18.5 | 19,800 | 37.9 | 52,300 |
| Plan - 2050 | 14,800 | 28.3 | 33,300 | 63.7 | 40,700 | 77.8 | 52,300 |

**Families with Incomes Less than Twice the Poverty Level[a]**

| Plan | 25,000 or More Jobs | | 10,000 or More Jobs | | 5,000 or More Jobs | | Total Families with Incomes Less Than Twice the Poverty Level |
|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | |
| Existing - 2015 | 9,700 | 8.0 | 28,800 | 23.8 | 50,700 | 41.9 | 121,000 |
| Trend - 2050 | 4,200 | 3.5 | 17,100 | 14.1 | 38,400 | 31.7 | 121,000 |
| Plan - 2050 | 28,200 | 23.3 | 68,500 | 56.6 | 86,300 | 71.3 | 121,000 |

**People with Disabilities[a]**

| Plan | 25,000 or More Jobs | | 10,000 or More Jobs | | 5,000 or More Jobs | | Total Population with Disabilities |
|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | |
| Existing - 2015 | 12,300 | 5.6 | 35,300 | 16.0 | 70,500 | 32.0 | 220,600 |
| Trend - 2050 | 7,100 | 3.2 | 21,800 | 9.9 | 54,500 | 24.7 | 220,600 |
| Plan - 2050 | 44,600 | 20.2 | 107,500 | 48.7 | 138,600 | 62.8 | 220,600 |

[a] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

health care facilities, grocery stores, MRMC, and GMIA. Table H.18 shows the existing minority populations and low-income populations that would have reasonable access (within 30 minutes) by transit to these activity centers. The significant expansion under the Preliminary Plan would greatly improve access for existing minority populations, lower-income populations, and people with disabilities to the activity centers analyzed, with the Preliminary Plan generally serving 10 to 30 percent more of these populations than the Trend.

As shown in Table H.19, the improvement and expansion of transit under the Preliminary Plan would result in increases from existing conditions of between 8 and 32 percent in total minority population that would have reasonable access to the various activity centers under the Preliminary Plan, compared to increases of 7 to 26 percent in total non-minority population. Similarly, the improvement and expansion of transit under the Preliminary Plan would result in increases from existing conditions of between 8 and 24 percent in total families in poverty and families with incomes less than twice the poverty level that would have reasonable access to the various activity centers under the Preliminary Plan, compared to increases of 6 to 24 percent in total families not in poverty and families with incomes higher than twice the poverty level. With respect to people with disabilities, the Preliminary Plan would result in increases from existing conditions of between 8 and 25 percent in total people with disabilities that would

## Table H.18
## Reasonable Access to Activity Centers by Transit[a]

**Minority Population[b]**

| Activity Center | Existing | | Trend (2050) | | Plan (2050) | | Total Minority Population |
|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | |
| Retail Centers | 104,000 | 17.8 | 68,900 | 11.8 | 229,000 | 39.3 | 582,900 |
| Major Parks | 46,300 | 7.9 | 33,400 | 5.7 | 125,100 | 21.5 | 582,900 |
| Public Technical Colleges and Universities | 157,700 | 27.1 | 116,600 | 20.0 | 210,100 | 36.0 | 582,900 |
| Health Care Facilities | 292,700 | 50.2 | 236,700 | 40.6 | 337,700 | 57.9 | 582,900 |
| Grocery Stores | 455,400 | 78.1 | 439,900 | 75.5 | 524,000 | 89.9 | 582,900 |
| General Mitchell International Airport | 72,900 | 12.5 | 59,300 | 10.2 | 121,100 | 20.8 | 582,900 |
| Milwaukee Regional Medical Center | 144,800 | 24.8 | 109,000 | 18.7 | 330,100 | 56.6 | 582,900 |

**Families in Poverty[b]**

| Activity Center | Existing | | Trend (2050) | | Plan (2050) | | Total Families in Poverty |
|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | |
| Retail Centers | 9,000 | 17.2 | 5,900 | 11.3 | 18,900 | 36.1 | 52,300 |
| Major Parks | 4,400 | 8.4 | 3,300 | 6.3 | 10,800 | 20.7 | 52,300 |
| Public Technical Colleges and Universities | 14,800 | 28.3 | 11,100 | 21.2 | 20,000 | 38.2 | 52,300 |
| Health Care Facilities | 25,600 | 48.9 | 21,100 | 40.3 | 29,800 | 57.0 | 52,300 |
| Grocery Stores | 38,400 | 73.4 | 36,300 | 69.4 | 43,700 | 83.6 | 52,300 |
| General Mitchell International Airport | 5,900 | 11.3 | 5,000 | 9.6 | 10,200 | 19.5 | 52,300 |
| Milwaukee Regional Medical Center | 13,100 | 25.0 | 9,900 | 18.9 | 28,000 | 53.5 | 52,300 |

**Families with Incomes Less Than Twice the Poverty Level[b]**

| Activity Center | Existing | | Trend (2050) | | Plan (2050) | | Total Families with Incomes Less Than Twice the Poverty Level |
|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | |
| Retail Centers | 17,600 | 14.5 | 11,800 | 9.8 | 42,300 | 35.0 | 121,000 |
| Major Parks | 8,400 | 6.9 | 6,000 | 5.0 | 23,900 | 19.8 | 121,000 |
| Public Technical Colleges and Universities | 28,000 | 23.1 | 20,400 | 16.9 | 41,300 | 34.1 | 121,000 |
| Health Care Facilities | 51,700 | 42.7 | 41,900 | 34.6 | 64,200 | 53.1 | 121,000 |
| Grocery Stores | 80,000 | 66.1 | 75,300 | 62.2 | 94,500 | 78.1 | 121,000 |
| General Mitchell International Airport | 12,600 | 10.4 | 11,000 | 9.1 | 22,200 | 18.3 | 121,000 |
| Milwaukee Regional Medical Center | 25,700 | 21.2 | 19,400 | 16.0 | 58,300 | 48.2 | 121,000 |

**People with Disabilities[b]**

| Activity Center | Existing | | Trend (2050) | | Plan (2050) | | Total Population with Disabilities |
|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | |
| Retail Centers | 31,700 | 14.4 | 23,800 | 10.8 | 83,600 | 37.9 | 220,600 |
| Major Parks | 16,600 | 7.5 | 11,600 | 5.3 | 49,200 | 22.3 | 220,600 |
| Public Technical Colleges and Universities | 42,300 | 19.2 | 30,900 | 14.0 | 72,600 | 32.9 | 220,600 |
| Health Care Facilities | 74,700 | 33.9 | 61,200 | 27.7 | 108,300 | 49.1 | 220,600 |
| Grocery Stores | 121,700 | 55.2 | 113,100 | 51.3 | 158,500 | 71.8 | 220,600 |
| General Mitchell International Airport | 16,100 | 7.3 | 15,600 | 7.1 | 33,800 | 15.3 | 220,600 |
| Milwaukee Regional Medical Center | 40,100 | 18.2 | 29,800 | 13.5 | 96,000 | 43.5 | 220,600 |

[a] *Reasonable access is defined as the ability to travel by automobile within 60 minutes to General Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.*

[b] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

## Table H.19
## Additional Percent with Reasonable Access[a] to Activity Centers by Transit Under the Preliminary Recommended Plan

**Minorities[b]**

| Activity Center | Minority Population | Non-Minority Population |
|---|---|---|
| Retail Centers | 21 | 26 |
| Major Parks | 14 | 17 |
| Public Technical Colleges and Universities | 9 | 17 |
| Health Care Facilities | 8 | 20 |
| Grocery Stores | 12 | 23 |
| General Mitchell International Airport | 8 | 7 |
| Milwaukee Regional Medical Center | 32 | 22 |

**Families in Poverty and Families with Incomes Less Than Twice the Poverty Level[b]**

| Activity Center | Families in Poverty | Families Not in Poverty | Families with Incomes Less Than Twice the Poverty Level | Families with Incomes More Than Twice the Poverty Level |
|---|---|---|---|---|
| Retail Centers | 19 | 24 | 20 | 24 |
| Major Parks | 12 | 15 | 13 | 16 |
| Public Technical Colleges and Universities | 10 | 15 | 11 | 15 |
| Health Care Facilities | 8 | 18 | 10 | 19 |
| Grocery Stores | 10 | 20 | 12 | 21 |
| General Mitchell International Airport | 8 | 6 | 8 | 6 |
| Milwaukee Regional Medical Center | 29 | 22 | 27 | 21 |

**People with Disabilities[b]**

| Activity Center | People with Disabilities | People Without Disabilities |
|---|---|---|
| Retail Centers | 24 | 25 |
| Major Parks | 15 | 17 |
| Public Technical Colleges and Universities | 14 | 15 |
| Health Care Facilities | 15 | 17 |
| Grocery Stores | 17 | 20 |
| General Mitchell International Airport | 8 | 7 |
| Milwaukee Regional Medical Center | 25 | 25 |

[a] *Reasonable access is defined as the ability to travel by automobile within 60 minutes to General Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.*

[b] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty, families not in poverty, families with incomes less than twice the poverty level, families with incomes more than twice the poverty level, people with disabilities, and people without disabilities are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

have reasonable access to the various activity centers, compared to increases of 7 to 25 percent of people without disabilities.

- **Comparing Improved Accessibility for Transit and Driving:** A comparison of the improvements in accessibility under the transit element of the Preliminary Plan to the highway element of the Preliminary Plan clearly indicates that the transit element would result in substantial increases in transit accessibility to jobs and other activities, and the highway element would result in only modest increases in highway accessibility to jobs and other activities. The modest increases in highway accessibility would benefit the majority of minority residents and low-income residents who travel by automobile. The substantial increases in transit accessibility would provide significant benefits to those who may not be able to afford a car and need public transit service to be able to reach jobs and other activities.

## CRITERION 2.1.2: MINORITY POPULATIONS AND LOW-INCOME POPULATIONS SERVED BY TRANSIT

Minority populations and lower-income populations, along with people with disabilities, utilize public transit at a higher proportion relative to other modes of travel than the remaining population of the Region. To an extent, any improvement in transit within the Region would be expected to benefit minority populations, lower-income populations, and people with disabilities. For this criterion, an evaluation was conducted of the characteristics of the existing population located within the service area of the Trend and Preliminary Recommended Plan public transit systems to compare the existing minority populations, lower-income populations (families in poverty and families with incomes below twice the poverty level), and people with disabilities that would be served. Table H.20 and Maps H.30 through H.44 show information on the existing minority populations, lower-income populations, and people with disabilities within walking distance of transit under existing conditions, the Trend, and the Preliminary Plan.

- **Existing Transit Services:** While most of the base year 2015 routes and service areas for the public transit systems in the Region serve the principal concentrations of existing minority populations, lower-income populations, and people with disabilities—serving about 488,100 minority people (84 percent of total), 40,800 families in poverty (78 percent of total), 121,000 families with incomes less than twice the poverty level (71 percent of total), and 130,500 people with disabilities (59 percent of total)—transit service in the Region has declined by about 25 percent since the early 2000s and is expected to further decline based on expected existing and future available Federal and State funding.

- **The Trend:** Most of the transit routes and service areas under the Trend would continue to serve the principal concentrations of existing minority populations, lower-income populations, and people with disabilities. However, based on the expected decline in transit service of an additional 22 percent under the Trend, the existing populations served are expected to decline to about 469,600 minority people, 39,200 families in poverty, 81,400 families with incomes less than twice the poverty level, and 122,200 people with disabilities. The decline in transit service is primarily a result of current and expected transit revenues (farebox and local, State, and Federal assistance) not being sufficient to fund current and expected capital, operating, and maintenance costs for the Region's existing transit services. This future transit service decline would particularly affect existing local bus service, potentially resulting in entire routes being cut, lower service frequencies, reduced service hours, and/or weekend service being eliminated, depending on the transit system.

- **Preliminary Recommended Plan:** Under the Preliminary Recommended Plan, the existing populations served by transit would increase to 517,700 minority people (89 percent of total), 43,300 families in poverty (83 percent of total), 92,600 families with incomes less than twice the poverty level (77 percent of total), and 149,200 people with disabilities (67 percent of total). The existing minority populations, lower-income populations, and people with disabilities in this service area would benefit from a significant expansion of transit service under the Preliminary Plan, including a reversal of the recent decline in transit service levels and a significant investment in fixed-

## Table H.20
## Populations and Families Served by Transit

**Minority Population[a]**

| Plan | Total Transit Service | | Fixed-Guideway Transit Service[b] | | Total Minority Population |
|---|---|---|---|---|---|
| | People | Percent | People | Percent | |
| Existing - 2015 | 488,100 | 83.7 | 3,200 | 0.5 | 582,900 |
| Trend - 2050 | 469,600 | 80.6 | 3,200 | 0.5 | 582,900 |
| Plan - 2050 | 517,700 | 88.8 | 240,100 | 41.2 | 582,900 |

**Families in Poverty[a]**

| Plan | Total Transit Service | | Fixed-Guideway Transit Service[b] | | Total Families in Poverty |
|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | |
| Existing - 2015 | 40,800 | 78.0 | 300 | 0.6 | 52,300 |
| Trend - 2050 | 39,200 | 75.0 | 300 | 0.6 | 52,300 |
| Plan - 2050 | 43,300 | 82.8 | 20,800 | 39.8 | 52,300 |

**Families with Incomes Less Than Twice the Poverty Level[a]**

| Plan | Total Transit Service | | Fixed-Guideway Transit Service[b] | | Total Families with Incomes Less Than Twice the Poverty Level |
|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | |
| Existing - 2015 | 85,300 | 70.5 | 500 | 0.4 | 121,000 |
| Trend - 2050 | 81,400 | 67.3 | 500 | 0.4 | 121,000 |
| Plan - 2050 | 92,600 | 76.5 | 40,500 | 33.5 | 121,000 |

**People with Disabilities[a]**

| Plan | Total Transit Service | | Fixed-Guideway Transit Service[b] | | Total Population with Disabilities |
|---|---|---|---|---|---|
| | People | Percent | People | Percent | |
| Existing - 2015 | 130,500 | 59.2 | 700 | 0.3 | 220,600 |
| Trend - 2050 | 122,200 | 55.4 | 700 | 0.3 | 220,600 |
| Plan - 2050 | 149,200 | 67.6 | 59,200 | 26.8 | 220,600 |

[a] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2008-2012 American Community Survey.*

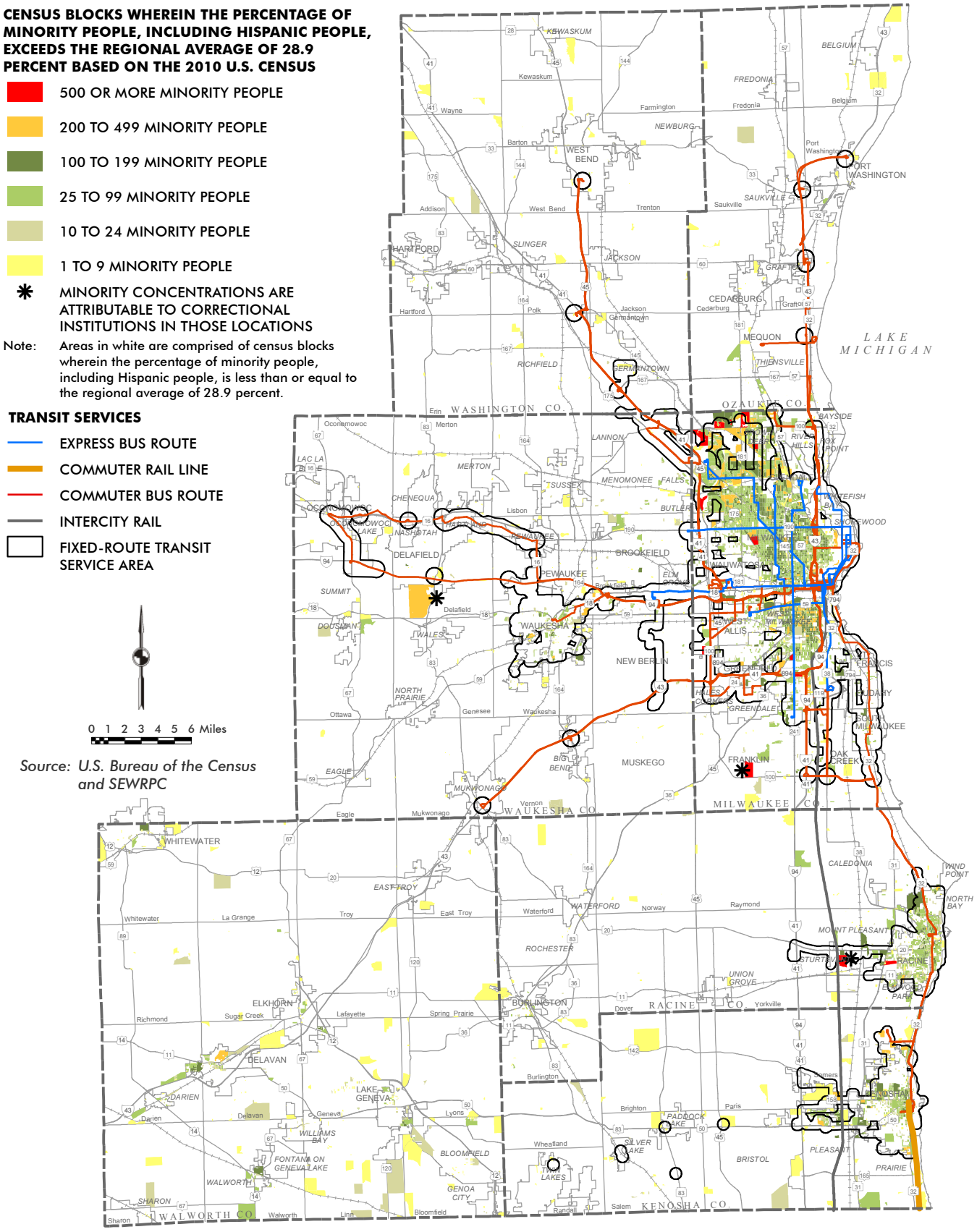
[b] *Includes rapid transit and commuter rail services.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

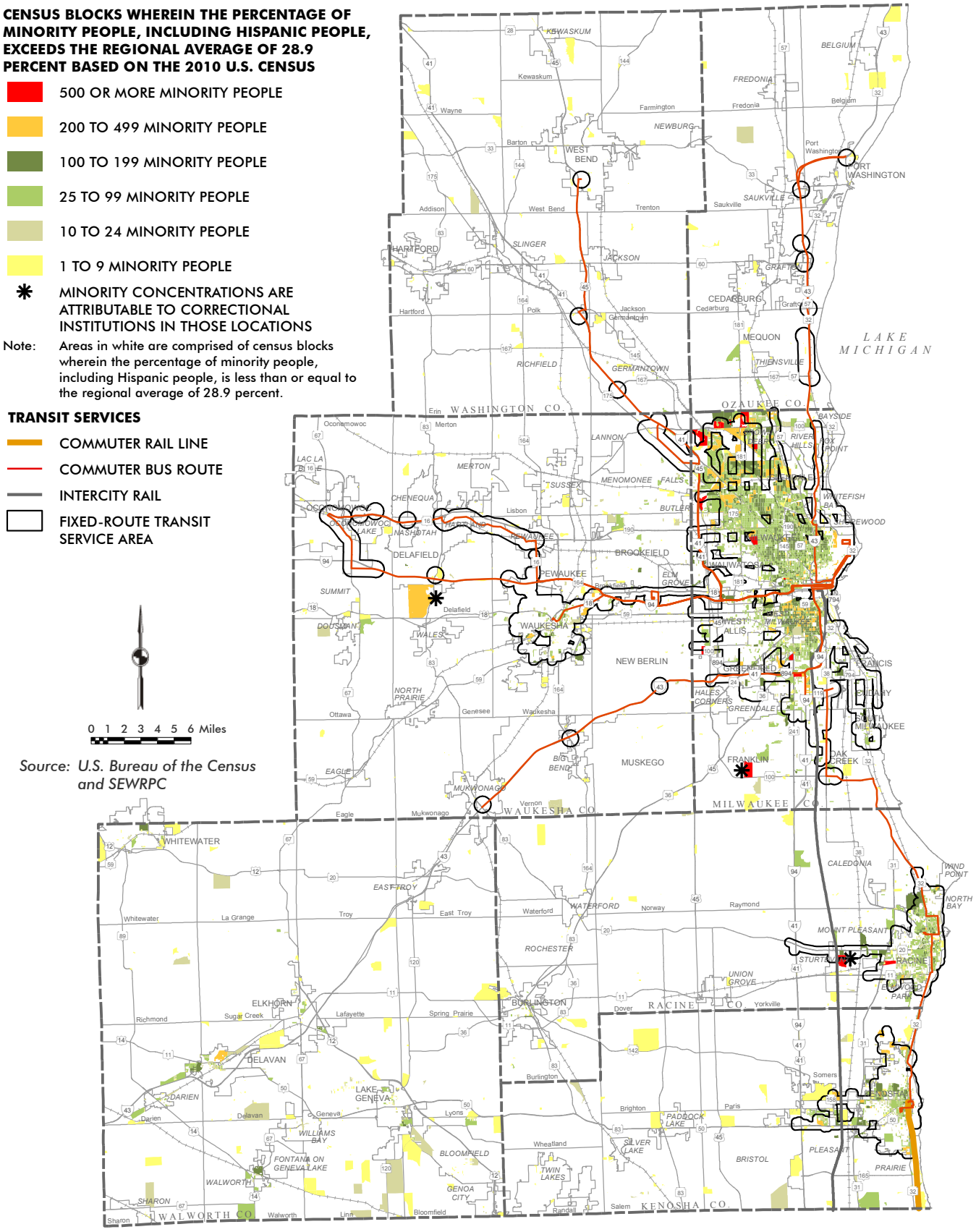
guideway transit corridors, including rapid transit and commuter rail. Specifically, existing minority populations, lower-income populations, and people with disabilities would likely receive a benefit from the increased service area and frequency of local bus routes, the eight rapid transit corridors, increased frequency on existing express bus routes, and additional express and commuter bus routes. The Preliminary Plan would provide significant benefits over the Trend for the existing minority populations, lower-income populations, and people with disabilities in terms of service provided by fixed-guideway transit—rapid transit or commuter rail—with an expected 240,100 minority people, 20,800 families in poverty, 40,500 families with incomes less than twice the poverty level, and 59,200 people with disabilities served.

This criterion calculates how many and what percentage of the Region's existing minority populations, lower-income populations, and people with disabilities are within walking distance of transit service under the Trend and Preliminary Plan, and does not attempt to determine the quality—speed, frequency, or usefulness—of that service to reach destinations for these populations. Criterion 2.1.3 (Transit Service Quality for Minority Populations and Low-Income Populations)

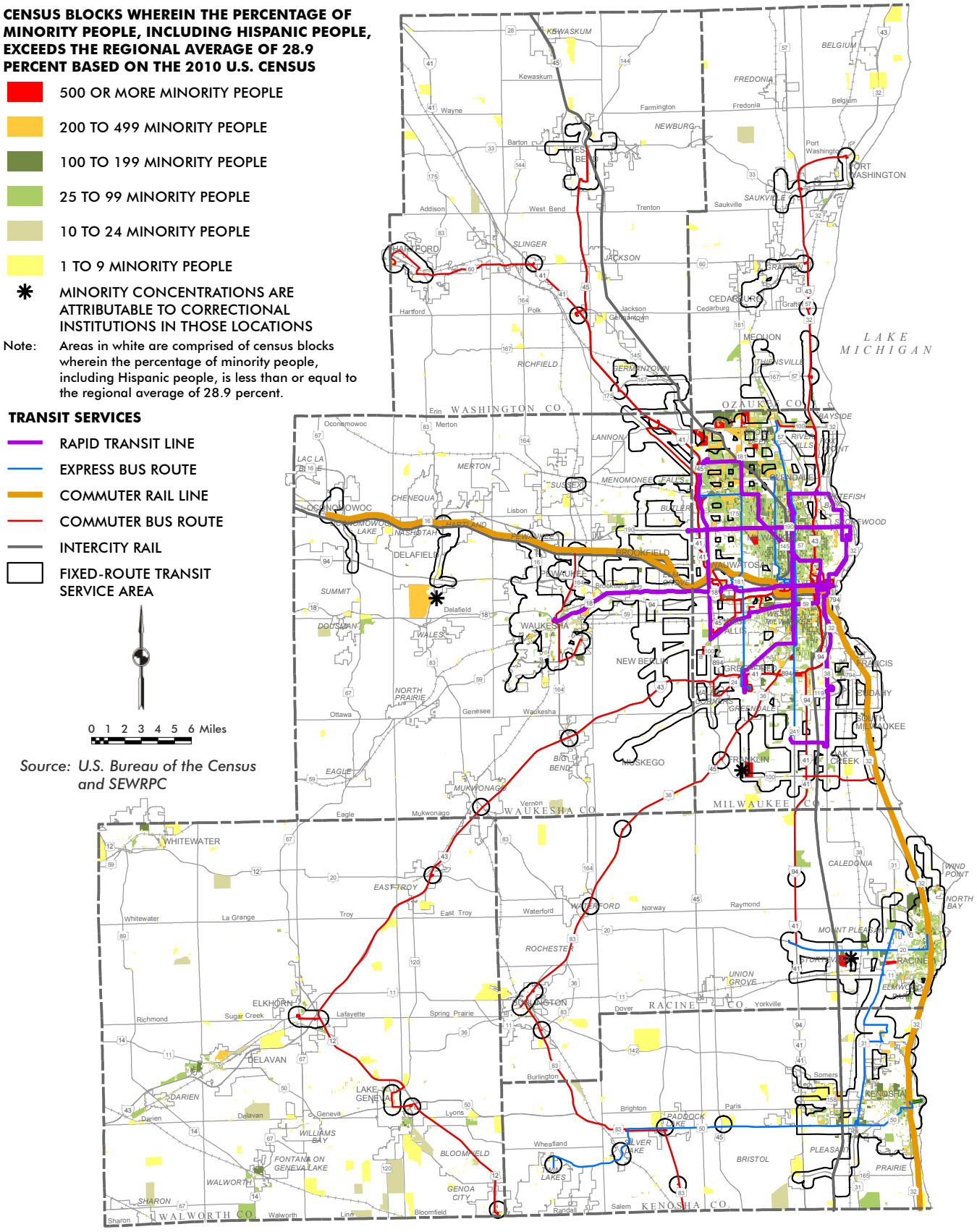
## Map H.30
## Comparison of Existing Concentrations of Total Minority Population in the Region to Public Transit Services: Existing



## Map H.31
## Comparison of Existing Concentrations of Total Minority Population in the Region to Public Transit Element: Trend



## Map H.32
## Comparison of Existing Concentrations of Total Minority Population in the Region to Public Transit Element: Preliminary Recommended Plan



## Map H.33
## Comparison of Concentrations of Year 2010 Races/Ethnicities in the Region to Public Transit Services: Existing

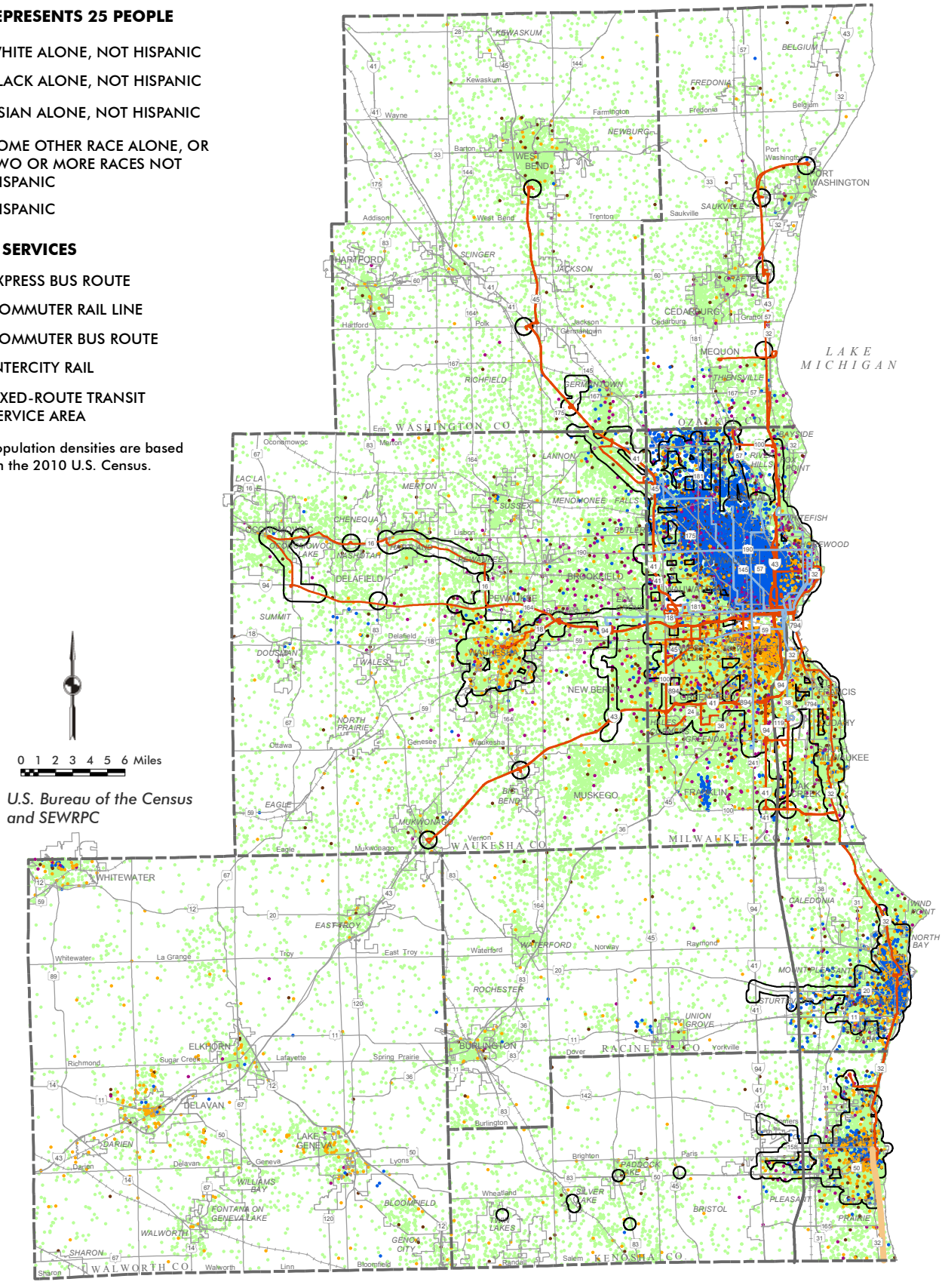
**1 DOT REPRESENTS 25 PEOPLE**

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

**TRANSIT SERVICES**

- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

Note: Population densities are based on the 2010 U.S. Census.




*Source: U.S. Bureau of the Census and SEWRPC*

## Map H.34
## Comparison of Concentrations of Year 2010 Races/Ethnicities in the Region to Public Transit Element: Trend

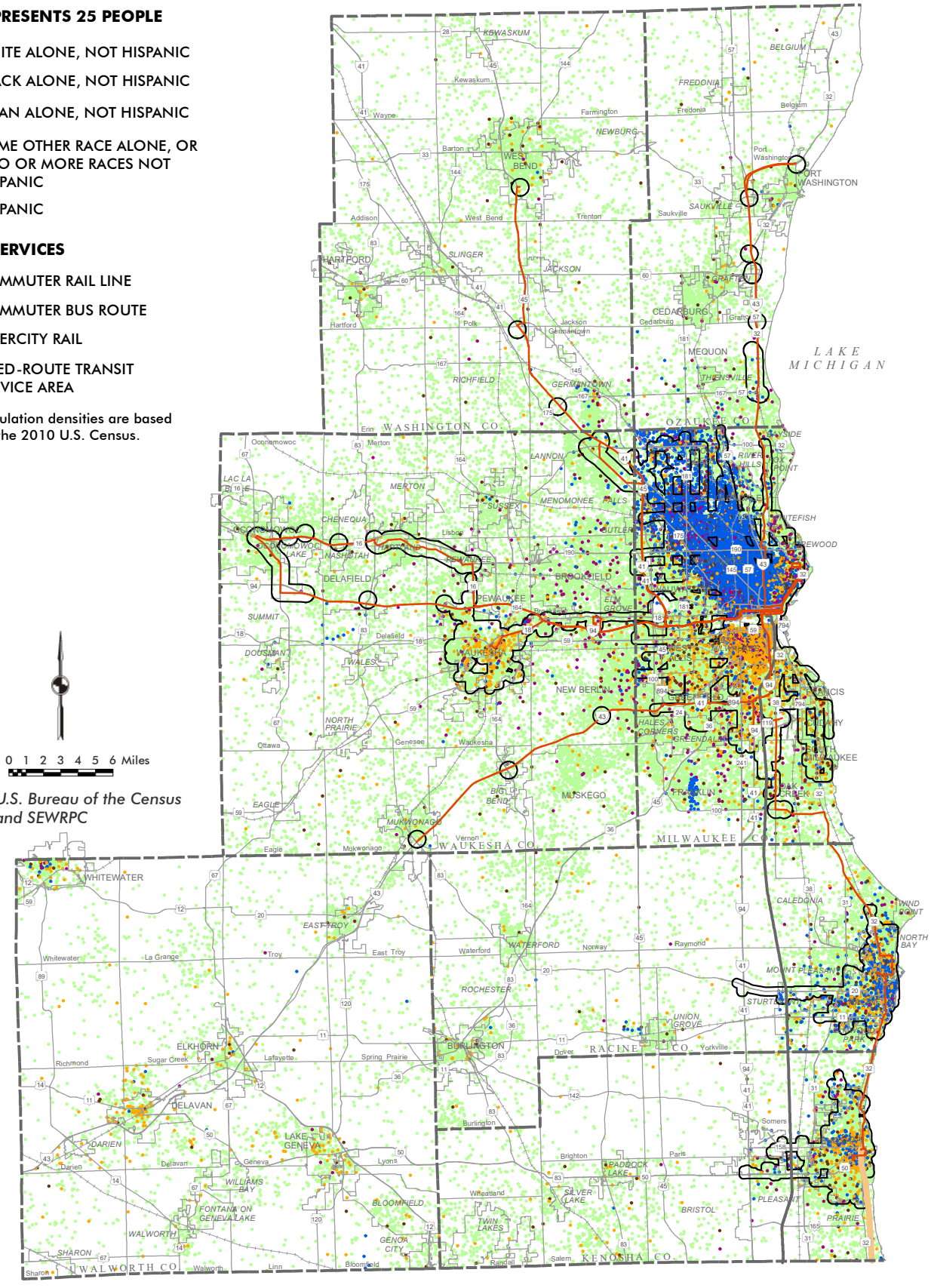
**1 DOT REPRESENTS 25 PEOPLE**

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

**TRANSIT SERVICES**

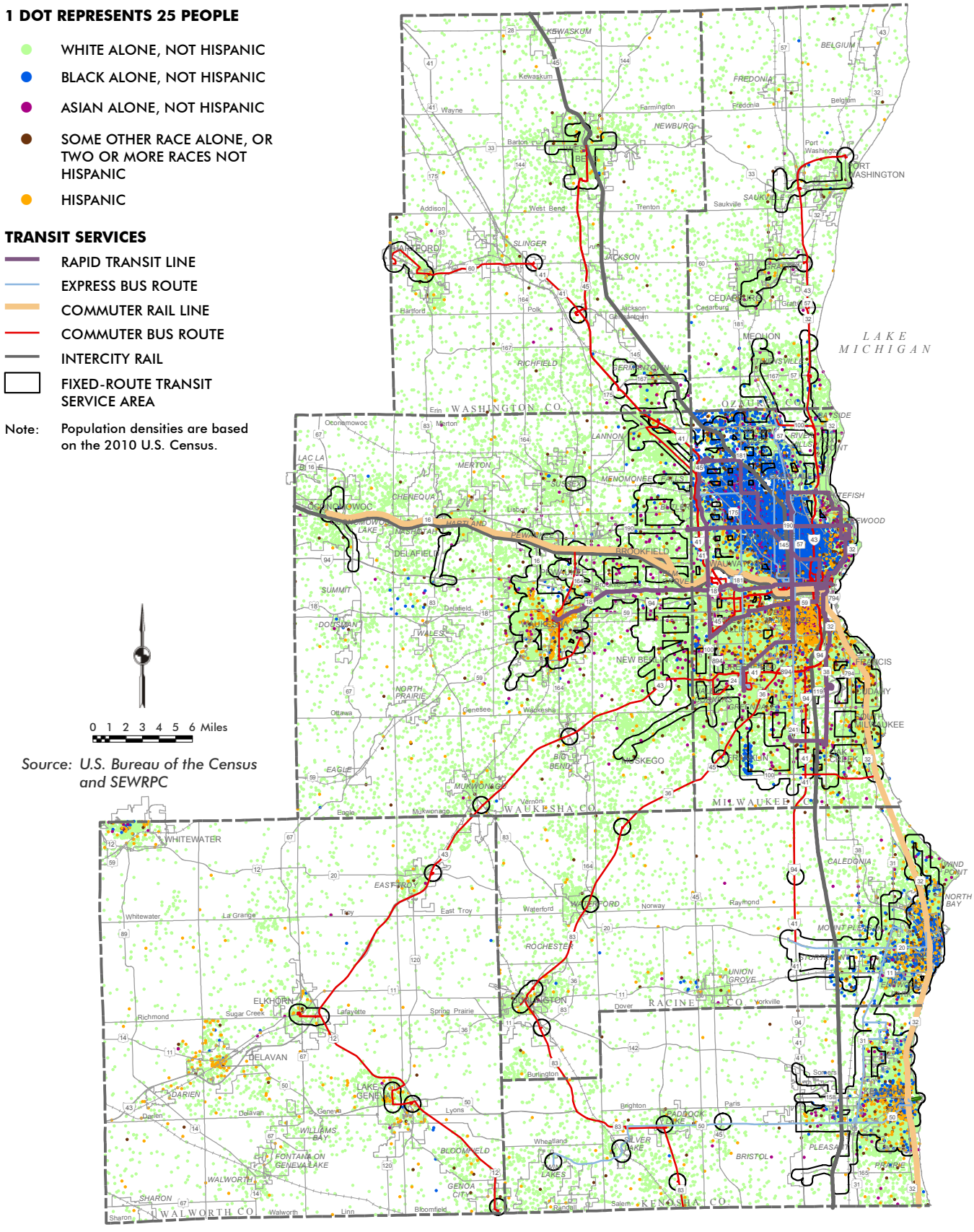
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

Note: Population densities are based on the 2010 U.S. Census.




*Source: U.S. Bureau of the Census and SEWRPC*

## Map H.35
## Comparison of Concentrations of Year 2010 Races/Ethnicities in the Region to Public Transit Element: Preliminary Recommended Plan



## Map H.36
## Comparison of Existing Concentrations of Families in Poverty in the Region to Public Transit Services: Existing

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

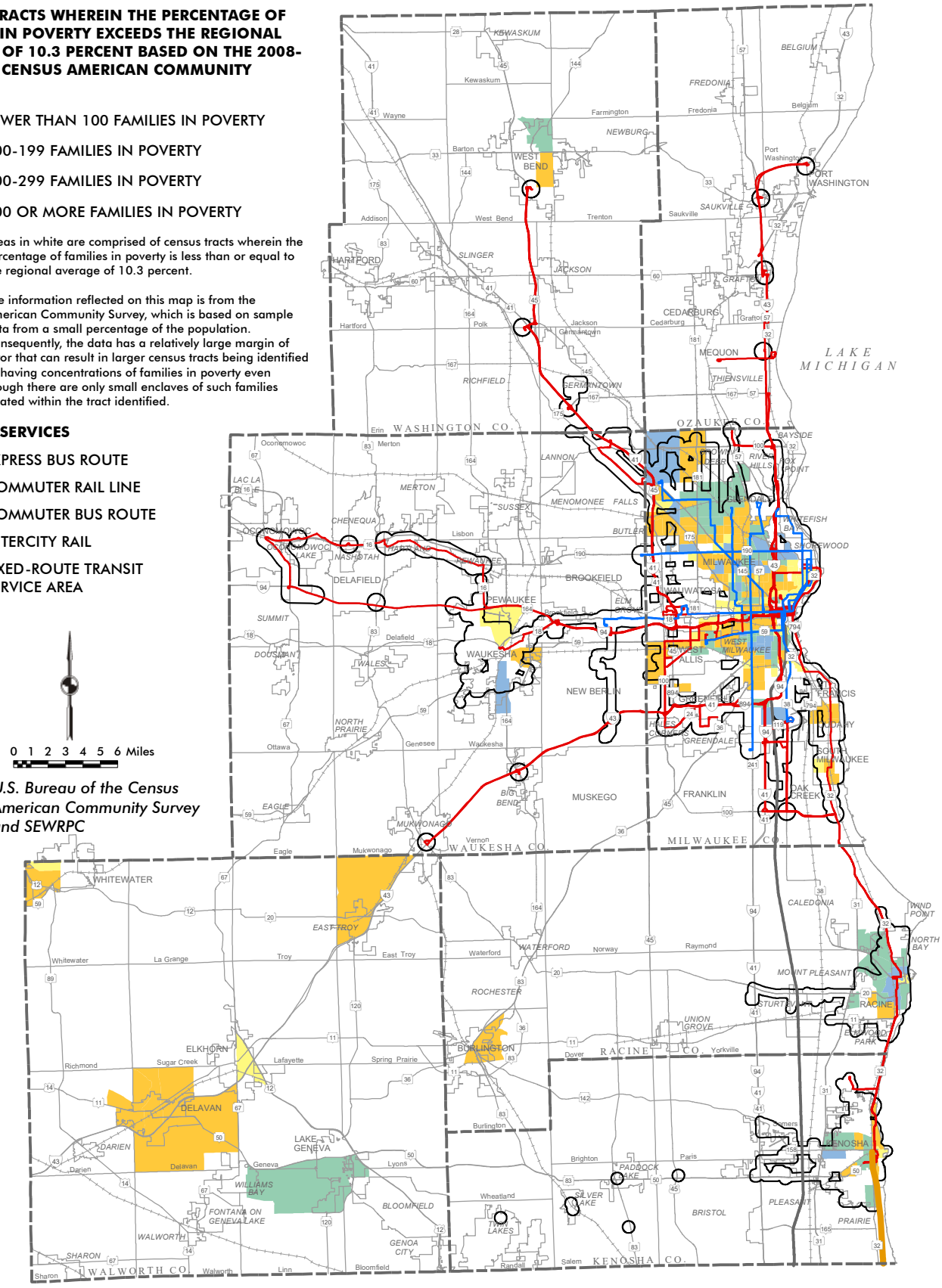
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

**TRANSIT SERVICES**

- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.37
## Comparison of Existing Concentrations of Families in Poverty in the Region to Public Transit Element: Trend

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

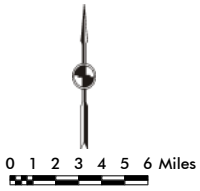
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

**TRANSIT SERVICES**

- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.38
## Comparison of Existing Concentrations of Families in Poverty in the Region to Public Transit Element: Preliminary Recommended Plan

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

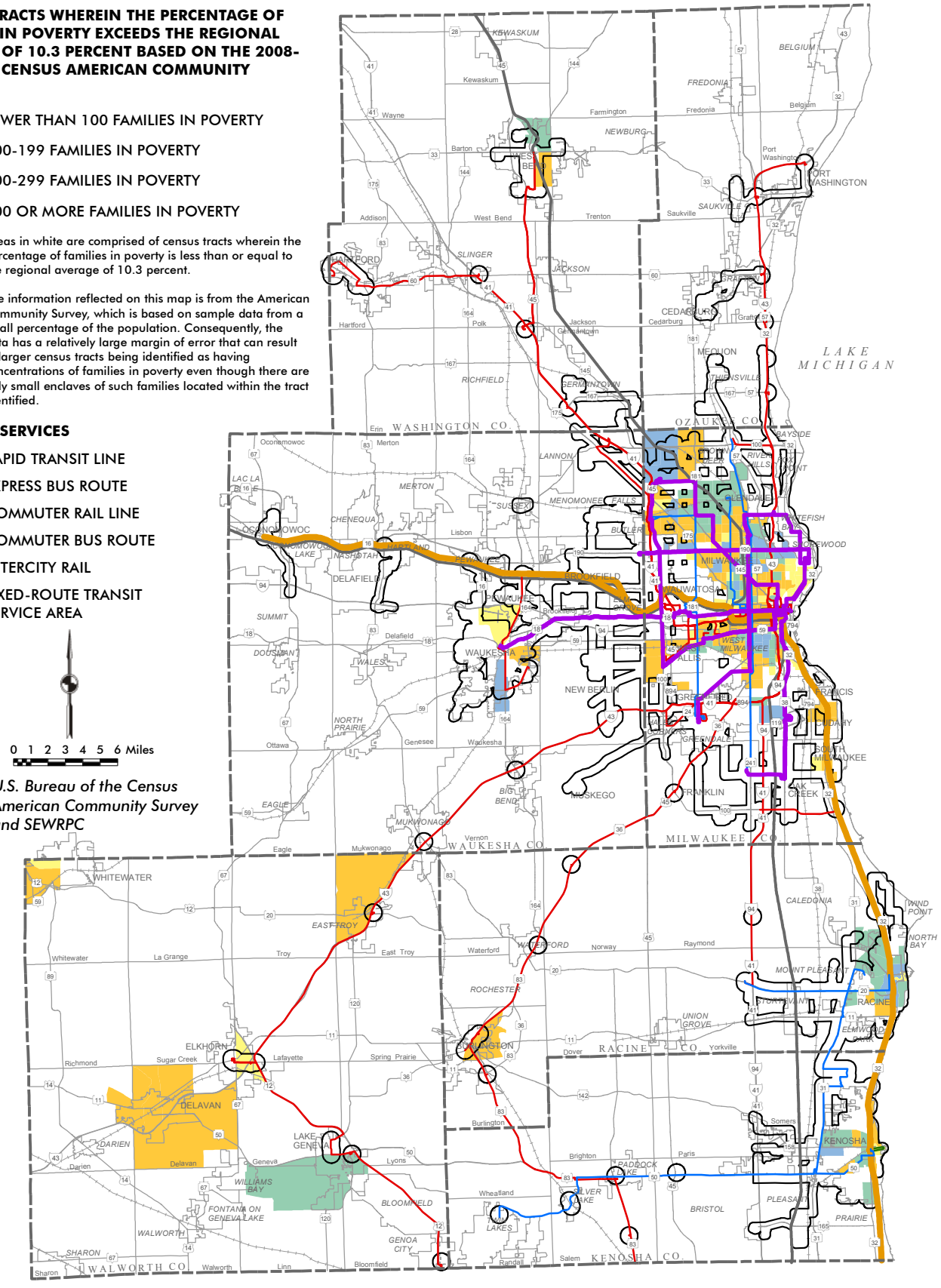
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

**TRANSIT SERVICES**

- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.39
## Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level in the Region to Public Transit Services: Existing

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 23.8 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

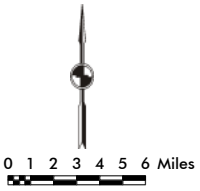
- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 23.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

**TRANSIT SERVICES**

- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.40
## Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level in the Region to Public Transit Element: Trend

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 23.8 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

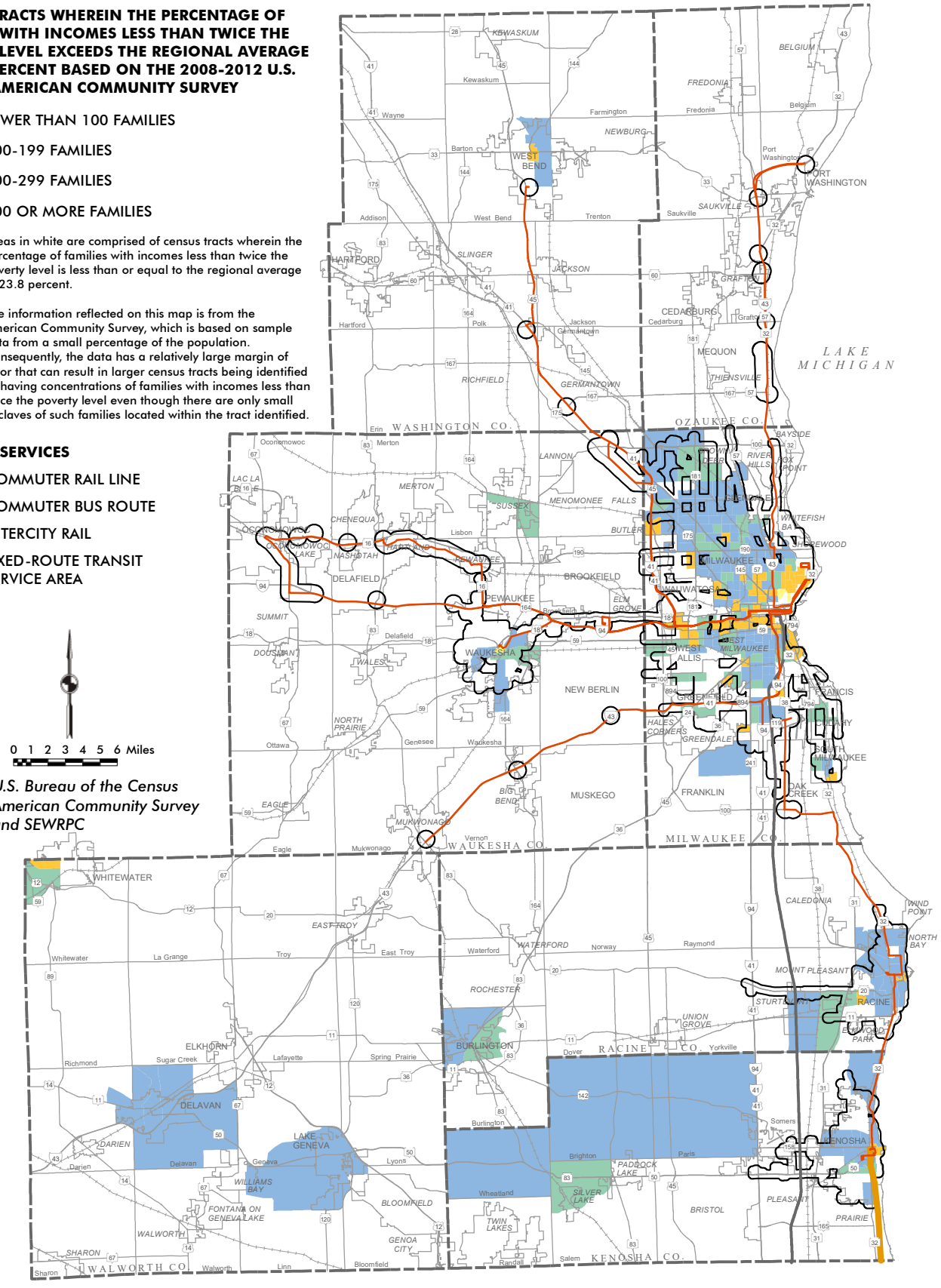
- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 23.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

**TRANSIT SERVICES**

- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.41
## Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level in the Region to Public Transit Element: Preliminary Recommended Plan

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 23.8 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

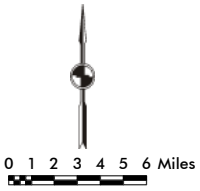
- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 23.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

**TRANSIT SERVICES**

- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.42
## Comparison of Existing Concentrations of People with Disabilities in the Region to Public Transit Services: Existing

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

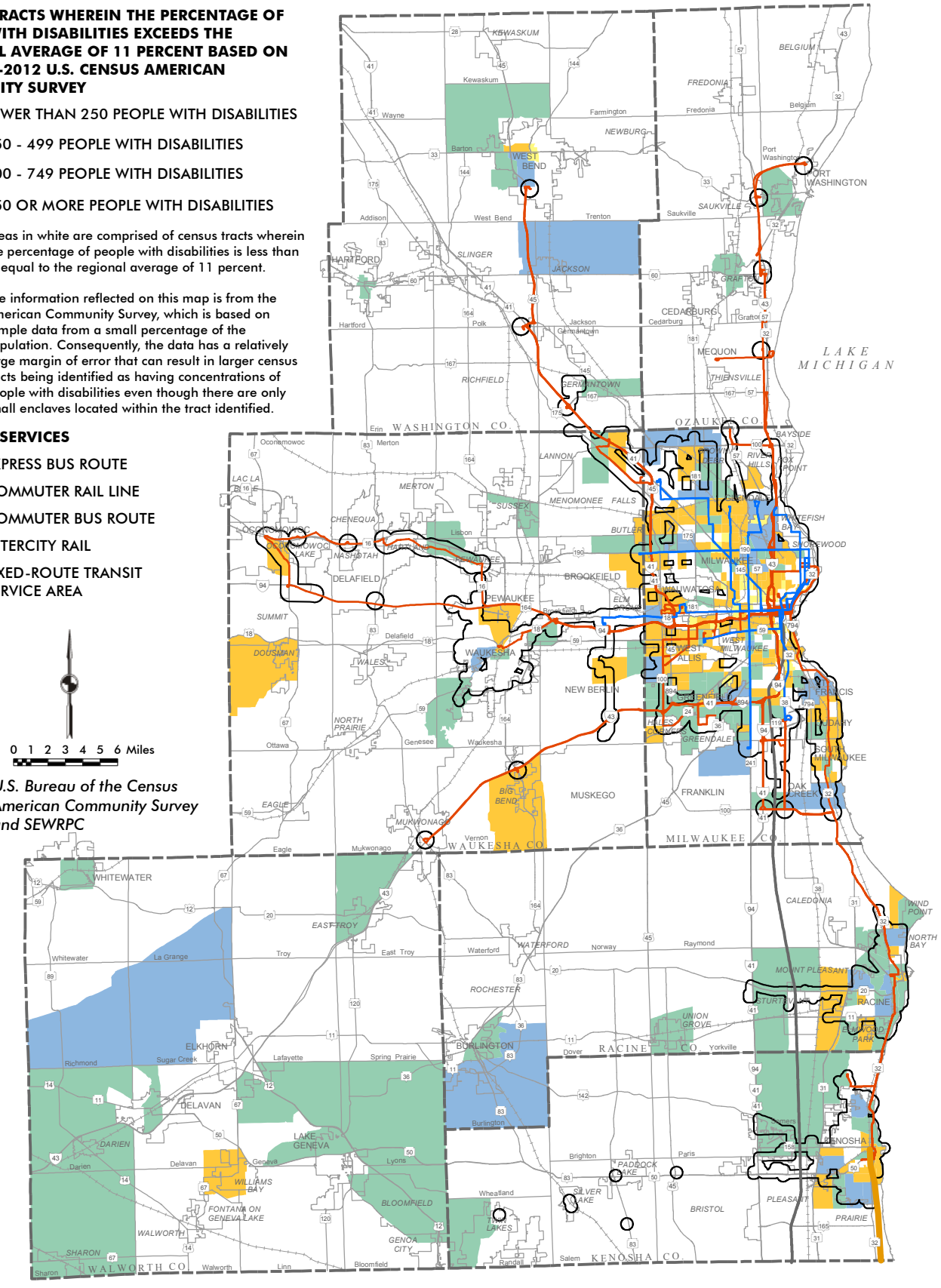
- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

**TRANSIT SERVICES**

- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.43
## Comparison of Existing Concentrations of People with Disabilities in the Region to Public Transit Element: Trend

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

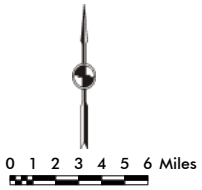
- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

**TRANSIT SERVICES**

- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.44
## Comparison of Existing Concentrations of People with Disabilities in the Region to Public Transit Element: Preliminary Recommended Plan

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

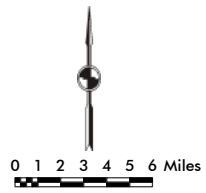
- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

**TRANSIT SERVICES**

- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

compares the quality of transit service that would be provided to existing minority populations, lower-income populations, and people with disabilities under the Trend and Preliminary Plan. Criterion 2.1.1 (Level of Accessibility of Jobs and Activity Centers for Minority Populations and Low-Income Populations) includes comparisons of how many jobs, hospitals, parks, colleges, major retail centers, grocery stores, and regional destinations could be reached within 30 minutes via transit by existing minority populations, lower-income populations, and people with disabilities under the Trend and Preliminary Plan.

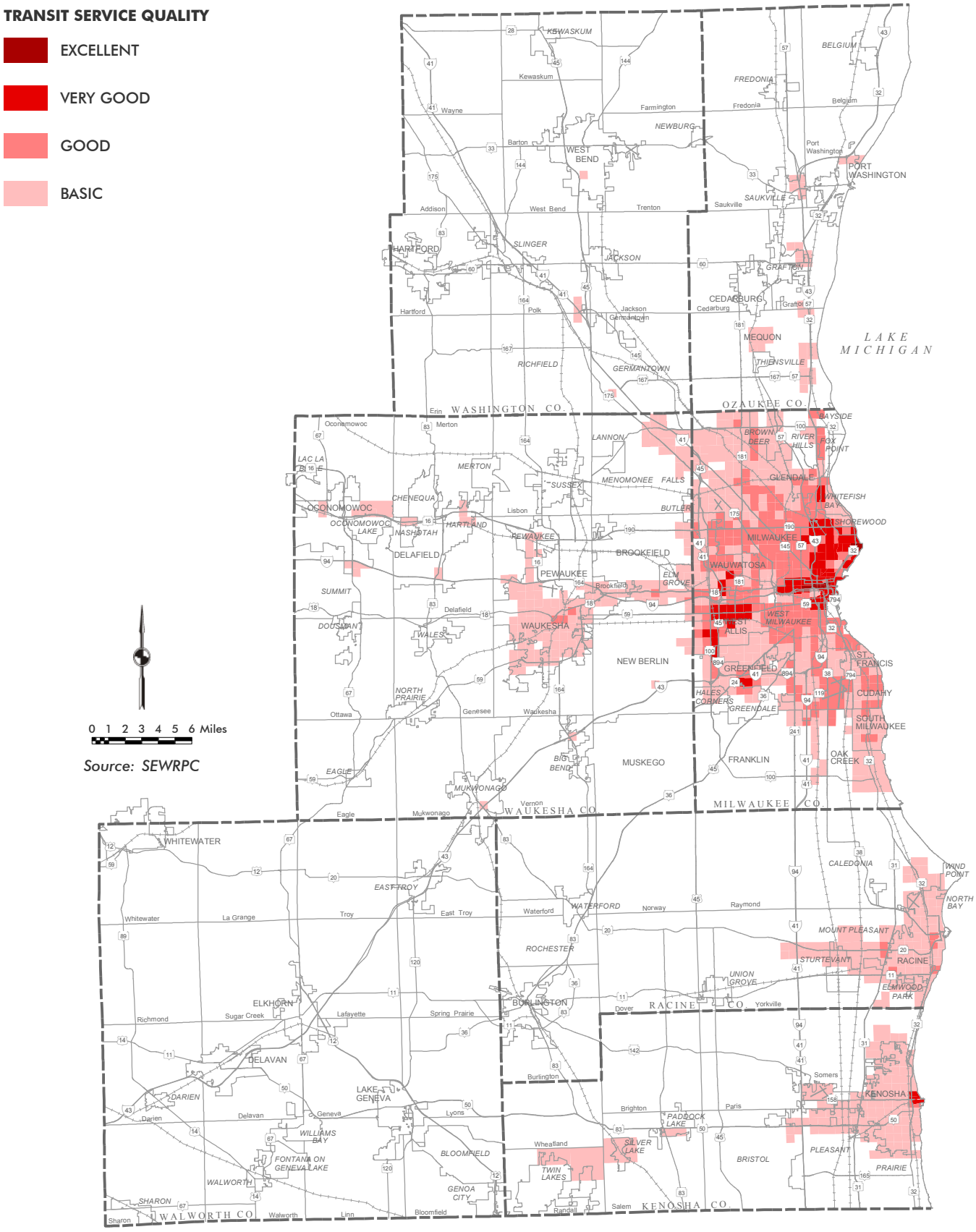
## CRITERION 2.1.3: TRANSIT SERVICE QUALITY FOR MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

While Criterion 2.1.2 measured the access that existing minority populations, lower-income populations, and people with disabilities would have to transit service under the Trend and Preliminary Recommended Plan, this criterion measures the quality of transit service that would be provided to these populations. The quality of transit service that would be provided to the Region's residents is evaluated under Criterion 4.5.3 (Transit Service Quality). Based on the amount and speed of transit service, levels of transit quality—Excellent, Very Good, Good, and Basic—were determined under existing conditions, the Trend, and the Preliminary Plan. Based on this analysis, the Preliminary Plan would provide high-quality—"Excellent" or "Very Good"—transit service to a significantly higher number of residents than the Trend. This methodology was used to compare the level of service quality provided under existing conditions, the Trend, and the Preliminary Plan (as shown on Maps H.45 through Map H.47) for existing minority populations, lower-income populations, and people with disabilities. The locations of existing minority populations, lower-income populations (families in poverty and families with incomes less than twice the poverty level), and people with disabilities in the Region are shown on Maps H.48 through H.51. The results of this analysis are presented in Table H.21.

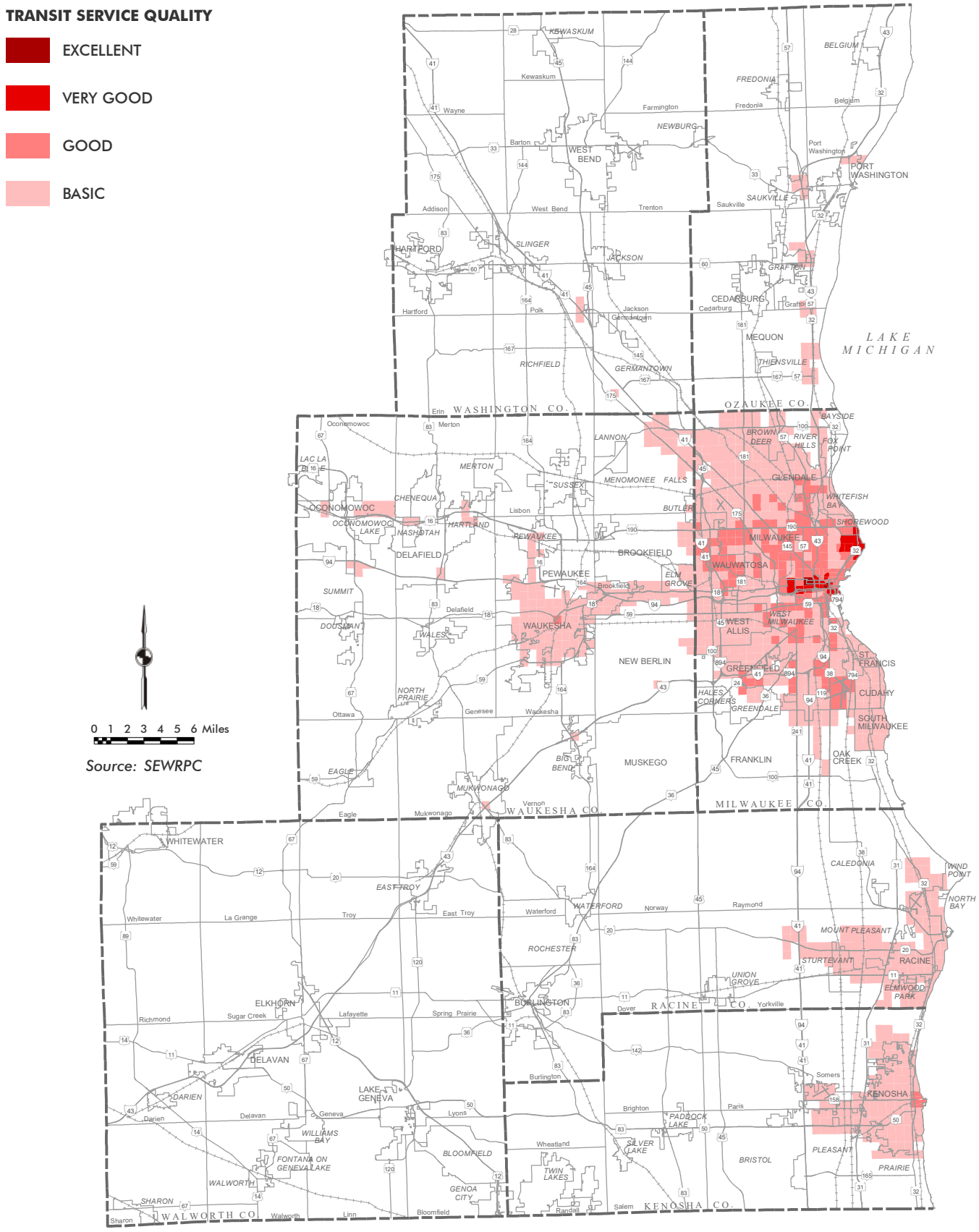
The Preliminary Plan would substantially increase the amount of the existing minority populations, lower-income populations, and people with disabilities that would have access to high-quality transit service compared to existing transit services—47 percent compared to 9 percent for minority population, 44 percent compared to 10 percent for families in poverty, 37 percent compared to 8 percent for families with incomes less than twice the poverty level, and 30 percent compared to 7 percent for people with disabilities. With the further decline in transit under the Trend, it is expected that only about 1 to 2 percent of these existing populations would be served by high-quality transit service under the Trend.

The Preliminary Plan would improve transit service over existing conditions particularly for existing minority populations, lower-income populations, and people with disabilities. As shown in Table H.22, the Preliminary Plan would result in approximately an additional 38 percent of the existing minority population with access to high-quality transit service, compared to approximately an additional 12 percent of the non-minority population. Similarly, the Preliminary Plan would result in approximately an additional 34 percent of the existing families in poverty and 29 percent of families with incomes less than twice the poverty level with access to high-quality transit service, compared to approximately an additional 16 and 14 percent of families with higher incomes, respectively. With respect to people with disabilities, the Preliminary Plan would result in approximately an additional 23 percent of people with disabilities receiving high-quality transit service, compared to approximately an additional 19 percent of people without disabilities.

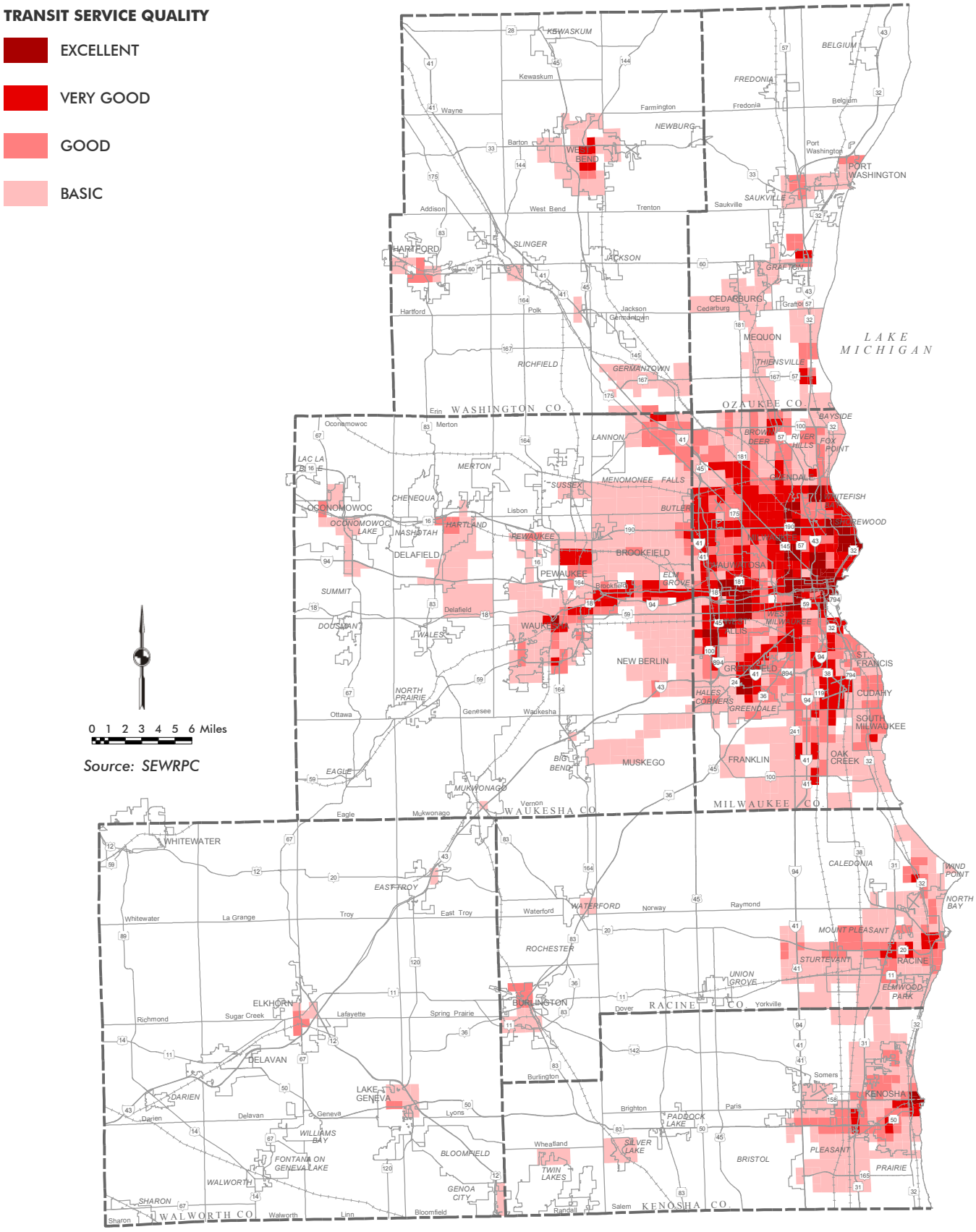
## Map H.45
## Transit Service Quality: Existing



## Map H.46
## Transit Service Quality: Trend



## Map H.47
## Transit Service Quality: Preliminary Recommended Plan

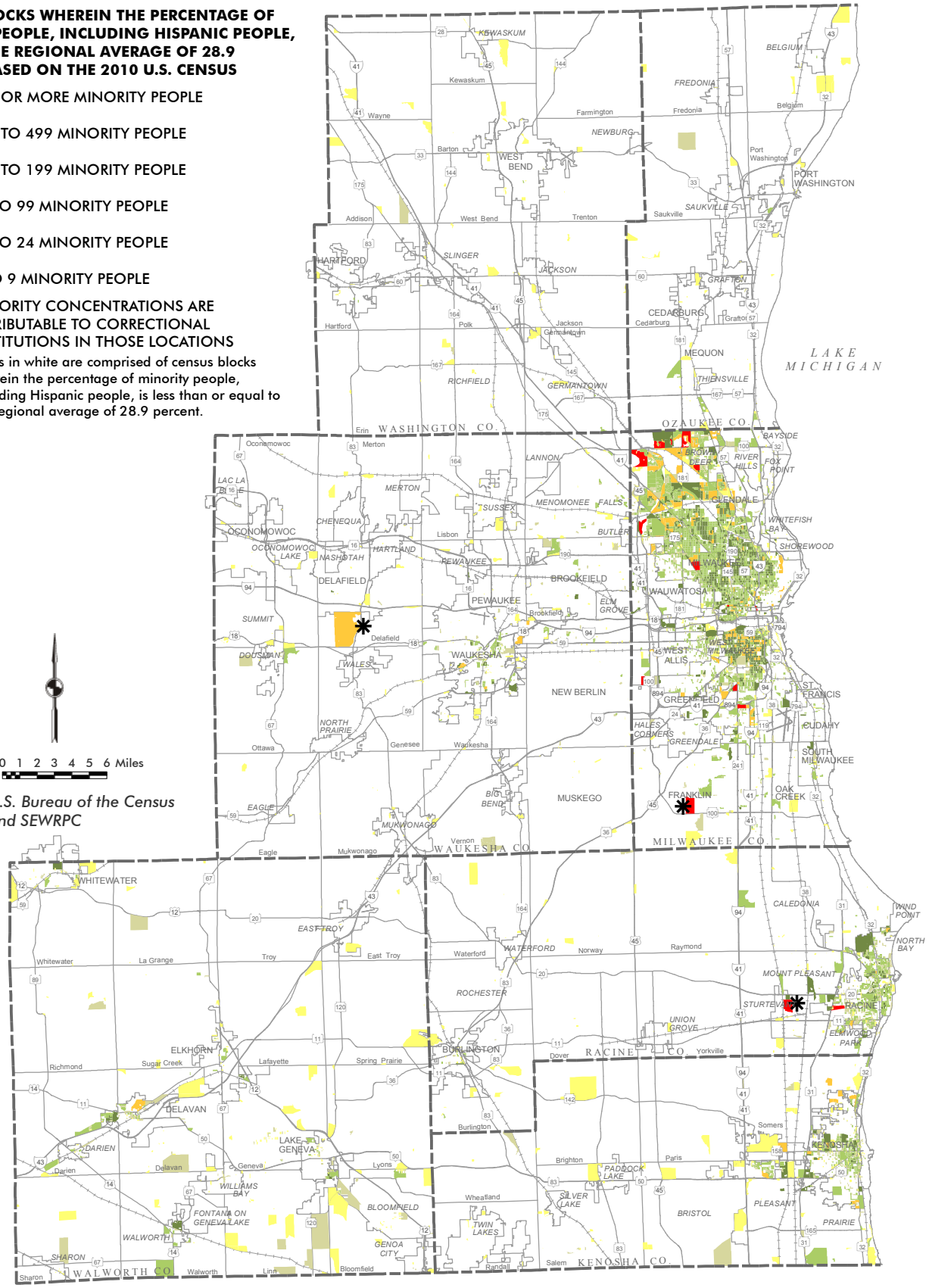


## Map H.48
## Concentrations of Total Minority Population in the Region: 2010

**CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS**

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.




*Source: U.S. Bureau of the Census and SEWRPC*

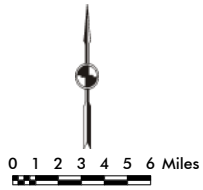
## Map H.49
## Concentrations of Families in Poverty in the Region: 2008-2012

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

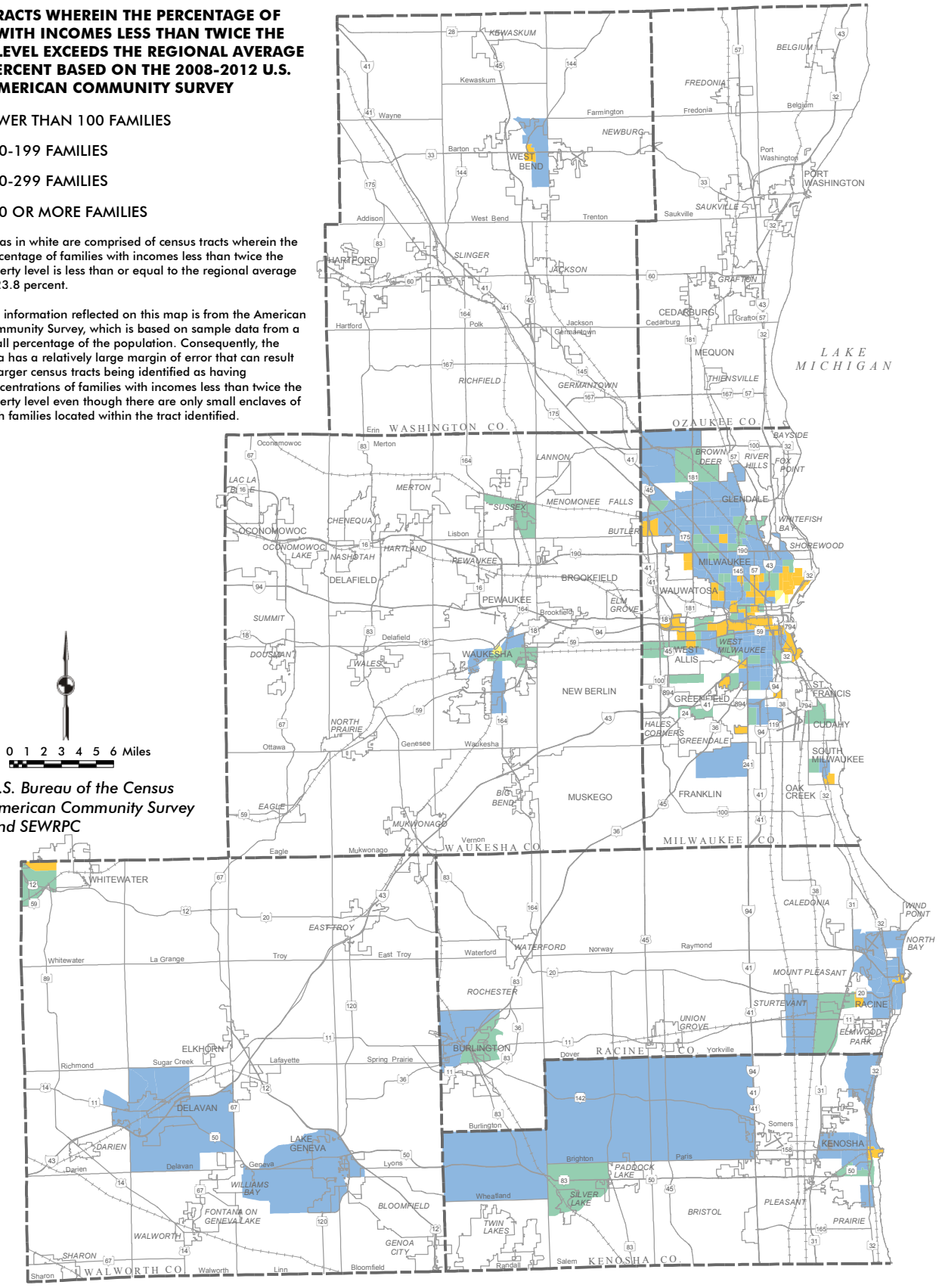
## Map H.50
## Concentrations of Families with Incomes Less Than Twice the Poverty Level in the Region: 2008-2012

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 23.8 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 23.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

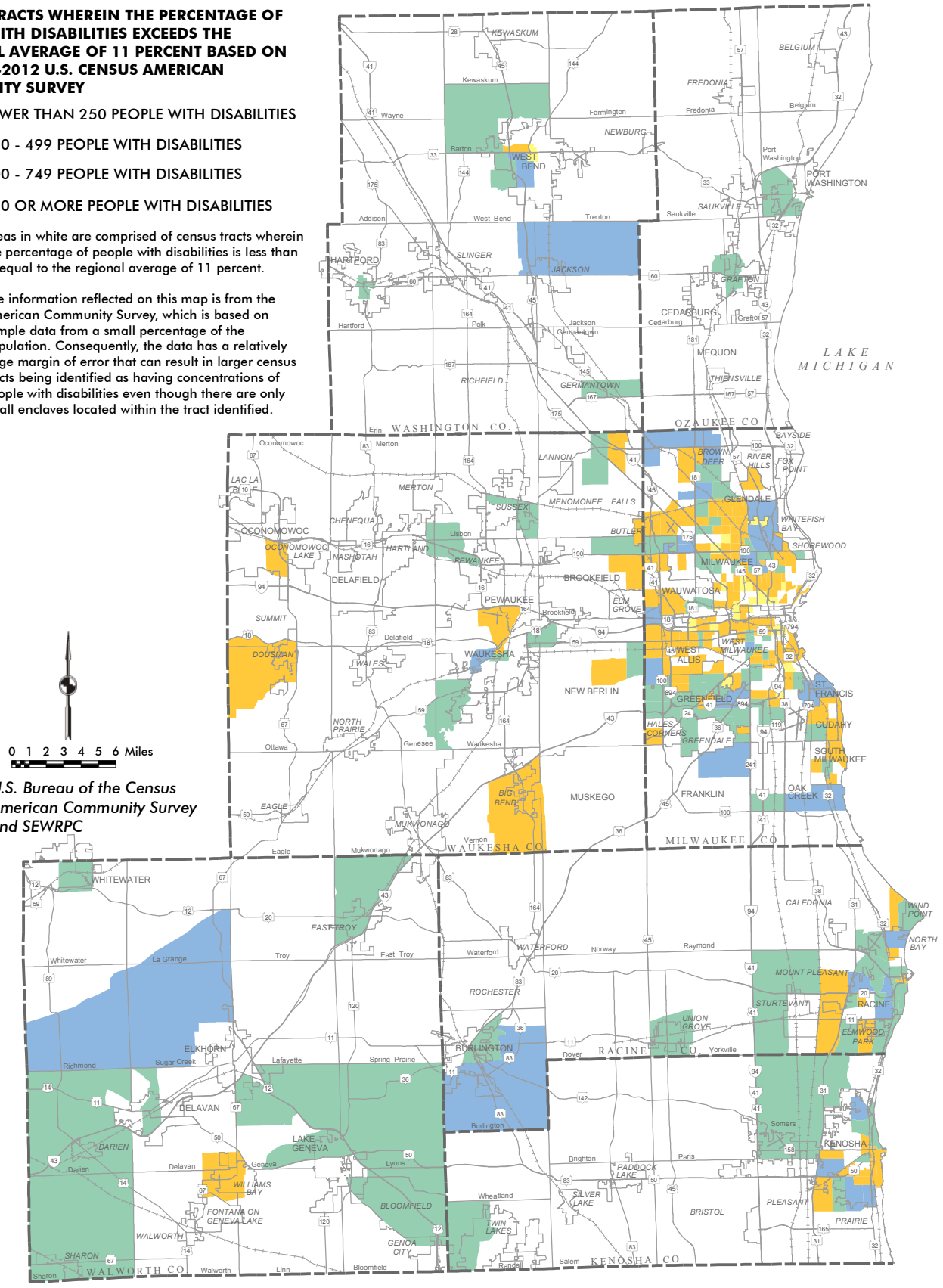
## Map H.51
## Concentrations of People with Disabilities: 2008-2012

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Table H.21
## Transit Service Quality

**Minority Population[a]**

| Plan | Excellent | | Very Good | | Good | | Basic | | Total Minority Population |
|---|---|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | People | Percent | |
| Existing - 2015 | 700 | 0.1 | 53,100 | 9.1 | 237,900 | 40.8 | 216,900 | 37.2 | 582,900 |
| Trend - 2050 | 2,700 | 0.5 | 10,600 | 1.8 | 161,300 | 27.7 | 332,000 | 57.0 | 582,900 |
| Plan - 2050 | 68,300 | 11.7 | 206,700 | 35.5 | 142,500 | 24.4 | 123,200 | 21.1 | 582,900 |

**Families in Poverty[a]**

| Plan | Excellent | | Very Good | | Good | | Basic | | Total Families in Poverty |
|---|---|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | Families | Percent | |
| Existing - 2015 | 0 | 0.0 | 5,200 | 9.9 | 20,000 | 38.2 | 17,300 | 33.1 | 52,300 |
| Trend - 2050 | 300 | 0.6 | 900 | 1.7 | 14,100 | 27.0 | 26,900 | 51.4 | 52,300 |
| Plan - 2050 | 6,300 | 12.0 | 16,900 | 32.3 | 12,000 | 22.9 | 10,300 | 19.7 | 52,300 |

**Families with Incomes Less Than Twice the Poverty Level[a]**

| Plan | Excellent | | Very Good | | Good | | Basic | | Total Families with Incomes Less Than Twice the Poverty Level |
|---|---|---|---|---|---|---|---|---|---|
| | Families | Percent | Families | Percent | Families | Percent | Families | Percent | |
| Existing - 2015 | 0 | 0.0 | 9,300 | 7.7 | 39,700 | 32.8 | 40,800 | 33.7 | 121,000 |
| Trend - 2050 | 400 | 0.3 | 1,500 | 1.2 | 26,600 | 22.0 | 60,300 | 49.8 | 121,000 |
| Plan - 2050 | 10,800 | 8.9 | 34,100 | 28.2 | 27,300 | 22.6 | 26,900 | 22.2 | 121,000 |

**People with Disabilities[a]**

| Plan | Excellent | | Very Good | | Good | | Basic | | Total Population with Disabilities |
|---|---|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | People | Percent | |
| Existing - 2015 | 200 | 0.1 | 15,200 | 6.9 | 51,500 | 23.3 | 73,500 | 33.3 | 220,600 |
| Trend - 2050 | 300 | 0.1 | 2,300 | 1.0 | 35,900 | 16.3 | 99,300 | 45.0 | 220,600 |
| Plan - 2050 | 17,000 | 7.7 | 48,300 | 21.9 | 44,000 | 19.9 | 58,500 | 26.5 | 220,600 |

[a] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

## Table H.22
## Additional Percent Receiving Excellent or Very Good Transit Service Quality Under the Preliminary Recommended Plan

**Minority Population[a]**

| Plan | Minority Population | Non-Minority Population |
|---|---|---|
| Plan - 2050 | 38 | 12 |

**Families in Poverty and with Incomes Less Than Twice the Poverty Level[a]**

| Plan | Families in Poverty | Families Not in Poverty | Families with Incomes Less Than Twice the Poverty Level | Families with Incomes More Than Twice the Poverty Level |
|---|---|---|---|---|
| Plan - 2050 | 34 | 16 | 29 | 14 |

**People with Disabilities[a]**

| Plan | People with Disabilities | People Without Disabilities |
|---|---|---|
| Plan - 2050 | 23 | 19 |

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty, families not in poverty, families with incomes less than twice the poverty level, families with incomes more than twice the poverty level, people with disabilities, and people without disabilities are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

## CRITERION 2.1.4: MINORITY POPULATIONS AND LOW-INCOME POPULATIONS BENEFITED AND IMPACTED BY NEW AND WIDENED ARTERIAL STREET AND HIGHWAY FACILITIES

This criterion provides an evaluation as to whether the existing minority populations and low-income[43] populations within the Region would receive a disproportionate share of the impacts—both costs and benefits—of the highway improvements under the Trend and Preliminary Recommended Plan. Specifically, an analysis was conducted to determine the extent to which the existing minority populations and low-income populations living in impacted areas would receive benefits—such as improved accessibility and improved safety—from the proposed new and widened arterials under the Preliminary Plan. As part of this analysis, a select link analysis was conducted to determine whether existing minority populations and low-income populations would be expected to utilize the segments of arterial streets and highways that would be improved under the Preliminary Plan. An analysis was also conducted to determine whether the existing minority populations and low-income populations would disproportionately bear any potential impacts from the new and widened facilities.

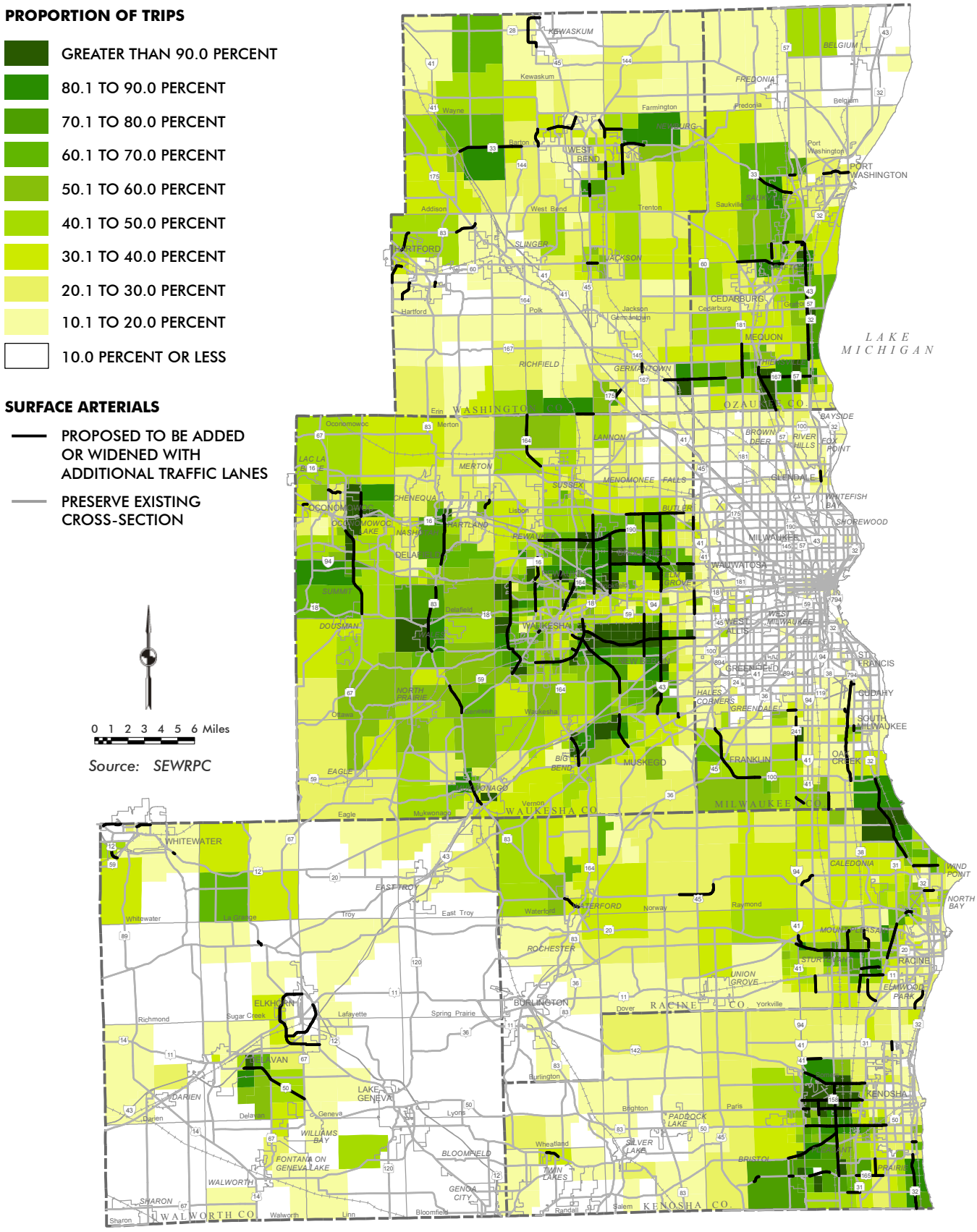
- **Benefits from Arterial Improvements:** While minority populations and low-income populations utilize public transit at a higher proportion relative to other modes of travel than white and higher-income populations in the Region, the automobile is by far the dominant mode of travel for minority populations and low-income populations. In Milwaukee County, about 81 to 88 percent of travel by minority populations to and from work is by automobile (depending on the race or ethnicity), compared to 88 percent of the white population. Similarly, in Milwaukee County about 70 percent of travel by low-income populations to and from work is by automobile, compared to 89 percent for populations of higher income.

  Maps H.52 through H.55 show the percentage of the automobile trips within each TAZ that would utilize the new or widened surface arterial and freeway segments under the Preliminary Recommended Plan. These maps were compared to locations of current concentrations of minority populations and low-income populations (as shown on Maps H.56 and H.57). With respect to surface arterials, the areas that would have the greatest use of these proposed improved arterials are largely adjacent, or near, the proposed new or widened surface arterials. The proposed new and widened surface arterials are largely located outside existing areas of minority populations and low-income populations. With respect to freeways, the segments of freeway proposed to be widened under the Preliminary Plan would directly serve areas of minority population and low-income population, particularly in Milwaukee County. As a result, it is expected that minority populations and low-income populations, particularly those residing adjacent to the freeway widenings, would be utilizing and experiencing benefit from the expected improvement in accessibility associated with the proposed widenings.

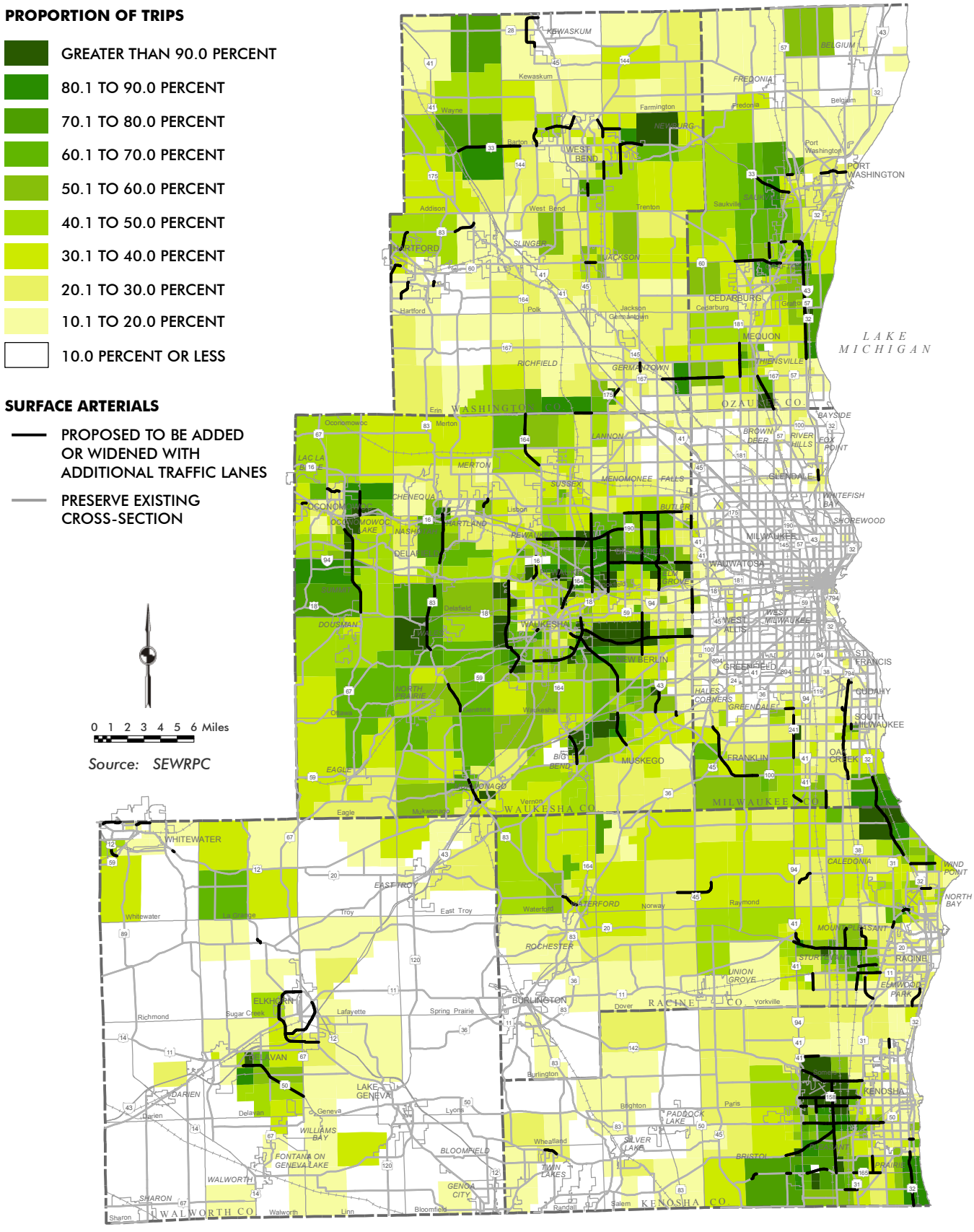
  Improvements in accessibility to jobs and other activity areas for existing minority populations and low-income populations were analyzed

[43] *For the purposes of this criterion, a low-income person is defined as a person residing in a household with an income level at or below the poverty level (about $22,113 for a family of four in 2010).*

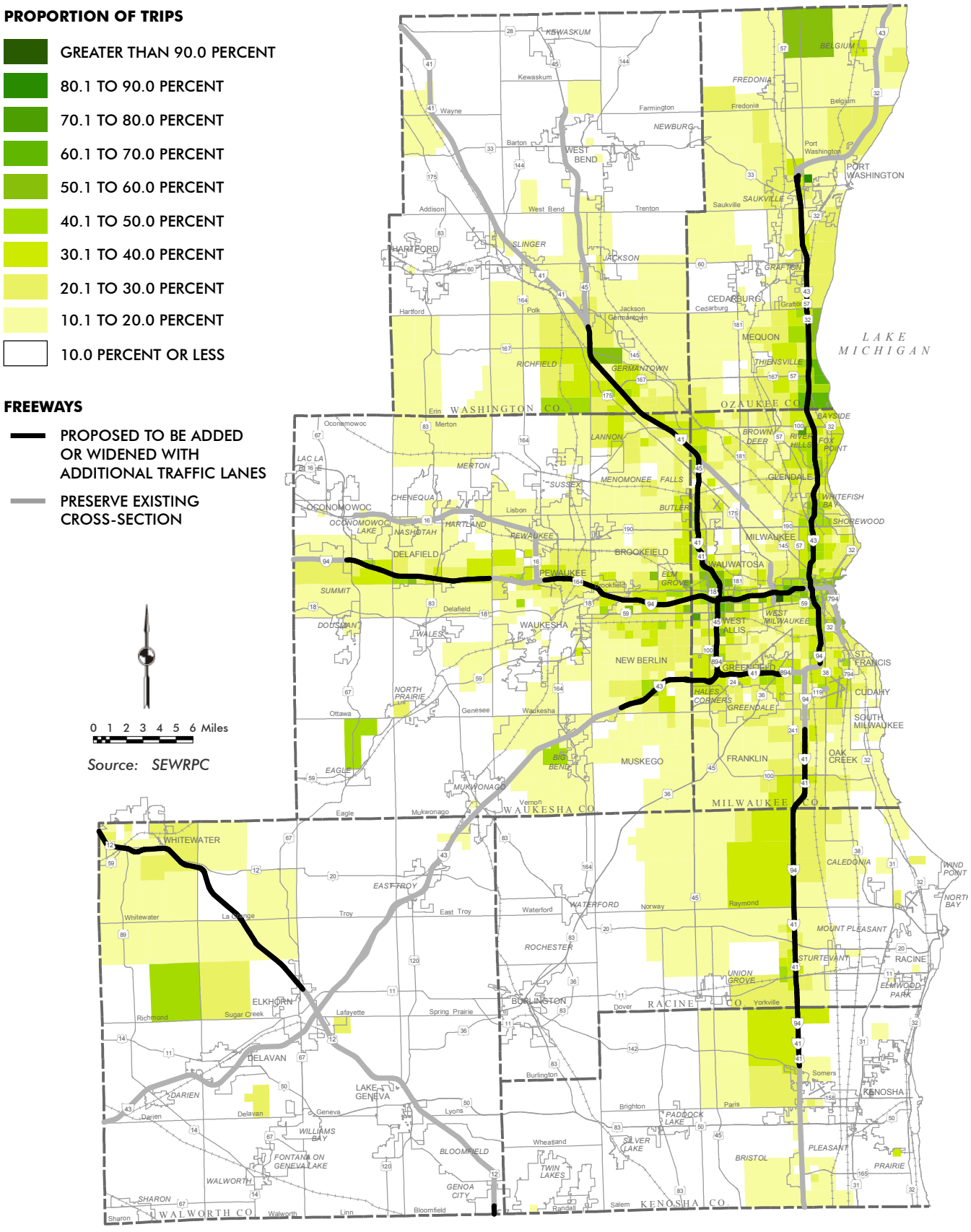
## Map H.52
## Proportion of Automobile Trips Using the New or Widened Surface Arterial Segments Within Each Traffic Analysis Zone: Trend



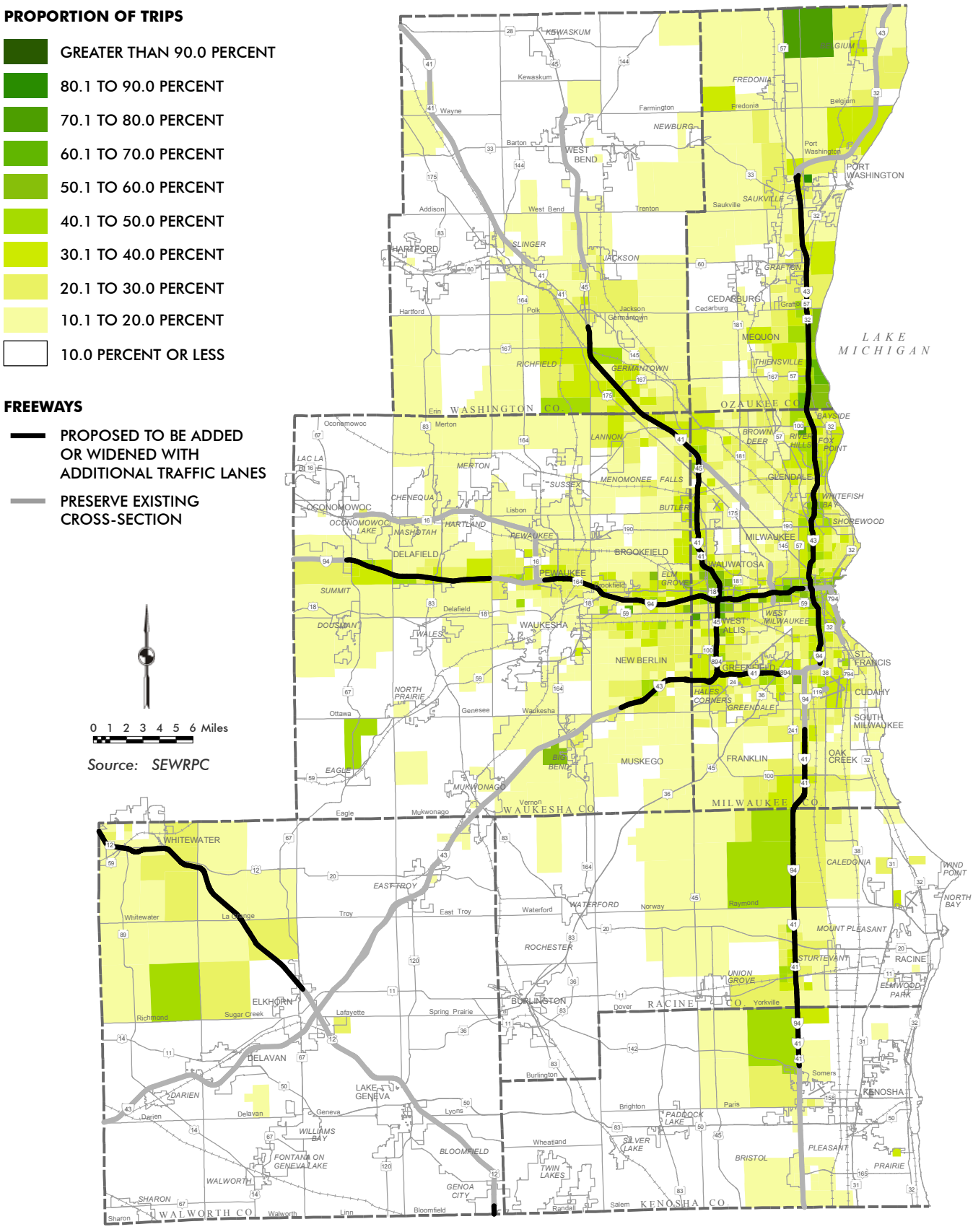
## Map H.53
## Proportion of Automobile Trips Using the New or Widened Surface Arterial Segments Within Each Traffic Analysis Zone: Preliminary Recommended Plan



## Map H.54
## Proportion of Automobile Trips Using the New or Widened Freeway Segments Within Each Traffic Analysis Zone: Trend



## Map H.55
## Proportion of Automobile Trips Using the New or Widened Freeway Segments Within Each Traffic Analysis Zone: Preliminary Recommended Plan

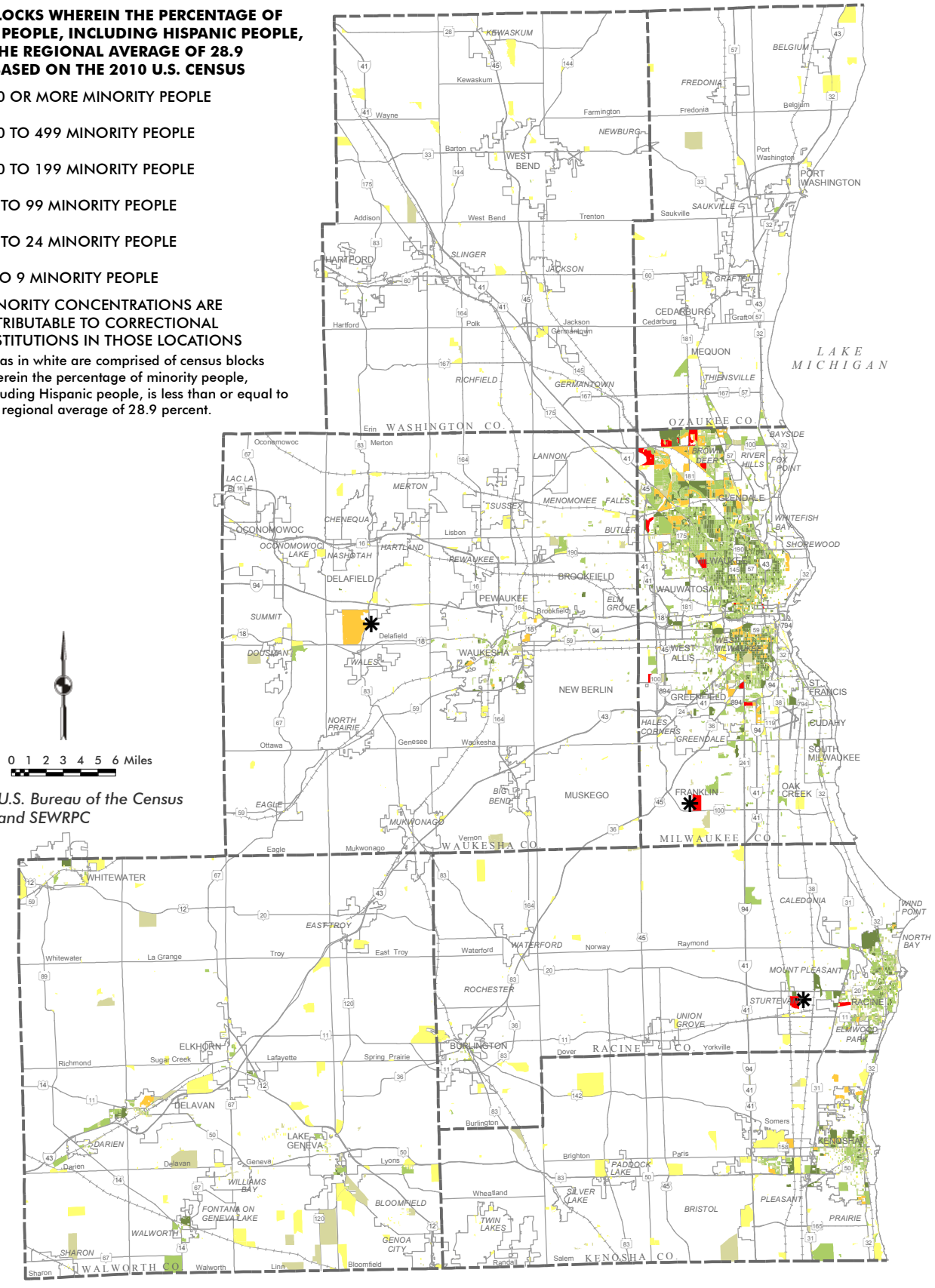


## Map H.56
## Concentrations of Total Minority Population in the Region: 2010

**CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS**

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.




*Source: U.S. Bureau of the Census and SEWRPC*

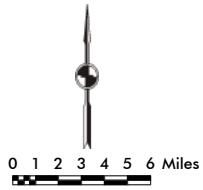
## Map H.57
## Concentrations of Families in Poverty in the Region: 2008-2012

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

in Criterion 2.1.1 (Level of Accessibility to Jobs and Activity Centers for Minority Populations and Low-Income Populations by Mode). The results of this criterion indicated that, even as traffic volumes increase through the year 2050, the additional arterial street and highway system capacity under the Preliminary Plan would modestly improve accessibility to jobs and other activity centers for minority populations and low-income populations. The Preliminary Plan was found to provide similar benefit in terms of accessibility to jobs and other activity areas by automobile for existing minority populations and low-income populations to the Trend.

With respect to safety, rear-end collision rates have historically been 5 to 20 times higher on congested freeways (with the highest rear-end crash rates on the most extremely congested freeways). By improving safety through the reduction in congestion along the freeway segments that would be widened, there would also be direct benefits to the existing minority populations and low-income populations that would use the widened freeway segments under the Preliminary Plan.

- **Impacts of Widenings and New Facilities:** Maps H.58 through H.63 compare the locations of the highway capacity improvements under the Preliminary Plan to the areas with current concentrations of minority populations and low-income populations. In general, no area of the Region, or minority or low-income community, would be expected to disproportionately bear the impact of these highway improvements. Proposed surface arterial improvements are largely located outside areas of existing minority populations and low-income populations, and therefore their widening, new construction, and subsequent operation would be expected to have minimal negative impacts on minority populations and low-income populations. With respect to the proposed freeway widenings and new construction, some segments are located adjacent to existing minority populations, but most segments are not.

- **Impacts from Freeway Widenings:** Maps H.64 and H.65 show the locations of freeways that would be widened under the Trend and Preliminary Plan compared to the existing locations of areas with concentrations of minority populations and low-income populations. Table H.23 shows the estimated existing minority populations and low-income populations residing in proximity (one-quarter mile to one-half mile) to freeway widenings. Under the Trend and Preliminary Plan, about 81,800 minority people and 7,500 families in poverty would reside within one-half mile of a freeway widening, while 38,300 minorities and 3,600 families in poverty would reside within one-quarter mile. The proportion of the minority population (about 40 percent) and families in poverty (about 15 percent) residing within one-half mile or one-quarter mile would exceed the regional averages of 28.9 percent and 10.3 percent, respectively. This result should be expected, as about 95 percent of the minority populations and low-income populations residing adjacent to the proposed freeway widenings under the Trend and Preliminary Plan are in Milwaukee County, where about 46 percent of the population is minority and about 17 percent of families are in poverty.

  Another way of examining the relative impact of freeway widenings is to compare the proportion of the minority population and families in poverty to the non-minority population and families not in poverty

## Map H.58
## Comparison of Existing Concentrations of Total Minority Population in the Region to Highway Element: Trend

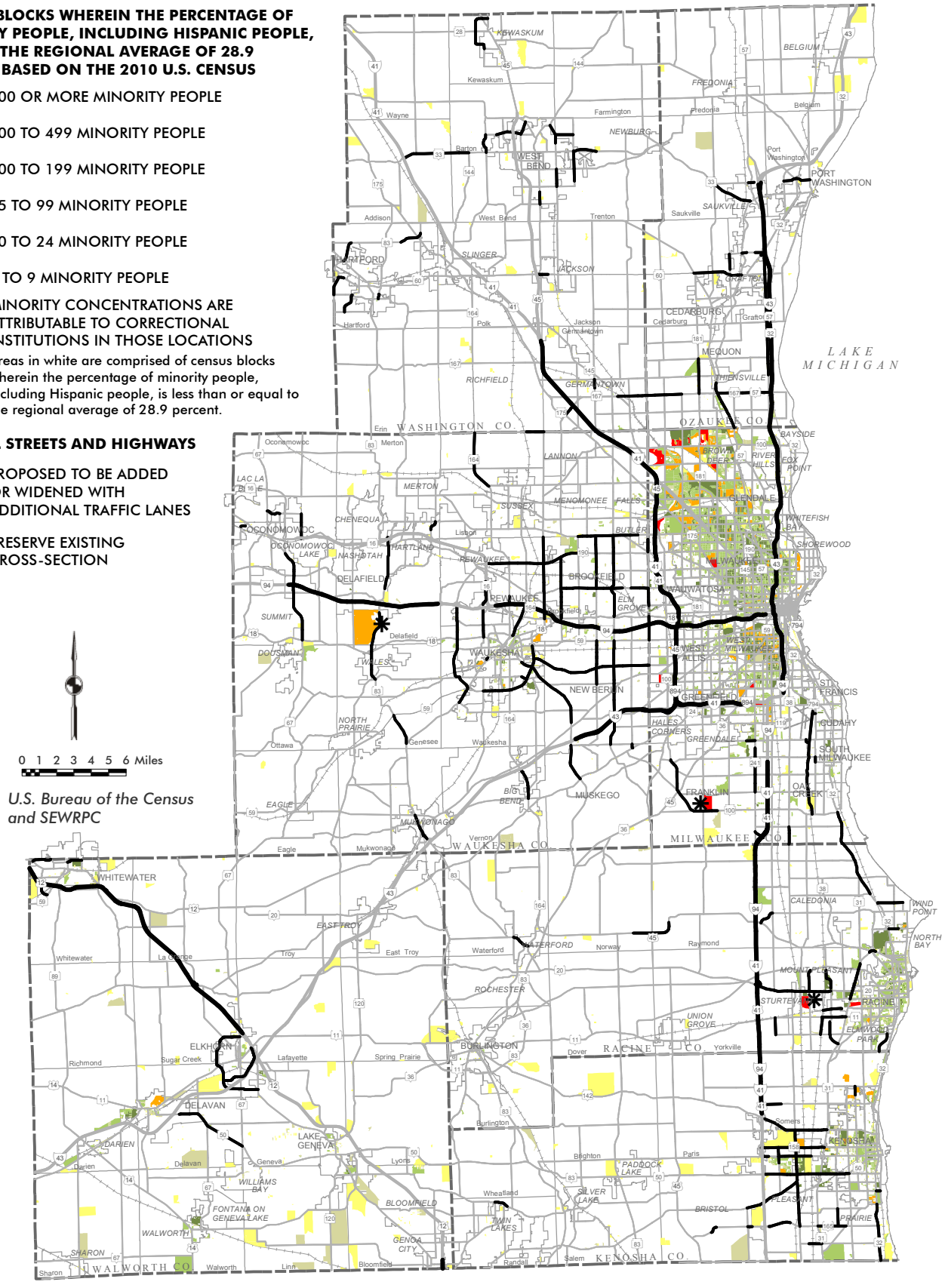
**CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS**

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

**ARTERIAL STREETS AND HIGHWAYS**

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION




*Source: U.S. Bureau of the Census and SEWRPC*

# Map H.59
# Comparison of Existing Concentrations of Families in Poverty in the Region to Highway Element: Trend

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

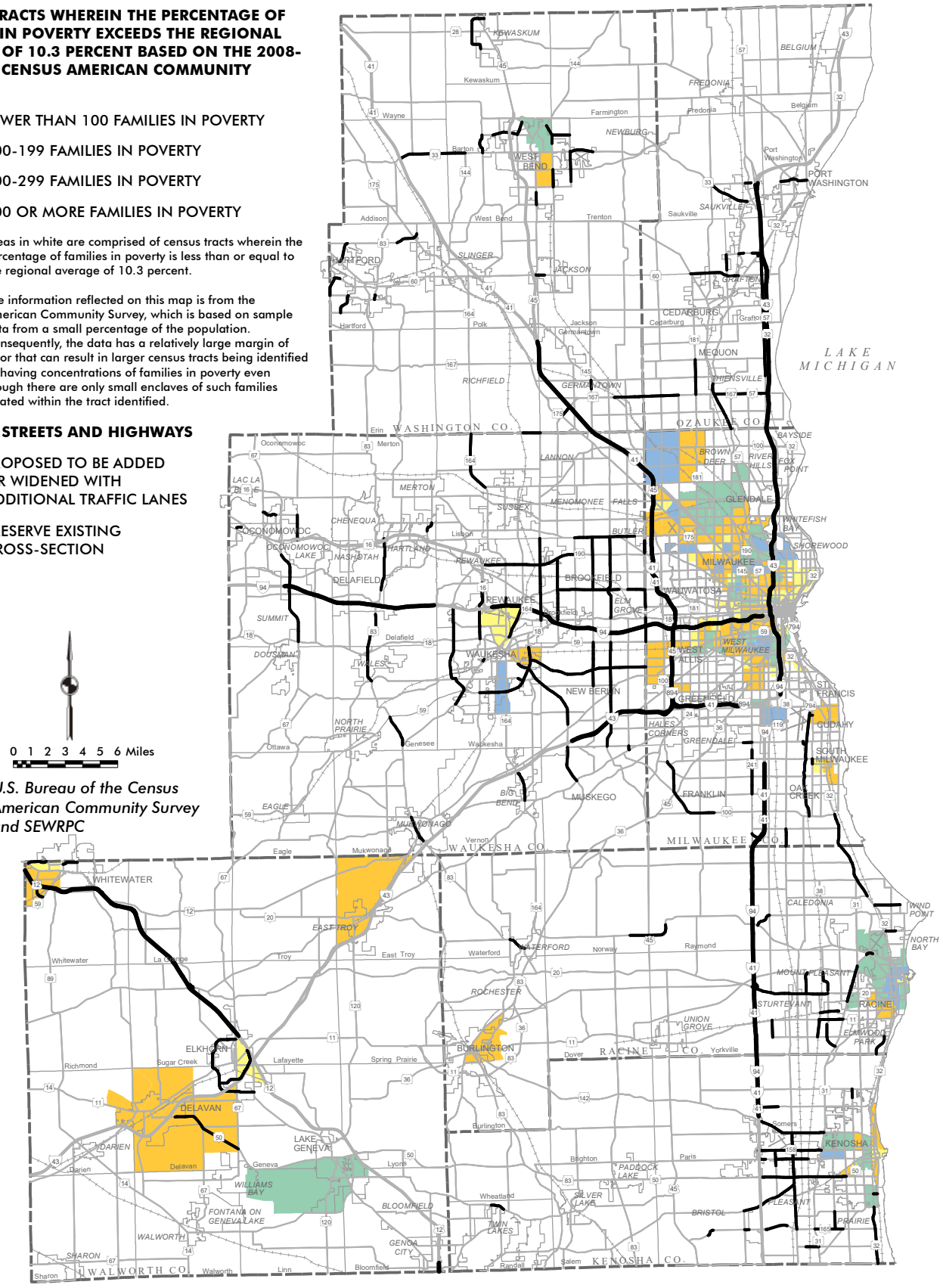
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

**ARTERIAL STREETS AND HIGHWAYS**

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.60
## Comparison of Existing Concentrations of Total Minority Population in the Region to Highway Element: Preliminary Recommended Plan

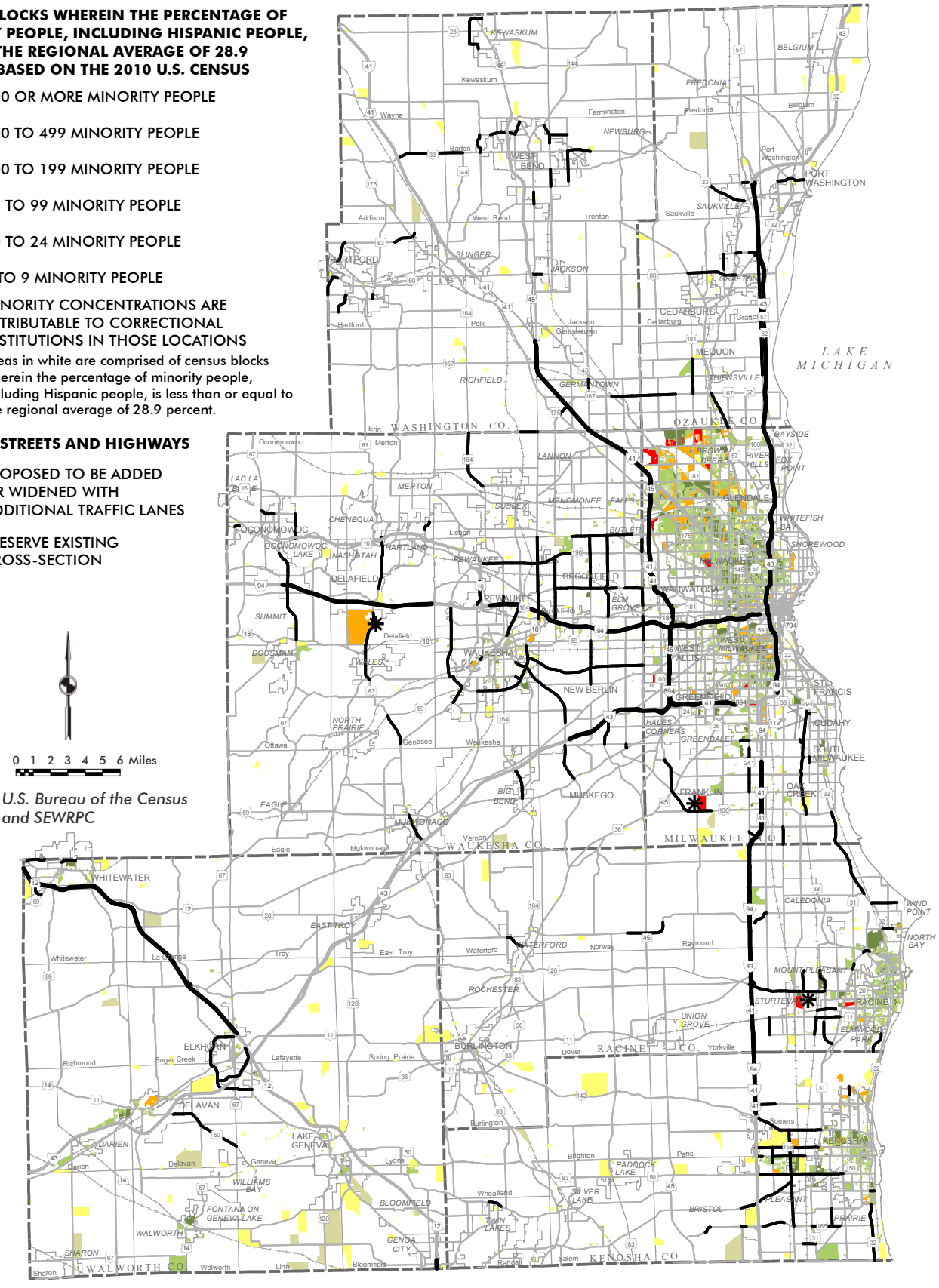
**CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS**

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

**ARTERIAL STREETS AND HIGHWAYS**

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION




*Source: U.S. Bureau of the Census and SEWRPC*

## Map H.61
## Comparison of Existing Concentrations of Families in Poverty in the Region to Highway Element: Preliminary Recommended Plan

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

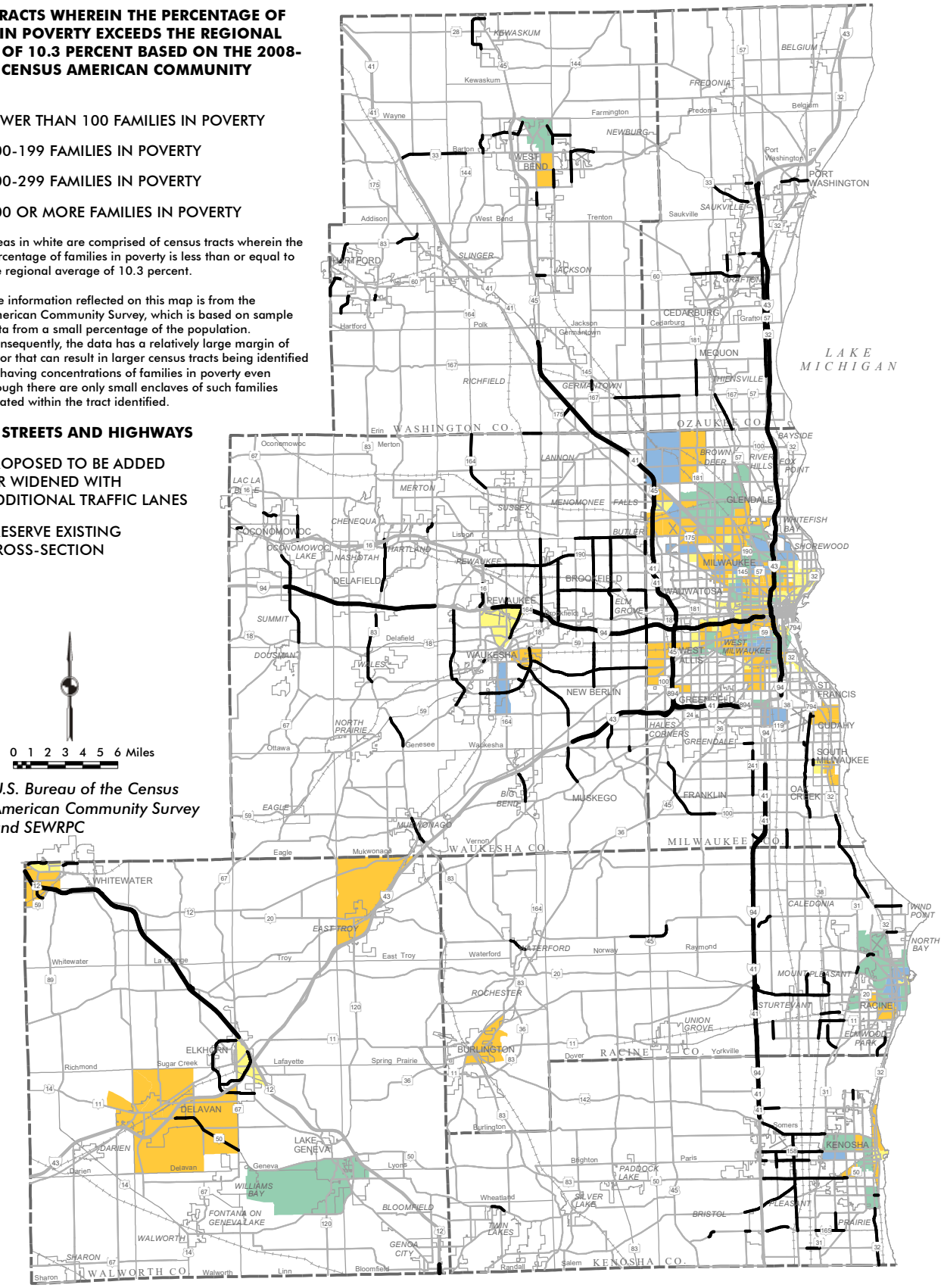
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

**ARTERIAL STREETS AND HIGHWAYS**

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.62
## Comparison of Concentrations of Year 2010 Races/Ethnicities in the Region to Highway Element: Trend

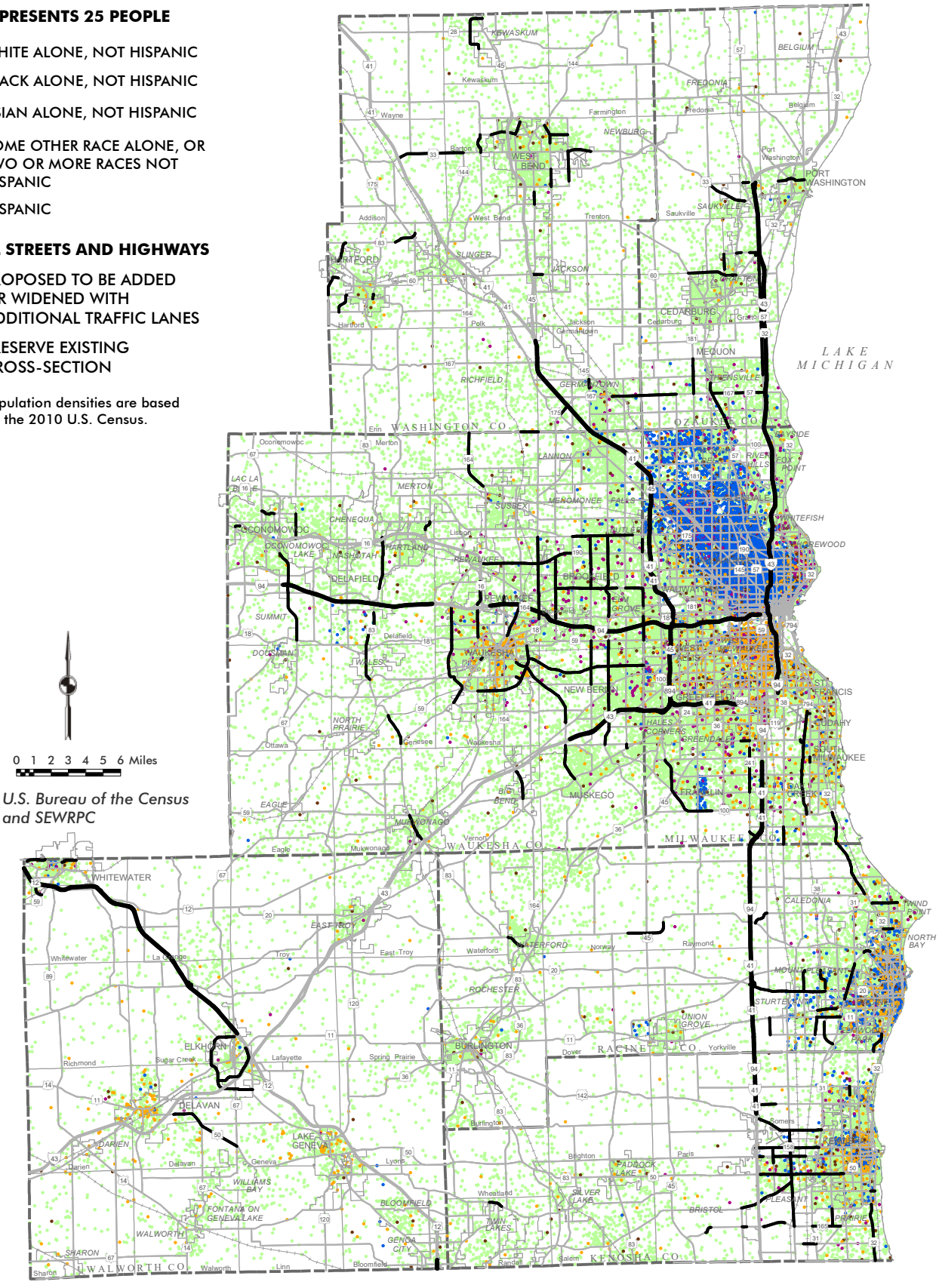
**1 DOT REPRESENTS 25 PEOPLE**

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

**ARTERIAL STREETS AND HIGHWAYS**

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

Note: Population densities are based on the 2010 U.S. Census.




*Source: U.S. Bureau of the Census and SEWRPC*

## Map H.63
## Comparison of Concentrations of Year 2010 Races/Ethnicities in the Region to Highway Element: Preliminary Recommended Plan

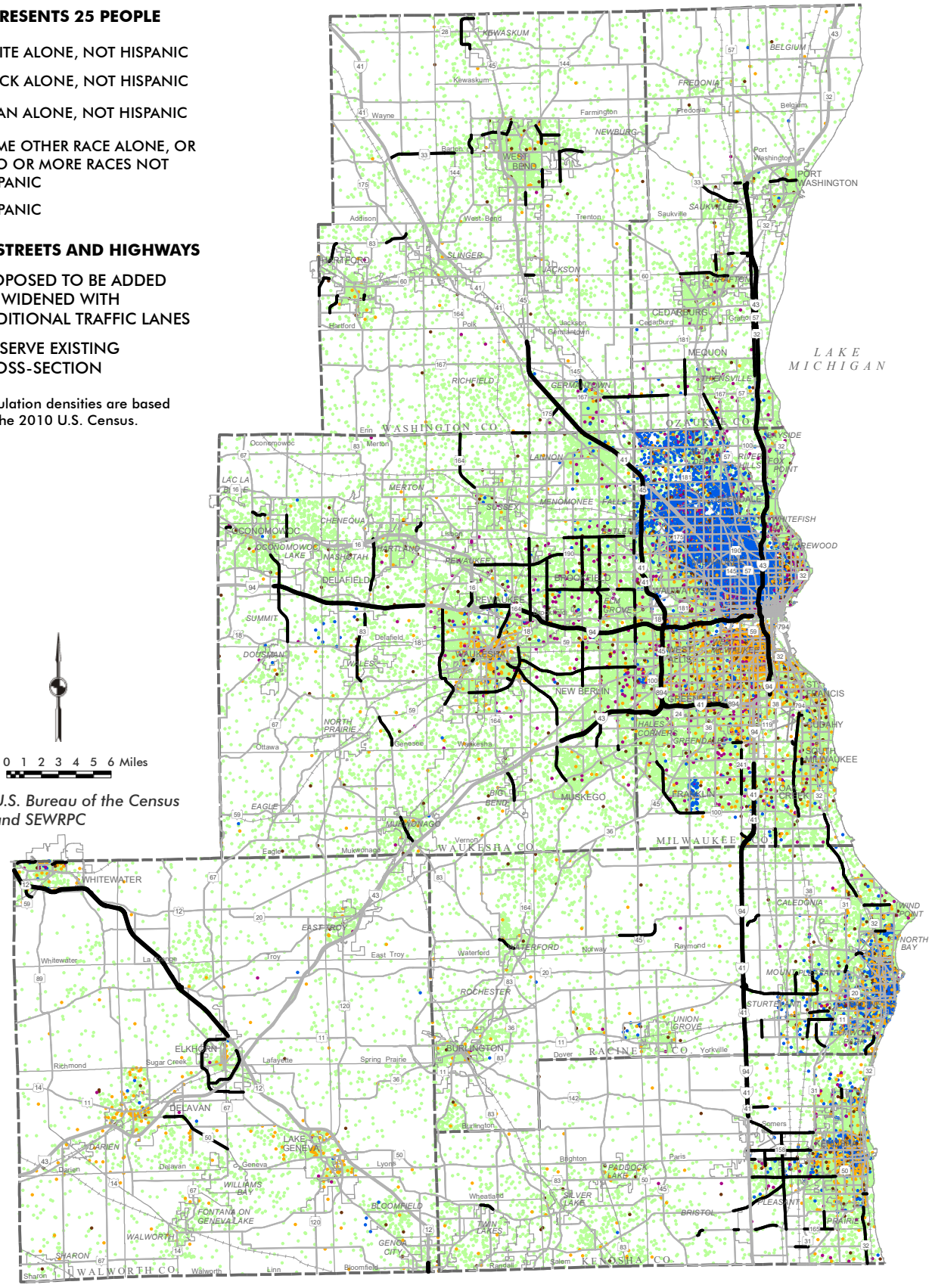
**1 DOT REPRESENTS 25 PEOPLE**

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

**ARTERIAL STREETS AND HIGHWAYS**

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

Note: Population densities are based on the 2010 U.S. Census.




*Source: U.S. Bureau of the Census and SEWRPC*

## Map H.64
## Comparison of Existing Concentrations of Total Minority Population in the Region to Freeways: Trend and Preliminary Recommended Plan

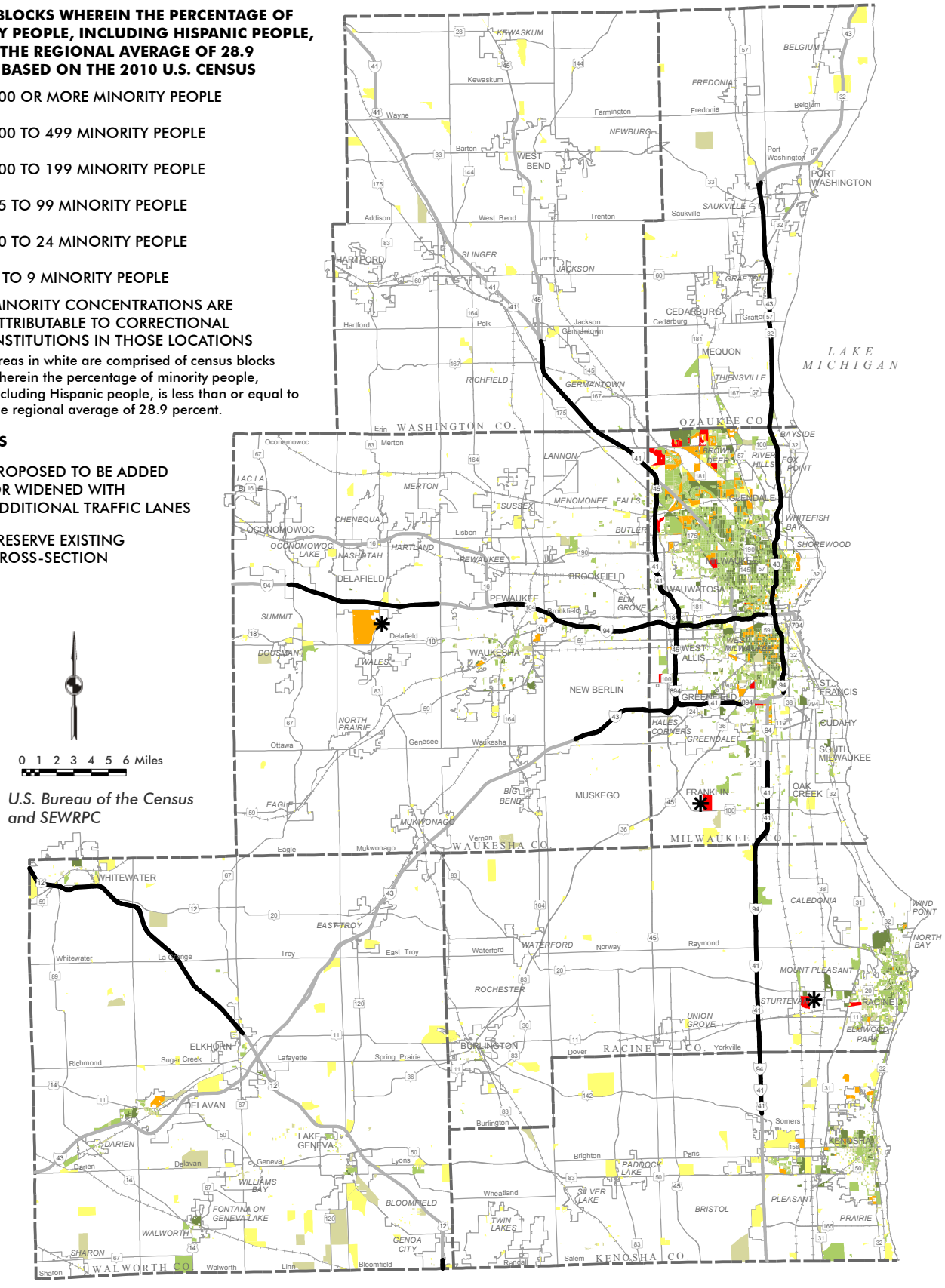
**CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS**

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

**FREEWAYS**

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION




*Source: U.S. Bureau of the Census and SEWRPC*

## Map H.65
## Comparison of Existing Concentrations of Families in Poverty in the Region to Freeways: Trend and Preliminary Recommended Plan

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

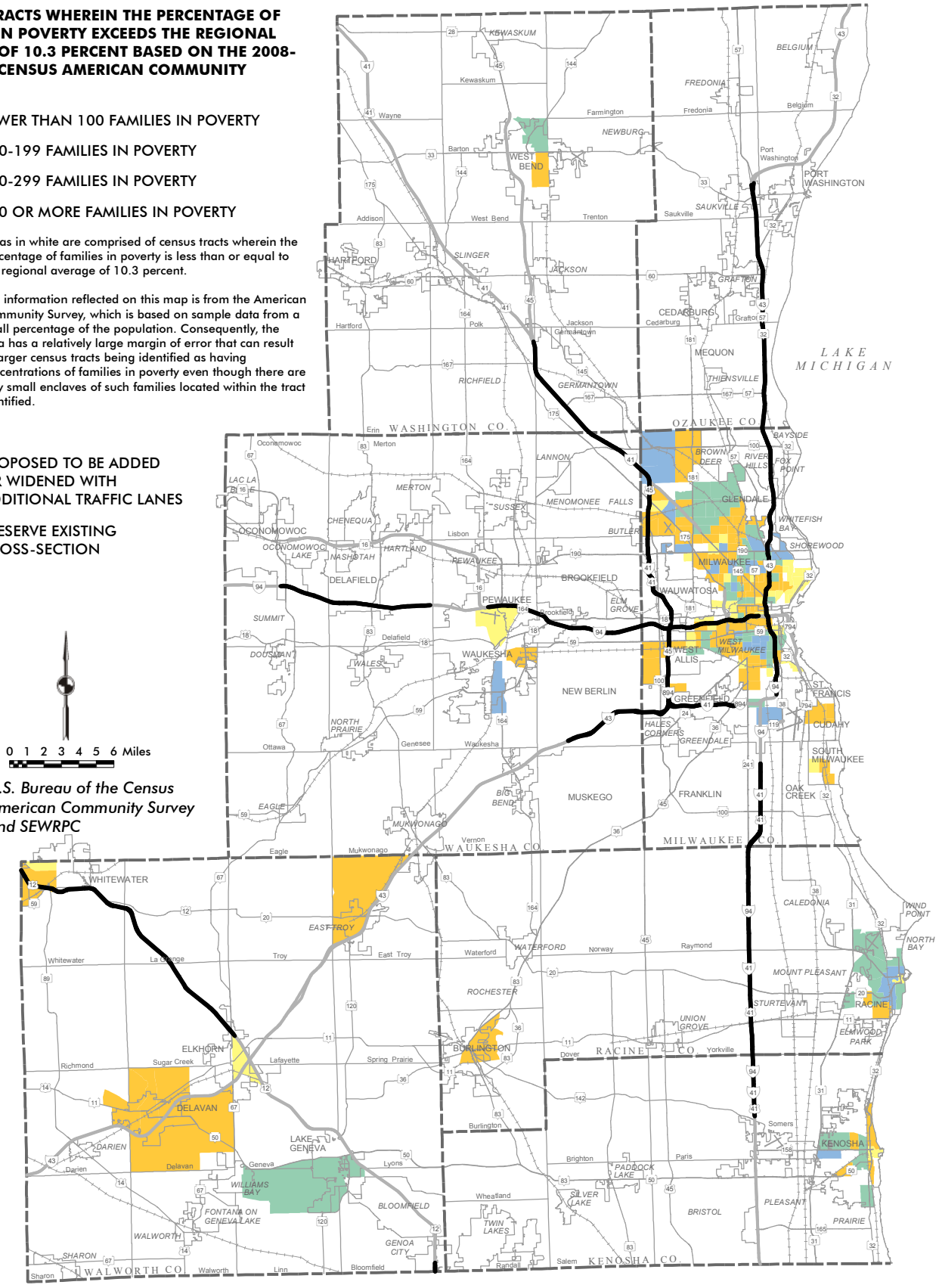
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

**FREEWAYS**

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Table H.23
## Minority Population and Families in Poverty Residing in Proximity to a Freeway Widening[a]

**Population and Families Within One-Half Mile**

| Plan | Total Population Near a Freeway Widening | Minority Population | | Total Families Near a Freeway Widening | Families in Poverty | |
|---|---|---|---|---|---|---|
| | | Near a Freeway Widening | Percent of Total | | Near a Freeway Widening | Percent of Total |
| Trend/Plan | 206,900 | 81,800 | 39.5 | 51,700 | 7,500 | 14.5 |

**Population and Families Within One-Quarter Mile**

| Plan | Total Population Near a Freeway Widening | Minority Population | | Total Families Near a Freeway Widening | Families in Poverty | |
|---|---|---|---|---|---|---|
| | | Near a Freeway Widening | Percent of Total | | Near a Freeway Widening | Percent of Total |
| Trend/Plan | 93,600 | 38,300 | 40.9 | 24,900 | 3,600 | 14.5 |

[a] *Total population and minority population are based on the 2010 U.S. Census and total families and families in poverty are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

## Table H.24
## Percent of Total Minority/Non-Minority Population and Families in Poverty/Families Not in Poverty Residing in Proximity to a Freeway Widening[a]

**Population and Families Within One-Half Mile**

| Plan | Minority Population | Non-Minority Population | Families in Poverty | Families Not in Poverty |
|---|---|---|---|---|
| Trend/Plan | 14 | 9 | 14 | 10 |

**Population and Families Within One-Quarter Mile**

| Plan | Minority Population | Non-Minority Population | Families in Poverty | Families Not in Poverty |
|---|---|---|---|---|
| Trend/Plan | 7 | 4 | 7 | 5 |

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty and families not in poverty are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

that reside in proximity to the freeway widenings, as shown in Table H.24. Under the Preliminary Plan, the existing minority population and families in poverty that reside within one-half mile of freeway widenings would represent about 14 percent of the total minority population and families in poverty, compared to about 9 to 10 percent of the non-minority population and families not in poverty. The existing minority population and families in poverty that reside within one-quarter mile of freeway widenings would represent about 7 percent of the total minority population and families in poverty, compared to about 4 to 5 percent of the non-minority population and families not in poverty.

## CRITERION 2.1.5: TRANSPORTATION-RELATED AIR POLLUTION IMPACTS ON MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

Automobiles and trucks traveling on arterial streets and highways emit air pollutants that generally exist in higher concentrations in the atmosphere near the arterial streets and highways with the most traffic, such as the Region's freeways. The lower speeds and starting/stopping of vehicles associated with congested conditions increases the level of transportation air pollutant emissions. Individuals living in proximity to the Region's freeways may be exposed to higher levels of transportation-related air pollutants.

Due in large part to past, current, and future Federal fuel and vehicle fuel economy standards and improved emissions controls, transportation-related air pollutant emissions in the Region have been declining, and are expected to continue to decline in the future. As indicated in Criterion 1.4.4 (Greenhouse Gas Emissions and Other Air Pollutants), this decline is expected to continue through the year 2050, even with the projected 25 and 26 percent increase in vehicle-miles of travel for the Preliminary Recommended Plan and the Trend, respectively. While the expected reductions in emissions are similar between the Trend and Preliminary Plan, the Preliminary Plan would be expected to result in lower levels of transportation-related air pollutant emissions (generally about 1 to 2 percent lower than the Trend), thereby reducing the exposure of residents of the region to these pollutants, including minority populations and low-income populations.

Even with the expected significant reductions in transportation-related air pollutant emissions, residents of the Region, including minority populations and families in poverty, living in proximity to roads with higher traffic volumes, such as freeways, may be exposed to higher levels of transportation-related air pollutants. The following is an assessment of whether there would be an expected disproportionate impact on, or over-representation of, existing minority populations and low-income populations residing along existing and new freeways under the Trend and Preliminary Plan.

- **Evaluation Results:** Tables H.25 and H.26 show the existing total and minority population and the existing total number of families and families in poverty that reside in proximity to the freeway system under the Trend and Preliminary Plan. Maps H.66 through H.67 show the freeway system, including those freeway segments to be widened, under the Trend and Preliminary Plan compared to locations of existing areas with concentrations of minority populations and low-income populations. The segments of freeways proposed to be widened and the extent of the freeways under the Trend and Preliminary Plan are the same. The percentages of the total population located in proximity to the freeway system under the Trend and Preliminary Plan that are of minority population or of low income are generally similar (equal or within a few percent lower or higher) to the percentage of the total minority population and low-income population residing within each county. At the regional level, about 36 percent of the existing population residing within one-half mile or one-quarter mile of a freeway are minorities, compared to about 29 percent of the total population of the Region that are minorities. With regards to existing low-income populations, about 14 percent of the families residing within one-half mile or one-quarter mile of a freeway are in poverty, compared to 10 percent of the total families in the Region.

## Table H.25
## Total and Minority Populations Residing in Proximity to a Freeway[a]

**Population Within One-Half Mile**

| County | Total and Minority Populations | | | Total and Minority Populations Within One-Half Mile of Existing Freeways | | |
|---|---|---|---|---|---|---|
| | | Minority Population | | | Minority Population | |
| | Total Population | Population | Percent of Total | Total Population | Population | Percent of Total |
| Kenosha | 166,426 | 36,534 | 22.0 | 1,550 | 230 | 14.8 |
| Milwaukee | 947,735 | 432,777 | 45.7 | 239,200 | 110,400 | 46.2 |
| Ozaukee | 86,395 | 5,706 | 6.6 | 9,500 | 800 | 8.4 |
| Racine | 195,408 | 49,994 | 25.6 | 1,200 | 90 | 7.5 |
| Walworth | 102,228 | 13,538 | 13.2 | 16,600 | 2,400 | 14.5 |
| Washington | 131,887 | 7,539 | 5.7 | 15,200 | 840 | 5.5 |
| Waukesha | 389,891 | 36,777 | 9.4 | 46,300 | 4,400 | 9.5 |
| Region | 2,019,970 | 582,865 | 28.9 | 329,550 | 119,160 | 36.2 |

**Population Within One-Quarter Mile**

| County | Total and Minority Populations | | | Total and Minority Populations Within One-Quarter Mile of Existing Freeways | | |
|---|---|---|---|---|---|---|
| | | Minority Population | | | Minority Population | |
| | Total Population | Population | Percent of Total | Total Population | Population | Percent of Total |
| Kenosha | 166,426 | 36,534 | 22.0 | 520 | 35 | 6.7 |
| Milwaukee | 947,735 | 432,777 | 45.7 | 109,700 | 49,900 | 45.5 |
| Ozaukee | 86,395 | 5,706 | 6.6 | 3,400 | 310 | 9.1 |
| Racine | 195,408 | 49,994 | 25.6 | 530 | 45 | 8.5 |
| Walworth | 102,228 | 13,538 | 13.2 | 6,100 | 780 | 12.8 |
| Washington | 131,887 | 7,539 | 5.7 | 7,100 | 370 | 5.2 |
| Waukesha | 389,891 | 36,777 | 9.4 | 21,300 | 2,200 | 10.3 |
| Region | 2,019,970 | 582,865 | 28.9 | 148,650 | 53,640 | 36.1 |

[a] *Total population and minority population are based on the 2010 U.S. Census.*

*Source: U.S. Bureau of the Census and SEWRPC*

As shown in Table H.27, at the regional level, about 20 percent each of existing minorities and of families in poverty are located within one-half mile of a freeway, while about 10 percent are located within one-quarter mile, compared to about 15 percent each of existing non-minorities and of families not in poverty that reside within one-half mile of a freeway and about 7 percent of those same categories who are within one-quarter mile of a freeway. Within each county, the percentages of existing total minority populations and non-minority populations, and the percentages of existing families in poverty and families not in poverty, that reside within one-half mile or one-quarter mile of a freeway are generally equal or within several percent lower or higher.

## Table H.26
## Total Families and Families in Poverty Residing in Proximity to a Freeway[a]

**Families Within One-Half Mile**

| County | Total Families and Families in Poverty in the Region | | | Total Families and Families in Poverty Within One-Half Mile of Existing Freeways | | |
|---|---|---|---|---|---|---|
| | | Families in Poverty | | | Families in Poverty | |
| | Total Families | Families | Percent of Total | Total Families | Families | Percent of Total |
| Kenosha | 42,167 | 4,024 | 9.5 | 930 | 30 | 3.2 |
| Milwaukee | 218,244 | 35,962 | 16.5 | 54,000 | 10,300 | 19.1 |
| Ozaukee | 24,344 | 642 | 2.6 | 2,300 | 60 | 2.6 |
| Racine | 50,148 | 4,630 | 9.2 | 570 | 20 | 3.5 |
| Walworth | 26,268 | 2,102 | 8.0 | 4,900 | 470 | 9.6 |
| Washington | 37,757 | 1,388 | 3.7 | 4,300 | 120 | 2.8 |
| Waukesha | 108,845 | 3,586 | 3.3 | 13,300 | 420 | 3.2 |
| Region | 507,773 | 52,334 | 10.3 | 80,300 | 11,280 | 14.2 |

**Families Within One-Quarter Mile**

| County | Total Families and Families in Poverty in the Region | | | Total Families and Families in Poverty Within One-Quarter Mile of Existing Freeways | | |
|---|---|---|---|---|---|---|
| | | Families in Poverty | | | Families in Poverty | |
| | Total Families | Families | Percent of Total | Total Families | Families | Percent of Total |
| Kenosha | 42,167 | 4,024 | 9.5 | 470 | 20 | 4.3 |
| Milwaukee | 218,244 | 35,962 | 16.5 | 25,300 | 4,800 | 19.0 |
| Ozaukee | 24,344 | 642 | 2.6 | 1,100 | 30 | 2.7 |
| Racine | 50,148 | 4,630 | 9.2 | 290 | 10 | 3.4 |
| Walworth | 26,268 | 2,102 | 8.0 | 2,600 | 250 | 9.6 |
| Washington | 37,757 | 1,388 | 3.7 | 2,100 | 60 | 2.9 |
| Waukesha | 108,845 | 3,586 | 3.3 | 6,700 | 210 | 3.1 |
| Region | 507,773 | 52,334 | 10.3 | 38,560 | 5,380 | 14.0 |

[a] *Total families and families in poverty are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Map H.66
## Comparison of Existing Concentrations of Total Minority Population in the Region to Freeways: Trend and Preliminary Recommended Plan

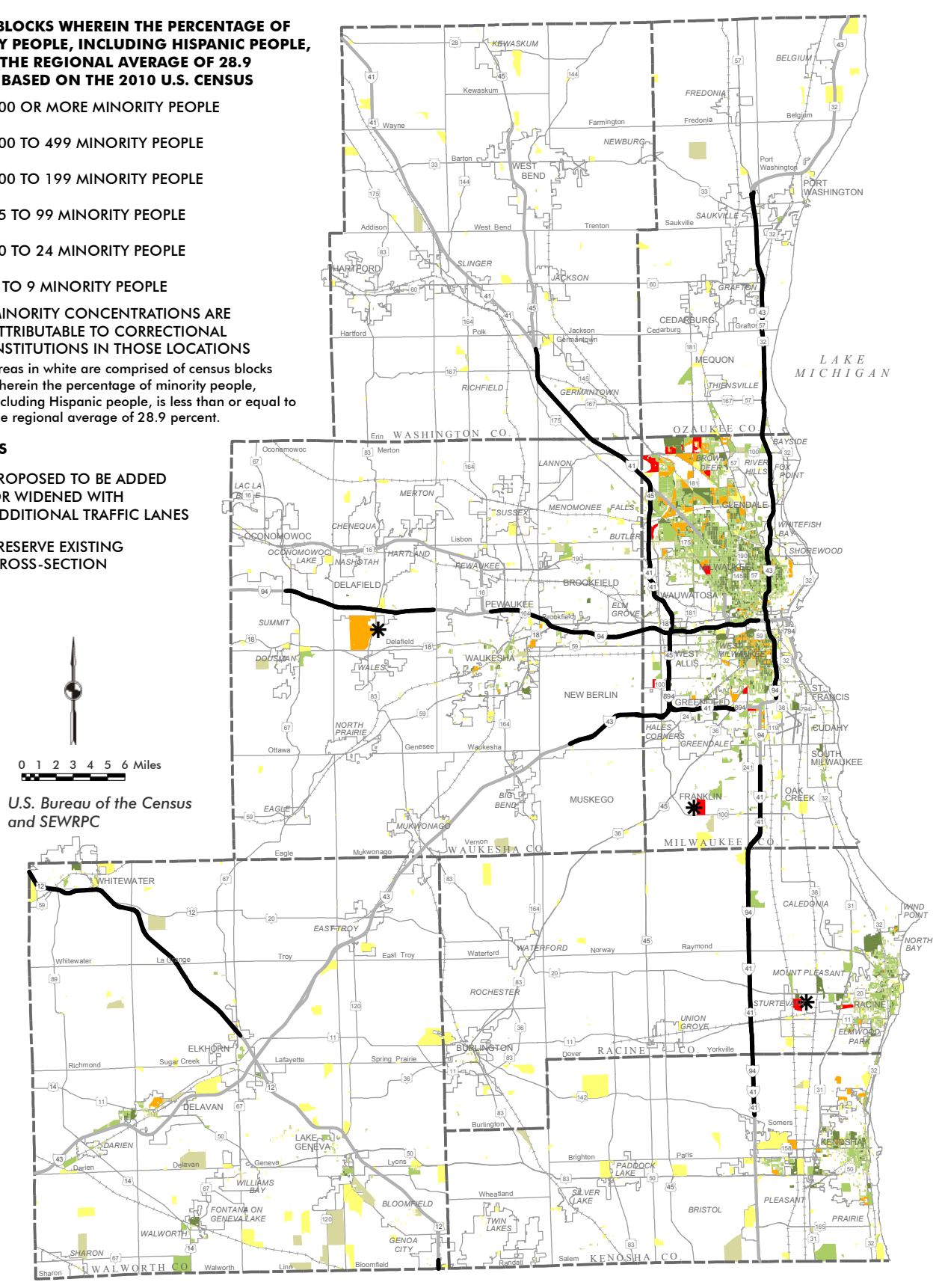
**CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS**

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

**FREEWAYS**

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION




*Source: U.S. Bureau of the Census and SEWRPC*

## Map H.67
## Comparison of Existing Concentrations of Families in Poverty in the Region to Freeways: Trend and Preliminary Recommended Plan

**CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY**

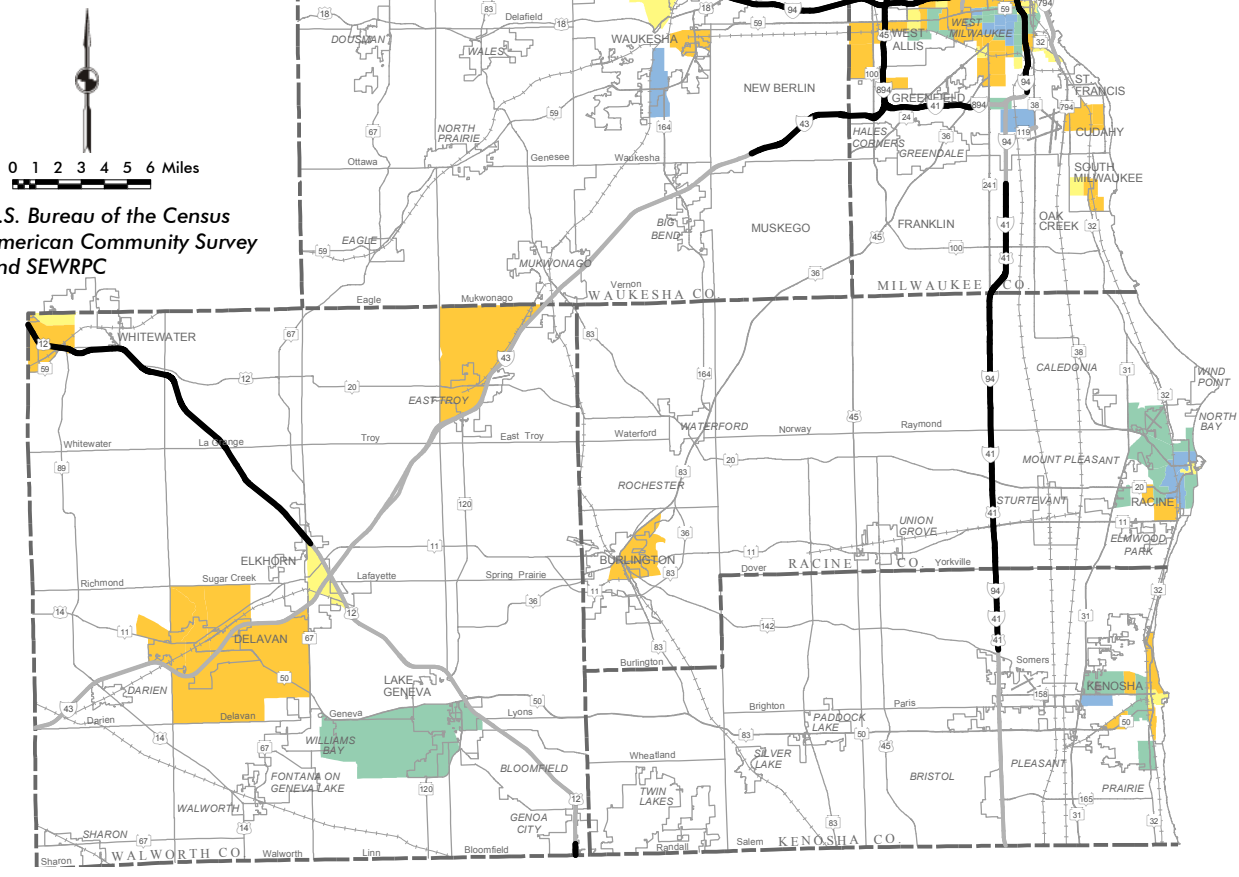
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

**FREEWAYS**

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION




*Source: U.S. Bureau of the Census American Community Survey and SEWRPC*

## Table H.27
## Minority/Non-Minority Populations and Families in Poverty/ Families Not in Poverty Residing in Proximity to a Freeway[a]

**Population and Families Within One-Half Mile**

| County | Percent of Populations Within One-Half Mile of Existing Freeways | | Percent of Families Within One-Half Mile of Existing Freeways | |
|---|---|---|---|---|
| | Minorities | Non-Minorities | Families in Poverty | Families Not in Poverty |
| Kenosha | 0.6 | 1.0 | 0.7 | 2.4 |
| Milwaukee | 25.5 | 25.0 | 28.6 | 24.0 |
| Ozaukee | 14.0 | 10.8 | 9.3 | 9.5 |
| Racine | 0.2 | 0.8 | 0.4 | 1.2 |
| Walworth | 17.7 | 16.0 | 22.4 | 18.3 |
| Washington | 11.1 | 11.5 | 8.6 | 11.5 |
| Waukesha | 12.0 | 11.9 | 11.7 | 12.2 |
| Region | 20.4 | 14.6 | 21.8 | 15.1 |

**Population and Families Within One-Quarter Mile**

| County | Percent of Populations Within One-Quarter Mile of Existing Freeways | | Percent of Families Within One-Quarter Mile of Existing Freeways | |
|---|---|---|---|---|
| | Minorities | Non-Minorities | Families in Poverty | Families Not in Poverty |
| Kenosha | 0.1 | 0.4 | 0.5 | 1.2 |
| Milwaukee | 11.5 | 11.6 | 13.3 | 11.2 |
| Ozaukee | 5.4 | 3.8 | 4.7 | 4.5 |
| Racine | 0.1 | 0.3 | 0.2 | 0.6 |
| Walworth | 5.8 | 6.0 | 11.9 | 9.7 |
| Washington | 4.9 | 5.4 | 4.3 | 5.6 |
| Waukesha | 6.0 | 5.4 | 5.9 | 6.2 |
| Region | 9.2 | 6.6 | 10.3 | 7.3 |

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty and families not in poverty are based on the 2008-2012 American Community Survey.*

*Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC*

## CRITERION 2.2.1: HOUSEHOLDS WITH AFFORDABLE HOUSING + TRANSPORTATION COSTS

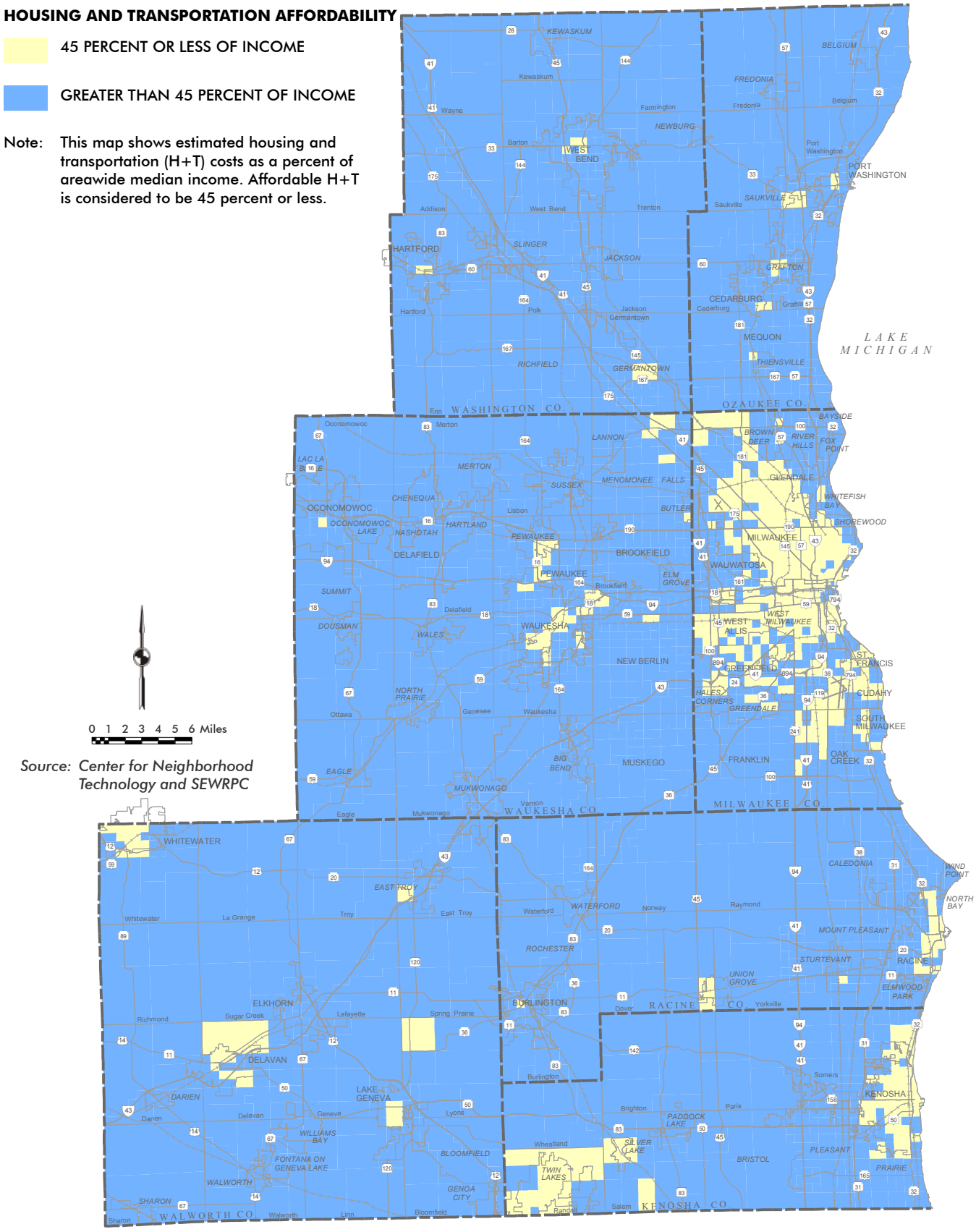
As described in the alternatives evaluation, this criterion attempts to estimate the affordability of an area by combining estimates of housing costs and transportation costs as a proportion of a household's budget. Like Alternative Plans I and II, the Preliminary Recommended Plan would result in the most households located in H+T-affordable areas (defined as areas with estimated housing and transportation costs that are 45 percent or less of areawide median income). The results of the analysis, presented in Table H.28 and Maps H.68 through H.70, show that compact, mixed-use communities with a balance of housing, jobs, and stores and easy access to transit have lower transportation costs because they enable residents to meet daily needs with fewer vehicles, which are the single greatest transportation cost factor for most households. The Trend, which would include more lower-density development and significantly less public transit service than the Preliminary Plan, would have fewer H+T-affordable areas.

### Table H.28
### Households with Affordable Housing + Transportation Costs

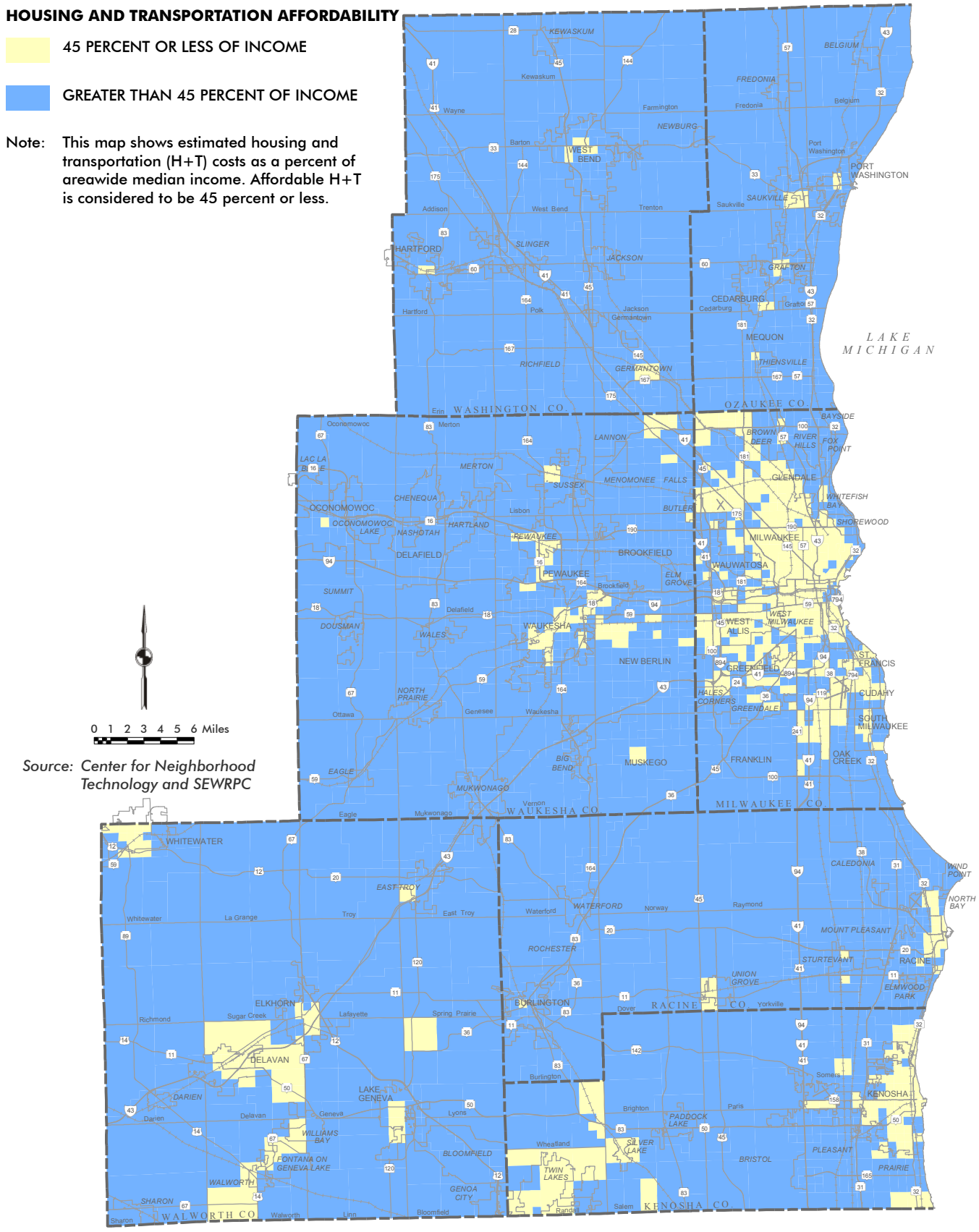
| Plan | Households with Affordable H+T Costs | Total Households | Percent of Total Households with Affordable H+T Costs |
|---|---|---|---|
| Existing - 2011 | 299,200 | 800,100 | 37.4 |
| Trend - 2050 | 342,800 | 972,400 | 35.3 |
| Plan - 2050 | 371,300 | 987,500 | 37.6 |

*Source: Center for Neighborhood Technology and SEWRPC*

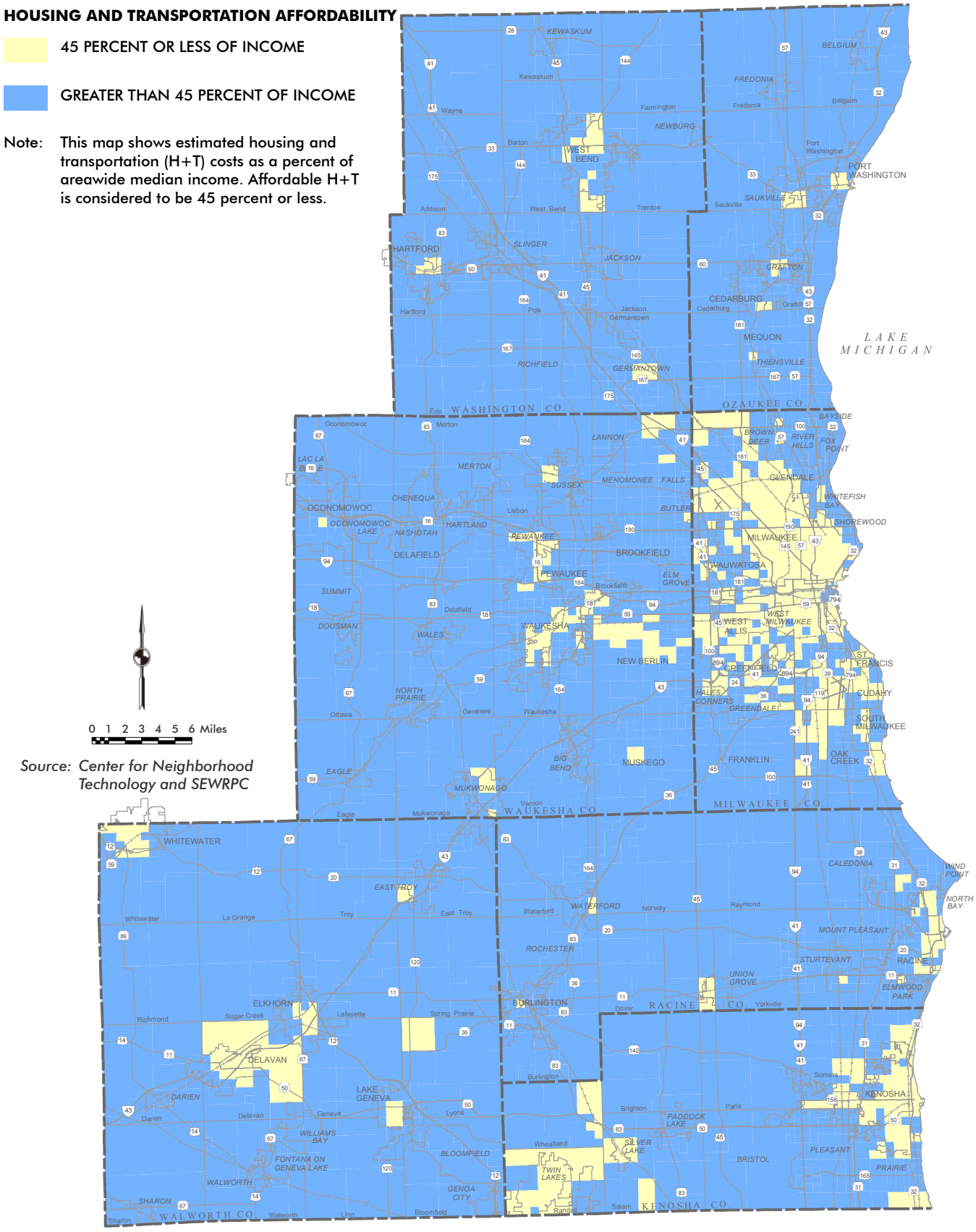
## Map H.68
## Housing and Transportation Affordability in the Region: Existing



## Map H.69
## Housing and Transportation Affordability in the Region: Trend



## Map H.70
## Housing and Transportation Affordability in the Region: Preliminary Recommended Plan



## CRITERION 2.2.2: ABILITY TO ACCOMMODATE DEMOGRAPHIC SHIFTS

As noted in the alternatives evaluation, forecasts prepared for VISION 2050 anticipate continued change in the demographics of the Region. The number of residents age 65 and older is projected to double by 2050 and extrapolation of past trends indicates that the minority share of the Region's population will increase to 45 percent by 2050. As the Baby Boomer population ages, there will be a need to attract population and labor force from outside the Region to grow employment. The Preliminary Recommended Plan would provide housing and transportation options to meet the variety of needs of an increasingly diverse population.

The Preliminary Plan would support the changing housing needs attributable to demographic shifts. Providing accessible housing and affordable workforce housing are two key concerns. The Region currently has excess demand for accessible housing, which is likely to increase in the coming years. In terms of affordable workforce housing, over 46 percent of renters in the Region have a high housing cost burden. The Preliminary Plan would likely increase the supply of accessible and affordable housing in the Region by adding more multifamily housing (apartments), which tends to be more accessible due to Federal and State fair housing laws and also tends to be more affordable to a wider range of households than single-family homes. About 42 percent of new housing would be multifamily units under the Preliminary Plan, compared to about 25 percent under the Trend.

The Preliminary Plan would also better accommodate the changing needs of the Region's population than the Trend in terms of transportation, proposing significant increases in local transit service and encouraging mixed-use TOD around fixed-guideway transit stations. These proposals would aid the Region in addressing an expected growth in demand for reliable and convenient public transit service to shopping, recreation, and health care as the Region's population ages and becomes increasingly reliant on public transit. Walkability is also expected to become increasingly important as the population ages. Studies have determined that neighborhoods with a high level of pedestrian amenities and shorter travel times to shopping and services are desirable features for people with mobility and sensory disabilities. As analyzed in Criterion 1.1.1, the Preliminary Plan would result in more people living in walkable areas and more areas of the Region being considered walkable. Studies recommend that accessible housing be combined with mixed-use, high-density neighborhoods to maximize accessibility in housing and access to various community amenities. Improved public transit service, including fixed-guideway transit (BRT, light rail, and commuter rail), walkability, and bicycle facilities may also increase the Region's ability to attract young workers who desire a variety of transportation and housing options.

## CRITERION 2.3.1: AREAS WITH A JOB-WORKER MISMATCH

The alternatives evaluation discussed how it is essential to have the necessary workforce available for existing businesses to maintain their presence and consider expansion, and to attract new business and industry to the Region. An adequate amount of workers in proximity to employers can help ensure workforce availability and reduce the distance workers have to travel to their jobs. Under the Preliminary Plan there would still be areas of the Region with job-worker mismatches, but more areas would have a match between jobs and workers than under the Trend. More jobs (957,700) and households (668,100) would be located in areas of the Region that have a job-worker match than the Trend (866,400 jobs and 616,400 households).

In addition, more jobs and households would be located in Milwaukee County under the Preliminary Plan than the Trend, including TOD near rapid transit and commuter rail stations. The TODs in the Preliminary Plan would include a mix of high-density housing and jobs, which helps to improve job-worker matches. The Preliminary Plan also includes fixed-guideway transit service from Milwaukee County to job opportunities in outlying counties, which may not contribute to job-worker match, but the improved transit options increase job opportunities for those without access to a personal vehicle. A rapid transit line connecting Milwaukee to the City of Waukesha through Brookfield, and commuter rail lines connecting Milwaukee to Racine and Kenosha and to Waukesha County communities would particularly improve this type of job access.

Communities that may have a shortage of workers tend to have public sewer service, with concentrations of employers and existing lower-density housing. The lower-density housing results in a lower population density and less available workers in proximity to employers. There may also be a lack of existing multifamily housing, which tends to be more affordable to a wider range of workers than single-family housing. Several of these communities that may have a shortage of workers are located in Waukesha County. Jobs in several Waukesha County communities would be more accessible to Milwaukee County workers through the rapid transit and commuter rail lines noted above.

Areas where there may be a shortage of jobs are generally outlying residential areas that do not offer the public services needed to support extensive commercial and industrial development, such as public sewer and water supply, or "bedroom communities" that do not include a significant employment base.

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APPENDIX H-3
PRELIMINARY RECOMMENDED PLAN EVALUATION FOR COSTS AND FINANCIAL SUSTAINABILITY

## CRITERION 3.1.1: IMPACT OF THE DISTRIBUTION OF GROWTH ON PROPERTY VALUES

The Preliminary Recommended Plan is designed to accommodate the year 2050 population, households, and employment projected by the Commission. While the Trend represents a continuation of overall decline in density across the Region, the Preliminary Plan includes more compact, walkable development, with a focus on TOD around fixed-guideway transit stations.

The change in TODs and walkable areas under the Preliminary Plan is expected to impact property values in those areas. There would be very few areas that could support TOD under the Trend. In addition, fewer of the Region's residents (724,600) would live in walkable neighborhoods under the Trend. There would be 161 rapid transit stations and 18 commuter rail stations that could potentially support TOD under the Preliminary Plan, and 844,000 residents would live in walkable neighborhoods.

As discussed in the alternatives evaluation, studies acknowledge that it is difficult to determine the exact impact of transit stations on development potential and property values within a station area in light of other factors, such as the overall strength of the local and regional real estate market; strength of the economy/job market; and other planning and development initiatives. Despite this uncertainty, a number of previous studies in metropolitan areas with fixed-guideway transit networks have shown a range of property value increases in station areas. Three examples include:

- 2 to 18 percent for condominiums within one-half mile of a station (San Diego)
- 15 percent for office development within one-half mile of a station (Santa Clara County)
- 30 percent for retail development within one-quarter mile of a station (Dallas)

Studies have also found that walkable neighborhoods have a positive impact on residential property values. A 2009 CEOs for Cities study of 15 metropolitan areas found that homes in areas with above average walkscores sell for $4,000 (Dallas) to $34,000 (Sacramento) more than comparable homes in areas with average walkscores.

The primary challenge associated with increased property values is addressing the potential for resultant housing cost increases. This is of particular concern for redevelopment in areas with concentrations of low-income households, as it may lead to the displacement of existing residents of a neighborhood if it becomes unaffordable for them to stay. Displacement may be one of the elements of a phenomenon commonly referred to as gentrification, which has been studied in detail by many experts for decades. The conclusions of those decades of research are mixed, and occasionally contradictory. Some studies indicate displacement due to housing in a neighborhood becoming unaffordable is relatively rare, occurring at a rate of about 1 percent of

longtime residents per year,[44] while others find a displacement rate of up to 10 percent each year in some cities with significant economic growth and high demand for urban living.[45] In addition, there is some evidence that in certain areas of high demand where local governments relax limitations on the height and density of new developments, nearby neighborhoods experience less gentrification, new development, and displacement.

To address the housing cost challenge, strategies for encouraging mixed-income housing in compact, walkable redevelopment areas should be pursued, including:

- Density bonus and reduced parking requirements as incentives for affordable housing
- Incentives to use Low-Income Housing Tax Credits in TODs
- Public/private partnerships through options including acquiring and assembling land, streamlining rezoning and permitting processes, and assistance with brownfield mitigation grants
- Developing enough new housing and preserving existing affordable housing to meet the potential demand (a review of nationwide studies conducted for the FTA estimates that demand for housing in transit station areas could grow 150 percent by 2030)

In terms of development in rural areas, public service costs of farmland are low compared to scattered lower-density residential development. In general, the tax returns to a community from farms are greater than the public service and facilities costs that farms require. Costs to provide public services and facilities to scattered residential development generally exceed tax revenues. Converting productive farmland can increase the cost of public services and impact a community's character. There would be significantly more farmland converted to urban development under the Trend (77 square miles) than the Preliminary Plan (58 square miles).

The emphasis on compact development in the Preliminary Plan may also have a positive impact on community property tax revenues, particularly in communities that have very little developable land. A community is allowed to increase its levy over the amount it levied in the prior year by the percentage of increase in equalized value from net new construction, with few exceptions. If no new construction occurred in a community, then the allowable tax levy increase is 0 percent.[46] Compact development or redevelopment provides an opportunity for communities, with otherwise very little developable land, to maximize the amount of new construction that may occur.

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[44] *Newman, S. J. and Owen, M. S. (1982),* Residential Displacement: Extent, Nature, and Effects. *Journal of Social Issues, 38: 135–148. doi: 10.1111/j.1540-4560.1982.tb01775.x and Freeman, Lance (2005),* Displacement or Succession? Residential Mobility in Gentrifying Neighborhoods. *Urban Affairs Review, vol. 40, no. 4: 463-491. doi: 10.1177/1078087404273341.*

[45] *Newman, Kathe and Wyly, Elvin K. (2006),* The Right to Stay Put, Revisited: Gentrification and Resistance to Displacement in New York City. *Urban Studies, vol. 43, no. 1: 23-57. doi: 10.1080/00420980500388710.*

[46] *League of Wisconsin Municipalities.*

## CRITERION 3.1.2: RETURN ON INVESTMENT

There are a variety of ways to look at the return on investment of the Preliminary Recommended Plan. The return on investment criterion attempts to determine what is gained from the proposed land development pattern and transportation system, by comparing the numerous quality of life and fiscal benefits discussed throughout the evaluation to the costs associated with building the Preliminary Plan's land development pattern and transportation system. This criterion, as was the done for the alternatives evaluation, is arranged in a series of short discussions on the costs and benefits associated with the Preliminary Plan.

- **Tax Revenue Required for Transportation Investment:** Criterion 3.2.1 (Average Annual Transportation System Investment) discusses the amount of tax revenue that would be needed to construct, operate, and maintain the transportation system included in the Preliminary Plan. The Preliminary Plan's regional transportation system would require 23 percent more tax revenue in the average year of the Plan ($198 million more annually) to construct, operate, and maintain than the Trend. The additional tax revenue required to support the transportation system would need to be raised from the Region's residents and/or businesses (as well as Federal and State sources), and would impact their household or corporate budgets.

- **Impacts of the Transportation System on Homes, Businesses, Land, Parkland, and Natural Resource Areas:** In addition to the needed additional tax revenue to fund the Preliminary Plan's transportation system, the system's expansion (in particular, new and widened arterial streets and highways) would negatively impact natural resource areas and require some relocations or acquisitions of homes, businesses, and parkland, as would system expansion under the Trend. However, impacts to natural resource areas would be relatively minor under both the Trend and Preliminary Plan, with 218.8 acres (out of 311,900 existing acres) of primary environmental corridors impacted by transportation system expansion under the Preliminary Plan and 229.7 acres under the Trend. Impacts to a number of other natural resource areas, including wetlands and critical species habitats, are summarized in Criterion 1.3.2 (Impacts to Natural Resource Areas). Although it is difficult, and in some cases, not desirable, to monetize these impacts from transportation system expansion, there is certainly a non-monetary cost associated with these impacts.

  As described in Criterion 1.5.1 (Homes, Businesses, Land, and Parkland Acquired), the Trend would have a greater impact on homes, businesses, land, and parkland, with expansion of the transportation system requiring 365 homes or businesses to be relocated and 126 acres of parkland to be acquired. The Preliminary Plan would have a slightly smaller impact with 332 homes or businesses relocated and 123 acres of parkland acquired. Home and business relocation can have a negative impact on the local economy, and acquiring parkland can negatively impact quality of life, in the neighborhoods adjacent to transportation system expansion.

- **Private Costs of Using the Transportation System:** As discussed in Criterion 3.3.1 (Private Transportation Costs per Capita), an expanded transit system that provides more frequent and faster service to more destinations has the ability to decrease the overall amount residents

of the Region spend on transportation. Under the Preliminary Plan, more residents are projected to live in households with fewer cars than under the Trend, with many of their journeys instead being taken on transit. Even with only a modestly higher transit mode share compared to the Trend, the Region's residents would spend $144 million less annually directly on transportation under the Preliminary Plan.

- **Improvements in Housing + Transportation Affordability:** Partially due to the decrease in private costs of transportation, Criterion 2.2.1 (Households with Affordable Housing + Transportation Costs) estimates that under the Preliminary Plan, compared to the Trend, 28,500 more households would be located in H+T-affordable areas (defined as areas with estimated housing and transportation costs that are 45 percent or less of the areawide household median income), and therefore would potentially have more money to save or spend on other needs.

- **Benefits of Decreased Crash Rates:** Crashes contribute to overall transportation costs by causing delay and unreliability on the transportation network; they increase public costs for police and emergency medical services; and, if they result in injury, increase medical costs and can lead to a heavy toll in life, property damage, and human suffering. One of the causes of crashes is poor or unsafe roadway design, and improving the roadway network, as would be done under both the Trend and Preliminary Plan, would result in reductions in crash rates and the negative effects of crashes. As can be seen in Criterion 1.6.1 (Crashes by Mode), the total number of crashes on the transportation system would be lower under the Preliminary Plan (300 to 600 fewer crashes annually than under the Trend), due primarily to the decrease in vehicle-miles traveled in private automobiles. FHWA has provided estimates of total societal costs of $3,200 to $290,000 per nonfatal crash (depending on severity) and $4,200,000 for the average crash resulting in a fatality. Applying these costs, the Preliminary Plan would save between $23.8 million and $24.9 million annually over the Trend.

- **Costs of Travel Delay:** As discussed in Criterion 3.3.2 (Per Household Cost of Delay), when people are stuck in traffic—either in a car, bus, or truck—they are prevented from doing more productive things with their time. Valuing the costs associated with traffic delays can be challenging, as estimates of the value of a person's time while they are stuck in traffic vary widely. Using guidance from USDOT, it is estimated that the total cost of delay in the Region would be higher under the Preliminary Plan ($29.1 million more per year than under the Trend), as the rapid transit network proposed by the Preliminary Plan would require a reduction of travel lanes on a few major arterial streets in Milwaukee County, increasing congestion on those segments of roadway.

- **Costs of Infrastructure and Services to Local Governments:** Significant research has been done nationally on the costs to local governments to maintain the public infrastructure associated with serving homes and businesses, but costs can vary widely across different parts of the country depending on construction and maintenance needs and practices. Criterion 3.4.1 (Supportive Infrastructure Costs) uses local information to estimate costs for providing sewer, water, and local roads to the new development under the Trend and Preliminary

Plan, and indicates that approximately $41 million less would need to be spent annually to build new sewers, water mains, and local roads under the Preliminary Plan. The cost of building this infrastructure is frequently borne by developers, rather than cities, villages, and towns. However, local governments are often left with the long-term maintenance and replacement costs associated with this infrastructure, and national data indicate that the per capita cost of maintaining roads, water mains, and sewer pipes, and providing fire protection, school transportation, and solid waste collection, all decrease as density increases. In addition—all else being equal—walkable neighborhoods have higher per unit housing values, and retain those values better in the face of a real estate slowdown. Therefore, walkable, dense neighborhoods offer local governments not only lower costs per capita, but higher and more stable property tax revenues per unit.

- **Benefits to the Environment:** As covered extensively in Criterion 1.4.7 (Overall Environmental Sustainability), the Preliminary Plan would have less impact and greater benefit to the environment than the Trend. It would preserve 0.2 percent more of the Region's total land area as pervious surface than the Trend, resulting in less ecological damage and flooding. About 18 fewer square miles of areas with high groundwater recharge potential would be developed under the Preliminary Plan than the Trend. Transportation-related greenhouse gas emissions and other air pollutants would be slightly lower under the Preliminary Plan (1 to 2 percent lower than the Trend). Although it is difficult to monetize many of these benefits, they can have a direct impact on the Region's ability to prepare for an uncertain climate future, and therefore are essential to the future economic competitiveness of the Region.

- **Benefits to Public Health:** The Preliminary Plan would improve public health by making active transportation (such as biking and walking) easier through increased density and enhanced bicycle facilities, and having lower overall air pollutant levels than the Trend, as discussed in Criterion 1.2.3 (Benefits and Impacts to Public Health). As active transportation increases, public health tends to improve and obesity-linked conditions tend to decline. As a result, the costly expenditures related to caring for these conditions may be reduced, which would lessen the healthcare costs to individuals and society as a whole. Following this logic, the Preliminary Plan would have a greater potential to reduce healthcare costs than the Trend.

- **Reduced Demand for Social Services:** Providing access to jobs for those without access to a car is one of the goals of the expansive transit services proposed under the Preliminary Plan. In addition to the numerous benefits associated with providing better transit service listed in this criterion and elsewhere in Chapter 4 of this volume, providing better access to jobs could decrease the need for other social services within the Region, as individuals who are currently unable to break the cycle of poverty gain access to higher-paying jobs at suburban business and industrial parks, decreasing their need for forms of government assistance.

## CRITERION 3.1.3: ABILITY TO CONNECT TO NEARBY METRO AREAS AND LEVERAGE THE VALUE OF THOSE AREAS

The alternatives evaluation noted the important role the transportation system plays in the Region's economic growth. High-quality, well-designed transportation infrastructure connecting the Region to nearby economic hubs, particularly the Chicago metropolitan region, is important to enable the flow of people and goods. This criterion discusses how the Preliminary Recommended Plan's transportation system addresses congestion on Southeastern Wisconsin's freeway system as well as improves regional connections to the airport, train stations, intercity bus stops, and ferry terminal that are used by people traveling to and from neighboring cities and metro areas. The Preliminary Plan's impacts on the movement of freight to, from, and within the Region is discussed in Criterion 4.6.3 (Impacts to Freight Traffic).

- **Southeastern Wisconsin Freeways:** The Region's freeways provide critical connections in the Region for people traveling by car and bus to and from neighboring cities and metro areas, playing a vital role in connecting business travelers and commuters with those areas. According to WisDOT, approximately 25,000 businesses are currently located within two miles of key freeway segments in the Region, including IH 41, IH 43, IH 94, and IH 894, and additional business development adjacent to the Region's freeways is expected to continue through the year 2050.

  Both the Trend and the Preliminary Plan would reduce freeway congestion compared to existing conditions, with the Preliminary Plan performing slightly better than the Trend (see Criterion 4.4.1). The Preliminary Plan would result in 24.4 percent (70 miles) of the freeway system operating over its design capacity (moderate, severe, or extreme congestion) on an average weekday, about 1.4 percent less than the Trend (71 miles).

- **General Mitchell International Airport:** General Mitchell International Airport currently provides access to commercial air service, intercity bus service, and intercity passenger rail service, connecting the Region to both nearby regions and other metropolitan areas across the nation and world. Under the Trend, regional access to the Airport would be provided by the arterial street and highway system, local bus transit service, and a commuter bus route operating between Kenosha and Milwaukee. The Preliminary Plan would improve regional access to the Airport by providing a rapid transit line connecting the Airport with downtown Milwaukee, Oak Creek (Drexel Town Square), and Franklin, and by providing a commuter rail line operating between Kenosha and downtown Milwaukee that would serve the Airport.

- **Milwaukee Intermodal Station:** The Milwaukee Intermodal Station (MIS) in downtown Milwaukee provides access to intercity bus service and intercity passenger rail service connecting Southeastern Wisconsin to nearby cities and metro areas. Under the Trend, regional access to MIS would be directly provided by the arterial street and highway system, local bus transit service, the downtown Milwaukee streetcar line, and a commuter bus route operating between Kenosha and Milwaukee. The Preliminary Plan would greatly enhance transit access to MIS by improving local bus transit service to MIS; replacing the commuter bus route with a commuter rail line connecting Kenosha

and downtown Milwaukee; establishing four rapid transit corridors connecting downtown Milwaukee with northwestern Milwaukee, with Milwaukee's East Side and Bayshore Town Center, with the Airport, Oak Creek (Drexel Town Square), and Franklin, and with West Allis; and providing a second commuter rail line operating between Oconomowoc and downtown Milwaukee.

- **Other Intercity Bus Stops, Train Stations, and Ferry Terminals:** Several other locations in the Region provide access to intercity bus service, intercity passenger rail service, commuter rail service, and Lake Michigan ferry service. The Goerke's Corners park-ride lot in Brookfield provides access to daily intercity bus service connecting Waukesha County with Madison, Wisconsin Rapids, and Stevens Point. The Sturtevant Amtrak station provides access to daily intercity passenger rail service connecting Racine County with the Chicago metro area. The Kenosha Metra station provides access to daily commuter rail service connecting the City of Kenosha with the Chicago metro area. Bus stops in Twin Lakes, Silver Lake, and Paddock Lack provide access to Western Kenosha County Transit service connecting to the Metra station in Antioch, Illinois. Finally, the Lake Express ferry terminal in Milwaukee provides access to daily Lake Michigan ferry service in the spring, summer, and fall connecting Milwaukee with Muskegon, Michigan.

  Under the Trend, regional access to the Goerke's Corners park-ride lot would be provided by the arterial street and highway system, local bus transit service, and commuter bus routes connecting downtown Milwaukee with both Oconomowoc and Waukesha. The Preliminary Plan would improve access by providing a rapid transit line connecting Goerke's Corners to downtown Waukesha and downtown Milwaukee.

  Under the Trend, regional access to the Sturtevant Amtrak station would be provided by the arterial street and highway system and by local bus transit service. The Preliminary Plan would improve access by providing improved local bus transit service and by providing an express bus route connecting the station to the Ives Grove park-ride lot and the Corinne Reid Owens Transit Center in downtown Racine.

  Under the Trend, regional access to the Kenosha Metra station would be provided by the arterial street and highway system, by local bus transit service, and by the Kenosha streetcar line. The Preliminary Plan would improve access by providing improved local bus transit service; by providing an express bus route connecting the station to Paddock Lake, Silver Lake, and Twin Lakes; and by providing a commuter rail line connecting the station with downtown Milwaukee.

  Under the Trend, there would be no transit service connecting communities in western Kenosha County and southeastern Walworth County with Metra service in northeastern Illinois. The Preliminary Plan would improve access by providing a commuter bus route connecting Burlington and Paddock Lake with the Metra station in Antioch, Illinois and by providing a commuter bus route connecting Elkhorn, Lake Geneva, and Genoa City with the Metra station in Fox Lake, Illinois.

  Under the Trend, regional access to the Lake Express ferry terminal in Milwaukee would continue to be provided by the arterial street and highway system. The Preliminary Plan would improve access by connecting it to the transit network with local bus service.

## CRITERION 3.1.4: POTENTIAL FOR ATTRACTING RESIDENTS AND BUSINESSES

As discussed in the alternatives evaluation, attracting businesses and residents will be vitally important in the future as there will be a need to in-migrate population to grow businesses and jobs in the long term. The alternatives evaluation noted that there are many factors that affect where a business decides to locate or expand and where an individual or family decides to make their home. Many of these factors are unique to the particular business or individual, and would not directly be impacted by VISION 2050. Primary factors significantly impacted by the Preliminary Plan are transportation infrastructure and housing.

While location decisions are clearly individual choices, the Trend and the Preliminary Plan include elements that may make the Region more attractive to potential businesses and residents. In terms of traffic congestion, both the Trend and the Preliminary Plan would reduce congestion compared to existing conditions, with the Trend performing slightly better than the Preliminary Plan (see Criterion 4.4.1). In particular, both the Trend and the Preliminary Plan would reduce severe and extreme congestion compared to existing conditions by providing additional capacity on the arterial street and highway system, and the Preliminary Plan would also significantly improve the transit system to provide alternatives to severely or extremely congested roads. Compared to existing conditions, the lower levels of traffic congestion under the Trend and Preliminary Plan would result in shorter travel times and decreased chances of crashes that would reduce transportation reliability.

For people looking to avoid the need to drive, and for businesses looking for robust transit service and housing options for their employees, the Preliminary Plan would perform far better than the Trend. More people would have access to transit, and more people would have access to higher-quality, fixed-guideway transit, than under the Trend. The Preliminary Plan would also have more walkable areas, providing prospective residents with the opportunity to walk to many destinations, and a greater variety of housing options. While the Trend would improve the bicycle network, the Preliminary Plan proposes further improvements to the bicycle network through the provision of enhanced bicycle facilities (such as protected bike lanes or buffered bike lanes) in key regional corridors.

## CRITERION 3.2.1: AVERAGE ANNUAL TRANSPORTATION SYSTEM INVESTMENT

The Preliminary Recommended Plan's transportation system would require additional revenues beyond what is currently available for transportation from Federal, State, and local taxes. Potential sources for these additional revenues are discussed in the Financial Analysis of the Preliminary Recommended Plan, presented in Chapter 4 of this volume.

Considered solely based on the amount of tax dollars required to provide the transportation system, the Trend is less expensive than the Preliminary Plan. Overall, as shown in Table H.29, the Preliminary Plan would require more public investment ($198 million annually, or 23 percent more than the Trend), as it includes significantly increased investment in transit and bicycle facilities, while still adding arterial street and highway capacity to address traffic congestion not addressed by transit, bicycle, and other measures.

**Table H.29**
**Average Annual Transportation System Investment (in Millions of 2015 Dollars)**

| | Arterial Streets and Highways | | | Transit Services | | | Bicycle Facilities | |
|---|---|---|---|---|---|---|---|---|
| **Plan** | Construction | Operations & Maintenance | Subtotal | Construction & Vehicles | Operations & Maintenance | Subtotal | Construction | **Annual Total** |
| Existing - 2015 | $590 | $77 | $667 | $30 | $131 | $161 | $4 | $832 |
| Trend - 2050 | $663 | $84 | $747 | $21[a] | $107[a] | $128[a] | $2 | $877 |
| Plan - 2050 | $662 | $84 | $746 | $125[a,b] | $198[a,b] | $323[a] | $6 | $1,075 |

[a] *Amounts for the Trend and Preliminary Plan represent the average annual costs for the transportation system during the plan period (2015-2050). Because the Trend and the Preliminary Plan transit systems change in size (and therefore cost) significantly over the life of the plan, the amounts in this table do not represent the costs of the Trend or Preliminary Plan in the year 2050.*

[b] *The rapid transit corridors included in the Preliminary Plan are assumed to be median or center-lane running bus rapid transit for the purposes of estimating the investment required to implement the Preliminary Plan. In general, median-running light rail construction costs are approximately $63.5 million per mile, while median-running bus rapid transit construction costs are approximately $12.8 million per mile. Operating costs per service hour are also higher for light rail than bus rapid transit, although the greater capacity of light rail vehicles can result in a lower operating cost per passenger than bus rapid transit.*

*Source: SEWRPC*

## CRITERION 3.3.1: PRIVATE TRANSPORTATION COSTS PER CAPITA

While Criterion 3.2.1 estimated the public expenditures on transportation infrastructure necessary to implement the Preliminary Recommended Plan, this criterion estimates the amount of money that residents would spend on transportation directly. While driving is still expected to be the dominant mode of travel in 2050, some residents would be expected to forgo owning a car and instead use alternative transportation modes under the Preliminary Plan. As the average vehicle in Southeastern Wisconsin costs its owner approximately $5,500 per year, compared to a range of $300 to $1,000 for an annual transit pass, those residents able to eliminate the need for one or more cars would be able to save a significant amount of money on transportation. Overall, the Preliminary Plan would save the Region's residents approximately $29 million annually by the year 2050 compared to the Trend due to the increase in walking, biking, and transit trips caused by a more compact development pattern and expanded transit services. As shown in Table H.30, this equates to $60 per year in savings on a per person basis (dividing the cost savings by the total population of the Region), although the savings would be distributed based on which households decide to replace one or more vehicles with walking, biking, and taking transit. Compared to the savings under the alternative plans (see Criterion 3.3.1 in Appendix F), the Preliminary Plan has significantly smaller overall cost savings due to the travel of the 35,200 additional residents projected under the Preliminary Plan. If the Preliminary Plan and the Trend had the same number of residents, the Preliminary Plan would save the Region's residents approximately $144 million annually by the year 2050.

### Table H.30
### Private Transportation Costs per Capita

| Plan | Regional Private Cost of Driving (Average Annual in 2015 Dollars) | Regional Private Cost of Using Transit (Average Annual in 2015 Dollars) | Combined Average Private Transportation Cost per Capita (Average Annual in 2015 Dollars) |
|---|---|---|---|
| Existing - 2011 | $6,175,000,000 | $57,213,000 | $3,085 |
| Trend - 2050 | $7,485,000,000 | $53,419,000 | $3,203 |
| Plan - 2050 | $7,387,000,000 | $122,174,000 | $3,143 |

*Source: SEWRPC*

## CRITERION 3.3.2: PER HOUSEHOLD COST OF DELAY

Recognizing that it is difficult to quantify the value of people's time when it comes to time lost traveling on congested roadways, this criterion examines the expected delay on the transportation system (see Criterion 4.4.2) and makes an attempt to monetize the time lost due to that delay for auto, transit, and commercial truck travel. The cost of delay is particularly important to commercial travel, which has a high per hour value of time largely due to the fact that the person whose time is affected is being paid to transport goods, some of which require faster shipping and have a correspondingly higher value placed on the shipping time.

Table H.31 presents a comparison of the estimated cost of delay on an average weekday and on an average annual basis for existing conditions, the Trend, and the Preliminary Plan. The total cost of delay (personal and commercial) to the Region would be higher under the Preliminary Plan ($497.5 million per year)—6 percent more than under the Trend ($468.4 million). The higher cost of delay under the Preliminary Plan is in part a result of the additional household and employment growth envisioned under the Preliminary Plan compared to the Trend. The total cost of delay would be higher under both the Trend and Preliminary Plan than under existing conditions ($434.4 million); however, per household cost of delay would be less under both the Trend and Preliminary Plan, as an additional 172,300 households are projected to be added to the Region through the year 2050 under the Trend, and an additional 187,400 households are projected to be added under the Preliminary Plan.

On a per household basis for personal travel, the average annual cost of delay under the Preliminary Plan (about $302 per household per year) would be about 6 percent higher than the Trend (about $284). However, per household cost of delay would be lower under both the Trend and Preliminary Plan than existing conditions ($338).

It should be noted that the cost of delay (total and per household) for transit is higher under the Preliminary Plan than the Trend, largely due to the expected increases in transit use (see Criterion 4.1.1). The increased transit travel under the Preliminary Plan would utilize both transit service operating in mixed traffic and fixed-guideway transit service operating in medians, transit-only lanes, or rail corridors. The transit travel in mixed traffic would be subject to traffic congestion and associated travel time delay, while fixed-guideway transit would mostly be unaffected by traffic congestion.

## Table H.31
## Per Household Cost of Delay

| Plan | Cost of Delay on an Average Weekday ($ millions) | | | |
|---|---|---|---|---|
| | Personal Travel | | Commercial Travel | Total |
| | Automobile | Transit | | |
| Existing - 2011 | $1.01 | $0.06 | $0.63 | $1.70 |
| Trend - 2050 | $1.04 | $0.05 | $0.74 | $1.83 |
| Plan - 2050 | $1.05 | $0.13 | $0.76 | $1.94 |

| Plan | Average Annual Cost of Delay ($ millions) | | | |
|---|---|---|---|---|
| | Personal Travel | | Commercial Travel | Total |
| | Automobile | Transit | | |
| Existing - 2011 | $257.0 | $13.5 | $163.9 | $434.4 |
| Trend - 2050 | $264.3 | $11.9 | $192.2 | $468.4 |
| Plan - 2050 | $267.5 | $30.9 | $199.1 | $497.5 |

| Plan | Per Household Cost of Delay for Personal Travel ($) | |
|---|---|---|
| | Average Weekday | Average Annual |
| Existing - 2011 | $1.34 | $338.08 |
| Trend - 2050 | $1.12 | $284.04 |
| Plan - 2050 | $1.19 | $302.18 |

[a] *Average annual delay is based on average weekday delay multiplied by the number of weekdays in a year.*

*Source: U.S. Department of Transportation, Puget Sound Regional Council, and SEWRPC*

## CRITERION 3.3.3: RESILIENCE IN ADAPTING TO CHANGING FUEL PRICES

As discussed in the alternatives evaluation, one of the major unknowns in planning for the Region's transportation system is the future availability and cost of fuel. This criterion tests the Preliminary Plan's performance given two opposite assumptions related to fuel prices. The first assumes the expected long-term fuel price would approximately double (about $7.50 per gallon), while the second assumes fuel price would approximately halve ($1.75 per gallon).[47]

Recognizing the difficulty in predicting how significant an impact a fuel price increase or decrease would have on the amount of driving in the long term, the Commission's travel demand models were used to estimate how much VMT might be expected to fluctuate if fuel prices were to be doubled or halved, as presented in Table H.32. Under the higher fuel price, VMT under the Trend would be 8 percent lower than under the expected fuel price. It would be 11 percent lower under the Preliminary Plan. Under the lower fuel price, VMT would be 5 percent higher under both the Trend and Preliminary Plan. The fluctuations in VMT indicate that some residents of the Region would shift their travel behavior based on changes to the long-term price, although the changes would be relatively modest.

Part of one's mode choice is dependent on the perceived cost of using that mode, which can be impacted by fuel prices. Fuel price is particularly significant because a person filling up their car's gas tank immediately notices when they are saving or spending more on fuel. The Commission's travel demand models were used to estimate how mode choice could change if the expected fuel price were to be doubled or halved, as presented in Table H.33. Under the Trend, where transit service would decline from existing levels, transit trips would increase by 35 percent under the higher fuel price and decrease by 10 percent under the lower fuel price. Under the Preliminary Plan, where transit service would be significantly improved and expanded, transit trips would increase by 58 percent under the higher fuel price and decrease by 14 percent under the lower fuel price. Non-motorized trips based on the different fuel price assumptions would vary between the Trend and Preliminary Plan similar to transit trips, although to a lesser degree. Similar to the fluctuations in VMT, the change in the number of trips by mode shows that some residents of the Region would shift their travel behavior based on changes to the long-term fuel price.

As discussed in the alternatives evaluation, even with significantly improved and expanded transit, bicycle, and pedestrian facilities, projected increases in transit ridership and non-motorized travel under the expected fuel price may be relatively modest with respect to their effect on total regional travel (see Criterion 4.1.1). Similarly, as shown in testing the impact of a higher fuel price, the projected increases in trips by alternative modes may also be relatively modest. However, the significantly improved and expanded transit infrastructure under the Preliminary Plan would provide the capacity to carry even more of the Region's residents. By increasing the capacity of the transportation system to handle more travel by alternative modes to the automobile, the system would be even more resilient should the long-term fuel price significantly increase beyond what is expected.

---

*[47] The projected fuel price in the year 2050 is estimated to be about $3.64 per gallon in year 2015 dollars.*

## Table H.32
## Vehicle-Miles of Travel Under Different Fuel Prices

| Plan | Average Weekday VMT (millions) | | |
|---|---|---|---|
| | Expected Fuel Price | Double the Fuel Price | Half the Fuel Price |
| Trend - 2050 | 51.6 | 47.5 | 54.1 |
| Plan - 2050 | 51.1 | 45.6 | 53.8 |

*Source: SEWRPC*

## Table H.33
## Trips per Day by Mode Under Different Fuel Prices

| Plan | Trips on an Average Weekday Under the Expected Fuel Price | | | |
|---|---|---|---|---|
| | Automobile | Transit | Non-Motorized | Total |
| Trend - 2050 | 6,498,000 | 130,000 | 582,000 | 7,210,000 |
| Plan - 2050 | 6,504,000 | 211,000 | 605,000 | 7,320,000 |

| Plan | Trips on an Average Weekday Under a Doubling of the Expected Fuel Price | | | |
|---|---|---|---|---|
| | Automobile | Transit | Non-Motorized | Total |
| Trend - 2050 | 6,367,000 | 175,000 | 668,000 | 7,210,000 |
| Plan - 2050 | 6,295,000 | 333,000 | 692,000 | 7,320,000 |

| Plan | Trips on an Average Weekday Under a Halving of the Expected Fuel Price | | | |
|---|---|---|---|---|
| | Automobile | Transit | Non-Motorized | Total |
| Trend - 2050 | 6,548,000 | 117,000 | 545,000 | 7,210,000 |
| Plan - 2050 | 6,572,000 | 181,000 | 567,000 | 7,320,000 |

*Source: SEWRPC*

In terms of the impact of fuel prices on transit system operating costs, lower fuel prices in the long term would reduce costs, while higher fuel prices would increase costs. However, fuel costs are a relatively small proportion of total operating costs, with salaries and benefits for drivers and other staff usually accounting for the majority of total operating costs.

## CRITERION 3.4.1: SUPPORTIVE INFRASTRUCTURE COSTS

Compared to the Trend, the Preliminary Plan would potentially have lower costs associated with extending supportive infrastructure to new development. Table H.34 shows the Preliminary Plan has a lower cost for extending sewer and water infrastructure to new development, which is due to a more compact development pattern, redevelopment/infill development, and multifamily development. Table H.34 also shows the cost of extending local roads to new development is less under the Preliminary Plan than the Trend. This is due to less frontage associated with the Preliminary Plan's higher-density development pattern, which reduces the distance local roads need to be extended, and to more redevelopment/infill development, which may be able to take advantage of existing streets.

**Table H.34**
**Supportive Infrastructure Costs**

| Plan | Sewer Infrastructure (billions of $) | Water Infrastructure (billions of $) | Local Roads (billions of $) | Total Supportive Infrastructure (billions of $) |
|---|---|---|---|---|
| Trend | $1.65 | $1.39 | $3.89 | $6.93 |
| Plan | $1.31 | $1.07 | $3.12 | $5.50 |

*Source: SEWRPC*

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## CRITERION 4.1.1: TRIPS PER DAY BY MODE

The vast majority of travel currently made in the Region by residents of the Region is by car, and is likely to continue to be by car in the future. However, the Preliminary Plan proposes significant improvements to public transit and bicycling facilities, which would provide improved alternatives to driving and could significantly increase the number of people that are able and choose to use these alternative modes. Table H.35 presents the total number of person trips by mode for residents of the Region on an average weekday within the Region under the existing transportation system and development pattern, as well as under the Trend and Preliminary Plan. The Commission's travel demand models forecast a continuing, though modest, increase of about 18 percent in total travel through the year 2050, given projected increases in population, households, and employment. Total travel under the Preliminary Plan is higher than the Trend, in part due to additional household and employment growth envisioned under the Preliminary Plan compared to the Trend. Under the Trend and Preliminary Plan, automobile travel continues to account for the vast majority of trips and is expected to increase by about 18 percent over the next 35 years, or about 0.5 percent per year. The Preliminary Plan would have 62 percent more transit trips and 4 percent more non-motorized trips than the Trend.

**Table H.35**
**Trips per Day by Mode Within the Region by Residents of the Region**

| Plan | Trips on an Average Weekday | | | |
|---|---|---|---|---|
| | Automobile | Transit | Non-Motorized | Total |
| Existing - 2011 | 5,521,000 | 134,000 | 524,000 | 6,179,000 |
| Trend - 2050 | 6,498,000 | 130,000 | 582,000 | 7,210,000 |
| Plan - 2050 | 6,504,000 | 211,000 | 605,000 | 7,320,000 |

*Source: SEWRPC*

## CRITERION 4.1.2: VEHICLE-MILES OF TRAVEL

Even with the Preliminary Recommended Plan's focus on providing viable alternatives to driving, and on a more compact development pattern that can reduce trip lengths, total VMT is expected to increase through 2050. The Commission's travel demand models forecast a continuing, though modest, increase in overall travel through the year 2050, given projected increases in population, households, and employment, and the vast majority of travel is likely to continue to be by car. However, the Preliminary Plan would result in about 1 percent less total VMT than the Trend, as shown in Table H.36. Under the Preliminary Plan, VMT is expected to increase by 25 percent over the next 35 years, or about 0.7 percent per year, slightly less than the 26 percent increase under the Trend.

VMT per capita is also expected to increase under the Preliminary Plan, although as discussed in the alternatives evaluation, this does not necessarily mean residents would be driving more on average. Projected future increases in commercial vehicle travel and travel through the Region are likely causing the future VMT per capita estimates to be higher.

**Table H.36**
**Vehicle-Miles of Travel**

| | Average Weekday | | Average Annual | |
|---|---|---|---|---|
| **Plan** | Total VMT (millions) | VMT per Capita | Total VMT (billions) | VMT per Capita |
| Existing - 2011 | 40.9 | 20.2 | 13.7 | 6,800 |
| Trend - 2050 | 51.6 | 21.9 | 17.3 | 7,300 |
| Plan - 2050 | 51.1 | 21.4 | 17.2 | 7,200 |

*Source: SEWRPC*

## CRITERION 4.1.3: IMPACTS OF TECHNOLOGY CHANGES

The alternatives evaluation discussed a number of emerging technologies that have the potential to affect future land use patterns and transportation infrastructure in the Region, acknowledging that their precise impacts are difficult to predict. The technologies discussed included car and bike sharing, mobile app innovation, autonomous cars, and vehicle fuel efficiency.

As the alternatives evaluation noted, mobile app technology (used by ridesharing services like Uber and Lyft) and car/bike sharing may increase transit use, reduce greenhouse gas emissions and, due to increased bike share usage, improve public health. The Preliminary Plan would accommodate emerging mobile app technology in transportation by providing flexibility in mode choice with significantly greater options for transit use, increasing the likelihood some individuals may choose to replace private automobile ownership with Uber or Lyft in combination with relying more on public transit. The Preliminary Plan, like Alternatives I and II, proposes increasing the availability of car share and bike share facilities and services in the Region, and would support the growth of car and bike sharing by improving transit service, enhancing bicycle facilities, and creating denser, more walkable areas in the Region. Increased availability of car share could serve to enhance the Preliminary Plan proposals, as car sharing is especially effective at replacing personal automobile ownership in areas with robust rapid transit. Additionally, the enhanced bicycle facilities proposed under the Preliminary Plan, along with the encouragement of more walkable and bicycle-friendly urban areas, would aid in addressing the needs of the growing bike sharing industry.

Of the numerous changes in technology that will likely happen between now and 2050, autonomous cars may have the largest impact on the future of mobility. Autonomous cars, also known as driverless or self-driving cars, may improve road safety and increase mobility for those currently unable to drive, while their impact on congestion may be positive or negative. The future of autonomous cars hinges on the ability to develop advanced artificial intelligence to sense rapidly changing road and weather conditions, making the timing for widespread implementation of autonomous cars uncertain. It is difficult to predict how infrastructure investment should be adjusted to adapt to a future in which some or all cars are autonomous, and there are diverging views among experts about whether autonomous cars will reduce congestion or increase congestion.

The fuel efficiency of vehicles is expected to nearly double by the year 2050 (see Criterion 1.4.3), which is desirable for many reasons, including reducing the environmental impacts. However, if fuel efficiency significantly reduces the cost of driving it has the potential to adversely affect transit ridership. More fuel-efficient vehicles also have the potential to result in declining transportation revenues from fuel sales, as discussed in the Financial Analysis of the Preliminary Plan presented in Chapter 4 of this volume.

## CRITERION 4.2.1: TRAVEL TIME TO IMPORTANT PLACES BY MODE

As under the alternatives, the proportion of the Region's population living within a reasonable travel time by auto to a major activity center or regional destination would remain about the same under both the Trend and Preliminary Plan. However, the Preliminary Plan would result in significantly more of the Region's population living within a reasonable travel time by transit to a major activity center or regional destination, while the Trend would reduce the number of people with reasonable access by transit.

### Table H.37
### Population Within 30 Minutes of a Retail Center

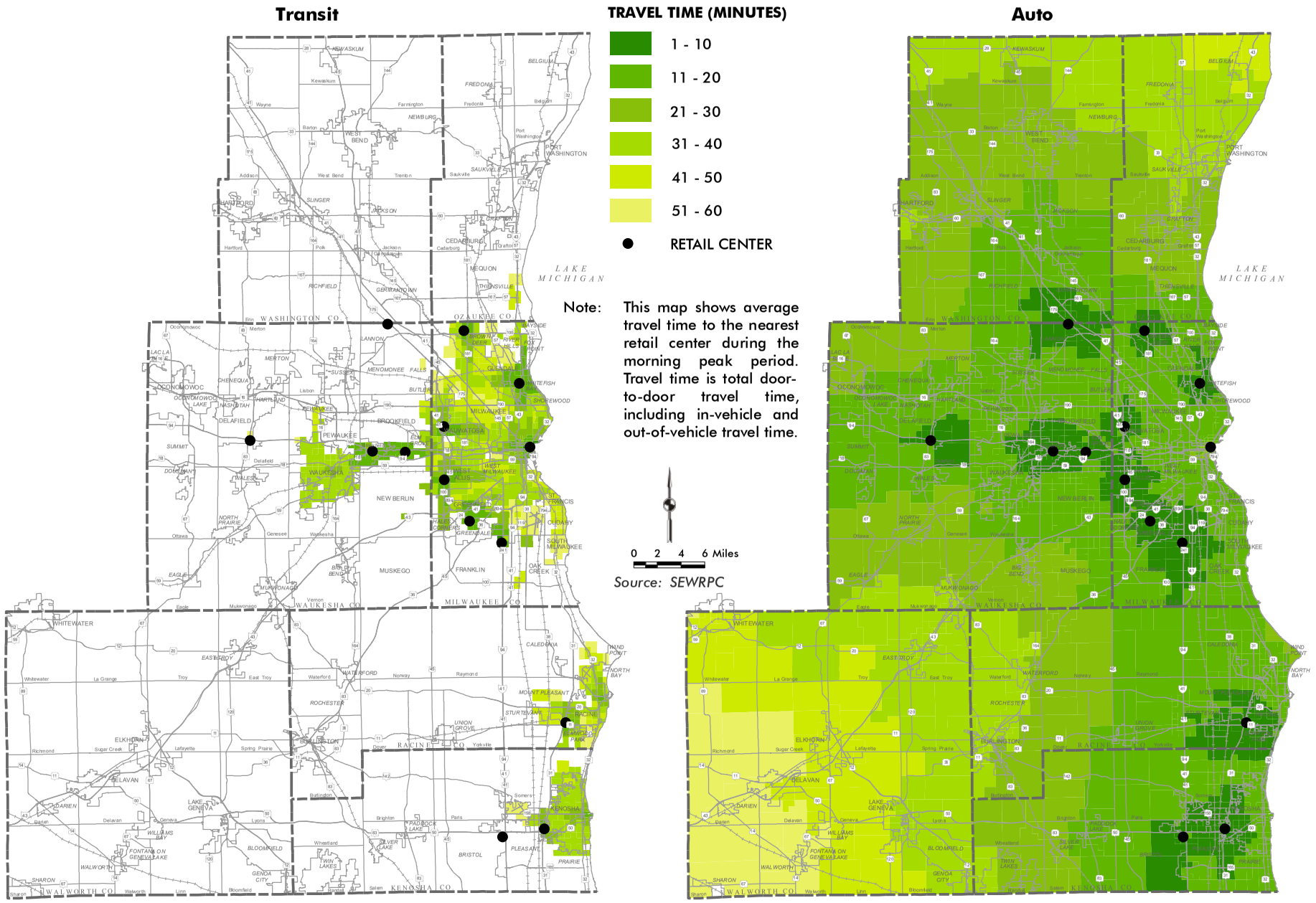
| Plan | Total Population Within a 30-Minute Transit Trip of a Retail Center | | Total Population Within a 30-Minute Drive of a Retail Center | |
|---|---|---|---|---|
| | Population with Access | Percent of Total Population | Population with Access | Percent of Total Population |
| Existing - 2011 | 285,400 | 14.1 | 1,849,900 | 91.6 |
| Trend - 2050 | 223,600 | 9.5 | 2,117,700 | 90.0 |
| Plan - 2050 | 872,300 | 36.5 | 2,163,500 | 90.6 |

*Source: SEWRPC*

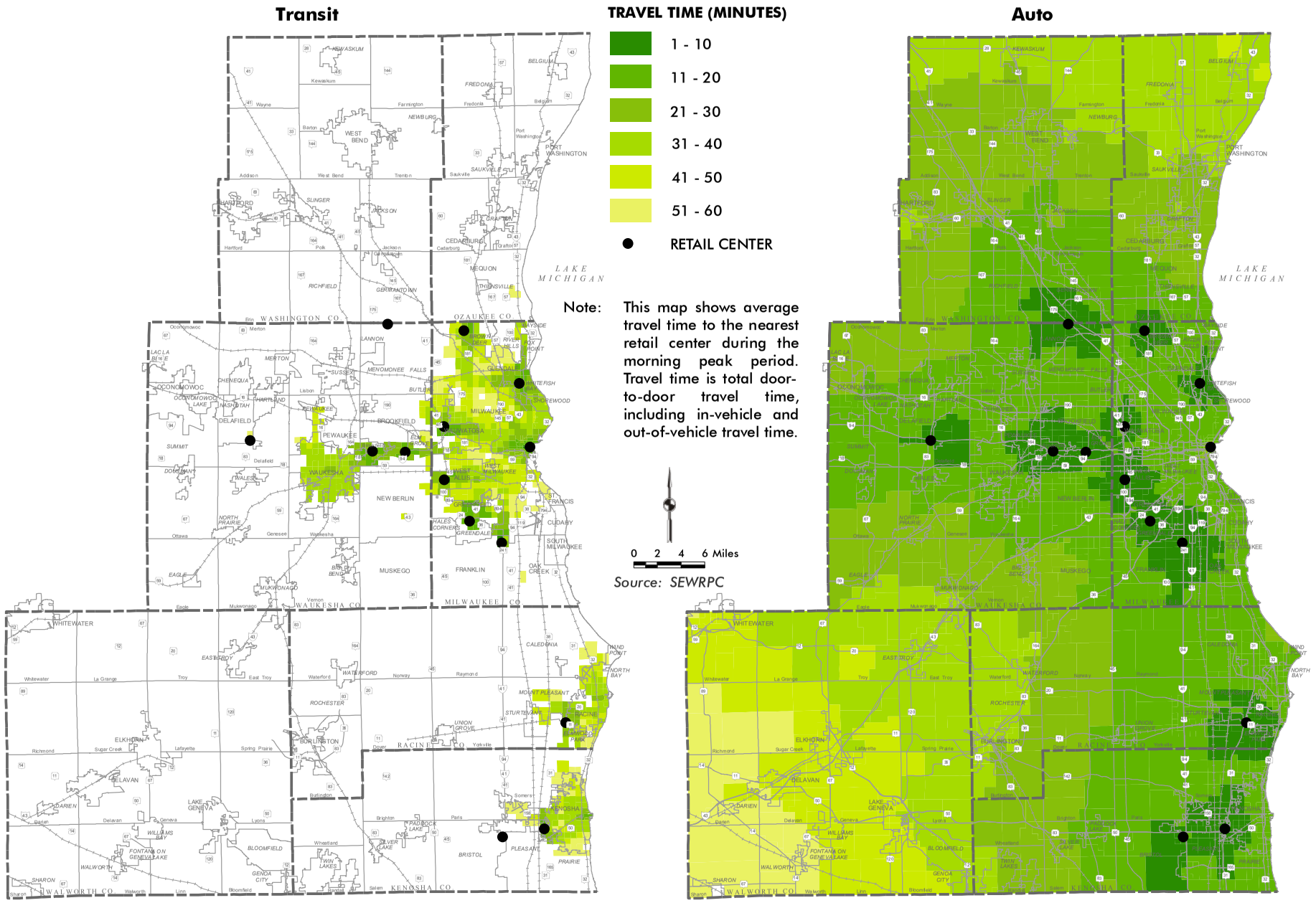
- **Transportation Access to Retail Centers:** Maps H.71 through H.73 show drive and transit trip times to one of the Region's existing 14 retail centers, and Table H.37 presents the population that would be within 30 minutes.[48] About 92 percent of the Region's population is currently within a 30-minute drive of one of the Region's existing retail centers. This proportion would remain at about 90 to 91 percent under both the Trend and Preliminary Plan, with the Preliminary Plan slightly higher primarily due to its more compact development pattern. Despite a projected increase in the Region's total population, approximately 60,000 fewer residents (22 percent less) would be within a 30-minute transit trip of a retail center under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of a retail center to about 650,000 additional residents (290 percent more).

*[48] For this criterion, only retail and retail/office centers having at least 2,000 retail jobs or 3,500 total jobs were analyzed.*

## Map H.71
## Average Peak Travel Time to Retail Centers: Existing



## Map H.72
## Average Peak Travel Time to Retail Centers: Trend



## Map H.73
## Average Peak Travel Time to Retail Centers: Preliminary Recommended Plan

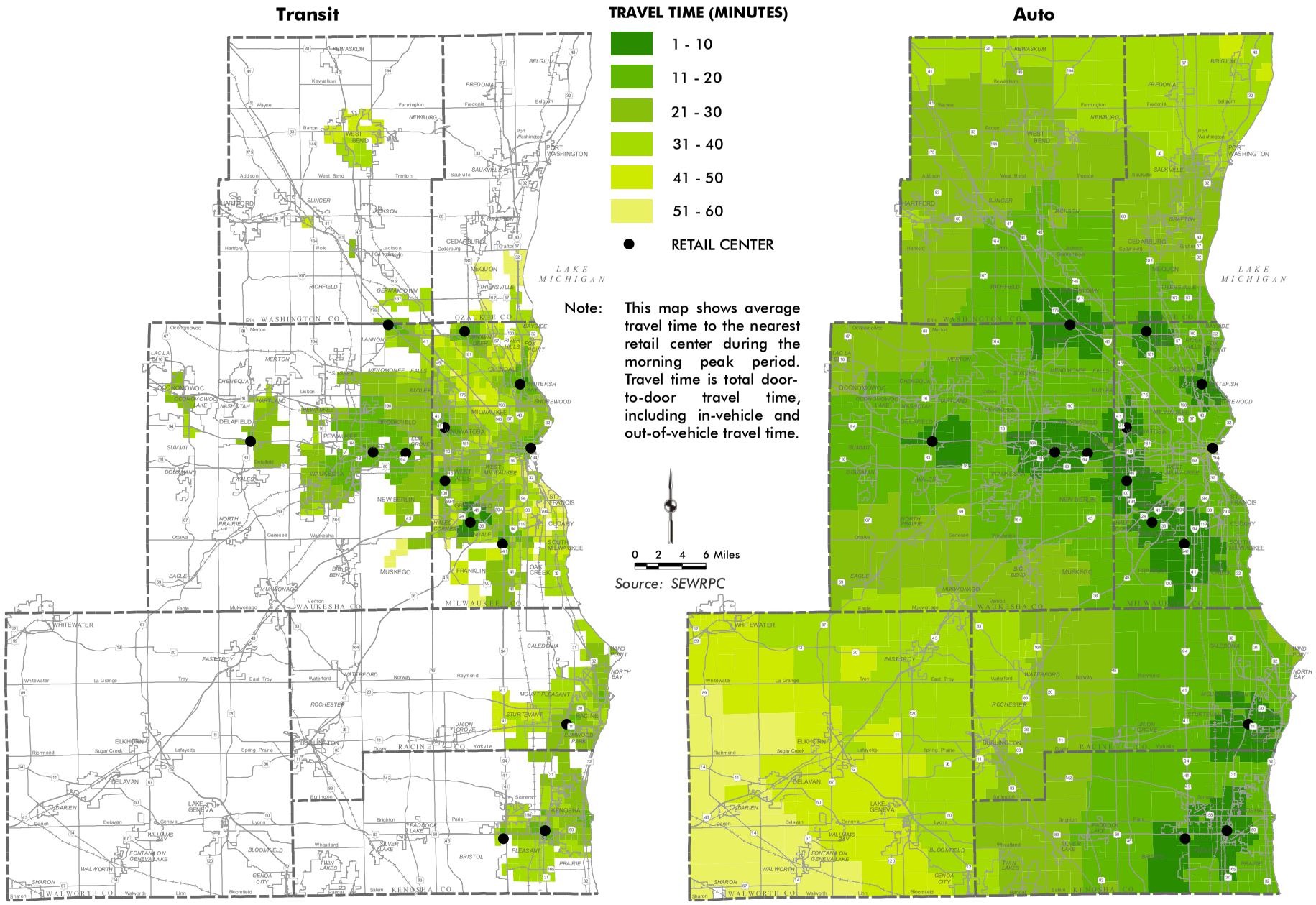


**Table H.38**
**Population Within 30 Minutes of a Major Park**

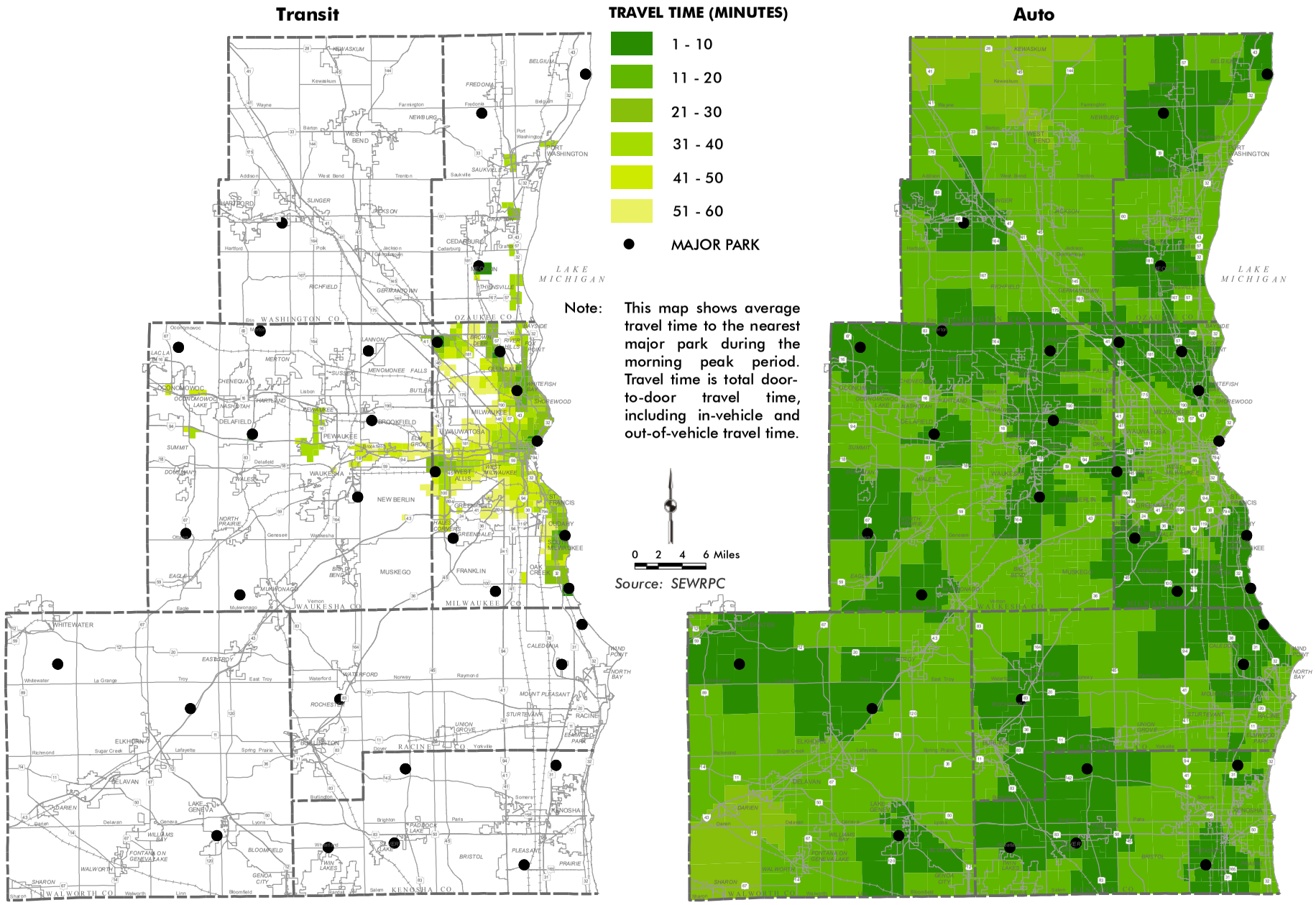
| Plan | Total Population Within a 30-Minute Transit Trip of a Major Park | | Total Population Within a 30-Minute Drive of a Major Park | |
|---|---|---|---|---|
| | Population with Access | Percent of Total Population | Population with Access | Percent of Total Population |
| Existing - 2011 | 162,200 | 8.0 | 2,020,000 | 100.0 |
| Trend - 2050 | 125,200 | 5.3 | 2,354,000 | 100.0 |
| Plan - 2050 | 553,200 | 23.2 | 2,389,200 | 100.0 |

*Source: SEWRPC*

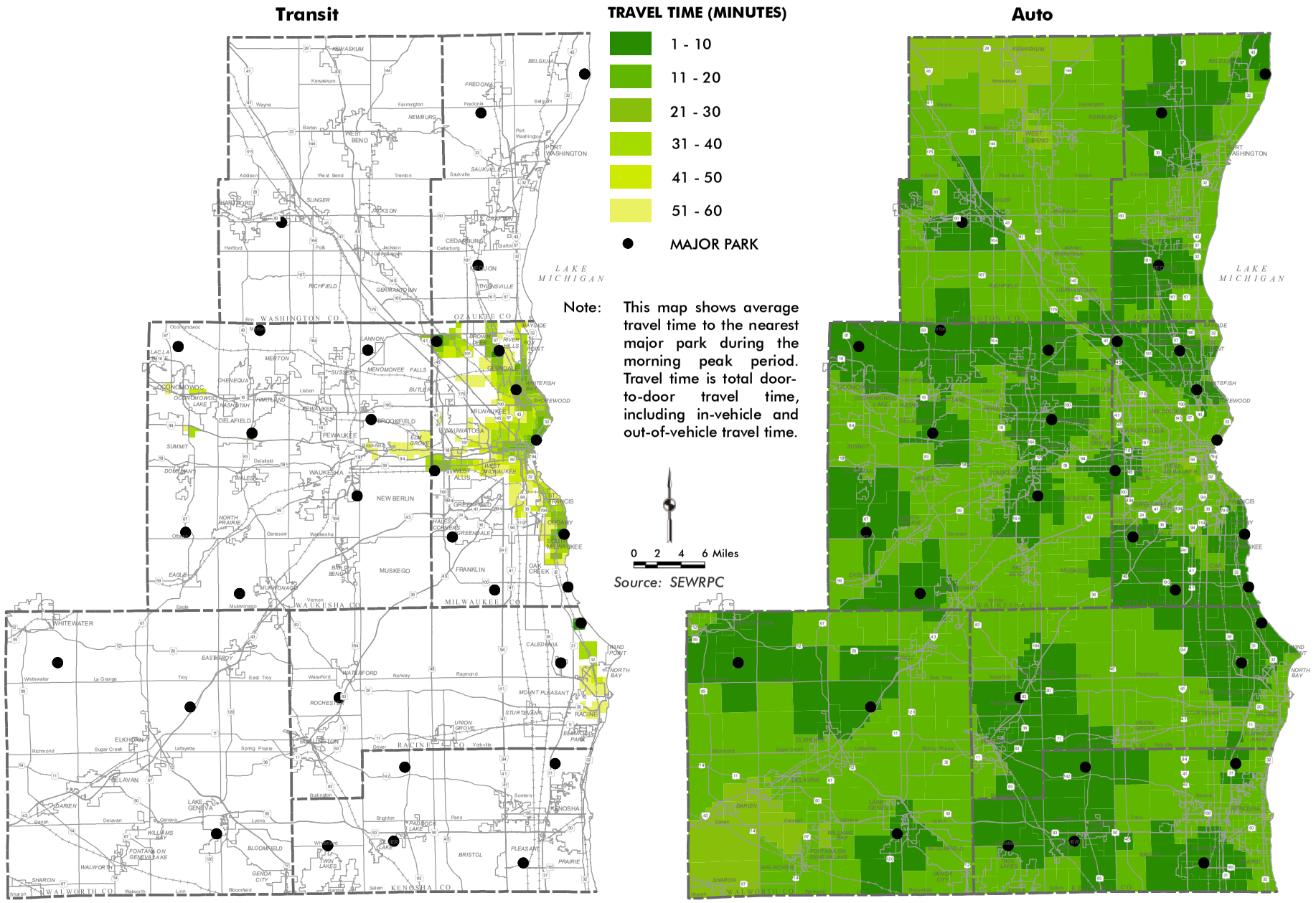
- **Transportation Access to Major Parks:** Maps H.74 through H.76 show drive and transit trip times to one of the Region's existing 32 major parks, and Table H.38 presents the population that would be within 30 minutes.[49] The entire population of the Region is currently within a 30-minute drive of one of the Region's existing major parks, which would continue under both the Trend and Preliminary Plan. Despite a projected increase in the Region's total population, approximately 37,000 fewer residents (23 percent less) would be within a 30-minute transit trip of a major park under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of a major park to about 430,000 additional residents (342 percent more).

[49] *For this criterion, only parks having an area of at least 250 acres were analyzed.*

## Map H.74
## Average Peak Travel Time to Major Parks: Existing



## Map H.75
## Average Peak Travel Time to Major Parks: Trend



## Map H.76
## Average Peak Travel Time to Major Parks: Preliminary Recommended Plan

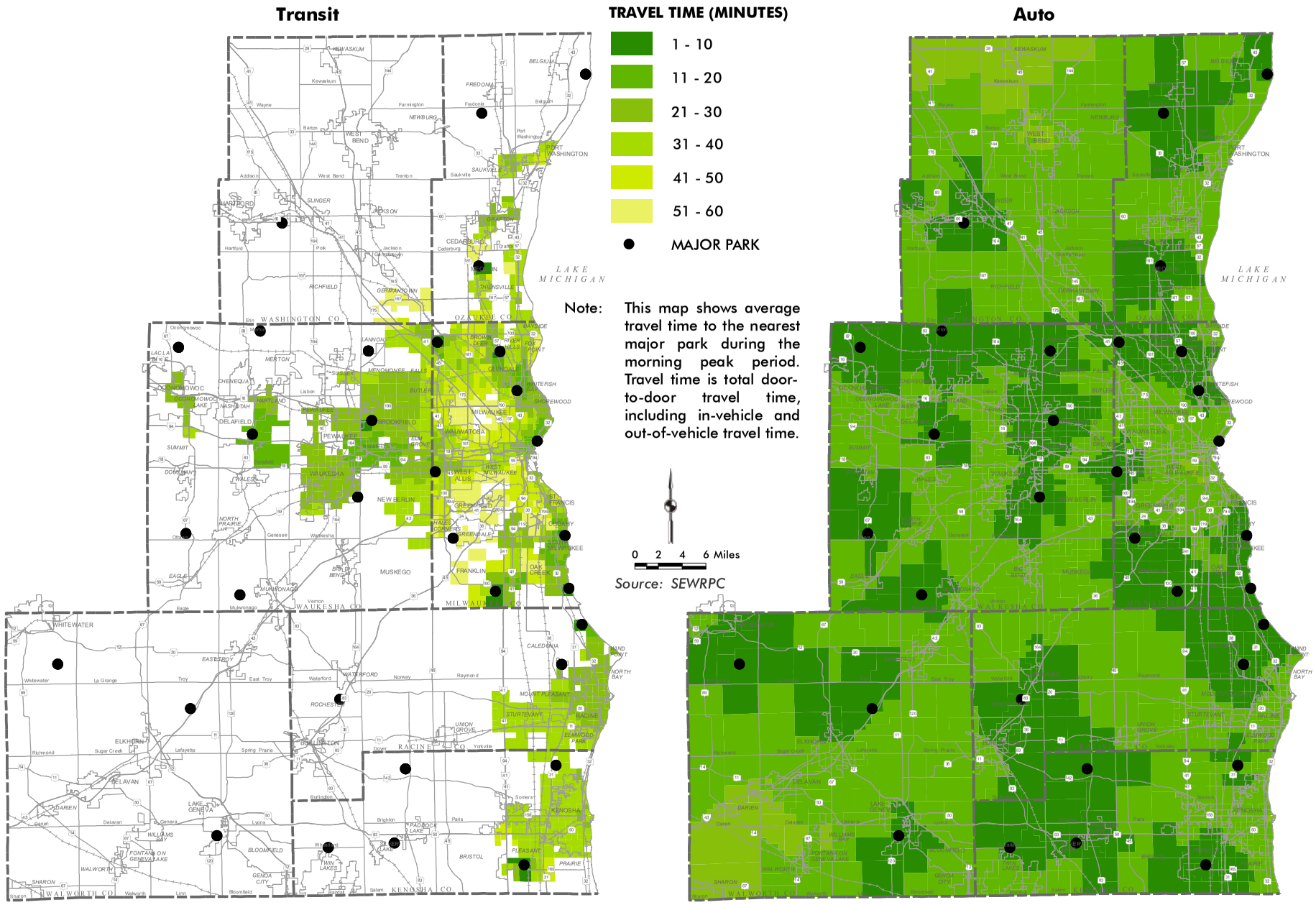


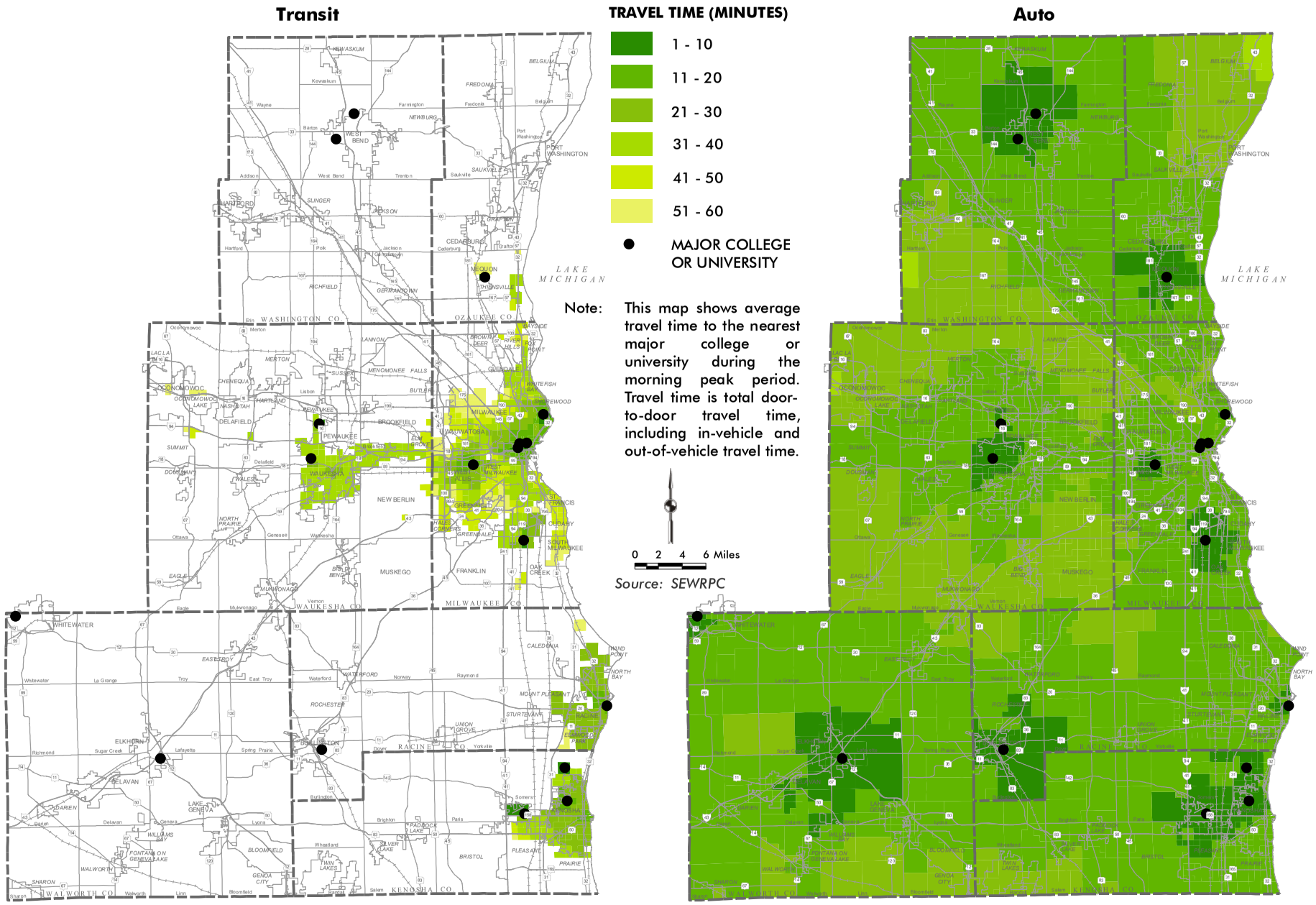
**Table H.39**
**Population Within 30 Minutes of a College or University**

| Plan | Total Population Within a 30-Minute Transit Trip of a College or University | | Total Population Within a 30-Minute Drive of a College or University | |
|---|---|---|---|---|
| | Population with Access | Percent of Total Population | Population with Access | Percent of Total Population |
| Existing - 2011 | 368,200 | 18.2 | 2,018,700 | 99.9 |
| Trend - 2050 | 282,500 | 12.0 | 2,349,400 | 99.8 |
| Plan - 2050 | 745,200 | 31.2 | 2,386,500 | 99.9 |

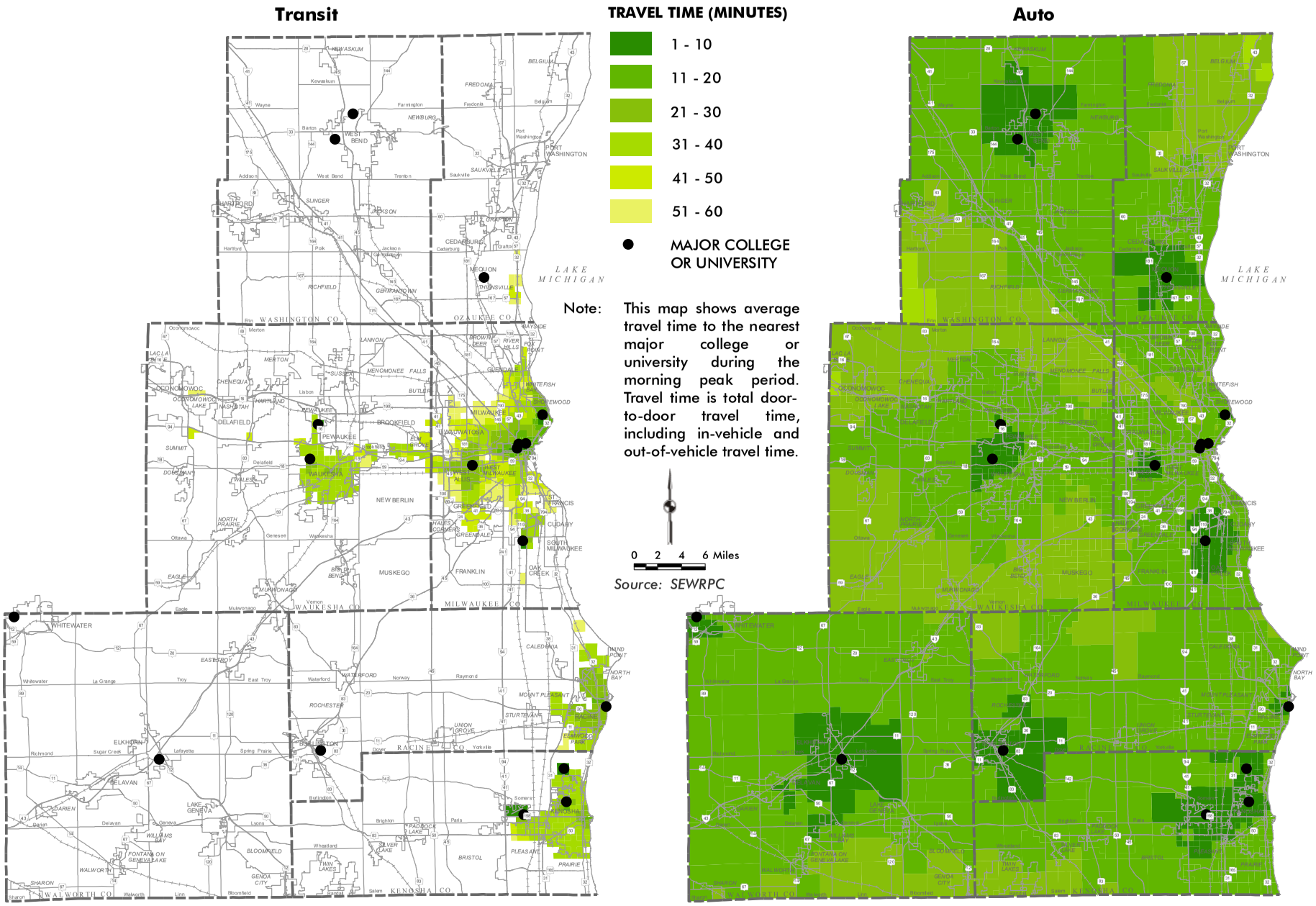
*Source: SEWRPC*

- **Transportation Access to Public Technical Colleges and Universities:** Maps H.77 through H.79 show drive and transit trip times to one of the Region's existing 18 public technical colleges or universities, and Table H.39 presents the population that would be within 30 minutes. Almost the entire population of the Region is currently within a 30-minute drive of one of the Region's existing colleges or universities, which would continue under both the Trend and Preliminary Plan. Despite a projected increase in the Region's total population, approximately 86,000 fewer residents (23 percent less) would be within a 30-minute transit trip of a college or university under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of a college or university to about 460,000 additional residents (164 percent more).

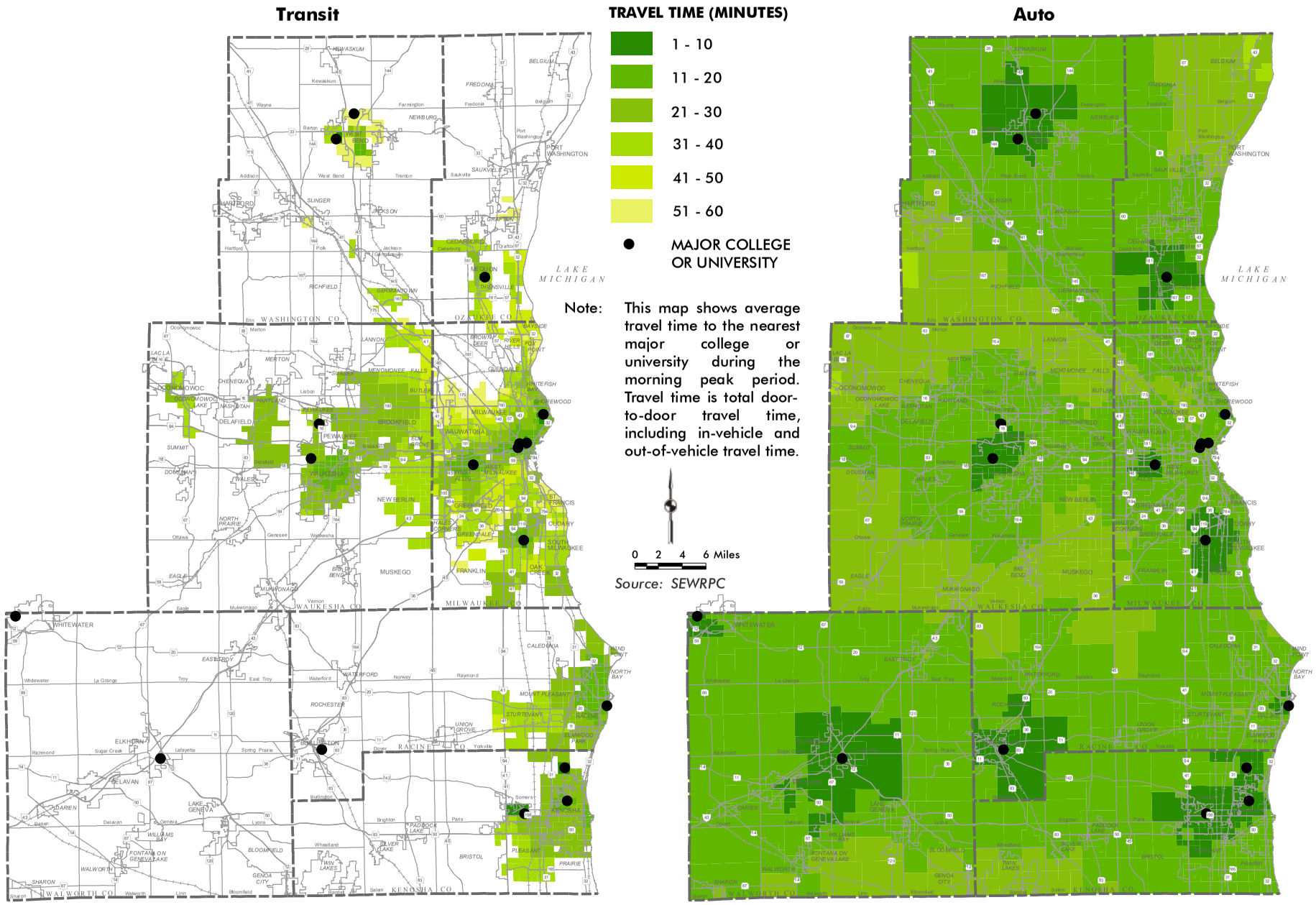
## Map H.77
## Average Peak Travel Time to Public Technical Colleges and Universities: Existing



## Map H.78
## Average Peak Travel Time to Public Technical Colleges and Universities: Trend



## Map H.79
## Average Peak Travel Time to Public Technical Colleges and Universities: Preliminary Recommend Plan



## Table H.40
## Population Within 30 Minutes of a Health Care Facility

| Plan | Total Population Within a 30-Minute Transit Trip of a Health Care Facility | | Total Population Within a 30-Minute Drive of a Health Care Facility | |
|---|---|---|---|---|
| | Population with Access | Percent of Total Population | Population with Access | Percent of Total Population |
| Existing - 2011 | 655,700 | 32.5 | 2,016,400 | 99.8 |
| Trend - 2050 | 542,200 | 23.0 | 2,354,000 | 100.0 |
| Plan - 2050 | 1,090,500 | 45.6 | 2,389,200 | 100.0 |

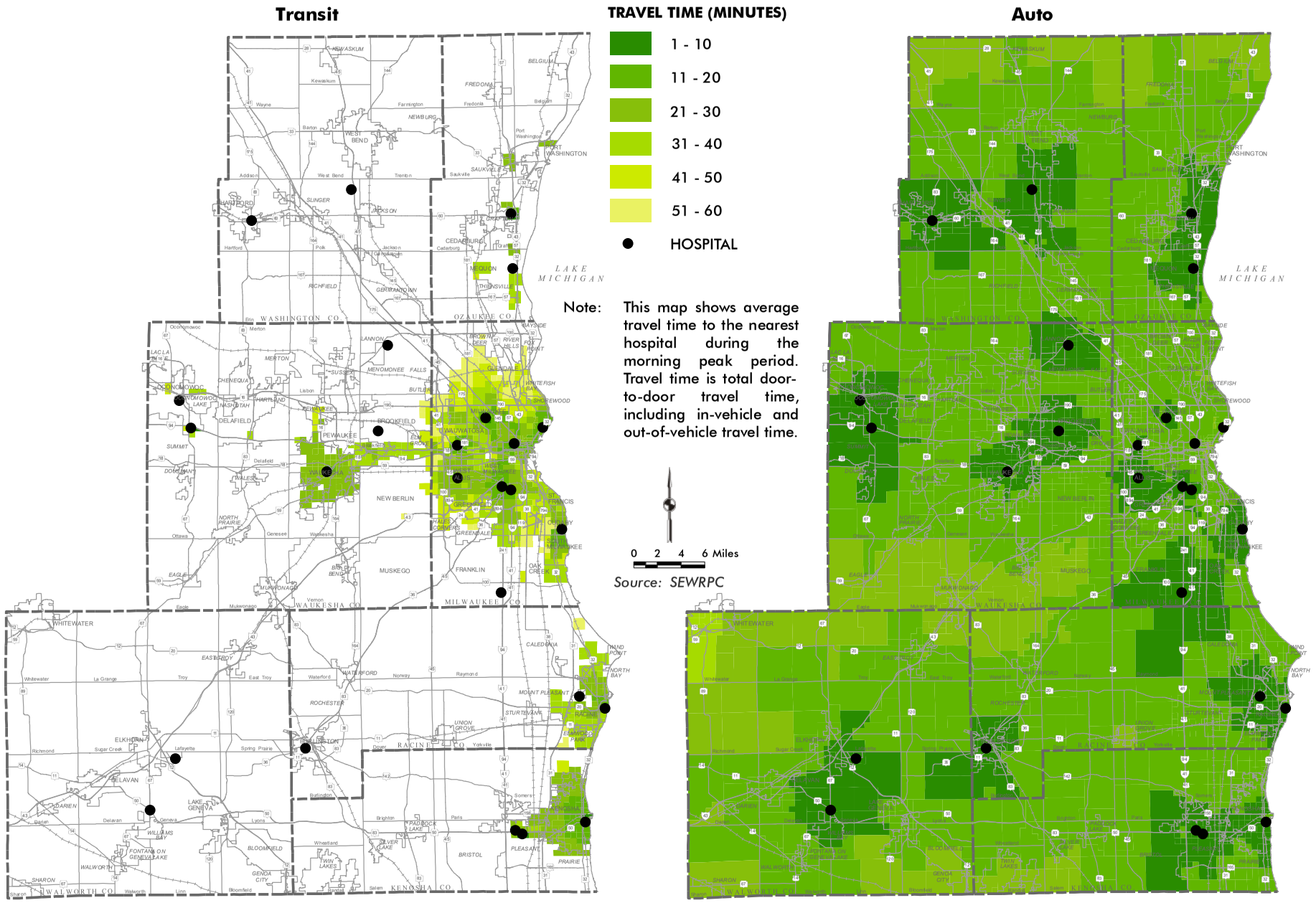
*Source: SEWRPC*

- **Transportation Access to Health Care Facilities:** Maps H.80 through H.82 show drive and transit trip times to one of the Region's existing 26 major hospitals, and Table H.40 presents the population that would be within 30 minutes.[50] Essentially the entire population of the Region is currently within a 30-minute drive of one of the Region's existing hospitals, which would continue under both the Trend and Preliminary Plan.[51] Despite a projected increase in the Region's total population, approximately 115,000 fewer residents (17 percent less) would be within a 30-minute transit trip of a hospital under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of a hospital to about 550,000 additional residents (101 percent more).

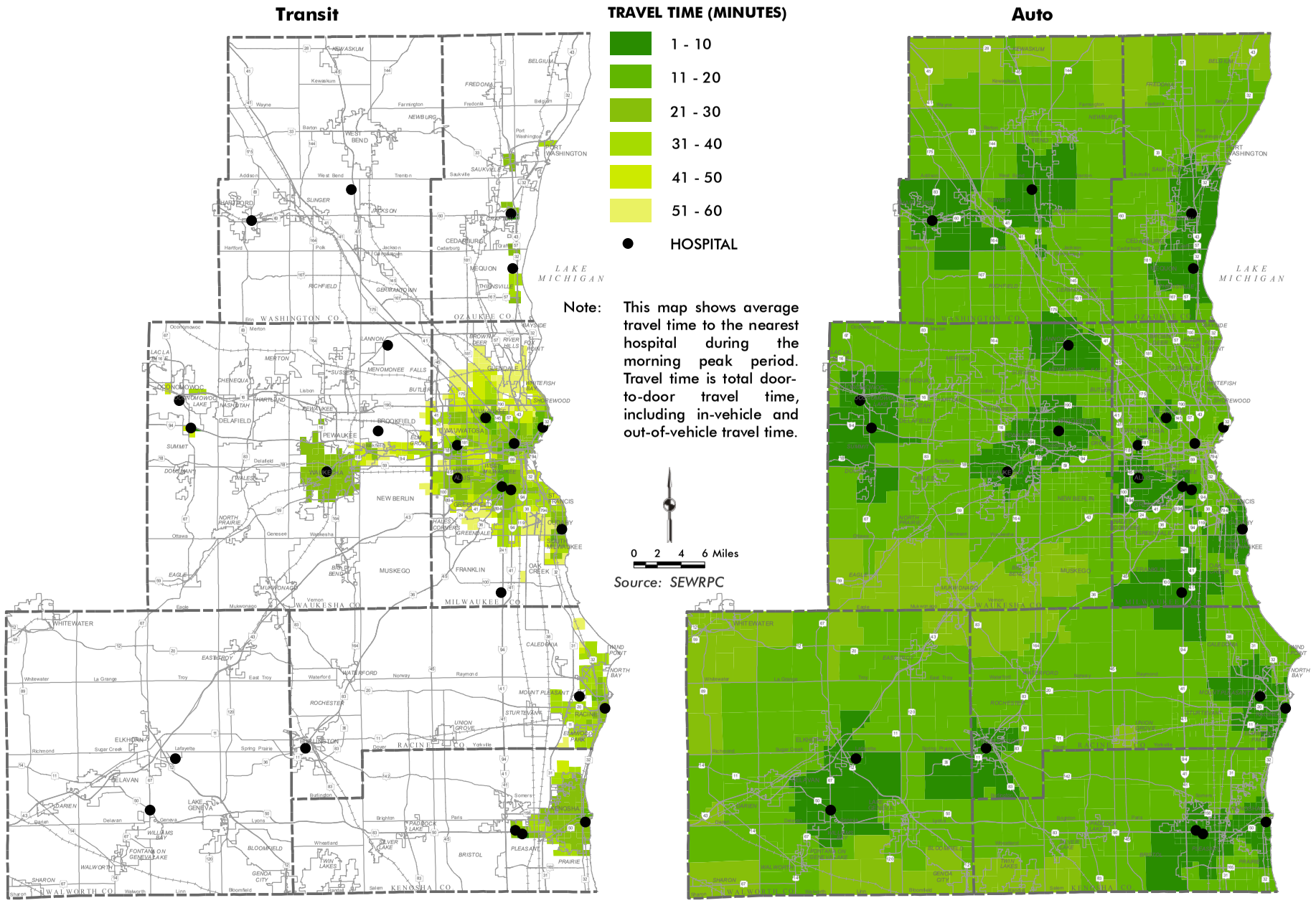
*[50] For this criterion, only major hospitals for the general population were analyzed (other health care facilities were excluded, such as specialty hospitals, urgent care facilities, facilities requiring referrals, and veterans-only facilities).*

*[51] The only area not currently within a 30-minute drive of a Region hospital is in the northwest corner of Walworth County. This small area is, however, currently within a 30-minute drive of Fort Memorial Hospital, a major general-population hospital located outside the seven-county Region.*

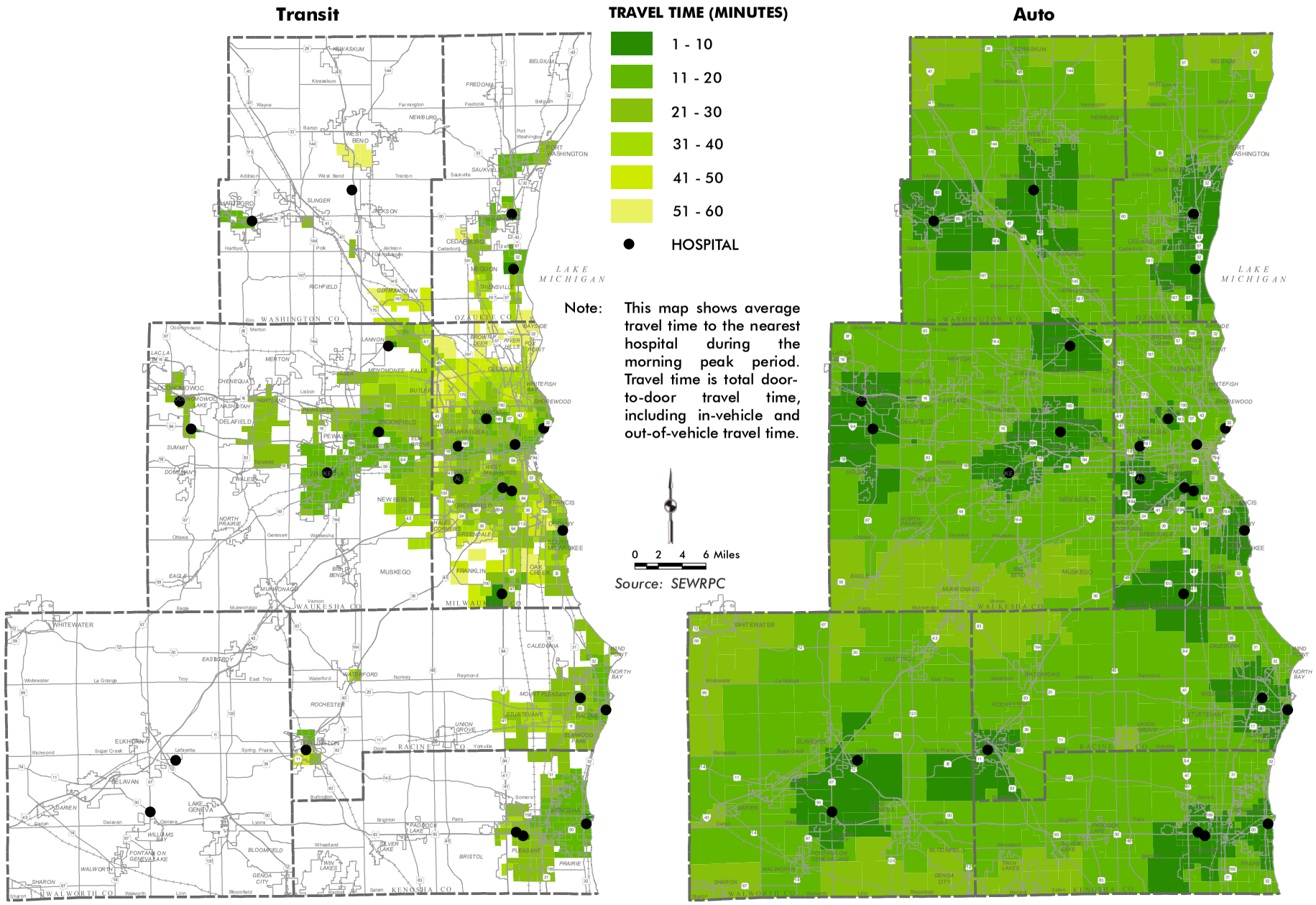
## Map H.80
## Average Peak Travel Time to Health Care Facilities: Existing



## Map H.81
## Average Peak Travel Time to Health Care Facilities: Trend



## Map H.82
## Average Peak Travel Time to Health Care Facilities: Preliminary Recommended Plan



## Table H.41
## Population Within 30 Minutes of a Grocery Store

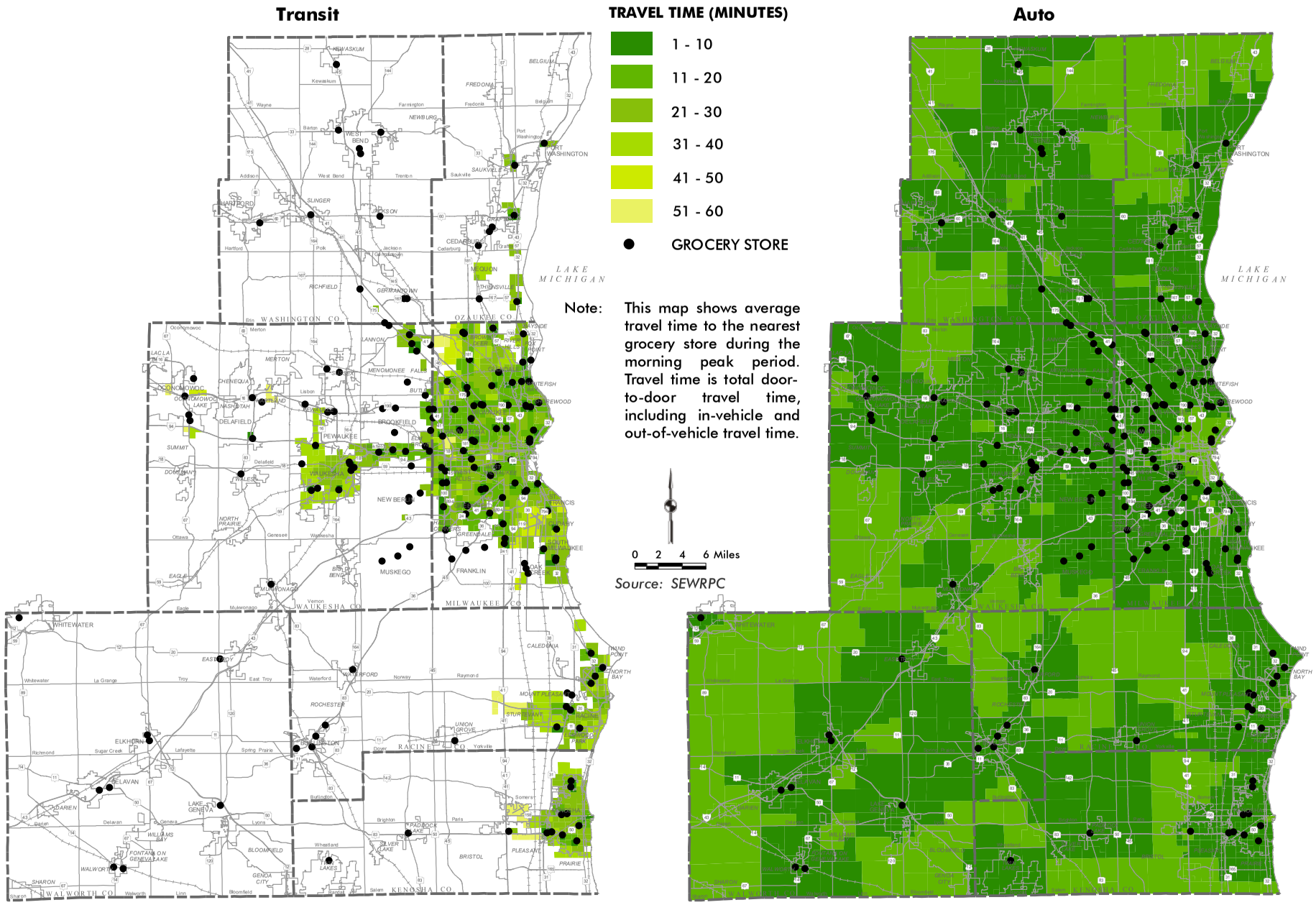
| Plan | Total Population Within a 30-Minute Transit Trip of a Grocery Store | | Total Population Within a 30-Minute Drive of a Grocery Store | |
|---|---|---|---|---|
| | Population with Access | Percent of Total Population | Population with Access | Percent of Total Population |
| Existing - 2011 | 1,015,400 | 50.3 | 2,020,000 | 100.0 |
| Trend - 2050 | 976,700 | 41.5 | 2,354,000 | 100.0 |
| Plan - 2050 | 1,555,800 | 65.1 | 2,389,200 | 100.0 |

*Source: SEWRPC*

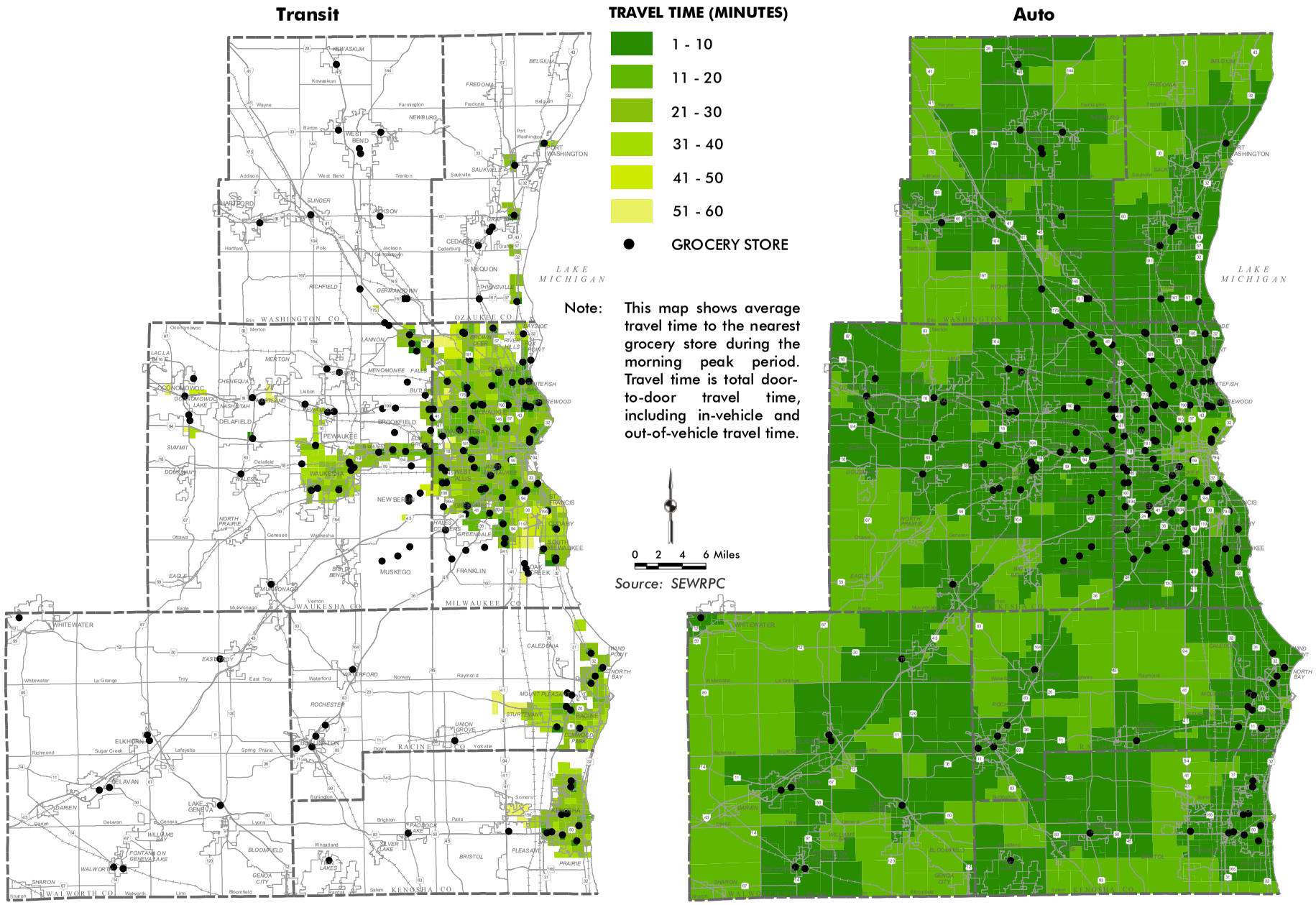
- **Transportation Access to Grocery Stores:** Maps H.83 through H.85 show drive and transit trip times to one of the Region's existing 177 grocery stores, and Table H.41 presents the population that would be within 30 minutes.[52] The entire population of the Region is currently within a 30-minute drive of one of the Region's existing grocery stores, which would continue under both the Trend and Preliminary Plan. Despite a projected increase in the Region's total population, approximately 40,000 fewer residents (4 percent less) would be within a 30-minute transit trip of a grocery store under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of a grocery store to about 580,000 additional residents (59 percent more). As discussed under the alternatives evaluation, another important consideration for grocery store access is whether residents are within a reasonable walking travel time to a grocery store. Like Alternatives I and II, the Preliminary Plan would be expected to result in more residents having walking access to a grocery store than the Trend given that more people would live in walkable areas (see Criterion 1.1.1).

[52] *For this criterion, only grocery stores having at least 50,000 square feet were analyzed.*

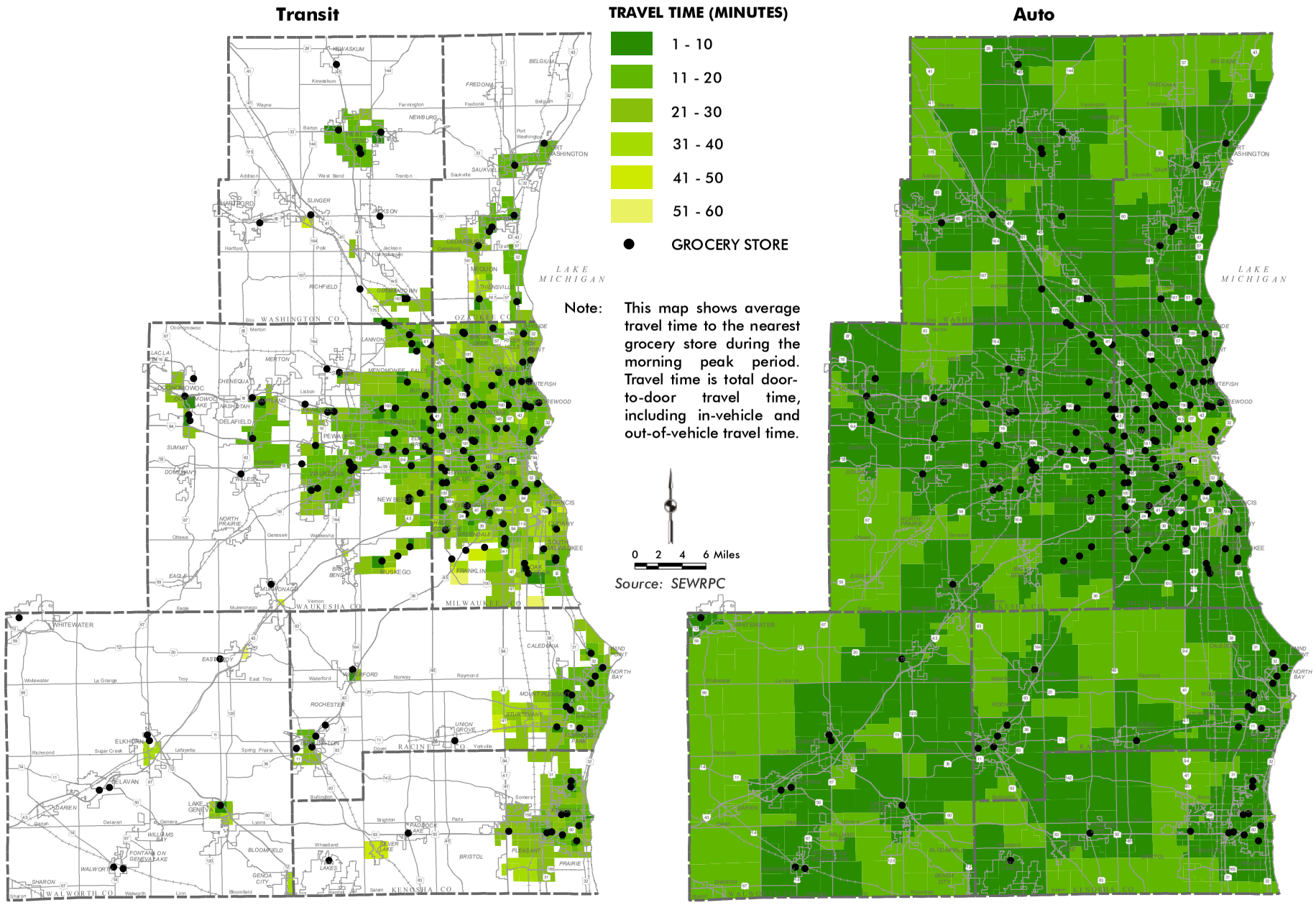
## Map H.83
## Average Peak Travel Time to Grocery Stores: Existing



## Map H.84
## Average Peak Travel Time to Grocery Stores: Trend



## Map H.85
## Average Peak Travel Time to Grocery Stores: Preliminary Recommended Plan



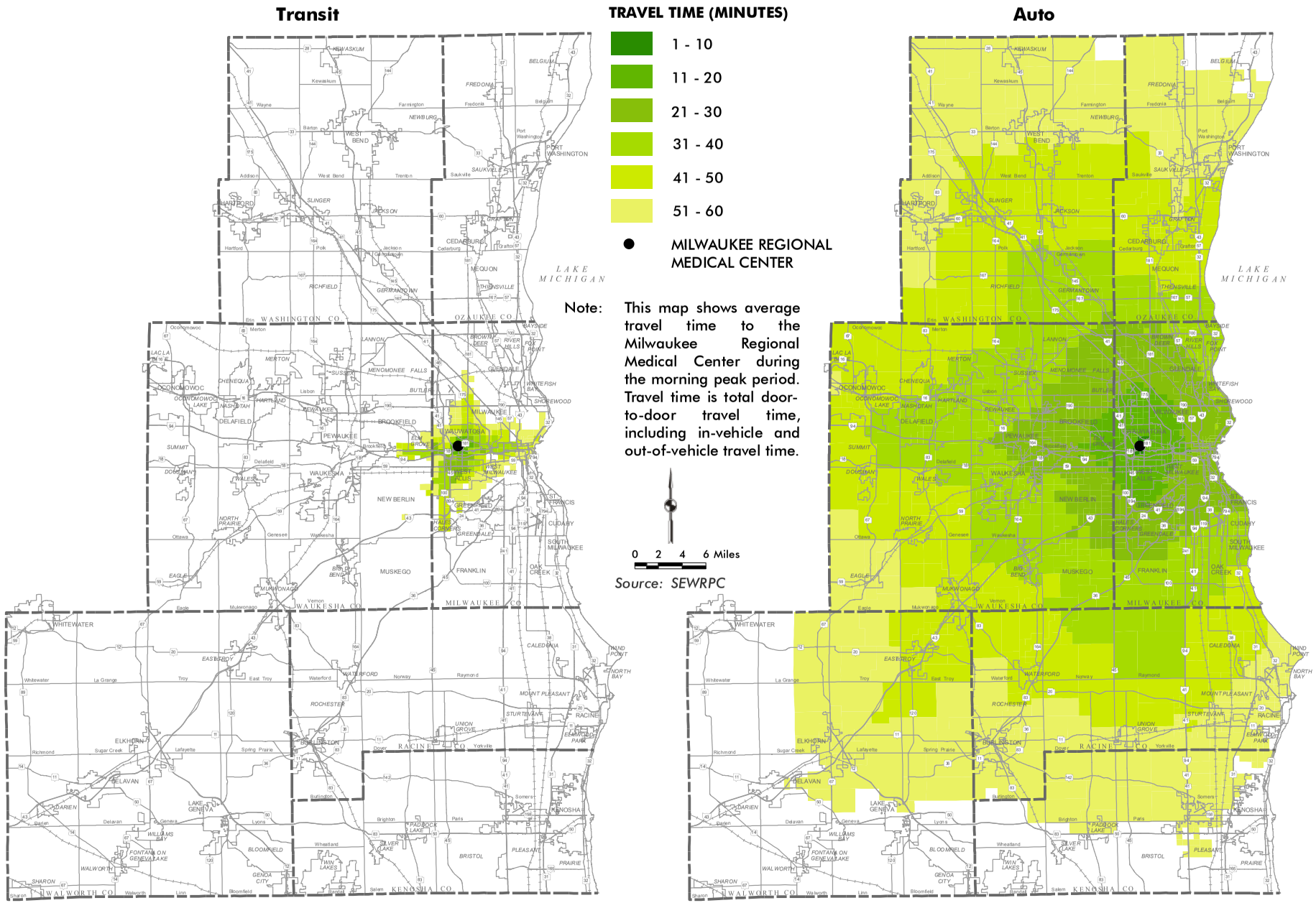
## Table H.42
## Population Within 60 Minutes of the Milwaukee Regional Medical Center

| Plan | Total Population Within a 60-Minute Transit Trip of the Milwaukee Regional Medical Center | | Total Population Within a 60-Minute Drive of the Milwaukee Regional Medical Center | |
|---|---|---|---|---|
| | Population with Access | Percent of Total Population | Population with Access | Percent of Total Population |
| Existing - 2011 | 343,400 | 17.0 | 1,792,600 | 88.7 |
| Trend - 2050 | 266,100 | 11.3 | 2,091,700 | 88.9 |
| Plan - 2050 | 917,500 | 38.4 | 2,125,900 | 89.0 |

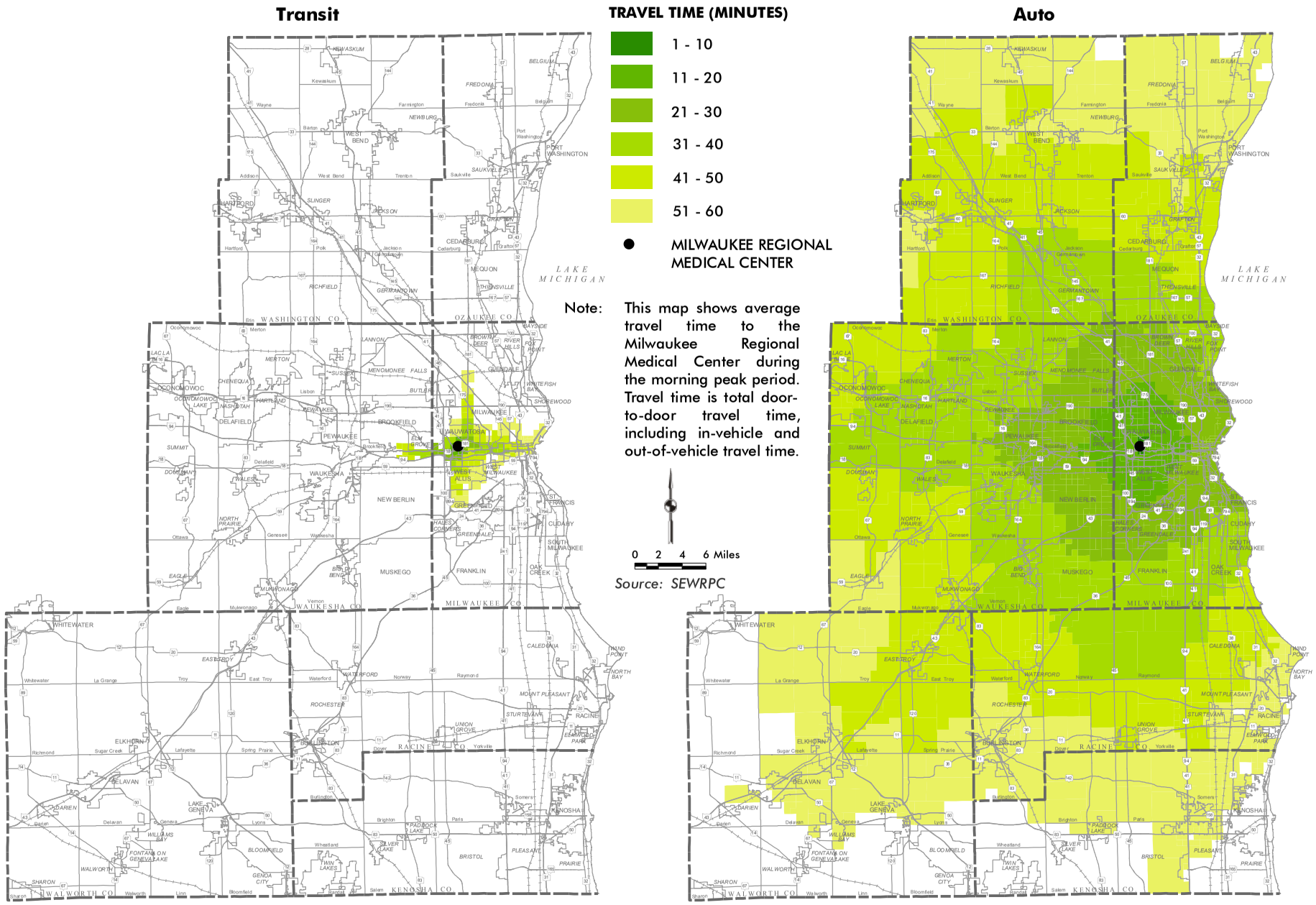
*Source: SEWRPC*

- **Transportation Access to Milwaukee Regional Medical Center:** Maps H.86 through H.88 show drive and transit trip times to the Milwaukee Regional Medical Center (MRMC) in Wauwatosa, and Table H.42 presents the population that would be within 60 minutes of MRMC. About 89 percent of the Region's population is currently within a 60-minute drive of MRMC. This proportion would remain at about 89 percent under the Trend and Preliminary Plan, with the Preliminary Plan slightly higher primarily due to its more compact development pattern. Despite a projected increase in the Region's total population, approximately 77,000 fewer residents (23 percent less) would be within a 60-minute transit trip of MRMC under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 60 minutes of MRMC to about 650,000 additional residents (245 percent more).

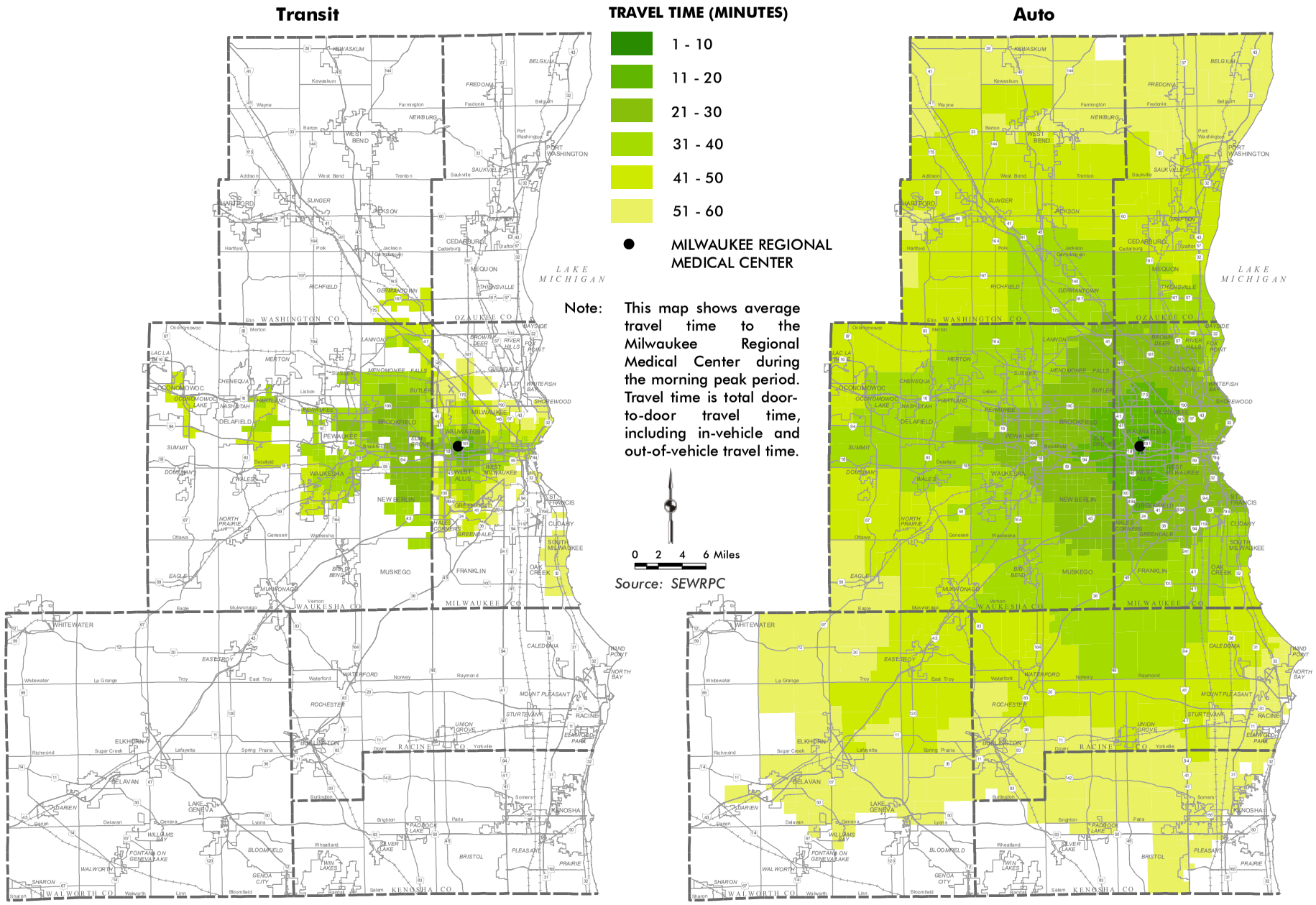
## Map H.86
## Average Peak Travel Time to the Milwaukee Regional Medical Center: Existing



## Map H.87
## Average Peak Travel Time to the Milwaukee Regional Medical Center: Trend



## Map H.88
## Average Peak Travel Time to the Milwaukee Regional Medical Center: Preliminary Recommended Plan



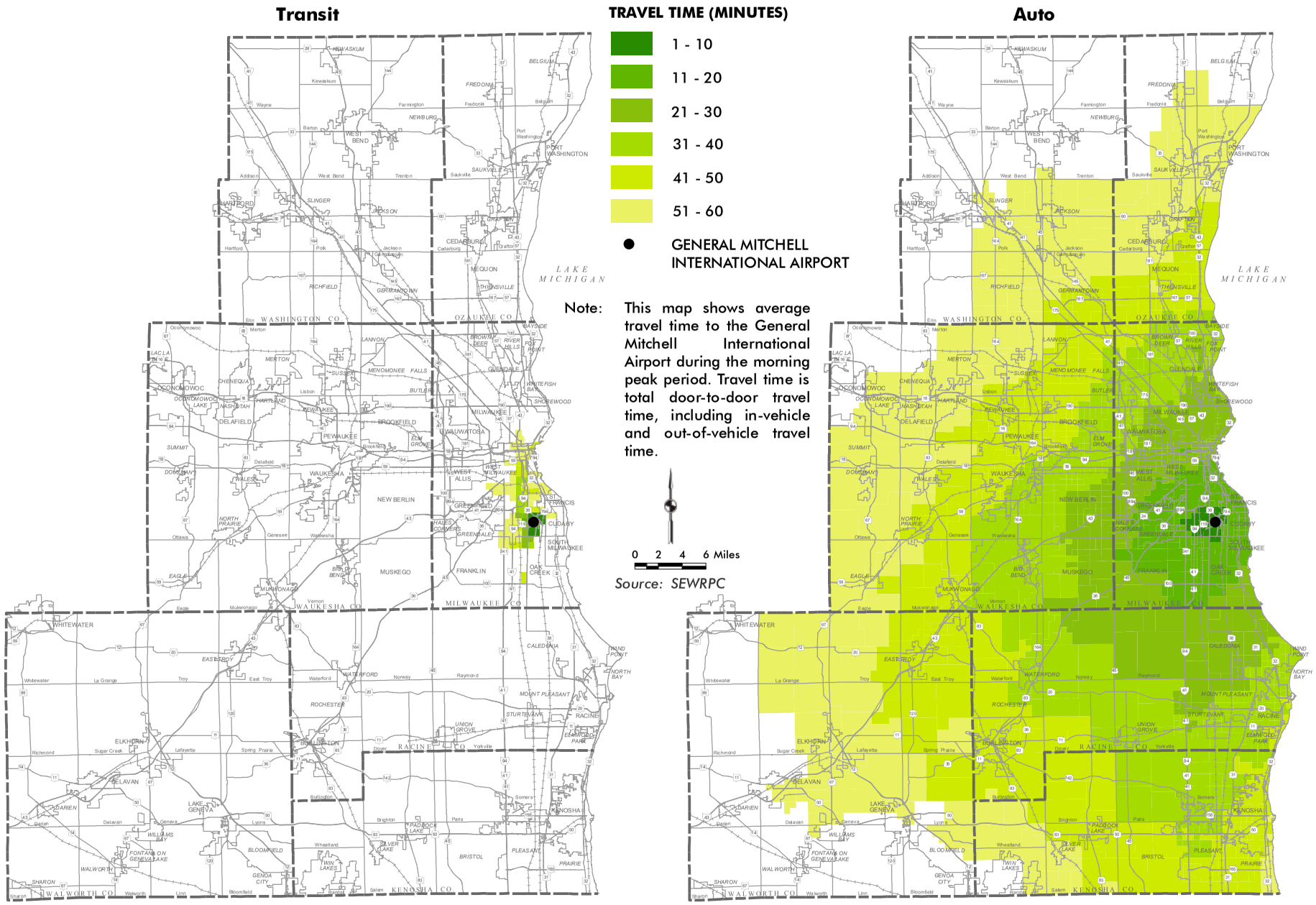
## Table H.43
## Population Within 60 Minutes of General Mitchell International Airport

| Plan | Total Population Within a 60-Minute Transit Trip of General Mitchell International Airport | | Total Population Within a 60-Minute Drive of General Mitchell International Airport | |
|---|---|---|---|---|
| | Population with Access | Percent of Total Population | Population with Access | Percent of Total Population |
| Existing - 2011 | 143,400 | 7.1 | 1,895,800 | 93.9 |
| Trend - 2050 | 134,600 | 5.7 | 2,196,600 | 93.3 |
| Plan - 2050 | 322,400 | 13.5 | 2,232,600 | 93.4 |

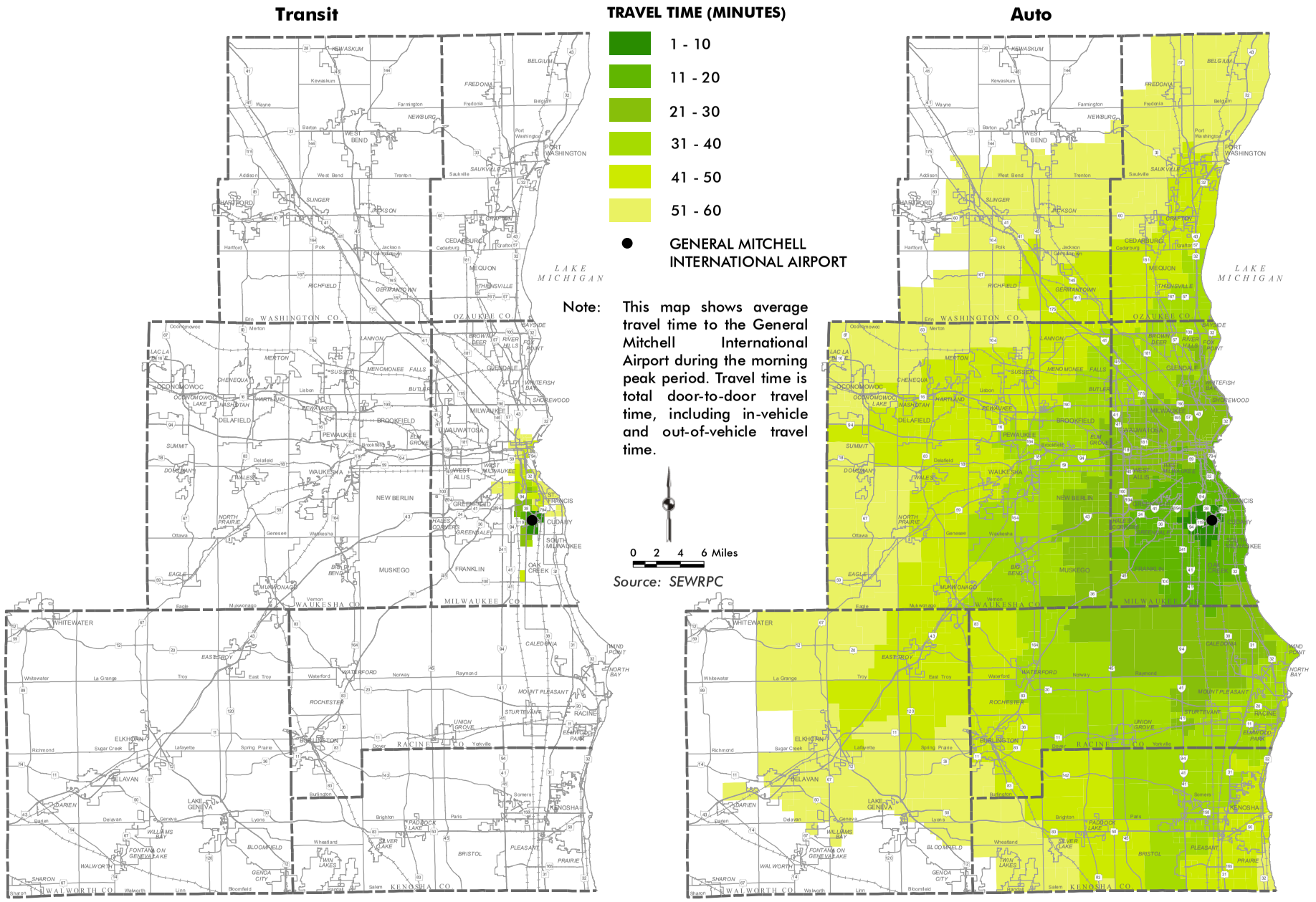
*Source: SEWRPC*

- **Transportation Access to General Mitchell International Airport:** Maps H.89 through H.91 show drive and transit trip times to General Mitchell International Airport (GMIA), and Table H.43 presents the population that would be within 60 minutes of GMIA. About 94 percent of the Region's population is currently within a 60-minute drive of GMIA. This proportion would remain at about 93 percent under the Trend and Preliminary Plan, with the Preliminary Plan slightly higher primarily due to its more compact development pattern. Despite a projected increase in the Region's total population, approximately 10,000 fewer residents (6 percent less) would be within a 60-minute transit trip of GMIA under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 60 minutes of GMIA to about 190,000 additional residents (140 percent more).

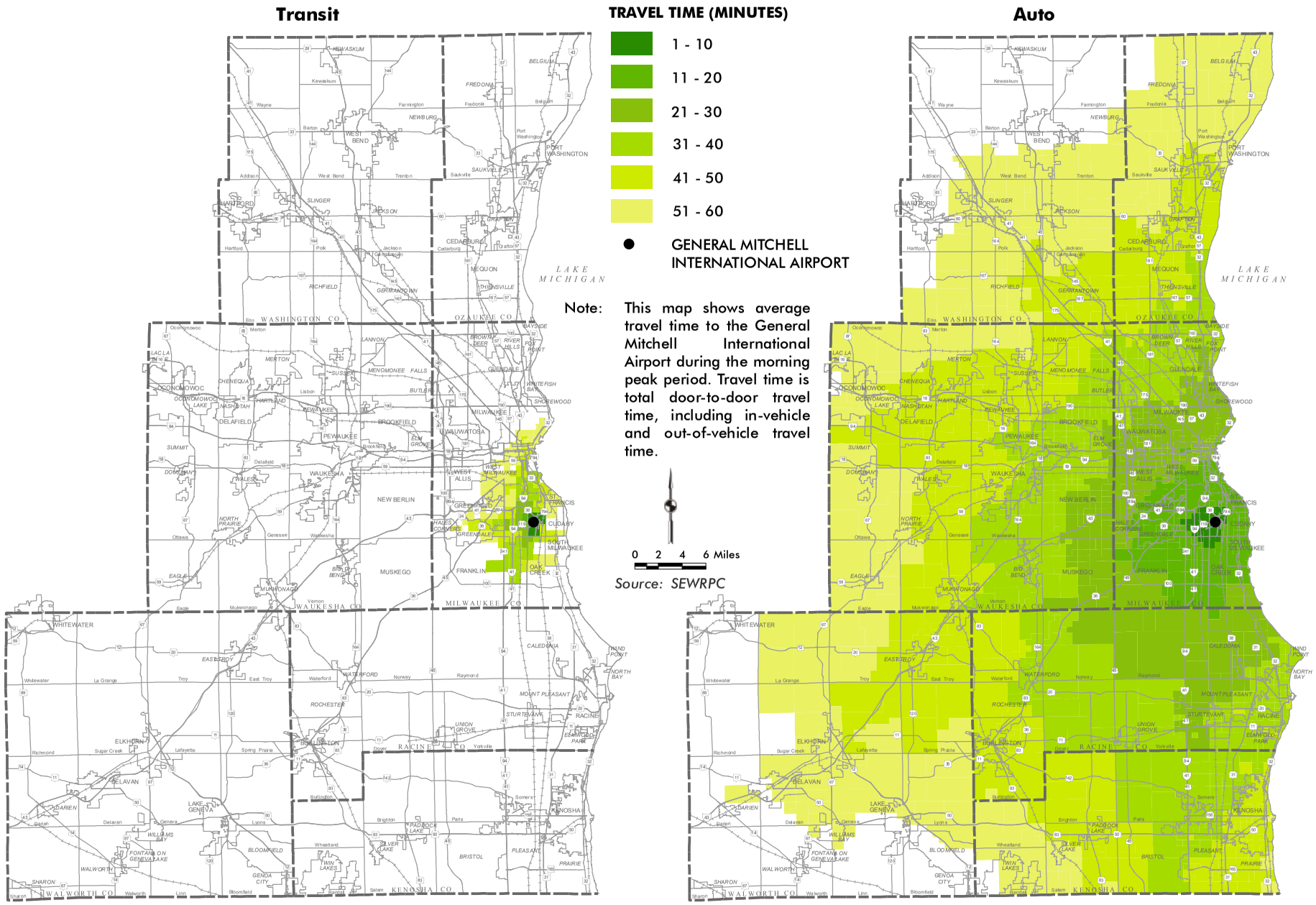
# Map H.89
## Average Peak Travel Time to General Mitchell International Airport: Existing



## Map H.90
## Average Peak Travel Time to General Mitchell International Airport: Trend



## Map H.91
## Average Peak Travel Time to General Mitchell International Airport: Preliminary Recommended Plan



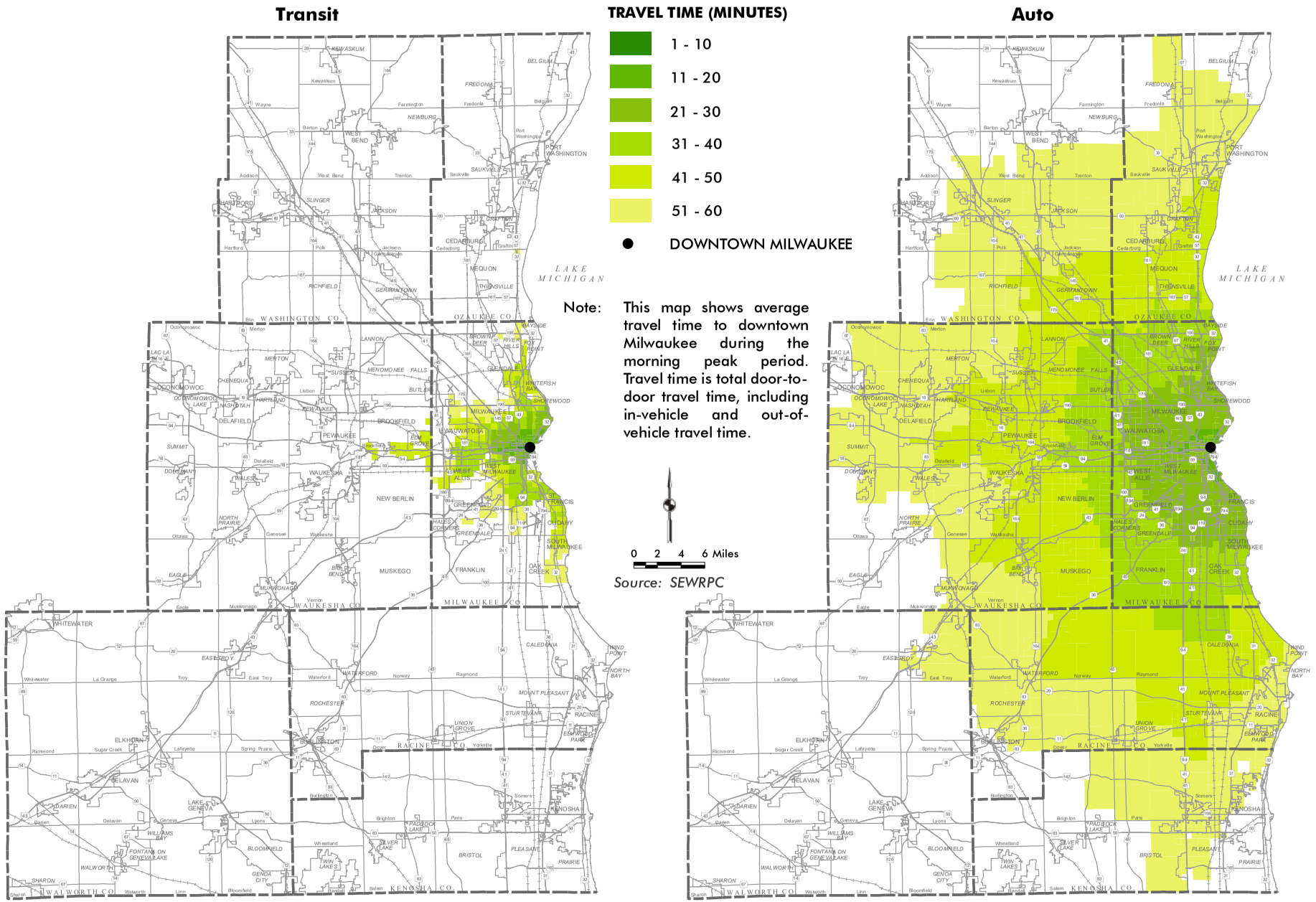
## Table H.44
## Population Within 30 Minutes of Downtown Milwaukee

| Plan | Total Population Within a 30-Minute Transit Trip of Downtown Milwaukee | | Total Population Within a 30-Minute Drive of Downtown Milwaukee | |
|---|---|---|---|---|
| | Population with Access | Percent of Total Population | Population with Access | Percent of Total Population |
| Existing - 2011 | 143,000 | 7.1 | 684,900 | 33.9 |
| Trend - 2050 | 105,700 | 4.5 | 755,000 | 32.1 |
| Plan - 2050 | 177,300 | 7.4 | 765,700 | 32.0 |

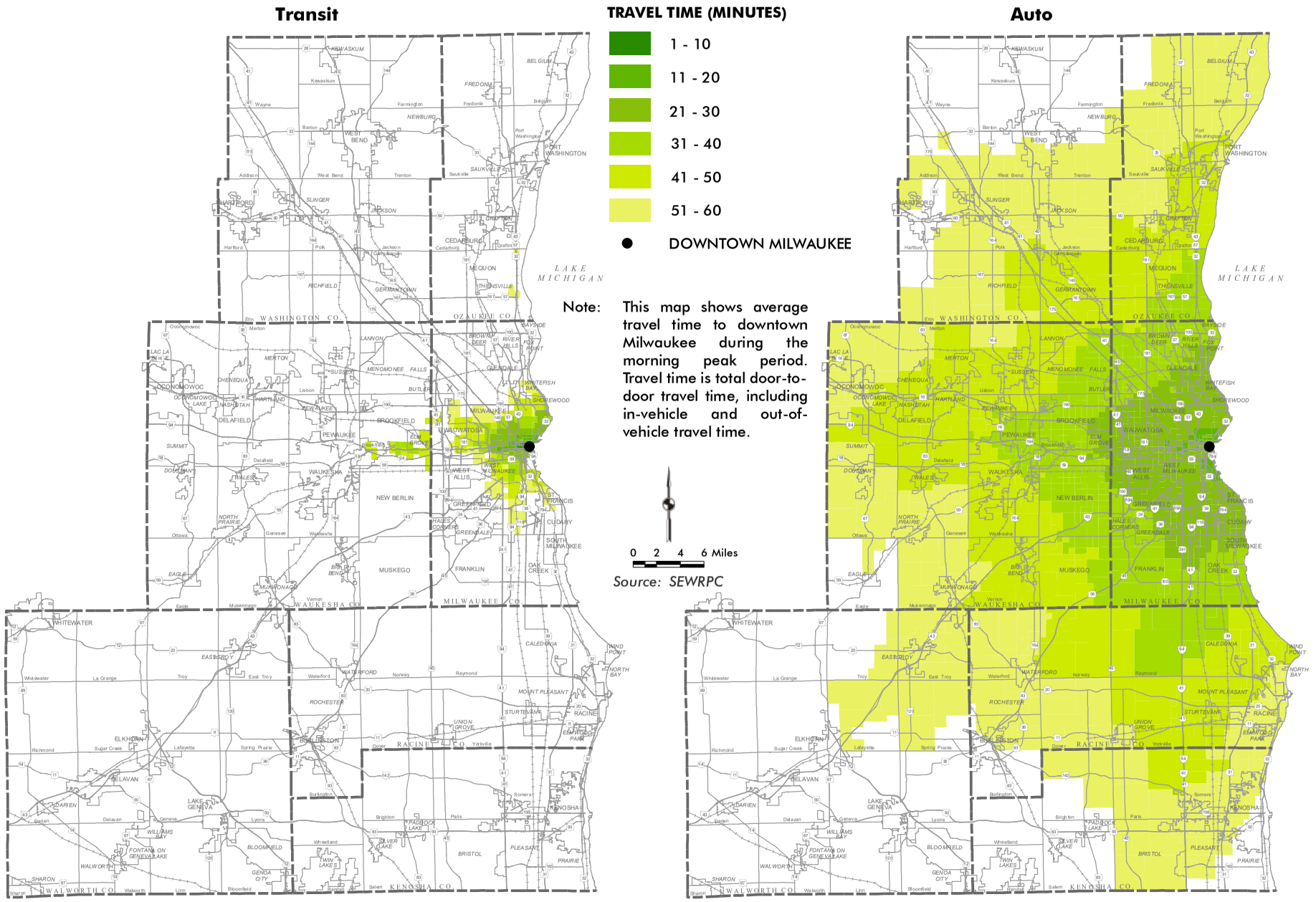
*Source: SEWRPC*

- **Transportation Access to Downtown Milwaukee:** Maps H.92 through H.94 show drive and transit trip times to downtown Milwaukee, and Table H.44 presents the population that would be within 30 minutes. About 34 percent of the Region's population is currently within a 30-minute drive of downtown Milwaukee. This proportion would remain about the same under both the Trend and Preliminary Plan. Despite a projected increase in the Region's total population, approximately 37,000 fewer residents (26 percent less) would be within a 30-minute transit trip of downtown Milwaukee under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of downtown Milwaukee to about 72,000 additional residents (68 percent more).

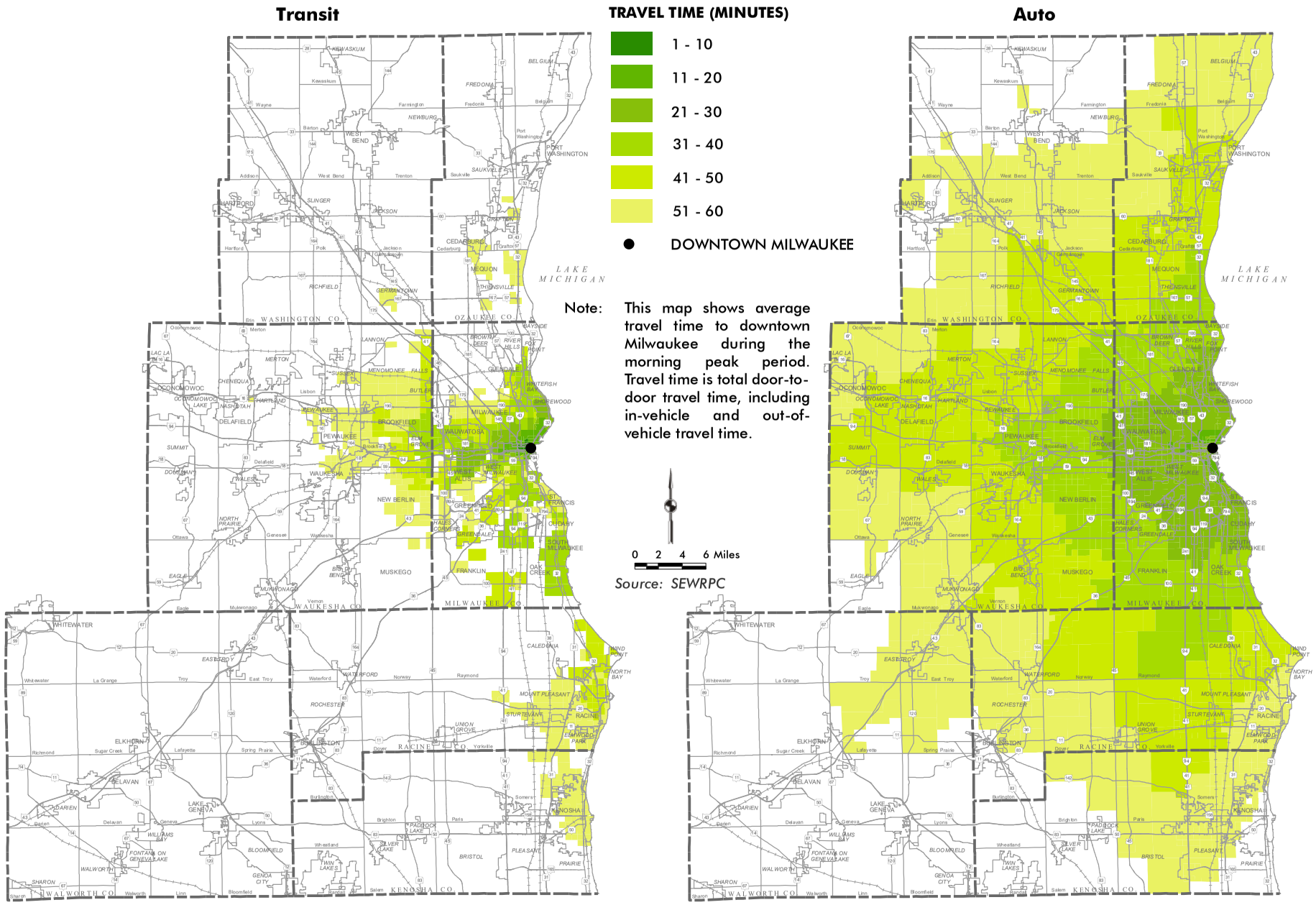
## Map H.92
## Average Peak Travel Time to Downtown Milwaukee: Existing



## Map H.93
## Average Peak Travel Time to Downtown Milwaukee: Trend



## Map H. 94
## Average Peak Travel Time to Downtown Milwaukee: Preliminary Recommend Plan



## CRITERION 4.2.2: ACCESS TO PARK-RIDE FACILITIES

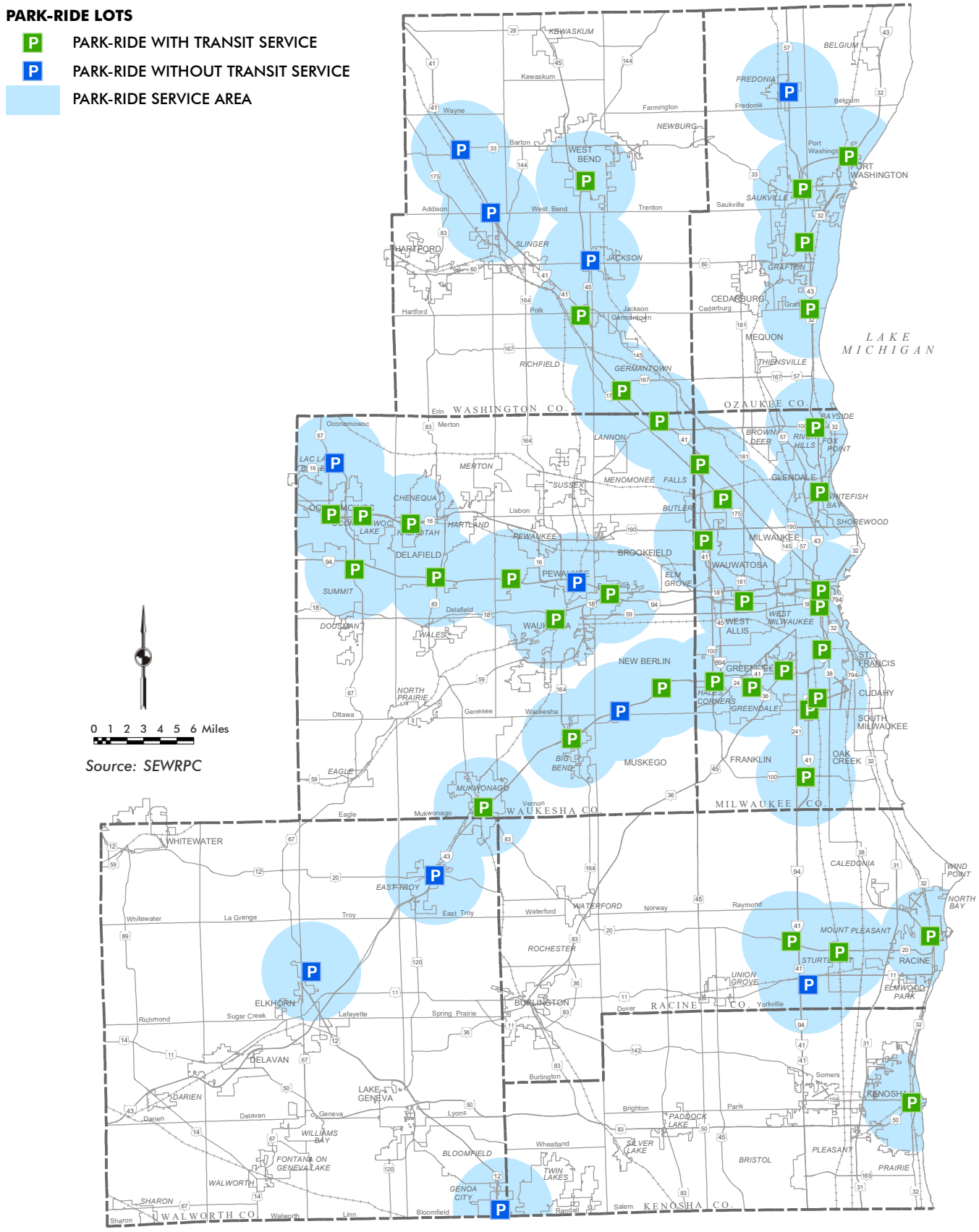
Significantly more residents would live within three miles of a park-ride facility under the Preliminary Plan (85.8 percent of all residents) compared to the Trend (68.7 percent), as shown in Table H.45 and on Maps H.95 through H.97. Despite having a few additional park-ride lots that would be added under the Trend as part of the reconstruction of the Region's freeway system, the percent of residents within three miles would decrease because more residents would be added to the Region outside of that three-mile buffer than within that buffer. Significantly more residents would live within three miles of a park-ride lot served by transit under the Preliminary Plan (81.5 percent) compared to the Trend (55.1 percent). The decrease in population living within three miles of a park-ride lot with transit service between existing conditions and the Trend is due to the significant reduction in commuter bus service included in the Trend.

### Table H.45
### Population with Access to Park-Ride Facilities

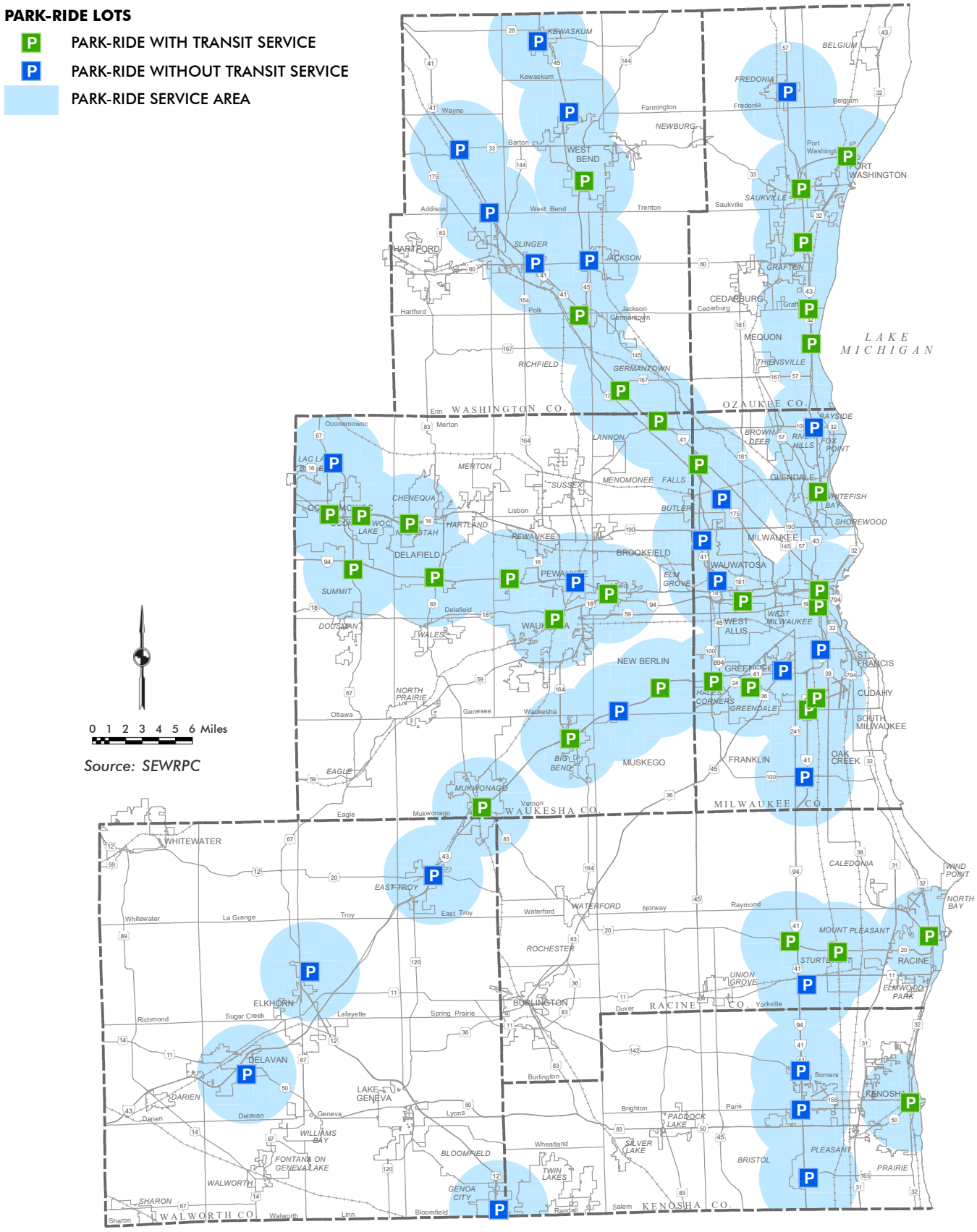
| Plan | Within Three Miles of a Park-Ride Facility | | Within Three Miles of a Park-Ride Facility with Transit Service | |
|---|---|---|---|---|
| | Population | Percent | Population | Percent |
| Existing - 2010 | 1,406,000 | 69.6 | 1,345,000 | 66.6 |
| Trend - 2050 | 1,617,000 | 68.7 | 1,296,000 | 55.1 |
| Plan - 2050 | 2,051,000 | 85.8 | 1,948,000 | 81.5 |

*Source: SEWRPC*

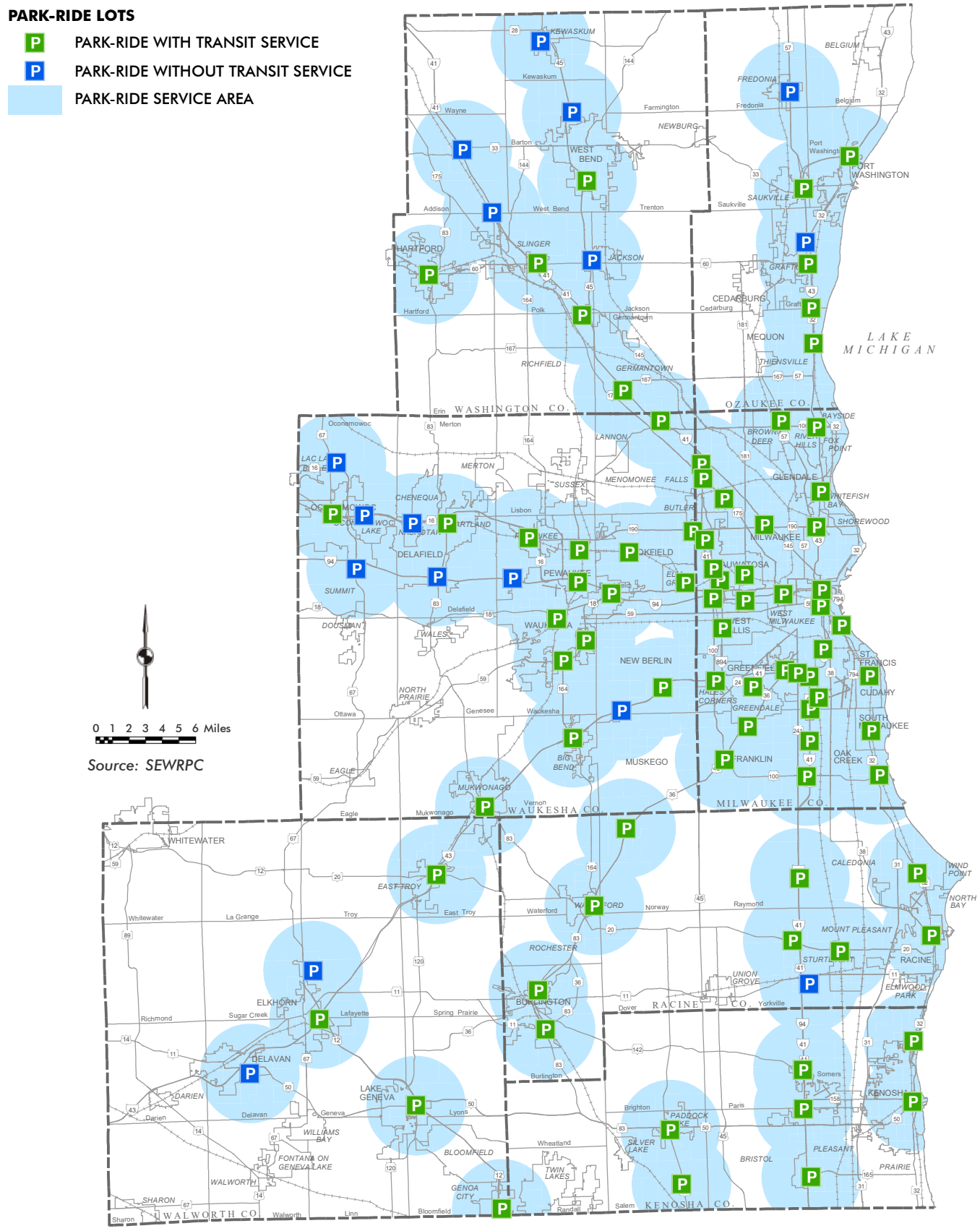
## Map H.95
## Access to Park-Ride Lots: Existing



## Map H.96
## Access to Park-Ride Lots: Trend



## Map H.97
## Access to Park-Ride Lots: Preliminary Recommended Plan



## CRITERION 4.3.1: PAVEMENT CONDITION

As discussed in the alternatives evaluation, preserving the condition of the Region's arterial streets and highways is critical to provide for safe and efficient travel throughout the Region. Map H.98 shows the existing arterial streets and highways that have a pavement condition of good, fair, and poor under the base year (2013).[53] Costs were estimated for the Trend and Preliminary Plan to maintain similar pavement conditions through the year 2050 as were observed in 2013. The estimated number of miles of arterial streets and highways by pavement condition under each alternative is shown in Table H.46. As shown in Table H.47, the estimated annual costs associated with reconstructing and maintaining the envisioned arterial street and highway system under the Trend ($608.3 million annually) would be slightly higher than the Preliminary Plan ($605.0 million). The primary reason for the difference in costs is that there are slightly fewer widened arterial facilities in the Preliminary Plan.

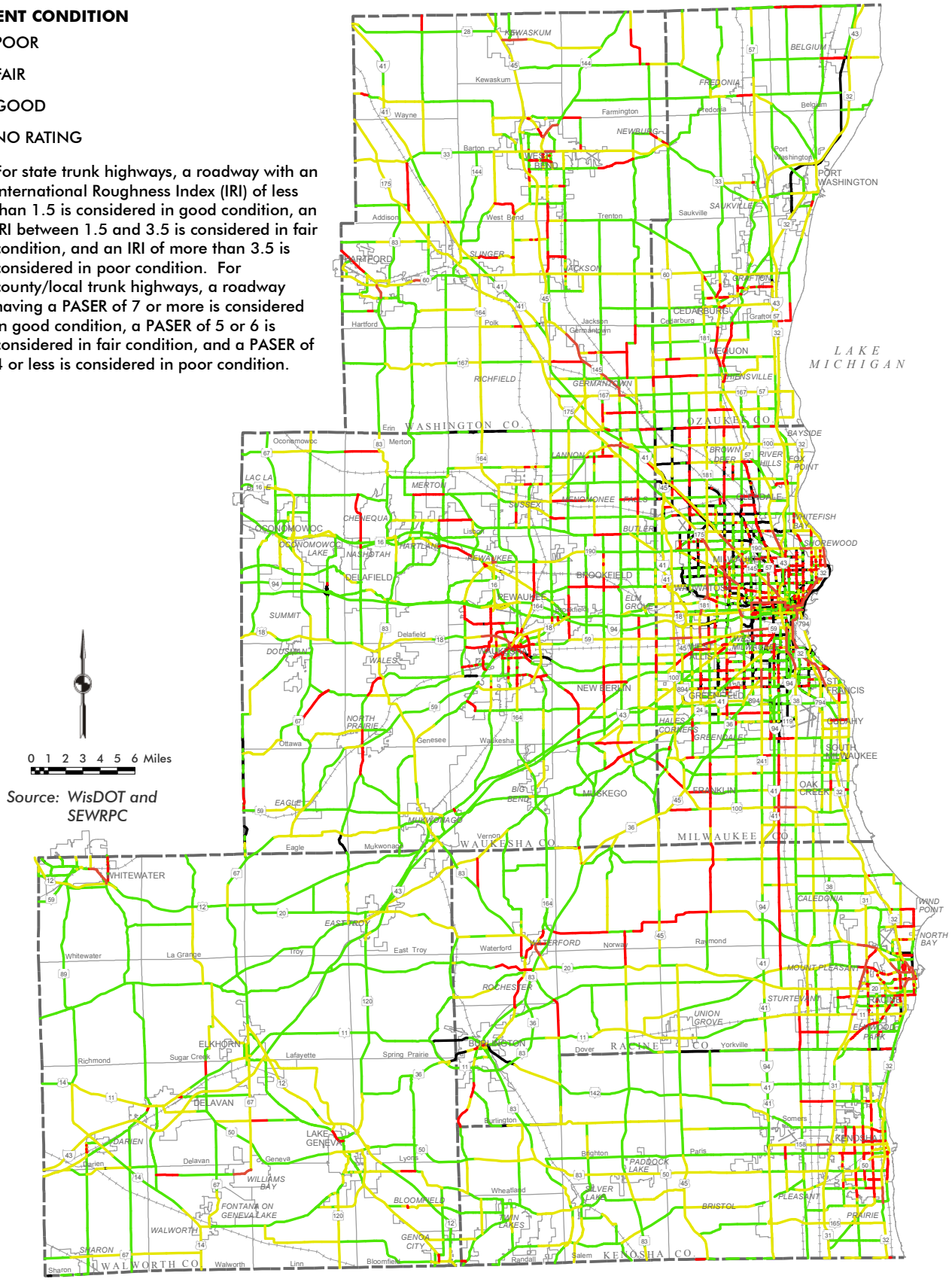
*[53] For state trunk highways, a roadway with an International Roughness Index (IRI) of less than 1.5 is considered in good condition, an IRI between 1.5 and 3.5 is considered in fair condition, and an IRI more than 3.5 is considered in poor condition. For county/local trunk highways, a roadway having a Pavement Surface and Evaluation Rating (PASER) of 7 or more is considered in good condition, a PASER of 5 or 6 is considered in fair condition, and a PASER of 4 or less is considered in poor condition.*

## Map H.98
## Pavement Condition on Arterial Streets and Highways in the Region: 2013

**PAVEMENT CONDITION**

- POOR
- FAIR
- GOOD
- NO RATING

Note: For state trunk highways, a roadway with an International Roughness Index (IRI) of less than 1.5 is considered in good condition, an IRI between 1.5 and 3.5 is considered in fair condition, and an IRI of more than 3.5 is considered in poor condition. For county/local trunk highways, a roadway having a PASER of 7 or more is considered in good condition, a PASER of 5 or 6 is considered in fair condition, and a PASER of 4 or less is considered in poor condition.




*Source: WisDOT and SEWRPC*

## Table H.46
## Pavement Condition of Arterial Streets and Highways

| Condition | Existing (2013) | | Trend (2050) | | Plan (2050) | |
|---|---|---|---|---|---|---|
| | Miles | Percent | Miles | Percent | Miles | Percent |
| Good | 1,958 | 54.7 | 2,255 | 61.5 | 2,255 | 61.5 |
| Fair | 1,239 | 34.7 | 1,021 | 27.9 | 1,021 | 27.9 |
| Poor | 380 | 10.6 | 389 | 10.6 | 389 | 10.6 |
| Total | 3,577 | 100.0 | 3,665 | 100.0 | 3,665 | 100.0 |

*Source: WisDOT and SEWRPC*

## Table H.47
## Cost per Year to Maintain Existing Pavement Condition Levels (in $ millions)

| Highway | Trend (2050) | Plan (2050) |
|---|---|---|
| Surface Arterials[a] | $295.6 | $292.3 |
| Freeways | | |
| Construction[a] | 280.8 | 280.8 |
| Resurface/Rehab | 31.9 | 31.9 |
| Total | $608.3 | $605.0 |

[a] *Cost estimates include the highway improvements—new and widened facilities—included in the Trend and the Preliminary Plan.*

*Source: SEWRPC*

## CRITERION 4.3.2: TRANSIT FLEET CONDITION

Assuming new, stable funding sources for transit are implemented as proposed under the Preliminary Plan, the transit fleet would be replaced as recommended by the Federal Transit Administration, and therefore none of the Region's 1,203 transit vehicles would be beyond their useful life by the year 2050. This would result in fewer breakdowns, lower operating and maintenance costs, and a more environmentally friendly fleet than under the Trend. The funding limitations projected under the Trend would result in approximately 20 percent of transit vehicles—about 75 of the Region's 387 fixed-route buses under the Trend—being beyond their useful life. As of 2015, approximately 15 percent of the transit fleet—about 90 of the Region's existing 591 fixed-route buses—is older than recommended.

## CRITERION 4.4.1: CONGESTION ON ARTERIAL STREETS AND HIGHWAYS

Table H.48 presents a comparison of the average weekday congestion on the arterial street and highway system for the Region and for each county in the Region under existing conditions, the Trend, and the Preliminary Plan. Maps H.99 through H.101 illustrate the average weekday congestion on the arterial system.

- **Total Congestion:** About 8.2 percent (274.1 miles) of the Region's existing arterial system operates over its design capacity (moderate, severe, or extreme congestion[54]) for at least part of an average weekday. The proportion of the Region's arterial system that is congested would decrease under both the Trend—6.3 percent (230.4 miles)—and the Preliminary Plan—6.7 percent (246.1 miles)—with the Trend having about 6.4 percent fewer congested miles than the Preliminary Plan.

  About 27.4 percent (73 miles) of the Region's existing freeway system is congested. The proportion of the Region's freeway system that is congested would decrease under both the Trend—25.0 percent (71 miles)—and the Preliminary Plan—24.4 percent (70 miles)—with the Preliminary Plan having about 1.4 percent fewer congested freeway miles than the Trend. Congestion on the freeway system would vary during an average weekday, with the worst congestion occurring during the morning (from about 7:00 to 9:00 a.m.) and afternoon (from about 3:00 to 5:00 p.m.) rush hour periods. Table H.49 shows the number of hours of extreme, severe, and moderate congestion occurring on the Region's freeways during an average weekday.

- **Severe and Extreme Congestion:** Vehicle traffic is particularly impacted by severe and extreme congestion on the arterial system. Under severe congestion, there is virtually no ability for vehicles to maneuver and change lanes on freeways and surface arterials. Under extreme congestion, vehicles experience stop-and-go traffic on freeways, as well as slow speeds and long delays at intersections along surface arterials. Comparing only the most congested arterial streets and highways in the Region, about 3.8 percent (127.2 miles) of the Region's existing arterial system is severely or extremely congested. The proportion of the Region's arterial system that is severely or extremely congested would decrease under both the Trend—2.9 percent (106.3 miles)—and the Preliminary Plan—3.2 percent (117.7 miles)—with the Trend having about 9.7 percent fewer miles of severely or extremely congested arterials than the Preliminary Plan.

  About 19.7 percent (52 miles) of the Region's existing freeway system is severely or extremely congested. The proportion of the Region's freeway system that is severely or extremely congested would decrease under both the Trend—14.8 percent (42 miles)—and the Preliminary Plan—14.9 percent (43 miles)—with the Trend having about 2.3 percent fewer freeway miles operating under severe or extreme congestion than the Preliminary Plan.

*[54] Under moderate congestion, average freeway speeds are 1 to 2 mph below free-flow speeds, and average surface arterial speeds are 40 to 50 percent of free-flow speeds. Under severe congestion, average freeway speeds are up to 10 mph below free-flow speeds, and average surface arterial speeds are 33 to 40 percent of free-flow speeds. Under extreme congestion, average freeway speeds are 20 to 30 mph or less, and average surface arterial speeds are 25 to 33 percent of free-flow speeds.*

## Table H.48
## Average Weekday Congestion on Arterial Streets and Highways

**Existing (2011)**

| County | Under or At Design Capacity | | Over Design Capacity | | | | | | Total Mileage |
|---|---|---|---|---|---|---|---|---|---|
| | | | Moderate Congestion | | Severe Congestion | | Extreme Congestion | | |
| | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | |
| Kenosha | 303.2 | 94.8 | 11.3 | 3.5 | 4.9 | 1.5 | 0.6 | 0.2 | 320.0 |
| Milwaukee | 647.5 | 82.1 | 64.6 | 8.2 | 49.5 | 6.3 | 26.8 | 3.4 | 788.4 |
| Ozaukee | 236.2 | 94.2 | 9.6 | 3.8 | 4.7 | 1.9 | 0.3 | 0.1 | 250.8 |
| Racine | 345.0 | 96.3 | 9.5 | 2.7 | 2.5 | 0.7 | 1.3 | 0.4 | 358.3 |
| Walworth | 442.6 | 99.3 | 2.4 | 0.5 | 0.4 | 0.1 | 0.2 | 0.0 | 445.6 |
| Washington | 397.8 | 97.9 | 6.1 | 1.5 | 2.3 | 0.6 | 0.3 | 0.1 | 406.5 |
| Waukesha | 676.5 | 89.8 | 43.4 | 5.8 | 27.9 | 3.7 | 5.5 | 0.7 | 753.3 |
| Region | 3,048.8 | 91.8 | 146.9 | 4.4 | 92.2 | 2.8 | 35.0 | 1.1 | 3,322.9 |

**Trend (2050)**

| County | Under or At Design Capacity | | Over Design Capacity | | | | | | Total Mileage |
|---|---|---|---|---|---|---|---|---|---|
| | | | Moderate Congestion | | Severe Congestion | | Extreme Congestion | | |
| | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | |
| Kenosha | 339.2 | 93.0 | 18.1 | 5.0 | 7.1 | 1.9 | 0.5 | 0.1 | 364.9 |
| Milwaukee | 665.1 | 82.6 | 59.7 | 7.4 | 53.7 | 6.7 | 26.8 | 3.3 | 805.3 |
| Ozaukee | 306.5 | 98.8 | 1.7 | 0.5 | 1.7 | 0.5 | 0.3 | 0.1 | 310.2 |
| Racine | 433.7 | 96.6 | 12.6 | 2.8 | 1.9 | 0.4 | 0.6 | 0.1 | 448.8 |
| Walworth | 485.4 | 99.2 | 2.7 | 0.6 | 1.2 | 0.2 | 0.2 | 0.0 | 489.5 |
| Washington | 448.1 | 98.1 | 6.7 | 1.5 | 1.7 | 0.4 | 0.2 | 0.0 | 456.7 |
| Waukesha | 756.9 | 95.8 | 22.6 | 2.9 | 8.2 | 1.0 | 2.2 | 0.3 | 789.9 |
| Region | 3,434.9 | 93.7 | 124.1 | 3.4 | 75.5 | 2.1 | 30.8 | 0.8 | 3,665.3 |

**Preliminary Plan (2050)**

| County | Under or At Design Capacity | | Over Design Capacity | | | | | | Total Mileage |
|---|---|---|---|---|---|---|---|---|---|
| | | | Moderate Congestion | | Severe Congestion | | Extreme Congestion | | |
| | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | |
| Kenosha | 339.8 | 93.1 | 17.4 | 4.8 | 7.1 | 1.9 | 0.6 | 0.2 | 364.9 |
| Milwaukee | 656.2 | 81.5 | 60.7 | 7.5 | 56.7 | 7.0 | 31.7 | 3.9 | 805.3 |
| Ozaukee | 302.4 | 97.5 | 4.7 | 1.5 | 2.1 | 0.7 | 1.0 | 0.3 | 310.2 |
| Racine | 432.1 | 96.3 | 12.6 | 2.8 | 3.5 | 0.8 | 0.6 | 0.1 | 448.8 |
| Walworth | 485.9 | 99.3 | 2.3 | 0.5 | 1.3 | 0.3 | 0.0 | 0.0 | 489.5 |
| Washington | 445.8 | 97.6 | 8.0 | 1.8 | 2.6 | 0.6 | 0.3 | 0.1 | 456.7 |
| Waukesha | 757.0 | 95.8 | 22.7 | 2.9 | 8.7 | 1.1 | 1.5 | 0.2 | 789.9 |
| Region | 3,419.2 | 93.3 | 128.4 | 3.5 | 82.0 | 2.2 | 35.7 | 1.0 | 3,665.3 |

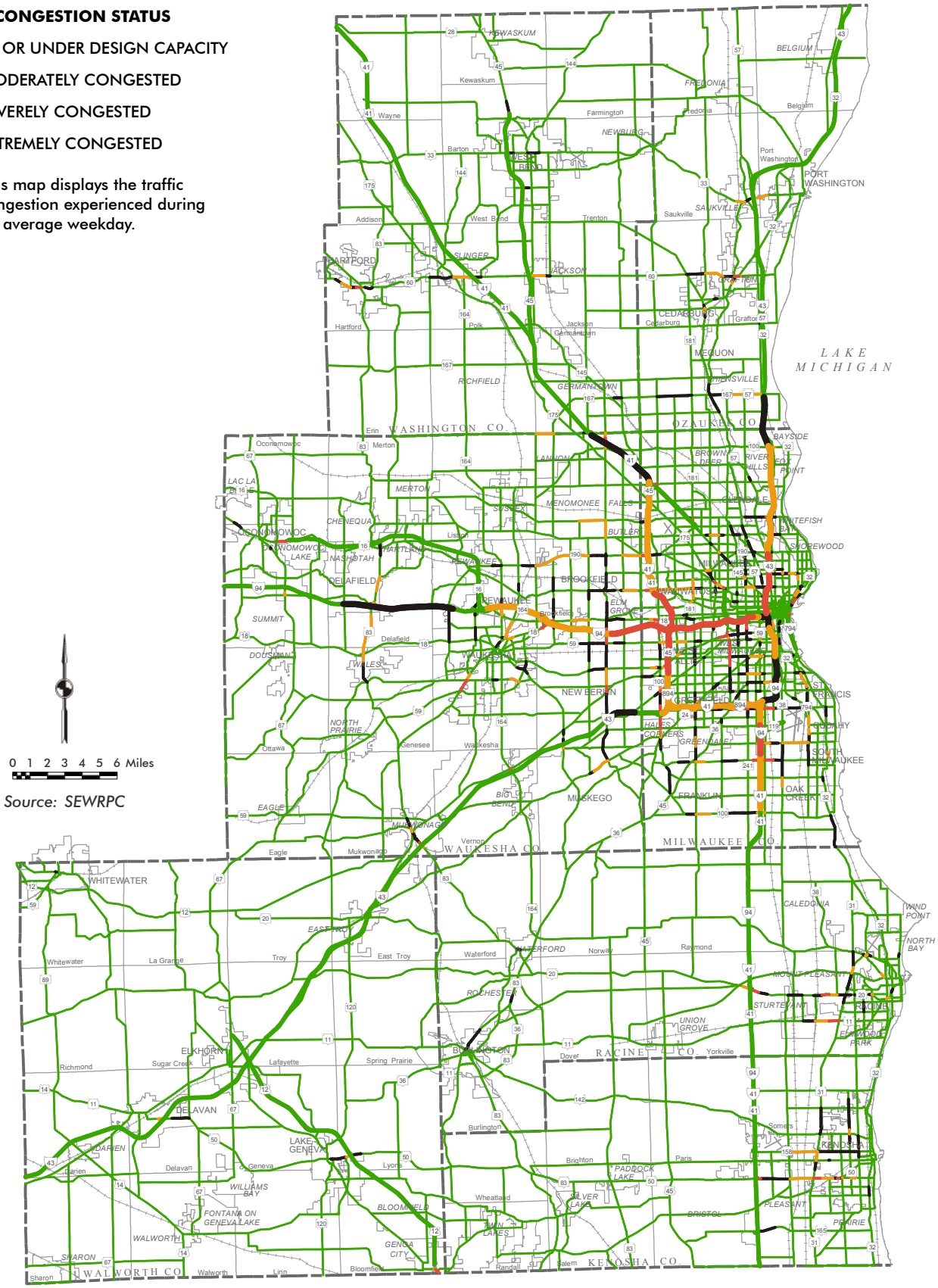
*Source: SEWRPC*

## Map H.99
## Congestion on the Arterial Street and Highway System: 2011

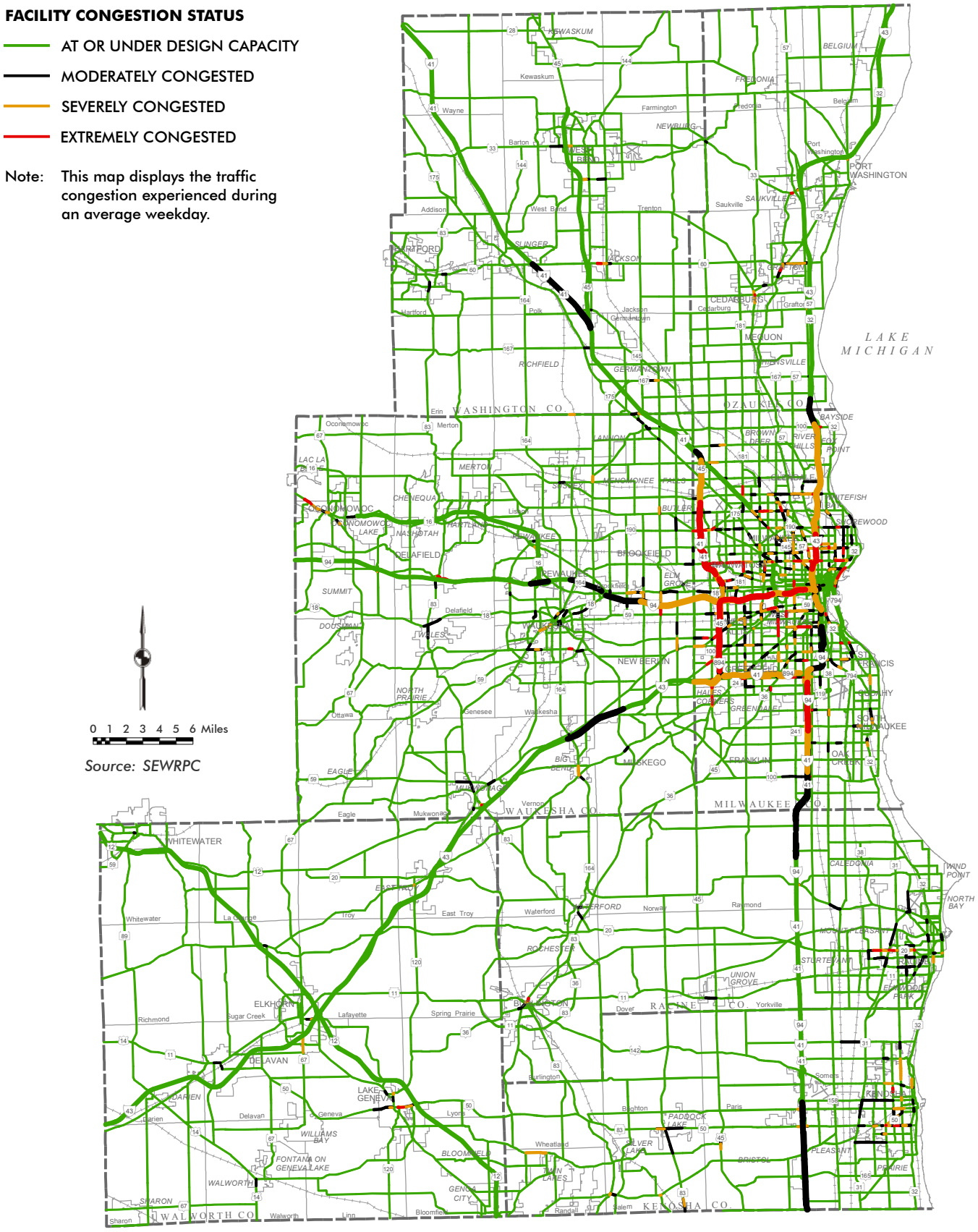
**FACILITY CONGESTION STATUS**

- AT OR UNDER DESIGN CAPACITY
- MODERATELY CONGESTED
- SEVERELY CONGESTED
- EXTREMELY CONGESTED

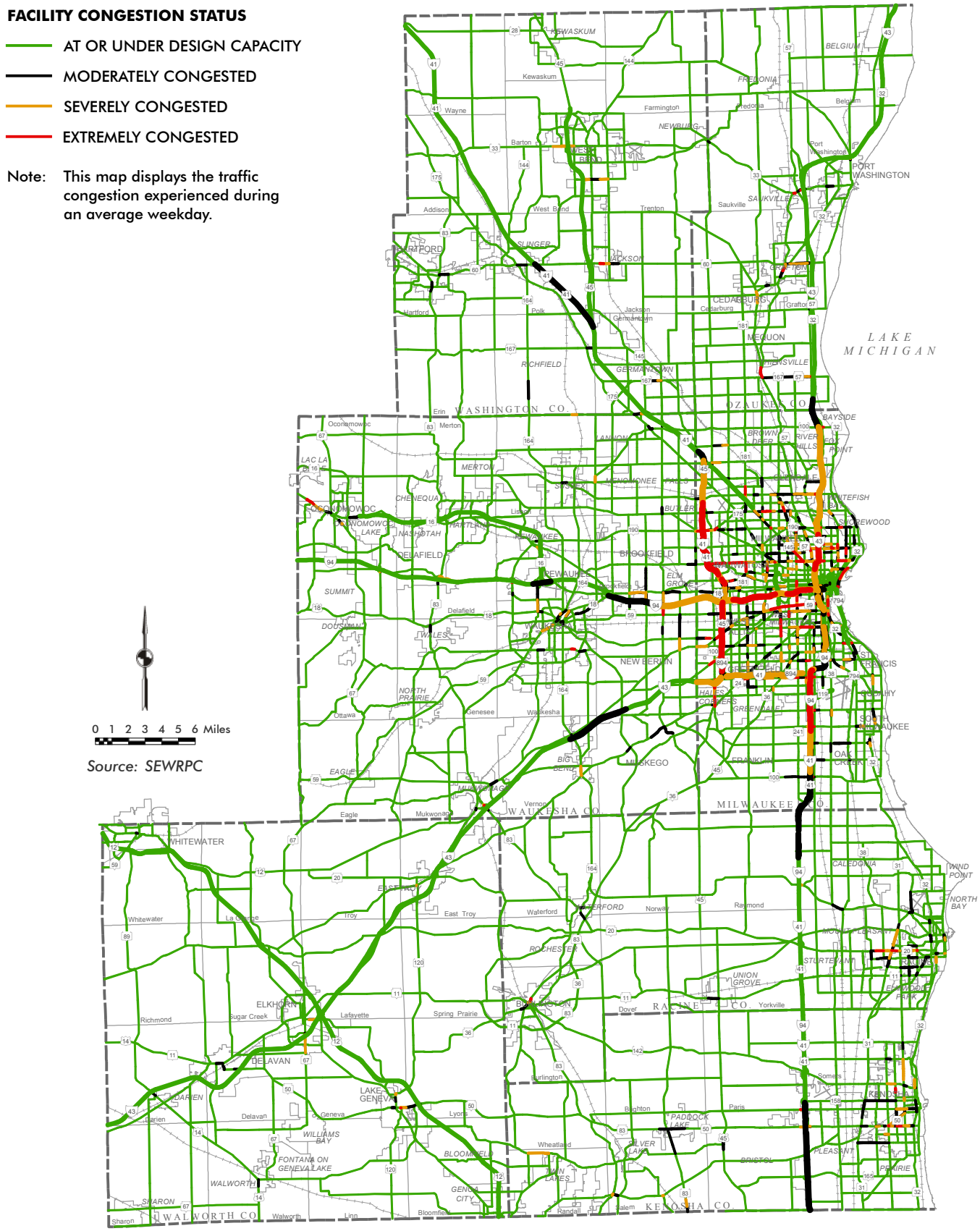
Note: This map displays the traffic congestion experienced during an average weekday.



## Map H.100
## Congestion on the Arterial Street and Highway System: Trend



## Map H.101
## Congestion on the Arterial Street and Highway System: Preliminary Recommended Plan



## Table H.49
## Average Hours of Congestion on an Average Weekday

| Plan | Highest Level of Hourly Congestion Experienced | Miles of Congested Freeways | | Average Hours of Congestion on an Average Weekday | | | |
|---|---|---|---|---|---|---|---|
| | | Number | Percent of Freeway System | Extreme | Severe | Moderate | Total |
| Existing - 2011 | Extreme | 18 | 6.8 | 1.3 | 2.9 | 3.9 | 8.1 |
| | Severe | 34 | 12.9 | -- | 1.4 | 2.3 | 3.7 |
| | Moderate | 21 | 7.7 | -- | -- | 1.8 | 1.8 |
| | Total | 73 | 27.4 | -- | -- | -- | -- |
| Trend - 2050 | Extreme | 14 | 5.0 | 1.2 | 2.7 | 3.7 | 7.6 |
| | Severe | 28 | 9.8 | -- | 1.4 | 2.4 | 3.8 |
| | Moderate | 29 | 10.2 | -- | -- | 1.6 | 1.6 |
| | Total | 71 | 25.0 | -- | -- | -- | -- |
| Plan - 2050 | Extreme | 15 | 5.1 | 1.2 | 2.6 | 3.6 | 7.4 |
| | Severe | 28 | 9.8 | -- | 1.4 | 2.4 | 3.8 |
| | Moderate | 27 | 9.5 | -- | -- | 1.8 | 1.8 |
| | Total | 70 | 24.4 | -- | -- | -- | -- |

*Source: SEWRPC*

## CRITERION 4.4.2: TRAVEL TIME DELAY

Table H.50 presents a comparison of estimated minutes of travel time delay (both on an average weekday and on an average annual basis[55]), for automobile, transit, and commercial travel under existing conditions, the Trend, and the Preliminary Plan. Both the Trend and Preliminary Plan would be expected to result in higher average annual minutes of travel time delay for total personal and commercial travel. The Trend would be expected to result in lower average annual minutes of travel time delay for total personal and commercial travel in the Region (1,613 million minutes), about 6.8 percent lower than the Preliminary Plan (1,731 million minutes). The lower average annual delay is a result of the Trend proposing slightly more arterial street and highway expansion than the Preliminary Plan, even though the Preliminary Plan proposes more compact land use development and transit service expansion than the Trend. It is also partially a result of the additional household and employment growth envisioned under the Preliminary Plan compared to the Trend. Much of this additional growth is in the urban areas of the Region, which inherently experience higher delay on average, particularly in the Milwaukee area.

The Trend would also be expected to result in lower average annual delay for total personal travel on a per capita basis (575 minutes)—about 6.0 percent lower than the Preliminary Plan (612 minutes)—although both the Trend and Preliminary Plan would result in lower per capita delay than existing conditions. Automobile delay per capita would be slightly lower under the Preliminary Plan than the Trend, however, with the difference in delay per capita for total personal travel entirely due to the additional delay for transit travel under the Preliminary Plan. The Preliminary Plan would be expected to result in significantly higher average annual delay for transit travel than the Trend due to the substantial increase in transit service and transit ridership under the Preliminary Plan. The increased transit travel under the Preliminary Plan would utilize both transit service operating in mixed traffic and fixed-guideway transit service operating in medians, transit-only lanes, or rail corridors. The transit travel in mixed traffic would be subject to traffic congestion and associated travel time delay, while fixed-guideway transit would mostly be unaffected by traffic congestion.

*[55] Average annual delay is calculated by multiplying average weekday delay by the number of weekdays in a year.*

## Table H.50
## Travel Time Delay

| Plan | Average Weekday Minutes of Delay[a] (Millions) | | | |
|---|---|---|---|---|
| | Personal Travel | | Commercial Travel | Total |
| | Automobile | Transit | | |
| Existing - 2011 | 4.94 | 0.29 | 0.86 | 6.09 |
| Trend - 2050 | 5.07 | 0.26 | 1.00 | 6.33 |
| Plan - 2050 | 5.14 | 0.63 | 1.03 | 6.81 |

| Plan | Average Annual Minutes of Delay[b] (Millions) | | | |
|---|---|---|---|---|
| | Personal Travel | | Commercial Travel | Total |
| | Automobile | Transit | | |
| Existing - 2011 | 1,259 | 66 | 224 | 1,549 |
| Trend - 2050 | 1,295 | 58 | 260 | 1,613 |
| Plan - 2050 | 1,310 | 151 | 270 | 1,731 |

| Plan | Average Annual Minutes of Delay per Capita[c] | | | |
|---|---|---|---|---|
| | Personal Travel | | Commercial Travel | Total |
| | Automobile | Transit | | |
| Existing - 2011 | 623 | 33 | -- | 656 |
| Trend - 2050 | 550 | 25 | -- | 575 |
| Plan - 2050 | 548 | 63 | -- | 612 |

[a] *Travel time delay is defined as the difference in travel time between congested and uncongested conditions.*

[b] *Average annual delay is calculated by multiplying average weekday delay by the number of weekdays in a year.*

[c] *Existing population totals 2,020,000, Trend 2050 population totals 2,354,000, and Plan 2050 population totals 2,389,200.*

*Source: SEWRPC*

## CRITERION 4.4.3: AVERAGE TRIP TIMES

This criterion compares average trip times for communities (counties and subareas of counties) by trip mode (auto and transit) and by trip purpose (work and other). This criterion uses overall travel time, which is the total door-to-door time for traveling between a trip origin and destination, including both in-vehicle and out-of-vehicle travel time. The trip times for this criterion represent average travel time during an average weekday.

Table H.51 presents average trip times by community, trip mode, and trip purpose under existing conditions. Tables H.52 and H.53 present the change in average trip times compared to existing conditions under the Trend and Preliminary Plan, respectively. Trip times that would increase by more than 20 percent compared to existing conditions are highlighted in red, while trip times that would decrease by more than 20 percent compared to existing conditions are highlighted in green.

Average auto trip times vary only slightly between the Trend and Preliminary Plan. Average transit trip times, however, would be significantly improved for most communities in the Region under the Preliminary Plan compared to the Trend. The Trend would result in the majority of communities experiencing increased transit trip times, with the City of Racine and the remainder of Racine County experiencing the most significant increases. Ozaukee, Walworth, and Washington Counties would be the exceptions, experiencing reductions in trip times under the Trend primarily due to expected traffic congestion levels being reduced on the commuter bus routes serving those counties. The only transit trip time increases under the Preliminary Plan would be slight increases in Racine County for residents living outside the City of Racine. All other areas of the Region would essentially maintain average transit trip times or experience reduced—sometimes significantly reduced—trip times under the Preliminary Plan. The most significant reductions in transit trip times would occur in Washington County (primarily due to the availability of bi-directional commuter bus service) and Walworth County (primarily due to the implementation of commuter bus service serving the County). Communities in Kenosha, Waukesha, and Ozaukee Counties would also experience significant trip time reductions.

In addition, there are noticeable reductions in average trip times in the City of Milwaukee and the rest of Milwaukee County under the Preliminary Plan. Those reductions, while not greater than 20 percent compared to existing conditions, would affect a far greater number of transit users than would be affected in other areas of the Region.

It should also be noted that average trip lengths on transit trips tend to be higher under the Preliminary Plan due to the increased ability to travel longer distances in shorter periods of time. The higher average trip lengths tend to result in higher average trip times, which masks the fact that transit travel is faster on many trips.

## Table H.51
## Average Travel Times in Minutes by Residents of the Region by Community, Mode, and Purpose: 2011

| Community | Auto | | | Transit | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Work | Other | Total | Work | Other | Total | Work | Other | Total |
| City of Kenosha | 16 | 9 | 12 | 50 | 40 | 44 | 17 | 10 | 12 |
| Remainder of Kenosha County | 22 | 12 | 16 | 59 | 47 | 52 | 22 | 12 | 16 |
| Kenosha County | 18 | 11 | 13 | 51 | 41 | 45 | 19 | 11 | 14 |
| City of Milwaukee | 19 | 15 | 16 | 46 | 41 | 43 | 20 | 16 | 18 |
| Remainder of Milwaukee County | 18 | 12 | 14 | 56 | 45 | 50 | 19 | 13 | 15 |
| Milwaukee County | 18 | 14 | 15 | 48 | 42 | 45 | 20 | 14 | 16 |
| City of Racine | 17 | 10 | 13 | 50 | 34 | 42 | 19 | 10 | 13 |
| Remainder of Racine County | 23 | 13 | 16 | 53 | 37 | 45 | 23 | 13 | 16 |
| Racine County | 21 | 12 | 15 | 51 | 35 | 43 | 21 | 12 | 15 |
| City of Waukesha | 18 | 12 | 14 | 49 | 36 | 42 | 19 | 12 | 15 |
| Remainder of Waukesha County | 20 | 13 | 16 | 57 | 43 | 51 | 20 | 13 | 16 |
| Waukesha County | 20 | 13 | 15 | 54 | 40 | 47 | 20 | 13 | 16 |
| Ozaukee County | 21 | 12 | 15 | 60 | 47 | 56 | 21 | 12 | 15 |
| Walworth County | 22 | 11 | 15 | 88 | 91 | 88 | 22 | 11 | 15 |
| Washington County | 21 | 12 | 15 | 79 | 77 | 78 | 22 | 12 | 15 |
| Region | 19 | 13 | 15 | 49 | 41 | 45 | 20 | 13 | 16 |

*Source: SEWRPC*

## Table H.52
## Change in Average Travel Times in Minutes: Trend Compared to 2011

| Community | Auto | | | Transit | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Work | Other | Total | Work | Other | Total | Work | Other | Total |
| City of Kenosha | -- | 1 | -- | 2 | -- | 1 | -- | -- | -- |
| Remainder of Kenosha County | -1 | -- | -1 | 5 | 2 | 3 | -1 | -- | -1 |
| Kenosha County | 1 | -- | -- | 3 | -- | 1 | -- | -- | -- |
| City of Milwaukee | -- | -- | -- | 3 | 2 | 3 | 1 | -- | -- |
| Remainder of Milwaukee County | -- | -- | -- | 6 | 4 | 4 | -- | -- | -- |
| Milwaukee County | -- | -- | -- | 4 | 3 | 3 | -- | -- | -- |
| City of Racine | 1 | -- | -- | 15 | 15 | 14 | -- | 1 | 1 |
| Remainder of Racine County | -1 | -- | -- | 13 | 13 | 12 | -- | -- | -- |
| Racine County | -- | -- | -- | 14 | 14 | 13 | 1 | -- | 1 |
| City of Waukesha | -- | -- | -- | -5 | -6 | -6 | -- | -- | -1 |
| Remainder of Waukesha County | -- | -- | -1 | -2 | -- | -2 | -- | -- | -1 |
| Waukesha County | -1 | -- | -- | -4 | -3 | -4 | -- | -- | -1 |
| Ozaukee County | -1 | -1 | -1 | -4 | -6 | -4 | -1 | -1 | -- |
| Walworth County | -- | -- | -- | -10 | -12 | -10 | -- | -- | -- |
| Washington County | -- | -- | -- | -9 | -18 | -10 | -- | -- | -- |
| Region | -- | -- | -- | 4 | 3 | 3 | -- | -- | -1 |

*Source: SEWRPC*

## Table H.53
## Change in Average Travel Times in Minutes: Preliminary Recommended Plan Compared to 2011

| Community | Auto | | | Transit | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Work | Other | Total | Work | Other | Total | Work | Other | Total |
| City of Kenosha | -- | 1 | -- | -8 | -12 | -10 | -- | -- | -- |
| Remainder of Kenosha County | -1 | -- | -1 | 2 | -2 | 1 | -1 | -- | -1 |
| Kenosha County | -- | -- | -- | -4 | -9 | -6 | -- | -- | -- |
| City of Milwaukee | -- | -- | -- | -- | -- | -- | 1 | 1 | -- |
| Remainder of Milwaukee County | -- | -- | -- | -4 | -2 | -3 | -- | -- | -- |
| Milwaukee County | -- | -- | -- | -- | -- | -1 | -- | 1 | 1 |
| City of Racine | 1 | -- | -- | -5 | -4 | -5 | -- | 1 | 1 |
| Remainder of Racine County | -1 | -- | -- | 4 | 2 | 3 | -- | -- | -- |
| Racine County | -- | -- | -- | -1 | -1 | -1 | 1 | -- | -- |
| City of Waukesha | -- | -- | -- | -7 | -2 | -4 | -- | 1 | -- |
| Remainder of Waukesha County | -1 | -- | -1 | -9 | -3 | -7 | -- | -- | -1 |
| Waukesha County | -1 | -1 | -- | -7 | -1 | -5 | -- | -- | -1 |
| Ozaukee County | -1 | -1 | -1 | -2 | -10 | -9 | -- | -1 | -- |
| Walworth County | -- | -- | -- | -21 | -53 | -36 | -- | -- | -- |
| Washington County | -- | -1 | -- | -20 | -41 | -31 | -1 | -- | -- |
| Region | -- | -1 | -- | -1 | -1 | -1 | -- | -- | -- |

*Source: SEWRPC*

## CRITERION 4.5.1: ACCESS TO TRANSIT

Access to transit service provides choices to residents of the Region, allowing them to travel farther distances than they could by walking or biking, and providing an alternative to driving. In addition to giving residents an additional choice for travel, there are numerous other benefits associated with transit, which were discussed as part of the alternatives evaluation.

The Preliminary Plan proposes extensive transit service and a compact land use development pattern, which would result in improved access to transit for the Region's residents, and improved access to jobs via transit (as shown in Table H.54). A higher proportion of the Region's population would have access to fixed-route transit and a much higher proportion of the Region's jobs would be accessible by transit under the Preliminary Plan than in 2015. In contrast, under the Trend, transit service would decline due to the limitations of reasonably expected future funds to support transit. Therefore, the Trend would result in slight decreases in people with transit access and jobs accessible via transit despite the expected growth in the Region's population and jobs.

**Table H.54**
**Access to Transit**

| Plan | Population Served | Total Population in the Region | Percent of Population Served | Jobs Accessible | Total Jobs in the Region | Percent of Jobs Accessible |
|---|---|---|---|---|---|---|
| Existing - 2010/2015 | 1,104,000 | 2,020,000 | 54.7 | 734,000 | 1,176,600 | 62.4 |
| Trend - 2050 | 1,042,000 | 2,354,000 | 44.3 | 727,000 | 1,386,900 | 52.4 |
| Plan - 2050 | 1,396,000 | 2,389,200 | 58.4 | 1,010,000 | 1,405,700 | 71.9 |

*Source: SEWRPC*

## CRITERION 4.5.2: ACCESS TO FIXED-GUIDEWAY TRANSIT

Access to fixed-guideway transit, such as commuter rail, light rail, or bus rapid transit, produces significant benefits for riders in reduced travel time and improved reliability when compared to transit services operating in mixed traffic lanes. The alternatives evaluation discussed the benefits of fixed-guideway transit in more detail.

Table H.55 shows the number and percentage of people and jobs in the Region that would be within a short walk (one-half mile) of fixed-guideway transit under the Preliminary Plan. Currently, there are no transit services in the Region that combine fixed-guideway technology with an exclusive lane or right-of-way, station spacing of at least one-half mile, and frequent service over a large span of the day (a limited commuter rail is currently provided to Kenosha from northeastern Illinois on Metra's Union Pacific North Line). The transit system included in the Trend would not add any fixed-guideway transit services. The Preliminary Plan envisions an extensive fixed-guideway transit system of eight rapid transit corridors and two commuter rail lines, and therefore 487,200 people (20 percent) and 444,100 jobs (32 percent) would be within walking distance of fixed-guideway transit.

**Table H.55**
**Access to Fixed-Guideway Transit**

| Plan | Population Served | Total Population in the Region | Percent of Population Served | Jobs Accessible | Total Jobs in the Region | Percent of Jobs Accessible |
|---|---|---|---|---|---|---|
| Existing - 2010/2015 | 5,500 | 2,020,000 | 0.3 | 3,500 | 1,176,600 | 0.3 |
| Trend - 2050 | 5,800 | 2,354,000 | 0.2 | 3,700 | 1,386,900 | 0.3 |
| Plan - 2050 | 487,200 | 2,389,200 | 20.4 | 444,100 | 1,405,700 | 31.6 |

*Source: SEWRPC*

## CRITERION 4.5.3: TRANSIT SERVICE QUALITY

Measuring access to transit (see Criterion 4.5.1) is important, but does not provide information about the speed or frequency of transit service, or any information about how useful transit service is to the people who have access to it. Transit level of service quantifies the amount and speed of transit service each area of the Region receives under each alternative. Also included under this criterion is an analysis that goes a step further, measuring the number of jobs accessible via transit within 30 minutes as a proxy for what residents can get to in a reasonable amount of time via transit under each alternative. Combined, these two measures help compare the quality and effectiveness of transit under each alternative.

- **Transit Level of Service:** The level of service provided by the transit system under each alternative is measured by comparing the number of buses or trains that can be reached via a short walk (10 minutes or less) throughout an average weekday. Buses or trains that travel faster, such as those that are part of a bus rapid transit or light rail line (rapid transit line), are valued higher than buses that are part of a standard local bus route. Level of service is categorized into four groups:

    - **Excellent:** If a part of the Region receives "Excellent" transit service, it is typically within walking distance of at least one rapid transit station, and also is within walking distance of multiple frequent local or express bus services. A resident living in an area of the Region with Excellent transit service has a high likelihood of not needing to own a car.

    - **Very Good:** Areas with "Very Good" transit service typically include parts of the Region that are within walking distance of a rapid transit or commuter rail station, but may have fewer local or express bus routes nearby than an area with Excellent service. Alternatively, areas with Very Good service may not be within walking distance of a rapid transit or commuter rail station, but may instead be near multiple frequent local and express bus routes.

    - **Good:** In order to have "Good" transit service, an area is within walking distance of one local or express bus route that provides service at least every 15 minutes all day, or may be near three or more local bus routes that do not provide frequent, all-day service. An area with Good transit service typically would not have access to a rapid transit line.

    - **Basic:** If a part of the Region is served by "Basic" transit service, it is within walking distance of at least one local bus route, but generally not more than two routes. The routes are not likely to have service better than every 15 minutes all day.

Although accessible shared-ride taxi services are an important part of the transit system under each alternative, they are not included in this analysis as their amount of service is directly related to the number of rides requested by users. The Preliminary Plan proposes a 24-hour advance reservation shared-ride taxi service available in all parts of the Region that would not be served by local bus service. Under the Trend, shared-ride taxi service would be provided in Ozaukee County, Washington County, and the City of Whitewater.

## Table H.56
## Transit Level of Service

| Plan | Excellent | | Very Good | | Good | | Basic | | Regional Population |
|---|---|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | People | Percent | |
| Existing - 2011 | 3,000 | 0.1 | 118,000 | 5.8 | 403,000 | 20.0 | 580,000 | 28.7 | 2,020,000 |
| Trend - 2050 | 8,000 | 0.3 | 26,000 | 1.1 | 227,000 | 9.6 | 781,000 | 33.2 | 2,354,000 |
| Plan - 2050 | 118,000 | 4.9 | 352,000 | 14.7 | 344,000 | 14.4 | 582,000 | 24.4 | 2,389,200 |

*Source: SEWRPC*

## Table H.57
## Access to Jobs Within 30 Minutes by Transit

| Plan | 100,000 or More Jobs | | 50,000 or More Jobs | | 10,000 or More Jobs | | Regional Population |
|---|---|---|---|---|---|---|---|
| | People | Percent | People | Percent | People | Percent | |
| Existing - 2011 | 45,000 | 2.2 | 139,000 | 6.9 | 643,000 | 31.8 | 2,020,000 |
| Trend - 2050 | 36,000 | 1.5 | 101,000 | 4.3 | 498,000 | 21.2 | 2,354,000 |
| Plan - 2050 | 279,000 | 11.7 | 618,000 | 25.9 | 1,356,000 | 56.8 | 2,389,200 |

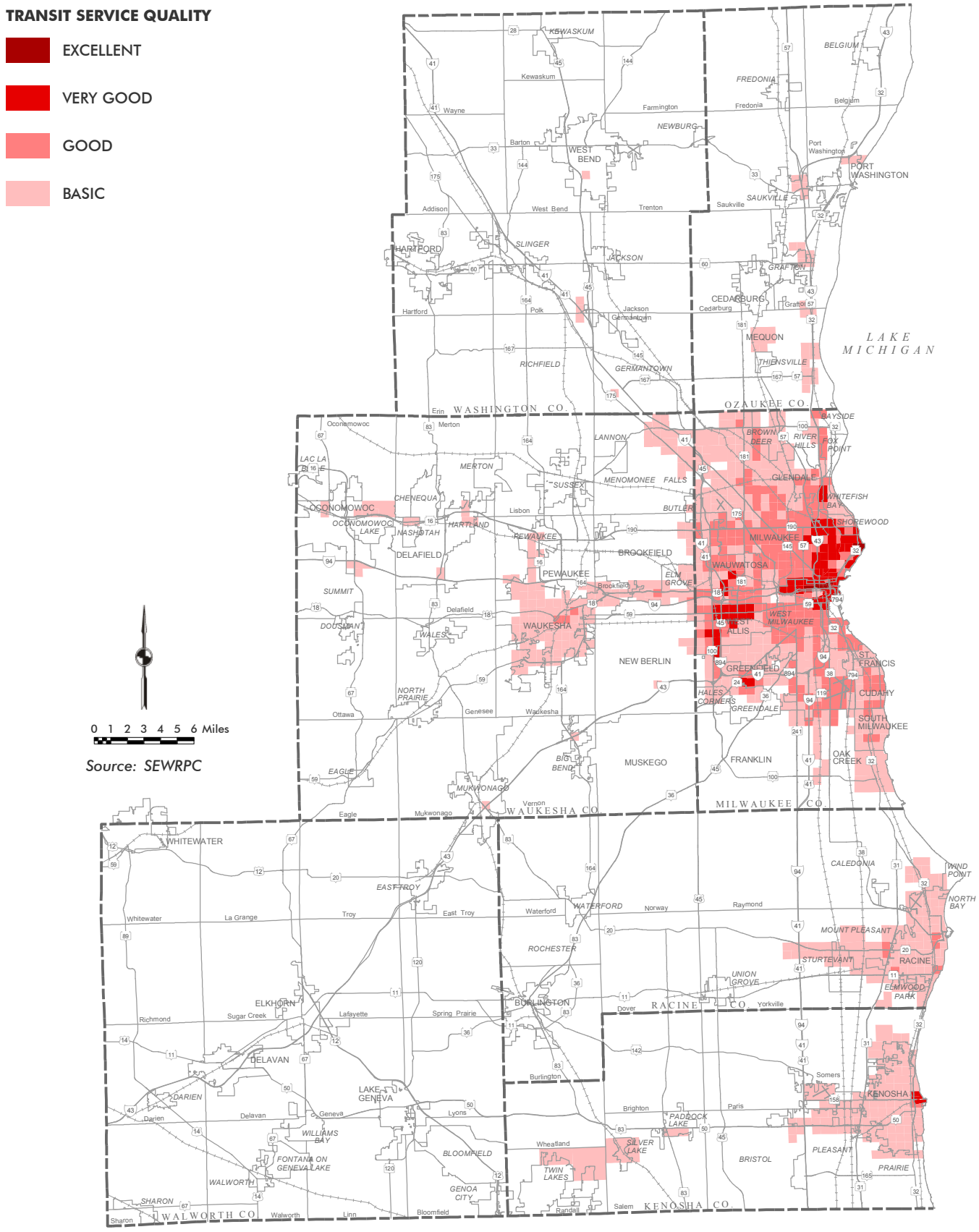
*Source: SEWRPC*

As shown in Table H.56, about 23 percent of the Region has access to Excellent or Very Good transit service under the Preliminary Plan, significantly better than the Trend. Overall, about 53 percent of the Region's residents would see their transit level of service at least one grade higher under the Preliminary Plan than the Trend. Maps H.102 through H.104 show the level of service provided by the existing transit system and under the Trend and Preliminary Plan.

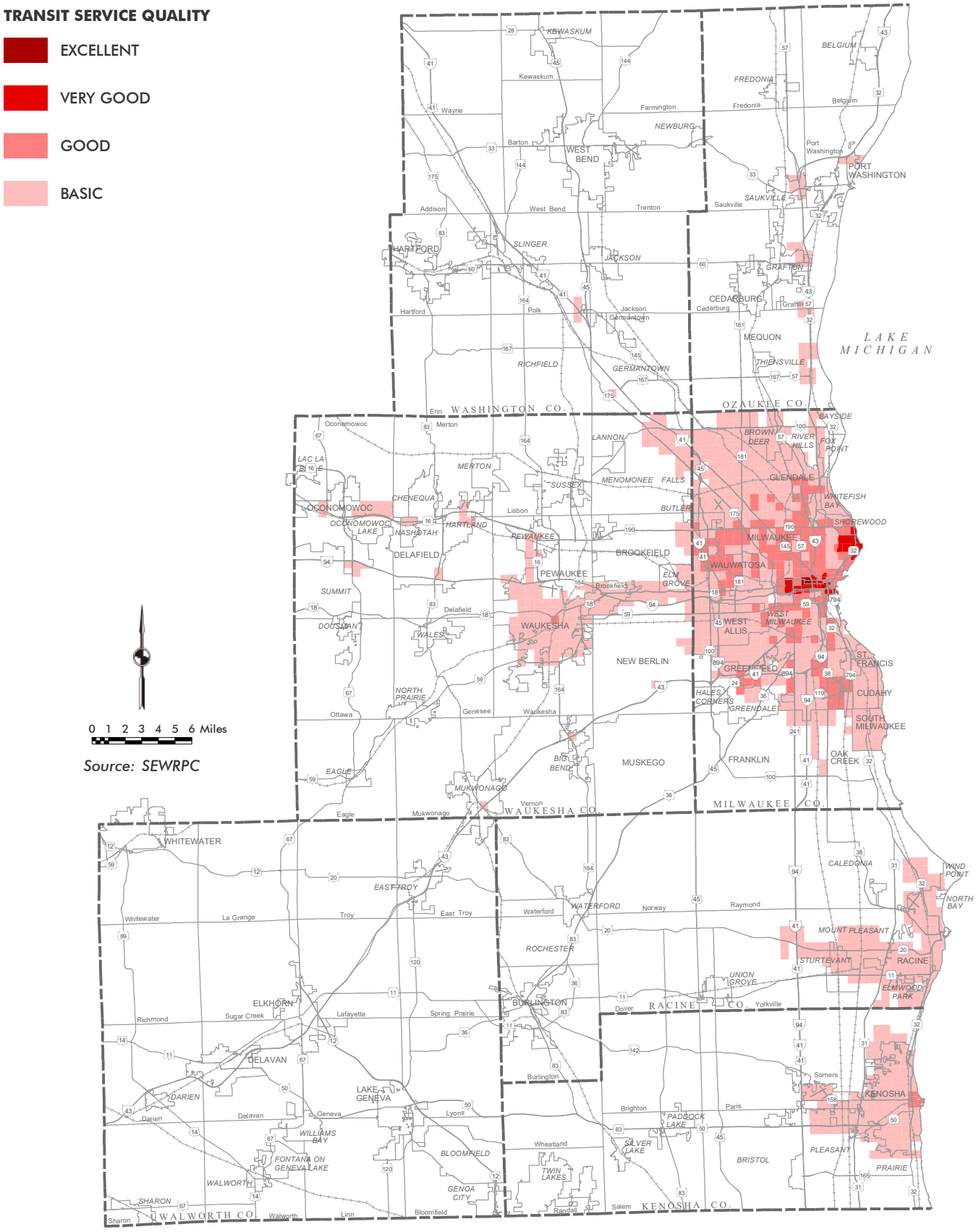
- **Jobs Accessible Within 30 Minutes via Transit:** One of the major goals of providing higher-quality transit service is to provide access to jobs, education, healthcare, and other needs for those without access to a car. How much access is provided by a transit system is not only determined by the level of transit service provided, but also by the land use served by transit service. Denser areas, with more people, jobs, and activity centers, make it easier to provide access to more destinations within a reasonable travel time on transit, especially if the transit service is separated from traffic congestion.

  In order to measure this element of transit service quality, the number of jobs accessible within 30 minutes via transit was measured for each alternative and is shown on Maps H.105 through Maps H.107. The coordinated land use pattern and transit system proposed for the Preliminary Plan would result in significant increases in access to jobs within 30 minutes compared to the Trend, as shown in Table H.57. Approximately 12 percent of residents would have access to at least 100,000 jobs within 30 minutes under the Preliminary Plan, compared to 2 percent of residents under the Trend.

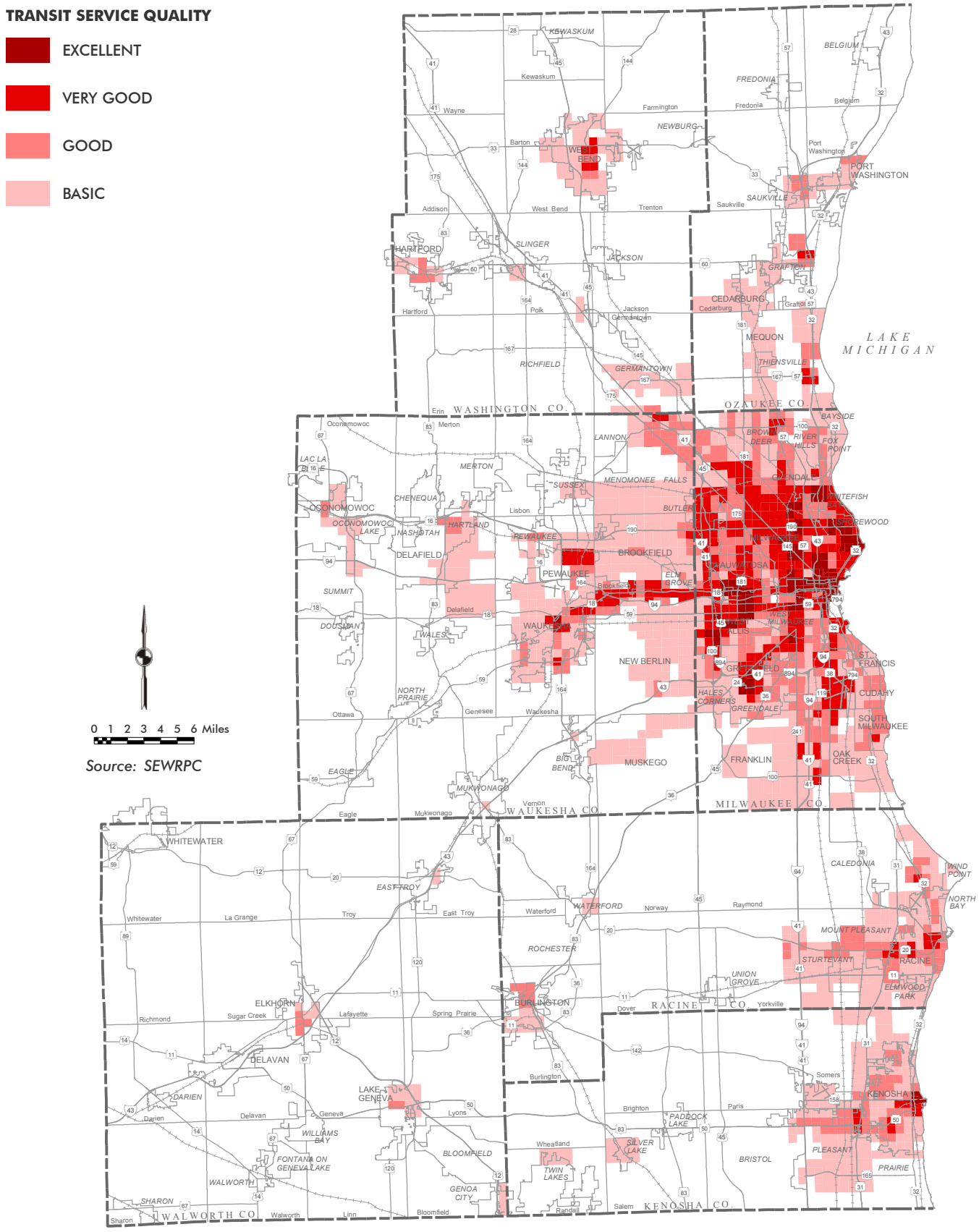
## Map H.102
## Transit Service Quality: Existing



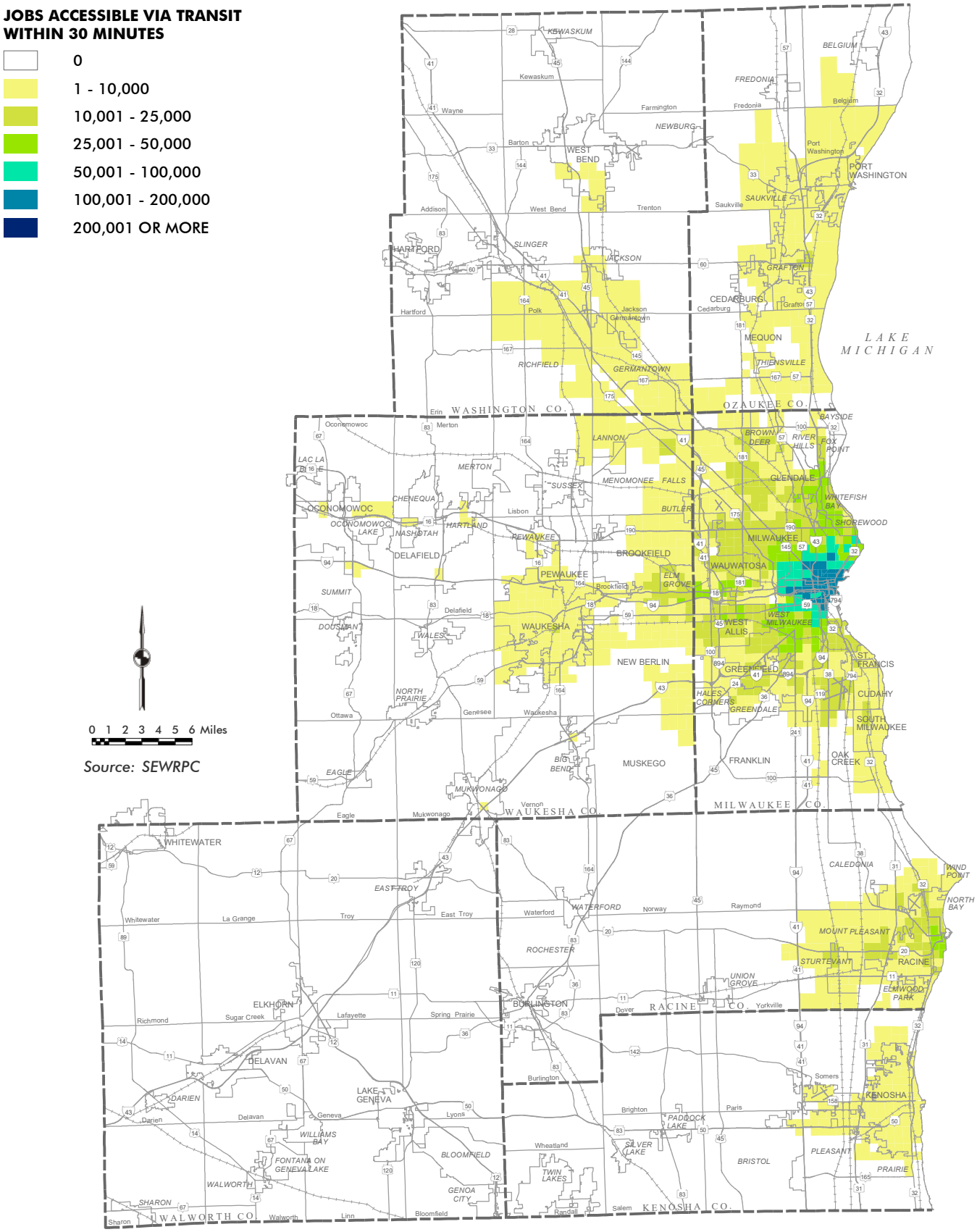
## Map H.103
## Transit Service Quality: Trend



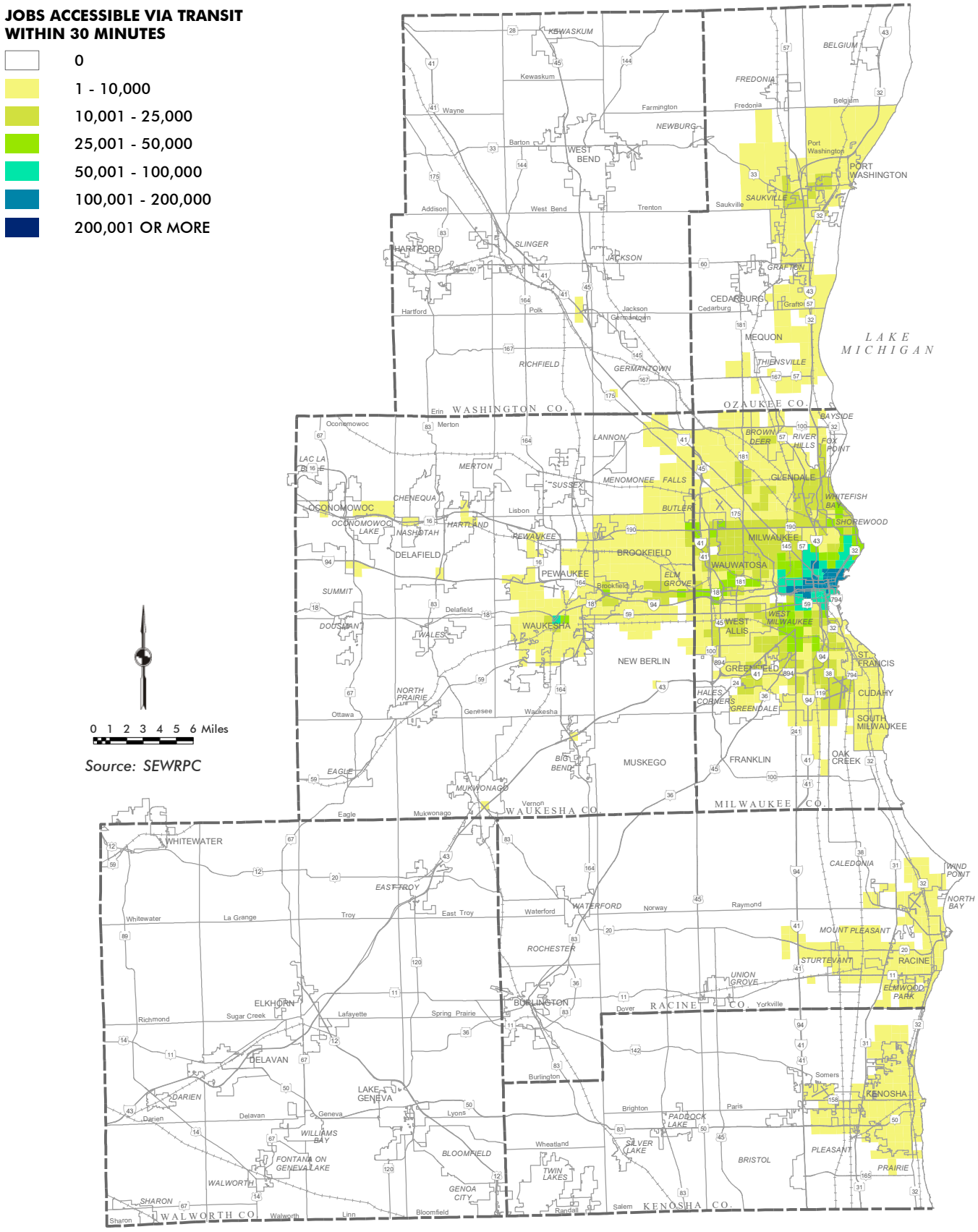
## Map H.104
## Transit Service Quality: Preliminary Recommended Plan



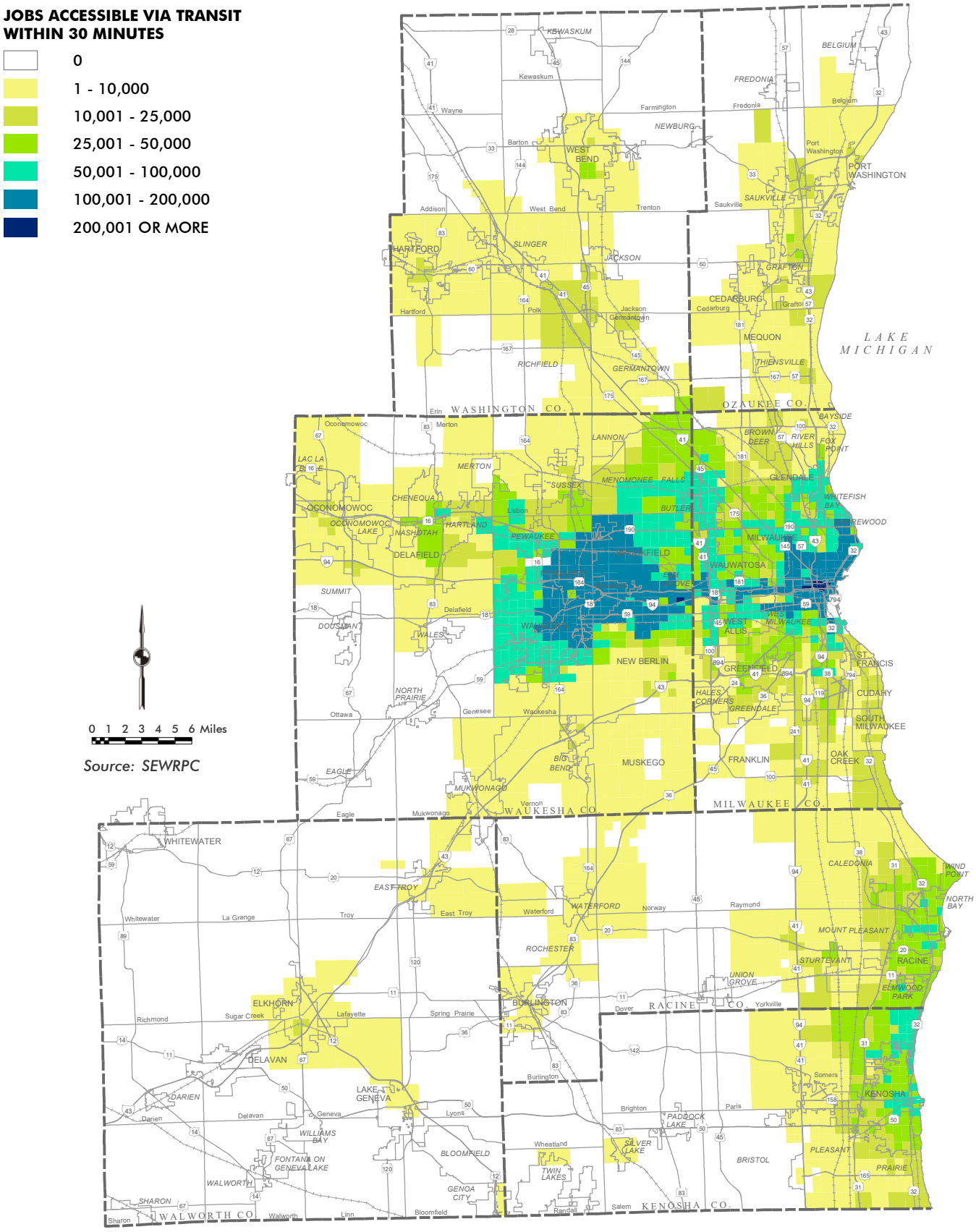
## Map H.105
## Access to Jobs Within 30 Minutes by Transit: Existing



## Map H.106
## Access to Jobs Within 30 Minutes by Transit: Trend



## Map H.107
## Access to Jobs Within 30 Minutes by Transit: Preliminary Recommended Plan



## CRITERION 4.6.1: TRANSPORTATION RELIABILITY

The VISION 2050 alternatives evaluation described the importance to Southeastern Wisconsin travelers of being able to reach their destinations safely and on time, and compared the alternatives with respect to several factors affecting transportation reliability. The Preliminary Recommended Plan would perform similarly to Alternative Plans I and II in that regard.

- **Total Congestion and Delay:** About 8.2 percent (274.1 miles) of the Region's existing arterial system operates over its design capacity (moderate, severe, or extreme congestion) for at least part of an average weekday. The proportion of the Region's arterial system that is congested would decrease under both the Trend—6.3 percent (230.4 miles)—and the Preliminary Plan—6.7 percent (246.1 miles)—with the Trend having about 6.4 percent fewer congested miles than the Preliminary Plan (see Criterion 4.4.1).

  Existing average annual minutes of delay for total personal and commercial travel in the Region is about 1,549 million minutes. Compared to existing conditions, both the Trend (1,613 million minutes) and the Preliminary Plan (1,731 million minutes) would be expected to result in higher average annual minutes of travel time delay, with the Trend having about 6.8 percent fewer minutes of delay (see Criterion 4.4.2).

- **Congestion on the Regional Highway Freight Network:** About 12.8 percent (210.9 miles) of the Region's existing regional highway freight network operates over its design capacity (moderate, severe, or extreme congestion) for at least part of an average weekday. The proportion of the Region's freight network that is congested would decrease under both the Trend—10.0 percent (166.4 miles)—and the Preliminary Plan—10.7 percent (177.8 miles)—with the Trend having about 6.4 percent fewer congested miles than the Preliminary Plan (see Criterion 4.6.2).

- **Non-Recurring Congestion:** Implementation of the Preliminary Plan would influence non-recurring congestion through reduction in vehicular crashes on arterial streets and highways. As well, a number of the transportation systems management (TSM) measures proposed in the Preliminary Plan are intended to reduce the impact of non-recurring congestion. While vehicle-miles of travel may be expected to increase by 25 percent by the year 2050, total vehicular crashes are estimated to increase by only 16 to 22 percent with full implementation of the Plan (see Criterion 1.6.1). The projected number of total crashes under the Trend and the Preliminary Plan are very similar, varying by less than 3 percent.

- **Alternative Routes and Modes:** Alternative routes and modes that could provide an opportunity for travelers to avoid congestion include transit service, bicycle facilities, and arterial streets and highways that serve as alternate routes. People living in walkable areas would also have a greater opportunity to avoid congestion when making shorter distance trips.

  As described in more detail in Criterion 4.5.3 (Transit Service Quality), the Preliminary Plan would best support transit as an alternative to driving on congested arterial streets and highways by providing the most

residents of the Region with high-quality transit service. In particular, the Preliminary Plan would include fixed-guideway transit that would offer attractive alternatives to traveling on congested freeways. The fixed-guideway transit routes would be parallel to freeways and would mostly be unaffected by traffic congestion by operating in medians, transit-only lanes, or rail corridors.

As described in more detail in Criterion 1.2.1 (Bicycle Level of Service) and Criterion 1.2.2 (Bicycle Connectivity), the Preliminary Plan would best support bicycling as an alternative to driving on congested arterial streets and highways by providing the highest comfort level for bicyclists riding on roadways as well as the most extensive bicycle facility network.

As described in more detail in Criterion 1.1.1 (Number of People Living in Walkable Areas), the Preliminary Plan would best support walking as an opportunity to avoid congestion when making shorter distance trips. The Preliminary Plan would result in the most people living in walkable areas, as well as the most developed land in walkable areas.

- **Resilience to Inclement Weather:** Fixed-guideway transit (such as commuter rail, light rail, and bus rapid transit) would be impacted to a lesser degree by inclement weather, as it would typically operate in a median, dedicated lane, or rail corridor, and would be able to avoid non-recurring congestion on arterials caused by weather-related crashes and reduced travel speeds. In particular, commuter rail and light rail, which have vehicles with steel wheels operating on steel rails, would be more resilient to winter conditions. As noted above, the Preliminary Plan would add fixed-guideway transit service, while the Trend would not.

## CRITERION 4.6.2: CONGESTION ON THE REGIONAL HIGHWAY FREIGHT NETWORK

As the alternatives evaluation discussed, the safe and efficient movement of raw materials and finished products to, from, and within Southeastern Wisconsin is essential for maintaining and growing the Region's economy. When segments of the arterial street and highway system that comprise the regional highway freight network[56] operate over their design capacity, the resulting congestion and associated truck travel delays can increase freight transportation costs for the Region's manufacturers and businesses. Table H.58 presents a comparison of the average weekday congestion on the regional highway freight network for the Region and for each county in the Region under existing conditions, the Trend, and the Preliminary Plan. Maps H.108 through H.110 illustrate the average weekday congestion on the regional highway freight network.

- **Total Congestion:** About 12.8 percent (210.9 miles) of the Region's existing regional highway freight network operates over its design capacity (moderate, severe, or extreme congestion[57]) for at least part of an average weekday. The proportion of the Region's freight network that is congested would decrease under both the Trend—10.0 percent (166.4 miles)—and the Preliminary Plan—10.7 percent (177.8 miles)—with the Trend having about 6.4 percent fewer congested miles than the Preliminary Plan.

- **Severe or Extreme Congestion:** Truck traffic is particularly impacted by severe and extreme congestion on the highway freight network. Under severe congestion, there is virtually no ability for vehicles to maneuver and change lanes on freeways and surface arterials. Under extreme congestion, vehicles experience stop-and-go traffic on freeways, as well as slow speeds and long delays at intersections along surface arterials. Comparing only the most congested arterial streets and highways in the Region, about 6.8 percent (111.9 miles) of the Region's existing highway freight network is severely or extremely congested. The proportion of the Region's highway freight network that is severely or extremely congested would decrease under both the Trend—5.0 percent (82.6 miles)—and the Preliminary Plan—5.4 percent (90.7 miles)—with the Trend having about 8.9 percent fewer miles of severely or extremely congested arterials than the Preliminary Plan.

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*[56] The regional highway freight network is based on the National Highway System (NHS) and the State of Wisconsin's designated routes for long trucks. Subsequent to the evaluation of the VISION 2050 alternatives, the regional highway freight network was updated based on the Wisconsin Department of Transportation's (WisDOT) recent proposed changes to the NHS. These proposed changes mostly involved removing stub ends of NHS routes that were added as part of MAP-21 and that serve areas already served by other NHS routes, and removing NHS routes no longer functionally classified as a principal arterial. The base year 2011 regional highway freight network in the Preliminary Plan evaluation includes about 1,646.6 highway miles, compared to about 1,658.1 highway miles in the base year 2011 regional highway freight network included in the alternatives evaluation.*

*[57] Under moderate congestion, average freeway speeds are 1 to 2 mph below free-flow speeds, and average surface arterial speeds are 40 to 50 percent of free-flow speeds. Under severe congestion, average freeway speeds are up to 10 mph below free-flow speeds, and average surface arterial speeds are 33 to 40 percent of free-flow speeds. Under extreme congestion, average freeway speeds are 20 to 30 mph or less, and average surface arterial speeds are 25 to 33 percent of free-flow speeds.*

## Table H.58
## Average Weekday Congestion on the Regional Highway Freight Network

**Existing (2011)**

| County | Under or At Design Capacity | | Over Design Capacity | | | | | | Total Mileage |
|---|---|---|---|---|---|---|---|---|---|
| | | | Moderate Congestion | | Severe Congestion | | Extreme Congestion | | |
| | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | |
| Kenosha | 134.4 | 94.2 | 6.6 | 4.6 | 1.5 | 1.1 | 0.2 | 0.1 | 142.7 |
| Milwaukee | 240.4 | 68.6 | 35.7 | 10.2 | 39.6 | 11.3 | 34.6 | 9.9 | 350.3 |
| Ozaukee | 97.9 | 85.7 | 11.1 | 9.7 | 3.9 | 3.4 | 1.4 | 1.2 | 114.3 |
| Racine | 184.2 | 95.4 | 6.4 | 3.3 | 2.1 | 1.1 | 0.4 | 0.2 | 193.1 |
| Walworth | 221.3 | 98.4 | 1.5 | 0.7 | 1.7 | 0.8 | 0.3 | 0.1 | 224.8 |
| Washington | 198.8 | 98.5 | 1.9 | 0.9 | 1.2 | 0.6 | 0.0 | 0.0 | 201.9 |
| Waukesha | 358.7 | 85.5 | 35.8 | 8.5 | 18.2 | 4.3 | 6.8 | 1.6 | 419.5 |
| Region | 1,435.7 | 87.2 | 99.0 | 6.0 | 68.2 | 4.1 | 43.7 | 2.7 | 1,646.6 |

**Trend (2050)**

| County | Under or At Design Capacity | | Over Design Capacity | | | | | | Total Mileage |
|---|---|---|---|---|---|---|---|---|---|
| | | | Moderate Congestion | | Severe Congestion | | Extreme Congestion | | |
| | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | |
| Kenosha | 127.4 | 89.2 | 12.7 | 8.9 | 2.7 | 1.9 | 0.0 | 0.0 | 142.8 |
| Milwaukee | 256.6 | 72.0 | 36.6 | 10.3 | 40.0 | 11.2 | 23.4 | 6.6 | 356.6 |
| Ozaukee | 110.5 | 96.8 | 1.7 | 1.5 | 1.7 | 1.5 | 0.3 | 0.3 | 114.2 |
| Racine | 184.5 | 95.5 | 6.3 | 3.3 | 1.8 | 0.9 | 0.6 | 0.3 | 193.2 |
| Walworth | 233.5 | 98.5 | 2.2 | 0.9 | 1.1 | 0.5 | 0.2 | 0.1 | 237.0 |
| Washington | 193.8 | 96.0 | 6.2 | 3.1 | 1.7 | 0.8 | 0.2 | 0.1 | 201.9 |
| Waukesha | 393.5 | 93.6 | 18.1 | 4.3 | 7.4 | 1.8 | 1.5 | 0.4 | 420.5 |
| Region | 1,499.8 | 90.0 | 83.8 | 5.0 | 56.4 | 3.4 | 26.2 | 1.6 | 1,666.2 |

**Plan (2050)**

| County | Under or At Design Capacity | | Over Design Capacity | | | | | | Total Mileage |
|---|---|---|---|---|---|---|---|---|---|
| | | | Moderate Congestion | | Severe Congestion | | Extreme Congestion | | |
| | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | Mileage | Percent of Total | |
| Kenosha | 127.1 | 89.0 | 13.2 | 9.2 | 2.5 | 1.8 | 0.0 | 0.0 | 142.8 |
| Milwaukee | 252.0 | 70.7 | 35.3 | 9.9 | 41.6 | 11.7 | 27.7 | 7.8 | 356.6 |
| Ozaukee | 106.4 | 93.2 | 4.7 | 4.1 | 2.1 | 1.8 | 1.0 | 0.9 | 114.2 |
| Racine | 183.2 | 94.8 | 6.0 | 3.1 | 3.4 | 1.8 | 0.6 | 0.3 | 193.2 |
| Walworth | 233.9 | 98.7 | 2.1 | 0.9 | 1.0 | 0.4 | 0.0 | 0.0 | 237.0 |
| Washington | 192.0 | 95.1 | 7.5 | 3.7 | 2.1 | 1.0 | 0.3 | 0.1 | 201.9 |
| Waukesha | 393.8 | 93.7 | 18.3 | 4.4 | 6.9 | 1.6 | 1.5 | 0.4 | 420.5 |
| Region | 1,488.4 | 89.3 | 87.1 | 5.2 | 59.6 | 3.6 | 31.1 | 1.9 | 1,666.2 |

*Source: SEWRPC*

## Map H.108
## Congestion on the Regional Highway Freight Network: 2011

**FACILITY CONGESTION STATUS**

- AT OR UNDER DESIGN CAPACITY
- MODERATELY CONGESTED
- SEVERELY CONGESTED
- EXTREMELY CONGESTED

Note: This map displays the traffic congestion experienced during an average weekday.

The regional highway freight network is based on the National Highway System (NHS) and the State of Wisconsin's designated routes for long trucks. The network may be revised upon completion of two freight planning efforts now underway, the U.S. Department of Transportation's *National Freight Strategic Plan* and the Wisconsin Department of Transportation's *Wisconsin State Freight Plan*.


*Source: SEWRPC*

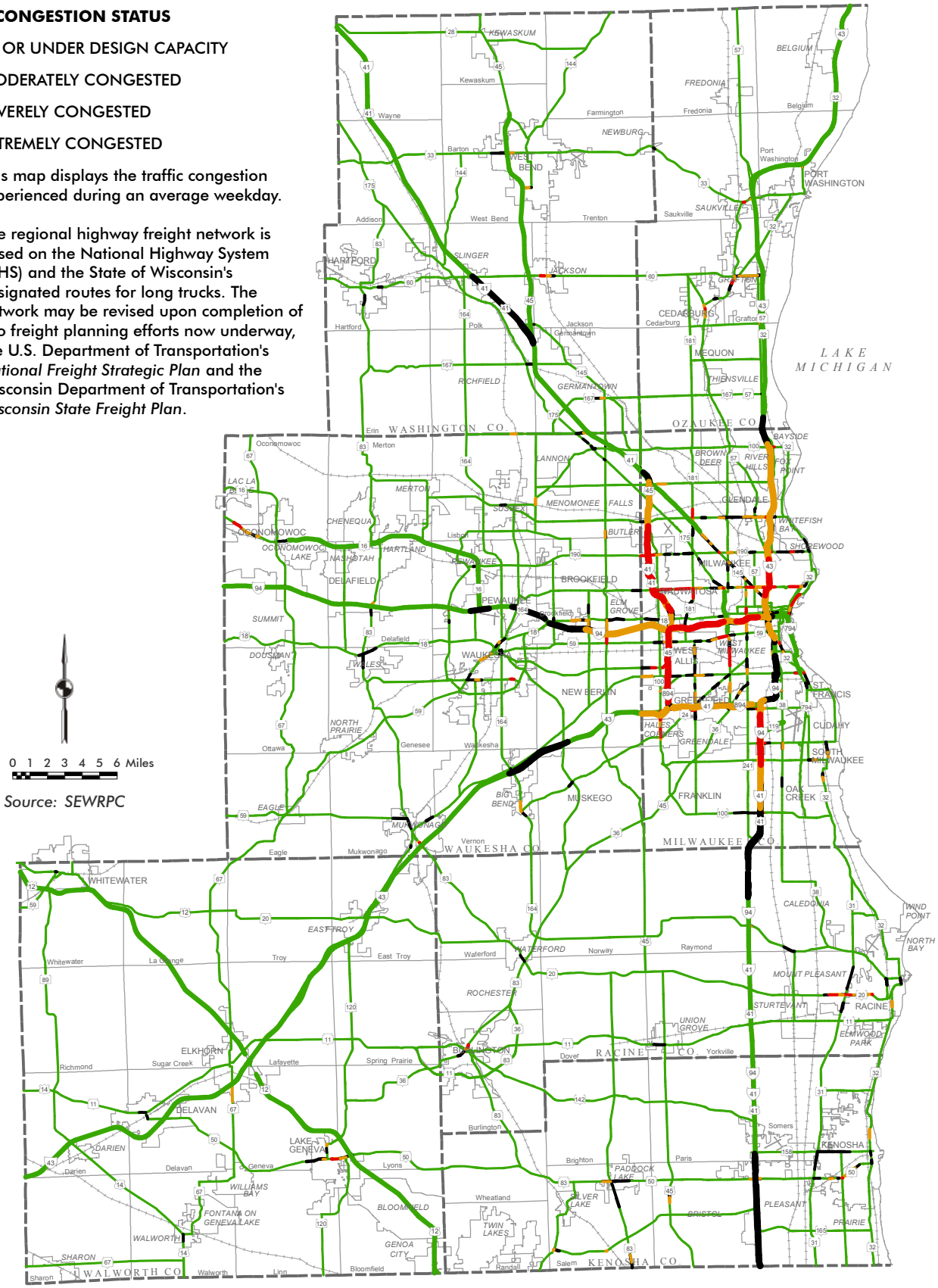
## Map H.109
## Congestion on the Regional Highway Freight Network: Trend

**FACILITY CONGESTION STATUS**

- AT OR UNDER DESIGN CAPACITY
- MODERATELY CONGESTED
- SEVERELY CONGESTED
- EXTREMELY CONGESTED

Note: This map displays the traffic congestion experienced during an average weekday.

The regional highway freight network is based on the National Highway System (NHS) and the State of Wisconsin's designated routes for long trucks. The network may be revised upon completion of two freight planning efforts now underway, the U.S. Department of Transportation's *National Freight Strategic Plan* and the Wisconsin Department of Transportation's *Wisconsin State Freight Plan*.



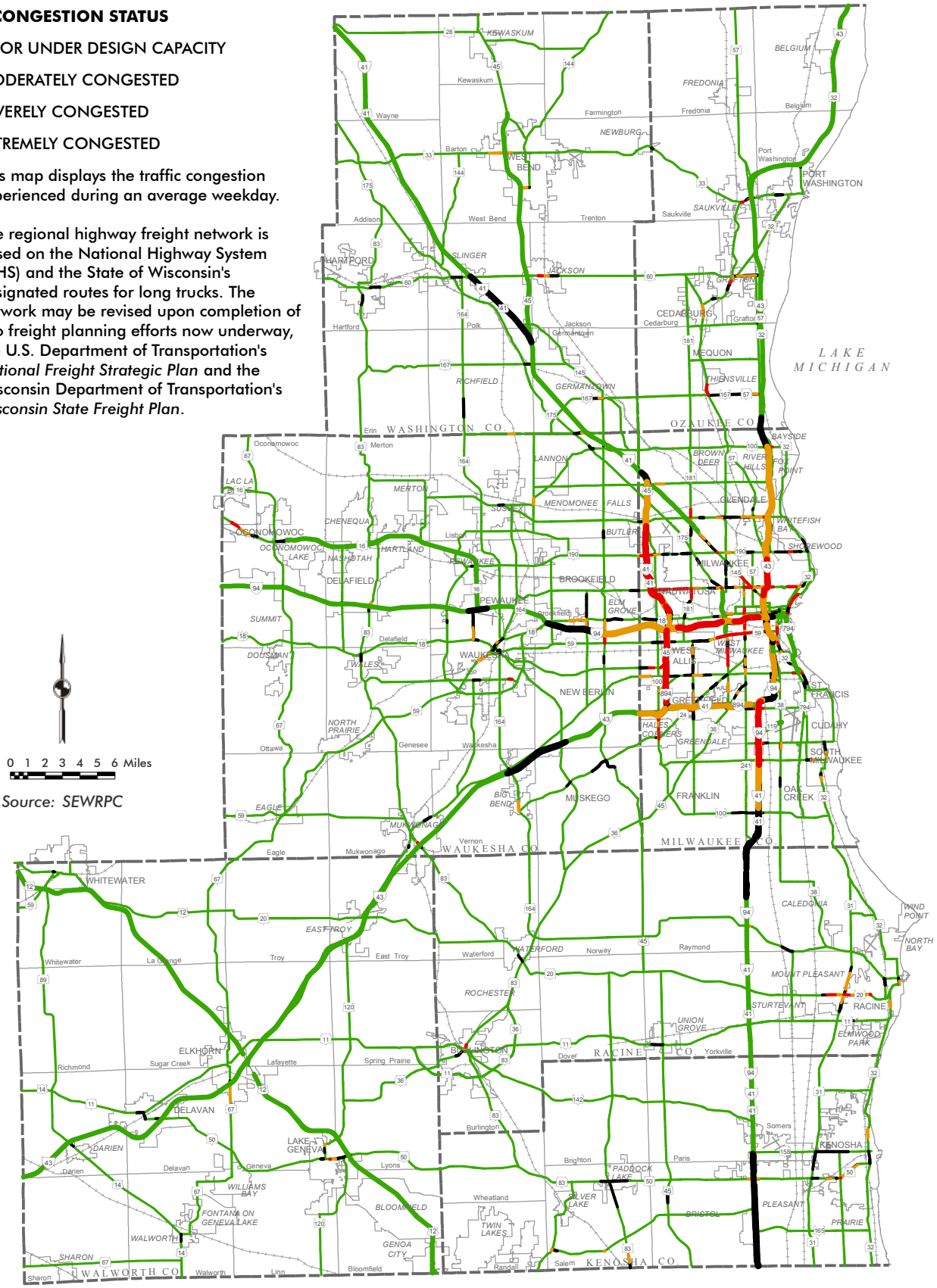
## Map H.110
## Congestion on the Regional Highway Freight Network: Preliminary Recommended Plan

**FACILITY CONGESTION STATUS**

- AT OR UNDER DESIGN CAPACITY
- MODERATELY CONGESTED
- SEVERELY CONGESTED
- EXTREMELY CONGESTED

Note: This map displays the traffic congestion experienced during an average weekday.

The regional highway freight network is based on the National Highway System (NHS) and the State of Wisconsin's designated routes for long trucks. The network may be revised upon completion of two freight planning efforts now underway, the U.S. Department of Transportation's *National Freight Strategic Plan* and the Wisconsin Department of Transportation's *Wisconsin State Freight Plan*.




Source: SEWRPC

## CRITERION 4.6.3: IMPACTS TO FREIGHT TRAFFIC

The evaluation of the VISION 2050 alternatives noted the importance of freight transportation to Southeastern Wisconsin's economy, and compared the alternatives in terms of their potential impacts on the movement of goods in the Region. The Preliminary Recommended Plan would perform similarly to Alternatives I and II in that regard.

- **Congestion on the Regional Highway Freight Network:** Southeastern Wisconsin's regional highway freight network is comprised of arterial streets and highways in the Region intended to carry a higher percentage of truck traffic. Higher levels of congestion on the freight network can result in increased shipping delays and higher shipping costs, negatively impacting businesses and manufacturers in the Region. About 12.8 percent (210.9 miles) of the Region's existing regional highway freight network operates over its design capacity (moderate, severe, or extreme congestion) for at least part of an average weekday. The proportion of the Region's highway freight network that is congested would decrease under both the Trend—10.0 percent (166.4 miles)—and the Preliminary Plan—10.7 percent (177.8 miles)—with the Trend having about 6.4 percent fewer congested miles than the Preliminary Plan (see Criterion 4.6.2).

- **Transportation Reliability:** Businesses and manufacturers in the Region benefit when the travel times of their freight shipments are predictable. In particular, the "just-in-time" business model requires carefully coordinated shipping schedules, since freight shipments that arrive late or early can increase the cost of doing business. Compared to today, both the Trend and Preliminary Plan would result in less congestion on the Regional arterial street and highway system—with the Trend having slightly fewer congested miles than the Preliminary Plan—and would improve the ability of the arterial system to accommodate truck travel via alternative routes (see Criterion 4.6.1). The annual number of crashes on the arterial street and highway system would be expected to be about the same under both the Trend and the Preliminary Plan (see Criterion 1.6.1).

- **Access to Intermodal Shipping Options:** In many cases, freight shipments to and from other countries or other regions of the United States are most effectively transported using more than one mode of transportation. These intermodal freight shipments typically involve using a ship, airplane, or train for the longer portion of a trip and a truck for the shorter last mile or first mile trip to or from a port, an airport, or a truck-rail intermodal facility. The Region's arterial street and highway system is essential for allowing trucks to provide last mile and first mile trips to and from the Port of Milwaukee, General Mitchell International Airport, O'Hare International Airport in Chicago, and truck-rail intermodal facilities located in Chicago, western Wisconsin, and Minneapolis-St. Paul. Given the importance of reducing unexpected delays experienced by last mile and first mile freight shipments, the Preliminary Plan would improve access to intermodal shipping options for the Region's businesses and manufacturers since it would result in a more reliable arterial street and highway system (see Criterion 4.6.1).

  The Preliminary Plan also proposes that the State, in cooperation with local governments, the Commission, local manufacturers and

shippers, and freight railroads, pursue development of a new truck-rail intermodal facility in or near the Region. Locating a truck-rail intermodal facility in or near Southeastern Wisconsin could provide transportation benefits to the Region's manufacturers and shippers, including lower shipping costs.

- **Oversize/Overweight Truck Impediments:** Unusually large or heavy goods shipped within or through the Region require that specific oversize/overweight (OSOW) truck routes be used. These routes may consist of streets and highways under State, county, or local jurisdiction. The Preliminary Plan proposes that State and local governments work with the Commission and local manufacturers, shippers, and utilities to improve the accommodation of OSOW shipments on the Region's arterial street and highway network—and in particular on routes to and from the Port of Milwaukee.

- **Congestion on the Freight Rail Network:** The proposed additional commuter rail service included in the Preliminary Plan would operate over privately owned freight rail lines and share track infrastructure with freight trains. The proposed commuter rail service operating between Kenosha and Milwaukee in would use track owned by Union Pacific Railroad (UP) and Canadian Pacific Railway (CP), and the proposed commuter rail service operating between Oconomowoc and Milwaukee would use track owned by CP. The Preliminary Plan envisions that the costs of implementing new commuter rail service would include the costs of infrastructure improvements necessary to keep commuter train operations from negatively affecting freight train operations.