BALTIMORE METROPOLITAN COUNCIL

Safe System Approach

Best Practices

The Safe System Approach is a global road safety strategy with potential to save lives in greater Baltimore.

Recognizing that humans make mistakes, the Safe System Approach aims to create a forgiving road system that reduces risk and eliminates fatal and serious injury crashes.

Source: Adapted from FHWA

The Safe System Approach is a holistic framework for achieving the goal of eliminating fatal and serious injury crashes. It is based on six foundational principles: deaths and serious injuries are unacceptable, humans make mistakes, humans are vulnerable, responsibility is shared, safety is proactive, and redundancy is crucial. Additionally, the Safe System Approach involves five key elements to

achieve zero fatal and serious injury crashes: safe roads, safe speeds, safe vehicles, safe road users, and post-crash care. The graphic on this page shows the framework for the Safe System Approach, its principles, and its key elements.

The Federal Highway Administration (FHWA) has adopted the **Safe System Approach** to eliminate fatal and serious injuries for all road users. Similarly, the Institute of Transportation Engineers (ITE) promotes the **Safe System Approach** to road system owners and operators to design, build, and operate safer roads.

Between November 2022 and February 2023, the Baltimore Metropolitan Council (BMC) held three workshops with staff from Baltimore County, Carroll County, and the City of Baltimore to understand how the Safe System Approach principles and elements are being integrated into the current planning and implementation efforts at each agency and throughout the region.

This memo outlines common challenges identified during the workshops and provides best practices and resources to address these common challenges. It is a resource for BMC and its member agencies to identify strategies that can be implemented through regional and local efforts that follow the Safe System Approach.

Baltimore County, Carroll County, and the City of Baltimore share six key challenges to integrating the Safe System Approach into their functions and plans:

DATA MANAGEMENT, ACCURACY, AND ANALYSIS There is limited staff capacity to manage accurate and consistent data that the agencies can use for analysis and sharing of transportation safety information.

SAFETY MESSAGING AND COMMUNICATIONS Coordinated messaging among the agencies to convey transportation safety information, especially education related to the relationship between speed and safety is lacking.

EQUITY AND SAFETY DECISION-MAKING The agencies are having challenges incorporating equity when making decisions regarding transportation safety priorities.

AGENCY CULTURE Interagency coordination on transportation safety topics to establish a shared responsibility among stakeholders is lacking, and there is limited staff awareness and training on safety resources to achieve safety goals.

PUBLIC ENGAGEMENT ON SAFETY The agencies need creative and proven ways to engage the public on transportation safety that convey information in captivating and convincing ways.

PROJECT PRIORITIZATION AND READINESS The agencies are lacking a robust process to identify transportation projects that prioritize safety and ensure the best use of limited resources.

Clearinghouses from national organizations with links to Safe System Approach resources and materials

Name	Description	Link	How-to information
Highway Safety Programs Resources FHWA, 2023	The FHWA has adopted the Safe System Approach and provides an online resources page with relevant outreach materials that explain the Safe System Approach, various reports, and noteworthy best practices from across the United States.	https://highways.dot.gov/safety/zero-deaths/resources	The FHWA provides a presentation template with 58 slides that cover the basics of the Safe System Approach. Each slide of the presentation includes speaker notes and key messages that can be used to deliver Safe System Approach presentations.
ITE Safe System Resources Clearinghouse ITE, 2023	ITE has a webpage dedicated to collecting and sharing general information about the Safe System Approach. The webpage begins with a description of the Safe System Approach's principles and elements; however, the main purpose of the webpage is to provide transportation professionals links to several fact sheets, reports, articles, and webinars.	https://www.ite.org/technical-resources/topics/safe-systems	ITE acknowledges that although reducing speed is not a direct prerequisite of a Safe System, it is necessary to achieve alignment with Safe System principles. In locations where vehicles interact with vulnerable road users, speeds should be controlled to a level at which a collision is unlikely to result in a fatal or serious injury. ITE provides several reports and fact sheets covering research into the need for safe speeds and how safe speeds can be achieved with street design.
National Safety Council Safe System Approach Clearinghouse NSC, 2023	The National Safety Council (NSC) is a leading safety advocate nonprofit in the United States. Its Safe System Working Group webpage provides information that policymakers, practitioners, and the public can use to increase the prioritization of safety programs by growing a strong safety culture and adopting the Safe System Approach.	https://www.nsc.org/road/resources/road-to-zero/safe-system-approach	The NSC and Road to Zero Coalition acknowledge the socioeconomic disparities that exist in street safety. NSC provides resources in its Safe, Equitable Mobility Systems section that covers why the Safe System approach must be implemented equitably, explaining disparities in street safety and work that can be done to reverse these disparities.

Integrating the Safe System Approach into the planning and implementation of transportation projects is crucial to successfully eliminating fatal and serious injury crashes.

The national resources shown in this section provide an overview of the Safe System Approach and best practices for incorporating its elements. These resources are particularly important for understanding how to integrate the Safe System Approach into public engagement and education, planning, and implementation.

Supplemental national resources, ordered by source then year

Name	Description	Link	How-to information
Primer on Safe System Approach for Pedestrians and Bicyclists FHWA, 2021	This report provides a primer and baseline overview of the Safe System approach and how it relates to bicycle and pedestrian safety. It outlines what a safe system for pedestrians and bicyclists looks like, and how a safe system can be implemented.	https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa21065.pdf	Since research and information regarding the Safe System approach specifically for bicycle and pedestrian needs continue to emerge, this report recommends agencies use existing structures as conduits for acting and implementing best practices now. Statewide, regional, and local plans, are all opportunities to start the conversation and work towards formalizing Safe System approaches.
Integrating the Safe System Approach with the Highway Safety Improvement Program: An Informational Report FHWA, 2020	This report explores the relationship between the Safe System approach and the Highway Safety Improvement Program (HSIP). It examines the key elements of the HSIP, State Highway Safety Plan (SHSP), and State HSIP as compared to the Safe System and presents areas of alignment. The report also discusses next steps for Federal and State stakeholders to advance implementation of the Safe System approach through these existing safety programs.	https://safety.fhwa.dot.gov/hsip/docs/fhwasa2018.pdf	When developing SHSPs, States can evaluate and prioritize countermeasures that align with the Safe System principles. Based on the Hierarchy of Controls framework, which identifies elimination of hazards as the most effective control level, countermeasures most aligned to eliminate death and serious injury are ones that eliminate exposure to hazards before a crash occurs. and should be prioritized for implementation first.
Transportation Safety Planning and the Zero Deaths Vision: A Guide for Metropolitan Planning Organizations and Local Communities FHWA, 2018	This resource provides guidelines to develop, implement, and evaluate a regional or local safety plan with a vision to eliminate traffic fatalities. It shows how safety practitioners can engage in safety planning efforts; analyze data; set goals and targets; identify strategies; prepare a document that presents the plan; and evaluate the effectiveness of the plan.	https://safety.fhwa.dot.gov/tsp/fhwasa18024	The safety planning process needs meaningful and realistic objectives and targets to help establish a performance-based approach to measure and evaluate progress. As such, the Federal government requires metropolitan planning organizations (MPOs) to adopt safety performance measures. This resource provides critical information for MPOs to develop performance measures by providing examples of different types of measures that go beyond the typically required operational metrics.
Case Studies on Implementing the Safe System Approach in the U.S. ITE, 2021	This resource summarizes case studies where the Safe System approach has been applied on some of the more common types of roadway fatalities and serious injuries in the United States. The case studies outline on-the-ground practices in the following three areas of need: major thoroughfares, intersections, and pedestrians.	https://www.ite.org/pub/?id=2175B176-E7AB-71C8-613C-3F9F6A856091	The case studies demonstrate one of the six principles of the Safe System approach: Humans Make Mistakes. It shows how communities across the United States have applied countermeasures that anticipate human error into their design to be forgiving of inevitable human mistakes so that serious injury outcomes are unlikely to occur.

Supplemental national resources, ordered by source then year (continued)

Name	Description	Link	How-to information
How are Vision Zero, Safe System, and Traffic Safety Culture Related? Montana State University, 2023	This short article explains the difference and relationship between Vision Zero and the Safe System Approach.	https://chsculture.org/how-are-vision-zero-safe-system-and-traffic-safety-culture-related	The article summarizes that Vision Zero is the goal in which zero is the only acceptable number of traffic fatalities and serious injuries. Meanwhile, Safe System is the approach for achieving Vision Zero. Vision Zero and the Safe System Approach share a specific set of values and beliefs roadway fatalities and serious injuries are preventable.
Safe Streets and Roads for All Resources USDOT, 2023	Safe Streets and Roads for All (SS4A) is a new federal government discretionary program that appropriated $5 billion over the next 5 years (Fiscal Years 2022 to 2026) to develop or update a safety action plan and implement projects or strategies identified in an action plan. The resources are intended to help interested stakeholders prepare to apply for an SS4A grant and conduct planning and implementation activities if awarded SS4A funding.	https://www.transportation.gov/grants/SS4A/resources	The USDOT has specific requirements for eligible action plans under the SS4A program. These requirements prescribe what action plans developed with SS4A funding need to include, and requirements of action plans to be eligible for SS4A implementation funding. Resources specifically outline the components of action plans and worksheets for stakeholders to conduct a self-certification to see if their current action plans are eligible.
Centering Safety at Metropolitan Planning Organizations Vision Zero Network, 2017	This resource outlines six recommendations on ways MPOs can make transportation safety, particularly the elimination of fatal and serious injury crashes, the topmost priority. The recommendations cover strategies for regional planning, funding, and policy.	https://visionzeronetwork.org/mpo_safety	One of MPOs' core functions is the allocation of federal transportation funding into the regions they oversee. This gives MPOs the opportunity to prioritize safety in project selection and funding decisions. This resource recommends that MPOs elevate their regular consideration of safety priorities in all funding decisions, project solicitation, and project review. Matching project selection and prioritization criteria to match safety goals demonstrates a commitment to Vision Zero.

This section provides best practice resources to address each of the six common challenges in incorporating the Safe System approach in Baltimore County, Carroll County, and the City of Baltimore.

The challenges, as articulated by staff at agency workshops, are summarized below, and the sections that follow provide national resources first, followed by local best practices from across the United States.

SAFETY MESSAGING AND COMMUNICATIONS Workshop participants identified that coordinated messaging among the agencies to convey transportation safety information, especially education related to the relationship between speed and safety is lacking. Specifically, the challenges related to safety messaging and communications stated were:

- Need to convey safety information in new ways that use language humanizing traffic safety
- Speed-related education messaging is lacking
- There is a need to coordinate agency safety messaging

PUBLIC ENGAGEMENT ON SAFETY Workshop participants identified that the agencies are lacking meaningful ways to engage the public on transportation safety that convey information in captivating and convincing ways. Specifically, the challenge related to public engagement on safety stated was:

- There is a need for meaningful ways to engage public using infographics, surveys, public meetings, events, committees, etc.

DATA MANAGEMENT, ACCURACY, AND ANALYSIS Workshop participants identified that there is limited staff capacity to manage accurate and consistent data that the agencies can use for analysis and sharing of transportation safety information. Specifically, the challenges related to data management, accuracy, and analysis stated were:

- There is no common dataset to work from
- Common analysis approaches are not shared across the agencies for consistency and to reduce duplication of efforts
- Data sharing and sharing of transportation safety information, especially with the public, is lacking
- There is limited organizational bandwidth to manage and share data

AGENCY CULTURE Workshop participants identified that meaningful transportation safety coordination among agencies is lacking and there is limited staff awareness and training on safety resources to achieve safety goals. Specifically, the challenges related to agency culture stated were:

- Interagency stakeholder coordination for shared responsibility is needed
- There is limited staffing and organizational capacity to achieve safety goals

EQUITY AND SAFETY DECISION-MAKING Workshop participants identified that the agencies are having challenges incorporating equity when making decisions regarding transportation safety priorities. Specifically, the challenges related to equity and safety decision-making stated were:

- Representatives are needed for equitable engagement in traffic safety planning
- A process to develop equity and crash overlay maps is needed
- There is a need to incorporate equity into decision-making

PROJECT PRIORITIZATION AND READINESS Workshop participants identified that the agencies are lacking a robust process to prioritize transportation safety projects to implement their current safety policies that prioritize safety in every transportation project. Specifically, the challenges related to project prioritization and readiness stated were:

- The agencies need to prioritize transportation safety in every project
- A process is needed to implement and incorporate safety into existing policies

Data management, accuracy, and analysis resources

Name	Description	Link	Challenge addressed	How-to information
Acadiana Planning Commission: Data Governance - Louisiana's Local Government Partnerships FHWA, 2021	The Acadiana Planning Commission (APC) is the Metropolitan Planning Organization (MPO) covering the Lafayette, LA area. The number and diversity of local agencies that comprise APC's members created a challenge to collect safety-related data and make data-driven decisions. As part of a FHWA-project, APC and the State Department of Transportation and Development created a joint data governance group. This report outlines the process and the lessons learned from APC.	https://highways.dot.gov/ sites/fhwa.dot.gov/files/ migrate/noteworthy/FHWA-SA-21-017_louisiana_data_ governance_case_study.pdf	Common dataset	APC developed partnerships and processes that helped the region manage crash and safety data. The core lesson of APC's experience has been the leadership needed bringing local agencies into the regional data governance group. The result is better quality safety data tailored to fit the analytic tools used by the region and state.
Lessons Learned from Development of Vision Zero Action Plans FHWA, 2021	This report summarizes the Vision Zero Action Plan (VZAP) development process for two communities: Daily City, CA and Macon-Bibb County, GA. It outlines the experiences, the common elements that were applied in developing a VZAP, and the opportunities, challenges, and lessons learned.	https://safety.fhwa.dot. gov/zerodeaths/docs/ FHWA-SA-20-073_ Lessons_Learned_from_ Development_of_Vision_ Zero_Action_Plans.pdf	Common analysis approaches	Sections 2.6 and 3.5 specifically outline the process and the lessons learned about conducting data-driven safety analyses. A lesson learned for the challenge of having reliable crash data is depending on State's crash available data, but when possible, using auxiliary data such as traffic citations, speed monitoring, hospital records, or public input.
Vision Zero – Maps and Safety Data Arlington County, VA 2023	A collection of static (PDF) maps, interactive maps, and data dashboards that displays information on crash analysis, crash hot spots, and crash reports on a public-facing website.	https://www.arlingtonva. us/Government/ Programs/Transportation/ Vision-Zero/ Maps-and-Safety-Data	Data sharing with the public	The Arlington County Crash Data Dashboard provides information on reported crashes going back to 2013 on an interactive map. To support users navigating the dashboard, Arlington County provides a written Crash Analysis Dashboard User Guide that visitors to the website can download. It has step-by-step details on how to navigate the dashboard and filter to find out specific crash information. If replicating a dashboard like Arlington County's at BMC, it is important to consider making the system easy and providing guides for users to understand the data and navigate the dashboard.
Video-based Network-wide Conflict Analysis to Support Vision Zero in Bellevue Bellevue, WA, 2020	The City of Bellevue was an early adopter of proactive safety techniques, forging multiple technology development partnerships to convert raw video footage from its existing traffic camera network into flow, speed, and conflict event data. This report looks at network screening and conflict analysis methodology and outcomes. The project leveraged video footage from existing traffic cameras at 40 intersections to obtain useful data.	https://bellevuewa.gov/ sites/default/files/media/ pdf_document/2020/ VZ-ITS-Bellevue-Report-1-web.pdf	Common analysis approaches, Common dataset	Often crash data is not readily available, and underreporting can underrepresent the true risks to all road users, especially vulnerable road users. Proactive safety data collection, such as video data on near misses can help augment crash data. In addition to identifying conflict hot spots – often in one week of data collection versus many years of crash report documentation – video analytics offer rapid insight into whether a countermeasure achieves a favorable outcome.

Data management, accuracy, and analysis resources (continued)

Name	Description	Link	Challenge addressed	How-to information
Vision Zero Crash Dashboard Denver, CO, 2023	As part of its Vision Zero efforts, the City and County of Denver has a publicly available data dashboard that displays up-to-date information on report fatal and serious injury crashes.	https://www.denvergov.org/Government/Citywide-Programs-and-Initiatives/Vision-Zero/Dashboard	Data sharing with the public	The data in the Denver Crash Dashboard is pulled from Denver's Open Data Catalog which is updated daily (Monday-Friday). The Denver Police Department maintains the data dynamically which allows for additions, deletions, or other modifications at any time. For example, the data on existing crashes are updated with new information gathered through the crash investigation process, ensuring that the most accurate information is available.
Sonoma County Vision Zero Data Dashboard Sonoma County, CA, 2020	The Sonoma County Transportation Authority developed the Vision Zero Data Dashboard in 2021 to show patterns in crash data from around the County and overlay them with other relevant data layers. The Data Dashboard makes it easy for anyone to explore crash data by year, severity, day of week, travel mode, and top crash factors,	https://storymaps.arcgis.com/stories/3199b07e942445068213291c6acbc4f0	Data sharing with the public; Common analysis approaches	The Data Dashboard was developed in partnership with data and crash analysis from UC Berkeley, and the Statewide Integrated Traffic Records System (SWITRS). It provides a straightforward tool to track Sonoma County's progress toward Vision Zero goal and evaluate the effectiveness of various measures over time. The Data Dashboard meets Sonoma County Vision Zero focus area to improve data for effective decision-making. Since the Dashboard conducts descriptive crash analyses, it gives users across the County the ability to understand and track crash trends without a need to be experts in crash analysis. The Data Dashboard begins with an interactive narrative StoryMap that allows a novice user to easily access and read key data trends, while more advanced users can dive into the Dashboard for the ability to filter the crash data and run custom queries.

Agency culture resources

Name	Description	Link	Challenge addressed	How-to information
Strategies to Coordinate Zero Deaths Efforts for State and Local Agencies FHWA, 2020	The FHWA Office of Safety promotes effective safety partnerships to advance zero deaths efforts. FHWA sponsored Vision Zero workshops and webinars in Texas, Florida, and Colorado where State, regional, and local stakeholders gathered to discuss safety priorities and strategies to achieve their shared goal of zero deaths. This report summarizes findings from these workshops and is designed to help other State and local agencies foster and build stronger relationships that support coordinated zero deaths efforts.	https://safety.fhwa.dot.gov/zerodeaths/docs/Strategies_for_VZ_Coordination_112020.pdf	Interagency coordination	The FHWA recognizes that MPOs are uniquely positioned to help lead regional planning, funding, and policy toward realizing the zero deaths vision. MPOs can analyze data and convene safety initiatives to inform safety studies either regionally or for their local public agencies. MPOs can foster collaboration by building capacity and bringing awareness through trainings and technical assistance, such as safety countermeasure toolkits. MPOs can be a platform to facilitate the connection between transportation planning and safety among all stakeholders in a region.
A Strategic Approach to Transforming Traffic Safety Culture to Reduce Deaths and Injuries NCHRP, 2018	This resource provides state agencies and their partners responsible for traffic safety with guidance on a strategic approach to transform the traffic safety culture of road users and stakeholders. Although focused on road users' behavioral hazards affecting crash risk, it also includes organizational culture.	https://nap.nationalacademies.org/catalog/25286/a-strategic-approach-to-transforming-traffic-safety-culture-to-reduce-deaths-and-injuries	Organizational capacity	The proposed strategic approach to transforming public traffic safety culture prioritizes traffic safety as a societal value and emphasizes the transformation of local culture to support traffic safety goals that align with that value. Chapter 3 explains that the adoption of this approach requires the culture of the implementing organization to also prioritize safety and adopt a culture-based paradigm to achieve safety goals. It may be necessary for state traffic safety, regional, and local agencies to transform their own culture to integrate and implement this strategic approach into their existing safety planning processes. It's important that employees shared a common "bond" with organization values and mission, safety goals are formalized in organization planning and strategic documents, and that there is low turnover in the organization's workforce.
Guidance for Evaluating Traffic Safety Culture Strategies Montana State University, 2020	This document provides guidance to traffic safety practitioners on evaluating traffic safety culture strategies. It includes a summary of evaluation types, components of effective evaluations, and steps to follow to complete an evaluation.	https://www.mdt.mt.gov/other/webdata/external/research/docs/research_proj/tsc/EVALUATION/GUIDANCE.pdf	Organizational capacity	Understanding how a traffic safety culture strategy leads to improving traffic safety is important, including assessing culture within an organization. Traffic safety culture strategies focus on changing behaviors related to traffic safety. For such strategies to become more widely used, more evidence is needed about their effectiveness. Traffic safety practitioners can use process, and outcome evaluations to grow evidence and understand internal traffic safety culture within organizations.

Agency culture resources (continued)

Name	Description	Link	Challenge addressed	How-to information
Traffic Safety Culture: A Primer for Traffic Safety Practitioners Montana State University, 2019	This resource provides practical and meaningful communication tools to implement a traffic safety culture strategies and explain how it influences road users' behavior and traffic safety. The Primer recognizes that the lack of shared language and understanding about traffic safety culture limits the ability of agencies to explore this topic and engage new stakeholders.	https://www.mdt.mt.gov/research/projects/trafficsafety-primer.aspx	Coordinate agency safety messaging	The Primer outlines that the starting point is to create a shared understanding about traffic safety culture and its relationship to traffic safety goals. Understanding becomes shared through conversations with colleagues, leaders, and stakeholders, as well as community members. It is necessary to start by examining an organization's own beliefs and safety culture. The Primer lists some questions that can be used to foster effective conversations about organizational safety culture across agencies.
Traffic Safety Culture Toward Zero Deaths, 2023	The Toward Zero Deaths National Strategy applies safety culture to decision-making at all levels. This resource provides links to national case studies where for both building traffic safe culture within organizations and externally with communities.	https://www.towardzerodeaths.org/traffic-safety-culture	Organizational capacity	Toward Zero Deaths acknowledges that safety culture is more than a public information campaign. Safety must be a factor in every transportation decision. The Toward Zero Deaths National Strategy applies safety culture to decision-making at all levels. It involves safety as a valued factor in every transportation decision, whether personal or organizational. It outlines the safety culture development process through a five step process to learn, engage, and evaluate strategies.

Safety messaging and communications resources

Name	Description	Link	Challenge addressed	How-to information
Traffic Safety Culture Index AAA, 2022	Annually, the AAA Foundation for Traffic Safety conducts a national survey of motorists to understand traffic safety culture in the United States. AAA envisions that the survey can provide insights into understanding public perceptions, attitudes towards, and engagement in unsafe driving behaviors and considerations for developing countermeasures. The Traffic Safety Culture Index report summarizes the survey methodology and summarizes national-level results.	https://aaafoundation.org/2021-traffic-safety-culture-index	Conveying safety information in new ways	The latest report, 2021 Traffic Safety Culture Index provides useful insight into motorists driving behaviors. It is a useful reference for stakeholders to understand public perceptions and attitudes toward unsafe driving behaviors in comparison to engagement in these behaviors. For example, 26% of drivers reported having sent a text/email while driving in the 30 days before the survey, although 92% of drivers believe texting/emailing while driving is very or extremely dangerous. This information can be used to help craft safety messaging.
World Day of Remembrance Vision Zero Network, 2023	The goals of World Day of Remembrance (WDoR) events are to remember those injured and killed in crashes and to call on decision-makers to take specific actions to stem this leading cause of death. World Day of Remembrance reminds the world that each "statistic" about roadway safety represents a beloved parent, child, sibling, grandparent, friend, or neighbor killed in predictable and preventable traffic crashes.	https://visionzeronetwork.org/world-day-of-remembrance	Conveying safety information in new ways	Vision Zero Network provides a toolkit for organizers to plan and execute a WDoR event in their communities. It outlines why WDoR is important, event planning tips, sample visuals and materials, talking points, press release templates, social media blurbs.
Review of Vision Zero Strategies Boston Region MPO, 2021	This technical memo was presented to the Boston Region MPO Board to identify Vision Zero strategies that are most effective at reducing traffic deaths and serious injuries. It presents global case studies and provides an overview of specific strategies and implementation factors that have led to success.	https://www.ctps.org/data/pdf/studies/bikeped/Review-of-Vision-Zero-Strategies.pdf	Conveying safety information in new ways, Speed-related education	Two early adopters of Vision Zero in the United States, New York City and San Francisco, have both adopted comprehensive communication strategies as a part of their Vision Zero campaigns. New York City uses crash data to direct advertisements and social media materials at particular demographics in high-incident neighborhoods to maximize the efficiency. Highly visible Street Teams directly engage locals and distribute educational material unique to each area. San Francisco places a larger emphasis on addressing speeding. At the center of its "Safe Streets SF" campaign is reducing moderate speeding in 25 mph zones rather than a vague appeal to violators everywhere.

Safety messaging and communications resources (continued)

Name	Description	Link	Challenge addressed	How-to information
Heads Up Boulder Media Campaign Boulder, CO, 2020	In 2017, the City of Boulder developed and implemented a robust communication and outreach program, called "Heads Up Boulder," to continue its goal of eliminating all fatal and serious injury crashes. The City promoted Vision Zero safety education campaigns across multiple platforms and at community events. This resource outlines how the City implemented this campaign and the outcomes.	https://highways.dot.gov/safety/learn-safety/noteworthy-practices/media-campaign-boulder-colorado	Conveying safety information in new ways	The City formed partnerships with community partners, the University of Colorado Boulder, and law enforcement. Various tactics to message traffic safety information were used. Including, staffing booths to educate the public on traffic safety laws at community events, playing Vision Zero videos during football home games, distributing approximately 20,000 Vision Zero safety inserts with utility bills, printing a community newsletter in with a Vision Zero cover story, broadcasting Vision Zero animated videos on a local channel, and using the popularity of the Snapchat ads and filters to target younger audiences.
Speed & Traffic Safety - Municipal Implementation Tool DVRPC, 2018	The Delaware Valley Regional Planning Commission (DVRPC) has produced a series of brochure on Municipal Implementation Tools available to local governments and planning partners to assist in implementing the region's long-range plan. The Speed & Traffic Safety brochure presents an overview of the relationship between speeding—driving too fast for conditions, racing, or exceeding the posted speed limit—and crash frequency and crash severity.	https://www.dvrpc.org/products/mit032	Speed-related education	The brochure highlights regional speeding-related crash trends, and provides an examination of contributing circumstances, and speed reduction strategies in the areas of engineering, education and enforcement that are useful to local roadway owners and local stakeholders. It allows DVRPC's local members to easily get information about trends in regional crash data that indicate the importance of safe speeds in a Safe System without the need for the local member to have advanced crash data analysis expertise to gather this information.
2021 Speed Pilot Program in Bishopville, Maryland Maryland DOT, 2021	In 2019, the Maryland Highway Safety Office (MHSO) was awarded a grant from three national roadway safety organizations — the Governors Highway Safety Association (GHSA), Insurance Institute for Highway Safety (IIHS), and National Road Safety Foundation (NRSF) to conduct a pilot project to reduce speeding through a combination of enforcement, engineering, and public outreach countermeasures in Bishopville, MD. This 2021 report summarizes how the pilot project successfully reduced speeding during the project.	https://zerodeathsmd.gov/wp-content/uploads/2022/06/Bishopville-2021-Final-Report.pdf	Speed-related education	The MHSO adapted its existing Be the Driver campaign into messages specific to Bishopville, which highlighted the pilot program's goal to slow drivers down. The campaign was disseminated via social media (Facebook, Instagram, Snapchat), billboards, an insertion in a local weekly print publication, and Waze's Zero Speed Takeover. Waze's Zero Speed Takeover drove awareness of the speed pilot campaign messaging to drivers while they were using the navigation app, Waze. Through the extensive use of electronic advertising, the MHSO ensured that people living in and around Bishopville heard and/or saw the campaign message. By utilizing an existing campaign, Be the Driver, efficiencies were realized with the creation of collateral. Success was also achieved by taking a system approach that combined engineering changes to narrow automobile travel lanes, with high-visibility enforcement and speed feedback signs. During the pilot, average speeds fell 9% and there was a 78% reduction in the odds that a motorists exceeded the speed limit by any amount.

Public engagement on safety resources

Name	Description	Link	Challenge addressed	How-to information
Safest Driver Contest Boston, MA, 2020	The City of Boston's Mayor's Office of New Urban Mechanics, in partnership with the Vision Zero Task Force, and the Transportation Department, held the Safest Driver Contest. The contest aimed to change driver behavior by offering incentives to participants who adopted safe practices while behind the wheel. Participants downloaded an app that assessed each driver's braking, acceleration, speeding, cornering, and distraction habits. The City awarded $4,500 to the top four winners in the first round and $25,000 in prizes in the second.	https://highways.dot.gov/safety/learn-safety/noteworthy-practices/safest-driver-contest-boston-massachusetts	Meaningful ways to engage public	The program was a new and meaningful way of engaging the public that led to a change in behavior during the two rounds of the competition. During the first round, the top 25% of drivers showed: 47% reduction in distraction, and 35% reduction in speeding. During the second round, participants showed, 48% reduction in distraction, and 38% reduction in speeding. Funding for the program came from non-traditional sources. The Arbella Insurance Foundation sponsored the first round of the competition. Liberty Mutual Insurance and a National Safety Council Road to Zero Safe System Innovation Grant (funded by NHTSA) sponsored the second round.
Walking Audits Broward County, FL, 2020	In 2018, the Broward MPO partnered with the Broward Regional Health Planning Council, Smart Growth Partnerships, the Health Foundation of South Florida, and municipal public works and traffic engineering departments to develop the Complete Streets Master Plan. The MPO conducted walking audits on high-ranking corridors to increase public involvement in the planning process. The walking audits engaged stakeholders, residents, technical staff, elected officials, and representatives of non-traditional transportation partners (i.e., YMCA, AARP). This resource outlines the process to implement these walking audits as an engagement tool and the outcomes of the audits.	https://highways.dot.gov/safety/learn-safety/noteworthy-practices/walking-audits-broward-county-florida	Meaningful ways to engage public	Broward MPO conducted six audits between 2018 and 2019 in the cities across its region. Each walking audit consisted of a presentation about the Complete Streets Initiative, a project specific overview of the audit location, an outline and purpose of the audits, and safety tips. It also included a workshop immediately after the walk to discuss and identify issues experienced during the walk. Broward MPO gathered feedback to inform the proposed project scope. At the conclusion of each audit, Broward MPO developed a Walking Audit Report summarizing findings. Over 270 people participated in the audits and was beneficial to the overall execution of the Complete Streets Master Plan and project development. Participants recommended raised crosswalks, sidewalk installation or widening, ADA violation corrections, pedestrian lighting, buffered bike lanes, and maintenance for landscaping/ greenery.
Suggested Design and Management Techniques for Enhancing Public Engagement in Transportation Policymaking Center for Transportation Studies, University of Minnesota, 2011	This report analyzes how the public can be effectively engaged in democratic decision-making and implementation of transportation policies. It to compiles and analyzes strategies for enhancing public engagement specifically in transportation planning and policy via a review of the literature, identification of key design choices in organizing public engagement, a case study, and recommendations for further research.	https://conservancy.umn.edu/bitstream/handle/11299/116934/CTS11-2a4.pdf?sequence=1&isAllowed=y	Meaningful ways to engage public	This resource covers general transportation planning and policy engagement, and is not specific to transportation safety, however, it argues and outlines how to engage the public in meaningful ways that improve decision-making. It suggests that that participation, defined as involving the public to provide input on a policy or project, is just one mode of engaging the public. It argues that across the transportation sector, most public engagement appears to be in this basic participation mode, which does not generate many benefits for transportation agencies or the public. Inclusive public management goes a step further, involving the participants in coproducing the definition of the problem as well as the process for making decisions.

Equity and safety decision-making resources

Name	Description	Link	Challenge addressed	How-to information
US DOT Equitable Transportation Community Explorer USDOT, 2023	The USDOT Equitable Transportation Community Explorer (ETCE) is an equity screening and mapping tool. The tool uses data consistent throughout the U.S. to highlight communities experiencing higher burdens and disadvantage rates. The tool offers different burden layers at the census tract level and allows individuals to utilize the data and mapping capabilities to inform their understanding of communities. The tool is intended to help target state and federally funded transportation projects to vulnerable or underserved communities. This version of the tool is experimental as the USDOT tests the service before releasing a final version.	https://experience.arcgis.com/experience/0920984aa80a4362b8778d779b090723/page/Applicant-Explorer	Equity and crash overlay maps, Incorporating equity into decision-making	Users can assess data layers that include race, color, and national origin using data from the U.S. Census Bureau's American Community Survey. This tool provides agencies with the capability to screen their projects for potentially historically underserved communities and determine early ways to avoid or mitigate potential impacts to those populations and prioritize investments and projects in these communities. MPOs can use this data and its tools when developing their Transportation Improvement Programs (TIPs) as criteria to score or prioritize projects.
Vision Zero Equity Strategies for Practitioners Vision Zero Network, 2017	Vision Zero Network advocates for safe mobility strategies, that do not exacerbate negative, unintended consequences, particularly in communities of color and low-income communities. This report summarizes successful strategies in U.S. Vision Zero cities that integrate equity into their work. Three broad strategies for integrating equity in Vision Zero include: re-thinking the role of enforcement, invest where needs are greatest, and engaging the community.	https://visionzeronetwork.org/resources/equity	Equity and crash overlay maps, Incorporating equity into decision-making	Most cities find that a relatively small percentage of streets are the sites of a disproportionate number of traffic deaths and serious injuries over a period. These streets are often labeled High Injury Networks (HIN) and should be prioritized for safety improvements. Many cities are overlaying their High Injury Networks with equity priority-areas, sometimes called Communities of Concern. This allows them to identify and communicate funding priorities to multiple city departments and the public. In this step, cities use a socioeconomic lens to further define and prioritize areas for attention and limited resources. The Los Angeles HIN spotlights streets with a high concentration of traffic collisions that result in severe injuries and deaths, and highlights those involving traditionally underserved and vulnerable communities. LA overlaid the HIN with data from Healthy Los Angeles' Health and Equity Index, which combines demographic, socio-economic, health conditions, land use, transportation, food environment, crime, and pollution burden data into a single lens.

Equity and safety decision-making resources (continued)

Name	Description	Link	Challenge addressed	How-to information
Advancing Transportation Equity: Research and Practice Center for Transportation Studies University of Minnesota, 2019	This resource provides an understanding of current research and practice to advance transportation equity in Minnesota. It presents a working definition of transportation equity, recommends action steps to consider in advancing transportation equity.	https://conservancy. umn.edu/bitstream/ handle/11299/204694/ CTS19-08_v2.pdf?se quence=3&isAllowed=y	Representative partners to engage	Recommendations included improvements to who are engaged in the planning and decision-making process, and how they are engaged. It recommends designing engagement processes that facilitate community leadership. Engagement should focus on inclusive participation of traditionally underserved and underrepresented communities, where community members drive conversations around their transportation needs. Outreach and engagement in should occur in places where communities already gather, including cultural events, farmers markets, etc. Organizations undergoing a planning process should allocate resources within project budgets to compensate community partners for their time and expertise. And finally, it recommends leveraging already established relationships with communities by partnering with nonprofit organizations, community development corporations, neighborhood associations.
Dignity Infused Community Engagement Strategy LADOT, 2019	The Los Angeles Department of Transportation (LADOT) has adopted its Dignity-Infused Community Engagement (DICE) approach for Vision Zero. The approach is a cross-sector effort to center community members in the Vision Zero planning process from the beginning; weaving all perspectives and lived experiences into the technical planning process. The dignity-infused planning process is an expansive approach to community engagement that empowers the LA community to lead and influence roadway safety.	https://ladotlivablestreets. org/content-detail/Dignity-Infused-Community-Engagement-Strategy	Representative partners to engage; Incorporating equity into decision-making	LADOT worked to meet communities where they are in its Vision Zero outreach. In an effort to move away from the role of an agency serving as the lead or most powerful voice on a safety issue, LADOT staff worked to help reassign power to community members whose daily experiences can guide solutions that best reflect their concerns and needs. Strategies include building relationships with target populations by going to established community groups, community centers, or organizations; and establishing Resident Advisory Councils that work alongside LADOT staff to evaluate Vision Zero efforts and inform the development of messaging and educational materials
Portland Vision Zero Action Plan Portland, OR, 2016	The City of Portland developed its Vision Zero Action Plan in 2016 with the goal to eliminate deaths and serious injuries for all who share Portland streets by 2025. Equity was one of the three guiding principles that guided the actions and performance measures in the Action Plan.	https://www.portland.gov/ transportation/vision-zero	Incorporating equity into decision-making	Portland and TriMet, the regional transit provider, used data to define "Communities of Concern" to identify census blocks in the city that scored in the top quartile in ten indicators. The indicators included, people of color, low-income households, lower paying jobs, and low-English proficiency. Compared to other neighborhoods, people living in Communities of Concern may have fewer choices about how, when and where they travel, putting them at higher risk as they move around. The Portland HIN was overlaid with the Communities of Concern to identify parts of the city where a corridor on the HIN is in a community of concern. Portland is prioritizing Vision Zero investments in Communities of Concern and along the HIN.

Project prioritization and readiness resources

Name	Description	Link	Challenge addressed	How-to information
Systemic Safety Project Selection Tool FHWA, 2013	The Systemic Safety Project Selection Tool presents a process for incorporating systemic safety planning into traditional safety management processes. It 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. It 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.	https://safety.fhwa.dot.gov/systemic/fhwasa13019/sspst.pdf	Prioritizing transportation safety in every project	The Tool outlines the Systemic Safety planning process in four stems: 1) identify crash types and risk factors; 2) screen and prioritize candidate locations; 3) select countermeasures; and 4) prioritize projects. For screening and prioritizing candidate locations the Tool recommends prioritizing lists of segments and intersections based on the presence of the selected risk factors—the more risk factors present, the greater the potential a crash and the higher the priority as a candidate for safety investment. These risk factors can be weighted if they have a stronger association with locals where fatal and serious injury crashes occur.
Highway Safety Improvement Program Indiana Department of Transportation, 2023	The Indiana Department of Transportation (INDOT) provides guidance to allocate the state's HSIP funding to local agencies. It identifies practices that MPOs and local agencies need to be eligible for HSIP funding. This includes, monitoring network performance, identifying feasible crash countermeasures, analyzing cost effectiveness of alternative investment choices, and prioritizing needs among candidate projects to deliver an efficient safety program.	https://www.in.gov/indot/traffic-engineering/traffic-safety-office	Implementing existing policies	INDOT developed a procedure providing specific guidance on a list of approved safety countermeasures that local agencies are eligible to use HSIP funding to construct. It details several high-priority, low-cost systemic countermeasures that demonstrate a strong benefit to roadway safety performance in Indiana. Project sponsors utilizing these countermeasures apply through INDOT's Local Highway Safety Program. By including not only the systemic safety countermeasures available for funding but also simplifying how they can be justified, INDOT achieved an increased sense of transparency in the project selection process to prioritize projects known to systemically improve roadway safety in Indiana.
MPO Guidebook for Using Safety as a Project Prioritization Factor FHWA, 2016	This guidebook provides options for MPOs to use safety as a project prioritization factor. The guidebook includes six types of approaches and details potential criteria, analysis methods, pros, cons, data, and resource needs, for implementing these approaches at basic, intermediate and advanced levels. Metropolitan Transportation Plans (MTP) and TIPs for 52 MPOs identified as potentially best practices in project prioritization and consideration of safety were reviewed.	https://trid.trb.org/view/1441070	Implementing existing policies	One of the six approaches the guidebook presents is the Systemic Approach. The basic objective of the systemic safety planning process is to identify candidates for safety investment based on risk factors. The data-driven process identifies the observed characteristics (risk factors) associated with the focus crash types. Under this approach MPOs can award prioritization points to projects on the list of higher risk locations defined by a systemic analysis of risk factors. Another of the six approach is the Countermeasure-Driven Approach, whereby MPOs award prioritization points to projects that include appropriate effective safety countermeasures such as the FHWA Proven Safety Countermeasures.

Project prioritization and readiness resources (continued)

Name	Description	Link	Challenge addressed	How-to information
Austin 2018 Bond Prioritization Methodology Austin, TX, 2018	The City of Austin, TX has a commitment to Vision Zero and after developing a Vision Zero Action Plan in 2018, the City developed a new project prioritization methodology to ensure 2018 Bond Vision Zero funds are used most effectively. The two-step screening process generated a ranked list of projects for crash reduction and mitigation projects with available funding.	https://www. austintexas.gov/page/ programs-and-initiatives	Implementing existing policies	The two-step process includes Crash Frequency and Severity Ranking, and a Safety Analysis Index. In Step 1, the Austin road network is segmented for analysis of the five-year crash data. The City developed a crash unit cost for different severity outcomes using guidance from USDOT, FHWA, and the National Safety Council, making adjustments using local data and policies. This provided a comprehensive crash cost for each location and a corresponding Crash Frequency Rank for each location. The top 100 highest-ranking comprehensive cost locations were selected. In Step 2, engineering criteria with weighting were applied to the highest-ranked- locations from Step 1. The locations were ranked by scores that considered crash rate, vulnerable user, top crash types and crash frequency.

Next steps

This review of resources and best practices summarizes strategies that can be applied by BMC to incorporate the Safe System Approach in its roadway safety efforts. These strategies can be used by BMC to address the common challenges implementing the Safe System Approach in the region and within local member agencies. As a next step, BMC will further explore how these best practices can be applied to the Baltimore regional conditions and situations through a series of case studies. It is understood that while these resources from across the United States demonstrate best practices in implementing the Safe System Approach, exploring how these practices can be applied by BMC and its member agencies is a crucial aspect that this next step will address.