



**National  
Transportation  
Safety Board**

# Good Sleep, Safe Travels: Managing Fatigue Risks in Transportation

Mark R. Rosekind, Ph.D.  
Board Member

Harvard Division of Sleep Medicine  
September 27, 2012



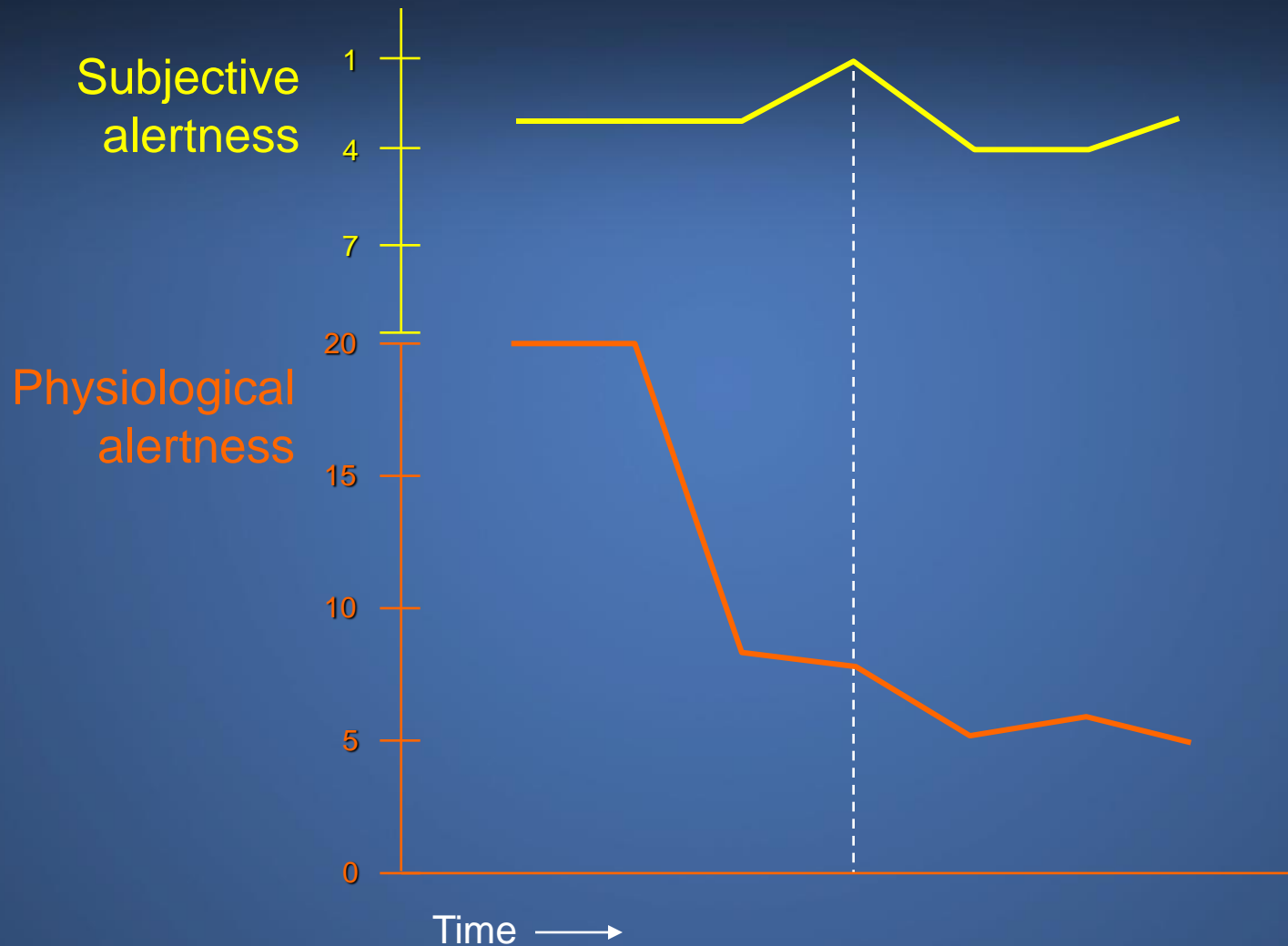
# National Transportation Safety Board

## Good Sleep, Safe Travels: The Societal Challenges

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# Alertness Reports Often Inaccurate



Adapted from Sasaki et al., 1986

# #1 Societal Discrepancy

Scientific knowledge  
vs.  
Attitudes and behaviors





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

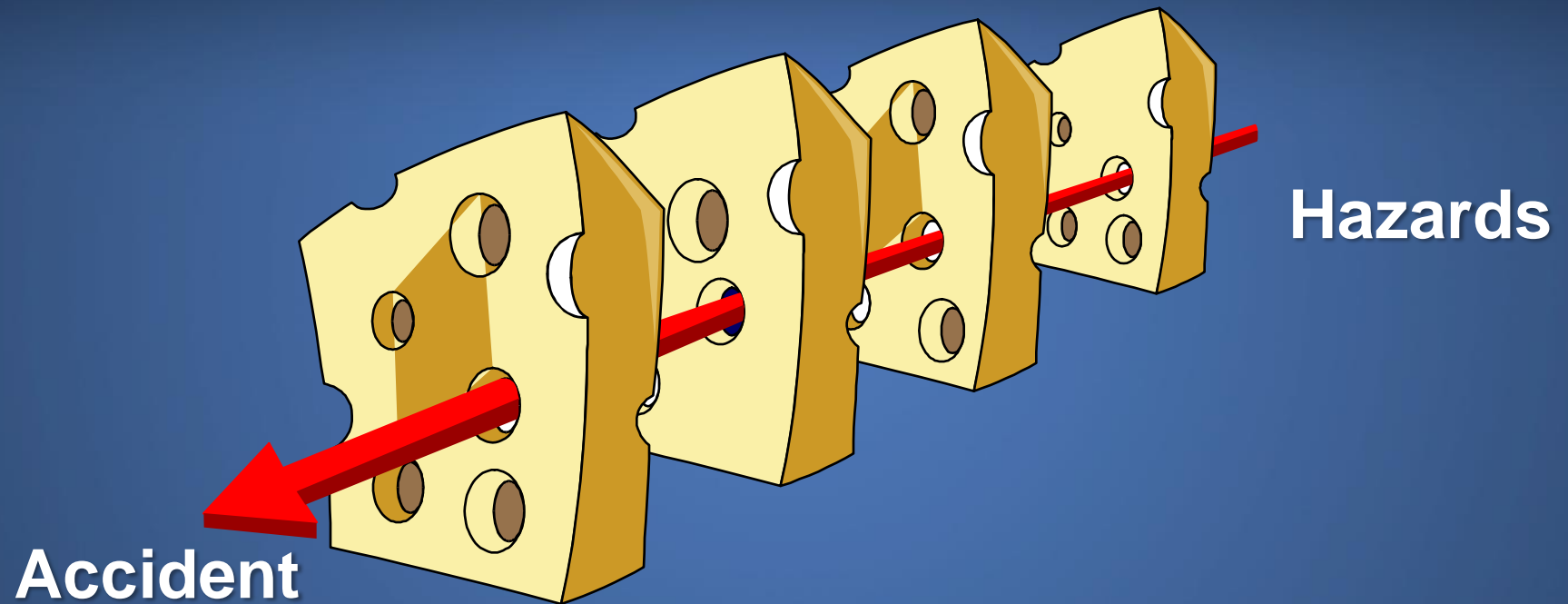




# All Modes



# “Swiss Cheese” Model (Reason)



Successive layers of defenses, barriers, and safeguards

# Miami, OK (June 26, 2009)

10 fatalities  
3 serious injuries  
2 minor injuries  
5 no injuries

Ford  
Windstar



Hyundai  
Sonata

Kia  
Spectra



# 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. . . . ”





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**Animation of Accident Reconstruction**

**Motorcoach Run Off Road-Collision with  
Bridge Signpost**

Interstate Highway 95 Southbound  
New York, New York  
March 12, 2011

HWY11MH005

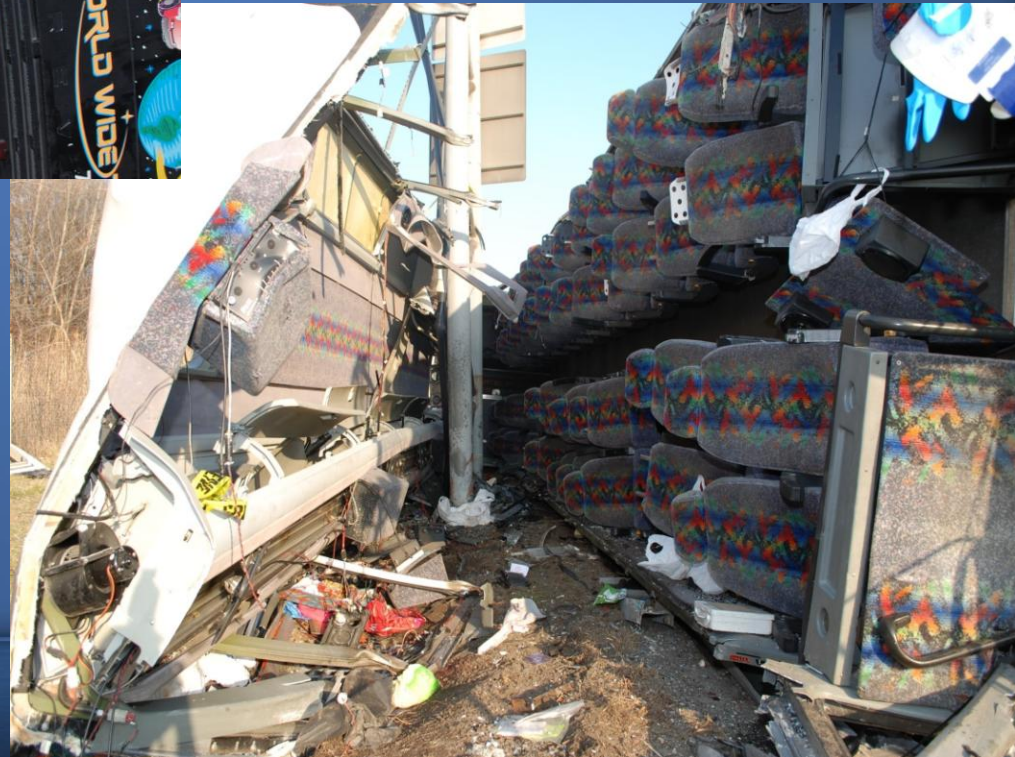


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# 'Bronx Bus', New York, NY (March 12, 2011)



15 fatalities  
17 injuries



# Probable Cause

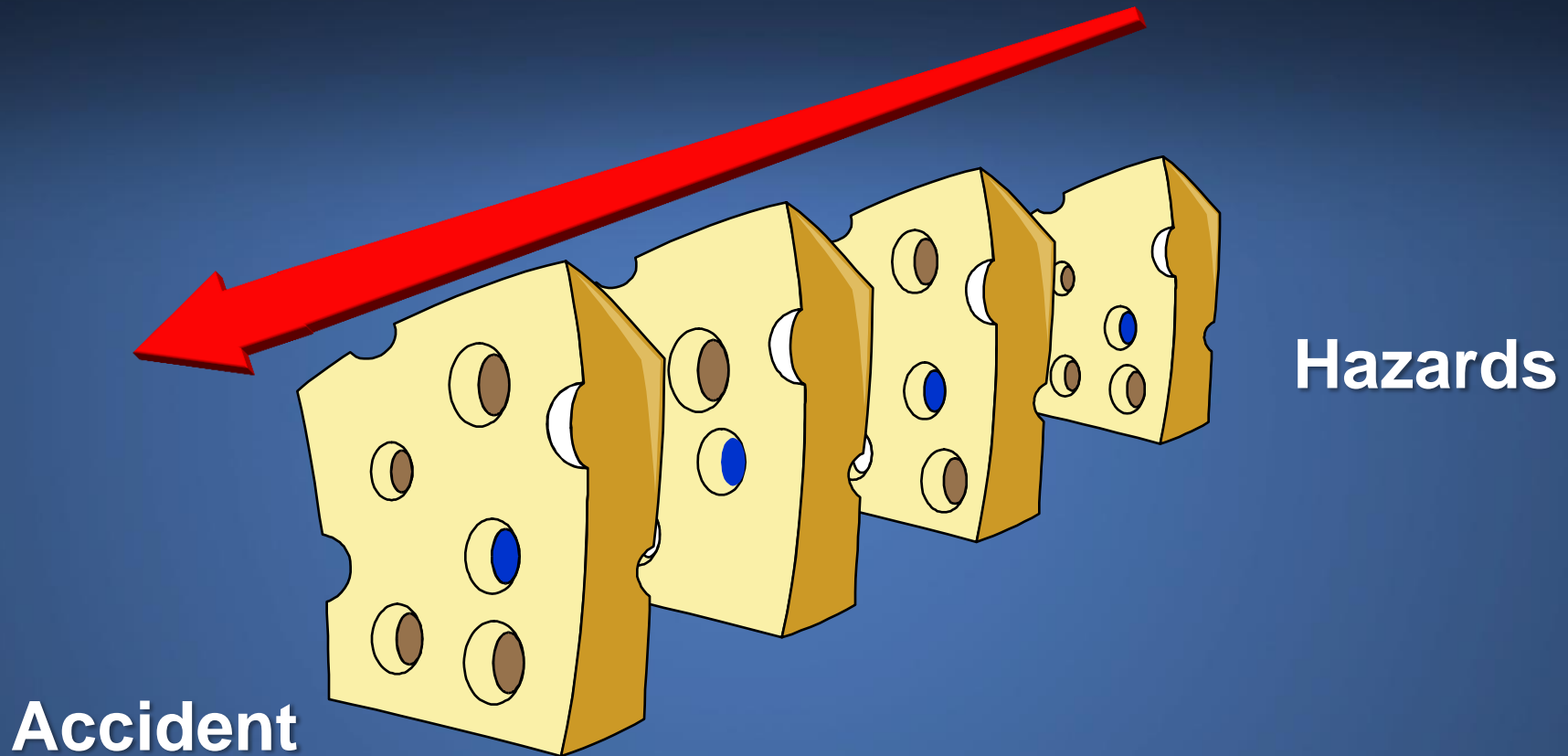
“The National Transportation Safety Board determines that the probable cause of the accident was the motorcoach driver's failure to control the motorcoach due to fatigue resulting from failure to obtain adequate sleep, poor sleep quality, and the time of day at which the accident occurred.”



## #2 More and Better Data

- Identify risks
- Accurate prevalence data
- Quantify costs (safety, health, ??)
- Evaluate strategies/interventions

# The Challenge (Haueter)



Successive layers of defenses, barriers, and safeguards

Honorable John K. Lauber:

No Accident  $\neq$   
Safe Operation



NTSB

# #3 Pervasive Culture Change: New Attitudes and Behaviors

- Society
- Industries
- Organizations
- Individuals







Home > Transportation Safety > Most Wanted List

SHARE   

## MOST WANTED LIST

A program to increase the public's awareness of, and support for, action to adopt safety steps that can help prevent accidents and save lives. The following are ten of the current issues.



Addressing Human Fatigue



General Aviation Safety



Safety Management Systems



Runway Safety



Bus Occupant Safety



Pilot & Air Traffic Controller Professionalism



Recorders



Teen Driver Safety



Addressing Alcohol-Impaired Driving



Motorcycle Safety



# Manage Fatigue = Enhance Safety

- Culture change
- Get educated
- Acknowledge
- Act!



# Changing Safety Culture

Safety goal . . .

→ 0



Good sleep, safe travels.



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