

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
A Policy on Geometric Design of Highways and Streets, 6th Edition	A Policy on Geometric Design of Highways and Streets, 6th Edition, 2011, commonly referred to as the "Green Book," contains the current design research and practices for highway and street geometric design. The document provides guidance to highway engineers and designers who strive to make unique design solutions that meet the needs of highway users while maintaining the integrity of the environment. It is also intended as a comprehensive reference manual to assist in administrative, planning, and educational efforts pertaining to design formulation. Design guidelines are included for freeways, arterials, collectors, and local roads, in both urban and rural locations, paralleling the functional classification used in highway planning. The book, similarly, is also organized into the following functional chapters to stress the relationship between highway design and function: Highway Functions, Design Controls and Criteria, Elements of Design, Cross-Section Elements, Local Roads and Streets, Collector Roads and Streets, Rural and Urban Arterials, Freeways, Intersections, and Grade Separations and Interchanges.	AASHTO	Guidance	2011	https://bookstore.transportation.org/collect_detail.aspx?ID=110	\$338.00	\$270.00	Member price of \$250 (hard copy) and \$200 (electronic)
A Review of Pedestrian Safety Research in the United States and Abroad	The purpose of this report is to provide an overview of research studies on pedestrian safety in the United States; some foreign research also is included. Readers will find details of pedestrian crash characteristics, measures of pedestrian exposure and hazard, and specific roadway features and their effects on pedestrian safety. Such features include crosswalks and alternative crossing treatments, signalization, signing, pedestrian refuge islands, provisions for pedestrians with disabilities, bus stop location, school crossing measures, reflectorization and conspicuity, grade-separated crossings, traffic-calming measures, and sidewalks and paths. Pedestrian educational and enforcement programs also are discussed. This report is an update resulting from two earlier reports. The most recent was Synthesis of Safety Research: Pedestrians, by C.V. Zegeer (FHWA-SA-91-034, Aug. 1991). The earlier work was Chapter 16, "Pedestrian Ways" by R.C. Pfefer, A. Sorton, J. Fegan, and M.J. Rosenbaum, which was published by the Federal Highway Administration (FHWA) in Synthesis of Safety Research Related to Traffic Control and Roadway Elements (from Volume 2, Dec. 1982). This updated report includes results from numerous studies, foreign and domestic. A review of pedestrian safety research from Australia, Canada, the Netherlands, Sweden, and the United Kingdom is given at: www.walkinginfo.org/rd/international.htm .	FHWA Sponsored Resources	Guidance	2004	http://www.fhwa.dot.gov/publications/research/safety/pedbike/03042/03042.pdf	n/a	Free	
Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts	Multimodal transportation networks provide access to jobs, education, health care, recreation, transit, and other essential services in urban, suburban, and rural areas throughout the United States. Interconnected pedestrian and bicycle infrastructure makes walking and bicycling a viable transportation choice for everyone and this contributes to the health, equity, and quality of life of our communities. This publication is a resource for practitioners seeking to build multimodal transportation networks. The publication highlights ways that planners and designers can apply the design flexibility found in current national design guidance to address common roadway design challenges and barriers. It focuses on reducing multimodal conflicts and achieving connected networks so that walking and bicycling are safe, comfortable, and attractive options for people of all ages and abilities. This resource includes 24 design topics, organized into two themes. The 12 design topics in Part 1 focus on design flexibility. The 12 topics in Part 2 focus on measures to reduce conflicts between modes. Each design topic is four pages in length and includes relevant case studies and references to appropriate design guidelines. This document covers a wide range of solutions to achieve multimodal transportation networks. It includes solutions for streets and intersections, and has information about shared use paths and other trails that can serve both transportation and recreation purposes. It includes information about crossing main streets, bridges and underpasses, and about interactions with freight and transit. This resource addresses common concerns and perceived barriers among planning and design professionals and provides specific information about flexible design treatments and approaches.	FHWA Sponsored Resources	Guidance	2016	http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/	n/a	Free	
Applying the Americans with Disabilities Act in Work Zones: A Practitioners Guide	A basic requirement of work zone traffic control, as provided in the Manual on Uniform Traffic Control Devices (MUTCD), is that the needs of pedestrians, including those with disabilities, must be addressed in temporary traffic control plans (TCPs) in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, Paragraph 35.130. The ADA is a Federal law that requires that pedestrians with physical and/or mental disabilities be accommodated not only in completed, publicly accessible facilities, but also during times of construction or improvement. This document provides State and local transportation agencies with strategies and technical guidance on how to design TCPs that address pedestrian access during construction, including the needs of those with disabilities. This document: describes the challenges faced by disabled pedestrians; outlines considerations to planning and designing strategies to manage pedestrians in a work zone; and provides examples to further assist practitioners in setting up work zones and making them safe for all pedestrians.	FHWA Sponsored Resources	Guidance	2012	https://www.workzonesafety.org/training-resources/fhwa_wz_grant/atsa_ada_guide/	n/a	free	
Bicycle Facility Design	COURSE DESCRIPTION: This training will assist planners and designers in learning how to apply the existing standards and how to deal with other technical issues involved. The availability of Federal, State, and local transportation funding for bicycle facilities that serve transportation and recreational users is resulting in a dramatic increase in the number of bicycling (and shared use) facilities being planned and built. Although there are no Federal design standards for bicycle facilities, the AASHTO Guide for the Development of Bicycle Facilities, or a modification thereof, serves as a design guide. As with most guides, the AASHTO guide cannot address every possible scenario so designers often need to apply engineering judgment where specific information is not provided. The training fee includes a copy of the AASHTO Guide for the Development of Bicycle Facilities. OUTCOMES: Upon completion of the course, participants will be able to: List the needs of bicyclists as transportation facility users; Identify common roadway and traffic conditions that affect bicyclists; Describe the characteristics of a roadway and a shared-use path that are designed to accommodate bicyclists; List the benefits to the transportation system of accommodating bicyclists with different abilities; Recognize opportunities to accommodate bicyclists during the planning, design, construction, and operational phases of a project. TARGET AUDIENCE: Federal, State, or local engineers with planning, design, construction, or maintenance responsibilities; bicycle specialists, transportation planners, landscape architects, as well as decisionmakers at the project planning level.	NHI	Information	2013	http://www.nhi.fhwa.dot.gov/training/course_search.aspx?tab=0&key=bicycle&sf=0&course_no=142046	n/a	n/a	Enrollment cost per person: \$700

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Bicycle Road Safety Audit Guidelines and Prompts Lists	Road Safety Audits (RSAs) are a formal safety examination of an existing or future roadway or off-road facility and are conducted by an independent, experienced, multidisciplinary team. The purpose of the Bicycle Road Safety Audit Guidelines and Prompt Lists is to provide transportation agencies and RSA teams with a better understanding of the safety of cyclists in the transportation system when conducting an RSA. These Guidelines present the RSA team with an overview of basic principles of the safety of cyclists and potential issues affecting cyclists. They also provide information on how to conduct an RSA and effectively assess the safety of cyclists. Prompt lists describe safety considerations when conducting a cyclist-specific RSA. These Guidelines will help RSA teams evaluate and suggest a multimodal approach to safety by improving the safety of cyclists and all roadway users.	FHWA Sponsored Resources	Safety Assess	2012	http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwas_a12018/	Free	Free	Hard copies can be requested here: http://safety.fhwa.dot.gov/ped_bike/ped_bike_order/
Bicycle Safer Journey	Bicycle Safer Journey helps educators, parents and others who care about bicycle safety to get the conversation started with children and youth. Three videos — one for each of three age groups — accompanied by a quiz or discussion and an educator's resource library can be used as an introduction to bicycle safety skills or to augment a comprehensive curriculum.	FHWA Sponsored Resources	Information	2017	http://www.pedbikeinfo.org/bicyclesaferjourney/	n/a	Free	
Bicycle Safety Guide and Countermeasure Selection System (BIKESAFE)	The Bicycle Safety Guide and Countermeasure Selection System is intended to provide practitioners with the latest information available for improving the safety and mobility of those who bike. The online tools provide the user with a list of possible engineering, education, or enforcement treatments to improve bicycle safety and/or mobility based on user input about a specific location.	FHWA Sponsored Resources	Guidance	2014	http://pedbikeinfo.org/BIKESAFE	n/a	Free	
Bicycling and Walking in the United States 2014 Benchmarking Report	This is the fourth biennial Benchmarking Project which began in 2003. Researchers analyzed data from the 50 States and from 50 large and 17 small and mid-sized U.S. cities to document trends in bicycling and walking. This report uses case studies from around the world to illustrate efforts taken to support bicycling and walking. Chapter topics include: mode share, public health, safety, policies and funding, infrastructure, multimodal, programs, and personnel.	CDC Funded Resource	Information	2014	http://www.bikewalkalliance.org/download-the-2014-benchmarking-report	\$39.95	Free	Member price 34.95
Bicycling and Walking in the United States 2016 Benchmarking Report	This is the fifth biennial Benchmarking Project which began in 2003. Researchers analyzed data from the 50 States and from 50 large and 18 small and mid-sized U.S. cities to document trends in bicycling and walking. This report uses case studies from around the U.S. to illustrate efforts taken to support bicycling and walking. This 2016 edition has been reformatted from previous editions. The report starts with a review of research showing the impact of biking and walking projects, next, state and city level statistics are presented, and finally, a tool box section provides resources for readers to collect and compare data on bicycling and walking in their area. Topics include: active transportation and health, safety, economic impacts, infrastructure, legislation and regulation, funding, and public opinion.	CDC Funded Resource	Information	2016	http://www.bikewalkalliance.org/resources/benchmarking	\$39.95	Free	Member price 34.95
Bikeability Checklist	The Bikeability Checklist (undated), produced by the National Highway Traffic Safety Administration, the Pedestrian and Bicycle Information Center, and the U.S. Department of Transportation, allows community members to rate the safety and efficiency of using a bicycle to get around. A user can review the questions on the checklist, then take a ride in the community to shops, work, or a friend's house. Upon returning from the ride, the user can answer the questions listed in the checklist. The checklist also includes suggestions for making a community safer for bicycling. These suggestions are organized based on the categories covered in the checklist and divided into actions that can improve conditions immediately and those that will take more time. The checklist also includes an extensive resources section.	FHWA Sponsored Resources	Information	2014	http://www.pedbikeinfo.org/pdf/bikeability_checklist.pdf	n/a	Free	
Bikesharing and Bicycle Safety	The growth of bikesharing in the United States has had a transformative impact on urban transportation. Major cities have established large bikesharing systems, including Boston, Chicago, Denver, Minneapolis-Saint Paul, New York City, Salt Lake City, the San Francisco Bay Area, Seattle, Washington DC, and others. These systems began operating as early as 2010, and no fatalities have occurred within the US as of this writing. However, three have happened in North America—two in Canada and one in Mexico. Bikesharing has some qualities that appear inherently unsafe for bicyclists. Most prominently, helmet usage is documented to be quite low in most regions. In addition, bikesharing is also used by people who bicycle less frequently, and by tourists, who are often less familiar with the local terrain. In this study, researchers take a closer look at bikesharing safety from qualitative and quantitative perspectives. Through a series of four focus groups, they discussed bikesharing usage and safety with bikesharing members and nonmembers in the Bay Area. They further engaged experts nationwide from a variety of fields to evaluate their opinions and perspectives on bikesharing and safety. Finally, researchers conducted an analysis of bicycle and bikesharing activity data, as well as bicycle and bikesharing collisions to evaluate injury rates associated with bikesharing when compared with benchmarks of personal bicycling. The data analysis found that collision and injury rates for bikesharing are lower than previously computed rates for personal bicycling. Experts and focus group participants independently pointed to bikesharing rider behavior and bikesharing bicycle design as possible factors. In particular, bikesharing bicycles are generally designed in ways that promote stability and limited speeds, which mitigate the conditions that contribute to collisions. Data analysis also explored whether there was evidence of a "safety in numbers benefit" that resulted from bikesharing activity. However, no significant impact from bikesharing activity on broader bicycle collisions could be found within the regions in which they operate. Discussion and recommendations are presented in the conclusion.	University Transportation Center	Information	2016	http://transweb.sjsu.edu/PDFs/research/1204-bikesharing-and-bicycle-safety.pdf	n/a	free	

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Capacity Analysis of Pedestrian and Bicycle Facilities Recommended Procedures for the "Bicycles" Chapter of the Highway Capacity Manual	The objective of this project was to develop revised operational analysis procedures for transportation facilities with pedestrian and bicyclist users. This document contains both new and revised procedures for analyzing various types of exclusive and mixed-use bicycle facilities. These procedures are recommended to determine the level of service for bicycle facilities on the basis of previous domestic and international bicycle operations research conducted to date. This document only addresses procedures for streets, roads, and intersections with designated bicycle facilities. In addition to this report, there were two additional reports produced as part of this effort on Capacity Analysis of Pedestrian and Bicycle Facilities.	FHWA Sponsored Resources	Information	1998	http://www.fhwa.dot.gov/publications/research/safety/pedbike/98108/	n/a	Free	
Capacity Analysis of Pedestrian and Bicycle Facilities Recommended Procedures for the "Pedestrians" Chapter of the Highway Capacity Manual	The objective of this project is to develop revised operational analysis procedures for transportation facilities with pedestrian and bicyclist users. This document describes the effects of pedestrians and bicyclists on the capacity of signalized intersections. These procedures augment the existing Highway Capacity Manual signalized intersection Level of Service procedures for locations with substantial pedestrian and/or bicycle traffic conflicting with vehicular turning movements. This document incorporates the results of a multi-regional data-collection effort that confirms the validity of a conflict zone occupancy approach to analyze pedestrian and bicycle effects on signalized intersection capacity. In addition to this report, there were two additional reports produced as part of this effort on Capacity Analysis of Pedestrian and Bicycle Facilities. These reports are subtitled as: Recommended Procedures for the "Bicycles" Chapter of the Highway Capacity Manual (FHWA-RD-98-108) Recommended Procedures for the "Signalized Intersection" Chapter of the Highway Capacity Manual (FHWA-RD-98-106)	FHWA Sponsored Resources	Information	1998	https://www.fhwa.dot.gov/publications/research/safety/pedbike/98107/	n/a	Free	
Capacity Analysis of Pedestrian and Bicycle Facilities Recommended Procedures for the "Signalized Intersections" Chapter of the Highway Capacity Manual	The objective of this project is to develop revised operational analysis procedures for transportation facilities with pedestrian and bicyclist users. This document describes the effects of pedestrians and bicyclists on the capacity of signalized intersections. These procedures augment the existing Highway Capacity Manual signalized intersection Level of Service procedures for locations with substantial pedestrian and/or bicycle traffic conflicting with vehicular turning movements. This document incorporates the results of a multi-regional data-collection effort that confirms the validity of a conflict zone occupancy approach to analyze pedestrian and bicycle effects on signalized intersection capacity. In addition to this report, there were two additional reports produced as part of this effort on Capacity Analysis of Pedestrian and Bicycle Facilities. These reports are subtitled as: Recommended Procedures for the "Bicycles" Chapter of the Highway Capacity Manual (FHWA-RD-98-108) Recommended Procedures for the "Signalized Intersection" Chapter of the Highway Capacity Manual (FHWA-RD-98-106)	FHWA Sponsored Resources	Guidance	1998	http://www.fhwa.dot.gov/publications/research/safety/pedbike/98106/index.cfm	n/a	Free	
Case Studies in Delivering Safe Comfortable and Connected Pedestrian and Bicycle Networks	To better understand the different ways in which communities are improving their pedestrian and bicycle networks, Federal Highway Administration (FHWA) Division Offices gathered and compiled examples of pedestrian and bicycle network improvement projects initiated by state departments of transportation (DOTs), metropolitan planning organizations (MPOs), counties, cities, and other local entities. The effort identified a total of 86 projects from all States, the District of Columbia, and Puerto Rico, each of which highlighted a project that was intended to improve the transportation network for pedestrians and bicyclists. The network examples were used to develop brief case studies of successful projects. Examples were identified, evaluated, and categorized into several key project types, including: Planning and Prioritization, Shared Use Paths, Corridor Improvements, Bridges, On-Road Facilities, and Intersections and Crossing Improvements. The examples provide agencies with ideas about how they can improve networks for pedestrians and bicyclists and will serve as a source of inspiration for communities who are interested in making network improvements.	FHWA Sponsored Resources	Information	2016	http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/network_report/	n/a	Free	
Characteristics of Emerging Road and Trail Users and Their Safety	This study was undertaken to clarify the operational characteristics of an increasingly diverse group of trail and other nonmotorized transportation users. Three "Ride for Science" data collection events were conducted to obtain the physical dimensions, turning capabilities, lateral operating space, acceleration, speed, and stopping sight distance of trail users. The results confirmed the great diversity in the operating characteristics of various road and trail user types. Some examples of findings include: Sweep Width - The 85th percentile inline skater had a 1.5-m (4.9-ft) sweep width, wider than the AASHTO recommended width for bike lanes; Design Speed - Recumbent bicyclists had the highest observed 85th percentile speeds of 29 km/h (18 mph), less than AASHTO's minimum design speed; Horizontal Alignment - Most users did not reduce their speeds for turning radii greater than 16 m (52.5 ft); Stopping Sight Distance - A recumbent cyclist in the 85th percentile requires a stopping sight distance of 32.7 m (107.3 ft) on wet pavement, less than the AASHTO value; Signal Clearance Intervals - Five-second clearance intervals would provide insufficient time for most users (85th percentile users) to clear a five-lane [18.3-m (60-ft) wide] intersection; and Characteristics of Segway® Users - Many characteristics of Segway users were comparable with those of other emerging trail users. These findings suggest that design guidelines may need to be revised to incorporate the needs of emerging trail users. The results of this study can be used to help design professionals adequately design roadway and shared use path facilities to meet the operational and safety needs of this growing group of users.	FHWA Sponsored Resources	Information	2004	http://www.fhwa.dot.gov/publications/research/safety/04103/index.cfm	n/a	Free	

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Checklist for accommodating pedestrians in temporary traffic control areas	The need to provide improved consistency and quality of pedestrian traffic control devices has become more important with the implementation of the Americans with Disabilities Act of 1990 (ADA), which was passed to eliminate barriers to employment, transportation, public accommodations, public services, and telecommunications. The ADA requires that pedestrians with physical and/or mental disabilities be accommodated not only in completed facilities, but also during times of construction. The Texas Department of Transportation sponsored a project to investigate methods for accommodating pedestrians in work zones that meet the evolving requirements being developed as a result of the ADA. This checklist document was developed to assist in considering pedestrians within the public right-of-way. Advice on pedestrians is contained in several locations – this document groups the advice to reflect the different stages of a project. The four stages used within the checklist are: Stage 1. Feasibility; Stage 2. Project Assessment; Stage 3. Temporary Traffic Control Plan Development; Stage 4. Construction In-Field Review. The checklist provides topics and issues to be considered within each stage. It also provides examples or discussion for these topics. After the user gains familiarity with the checklists, the examples and discussions are not needed. Therefore, the Appendix provides a summary of the key topics to consider when using the checklist.	FHWA Sponsored Resources	Guidance	2007	http://d2dtl5nlpfr0r.cloudfront.net/tti.tamu.edu/documents/0-5237-P1.pdf	n/a	free	
Crash Modification Factors Clearinghouse	A crash modification factor (CMF) is a multiplicative factor used to compute the expected number of crashes after implementing a given countermeasure at a specific site. The Crash Modification Factors Clearinghouse houses a Web-based database of CMFs along with supporting documentation to help transportation engineers identify the most appropriate countermeasure for their safety needs. Using this site, you can search to find CMFs or submit your own CMFs to be included in the clearinghouse.	FHWA Sponsored Resources	Information	2017	http://www.cmfclearinghouse.org/	n/a	Free	
Crash-Type Manual for Bicyclists	Approximately one out of six highway fatalities in the United States is a bicyclist or pedestrian each year. Estimates for 1995 indicate that 61,000 bicyclists were injured and 830 were killed in traffic crashes. These crashes can be classified or "typed" by their precipitating actions, predisposing factors, and characteristic populations and/or location that can be targeted for intervention. The information provided in the following guide is the result of a Federal Highway Administration (FHWA) research study that applied the basic National Highway Traffic Safety Administration (NHTSA) bicycle and pedestrian typologies to a sample of bicycle- and pedestrian-motor vehicle crashes from six States with the purpose of refining and updating the crash type distributions. Particular attention was given to roadway and locational factors in order to identify situations where engineering, educational, and/or regulatory countermeasures might be effectively implemented to reduce the frequency of the crashes. This informational guide should be of interest to State and local bicycle and pedestrian coordinators, transportation planners, and transportation engineers involved in safety and risk management. Other interested parties include those in education, enforcement, and the medical profession.	FHWA Sponsored Resources	Guidance	1996	https://www.fhwa.dot.gov/publications/research/safety/pedbike/96104/	n/a	Free	
Crash-Type Manual for Pedestrians	Bicyclists or pedestrians are involved in approximately one out of six highway fatalities each year. This research was conducted in order to better understand the precipitating actions, predisposing factors and characteristic populations involved. Some of the factors reviewed include: walking into vehicle intersection, driver violations, midblock dart out, suicides, domestic/dispute related, backing vehicles, walking alone, exiting/entering parked vehicle, vehicle turn/merge and assaults with vehicles. A greater understanding of the causes could help to identify situations where better engineering, increased public awareness and the enactment of regulatory countermeasures could help reduce the number of injuries and fatalities.	FHWA Sponsored Resources	Information	1996	http://ntl.bts.gov/lib/10000/10300/10391/into1.pdf	n/a	Free	
Creating Healthier Generations - A Look at the 10 Years of the Federal Safe Routes to School Program	In August 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was passed. The law included a new Federal Safe Routes to School (SRTS) Program which had the ambitious goal to improve the ability of primary and middle school students to walk and bicycle to school safely. This report examines the accomplishments of the Federal SRTS Program over the 10-year period since it was enacted. The Federal SRTS Program provided the Federal Highway Administration (FHWA) with over \$1 billion in dedicated funding for implementation through State departments of transportation (DOTs). In July 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) was enacted. Under MAP-21, SRTS activities were eligible to compete for funding alongside other eligible activities under the Transportation Alternatives Program (TAP). TAP funding was apportioned to State DOTs and urbanized areas with populations over 200,000.	FHWA Sponsored Resources	Information	2015	http://www.fhwa.dot.gov/environment/safe_routes_to_school/resources/ten_year_report/index.cfm	n/a	Free	
Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks: A Review of International Practices	The purpose of this study was to identify noteworthy and innovative international designs, treatments, and other practices that have potential to improve bicycle and pedestrian safety and access and increase walking and bicycling in the United States. This report covers treatments and practices from a total of 11 countries, covering six thematic areas: (1) network infrastructure, (2) limited auto traffic areas, (3) signalization, traffic control, and intelligent transport systems, (4) policy change, (5) criteria or methods for prioritizing improvements, and (6) goals and network performance measures. A number of treatments and practices appear to have significant potential to help improve bicycle and pedestrian network safety, comfort, and connectivity in the U.S. Additional study and actions are needed to better understand, test, and refine the most promising designs and practices for use by U.S. jurisdictions.	FHWA Sponsored Resources	Guidance	2015	http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/global_benchmarking/page00.cfm	n/a	Free	

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Designing for Pedestrian Safety	<p>COURSE DESCRIPTION: The Designing for Pedestrian Safety course is intended to help state and local transportation engineering professionals address pedestrian safety issues through design and engineering solutions. The training course includes a field exercise in the application of the principles, concepts, and strategies covered in the course. Also the participants will share and prioritize potential policies, programs, and strategies.</p> <p>OUTCOMES: Upon completion of the course, participants will be able to: Describe the influence of planning factors: land use, street connectivity, access management, site design, and level of service; Describe how pedestrians should be considered and provided for during the planning, design, work zone, maintenance, and operations phases; Describe how human behavior affects the interaction between pedestrians and drivers; Identify good practices and effective solutions to enhance pedestrian safety and accessibility.</p> <p>TARGET AUDIENCE: This course is intended primarily for state DOT staff involved with the Highway Safety Improvement Program, and for FHWA Safety Specialists. These specialists shall include: Engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers who have the responsibility of improving pedestrian safety at the state or local level.</p>	NHI	Information	2009	http://www.nhi.fhwa.dot.gov/training/course_search.aspx?tab=0&key=380089&course_no=380089&res=1	n/a	n/a	Enrollment cost per person: \$450
Designing Walkable Urban Thoroughfares (with CNU)	<p>The ITE Recommended Practice, Designing Walkable Urban Thoroughfares: A Context Sensitive Approach, advances the successful use of context sensitive solutions (CSS) in the planning and design of major urban thoroughfares for walkable communities. It provides guidance and demonstrates for practitioners how CSS concepts and principles may be applied in roadway improvement projects that are consistent with their physical settings. The report's chapters are focused on applying the principles of CSS in transportation planning and in the design of roadway improvement projects in places where community objectives support walkable communities-compact development, mixed land uses and support for pedestrians and bicyclists, whether it already exists or is a goal for the future.</p> <p>This document was produced in cooperation with the Federal Highway Administration, the Environmental Protection Agency and in partnership with the Congress for the New Urbanism.</p>	ITE	Guidance	2010	http://www.ite.org/css/	\$37.50	Free	Member price of \$30
Developing a Pedestrian Safety Action Plan	<p>COURSE DESCRIPTION: The Developing a Pedestrian Safety Action Plan course is designed to help state and local officials learn "HOW TO" address pedestrian safety issues in the development of a pedestrian safety action plan, program, and activities tailored to their community. It is also intended to assist agencies in the further enhancement of their existing pedestrian safety plan, programs, and activities, including involving partners and stakeholders, collecting and analyzing data and information, prioritizing issues and concerns, selecting and implementing an optimal combination of education, enforcement, engineering strategies. The training course includes a field exercise in the application of the principles, concepts, and strategies covered in the course. Also the participants will share and prioritize potential policies, programs, and strategies.</p> <p>OUTCOMES: Upon completion of the course, participants will be able to: Develop and implement a Pedestrian Safety Action Plan addressing your specific issues, problems, needs and resources; Describe how pedestrians should be considered and provided for during the planning, design, work zone, maintenance, and operations phases; Describe how human behavior affects the interaction between pedestrians and drivers; Identify good practices and effective solutions to enhance pedestrian safety and accessibility.</p> <p>TARGET AUDIENCE: This course is intended primarily for state DOT staff involved with the Highway Safety Improvement Program, and for FHWA Safety Specialists. These specialists shall include: Engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers who have the responsibility of improving pedestrian safety at the state or local level.</p>	NHI	Information	2009	http://www.nhi.fhwa.dot.gov/training/course_search.aspx?tab=0&key=380090&course_no=380090&res=1	n/a	n/a	Enrollment cost per person: \$450
Developing Safety Plans: a Manual for Local Road Owners	<p>Local road practitioners across the country play a critical role in addressing crash risks at the local level and may be able to identify the specific or unique conditions that contribute to crashes within their jurisdictions. The Local Road Safety Plan (LRSP) offers a foundation for consensus and focus. It defines key emphasis areas and strategies that impact local rural roads and provides a framework to accomplish safety enhancements at the local level. The LRSP helps communities take a proactive stance in reducing and preventing local road fatalities and injuries. This document guides the development of an LRSP.</p>	FHWA Sponsored Resources	Guidance	2012	http://safety.fhwa.dot.gov/local_rural/training/fhwasa12017/	n/a	Free	
Engineering Speed Management Countermeasures: A Desktop Reference of Potential Effectiveness in Reducing Crashes	<p>"This chart summarizes studies about the effectiveness of engineering countermeasures. Studies where an increase in crashes were reported are also shown since this information is also relevant in selection of countermeasures."</p>	FHWA Sponsored Resources	Guidance	2014	http://safety.fhwa.dot.gov/speedmgmt/reference/eng_count/2014/reducing_crashes.cfm	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Evaluation of Low Cost Traffic Calming for Rural Communities – Phase II	<p>The main goal of the research described in this report was to evaluate countermeasures that agencies can use to reduce speeds as drivers enter rural communities located on high-speed roadways. The objectives of this study were as follows: Identify and summarize countermeasures used to manage speeds in transition zones; Demonstrate the effectiveness of countermeasures that are practical for high- to low-speed transition zones; Acquire additional information about countermeasures that may show promise but lack sufficient evidence of effectiveness; Develop an application toolbox to assist small communities in selecting appropriate transition zones and effective countermeasures for entrances to small rural communities.</p> <p>The team solicited small communities that were interested in participating in the Phase II study and several communities were also recommended. The treatments evaluated were selected by carefully considering traffic-calming treatments that have been used effectively in other countries for small rural communities, as well as the information gained from the first phase of the project. The treatments evaluated are as follows: Transverse speed bars; Colored entrance treatment; Temporary island; Radar-activated speed limit sign; Speed feedback sign.</p> <p>The toolbox publication and four focused tech briefs also cover the results of this work.</p>	FHWA Sponsored Resources	Information	2013	http://www.inttrans.iastate.edu/research/documents/research-reports/updated_rural_traffic_calming_w_cvr2.pdf	n/a	Free	
Evaluation of Safety, Design, and Operation of Shared-Use Paths	<p>Shared-use paths are becoming increasingly busy in many places in the United States. Path designers and operators need guidance on how wide to make new or rebuilt paths, and on whether to separate the different types of users. The current guidance is not very specific; it has not been calibrated to conditions in the United States, and does not accommodate the range of modes found on a typical U.S. path. The purpose of this project was to develop a level of service (LOS) estimation method for shared-use paths that overcomes these limitations. The research included the development of the theory of traffic flow on a path, an extensive effort to collect data on path operations, and a survey through which path users expressed their degree of satisfaction with the paths shown in a series of videos. Based on the theory developed and the data collected, the researchers developed an LOS estimation method for bicyclists that requires minimal input and produces a simple and useful result. Factors involved in the estimation of an LOS for a path include the number of times a typical bicyclist meets or passes another path user, the number of those passings that are delayed, the path width, and whether the path has a centerline. The method considers four other types of path users besides the adult bicyclists for whom the LOS is calculated—pedestrians, joggers, child bicyclists, and skaters. This report documents the research conducted during the project. Other products of the effort include Report No. FHWA-HRT-05-138, Shared-Use Path Level of Service Calculator: A User's Guide (for the LOS procedure and the spreadsheet calculation tool); and a TechBrief, Publication No. FHWA-HRT-05-139, Evaluation of Safety, Design, and Operation of Shared-Use Paths.</p>	FHWA Sponsored Resources	Information	2006	https://www.fhwa.dot.gov/publications/research/safety/pedbike/05137	n/a	Free	
Everyone Walks	<p>In January 2015 the Governors Highway Safety Association (GHSA) surveyed 40 State Highway Offices on their pedestrian safety programs, laws, and policies. This document presents State measures addressing pedestrian safety, distraction, educating roadway users, enforcing laws, and funding. Included in this report are 21 key points for States to consider when developing pedestrian policies.</p>	Governors Highway Safety Association	Information	2015	http://www.ghsa.org/html/publications/sfped.html	n/a	Free	
Factors Contributing to Pedestrian and Bicycle Crashes on Rural Highways	<p>The goals of this study were to examine the differences between pedestrian and bicycle crashes in urban and rural settings in North Carolina and to identify problem areas (specific crash types and crash locations) on rural highways that are of high priority for safety treatment and treatment development.</p>	FHWA Sponsored Resources	Information	2011	https://www.fhwa.dot.gov/publications/research/safety/10052/10052.pdf	n/a	Free	
Fatality Analysis Reporting System (FARS) Encyclopedia		NHTSA Sponsored Resource	Information	2017	http://www-fars.nhtsa.dot.gov/Main/index.aspx	n/a	Free	
FHWA Course on Bicycle and Pedestrian Transportation	<p>This Student Workbook contains 24 lessons of resource material that is intended for use in university courses on bicycle and pedestrian transportation. The lessons span a wide range of topics including an introduction to bicycling and walking issues, planning and designing for bicycle and pedestrian facilities, and supporting elements and programs. This is the second edition of the Student Workbook; the first edition was published as Report No. FHWA-RD-99-198.</p> <p>Lesson-based slideshows (scripted slideshows for all 24 lessons) and an overview lecture (a scripted slideshow for a one- or two-lecture overview in existing undergraduate or graduate transportation courses) are also available to assist in course development and delivery. The key learning outcomes in the course material are as follows:</p> <ul style="list-style-type: none"> • Students should recognize the legitimacy of the bicycle and pedestrian modes in a balanced transportation system. • Students should understand how policy, planning, and engineering practices can be improved to create a more balanced transportation system. • Students should be familiar with basic policies, practices, tools, and design principles and know how to use them to create bicycle and pedestrian-friendly communities. 	FHWA Sponsored Resources	Information	2006	http://www.fhwa.dot.gov/publications/research/safety/pedbike/05085/	n/a	Free	
FHWA Pedestrian Forum	FHWA Newsletter on pedestrian safety	FHWA Sponsored Resources	Information	2017	http://safety.fhwa.dot.gov/ped_bike/ped_forum/	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
FHWA Planning it Safe	FHWA Newsletter on transportation safety	FHWA Sponsored Resources	Information	2012	http://www.fhwa.dot.gov/planning/transportation_safety_planning/publications/newsletter/	n/a	Free	
Final Detailed Findings Report for Marketing Plan and Outreach Materials that Promote Pedestrian and Bicyclist Safety to Different Hispanic Populations in the United States	According to a 2004 report by the Center for Applied Research and The Media Network, an average of 545 Hispanic pedestrians and 79 Hispanic bicyclists are killed in crashes with motor vehicles every year. These numbers are likely to increase as the Hispanic population in the U.S. continues to increase. There is a clear need to include Hispanics as part of the target audience in any pedestrian/bicycle safety education program. With that need in mind, the Federal Highway Administration sponsored this project, "Marketing Plan and Outreach Materials that Promote Pedestrian and Bicyclist Safety to Different Hispanic Populations in the United States".	FHWA Sponsored Resources	Information	2005	http://safety.fhwa.dot.gov/ped_bike/hispanic/	n/a	Free	
Guide for Maintaining Pedestrian Facilities for Enhanced Safety	A Guide for Maintaining Pedestrian Facilities for Enhanced Safety provides guidance for maintaining pedestrian facilities with the primary goal of increasing safety and mobility. The Guide addresses the needs for pedestrian facility maintenance; common maintenance issues; inspection, accessibility, and compliance; maintenance measurers; funding; and construction techniques to reduce future maintenance.	FHWA Sponsored Resources	Guidance	2013	http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwa13037/	Free	Free	Hard copies can be requested here: http://safety.fhwa.dot.gov/ped_bike/ped_bike_order/
Guide for Maintaining Pedestrian Facilities for Enhanced Safety Research Report	A Guide for Maintaining Pedestrian Facilities for Enhanced Safety provides guidance for maintaining pedestrian facilities with the primary goal of increasing safety and mobility. The Guide addresses the needs for pedestrian facility maintenance; common maintenance issues; inspection, accessibility, and compliance; maintenance measurers; funding; and construction techniques to reduce future maintenance.	FHWA Sponsored Resources	Guidance	2013	http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwa13037/research_report/	n/a	Free	
Guide for the Development of Bicycle Facilities, 4th Edition	This guide provides information on how to accommodate bicycle travel and operations in most riding environments. It is intended to present sound guidelines that result in facilities that meet the needs of bicyclists and other highway users. Sufficient flexibility is permitted to encourage designs that are sensitive to local context and incorporate the needs of bicyclists, pedestrians, and motorists. However, in some sections of this guide, suggested minimum dimensions are provided. These are recommended only where further deviation from desirable values could increase crash frequency or severity. This guide has been updated from the previous guide published in 1999. The fact that new guidance is presented herein does not imply that existing bicycle facilities are inadequate or unsafe, nor does it mandate the initiation of improvement projects. The intent of this document is to provide guidance to designers and planners by referencing a recommended range of design values and describing alternative design approaches.	AASHTO	Guidance	2012	https://bookstore.transportation.org/collect_detail.aspx?ID=116	\$203.00	162	Member pricing available
Guide for the Planning, Design, and Operation of Pedestrian Facilities	The purpose of this guide is to provide guidance on the planning, design, and operation of pedestrian facilities along streets and highways. Specifically, the guide focuses on identifying effective measures for accommodating pedestrians on public rights-of-way. Appropriate methods for accommodating pedestrians, which vary among roadway and facility types, are described in this guide. The primary audiences for this manual are planners, roadway designers, and transportation engineers, whether at the state or local level, the majority of whom make decisions on a daily basis that affect pedestrians. This guide also recognizes the profound effect that land use planning and site design have on pedestrian mobility and addresses these topics as well.	AASHTO	Guidance	2014	https://bookstore.transportation.org/collect_detail.aspx?ID=131	\$133.00	\$111.00	Member price of \$84
Guide to Promoting Bicycling on Public Lands	Federal lands, including units of the National Park Service, National Forests, National Wildlife Refuges, and Bureau of Land Management lands are at a critical juncture. Increasing numbers of automobiles in some areas have led to congestion, poor air quality, damage to natural resources, and degraded visitor experience. At the same time, growth in the number of bicyclists on some of the most scenic roadways has led to motorist-bicyclist conflicts and concern for everyone's safety. Increased fuel costs and climate change have spawned efforts to reduce fuel consumption and minimize the "carbon footprint" of Federal land agencies. Sixty-one percent of adults in the United States are overweight or obese and childhood obesity rates are soaring. Bicycling networks are one part of the solution to these issues. This report provides guidance to Federal land managers on how to promote bicycling. Bicycling facilities are important transportation and recreation links to connect gateway communities, visitor centers, campgrounds, trailheads, and other attractions on Federal lands. This report presents benefits of bicycling, successful bicycling programs, policies that support bicycling, issues and challenges faced by land managers, and useful resources available to help meet these challenges. Bicycle transportation networks have significant positive impacts for the environment, health and visitor experience on Federal lands. Federal land managers have the opportunity to serve as positive national role models by mainstreaming bicycling to create sustainable transportation networks.	FHWA Sponsored Resources	Guidance	2008	http://flh.fhwa.dot.gov/innovation/td/bikes/documents/02_title_forward_toc.pdf	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Guidebook on Pedestrian and Bicycle Volume Data Collection (NCHRP Report 797)	TRB's National Cooperative Highway Research Program (NCHRP) Report 797: Guidebook on Pedestrian and Bicycle Volume Data Collection describes methods and technologies for counting pedestrians and bicyclists, offers guidance on developing a non-motorized count program, gives suggestions on selecting appropriate counting methods and technologies, and provides examples of how organizations have used non-motorized count data to better fulfill their missions.	NCHRP Resources	Guidance	2015	http://www.trb.org/Main/Blurbs/171973.aspx	\$71.00	Free	Affiliate price of \$53.25
Handbook for Designing Roadways for the Aging Population	The proportion of the United States population age 65 and over will increase significantly in the coming decades. The effects of aging on people as drivers and pedestrians are highly individual. Challenges that may impact people as they age include declining vision, decreased flexibility and psychomotor performance, and changes in perceptual and cognitive performance. Design practices that explicitly recognize these changes will better serve this growing segment of the nation's population. This Handbook for Designing Roadways for the Aging Population provides practitioners with a practical information source that links aging road user performance to highway design, operational, and traffic engineering features. This Handbook supplements existing standards and guidelines in the areas of highway geometry, operations, and traffic control devices. The information in this Handbook should be of interest to highway designers, traffic engineers, and highway safety specialists involved in the design and operation of highway facilities. In addition, this Handbook will be of interest to researchers concerned with issues of aging road user safety and mobility.	FHWA Sponsored Resources	Guidance	2014	http://safety.fhwa.dot.gov/older_users/handbook/	n/a	Free	
Highway Capacity Manual (HCM), 5th Edition	The Transportation Research Board's (TRB) fifth edition of the Highway Capacity Manual (HCM 2010), incorporates results from more than \$5 million of research completed since the publication of the HCM2000. This latest edition significantly updates the methodologies that engineers and planners use to assess the traffic and environmental effects of highway projects.	Transportation Research Board	Guidance	2010	http://hcm.trb.org/	\$220.00	\$220.00	Member price of \$165
Highway Safety Manual	The AASHTO Highway Safety Manual (HSM), published in 2010, presents a variety of methods for quantitatively estimating crash frequency or severity at a variety of locations. For the first time, a complete collection of quantitative safety analysis methods are available.	AASHTO	Guidance	2010	http://www.highwaysafetymanual.org/Pages/default.aspx	\$624.00	\$520.00	Member price of \$480 (hard copy) and \$400 (electronic)
How to Develop a Pedestrian Safety Action Plan	The purpose of this guide on "How to Develop a Pedestrian Safety Action Plan" is to present an overview and framework for state and local agencies to develop and implement a Pedestrian Safety Action Plan tailored to their specific problems and needs. A Pedestrian Safety Action Plan is a plan developed by community stakeholders that is intended to improve pedestrian safety in the community. An objective of the guide is to help state and local officials know where to begin to address pedestrian safety issues. It is also intended to assist agencies in further enhancing their existing pedestrian safety programs and activities, including identifying safety problems and selecting optimal solutions. This guide is primarily a reference for improving pedestrian safety through street redesign and the use of engineering countermeasures as well as other safety-related treatments and programs that involve the whole community. This guide can be used by engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers who have the responsibility of improving pedestrian safety at the state or local level.	FHWA Sponsored Resources	Guidance	2009	http://safety.fhwa.dot.gov/ped_bike/ped_focus/docs/fhwas0512.pdf	Free	Free	Hard copies can be requested here: http://safety.fhwa.dot.gov/ped_bike/ped_bike_order/
Human Factors Assessment of Pedestrian Roadway Crossing Behavior	Pedestrian-vehicle crashes are both common and deadly. The majority of pedestrian fatalities occur outside marked intersection crosswalks. The influences of pedestrian and environmental factors on crossing location choice were examined. A literature review covering factors intrinsic to pedestrians is provided. In addition, pedestrian crossings at 20 different locations were recorded and analyzed. The vast majority of crossings (89 percent of the total observed) took place in the marked intersection crosswalks. Drivers are likely to yield to pedestrians. However, while drivers are more likely to yield to pedestrians in the marked crosswalk, pedestrians and vehicles are equally as likely to yield to one another outside the marked crosswalk. The data also suggest that measures that reduce the perceived affordances to cross the roadway (e.g., flowerbeds that separate the sidewalk from the roadway) also reduce the proportion of crossings outside the marked crosswalks. It also appears that pedestrians cross when perceived control of the crossing is greatest. Measures to increase perceived control have the potential to increase (e.g., visible countdown clocks) or decrease (e.g., large medians) crossings in the marked crosswalk. A model to predict pedestrian crossing location is provided. The model uses various environmental variables as predicting factors and was shown to successfully predict an average of 90 percent of the crossings.	FHWA Sponsored Resources	Information	2014	https://www.fhwa.dot.gov/publications/research/safety/13098/13098.pdf	n/a	Free	
Implementing Bicycle Improvements at the Local Level	This implementation manual is intended for local governments who want to make improvements to existing conditions that affect bicycling. Thirteen of the most typical situations or factors that impact bicycle use are considered. For each situation or factor the manual provides (as appropriate) a problem overview, a solution overview, implementation strategies, objectives, resource requirements, subtasks, a schedule, specifications, and references. The intent is to make it relatively easy and straightforward for a local public works or transportation department to identify specific problems and deal with them, generally as part of the agency's routine functions. The information provided is based on the approaches and techniques developed over the past two decades by some of the most bicycle-friendly communities and leading practitioners. The categories covered are (1) major urban streets, (2) minor urban street traffic, (3) minor street/major street crossings, (4) breaking bicycling barriers, (5) trail networks, (6) transit connections, (7) roadway bridge modifications, (8) railroad crossings, (9) traffic signals, (10) drainage grates and utility covers, (11) rural road shoulders, (12) bicycle parking, and (13) maintenance.	FHWA Sponsored Resources	Guidance	1998	https://www.fhwa.dot.gov/publications/research/safety/98105/98105.pdf	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Integration of Safety in the Project Development Process and Beyond	The ITE informational report, Integration of Safety in the Project Development Process and Beyond: A Context Sensitive Approach, builds upon the above referenced ITE FHWA Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (RP) and the dialog that was initiated with ITE members in support of advancing the implementation of context sensitive solution (CSS). This report focuses on the consideration of safety in the project development process and its relationship to highway design elements considering project context from a quantitative, substantive, analytical, and technical perspective. This document was produced in cooperation with the Federal Highway Administration.	ITE	Information	2015	http://www.ite.org/css/	\$37.50	Free	Member price of \$30
Intersection Safety Briefs	This document contains a series of Issue Briefs on various intersection safety-related topics. This is the Second Edition of these briefs. The target audience for the Issue Briefs consists of traffic engineers and transportation and safety professionals. Many products have developed over the past two years that will help practitioners evaluate causes of intersection crashes and potential solutions. The Issue Briefs provide practitioners with a substantial number of references and resources for subsequent review and consideration. The materials could also be used by a far wider audience of people and organizations who want to promote intersection safety issues within their area of influence. The topics included in this edition are as follows: (1) Introduction; (2) The National Intersection Safety Problem; (3) Traffic Control Devices: Uses and Misuses; (4) Stop Signs; (5) Signals; (6) Engineering Countermeasures to Reduce Red Light Running; (7) Red-Light Cameras; (8) Intersection Safety Countermeasures; (9) Pedestrian Safety; (10) Older Drivers; (11) ADA Considerations at Intersections; (12) Human Factors; (13) Access Management; (14) Roundabouts; (15) Road Safety Audits; (16) Work Zones; and (17) Resources. The format of the Issue Briefs has changed with the second edition. They are now three-hole punched and can easily be placed in a notebook for quick access and for reproduction as required.	ITE	Guidance	2004	http://safety.fhwa.dot.gov/intersection/resources/fhwa10005/brief_17.cfm	n/a	Free	
Making Local and Rural Roads Safer for Pedestrians and Bicycles	There are several enhancements that can be introduced to improve safety for pedestrians and bicyclists. The safety treatments shown in the table below can be employed to improve pedestrian and bicycle safety at intersections in particular. The table also shows the associated crash modification factor (CMF) or crash reduction, the safety issue addressed, and the typical cost of implementation.	FHWA Sponsored Resources	Guidance	2014	http://safety.fhwa.dot.gov/local_rural/trailling/fhwasat4090/ped_bike.pdf	n/a	Free	
Manual on Uniform Traffic Control Devices (MUTCD), 2nd edition	The Manual on Uniform Traffic Control Devices, or MUTCD defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public travel. The MUTCD is published by the Federal Highway Administration (FHWA) under 23 Code of Federal Regulations (CFR), Part 655, Subpart F. The MUTCD, which has been administered by the FHWA since 1971, is a compilation of national standards for all traffic control devices, including road markings, highway signs, and traffic signals. It is updated periodically to accommodate the nation's changing transportation needs and address new safety technologies, traffic control tools and traffic management techniques.	FHWA Sponsored Resources	Guidance	2012	http://mutcd.fhwa.dot.gov/	n/a	Free	
Materials for Hispanic Pedestrians and Bicyclists		FHWA Sponsored Resources	Information	2017	http://safety.fhwa.dot.gov/ped_bike/hispanic/materials/	n/a	Free	
National Pedestrian Safety Campaign	The Federal Highway Administration's Pedestrian Safety Campaign was developed in 2003 and consists of ready-made outreach materials that States and communities can customize and use locally. The Campaign materials have been used in over 400 communities nationwide, and we no longer have hard copy materials available. Everything that was included in the Pedestrian Safety Campaign Planner is available here for download and use. The threefold purpose of the campaign is to (1) sensitize drivers to the fact that pedestrians are legitimate road users and should always be expected on or near the roadway, (2) educate pedestrians about minimizing risks to their safety, and (3) develop program materials to explain or enhance the operation of pedestrian facilities, such as crosswalks and pedestrian signals. This Pedestrian Safety Campaign website includes materials designed for use in television, radio, cinema, and print advertising. Some of the materials included are available in both English and Spanish. States and local communities are responsible for implementing the campaign through local television and radio stations and print media. A Campaign Planning Step by Step Guide that explains in detail how to implement the campaign successfully at the local level is also provided. All you need is a lot of determination and commitment to fixing the problem and selling your ideas to others!	FHWA Sponsored Resources	Information	2011	http://safety.fhwa.dot.gov/local_rural/ped_campaign/	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
NCHRP Report 500 Vol 18 A Guide for Reducing Collisions Involving Bicycles	TRB's National Cooperative Highway Research Program (NCHRP) Report 500, Vol. 18, Guidance for Implementation of the AASHTO Strategic Highway Safety Plan: A Guide for Reducing Collisions Involving Bicycles provides strategies that can be employed to reduce collisions involving bicycles. In 1998, the American Association of State Highway and Transportation Officials (AASHTO) approved its Strategic Highway Safety Plan, which was developed by the AASHTO Standing Committee for Highway Traffic Safety with the assistance of the Federal Highway Administration, the National Highway Traffic Safety Administration, and the Transportation Research Board Committee on Transportation Safety Management. The plan includes strategies in 22 key emphasis areas that affect highway safety. The plan's goal is to reduce the annual number of highway deaths by 5,000 to 7,000. Each of the 22 emphasis areas includes strategies and an outline of what is needed to implement each strategy. Over the next few years the National Cooperative Highway Research Program (NCHRP) will be developing a series of guides, several of which are already available, to assist state and local agencies in reducing injuries and fatalities in targeted areas. The guides correspond to the emphasis areas outlined in the AASHTO Strategic Highway Safety Plan. Each guide includes a brief introduction, a general description of the problem, the strategies/countermeasures to address the problem, and a model implementation process.	NCHRP Resources	Guidance	2014	http://www.trb.org/main/Blurbs/156839.aspx	\$55.00	Free	Affiliate price of \$41.25
NCHRP Report 500, Volume 10: A Guide for Reducing Collisions Involving Pedestrians	TRB's National Cooperative Highway Research Program (NCHRP) Report 500: Guidance for Implementation of the AASHTO Strategic Highway Safety Plan Volume 10: A Guide for Reducing Collisions Involving Pedestrians provides strategies that can be employed to reduce the number of collisions involving pedestrians.	NCHRP Resources	Guidance	2014	http://www.trb.org/Main/Blurbs/154863.aspx	\$24.00	Free	Affiliate price of \$18
NCHRP Report 546 Incorporating Safety into Long-Range Transportation Planning	TRB's National Cooperative Highway Research Program (NCHRP) Report 546/CD ROM CRP-CD-62, examines where and how safety can be effectively addressed and integrated into long-range transportation planning at the state and metropolitan levels. The report includes guidance for practitioners in identifying and evaluating alternative ways to incorporate and integrate safety considerations in long-range statewide and metropolitan transportation planning and decision-making processes.	NCHRP Resources	Guidance	2014	http://www.trb.org/Main/Blurbs/156716.aspx	\$29.00	Free	Affiliate price of \$21.75
NCHRP Report 600: Human Factors Guidelines for Road Systems	TRB's National Cooperative Highway Research Program (NCHRP) Report 600: Human Factors Guidelines for Road Systems: Second Edition provides data and insights of the extent to which road users' needs, capabilities, and limitations are influenced by the effects of age, visual demands, cognition, and influence of expectancies. NCHRP Report 600 provides guidance for roadway location elements and traffic engineering elements. The report also provides tutorials on special design topics, an index, and a glossary of technical terms. The second edition of NCHRP 600 completes and updates the first edition, which was published previously in three collections.	NCHRP Resources	Guidance	2014	http://www.trb.org/Main/Blurbs/167909.aspx	\$79.00	Free	Affiliate price of \$59.25
NCHRP Report 674 Crossing Solutions at Roundabouts and Channelized Turn Lanes for Pedestrians with Vision Disabilities	TRB's National Cooperative Highway Research Program (NCHRP) Report 674: Crossing Solutions at Roundabouts and Channelized Turn Lanes for Pedestrians with Vision Disabilities explores information related to establishing safe crossings at roundabouts and channelized turn lanes for pedestrians with vision disabilities.	NCHRP Resources	Guidance	2011	http://www.trb.org/Publications/Blurbs/164715.aspx	\$60.00	Free	Affiliate price of \$45 (hard copy)
NCHRP Report 770 Estimating Bicycling and Walking for Planning and Project Development: A Guidebook	TRB's National Cooperative Highway Research Program (NCHRP) Report 770: Estimating Bicycling and Walking for Planning and Project Development: A Guidebook contains methods and tools for practitioners to estimate bicycling and walking demand as part of regional-, corridor-, or project-level analyses. The products of the research include a guidebook for practitioners on a range of methods for estimating bicycling and walking activity and a CD-ROM containing a GIS Walk Accessibility Model, spreadsheets, and the contractor's final report, which documents the research and tools that operationalize the methods described in the guidebook.	NCHRP Resources	Guidance	2014	http://www.trb.org/Publications/Blurbs/171138.aspx	\$78.00	Free	Affiliate price of \$58.50 (hard copy)
NCHRP Report 783: Evaluation of the 13 Controlling Criteria for Geometric Design	"In 1985, the FHWA designated 13 specific design elements as controlling criteria for roadway design (see Mitigation Strategies for Design Exceptions). The 13 controlling criteria are (1) design speed, (2) lane width, (3) shoulder width, (4) bridge width, (5) structural capacity, (6) horizontal alignment, (7) vertical alignment, (8) grade, (9) stopping sight distance, (10) cross slope, (11) superelevation, (12) vertical clearance, and (13) horizontal clearance. Federally assisted highway construction and reconstruction projects must meet the established design criteria for these elements, or a formal design exception must be prepared and approved. Different procedures apply to rehabilitation projects, but these design elements are still key considerations in design. Since their designation, the 13 controlling criteria and their application have not been reconsidered as new knowledge has been gained about the relationships between geometric design elements and safety and operations. In NCHRP Project 17-53, MRIGlobal and their subcontractors (Quincy Engineering and HQE, Inc.) investigated what is known about the safety and operational effects of the 13 controlling and other important geometric design criteria. Several small studies were done to augment the information found in the literature. This information was used to assess the sensitivity of safety and operations to design decisions for these criteria for different types of roads. The research also addressed how to reduce confusion related to the definitions of the controlling criteria."	NCHRP Resources	Guidance	2014	http://www.trb.org/Publications/Blurbs/171358.aspx	\$58.00	Free	Affiliate price of \$43.50 (hard copy)

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
NCHRP Report 803 Pedestrian and Bicycle Transportation Along Existing Roads—ActiveTrans Priority Tool Guidebook	TRB's National Cooperative Highway Research Program (NCHRP) Report 803: Pedestrian and Bicycle Transportation Along Existing Roads—ActiveTrans Priority Tool Guidebook presents a tool and guidance that may be used to help prioritize improvements to pedestrian and bicycle facilities, either separately or together as part of a "complete streets" evaluation approach. The guidebook is supplemented by a CD that contains a programmed spreadsheet to facilitate implementation of the ActiveTrans methodology, as well as a final report that documents the research approach, findings, and conclusions.	NCHRP Resources	Guidance	2015	http://www.trb.org/Publications/Blurbs/172459.aspx	\$71.00	Free	Affiliate price of \$53.25 (hard copy)
NCHRP Report 811 Institutionalizing Safety in Transportation Planning Processes	TRB's National Cooperative Highway Research Program (NCHRP) Report 811: Institutionalizing Safety in Transportation Planning Processes: Techniques, Tactics, and Strategies provides field-tested guidance on institutionalizing the integration of safety into transportation planning and programming processes. The guidebook also provides ways to measure the effectiveness and success of integration efforts.	NCHRP Resources	Guidance	2015	http://apps.trb.org/cmsfeed/trbnetprojectdisplay.asp?projectid=2502	\$51.00	Free	Affiliate price of \$38.25
NCHRP Report 766 Recommended Bicycle Lane Widths for Various Roadway Characteristics	TRB's National Cooperative Highway Research Program (NCHRP) Report 766: Recommended Bicycle Lane Widths for Various Roadway Characteristics presents an analysis of the research and design guidance for bicycle lane widths on existing travel lane widths and parking lane widths. The conclusions are most applicable to urban and suburban roadways with level grade and a posted speed limit of 30 mph and should be used cautiously for the design of roadways with motor vehicle speeds outside of the range of 25 to 35 mph, and in particular for higher-speed roadways.	NCHRP Resources	Guidance	2014	http://www.trb.org/Publications/Blurbs/171010.aspx	\$52.00	Free	Affiliate price of \$39 (hard copy)
Non-Motorized User Safety A Manual for Local Rural Road Owners	Many of the roads in the U.S. are non-Interstate, local and rural roads that are maintained and operated by local agencies, such as towns, counties, and Tribal governments. Non-motorized modes of travel, such as biking, walking, and riding horses or horse-drawn carriages can be expected along these roads and may face safety concerns when utilizing the same roadway as motorized travelers. This Non-Motorized User Safety Manual focuses on low-volume local rural roadways and rural villages and describes a process that can be used to address the safety of non-motorized users. It provides a concise "toolbox" of resources and information for addressing non-motorized safety concerns, and provides evaluation methods for locally-implemented initiatives to address the safety of non-motorized users.	FHWA Sponsored Resources	guidance	2012	http://safety.fhwa.dot.gov/local_rural/training/fhwasa010413/	n/a	Free	
Nonmotorized Transportation Pilot Program Final Report	Section 1807 of the Safe, Accountable, Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) P.L. 109-59 established the Nonmotorized Transportation Pilot Program (NTPP) in August 2005. Over the span of 4 years, the NTPP provided roughly \$25 million annually in contract authority allocated equally among four pilot communities (Columbia, Missouri; Marin County, California; Minneapolis, Minnesota; and Sheboygan County, Wisconsin) "to construct ... a network of nonmotorized transportation infrastructure facilities, including sidewalks, bicycle lanes, and pedestrian and bicycle trails, that connect directly with transit stations, schools, residences, businesses, recreation areas, and other community activity centers." From its inception, the NTPP was designed as a demonstration program to gather statistical information on transportation mode share shifts before and after the implementation of nonmotorized transportation infrastructure and educational or promotional programs. The program was intended to "demonstrate the extent to which bicycling and walking can carry a significant part of the transportation load, and represent a major portion of the transportation solution, within selected communities." Throughout the program to date, the four communities, each with unique physical and demographic characteristics, identified and implemented a locally devised strategy to significantly increase the use of nonmotorized transportation, along with the accompanying safety, environmental, and health benefits. This report represents the culmination of that initial implementation and analytical effort.	FHWA Sponsored Resources	Information	2012	http://www.fhwa.dot.gov/environment/bicycle_pedestrian/ntpp/	n/a	Free	
Nonmotorized Transportation Pilot Program: Continued Progress in Developing Walking and Bicycling Networks	In 2005, the United States Congress directed the Federal Highway Administration (FHWA) to develop the Nonmotorized Transportation Pilot Program (NTPP). The program provided over \$25 million in contract authority to four pilot communities (Columbia, Missouri; Marin County, California; Minneapolis area, Minnesota; and Sheboygan County, Wisconsin) for pedestrian and bicycle infrastructure and nonmotorized programs. This report summarizes the progress and results of the NTPP from August 2005 through December 2013, updating and expanding upon the analysis from the Report to the U.S. Congress on the Outcomes of the Nonmotorized Transportation Pilot Program, submitted by the Federal Highway Administration in April 2012. This report analyzes the results through December 2013 of the NTPP in terms of program implementation, transportation mode shift toward walking and bicycling and associated improvements pertaining to access and mobility, safety and public health, and the environment and energy. From 2007 to 2013, the pilot communities observed an estimated 22.8 percent increase in the number of walking trips and an estimated 48.3 percent increase in the number of bicycling trips. This report examines how the NTPP pilot communities provide examples to other communities interested in implementing and evaluating nonmotorized investments.	FHWA Sponsored Resources	Information	2014	http://www.fhwa.dot.gov/environment/bicycle_pedestrian/ntpp/	n/a	Free	
Pedestrian and Bicycle Crash Analysis Tool (PBCAT)	The Pedestrian and Bicycle Crash Analysis Tool (PBCAT) is a crash typing software product intended to assist state and local pedestrian/bicycle coordinators, planners and engineers with improving walking and bicycling safety through the development and analysis of a database containing details associated with crashes between motor vehicles and pedestrians or bicyclists.	FHWA Sponsored Resources	Guidance	2014	http://www.pedbikeinfo.org/pbcats/	n/a	Free	
Pedestrian and Bicycle Facility Design Resource Index	The Design Resource Index identifies the specific location of information in key national design manuals for various pedestrian and bicycle design treatments. The Design Resource Index will help practitioners quickly access the right resources and should reduce the amount of time it takes to search through multiple design guides to find the information they need. The Design Resource Index consists of three separate matrices: On-Street Bicycle Facilities, Shared Use Paths, and Pedestrian Facilities. The Design Resource Index incorporates national resource manuals and guidelines published by FHWA, ITE, AASHTO, NACTO, and the U.S. Access Board.	FHWA Sponsored Resources	Guidance	2015	http://www.pedbikeinfo.org/planning/facilities_designresourceindex.cfm	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Pedestrian and Bicyclist Intersection Safety Indices	The Pedestrian and Bicycle Intersection Safety Indices (Ped ISI and Bike ISI) are a set of models that enable users to identify intersection crossings and intersection approach legs that should be the greatest priority for undergoing indepth pedestrian and bicycle safety assessment. This TechBrief summarizes the final report which had the development of these indices as its primary objective.	FHWA Sponsored Resources	Guidance	2007	https://www.fhwa.dot.gov/publications/research/safety/pedbike/06130/	n/a	Free	
Pedestrian and Bicyclist Road Safety Assessments	Beginning in the fall of 2014, the United States Department of Transportation (U.S. DOT) field offices began organizing pedestrian and bicycle safety assessments, on-the-ground examinations of transportation facilities conducted by a multidisciplinary, multi-agency team. By June of 2015, field offices from the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), National Highway Traffic Safety Administration (NHTSA), Federal Motor Carrier Safety Administration (FMCSA), and Federal Railroad Administration (FRA) had hosted or participated in 52 assessments, one in every State, Puerto Rico, and the District of Columbia. More than 1,500 people, including elected officials, field office leaders, and representatives from local, regional, State, Federal, and nongovernmental agencies took part, helping advance Secretary Foxx's Safer People, Safer Streets Initiative for pedestrian and bicycle safety. The purpose of the assessments was for teams to consider site-specific recommendations as well as to envision broader systemic changes needed to improve safe walking and bicycling. While simply conducting an assessment does not immediately fix problems, the act of bringing together many partners to focus their attention on these issues lays the groundwork for effective interagency collaboration going forward. This report highlights some of the varied and creative methods used to conduct the assessments. It discusses examples of both infrastructure and non-infrastructure barriers identified through the assessments; how specific communities used the assessments to discuss and address barriers; and resources (existing and under development) to support communities in ensuring safe and convenient access to walking and bicycling.	USDOT	guidance	2015	https://www.transportation.gov/fastlane/collaboration-helps-improve-pedestrian-and-bicyclist-safety	free	Free	
Pedestrian and Bicyclist Traffic Control Device Evaluation Methods	This report offers traffic engineering practitioners information on how to evaluate roadway traffic control devices used by pedestrians and bicyclists. Though presented in the context of devices meant for pedestrian and bicyclist facilities, the guidance provided can be applied in a more general sense to evaluations of traffic control devices in all settings. The evaluation methods report is designed for practitioners (State transportation departments and county or city engineers and planners) but could also be helpful to traffic safety students and researchers. Personnel without specialized statistical analysis skills should be able to use the report. It presents a detailed plan for practitioners to follow from the initial problem identification stages to documenting the evaluation effort. The first step of any evaluation is to clearly formulate the research question by identifying the motorist, pedestrian, or bicyclist behavior that poses a safety or operational problem. Candidate traffic control devices and other countermeasures can then be identified as potential solutions to that problem. The evaluation methods described in this report include user surveys or interviews, visibility studies, driving performance studies, observational traffic studies, and crash analyses. The selection of the appropriate evaluation method will consider cost, time, research aims, and available research equipment and staff.	FHWA Sponsored Resources	Guidance	2011	http://www.fhwa.dot.gov/publications/research/safety/pedbike/11035/11035.pdf	n/a	Free	
Pedestrian Countermeasure Policy Best Practice Report	Safety is the number one priority for the U.S. Department of Transportation (USDOT) and it's the agency's policy to provide safe and effective pedestrian accommodation wherever possible. The Federal Highway Administration (FHWA) encourages the use of specific proven pedestrian safety countermeasures that can help achieve local, State and National safety goals. One such countermeasure is raised medians. FHWA's Safety Office has encouraged the consideration of raised medians in curbed sections of multilane roadways in urban and suburban areas, particularly in areas with a combination of high volumes of traffic, a significant number of pedestrians, and intermediate or high travel speeds.1 Another proven countermeasure is the use of walkways/paved shoulders. FHWA's Office of Safety has promoted the evidence-based safety benefits of accessible sidewalks or walkways along both sides of streets and highways in urban areas—particularly near school zones and transit locations—and where there is frequent pedestrian activity. This report highlights State departments of transportation (DOTs) that have developed policies related to these countermeasures.	FHWA Sponsored Resources	Guidance	2013	http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwas_a11017/	n/a	Free	
Pedestrian Facility Design Course	COURSE DESCRIPTION: To emphasize the importance of planning for pedestrians, the course focuses on case examples involving corridor and intersection design issues. Participants are engaged through lecture, discussion, video demonstrations of problem areas in corridors and intersections, small group problem identification, and the development of design alternatives. This training was developed to provide information and application opportunities to those involved in the design of pedestrian facilities. The Americans with Disabilities Act (ADA) requires newly constructed and altered sidewalks to be accessible and usable by people with disabilities, and accessibility improvements need to be implemented for existing facilities. OUTCOMES: Upon completion of the course, participants will be able to: List the characteristics of pedestrians and motorized traffic that influence pedestrian facility design; Apply the concepts of universal design and applicable design reference material to redesigning an existing location and/or designing a new location that meets the needs of motorized and nonmotorized users; Given a case example, identify potential conflicts between pedestrians and other traffic and propose design options that improve access and safety; Given a case example, analyze the network for improvement options to meet the needs of pedestrian and other traffic. TARGET AUDIENCE: Engineers with planning, design, construction, or maintenance responsibilities; pedestrian and bicycle specialists, disability and orientation specialists, transportation planners, architects, landscape architects, as well as decisionmakers at the project planning level.	NHI	Information	2016	http://www.nhi.fhwa.dot.gov/training/course_search.aspx?tab=0&key=bicycle&sf=0&course_no=142045	n/a	n/a	Enrollment cost per person: \$700

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Pedestrian Hybrid Beacon Guide	A pedestrian hybrid beacon (PHB) is a traffic control device similar to a European pedestrian signal (PELICAN) that was imported to the US and adapted by engineers in Arizona to increase motorists' awareness of pedestrian crossings at uncontrolled marked crosswalk locations. A PHB is distinct from pre-timed traffic signals and constant flash warning beacons because it is only activated by pedestrians when needed.	FHWA Sponsored Resources	Guidance	2014	http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwas_a14014/	Free	Free	Hard copies can be requested here: http://safety.fhwa.dot.gov/ped_bike/ped_bike_order/
Pedestrian Road Safety Audit Guidelines and Prompt Lists	A road safety audit (RSA) is a formal safety examination of a future roadway plan or project or an in-service facility that is conducted by an independent, experienced multidisciplinary RSA team. All RSAs should include a review of pedestrian safety; however, some RSAs may be conducted to improve an identified pedestrian safety problem. The Pedestrian Road Safety Audit Guidelines and Prompt Lists provides transportation agencies and teams conducting an RSA with a better understanding of the needs of pedestrians of all abilities. The Guide has two primary sections: Knowledge Base and the Field Manual. The Knowledge Base section discusses the basic concepts with which the RSA team should be familiar before conducting an RSA, such as understanding the characteristics of all pedestrians, analyzing pedestrian crash data, pedestrian considerations in the eight-step RSA process, and use of the Guide. The Field Manual section includes the guidelines and prompt lists. The guidelines provide detailed descriptions of potential pedestrian safety issues while the prompt lists are a general listing of potential pedestrian safety issues. The guidelines and prompt lists will help familiarize RSA teams with potential pedestrian issues and help them identify specific safety concerns related to pedestrian safety throughout the RSA process.	FHWA Sponsored Resources	Guidance	2007	http://www.pedbikeinfo.org/cms/downloads/PedRSAReduced.pdf	n/a	Free	
Pedestrian Safer Journey	Pedestrian Safer Journey helps educators, parents and others who care about pedestrian safety to get the conversation started with children and youth. Three videos — one for each of three age groups — accompanied by a quiz or discussion and an educator's resource library can be used as an introduction to pedestrian safety skills or to augment a comprehensive curriculum.	FHWA Sponsored Resources	Information	2017	http://www.pedbikeinfo.org/pedsaferjourney/	n/a	Free	
Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE)	The Pedestrian Safety Guide and Countermeasure Selection System is intended to provide practitioners with the latest information available for improving the safety and mobility of those who walk. The online tools provide the user with a list of possible engineering, education, or enforcement treatments to improve pedestrian safety and/or mobility based on user input about a specific location.	FHWA Sponsored Resources	Guidance	2013	http://pedbike.safe.org/PEDSAFE/	n/a	Free	
Pedestrian Safety Guide for Transit Agencies	The guide is intended to provide transit agency staff with an easy-to-use resource for improving pedestrian safety. The guide includes a variety of approaches to address common pedestrian safety issues that are likely to arise near transit stations, bus stops, and other places where transit (bus or rail) is operated. It provides references to publications, guides and other tools to identify pedestrian safety problems. Descriptions of engineering, education and enforcement programs that have been effectively applied by transit agencies are included as well as background information about pedestrian safety and access to transit.	FHWA Sponsored Resources	Guidance	2008	http://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/about.cfm	Free	Free	Hard copies can be requested here: http://safety.fhwa.dot.gov/ped_bike/ped_bike_order/
Pedestrian Safety Strategic Plan Recommendations for Research and Product Development	Pedestrian fatalities continue to be a major highway safety problem in the U.S., with pedestrians accounting for approximately 12 percent of all traffic-related deaths. This Pedestrian Safety Strategic Plan: Recommendations for Research and Product Development is based on a comprehensive analysis of pedestrian crash data trends and factors, a detailed review of more than 200 reports and publications on pedestrian safety, and input from more than 25 expert stakeholder members. The Federal Highway Administration (FHWA) led the development of the Strategic Plan to address these safety concerns and equip professionals with knowledge, resources, and information needed to identify problems and implement solutions related to the roadway environment. The Strategic Plan identified 28 new research topics to address four primary categories of research needs: problem identification and data collection, analysis and decision making, innovative research and evaluation, and technology transfer. Detailed research problem statements were developed for each of the 28 proposed research topics, including the research goals, background, and schedule. The Strategic Plan also recommends updates to existing FHWA technology transfer tools and resources based on an evaluation by potential end-users. Dissemination activities identified by the Strategic Plan include event marketing, successful practices guides, in-person and web-based training, and software development. Recommended innovative strategies for distributing information include convening interactive webinars, developing a video-share website, and utilizing 3D visualization tools. Recommendations are made for Strategic Plan implementation, while keeping in mind the importance of interagency collaboration. Potential barriers to successful plan implementation are identified along with possible solutions. A recommended timeline for activities is also included, which covers a 15-year period. Strategies for plan review, evaluation, and updates are also included which ensures that the Strategic Plan will be a flexible, living document. Recommendations for research and product development are intended to be addressed through a collaborative approach between various agencies and offices. A cooperative effort is suggested to address the variety of crash problems discussed in the Strategic Plan.	FHWA Sponsored Resources	Information	2010	http://safety.fhwa.dot.gov/ped_bike/pss/p/fhwas10035/	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
PedSafe Countermeasures Las Vegas Phase 2 Final Report	The goals of the program are to deploy and evaluate countermeasures (that were identified and developed in Phase 1) to help improve pedestrian safety and walkability (and reduce/minimize risk). The intent of this program is to serve as an example of what would lead to the implementation of successful pedestrian safety countermeasures across the nation. Some of the countermeasures deployed in Phase 2 have been selected in consultation with Florida (Miami-Dade County) team and San Francisco team. This is to permit a comparative evaluation of countermeasures at three different locations in the country.	FHWA Sponsored Resources	Information	2008	http://safety.fhwa.dot.gov/ped_bike/tools_solve/pedsafetysolve/pedsafetysolve/lasvegas.p	n/a	Free	
PedSafe Countermeasures Miami Dade Phase 2 Final Report	This report presents the methods and key findings from the Miami-Dade comprehensive pedestrian safety planning and engineering project. It is one of three such projects in the nation funded by the Federal Highway Administration (FHWA) to evaluate: In Phase I: The effectiveness of a pedestrian safety plan to target higher-injury areas; In Phase II: The implementation of a range of mostly low-to-moderate-cost, innovative engineering safety improvements. This report concentrates on the Phase II countermeasure implementation efforts, minimizing duplication with earlier reports, and focusing primarily on the experience and overall lessons learned. This project had three primary goals: 1.) The installation of pedestrian countermeasures; 2.) The scientific evaluation of the countermeasures in order to determine their efficacy; and 3.) To produce a significant crash reduction along the treated high crash corridors.	FHWA Sponsored Resources	Information	2008	http://safety.fhwa.dot.gov/ped_bike/tools_solve/pedsafetysolve/miami/ch1.cfm	n/a	Free	
PedSafe Countermeasures San Francisco Phase 2 Final Report	This report presents the methods and key findings from San Francisco PedSafe, a comprehensive pedestrian safety planning and engineering project. It is one of three such projects in the nation funded by the Federal Highway Administration (FHWA) to evaluate: In Phase I: The effectiveness of a pedestrian safety plan targeted to higher-injury areas; In Phase II: The implementation of a range of mostly low-to-moderate-cost, innovative safety improvements. This report concentrates on the Phase II countermeasure implementation efforts, minimizing duplication with earlier reports, and focusing primarily on the implementation experience and overall lessons learned.	FHWA Sponsored Resources	Information	2008	http://safety.fhwa.dot.gov/ped_bike/tools_solve/pedsafetysolve/sf/pedsafetysolve_sf.pdf	n/a	Free	
Planning and Designing for Pedestrian Safety	COURSE DESCRIPTION: The Planning and Designing for Pedestrian Safety is a combination of the information from the 2-day "Developing a Pedestrian Safety Action Plan" (NHI-380089) and 2-day "Designing for Pedestrian Safety" (NHI-380090) course. This comprehensive course is designed to help state and local officials learn "HOW TO" address pedestrian safety issues in the development of a pedestrian safety action plan, and specific programs and activities tailored to their community. It is also intended to assist agencies in the further enhancement of their existing pedestrian safety plan, programs, and activities, including involving partners and stakeholders, collecting and analyzing data and information, prioritizing issues and concerns, selecting and implementing an optimal combination of education, enforcement, engineering strategies. This course goes into more detail on engineering strategies than the "Developing a Pedestrian Safety Action Plan" (NHI-380089) course. This course includes two field exercises in the application of the principles, concepts, and strategies covered in the course. Also the participants will share and prioritize potential policies, programs, and strategies. OUTCOMES: Upon completion of the course, participants will be able to: Describe the role that planning and street design play in pedestrian safety; Demonstrate how pedestrians should be considered and provided for during the planning, design, work zone maintenance, and operations phases of the pedestrian safety action plan; Describe how human behavior issues related to pedestrians and drivers interacting safely and common pedestrian crash types; Identify good practices and effective solutions to enhance pedestrian safety and accessibility; Explain the significance of land-use, street connectivity, and site design in helping to make a safer pedestrian environment; Recognize human behavior issues related to pedestrians and drivers interacting safely and common pedestrian crash types; Collect and analyze data in a meaningful way to identify safety deficiencies and priorities for improvement; Employ commonly used and effective pedestrian crash countermeasures; Effectively involve stakeholders to create publicly supported and trusted policies, programs, and projects. TARGET AUDIENCE: Engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers who have the responsibility of improving pedestrian safety at the state or local level.	NHI	Information	2009	http://www.nhi.fhwa.dot.gov/training/course_search.aspx?tab=0&key=380091&course_no=380091&res=1	n/a	n/a	Enrollment cost per person: \$530
PLANSAFE: Forecasting the Safety Impacts of Socio-Demographic Changes and Safety Countermeasures	TRB's National Cooperative Highway Research Program (NCHRP) CRP-CD-78 provides safety forecasting software and accompanying guidance that is designed to help independently forecast the safety impacts of changes in socio-demographics and safety investments, both engineering and behavioral.	NCHRP Resources	Guidance	2011	http://www.trb.org/Main/Blurbs/163790.aspx	n/a	Free	
PlanWorks	PlanWorks: Better planning. Better projects. is a web resource that supports collaborative decision-making in transportation planning and project development. PlanWorks is built around key decision points in long-range planning, programming, corridor planning, and environmental review. PlanWorks suggests when and how to engage cross-disciplinary partners and stakeholder groups. This system can help build consensus throughout these processes. PlanWorks has four major components:	FHWA Sponsored Resources	Guidance	2017	https://fhwa.pps.fhwa.dot.gov/planworks/	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Primer on Safety Performance Measures for the Transportation Planning Process	This Primer is a tool to help State and local practitioners, transportation planners, and decision-makers identify, select, and use safety performance measures as a part of the transportation planning process. The Primer draws from current literature, professional experience, and State DOT and MPO practice. Key elements of the Primer include: a definition of performance measures; a step-by-step description and flowchart showing how safety performance measures can be identified and integrated into the transportation planning process; characteristics of effective performance measures; a checklist to assess an organization's current status with respect to the use of safety performance measures in the transportation planning and decision-making process; a list of references; and case studies of noteworthy practice.	FHWA Sponsored Resources	Information	2009	http://safety.fhwa.dot.gov/tsp/fhwahep09043/	n/a	Free	
Promoting Pedestrian and Bicyclist Safety to Hispanic Audiences	This marketing plan, which uses available reference materials and additional research in the form of focus group session results, showcases a strategy for marketing pedestrian and bicycle safety issues/concerns to different Hispanic populations in the United States.	FHWA Sponsored Resources	Guidance	2005	http://safety.fhwa.dot.gov/ped_bike/hispanic/	n/a	Free	
Proven Safety Countermeasures Best Practices and Recommendations Reports	In January 2012, FHWA issued a "Guidance Memorandum on Promoting the Implementation of Proven Safety Countermeasures". This guidance takes into consideration the latest safety research to advance a group of countermeasures that have shown great effectiveness in improving safety. Safety practitioners are encouraged to consider this set of countermeasures that are research-proven, but not widely applied on a national basis. Each fact sheet provides more detailed descriptions, related research studies, and evaluations of each of these countermeasures. Further information on each countermeasure can also be found at the Crash Modification Factors Clearinghouse (http://www.cmfclearinghouse.org/).	FHWA Sponsored Resources	Guidance	2012	http://safety.fhwa.dot.gov/provencountermeasures/	n/a	Free	
Public Right-of-Way Accessibility Guidelines (PROWAG)	The Architectural and Transportation Barriers Compliance Board is proposing accessibility guidelines for the design, construction, and alteration of pedestrian facilities in the public right-of-way. The guidelines ensure that sidewalks, pedestrian street crossings, pedestrian signals, and other facilities for pedestrian circulation and use constructed or altered in the public right-of-way by state and local governments are readily accessible to and usable by pedestrians with disabilities. When the guidelines are adopted, with or without additions and modifications, as accessibility standards in regulations issued by other federal agencies implementing the Americans with Disabilities Act, Section 504 of the Rehabilitation Act, and the Architectural Barriers Act, compliance with the accessibility standards is mandatory.	Access Board	Guidance	2011	http://www.access-board.gov/guidelines-and-standards/streams/sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines	n/a	Free	
Recommended Design Guidelines to Accommodate Pedestrians and Bicycles at Interchanges	The final version of Recommended Design Guidelines to Accommodate Pedestrians and Bicycles at Interchanges (RP-039) has been approved for publication. It is currently being balloted with the ITE board of direction and if approved, copies of the final recommended practice will be made available. While some local and regional jurisdictions have recommended practices on interchange designs that accommodate pedestrians and bicyclists, currently there is not a collection of consensus best practices available in the United States or Canada. In response, the ITE Pedestrian and Bicycle Council initiated a series of interactive workshops over the course of three consecutive years from 2008 to 2010 to discuss interchange design issues and opportunities with regard to pedestrian and bicyclist safety and accommodation. The ITE Traffic Engineering Council served as a co-sponsor of these workshops. At the conclusion of the fourth debrief workshop, the Pedestrian and Bicycle Council Executive Committee made a decision to develop a report that would document the consensus recommendations from the workshops in an effort to improve pedestrian and bicyclist safety and accommodation at interchanges. This ITE report compiles design guidelines for accommodating pedestrians and bicyclists at interchanges with respect to safety and accessibility. The guidelines identify specific dimensions, safety features, signage, pavement markings, design geometries, and other treatments. These best practices may provide insight into future updates of statewide or federal highway design manuals.	ITE	Guidance	2014	http://ecommerce.ite.org/ItemDetail?ProductCode=RP-039	\$43.75	n/a	Member price of \$35
Resident's Guide for Creating Safer Communities for Walking and Biking	This guide is intended to assist residents, parents, community association members, and others in getting involved in making communities safer for pedestrians and bicyclists. The guide includes facts, ideas, and resources to help residents learn about traffic problems that affect pedestrians and bicyclists and to find ways to help address these problems and promote safety among all road users. The guide includes information on identifying problems, taking action to address pedestrian and bicycle concerns, finding solutions to improve safety, and resources to get additional information.	FHWA Sponsored Resources	Guidance	2015	http://safety.fhwa.dot.gov/PED_BIKE/ped_community/ped_walkguide/index.cfm	Free	Free	Hard copies can be requested here: http://safety.fhwa.dot.gov/ped_bike/ped_bike_order/

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Road Diet Case Studies	<p>Improving safety is a top priority for the U.S. Department of Transportation, and the Federal Highway Administration (FHWA) remains committed to reducing highway fatalities and serious injuries on our Nation's roadways through the use of proven safety countermeasures, including Road Diets. Along with the development of the Road Diet Informational Guide, the FHWA Office of Safety commissioned a series of 24 case studies highlighting Road Diet implementations throughout the United States. The aim of this document is to provide State and local agencies and Tribal governments with examples and advice that can assist them in planning and implementing Road Diets in their own jurisdictions.</p> <p>Many of the concepts described in this publication are illustrated in photographs and drawings. The drawings are for illustrative purposes only; they are not to scale and should not be used for design purposes. It is important to note that the lettering styles, arrows and symbols used in these case studies are not always consistent with those prescribed in the Manual on Uniform Traffic Control Devices (MUTCD). When employing treatments included in the case studies, only MUTCD-approved lettering styles, arrows and symbols should be used. Additionally, any highway agency wishing to implement a treatment that has not been included in the most recent edition of the MUTCD must request experimentation approval from the FHWA.</p>	FHWA Sponsored Resources	Information	2015	http://safety.fhwa.dot.gov/road_diets/case_studies/	n/a	Free	
Road Diet Desk Reference	The Road Diet Desk Reference is a resource to assist transportation agencies during their decision-making process in regards to considering, implementing, and evaluating Road Diet conversions. The information in the document is derived from the Road Diet Informational Guide.	FHWA Sponsored Resources	Guidance	2015	http://safety.fhwa.dot.gov/road_diets/desk_ref/	n/a	Free	
Road Diet Informational Guide	A classic Road Diet converts an existing four-lane undivided roadway segment to a three-lane segment consisting of two through lanes and a center two-way left turn lane (TWLTL). A Road Diet improves safety by including a protected left-turn lane for mid-block left-turning motorists, reducing crossing distance for pedestrians, and reducing travel speeds that decrease crash severity. Additionally, the Road Diet provides an opportunity to allocate excess roadway width to other purposes, including bicycle lanes, on-street parking, or transit stops. This Informational Guide includes safety, operational, and quality of life considerations from research and practice, and guides readers through the decision-making process to determine if Road Diets are a good fit for a certain corridor. It also provides design guidance and encourages post-implementation evaluation.	FHWA Sponsored Resources	Guidance	2014	http://safety.fhwa.dot.gov/road_diets/info_guide/	n/a	Free	
Road Safety Audits (RSAs)	A Road Safety Audit (RSA) is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users. The FHWA works with State and local jurisdictions and Tribal Governments to integrate RSAs into the project development process for new roads and intersections, and also encourages RSAs on existing roads and intersections.	FHWA Sponsored Resources	Guidance	2014	http://safety.fhwa.dot.gov/ras/	n/a	Free	
Roadside Design Guide, 4th Edition	<p>The Roadside Design Guide presents a synthesis of current information and operating practices related to roadside safety and is written in dual units—metric and U.S. Customary.</p> <p>The guide is intended to be used as a resource document from which individual highway agencies can develop standards and policies. It includes a synthesis of current information and operating practices related to roadside safety. It focuses on safety treatments that can minimize the likelihood of serious injuries when a motorist leaves the roadway. This guide was written for use by design engineers and professionals involved in roadside safety and is considered a significant toll that combines current research with practical experience.</p> <p>The 2011 edition of the AASHTO Roadside Design Guide has been updated to include hardware that has met the evaluation criteria contained in the National Cooperative Highway Research Program (NCHRP) Report 350: Recommended Procedures for the Safety Performance Evaluation of Highway Features and begins to detail the most current evaluation criteria contained under the Manual for Assessing Safety Hardware, 2009 (MASH). For the most part, roadside hardware tested and accepted under older guidelines that are no longer applicable has not been excluded in this edition.</p>	AASHTO	Guidance	2011	https://bookstore.transportation.org/collect_detail.aspx?ID=105	\$218.00	\$182.00	Member price of \$168 (hard copy) and \$140 (electronic)
Roadway Safety Data Dashboards		FHWA Sponsored Resources	Information	2017	https://rspcb.safety.fhwa.dot.gov/safety_cop.aspx			
Rumble Strips and Rumble Stripes	<p>Safe accommodation of all road users can be considered when designing and applying rumble strips. Rumble strips are primarily a safety device for passenger vehicles. For other road users, particularly bicyclists, they may cause concerns. A part of the success in accommodating the variety of road users present on our roadways is the use of flexibility in the design and placement of rumble strips.</p> <p>To fulfill their purpose, tires must drop into the rumble and cause enough vibration or noise inside the vehicle to get the driver's attention. There are opportunities to reduce the impacts of rumble strips on other road users by adjusting dimensions and location. This section explores information about how to accommodate all road users with effective rumble strip design and implementation. Coordination with local bicycling organizations is highly recommended when developing policies and projects.</p>	FHWA Sponsored Resources	Guidance	2017	http://safety.fhwa.dot.gov/roadway_dept/pavement/rumble_strips/accommodating-all-users.cfm	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Safe Routes to School Online Guide	<p>This guide is a comprehensive online reference manual designed to support the development of Safe Routes to School (SRTS) programs. It provides links to other SRTS publications and training resources. Readers of the online guide can pick and choose specific topics based on their interests and needs, such as guidelines for adult school crossing guards, tools to create school route maps, and ways to include children with disabilities in SRTS initiatives.</p> <p>One of the basic tenets of pedestrian and bicycle safety is that to be effective, safety programs must be comprehensive – involving engineering, education, enforcement and evaluation. The online guide supports that premise by providing “one-stop shopping” on all aspects of SRTS. Plus it adds additional elements that apply to school programs, such as motivating students to walk and bicycle to school – or “encouragement”.</p> <p>This online guide contains several chapters. Each chapter is subdivided into sections. The sections within each chapter are easily identified with sub-links. Simply click on each sub-link within a chapter and you will enter a particular section.</p>	USDOT	Guidance	2015	http://guide.saferroutesinfo.org/	n/a	Free	
Safe Routes to School Toolkit	<p>In August 2000, the Marin County Bicycle Coalition and Walk Boston, with funding from the National Highway Traffic Safety Administration (NHTSA), began to develop a national model Safe Routes to School program. To demonstrate the benefits of the Safe Routes to School program, the Marin County Bicycle Coalition recruited nine pilot schools in four locations. Each school received guidance, forms, newsletters, and other promotional materials. A transportation engineer was hired to assist in developing plans to increase safety on routes to school. Every school held periodic Walk and Bike to School Days and participated in the Frequent Rider Miles contest which rewarded children who came to school walking, biking, by carpool, or by bus. At the end of the pilot program there was a 57% increase in the number of children walking and biking to school and a 29% decrease in the number of children arriving by car (those not in a carpool). This toolkit resulted from the experiences of the Marin County pilot program and from other Safe Routes to School programs in the United States, in the Canadian province of British Columbia, and in the United Kingdom.</p>	NHTSA	Guidance	2002	http://www.nhtsa.gov/people/injury/pedbi/mot/bike/SafeRoutes-2002/toc.html	n/a	Free	
Safety Analyst	<p>Safety Analyst is a set of software tools used by state and local highway agencies for highway safety management. Safety Analyst implements state-of-the-art analytical procedures for use in the decision-making process to identify and manage a systemwide program of site-specific improvements to enhance highway safety by cost-effective means. The software automates procedures to assist highway agencies in implementing the six main steps of the highway safety management process, including: network screening, diagnosis, countermeasure selection, economic appraisal, priority ranking, and countermeasure evaluation. Safety Analyst was developed as a cooperative effort by FHWA and participating state and local agencies. The software is available for licensing as an AASHTOWare product.</p>	AASHTO	Guidance	2015	http://www.safetyanalyst.org/	n/a	\$15,000.00	annual fee
Safety Effects of Marked versus Unmarked Crosswalks at Uncontrolled Locations: Final Report and Recommended Guidelines	<p>Pedestrians are legitimate users of the transportation system, and they should, therefore, be able to use this system safely. Pedestrian needs in crossing streets should be identified, and appropriate solutions should be selected to improve pedestrian safety and access. Deciding where to mark crosswalks is only one consideration in meeting that objective. The purpose of this study was to determine whether marked crosswalks at uncontrolled locations are safer than unmarked crosswalks under various traffic and roadway conditions. Another objective was to provide recommendations on how to provide safer crossings for pedestrians. This study involved an analysis of 5 years of pedestrian crashes at 1,000 marked crosswalks and 1,000 unmarked comparison sites. All sites in this study had no traffic signal or stop sign on the approaches. Detailed data were collected on traffic volume, pedestrian exposure, number of lanes, median type, speed limit, and other site variables. Poisson and negative binomial regressive models were used. The study results revealed that on two-lane roads, the presence of a marked crosswalk alone at an uncontrolled location was associated with no difference in pedestrian crash rate, compared to an unmarked crosswalk. Further, on multilane roads with traffic volumes above about 12,000 vehicles per day, having a marked crosswalk alone (without other substantial improvements) was associated with a higher pedestrian crash rate (after controlling for other site factors) compared to an unmarked crosswalk. Raised medians provided significantly lower pedestrian crash rates on multilane roads, compared to roads with no raised median. Older pedestrians had crash rates that were high relative to their crossing exposure. More substantial improvements were recommended to provide for safer pedestrian crossings on certain roads, such as adding traffic signals with pedestrian signals when warranted, providing raised medians, speed-reducing measures, and others.</p>	FHWA Sponsored Resources	Guidance	2005	https://www.fhwa.dot.gov/publications/research/safety/04100/04100.pdf	n/a	Free	
School Site Planning, Design and Transportation	<p>This report provides information to aid school and local officials, engineers, architects, planners, and developers in creating walkable, community-based schools. A major emphasis is on the design of new schools for maximum walkability, traffic safety, and efficiency. This report also addresses these issues for the improvement or redevelopment of existing school sites.</p>	ITE	Guidance	2013	http://ecommerce.ite.org/MIS/ItemDetails.aspx?ProductCode=IR-137	\$43.75	\$31.50	Member price of \$35 (\$25 for e copy)

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Separated Bike Lane Planning and Design Guide	This Separated Bike Lane Planning and Design Guide outlines planning considerations for separated bike lanes (also sometimes called "cycle tracks" or "protected bike lanes") and provides a menu of design options covering typical one and two-way scenarios. It highlights different options for providing separation, while also documenting midblock design considerations for driveways, transit stops, accessible parking, and loading zones. It provides detailed intersection design information covering topics such as turning movement operations, signalization, signage, and on-road markings. Case studies highlight best practices and lessons learned throughout the document. The Guide consolidates lessons learned from practitioners designing and implementing separated bike lanes throughout the U.S. It attempts to capture the current state of practice, while still recognizing that the understanding of this facility type is still evolving and that there is a need for design flexibility. To encourage continued development and refinement of techniques, the guide identifies specific data elements to collect before and after implementation to enable future analysis across facilities in different communities. It identifies potential future research, highlights the importance of ongoing peer exchange and capacity building, and emphasizes the need to create holistic ways to evaluate the performance of a separated bike lane.	FHWA Sponsored Resources	Guidance	2015	https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_page00.cfm	n/a	Free	
Separated Bikeways	The purpose of this report, developed by the ITE Pedestrian and Bicycle Council, is to present existing information about separated bikeways, consider the current and potential utility of separated bikeways in the United States and Canada, and promote the development of research statements for further investigation of the application, safety, and mobility performance of separated bikeways. Separated bikeways are one- or two-way exclusive bikeways parallel to the roadway yet physically separated from moving traffic by different vertical buffers. Separated bikeways are distinct from shared use paths, which are intended for bicycles and pedestrians. They also differ from bicycle lanes, which are on-street bicycle facilities separated from adjacent motor vehicles through the use of simple pavement markings and signage. This report does not address conventional bicycle lanes nor buffered bicycle lanes (conventional lanes with a designated buffer space between bicyclists and vehicles). Specifically, this report: Identifies some of the locations, designs, and operational attributes of separated bikeway facilities already constructed, including examples of European design practices; Summarizes safety studies that have been conducted on these facilities; and Presents the need for additional research that could assist in the development of guidelines and standards for the construction of these facilities where appropriate in the U.S. and Canada.	ITE	Guidance	2013	http://ecommerce.ite.org/ItemDetail?ProductCode=IR-135	\$43.75	\$31.50	Member price of \$35 (\$25 for e copy)
Shared-Use Path Level of Service Calculator	Shared-use paths are becoming increasingly busy in many places in the United States. Path designers and operators need guidance on how wide to make new or rebuilt paths and whether to separate the different types of users. The current guidance is not very specific, has not been calibrated to conditions in the United States, and does not accommodate the range of modes found on a typical U.S. path. The purpose of this project was to develop a level of service (LOS) estimation method for shared-use paths that overcomes these limitations. The research included the development of the theory of traffic flow on a path, an extensive effort to collect data on path operations, and a survey during which path users expressed their degree of satisfaction with the paths shown on a series of videos. Based on the theory developed and the data collected, the researchers developed an LOS estimation method for bicyclists that requires minimal input and produces a simple and useful result. The method requires only four inputs from the user: One-way user volume in the design hour, mode split percentages, trail width, and presence or absence of a centerline. Factors involved in the estimation of an LOS for a path include the number of times a typical bicyclist meets or passes another path user and the number of those passes that are delayed. The method considers five types of path users when calculating adult bicyclists' LOS, including other adult bicyclists, child bicyclists, pedestrians, runners, and in-line skaters. This report provides step-by-step instructions on how to use the LOS procedure and spreadsheet calculation tool, which can be downloaded from the Turner-Fairbank Highway Research Center Web site at www.tfrc.org . Other products of the effort include FHWA-HRT-05-137 Evaluation of Safety, Design, and Operation of Shared-Use Paths: Final Report, which documents the research and the spreadsheet calculation tool and is the basis of FHWA-HRT-05-139 Evaluation of Safety, Design, and Operation of Shared-Use Paths TechBrief.	FHWA Sponsored Resources	Information	2006	https://www.fhwa.dot.gov/publications/research/safety/pedbike/05138/	n/a	Free	
Speed Management Toolbox for Rural Communities	The primary objective of this toolbox is to summarize various known traffic-calming treatments and their effectiveness. This toolbox focuses on roadway-based treatments for speed management, particularly for rural communities with transition zones. Education, enforcement, and policy strategies should also be considered, but are not the focus of this toolbox. The research team identified treatments based on their own research, a review of the literature, and discussion with other professionals. This toolbox describes each treatment and summarizes placement, advantages, disadvantages, effectiveness, appropriateness, and cost for each treatment. The categories of treatments covered in this toolbox are as follows: horizontal physical displacement, vertical physical displacement, narrowing, surroundings, pavement markings, traffic control signs, and other strategies.	FHWA Sponsored Resources	Guidance	2013	http://www.ians.iastate.edu/research/documents/research-reports/rural_traffic_calming_toolbox_wcvr.pdf	n/a	Free	
Systemic Safety Project Selection Tool	The Systemic Safety Project Selection Tool presents a process for incorporating systemic safety planning into traditional safety management processes. The Systemic Tool provides a step-by-step process for conducting systemic safety analysis; considerations for determining a reasonable distribution between the implementation of spot safety improvements and systemic safety improvements; and a mechanism for quantifying the benefits of safety improvements implemented through a systemic approach. The tool is intended for use by transportation safety practitioners in state, county, and local government agencies to plan, implement, and evaluate systemic safety improvement programs and projects that best meet their capabilities and needs.	FHWA Sponsored Resources	Guidance	2013	http://safety.fhwa.dot.gov/systemic/fhwa13019/	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Technical Guide for Conducting Bicycle Safety Assessment for California Communities	This document describes the California BSA process and provides guidelines for BSA evaluators to conduct BSAs. It synthesizes current best practices and research on bicycling safety and provides guidelines for bicycling safety applications tailored to meet the needs of local communities in California. While this book targets California communities, the methods described are applicable outside California. Users of this guidebook outside of California should substitute national or locally adopted standards, practices, or references as needed. This guidebook is intended for use by transportation professionals, not the general public. This guidebook is based on material contained in the Federal Highway Administration (FHWA) report, Bicycle Road Safety Audit Guidelines and Prompt Lists http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa12018), incorporating elements from additional resources as deemed appropriate for California practice. It is modeled after the Technical Guide for Conducting Pedestrian Safety Assessments for California Communities (www.techtransfer.berkeley.edu/pedsafety/psa_handbook.pdf), produced by the University of California, Berkeley's award-winning Pedestrian Safety Assessment program.	NHTSA Sponsored Resource	Guidance	2013	http://www.techtransfer.berkeley.edu/services/bicycle-safety-assessments	n/a	Free	
Technical Guide for Conducting Pedestrian Safety Assessment for California Communities	The first edition of this guidebook was based on material contained in the Federal Highway Administration (FHWA) report, Pedestrian Road Safety Audit Guidelines and Prompt Lists (July 2007). The award-winning California PSA Program updated this second edition to incorporate current best practices and the collective experience of our team of evaluators who have conducted 78 PSAs in California over the past five years.	NHTSA Sponsored Resource	Guidance	2013	http://www.techtransfer.berkeley.edu/services/pedestrian-safety-assessments	n/a	Free	
The Pedestrian and Bicyclist Highway Safety Problem As It Relates to the Hispanic Population in the United States	The overall goal of the Federal Highway Administration's (FHWA) Pedestrian and Bicycle Safety Research Program is to increase pedestrian and bicycle safety and mobility. The following document describes the level of involvement of Hispanics in pedestrian and bicycle crashes. Possible approaches for local pedestrian and bicycle safety programs targeting Hispanics are presented. The results of this research will be useful to transportation researchers, engineers, planners and safety professionals involved in improving pedestrian and bicyclist safety and mobility.	FHWA Sponsored Resources	Information	2004	http://safety.fhwa.dot.gov/ped_bike/hispanic/	n/a	Free	
Toolbox of Countermeasures and Their Potential Effectiveness for Pedestrian Crashes	This issue brief documents estimates of the crash reduction that might be expected if a specific countermeasure or group of countermeasures is implemented with respect to pedestrian crashes. The crash reduction estimates are presented as Crash Reduction Factors (CRFs). As some studies reviewed included bicycle crashes in their analysis, some of the crash reduction estimates include bicyclists. Traffic engineers and other transportation professionals can use the information contained in this issue brief when asking the following types of question: Which countermeasures might be considered at the signalized intersection of Maple and Elm streets, an intersection experiencing a high number of pedestrian crashes? What change in the number of pedestrian crashes can be expected with the implementation of the various countermeasures?	FHWA Sponsored Resources	Guidance	2008	http://safety.fhwa.dot.gov/ped_bike/tools_solve/ped_traffic_calming/	n/a	Free	
Traffic Calming	"This Traffic Calming Web site was developed by the Institute of Transportation Engineers with financial support from the Federal Highway Administration in the interest of information exchange. The contents should not be construed as an endorsement. The United States Government assumes no liability for its contents or use thereof."	ITE	Information	2016	http://www.ite.org/traffic/index.asp	n/a	Free	
Traffic Control Devices Handbook	The Handbook augments the 2009 Edition of the Manual on Uniform Traffic Control Devices (MUTCD). The Traffic Control Devices Handbook, 2nd Edition provides guidance and information to implement the provisions of the MUTCD. The objective of the Handbook is to bridge the gap between the MUTCD requirements and field applications. Additional guidance is provided on the new MUTCD requirements to clarify these MUTCD provisions. The Handbook does not establish policy, procedures, or standards for an agency, or set the "standard-of-care" for decisions on traffic control devices. It is meant as guidance material to assist in determining the appropriate device(s) for a specific condition based on judgment and/or study. The Handbook includes 16 chapters covering the wide variety of traffic control devices available to meet public need. There are chapters on low-volume, rural roads as well as residential streets. Separate chapters are provided for signs, markings, traffic signals, railroad-highway grade crossings and temporary (construction) traffic controls. One chapter addresses installation considerations for traffic control devices. Another discusses the human-factor considerations in the application of traffic control devices. The specific issues of traffic control devices for schools, pedestrians and bicyclists are each addressed in separate chapters.	ITE	Guidance	2013	http://ecommerce.ite.org/ItemDetail.aspx?ProductCode=IR-112A	\$62.50	n/a	Member price of \$50
Traffic Monitoring Guide	FHWA has released a 2013 edition of the Traffic Monitoring Guide (TMG) which provides the most up to date guidance to State highway agencies in the policies, standards, procedures, and equipment typically used in a traffic monitoring program. The TMG presents recommendations to help improve and advance current programs with a view towards the future of traffic monitoring and with consideration for recent transportation legislation resulting from MAP-21. The needs for traffic data at both the Federal and State levels will continue to require that States have a well-designed traffic monitoring program to support all business areas. Traffic data and information is needed to assess current and past performance and to predict future performance. Improved traffic data, including data on ramps, is needed for reporting in the Highway Performance Monitoring System (HPMS) and there are now opportunities to utilize traffic data from Intelligent Transportation Systems (ITS) to support coordination of planning and operations functions at the Federal and State levels.	FHWA Sponsored Resources	Guidance	2013	http://www.fhwa.dot.gov/policyinformation/tmg/	n/a	Free	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Traffic Safety Facts Bicyclists and Other Cyclists	NHSTA regularly produces fact sheets and reports on bicycle safety and statistics.	NHTSA Sponsored Resource	Information	2015	http://www-nrd.nhtsa.dot.gov/Cats/listpublications.aspx?Id=45&ShowBy=Category	n/a	Free	
Traffic Safety Facts Pedestrians	NHSTA regularly produces fact sheets and reports on pedestrian safety and statistics.	NHTSA Sponsored Resource	Information	2015	http://www-nrd.nhtsa.dot.gov/Cats/listpublications.aspx?Id=13&ShowBy=Category	n/a	Free	
Transportation Planners Safety Desk Reference	This report is a reference document on safety for use by transportation planners. It serves as a companion to the National Cooperative Highway Research Program's (NCHRP) Report 500 Guidance for Implementation of the American Association of State Highway and Transportation Officials (AASHTO) Strategic Highway Safety Plan. The report describes an overview of transportation safety, the potential roles that transportation planners can play to advance it, a framework for incorporating safety into the transportation planning process, available sources that may be accessed to fund safety programs, and a menu of possible safety strategies. This report will be of interest to transportation planning staff who wish to more effectively incorporate safety into the planning process and improve safety on their transportation systems, including state departments of transportation, metropolitan planning organizations, and other organizations involved in transportation decision-making. It is being distributed electronically via the Transportation Planning Safety Working Group, FHWA, and other web sites.	FHWA Sponsored Resources	Guidance	2010	http://tsp.trb.org/assets/FR_Safety%20PIanner_1_17_07FINAL.pdf	n/a	Free	
Transportation Planning Handbook	This is a reference for practicing transportation professionals involved with the administrative, technical and legal aspects of transportation planning. It is a must for anyone in the governmental, consulting and educational fields working with the planning of the transportation infrastructure. Written by 22 highly respected authors in the field of transportation, and reviewed by leading transportation professionals, the new edition breaks chapters down into three categories: basic understanding, application contexts and strategy-specific planning. Basic information covers legal framework; urban travel characteristics and modeling; environmental considerations; land use and urban design; evaluation and prioritization methods; and asset management. Application chapters focus on various planning contexts such as statewide; corridor; metropolitan; activity centers and site impact analysis; rural and tribal; transportation terminals; and recreational areas. Strategies are explained in relation to transit, operations, parking, safety, freight and pedestrians/bicycles.	ITE	Guidance	2016	http://ecommerce.ite.org/ItemDetail?iProductCode=LP-695	\$150.00	n/a	Member price of \$110
Transportation Planning Process Briefing Book	This book provides an overview of transportation planning and will be useful for government officials, transportation decisionmakers, planning board members, transportation service providers, interested stakeholders, and the public. It covers the basics and key concepts of metropolitan and Statewide transportation planning, along with references for additional information. Part I discusses transportation planning and its relationship to decisionmaking. This section is general and provides a broad introduction to the planning process. Part II presents short descriptions of the key products that are prepared as part of the transportation planning process. This book has been updated to reflect recent changes in Federal legislation concerning the requirements for transportation planning at the metropolitan, and Statewide and nonmetropolitan levels. It is an informational publication that replaces its predecessor of the same title published in 2007. This report, along with a collection of related informational resources, is available electronically on the Transportation Planning Capacity Building website at www.planning.dot.gov and is updated periodically to include additional topics or information.	FHWA Sponsored Resources	Information	2015	http://www.fhwa.dot.gov/planning/publications/briefing_book/	n/a	Free	
Urban Bikeway Design Guide	The purpose of the NACTO Urban Bikeway Design Guide (part of the Cities for Cycling initiative) is to provide cities with state-of-the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists. The NACTO Urban Bikeway Design Guide is based on the experience of the best cycling cities in the world. The designs in this document were developed by cities for cities, since unique urban streets require innovative solutions. Most of these treatments are not directly referenced in the current version of the AASHTO Guide to Bikeway Facilities, although they are virtually all (with two exceptions) permitted under the Manual on Uniform Traffic Control Devices (MUTCD). The Federal Highway Administration has posted information regarding MUTCD approval status of all of the bicycle related treatments in this guide and in August 2013 issued a memorandum officially supporting use of the document. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US. To create the Guide, the authors have conducted an extensive worldwide literature search from design guidelines and real-life experience. They have worked closely with a panel of urban bikeway planning professionals from NACTO member cities, as well as traffic engineers, planners, and academics with deep experience in urban bikeway applications.	NACTO	Guidance	2012	http://nacto.org/publication/urban-bikeway-design-guide/	\$50.00	\$49.99	

Resource Name	Abstract	Category	Resource Type (FHWA)	Last Updated	Link	Hard Copy \$	E-Copy \$	Availability Notes
Urban Street Design Guide	A blueprint for designing 21st century streets, the Guide unveils the toolbox and the tactics cities use to make streets safer, more livable, and more economically vibrant. The Guide outlines both a clear vision for complete streets and a basic road map for how to bring them to fruition.	NACTO	Guidance	2013	http://nacto.org/publication/urban-street-design-guide/	\$50.00	\$49.99	
Urban Street Design Guide Overview	Overview document released prior to full guide	NACTO	Guidance	2012				Overview document released prior to full guide
USDOT PedSafe Countermeasures Final System Impact Report	FHWA awarded three cooperative agreements to Las Vegas, NV; Miami-Dade, FL; and San Francisco, CA to demonstrate and evaluate the effectiveness of a combined pedestrian safety engineering and intelligent transportation systems (ITS)-based areawide countermeasures program for reducing pedestrian fatalities, injuries, conflicts, and other surrogate measures of safety. Each of the field teams conducted two-phase studies, which included self-evaluations of the pedestrian countermeasures that were ultimately selected and deployed. The objectives of the evaluations were to assess the safety and mobility impacts of the pedestrian countermeasures deployed through the collection and analysis of quantitative data. A wide range of data was collected. Data included safety surrogate measures of effectiveness (MOEs) (e.g., driver and pedestrian behavioral data), driver mobility MOEs (e.g., travel times and speeds along corridors), and pedestrian mobility MOEs (e.g., average pedestrian delays). FHWA also sponsored an independent national evaluation of the countermeasures as well as a cross-cutting study of the teams' findings. This report presents and discusses the evaluation results for 18 pedestrian safety countermeasures (or combination of countermeasures) and contains cross-cutting analyses, where possible, of those countermeasures that were deployed by more than one of the field teams. Lessons learned by the field teams throughout the course of the project are also synthesized and presented herein. Overall, the implementation and evaluation of a comprehensive pedestrian safety program proved to be a very challenging undertaking for each of the three field teams involved. There were many lessons learned over the course of the more than 6- year project, ranging from assembling and maintaining communications with a diverse set of project partners, to countermeasure selection and procurement, to the details associated with the successful application of particular countermeasures. The quantitative results are fairly mixed and in some cases inconsistent. Nonetheless, there were many notable and promising findings from the field tests and evaluations that might be applied by other jurisdictions in their efforts to improve the safety of pedestrians.	USDOT	Information	2009	http://safety.fhwa.dot.gov/ped_bike/tools_solve/pedscdproj/sys_impact_rpt.pdf	n/a	Free	
USDOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations	The United States Department of Transportation (DOT) is providing this Policy Statement to reflect the Department's support for the development of fully integrated active transportation networks. The establishment of well-connected walking and bicycling networks is an important component for livable communities, and their design should be a part of Federal-aid project developments. Walking and bicycling foster safer, more livable, family-friendly communities; promote physical activity and health; and reduce vehicle emissions and fuel use. Legislation and regulations exist that require inclusion of bicycle and pedestrian policies and projects into transportation plans and project development. Accordingly, transportation agencies should plan, fund, and implement improvements to their walking and bicycling networks, including linkages to transit. In addition, DOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all ages and abilities, and utilize universal design characteristics when appropriate. Transportation programs and facilities should accommodate people of all ages and abilities, including people too young to drive, people who cannot drive, and people who choose not to drive.	USDOT	Policy	2010	http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/policy_accommodation.cfm	n/a	Free	
USLIMITS2: A tool to aid practitioners in determining appropriate speed limit recommendations	"USLIMITS2 is a web based tool designed to help practitioners set reasonable, safe, and consistent speed limits for specific segments of roads. USLIMITS2 is applicable to all types of roads ranging from rural local roads and residential streets to urban freeways. User-friendly, logical, and objective, USLIMITS2 is of particular benefit to local communities and agencies without ready access to engineers experienced in conducting speed studies for setting appropriate speed limits. For experienced engineers, USLIMITS2 can provide an objective second opinion and increase confidence in speed limit setting decisions."	FHWA Sponsored Resources	Guidance	2014	http://safety.fhwa.dot.gov/uslimits/	n/a	Free	
Virginia Department of Transportation Work Zone Pedestrian and Bicycle Guidance	The purpose of this guidance is to present basic guidelines for work zone traffic control for pedestrians and bicyclists. It is a supplement to the current edition of the 2011 Virginia Work Area Protection Manual. These recommendations and examples apply to temporary traffic control zones, as found in construction, maintenance, permit and utility work areas. This information is intended to illustrate the principles of proper work zone traffic control for pedestrians and bicyclists, but is not a standard. The Virginia Work Area Protection Manual contains the standards for temporary traffic control zones for roadways in Virginia and can be accessed at VirginiaDOT.org, Business Center.	State Resource	Guidance	2016	http://www.virginiadot.org/business/resources/wztc/2016_WZ_Ped_BikeGuide.pdf	n/a	free	