



**NTSB** National Transportation Safety Board

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# Fatigue-Impaired Driving: Safety Risks and Challenges

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UNITED STATES CODE, TITLE 49  
**CHAPTER 11—NATIONAL TRANSPORTATION SAFETY BOARD**

**SUBCHAPTER 1—GENERAL**

Sec.  
1101. Definitions.

**SUBCHAPTER 2—ORGANIZATION AND ADMINISTRATIVE**

1111. General organization.  
1112. Special boards of inquiry on air transportation safety.  
1113. Administrative.  
1114. Disclosure, availability, and use of information.  
1115. Training.  
1116. Reports and studies.  
1117. Annual report.  
1118. Authorization of appropriations.

**SUBCHAPTER 3—AUTHORITY**

1121. General authority.  
1122. Civil aircraft accident investigations.  
1123. Review of other agency action.  
1124. Inspections and audits.  
1125. Secretary of Transportation's responses to safety recommendations.

**SUBCHAPTER 4—ENFORCEMENT AND FINALITIES**

1135. Aviation enforcement.  
1132. Injurer and intervention in aviation proceedings.  
1133. Judicial review.  
1134. Discovery and use of cockpit voice and other material.  
1135. Aviation penalties.

**SUBCHAPTER 5—GENERAL**

§1181. Definitions

Section 40102(a) of this title applies to this chapter.

**SUBCHAPTER 6—ORGANIZATION AND ADMINISTRATIVE**

§1183. General organization

(a) ORGANIZATION.—The National Transportation Safety Board is an independent constitutional body of the Government.

(b) APPOINTMENT OF MEMBERS.—The Board is composed of 5 members appointed by the President, by and with the advice and consent of the Senate. Not more than 3 members may be appointed from the same political party. The members shall be appointed on the basis of technical qualification, professional standing, and demonstrated knowledge of accident reconstruction, safety engineering, human factors, transportation safety, or transportation regulation.

(c) TERMS OF OFFICE AND REMOVAL.—The term of office of each member is 7 years. At the end of the term, the President may appoint a member to fill a vacancy occurring before the expiration of the term for which the predecessor of that member was appointed for the remainder of that term. When the term of office of a member ends, the successor may not be a successor in office.

(d) CHAIRMAN AND VICE CHAIRMAN.—The President shall designate, by and with the advice and consent of the Senate, a Chairman of the Board. The President also shall designate a Vice Chairman of the Board. The terms of both the Chairman and Vice Chairman are 2 years. When the Chairman is absent or unable to perform the duties of the office, the Vice Chairman shall perform the duties of the office.

# Mission

The NTSB is charged with:

- 1) determining the probable cause of transportation accidents
- 2) making recommendations to prevent their recurrence



## **The NTSB is Responsible for Investigating:**

Aviation, highway, rail, marine, pipeline,  
and hazardous material accidents





- 130,000+ accident investigations
- 13,000+ safety recommendations
  - 82% acceptance rate

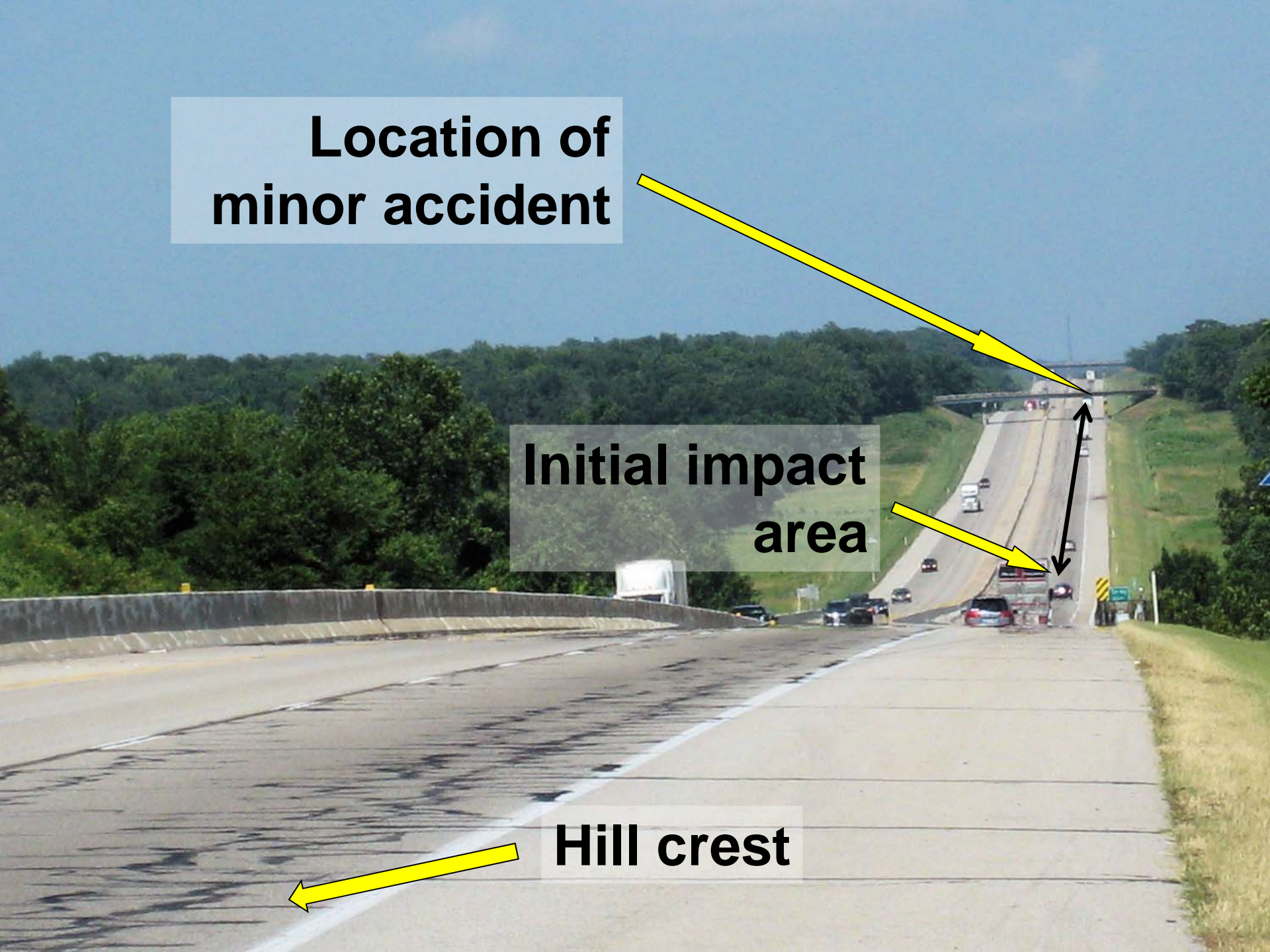
# Miami, Oklahoma (June 26, 2009)

- Initial minor accident (~1:13 pm)
  - blocked eastbound I-44
  
- 2008 Volvo truck-tractor (~1:19 pm)
  - refrigerated semitrailer
  - traveling eastbound on I-44
  - 69 mph with cruise control engaged
  - without slowing or braking collided into queue of slowing & stopped vehicles

**Location of  
minor accident**

**Initial impact  
area**

**Hill crest**



10 fatalities  
3 serious injuries  
2 minor injuries  
5 no injuries

**Ford  
Windstar**



**Hyundai  
Sonata**

**Kia  
Spectra**

# Fatigue Factors

- Off work for 3 weeks
- Kept day active/night sleep schedule when off
- Had one work day prior to accident
- 3am to 3pm shift work/drive schedule (since 1997)
- Obtained min 3 hrs/max 5 hrs sleep prior to accident
- Early bedtime (2 hr phase advance in sleep time)
- Subsequently diagnosed with mild sleep apnea



# Probable Cause (fatigue)

“ . . . driver’s fatigue, caused by the combined effects of acute sleep loss, circadian disruption associated with his shift work schedule, and mild sleep apnea, which resulted in the driver’s failure to react to slowing and stopped traffic ahead by applying the brakes or performing any evasive maneuver to avoid colliding with the traffic queue. . . . ”

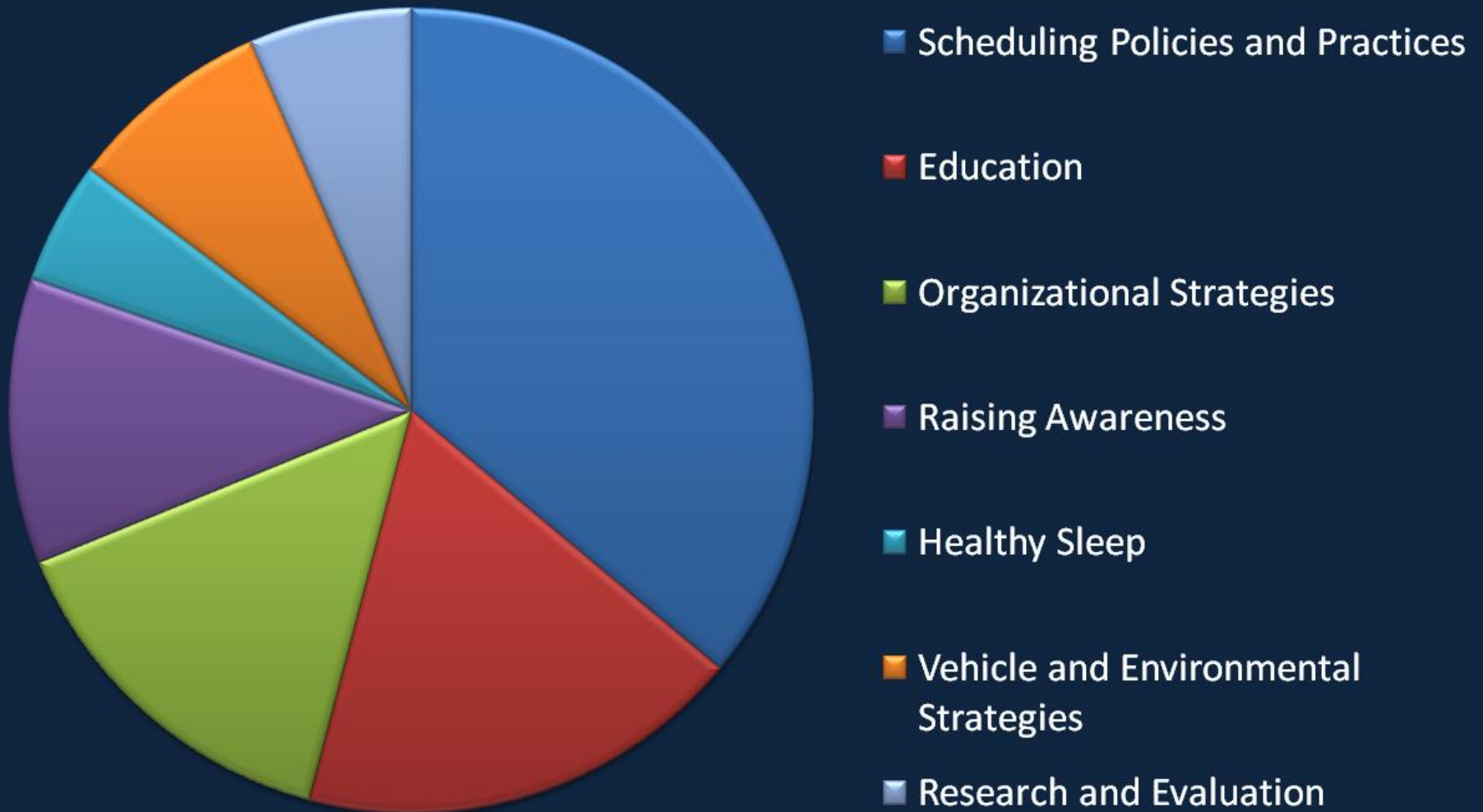
# NTSB Fatigue Investigations/Studies

- 30 highway accident investigations
- 2 Safety Studies
  - Fatigue, Alcohol, Other Drugs and Medical Factors in Fatal-To-The-Driver Heavy Truck Crashes (31% fatigue; > drugs and alcohol)
  - Factors that Affect Fatigue in Heavy Truck Accidents (last sleep duration, total sleep in 24 hrs, split sleep)

# NTSB Recommendations

- MOST WANTED since 1990
- 190+ fatigue recommendations
- 60+ in highway

# Highway Fatigue Recommendations



# Education

- Education vs. awareness
- Foundation for any fatigue efforts
- Address broad/applied content:
  - how fatigue affects performance
  - how to minimize fatigue risks
  - countermeasures to combat fatigue
  - policies to support tired drivers

# Scheduling Policies and Practices

Victoria, Texas, January 2, 2008



Victoria, Texas Fire Department

- 1 fatality, 47 injuries; day sleep, night drive, ~ 4 am WOCL

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# Scheduling Policies and Practices

- Establish scientifically based hours of service regulations
- When possible, address:
  - schedule inversion
  - day sleep/night work
  - rotating schedules
  - extended duty days
  - opportunity for 8 hrs uninterrupted sleep

# Healthy Sleep

Mexican Hat, UT, January 6, 2008



- 360 rollover, 50/53 ejected, 9 fatalities; OSA (-CPAP)

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# Healthy Sleep

- Disseminate guidance for identifying and treating obstructive sleep apnea
- Ensure drivers with apnea are effectively treated before granting unrestricted medical certification
- Have a written contingency plan to accommodate drivers impaired by fatigue or illness

# Fatigue Management Programs

- Comprehensive approach
- Multiple components
- Science based
- Continuously evaluated and updated
- Complements HOS regulations

# Success requires . . .

A culture change that supports  
different attitudes and behaviors

# The Opportunity . . .

- Don't underestimate fatigue risks
- Implement effective strategies
- Embrace/facilitate culture change



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