

Pedestrian Safety Mitigation Plan

City of Auburn





September 2019

Table of Contents

Heads Up Project Overview1
Purpose and Need1
Auburn's Process and Results
Community Pedestrian Safety Forum3
Site Safety Review4
Safer Walking Behavioral Forum4
Auburn's Recommendations5
Engineering5
General Considerations for All Locations5
Short Term5
Medium Term6
Long Term6
Specific Engineering Recommendations8
Site #1: Court Street Downtown8
Site #2: Minot Ave / Washington St / Rotary10
Site #3: Center Street Heading to the Mall12
Site #4: Mount Auburn Ave at Mall / Turner St14
Site #5: Veterans Memorial Bridge16
Education18
Recommendations for all 21 Focus Communities18
Recommendations for Crossing at Unmarked Intersections
Recommendations for Speeding25
Encouragement27
Recommendations for all 21 Focus Communities27

Enforcement	
Er	nforcement Recommendations for all 21 Focus Communities
Er	nforcement Recommendations for Crossing at Unmarked Locations
Er	nforcement Recommendations for Speeding35
Evaluat	tion36
Re	ecommendations for all 21 Focus Communities36
Works Cited	

Appendices	A
Appendix A –	FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations - Section 4: Select Countermeasure(s)A1
Appendix B –	MaineDOT's Crosswalk PolicyA2
Appendix C –	MaineDOT Lane Width and Shoulder Width Engineering InstructionA3
Appendix D –	City of Auburn, Maine – Complete Streets PolicyA4
Appendix E –	Auburn's Ped Safety Forum FlyerA5
Appendix F –	Auburn's Heads Up Pedestrian Safety ForumA6
Appendix G –	Auburn's Heads Up Pedestrian Safety Forum CommentsA7
Appendix H –	Auburn's Heads Up Pedestrian Safety Forum WorksheetsA8
Appendix I –	Auburn's Heads Up Pedestrian Safety Forum Voting SummaryA9
Appendix J –	Auburn's Heads Up Pedestrian Safety Forum Voting Detail A10
Appendix K –	Auburn's Priority Locations A11
Appendix L –	Auburn's Safer Walking Forum Flyer A12
Appendix M –	Auburn's Safer Walking Forum Notes A13

Heads Up Project Overview

The Maine Department of Transportation (MaineDOT) has partnered with the Bicycle Coalition of Maine (BCM) and 21 communities across Maine to facilitate a series of public meetings addressing pedestrian safety. As part of the *Heads Up Pedestrian Safety Initiative*, these meetings:

- collected information on locations the residents felt were unsafe;
- identified possible infrastructure changes to improve pedestrian safety; and
- discussed specific educational and law enforcement interventions that might improve driver and pedestrian behavior.

The aim of the project is to explore potential short-, medium-, and long-term mitigation strategies to improve pedestrian safety and reduce crashes.

Purpose and Need

From 2003 to 2014, the number of persons killed while walking on Maine's roadways hovered between 7 and 13 per year. Beginning in 2015, and extending through 2016 and 2017, Maine experienced a sharp increase in pedestrian fatalities, reaching a high of 21 in 2017.



Figure 1: Maine Pedestrian Fatalities (2003 - 2017)

Maine's crash data indicates this increase in pedestrian fatalities has no clear single cause, but is the result of a combination of factors that include roadway design and risky behaviors by both drivers and pedestrians.

In late 2016, MaineDOT initiated a process to engage the public in efforts to improve pedestrian safety. MaineDOT's Safety Office identified 21 communities that experienced the highest number of pedestrian crashes between 2011 and 2015, often representing the state's most densely populated and "urbanized" areas. The identified 21 Focus Communities are:

1.	Auburn	8.	Camden	15.	Saco
2.	Augusta	9.	Hallowell	16.	Sanford
3.	Bangor	10.	Lewiston	17.	South Portland
4.	Bath	11.	Old Town	18.	Topsham
5.	Biddeford	12.	Orono	19.	Waterville
6.	Brewer	13.	Portland	20.	Westbrook
7.	Brunswick	14.	Rockland	21.	Winslow

The project was launched in 2017 and is anticipated to run at least through 2020.

The Heads Up Pedestrian Safety Initiative includes the following activities for each of the 21 focus communities:

- 1. Convene and facilitate Community Pedestrian Safety Forums with community leadership, residents, and interested stakeholder groups to define local issues, review the community's pedestrian crash data, and identify/prioritize the locations of primary risk and need.
- 2. Facilitate an infrastructure Site Safety Review with municipal staff and other interested parties, in which the top 5 (and in some cases, more) problem locations identified by the community at the Safety Forum are analyzed for possible infrastructure changes (e.g. painting crosswalks, changing curb lines, adding refuge islands, adding signs, etc.).
- 3. Convene and facilitate a Safer Walking Behavioral Forum for community leadership, residents, and interested stakeholder groups that focuses on identifying priority problem behaviors, and then brainstorming educational and law enforcement interventions to improve safety for pedestrians.

- 4. Collaboratively develop with each municipality a community specific Pedestrian Safety Mitigation Plan (strategy) that incorporates both long-term and short-term alternatives for reducing the number of pedestrian crashes. The possible mitigation recommendations are organized according to the classic Safe Routes to School "5 E's" model: Engineering, Education, Encouragement, Enforcement, and Evaluation. These strategies will address policy, growth, infrastructure, education, outreach, and law enforcement.
- 5. Collaborate with local law enforcement to implement a Pedestrian Safety Enforcement Program that supports officers proactively interacting with individuals engaged in behaviors that may put pedestrians at risk. Program supports include technical assistance, education, outreach, handouts, and high-visibility safety items to distribute.

Auburn's Process and Results

Community Pedestrian Safety Forum

The *Community Pedestrian Safety Forum*, held in Auburn on June 7, 2017, was attended by 14 people, including municipal officials, MaineDOT staff, BCM staff, and the general public. Participants used "TurningPoint" real-time polling technology to gather key information from participants, which showed that:

- 23% of participants were from the general public
- 69% described their walking habits as "for exercise and errands"
- 58% said that roadway safety was the combined result of drivers, persons walking, and road design.

At this forum, the following locations were identified as "priority" problem locations needing attention. Locations were identified as the places ranked as "highest" or "high" priority for attention by a majority of the participants.

Priority Locations	% High Priority	Rank	Participant Comments Please Note: Public perceptions may differ from the actual conditions.
Court Street Downtown	70		Crosswalks not visible enough, Signals not present or not working well, Crosswalks too long
Minot Ave / Washington Street / Rotary	62.5	2	Speeding Traffic

Priority Locations	% High Priority	Rank	Participant Comments Please Note: Public perceptions may differ from the actual conditions.
Center Street heading to the Mall	50	3	Speeding Traffic, No Crosswalks, Crosswalks not visible enough, Signals not present or not working well, Problems with maintenance and condition, No Sidewalks
Mount Auburn Ave at Mall / Turner Street	37.5	4	Apartments don't have pedestrian access
Veterans Memorial Bridge	22	5	High speed traffic, no accommodation

Figure 2: Auburn Priority Locations

Site Safety Review

A site visit in Auburn occurred on July 6, 2017 during which priority locations were discussed using satellite photos, in-person visitation, and local expertise. The site visit included staff from the MaineDOT, BCM and the municipality. Measurements and observations were made during the visit, and conversations regarding problems and possible solutions were held.

Notes from the meeting have been included in the appendices at the end of the document and recommendations are included in the Engineering/Infrastructure section of this report.

Safer Walking Behavioral Forum

On June 6, 2018, 20 residents of Auburn joined MaineDOT, BCM, and Auburn city staff for a *Safer Walking Behavioral Forum*. At this forum, participants reviewed the priority locations identified in the Community Pedestrian Safety Forum, and the behavioral issues (speeding, failure to yield, pedestrian actions) that were associated with each. The group was asked to prioritize the behaviors that they identified as most problematic on the part of drivers, bicycle riders (who often came up as problems) and pedestrians. Focused discussions explored potential education strategies and law enforcement efforts to improve behavior. The forum included a call for local champions to advocate and implement proposed interventions.

The most problematic behaviors identified by Auburn residents at this forum were as follows:

- Most Problematic Pedestrian Behavior: Crossing at Unmarked Locations
- Most Problematic Bicycle Behavior: Ignoring Traffic Signs and Signals
- Most Problematic Motorist Behavior: Speeding

Recommendations from the *Safer Walking Behavioral Forum* to address pedestrian and motorist behaviors are included in the Education and Enforcement sections of this report. Recommendations to address bicyclist behaviors were not discussed during the forum and therefore no recommendations have

been included within this report. The problem behaviors of cyclists is only provided as a forum observation and could be useful for future mitigation efforts.

Auburn's Recommendations

This report provides a series of recommendations based on the forums, site visits, examinations of aerial photos, reviews of existing plans and conversations with stakeholders to improve pedestrian safety in Auburn.

The recommendations are organized according to the classic Safe Routes to School "5 E's" model: Engineering, Education, Encouragement, Enforcement, and Evaluation. Sound engineering is essential to promote encouragement, must align with education, and is necessary to support enforcement efforts.

Recommendations are further organized into timeframes, with "Short Term" meaning <1+ year implementation window, "Medium Term" meaning 1-5+ year implementation window, and "Long Term" meaning a >5-year implementation window. Note that Short Term and Medium-Term mitigations should not necessarily be abandoned after the implementation windows proposed here. Consideration of their continued or periodic use should be a routine and on-going community conversation.

Engineering

The built environment is an important factor affecting roadway safety, as conditions on the ground will influence the behavior of all users. Historically, many roadways were designed for higher vehicle speeds and shorter travel times. Complete Streets policies implemented by MaineDOT and many other communities attempt to address the needs of all roadway users by redesigning infrastructure where feasible to reduce vehicle speeds, accommodate bicyclists, and improve pedestrian safety and access.

General Considerations for All Locations

Implementation must be based upon engineering judgement.

Short Term

- Refresh crosswalk paint; use high visibility "piano key" or other highly visible style of crossings.
- Install pedestrian signage (high intensity yellow or yellow/lime color is recommended) alerting drivers of the presence of crosswalks.
- Regularly check signal function and timing.
- Review Appendix B–*MaineDOT's Crosswalk Policy* and Appendix C–*MaineDOT Lane Width and Shoulder Width Engineering Instruction* to ensure that future bicycle and pedestrian improvements comply with existing MaineDOT policies and guidance.

- Implement a municipal policy which stipulates that all alterations to roadways and pedestrian ways will require that the impacted facilities must be made ADA compliant to the maximum extent feasible and should comply with MaineDOT's ADA Design Guidance for pedestrian facilities found here: mainedot.gov/civilrights/ada/.
- Review and evaluate potential opportunities to implement recommendations as appropriate that are found in the *Lewiston-Auburn Arterial Streets Bicycle and Pedestrian Facilities Analysis* which can be found on the Androscoggin Transportation Resource Center website at: http://avcog.org/DocumentCenter/View/2412.

Medium Term

- Upgrade all crossings to ensure Americans with Disabilities Act of 1990 (ADA) compliance.
- As appropriate, narrow travel lanes on roadways with posted speed limits of 30 mph or less to improve driver speed compliance. See Appendix C–*MaineDOT Lane Width and Shoulder Width Engineering Instruction*
- Consider installing Rectangular Rapid Flashing Beacons (RRFBs) or other crossing improvements at critical crossings.
- Implement and enforce 20-foot parking setback from all crosswalks.
- Review the potential pedestrian safety infrastructure improvements included within MaineDOT's newly developed Pedestrian Safety Toolbox once it is released to the public. Identify opportunities within Auburn where new treatments could be incorporated.

Long Term

- Consider traffic calming measures such as bump-outs, raised crosswalks, or median islands to slow and calm traffic at pedestrian crossings.
- Ensure traffic volumes and turning movements warrant channelized right turn lanes. Where warranted, ensure channelized right turn lanes are designed to draw attention to pedestrians in crosswalks.
- Consider lane reductions of 4 lane roads to 3 lanes with a continuous 2-way left-turn lane (Road Diets); where appropriate, add bike lanes, pedestrian space, medians, or esplanades to the newly freed space.
- In general, retrofit in-city roadways with fewer, narrower travel lanes to slow traffic and shorten pedestrian crossings.
- As outlined within Auburn's Complete Streets Policy, incorporate pedestrian safety needs into all projects while also considering the pedestrian needs of the area surrounding the proposed roadway or development project.

This report also provides specific recommendations that may improve pedestrian safety at the 5 priority locations identified during Auburn's *Community Pedestrian Safety Forum* on June 7, 2017. Those locations are:

- 1) Court Street Downtown
- 2) Minot Avenue/Washington Street/Rotary Street
- 3) Center Street heading to the Mall
- 4) Turner Street/Mount Auburn Avenue at Mall
- 5) Veterans Memorial Bridge

Engineering recommendations were developed from information gathered during the *Pedestrian Site Safety Review* and are supplemented by recommendations referring to common and ongoing maintenance and construction efforts essential to maintain pedestrian safety.

All mitigation recommendations are based on Federal Highway Administration (FHWA) Pedestrian Safety Guide and Countermeasure Selection System at <u>pedbikesafe.org/PEDSAFE/</u>, comply with the Manual on Uniform Traffic Control Devices (MUTCD), and have been reviewed by both MaineDOT and the Federal Highway Administration. Please note that photographs provided in this report are intended to represent the referenced area of concern and do not necessarily include the entire scope of the recommendations provided nor then entire area of described concerns.

Specific Engineering Recommendations

Site #1: Court Street Downtown



Figure 3: Site #1 - Court Street Downtown

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Increase visibility of crosswalks	 Complete a field review and a safety assessment to determine appropriate ped safety alternatives (signage, locations, sight distance, Accessible Pedestrian Signal, lighting, etc.) Ensure that crosswalks are painted at least twice annually, with the first as early as possible in the spring Upgrade all crosswalks to have high visibility crosswalk markings Evaluate the appropriateness of utilizing flexible delineators on the white edge lines for some crosswalks in this area 		Short	MaineDOT City of Auburn ATRC	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Calm Turning Traffic	 Evaluate the appropriateness of utilizing flexible delineators to tighten the radius of intersection corners to slow turning vehicles 		Short	MaineDOT City of Auburn ATRC	
Increase visibility of crosswalks	 Evaluate current lighting and consider upgrading Consider pedestrian crossing improvements to the intersection of Pleasant and Court Streets 		Medium	MaineDOT City of Auburn ATRC	
Lane Reconfiguration / Narrowing to improve pedestrian safety	 Complete a traffic analysis of these intersections Determine if traffic volume and movements warrant existing lane configuration Utilizing the <i>Lane Width and Shoulder Width Engineering Guidance</i> provided by MaineDOT (Appendix C), determine if lane widths can be narrowed to slow and calm traffic 		Medium	MaineDOT City of Auburn ATRC	
Lane Reconfiguration / Narrowing to improve pedestrian safety at Great Falls Plaza	 Complete a traffic analysis of these intersections Expand pedestrian islands Consider reclaiming slip lane onto Great Falls Plaza and making turning traffic execute a 90° turn onto side streets 		Long	MaineDOT City of Auburn ATRC	

Site #2: Minot Avenue / Washington Street / Rotary



Figure 4: Site #2 - Minot Ave / Washington St. / Rotary

NOTE: This area is designed with an almost highway-style geometry and as a result is not generally suitable for low cost short-term fixes of the type on which this project focuses. Additional study and significant redesign is needed to raise the pedestrian level of service.

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Increase visibility of crosswalks	 Complete a field review and a safety assessment to determine appropriate ped safety alternatives (signage, locations, sight distance, Accessible Pedestrian Signal, lighting, etc.) Ensure that crosswalks are painted at least twice annually, with the first as early as possible in the spring Upgrade all crosswalks to have high visibility crosswalk markings Install signage alerting drivers of the presence of crosswalks Evaluate the appropriateness of utilizing flexible delineators on the white and/or yellow edge lines for crosswalks on Minot Ave just east of Madison St 		Short	MaineDOT City of Auburn ATRC	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Review existing pedestrian connectivity and infrastructure	 Identify gaps, accessibility challenges, and deficient existing sidewalk facilities to determine opportunities Develop a long-term pedestrian plan for needed improvements to this corridor 		Short	City of Auburn MaineDOT ATRC	
Increase visibility of crosswalks	 Consider RRFB installation at crosswalk on Minot Ave just east of Madison St 		Medium	MaineDOT City of Auburn ATRC	
Lane reconfiguration / narrowing to slow traffic to improve pedestrian safety	 Consider a traffic analysis of these intersections Determine if traffic volumes (vehicle, bike, and pedestrian) and movements warrant existing lane configuration. (Note that City of Auburn has planning documents suggesting lane reductions in this area.) Utilizing the <i>Lane Width and Shoulder Width Engineering Guidance</i> provided by MaineDOT (Appendix C), determine if lane widths can be narrowed to slow and calm traffic Determine if a road diet on Minot Ave. might be feasible and appropriate 		Medium	MaineDOT City of Auburn ATRC	
Increase visibility of crosswalks, continued.	 Review MaineDOT's Crosswalk Policy and explore alternative crosswalk enhancements within MaineDOT's Pedestrian Safety Toolbox once developed Consider raised tabletop crossings to slow and calm traffic on Minot Ave 		Long	MaineDOT City of Auburn ATRC	

(11)

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Lane reconfiguration / narrowing / rotary changes to slow traffic to improve pedestrian safety	 Consider a traffic analysis of these intersections Utilizing the <i>Lane Width and Shoulder Width Engineering Guidance</i> provided by MaineDOT (Appendix C), determine if lane widths can be narrowed to slow and calm traffic Assess feasibility of a 4-way intersection or a miniroundabout at the intersection of Minot Ave and the Rotary (Note that City of Auburn has planning documents suggesting a roundabout in this area.) 		Long	MaineDOT City of Auburn ATRC	

Site #3: Center Street Heading to the Mall



Figure 5: Site #3 - Center Street by Auburn Mall

NOTE: This area is designed with an almost highway-style geometry and as a result is not generally suitable for low cost short-term fixes of the type that this project is focusing on. Additional study and significant redesign is needed to raise the pedestrian level of service.

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Increase visibility of crosswalks	 Complete a field review and a safety assessment to determine appropriate ped safety alternatives (signage, locations, sight distance, Accessible Pedestrian Signal, lighting, etc.) Ensure that crosswalks are painted at least twice annually, with the first as early as possible in the spring Upgrade all crosswalks to have high visibility crosswalk markings Install signage alerting drivers of the presence of crosswalks. Evaluate the appropriateness of utilizing flexible delineators on the white edge line at crosswalks Evaluate the appropriateness of utilizing flexible delineators to create seasonal curb extensions to enhance visibility of and shorten crossings 		Short	MaineDOT City of Auburn ATRC	
Increase visibility of crosswalks	 Evaluate current lighting and consider upgrading 		Medium	MaineDOT City of Auburn ATRC	
Lane reconfiguration / narrowing to slow traffic to improve pedestrian safety	 Complete a traffic analysis of this roadway segment Determine if traffic volume and movements warrant existing lane configuration and number. Utilizing the <i>Lane Width and Shoulder Width Engineering Guidance</i> provided by MaineDOT (Appendix C), determine if lane widths can be narrowed to slow and calm traffic 		Medium	MaineDOT City of Auburn ATRC	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Improve safe pedestrian access to the Auburn Mall	Extend sidewalk to connect to crossing at Center St. (north of Bradman St) and the Auburn Mall entrance road off Center St.		Medium- Long	MaineDOT City of Auburn ATRC	
Increase visibility of crosswalks	 Consider raised tabletop crossings to slow and calm traffic on Center St Consider hardscaped curb extensions to slow traffic and shorten crossings 		Long	MaineDOT City of Auburn ATRC	

Site #4: Mount Auburn Ave at Mall / Turner St



Figure 6: Site #4 -Mount Auburn Ave / Turner St

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Increase visibility of crosswalks	 Complete a field review and a safety assessment to determine appropriate ped safety alternatives (signage, locations, sight distance, Accessible Pedestrian Signal, lighting, etc.) Ensure that crosswalks are painted at least twice annually, with the first as early as possible in the spring Upgrade all crosswalks to have high visibility crosswalk markings Install signage alerting drivers of the presence of crosswalks. Evaluate the appropriateness of utilizing flexible delineators on the white edge line at crosswalks 		Short	MaineDOT City of Auburn ATRC	
Increase visibility of crosswalks	 Evaluate current lighting and consider upgrading 		Medium	MaineDOT City of Auburn ATRC	
Add locations for safe crossing of Turner between Union St and Mt Auburn Ave	 Conduct a study to identify locations where crosswalk siting requirements are met Develop a plan to build new crossings with safe landings. Consider choke-downs/curb extensions with crosswalk and RRFB on Turner St at transit stops to increase conspicuity, slow traffic, and shorten crossing 		Medium -Long	MaineDOT City of Auburn ATRC	
Increase visibility of crosswalks	 Consider raised tabletop crossings to slow and calm traffic on Turner St 		Long	MaineDOT City of Auburn ATRC	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Improve safe pedestrian access on Turner St from Mt Auburn Ave to CMCC	 Consider building sidewalk on Turner St from Mt Auburn Ave to CMCC Study and plan for locations for crosswalks 		Long	MaineDOT City of Auburn ATRC	

Site #5: Veterans Memorial Bridge



Figure 7: Site #5 - Veterans Memorial Bridge

NOTE: This area is designed with a highway-style geometry and as a result is not generally suitable for low cost short-term fixes of the type that this project is focusing on. Additional study and significant redesign is needed to raise the pedestrian level of service.

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Lane change / narrowing to improve pedestrian access and safety	 Complete a traffic analysis of this roadway segment Determine if traffic volume and movements warrant existing lane configuration Utilizing the <i>Lane Width and Shoulder Width Engineering Guidance</i> provided by MaineDOT (Appendix C), determine if lane widths can be narrowed to slow and calm traffic and free up space for wider shoulders marked with a 6" stripe 		Medium	MaineDOT City of Auburn ATRC	
Incorporate bicycle and pedestrian facilities into the Veterans Memorial Bridge and surrounding area	 Identify needed bicycle and pedestrian facilities for this area Develop preliminary designs to incorporate these elements into a future bridge improvement project Develop preliminary designs to incorporate these elements into a future bridge replacement project Continue to advocate for needed bicycle and pedestrian improvements to the Veterans Memorial Bridge to the MaineDOT Bridge Program and MaineDOT Planners 		Long	MaineDOT City of Auburn ATRC	

Education

Education is an essential component of pedestrian safety. According to Countermeasures that Work, consistency and repetition in traffic safety educational efforts, coupled with real world practice, are critical for moving people from knowledge changes to behavioral changes, particularly with school-age populations. A need to better educate pedestrians and drivers on how to safely use the roads has been identified as a need in all 21 Focus Communities, including Auburn.

The most problematic pedestrian behaviors identified (by type) by Auburn residents at the Safer Walking forum held on June 6, 2018 were as follows:

- Most Problematic Pedestrian Behavior: Crossing at Unmarked Locations
- Most Problematic Motorist Behavior: Speeding

Because driver and pedestrian safety education is a statewide need, we have also provided general education recommendations to address these common needs. Specific education recommendations to address problem behaviors were suggestions from community members participating in the Safer Walking Forum.

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Get local schools more involved in free Safe Routes to School (SRTS) education programming offered by MaineDOT/ BCM	 Request information from the Bicycle Coalition of Maine (BCM) on the SRTS Program Municipal and school leadership meet to discuss the benefits of participation Request a BCM site visit to discuss participation in the program Schedule an introductory SRTS event at a local school Work to institutionalize traffic safety education as part of every student's education. 		Short	City of Auburn BCM Auburn School Department	

Recommendations for all 21 Focus Communities

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Provide <i>Lunch</i> and <i>Learns</i> to businesses, community organizations, and at public events to emphasize safe behavior	 Work with BCM and MaineDOT to identify priority messaging Develop a presentation outline for each priority message Identify and train potential facilitators Send informational materials on the Lunch and Learn Program to area businesses and community groups Contact potential groups to schedule an event 		Short	MaineDOT BCM City of Auburn	
Consider "point of use" educational resources that would help people follow best practices for pedestrian behavior (e.g. midblock stencils reading "Use the Crosswalk!" or signs for drivers saying "Respect our Neighborhood, Slow Down" etc.)	 Work with BCM and MaineDOT to identify priority messaging content Identify which messages should be developed first, how they should be delivered, and who the target audience will be Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Short	MaineDOT BCM City of Auburn	
Create walking school buses or "safety clubs" that also teach best practices to school children	 Request information from the Bicycle Coalition of Maine (BCM) on the Walking School Bus Program Municipal and school leadership meet to discuss the benefits of participation Request a BCM site visit to discuss participation in the program Schedule an introductory Walking School Bus event at a local school 		Medium	BCM City of Auburn Auburn School Department	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Create an educational campaign directed toward adults	 Work with BCM and MaineDOT to identify priority messaging content Identify which messages should be developed first, how they should be delivered, and who the target audience will be Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Medium	MaineDOT BCM City of Auburn	
Create a local social marketing campaign using fliers, conventional media, and social media to educate the community about driving safely around vulnerable users	 Work with BCM and MaineDOT to identify priority messaging content Identify which messages should be developed first, how they should be delivered, and who the target audience will be Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Medium	MaineDOT BCM City of Auburn	
Because 48% of all reported pedestrian crashes nationally involve drug and/or alcohol impairment of either the driver or the pedestrian, develop outreach materials and programs on the safety risks of impairment from drugs and alcohol use.	 Work with BCM and MaineDOT to identify priority messaging content Identify which messages should be developed first, how they should be delivered, and who the target audience will be Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Medium	MaineDOT BCM City of Auburn	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Current Party Status
Create a local social marketing campaign using fliers, conventional media, and social media to educate the community on strategies for biking and walking safely	 Work with BCM and MaineDOT to identify priority messaging content Identify which messages should be developed first, how they should be delivered, and who the target audience will be Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Medium	MaineDOT BCM City of Auburn
Develop and coordinate a "Walk & Bike Brightly" campaign	 Research existing Walk & Bike Brightly Campaigns including their strategies and content Meet with BCM to learn about what they are doing in other Maine Communities Work with BCM and MaineDOT to identify priority messaging content Identify potential target audiences and the potential delivery methods Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Medium	MaineDOT BCM City of Auburn
Create a "Push the Button" campaign for the use of Rectangular Rapid Flashing Beacons	 Work with BCM and MaineDOT to identify priority messaging content Identify the target audience, how the content should be delivered, and the distribution strategy Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Medium	MaineDOT BCM City of Auburn

Recommendations for Crossing at Unmarked Locations

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Get schools more involved in free SRTS education programming offered by MaineDOT/ BCM	 Identify which K-8 Schools in the municipality are not currently participating in SRTS Programming Request SRTS information and presentations from the Bicycle Coalition of Maine (BCM) Work with BCM and MaineDOT to identify prioritized program areas Share information and resources developed for the municipality during MaineDOT's Heads Up Project Identify potential target audiences and the potential delivery methods Identify local champions to help develop, implement, and promote the program Convene a meeting between municipal staff and key school staff (principal, resource officer, physical education, school board, etc.) for all schools serving children in grades K-8 to discuss the benefits of participation Invite BCM to provide a program overview and potential program activities during the meeting Schedule an introductory SRTS event at a local school 		Short	MaineDOT BCM City of Auburn Auburn School Department	
Distribute safety information along with highly reflective and actively lit materials at Lunch and Learns, community events, in schools, etc.	 Obtain highly reflective and actively lit pedestrian safety materials from MaineDOT and BCM Distribute safety information and materials at community events as appropriate, such as at Liberty Fest, the Great Falls Balloon Festival, neighborhood associations, car dealerships and other venues 		Short	MaineDOT BCM City of Auburn Auburn School Department	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Develop and provide presentations and resources to teach people about the safety benefits of safe crossing behaviors.	 Work with BCM and MaineDOT to identify priority messaging content, including developing presentations/resources for a "stop, look and wave" social marketing campaign Identify which messages should be developed first, how they should be delivered, and who the target audience will be Identify local champions to help develop, implement, and promote the program, such as the Auburn's Committee on Age-Friendly Community, Healthy Androscoggin or the Lewiston-Auburn Complete Streets Committee Build local energy and support for the program 		Short	MaineDOT BCM City of Auburn	
Use dynamic messaging boards to remind walkers to use reflective materials, to "stop, look and wave" before crossing and remind drivers to slow down and watch out for pedestrians and other vulnerable users	 Work with BCM and MaineDOT to identify priority messaging content Identify which messages should be developed first, how they should be delivered, and who the target audience will be Identify various high-visibility locations within the municipality where the signs can be safely located Consider "event based" targeted messaging such as for holidays and when school resumes Continue the city's deployment of the <i>Stop, Look, Wave</i> signs during warm weather months 		Short	MaineDOT BCM City of Auburn	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Create a local social marketing campaign using fliers, social and conventional media, plus dynamic messaging boards, about pedestrians using safe crossing behaviors, being visible, motorists slowing down and watching out for other users	 Work with BCM and MaineDOT to identify priority messaging content Identify which messages should be developed first, who the target audience will be, and which social media planform(s) to use to reach this audience submit regular column in the <i>Lewiston Sun Journal</i> newspaper consider using a popular mascot as a spokesperson for crosswalk safety Explore the benefits and added value of utilizing a social media consultant 		Medium	MaineDOT BCM City of Auburn	
Have police officers during warning stops distribute educational materials developed by the <i>Head's Up</i> <i>Pedestrian Safety</i> <i>Project</i>	 Work with BCM and MaineDOT to identify priority messaging content Identify which messages should be developed first, who the target audience will be, and under what situations the materials would be distributed Obtain highly reflective and actively lit pedestrian safety materials from MaineDOT and BCM Distribute select information and safety materials as appropriate Build local energy and support for the program 		Medium	MaineDOT BCM City of Auburn	
Provide ongoing education on the importance of safe street crossing behaviors.	 Work with BCM and MaineDOT to identify priority messaging content Identify potential target audiences and the potential delivery methods Identify which messages should be developed first and under what situations the materials would be distributed Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Long	MaineDOT BCM City of Auburn	

Recommendations for Speeding

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Teach people of their duty to obey the speed limit and be attentive to pedestrian safety at Lunch and Learns, community events, in schools, etc.	 Work with BCM and MaineDOT to identify priority messaging Develop a presentation outline for each priority message Identify and train potential facilitators Send informational materials on the Lunch and Learn Program to area businesses and community groups Contact potential groups to schedule an event, e.g. Auburn's Committee on Age-Friendly Community, Healthy Androscoggin, local neighborhood associations or the Lewiston-Auburn Complete Streets Committee, etc. 		Short	MaineDOT BCM City of Auburn	
Use dynamic messaging boards to remind drivers of their duty to obey the speed limit, be attentive and watch out for pedestrians and other vulnerable users	 Work with BCM and MaineDOT to identify priority messaging content Identify which messages should be developed first, how they should be delivered, and who the target audience will be Identify various high-visibility locations within the municipality where the signs can be safely located Consider "event based" targeted messaging such as for holidays, local events and when school resumes 		Short	MaineDOT BCM City of Auburn	
Create a local social marketing campaign using dynamic messaging boards, fliers, conventional media, and social media on the consequences of speeding	 Work with BCM and MaineDOT to identify priority messaging content Identify which messages should be developed first, how they should be delivered, and who the target audience will be Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Medium	MaineDOT BCM City of Auburn	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Provide ongoing education around speeding via road signs, ongoing educational campaigns at schools and worksites, etc.	 Work with BCM and MaineDOT to identify priority messaging content Identify potential target audiences and the potential delivery methods Identify which messages should be developed first and under what situations the materials would be distributed Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Long	MaineDOT BCM City of Auburn Auburn School Department	

Encouragement

The PL Jacobsen study published in the *Journal of Injury and Prevention* in 2003 concludes that where there are more people walking or bicycling, there are fewer crashes. This study, sometimes referred to as the "Safety in Numbers" study, suggests that encouragement activities to get more people walking (and biking) are important to promoting overall community safety, because the more people who are walking, the safer conditions become.

Encouragement activities can take many forms and may include not only programmatic efforts (e.g. Walking School Buses), but also activities in the realms of policy and the built environment. Indeed, they must go together - efforts to encourage people to walk in a built environment that is not supportive of pedestrian mobility are unlikely to change behavior.

Objectives	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Sponsor Walk to School and Walk to Work Days	 Request Walk to School / Walk to Work information from the Bicycle Coalition of Maine (BCM) Identify local champions to help develop, implement, and promote the program Share information and resources developed for the municipality during MaineDOT's Heads Up Project Convene a meeting of municipal staff and local champions to plan, schedule and deliver the event Schedule at least one event annually 		Short	City of Auburn Auburn School Department	
Develop an outreach campaign with presentations and resources to engage businesses celebrating the benefits of more foot and bike traffic	 Work with BCM and MaineDOT to identify priority messaging content Identify potential target audiences and the potential delivery methods Identify local champions to help develop, implement, and promote the program Build local energy and support for the program Deliver the program 		Short	MaineDOT BCM City of Auburn	

Recommendations for all 21 Focus Communities

Objectives	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Get local schools more involved with MaineDOT's `/ BCM's free Safe Routes to School Program and its encouragement activities	 Identify which K-8 Schools in the municipality are not currently participating in SRTS Programming Request SRTS information from the Bicycle Coalition of Maine (BCM) Work with BCM and MaineDOT to identify prioritized program areas Share information and resources developed for the municipality during MaineDOT's Heads Up Project Identify potential target audiences and the potential delivery methods Identify local champions to help develop, implement, and promote the program Convene a meeting between municipal staff and key school staff (principal, resource officer, physical education, school board, etc.) for all schools serving children in grades K-8 to discuss the benefits of participation Invite BCM to provide a program overview and potential program activities during the meeting Schedule an introductory SRTS event at a local school annually 		Short	MaineDOT BCM City of Auburn Auburn School Department	

Objectives	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Sponsor "People in the Streets" events where a local street is open only to pedestrians	 Request <i>People in the Streets</i> event information from the Bicycle Coalition of Maine (BCM) Identify local champions to help develop, implement, and promote the program Share information and resources developed for the municipality during MaineDOT's Heads Up Project Convene a meeting of municipal staff and local champions to plan, schedule and deliver the event annually 		Medium	BCM City of Auburn	
Create streetscapes that are more attractive and supportive of pedestrian use	 Budget for a streetscape improvement planning project Work with MaineDOT and BCM to identify potential locations and strategies to improve local streetscapes Hire a consultant to develop streetscape improvement plan Budget for the implementation of the recommendations developed during the streetscape improvement planning project Implement at least one of the recommendations developed during the streetscape improvement planning process. 		Long	MaineDOT BCM City of Auburn	

Enforcement

More enforcement of the laws governing the legal use of roads on the part of pedestrians and drivers has been identified as a need in all 21 Focus Communities, including Auburn.

According to the 2014 National Highway Transportation Safety Administration (NHTSA) publication Pedestrian Safety Enforcement Operations: A How to Guide), "Enforcement of pedestrian safety laws has typically been minimal, even though compliance with these laws is low." Increased enforcement activity may improve the behavior of both drivers and pedestrians.

Enforcement recommendations address common enforcement opportunities in all communities. Specific enforcement recommendations are community suggestions that address problem behaviors identified at the Safer Walking Forum.

The most problematic behaviors for pedestrians identified (by type) by Auburn residents at the Safer Walking forum held on June 6, 2018 were as follows:

- Most Problematic Pedestrian Behavior: Crossing at Unmarked Locations
- Most Problematic Motorist Behavior: Speeding

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Utilize Maine Bureau of Highway Safety (BHS) grant funding to enhance enforcement of distracted driving laws in support of vulnerable user safety	 Fully define the Distracted Driving problem within the local community and develop a local intervention strategy to address the issues Refine and clarify the program's goals and objectives Develop an implementation timeline Determine the municipality's strategy for evaluating the effectiveness of this intervention strategy Develop a budget for strategy implementation Apply annually for BHS Distracted Driving Grant Funding Update information as needed, but at least annually 		Short	City of Auburn Maine Bureau of Highway Safety	

Enforcement Recommendations for all 21 Focus Communities

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Utilize Maine Bureau of Highway Safety grant funding to enhance enforcement of bicycle and pedestrian laws	 Identify the problems/challenges and define why pedestrian crossing laws need additional enforcement within the local community Develop a local intervention strategy to address the issues Refine and clarify the program's goals and objectives Develop an implementation timeline Determine the municipality's strategy for evaluating the effectiveness of this intervention strategy Develop a budget for strategy implementation Apply annually for BHS Pedestrian Safety Grant Funding Update information as needed, but at least annually 		Short	City of Auburn Maine Bureau of Highway Safety	
Use dynamic messaging boards to remind drivers to put down their phones, slow down and watch out for pedestrians and other vulnerable users	 Work with BCM and MaineDOT to identify priority messaging content Identify potential target audiences and the potential delivery methods Identify local champions to help develop, implement, and promote the program Build local energy and support for the program 		Short	MaineDOT BCM City of Auburn	
Investigate all reports of aggressive or negligent motor vehicle operation	 Create and promote a process for community members to report concerns on motor vehicle operation Validate and prioritize all reports received Investigate all reports 		Short	City of Auburn	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Law enforcement will distribute appropriate state-wide resources developed by the <i>Heads Up</i> <i>Pedestrian Safety</i> <i>Project</i>	 Identify which resources developed by the community, MaineDOT, and/or BCM would be appropriate for law enforcement to distribute and under what circumstances Identify if the municipality would like to implement a seasonal or thematic calendar where specific issues are highlighted at different times of the year and develop if appropriate Develop a local policy that outlines the appropriate times and circumstances when it would be appropriate for an officer to distribute each resource item Ensure that adequate materials and resources are printed and available to every officer 		Short	City of Auburn	
Develop and distribute ongoing community specific resources appropriate for distribution by law enforcement	 Identify which community specific resources would be appropriate for law enforcement to distribute and under what circumstances Work with BCM and MaineDOT to identify community specific priority messaging content Identify which messages should be developed first, how they should be delivered, and who the target audience will be Identify if the municipality would like to implement a seasonal or thematic calendar where specific issues are highlighted at different times of the year and develop if appropriate Develop a local policy that outlines the appropriate times and circumstances when it would be appropriate for an officer to distribute each resource item Ensure that adequate materials and resources are printed and available to every officer 		Medium	MaineDOT BCM City of Auburn	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Make enforcement of laws protecting vulnerable users a departmental / municipal priority.	 Provide BCM vulnerable user inservice training to every member of the municipal police department Encourage officers to enforce vulnerable user laws through stops, citations, and warnings Ensure that all crashes involving pedestrians include detailed and specific crash information Ensure that vulnerable user laws are enforced across all user groups (bicyclists, pedestrians, drivers) Raise local awareness of the municipality's enhanced enforcement strategy through the local media, print, and social media outreach efforts 		Medium	BCM City of Auburn	

Enforcement Recommendations for Crossing at Unmarked Locations

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Improve Pedestrian VisibilityHave police officers provide reflective materials provided by the <i>Heads Up</i> <i>Pedestrian Safety</i> <i>Project</i> to persons walking after dark	 Identify which resources (reflective strips or slap-bands) would be appropriate for law enforcement to distribute and under what circumstances Develop a local policy that outlines the appropriate times and circumstances when it would be appropriate for an officer to distribute each resource item Request highly-reflective materials from MaineDOT Ensure that adequate materials and resources are available to every officer 		Short	City of Auburn MaineDOT	

Objectives*	Potential Actions	Priority	Time Frame	1	Current Status
Enforce Existing Pedestrian Laws	 Assign more officers to bike or foot patrol downtown to enable community policing and education Conduct enforcement operations targeting pedestrians who fail to yield to vehicular traffic at unmarked locations as required by state law 		Short	City of Auburn	
Encourage Use of Safe Crossing Locations.	 Identify locations of particular danger due to sight lines and speed and work to discourage crossing at such sites Conduct enforcement operations against drivers who fail to yield at marked crosswalks to build confidence in the relative safety of marked locations Consider studying high volume unmarked crossing locations for possible marked crosswalk installation 		Medium	MaineDOT City of Auburn	
Have police officers conduct community education sessions at schools and worksites on pedestrian safety, emphasizing the relative safety of marked locations	 Work with BCM and MaineDOT to identify priority messaging Develop a presentation outline for each priority message Identify and train officers to be potential facilitators Send informational materials on the program to area businesses, schools, and community groups Contact potential groups to schedule an event 		Medium	MaineDOT BCM City of Auburn	

Enforcement Recommendations for Speeding

Objectives	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Ensure departmental culture supports the belief that speeding is not considered a minor offense and encourages stricter enforcement	 Provide training that documents the increase in lethality of a motor vehicle traveling as little as 5 miles per hour over posted speed limits Provide training that encourages officers to not forgive drivers for speeding 		Short	BCM City of Auburn	
Conduct Regular Speed Enforcement Details	 Use BHS Grants and municipal funds to make speed enforcement a greater priority Use dynamic speed displays to encourage drivers to slow down Consider adopting a zero-tolerance policy of stopping cars going over the speed limit. Consider adopting a policy of stopping cars going more than 5 mph over the speed limit; above that and the lethality of crashes increases significantly 		Medium	City of Auburn Maine Bureau of Highway Safety	
Track all warnings and citations issued during traffic stops to identify chronic offenders	 Develop a local policy guiding the process for collecting and tracking all warnings and citations for failure to yield drivers Determine the local threshold for determining when a driver is classified as a "chronic offender" and what local actions will be taken Raise local awareness of the municipality's enhanced enforcement strategy through the local media, print, and social media outreach efforts 		Medium	City of Auburn	

Evaluation

Evaluation of the impact of the mitigation recommendations above can be measured most tangibly in reductions in the frequency and severity of pedestrian crashes.

Recommendations for all 21 Focus Communities

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Track the frequency, severity, and causal factors of pedestrian crashes city wide	 Utilize existing pedestrian crash data (MaineDOT and local) to identify locations, frequency, severity, and causal factors of all pedestrian crashes for the previous 5 years (2013-2018) Track the number, severity, and causal factors of all pedestrian cashes within the municipality Compare and evaluate all pedestrian crashes within the community with those experienced during the 2013-2018 5-year period Evaluate the frequency, severity and causal factors of pedestrian crashes at all locations prioritized by the community during the <i>Heads Up Pedestrian Safety Forums</i> Evaluate the frequency, severity and causal factors of pedestrian crashes at all locations with more than one pedestrian crash after January 1, 2018 Request MaineDOT and the Bicycle Coalition of Maine complete an updated Site Safety Review of all locations with multiple pedestrian crashes or recurrent causal factors 		Short	MaineDOT BCM City of Auburn	
Regularly administer Pedestrian Safety Surveys to community members to track safety knowledge and behaviors over time	 Work with BCM and MaineDOT to create an appropriate Pedestrian Safety Survey Instrument that will remain valid over time Determine desired survey delivery method, sample population, and survey frequency Administer survey Track responses and changes over time Based on survey results, determine what additional efforts may be needed 		Short	MaineDOT BCM City of Auburn	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Count the number of short-term measures identified in this report that are implemented	 The municipality will have partially met standard expectation by implementing (within 1 year of receiving this report) at least 1 short-term measure in at least half of all sections The municipality will have met the minimum standard expectation by implementing (within 1 year of receiving this report) at least 1 short-term measure per section The municipality will have exceeded the standard expectation by implementing (within 1 year of receiving this report) at least 2 short-term measures per section 		Short	City of Auburn	
Trend line reduction for the frequency and severity of pedestrian crashes city wide and at the locations prioritized by the community	 Utilize existing pedestrian crash data (MaineDOT and local) to identify locations, frequency, severity, and causal factors of all pedestrian crashes for the previous 5 years (2013-2018) Track the number, severity, and causal factors of all pedestrian cashes within the municipality Compare and evaluate all pedestrian crashes within the community with those experienced during the 2013-2018 5-year period Evaluate the frequency, severity and causal factors of pedestrian crashes at all locations prioritized by the community during the <i>Heads Up Pedestrian Safety Forums</i> Determine annually the community's 5-year trend line for all pedestrian crashes and for those at the locations prioritized by the community 		Medium	City of Auburn	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Count the number of medium-term measures identified in this report that are implemented	 The municipality will have partially met standard expectation by implementing (within 5 years of receiving this report) at least 1 medium-term measure in at least half of all sections The municipality will have met the minimum standard expectation by implementing (within 5 years of receiving this report) at least 1 medium-term measure per section The municipality will have exceeded the standard expectation by implementing (within 5 years of receiving this report) at least 2 medium-term measures per section 		Medium	City of Auburn	
Trend line reduction for the frequency and severity of pedestrian crashes city wide and at the locations prioritized by the community	 Utilize existing pedestrian crash data (MaineDOT and local) to identify locations, frequency, severity, and causal factors of all pedestrian crashes for the previous 5 years (2013-2018) Track the number, severity, and causal factors of all pedestrian cashes within the municipality Compare and evaluate all pedestrian crashes within the community with those experienced during the 2013-2018 5-year period Evaluate the frequency, severity and causal factors of pedestrian crashes at all locations prioritized by the community <i>Forums</i> Determine annually the community's 10-year trend line for all pedestrian crashes and for those at the locations prioritized by the community 		Long	City of Auburn	

Objectives*	Potential Actions	Priority	Time Frame	Responsible Party	Current Status
Count number of long-term measures identified in this report that are implemented	 The municipality will have partially met standard expectation by implementing (within 10 years of receiving this report) at least 1 long-term measure in at least half of all sections The municipality will have met the minimum standard expectation by implementing (within 10 years of receiving this report) at least 1 long-term measure per section The municipality will have exceeded the standard expectation by implementing (within 10 years of receiving this report) at least 2 long-term measures per section 		Long	City of Auburn	

Works Cited

Goodwin, A., Thomas, L., Kirley, B., Hall, W., O'Brien, N., & Hill, K. Countermeasures that Work: A Highway Safety Countermeasures Guide for State Highway Safety Offices, Eighth Edition 2015. (Report No. DOT HS 812 202). Washington, DC: National Highway Traffic Safety Administration.

PL Jacobsen. "Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling." Journal of Injury Prevention 2003;9:205–209.

NHTSA. Pedestrian Safety Enforcement Operations: A How to Guide (DOT HS 812 059 November 2014).