

PRELIMINARY DRAFT

FIRST AMENDMENT TO

VISION 2050: A REGIONAL LAND USE AND TRANSPORTATION PLAN FOR SOUTHEASTERN WISCONSIN

ESTABLISHING TARGETS FOR FEDERAL PERFORMANCE MEASURES: HIGHWAY SAFETY



SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

**VISION
2050**
One Region, Focusing on Our Future

VISION 2050 AMENDMENT: ESTABLISHING TARGETS FOR THE FEDERAL SAFETY PERFORMANCE MEASURES FOR INCORPORATION INTO VISION 2050

The Moving Ahead for Progress in the 21st Century Act (MAP-21), enacted in 2012, created a national performance management framework that established uniform performance measures and target setting to, in part, create a consistent nationwide process for monitoring the effectiveness of Federal transportation investments, including investments in safety-related improvements implemented with Highway Safety Improvement Program (HSIP) funding. As part of implementing the national performance management framework, States and metropolitan planning organizations (MPOs), like the Commission, are to annually establish targets for the five safety performance measures:

- Number of fatalities
- Rate of fatalities per one hundred million vehicle miles traveled (HMVMT)
- Number of serious injuries
- Rate of serious injuries per HMVMT
- Number of non-motorized (pedestrian/bicyclist) fatalities and serious injuries

Under the national performance management framework, the State is required to establish safety performance targets for the State and the Commission is required to establish safety performance targets for the Region's metropolitan planning area. The targets are set for each of the five safety measures as a rolling five-year average ending in the year after the reporting year (2018), and are compared to a base rolling five-year average ending in the year previous to the reporting year (2016). While the Commission is required to establish safety targets and plan and program for achievement of those targets, there are no consequences should those targets not met. In addition, the safety performance targets established for the Region are required to be incorporated into VISION 2050—the year 2050 regional land use and transportation plan completed in 2016.

In August 2017, the Wisconsin Department of Transportation (WisDOT) established and reported statewide targets for the five safety performance targets, in coordination with the State's metropolitan planning organizations (MPOs), including the Commission, and with the State Highway Safety Office. Following the establishment of targets by WisDOT, the Commission could either choose to accept the statewide targets (and plan and program to achieve WisDOT's

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targets) or establish its own targets (and plan and program to achieve the areawide targets). The Commission is permitted to choose to accept WisDOT's targets for some of the safety measures and establish its own targets for the remaining measures. The following describes the process used by the Commission in developing the safety-performance targets for the Southeastern Wisconsin Region, and preliminary recommended targets for meeting the national performance management requirements and inclusion in VISION 2050.

Process for Establishing Targets

Given the requirement to include the short-range target-setting process into VISION 2050, a long-range plan, it was determined that long-term regional targets (for the period 2046-2050) should be established for each of the five safety performance measures. The establishment of the short-term targets for the metropolitan planning area, as required as part of the national performance measure framework, was based on the long-term regional targets.

With respect to establishing long-term safety targets, the following process was used:

1. Baseline data for each of the measures was developed for the Region, plus those portions of Jefferson and Dodge Counties within the metropolitan planning area.
2. Historical regional trends in the number and rate of fatalities and serious injuries and the number of non-motorized (bicycle and pedestrian) fatalities and serious injuries were reviewed.
3. The safety-related recommendations of VISION 2050 and the State's latest Strategic Highway Safety Plan (SHSP) were reviewed to determine their potential effect on crashes in the Region.
4. Based on the evaluations of the historical trends and the review of the safety recommendations of VISION 2050 and SHSP, alternative methods for establishing targets were developed and evaluated based on their ability to meet the aspirational nature of, and quantify the safety objective and recommendations of, VISION 2050, while recognizing and considering the effect of past efforts to reduce the number and rate of crashes.
5. Based on the evaluation of the alternative methods, preliminary recommended targets for years 2046-2050 were developed for each of the five safety performance measures for inclusion in VISION 2050.

After following this process, it was determined that separate areawide short-term targets for the safety performance measures would be established for the Region, rather than accepting the State's targets.

More details on the process used to establish the safety performance targets for the Region can be found in the remainder of this document.

Preliminary Recommended Targets for Safety-Related Performance Measures

Table ES.1 shows the preliminary recommended years 2046-2050 regional targets for each of the five national safety performance measures, which are proposed to be incorporated into VISION 2050 as an amendment. Table ES.2 shows the resulting short-term years 2014-2018 safety targets for both the Region's metropolitan planning area and the seven-county Region. These preliminary recommended targets represent the aspirational nature of, and quantify, the safety objective and safety recommendations of VISION 2050, but recognize the effect of past efforts to reduce the number and rate of fatalities and serious injuries. While there may be fluctuations in the number of fatalities and serious injuries from year-to-year (which may cause short-term targets to not be met), it is expected that with the long-term implementation of the recommendations of VISION 2050 and the State's SHSP—along with continued improvements in vehicular safety (including driver-assistance technology and automated vehicles)—the long-term decline in fatalities and serious injuries will continue. The preliminary recommended safety targets, along with the process to establish the targets, were reviewed and endorsed by the Commission's Advisory Committees on Regional Land Use Planning and Regional Transportation Planning at a joint meeting held on January 18, 2018, and were presented for review and comment by the public through April 13, 2018. No public comments were received during the public review and comment period.

**Table ES.1
Preliminary Recommended Regional Years 2046-2050 Targets
for the National Safety-Related Performance Measures**

Performance Measure	2012-2016 Baseline Data	Preliminary Recommended 2046-2050 Target	Percent Change from 2012-2016 Base Year
Number of Fatalities	152.2	91.9	-39.6
Rate of Fatalities	0.962	0.488	-49.3
Number of Serious Injuries	798.2	144.1	-82.0
Rate of Serious Injuries	5.053	0.766	-84.8
Number of Non-Motorized Fatalities and Serious Injuries	167.2	45.7	-72.7

Source: Fatality Analysis Reporting System (FARS) and Wisconsin Traffic Operations and Safety (TOPS) Laboratory

**Table ES.2
Resulting 2014-2018 Targets for the National Safety-Related Performance Measures for the Metropolitan Planning Area and Seven-County Region Based on the Preliminary Recommended Years 2046-2050 Regional Targets**

Performance Measure	Metropolitan Planning Area		Seven-County Region	
	2012-2016 Baseline Data	Resulting 2014-2018 Target	2012-2016 Baseline Data	Resulting 2014-2018 Target
Number of Fatalities	137.2	133.2	152.2	147.7
Rate of Fatalities	0.923	0.884	0.962	0.922
Number of Serious Injuries	743.8	672.5	798.2	721.7
Rate of Serious Injuries	5.005	4.464	5.053	4.504
Number of Non-Motorized Fatalities and Serious Injuries	161.0	149.2	167.2	154.9

Source: Fatality Analysis Reporting System (FARS) and Wisconsin Traffic Operations and Safety (TOPS) Laboratory

Final Recommended Targets for Safety-Related Performance Measures

This section will be completed upon action by the Advisory Committees on Regional Land Use Planning and Regional Transportation Planning to recommend final safety targets for inclusion into VISION 2050 as an amendment at their meeting scheduled for April 26, 2018, and by the Commission at its meeting scheduled for June 20, 2018.

Reporting and Monitoring of Safety Targets

The safety targets will be reported and monitored in the transportation system performance section of the Commission's Annual Report and on its website. The regional long-term targets will be reviewed and potentially updated every four years as part of the interim regional plan update and every 10 years as part of the major regional plan update.

INTRODUCTION

The Moving Ahead for Progress in the 21st Century Act (MAP-21), enacted in 2012, created a national performance management framework that established uniform performance measures and target setting to, in part, establish a consistent nationwide process for monitoring of the effectiveness of Federal transportation investments, including investments in safety-related improvements with Highway Safety Improvement Program (HSIP) funding. This framework was continued in the Fixing America's Surface Transportation Act (FAST Act) enacted in 2015. As part of implementing the national performance management framework established by MAP-21 and the FAST Act, the Federal Highway Administration (FHWA) has developed regulations (effective on May 27, 2016) for States and metropolitan planning organizations (MPOs), like the Regional Planning Commission, to annually establish for all public roadways targets for five safety performance measures: 1) the number of fatalities, 2) the rate of fatalities per one hundred million vehicle miles traveled (HMVMT), 3) number of serious injuries, 4) the rate of serious injuries per HMVMT, and 5) the number of non-motorized fatalities and serious injuries.¹ The targets are set for each of the five performance measures as a rolling five-year average² ending the year after the reporting year. The targets are compared to a base rolling five-year average ending in the year previous to the reporting year.

The safety performance targets established for the Region are required to be incorporated into VISION 2050—the year 2050 regional land use and transportation plan completed in 2016. Subsequent updates to VISION 2050 (every four years as part of interim plan updates and every 10 years as part of major updates) will also include a monitoring of the achievement of the targets. In addition, the regional transportation improvement program (TIP) is required to include a description of how the projects programmed in the TIP promote the achievement of the safety performance targets. The deadline for incorporating the safety performance targets is May 27, 2018, or two years after the effective date of the safety performance regulations. While the Commission is required to establish safety targets and plan and program for achievement of those targets, there are no consequences—unlike for the State³—should those targets not be met.

In August 2017, the Wisconsin Department of Transportation (WisDOT) established statewide targets for the five safety performance targets, in coordination with the State's MPOs, including the Commission, and with the State Highway Safety Office. Table 1 shows the WisDOT established targets for the five-year rolling average for the years 2014-2018 based on the baseline five-year rolling average for the years 2012-2016. The targets represent a reduction in the two-year period in the five-year rolling average of 2 percent for the safety performance measures related to the number and rate of fatalities and of 5 percent for the safety performance measures related to the number and rate of serious injuries and the number of non-motorized fatalities and serious injuries. These targets were reported in the State's year 2017 HSIP report completed on August 31, 2017.

¹ A non-motorized fatality or serious injury involves any vehicular crash that results in the death or serious injury of a pedestrian, bicyclist, or person utilizing a wheel chair (manual or motorized).

² Due to the somewhat 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 lower or higher than a typical year. Thus, to avoid annual anomalies, the annual average of the number of crashes over a certain time period is commonly used (such as three or five years). The safety performance measure regulations developed by FHWA specify that the five-year rolling average be used for base year and target-setting purposes.

³ The State's targets are evaluated each year by FHWA to determine whether the State has "met or made significant progress" towards achieving the safety performance targets. This is determined for each safety performance measure by whether its outcome for the evaluation year is either at or below the established target (or meeting the target) or less than the base five-year rolling average used to establish the target. If these conditions are met for four out of the five performance measures, FHWA would consider WisDOT having met or made significant progress towards achieving the statewide safety targets. If the State is determined to not have met or made significant progress, the State would be required to use in the following year all of the HSIP funding it receives only on highway safety improvement projects (and would not have the flexibility to transfer HSIP funding to other FHWA funding programs). The first determination of whether the State met or made significant progress towards its safety targets would be conducted by FHWA in 2019. Should WisDOT not meet or show significant progress for at least four performance measures that year, the restrictions would apply to the use of HSIP funding in 2020.

Table 1
Year 2014-2018 Statewide Baseline Levels and Targets for
the National Safety Performance Measures

Performance Measure	Year 2012-2016 Baseline 5-Year Average	Year 2014-2018 Target
Number of Fatalities	567.4	556.1
Fatalities Per 100 Million Vehicle-Miles Traveled	0.936	0.917
Number of Serious Injuries	3,183.0	3,023.9
Serious Injuries Per 100 Million Vehicle-Miles Traveled	5.260	4.997
Number of Non-Motorized Fatalities and Serious Injuries	361.4	343.3

Source: Fatality Analysis Reporting System (FARS), Wisconsin Traffic Operations and Safety (TOPS) Laboratory, and SEWRPC

Based on the regulations, the Commission is required to establish safety performance targets for the Region’s metropolitan planning area (see Map 1) for the same five-year period as WisDOT’s targets. The Commission can either choose to accept the targets established by the State (and plan and program to achieve the State targets) or establish its own targets (and plan and program to achieve the areawide targets), with the Commission being permitted to choose to accept WisDOT’s targets for some of the safety measures and establish its own targets for the remaining measures.⁴ The short-term (two-year) targets for the safety performance measures need to be established by February 27, 2018 (or within 180 days following WisDOT reporting its targets).

The remainder of this memorandum documents the proposed process followed by the Commission in establishing targets for the five safety-related performance measures, and amending VISION 2050 to incorporate the establishing and monitoring of the safety targets.

PROPOSED PROCESS FOR ESTABLISHING SAFETY TARGETS

To allow the effective monitoring of safety-related plan recommendations and projects programmed in the Region in achieving the targets, the Commission staff proposes that separate areawide short-term targets for the safety performance measures be established for the Region, rather than accepting the State’s targets. To integrate the target-setting process into VISION 2050, it is further proposed that regional long-term targets (for the period 2046-2050) be established for each of the five safety performance measures, which would be amended into VISION 2050. It is proposed that the transportation system performance section of the Commission’s Annual Report include the monitoring of achievement of the safety targets. It is also proposed that the regional long-term targets be reviewed and potentially updated every four years as part of the interim regional plan update and every 10 years as part of the major regional plan update. The establishment of the short-term targets for the metropolitan planning area, as required by the planning regulations, would be based on the long-term regional targets.

The first step to develop years 2046-2050 safety targets for each of the five safety-related performance measures was the establishment of the baseline data for each of the measures for the Region, plus those portions of Jefferson and Dodge Counties within the metropolitan planning area. The next step in establishing the years 2046-2050 safety targets involved a review of trends in the number and rate of fatalities and serious injuries, along with the number of non-motorized (bicycle and pedestrian) fatalities and serious injuries, that have occurred historically in the Region. In addition, the safety-related recommendations of VISION 2050 and the State’s latest Strategic Highway Safety Plan (SHSP) were reviewed to determine their potential effect on crashes in the Region. Based on these evaluations, Commission staff developed and evaluated alternative targets for each of the three number-based performance measures—fatalities, serious injuries, and non-motorized fatalities and serious injuries. For the two rate-related criteria, the alternatives considered included applying projected vehicle-miles traveled (VMT) data to the alternatives developed for the number of fatalities and number of serious injuries criteria. Based on the evaluation of the alternatives, Commission staff identified preliminary recommended targets for years 2046-2050 for each of the five safety performance measures for inclusion in VISION 2050.

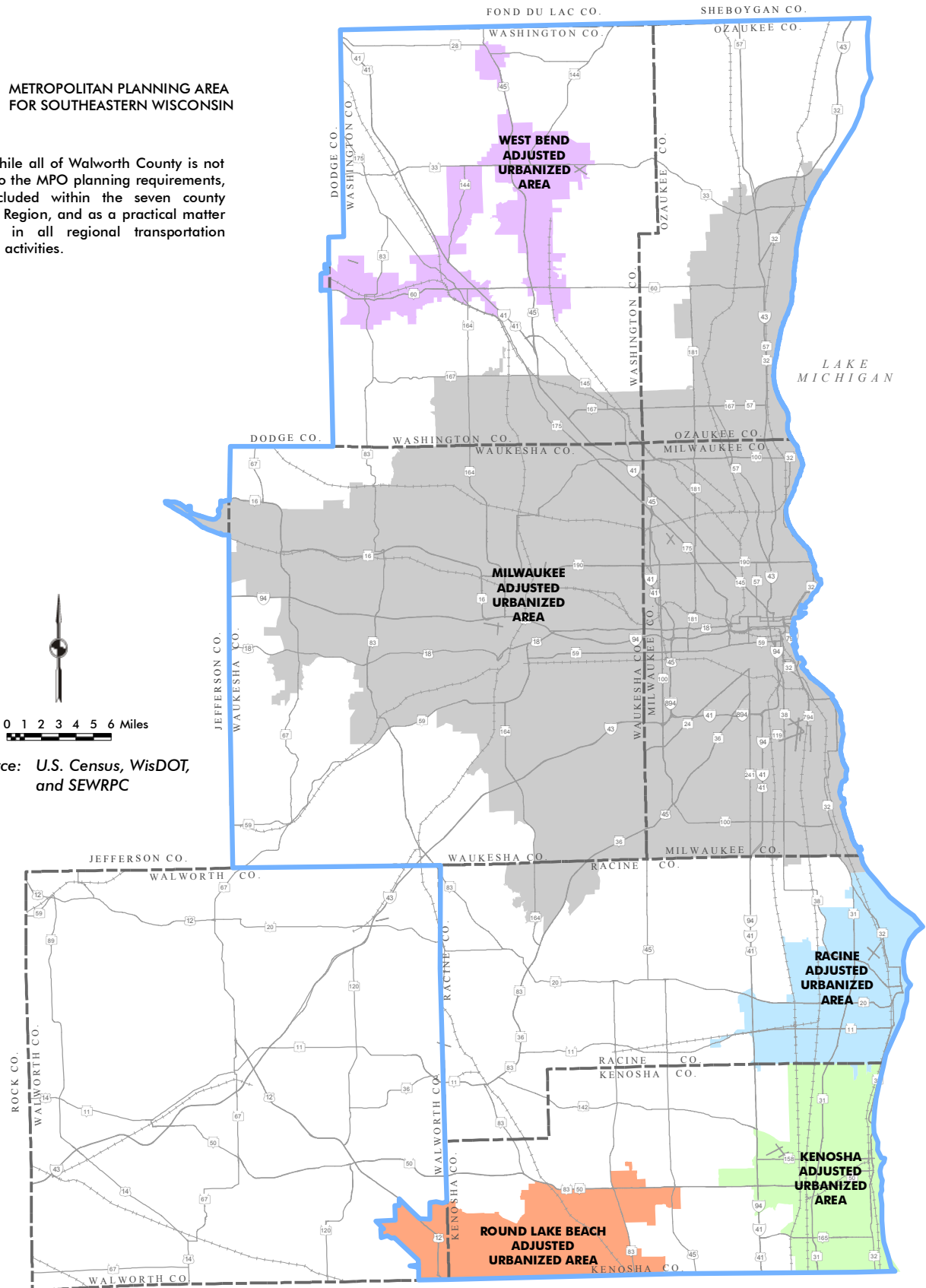
⁴ This was included in the regulation to recognize that some MPOs may not have the resources to establish their own targets for the performance measures.

Map 1 Southeastern Wisconsin Metropolitan Planning Area

LEGEND

 METROPOLITAN PLANNING AREA FOR SOUTHEASTERN WISCONSIN

Note: While all of Walworth County is not subject to the MPO planning requirements, it is included within the seven county SEWRPC Region, and as a practical matter included in all regional transportation planning activities.



Source: U.S. Census, WisDOT, and SEWRPC

Table 2
Year 2012-2016 Baseline Levels for the National Safety Performance
Measures: Seven-County Southeastern Wisconsin Region^a

Performance Measure	Year					5-Year Average
	2012	2013	2014	2015	2016	
Number of Fatalities	162	125	145	150	179	152.2
Fatalities Per 100 Million Vehicle-Miles Traveled	1.038	0.792	0.930	0.945	1.108	0.962
Number of Serious Injuries	898	834	745	716	798	798.2
Serious Injuries Per 100 Million Vehicle-Miles Traveled	5.751	5.283	4.778	4.512	4.940	5.053
Number of Non-Motorized Fatalities and Serious Injuries	183	168	151	165	169	167.2

^a Includes the portion of Jefferson County within the Milwaukee urbanized area and the portion of Dodge County within the West Bend urbanized area.

Source: Fatality Analysis Reporting System (FARS), Wisconsin Traffic Operations and Safety (TOPS) Laboratory, and SEWRPC

The preliminary year 2046-2050 targets will be reviewed and considered by the Commission’s Advisory Committees on Regional Land Use Planning and Regional Transportation Planning for incorporation into VISION 2050 as a plan amendment. The public will have an opportunity to review and provide comment on the targets during a 30-day public comment period. The preliminary targets, along with any comments received and addressed by Commission staff, will be reviewed and considered by the Commission as an amendment to VISION 2050.

Regional Baseline Data

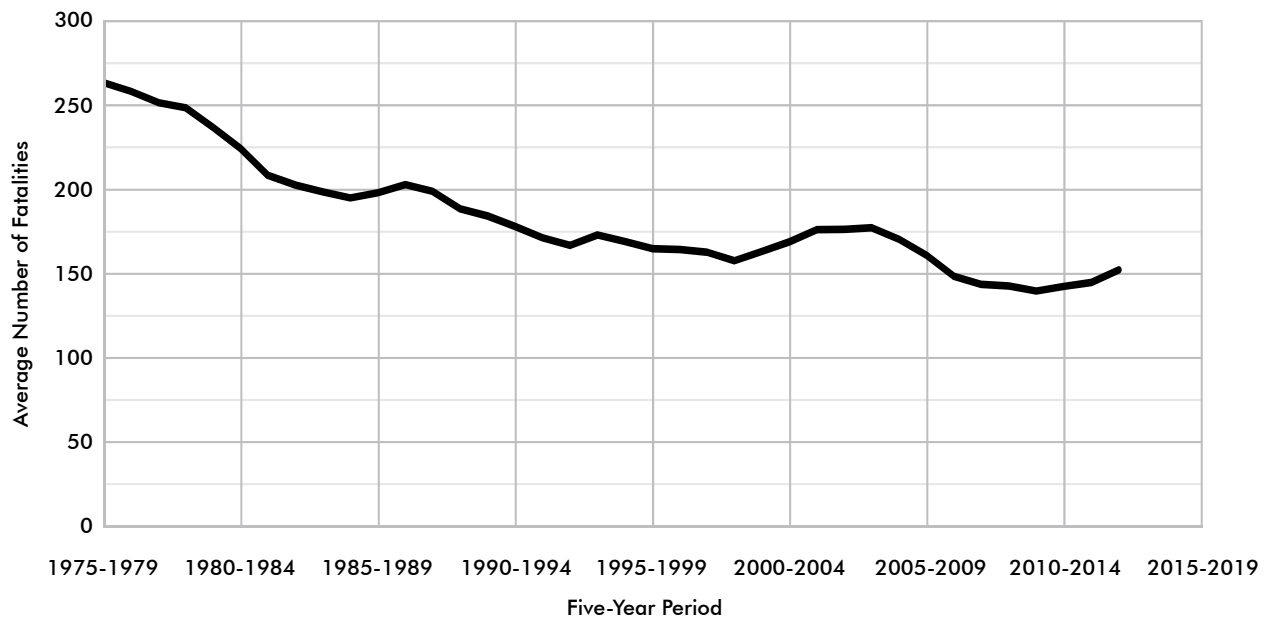
Table 2 shows the years 2012-2016 five-year rolling average (representing the baseline) for the five safety performance measures for the Region, including the portions of Jefferson and Dodge Counties within the metropolitan planning area. The number of fatalities, number of serious injuries, and number of non-motorized fatalities and non-motorized serious injuries reported were based on county-level crash data reported by WisDOT. The numbers for each of the performance measures for the small portions of Jefferson and Dodge Counties were estimated based on reviewing the crashes recorded in the State’s crash database maintained by the University of Wisconsin-Madison’s Transportation Operations and Safety Laboratory (TOPS Lab). The VMT data used for the two safety performance measures involving rates were based on VMT data maintained by the Commission for the Region.

The Region’s five-year rolling average for both the number of fatalities and the number of serious injuries represents about one-quarter of the State’s five-year rolling average. Similarly, the year 2016 VMT within the Region accounts for a quarter of the year 2016 VMT within the State. However, the Region accounts for about 45 percent of the State’s five-year rolling number of bicycle/pedestrian fatalities and serious injuries. This exceeds the Region’s share of 2016 VMT of 25 percent and share of population of 35 percent. Given the significant share that the Region has of the State’s fatalities and serious injuries, it would be expected that efforts to reduce fatalities and serious injuries in the Region would significantly contribute to the State achieving its targets.

Evaluation of Historical Trends

As part of establishing targets for the five safety performance measures, an evaluation was conducted on the historical number and rate of fatalities, number and rate of serious injuries, and number of non-motorized (pedestrian and bicyclist) fatalities and serious injuries. To avoid the annual anomalies that can occur with these data, the trends of the historical five-year rolling averages were evaluated. The number of fatalities and serious injuries in the Region (including the portion of Jefferson and Dodge Counties within the metropolitan planning area) was evaluated. A separate review of the number of total crashes that have occurred within the Region is provided in Attachment A of this document. This attachment provides an update to the crash review that was conducted and included in the inventory sections of the VISION 2050 plan report.

Figure 1
Five-Year Rolling Average of Number of Fatalities in Southeastern Wisconsin: 1975-2016



Source: Fatality Analysis Reporting System (FARS)

Number of Fatalities

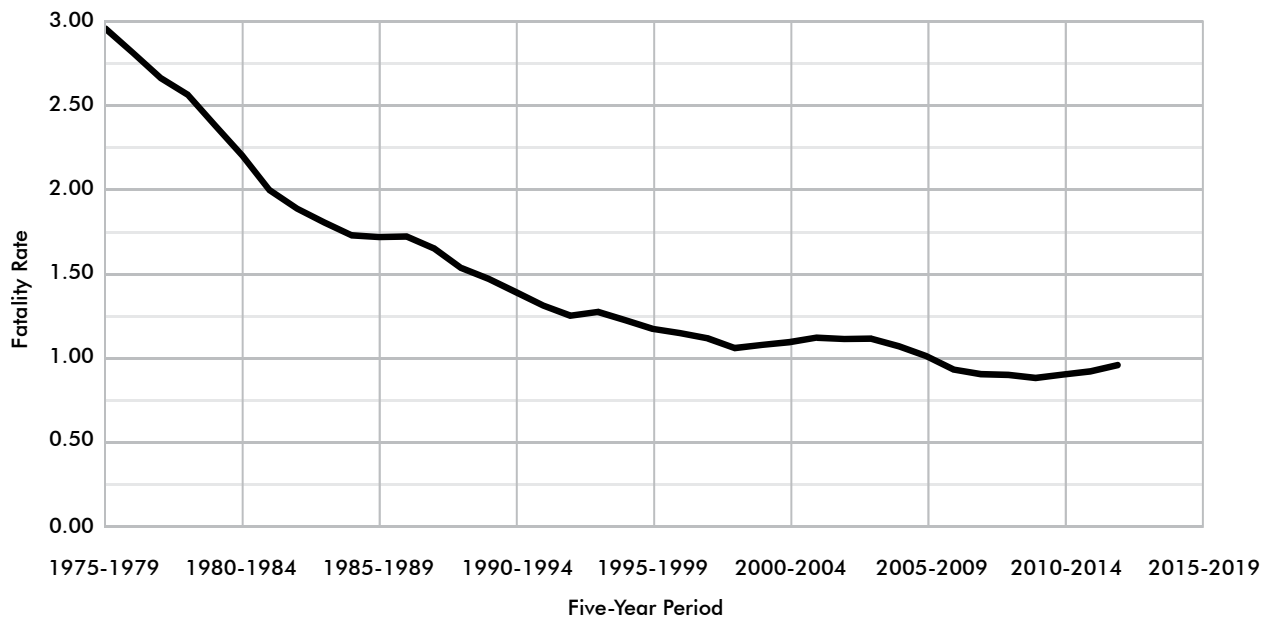
Figure 1 shows the rolling five-year average of the number of fatalities within the Region (including the portions of Jefferson and Dodge Counties within the metropolitan planning area) over the 42-year period of 1975 through 2016.⁵ Over this time period, there has been an overall decline in the rolling average of about 42.3 percent (or an average annual decline of about 1.5 percent). The decline in the five-year rolling average was fairly uniform from the 1975-1979 period to the 1998-2002 period. While the overall five-year rolling average has decreased by only about 3.5 percent since the 1998-2002 time period (or an average annual decline of about 0.3 percent), there have been large fluctuations in the five-year rolling average over this time period. From the 1998-2002 time period, the five-year rolling average increased from 157.8 fatalities to a high of 177.4 fatalities in the 2003-2007 time period, an increase of about 12.4 percent (or an average increase of about 2.3 percent). This was followed by a decline from the 2003-2007 period to a historical low of 139.8 fatalities in the 2009-2013 period, a decline of about 21.2 percent (or an average annual decline of about 3.9 percent). However, since the historical low in the 2009-2013 period, the five-year rolling average of the number of fatalities has gradually increased to 152.2 fatalities in the 2012-2016 period, an increase of about 8.9 percent (or an average annual increase of about 2.9 percent). While there has been a recent increase in the five-year rolling average for the number of fatalities, the decrease from the recent high in the 2003-2007 period to the 2012-2016 period is consistent with the historical average annual decline of about 1.7 percent.

Rate of Fatalities

Figure 2 shows the rolling five-year average of the rate of fatalities, which represents the number of fatalities per 100 million vehicle-miles of travel (HVMVT), within the Region over the 42-year period of 1975 through 2016. As expected, the five-year rolling average for the rate of fatalities declined in a similar manner to the number of fatalities over the same time period, including fluctuations in the number of fatalities over time (particularly since the 1998-2002 period). However, because of the general increase in total VMT over the same time period (as shown on Figure 3), the rolling average of the rate of fatalities had greater declines, or lesser increases, than the rolling average for the number of fatalities. Specifically, from 1975 through 2016, there has been an overall decline in the five-year rolling average in the rate of fatalities of about 67.6 percent (or an average annual decline of about

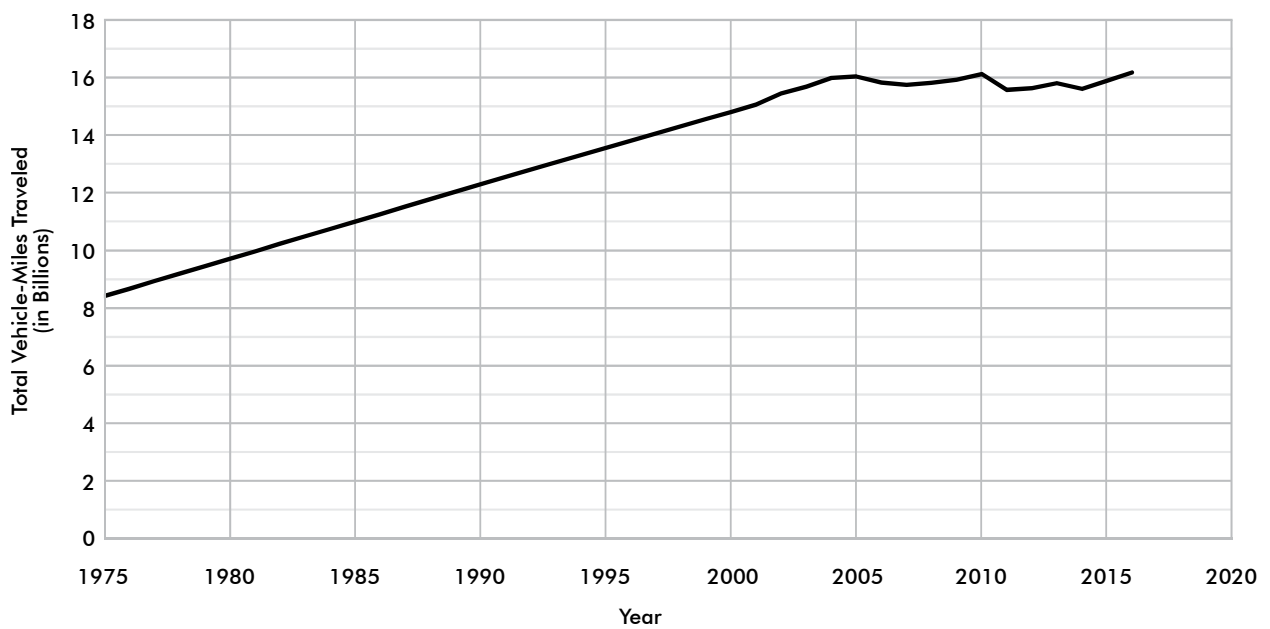
⁵ The source of the number of vehicular-crash related fatalities is the Fatality Analysis Reporting System (FARS), which has historical fatality numbers available for each county for crashes that have occurred from 1975 to 2016.

Figure 2
Five-Year Rolling Average of the Fatality Rate in Southeastern Wisconsin: 1975-2016



Source: Fatality Analysis Reporting System (FARS)

Figure 3
Total Annual Vehicle-Miles Traveled in Southeastern Wisconsin: 1975-2016



Source: SEWRPC

3.1 percent), a greater decline than the rolling average of the number of fatalities over the same time period. However, from the 2009-2013 period to the 2012-2016 period, the rolling average of the fatality rate increased by about 8.6 percent (or an average annual increase of about 2.7 percent), which is slightly less of an increase than the increase in the rolling average for the number of fatalities over the same time period.

Number of Serious Injuries

As shown on Figure 4, the five-year rolling average of the number of serious injuries⁶ has consistently declined within the Region over the time period of 1994 to 2016⁷ by about 59.6 percent (or an average annual decline of about 4.9 percent). One exception to this occurred between the two most recent five-year periods—2011-2015 and 2012-2016—where the percent change was only about 1.6 percent.

Rate of Serious Injuries

As shown on Figure 5, similar to the number of serious injuries, the rolling average of the serious injury rate has consistently declined in the Region over the time period from 1994 to 2016. The five-year rolling average of the rate of serious injuries has decreased over this time period by about 64.9 percent (or an average annual decline of 5.6 percent), a slightly higher decline than that for the number of fatalities over the same time period. The higher decline in the rate of serious injuries is due to the general increase in VMT over the same time period.

Non-Motorized Fatalities and Serious Injuries

Figure 6 shows the five-year rolling average of the number of non-motorized (pedestrian/bicyclist) fatalities and serious injuries (with about 10-20 percent representing the number of non-motorized fatalities and 80 to 90 percent representing the number of non-motorized serious injuries). The five-year rolling average of non-motorized fatalities and serious injuries has consistently declined from 1994 to 2016 by about 49.7 percent (or an average annual decline of about 3.7 percent). However, the rate of decline is less in more recent years. Following about a 42.9 percent decline between the 1994-1998 and 2004-2008 periods (or an average annual decline of about 5.5 percent), the five-year rolling average for non-motorized fatalities and serious injuries declined from the 2003-2008 period to the 2012-2016 period by about 12.5 percent (or an average annual decline of about 1.5 percent). In the last few five-year periods, the five-year rolling average has essentially been flat with the five-year rolling average slightly rising from 166.8 non-motorized fatalities and serious injuries in the 2010-2014 period to 167.2 non-motorized fatalities and serious injuries in the 2012-2016 period, an increase of about 0.2 percent (or an average annual increase of about 0.1 percent).

Evaluation of Trends

The overall decline in the number of fatalities and serious injuries is significant given the growth in population (see Figure 7), registered vehicles (see Figure 8), and VMT (see Figure 3) that has occurred. The decline in fatalities and serious injuries has occurred, in large part, through efforts by many groups and agencies, including advances in vehicle and roadway technology, changes in traffic laws and enforcement levels, advances in emergency medical services, education efforts, and the implementation of engineered safety solutions.

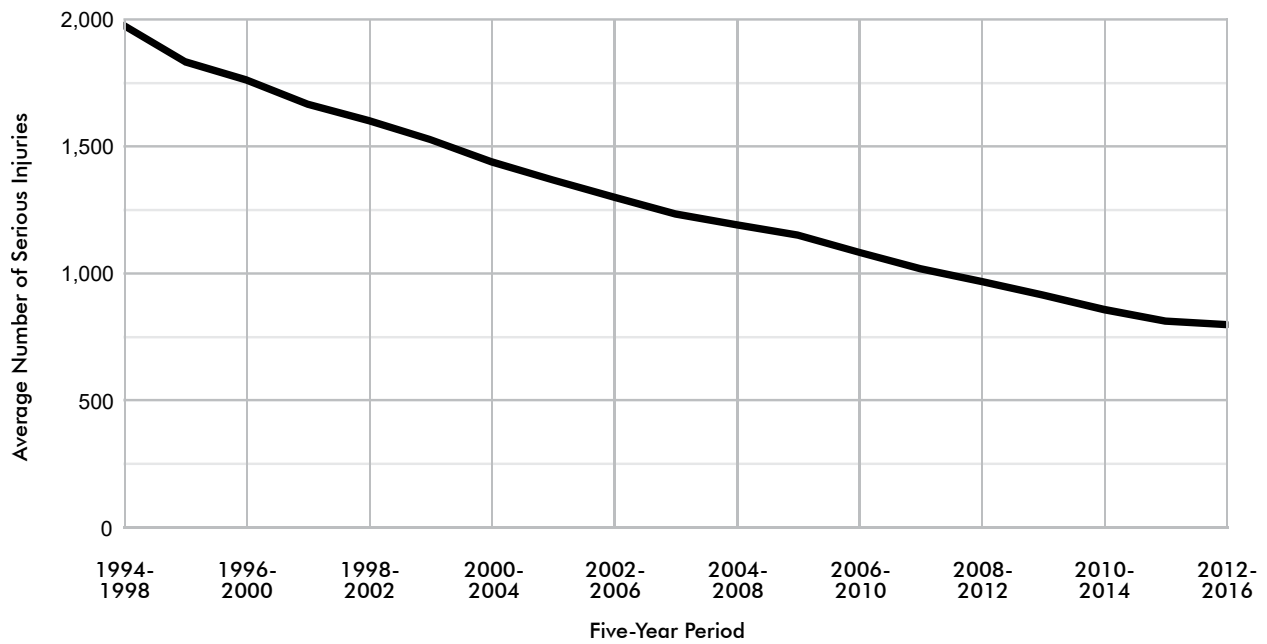
Review of Relevant Plans

The State's 2017-2020 Strategic Highway Safety Plan (SHSP) and the year 2050 regional land use and transportation plan—VISION 2050—were reviewed as part of the target-setting process. Both of these plans include recommendations for addressing vehicular crashes in the future—the next four years with respect to the SHSP and the next 35 years with respect to VISION 2050.

⁶ Under the KABC system for reporting the severity of crashes that is currently used by the State of Wisconsin, the actual number of suspected serious injuries is not recorded in the crash report by the presiding officer, unlike the number of fatalities. The crash reports in Wisconsin only indicate whether any of the drivers of the vehicles or a pedestrian/bicyclist involved in a crash was suspected of having a serious injury. As a result, the number of serious injuries included in this table is based on applying adjustment factors specified by FHWA to the number of suspected serious injuries provided in the police reports. MAP-21 specified that all states by April 15, 2019, are to determine serious injuries using the Model Minimum Uniform Crash Criteria (MMUCC) 4th Edition, which includes the reporting of the number of serious injuries of all persons involved in each crash, similar to what is done for the number of suspected fatalities. Thus, there may be an increase in the number of serious injuries that result from a vehicular crash following the implementation of the MMUCC on April 15, 2019, by the State. However, it would be expected that there would still be a declining trend in the number of serious injuries.

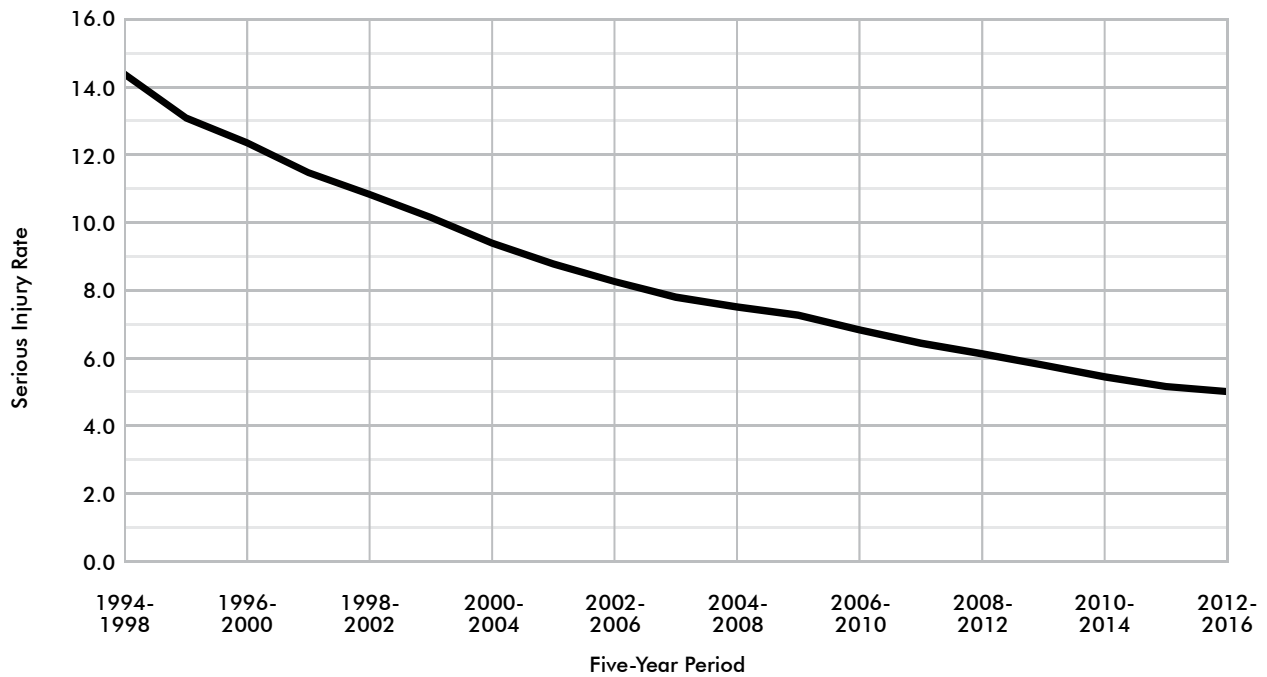
⁷ The source of the number of vehicular-related serious injuries is the TOPS Lab database, which has historical crash data available for each county for crashes that have occurred from 1994 to 2016.

Figure 4
Five-Year Rolling Average of Number of Serious Injuries
in Southeastern Wisconsin: 1994-2016



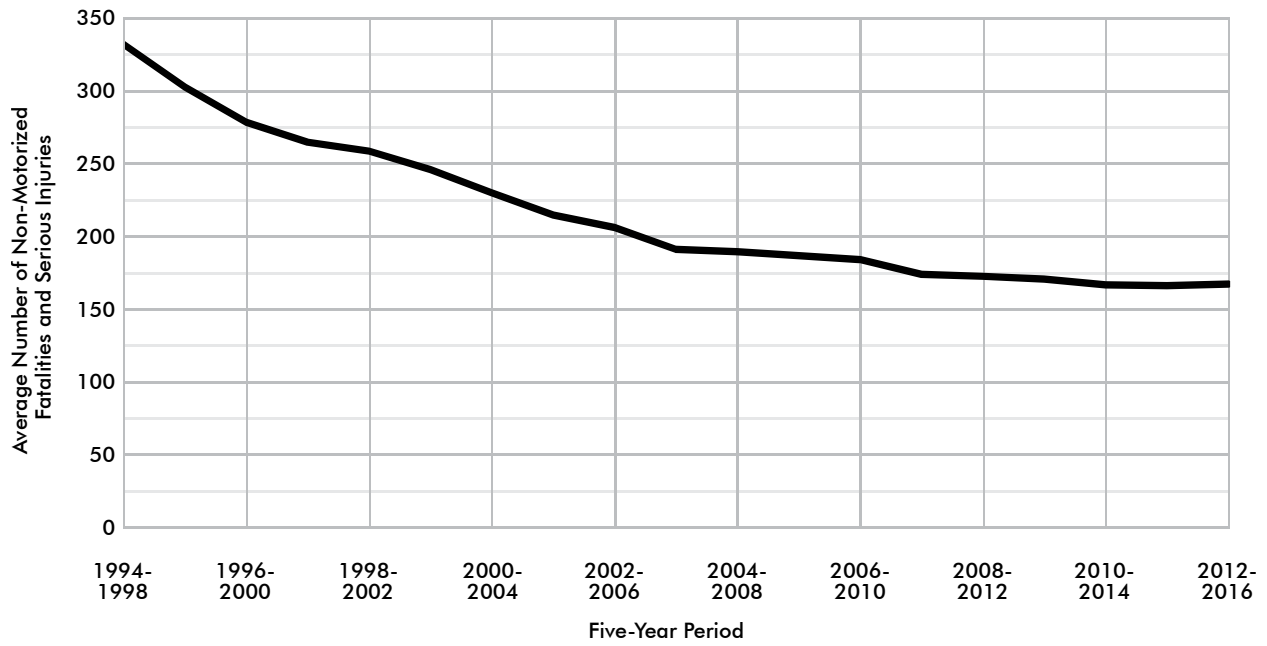
Source: Wisconsin Traffic Operations and Safety (TOPS) Laboratory

Figure 5
Five-Year Rolling Average of the Serious Injury Rate in Southeastern Wisconsin: 1994-2016



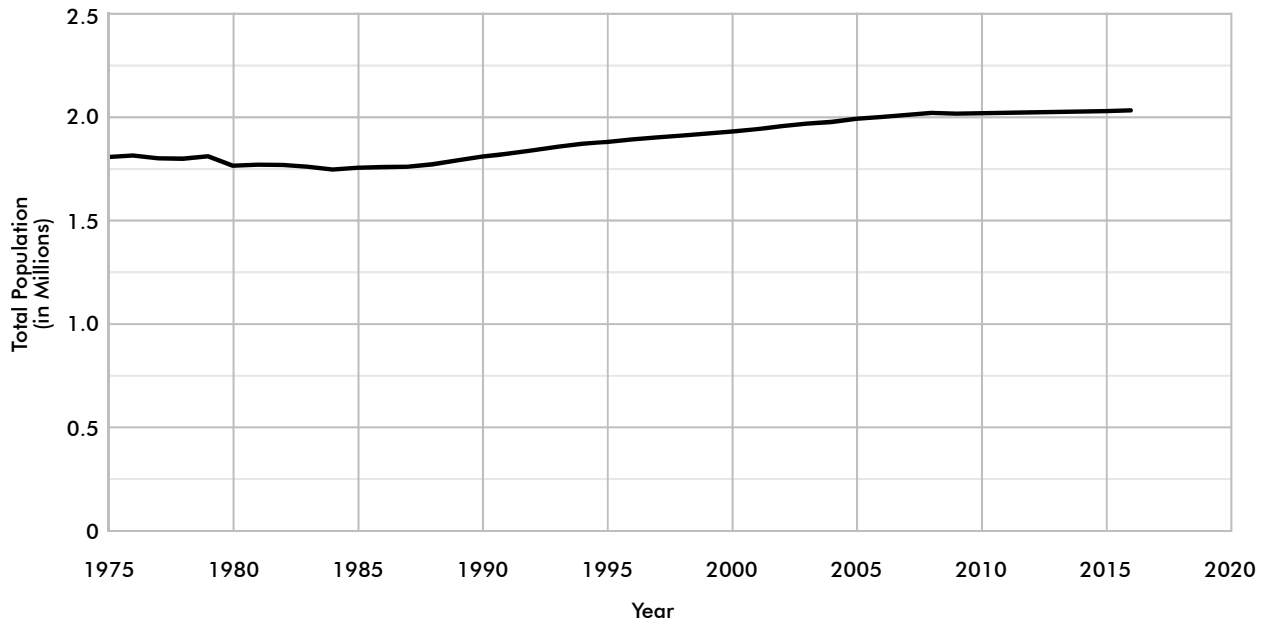
Source: Wisconsin Traffic Operations and Safety (TOPS) Laboratory

Figure 6
Five-Year Rolling Average of Number of Non-Motorized Fatalities and Serious Injuries in Southeastern Wisconsin: 1994-2016



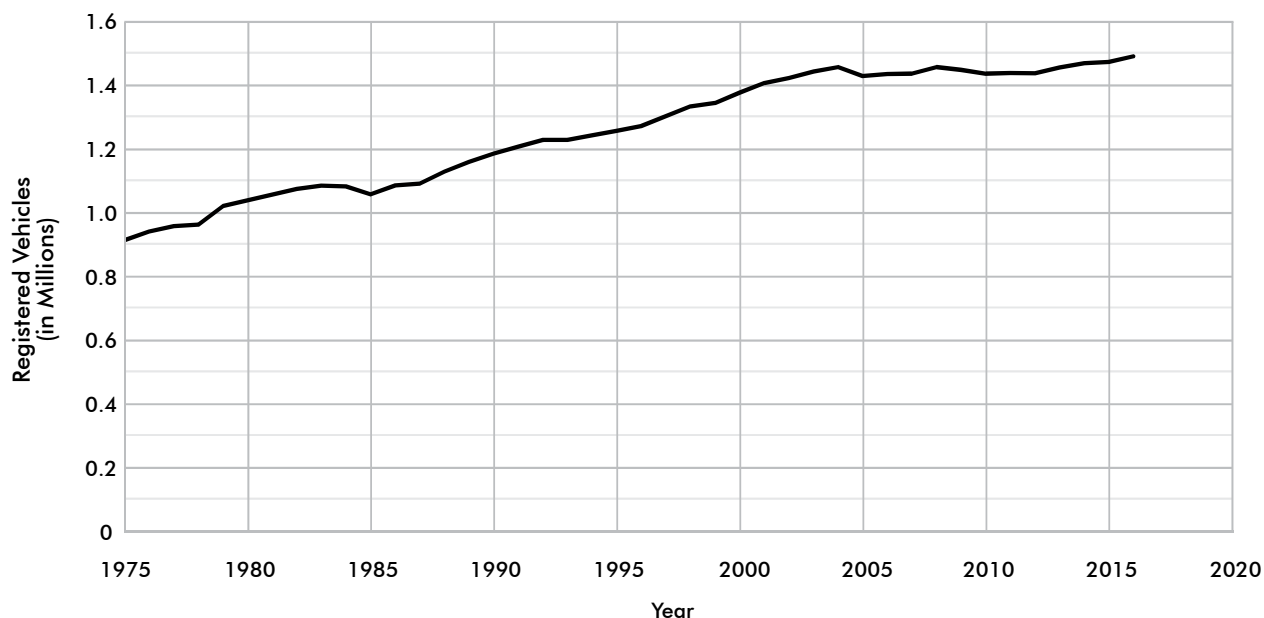
Source: SEWRPC

Figure 7
Total Population in Southeastern Wisconsin: 1975-2016



Source: SEWRPC

Figure 8
Total Registered Vehicles in Southeastern Wisconsin: 1975-2016



Source: SEWRPC

Strategic Highway Safety Plan

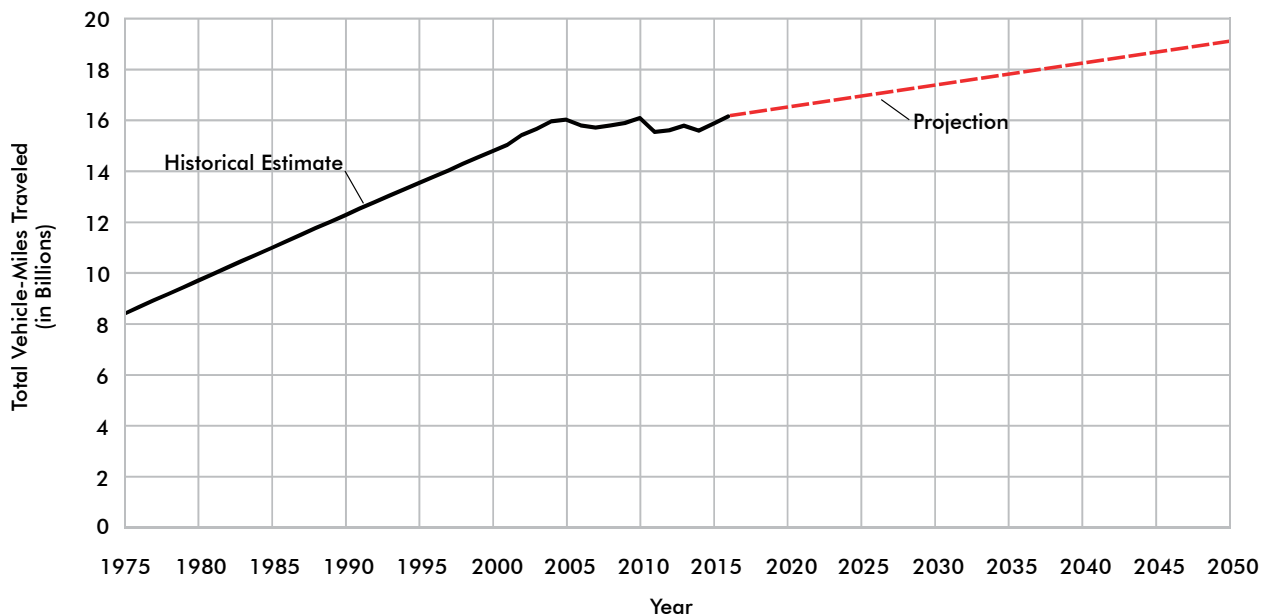
The State's Strategic Highway Safety Plan (SHSP) provides a framework for all State planning and programming activities related to reducing fatalities and serious injuries on all public roads. The SHSP identifies strategies and countermeasures to address the State's most critical safety issues. Specifically, the SHSP is developed every three to four years and identifies the types of crashes for which reductions are to be emphasized over a three- to four-year period. For each of the crash types identified, the SHSP identifies engineering, enforcement, emergency, and education measures and policies recommended to be implemented over the time period. The most recent SHSP was completed in 2017 for the years 2017-2020.⁸ The 2017-2020 SHSP was collaboratively developed by the State, and a number of safety stakeholders, including the Commission. The types of crashes prioritized in the 2017-2020 SHSP for reduction include distracted driving, intersection crashes, speed-related crashes, roadway departure crashes, non-motorized crashes, alcohol/drug-related crashes, and crashes involving the driver or passengers not wearing a seatbelt. In addition, the 2017-2020 SHSP has identified two other emphasis areas to be addressed over the four-year period—driver performance (particularly young and elderly drivers) and safety culture, data, and technology. The executive summary for the 2017-2020 SHSP is included as Attachment B to this document.

Safety-Related Recommendations of VISION 2050

VISION 2050 recognizes the negative effect vehicular crashes—particularly those crashes that result in fatalities and serious injuries—have on the Region, and recommends (through Recommendation 6.5) that Federal, State, and local governments, and the Commission, work to minimize and reduce crashes. Details on Recommendation 6.5 are contained in Attachment C of this document. The effects of implementing VISION 2050 recommendations related to transit, bicycle/pedestrian, transportation system management (TSM), travel demand management (TDM), and the arterial street and highway system on traffic crashes were estimated as part of the VISION 2050 effort. While, as part of the development of VISION 2050, VMT was forecast to increase 23 percent by the year 2050, total vehicular crashes were estimated to increase by only 16 to 22 percent with full implementation of VISION 2050, including implementation of the recommended improvement and expansion of public transit and bicycle/pedestrian facilities, and the recommended TDM measures. These estimates also rely on implementing the recommended reconstruction of the freeway system with additional traffic lanes, which would reduce

⁸ The 2017-2020 SHSP can be found at <http://wisconsindot.gov/Pages/safety/education/frms-pubs>.

Figure 9
Total Annual Vehicle-Miles Traveled in Southeastern Wisconsin: 1975-2050



Source: SEWRPC

traffic congestion and related traffic crashes. The estimated increase in total vehicular crashes did not take into account the long-term trend in crash reductions that have occurred over the last few decades. Such reductions would be difficult to quantify without a rigorous analysis of potential crash reductions related to implementation of project-level and system-wide safety improvements. The Regional Safety Improvement Plan, to be developed by the Commission (as recommended in VISION 2050), could assist in determining the effect safety measures would have on the potential reduction of vehicular crashes, including crashes involving fatalities, serious injuries, and pedestrians/bicyclists.

Alternative Methodologies for Setting Targets

VISION 2050 contained a safety-related objective to provide safe and secure travel environments that minimize loss of life, injury, and property damage, and, as previously indicated, made specific recommendations for achieving that objective. Thus, when developing alternative methods for setting targets for the Region, and the metropolitan planning area, for the five national safety performance measures, Commission staff attempted to develop alternatives that would meet the aspirational nature of, and quantify, the safety objective of VISION 2050, while recognizing and considering the effect of past efforts to reduce the number and rate of crashes. Setting the target in such a way would recognize the continued efforts to reduce fatalities and serious injuries in the Region, including implementation of the recommendations of the 2017-2020 SHSP and VISION 2050. Alternative methods based on the Region's share of the State's targets were also developed and considered.

Specifically, under each alternative method, the alternative years 2046-2050 targets for the number-related criteria—fatalities, serious injuries, and non-motorized fatalities and serious injuries—were developed based on the review of historical trends in the number of fatalities and serious injuries and the recommendations of the 2017-2020 SHSP and VISION 2050. The alternative targets for the rate-related performance measures were estimated based on the alternative targets for the number of fatalities and number of serious injuries measures and the forecast of total VMT based on VISION 2050 (as shown on Figure 9). The alternative targets were developed based on the baseline data, and the evaluation of the historical trends, for the Region. The following sections describe the alternative safety targets developed, and their evaluation.

Table 3
Alternative Years 2046-2050 Regional Targets for the National Safety Performance Measures

Performance Measure	Alternative	Potential Target	Percent Change from 2012-2016 Base Year	Average Annual Percent Change
Number of Fatalities	Baseline	152.2	--	--
	1 – State	107.8	-29.2	-1.0
	2 – Long Term	91.9	-39.6	-1.5
	3 – Short Term	138.4	-8.4	-0.3
Rate of Fatalities	Baseline	0.962	--	--
	1 – State	0.572	-40.5	-1.5
	2 – Long Term	0.488	-49.3	-2.0
	3 – Short Term	0.740	-23.1	-0.8
Number of Serious Injuries	Baseline	798.2	--	--
	1 – State	334.0	-58.2	-2.5
	2 – Long Term	144.1	-82.0	-4.9
	3 – Short Term	460.9	-42.3	-1.6
Rate of Serious Injuries	Baseline	5.053	--	--
	1 – State	1.774	-64.9	-3.0
	2 – Long Term	0.766	-84.8	-5.4
	3 – Short Term	2.447	-51.6	-2.1
Number of Non-Motorized Fatalities and Serious Injuries	Baseline	167.2	--	--
	1 – State	70.0	-58.2	-2.5
	2 – Long Term	45.7	-72.7	-3.7
	3 – Short Term	101.1	-39.5	-1.5

Source: Fatality Analysis Reporting System (FARS) and Wisconsin Traffic Operations and Safety (TOPS) Laboratory

Alternative Method 1 (Based on State Reductions)

One alternative method considered was basing the years 2046-2050 targets for the five safety performance measures on a similar reduction to those used by the State in developing their targets from the 2012-2016 period to the 2014-2018 period—about 1.0 percent annually for the number of fatalities and 2.5 percent annually for the number of serious injuries and the number of non-motorized fatalities and serious injuries.⁹ Table 3 shows what the Region years 2046-2050 targets would be for the five performance measures under this target-setting method.

Alternative Method 2 (Based on Long-Term Trends)

Another alternative method considered was basing the safety targets on the long-term trends. This alternative assumes that the long-term trend of reduced fatalities and serious injuries will continue based on the continued efforts to reduce crashes in the Region (such as the safety measures recommended in the SHSP and VISION 2050, and safety-related projects programmed in the TIP). With respect to the number of fatalities, it is assumed under this alternative that the five-year rolling average for the number of fatalities would decrease by about 39.6 percent (or decline by about 1.5 percent annually consistent with the long-term trend from 1975 through 2016) from the 2012-2016 five-year period to the 2046-2050 five-year period. This would result in a five-year rolling average for this five-year period of 91.9 fatalities and 0.488 fatalities per HMVMT for the Region, as shown in Table 3.

With respect to the number of serious injuries, it is assumed under this alternative that the five-year rolling average for the number of fatalities would decrease by about 82.0 percent (or decline by about 4.9 percent annually consistent with the long-term trend between 1994 and 2016) from the 2012-2016 five-year period to the 2046-2050 five-year period. This would result in a five-year rolling average for this five-year period of 144.1 serious injuries and 0.766 serious injuries per HMVMT for the Region, as shown in Table 3.

⁹ To be consistent with the rate-related targets developed under the other alternative methods, the rate-related targets under Alternative Method 1 were estimated based on the alternative targets for the number of fatalities and number of serious injuries measures and the forecast of total VMT based on VISION 2050.

With respect to the number of non-motorized fatalities and serious injuries, it is assumed under this alternative that the five-year rolling average for the number of fatalities would decrease by about 72.7 percent (or decline by about 3.7 percent annually consistent with the long-term trend between 1994 and 2016) from the 2012-2016 five-year period to the 2046-2050 five-year period. This would result in a five-year rolling average for this five-year period of 45.7 non-motorized fatalities and serious injuries for the Region, as shown in Table 3.

Alternative Method 3 (Based on Short-Term Trends)

Another alternative considered was basing the targets on the short-term (more recent) trends. With respect to the number of fatalities, it is assumed under this alternative that the five-year rolling average for the number of fatalities would decrease by about 8.4 percent (or decrease by about 0.3 percent annually consistent with the short-term trend from 1998 through 2016) from the 2012-2016 five-year period to the 2046-2050 five-year period. This would result in a five-year rolling average for this five-year period of 139.4 fatalities and 0.740 fatalities per HMVMT for the Region, as shown in Table 3.

With respect to the number of serious injuries, it is assumed under this alternative that the five-year rolling average for the number of fatalities would decrease by about 42.3 percent (or decline by about 1.6 percent annually consistent with the short-term trend between 2011 and 2016) from the 2012-2016 five-year period to the 2046-2050 five-year period. This would result in a five-year rolling average for this five-year period of 460.9 serious injuries and 2.447 serious injuries per HMVMT for the Region, as shown in Table 3.

With respect to the number of non-motorized fatalities and serious injuries, it is assumed under this alternative the five-year rolling average for the number of fatalities would decrease by about 39.5 percent (or decline by about 1.5 percent annually consistent with the short-term trend between 2004 and 2016) from the 2012-2016 five-year period to the 2046-2050 five-year period. This would result in a five-year rolling average for this five-year period of 101.1 non-motorized fatalities and serious injuries for the Region, as shown in Table 3.

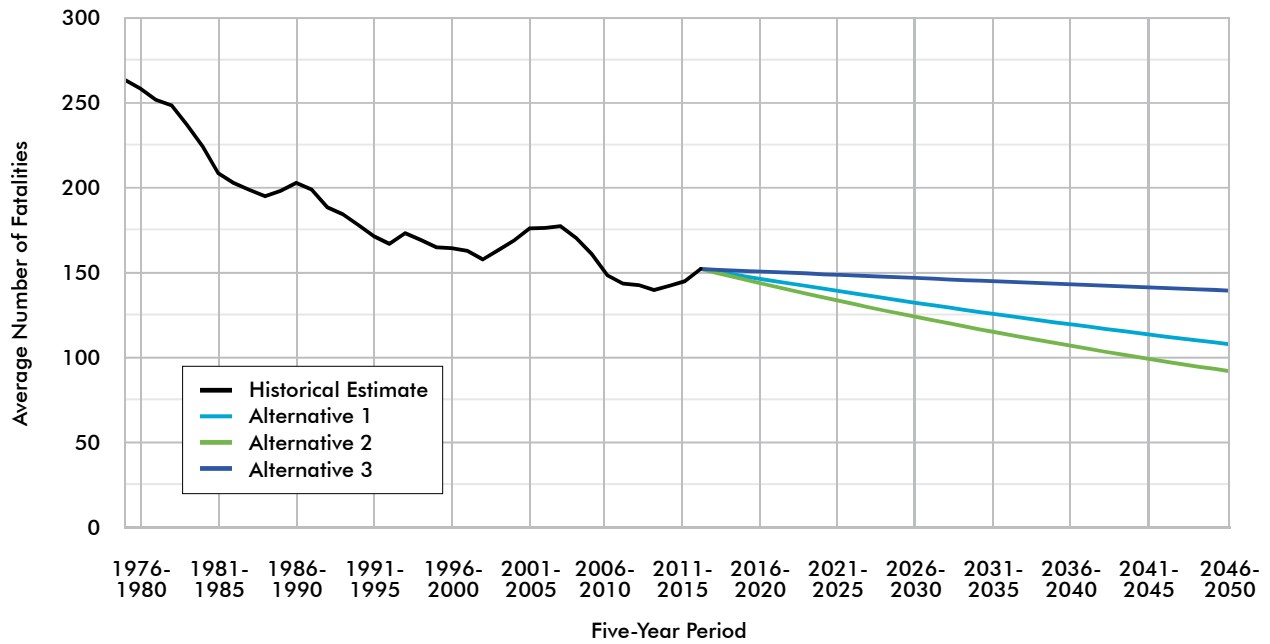
Comparison of the Alternatives for the Number-Based Targets

Table 3 compares the alternative years 2046-2050 targets developed for each of the five performance measures. For reference, Table 3 also includes the years 2012-2016 baseline data for the five safety performance measures. Figures 10 through 14 compare the declines over the 34-year timeframe between 2017 and 2050 resulting from different alternative methods for the five safety performance measures. In general, the assumed percent decline in the number of fatalities and serious injuries for all three performance measures under Alternative Method 1 (based on the State's targets) is less than the percent decline assumed based on the long-term trends (Alternative Method 2). However, the percent decline under Alternative Method 1 is higher than the decline assumed for the targets based on the short-term trend (Alternative Method 3).

Number and Rate of Fatalities

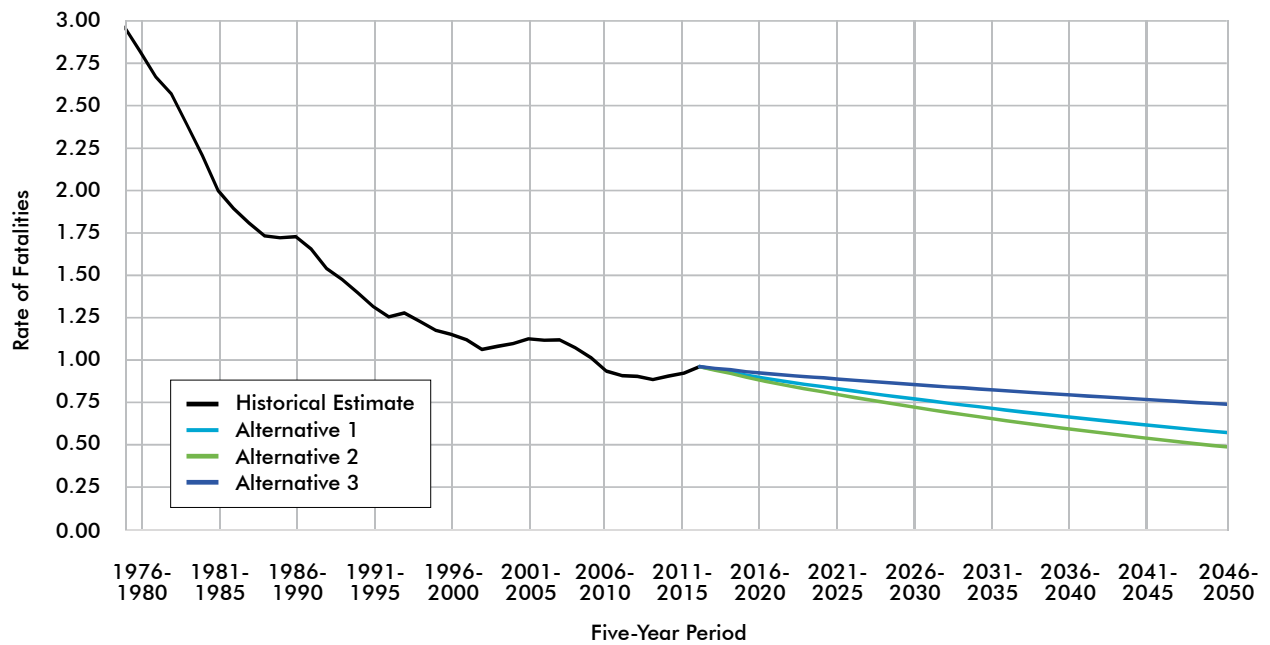
While the rolling five-year average in the number of fatalities has continually increased since the 2009-2013 period, there has been a cycle of periods of time with continued increases in fatalities, followed by continued decreases in fatalities, throughout the last 20 years. As such, efforts in reducing crashes may only have a minimal effect on the number of fatalities that occur in the short-term. However, if recent trends hold true, it would be expected that further efforts to implement safety improvement measures (such as those recommended in the 2017-2020 SHSP and VISION 2050) would eventually begin to reduce the number of fatalities in the long term. That is, while it may be more realistic to choose a years 2046-2050 target for the number of fatalities performance measure based on the short-term trend that is above or—in the case of Alternative 3—at about the baseline year levels, it may be desirable to set the target for the number of fatalities to reflect a higher percentage of decline to be consistent with the objectives of VISION 2050 to minimize the loss of life. Both Alternative 1 (based on the State's targets) and Alternative 2 (based on the long-term trend) assume such a reduction. Commission staff preliminarily recommends that the years 2046-2050 target for the number of fatalities performance measure be 91.9 fatalities and 0.488 fatalities per HMVMT based on the long-term trend (Alternative 2), rather than based the State's targets (Alternative 1), as it represents a more aggressive reduction, but is still consistent with the annual decline that has occurred between 2003 and 2016.

Figure 10
Comparison of the Results of the Alternative Methods for Establishing Targets
for the Number of Fatalities Performance Measure: 2017-2050



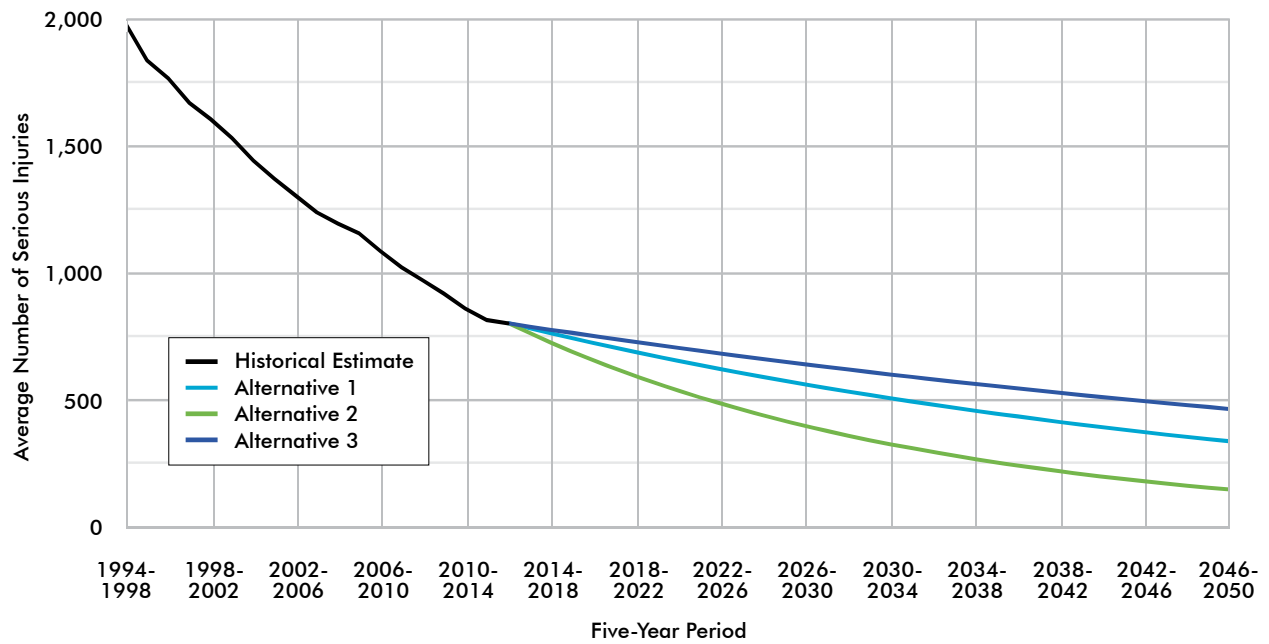
Source: Fatality Analysis Reporting System (FARS)

Figure 11
Comparison of the Results of the Alternative Methods for Establishing Targets
for the Rate of Fatalities Performance Measure: 2017-2050



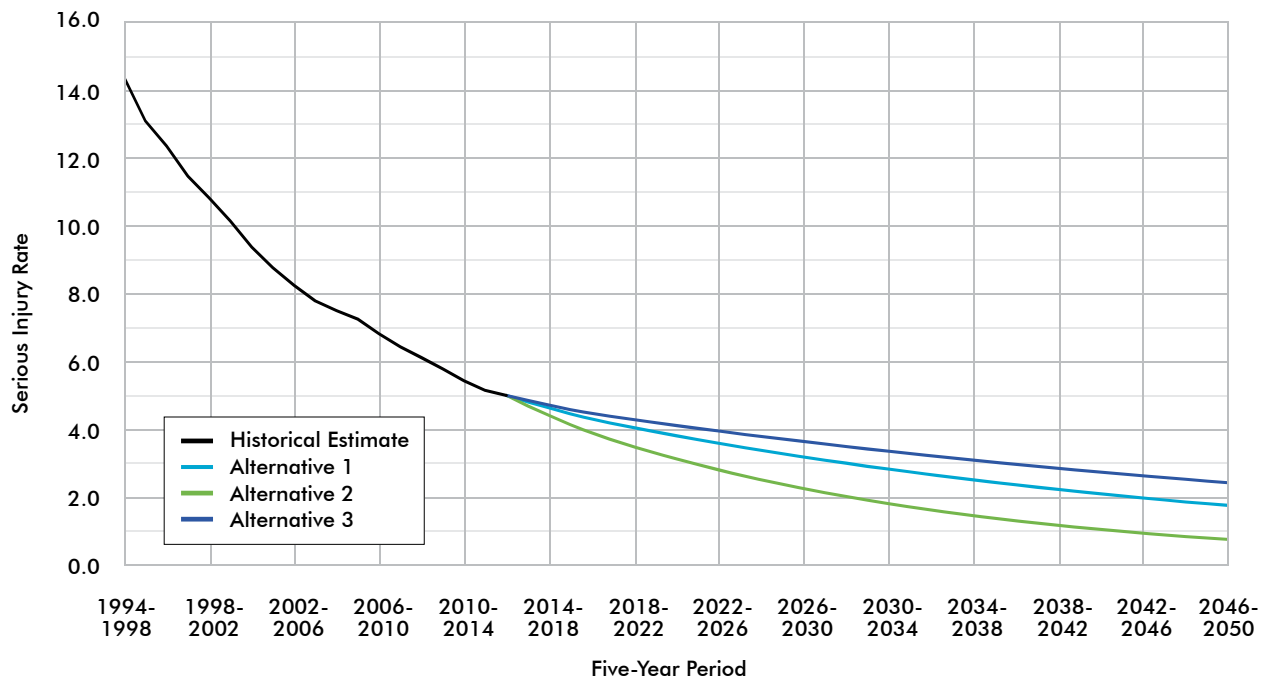
Source: Fatality Analysis Reporting System (FARS)

Figure 12
Comparison of the Results of the Alternative Methods for Establishing Targets
for the Number of Serious Injuries Performance Measure: 2017-2050



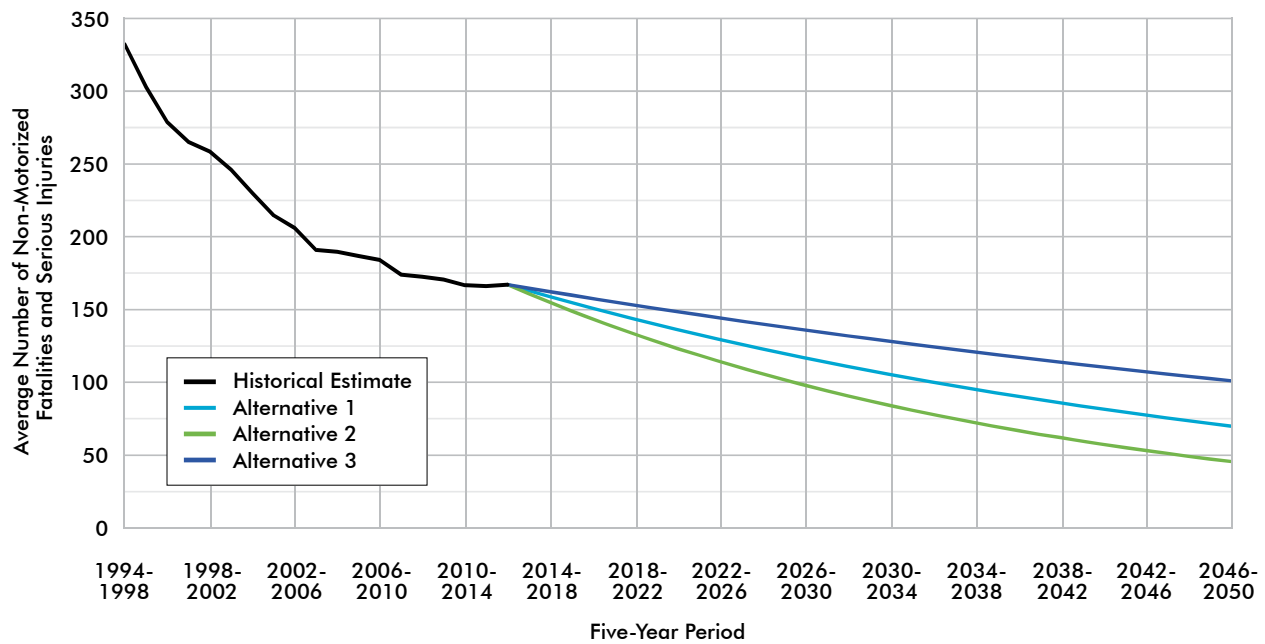
Source: Wisconsin Traffic Operations and Safety (TOPS) Laboratory

Figure 13
Comparison of the Results of the Alternative Methods for Establishing Targets
for the Rate of Serious Injuries Performance Measure: 2017-2050



Source: Wisconsin Traffic Operations and Safety (TOPS) Laboratory

Figure 14
Comparison of the Results of the Alternative Methods for Establishing Targets for the
Number of Non-Motorized Fatalities and Serious Injuries Performance Measure: 2017-2050



Source: Fatality Analysis Reporting System (FARS) and Wisconsin Traffic Operations and Safety (TOPS) Laboratory

Number and Rate of Serious Injuries

With the exception of the decline between the latest two periods (2011-2015 and 2012-2016), the rolling five-year average of the number of serious injuries has consistently declined over the last 20 years at a rate consistent with Alternative 2 (based on the long-term trend). The decline between the most recent periods could be the beginning of a new trend (consistent with Alternative 3), however it could be an anomaly. While the percent decline under Alternative 1 (based on the State’s targets) would be a compromise between the decline assumed under Alternatives 2 and 3, Commission staff preliminarily recommends that the years 2016-2050 targets for the number of serious injuries performance measure be 144.1 serious injuries and 0.766 serious injuries per HMVMT based on the long-term trend of consistent decline (Alternative 2).

Number of Non-Motorized Fatalities and Serious Injuries

While Alternative 3 may be representative of the short-term trend, this alternative may not be considered aspirational. Both Alternative 1 (based on the State’s target) and Alternative 2 (based on the long-term trend) would be fairly aspirational given that the declines estimated under these alternatives have not been experienced since 2003. Because of the high proportion of the number of non-motorized fatalities and serious injuries being represented by serious injuries (80 to 90 percent), Commission staff preliminarily recommends that the 2046-2050 target for non-motorized fatalities and serious injuries be 45.7 based on Alternative 2, which has an average annual decline similar to the preliminary recommended target set for the number of serious injuries performance measure.

Preliminary Recommended Targets for Safety-Related Performance Measures

Table 4 shows the preliminary recommended regional years 2046-2050 targets for each of the five national safety performance measures, which are proposed to be incorporated into VISION 2050 as an amendment. Table 5 shows the resulting short-term years 2014-2018 safety targets for both the Region’s metropolitan planning area and the seven-county Region. The preliminary recommended targets were based on an evaluation of short-term and long-term trends in the number of fatalities and serious injuries and consideration of the safety improvement recommendations of the 2017-2020 SHSP and VISION 2050. The recommended targets for the rate-related performance measures were calculated using the annual average number of fatalities or serious injuries needed to achieve their respective targets and the projected VMT. While there may continue to be fluctuation in the number of

Table 4
Preliminary Recommended Regional Years 2046-2050 Targets
for the National Safety-Related Performance Measures

Performance Measure	2012-2016 Baseline Data	Preliminary Recommended 2046-2050 Target	Percent Change from 2012-2016 Base Year
Number of Fatalities	152.2	91.9	-39.6
Rate of Fatalities	0.962	0.488	-49.3
Number of Serious Injuries	798.2	144.1	-82.0
Rate of Serious Injuries	5.053	0.766	-84.8
Number of Non-Motorized Fatalities and Serious Injuries	167.2	45.7	-72.7

Source: Fatality Analysis Reporting System (FARS) and Wisconsin Traffic Operations and Safety (TOPS) Laboratory

Table 5
Resulting 2014-2018 Targets for the National Safety-Related Performance
Measures for the Metropolitan Planning Area and Seven-County Region Based
on the Preliminary Recommended Years 2046-2050 Regional Targets

Performance Measure	Metropolitan Planning Area		Seven-County Region	
	2012-2016 Baseline Data	Resulting 2014-2018 Target	2012-2016 Baseline Data	Resulting 2014-2018 Target
Number of Fatalities	137.2	133.2	152.2	147.7
Rate of Fatalities	0.923	0.884	0.962	0.922
Number of Serious Injuries	743.8	672.5	798.2	721.7
Rate of Serious Injuries	5.005	4.464	5.053	4.504
Number of Non-Motorized Fatalities and Serious Injuries	161.0	149.2	167.2	154.9

Source: Fatality Analysis Reporting System (FARS) and Wisconsin Traffic Operations and Safety (TOPS) Laboratory

fatalities and, to a lesser extent, serious injuries (which may cause targets to not be met), it is expected that with the long-term implementation of the recommendations of VISION 2050 and the State’s SHSP—along with continued improvement in vehicular safety—the long-term decline in fatalities and serious injuries would continue. Commission staff proposes that the five performance measures be monitored annually and reported in the Commission’s Annual Report and on the Commission’s website. It is further proposed that the long-range targets be reviewed every four years as part of an interim update to the regional plan—currently VISION 2050—and every 10 years as part of a major review and update of the regional plan.

To assist local governments in the Region and the State in achieving the safety targets, it is also recommended that Commission staff initiate work, along with WisDOT and local governments, on a Regional Safety Implementation Plan (RSIP) that will identify a list of intersections and corridors along the Region’s arterial streets and highways with the most severe crash rates in each county. These intersections and corridors would be prioritized based on the nature of the crashes and frequency of the crashes resulting in fatalities and serious injuries. This prioritization could be used by the State and local governments to identify intersections and corridors for further, more detailed safety studies and for identifying and prioritizing projects for Federal Highway Safety Improvement Program (HSIP) funds. The study would also identify a list of corrective measures to reduce the number and severity of crashes. The results of the study could assist in determining the effect recommended measures would have on the potential reduction of vehicular crashes, including crashes involving fatalities, serious injuries, and pedestrians/bicyclists.

The preliminary recommended safety targets, along with the process to establish the targets, were reviewed and endorsed by the Commission’s Advisory Committees on Regional Land Use Planning and Regional Transportation Planning at a joint meeting held on January 18, 2018, and were presented for review and comment by the public through April 13, 2018. No public comments were received during the public review and comment period.

Final Recommended Targets for Safety-Related Performance Measures

This section will be completed upon action by the Advisory Committees on Regional Land Use Planning and Regional Transportation Planning to recommend final safety targets for inclusion into VISION 2050 as an amendment at their meeting scheduled for April 26, 2018, and by the Commission at its meeting scheduled for June 20, 2018.

The following sections contain an evaluation of historical crashes that have occurred within the seven-county Region, including the portions of Jefferson and Dodge Counties in the metropolitan planning area. The data below provide an update to some of the crash data provided in the inventory sections of the VISION 2050 plan report. However, unlike the crash data provided in VISION 2050, the data provided in the following sections include crashes involving deer, as such crashes were included in the data used to develop the targets for the national safety performance measures.

TOTAL CRASHES

Figure A.1 shows that there has been a general decline in the number of vehicle crashes from 1994 through 2016, representing a nearly 8 percent decline in vehicular crashes since 1994. However, the number of crashes has steadily increased since 2012 by about 26 percent. Crashes involving an injury or a fatality decreased by about 25 percent over the period from 1994 to 2016. In addition, the percentage of the total crashes that resulted in an injury or fatality decreased from about 34 percent in 1994 to about 28 percent in 2016. However, the crashes involving an injury or a fatality increased by about 17 percent from a low in 2011 to 2016. The overall decrease in vehicular crashes since 1994 is significant given the increase over that same time period in population within Southeastern Wisconsin of 9 percent and in vehicle-miles traveled over that same time period of 20 percent.

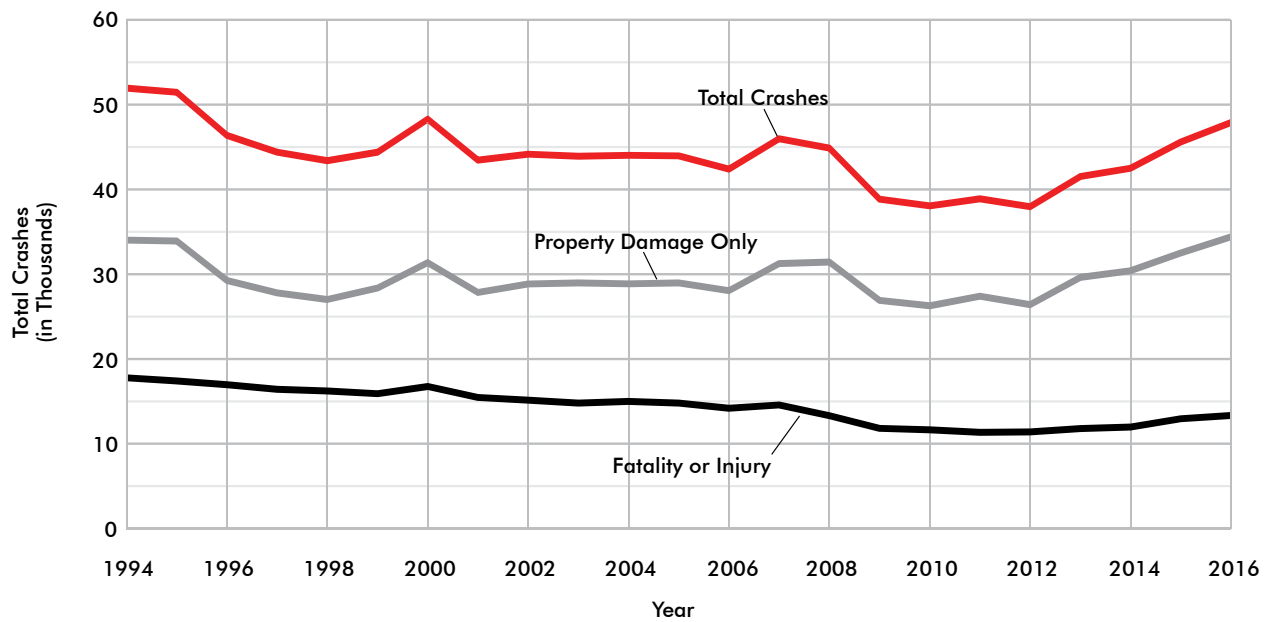
FATAL CRASHES

Figure A.2 shows that the number of fatal crashes has fluctuated over the 23-year period from 1994 through 2016, including a peak of 171 fatal crashes in 2005 and a low of 116 fatal crashes in 2009. Crashes involving fatalities have increased since 2009 to a total of 152. Over the 23-year period, these crashes have accounted for about 0.3 to 0.4 percent of the total crashes in the Region.

The number of crashes resulting in fatalities within a given year may be attributed to the prevalence of certain crashes that can increase the risk of a fatality occurring, such as crashes involving motorcycles, alcohol/drugs, distracted driving, excessive speeding, and bicycle/pedestrian crashes. As shown on Figure A.3, the percentage of fatal crashes that involve these characteristics can vary from year to year. However, on average, fatal crashes that involved lack of seat belt or helmet use account for the highest percentage of total fatal crashes (45 percent), followed by alcohol-related and excessive speed-related fatal crashes (about 35 percent each), motorcycle-related fatal crashes (about 20 percent), bicycle/pedestrian-related fatal crashes (about 18 percent), and distracted driving-related fatal crashes (about 13 percent).

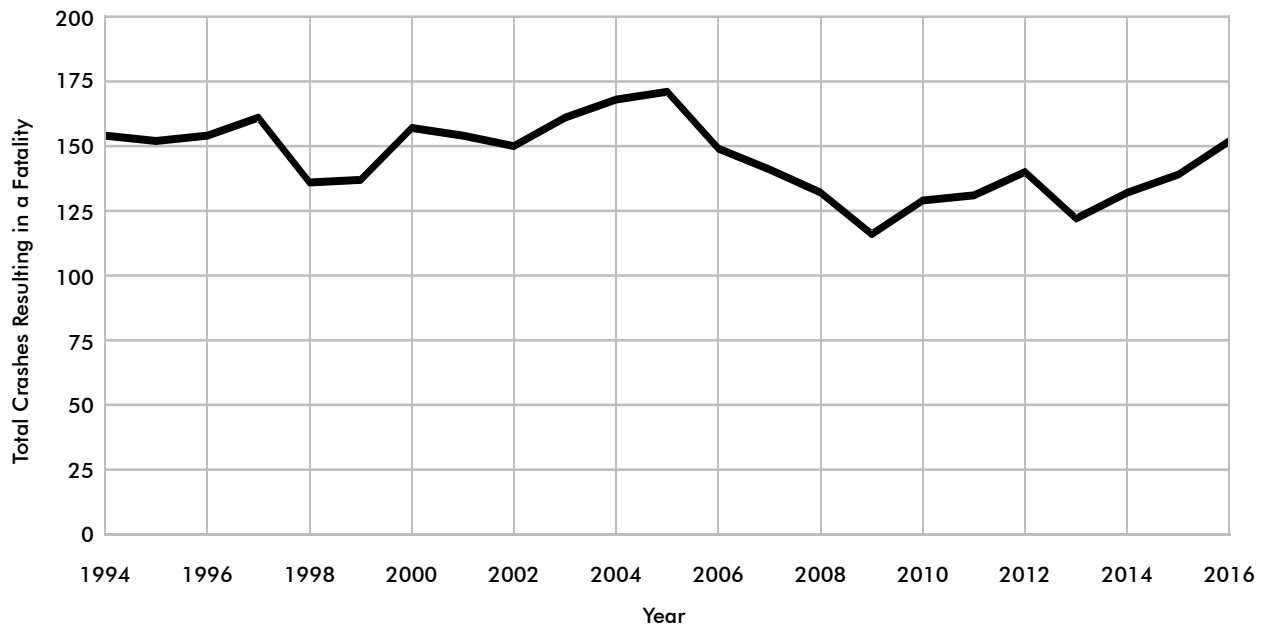
REVIEW OF VEHICLE CRASHES OCCURRING WITHIN SOUTHEASTERN WISCONSIN: 1994-2016 ATTACHMENT A

Figure A.1
Total Number of Vehicular Crashes in Southeastern Wisconsin: 1994-2016



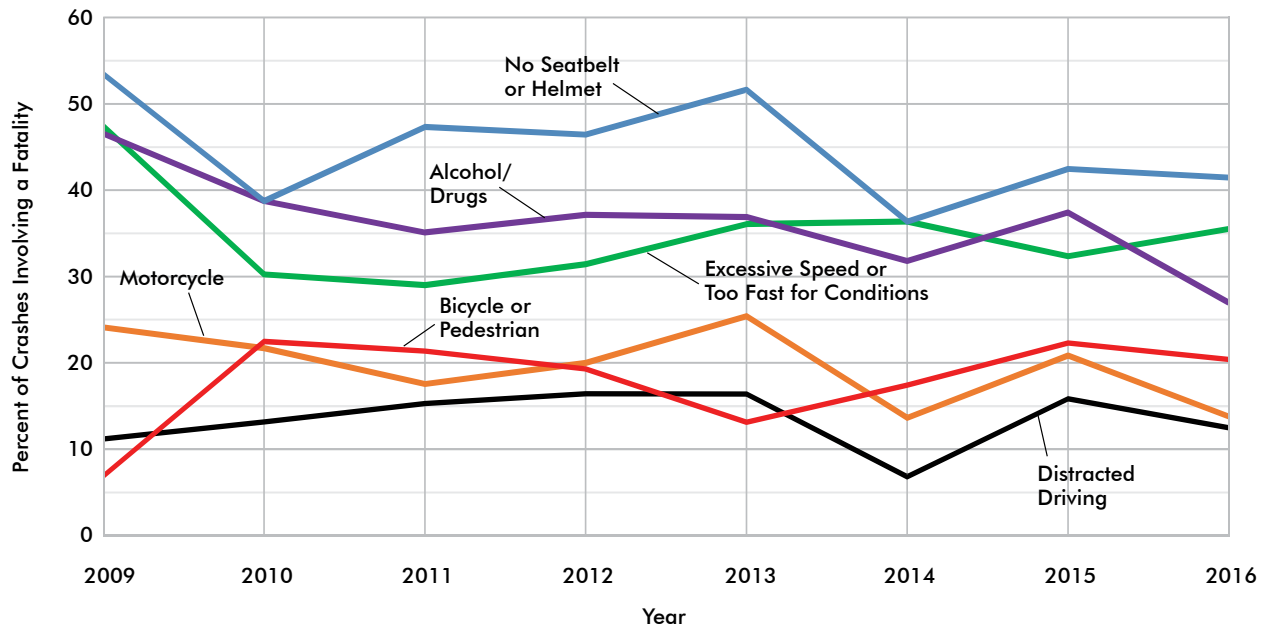
Source: Fatality Analysis Reporting System (FARS) and Wisconsin Traffic Operations and Safety (TOPS) Laboratory

Figure A.2
Total Number of Vehicular Crashes Involving a Fatality in Southeastern Wisconsin: 1994-2016



Source: Fatality Analysis Reporting System (FARS)

Figure A.3
Percentage of Fatal Vehicular Crashes Involving Selected
Crash Characteristics in Southeastern Wisconsin



Note: A crash may be attributable to multiple categories.

Source: Fatality Analysis Reporting System (FARS)

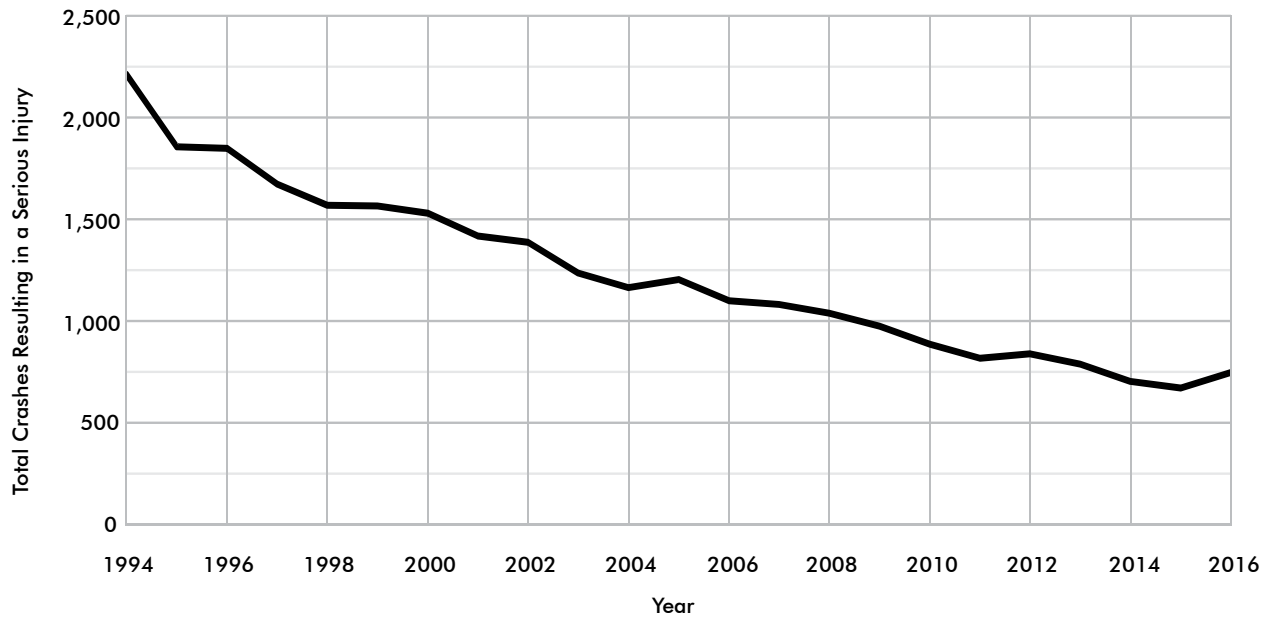
SERIOUS INJURY CRASHES

Figure A.4 shows that the number non-fatal crashes resulting in a serious injury has declined significantly, by about 66 percent, from 1994 to 2016. Such crashes accounted for about 4.3 percent of total crashes in 1994, but accounted for about 1.6 percent of total crashes in 2016—a significant decline.

BICYCLE AND PEDESTRIAN CRASHES

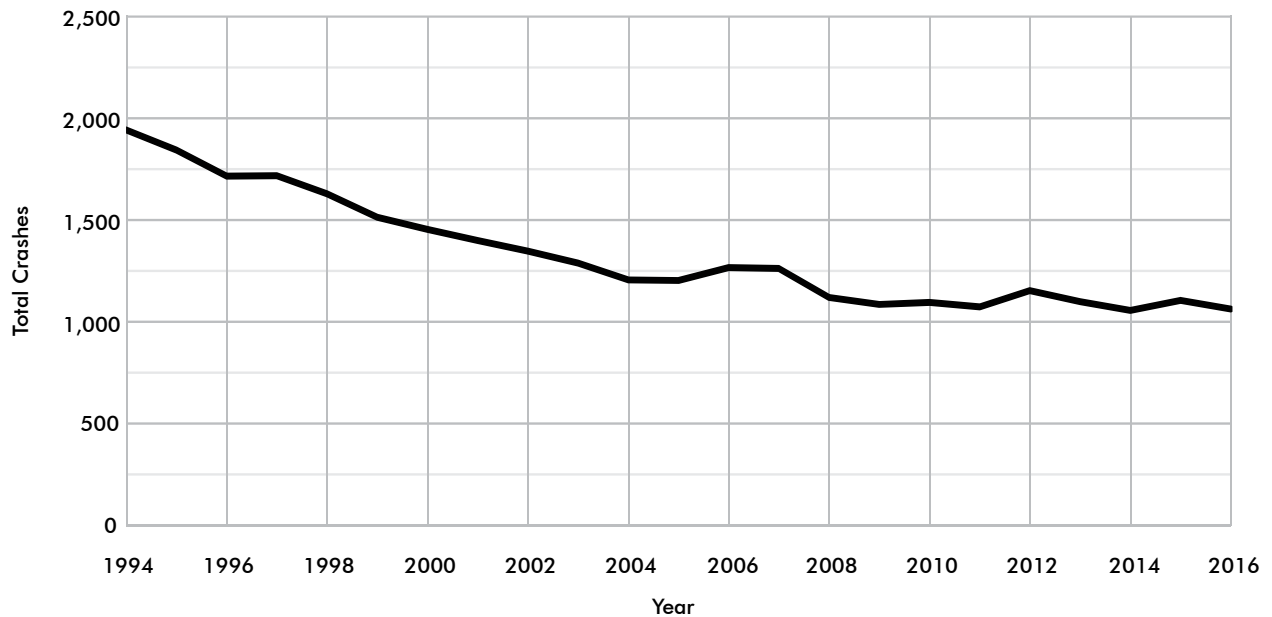
Over the past 23 years (1994 through 2016), the number of bicycle and pedestrian crashes has significantly decreased by 45 percent, as shown in Figure A.5. Such crashes accounted for about 3.7 percent of total crashes in 1994 and about 2.2 percent of total crashes in 2016. The number of bicycle and pedestrian crashes resulting in a fatality or serious injury has also decreased substantially over the past 23 years, as shown in Figure A.6. However, while vehicular crashes involving either a bicycle or a pedestrian represented about 2 to 4 percent of the total overall crashes, as bicyclists and pedestrians are more vulnerable than occupants of an automobile or truck, they account for about 18 percent of the total number of fatalities and serious injuries experienced in the Region.

Figure A.4
Total Number of Vehicular Crashes Involving a Serious Injury in Southeastern Wisconsin: 1994-2016



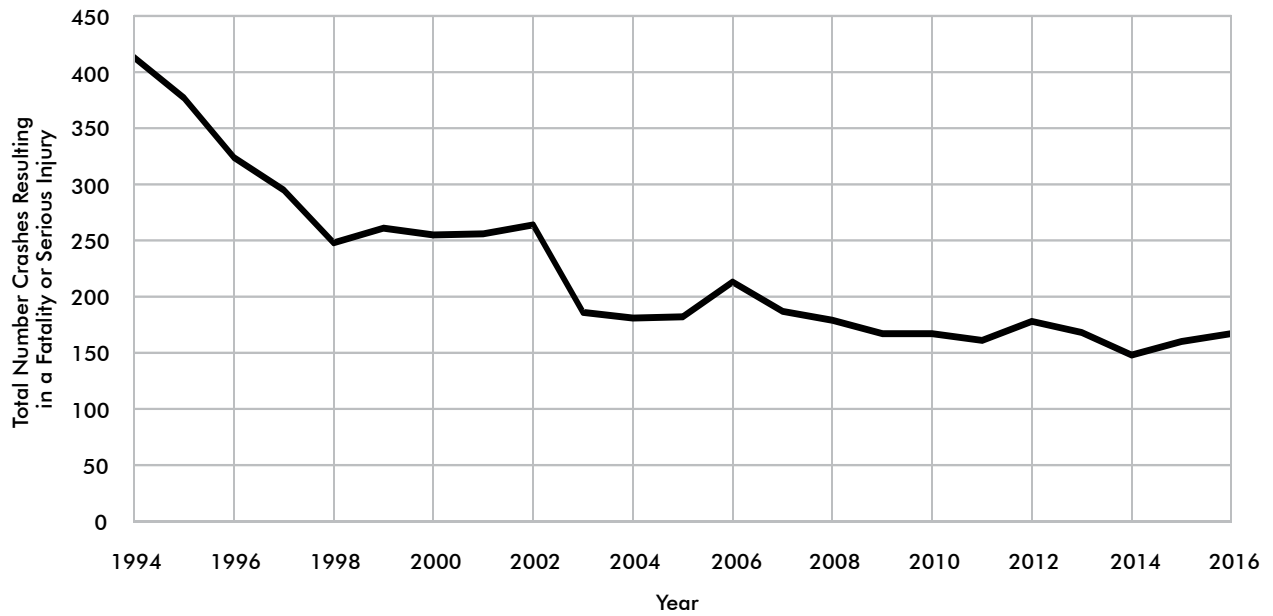
Source: Traffic Operations and Safety (TOPS) Laboratory

Figure A.5
Total Number of Bicycle or Pedestrian Crashes in Southeastern Wisconsin: 1994-2016



Source: Traffic Operations and Safety (TOPS) Laboratory

Figure A.6
Total Number of Bicycle or Pedestrian Crashes Involving a Fatality or Serious Injury in Southeastern Wisconsin: 1994-2016



Source: Fatality Analysis Reporting System (FARS) and Wisconsin Traffic Operations and Safety (TOPS) Laboratory

**EXECUTIVE SUMMARY OF THE YEARS 2017-2020
STRATEGIC HIGHWAY SAFETY PLAN PREPARED BY THE
WISCONSIN DEPARTMENT OF TRANSPORTATION
ATTACHMENT B**

Wisconsin's Strategic Highway Safety Plan (SHSP) is a statewide, comprehensive, and data-driven plan that implements the framework for supporting the safety goals. The SHSP examines a variety of issue areas that affect highway safety in Wisconsin. The ten highest priority issue areas and their associated tasks are listed below.

Improve Safety Culture, Safety Data, and Safety Technology

Task #1: Create a behavioral change work group that meets quarterly

Task #2: Change driver behavior through community engagement, education, and public outreach

Task #3: Improve data collection and availability

Task #4: Utilize innovative technology to increase safety

Reduce Driver Distraction/Improve Driver Alertness

Task #1: Continue to focus on the use of rumble strips to address the issue of driver alertness

Task #2: Promote public safety measures to deter distracted driving

Task #3: Create education campaigns with direct outreach to teen/young adult drivers and adult drivers

Task #4: Review the effectiveness of Wisconsin's texting ban and the ability of law enforcement to enforce and properly report distracted driving

Task #5: Explore marketing and signage on roadways to remind drivers to stay alert and not to text and drive

Task #6: Keep abreast of research on the effects of different types of roadway signage, stationary billboards, vehicle technology, and mobile billboards on drivers' visual and cognitive attention

Task #7: Explore the possibility of creating incentives for motorists with safe driving records

Task #8: Create a multi-disciplined distracted driving work group that meets quarterly

Reduce Alcohol & Drug-Impaired Driving

Task #1: Improve data collection, sharing, and distribution

Task #2: Continue the communication program

Task #3: Focus on the prevention of impaired driving

Task #4: Focus on impaired driving among persons younger than age 35

Task #5: Promote transportation alternatives

Task #6: Continue overtime enforcement

Task #7: Streamline the OWI process

Task #8: Improve drugged driving recognition

Task #9: Continue to support Traffic Safety Resource Prosecutors

Task #10: Create OWI courts

Task #11: Support the Intoxicated Driver Program

Task #12: Research lower allowable blood alcohol concentration (BAC)

Task #13: Increase compliance with ignition interlock devices (IIDs)

Task #14: Increase education related to impairment

Task #15: Continue quarterly impaired driving work group meetings

Reduce the Incidence and Severity of Motorcycle Crashes

Task #1: Continue to develop and display PSAs about motorcyclist safety

Task #2: Reduce the number of unlicensed riders

Task #3: Provide courses for riders to refresh their skills

Task #4: Market refresher courses to make them more desirable

Task #5: Quantify data to share information with riders and law enforcement agencies

Task #6: Involve law enforcement in reaching out to the public

Task #7: Continue quarterly meetings of the Motorcycle Safety Advisory Council (MoSAC)

Improve Driver Performance (Teens, Older, Competent)

Task #1: Improve teen driver performance

Task #2: Ensure drivers are licensed and competent

Task #3: Sustain proficiency in older drivers

Task #4: Create a multi-disciplined work group to meet quarterly on driver performance

Improve Non-Motorist Safety

Task #1: Use infrastructure and engineering treatments to strengthen the safety of vulnerable users

Task #2: Increase education for both motorists and non-motorists

Task #3: Use enforcement to protect non-motorists

Task #4: Support public information campaigns

Task #5: Utilize road diets, speed reduction methods, and stop laws

Task #6: Create a work group that meets quarterly regarding non-motorist safety

Improve Safety of Intersections

Task #1: Improve data and decision support

Task #2: Support knowledge development and knowledge sharing

Task #3: Implement cutting-edge design and engineering safety interventions

Task #4: Create a multi-disciplined work group on intersection safety

Increase Occupant Protection

Task #1: Increase public outreach to improve awareness

Task #2: Continue Click It or Ticket and other High-Visibility Mobilization initiatives

Task #3: Develop best practice on occupant protection

Task #4: Continue the participation of external partners in the Seat Belt and Child Safety Seat Work Group

Task #5: Continue the federally required annual field observation safety belt use survey

Task #6: Work with child safety seat advocates to improve education for individuals and agencies that transport children

Task #7: Continue to have quarterly meetings of the occupant protection work group

Curb Aggressive Driving/Reduce Speed-Related Crashes

Task #1: Increase targeted enforcement and strengthen the efficiency of prosecutions

Task #2: Increase innovative education and outreach

Task #3: Implement sound engineering practices as a defense against unsafe driving behavior

Task #4: Provide research and data to support sound policy making

Task #5: Establish rational speed limits on state and local roads

Task #6: Continue to have quarterly meetings through the aggressive driving work group

Reduce Lane Departure Crashes

Task #1: Develop and improve data and decision support systems for county/municipal and state engineering to reduce the incidence and severity of lane departure crashes

Task #2: Develop and implement a comprehensive program to reduce the incidence and severity of lane departure crashes

Task #3: Analyze and develop roadside and pavement strategies focusing on low cost treatment for rural highways that are not state trunk highways

Task #4: Create a multi-disciplined work group on lane departure crashes

**VISION 2050 SAFETY-RELATED
RECOMMENDATIONS
ATTACHMENT C**

Vehicular crashes take a heavy toll in life, property damage, and human suffering, and should be minimized through a variety of measures.

► **Recommendation 6.5: Address safety needs on the arterial street and highway network**

The occurrence of crashes can have a negative effect on the Region as they contribute to overall transportation costs; increase public costs for police, emergency medical, and other social services; and cause nonrecurring congestion on the highway system. In addition, vehicular crashes take a heavy toll in life, property damage, and human suffering. Vehicular crashes occur due to one or a combination of the following factors: human error, vehicle failure, and roadway/environmental conditions. VISION 2050 recommends that Federal, State, and local governments, and the Commission, work to:

- **Minimize total traffic crashes on the arterial street and highway system** – Implementing each element of VISION 2050 should minimize the number of total traffic crashes on the arterial street and highway system. For example, the recommended improvement and expansion of public transit and bicycle and pedestrian facilities and implementation of the recommended TDM measures should reduce the growth in vehicle travel, conflicts, and crashes and encourage increased travel on safer facilities and services. Also, the recommended reconstruction of the freeway system with additional traffic lanes should reduce traffic congestion and related traffic crashes. While VMT may be expected to increase by 23 percent by the year 2050, total vehicular crashes are estimated to increase by only 16 to 22 percent with full implementation of all elements of VISION 2050.

With respect to highways, strategies that can reduce the number of crashes should be considered for roadways identified as having excessive crashes as part of a safety assessment or during preliminary engineering for their reconstruction or rehabilitation. These strategies can include modifying roadway and roadside elements (such as increasing lane width, adding/widening paved shoulders, installing side barricades, and removing fixed objects along the roadside), improving horizontal and vertical grades, modifying intersections (such as improving signal timing and adding turn lanes), adding/modifying signage and pavement markings, and controlling access. In some cases, the rate of crashes may be reduced by adding capacity along a surface arterial, such as reconstructing an urban two-lane arterial that exceeds its design capacity as a divided roadway. With respect to freeways, strategies to reduce the number of crashes could also include removing ramp entrances and exits on the left side of the freeway, increasing the distance between ramp terminals, and increasing entrance ramp length. Adding capacity on heavily congested freeways can also be expected to reduce crash rates.

- **Minimize total traffic crashes, along with crashes involving fatalities and serious injuries, on the arterial street and highway system** – There are many factors that can affect the severity of a crash, including human factors (age and vulnerability of drivers/passengers, seat belt/helmet use, speed of vehicle, sobriety of driver), vehicle factors (safety features), and roadway/environmental factors (weather conditions, pavement condition, grade, presence of roadside features). Implementing the recommendations of the State’s Strategic Highway Safety Plan (SHSP) by the State and local governments would assist

in the reduction of crashes involving fatalities and serious injuries.²³ While implementing the SHSP would be expected to reduce overall crashes, addressing the types of crashes emphasized in the SHSP would also be expected to reduce fatalities and serious injuries, which occur at a higher proportion for such crashes. The types of crashes prioritized in the SHSP include intersection crashes, speed-related crashes, head-on and roadway departure crashes, crashes involving pedestrians and bicyclists, alcohol/drug-related crashes, and crashes involving the driver or passengers not wearing a seatbelt.

- **Minimize bicycle and pedestrian-related crashes** – While the number of reported vehicular crashes involving either a bicycle or a pedestrian accounted for only 3 percent of all vehicular crashes in the Region, they were involved in about 18 percent of vehicular crashes resulting in a fatality or serious injury. VISION 2050 promotes the improvement of bicycle and pedestrian safety by recommending implementation of safe and convenient accommodations for bicycle and pedestrian traffic. Specifically, VISION 2050 recommends that as arterial roadways in the Region are reconstructed and resurfaced, bicycle accommodation be considered and implemented, as described in Recommendation 3.1. In addition, VISION 2050 recommends, under Recommendation 3.2, expanding a system of off-street bicycle paths largely constructed in natural resource and utility corridors. VISION 2050 also recommends a network of enhanced bicycle facility corridors through the Kenosha, Milwaukee, and Racine urbanized areas, as described under Recommendation 3.3. These corridors, in particular, would be expected to reduce bicycle-related crashes on higher-speed, higher-volume arterial streets and highways within the three urbanized areas by separating bicyclists from automobiles (either through accommodations along the roadway or by use of parallel nonarterials). With respect to pedestrian safety, VISION 2050 recommends providing sidewalks in areas of existing or planned urban development, and encourages making efforts to maximize pedestrian safety at street crossings in these locations, as described in Recommendation 3.5.
- **Reduce conflicts between automobiles and public transit vehicles** – VISION 2050 recommends expanding the use of dedicated transit lanes along rapid, express, and major local transit routes, as described in Recommendation 2.6. The dedicated transit lanes could be provided via auxiliary lanes, or where right-of-way is constrained through peak-period, peak-direction curb-lane parking restrictions. These lanes are intended to reduce travel times and improve transit travel time reliability during times of congestion, but can also reduce the conflicts between automobiles and public transit vehicles by allowing transit vehicles to stop without interrupting the flow of traffic.
- **Reduce vehicle traffic conflicts** – VISION 2050 recommends that traffic engineering measures and access management standards be considered to reduce vehicle traffic conflicts, including freeway modernization, congestion mitigation, and implementation of alternative intersection types.
 - o **Freeway Modernization** – It is anticipated that the segment-by-segment reconstruction of the regional freeway system would

²³ At the time VISION 2050 was completed, the most recent SHSP was completed in September 2014 for the years 2014-2016 and can be found at <http://wisconsindot.gov/Pages/safety/education/frms-pubs>.

continue during the time period of VISION 2050. The regional freeway system was originally built in the 1950s, 1960s, and 1970s, and is approaching the end of its useful life. Over the last few decades, there have been significant advances in freeway design, as a result of research and experience in freeway operations. The existing freeway system has many deficiencies in design—left-hand exits and entrances, lack of shoulders, service interchanges spaced too close to freeway-to-freeway interchanges, and multi-point exits. VISION 2050 recommends reconstructing the freeway system to modern design standards, addressing the design deficiencies of the existing freeway system and improving travel safety.

- o **Congestion Mitigation** – Portions of the freeway system in the Region, particularly in Milwaukee and Waukesha Counties, currently experience severe congestion, and are projected to experience substantially increased congestion, for periods of the day, even if all of the VISION 2050 recommendations that do not involve highway capacity expansion are implemented, including improved land use, travel demand and systems management, and improved and expanded public transit. The rate of overall crashes is greater on the segments of congested freeway (typically 2 to 7 times higher). In particular, rear-end crash rates (which make up about 40 percent of total freeway crashes) are 5 to 20 times higher on congested freeway segments, with the highest rates on the most severely congested freeway segments. While it would be expected that freeway modernization would reduce sideswipe crashes, it would not be expected to significantly reduce the number of rear-end crashes, which appear to be more of a result of freeway congestion. Thus, the freeway widenings recommended under Recommendation 6.3 would be expected to improve travel safety by reducing congestion, and associated rear-end crashes.
- o **Alternative Intersections** – VISION 2050 recommends that alternative intersection types that reduce the number of vehicle-to-vehicle conflicts be considered, particularly for high-volume intersections. While VISION 2050 does not identify the specific treatment that should be implemented at each intersection, it recommends that alternative intersection types be considered during the preliminary engineering conducted for the reconstruction of the intersection. Roundabouts are one example of an alternative intersection type increasingly being implemented throughout the Region. While a roundabout is not ideal for every intersection location, when properly designed and located, roundabouts have been found to be effective in reducing the number of crashes, and particularly the severity of crashes. Other intersection types utilized around the country that could be considered on the Region's arterial system include displaced left-turns, median U-turns, restricted crossing U-turns (including J-turn intersections), and quadrant roadways (currently proposed by WisDOT for the intersection of STH 50 and STH 31 in Kenosha County).
- o **Access Management** – Developing and implementing access management standards, as recommended in Recommendation 4.7, along arterial streets and highways would be expected to reduce the number of conflicts that can result in vehicular crashes. A set of recommended access management standards are included in the design guidelines.

- **Regional Safety Implementation Plan** – VISION 2050 recommends that the Commission, working with WisDOT and local governments, develop a Regional Safety Implementation Plan (RSIP) that will identify a list of intersections and corridors along the Region’s arterial streets and highways with the most severe crash rates in each county. These intersections and corridors would be prioritized based on the nature of the crashes and frequency of the crashes resulting in fatalities and serious injuries. This prioritization could be used by the State and local governments to identify intersections and corridors for further, more detailed safety studies and identifying and prioritizing projects for Federal and State Highway Safety Improvement (HSIP) funds. The study would also identify a list of corrective measures to reduce the number and severity of crashes.

