



City of Saint Paul

Roadway Safety Plan

Moving Toward ZERO Deaths

January 2016

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REPORT

St. Paul Safety Plan

Prepared for

Minnesota Department of Transportation

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Acronyms and Abbreviations

CMF	Crash Modification Factor
FHWA	Federal Highway Administration
MADD	Mothers Against Drunk Driving
MnCMAT	Minnesota Crash Mapping and Analysis Tool
MnDOT	Minnesota Department of Transportation
mph	miles per hour
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
OTS	Office of Traffic Safety
RLR	red light running
SADD	Students Against Drunk Driving
SHSP	Strategic Highway Safety Plan
TZD	Toward Zero Death

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Introduction/Background

Minnesota's Strategic Highway Safety Plan (SHSP) documents MnDOT's adoption of the short-term safety goal for 300 or fewer fatalities and 850 or fewer serious injuries by 2020 and the long-term vision of zero traffic fatalities. Since approximately 50 percent of severe crashes (those involving fatalities plus serious injuries) in Minnesota occur on the local system, the SHSP also documents MnDOT's commitment to increase local transportation agency participation in the statewide safety planning process. Consistent with this commitment, MnDOT accepted responsibility for road safety oversight, changed the Highway Safety Improvement Program to direct approximately one-half of safety funds to projects on the local system, and began working with county engineers to identify safety projects. The counties were selected for this initial outreach effort because more than 70 percent of severe crashes occur in rural areas and counties own/operate a majority of rural roads. Subsequently, MnDOT recently completed providing technical assistance to each of Minnesota's 87 counties by preparing Safety Plans for each county. The Safety Plans were developed using an analytical approach based on the completion of a systemic risk assessment that identified more than \$250 million of high priority, low cost (the average cost per project was under \$15,000) safety projects.

Continuing with their efforts to further engage local agencies in safety planning, MnDOT afforded the City of St. Paul the opportunity to participate in a pilot project to extend systemic safety planning efforts to city systems. The basic approach to providing technical assistance includes: analysis of metro-wide and St. Paul-specific crash data for city streets, identification of roadway and traffic characteristics associated with the few locations with severe crashes (risk factors), a systemic assessment of each city's streets, identification of strategies for mitigating the types of crashes determined to represent the greatest opportunity for reduction, and identifying locations in the city considered to be priority candidates for safety investment (Figure 1-1 - Approach Flow Chart).

This basic approach addresses the three issues (in three phases) that are the focus of virtually all safety planning studies:

1. Identifying crash types that represent the greatest opportunity for the reduction of fatalities and severe injuries.
2. Identifying strategies that have demonstrated a high level of effectiveness at mitigating the priority crash types.
3. Identifying locations along the city's system that are most at-risk for the priority crash types and are therefore the highest priority candidates for safety investment.

The approach will include a safety analysis that uses the systemic approach that identifies candidates for safety investment based on the presence of roadway and traffic characteristics associated with locations with severe crashes.



Figure 1-1 Approach Flow Chart

The approach was developed because even though there are more than 500 severe crashes per year across the Minneapolis/St. Paul Metropolitan area, previous studies of the state and county systems found that more than 90 percent of those systems had no severe crashes during a five year study period, approximately 7 percent had one severe crash and no locations averaged one severe crash per year. As a result, it was concluded that identifying locations for safety investment based solely on crash history would not be effective because it was entirely based on reacting to the few severe crashes that occur while ignoring the greater number of locations considered at-risk due to sharing a common set of roadway and traffic characteristics. The systemic approach allows agencies to proactively deploy safety improvements that can prevent serious injury and fatal crashes, which provides staff with a much better answer to the question that inevitably arises – How many people have to be killed before you do something? With the systemic approach, the answer is truly none.

Sections of this report include:

- Section 1 - Introduction/Background
- Section 2 - Crash Data Overview
- Section 3 - Infrastructure Safety Strategies
- Section 4 - Identification of Candidate Locations for (Infrastructure Based) Safety Investment
- Section 5 - Beyond Infrastructure (Opportunities to Improve Road Safety)
- Section 6 - Behavioral Safety Strategy Implementation
- Section 7 - References

Crash Data Overview

The first phase of the safety analysis process involves documenting the number and type of severe crashes that have occurred in St. Paul during the adopted study period, which is the five- years from 2009 through 2013. Severe crashes (those involving either a fatality or a serious injury as determined by law enforcement) were selected as the safety performance measure (as opposed to all crashes) because Minnesota’s SHSP adopted severe crashes as the statewide performance measure consistency with national guidance provided by the Federal Highway Administration. The use of the five year period is consistent with typical industry practice that attempts to strike a balance – using multiple years of data to reduce the chances of ultimately making investment decisions based on one unusually high or low year versus using too many years of data that results in concerns about roadway or traffic characteristics changing at locations across the system over a longer time frame. Safety analysts in Minnesota have previously chosen the five year study period to support analyses of both the State and county systems. This crash data comes from Minnesota’s Crash Mapping and Analysis Tool (MnCMAT) and is based on crash reports generated by the State Patrol, County Sheriff, and City Police.

An overview of crashes in St. Paul indicates that during the study period there were 283 severe crashes, an average of approximately 57 per year, and the following trends are suggested (Figure 2-1 - St. Paul Crash Tree):

- In Ramsey County, 63 percent of severe crashes are in St. Paul, which has 56 percent of the County’s population.
- In St. Paul, 39 percent of severe crashes are on city-owned streets, which is more than the county (36 percent) or state (25 percent) systems.
- On city streets, severe crashes are divided between 2-lane and multi-lane facilities and the cross-section with the fewest severe crashes (2 percent) are 3-lane roads (with two-way left-turn lanes).
- Also, on city streets, approximately 60 percent of severe crashes are intersection related, with about two-thirds at Thru/STOP controlled intersections and one-third at signal controlled intersections.
- A closer look at St. Paul’s system indicates:
 - From a traffic volume perspective, severe crashes are over represented on streets with volumes greater than 10,000 vehicles per day (21 percent of severe crashes versus 2 percent of the system by mileage) and under represented on streets with volumes less than 5,000 vehicles per day (41 percent of crashes versus 52 percent of the system by mileage).
 - From a functional classification perspective, severe crashes are over represented on arterials and collectors (91 percent of severe crashes versus 21 percent of the system by mileage) and under represented on local streets (9 percent of severe crashes versus 79 percent of the system by mileage).
 - The density of severe crashes is very low – 0.07 severe crashes per mile per year across the entire system and on the arterial and collector streets, which account for more than 90 percent of severe crashes, the density is slightly more than 0.3 severe crashes per mile per year.
 - The majority of severe intersection-related crashes occur at locations with traffic signal control and where the volume on major approaches exceeds 15,000 vehicles per day.
 - From a driver behavior perspective, the top five emphasis areas include; Unbelted (22 percent), Impaired (20 percent), Unlicensed (17 percent), Inattentive (16 percent), and Speed (12

percent). These percentages are somewhat lower than state-wide values but the trend is similar with the exception of Unlicensed replacing Young Drivers.

A focus on individual segments and intersections found 41 segments and 11 intersections with multiple severe motor vehicle crashes and 38 segments with multiple severe pedestrian/bicycle involved crashes.

The Top 5 Segments based on the number of severe motor vehicle crashes include:

- Rice Street – John Ireland Boulevard to University Avenue (4 severe crashes/72 total)
- 3rd Street East – Earl Street to McKnight Road (5 severe crashes/115 total)
- Cretin Avenue – Ford Parkway to Grand Avenue (3 severe crashes/79 total)
- Kellogg Boulevard – Concordia Avenue to Market Street (4 severe crashes/260 total)
- Case Avenue – Westminster Street to Earl Street (3 severe crashes/116 total)

The Top 5 Intersections based on the number of severe motor vehicle crashes include:

- Maryland Avenue and Prosperity Avenue (4 severe crashes/71 total) – reconstructed, widened, and a left-turn lane added in 2011
- University Avenue and Marion Street (4 severe crashes [1 fatal]/59 total) – rebuilt in 2013
- Snelling Avenue and Concordia Avenue (3 severe crashes [1 fatal]/372 total) – rebuilt in 2015
- Dale Street and Como Boulevard (3 severe crashes/45 total)
- Third Street and Johnson Parkway (3 severe crashes/24 total)

The Top 5 segments based on the number of severe pedestrian/bicycle crashes include:

- Rice Street – John Ireland Boulevard to University Avenue (2 severe crashes/8 total)
- 3rd Street East – Earl Street to McKnight Road (4 severe crashes/7 total)
- Grand Avenue – Cretin Avenue to Dale Street (3 severe/37 total)
- Como Avenue – Eustis Street to Raymond Avenue (2 severe/10 total)
- Front Avenue – Dale Street to Rice Street (2 severe/10 total)

In St. Paul, with a total of 283 severe crashes during the five-year study period, there was concern that trends illustrated by the disaggregation process might not be statistically reliable. To address this concern, an expanded data set was generated that combined severe crashes in St. Paul with severe crashes in Minneapolis. This combined data set (Figure 2-1 St. Paul Crash Tree and Figure 2-2 Minneapolis and St. Paul Crash Tree) includes a total of 781 severe crashes and indicates similar trends to those identified in St. Paul – an even distribution of crashes between two-lane and multi-lane facilities, the three-lane cross-sections having the fewest severe crashes and a majority of intersection-related severe crashes occurring at locations with traffic signal control.

The analysis point to four key conclusions about safety priorities for St. Paul. First, the city's streets that are classified as local/residential and characterized by low speed (30 miles per hour [mph]) and low volume (under 5,000 vehicles per day) are very safe. This points to identifying higher speed (35 mph and higher), higher volume (over 10,000 vehicles per day) collectors and arterials as the City's safety priorities. Second, the data is very clear that the most common types of severe crashes are those involving Ped/Bikes (111) and Right Angle (78) collisions. Third, the data supports identifying candidates for safety investment using a two-step process. The first step based on the lists of locations with multiple severe crashes. Then supplementing that list with additional segments that have roadway and traffic characteristics similar to the segments with multiple severe crashes, as identified through a systemic risk assessment. Finally, the data also suggests that safety investments to mitigate the most common types of severe crashes should be focused at intersections and at signal controlled intersections in particular.

Source: MnCMAT Crash Data, 2009-2013
 -- Severe = Fatal + A-injury crashes.

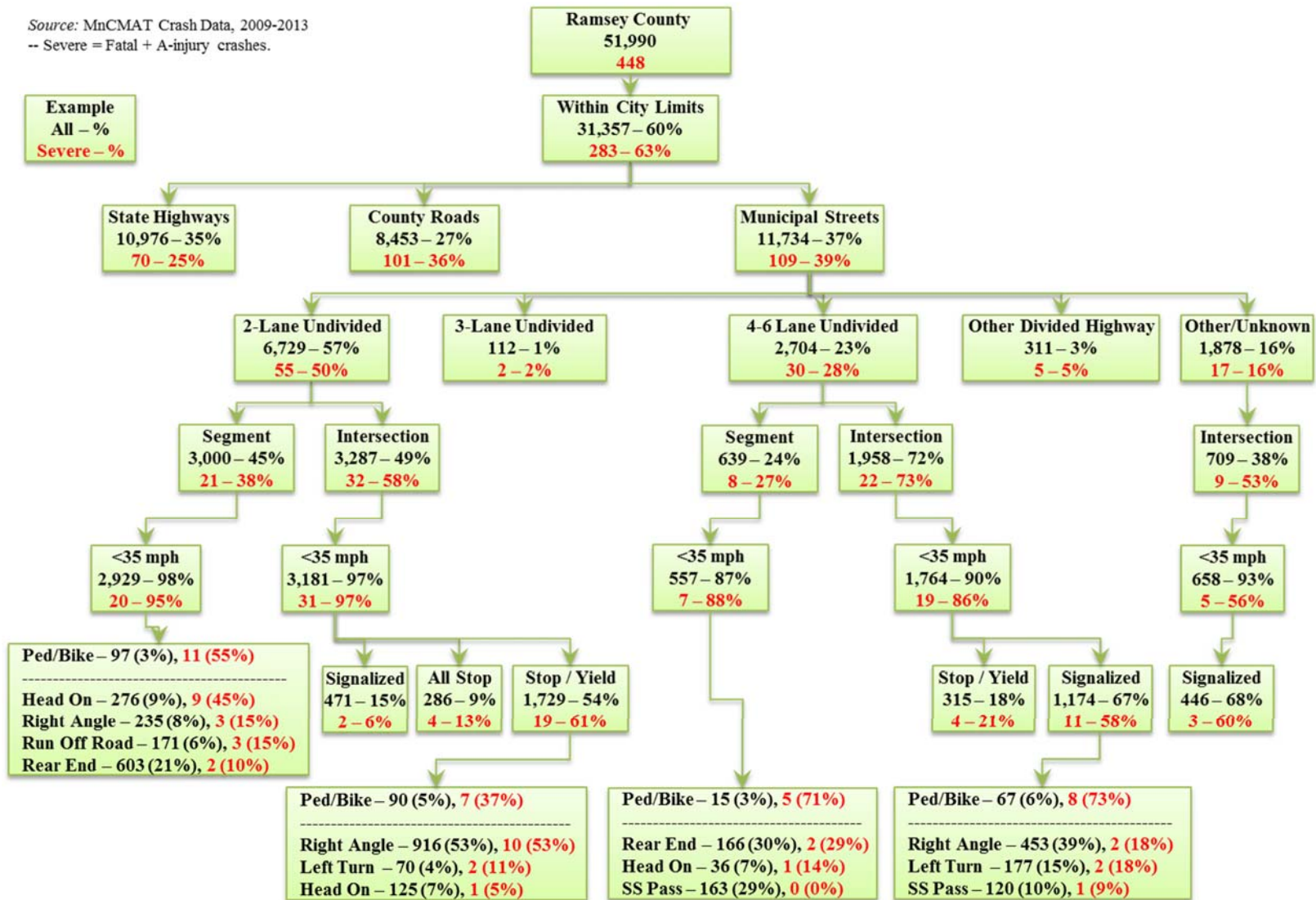


Figure 2-1 St. Paul Crash Tree

Source: MnCMAT Crash Data, 2009-2013
 -- Severe = Fatal + A-injury crashes.

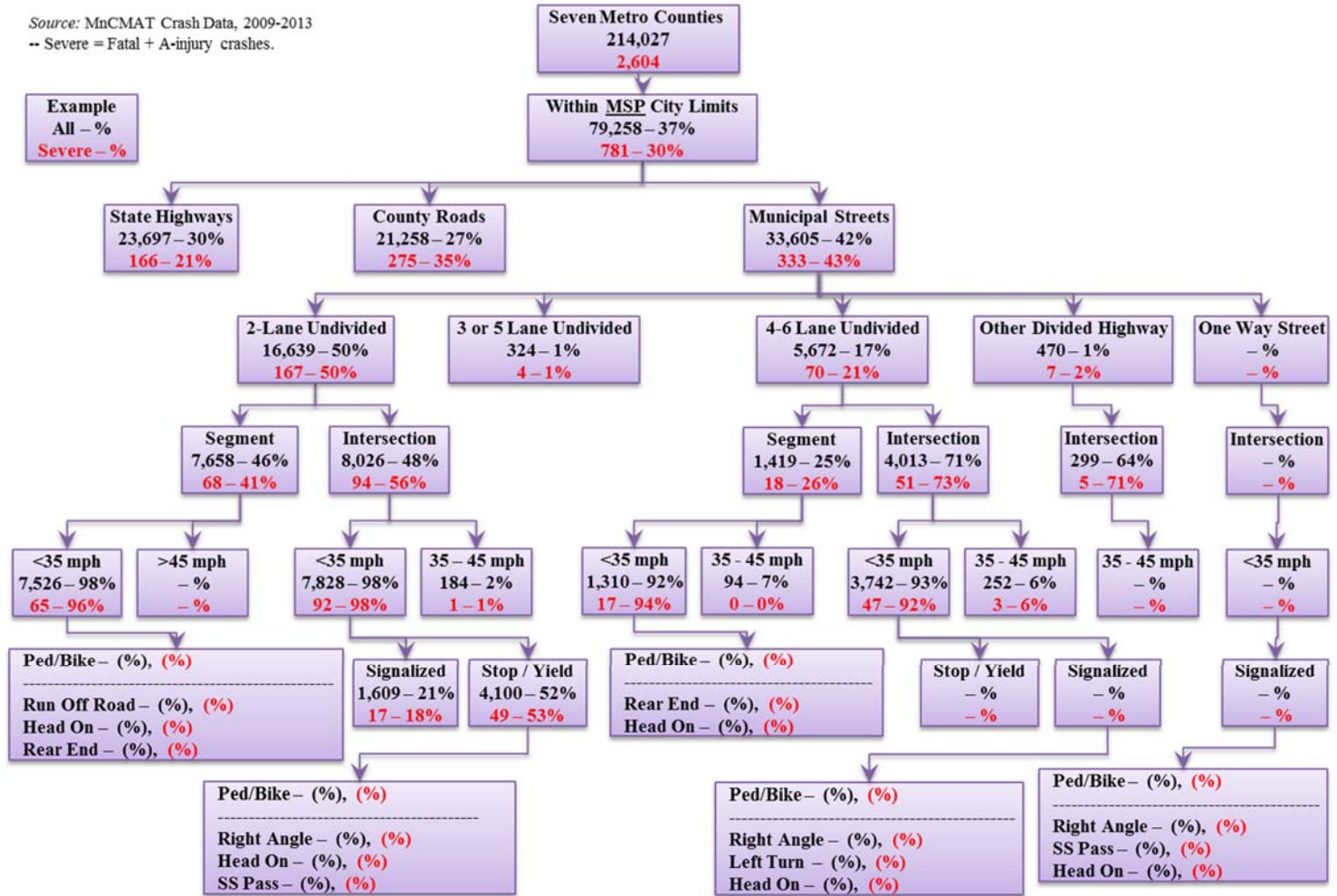


Figure 2-2 Minneapolis and St. Paul Crash Tree

Infrastructure Safety Strategies

The second phase in the safety planning process involves identifying a short list of safety strategies that could be implemented to address the adopted priority crash types. An initial list of potential safety strategies was assembled from published safety research, primarily the National Cooperative Highway Research Program (NCHRP) Report 500 Series, the FHWA's Crash Modification Factor (CMF) Clearinghouse (focusing on roadway related strategies) (FHWA, 2015), Countermeasures that Work (focusing on driver behavior strategies) (USDOT and NHTSA, 2013) and Minnesota's SHSP (MnDOT, 2014). These resources include hundreds of possible strategies, too many for providing effective guidance in a safety plan, and as a result a prioritization exercise was completed to create a list of strategies for the City of St. Paul based on the city's crash and roadway characteristics.

The first level of strategy screening focused on those associated with the adopted priority crash types. There are no universal safety strategies, most strategies have demonstrated an ability to mitigate a particular crash type. For example, providing median refuge islands along urban arterials and leading pedestrian indications at signalized intersections have demonstrated an ability to reduce the number of severe pedestrian involved crashes. The next level of screening focused on general effectiveness (documented crash reduction) and basic implementation costs of the remaining strategies.

Initially, strategies were identified as being either proven (effective at reducing crashes), tried, or experimental. The definitions of these terms was borrowed from the NCHRP Report 500 Series and are summarized as follows:

- **Proven** – Proven effective strategies have been widely deployed across the country, have been subject to academically rigorous statistical evaluations, and the documented crash reductions fall within a narrow range. Examples of proven strategies include sidewalks, pedestrian refuge islands, and managing access/conflicts along urban arterials and collectors.
- **Tried** – Strategies considered to have been tried either have not been widely deployed, lack rigorous statistical testing, or the results of the testing have not been consistent with the results ranging from a decrease in crashes in some locations to an increase in others. Examples of tried strategies include adding on-road bike lanes (large deployment but a wide range of results) and use of the leading pedestrian interval at signalized intersections (consistently positive results but small deployment to date).
- **Experimental** – Experimental strategies are relatively new (typically), often involving technologies that are beginning to be implemented and that lack sufficient deployment and rigorous statistical evaluation. Examples of experimental strategies include the use of bicycle boxes and a variety of pedestrian enhancements such as flashing beacons, flags, and in-street devices at crosswalks.

The value of these designations is the assistance they provide analysts in developing safety projects and managers assembling the state's safety improvement program. These safety professionals can have a high level of confidence that investments in proven strategies would yield similar kinds of crash reductions as have been documented in the national research for prior deployment. Whereas, investment in tried or experimental strategies would carry a lower confidence level. There is no requirement at either the federal or state level that directs safety funds to only those projects that involve the implementation of proven strategies. However, there is a bias among safety program managers toward projects that use proven strategies because they provide the highest level of confidence that those projects will result in crash reductions similar to what was achieved elsewhere and maximize a state's efforts to meet short-term crash reduction goals documented in their SHSP.

This level of screening also considered the estimated implementation costs of the various safety strategies, for example; \$5 per square foot for sidewalks, \$30,000 for median refuge islands and \$10,000 per intersection to add pedestrian countdown timers. As was the case with effectiveness, there is no requirement for safety program managers to direct funding to low-cost projects. However, Minnesota and St. Paul crash data support a bias toward the use of low-cost strategies based on two facts. First, even though St. Paul averages almost 60 severe crashes per year, the density of these crashes is very low, approximately 0.07 severe crashes per mile per year and it was determined that there were no intersections on the city's system that averaged a severe crash per year. These data support an approach to addressing crashes that involves implementing improvements along as many miles of streets and as many intersections as possible. Because of the limited dedicated-safety funding available, compared to the size of the local system, a focus on the deployment of low-cost strategies is required. Second, it was expected that the safety needs of local agencies would be greater than the amount of safety funds reserved for the implementation of projects along local systems. MnDOT has committed to a distribution of safety funds proportional to the distribution of crashes, which results in approximately \$15 million annually (50 percent of the state's \$30 million Highway Safety Improvement Program allocation) being reserved to support implementation of safety projects on local roadways but the value of previously identified safety projects on the local system totals almost \$250 million. Data supports the need to focus on low-cost strategies to be able to spread deployment across as many miles and intersections of the local road system as possible. The data reveals an approach to overcoming the challenge of low-crash densities across an expansive system by widely deploying proven, effective, low-cost strategies at the fraction of high-priority locations.

The next step in the screening process involved participating in a facilitated discussion with the City of St. Paul safety partners at a safety workshop. Approximately 50 advocates representing enforcement, education, emergency response, engineering, plus elected officials and members of planning councils attended the workshop on June 25, 2015 at the Wellstone Center. The participants were provided background information about the characteristics of serious crashes in St. Paul and lists of infrastructure- and driver-behavior-related strategies along with information about effectiveness and implementation costs. The discussion of the strategies included receiving feedback regarding general observations, feasibility, challenges, and outcomes. The participants were asked to indicate their preferences among the various strategies and the most common responses included:

- Enhanced enforcement events for speeding, impaired, and distracted driving
- Collaborating with local employers to increase emphasis on policies related to driver behavior – speeding, impaired driving, and distracted driving
- Support for alcohol server training and the concept of using the Place of Last Drink to indicate establishments in need of the training
- Conducting media campaigns and public outreach to target key safety issues, such as Minnesota's cross-walk law, the general ineffectiveness of marked crosswalks, and the demonstrated benefits associated with pedestrians making eye contact with approaching drivers
- Using confirmation lights at traffic signals to support enhanced enforcement of red light running (RLR) in at-risk corridors
- A suite of pedestrian-related strategies including: road diets (converting to a three-lane cross-section), count-down timers, and the leading pedestrian interval at signalized intersections plus median refuge islands and curb extensions.

The toolbox of potential infrastructure-based safety strategies for urban locations along with the identified crash reduction factors and typical installation costs are summarized in Table 3-1. This list of strategies was derived from a list based on proven effectiveness to mitigate the specific type of severe crashes that are over represented in St. Paul; Pedestrian/Bike, right Angle and Head-On.

Table 3-1. Urban Infrastructure-based Safety Strategies

Strategy	Crash Reduction Factor	Typical Installation Cost
Road Diet (convert to three-Lanes)	30 percent to 50 percent	\$160,000/Mile
Access Management	5 percent to 30 percent	\$360,000/Mile
Traffic Signal Confirmation Lights	25 percent to 85 percent (violations)	\$2,500/Intersection
Pedestrian/Bike – Countdown Timer	25 percent	\$12,000/Intersection
Pedestrian/Bike – Leading Pedestrian Interval	30 percent to 45 percent	\$600/Intersection
Pedestrian/Bike – Curb Extensions	40 percent to 45 percent	\$36,000/Corner
Pedestrian/Bike – Median Refuge Island	40 percent to 45 percent	\$25,000/Approach

Note: An expanded discussion of driver-behavior strategies is provided in the Section 5, Beyond Infrastructure.

Source: FHWA 2015

Identification of Candidate Locations for (Infrastructure Based) Safety Investment

The final phase in the analytical process involves identifying candidate locations for safety investment and developing safety projects that would deploy highly effective strategies proven to be effective at mitigating the types of severe crashes determined to be over represented on St. Paul's system of streets.

It was previously determined that three types of crashes represent the greatest opportunity for reduction, based on the overall number of severe crashes – pedestrian/bicycle, right angle, and head-on crashes. In addition, an evaluation process also identified a short list of strategies proven to be highly effective at reducing the number of these kinds of crashes, including; the use of countdown timers and the leading pedestrian interval at traffic signal controlled intersections, curb extensions and median refuge islands, installing confirmation lights at traffic signals to help law enforcement more effectively address RLR and using the concept of the road diet to improve the safety performance of undivided arterials and collectors.

The key step of identifying candidate locations for safety investment was approached from two perspectives – first, locations that have experienced multiple focus crash types and second, locations that share a number of roadway and traffic characteristics with the locations with multiple crashes. The roadway segments with multiple severe crashes were previously identified and the following roadway and traffic characteristics were shared by these streets:

- **Functional Classification** – Arterials account for approximately 6 percent of St. Paul's street mileage but 41 percent of severe crashes, and collectors account for 14 percent of street miles and 50 percent of severe crashes. As a result, focusing safety investment arterials and collectors would address 91 percent of severe crashes while only dealing with 14 percent of city streets.
- **Traffic Volume** – Streets classified as arterials and collectors and with traffic volumes greater than 10,000 vehicles per day account for 16 percent of street mileage but 27 percent of severe crashes.
- **Roadway Cross Section** – Of the streets with multiple severe crashes, 88 percent are two-lane facilities (in most cases with on-street parking).
- **Access Density** – Streets with multiple severe crashes have high levels of access, the average access density is almost 60 per mile and several streets have more than 100 per mile. Typical arterial and collector streets have access density in the range of 30 to 40 per mile. High levels of access result in greater conflicts, which results in high frequencies of crashes.

The street corridors that represent the greatest opportunity for St. Paul to reduce the number of severe crashes through focused safety investment either have experienced multiple severe crashes or have some of the similar characteristics to those streets and include:

Arterials

Arcade Street	Kellogg Boulevard
Como Avenue	Payne Avenue
Cretin Avenue	Phalen Boulevard
Edgumbe Road	Ruth Street
Fairview Avenue	Selby Avenue
Johnson Parkway	Third Street
Kasota Avenue	

Collectors

Ames/Hazelwood Avenue	Grand Avenue
Arlington Avenue	Hamline Avenue
Case Avenue	Prior Avenue
Clarence Street	Suburban Avenue
Earl Street	Western Avenue

Investing in safety strategies along these streets, which represent roughly 5 percent of the streets and approximately one-quarter of arterials and collectors, would address 36 percent of the severe crashes in St. Paul.

Finally, the types of safety projects consistent with the results of the crash analysis involves widely deploying low-cost strategies at as many locations as possible aimed at improving pedestrian safety (primarily at intersections), reducing the frequency of red light violations at traffic signals, and improving the safety characteristics of undivided streets.

Beyond Infrastructure (Opportunities to Collaborate to Improve Road Safety)

Traffic safety research and national best practices assert that state and local transportation safety officials must go beyond infrastructure safety strategies and adopt a more comprehensive safety approach to effectively reduce severe traffic crashes. Consistent with, and in support of, the Minnesota SHSP, the City of St. Paul recognizes that driver behavior is a primary contributor to serious crashes on its local streets.

Traffic crashes may result from any combination of overlapping crash factors including the roadway, vehicle, and driver behavior. Research supports that, in most cases, driver behavior (such as risky decisions, driver error, lapses of attention, and driver limitations) is a chief factor contributing to traffic crashes. In other words, a city may have the best-engineered and maintained road for safety, but the problem isn't solved until motorists make safer choices—to buckle up, drive at safe speeds, pay attention, and plan ahead for a designated driver when drinking.

Moving beyond infrastructure and fostering effective collaboration among the key traffic safety disciplines—traffic engineering/road maintenance, enforcement, education/public outreach, emergency medical and trauma care—is a proven, more comprehensive safety approach consistent with the Minnesota Toward Zero Deaths (TZD) statewide traffic safety program and national TZD initiatives. A primary vision of the Minnesota TZD program is to create a safe driving culture in Minnesota in which motorists support a goal of zero road fatalities by practicing and promoting safe and smart driving behavior. To foster partnership efforts and leverage resources, the City of St. Paul collaborates with the Metro Region Minnesota TZD program which includes Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott, and Washington counties.

5.1 City of St. Paul Behavioral Emphasis Areas

As with the Minnesota SHSP and the county safety plans, the City of St. Paul's safety plan seeks to address priority emphasis areas that represent key risk factors or types of crashes contributing to the city's severe crashes. Based on a careful review of the City of St. Paul's crash data, the city's traffic safety best practices, historical perspectives on driver behavior, and the emphasis areas the City of St. Paul believes to be most effective for local-level implementation, the city identified inattentiveness and speed as the behavioral emphasis areas to focus its efforts and behavioral investments. These emphasis areas support core behavioral focus areas of the Minnesota SHSP and the Metro Region TZD priorities. Finally, it is important to note that, not surprisingly, severe crashes often involve multiple high-risk behavioral factors working together contributing to the crash (e.g., unbelted, impaired driver who was also speeding).

5.2 Behavioral Safety Strategy Considerations

The City of St. Paul's priority behavioral emphasis areas provide a framework for identifying and implementing safety strategies to promote safe driving practices and reduce severe crashes. National-level research and evaluation studies have identified evidence-based interventions that have demonstrated or proven to effectively reduce traffic crashes. Such proven strategies are generally widely deployed and offer traffic safety professionals greater confidence that their efforts will strengthen traffic safety.

When considering strategies to promote safe driving, the most effective formula for changing driver behavior includes three chief components: 1) *policy* or laws and local ordinances with strong and swift penalties, 2) *enforcement* of the laws, and 3) *education* or community outreach about the enforcement and risks associated with lack of seat belt use, speed, driver distraction, and impaired driving. However, public education campaigns are popular among communities seeking to change risky driving behaviors. The primary traffic safety challenge is that most drivers know how to drive safely but, with no crash incidents, underestimate the repercussions of risky driving habits. For this reason, education and community outreach alone won't change high-risk driving behaviors. Consequently, when selecting and implementing a behavioral strategy, an agency must examine the strength of related policy or laws, the degree and consistency of enforcement, and the effectiveness of educational/public outreach components of the strategy. The agency also must explore ways to strengthen each, as appropriate, to gain the most from a selected strategy.

Finally, it is critical that traffic safety enforcement is a priority within local law enforcement agencies and local elected officials and local agency and community leaders advocate for strong local enforcement of traffic laws and address political and public resistance to strong enforcement.

5.3 City of St. Paul's Priority Behavioral Safety Strategies

Based on the City of St. Paul's crash data, strategy effectiveness, strategy consistency with state SHSP and TZD initiatives, and strategies for local-level implementation, the following are a focused set of priority behavioral safety strategies for implementation, with a particular emphasis on inattentive driving and speed. The City of St. Paul's priority behavioral emphasis areas, speed and inattentive driving, are consistent with two of the seven priority emphasis areas in the Minnesota SHSP.

Strategy	Activities and Suggested Resources
Publicize and support high-visibility law enforcement efforts Key City of St. Paul Focus: <i>Belt Use</i> <i>Inattentive Driving</i> <i>Impaired</i> <i>Speed</i>	Support and conduct dedicated high-visibility enforcement events consisting of multiple jurisdictions and/or multiple squads patrolling a segment of roadway at the same time thereby increasing public perception that violators will be ticketed and/or apprehended. Planned enforcement is publicized extensively through community kickoff events involving local media and public education campaigns about the enforcement. Enforcement agencies report the outcome or arrests made during the enforcement campaign to news media. Generally, statewide enforcement waves include: October: Belt Use November – December: Impaired Driving April: Inattentive Driving May: Belt Use July: Speed August – September: Impaired Driving The City of St. Paul also implemented enhanced enforcement during its Pedestrian Safety Awareness Week: August – Pedestrian Safety In addition, local enforcement agencies are encouraged to extend beyond the statewide enforcement waves and combine and concentrate their resources to conduct more consistent saturation patrols. See the Office of Traffic Safety (OTS) website for its annual calendar of enforcement mobilizations, talking points, and outreach materials: https://dps.mn.gov/divisions/ots/law-enforcement/Pages/Enforcement-Mobilizations.aspx

Strategy	Activities and Suggested Resources
	<p>See the National Highway Traffic Safety Administration’s Traffic Safety Marketing website as a one-stop-shop resource for the latest communications news, campaign materials, and marketing techniques:</p> <p>http://www.trafficsafetymarketing.gov/</p> <p>To integrate the City of St. Paul’s pedestrian enforcement and public education/outreach efforts, research supports the importance of pedestrian eye contact with on-coming drivers. For further information, see:</p> <p>http://www.wsj.com/articles/the-key-to-crossing-the-street-safely-eye-contact-1427734205</p> <p>http://www.sciencedirect.com/science/article/pii/S0925753515000193</p>
<p>Provide enhanced enforcement of Red Light Running at corridors using RLR confirmation lights</p> <p><i>Key City of St. Paul Focus:</i></p> <p><i>Speed/Aggressive Driving</i></p>	<p>RLR confirmation lights, as described in the infrastructure safety strategies section of this report, reduce RLR-related right angle crashes at signalized intersections. Implementing RLR confirmation lights requires close collaboration between local engineering and enforcement.</p> <ul style="list-style-type: none"> • Ask for an agreement regarding minimum levels of enforcement (i.e., one hour per day at any of the equipped locations) and provide enforcement training and demonstrations that the confirmation lights come on at the same instant as the red light of the signal. • Support law enforcement in educating city/county attorney and district court judge to help ensure violators are prosecuted and judges uphold charges and support convictions. • Prior to issuing tickets for violations using Confirmation Lights, have the traffic signal operations engineer check all of the signals clearance intervals (Yellow + All Red) to make sure they are 100 percent consistent with the agencies adopted guidelines. Place a note confirming compliance signed by the engineer in the signal controller cabinet to help address the inevitable complaint by those issued tickets that the agency changed the clearance intervals to generate more violators to increase revenue streams. • With local law enforcement, attend county board/city council meetings to speak on the community safety benefits of red-light-running confirmation lights. • Most effective would be added media/public outreach about the RLR confirmation lights during periods of added enforcement. <p>Contact City of Burnsville for insights in deploying RLR confirmation lights:</p> <p>City of Burnsville Public Works, Minnesota Engineering Department 100 Civic Center Parkway Burnsville, MN 55337 Phone: 952-895-4534</p>
<p>Conduct additional media and public outreach campaigns</p> <p><i>Key City of St. Paul Focus:</i></p> <p><i>Distracted Driving</i></p>	<p>Communications and media outreach alone, separate from an enforcement campaign, rarely change risky driving behavior. However, to have any potential for impact, public outreach initiatives must: communicate new information not previously known, provide focused messaging for a target group, be part of a community-wide campaign with sustained messaging over time, and strongly utilize social networking to target messaging to young drivers (Facebook, YouTube, Twitter).</p> <p>One campaign opportunity is to promote community awareness of strengthened Minnesota traffic safety policy for distracted driving. Specifically, the 2015 traffic law change of an additional fine of \$225.00 for a second or subsequent violation of Minnesota’s no texting/emailing/ban on wireless communication devices (except talking on cell phones) while driving. Public outreach of this enhanced penalty is recommended during Minnesota’s annual Distracted Driving statewide enforcement mobilization in April as well as other local community events promoting driver traffic safety.</p> <p>For reference to enhanced penalty law effective August 1, 2015, see:</p> <p>https://www.revisor.mn.gov/laws/?id=75&year=2015&type=0#laws.2.22.0</p> <p>Improve young drivers’ understanding of and experience with the distracted driving risks (while in a safe environment) to reinforce the importance of refraining from extraneous activities while</p>

Strategy	Activities and Suggested Resources
	<p>driving. Outreach activities may occur at community and high-school events that young drivers attend.</p> <p>For an example, interactive on-line driving simulator resources to help young drivers identify various distractions and their relative impact on driving ability, see:</p> <p>The University of Minnesota’s Intelligent Transportation Institute’s Distraction Dodger simulator game http://www.its.umn.edu/DistractionDodger/</p> <p>Toyota USA and Discovery Education’s Head’s Up simulator game http://headsup.discoveryeducation.com/</p> <p>For driver distraction curriculum materials consisting of five classroom lessons, including a course presentation and handouts, that may be adapted by teachers for their own classroom use, see:</p> <p>University of Minnesota’s Intelligent Transportation Institute’s K–12 Driver Distraction Curriculum http://www.its.umn.edu/Education/k12outreach/curricula/driverdistraction/</p>
<p>Strengthen local liquor establishments’ serving/selling practices</p> <p>Addresses: <i>Impaired Driving</i></p>	<p>Promote local liquor establishments’ support of and participation in server/seller training classes taught by accredited Minnesota DPS Alcohol & Gambling Enforcement Regional Alcohol Awareness Trainers to prevent over serving or selling to/serving intoxicated or underage customers.</p> <p>Collaborate with local law enforcement and on-sale liquor establishments identified as having high levels of customer drinking and driving incidents to develop and implement preventative action plans.</p> <p>Explore community and local agency support for local alcohol ordinances and penalties that may be more restrictive than state law, such as high fines, long license suspension, and early license revocation for repeated violations.</p> <p>See Alcohol & Gambling Enforcement Regional Alcohol Awareness Training contacts and training materials including information on local alcohol ordinances, at: https://dps.mn.gov/divisions/age/alcohol/Pages/default.aspx</p>
<p>Conduct additional media and public outreach campaigns</p> <p>Addresses: <i>Unbelted Occupants</i></p>	<p>Continuously educate and reinforce the life-saving value of seat belt use through publicly recognizing traffic crash survivors who buckled up, crashed, and were saved by the belt. Community saved by the belt testimonies increase public awareness of the lifesaving value of safety belts of those who survived traffic crashes because they were properly restrained. This strategy is most effective in supporting media and public outreach during statewide and local agency seat belt enforcement waves and incorporated into seat belt enforcement messaging. Including local law enforcement officers in honoring traffic crash survivors who were buckled up promotes a positive relationship between local law enforcement and the community.</p> <p>Consider partnering with local businesses to offer gift certificates in recognizing young drivers and passengers who buckle up.</p> <p>To download a Saved by the Belt certificate, template news releases, and template letter to the editor, see: https://dps.mn.gov/divisions/ots/law-enforcement/Pages/Enforcement-Program.aspx</p> <p>Popular unbelted/saved-by-the-belt public service announcement: THINK! Always Wear a Seatbelt http://www.youtube.com/watch?v=Xx6v9CNcQ04</p> <p>Three guys are terribly injured in a crash, not wearing seatbelts. Time rewinds, they put on their seatbelts when they get in the car and sustain only minor injuries (sore neck, etc.). “If you could have another chance, what would you do differently?”</p>
<p>Strengthen community support of enforcing primary seat belt law</p>	<p>A motorist’s seat belt is the most effective defense in the event of a crash. When lap and shoulder seat belts are used, the risk of fatal injury to occupants is reduced by 45 to 65 percent. Although nearly 94 percent of drivers in Minnesota buckle up, unbelted crashes continue to be a chief contributing factor both statewide and for the City of St. Paul. It is critically important that</p>

Strategy	Activities and Suggested Resources
<p>Addresses: <i>Unbelted Occupants</i></p>	<p>primary seat belt enforcement, allowing officers to ticket a driver or passenger for not wearing a seat belt—without any other law being broken—is strongly supported. Primary enforcement of seat belt laws has a proven track record of getting more people to buckle up. The goal is not to issue more tickets but through the threat of being caught and ticketed, encourage motorists to buckle up so they can increase their chances of survival in a crash.</p> <p>Therefore, elected officials and local agency and community leaders must advocate for strong local enforcement of Minnesota’s primary seat belt law and address political and community resistance to its enforcement.</p> <p>A University of Minnesota Humphrey School of Public Affairs study examining the impact of Minnesota’s Primary Seat Belt Law since the law’s implementation in June 2009 through June 2013 indicated at least 132 fewer deaths, 434 fewer severe injuries, and 1,270 fewer moderate injuries than expected. For further information on the study, see: http://www.cts.umn.edu/Publications/catalyst/2014/june/seatbelt</p> <p>Popular unbelted public service announcements:</p> <p>National Highway Traffic Safety Administration (NHTSA): 2014 Friendly Cop Friendly police officer gives warning for forgetting turn signal, ticket for not wearing seatbelt. http://www.trafficsafetymarketing.gov/CIOT2014 (official website) http://www.youtube.com/watch?v=hzzQa9v79r8 (Youtube)</p> <p>Zero Fatalities Twist Child in back seat dies because unbelted parent was thrown into him. https://www.youtube.com/watch?v=tXW57B_2sRQ&list=UUrR3CPsVkfxJ5QNbAI4ZwAw</p> <p>Minnesota DPS: Heights http://www.youtube.com/watch?v=HSZ-pQeRtK8&feature=youtu.be</p> <p>A crash at 25 mph without seatbelt is like falling from a 2-story building, shows all the way up to 60 mph equals a 12-story building. Shows camera view from that height looking straight down to portray the potential damage of a vehicular crash while being unbelted can cause.</p>

Behavioral Safety Strategy Implementation

To explore the above safety strategies and to learn about specific safety initiatives in the City of St. Paul and the Metro Area, contact the Metro Minnesota TZD Regional Coordinator at:

Susan Youngs

Phone: 651-234-7706

E-mail: Susan.Youngs@state.mn.us

<http://www.minnesotatzd.org/initiatives/regions/metro/>

Helpful On-Line Behavioral Traffic Safety Resources:

Minnesota TZD

<http://www.minnesotatzd.org/topics/>

Minnesota Office of Traffic Safety (OTS)

<https://dps.mn.gov/divisions/ots/Pages/traffic-topics.aspx>

Minnesotan's for Safe Driving

<http://mnsafedriving.com/teens-parents/teen-driving-laws.html>

Minnesota Mothers Against Drunk Driving (MADD)

<http://www.madd.org/local-offices/mn/>

Minnesota Safety Council, traffic safety

<http://www.minnesotasafetycouncil.org/traffic/>

Students Against Destructive Decisions (SADD), Minnesota Chapter

<http://sadd.org/states/minnesota.htm>

National Highway Traffic Safety Administration (NHTSA) Traffic Safety Marketing

<http://www.trafficsafetymarketing.gov/>

Governor's Highway Safety Association

<http://www.ghsa.org/html/issues/index.html>

References

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Federal Highway Administration (FHWA). Crash Modification Factor (CMF) Clearinghouse. <http://safety.fhwa.dot.gov/tools/crf/resources/>. Modified October 2015.

U.S. Department of Transportation and National Highway Traffic Safety Administration (NHTSA). 2013 *Countermeasures that Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, Seventh Edition*. April.

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