

AASHTO Technical Committee on Nonmotorized Transportation Annual Meeting Minutes

Monday, June 2, 2014 in Savannah, GA

Attendees

Members: Scott Woodrum, Chair (Virginia DOT), Tony Laird, Vice-Chair (Wyoming DOT), Dan Goodman, Secretary (FHWA), Ron Effland (Missouri DOT), Joseph Andrew Hofstee (Delaware DOT), Milly Ortiz (Iowa DOT), Becky Pepper (Kansas DOT), Lynn Jonell Soporowski (Kentucky DOT), Jameelah Hayes (AASHTO).

Non-Members: Ray Derr, Evan Rothblat, Charlie Zegeer, Darren Torbic, Paul Ryus, Richard Kuzmyak, Michael Hintz, Jamie Parks, Bob Schneider, Dick Albin, Theo Petritsch, David Vega-Barachowitz.

Updates on Ongoing Projects

- **NCHRP 17-56:** Development of Crash Reduction Factors for Uncontrolled Pedestrian Crossing Treatments, Charlie Zegeer, University of North Carolina - Chapel Hill. This project developed crash modification factors at unsignalized intersections and includes hybrid beacons, HAWKS, RRFBs, refuge islands, etc. The project will be completed around May 2015. For more information, see: <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3178>
- **NCHRP 07-17:** Pedestrian and Bicycle Transportation along Existing Roads, Michael Hintz, Toole Design Inc. This project will provide a methodology for evaluating and prioritizing pedestrian and bicycle infrastructure improvements. Twelve agencies have pilot tested the methodology and it will likely be posted on the PBIC webpage. The project has included a literature review, survey and outreach, categorization of methodologies, development of draft methodology, pilot testing, final methodology, and development of outreach material. A programmed MS Excel spreadsheet will also be provided. For more information, see: <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2955>
- **NCHRP 08-78:** Estimating Bicycling and Walking for Planning and Project Development, Richard Kuzmyak, Renaissance Planning Group. This project will result in a guidebook on techniques for estimating demand. A GIS tool will also be provided that overlaps networks with land use to generate accessibilities. The methods will account for trip purpose, land use, transportation facilities, natural environment, socio-demographics, etc. The project will be released as Report 770. For more information, see <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2707>
- **NCHRP 15-42:** Recommended Bicycle Lane Widths, Darren Torbic, Midwest Research Institute. This project will inform design decisions for bike lanes based on volumes, lane width, on-street parking, amount of truck traffic, and other factors. This information can inform the next update of the AASHTO Bike Guide. For more information, see: <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2723>
- **NCHRP 07-19:** Methods and Technologies for Collecting Pedestrian and Bicycle Volume Data, Paul Ryus, Kittleson & Associates, Inc. This project will assess existing, new, and innovative

technologies and methods for pedestrian and bicycle counting. It will provide guidance for practitioners on how best to collect volume data. It will cover data applications, planning and implementation considerations, adjusting techniques, technology toolbox, and case studies. For more information, see: <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3159>

- **NCHRP 20-07/Task 350:** US Bicycle Route Guide Signing, Theo Petritsch, Sprinkle Consulting, Inc. This project will outline methods for signing overlapping routes and multiple routes. It will include an evaluation of various sign technologies and sign types. It will inform the MUTCD and the updated AASHTO Bike Guide. It is anticipated to be completed in summer/fall 2014. For more information, see: <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3603>
- **NCHRP 15-45:** Proposed Update of the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, Theo Petritsch, Sprinkle Consulting, Inc. This project will develop the text for the updated AASTO Pedestrian Guide. A draft was recently submitted, one more is anticipated. The report will distinguish pedestrian accommodations from pedestrian facilities. The Technical Committee will likely review the report in fall 2014 and then will through the balloting process. For more information, see: <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3175>.

Projects Recently Selected for Funding by the AASHTO Standing Committee on Research (SCOR)

- **NCHRP 08-102:** Understanding Urban Bicyclist Facility Type Preferences and Facility Type Impacts on Transportation System Performance. This research will inform practitioners at state departments of transportation, regional planning agencies, and cities about the types of bicycle facility designs that are most preferred by bicyclists and focus on (1) Analyzing the relationship between urban bicyclist demographics and attitudes and bicyclist facility type preferences, including a review of existing studies to guide this research on potential correlations between those factors and; (2) Understanding bicyclist route choice effects and resulting system impacts of bikeway installations in different types of urban regions by studying locations where on-street bicycle facilities have been deployed in urban areas. The studied facility types will include relatively new design options, the impacts of which are not yet well-understood, such as shared bus/bike lanes and sharrows. The area types will include a variety of U.S. locations and at least one dense large-city downtown and one or more smaller cities whose down-town is served by a major arterial or state highway. For more information, see: http://onlinepubs.trb.org/onlinepubs/nchrp/NCHRP_PanelSolicit2015.pdf.
- **NCHRP 17-73:** Developing a Systemic Safety Analysis tool for Pedestrians. The objective of this research is to develop a tool to conduct systemic safety analysis for pedestrians using analytical techniques to identify road features that are high-risk for pedestrians and recommend the appropriate and cost-effective systemic pedestrian safety improvements. The research would be conducted through the following tasks: (1) Develop an analytic method to identify prevalent pedestrian crash types and the predominant facilities for these crashes. The conjecture here is that there is an association between specific crash types and design at-tributes that can be identified; (2) Develop a procedure to select the appropriate safety improvements given the pedestrian crash type and the attributes of the facility; (3) Develop a technique to calculate the benefit-cost ratio of systemic pedestrian safety improvements. This technique would ideally consider the economies of scale of implementing the same improvements across multiple

locations and; (4) Develop a prototype tool that incorporates the above tasks. For more information, see: http://onlinepubs.trb.org/onlinepubs/nchrp/NCHRP_PanelSolicit2015.pdf.

- **NCHRP 15-60:** Update of the AASHTO Guide for the Development of Bicycle Facilities. The objective of the research is to update the *AASHTO Guide for the Development of Bicycle Facilities* and develop a draft guide suitable for review and balloting by the AASHTO Technical Committee on Nonmotorized Transportation. For more information, see: http://onlinepubs.trb.org/onlinepubs/nchrp/NCHRP_PanelSolicit2015.pdf.
- **NCHRP Synthesis 20-05/Topic 46-10:** Traffic Control Device Application at Pedestrian Crossings of Streets and Highways. This project will result in a comprehensive reference is needed to document pedestrian treatments that will enable engineers to make objective safety and operational design-decisions at intersections and crossing in a uniform and consistent manner that produces an effective outcome for users. For more information, see: <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3799>

Other Updates

- **NACTO Urban Street Design Guide**, David Vega-Barachowitz. NACTO is a peer to peer network of cities that advances city design. An overview of the NACTO Urban Street Design Guide was provided. The Guide notes specific strategies for getting design controls to move toward an established vision, rather than allowing the design controls to set an incidental vision in motion (e.g. design speed versus target speed versus posted speed). An online version is provided to make the USDG a “living document.” An endorsement campaign was completed May 31. Items included in the Guide that are not covered in the Green Book include functional class, shared streets, cycle tracks, transit priority, and interim improvements. Supper sharrows (i.e. green backed shared lane markings) were discussed. The TCNMT was specifically asked if there were any concerns with this application of green backed shared lane markings and there was consensus that there is no concern with this application. For more information, see: <http://nacto.org/usdg>.
- **Rumble Strips & Bicycle Accommodations Discussion**, Dick Albin, P.E., FHWA. There are significant studies underway on safety impacts of rumble strips, for example by discouraging instances where vehicles leave the roadway and/or veer across the center line. These safety benefits need to be weighed against other considerations. There may be a need for additional research on the impact of rumble strip applications on bicycle networks on different roadway types and in different land use settings.
- **US Access Board Update**, Melissa Anderson, U.S. Access Board. An update was provided on the status of the PROWAG process. There was discussion on PROWAG and shared use paths. The hope is that PROWAG will be out by the end of 2014. This would require voting at the July and/or September meetings and there would also be a 90 day OMB approval period. There was some discussion of differences in standard drawings, for example in the use of tactile domes, between the Access Board, FHWA, and DOJ. It was also noted that Questions and Answers were being developed as a supplement to the DOT/DOJ document. The applicable date is effective immediately but there are caveats and safe harbor provisions.

- **FHWA Update-** Dan Goodman, FHWA. FHWA provided an update on ongoing and planned pedestrian and bicycle initiatives. The presentation included an overview of national leadership commitment. Safety is U.S.DOT's top priority, the agency intends to build on past investment and work, while at the same time acknowledges innovation and rapid advancement in pedestrian and bicycle planning and design and increasing public demand. In response, FHWA is implementing targeted policy changes, convening an agency wide Pedestrian and Bicycle Work Group, actively supporting partners, initiating an aggressive research program, and package information to aid accelerated planning, programming, and design decision making. Pedestrian and bicycle focus areas include safety; connected networks; data and performance measures; and equity and ladders of opportunity.

FHWA provided an update on the [Design Flexibility Memo](#), recent [guidance on curb ramps and resurfacing](#), FHWA's ongoing Cycle Track Project, and USDOT's commitment to connected pedestrian and bicycle networks. FHWA is currently initiating an aggressive research agenda on a range of topics including pedestrian and bicycle safety, performance measures, design flexibility, network development, international best practices, and Transportation Alternatives Program (TAP) performance evaluation. FHWA will also be working on a *Strategic Agenda for Pedestrian and Bicycle Transportation* that will identify critical gaps, prioritize near term investments, and establish a national framework for issues such as data collection and management, network implementation and documentation, research, training, and national design guidance.

Research Needs and Proposal Review Session

Jamie Parks from the TRB Bicycle Committee and Bicycle Research Subcommittee and Bob Schneider and Dan Goodman from the TRB Pedestrian Committee and Pedestrian Research Subcommittee presented research priorities identified by the TRB Bicycle and Pedestrian Committees. The research ideas that were presented were developed and ranked by the respective committees and are included for reference on the following pages. The TCNMT provided feedback on the research ideas and highlighted ones of particular interest. It was noted that the TCNMT is especially interested in research topics that have practical relevance and that can be foreseeably "operationalized" by state DOT planning, engineering, and design staff.

As follow-up, the TRB Pedestrian and Bicycle Committees will provide a revised list of research ideas that best meet the goals and interests of the TCNMT and the TCNMT will then prioritize or rank the ideas. The TRB Committees and the TCNMT will schedule a follow-up conference call to discuss the research ideas and will also look for opportunities to meet again in person, for example at the Pro Walk/Pro Bike/Pro Place conference in September 2014 or the TRB annual meeting in January 2015.

Additional topics that were discussed included the Pooled Research Fund mechanism to fund important research and potential criteria for evaluating research projects (e.g. safety, operations, balance, ability to operationalize research results, etc.).

2012-2014 Submitted Research Needs Statements, TRB Pedestrian Research Subcommittee

Year	Research Needs Statement Type	Title	TCNMT Submitted to NCHRP for Consideration	Funded?
2014	Synthesis	Synthesis of the Economic Benefits of Pedestrian and Bicycle Transportation	NA	No
		Developing and Refining the Standards for Traffic Control Device Application at Pedestrian Crossings of Streets and Highways	NA	Yes
		Synthesis of Pedestrian Infrastructure Assessment Methods and Tools	NA	No
		Lighting for Pedestrian Safety and Walkability	NA	No
	Full	TBD	TBD	TBD
		TBD	TBD	TBD
2013	Synthesis	State of the Practice for Sidewalk Maintenance	NA	No
		Synthesis of Pedestrian Infrastructure Assessment Methods and Tools	NA	No
		Data sources to measure pedestrian and bicycle safety in parking lots	NA	No
		Framework for Developing Pedestrian and Bicycle Performance Measures	NA	No
	Full	Safe Practices for Bicyclists Passing Pedestrians	TBD	No
		Documenting Severe Pedestrian Injuries for Accurate Performance Measurement	TBD	No
		Selecting the corner radius and design vehicle to improve safety at intersections	TBD	No
		Using Automated Detectors to Maximize Safety for Pedestrians and Bicyclists at Signalized Intersections	TBD	No
		Countdown Pedestrian Signals: Accuracy of Response by Pedestrians with Varying Levels of Visual Acuity	TBD	No
2012	Synthesis	State of the Practice for Sidewalk Maintenance	NA	No
		Synthesis of Pedestrian Infrastructure Assessment Methods and Tools	NA	No
		Synthesis of Practices to Improve Pedestrian Access to and Safety at Local Bus Stops	NA	No
		Data sources to measure pedestrian and bicycle safety in parking lots	NA	No
		Framework for Developing Pedestrian and Bicycle Performance Measures	NA	No
	Full	Improving Pedestrian Injury Reporting	Yes	No
		Guide for Managing Pedestrian Facility Risks	Yes	No
		Guidelines for selecting the corner radius and design vehicle to improve safety at intersections with pedestrian crossings	Yes	No

Pedestrian Research Priorities, 2014 Pedestrian Research Subcommittee Annual Meeting

Category	Specific Topics	Small Group Discussion Priorities	Total Votes
User Characteristics	Influence of demographic characteristics on pedestrian behavior; Data on attitudes and behaviors; Typology of choice walkers (Why they walk or don't walk), possibly organized by security, physical infrastructure, barriers, motivations	3	18
Performance Measures	Pedestrian behavior performance measures guidance; Performance measurement; Synthesis of bike/ped performance measures: Establish clear measures for key quantities of interest: A: how to monitor, B: How to evaluate effects of interventions, and C: Before/after evaluations	3	14
	Pedestrian count data collection for demand forecasting	1	3
	Pedestrian comfort - what changes to infrastructure impact comfort, user component	1	2
Economic Impact of Walking	Economic impacts of pedestrian (and bicycle) facilities; Economic and fiscal costs and benefits of (1) pedestrian projects and strategies (2) of walking; Economic case for walking, including what developers, business interests, etc. think	3	12
Safety Analysis	Identify and prioritize high crash locations; Synthesis on how to identify and prioritize high collision locations for pedestrian safety action plans; Using incident data to give insight on how pedestrians behave and using data for a database	3	9
	Safety effects of sidewalks on urban/suburban arterials	1	4
	Urban multimodal safety and design at intersections (looking at how pedestrians behave and what they prefer)	1	4
	Safety prediction models for pedestrian crashes at mid-block locations with marked crosswalks along urban multilane roadways	1	2
Evaluation of Treatments	Investigate the effectiveness of yield/stop to pedestrian signs (marking) at crossing (mid-block, intersection, signal, transit)	1	8
	Best practices for pedestrian related enforcement/social norm change (consistent enforcement of driver yielding, pedestrian jaywalking, speeding, obeying traffic control)	1	6
	Improve safety of mid-block crossings near transit stops	1	5
	Obstacles to pedestrian accessibility in traffic signal engineering practice	1	2

Draft Transportation Research Circular: A Research Program for Pedestrian Research Subcommittee

Preface: The pedestrian field has advanced significantly since the last Pedestrian Research Circular was published, by the Transportation Research Board (TRB), in 2005. The Pedestrian Research Subcommittee (PRS) of the TRB Pedestrian Committee has developed a significant number of research needs statements (RNSs) since 2005. While a few of these RNSs became funded research projects, many of them are in need of funding. This Research Circular provides an overview of Pedestrian RNSs that have been developed by the PRS since 2005 in Part I. During 2010, PRS members began a strategic initiative to identify goals of agencies and other organizations that may have an interest in conducting or funding pedestrian research. In Part II, the Research Circular identifies pedestrian-related goals of transportation and non-transportation organizations that may correspond to the topics described in the Pedestrian RNSs. This document does not make specific recommendations to organizations. However, it presents RNSs that could be adopted to help meet the goals of these organizations. This Pedestrian Research Circular is a living document. The PRS looks forward to receiving feedback about existing topics that have been funded or new ideas for research.

Fully Developed and Available Pedestrian Research Needs Statements

Safety

- RNS 1: Data Sources to Measure Pedestrian and Bicycle Safety in Parking Lots
- RNS 2: Increasing the Safety of Interactions between Pedestrians and Large Commercial Vehicles in Urban Areas
- RNS 3: Improving the Safety of Mid-Block Pedestrian Crossings near Transit Stops
- RNS 4: Automobile Parking and Pedestrian Safety: a Search for a Unifying Frame of Reference
- RNS 5: Effects of Hand-Held Communication Device use on Pedestrian Safety
- RNS 6: Improving Pedestrian and Bicyclist Accessibility and Safety at At-Grade Railroad Crossings
- RNS 7: Pedestrian-Vehicle Conflicts Near Schools

Policies and Institutions

- RNS 8: Documenting Severe Pedestrian Injuries for Accurate Performance Measurement
- RNS 9: Framework for National Pedestrian and Bicycle Performance Measures
- RNS 10: Determinants of Success: Best Practices for Evaluating Safe Routes to School Programs
- RNS 11: Improving Transit and Transportation Agency Coordination to Increase the Safety of Mid-Block Pedestrian Crossings near Transit Stops

Planning & Design

- RNS 12: Synthesis of Pedestrian Infrastructure Assessment Methods and Tools
- RNS 13: Developing Guidelines to Improve Pedestrian Access to Transit Stops
- RNS 14: Effects of Pedestrian Improvements on Transit Ridership and Customer Satisfaction
- RNS 15: A Platform for the Simulation of Pedestrians
- RNS 16: Understanding Users' Diverse Vision Needs for Safe, Usable Transit Systems
- RNS 17: Development of a Methodology to Evaluate the Impacts of Constructing Missing Sidewalks

Operations & Maintenance

- RNS 18: Best Practices for Pedestrian Facility Maintenance
- RNS 19: Evaluation of Automated Pedestrian Detection Technologies

TRB Bicycle Transportation Committee - Research Priority Summary

This document summarizes the current research priorities of the TRB Bicycle Committee. The Bicycle Committee has 19 current Research Needs Statements (RNSs) covering a range of potential bicycle-related research. This document describes 6 research needs that we feel have the best potential to be successful and high-value NCHRP projects, based on 2013 voting by Bicycle Committee members. The research needs are divided into 2 tiers:

Tier 1 - Highest Priority Research

- Safety Evaluations of On-Street Bikeway Designs
- Calibration of Highway Capacity Manual (2010) Bicycle Level of Service to Urban and Suburban Bikeways

Tier 2 - Other High Priority Research

- Impact of Traffic Speed on Bicycling Risk
- Methods for Creating and Maintaining Statewide Bicycle and Pedestrian Count Data Warehouses
- Design Options to Reduce Turning Vehicle/Bicycle Conflicts at Intersections
- Development of a Bicycle Safety Diagnosis and Prediction Methodology

The Bicycle Committee would be interested in working with the TCNMT to refine any of these statements to better reflect TCNMT and AASHTO priorities.

The remainder of the document summarizes each RNS, and also provides a link to the full RNS on the TRB RNS database. A full list of Bicycle Committees research needs is available by searching "ANF20" in the TRB data (rns.trb.org).

Safety Evaluation of On-Street Bikeway Designs

<http://rns.trb.org/dproject.asp?n=33966>

While on-street bike lanes have been used in the United States for many years, separated bikeways are increasingly popular throughout the United States, with recently installed facilities in many cities, and numerous other state and local departments of transportation exploring the potential for additional facilities.

The investigation should consider a range of separated bikeways and on-street cycle lanes immediately adjacent to roadways, including, but not limited to, one-way and two-way bikeways, bike lanes separated from motor vehicle traffic by different types of barriers or by parking lanes, on-street bike lanes, and paths raised to sidewalk or near sidewalk level. It should consider applications on streets with and without parallel parking, and both signalized and unsignalized intersections. The impact of various design treatments should also be examined to the extent possible, including the impacts of:

- signal phasing options to separate cyclists and turning motorists; intersection approach treatments;
- removal of parking to improve sightlines, especially at intersections;
- access management and driveway frequency;
- signs and pavement marking at intersections, including colored pavement;

- advanced stop lines (“bike boxes”) to allow bicyclists to queue ahead of motorists at signalized intersections; and
- alternative methods to accommodate bicycle left-turns

A possible outcome of the research would be information useful for the development of guidance that could be included in, supplement, or update the revised AASHTO Guide for the Development of Bicycle Facilities. One critical issue identified for this guide is the lack of research on various separated bikeway designs in the US. Research results could also be used to update other guidance documents, such as the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide, or influence updates to the Federal Highway Administration’s Manual on Uniform Traffic Control Devices. The research could also be incorporated into the Highway Safety Manual, which is short on risk relationships for bicycle facilities. Other possible outcomes are a greater understanding of the safety, efficiency, connectivity, and maintainability issues associated with some separated bikeway designs, and the identification of additional research needs.

Calibration of Highway Capacity Manual (2010) Bicycle Level of Service to Urban and Suburban Bikeways

<http://rns.trb.org/dproject.asp?n=33971>

HCM 2010 is the de facto standard for transportation engineering analysis in numerous locations throughout the United States; yet, recent research shows significant limitations with the HCM BLOS. In particular, the methodology is insensitive to many design alternatives, including emerging bicycle facilities (e.g., cycle tracks) shown to have significant effects on cyclist preferences. Moreover, HCM BLOS only addresses the suitability of facilities in isolation and does not provide an understanding of the “bikeability” of the larger network, in addition to covering a limited range of facilities and roadway types (e.g. primarily focused on arterials).

The proposed research will create a statistically and methodologically robust refinement of the HCM 2010 BLOS through field-based research and user surveys, with models applicable to both urban and suburban conditions. The research team will design and implement field experiments of user preference and comfort, taking into account the user experience and demographics. Participants will experience a variety of roadway types with innovative and standard bikeways and rate their experiences for each facility. Data will be collected at the segment level and also with regard to the overall perception of a particular route in order to understand how the network serves the users in terms of “bikeability”, and whether the bikeway provides convenient, comfortable access.

The research team will derive a BLOS model that is calibrated to urban and suburban contexts. Location-specific BLOS will be expanded to network measures of level of comfort, as done with Level of Traffic Stress. The proposed research plan includes execution of the experiment in a dispersed range of jurisdictions.

Impact of Traffic Speed on Bicycling Risk

<http://rns.trb.org/dproject.asp?n=33963>

Research investigating barriers to bicycling suggests that perceived traffic risk is a consistent deterrent. However, it is unclear how various aspects of perceived risk affect current and potential bicyclists. In particular, little is known about how traffic speeds affect cyclists' perceptions of safety and comfort—particularly when sharing the road with traffic.

Similarly, the profession lacks understanding of the relative risk of cyclists sharing the road with drivers in various circumstances and design speeds. The effect of traffic speeds (and motor vehicle impact speeds) on the severity of pedestrian crashes has been well-studied finding strong correlation between increasing motor vehicle speeds and increasing crash severity. These effects have generally been assumed to apply to bicycle crashes, although little research has examined bicycle-specific effects of traffic speed. A small study in New Zealand found that the effects of traffic speed on fatality rates may differ between pedestrians and cyclists, but more research is necessary to understand how risk may differ at various speeds.

The proposed research will investigate the effects of different traffic speed environments on the perceived and actual safety of bicyclists, and develop research-based guidance for safe accommodation of bicyclists under various speed conditions. The majority of effort will be directed at gathering field-based observational data.

Methods for Creating and Maintaining Statewide Bicycle and Pedestrian Count Data Warehouses

<http://rns.trb.org/dproject.asp?n=33964>

Without accurate bicycle and pedestrian count data, facility level analysis of roadway safety, design, and use often does not include bicyclists and pedestrians. As leading health agencies call for higher levels of physical activity and recommend walking and cycling to improve overall health, the desire for safer and more effective roadway design for these uses will increase. To do the rigorous safety analyses needed to understand what facilities are safest for non-motorized road users, accurate count data at the facility level is needed. Similarly, count data is important to understanding how road design affects bicycle and pedestrian road use.

While the need is great, bicycle and pedestrian count data are already being collected in most states, usually by local agencies. For the most part, these data are used for a specific study or analysis and are not archived systematically or made available to state departments of transportation (DOTs). Some states have begun to seek out local agencies who conduct short-term bicycle and pedestrian counts or who operate continuous bicycle and pedestrian count equipment to gather these data into a statewide database. Some states also conduct their own bicycle and pedestrian counting programs. These programs demonstrate potential solutions for how bicycle and pedestrian count data can be better managed and distributed to those who need them.

The objective of this study is to recommend best practices for creating and maintaining regional, statewide, and/or national bicycle and pedestrian count data warehouses. This includes gathering, quality checking, warehousing, maintaining, processing, and disseminating bicycle and pedestrian count data.

Design Options to Reduce Turning Vehicle/Bicycle Conflicts at Intersections

<http://rns.trb.org/dproject.asp?n=24824>

Each year, vehicle-bicycle collisions result in hundreds of cyclist deaths and many more non-fatal injuries (the exact numbers are difficult to define due to lack of consistent reporting methods). The most common location for these collisions is at intersections, which inherently have a large number of turning conflicts. For example, over 89% of fatal bicycle crashes reported in New York City during 2005 occurred at or within 25 feet of intersections. As a result, improving bicycle facilities at intersections has become a critical safety topic.

Reducing these conflicts is a key objective in improving intersection safety across all modes. Of particular concern for bicyclist safety at intersections are the conflicts between straight-through bicyclists and motor vehicle right-turns and opposing left-turns.

There is no comprehensive research to indicate what design provides the most effective approach or the most appropriate situation in which each should be applied. Intersections should be carefully designed to enhance safety, improve operational efficiency, accommodate bicycle travel, minimize conflicts, and reduce the danger that turning cars pose to bicycle through-movements. Research on alternative designs to reduce conflicts at intersections is required to determine best practices to meet these objectives.

The proposed research will develop guidelines for intersection design that minimize the risk that motor-vehicle turning movements create for through-moving bicyclists, and considers the applicability of treatments such as bike boxes, bicycle signal phases, and “mixing zones”.

Development of a Bicycle Safety Diagnosis and Prediction Methodology

<http://rns.trb.org/dproject.asp?n=33978>

The number of bicycle based trips has increased by 27 percent since 2001 according to the 2009 National Household Travel Survey. However, non-motorized travelers such as cyclists suffer a higher level of risk than those traveling via other modes. There is an urgent need for innovative and proactive methods of analyzing and improving cycling safety as well as for reducing the social and economic costs associated with bicycle collisions.

The American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual (HSM) establishes a methodology for estimating the potential change in crash frequency or severity due to the installation of a particular engineering treatment at intersections and on roadways. The HSM used previous research to develop “Crash Modification Factors” (CMFs) that relate specific interventions (e.g., protected left-turn phasing) to their expected effectiveness in reducing crashes. While the HSM provides numerous CMFs for automobiles, Chapter 14 of the HSM provides only 1 intersection CMF for cyclists, whereas numerous treatments are listed in the “trends” section of the chapter as having insufficient data to develop a CMF.

The proposed research will develop a predictive method for geometric treatments at intersections and on roadways for bicycle facilities using conflicts as a surrogate for collisions. A key outcome of the research would be a method and guidance to supplement or update the HSM and the AASHTO Guide for the Development of Bicycle Facilities. This research could serve to populate the Federal Highway Administration (FHWA) CMF clearinghouse and supplement the data available in the HSM for bicyclists.

Meeting Adjourned at 5pm