

Report on the Methodology of the NTSB Most Wanted List

As required by section 1106 of the
National Transportation Safety Board Reauthorization Act of 2018
(Division C of Public Law 115-254)

January 2019



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Introduction

This report addresses the requirement in section 1106 of the National Transportation Safety Board Reauthorization Act of 2018 (division C of Public Law 115-254), which states:

- (a) **IN GENERAL.**—Not later than the date on which the first Most Wanted List to be published after the date of enactment of this Act is published, the Chairman shall publish on a publicly available website of the Board and submit to appropriate committees of Congress a report on the methodology used to prioritize and select recommendations to be included by the Board in the Most Wanted List.
- (b) **ELEMENTS.**—The report under subsection (a) shall include—
 - (1) a detailed description of how the Board accounts for the risk to safety addressed in each of its recommendations, including the extent to which the Board considers:
 - (A) the types of data and other information, including studies and reports, used to identify the amount and probability of risk to safety;
 - (B) the reduction of the risk to safety, estimated over a period of time, by implementing each recommendation;
 - (C) the practicality and feasibility of achieving the reduction of the risk to safety described in subparagraph (B); and
 - (D) any alternate means of reducing the risk;
 - (2) a detailed description of the extent to which the Board considers any prior, related investigation, safety recommendation, or other safety action when prioritizing and selecting recommendations; and
 - (3) a description of the extent of coordination and consultation when prioritizing and selecting the recommendations.
- (c) **GAO REPORT.**—Not later than 15 months after the date that the methodology report is published under subsection (a), the Comptroller General of the United States shall submit to the appropriate committees of Congress a report examining the methodology used by the Board to prioritize and select safety recommendations for inclusion in the Most Wanted List.

Background

The [NTSB Most Wanted List](#) (MWL) was created in 1990 as an advocacy tool to increase industry, congressional, and public awareness of the transportation safety issues identified in the agency's accident investigations and safety studies. Because the NTSB cannot require recipients to act on our recommendations, the MWL serves as our primary point of leverage to spur recommendation recipients to action. The MWL takes advantage of trends in transportation safety as revealed not only by investigations and safety studies, but also by trends in public sentiment, political discourse, and

media attention. In some years (such as 1990), the MWL has included up to 18 recommendations/issues.

In 2016, the MWL cycle was expanded to 2 years, allowing for more time to advocate for the issues on the list. Additionally, MWL parameters were modified so that the list contains no fewer than 5 and no more than 10 transportation safety issues, so we can focus more on fewer issues, which increases the likelihood that our advocacy efforts will be successful. The number of issues may exceed 10 if an emerging issue is added midcycle, or may drop below 5 if an issue is removed midcycle because the recommendations supporting it are closed.

Most Wanted List Development Process

Every MWL issue is supported by open [safety recommendations](#), which are calls for action to address transportation safety issues that we have discovered in our investigations and safety studies. MWL development is an iterative process guided by the agency's Board Order 71E, The Most Wanted List Program (see Appendix A). At the beginning of the cycle, staff from NTSB modal investigative offices, the Office of Research and Engineering, and the Office of Safety Recommendations and Communications review accident, injury, and fatality statistical data; findings from recent NTSB accident investigation reports and studies; national accident trends, as provided by US Department of Transportation (DOT) modal agencies and NTSB data; and the status of open safety recommendations. Draft MWL issue areas are developed using the three criteria below, which are taken from Board Order 71E.

- 1) Level of validation: The issue has been thoroughly validated by NTSB investigations as evidenced by any combination of:
 - [Related recommendations](#) (See Appendix B for a list of recommendations associated with the 2019–2020 MWL).
 - Board member concerns.
 - Modal director concerns.
 - [Investigation reports](#) that have the same or similar “findings” as they relate to causes, contributing factors, and risk.
 - [Safety alerts](#).
 - [Safety studies or special investigation reports](#).
- 2) Level of action: Insufficient or inadequate safety action has been taken, for example, related to:
 - The length of time since the issue was first communicated (see Appendix C for a list of the MWL issue areas from 1990 to the present).
 - Efforts by change agents to eliminate or reduce the safety deficiency.
 - Unsatisfactory [responses to NTSB recommendations](#).
- 3) Level of risk: The issue could create a high risk to public safety if not addressed, and is substantiated by one or more of the following factors:
 - Statistics demonstrating risk by quantity and relative frequency (probability).
 - High impact or potential for very serious consequences (severity) if not addressed.

This information is used to develop office submissions for each of the proposed issue areas (see Appendix D for the office submissions for the 2019–2020 MWL). The office submissions are included as part of the notation document that is sent to the Board for review and vote. During their review,

Board members can suggest new issue areas, remove issue areas, or modify the scope of issue areas. If this occurs, staff then comments on the proposed changes and submits their comments to the Board for review prior to final voting.

Process Timeline for Development of the 2019–2020 MWL

The timeline for developing the 2019–2020 MWL is described below. The MWL development process took approximately 1 year.

November 2017

- Conducted briefings and feedback discussions with industry stakeholders, recommendation recipients, and advocacy groups as part of the [midpoint progress review](#) for the 2017–2018 MWL (see Appendix E for list of attendees). Potential new MWL items were gleaned from these discussions and through follow-up surveys.
- Met with DOT modal administration safety leadership to collect feedback on possible items for the MWL.

January–February 2018

- Conducted series of brainstorming meetings with leadership and select staff from the NTSB Offices of Aviation Safety; Highway Safety; Marine Safety; Rail, Pipeline, and Hazardous Materials Investigations; Research and Engineering; and Safety Recommendations and Communications. Each office was asked to identify three items for possible inclusion on the list, using the following criteria:
 - Relevant NTSB or industry data pertaining to fatalities, injuries, and known benefits.
 - Accident trends and safety issue trends across multiple accidents.
 - Current open recommendations (regardless of status).
 - Potential for accidents, loss of life, and injury if the status quo continues.
 - The level of external support for recommendation adoption.
 - The likelihood of successfully closing the open recommendations in a 2-year period.

March 2018

- Conducted an assessment meeting with the directors and deputies from the NTSB modal offices, the managing director, and the deputy managing director to discuss the viability of the items proposed at prior meetings, then combined or consolidated similar items. Employed a scoring rubric that accounted for open recommendations, level of external support, and risk of not addressing the issue.
- Developed draft list and gathered Board member feedback.

April 2018

- Developed proposed titles for the initial list and provided Board member feedback to NTSB modal directors for refinement.
- Staff approved the proposed final list for submission to the Board.

July 2018

- Sent MWL notation memorandum to Board members for formal review.

August–September 2018

- Board members provided written feedback to staff, per the agency’s notation process. In their comments, Board members either approved the proposed issue, suggested modifications to the issue’s scope, or suggested other new issues.
- Staff addressed Board member feedback and proposed a final MWL for their consideration.

October 2018

- Board voted to approve the 2019–2020 MWL as follows:
 - End Alcohol and Other Drug Impairment
 - Require Medical Fitness—Screen for and Treat Obstructive Sleep Apnea
 - Strengthen Occupant Protection
 - Eliminate Distractions
 - Reduce Fatigue-Related Accidents
 - Improve the Safety of Part 135 Aircraft Flight Operations
 - Implement a Comprehensive Strategy to Reduce Speeding-Related Crashes
 - Fully Implement Positive Train Control
 - Increase Implementation of Collision Avoidance Systems in all New Highway Vehicles
 - Ensure the Safe Shipment of Hazardous Materials

NTSB Safety Recommendations

Each MWL issue area is supported by one or more open safety recommendations. The NTSB issues safety recommendations in accordance with Title 49 *US Code* section 1116. Safety recommendations are a suggested course of action proposed by staff and adopted by the Board to correct an identified transportation safety deficiency. Recommendations are transmitted by letter to appropriate recipients. Any entity can receive a recommendation, including DOT modal agencies, states and state agencies, manufacturers, operators, unions, and transportation industry organizations.

In the course of developing accident investigation reports, safety studies, or special investigation reports, staff may discover evidence of a safety deficiency that could be corrected with a recommendation. Safety recommendations must be fully justified and adequately supported by accident or incident investigation findings, review of accident or incident trends, or conclusions reached as a result of safety studies, special investigative reports, or other NTSB investigative processes. The following areas can be considered in the recommendation development process:

- What is the problem? Describe the specific safety deficiency that needs to be addressed, including the unsafe condition that it presents (the hazard), scope (how much of the transportation system could be affected by this hazard?), magnitude (what is the worst-case safety consequence?), and root cause (such as inadequate regulation, inadequate design analysis, or inadequate training).
- Why is it a problem? Indicate why a continuation of the identified problem would be detrimental to safety, or how the identified problem led to a finding from the accident or incident.
- What is the link between the problem and the accident or incident? How will these proposed recommendations protect against the identified safety issue?
- What supporting information is relevant to the problem and ties the key conclusions to the problem?
- What is the industry's history of action to address this or similar safety issues? What methods (regulation, policy, procedure, equipment design) already exist to prevent this safety deficiency from occurring or to detect the deficiency should it occur? If some methods exist, why were they ineffective in preventing this safety issue? What evidence do you have to show these methods were deficient? How does this safety recommendation differ from what has already been done?
- What is the relationship of this recommended action to current regulations, policies, procedures, and industry standards?
- What is the NTSB's history of safety recommendations to address this safety issue or similar safety issues? If there are open recommendations, what is the status of each recommendation? Should they be reiterated? What is the NTSB's public response to related notices of proposed rulemaking? Has the Board made a similar recommendation within or across modal offices, or offered a public response? If yes, what was the outcome? How does that affect this or previous safety recommendations?

- What are the possible limitations of the proposed recommendation for protecting against the identified safety issue?
- Approximately how much time would it take to implement the corrective action, and how much of an impact will the corrective action have on the transportation industry? Why is this impact or scope appropriate? If the recommendation asks for a technology-based action, does the technology exist to allow action to take place now? If not, what technology must be created to allow action to be implemented? What interim actions, if any, are required?

The scope of recommendations can vary considerably, from recommendations encouraging state legislation, to suggested regulatory changes, to small procedural changes by an operator to improve safety, to professional associations being asked to inform their members of the circumstances of an accident to make them aware of the pertinent safety issues. Every proposed recommendation is contingent on the underlying risk to safety determined by the specific investigation or study.

NTSB Board Order 70C, NTSB Safety Recommendation Program, specifies that the NTSB does not conduct formal cost/benefit evaluations when developing safety recommendations. Although we consider the feasibility and practicality associated with each recommendation, we believe that the recommendation recipient is in the best position to determine the value of the risk reduction, based on the recipient's capabilities, business structure, and safety programs and systems. In our ongoing discussions with recommendation recipients, we encourage alternate ways of achieving the intent of the recommendation if recipients determine they cannot undertake the original suggested course. To that end, we can assign a recommendation status as "Closed—Acceptable Alternate Action" when the recipient indicates that an alternate course of action has been completed that fulfills the recommendation's objective.

Draft safety recommendations are presented to the Board for consideration via the Board's formal review and voting procedure. A majority vote is required for a recommendation to be accepted by the Board. During the voting process, a Board member can also offer a new recommendation or modify a draft recommendation as an amendment to a report. The amendment is then debated by the Board and voted upon. Accordingly, much of the information required for background research and new recommendation justification is not reflected in the final report or the associated factual information.

After a safety recommendation is adopted by the Board, it is actively monitored from the date it is issued until it is closed. A permanent record of all safety recommendations (open and closed) is maintained in an electronic document control system, as is all formal correspondence between a safety recommendation recipient and the NTSB about the recommendation. This information is also available to the public via [the NTSB's website](#).

Safety recommendations are classified and closed only by majority vote of the Board after its review. The Board members' votes are recorded in the document control system indicating the recommendation classification status. Safety recommendations, related responses, and follow-up statuses are available to the public via the NTSB's website.

Examples of Research Supporting Safety Recommendations in the MWL

Safety recommendations underpinning the MWL issue areas are drawn from accident reports, safety studies, special investigation reports, and safety recommendation reports. The following are examples of each type of report, illustrating the level of research undertaken to examine risk, related investigations and recommendations, and safety actions taken by recommendation recipients prior report completion.

Accident Reports

Accident reports are the primary sources by which we justify our recommendations. The MWL issue “Improve the Safety of Part 135 Aircraft Flight Operations” has 15 associated recommendations focused on three areas: safety management systems (SMS) implementation, flight data monitoring (FDM) recording device installation and analysis of the associated data via a flight data monitoring program, and controlled flight into terrain (CFIT) training for pilots. Eight of these recommendations come from two accident reports: *Crash During Nonprecision Instrument Approach to Landing, Execufight Flight 1526, British Aerospace HS 125-700A, N237WR, Akron, Ohio, November 10, 2015* and *Collision with Terrain, Promech Air, Inc. de Havilland DHC-3, N270PA, Ketchikan, Alaska, June 25, 2015*.

Safety Studies

Safety studies are extensive examinations of safety topics of national public interest that involve reducing transportation losses, the technical aspects of a transportation system, analyzing accident data, or the history and progress of transportation safety improvements. Safety studies result in a narrative report on facts, conclusions, and applicable recommendations. The MWL issue “Implement a Comprehensive Strategy to Reduce Speeding-Related Crashes” is largely supported by our 2017 safety study, *Reducing Speeding-Related Crashes Involving Passenger Vehicles*.

Special Investigations Reports

Special investigations reports are information-gathering efforts concerning predetermined subjects selected in support of safety studies, or examinations of technical issues and safety problems identified in one or more accident investigations. The MWL issue area “Increase Implementation of Collision Avoidance Systems in all New Highway Vehicles” is supported by our 2015 special investigation report, *The Use of Forward Collision Avoidance Systems to Prevent and Mitigate Rear-End Crashes*.

Safety Recommendation Reports

Safety recommendation reports may be issued at any time during an accident investigation to address specific safety concerns. They contain factual and analytical information to support the associated recommendations. The MWL issue “Ensure the Safe Shipment of Hazardous Materials” is supported by a safety recommendation report that included four urgent recommendations issued 2 months after the natural gas explosions and fires in the Merrimack Valley of Massachusetts: *Natural Gas Distribution System Project Development and Review (Urgent)*.

Appendix A: Board Order 71E, Most Wanted List Program

National Transportation Safety Board Order Office of the Managing Director Washington, D.C.

NTSB 71E

September 26, 2016

SUBJECT: MOST WANTED LIST PROGRAM

1. OFFICE OF PRINCIPAL INVOLVEMENT. Office of Safety Recommendations and Communications. This order was issued September 26, 2016 will be due for review by September 25, 2021.
2. PURPOSE. This order establishes a program for the biennial selection, development, and advocacy of no fewer than 5 and no more than 10 transportation safety issues on the Most Wanted List (MWL), beginning in 2017. The number of issues may exceed 10 if an emerging issue is added mid-cycle or may drop below 5 if an issue is removed mid-cycle due to successful closure of the recommendation(s) supporting the issue or if the issue area no longer warrants MWL status.
3. POLICY. The Director, Office of Safety Recommendations and Communications, shall publish and maintain an Operations Bulletin (SRC-GEN-001) establishing procedures for implementing the MWL Program. The procedures will include the process for identifying, selecting, and developing transportation safety issues and advocacy of the MWL issues.
4. CANCELLATION. This Order supersedes NTSB Order 71D, dated March 30, 2011.
5. BACKGROUND. Section 304(a)(3) of Public Law 93-633, the "Independent Safety Board Act of 1974," 49 *United States Code* 1116, assigns the National Transportation Safety Board (NTSB) the responsibility for advocating meaningful responses to reduce the likelihood of transportation accident recurrence and for proposing corrective steps to make transportation as safe as possible. The NTSB carries out these responsibilities by investigating accidents and determining their probable cause, and issuing safety recommendations and safety studies that propose solutions. The NTSB created the MWL program to increase industry, Congressional, and public awareness of the transportation safety issues identified in these accident investigations and safety studies and advocate for adoption of NTSB recommendations. Safety issues highlighted on the MWL receive increased

emphasis by staff and Board Members, and become the primary focus of the Safety Advocacy Division.

6. MWL ISSUE AREA DEFINITION AND CRITERIA. MWL issues are selected from NTSB safety recommendations and emerging areas, and are based on the magnitude of risk, potential safety benefits, timeliness, and probability of advocacy efforts to bring about change. Specific criteria considered include the following:

Criteria	Considerations
Level of validation	<p>The issue has been thoroughly validated by NTSB investigations as evidenced by any combination of:</p> <ul style="list-style-type: none"> • Related recommendations • Board member concerns • Modal director concerns • Investigation reports that have the same or similar “findings” as they relate to causes, contributing factors, and risk • Safety alerts • Safety studies or special investigation reports
Level of action	<p>Insufficient or inadequate safety action has been taken, for example, related to:</p> <ul style="list-style-type: none"> • The length of time since the issue was first communicated • Efforts by change agents to eliminate or reduce the safety deficiency • Unsatisfactory responses to NTSB recommendations
Level of risk	<p>The issue could create a high risk to public safety if not addressed and is substantiated by one or more of the following factors:</p> <ul style="list-style-type: none"> • Statistics demonstrating risk by quantity and relative frequency (probability) • High impact or potential for very serious consequences (severity) if not addressed

7. RESPONSIBILITIES.

- a. The Director, Office of Safety Recommendations and Communications, is responsible for the following:
- (1) Establishing procedures to identify and select transportation safety issues for the MWL and developing advocacy plans to address the issues;
 - (2) Collecting preferences from modal directors, the Director of the Office of Research and Engineering, and Board Members for proposed MWL issues and any additional issue areas they suggest;

- (3) Establishing an internal SRC review panel to review input from modal directors and Board members to identify the list of proposed issue areas for the MWL;
 - (4) Developing a notation package that identifies the proposed issues to be highlighted on the MWL and submitting the notation to Office Directors for approval and scheduling a directors' review meeting, if necessary;
 - (5) Submitting the final notation package to the Board Members for vote;
 - (6) Preparing presentations and briefing Board members about safety recommendations that support the MWL issues, and organizing and participating in the Board meeting, if the notation package is calendared.
 - (7) Coordinating a biennial press conference to announce the MWL issues, beginning in 2017, as well as any mid-cycle additions, updates, or issues to be removed from the list because of positive results;
 - (8) Leading the development and implementation of advocacy plans for each issue area identified in the MWL. For multimodal issue areas, a separate advocacy plan will be developed for each mode that is represented in that issue area; and
 - (9) Developing and implementing a communications plan for the overall MWL that, at a minimum, provides for an update on the progress made on MWL issues and outlines the strategies and tactics to be employed throughout the biennial MWL lifecycle to gain earned media coverage, create and sustain conversations within social media channels, and advocate for MWL issues and related safety recommendations (See SRC-GEN-001 for communications plan outline).
- b. The Modal Offices, the Office of Research and Engineering, and the Safety Advocacy Division of the Office of Safety Recommendations and Communications are responsible for working together toward the following:
- (1) Identifying issues for consideration by the internal SRC MWL review panel and preparing office submissions in accordance with the criteria established in SRC-GEN-001;
 - (2) Participating in MWL development and review meetings and Board Member meetings;
 - (3) Participating in the Board meeting process if the MWL is calendared;
 - (4) Developing key messages for each issue area;
 - Developing supporting MWL documents, including fact sheets, brochures, videos, and other materials necessary to execute the MWL communications

plan; and

- (5) Developing and implementing advocacy plans for each issue area, with the Safety Advocacy Division leading this effort.
- c. The Board Members are responsible for the following:
- (1) Reviewing nominations of the MWL issues within the specified timeframes, as outlined in Operations Bulletin SRC-GEN-001;
 - (2) Selecting the final MWL through the notation process or at a Board meeting, if calendared;
 - (3) Announcing the final MWL in a public event; and
 - (4) Supporting advocacy of all MWL issues.
- d. Board Members and Office Directors may propose the addition of an emerging issue to the MWL or the removal of an issue during the biennial period.
- (1) An emerging issue is not necessarily a new issue, but is one that may require immediate attention that can't await the traditional MWL cycle because of a safety concern, that, if not addressed, poses imminent danger or threatens the safety of the traveling public.
 - (2) The emerging issue will meet the same criteria and review process established above for the nomination of MWL issue areas, but in a more expedited timeframe.
 - (3) When an emerging issue is added to the MWL, the Office of Safety Recommendations and Communications will develop appropriate communications and advocacy plans for the added issue.
 - (4) Emerging issue additions to the MWL will typically be announced between November and January of the off year to capitalize on the "year in review, the year ahead" news cycle typical of these months.
 - (5) Issues may be removed mid-cycle (between November and January of the off year) if the recommendation(s) supporting the issue are closed in an acceptable manner or if the issue area no longer warrants MWL status. The removal of an issue will follow the review process established above but in a more expedited timeframe.

Thomas E. Zoeller

Managing Director

Appendix B: Safety Recommendations Associated with the 2019–2020 Most Wanted List



2019–2020 MWL -Associated AS OF DECEMBER 11, 2018

Open Safety Recommendations

2019–2020 MOST WANTED LIST OF TRANSPORTATION SAFETY IMPROVEMENTS

This document provides a listing of open NTSB safety recommendations most strongly associated with the **2019–2020 NTSB Most Wanted List**. The recommendations are grouped by each MWL topic area and include the recommendation number, classification status, and recommendation text. For the most current recommendations, please visit www.NTSB.gov/MostWanted.

- AVIATION
- HIGHWAY
- MARINE
- RAILROAD
- PIPELINE

About the NTSB Most Wanted List of Transportation Safety Improvements

Tens of thousands of people die in transportation accidents and crashes every year—our neighbors, our coworkers, our schoolmates, our family members. But they don't have to. Most of these deaths are completely preventable. With each accident, we learn lessons about safety gaps and make recommendations that, if acted upon, could close these gaps.

The **MOST WANTED LIST**, the NTSB's premier advocacy tool, identifies the top safety improvements that can be made across all modes to prevent accidents, minimize injuries, and save lives in the future. These issue areas are ripe for action now; if addressed, they would make a significant impact.

The **MOST WANTED LIST** is our road map from lessons learned to lives saved. We urge lawmakers, industry, and every American to learn more about what they can do to implement and champion these critical safety improvements.

Together, we can save lives.

To learn more about the Most Wanted List, visit www.NTSB.gov/MostWanted or contact SafetyAdvocacy@NTSB.gov

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Reduce Fatigue-Related Accidents

Fatigue is a pervasive problem in transportation that degrades a person's ability to stay awake, alert, and attentive to the demands of safely controlling a vehicle, vessel, aircraft, or train. **We are calling for a comprehensive approach to combatting fatigue in transportation, focusing on research, education, and training; technology; sleep disorder treatment; hours-of-service regulations; and on- and off-duty scheduling policies and practices.**

RECOMMENDATION NO. STATUS

Aviation

A-13-003 **Open-Acceptable Alternate Response**
TO THE FEDERAL AVIATION ADMINISTRATION: Require that personnel performing maintenance or inspections under Title 14 *Code of Federal Regulations* Parts 121, 135, 145, and 91 Subpart K receive initial and recurrent training on human factors affecting maintenance that includes a review of the causes of human error, including fatigue, its effects on performance, and actions individuals can take to prevent the development of fatigue.

A-14-072 **Open-Acceptable Response**
TO THE FEDERAL AVIATION ADMINISTRATION: Require principal operations inspectors to ensure that operators with flight crews performing Title 14 *Code of Federal Regulations* Part 121, 135, and 91 subpart K overnight operations brief the threat of fatigue before each departure, particularly those occurring during the window of circadian low.

A-14-087 **Open-Acceptable Response**
TO UPS (UNITED PARCEL SERVICE) AIRLINES: Work with the Independent Pilots Association to conduct an independent review of the fatigue event reporting system to determine the program's effectiveness as a nonpunitive mechanism to identify and effectively address the reported fatigue issues. Based on the findings, implement changes to enhance the safety effectiveness of the program.

A-14-088 **Open-Acceptable Response**
TO UPS (UNITED PARCEL SERVICE) AIRLINES: Work with the Independent Pilots Association to counsel pilots who call in fatigued and whose sick bank is debited to understand why the fatigue call was made and how to prevent it from recurring.

A-14-089 **Open-Acceptable Response**
TO THE INDEPENDENT PILOTS ASSOCIATION: Work with UPS to conduct an independent review of the fatigue event reporting system to determine the program's effectiveness as a nonpunitive mechanism to identify and effectively address the reported fatigue issues. Based on the findings, implement changes to enhance the safety effectiveness of the program.

A-14-090 **Open-Acceptable Response**
TO THE INDEPENDENT PILOTS ASSOCIATION: Work with UPS to counsel pilots who call in fatigued and whose sick bank is debited to understand why the fatigue call was made and how to prevent it from recurring.

A-18-029 **Open-Await Response**
TO TRANSPORT CANADA: Revise current regulations to address the potential for fatigue for pilots on reserve duty who are called to operate evening flights that would extend into the pilots' window of circadian low.

A-94-194 **Open-Acceptable Response**
TO THE FEDERAL AVIATION ADMINISTRATION: Revise the Federal Aviation Regulations contained in Title 14 *Code of Federal Regulations* Part 135 to require that pilot flight time accumulated in all company flying conducted after revenue operations—such as training and check flights, ferry flights and repositioning flights—be included in the crewmember's total flight time accrued during revenue operations.

A-95-113 **Open-Acceptable Response**
TO THE FEDERAL AVIATION ADMINISTRATION: Finalize the review of current flight and duty time regulations and revise the regulations, as necessary, within 1 year to ensure that flight and duty time limitations take into consideration research findings in fatigue and sleep issues. The new regulations should prohibit air carriers from assigning flightcrews to flights conducted under Title 14 *Code of Federal Regulations* (CFR) Part 91 unless the flightcrews meet the flight and duty time limitations of 14 CFR Part 121 or other appropriate regulations.

Highway

H-09-009 **Open-Await Response**
TO THE AMERICAN BUS ASSOCIATION AND THE UNITED MOTORCOACH ASSOCIATION: Inform your members through Web sites, newsletters, and conferences of the circumstances of the Mexican Hat, Utah, accident. The prepared information should encourage charter operators to develop written contingency plans for each charter to ensure that trip planning is in place in the event of driver fatigue, incapacitation, or illness or in the event of trip delays necessitating replacement drivers to avoid hours-of-service violations and inform drivers of their trip's contingency plans. The prepared information should also provide information about the risks of operating in rural areas without wireless telephone coverage and advise members to carry mobile cellular amplifiers or satellite-based devices to communicate emergency events.

Reduce Fatigue-Related Accidents – continued

H-09-010 Open-Acceptable Response

TO ARROW STAGE LINES: Develop written contingency plans for each charter to ensure that trip planning is in place in the event of driver fatigue, incapacitation, or illness or in the event of trip delays necessitating replacement drivers to avoid hours-of-service violations and inform drivers of their trip's contingency plans.

H-09-015 Open-Unacceptable Response

TO THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION: Implement a program to identify commercial drivers at high risk for obstructive sleep apnea and require that those drivers provide evidence through the medical certification process of having been appropriately evaluated and, if treatment is needed, effectively treated for that disorder before being granted unrestricted medical certification.

H-09-016 Open-Acceptable Response

TO THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION: Develop and disseminate guidance for commercial drivers, employers, and physicians regarding the identification and treatment of individuals at high risk of obstructive sleep apnea (OSA), emphasizing that drivers who have OSA that is effectively treated are routinely approved for continued medical certification.

H-12-029 Open-Unacceptable Response

TO THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION: Establish an ongoing program to monitor, evaluate, report on, and continuously improve fatigue management programs implemented by motor carriers to identify, mitigate, and continuously reduce fatigue-related risks for drivers. (This safety recommendation supersedes Safety Recommendation H-08-14.)

H-12-030 Open-Unacceptable Response

TO THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION: Incorporate scientifically based fatigue mitigation strategies into the hours-of-service regulations for passenger-carrying drivers who operate during the nighttime window of circadian low.

H-15-022 Open-Acceptable Response

TO WAL-MART STORES, INC. (ORIGINALLY ISSUED TO WALMART TRANSPORTATION LLC): Develop and implement a fatigue management program based on the North American Fatigue Management Program guidelines.

H-17-049 Open-Acceptable Alternate Response

TO THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION: Make the 2016 Medical Review Board/Motor Carrier Safety Advisory Committee recommendations on screening for obstructive sleep apnea (OSA) easily accessible to certified medical examiners, and instruct the examiners to use the recommendations as guidance when evaluating commercial drivers for OSA risk.

H-17-056 Open-Await Response

TO THE UNITED STATES DEPARTMENT OF LABOR: Develop and disseminate guidelines and training material for agricultural employers and farm labor contractors on the dangers of driving while tired and on strategies for managing driver fatigue.

Marine

M-16-004 Open-Acceptable Response

TO THE UNITED STATES COAST GUARD: Address the risks associated with watch stander fatigue by implementing Commandant Instruction 3500.2, Crew Endurance Management, issued on March 30, 2006, in all operational units.

Railroad

R-06-003 Open-Acceptable Response

TO THE FEDERAL TRANSIT ADMINISTRATION: Require transit agencies, through the system safety program and hazard management process if necessary, to ensure that the time off between daily tours of duty, including regular and overtime assignments, allows train operators to obtain at least 8 hours of uninterrupted sleep.

R-09-011 Open-Acceptable Response

TO 46 US RAIL TRANSIT AGENCIES: Establish a program to identify operators who are at high risk for obstructive sleep apnea or other sleep disorders and require that such operators be appropriately evaluated and treated.

R-12-016 Open-Unacceptable Response

TO THE FEDERAL RAILROAD ADMINISTRATION: Require railroads to medically screen employees in safety-sensitive positions for sleep apnea and other sleep disorders.

R-12-017 Open-Acceptable Response

TO THE FEDERAL RAILROAD ADMINISTRATION: Establish an ongoing program to monitor, evaluate, report on, and continuously improve fatigue management systems implemented by operating railroads to identify, mitigate, and continuously reduce fatigue-related risks for personnel performing safety-critical tasks, with particular emphasis on biomathematical models of fatigue.

R-12-018 Open-Acceptable Response

TO THE FEDERAL RAILROAD ADMINISTRATION: Conduct research on new and existing methods that can identify fatigue and mitigate performance decrements associated with fatigue in on-duty train crews.

R-12-019 Open-Acceptable Response

TO THE FEDERAL RAILROAD ADMINISTRATION: Require the implementation of methods that can identify fatigue and mitigate performance decrements associated with fatigue in on-duty train crews that are identified or developed in response to Safety Recommendation R-12-18.

R-12-025 Open-Acceptable Alternate Response

TO THE BNSF RAILWAY: Require all employees and managers who perform or supervise safety-critical tasks to complete fatigue training on an annual basis and document when they have received this training.

R-12-026 Open-Unacceptable Response

TO THE BNSF RAILWAY: Medically screen employees in safety-sensitive positions for sleep apnea and other sleep disorders.

R-13-021 **Open-Unacceptable Response**

TO THE FEDERAL RAILROAD ADMINISTRATION: Develop medical certification regulations for employees in safety-sensitive positions that include, at a minimum, (1) a complete medical history that includes specific screening for sleep disorders, a review of current medications, and a thorough physical examination, (2) standardization of testing protocols across the industry, and (3) centralized oversight of certification decisions for employees who fail initial testing; and consider requiring that medical examinations be performed by those with specific training and certification in evaluating medication use and health issues related to occupational safety on railroads. [This recommendation supersedes Safety Recommendations R-02-24 through -26.]

R-14-062 **Open-Acceptable Response**

TO METRO-NORTH RAILROAD: Revise your medical protocols for employees in safety-sensitive positions to include specific protocols on sleep disorders, including obstructive sleep apnea.

R-14-064 **Open-Acceptable Response**

TO METRO-NORTH RAILROAD: Develop and implement protocols to routinely screen and fully evaluate your safety-sensitive employees for sleep disorders and ensure that such disorders are adequately addressed if diagnosed.

R-14-065 **Open-Acceptable Response**

TO THE LONG ISLAND RAILROAD: Develop and implement protocols to routinely screen and fully evaluate your safety-sensitive employees for sleep disorders and ensure that such disorders are adequately addressed, if diagnosed.

R-14-071 **Open-Unacceptable Response**

TO THE ASSOCIATION OF AMERICAN RAILROADS, THE AMERICAN PUBLIC TRANSPORTATION ASSOCIATION, THE AMERICAN SHORT LINE AND REGIONAL RAILROAD ASSOCIATION, THE BROTHERHOOD OF LOCOMOTIVE ENGINEERS, AND THE INTERNATIONAL ASSOCIATION OF SHEET METAL, AIR, RAIL AND TRANSPORTATION WORKERS: Collaborate to develop a model national labor agreement that supports effective programs for addressing sleep disorders and other medical conditions among safety-sensitive train operating personnel.

R-15-018 **Open-Acceptable Response**

TO THE FEDERAL TRANSIT ADMINISTRATION: Develop a work scheduling program for rail transit agencies that incorporates fatigue science—such as validated biomathematical models of fatigue—and provides for the management of personnel fatigue risks, and implement the program through the state safety oversight program.

R-15-019 **Open-Acceptable Response**

TO THE FEDERAL TRANSIT ADMINISTRATION: Establish (through the state safety oversight program) scientifically based hours-of-service regulations that set limits on hours of service, provide predictable work and rest schedules, and consider circadian rhythms and human sleep and rest requirements.

R-15-020 **Open-Acceptable Response**

TO THE FEDERAL TRANSIT ADMINISTRATION: Identify the necessary training and certification needs for work schedulers in the rail transit industry and require the transit agencies—through the state safety oversight program—to provide additional training or certification for their work schedulers.

R-15-021 **Open-Acceptable Response**

TO THE FEDERAL TRANSIT ADMINISTRATION: Require (through the state safety oversight program) rail transit employees who develop work schedules to complete initial and recurrent training based on current fatigue science to identify and mitigate work schedule risks that contribute to operator fatigue.

R-16-043 **Open-Unacceptable Response**

TO THE FEDERAL RAILROAD ADMINISTRATION: Require freight railroads to use validated biomathematical fatigue models, similar to the models used by passenger railroads, to develop work schedules that do not pose an excessive risk of fatigue.

R-16-044 **Open-Unacceptable Response**

TO THE FEDERAL RAILROAD ADMINISTRATION: Develop and enforce medical standards that railroad employees in safety-sensitive positions diagnosed with sleep disorders must meet to be considered fit for duty.

R-16-045 **Open-Await Response**

TO BNSF RAILWAY, CANADIAN NATIONAL RAILWAY, CANADIAN PACIFIC RAILWAY, CSX TRANSPORTATION, KANSAS CITY SOUTHERN RAILWAY, NORFOLK SOUTHERN RAILWAY, INTERCITY RAILROADS, AND COMMUTER RAILROADS: Review and revise as necessary your medical rules, standards, or protocols to ensure you are informed of any diagnosed sleep disorders that employees in safety-sensitive positions must report and, when an employee makes such a report, perform periodic evaluations to ensure the condition is appropriately treated and the employee is fit for duty.

R-16-046 **Open-Await Response**

TO CLASS I RAILROADS: Revise your scheduling practices for train crews and implement science-based tools, such as validated biomathematical models, to reduce start time variability that results in irregular work-rest cycles and fatigue.

R-16-047 **Open-Acceptable Response**

TO UNION PACIFIC RAILROAD: Revise your medical rules to add any diagnosed sleep disorder to the list of medical conditions that employees in safety-sensitive positions must report and, when an employee makes such a report, perform periodic evaluations to ensure the condition is appropriately treated and the employee is fit for duty.

R-18-004 **Open-Initial Response Received**

TO NEW JERSEY TRANSIT AND METROPOLITAN TRANSPORTATION AUTHORITY: Ensure that operator impairment due to medical conditions, including obstructive sleep apnea, is part of the hazard management portion of your system safety program plan.



Require Medical Fitness—Screen for and Treat Obstructive Sleep Apnea

Undiagnosed and untreated obstructed sleep apnea continues to be deadly on our roads and rails, causing too many preventable accidents. **We want to see mandatory screening and treatment for obstructive sleep apnea for rail and highway personnel in safety-sensitive positions.**

RECOMMENDATION NO.

STATUS

Highway

H-09-015 **Open-Unacceptable Response**
TO THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION: Implement a program to identify commercial drivers at high risk for obstructive sleep apnea and require that those drivers provide evidence through the medical certification process of having been appropriately evaluated and, if treatment is needed, effectively treated for that disorder before being granted unrestricted medical certification.

H-09-016 **Open-Acceptable Response**
TO THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION: Develop and disseminate guidance for commercial drivers, employers, and physicians regarding the identification and treatment of individuals at high risk of obstructive sleep apnea (OSA), emphasizing that drivers who have OSA that is effectively treated are routinely approved for continued medical certification.

H-17-049 **Open-Acceptable Alternate Response**
TO THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION: Make the 2016 Medical Review Board/Motor Carrier Safety Advisory Committee recommendations on screening for obstructive sleep apnea (OSA) easily accessible to certified medical examiners, and instruct the examiners to use the recommendations as guidance when evaluating commercial drivers for OSA risk.

Railroad

R-09-011 **Open-Acceptable Response**
TO 46 US RAIL TRANSIT AGENCIES: Establish a program to identify operators who are at high risk for obstructive sleep apnea or other sleep disorders and require that such operators be appropriately evaluated and treated.

R-12-016 **Open-Unacceptable Response**
TO THE FEDERAL RAILROAD ADMINISTRATION: Require railroads to medically screen employees in safety-sensitive positions for sleep apnea and other sleep disorders.

R-12-026 **Open-Unacceptable Response**
TO THE BNSF RAILWAY: Medically screen employees in safety-sensitive positions for sleep apnea and other sleep disorders.

R-13-021 **Open-Unacceptable Response**
TO THE FEDERAL RAILROAD ADMINISTRATION: Develop medical certification regulations for employees in safety-sensitive positions that include, at a minimum, (1) a complete medical history that includes specific screening for sleep disorders, a review of current medications, and a thorough physical examination, (2) standardization of testing protocols across the industry, and (3) centralized oversight of certification decisions for employees who fail initial testing; and consider requiring that medical examinations be performed by those with specific training and certification in evaluating medication use and health issues related to occupational safety on railroads. [This recommendation supersedes Safety Recommendations R-02-24 through -26.]

R-14-062 **Open-Acceptable Response**
TO METRO-NORTH RAILROAD: Revise your medical protocols for employees in safety-sensitive positions to include specific protocols on sleep disorders, including obstructive sleep apnea.

R-14-064 **Open-Acceptable Response**
TO METRO-NORTH RAILROAD: Develop and implement protocols to routinely screen and fully evaluate your safety-sensitive employees for sleep disorders and ensure that such disorders are adequately addressed if diagnosed.

R-14-065 **Open-Acceptable Response**
TO THE LONG ISLAND RAILROAD: Develop and implement protocols to routinely screen and fully evaluate your safety-sensitive employees for sleep disorders and ensure that such disorders are adequately addressed, if diagnosed.

R-14-071 **Open-Unacceptable Response**
TO THE ASSOCIATION OF AMERICAN RAILROADS, THE AMERICAN PUBLIC TRANSPORTATION ASSOCIATION, THE AMERICAN SHORT LINE AND REGIONAL RAILROAD ASSOCIATION, THE BROTHERHOOD OF LOCOMOTIVE ENGINEERS, AND THE INTERNATIONAL ASSOCIATION OF SHEET METAL, AIR, RAIL AND TRANSPORTATION WORKERS: Collaborate to develop a model national labor agreement that supports effective programs for addressing sleep disorders and other medical conditions among safety-sensitive train operating personnel.

R-16-044 **Open-Unacceptable Response**
TO THE FEDERAL RAILROAD ADMINISTRATION: Develop and enforce medical standards that railroad employees in safety-sensitive positions diagnosed with sleep disorders must meet to be considered fit for duty.



Strengthen Occupant Protection

Seat belts, child car seats, and child safety restraint systems in highway vehicles and on airplanes reduce the risk of injury and death. Restraints in motor vehicles saved 14,668 lives in 2016 alone. **We want all states to enact laws and regulations requiring all motor vehicle occupants to use seatbelts, and allowing primary enforcement of seat belt laws for all vehicle occupants. We also want to see requirements for enhanced vehicle design to provide better occupant protection, and for general aviation aircraft owners to install shoulder harness systems.**

RECOMMENDATION NO.

STATUS

Aviation

A-15-012 **Open-Acceptable Response**
TO THE FEDERAL AVIATION ADMINISTRATION: Require, for all newly manufactured rotorcraft regardless of the design's original certification date, that the fuel systems meet the crashworthiness requirements of Title 14 *Code of Federal Regulations* 27.952 or 29.952, "Fuel System Crash Resistance."

A-16-011 **Open-Acceptable Response**
TO THE EUROPEAN AVIATION SAFETY AGENCY: Once Airbus Helicopters completes development of a retrofit kit to incorporate a crash-resistant fuel system into AS350 B3e and similarly designed variants, prioritize its approval to accelerate its availability to operators.

A-16-025 **Open-Acceptable Response**
TO THE FEDERAL AVIATION ADMINISTRATION: Require Title 14 *Code of Federal Regulations* Part 121 operators to provide (1) guidance that instructs flight attendants to remain at their assigned exits and actively monitor exit availability in all non-normal situations in case an evacuation is necessary and (2) flight attendant training programs that include scenarios requiring crew coordination regarding active monitoring of exit availability and evacuating after a significant event that involves a loss of communications.

A-16-026 **Open-Unacceptable Response**

TO THE FEDERAL AVIATION ADMINISTRATION: Develop best practices related to evacuation communication, coordination, and decision-making during emergencies through the establishment of an industry working group and then issue guidance for Title 14 *Code of Federal Regulations* Part 121 air carriers to use to improve flight and cabin crew performance during evacuations.

A-17-012 **Open-Acceptable Response**

TO THE ASSOCIATION OF CRITICAL CARE TRANSPORT: In collaboration with the Association of Air Medical Services and the Air Medical Operators Association, establish a working group to develop and distribute guidelines, for those who purchase, lease, or contract for helicopters, regarding the equipment and systems that would enhance the helicopters' crashworthiness, including, at a minimum, a crash-resistant fuel system and energy-absorbing seats.

A-17-013 **Open-Await Response**

TO THE ASSOCIATION OF AIR MEDICAL SERVICES AND AIR MEDICAL OPERATORS ASSOCIATION: Work with the Association of Critical Care Transport to establish a working group to develop and distribute guidelines, for those who purchase, lease, or contract for helicopters, regarding the equipment and systems that would enhance the helicopters' crashworthiness, including, at a minimum, a crash-resistant fuel system and energy-absorbing seats.

A-18-009 **Open-Acceptable Response**

TO THE FEDERAL AVIATION ADMINISTRATION: Conduct research to (1) measure and evaluate the effects of carry-on baggage on passenger deplaning times and safety during an emergency evacuation and (2) identify effective countermeasures to reduce any determined risks, and implement the countermeasures.

Highway

H-11-036 **Open-Unacceptable Response**

TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: Modify Federal Motor Vehicle Safety Standard 217 to require that all emergency exits on school buses be easily opened and remain open during an emergency evacuation.

H-11-038 **Open-Unacceptable Response**

TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: To cover the interim period until Federal Motor Vehicle Safety Standard 217 is modified as specified in Safety Recommendations H-11-36 and -37, provide the states with guidance on how to minimize potential evacuation delays that could be caused by protruding latch mechanisms on emergency exit windows and by exit windows that require additional manual assistance to remain open during egress.

H-11-045 **Open-Initial Response Received**

TO THE STATE OF MISSOURI: Revise your bus evacuation regulations to require that pupils traveling to an activity or on a field trip in a school bus or a school-chartered bus be instructed in safe riding practices and on the location and operation of emergency exits prior to starting the trip.

H-12-022 **Open-Unacceptable Response**

TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: Evaluate the effects of seat spacing and armrests as factors for potential occupant injury, and if safer spacing or armrest configurations are identified, develop and implement appropriate guidelines.

H-13-032 **Open-Await Response**

TO THE STATES OF CALIFORNIA, FLORIDA, LOUISIANA, NEW JERSEY, NEW YORK, AND TEXAS: Develop: (1) a handout for your school districts to distribute annually to students and parents about the importance of the proper use of all types of passenger seat belts on school buses, including the potential harm of not wearing a seat belt or wearing one but not adjusting it properly; and (2) training procedures for schools to follow during the twice yearly emergency drills to show students how to wear their seat belts properly.

H-13-033 **Open-Await Response**

TO THE STATES OF CALIFORNIA, FLORIDA, LOUISIANA, NEW JERSEY, NEW YORK, AND TEXAS: Upon publication of the National School Transportation Specifications and Procedures document, revise the handout and training procedures developed in Safety Recommendation H-13-32 to align with the national procedures as appropriate.

H-13-035 **Open-Acceptable Response**

TO THE NATIONAL ASSOCIATION OF STATE DIRECTORS OF PUPIL TRANSPORTATION SERVICES, NATIONAL ASSOCIATION FOR PUPIL TRANSPORTATION, NATIONAL SCHOOL TRANSPORTATION ASSOCIATION, SCHOOL BUS MANUFACTURERS TECHNICAL COUNCIL, AND NATIONAL SAFETY COUNCIL, SCHOOL TRANSPORTATION SECTION: Develop guidelines and include them in the next update of the National School Transportation Specifications and Procedures to assist schools in training bus drivers, students, and parents on the importance and proper use of school bus seat belts, including manual lap belts, adjustable lap and shoulder belts, and flexible seating systems.

H-13-036 **Open-Acceptable Alternate Response**

TO THE NATIONAL ASSOCIATION OF STATE DIRECTORS OF PUPIL TRANSPORTATION SERVICES, NATIONAL ASSOCIATION FOR PUPIL TRANSPORTATION, AND NATIONAL SCHOOL TRANSPORTATION ASSOCIATION: Provide your members with educational materials on lap and shoulder belts providing the highest level of protection for school bus passengers, and advise states or school districts to consider this added safety benefit when purchasing seat belt-equipped school buses.

H-13-037 **Open-Acceptable Alternate Response**

TO THE SCHOOL BUS MANUFACTURERS TECHNICAL COUNCIL: Develop a recommended practice for establishing and safeguarding the structural integrity of the entire school bus seating and restraint system, including the seat pan attachment to the seat frame, in severe crashes—in particular, those involving lateral impacts with vehicles of large mass.

H-15-010 **Open-Acceptable Response**

TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: Develop requirements addressing the minimum aisle width for safe evacuation from all buses, including those with moveable seats.

H-15-020 **Open-Await Response**

TO THE NATIONAL LIMOUSINE ASSOCIATION: Develop and distribute guidelines to your member operators urging them, during pretrip safety briefings, to (1) direct passengers to use seat belts where required by law and strongly encourage passengers to use seat belts where not required by law, and (2) encourage passengers to use properly adjusted head restraints.

H-15-042 **Open-Await Response**

TO THE FIFTY STATES, DISTRICT OF COLUMBIA, AND PUERTO RICO: Enact legislation that provides for primary enforcement of a mandatory seat belt use law for all vehicle seating positions equipped with a passenger restraint system. (Safety Recommendation H-15-042 supersedes Safety Recommendation H-97-2)

H-17-001 **Open-Await Response**

TO MOTOR COACH INDUSTRIES INTERNATIONAL, INC.: Evaluate and, if appropriate, modify the driver and passenger floor structure design on new motorcoaches to prevent driver seat separation during crashes.

H-17-008 **Open-Await Response**

TO THE AMERICAN BUS ASSOCIATION AND THE UNITED MOTORCOACH ASSOCIATION: Encourage member passenger-carrying companies to (1) establish procedures to ensure that the seat belts on all buses are regularly inspected to maintain their functionality and accessibility, and (2) provide pretrip safety briefings emphasizing the benefits of seat belt use.

H-17-012 **Open-Acceptable Response**

TO GREYHOUND LINES, INC.: Provide pretrip safety briefings at all stops prior to departure when taking on new passengers, which describe the use of the emergency exits and the benefits of wearing seat belts.

H-17-061 **Open-Acceptable Response**

TO THE FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION: Work with SAE International and the National Highway Traffic Safety Administration to improve truck-tractor side-mounted fuel tank crashworthiness to prevent catastrophic tank ruptures and limit postcollision fuel spillage, and develop and promulgate an updated standard.

H-17-062 **Open-Acceptable Response**

TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: Work with SAE International and the Federal Motor Carrier Safety Administration to improve truck-tractor side-mounted fuel tank crashworthiness to prevent catastrophic tank ruptures and limit postcollision fuel spillage, and develop and promulgate an updated standard.

H-17-065 **Open-Await Response**

TO SAE INTERNATIONAL: Work with the Federal Motor Carrier Safety Administration and the National Highway Traffic Safety Administration to improve truck-tractor side-mounted fuel tank crashworthiness to prevent catastrophic tank ruptures and limit postcollision fuel spillage, and develop and promulgate an updated standard.

H-18-009 **Open-Await Response**

TO THE STATES OF FLORIDA, LOUISIANA, NEW JERSEY, AND NEW YORK: Amend your statutes to upgrade the seat belt requirement from lap belts to lap/shoulder belts for all passenger seating positions in new large school buses in accordance with Federal Motor Vehicle Safety Standard 222.

Strengthen Occupant Protection – continued

H-18-010 Open-Await Response

TO THE STATES OF ALABAMA, ALASKA, ARIZONA, COLORADO, CONNECTICUT, DELAWARE, GEORGIA, HAWAII, IDAHO, ILLINOIS, INDIANA, IOWA, KANSAS, MAINE, MARYLAND, MICHIGAN, MINNESOTA, MISSISSIPPI, MISSOURI, MONTANA, NEBRASKA, NEW HAMPSHIRE, NEW MEXICO, NORTH CAROLINA, NORTH DAKOTA, OHIO, OKLAHOMA, OREGON, RHODE ISLAND, SOUTH CAROLINA, SOUTH DAKOTA, TENNESSEE, UTAH, VERMONT, WASHINGTON, WEST VIRGINIA, WISCONSIN, AND WYOMING; THE COMMONWEALTHS OF KENTUCKY, MASSACHUSETTS, PENNSYLVANIA, AND VIRGINIA; THE DISTRICT OF COLUMBIA; AND THE TERRITORY OF PUERTO RICO: Enact legislation to require that all new large school buses be equipped with passenger lap/shoulder belts for all passenger seating positions in accordance with Federal Motor Vehicle Safety Standard 222.

H-18-058 Open-Await Response

TO THE NATIONAL TRAFFIC SAFETY ADMINISTRATION: Amend Federal Motor Vehicle Safety Standard 210 to increase the minimum anchorage spacing for individual seat belt assemblies, taking into account the dynamic testing of seat belt designs, seat belt fit, and vehicle configuration.

H-18-059 Open-Await Response

TO THE NATIONAL TRAFFIC SAFETY ADMINISTRATION: Amend Federal Motor Vehicle Safety Standard 208 to require lap/shoulder belts for each passenger seating position on all new buses with a gross vehicle weight rating of more than 10,000 pounds but not greater than 26,000 pounds.

H-18-062 Open-Await Response

TO MEDIUM-SIZE BUS MANUFACTURERS ARBOC SPECIALTY VEHICLES, LLC; COACH & EQUIPMENT MANUFACTURING CORPORATION; REV GROUP, INC.; DIAMOND COACH CORPORATION; FOREST RIVER, INC.; GIRARDIN BLUE BIRD; SVO GROUP, INC.; AND THOMAS BUILT BUSES: Install lap/shoulder belts in all seating positions as standard, rather than optional, equipment in all newly manufactured medium-size buses.

H-18-063 Open-Await Response

TO THE SEAT MANUFACTURERS FREEDMAN SEATING COMPANY AND HSM TRANSPORTATION SOLUTIONS: Supply seating systems equipped with lap/shoulder belts as standard, rather than optional, equipment for medium-size buses.

H-96-014 Open-Acceptable Response

TO THE 50 STATES, THE 5 US TERRITORIES, AND THE DISTRICT OF COLUMBIA: Review existing laws and enact legislation, if needed, that would ensure that children up to 8 years old are required by the state's mandatory child restraint use law to use child restraint systems and booster seats.

H-99-009 Open-Unacceptable Response

TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: Revise the Federal Motor Vehicle Safety Standard 217, "Bus Window Retention and Release," to require that other than floor-level emergency exits can be easily opened and remain open during an emergency evacuation when a motorcoach is upright or at unusual attitudes.

H-99-049 Open-Unacceptable Response

TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: Expand your research on current advanced glazing to include its applicability to motorcoach occupant ejection prevention, and revise window glazing requirements for newly manufactured motorcoaches based on the results of this research.

H-99-050 Open-Unacceptable Response

TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: In 2 years, develop performance standards for motorcoach roof strength that provide maximum survival space for all seating positions and that take into account current typical motorcoach window dimensions.

H-99-051 Open-Unacceptable Response

TO THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION: Once performance standards have been developed for motorcoach roof strength, require newly manufactured motorcoaches to meet those standards.

Marine

M-16-026 Open-Acceptable Response

TO THE UNITED STATES COAST GUARD: Amend Navigation and Vessel Inspection Circular 1-01 to ensure that (1) amphibious passenger vehicle (APV) operators tell passengers that seat belts must not be worn while the vessel/vehicle is operated in the water and (2) before the APV enters the water or departs the dock, the master or other crewmember visually checks that each passenger has unbuckled his or her seat belt.

M-16-027 Open-Acceptable Response

TO THE UNITED STATES COAST GUARD: Distribute a safety alert on amphibious passenger vehicle operations that addresses the role of risk assessment to mitigate driver distraction, as well as the need to tell passengers to remove seat belts before waterborne operations begin.

Railroad

R-12-021 Open-Acceptable Response

TO THE FEDERAL RAILROAD ADMINISTRATION: Revise Title 49 *Code of Federal Regulations* Part 229 to ensure the protection of the occupants of isolated locomotive operating cabs in the event of a collision. Make the revision applicable to all locomotives, including the existing fleet and those newly constructed, rebuilt, refurbished, and overhauled, unless the cab will never be occupied.

R-14-074 Open-Acceptable Response

TO THE FEDERAL RAILROAD ADMINISTRATION: Develop a performance standard to ensure that windows (e.g., glazing, gaskets, and any retention hardware) are retained in the window opening structure during an accident and incorporate the standard into Title 49 *Code of Federal Regulations (CFR)* 238.221 and 49 *CFR* 238.421 to require that passenger railcars meet this standard.

R-15-001 Open-Unacceptable Response

TO THE FEDERAL RAILROAD ADMINISTRATION: Revise Title 49 *Code of Federal Regulations* 238.213 to require the existing forward-end corner post strength requirements for the back-end corner posts of passenger railcars.

R-16-035 **Open-Initial Response Received**
TO THE FEDERAL RAILROAD ADMINISTRATION: Conduct research to evaluate the causes of passenger injuries in passenger railcar derailments and overturns and evaluate potential methods for mitigating those injuries, such as installing seat belts in railcars and securing potential projectiles.

R-16-036 **Open-Initial Response Received**
TO THE FEDERAL RAILROAD ADMINISTRATION: When the research specified in Safety Recommendation R-16-35 identifies safety improvements, use the findings to develop occupant protection standards for passenger railcars to mitigate passenger injuries likely to occur during derailments and overturns.



2019-2020 NTSB
MOST WANTED LIST OF
TRANSPORTATION SAFETY IMPROVEMENTS

If acted upon,
these recommendations
will save lives and improve
transportation safety.

For more details and
a complete history of
action or inaction on these
recommendations, see our
Safety Recommendations
database at **ntsb.gov**.



Critical changes needed to reduce transportation accidents, injuries, and fatalities

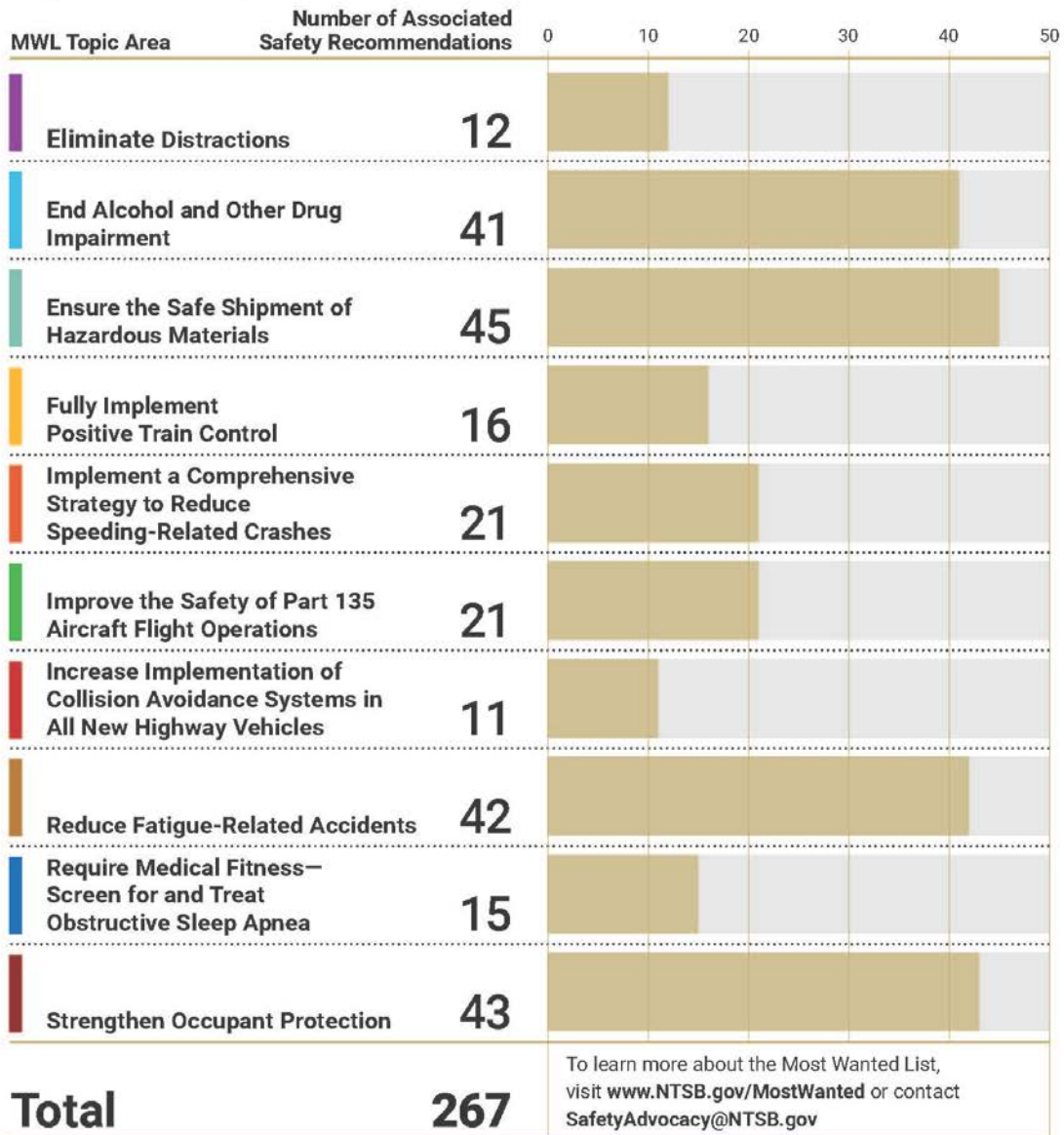


2019–2020 NTSB MOST WANTED LIST OF TRANSPORTATION SAFETY IMPROVEMENTS

<p>Eliminate Distractions</p>	<p>Improve the Safety of Part 135 Aircraft Flight Operations</p>
<p>End Alcohol and Other Drug Impairment</p>	<p>Increase Implementation of Collision Avoidance Systems in All New Highway Vehicles</p>
<p>Ensure the Safe Shipment of Hazardous Materials</p>	<p>Reduce Fatigue-Related Accidents</p>
<p>Fully Implement Positive Train Control</p>	<p>Require Medical Fitness—Screen for and Treat Obstructive Sleep Apnea</p>
<p>Implement a Comprehensive Strategy to Reduce Speeding-Related Crashes</p>	<p>Strengthen Occupant Protection</p>

To Learn more about the Most Wanted List visit www.NTSB.gov/MostWanted or contact SafetyAdvocacy@NTSB.gov

Summary Table of 2019–2020 MWL-Associated Open Safety Recommendations (as of December 11, 2018)



The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—highway, marine, railroad, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. For more information, visit www.ntsb.gov.

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Appendix C: List of MWL Issue Areas, 1990 to present

1990 Most Wanted List

Boating While Intoxicated
Administrative Revocation of Driver's Licenses
Ground Proximity Warning Systems in Commuter aircraft
Positive Train Separation
Mode C Intruder Alert in Terminal Areas
Fishing Vessel Safety
Adjustable Upper Anchorage Points for Shoulder Harness Seatbelts
Cross Modal Human Fatigue/Hours-of-Work Policy
School Bus Safety
Aircraft Structural Fatigue Testing
Passenger Vessel Safety
Uniform Policy on Alcohol/Drug Specimens
Brake Wear Limits and Performance in Transport Category Aircraft
Runway Incursion/Ground Collision of Aircraft
Railroad Tank Car safety
Commercial Truck Safety
Pipeline Excess Flow Valve Installation
Mandatory Seatbelt Use in Automobiles, Vans, and Light Trucks

1991 Most Wanted List

Boating While Intoxicated
Administrative Revocation of Driver's Licenses
Ground Proximity Warning Systems in Commuter aircraft
Positive Train Separation
Mode C Intruder Alert in Terminal Areas
Fishing Vessel Safety
Adjustable Upper Anchorage Points for Shoulder Harness Seatbelts
Cross Modal Human Fatigue/Hours-of-Work Policy
School Bus Safety
Aircraft Structural Fatigue Testing
Passenger Vessel Safety
Uniform Policy on Alcohol/Drug Specimens
Brake Wear Limits and Performance in Transport Category Aircraft
Runway Incursion/Ground Collision of Aircraft
Railroad Tank Car safety
Commercial Truck Safety
Pipeline Excess Flow Valve Installation
Mandatory Seatbelt Use in Automobiles, Vans, and Light Trucks

1992 Most Wanted List

Boating While Intoxicated
Administrative Revocation of Driver's Licenses
Positive Train Separation

Mode C Intruder Alert in Terminal Areas
Fishing Vessel Safety
Adjustable Upper Anchorage Points for Shoulder Harness Seatbelts
Cross Modal Human Fatigue/Hours-of-Work Policy
School Bus Safety
Aircraft Structural Fatigue Testing
Passenger Vessel Safety
Uniform Policy on Alcohol/Drug Specimens
Brake Wear Limits and Performance in Transport Category Aircraft
Runway Incursion/Ground Collision of Aircraft
Railroad Tank Car Safety
Commercial Truck Safety
Pipeline Excess Flow Valve Installation
Mandatory Seatbelt Use in Automobiles, Vans, and Light Trucks

1993 Most Wanted List

Boating While Intoxicated
Administrative Revocation of Driver's Licenses
Positive Train Separation
Mode C Intruder Alert in Terminal Areas
Fishing Vessel Safety
Cross Modal Human Fatigue/Hours-of-Work Policy
School Bus Safety
Aircraft Structural Fatigue Testing
Passenger Vessel Safety
Uniform Policy on Alcohol/Drug Specimens
Brake Wear Limits and Performance in Transport Category Aircraft
Runway Incursion/Ground Collision of Aircraft
Railroad Tank Car safety
Commercial Truck Safety
Pipeline Excess Flow Valve Installation
Mandatory Seatbelt Use in Automobiles, Vans, and Light Trucks

1994 Most Wanted List

Boating While Intoxicated
Administrative Revocation of Driver's Licenses
Positive Train Separation
Mode C Intruder Alert in Terminal Areas
Fishing Vessel Safety
Cross Modal Human Fatigue/Hours-of-Work Policy
School bus Safety
Aircraft structural fatigue testing
Uniform Policy on Alcohol/Drug Specimens
Brake Wear Limits and Performance in Transport Category Aircraft
Runway Incursion/Ground Collision of Aircraft
Railroad Tank Car Safety

Commercial Truck Safety
Pipeline Excess Flow Valve Installation
Youth Highway Crashes
Small Passenger Vessel Safety

1995 Most Wanted List

Recreational Boating Safety
Administrative Revocation of Driver's Licenses
Positive Train Separation
Mode C Intruder Alert in Terminal Areas
Fishing Vessel Safety
Cross Modal Human Fatigue/Hours-of-Work Policy
School Bus Safety
Uniform Policy on Alcohol/Drug Specimens
Runway Incursion/Ground Collision of Aircraft
Railroad Tank Car safety
Commercial Truck Safety
Excess Flow Valve Installation
Youth Highway Crashes
Small Passenger Vessel Safety
Wake Vortex Turbulence
Flight Data Recorder--Expanded Parameters
Commuter Category Airline Safety

1996 Most Wanted List

Recreational Boating Safety
Administrative Revocation of Driver's Licenses
Positive Train Separation
Mode C Intruder Alert in Terminal Areas
Fishing Vessel Safety
Cross Modal Human Fatigue/Hours-of-Work Policy
School Bus Safety
Runway Incursion/Ground Collision of Aircraft
Railroad Tank Car Safety
Commercial Truck Safety
Excess Flow Valve Installation
Youth Highway Crashes
Small Passenger Vessel Safety
Wake Vortex Turbulence
Flight Data Recorder--Expanded Parameters
Pilot Background Checks
Safety of Passengers in Railroad Cars
Highway Vehicle Occupant Safety
Pilot Background Checks
Safety of Railroad Passenger Cars

1997 Most Wanted List

Flight Data Recorders-Expanded Parameters
Recreational Boating Safety
Administrative Revocation of Driver's Licenses
Positive Train Separation
Mode C Intruder Alert in Terminal Areas
Fishing Vessel Safety
Cross Modal Human Fatigue/Hours-of-Work Policy
School Bus Safety
Airplane Cargo Compartment Fires
Runway Incursion/Ground Collision of Aircraft
Explosive Mixtures in Fuel Tanks on Transport Category Aircraft
Commercial Truck Safety
Excavation Damage Prevention to Underground Facilities
Youth Highway Crashes
Small Passenger Vessel Safety
Wake Vortex Turbulence
Automatic Information Recording Devices
Airframe Structural Icing

1998 Most Wanted List

Recreational Boating Safety
Positive Train Separation
Cross Modal Human Fatigue/Hours-of-Work Policy
Runway Incursion/Ground Collision of Aircraft
Explosive Mixtures in Fuel Tanks on Transport Category Aircraft
Excavation Damage Prevention to Underground Facilities
Youth Highway Crashes
Automatic Information Recording Devices
Airframe Structural Icing
Highway Vehicle Occupant Safety

1999 Most Wanted List

Recreational Boating Safety
Positive Train Separation
Cross Modal Human Fatigue/Hours-of-Work Policy
Runway Incursion/Ground Collision of Aircraft
Explosive Mixtures in Fuel Tanks on Transport Category Aircraft
Excavation Damage Prevention to Underground Facilities
Child/Youth Safety in Transportation
Automatic Information Recording Devices
Airframe Structural Icing
Highway Vehicle Occupant Safety

2000 Most Wanted List

Child/Youth Safety in Transportation

Cross Modal Human Fatigue/Hours-of-Work Policy
Explosive Mixtures in Fuel Tanks on Transport Category Aircraft
Airframe Structural Icing
Positive Train Separation
Recreational Boating Safety
Automatic Information Recording Devices
Highway Vehicle Occupant Safety
Commercial Truck and Bus Safety
Runway Incursion/Ground Collision of Aircraft

2001 Most Wanted List

Child Occupant Protection
Cross Modal Human Fatigue/Hours-of-Work Policy
Explosive Mixtures in Fuel Tanks on Transport Category Aircraft
Airframe Structural Icing
Positive Train Control Systems
Recreational Boating Safety
Automatic Information Recording Devices
Youth Highway Safety
Highway Vehicle Occupant Protection
Commercial Truck and Bus Safety
Runway Incursion/Ground Collision of Aircraft

2002 Most Wanted List

Child Occupant Protection
Cross Modal Human Fatigue/Hours-of-Work Policy
Explosive Mixtures in Fuel Tanks on Transport Category Aircraft
Airframe Structural Icing
Marine Post-Accident Alcohol/Drug Testing
Positive Train Control Systems
Recreational Boating Safety
Automatic Information Recording Devices
Youth Highway Safety
Primary Seat Belt Enforcement Laws
Commercial Truck and Bus Safety
Runway Incursion/Ground Collision of Aircraft

2003 Most Wanted List

Reduce Dangers to Aircraft Flying in Icing Conditions
Eliminate Flammable Fuel/Air Vapors in Fuel Tanks on Transport Category Aircraft
Stop Runway Incursion/Ground Collisions of Aircraft
Improve the Safety of Motor Carrier Operations
Enhance Protection for Bus Passengers
Prevent Medically-Unqualified Drivers from Operating Commercial Vehicles
Require Restraint Systems for Children Under Age 2
Update Hours-of-Service Regulations in Aviation, Marine and Pipeline Industries

Improve Audio and Data Recorders/Require Video Recorders (Aviation)
Improve Drug and Alcohol Testing of Crews After Accidents
Require Voyage Data Recorders
Require Cab Voice Recorders/Improve Survivability of Recorders
Implement Positive Train Control Systems
Enact Primary Seat Belt Enforcement Laws
Promote Teen Highway Safety
Reduce Hard Core Drinking Driving
Improve Child Occupant Protection
Enhance Recreational Boating Safety

2004 Most Wanted List

Reduce Dangers to Aircraft Flying in Icing Conditions
Eliminate Flammable Fuel/Air Vapors in Fuel Tanks on Transport Category Aircraft
Stop Runway Incursions/Ground Collisions of Aircraft
Improve Audio and Data Recorders/Require Video Recorders
Require Restraint Systems for Children Under Age 2
Implement Positive Train Control Systems
Improve Survivability of Recorders
Improve the Safety of Motor Carrier Operations
Prevent Medically-Unqualified Drivers from Operating Commercial Vehicles
Enhance Protection for Bus Passengers
Improve Drug and Alcohol Testing of Crews After Accidents
Update Hours-of-Service Regulations in Aviation, Marine and Pipeline Industries
Improve Child Occupant Protection
Enact Primary Seat Belt Enforcement Laws
Promote Teen Highway Safety
Eliminate Hardcore Drinking Driving
Improve School Bus/Grade Crossing Safety
Enhance Recreational Boating Safety

2005 Most Wanted List

Reduce Dangers to Aircraft Flying in Icing Conditions
Eliminate Flammable Fuel/Air Vapors in Fuel Tanks on Transport Category Aircraft
Stop Runway Incursions/Ground Collisions of Aircraft
Improve Audio and Data Recorders/Require Video Recorders
Require Restraint Systems for Children Under Age 2
Implement Positive Train Control Systems
Improve the Safety of Motor Carrier Operations
Prevent Medically-Unqualified Drivers from Operating Commercial Vehicles
Enhance Protection for Bus Passengers
Improve Drug and Alcohol Testing of Crews After Accidents
Update Hours-of-Service Regulations in Aviation, Marine and Pipeline Industries
Improve Child Occupant Protection
Enact Primary Seat Belt Enforcement Laws
Promote Teen Highway Safety

Eliminate Hardcore Drinking Driving
Improve School Bus/Grade Crossing Safety
Enhance Recreational Boating Safety

2006 Most Wanted List

Stop Runway Incursions and Ground Collisions of Aircraft
Eliminate Flammable Fuel/Air Vapors in Transport Category Aircraft
Require Restraint Systems for Children Under Age 2
Reduce Dangers to Aircraft Flying in Icing Conditions
Improve Aviation Audio and Data Recorders and Require Cockpit Video Recorders
Reduce Accidents and Incidents Caused by Human Fatigue
Implement Positive Train Control Systems
Improve Drug and Alcohol Testing of Crews After Accidents
Improve the Safety of Motor Carrier Operations
Prevent Medically Unqualified Drivers from Operating Commercial Vehicles
Enhance Protection for Bus Passengers
Improve School Bus/Grade Crossing Safety
Enhance Recreational Boating Safety
Improve Child Occupant Protection
Eliminate Hard Core Drinking Driving
Promote Youth Highway Safety
Enact Primary Seatbelt Enforcement Laws

2007 Most Wanted List

Stop Runway Incursions and Ground Collisions of Aircraft
Eliminate Flammable Fuel/Air Vapors in Transport Category Aircraft
Reduce Dangers to Aircraft Flying in Icing Conditions
Improve Crew Resource Management
Improve Aviation Audio and Data Recorders and Require Cockpit Video Recorders
Reduce Accidents and Incidents Caused by Human Fatigue
Implement Positive Train Control Systems
Improve the Safety of Motor Carrier Operations
Prevent Medically Unqualified Drivers from Operating Commercial Vehicles
Enhance Protection for Motorcoach Passengers
Prevent Collisions with Enhanced Vehicle Safety Technology
Enhance Protection for Schoolbus Passengers
Improve Child Occupant Protection
Enact Primary Seatbelt Enforcement Laws
Promote Youth Highway Safety
Eliminate Hardcore Drinking Driving
Improve Schoolbus/Grade Crossing Safety
Enhance Recreational Boating Safety

2008 Most Wanted List

Improve Safety of Emergency Medical Services Flights
Improve Runway Safety

Reduce Dangers to Aircraft Flying in Icing Conditions
Improve Crew Resource Management
Require Image Recorders
Reduce Accidents and Incidents Caused by Human Fatigue
Restrict Use of Cellular Telephones in the Railroad Industry
Reduce Accidents and Incidents Caused by Human Fatigue
Restrict Use of Cellular Telephones by Motorcoach Drivers
Require On-board Electronic Recorders
Improve Safety of Motor Carrier Operations
Prevent Medically Unqualified Drivers from Operating Commercial Vehicles
Prevent Collisions by Using Enhanced Vehicle Safety Technology
Enhance Protection of Motorcoach Passengers
Reduce Accidents and Incidents Caused by Human Fatigue
Child Occupant Protection
Enact Primary Seat Belt Enforcement Laws
Eliminate Distractions for Young Drivers
Eliminate Hard Core Drinking Driving
Enhance Recreational Boating Safety

2009 Most Wanted List

Improve Safety of Emergency Medical Services Flights
Improve Runway Safety
Reduce Dangers to Aircraft Flying in Icing Conditions
Improve Crew Resource Management
Require Image Recorders
Reduce Accidents and Incidents Caused by Human Fatigue
Restrict Use of Cellular Telephones in the Railroad Industry
Reduce Accidents and Incidents Caused by Human Fatigue
Restrict Use of Cellular Telephones by Motorcoach Drivers
Require On-board Electronic Recorders
Improve Safety of Motor Carrier Operations
Prevent Medically Unqualified Drivers from Operating Commercial Vehicles
Prevent Collisions by Using Enhanced Vehicle Safety Technology
Enhance Protection of Motorcoach Passengers
Reduce Accidents and Incidents Caused by Human Fatigue
Improve Child Occupant Protection
Enact Primary Seat Belt Enforcement Laws
Eliminate Distractions for Young Drivers
Eliminate Hard Core Drinking Driving
Enhance Recreational Boating Safety

2010 Most Wanted List

Improve Transit Railcar Design
Require Safety Management Systems (SMS) for Domestic Vessels
Reduce Accidents and Incidents Caused by Human Fatigue in the Marine Industry
Improve Oversight of Pilot Proficiency

Require Image Recorders
Improve the Safety of Emergency Medical Services (EMS) Flights
Improve Runway Safety
Reduce Dangers to Aircraft Flying in Icing Conditions
Improve Crew Resource Management
Reduce Accidents and Incidents Caused by Human Fatigue in the Aviation Industry
Prohibit Cell Phone Use by Motorcoach Drivers
Require Electronic Onboard Data Recorders to Maintain Accurate Carrier Records on Driver Hours of Service
Improve the Safety of Motor Carrier Operations
Prevent Medically Unqualified Drivers from Operating Commercial Vehicles
Prevent Collisions by Using Enhanced Vehicle Safety Technology
Enhance Protection for Motorcoach Passengers
Improve Child Occupant Protection
Enact Primary Seat Belt Enforcement Laws
Eliminate Distractions for Young Drivers
Eliminate Hard Core Drinking Driving
Improve Motorcycle Safety

2011 Most Wanted List

The list was remodeled in 2011 to limit the list to no more than 10 issue areas, and the list was issued for the years 2011 and 2012.

2012 Most Wanted List

General Aviation Safety
Runway Safety
Bus Occupant Safety
Safety Management Systems
Recorders
Teen Driver Safety
Addressing Human Fatigue
Addressing Alcohol-Impaired Driving
Motorcycle Safety
Pilot and Air Traffic Controller Professionalism

2013 Most Wanted List

Improve Safety of Airport Surface Operations
Improve the Safety of Bus Operations
Eliminate Distraction in Transportation
Improve Fire Safety in Transportation
Improve General Aviation Safety
Preserve the Integrity of Transportation Infrastructure
Enhance Pipeline Safety
Implement Positive Train Control Systems
Eliminate Substance-Impaired Driving
Mandate Motor Vehicle Collision Avoidance Technologies

2014 Most Wanted List

Address Unique Characteristics of Helicopter Operations
Enhance Pipeline Safety
General Aviation- Improve Hazardous Weather Communication
Advance Passenger Vessel Safety
Eliminate substance-impaired driving
Improve fire safety in transportation
Implement Positive Train Control
Eliminate Distraction in Transportation
Strengthen Occupant Protection in Transportation
Promote Operational Safety in Mass Transit

2015 Most Wanted List

Disconnect from Deadly Distraction
Improve Rail Tank Car Safety
Prevent Loss of Control in Flight in General Aviation
Strengthen Commercial Trucking Safety
End Substance Impairment in Transportation
Require Medical Fitness for Duty
Implement Positive Train Control in 2015
Strengthen Procedural Compliance (cockpit)
Enhance Public Helicopter Safety
Make Mass Transit Safer

2016 Most Wanted List

Reduce Fatigue-Related Accidents
Improve Rail Transit Safety Oversight
Promote Availability of Collision Avoidance Technologies in Highway Vehicles
Strengthen Occupant Protection
Disconnect from Deadly Distractions
Prevent Loss of Control in Flight in General Aviation
Promote the Completion of Rail Safety Initiatives
End Substance Impairment in Transportation
Require Medical Fitness for Duty
Expand Use of Recorders to Enhance Transportation Safety

2017-2018 Most Wanted List (first year of 2-year cycle)

Eliminate Distractions
Reduce Fatigue-Related Accidents
Prevent Loss of Control in Flight in General Aviation
Improve Rail Transit Safety Oversight
End Alcohol and Other Drug Impairment in Transportation
Increase Implementation of Collision Avoidance Technologies
Expand Recorder Use to Enhance Safety
Require Medical Fitness

Strengthen Occupant Protection
Ensure the Safe Shipment of Hazardous Materials

2019-2020 Most Wanted List

End Alcohol and Other Drug Impairment in Transportation
Require Medical Fitness—Screen for and Treat Obstructive Sleep Apnea
Strengthen Occupant Protection
Eliminate Distractions
Reduce Fatigue-Related Accidents
Improve the Safety of Part 135 Aircraft Flight Operations
Implement a Comprehensive Strategy to Reduce Speeding-Related Crashes
Fully Implement Positive Train Control
Increase Implementation of Collision Avoidance Systems in all New Highway Vehicles
Ensure the Safe Shipment of Hazardous Materials

Appendix D: 2019–2020 MWL Office Submissions

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: End Alcohol & Other Drug Impairment in Transportation:
(Alcohol Impairment)

Mode(s) Impacted: Multimodal

DESCRIPTION

The 2013 NTSB *Reaching Zero* report issued 10 new recommendations and reiterated or reclassified 10 previously issued recommendations that would contribute to reaching zero traffic deaths from alcohol-involved crashes.

In particular, recommendations to establish a *per se* blood alcohol concentration (BAC) limit of 0.05 or lower for all drivers who are not already required to adhere to lower BAC limits, enact laws to require the use of alcohol ignition interlock devices for all individuals convicted of driving while intoxicated (DWI) offenses, and provisions for conducting high-visibility enforcement of impaired driving laws through routine traffic stops, saturation patrols, sobriety checkpoints, and accident scene responses.

In January 2018, the National Academies of Sciences, Engineering, and Medicine released a consensus study report, "Getting to Zero Alcohol-Impaired Driving Fatalities" which included recommendations to state governments to enact *per se* laws for alcohol impaired driving at 0.05 percent, enact all-offender ignition interlock laws, and states and localities should conduct frequent sobriety checkpoints in conjunction with widespread publicity to promote awareness of these enforcement initiatives.

In December 2018, a *per se* BAC limit of 0.05 will take effect in the state of Utah. There are currently 31 states with all-offender ignition interlock laws in place. There are currently 13 states that do not conduct sobriety checkpoints.

The NTSB has included a variation on reducing impairment in transportation on almost every Most Wanted List since its inception in 1990. With evidence showing that the aforementioned, impactful steps would combat alcohol-impaired driving, NTSB has determined that a concentration on these recommendations from the *Reaching Zero* report should be a Most Wanted List item.

REASON(S) TO ADDRESS

When NTSB released the "Reaching Zero: Actions to Eliminate Alcohol-Impaired Driving" in 2013, it used NHTSA 2011 data, which reported 9,878 fatalities in crashes involving a driver with a BAC of 0.08 or higher. Current available data (2016) reports that number has increased to 10,497 fatalities. However, that number would be closer to 11,500 if statistics included lives lost by drivers with a 0.05 BAC or higher. In 2016, there were approximately 950 fatalities in crashes involving a driver with a BAC between 0.05 and 0.08.

A lower BAC limit has been shown to be an effective strategy in other developed countries and has the greatest potential impact on those at the highest risk of alcohol-impaired driving. Approximately 100 countries have some type of 0.05 or lower BAC laws and, while their average alcohol consumption is the same or higher than the U.S., their alcohol-related deaths are lower.

It is estimated that a 0.05 or lower BAC would result in an 11.1% decline in fatal alcohol-related crashes and save 1,790 lives annually in the United States. (NORC, 2017)

High-visibility enforcement was included as a Finding in the NTSB Reaching Zero report as “an effective countermeasure to deter alcohol-impaired driving.”

The Insurance Institute for Highway Safety (IIHS) estimates, “if all drivers with at least one alcohol-impaired driving conviction within the previous 3 years had used zero-BAC interlocks, approximately 1,100 deaths, or about 10 percent of fatalities associated with alcohol-impaired drivers, could have been prevented in 1 year.” (IIHS, 2007).

KEY STATISTICS

Mode	Current (last reported) data/source:	Prior (last reported) data/source:	% change:
HIGHWAY	2016: 10,497 fatalities (NHTSA)	2015: 10,265 fatalities (NHTSA)	1.7% increase
AVIATION	2008-2012: 23% of fatally-injured pilots tested positive for potentially impairing substances (NTSB Safety Study)	1990-1997: 11% of fatally-injured pilots tested positive for potentially impairing substances (NTSB–Safety Study)	Increase of 12 percentage points
	2008-2012: 4% of fatally-injured pilots tested positive for illicit drugs (NTSB Safety Study)	1990-1997: 2% of fatally-injured pilots tested positive for illicit drugs (NTSB Safety Study)	Increase of 2 percentage points
RAIL	2016: About 8% of workers involved in rail accidents tested positive for drug use, including marijuana, cocaine, ecstasy, benzodiazepine, oxycodone, and morphine. (FRA)	No credible data available	
MARINE	2016: 15% of fatal boating accidents caused by alcohol (USCG)	2014: 21% of fatal boating accidents caused by alcohol use (USCG)	6% decrease

SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS

Mode	NTSB Accident Reports & Studies	External
HIGHWAY	<ul style="list-style-type: none"> Highway Accident Report: Multivehicle Work Zone Crash on Interstate 75 (October 2016) Safety Study: Reaching Zero: Actions to Eliminate Alcohol-Impaired Driving (NTSB, 2013) 	<ul style="list-style-type: none"> NHTSA: Marijuana-Impaired Driving: A Report to Congress (July 2017) NHTSA: Ignition Interlock Data Utilization Report (August 2017) NHTSA: 2013–2014 National Roadside Study of Alcohol and Drug Use by Drivers—Drug Results (May, 2017) AAA Safety Culture Impaired Driving Fact Sheet (March, 2018) Getting to Zero Alcohol-Impaired Driving Fatalities: A Comprehensive Approach to a Persistent Problem (National Academies of Science, Engineering, and Medicine, 2018)
AVIATION	<ul style="list-style-type: none"> Aviation Accident Report: Lockhart, TX (October 2017) 	
RAIL		<ul style="list-style-type: none"> FRA Model Part 219 Railroad Contractor Drug and Alcohol Compliance Plan (March 2017)
MARINE	<ul style="list-style-type: none"> Safer Seas (August 2017) 	

RECOMMENDATION RESPONSE

OVERALL ASSESSMENT OF RECOMMENDATION RESPONSES:

43 open recommendations for this issue, ranging from 2000 through 2016

- HIGHWAY: 24 open recommendations
 - 7 open—acceptable
 - 12 open—awaiting response
 - 5 open—unacceptable
- AVIATION: 6 open recommendations
 - 5 open—acceptable
 - 1 open—unacceptable
- RAIL: 7 open recommendation
 - 2 open—acceptable
 - 5 open—unacceptable
- MARINE: 3 open recommendations
 - 3 open—acceptable
- INTERMODAL: 2 open recommendations
 - 2 open—await response
- PIPELINE: 1 open recommendation
 - 1 open—acceptable

(See Attachment A for the specific NTSB safety recommendations associated with this topic area)

NEEDED REGULATORY/LEGISLATIVE ACTION

HIGHWAY:

- FMCSA: published the “Commercial Driver’s License Drug and Alcohol Clearinghouse” final rule
- NHTSA: Seek legislative authority to award incentive grants for states to establish a per se blood alcohol concentration (BAC) limit of 0.05 or lower for all drivers who are not already required to adhere to lower BAC limits.
- 49 States, Commonwealth of Puerto Rico, and District of Columbia: Establish a per se blood alcohol concentration (BAC) limit of 0.05 or lower for all drivers who are not already required to adhere to lower BAC limits.
- States that do not mandate the use of alcohol ignition interlocks for all DWI offenders: Enact laws to require the use of alcohol ignition interlock devices for all individuals convicted of DWI offenses.

AVIATION:

- FAA: amended third-class medical certificate requirements for noncommercial pilots. The Alternative Pilot Physical Examination and Education Requirements allow pilots to fly without a medical certificate if they have a driver’s license, held a medical certificate within the past 10 years, completed a medical education course, and have been physically examined by a state-licensed physician.

RAIL:

- FRA: published a final rule that will expand the scope of its drug and alcohol regulation to include noncovered service employees

NEEDED INDUSTRY ACTION

- Highway: **DADSS Program and Partners:** As technology develops and advances, consider a lower BAC threshold for vehicle lockout.
- RAIL: FRA will hold a series of training courses to familiarize maintenance-of-way employees with 49CFR Part 219’s prohibitions, testing, and return-to-duty requirements.
- RAIL: FTA has developed a toolkit and classroom training designed to educate transit providers on the effects of alcohol misuse and drug abuse.

PROBABILITY OF SUCCESS/CHALLENGES

Staff believes we have a high likelihood of success in seeing more states adopting life-saving legislation and implementing enhanced safety enforcement across the countries, given the increasing number of alcohol-

impaired fatalities each year, the mounting evidence demonstrating the benefits of a lower BAC, the increasing use of all-offender alcohol ignition interlocks, and the increasing use of high-visibility enforcement at the local level and public support of these high-visibility campaigns.

2019-2020 MWL OFFICE SUBMISSION FORM

**Proposed Topic: End Alcohol & Other Drug Impairment in Transportation:
(Improve Laws, Enforcement, and Testing to Reduce Driver Drug Impairment)**
Mode(s) Impacted: Highway

DESCRIPTION

Driving under the influence of drugs is on the rise in the United States. However, it is very difficult to identify certain drugs and their impact in drivers, as a standardized drug test and drug impairment thresholds do not exist at this point. Evaluating the impact of drugs on drivers is complex and challenging, as we know that drugs impair individuals differently, and there are hundreds of different drugs – both illicit and legal – available to users. Data on drug-impaired driving is incomplete and inconsistent, as some tests can run 4-, 7-, or 10-panels, and there are few regulations or standards on which should be used.

REASON(S) TO ADDRESS

More states are passing recreational and medicinal marijuana laws each year. The opioid crisis continues to worsen across the country. New, powerful drugs are being rapidly created, causing difficulty for law enforcement to detect or properly test and evaluate for impairment.

A 2018 Governor's Highway Safety Association study found that, among drug-tested fatally-injured drivers in 2016, 38% tested positive for some form of marijuana, 16% tested positive for opioids, and 4% tested positive for both marijuana and opioids. The publication also highlights the frequency of poly-drug use, or the use of multiple potentially-impairing substances simultaneously. Also, the NHTSA 2013-2014 Roadside Survey of Alcohol and Drug Use by Drivers found an increase in the number of drivers testing positive for marijuana and other drugs that can impair driving skills, compared to the 2007 survey findings. In the 2013-2014 survey, nearly one in four drivers tested positive for at least one drug that could potentially affect safe-driving skills.

Drug-impairment must be treated and handled concurrently, yet separately from alcohol-impairment. Too often testing is completed once alcohol is detected. However, without testing for drug impairment, the data will continue to be incomplete, and lives will continue to be lost at the hands of drug-impaired drivers.

KEY STATISTICS

Mode	Data (Source/Date)
HIGHWAY	In 2016, 44% of fatally-injured drivers with known results tested positive for drugs, up from 28% just 10 years prior (GHSA, 2018)
	In 2015, NHTSA's Fatality Analysis Reporting System (FARS) reported that drugs were present in 43% of the fatally-injured drivers with a known test result, more frequently than alcohol was present (FARS, 2016).
	NHTSA's 2013–2014 roadside survey found drugs in 22% of all drivers both on weekend nights and on weekday days (Berning et al., 2015).

SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS

Mode	NTSB Accident Reports & Studies	External
HIGHWAY	Safety Study: Reaching Zero: Actions to Eliminate Alcohol-Impaired Driving (NTSB, 2013)	Drug Impaired Driving – A Guide for States (GHSA, 2017) Drug-Impaired Driving: Marijuana and Opioids Raise Critical Issues for States (GHSA, 2018)

RECOMMENDATION RESPONSE

There is 1 open recommendation for this item, as follows:

- HIGHWAY: 1 open recommendations
 - 1 open – acceptable response

(See Attachment A for the specific NTSB safety recommendations associated with this topic area)

NEEDED REGULATORY/LEGISLATIVE ACTION

- NHTSA: Continue to explore, research, and develop a common standard of practice for drug toxicology testing.

NEEDED INDUSTRY ACTION

- Drug Testing Manufacturers: Conform to the common standard of practice set by NHTSA, once established.

PROBABILITY OF SUCCESS/CHALLENGES

Staff believes there is a high likelihood of making progress on this issue, given the increasing prevalence of drug use each year, which is raising public, legislative attention; and the lack of standards and the inconsistency in drug testing, which is making it difficult to determine the true impact of drug use on driving. In 2018, NHTSA announced a new initiative to combat drug-impaired driving. NTSB is encouraged that this initiative will work towards achieving a “Closed-Acceptable” status on their recommendation about drug testing standards.

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: Require Medical Fitness: Focus on (Routinely Screen, Diagnose, and Treat Safety-Sensitive Personnel for Obstructive Sleep Apnea)
Mode(s) Impacted: Highway and Rail

DESCRIPTION

The operation of complex machinery across the nation's rail and highway systems requires the full cognitive and physical capabilities of drivers, operators, maintenance employees, and other safety-critical personnel. Operating any vehicle requires skill and constant vigilance. Consequently, medical conditions and treatments that may impair transportation professionals can directly affect the safety of operations. Obstructive Sleep Apnea (OSA) is a chronic disease in which patients experience episodes of airway obstruction while sleeping; this often results in fragmented sleep and subsequent daytime sleepiness and fatigue. This sleep disorder often goes undiagnosed in the transportation environment, which increases the risk that safety-sensitive personnel will perform in an unsafe manner.

REASON(S) TO ADDRESS

Since 2000, the NTSB has cited obstructive sleep apnea as causal or contributory in 13 highway crashes and rail accidents resulting in 50 fatalities and 373 injuries.

Railroad: As a result of these investigations, the NTSB has made numerous recommendations to reduce the risk of undiagnosed and untreated OSA in passenger rail and transit operators. The Federal Rail Administration (FRA) currently has no regulations that require employees in safety-sensitive positions to undergo a complete medical history that includes specific screening for sleep disorders or to have sleep disorders diagnosed or treated.

Highway: Given the high risk for OSA among commercial drivers due to male sex, age, and obesity, the single question about sleep issues on the FMCSA medical history form is inadequate. FMCSA currently provides very limited guidance to its medical examiners regarding screening for sleep disorders or ensuring adequate treatment once diagnosed. Further, the FMCSA plan to address OSA through safety programs and voluntary carrier use of the North American Fatigue Management Program are insufficient to alternately address the issue.

Of particular concern is the FRA's and FMCSA's recent withdrawal of the 2016 ANPRM *Evaluation of Safety Sensitive Personnel for Moderate-to-Severe Obstructive Sleep Apnea*. The NTSB believes that the unwillingness of the FRA and FMCSA to address the issue of employee fatigue due to OSA and other sleep disorders continues to jeopardize public safety and the NTSB will therefore continue to investigate accidents where undiagnosed or inadequately treated obstructive sleep apnea is causal or contributory.

KEY STATISTICS

Mode	Data (Source/Date)
RAILROAD	2016: Obstructive sleep apnea (OSA) has been in the probable cause of 10 highway and rail accident investigations in the past 17 years. (NTSB)
HIGHWAY	2016: OSA has been in the probable cause of 10 highway and rail accident investigations in the past 17 years. (NTSB)

SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS

Mode	NTSB Accident Reports & Studies	External
RAILROAD	<ul style="list-style-type: none"> Long Island Rail Road Passenger Train Strikes Platform in Atlantic Terminal, 	

	<ul style="list-style-type: none"> • Brooklyn, New York, January 4, 2017 (February 6, 2018) • End-of-Track Collisions at Terminal Stations Hoboken, New Jersey, September 29, 2016 and Atlantic Terminal, Brooklyn, New York, January 4, 2017 (February 6, 2018) • Collision of Two Union Pacific Railroad Freight Trains, Hoxie, Arkansas, August 17, 2014 (December 19, 2016) • Metro-North Train Derailment, Bronx, NY, December 1, 2013 (October 24, 2014) • Collision of Union Pacific Railroad Freight Train with BNSF Railway Freight Train, Chaffee, Missouri, May 25, 2013 (November 17, 2014) • Collision of BNSF Coal Train With the Rear End of Standing BNSF Maintenance-of-Way Equipment Train, Red Oak, Iowa, April 17, 2011 (April 24, 2012) • Collision Between Two Massachusetts Bay Transportation Authority Green Line Trains, Newtown, Massachusetts, May 28, 2008 (July 14, 2009) • Collision of Two Canadian National/Illinois Central Railway Trains, Clarkston, Michigan, November 15, 2001 (November 19, 2002) • Maryland Transit Administration Light Rail Vehicle Accidents at the Baltimore-Washington International Airport Transit Station Near Baltimore, Maryland February 13 and August 15, 2000 (December 11, 2001) 	
HIGHWAY	<ul style="list-style-type: none"> • Work Zone Collision Between a Tractor-Semitrailer and a Tennessee Highway Patrol Vehicle, Jackson, Tennessee, July 26, 2000 (May 14, 2002) • Safety Recommendation Letter from Jackson, Tennessee and other supporting investigations (October 20, 2009) • Truck-Tractor Semitrailer Rear-End Collision Into Passenger Vehicles on Interstate 44 Near Miami, Oklahoma, June 26, 2009 (September 28, 2010) • Motorcoach Run-Off-the-Road and Collision With Vertical Highway Signpost, Interstate 95 Southbound, New York City, New York, March 21, 2011 (June 5, 2012) • Motorcoach Collision With Combination Vehicle After Traffic Break on Interstate 10, Palm Springs, California October 23, 2016 (October 31, 2017) 	<ul style="list-style-type: none"> • AAA Foundation for Traffic Safety Acute Sleep Deprivation and Crash Risk study
RECOMMENDATION RESPONSE		
Railroad: There are 13 open recommendations for this issue, ranging from 2009 through 2018, as follows:		

- RAIL: 13 open recommendations
- 2 open—await
 - 1 open—initial response received
 - 6 open—acceptable
 - 1 open—acceptable alternate
 - 3 open—unacceptable

Highway: There are 3 open recommendations for this issue, as follows:

- Highway: 3 open recommendations
- 1 open—acceptable
 - 1 open—initial response received
 - 1 open—unacceptable response

(See Attachment A for the specific NTSB safety recommendations associated with this topic area)

NEEDED REGULATORY/LEGISLATIVE ACTION

- The FRA and FMCSA should re-instate the ANPRM *Evaluation of Safety Sensitive Personnel for Moderate-to-Severe Obstructive Sleep Apnea* and develop a regulation to address sleep disorders by safety-sensitive railroad and highway employees.
- The FRA should require railroads to systematically identify medical conditions or medication use among employees in safety-sensitive positions.
- Ensure that medical organizations provide training and informational materials on the unique needs of the railroad population.
- The FMCSA should provide easily accessible OSA guidance to medical examiners to improve commercial driver evaluations.

NEEDED INDUSTRY ACTION

- Develop a formal sleep apnea program, that includes screening and treatment for safety-sensitive rail and highway employees.
- Establish policies for requiring that medical certifications be performed by medical professionals specifically trained and certified in evaluating medication use and health issues related to occupation safety.
- Develop and implement protocols to routinely screen and fully evaluate safety sensitive employees for sleep disorders and ensure that such disorders are adequately addressed, if diagnosed.
- Look to others within your industry, such as the Metropolitan Transit Authority and Schneider Trucking, as models for effective sleep apnea screening and treatment programs.

PROBABILITY OF SUCCESS/CHALLENGES

The FRA, FMCSA and rail and highway industries have been slow to implement NTSB safety recommendations related to fatigue, and specifically identifying safety-sensitive personnel at risk of obstructive sleep apnea and other sleep disorders. However, some operators within the rail and trucking industries have developed effective programs that could be piloted by others within their respective industries. While the FRA, with the Volpe Center, fatigue researchers, and medical professionals, launched the Railroaders' Guide to Healthy Sleep website (www.railroaderssleep.org) as an educational resource to promote sleep health across the industry in 2012, the lack of regulatory action continues to compromise safety.

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: Strengthen Occupant Protection

Mode(s) Impacted: Multimodal

DESCRIPTION

Motor vehicle travel is the primary means of transportation in the United States; it is also the leading cause of death for individuals between the ages of 4 and 34. According to NHTSA, in 2016, 37,416 people were killed and more than 3.1 million were injured on US roads. Despite a 90% daytime seat belt use rate, nearly 50% of passengers that died in 2016 were unrestrained at the time of the crash. A great deal of attention is placed on identifying ways to prevent these deaths, but steps to prevent injuries in the event of an accident or crash are just as critical. Additionally, seat belt use in the rear seat of passenger vehicles is still significantly lower than those in the front seat.

We have investigated many accidents in which improved occupant protection systems (seat belts, child restraints, and the traveling compartment or vehicle body) could have reduced injuries and saved lives.

For those traveling in the air and on the road, properly using a child safety seat or seat belt is the best means of occupant protection. But occupant protection is not just about restraints; it also requires vehicle designs that maintain survivable space and minimize sharp interior surfaces that can cause injury. Our accident investigations have found that current passenger railcar and bus designs lack adequate crashworthiness protection for occupants and operators. Buses often lack enough roof strength during overturn accidents, and the sidewall structure of some railcars is not designed to limit intrusion into occupant seating areas. Likewise, passenger railcars and buses are usually built with large side windows, which can help passengers escape or emergency personnel enter in an accident, but that can also become portals for ejection when they break or pop out during an overturn accident.

The NTSB has investigated numerous survivable general aviation accidents in which passengers were fatality injured because they were not properly restrained using a shoulder harness. We believe that preventable deaths will continue to occur if attention is not called to this issue. In the last decade, the NTSB has cited the lack of shoulder harnesses as contributing to the severity of injuries in five GA accidents.¹

The NTSB's 2011 study on airbag performance in GA restraint systems showed support for injury reduction through shoulder harness use in GA and, as a result, the NTSB recommended that the FAA require the retrofitting of shoulder harnesses on all GA airplanes not equipped with such restraints. In 2013, the FAA reported that, because the economic burden on the GA community would outweigh any potential benefit, the agency would not mandate the retrofit of aircraft manufactured before December 12, 1986, with shoulder harnesses or a two-point inflatable lap restraint.

REASON(S) TO ADDRESS

Thousands of transportation-related injuries and deaths would be prevented each year through the use of safety restraint systems, such as seat belts and child car seats. Seat belts, child safety seats and safety restraint systems reduce the risk of injury and death to drivers, pilots and passengers in the event of an accident or crash. To minimize deaths and injuries, we must ensure that appropriate and adequate seat belts and safety restraint systems are available in all highway vehicles and aircraft and used properly by all occupants.

KEY STATISTICS

Mode	Data (Source/Date)		
HIGHWAY	2016: 14,668 lives saved by seat belts (age 5 and older); 328 lives	2015: 14,067 lives saved by seat belts (age 5 and older); 272 lives	

¹ Note that additional accidents may have occurred, but we were unable to definitively link between the lack of shoulder harnesses and injury due to post impact aircraft damage or nature of the injury.

	saved by child restraints (age 4 and younger) (NHTSA) 2015: 48% (9,874 people) of passenger vehicle occupants killed were unrestrained (NHTSA)	saved by child restraints (age 4 and younger) (NHTSA) 2014: 49% (9,410 people) of passenger vehicle occupants killed were unrestrained (NHTSA)	
AVIATION	No data available		
RAIL			
MARINE			
SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS			
Mode	NTSB Accident Reports & Studies	External	
HIGHWAY	<ul style="list-style-type: none"> • Highway Accident Report: Pickup Truck Centerline Crossover Collision with Medium-Size Bus on US Highway 83 Concan, Texas March 29, 2017 • Highway Accident Report: Motorcoach Run-Off-the-Road and Overturn US Highway 83 Laredo, Texas May 14, 2016 • Highway Accident Report: Collision Between Freight Train and Charter Motorcoach at High-Profile Highway–Railroad Grade Crossing Biloxi, Biloxi, Mississippi (August 2018) • Highway Special Investigation Report: Selective Issues in School Bus Transportation Safety: Crashes in Baltimore, Maryland, and Chattanooga, Tennessee (May 2018) • Highway Accident Report: Amphibious Passenger Vehicle DUCK 6 Lane Crossover Collision with Motorcoach on State Route 99, Aurora Bridge, Seattle, Washington (November 2016) 	<ul style="list-style-type: none"> • NHTSA National Occupant Protection Use Survey shows national daytime seat belt use reached 90.1 percent • NHTSA Lives Saved in 2016 by Restraint Use and Minimum-Drinking-Age Laws • IIHS State Report Unbelted • IIHS Booster Seat Ratings • IIHS Latch Ease of Use Ratings • AAA 2017 Traffic Safety Culture Index • Safe Kids Worldwide Car Seat Tethers Report 	
AVIATION	<ul style="list-style-type: none"> • Aviation Accident Report: Runway Excursion During Landing Delta Air Lines Flight 1086 Boeing MD-88, N909DL, New York, New York (September 2016) 		
RAIL	<ul style="list-style-type: none"> • Rail Accident Report: Derailment of Amtrak Passenger Train 188, Philadelphia, Pennsylvania (May 2016) 		
RECOMMENDATION RESPONSE			
OVERALL ASSESSMENT OF RECOMMENDATION RESPONSES:			
51 open recommendations for this issue, ranging from 1999 to present			
<ul style="list-style-type: none"> • HIGHWAY: 28 open safety recommendations <ul style="list-style-type: none"> ○ 10 open—acceptable ○ 5 open—response received ○ 6 open—await response 			

- 7 open—unacceptable
- AVIATION: 8 open safety recommendations
 - 7 open—acceptable
 - 1 open—await response
- RAIL: 12 open safety recommendations
 - 5 open—acceptable
 - 2 open—response received
 - 1 open—await response
 - 4 open—unacceptable
- MARINE: 3 open safety recommendations
 - 2 open—acceptable
 - 1 open—await response

(See Attachment A for the specific NTSB safety recommendations associated with this topic area)

NEEDED REGULATORY/LEGISLATIVE ACTION

AVIATION

- Conduct research to examine the injury potential to occupants in accidents with significant lateral forces and to identify the mechanism that produces high thoracic spinal injuries in commercial aviation accidents and implement regulations that would mitigate such hazards.
- Require the retrofitting of shoulder harnesses on all general aviation airplanes that are not currently equipped with such restraints in accordance with Advisory Circular (AC) 21-34, issued June 4, 1993.
- Children are safest when they are properly secured in a child safety seat, in their own seat, when flying. Holding an infant in a lap during flight is not a sufficient safety measure. Remove the exemption which allows for lap held children on commercial aviation flights.

HIGHWAY

- The 50 states and the District of Columbia should enact legislation that authorizes the primary enforcement of seat belt laws that apply to all vehicles in all seating positions.
- The 50 states and the District of Columbia should enact legislation that requires that all newly purchased school buses be equipped with seat belts.
- Use and support high-visibility enforcement campaigns to effectively increase seat belt use.
- Education campaigns about the benefits of seat belt and child restraint use enhance understanding of these issues and encourage proper use in all vehicles.
- Require new buses of all sizes to be built with lap/shoulder belts for all passengers.
- For larger passenger vehicles, require pre-trip briefings and training on the proper use of available restraints and evacuation routes.

RAIL

- Require enhanced rail cab and car design to ensure better occupant protection. When Amtrak 188 derailed, passenger car windows became dislodged and some passengers were ejected and killed. Additionally, when the cars overturned, passengers were thrown from their seats and struck by loose objects, resulting in severe injuries. Had the windows in Amtrak 188 remained in place, the ejected passengers would likely have remained inside the train and survived.
- Evaluate the causes of passenger injuries in passenger railcar derailments and overturns and evaluate potential methods for mitigating injuries, such as installing seat belts in rail cars and securing potential projectiles.

NEEDED INDUSTRY ACTION

AVIATION

- Install shoulder harness systems in all general aviation aircraft.
- Improve and implement evacuation procedures, including communication, coordination, and decision-making.

- Commercial flight and cabin crews must have proper training and procedures to conduct timely and professional evacuations when conditions warrant. Consider joint evacuation exercises for flight and cabin crews to resolve these issues.
- The Association of Critical Care Transport, Association of Air Medical Services and the Air Medical Operators Association should establish a working group and provide guidance regarding the equipment and systems that would enhance helicopter crashworthiness, including, at a minimum, a crash-resistant fuel system and energy-absorbing seats.

HIGHWAY

- New buses of all sizes need to be built with lap/shoulder belts for all passengers.
- For larger passenger vehicles, pre-trip briefings and training on the proper use of available restraints and evacuation routes are vital.

RAIL

- Adopt existing voluntary standards that address crashworthiness and strengthen occupant protection for train passengers and crews. Protecting passengers and crews from injury requires keeping railcars' windows intact and maintaining their structural integrity during an accident, and includes occupant restraint systems, such as seat belts, to mitigate the severity of passenger injuries. Incorporate design elements that optimize crashworthiness and enhance ease of evacuation in an emergency.

PROBABILITY OF SUCCESS/CHALLENGES

Staff believes that if this issue were on the MWL, it would place a renewed emphasis on the real safety benefits associated with the use of occupant protection systems. Staff believes that without the visibility and priority associated with an item on the MWL, the efforts in states to repeal existing occupant protection laws and the lack of action taken to improve existing child restraint systems and seat belts will continue.

There are common injury mechanisms that are likely to be amenable to prevention by improved rear seat and belt design, together with injury countermeasures to minimize head injury risk, such as curtain airbags. The results support the need for consumer and or regulatory consideration of the rear seat environment. While NHTSA is investigating different technologies to better understand the potential of these front seat technologies in the rear seat, staff believes this subsection of occupant protection should be a part of the MWL to further reduce traffic deaths in the United States.

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: Eliminate Distractions

Mode(s) Impacted: Multimodal

DESCRIPTION

Distraction is a growing and life-threatening problem in all modes of transportation. To reduce crashes, injuries, and deaths drivers and other operators will have to completely disconnect from an increasing variety of deadly distractions. The NTSB has placed a strong emphasis on distractions from personal electronic devices (PEDs) because of the growing number of highway crashes that involve driver distraction, combined with the increasing use of cell phones and other PEDs by the general population. Additionally, the NTSB has seen distracted operations in the cockpit, on the tracks, on the waterways, and in every type of vehicle on our roadways—the cabs of large trucks, in motor coaches, in school buses, and, in every type of private vehicle. The attention of a driver, pilot, or operator can be diverted by other internal or external distractions. Teen drivers are subject to teen passengers taking their attention away from the primary task, too often, leading to tragic consequences. The safety improvement sought is to eliminate distractions for operators and drivers of vehicles across all modes of transportation to prevent the subsequent crashes, injuries, and fatalities that occur by recommending appropriate countermeasures. This can be accomplished by enacting strong laws, promoting high-visibility enforcement, and developing good education campaigns on why vehicle drivers and operators across all modes of transportation should not use these devices while operating their vehicles/vessels. During our first ever Distraction in Transportation Roundtable many experts from all modes of transportation voiced their many concerns about the many facets of distractions, but we all have agreed on the one thing that will have the greatest impact, we need to focus on changing the behavior of the driver, operator and pilot. A big component of this starts with employee regulations and policies.

However, we also learned during the Distraction in Transportation Roundtables of the difficulties that some industries face with getting the right policies in place. For instance, in the railroad industry it was expressed that the concern that one of the biggest hurdles for regulators is the rule making process, which may take three to five years and with the fast-pace changes in technology it simply outpaces the regulatory process. The work place has a huge captive audience that can be instrumental in helping to change behavior. Employees care about the people they put in their vessels, vehicles, trains or planes and having a greater focus on this issue with employee's will enable us to see a great and better return on the problem of distractions in transportation.

REASON(S) TO ADDRESS

There is a general awareness that more needs to be done to address the rising number of crashes and incidents involving distraction across all modes of transportation. The transportation industry and states are acting to educate about the dangers of distraction, but they are taking an incremental approach or appealing to the operator's better judgment.

Staff believes that eliminating distractions in transportation will require a change of thinking, and that added emphasis of being an issue on the Most Wanted List elevates the issue to a place where the NTSB can continue the dialogue and encourage this change.

KEY STATISTICS

Mode	Data (Source/Date)		
HIGHWAY	2016: 3,450 fatalities due to distraction	2015: 3,477 fatalities due to distraction 2014: 3,197 fatalities due to distraction	8.8% increase from the 3,197 fatalities in 2014

AVIATION RAIL MARINE	No credible data available	
SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS		
Mode	NTSB Accident Reports & Studies	External
Aviation	<ul style="list-style-type: none"> • Aviation Accident Report: PIPER PA46 500TP, Council Bluffs, IA, (CEN16FA062), (June 2017) • Aviation Accident Report: Experimental amateur-built Collins RV6A airplane Pekin, Illinois (May 2017) • Aviation Accident Report: Medical Helicopter Operated by LifeNet Crash near Midwest National Airport, Mosby, Missouri (April 2013) 	<ul style="list-style-type: none"> • <i>The "Turn Off Tune In" program is a collaborative proactive initiative launched in 2013 by FAA and NATCA to eliminate distractions in the operational workplace.</i> • <i>On April 19, 2016, FAA issued AC 90-48D, Pilot's Role in Collision Avoidance, for the purpose of alerting all pilots to the potential hazards of mid-air collisions and near midair collisions</i>
Highway	<ul style="list-style-type: none"> • Highway Accident Report: Multivehicle Collision, Gray Summit, Missouri (August 2010) • Highway Accident Report: Collapse of the Interstate 5 Skagit River Bridge, Mount Vernon, Washington (May 2013) • Highway Accident Report: Highway-Railroad Grade Crossing Collision, Rosedale, Maryland (May 2013) 	<ul style="list-style-type: none"> • <i>Scientific: University of Houston and Texas A&M Transportation Institute, "How Drivers React to Different Types of Distractions" (August 15, 2017)</i> • AAA Study: "Visual and Cognitive Demands of Using Apple's CarPlay, Google's Android Auto and Five Different OEM Infotainment Systems" (June 2018)
Marine	<ul style="list-style-type: none"> • Marine Accident Brief: Collision between Dewey R Tow and P.B. Shah Tow, Columbus, Kentucky (September 2015) • Marine Accident Report: Collision of Tugboat/Barge Caribbean Seat/The Resource with Amphibious Passenger Vehicle DUKW 34, 	

	Philadelphia, Pennsylvania (July 2010)	
Rail	<ul style="list-style-type: none"> • Rail Accident Report: Collision of Metrolink Train 111 with Union Pacific Train LOF65-12, Chatsworth, California (September 2008) • Rail Accident Report: Derailment of Amtrak Passenger Train 188, Philadelphia, Pennsylvania (May 2016) 	<ul style="list-style-type: none"> • FRA is near completion on a research project on mitigating distraction through sustained attention training • <i>In 2013, PHMSA issued a final rule (78 FR 58923) forbidding motor carriers transporting quantities of hazardous materials requiring placarding from texting or using hand-held mobile telephones while driving. These provisions are found in 49 CFR 177.804(b).</i>

RECOMMENDATION RESPONSE

OVERALL ASSESSMENT OF RECOMMENDATION RESPONSES:

12 open recommendations for this issue, ranging from 2003 through 2016

- HIGHWAY: 7 open safety recommendations
 - 2 open—acceptable
 - 4 open—await response
 - 1 open—unacceptable
- AVIATION: 1 open safety recommendation
 - 1 open—acceptable
- RAIL: 2 open safety recommendations
 - 2 open—acceptable
- MARINE: 2 open safety recommendations
 - 1 open—acceptable
 - 1 open—await response

(See Attachment A for the specific NTSB safety recommendations associated with this topic area)

NEEDED REGULATORY/LEGISLATIVE ACTION

AVIATION:

- Ban PED use in Part 135 and Part 91 aircraft. The [findings on the fatal crash of an Air Methods EMS helicopter flight in 2011](#) points to the need to address distraction in all aircraft types. In that accident, texting while flying was at least in part responsible for the crash. Four people—the pilot, a nurse, paramedic and the patient—died in the accident.

HIGHWAY:

- The 50 states and the District of Columbia need to enact legislation that would prohibit the use of cell phones by all drivers in all vehicle types.

NEEDED INDUSTRY ACTION

HIGHWAY:

- Develop formal policies prohibiting cellular telephone use by commercial driver's license holders with a passenger-carrying or school bus endorsement, while driving under the authority of that endorsement, except in emergencies.

AVIATION:

- In support of the "sterile cockpit" regulations, develop procedures and strategies for pilots to help them identify and avoid nonwork-related distractions. These strategies should ensure pilots only direct their attention to operationally relevant information to maintain flight safety.
- Establish procedures for safety-critical personnel other than pilots related to PED use, including all crew, mechanics, ramp workers, and others. In 2014, the FAA issued its final rule on the Prohibition on Personal Use of

Electronic Devices on the Flight Deck (Part 121) and it also published guidance encouraging the aviation industry to expand procedure manuals and training programs to include other personnel in the prohibition of PEDs in the operational environment.

RAIL:

- The FRA should continue to work with its research partners, rail labor, and rail management on regulatory, voluntary, and research efforts to reduce Personal Electronic Device (PED) distractions for safety-critical rail employees.

PROBABILITY OF SUCCESS/CHALLENGES

Staff believes that without the visibility and priority associated with an item on the MWL, progress will be slow and policy makers will lose their sense of urgency to address this problem.

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: Reduce Fatigue-Related Accidents

Mode(s) Impacted: Multimodal

DESCRIPTION

Airplanes, trains, trucks, buses, cars, ships, and pipeline control systems are complex machines that require the full attention of the operator, maintenance person, and other individuals performing safety-critical functions. Consequently, cognitive impairments of these individuals that result from fatigue due to insufficient or poor-quality sleep are critical factors to consider in improving transportation safety. Whether driving a vehicle, piloting a ship, or flying professionally for an airline, operators of transportation vehicles need to have sufficient off-duty time to obtain sufficient sleep. But duty schedules are only part of the equation. Even when an individual has enough time to get rest, medical conditions, living environment, and personal choices can affect the ability to obtain quality sleep.

Over the years, the NTSB has investigated many accidents, in all transportation modes, in which fatigue was cited as the probable cause or a contributing factor. Human fatigue is subtle; at any given point, the traveling public could be at risk because the professional pilots, vessel captains, motorcoach drivers, air traffic controllers, truck drivers or personal vehicle operators with whom, or near whom, they are travelling—or the individuals responsible for maintaining vehicles—do not realize until it is too late that they cannot safely execute their duties because of fatigue. To make matters worse, people frequently may deny, or are not aware of, impairments caused by fatigue. Just because an operator is not yawning or falling asleep does not necessarily mean that he or she is not fatigued.

REASON(S) TO ADDRESS

Several recent NTSB investigations have revealed that fatigue is still a common causal factor in transportation accidents in all modes. The goal of placing human fatigue back on the Most Wanted List is to draw attention to several key aspects of human fatigue that we continue to see despite the improvements in training and monitoring. Through the Most Wanted List, the NTSB can draw attention to the medical conditions that may affect sleep quality including sleep disorders such as OSA and also other conditions such as insomnia, diabetes or restless leg syndrome that may affect the quality of a person's sleep. Further, medications can affect sleep quality and many in the transportation field may be unaware of these medications.

Although there is no single solution to addressing human fatigue in transportation, several modes are pursuing technological solutions to reduce the occurrence of fatigue related events. The highway mode is pursuing technologies to detect and reduce the occurrence of fatigue related accidents while in rail, the focus is to create new methods to identify and mitigate performance decrements associated with fatigue. A spotlight on existing and emerging technologies will advance their development and implementation.

Finally, the best countermeasures to combat fatigue depend on the task at hand, the schedules for work and rest, and the opportunities for sleep. Data on the habits of workers in different modes of transportations, along with the results of existing fatigue management programs or research into possible alternatives, will allow for a better analysis to determine the best fatigue countermeasures to employ in every situation. Including fatigue in the Most Wanted List will highlight the successful fatigue management programs already in place, and encourage efforts to identify and implement the best countermeasures.

KEY STATISTICS

Mode	Data (Source/Date)		
HIGHWAY	2016: 328,000 drowsy-driving crashes, 109,000 injury-related drowsy-driving crashes, 6,400	2015: 72,000 police-reported drowsy-driving-related crashes (NHTSA)	

	fatal drowsy-driving crashes (GHSA) 2016: More than 50% of drowsy-driving crashes involved drivers age 25 and younger (GHSA)	2015: 41,000 people were injured in drowsy-driving-related crashes (NHTSA) 2015: more than 800 people were killed in drowsy-driving-related crashes (NHTSA)	
AVIATION	No data available		
RAIL			
MARINE			
SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS			
Mode	NTSB Accident Reports & Studies	External	
HIGHWAY	<ul style="list-style-type: none"> • Highway Accident Report: Motorcoach and Truck Semi-trailer Crash, Palm Springs, California (October 2017) • Safety Alert: Drowsy Driving Among Young Drivers: Get the Right Amount of Sleep to Stay Alert Behind the Wheel (March 2017) • Highway Accident Brief: Passenger Vehicle Median Crossover Crash, US Highway 77, Robstown, Texas (December 2016) • Highway Accident Brief: Train and Truck Crash on Railroad Right-of-Way and Subsequent Fire, Oxnard, California (November 2016) • Highway Accident Report: Multivehicle Work Zone Crash on Interstate 75 Chattanooga, Tennessee (October 2016) • Motorcoach Run-Off-the-Road and Collision With Vertical Highway Signpost State Route 99, Livingston, California (August 2016) • Agricultural Labor Bus and Truck-Tractor Collision at US-98-SR-363 Intersection Near St. Marks, Florida (July 2016) 	<ul style="list-style-type: none"> • AAA: Foundation for Traffic Safety Acute Sleep Deprivation and Crash Risk study • GHSA: Wake Up Call! Understanding Drowsy Driving and What States Can Do report 	
RAIL	<ul style="list-style-type: none"> • Rail Accident Brief: Collision of Two Union Pacific Railroad Freight Trains, Texarkana, Texas (October 2017) • Rail Accident Report: Collision of Two Union Pacific Railroad Freight Trains in Hoxie, Arkansas (December 2016) • Rail Accident Report: New Jersey Transit Train Strikes Wall in Hoboken Terminal, Hoboken, New Jersey, September 29, 2016 • Rail Accident Report: Chicago Transit Authority Train Collides with Bumping Post and Escalator at O'Hare Station, Chicago, Illinois, March 24, 2014 • Rail Accident Brief: Metro-North Railroad Derailment, Bronx, New York, December 1, 2013 • Collision of BNSF Coal Train With the Rear End of Standing BNSF Maintenance-of-Way Equipment Train, Red Oak, Iowa, April 17, 2011. 	<ul style="list-style-type: none"> • AAR: Fighting Fatigue in the Rail Industry document (June 2017) 	

MARINE	<ul style="list-style-type: none"> • Safer Seas Digest (July 2017) • Marine Accident Brief: Collision and Subsequent Sinking of Towing Vessel <i>Specialist</i> Hudson River at Tappan Zee Bridge, Tarrytown, New York (May 2017) • Marine Accident Brief: Capsizing and Sinking of Fishing Vessel <i>Lydia & Maya</i> Bar Harbor, Maine (May 2017) • Marine Accident Report: Grounding of Fishing Vessel <i>Day Island</i> Ventura Beach, California (November 2016) 	
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RECOMMENDATION RESPONSE

OVERALL ASSESSMENT OF RECOMMENDATION RESPONSES:

41 open recommendations for this issue, ranging from 2008 through 2016

- HIGHWAY: 9 open safety recommendations
 - 4 open—acceptable
 - 1 open—await response
 - 4 open—unacceptable
- AVIATION: 5 open safety recommendations
 - 4 open—acceptable
 - 1 open—unacceptable
- RAIL: 25 safety recommendations
 - 18 open—acceptable
 - 1 open—response received
 - 4 open—await response
 - 2 open—unacceptable
- MARINE: 2 open recommendations
 - 2 open—acceptable
 -

(See Attachment A for the specific NTSB safety recommendations associated with this topic area)

NEEDED REGULATORY/LEGISLATIVE ACTION

AVIATION

- Establish duty-time regulations for maintenance personnel working under [Title] 14 *Code of Federal Regulations* Parts 121, 135, 145, and 91 subpart K that take into consideration factors such as start time, workload, shift changes, circadian rhythms, adequate rest time, and other factors shown by recent research, scientific evidence, and current industry experience to affect maintenance crew alertness.
- Require that personnel performing maintenance or inspections under [Title] 14 *Code of Federal Regulations* Parts 121, 135, 145, and 91 subpart K receive initial and recurrent training programs for maintenance and inspection personnel that includes a review of the causes of human error, including fatigue, and its effects on performance, and actions individuals can take to prevent the development of fatigue.

HIGHWAY

- Although some motor carriers are taking steps to address fatigue (e.g., implementing fatigue management programs), investing in vehicle technologies to prevent drowsy driving crashes, and screening and treating sleep disorders, the FMCSA has made relatively little progress on NTSB recommendations in this area. We are pleased that the electronic logging devices rule will go into effect in December 2017, but disappointed that the FMCSA and FRA withdrew their ANPRM concerning OSA. We continue to see fatigue-related issues in many of the crashes we investigate.
- Incorporate scientifically based fatigue mitigation strategies into the hours-of-service regulations for passenger-carrying drivers who operate during the nighttime window of circadian low.
- Require motor carriers to adopt fatigue management programs based on the North American Fatigue Management Program. Develop and implement a plan to deploy in-vehicle technologies that reduce fatigue-related accidents.

- Implement a program to identify commercial drivers at high risk for OSA and require that those drivers show evidence of appropriate evaluation and treatment before granting medical certification. Disseminate guidance for commercial drivers, employers, and physicians about the identification and treatment of OSA.
- Provide easy access for drivers and certified medical examiners to more specific, clearer guidance on OSA for commercial medical examiners such as that provided in 2016 by the Medical Review Board.

RAIL

- Provide guidance to operators, transit authorities, and physicians to help them identify and treat individuals at high risk for OSA and other sleep disorders.
- Require railroads to medically screen employees in safety-sensitive positions for sleep apnea and other sleep disorders.
- Using current fatigue science, provide initial and recurrent training on work schedule issues to mitigate risks that contribute to operator fatigue.
- Develop medical certification regulations for employees in safety-sensitive positions that include, at a minimum, a complete medical history (including specific screening for sleep disorders, a review of current medications, and a thorough physical examination), standard testing protocols across the industry, and central oversight of certification decisions for employees who fail initial testing. Consider requiring that medical examinations be performed by those with specific training and certification in evaluating medication use and health issues related to occupational safety on railroads.
- Research new methods to identify fatigue and mitigate associated performance decrements in on-duty crews.

MARINE

- Require local pilot oversight organizations that have not already done so to implement fatigue mitigation and prevention programs that regularly inform mariners of the hazards of fatigue and effective strategies to prevent it, and promulgate hours-of-service rules that prevent fatigue resulting from extended hours of service, insufficient rest within a 24-hour period, and disruption of circadian rhythms.
- Collect and analyze data regarding fatigue's impact on vessel operations and help vessel operators identify high-risk mariners.
- Require mariners to report to the Coast Guard, in a timely manner, any substantive changes in their medical status or medication use that occur between required medical evaluations.
- Encourage vessel operators and mariners to adhere to the IMO's Guidelines on Fatigue Mitigation and Management (MSC/Circ. 1014).

MULTIMODAL

- Ensure that board-certified physicians in family medicine receive enhanced and ongoing training so they can successfully identify risk factors for, evaluate, and treat OSA in their patients.

NEEDED INDUSTRY ACTION

AVIATION

- Establish initial and recurrent training programs for maintenance and inspection personnel that includes a review of the causes of human error, including fatigue, and its effects on performance, and actions individuals can take to prevent the development of fatigue.

RAIL

- Collaborate to develop a model national labor agreement that supports effective programs for addressing sleep disorders and other medical conditions among safety-sensitive train-operating personnel.

MULTIMODAL

- Establish fatigue risk management programs and continually monitor their success to reduce risks for personnel performing safety-critical tasks. Fatigue risk management programs take a comprehensive, tailored approach to address the problem of fatigue within an industry or workplace. Such programs include policies or practices to address scheduling, attendance, education, medical screening and treatment, personal responsibility during non-work periods, task and workload issues, rest environments, commuting, and napping.

PROBABILITY OF SUCCESS/CHALLENGES

Staff believes that continued focus on fatigue as a Most Wanted List topic will communicate to the modal agencies and transportation industry that more work remains to address this insidious problem. Developing a strong, targeted advocacy plan will be critical to success.

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: Improve the Safety of Part 135 Aircraft Flight Operations Mode(s) Impacted: Aviation

DESCRIPTION

To improve safety, Part 135 operators should implement **safety management systems (SMS)**, install **flight data monitoring (FDM)** recording devices and then analyze the data from these devices via a flight data monitoring program, and ensure pilots receive **controlled flight into terrain (CFIT) training**—all recommendations the NTSB has issued in the last few decades.

- An SMS is a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures. One of the defining characteristics of an SMS is its emphasis on risk management (within the individual operators' environment and situation). A successful SMS program is one that incorporates proactive safety methods to evaluate a company's flight and maintenance operations to, at a minimum, identify safety hazards, ensure that remedial action necessary to maintain an acceptable level of safety is implemented, provide for continuous monitoring and regular assessment of the safety level achieved, and continuously improve the company's overall level of safety. We have asked that the FAA to require all 14 Code of Federal Regulations Part 135 operators to establish safety management system programs. With Part 135 it is important that SMS be scalable, that is they be appropriate for the small sized operations that are typical of many Part 135 operators. SMS is appropriate and beneficial for smaller operators when appropriately scaled.
- An FDM system is an aviation technology/software that captures flight data, and sometimes cockpit audio and imagery, and provides mechanisms for analyzing that data through reports and a variety of features. FDM devices, paired with a program used to evaluate the information from those devices (flight data monitoring program), helps to identify deviations from standard operating procedures, identify and mitigate hazards, provide operational oversight, and improve decision making regarding the allocation of safety and training resources.
- Controlled Flight into Terrain (CFIT) occurs when an airworthy aircraft is flown, under the control of a qualified pilot, into terrain (water or obstacles) with inadequate awareness on the part of the pilot of the impending collision. CFIT training can help prevent this occurrence. We have asked the FAA to expand the application of Federal Aviation Administration Order 8900.1, volume 3, chapter 19, section 6, "Safety Assurance System: Flight Training Curriculum Segments," paragraphs 3-1251(B) and 3-1252, which address controlled flight into terrain-avoidance training programs for 14 Code of Federal Regulations (CFR) Part 135 helicopter operations, to all 14 CFR Part 135 operations.

REASON(S) TO ADDRESS

While Part 121 passenger airline accidents have been decreasing, we are increasingly concerned by a troubling trend emerging within the other segment of the commercial aviation industry: poor safety practices, and inefficient policies and training among Part 135 (business/charter) aircraft operations.

We continue to see too many Part 135 crashes that could have been avoided if companies had addressed the three areas identified above (SMS, FDM, and CFIT training). In just the last eight years (since 2010), ***we have issued 15 recommendations as a result of a variety of Part 135 accidents that address these areas.*** If the FAA and industry do not address our recommendations, we will undoubtedly see more accidents involving the traveling public. Charter aircraft have a duty to do the utmost to keep their passengers safe.

- **SMS:** During its investigation of the November 10, 2015, fatal accident in Akron, Ohio, involving a British Aerospace HS 125-700A operated under Part 135, the NTSB identified problems with the operator's safety culture and a lack of compliance with SOPs (NTSB 2016). In another accident, involving the crash of an East Coast Jets flight in Owatonna, Minnesota, in July 31, 2008, (AAR-11-01),

which killed eight, we found that the captain allowed an atmosphere in the cockpit that did not comply with well-designed procedures intended to minimize operational errors, including sterile cockpit adherence.

- **FDM:** The Akron, Ohio, accident also highlighted the need for FDM. But an older crash, from 2004, involving Business Jet Services, Ltd., Gulfstream G-1159A (G-III), was another example of the value of FDM. The plane crashed during approach to landing in Houston, Texas, killing three. We discovered during our investigation that this aircraft had data that an FDM program should have been able to pick up, and, if it had been evaluated and monitored, would have given the operator reason to look into whether the accident pilots' behavior over the course of several flights represented a pattern.
- **CFIT:** We saw how CFIT training could have made the difference in an October 2, 2016, accident we investigated involving a turbine-powered Cessna 208B Grand Caravan airplane, which was operated by Hageland Aviation Services, Inc. The plane collided with steep, mountainous terrain about 10 nautical miles northwest of Togiak Airport, Togiak, Alaska, killing the two commercial pilots and the passenger. Safety issues identified in this report included the need for improvements in Hageland's controlled flight into terrain (CFIT)-avoidance training and the lack of FAA requirements for CFIT-avoidance training programs for Title 14 Code of Federal Regulations Part 135 fixed-wing operations.

KEY STATISTICS

Mode	Data (Source/Date)
SMS/FDM	A review of NTSB investigations of accidents from 2000 through 2015 found that seven accidents involving only Part 135 on-demand operators killed 53 people and seriously injured 4. The NTSB believed that this was evidence of a safety problem for which an SMS and FDM may have been an effective mitigation. (Source: NTSB Recommendation Reply Letter (April 6, 2017) to the FAA about Safety Recommendations A-16-34 through -42, PMA 56418)
FDM	<p>From 2005 through 2017, we found that 159 accident aircraft had no form of recording equipment, which could have helped companies identify operational safety problems in advance. (Source: NTSB Rec Reply Letter, April 6, 2017)</p> <p>Airlines with an active FDM program have accident rates that are 50 percent less than those carriers without this important safety program. (Source: Flight Safety Foundation)</p> <p>The flight data monitoring market is estimated to grow from USD 3.45 Billion in 2016 to USD 5.34 Billion by 2022, at a CAGR of 7.55% from 2017 to 2022. (Source: Markets and Markets, March 2018)</p>
CFIT	CFIT accidents account for 17 percent of all general aviation fatalities. More than half of these CFIT accidents occurred during IMC. (FAA)

SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS

Mode	NTSB Accident Reports & Studies	External
SMS-FDM	<ul style="list-style-type: none"> • April 6, 2017 letter to the FAA about Safety Recommendations A-16-34 through -42, PMA 56418 (outlines history and example of crashes that could have been avoided with SMS-FMD) • Crash During Nonprecision Instrument Approach to Landing, Execufight Flight 1526, British Aerospace HS 125-700A, N237WR, Akron, Ohio, November 10, 2015 	
CFIT	<ul style="list-style-type: none"> • Collision with Terrain Promech Air, Inc. de Havilland DHC-3, N270PA, Ketchikan, Alaska, June 25, 2015. 	Controlled Flight Into Terrain Accident Analysis Report (IATA 2014 Report)

RECOMMENDATION RESPONSE

There are 15 recommendations still in “Open” status covering SMS, FDM, and CFIT topics, issued since 2010, as follows:

- 3 open—unacceptable response
- 9 open—acceptable
- 2 open—acceptable alternate response
- 1 open—await response

Note: We have recommended SMS for Part 121 since 2007, and for Part 91 since 2009. We recommended FDM for some Part 135 (HEMS) in 2009, but this rec was closed in January 2018. CFIT training goes back decades to the late 1970s for Part 121.

(See Attachment A for the specific NTSB safety recommendations associated with this topic area)

NEEDED REGULATORY/LEGISLATIVE ACTION

- FAA should adopt open recommendations
- Develop/push the FAA Advisory Circular on Flight Monitoring

NEEDED INDUSTRY ACTION

- Although there are no recommendations directly to industry, operators should voluntarily install and implement SMS, FDM, and CFIT training
- As a result of the 2016 Togiak investigation, we made a recommendation to the Medallion Foundation to push them to require FDM programs as part of their voluntary audit standards. Other auditing groups, such as ACSF, Wyvern, or Argus, should do similarly - IN ADVANCE of the FAA adopting the recs to make them mandatory.

PROBABILITY OF SUCCESS/CHALLENGES

The primary target audience of this MWL issue is industry, associations, and operators, NOT the FAA (government), where we are unlikely to see movement, given the current political environment, regulations freeze, and slow regulatory process. We see industry as having the greatest capability of making progress on this issue in the next two years.

Many companies have already established some form of SMS, FDM and CFIT training. Associations and industry groups can set the role model, baseline, and issue guidance specific to industry needs—and some already have. As was demonstrated by the NBAA with business aircraft (see recommendation A-15-34), associations can aggregate FDM data from many operators to identify safety risks within the industry and develop mitigations. Part 135 can also look to Part 121 successes in these areas. For example, Air Carriers around the world have benefited from Flight Operational Quality Assurance (FOQA) programs and SMS for many years.

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: Implement a Comprehensive Strategy to Reduce Speed-Related Crashes

Mode(s) Impacted: Highway

DESCRIPTION

Speeding increases the likelihood of serious injury in a crash and may make a crash more likely. Each year between 2005 and 2014, roughly the same number of people died in speeding-involved crashes as in alcohol-involved crashes. Proven effective countermeasures, such as automated enforcement, high-visibility enforcement, education campaigns, vehicle technology and reduced speed limits, are being underutilized across the nation to address the impact of excessive speed on highway safety.

REASON(S) TO ADDRESS

Speeding-related crashes account for about 30 percent of all highway fatalities each year. Unlike impaired driving, speeding is not socially unacceptable. While injury severity is directly linked to speed, it is more difficult to quantify the relationship between speed and crash likelihood. The public has come to accept exceeding the posted speed limit as a normal way of traveling on the nation's roadways. It's estimated that speeding-related crashes are underreported. If this issue is not addressed, lives will continue to be lost and injuries sustained. The issue was of such concern to the NTSB that, in 2017, we completed a special study on speeding, highlighting several speed-related accidents that could have been avoided. Speeding is particularly dangerous in large commercial vehicles or vehicles transporting passengers.

KEY STATISTICS

Mode	Data (Source/Date)
HIGHWAY	In 2016, of the 37,461 traffic fatalities, 10,111 (27 percent) were in crashes where at least one driver was speeding (NHTSA/March 2018)
	In 2016, 32 percent of 15- to 20-year-old male drivers involved in fatal crashes were speeding, the highest among the age groups presented (NHTSA/March 2018)
	In 2016, 33 percent of motorcycle riders involved in fatal crashes were speeding, more than drivers of any other vehicle type (NHTSA/March 2018)
	After reaching a low of 9,283 fatalities in 2014, speeding-related traffic fatalities have increased to 9,723 in 2015 and 10,111 in 2016 (NHTSA/March 2018)

SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS

Mode	NTSB Accident Reports & Studies	External
HIGHWAY	Safety Study: Reducing Speeding-Related Crashes Involving Passenger Vehicles – July 25, 2017	Rand Report for NSC: The Road to Zero: A Vision for Achieving Zero Roadway Deaths by 2050 Report , April 2018
	Highway Accident Report: Motorcoach Run Off-the-Road and Collision with Vertical Signpost, Interstate 95 Southbound, New York City, New York (March 2011)	NHTSA: Traffic Safety Facts Speeding 2016 Data , March 2018
	Highway Accident Report: Multivehicle Work Zone Crash on Interstate 95, Cranbury, New Jersey (June 2014)	AAA Foundation for Traffic Safety: 2016 Traffic Safety Culture Index , February 2017
		Journal of Safety Research: Raising the speed limit from 75 to 80 mph on Utah rural interstates: effects on vehicle speeds and speed variance, 2017
		Traffic Injury Prevention: Effects of automated speed enforcement in Montgomery County,

	Maryland, on vehicle speeds, public opinion, and crashes, 2016
	NHTSA Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices , June 2017
	GHSA: Speeding-Related Fatal Crashes Among Teen Drivers and Opportunities for Reducing the Risks , June 2013
	International Transport Forum. 2018. Speed and Crash Risk. OECD: Paris, France.

RECOMMENDATION RESPONSE

There are 22 open recommendations for this issue, ranging from 2005 through 2017, as follows:

- HIGHWAY: 22 open recommendations
 - 7 open—acceptable
 - 3 open—acceptable alternate
 - 5 open—awaiting response
 - 4 open—response received
 - 3 open—unacceptable

(See Attachment A for the specific NTSB safety recommendations associated with this topic area)

NEEDED REGULATORY/LEGISLATIVE ACTION

- Implement recommendations from NTSB speeding study
 - Establish a national campaign similar to Click It or Ticket (NHTSA)
 - Increasingly adopt speeding-related MMUCC guidelines (NHTSA, GHSA, IACP, NSA)
 - Develop a system for consistent law enforcement reporting of speeding-related crashes (NHTSA, GHSA, IACP, NSA)
 - State legislative action to authorize use of automated speed enforcement (50 States)
 - Encourage passenger-vehicle manufacturers to adopt intelligent speed-adaptation systems (NHTSA)
 - Revise guidance on setting speed limits (FHWA)
- Implement recommendations from NTSB accident investigations HAR-12/01 and HAR-15/02
 - Develop performance standards for advanced speed-limiting technology for heavy vehicles (NHTSA)
 - After establishing performance standards for advanced speed-limiting technology for heavy vehicles, require that all newly manufactured heavy vehicles be equipped with such devices (NHTSA)

NEEDED INDUSTRY ACTION

- GHSA/IACP/NSA
 - Work w/NHTSA to develop and implement a program to increase adoption of speeding-related MMUCC guidelines and improve consistent law enforcement reporting of speeding-related crashes

PROBABILITY OF SUCCESS/CHALLENGES

The release of the NTSB speed study ignited a national conversation around the issue of speed and the speed-related crashes, injuries and fatalities. In 2017, at least 11 states considered legislation related to speed limits and enforcement tools. Much of the legislation, if enacted, would contribute to the speed problem rather than positively address the problem.

There are significant political challenges associated with the use of automated speed enforcement technologies at the federal, state, and local levels. Changing driver behavior regarding speeding will require a coordinated and sustained effort at the local, state, and national levels.

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: Fully Implement Positive Train Control
Mode(s) Impacted: Railroad

DESCRIPTION

Even on our best days, humans make mistakes. Train engineers and crews aren't immune to mistakes and can become distracted, fatigued, or commit crucial operator errors. Positive train control (PTC) is a critical, life-saving technology that prevents mistakes from turning tragic by taking over train operation if the human operator is not responding appropriately. The FRA has required all train operations to install PTC by end of 2018.

REASON(S) TO ADDRESS

Congress and regulators have issued federal mandates requiring that railroads install PTC; however, we've already seen delays in implementation. In 2008, after a deadly PTC-preventable head-on collision between a commuter train and a freight train in Chatsworth, California, that killed 25 people and injured more than 100, Congress passed a law requiring PTC implementation by the end of 2015. Many railroads worked hard and spent billions of dollars implementing PTC, improving the safety of many tracks and trains. Despite these efforts, though, tens of thousands of track miles and millions of rail passengers are still left unprotected by PTC. After railroads failed to meet the 2015 deadline, Congress granted them an additional 3 years to implement their PTC systems. Following the 2017 crash in DuPont, WA, and numerous others we have investigated that could have been prevented by PTC and the industry responses to questions from USDOT on their progress at implementation, it is apparent that continued pressure is needed to support timely implementation.

KEY STATISTICS

Mode	Data (Source/Date)
RAILROAD	56% freight route miles in operation and 24% passenger route miles in operation (FRA 2018)

SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS

Mode	NTSB Accident Reports & Studies	External
RAILROAD	Accident Brief: Collision of Two Arkansas & Missouri Railroad Trains Brentwood, Arkansas (May 25, 2017) Accident Report: Collision of Two Union Pacific Railroad Freight Trains in Hoxie, Arkansas (December 6, 2016) Accident Brief: Collision of Two Union Pacific Railroad Freight Trains, Texarkana, Texas (October 12, 2017) Preliminary Report: Derailment, DuPont, WA (December 18, 2017)	Testimony: Many Commuter Railroads Still Have Significant Additional Implementation Work and Opportunities Exist to Provide Federal Assistance (GAO, 2018)

RECOMMENDATION RESPONSE

There are 14 open safety recommendations, ranging from 1997 through 2015, as follows:

- 8 open—acceptable
- 1 open—await response
- 5 open—unacceptable

(See Attachment A for the specific NTSB safety recommendations associated with this topic area)

NEEDED REGULATORY/LEGISLATIVE ACTION

- Regulators have required that railroads meet the deadline of December 31, 2018, for implementation, with possible extensions allowed if certain requirements are met. The FRA must continue to pressure

railroads to meet this deadline and track the results of implementation. Additionally, the FRA and Congress must allow no further extensions.

NEEDED INDUSTRY ACTION

- Railroads must finish work to meet the 2018 deadline; they must follow timelines established by the FRA.

PROBABILITY OF SUCCESS/CHALLENGES

We are concerned that deadlines could be pushed again. Staff believes that the issue needs to remain on the MWL through the critical implementation deadline phase to keep the pressure on the FRA and railroads. Recent high-profile accidents have caught the attention of legislators, the media, and the public, which will help put pressure on railroads to meet the deadlines and support our advocacy efforts.

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: Install Collision Avoidance Technologies in All Highway Vehicles

Mode(s) Impacted: Highway

DESCRIPTION

Collision avoidance technologies (also known as advanced driver assistance systems or ADAS) should be installed in all vehicles, including passenger and commercial. These technologies include all forms of collision warning (front and rear), lane departure warning, blind spot detection, adaptive cruise control (ACC), and automatic emergency braking (AEB). Consumers—both passenger vehicle buyers and commercial vehicle owners/drivers—should be made aware of their availability and understand their benefits and how they are used. Additionally, NHTSA should complete standards for (1) collision warning and AEB systems in commercial vehicles, and (2) connected vehicle technology, and require this technology in all newly manufactured vehicles. Furthermore, NHTSA should continue with the proposed changes to the New Car Assessment Program, to include rating collision avoidance systems, and reinstate its notice of proposed rulemaking on vehicle-to-vehicle technologies.

REASON(S) TO ADDRESS

These technologies, if installed and used, could prevent and/or mitigate most highway-related accidents. We know that we could potentially prevent 1,700 fatal rear-end collisions, and other studies say nearly 1,000 lives could be saved with collision avoidance systems each year. With the recent agreement with NHTSA and the IIHS, passenger vehicle manufacturers are steadily increasing the implementation of these systems as standard equipment. However, the incorporation of these systems in commercial vehicles has not improved, and this should be one of our key focus areas. Additionally, these technologies are the building blocks of automated vehicle (AV) systems, which have additional detection sensors that allow improved obstacle detection. The implementation and use by the general public of collision avoidance baseline technologies is expected to ease the transition to vehicles with various levels of automation. We can capitalize on the AV discussion to highlight these technologies. Consumers (and dealers) appear to lack a general understanding of how these technologies work, and more advocacy can be done in this area to educate them, which would lead to more requests for this tech.

KEY STATISTICS

Mode	Data (Source/Date)
HIGHWAY passenger vehicle	In 2016...56% offered optional collision warning system (CWS) or CWS+automatic emergency braking (AEB). 8% offered CWS or CWS+AEB as standard. (Insurance Institute for Highway Safety [IIHS])
HIGHWAY commercial	In 2016...about 14–15% of class 8 truck-tractors in the US are equipped with a collision mitigation system (including stability control). (Bendix) In 2016, we saw about 120,000 WABCO collision avoidance mitigation systems (OnGuard Active) in operation with 267 fleets (MERITOR). Bendix Wingman, a single competing tech, data not available.

SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS

Mode	NTSB Accident Reports & Studies	External
HIGHWAY	<ul style="list-style-type: none"> Special Investigation Reports on Rear-End Collisions – 2001 and 2015 Highway Accident Report: Motorcoach Collision with Crash Attenuator in Gore Area US Highway 101, San Jose, CA (March 28, 2017) 	<ul style="list-style-type: none"> IIHS Lane Departure Warning, Blind Spot Detection Help Drivers Avoid Trouble (Aug 23, 2017) AAA Foundation for Safety: https://t.co/NgAhMo3fCr or

	<ul style="list-style-type: none"> • Highway Accident Report: Collision Between a Car Operating with Automated Vehicle Control Systems and a Tractor-Semitrailer Truck near Williston, FL (September 12, 2017) 	<p>http://www.tnews.com/articles/aaa-study-onboard-safety-systems-could-prevent-63000-large-truck-crashes (Sept 21)</p> <ul style="list-style-type: none"> • University of Iowa: new research indicates how drivers' knowledge of and attitudes toward ADAS technologies improve after exposure to one of four learning methods (December 2016) • NHTSA: A Target Population for AEB in Heavy Vehicles (DOT HS 812 390) (July 2017) • NHTSA: Field Study of Heavy Vehicle Crash Avoidance Systems (DOT 812 280) (June 2016) • NHTSA: Driver Acceptance of CW Applications Based on Heavy-Truck V2V Applications (October 2016) • Accident Analysis and Prevention (research) / NIH, Cost and Benefit Estimates of Partially-Automated Vehicle Collision Avoidance Technologies (October 2016)
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RECOMMENDATION RESPONSE

There are currently 10 open highway safety recommendations for this issue, ranging from 2013 through 2016, as follows:

- 4 open—acceptable
- 2 open—response received
- 2 open—await response
- 2 open—unacceptable

(See Attachment A for the specific NTSB safety recommendations associated with this topic area)

NEEDED REGULATORY/LEGISLATIVE ACTION

- Complete standards for collision warning and AEB systems in commercial vehicles and require this technology in all highway vehicles.
- Improve consumer awareness about collision avoidance systems available in passenger vehicles by rating them in the New Car Assessment Program's 5-Star rating system and including the ratings on vehicle Monroney labels.

NEEDED INDUSTRY ACTION

- Install and make standard forward collision avoidance system in all vehicles. They should not just be options sold as part of expensive add-on packages.
- Educate consumers on the capabilities and limitations of forward collision avoidance systems.

PROBABILITY OF SUCCESS/CHALLENGES

More and more passenger vehicles are installing collision avoidance technologies in their vehicles, and the voluntary agreement from industry to install AEB by 2022 is promising. Additionally, there is a very public discussion about autonomous/driverless vehicles (AV) that is motivating states and competitive industry action. The Tesla and Google cars created quite a conversation (and resulting accidents). We can capitalize on this momentum to highlight the value of these tech; this momentum increases our chance of success. Even trucking/fleet owners are looking into driverless trucks, which opens the dialog. OEMs in trucking are making some of these tech standard, but the challenge is getting fleet owners to request/purchase them.

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: Ensure Safe Shipment of Hazardous Materials (Rail)

Office: RPH

Mode(s) Impacted: RPH

DESCRIPTION

The NTSB has identified a number of vulnerabilities involving the DOT-111 and the CPC-1232 tank car, which are commonly used to move flammable liquids. These deficiencies increase the risk of release during an accident as demonstrated in recent accidents.

In 2014, the NTSB called for an aggressive schedule for replacing or retrofitting the current rail car fleet. The DOT issued new tank car regulations with a generous 2029 implementation deadline. It did not include a performance schedule or transparent completion reporting requirements. While the NTSB would have preferred a more aggressive schedule for full implementation, however PHMSA's deadlines were mandated by the FAST Act.

Yet repeated tank car breaches during derailments demonstrate that safer tank cars are essential to the safe movement of hazardous liquids by rail. Each day that passes until our nation's present tank-car fleet is replaced or upgraded is a day lived with elevated risk.

The public remains very concerned with the continued operation of high hazard flammable unit trains through their communities.

REASON(S) TO ADDRESS

The public remains very concerned with the continued operation of high hazard flammable unit trains through their communities. (The transportation of crude oil has gone down as pipelines are becoming more available in production areas, however ethanol shipping continues to increase). Although progress has been made on the retrofitting and replacing the DOT 111...

KEY STATISTICS

- There are currently no DOT-111 tank cars transporting crude oil.
- The number of DOT-111 tank cars shipping ethanol dropped from 30,688 in 2015 to about 18,704 during the second quarter of 2018.
- The number of DOT-111 tank cars shipping other flammable liquids dropped from 26,643 in 2015 to about 18,064 during the second quarter of 2018.
- The number of new DOT-117/120 tank cars has grown to about 19,486 as of July 2018.
- The number of DOT-117R tank cars that have been converted from DOT-111/CPC-1232 tank cars has grown to about 13,863 as of July
- The current pace of retrofits and replacement must be: 146/month crude oil; 351/month ethanol; and 195/month PG I other flammable liquids; and 305/month PG II and III other flammable liquids – in order to achieve the FAST Act deadlines.

SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS

Mode	NTSB Accidents & Reports	External
	<ul style="list-style-type: none"> • Railroad Accident Brief: BNSF Railway Train Derailment, Casselton, North Dakota (December 30, 2013) • Preliminary Report: Accident performance of DOT-117R tank cars following BNSF Railway freight train derailment near Doon, Iowa (June 22, 2018) • Railroad Accident Report: Derailment and Hazardous Materials Release of Union Pacific Railroad Unit Ethanol Train, Graettinger, Iowa (March 2017) • Preliminary Report: Tank-Car Breach, Hazardous Materials Release, New Martinsville, West Virginia (August 2016) • Preliminary Report: CSX Transportation Train Derailment, Hyndman Borough, Bedford County, Pennsylvania (August 2017) 	<p>BTS: Fleet Composition of Rail Tank Cars That Transport Flammable Liquids: 2013–2016 (September 2017)</p> <p>AAR: Updating Tank Car Field Guide to include phase-out information for DOT111 tank cars (February 2017)</p> <p>TRB: Special Report 325: Safely Transporting Hazardous Liquids and Gases in a Changing U.S. Energy Landscape (October 2017)</p>
RECOMMENDATION RESPONSE		
<p>Overall assessment of recommendation responses: 16 open recommendations for this issue, ranging from 2004 to 2017</p> <ul style="list-style-type: none"> • 10 open—acceptable • 2 open—initial response received • 2 open—await response • 2 open—unacceptable 		
<i>NTSB recommendation</i>		<i>Status</i>
NEEDED REGULATORY/LEGISLATIVE DEVELOPMENTS (IF APPLICABLE)		
<ul style="list-style-type: none"> • PHMSA: Aug. 2016, final rule released on tank car standards: “Hazardous Materials: FAST Act Requirements for Flammable Liquids and Rail Tank Cars” (Pub. L. No. 81 FR 53935) • PHMSA: Jan. 2017, ANPRM on Hazardous Materials: “FAST Act Requirements for Real-Time Train Consist Information by Rail” (Docket Number PHMSA-2016-0015 [HM-263]) 		
NEEDED INDUSTRY ACTIONS		
<ul style="list-style-type: none"> • AAR: Encouraging members to upgrade rail tank car fleet to new standards 		
PROBABILITY OF SUCCESS/CHALLENGES		
<p>Continuing the MWL item will maintain the importance and urgency of implementing the remaining open recommendations. This will maintain pressure on the regulators to expedite the resolution through new regulations and push the industry to phase out the legacy tank cars as fast as possible.</p>		

2019-2020 MWL OFFICE SUBMISSION FORM

Proposed Topic: Ensure Safe Shipment of Hazardous Materials (Pipeline)

Office: RPH

Mode(s) Impacted: RPH

DESCRIPTION

Two and a half million miles of pipeline crisscross our nation powering thousands of homes and delivering important resources, such as oil and gasoline, to consumers. While pipelines remain one of the safest and most efficient means of transporting these commodities there are inherent risks that can lead to tragic consequences when industry-recognized safety practices are not implemented at all levels of the operation. Implementing a comprehensive Safety Management System (SMS) that includes near miss reporting and encourages employee input is one way that an operator can begin to eliminate potential sources of future accidents. Another way of enhancing pipeline safety is to improve oversight of the industry. Federal and state oversight agencies should work together to identify and correct deficiencies in a pipeline operator's safety program in a timely manner. Routine inspection of pipeline operators is necessary to ensure compliance with performance-based standards. However, oversight is more than identifying deficiencies; effective oversight requires an organized approach that focuses on establishing meaningful metrics and measuring tangible safety improvements by an operator. Many of the nation's transmission and distribution pipelines pre-date the federal regulations and present additional challenges to operators and regulators alike. These pipelines may not have been constructed to the standards required under the current regulations and may lack post-installation strength tests or the original design and construction records needed to determine the maximum safe operating pressure. In these cases, operators must ensure the integrity of the pipeline using hydrostatic testing and inline inspections, while recognizing the limitations of each method when establishing the final safe operating pressure. Another important element of pipeline safety is ensuring a timely response if a significant leak or rupture occurs. Smaller diameter pipelines that deliver natural gas to residential dwellings must have excess flow valves that automatically stop the flow of product following a significant pipeline leak or break. Large diameter transmission pipelines that transport these products in much greater volumes near structures intended for human occupancy, so called "high consequence areas," should also incorporate automatic or remote-controlled valves to enable a rapid shutdown of flow in the event of a breach in the pipeline. Automatic shutoff or remote-controlled valves can minimize the volume of natural gas released following an accident, thereby lessening the severity of thermal damages, if ignition occurs, or reducing the potential for ignition in the first place.

REASON(S) TO ADDRESS

The pipeline infrastructure continues to age. Being that most transportation pipelines are buried, corrosion and other aging conditions continue through the operating lifetime, yet the ability to detect the corrosion and other defects before the pipeline fails is difficult and costly. A high-pressure gas line rupture can cause a major fire that cannot be quickly extinguished. A large diameter hazardous liquid rupture can cause major environmental damage, as well as an uncontrolled fire like a gas pipeline rupture. Small diameter, low pressure gas distribution line leaks can quickly fill structures with gas, which if ignited can cause the entire building to violently explode.

KEY STATISTICS

Mode	Data (Source/Date)
Pipeline	16 Fatalities (3 Liquid) (Gas 13)

SUPPORTING REPORTS, RESEARCH, & PUBLICATIONS		
Mode	NTSB Accident Reports and Studies	External
RPH	<ul style="list-style-type: none"> Sep. 13, 2018: Safety Recommendation Report: Natural Gas Distribution System Project Development and Review (Urgent) Merrimack Valley MA June 22, 2018: Preliminary Report - Hazardous Materials - HMD18LR002: Doon, IA Feb. 23, 2018: Preliminary Report: Natural Gas-Fueled Explosion of Residence: Dallas TX Nov. 17, 2017: Pipeline Accident Brief: TransCanada Corporation Pipeline (Keystone Pipeline) Rupture: Amherst SD Aug. 2, 2017 Preliminary Report: Pipeline: Gas Explosion Destroyed Minnehaha Academy: Minneapolis, MN US Trans Fatalities in 2016 – Mode: https://www.nts.gov/investigations/data/Pages/Data_Stats.aspx 	<ul style="list-style-type: none"> PHMSA Reports American Petroleum Institute Reports American Gas Association Resources
RECOMMENDATION RESPONSE		
<p>There are 33 open recommendations for this issue:</p> <ul style="list-style-type: none"> 23 open—acceptable 1 open—acceptable alternate 1 open—awaiting response 5 open—response received 3 open—unacceptable <p><i>(See Attachment A for the specific NTSB safety recommendations associated with this topic area)</i></p>		
NEEDED REGULATORY/LEGISLATIVE DEVELOPMENTS (IF APPLICABLE)		
<ul style="list-style-type: none"> Oversight agencies play a role, especially when operators are reluctant to initiate safety improvements. Regulators can mandate specific safety program improvements to ensure pipeline operators adopt and improve practices that reduce the risk and consequences of pipeline failures. Pipeline and Hazardous Materials Safety Administration (PHMSA) should require this technology, which can isolate a rupture within minutes and reduce the volume of gas released and the duration of a fire. 		
NEEDED INDUSTRY ACTIONS		
<ul style="list-style-type: none"> Companies strengthening their operating practices to address safety concerns in design, installation, operation, maintenance, and inspection. Improving in-line inspection technologies and expanding the use of pipeline inspection tools improve the chances of locating defects early and reduces the probability of a catastrophic failure. Companies should also incorporate hydrostatic pressure testing, which is used to demonstrate that existing flaws in the steel pipe will not grow and cause a leak or failure under normal pipeline operating limits. Improved communications between pipeline operators and the communities through which their pipelines travel. Improving communication with emergency response personnel is particularly important. Pipeline operators should continue to provide accurate route maps to emergency responders and strengthen their internal procedures for notifying the local emergency response personnel when leaks or ruptures are suspected 		
PROBABILITY OF SUCCESS/CHALLENGES		
<p>While PHMSA and the FRA have taken significant positive actions to address each of the recommended safety actions, there is intense Congressional and public pressure for industry and government to further improve flammable liquids rail transportation safety, improve routing decisions for new transmission pipelines, and upgrade the antiquated natural gas distribution pipelines. Highlighting these timely issues with placement on the MWL could help overcome obstacles for positive action.</p>		

Appendix E: Attendees at November 2017 MWL Midpoint Progress Review Meeting

Federal Agencies

Federal Aviation Administration
National Guard Bureau
National Highway Traffic Safety
Administration
Pipeline and Hazardous Materials Safety
Administration
U.S. Department of Transportation
United States Coast Guard

Companies

AC2 - Aerospace & Transportation
Amazon.com
Alcohol Monitoring Systems
BNSF Railway Co.
Eastern Lift Truck Company
Engineering Systems, Inc.
General Motors
Leidos
MTA Long Island Rail Road
RailWorks Corporation
Rosco Vision Systems, Inc.
Tangible Security
Uber

Industry Associations

Air Line Pilots Association, International
Aircraft Owners and Pilots Association
American Beverage Licensees
American Bus Association
American Fuel and Petrochemical
Manufacturers
American Pilots' Association (marine)
American Public Transportation
Association
American Trucking Associations
Bus Industry Safety Council

Council of American Master Mariners
Cruise Lines International Association
Flight Safety Foundation
General Aviation Manufacturers Association
Insurance Institute for Highway Safety
National Air Transportation Association
National Association of Attorneys General
National Safety Council
National Sleep Foundation
National Business Aviation Association
The American Waterways Operators
United Motorcoach Association

Advocacy Groups

Advocates for Highway and Auto Safety
FIA Foundation
Foundation for Advancing Alcohol
Responsibility
Mothers Against Drunk Driving
National Organization for Youth Safety
Red Means Stop Traffic Safety Alliance
Sara's Wish Foundation

Law Firms and Others

Bergen County, NJ Emergency Management
Agency
Chambers, Conlon & Hartwell, LLC
Chesapeake Region Safety Council
DC Pedestrian Advisory Council
Fairport Central School District
George L. Reagle and Associates
Holland & Knight LLP
Inter-American Development Bank
Nichols and Associates
Transport Topics
Van Ness Feldman LLP
Washington Regional Alcohol Program