Roadway Safety—A Distinct Discipline

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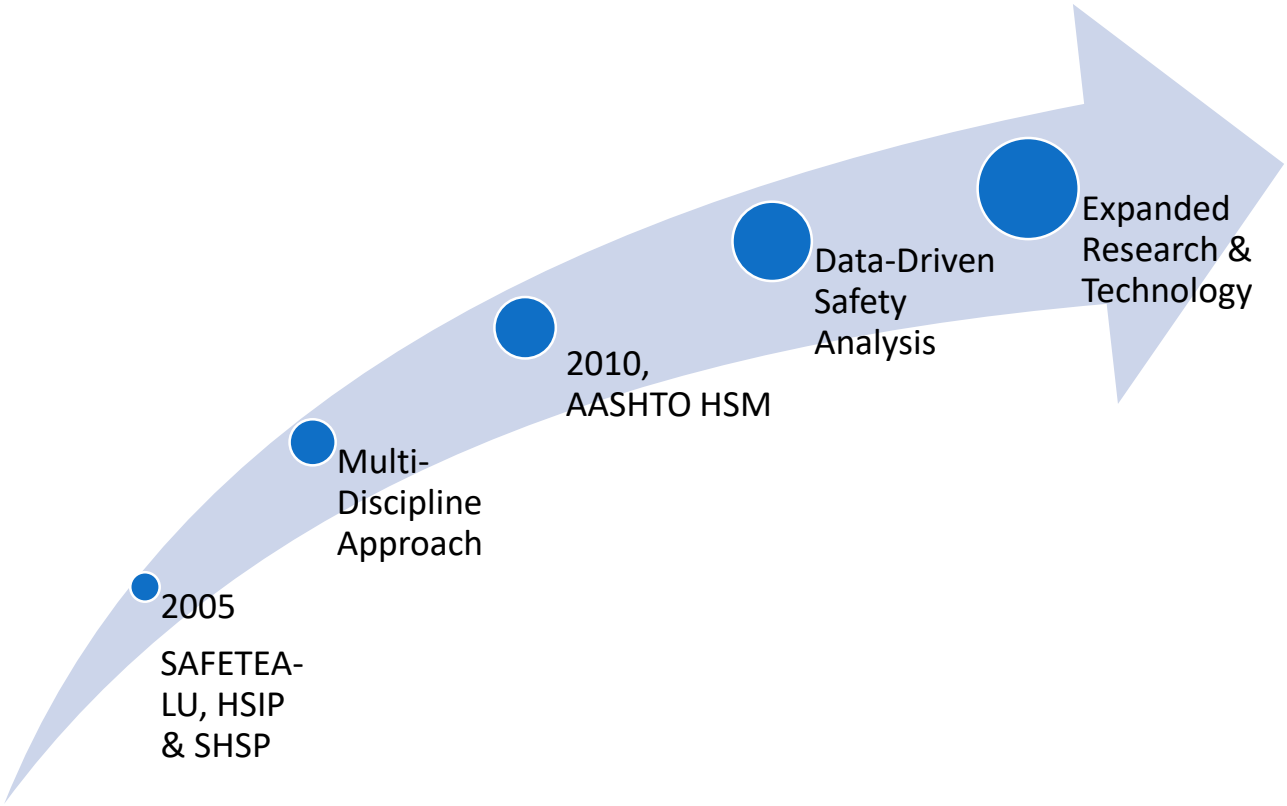
21st Annual NJDOT Research Showcase

October 23, 2019

Background


2005
SAFETEA-LU, HSIP & SHSP
Multi-Discipline Approach
2010, AASHTO HSM
Data-Driven Safety Analysis
Expanded Research & Technology

Multidisciplinary Nature of Road Safety

- Road safety is a multidisciplinary field
- North American licensing professional engineers
  - Provides assurance that the holder demonstrated acceptable knowledge and skill in basic engineering areas
- Engineering knowledge and practice expanded
  - New skills for practice in the growing number of engineering specialties
- Voluntary certification seeks to meet this need
  - Additional credential which the public, employers, and clients can rely upon: specialty skills and knowledge

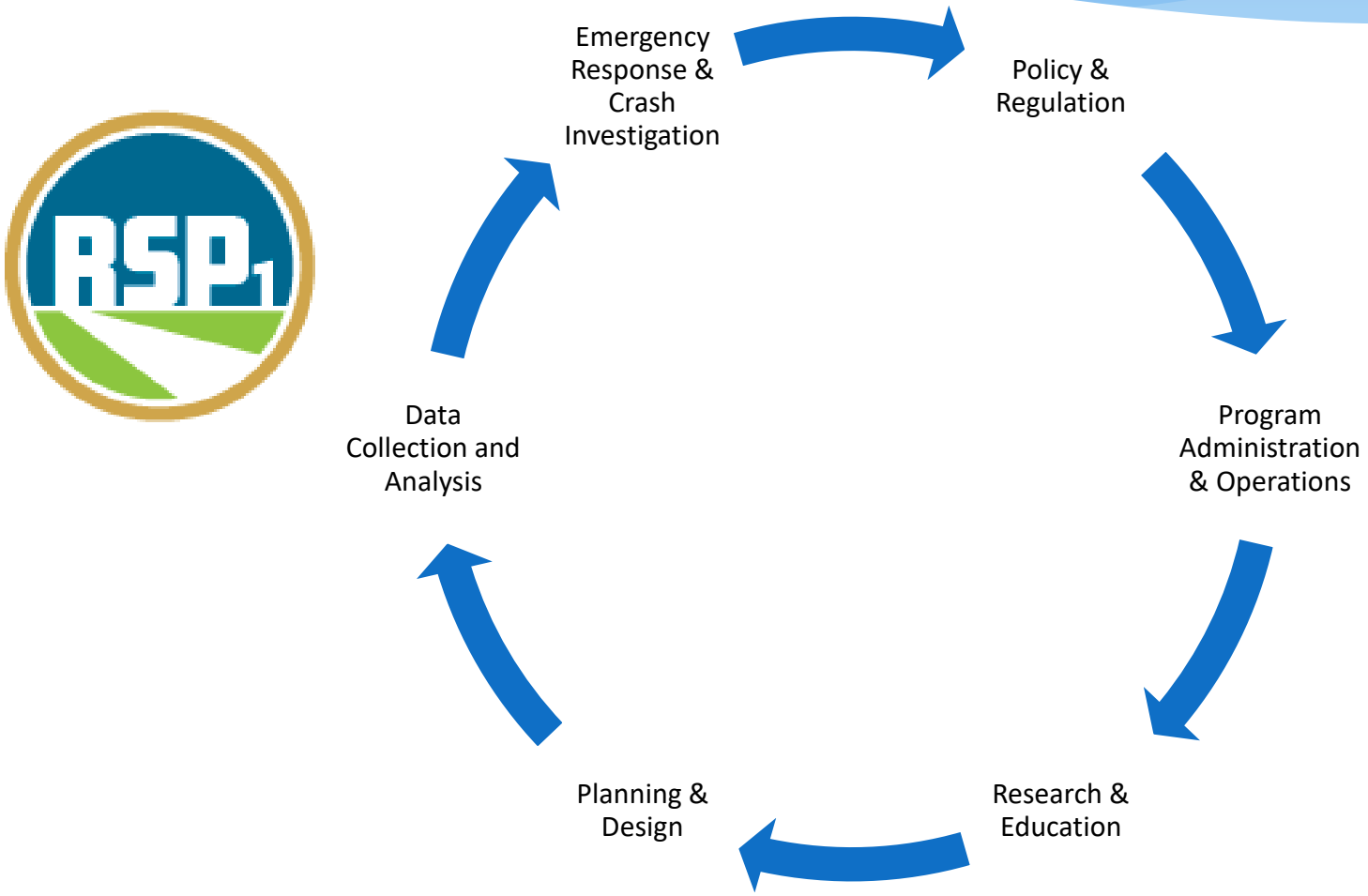
Goals

- To recognize road safety as a profession
- To establish a recognized level of practice and knowledge
- To incentivize safety education
- To support public safety initiatives such as Toward Zero Deaths, Vision Zero, and Road to Zero

Are you a road safety professional?

- Are you a professional that during a typical work day makes decisions that directly or indirectly impact the future frequency and severity of traffic collisions?
- Do you know how to explicitly consider this impact (and quantify, when possible) and reduce negative safety impacts?
  - Do you have the knowledge?
  - Do you have the experience?
- Would you like to be recognized for your education and practical experience in the discipline of road safety?

RSP Certification Level 1 : Audience



Level 1 Exam: Pre-Requisites

- Bachelor's degree from accredited university and minimum of 2 years of experience transportation, road safety, or public health

OR

- Minimum of 4 years of experience transportation, road safety, or public health

RSP Level 2 : Background

- Higher level certification demonstrating deeper level of understanding and proficiency in road safety science
- Any professional whose primary job functions are directed at improving the road safety performance
- Two options:
  - Behavioural
  - Infrastructure

RSP Level 2 : Exam Pre-requisites

- Successful completion of Level 1 exam

AND

- Bachelor's degree from an accredited university and minimum of 5 years of experience in transportation, road safety, or public health

OR

- Minimum of 10 years of experience transportation, road safety, or public health

RSP Level 1: Domain Overview

- Foundations of Road Safety
- Measuring Safety
- Human Behavior and Road Safety
- Solving Safety Problems
- Implementing Road Safety Programs

RSP-1 Foundations of Road Safety

Nominal Safety vs. Substantive Safety

Elements involved in crash causation and how they influence crash severity.

Characteristics of different road users and effective selection of countermeasures.

Multi-discipline road safety partners and their role in reducing frequency and severity of crashes.

Different road safety management approaches (e.g., traditional 4E, Haddon's matrix, Safe Systems Approach, Vision Zero).

Benefit-Cost

Safety Culture

RSP-1 Measuring Road Safety

Safety Data: types, applications, and users, and the challenges, limitations, and ways to mitigate them by using nontraditional safety data.

Quality of safety data

Key factors (e.g., speed, volume, time of day) and could affect the frequency and severity of crashes.

Components of quantitative safety analysis

RSP-1 Human Behavior and Road Safety

- **Key characteristics and limitations of human behavior that influence how road users interact with the roadway environment**
- **Multidisciplinary safety strategies**
- **Effective educational strategies and enforcement campaigns**
- **How roadway infrastructure features and elements affect human behavior**
- **Human factors and consideration in the process of planning, design, and operations**
- **Positive guidance principles to affect road user behavior and improve safety performance**
- **Driving task model to the process of identifying contributing factors**

RSP-1 Solving Safety Problems

Safety management process that uses effective data-driven procedures and methods to reduce fatalities and injuries caused by traffic collisions

Systemwide (countermeasure-oriented) approach

Tools used to diagnose safety problems

Collision patterns and crash contributing factors

User-focused interventions targeted at different populations.

Countermeasure costs and benefits can be used to evaluate the effectiveness of program and project investments.

Techniques for estimating and comparing the safety performance of different project alternatives.

RSP-1 Implementing Road Safety Programs

Strategic safety plans-preparation and use

Important elements of successful road safety policies and programs

Role and value of champions in influencing road safety policies and programs

Elements of successful communication and outreach strategies

RSP Level 1 List of References

- **Crash Modification Factors Clearinghouse** – available online
- **AASHTO Highway Safety Manual**, 2010
- **Road Safety Fundamentals** – available online
- **NHTSA Countermeasures That Work: A Highway Safety Countermeasures Guide for State Highway Safety Offices**, 2015 – available online
- **ITE Traffic Engineering Handbook, 7th Edition, 2016** – available online
- **AAA Improving Traffic Safety in the United States, The Journey Forward**, 2007 – available online
- **NCHRP Report 501 – Integrated Safety Management Process** – available online
- **Human Factors In Traffic Safety, 3rd Edition**, Edited by Alison Smiley, Lawyers and Judges Publishing Company Inc., 2015 -
- **NCHRP Report 500 – Guidance for Implementation of the AASHTO Strategic Highway Safety Plan** - available online
  - A Guide for Addressing Run-Off-Road Collisions – Volume 6
  - A Guide for Reducing Collisions Involving Pedestrians – Volume 10
  - A Guide for Reducing Collisions at Signalized Intersection – Volume 12
  - A Guide for Reducing Collisions Involving Bicycles – Volume 18
- **PIARC Road Safety Manual** – available online

RSP-2 Behavior Level 2 Domain Overview

Fundamentals	Road Safety Program Management	Safety Data and Analysis
Target Crashes and Countermeasures	Human Health and Transportation Modes	Public Health and Transportation Safety
Addressing Safety Problems with Public Policy (Law, Regulations, Policies, and Standards)	Strategic Safety Planning	Safe Systems Approaches

References RSP Behavior Level 2

- AASHTO Highway Safety Manual
- Traffic Safety and Human Behavior
- Human Factors In Traffic Safety
- Reliability of Safety Management Methods – Diagnosis
- Reliability of Safety Management Methods – Countermeasure Selection
- Reliability of Safety Management Methods – Countermeasure Selection
- Countermeasures That Work: A Highway Safety Countermeasure Guide For State Highway Safety Offices
- Drug-Impaired Driving: A Guide for States
- Traffic records program assessment advisory
- Toward Zero Deaths: A National Strategy on Highway Safety
- The Art of Appropriate Evaluation: A Guide for Highway Safety Program Managers
- Road Safety Fundamentals
- Guidance for Implementation of the AASHTO Strategic Highway Safety Plan
- Guidance for Implementation of the AASHTO Strategic Highway Safety Plan
- Road Safety Manual
- ITF 2016
- Guidance for Implementation of the AASHTO Strategic Highway Safety Plan
- Guidance for Implementation of the AASHTO Strategic Highway Safety Plan
- Guidance for Implementation of the AASHTO Strategic Highway Safety Plan
- My Car Does What
- Accident Analysis and Prevention Traffic conflicts and exposure

RSP-2 Infrastructure Level 2 Domain Overview

Fundamentals

Road Safety Management

Acquiring and Using Safety Data

Crash Prediction and Trend Interpretation

Target Crashes and Countermeasures

Multimodal Transportation Safety

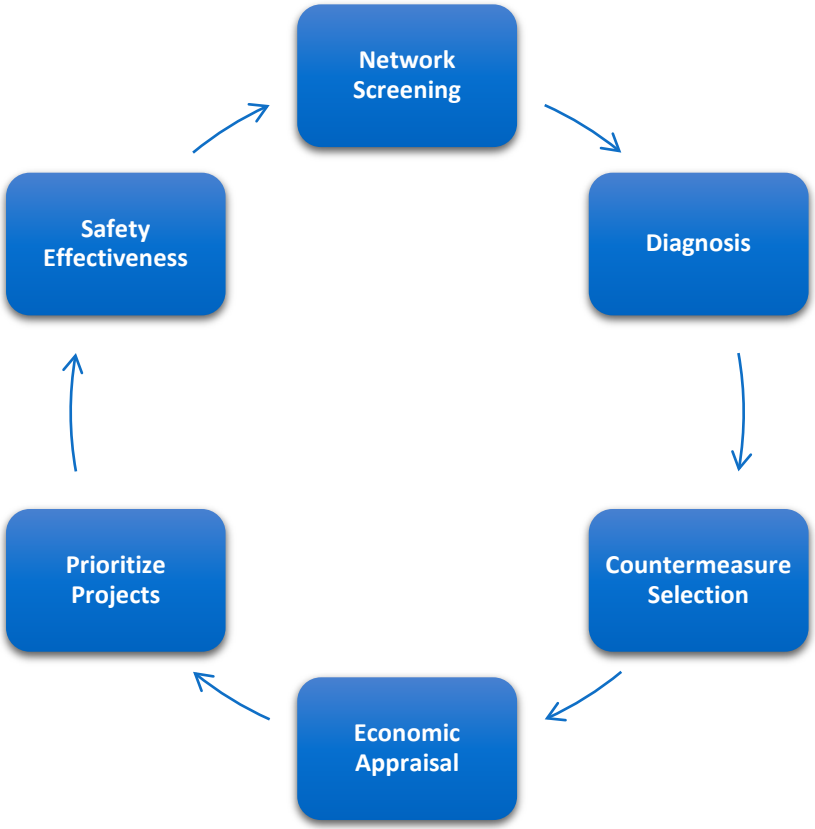
Addressing Safety Problems with Policy

Safe System and Vision Zero Approaches

RSP-2 Infrastructure Domain 1: Fundamentals

- Apply predicted crashes, expected crashes, and excess crashes
- Crash injury severity scales and levels
- Physics (e.g., relationship of speed and impact forces) of a crash
- Safety effects of posted speed as it relates to operating speed
- Positive guidance approach to roadway design
- Human factors issues contributing to different crash types
- Crash costs estimates, strengths and weaknesses of these estimates

RSP-2 Infrastructure Domain 2: Road Safety Management

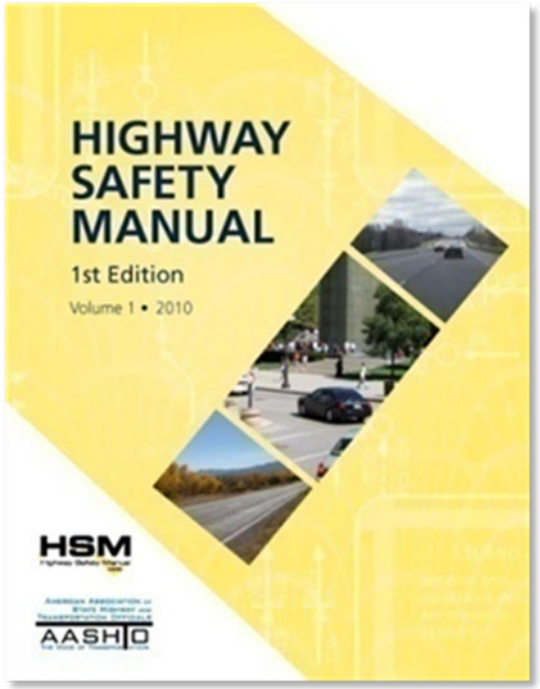


- Systemic analyses
- How to integrate safety considerations into projects (e.g., resurfacing, reconstruction, rehabilitation, maintenance, capacity)
- Strengths and weaknesses of the methods used to evaluate the safety effect of treatments

RSP-2 Infrastructure Domain 3: Acquiring and Using Safety Data

- Data needs
- Ability to analyze crash datasets to determine relationships between crash patterns and other characteristics to establish strategic emphasis areas
- Key characteristics of different crash types
- Constraints/challenges of using safety data associated with completeness, timeliness, accuracy, and uniformity

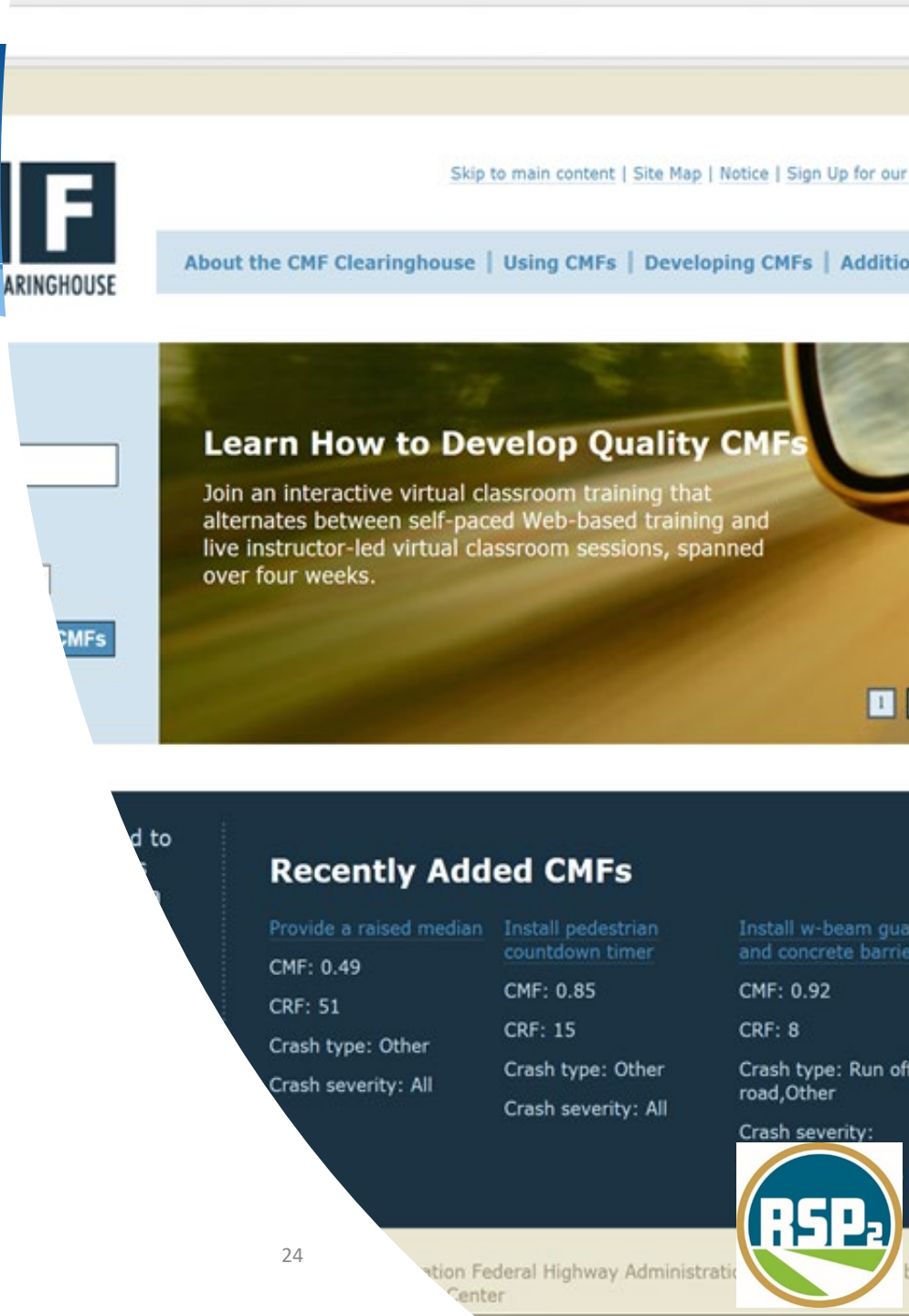
RSP-2 Infrastructure Domain 4: Crash Prediction and Trend Interpretation



- Attributes of different statistical methods including common applications and errors related to safety data analysis
- Process of developing safety performance functions (SPFs) including how to select and calibrate SPFs
- When/How to use predicted versus expected crash frequency

RSP-2 Infrastructure Domain 5: Target Crashes and Countermeasures

- Different types and characteristics of available evidence-based countermeasures
- Explain the importance and purpose of selecting a particular target crash type and severity for treatment
- Data requirements for evaluating the effectiveness of a countermeasure
- Select an appropriate countermeasure and crash modification factor (CMF) based on local/site conditions
- Considerations, other than safety effectiveness, that influence the selection of a countermeasure (e.g., cost, modal split, public acceptance)



RSP-2 Infrastructure Domain 6: Multimodal Transportation Safety

- Safety effects of operating speed on drivers, bicyclists, motorcyclists, and pedestrians, as well as younger and older road users
- Speed management strategies that affect the safety of all road users
- Contributing factors of crashes between motor vehicles and pedestrians and related treatments.
- Contributing factors of crashes between pedestrians and bicyclists and related treatments
- Mobility and safety tradeoffs of a multimodal system (e.g., complete streets)

References – RSP Infrastructure Level 2

- AASHTO Highway Safety Manual
- Traffic Safety and Human Behavior
- Human Factors In Traffic Safety
- Observational Before–After Studies in Road Safety.
- Statistical Methods in Highway Safety Analysis - A Synthesis of Highway Practice
- A Guide for Developing Quality Crash Modification Factors
- Reliability of Safety Management Methods – SERIES
- Crash Costs for Highway Safety Analysis
- Safety Performance Function Development Guide: Developing Jurisdiction-Specific SPFs
- Safety Performance Function Decision Guide: SPF Calibration vs SPF Development
- User's Guide to Develop Highway Safety Manual Safety Performance Function Calibration Factors
- Integration of Safety in the Project Development Process and Beyond: A Context Sensitive Approach
- Countermeasures That Work: A Highway Safety Countermeasure Guide For State Highway Safety Offices
- Guidelines for Integrating Safety and Cost-Effectiveness into Resurfacing, Restoration, and Rehabilitation (3R) Projects
- Bikeway Selection Guide
- TRB Access Management Guide
- Road Safety Fundamentals - Concepts, Strategies, and Practices that Reduce Fatalities and Injuries on the Road
- Crash Modification Factors Clearinghouse
- Integrated Safety Management Process
- A Guide for Addressing Run-Off-Road Collisions – Volume 6
- A Guide for Reducing Collisions Involving Pedestrians – Volume 10
- PIARC Road Safety Manual
- Zero Road Deaths and Serious Injuries: Leading a paradigm shift to Safe System
- Introduction to Crash Modification Factors
- CMFs in Practice: Quantifying Safety in the Roadway Safety Management Process
- CMFs in Practice: Quantify Safety in Alternatives Development and Analysis
- Pedestrian Safety Guide and Countermeasure Selection System
- Integrating Speed Management within Roadway Departure, Intersections, and Pedestrian and Bicyclist Safety Focus Areas
- Road Safety Fundamentals - Concepts, Strategies, and Pr that Reduce Fatalities and Injuries on the Road
- Traffic Engineering Handbook
- Road Diet Informational Guide

Exam Structure

RSP1	RSP2
Three (3) hours	Three (3) hours
75 Multiple-Choice Questions	75 Multiple-Choice Questions
Qualitative	Qualitative and Quantitative

https://www.scantron.com/test-site-cities/

Certified RSPs and October Exam Registrants

CANADA

- RSP1 Certified
  - 55

USA

- **RSP1 Certified**
  - **251**

* **RSP Registrations for October 2019 Exams**
  * **92 RSP1**
  * **65 RSP2 (5 Behavioural, 56 Infrastructure, 4 both)**

Frequency of Exam Offers

- RSP exams offered 3 times/year
- February 1-28
  - Application deadline: December 5
- June 1-30
  - Application deadline: April 4
- October 1-31
  - Application deadline: August 6

Fee Structure

- Application/Examination Fee: US$100
- Three-Year Certification Fee: US$180 (US$60/year)
- Discounts provided for existing PTOE/PTP certification holders
- 3-year renew period (RSP1)
  - 24 Professional Development Hours (PDH) continuing education requirements

- Application/Examination Fee: US$100
- Three-Year Certification Fee: US$315
- Discounts provided for existing PTOE/PTP/RSP1 certification holders
- 3-year renew period (RSP2)
  - 45 Professional Development Hours (PDH) continuing education requirements

www.tpcb.org/certification/rsp/

For more information

- Visit tpcb.org/certification/rsp/
- Ann O'Neill, aoneill@tpcb.org 202-464-6213