Fatigue Management: NAFMP Quick Overview

Phoenix Metals

May 14, 2026

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Overview

1. Problem of Fatigue
2. Fatigue Management Program
3. Driver Knowledge
4. Driver Skills
5. Next Steps

Poll

Alertness and fatigue are like an on/off switch, you are either awake or asleep

- True
- False

Alertness Spectrum

- **Delta brain waves:** Deep sleep. 1 to 4 Hertz
- **Theta brain waves:** Sleeping or daydreaming when awake. 4 to 8 Hertz
- **Alpha brain waves:** Awake and calm. 8 to 12 Hertz
- **Beta brain waves:** Awake, alert, busy, and focused. 12 to 38 Hertz
  - **Low beta waves:** Thinking. 12 to 15 Hertz
  - **Beta waves:** Performing or focusing. 15 to 22 Hertz
  - **High beta waves:** Excited or anxious. 22 to 38 Hertz
- **Gamma brain waves:** Highly alert and consciousness. 30 to 80 Hertz

Poll

The only cause of fatigue is insufficient sleep

- True
- False

Alertness Has Supply & Demand

- Supply Factors
  - Internal individual susceptibility: circadian rhythm, amount of sleep, time of day, time awake, stimulants, other drugs, health, genes, mood
- Demand Factors
  - Task related: Time on task, task complexity, task monotony
  - Environmental: Road conditions, weather, stress (heat, noise, vibration), vehicle design, social interaction, other stimulation

Poll

In truck/bus crash statistics, driver fatigue is…

- The number 1 cause
- Not a significant cause
- Underrepresented

NTSB Report

- Factors That Affect Fatigue In CMV Crashes
  - The Safety Board believes that the incidence of driver fatigue is underrepresented in FARS in general and in FARS specifically with regard to CMV drivers.
  - Research has suggested that CMV driver fatigue is a contributing factor in 30 to 40 percent of all CMV crashes.

CMV Driving Worsens Fatigue

- Tight schedule to get enough sleep
- Extended work hours + commuting
- Changing work schedules
- Work/sleep periods conflict with circadian rhythm
- Limited time for rest & naps
- Unfamiliar & uncomfortable sleep locations
- Sleep disruptions
- Difficulty finding nutritious food on the road
- Limited opportunities for exercise
- Personal, work and environmental stressors

Poll

Why manage fatigue?

Fiduciary Duty for Lifetime Earnings and Profits

- Lower Fatigue Related Crashes
- Lower Legal Liability Exposure
- Cost Reduction
  - Driver retention
  - Medical costs
  - Maintenance
- Labor force
  - Safer
  - More productive
  - Healthier & happier
- Articles
  - Nailing the Top Ten Industry Issues through Fatigue Management
    - Part One
    - Part Two

Fatigue Management Program (FMP)

- Safety Culture
  1) Education
  2) Training
  3) Continuous communications – Including partnerships
- Fatigue Risk Management System
  1) Operations
  2) Identify risks with processes and controls
     - Predictive, proactive, reactive
     - Sound scheduling, sleep disorders management program, fatigue detection technologies
  3) Risk assessment
  4) Measures and countermeasures
  5) Evaluation

Module 2: Safety Culture and Management Practices

Reminders, Please

- Not medical professional
- Consult your medical provider before following any lifestyle recommendations or if you feel any discomfort
- You are responsible for any consequences of following any recommendations provided
- Be aware and try to eliminate the stigma associated sometimes with sleeping, metabolic diseases, substance abuse and mental health
- Do not allow any recommendations cause you to worry or become obsessed with a toxic wellness culture

Poll

What will kill you faster?

- No Sleep
- No breathing
- Starvation
- Dehydration

Importance of Sleep: Biology

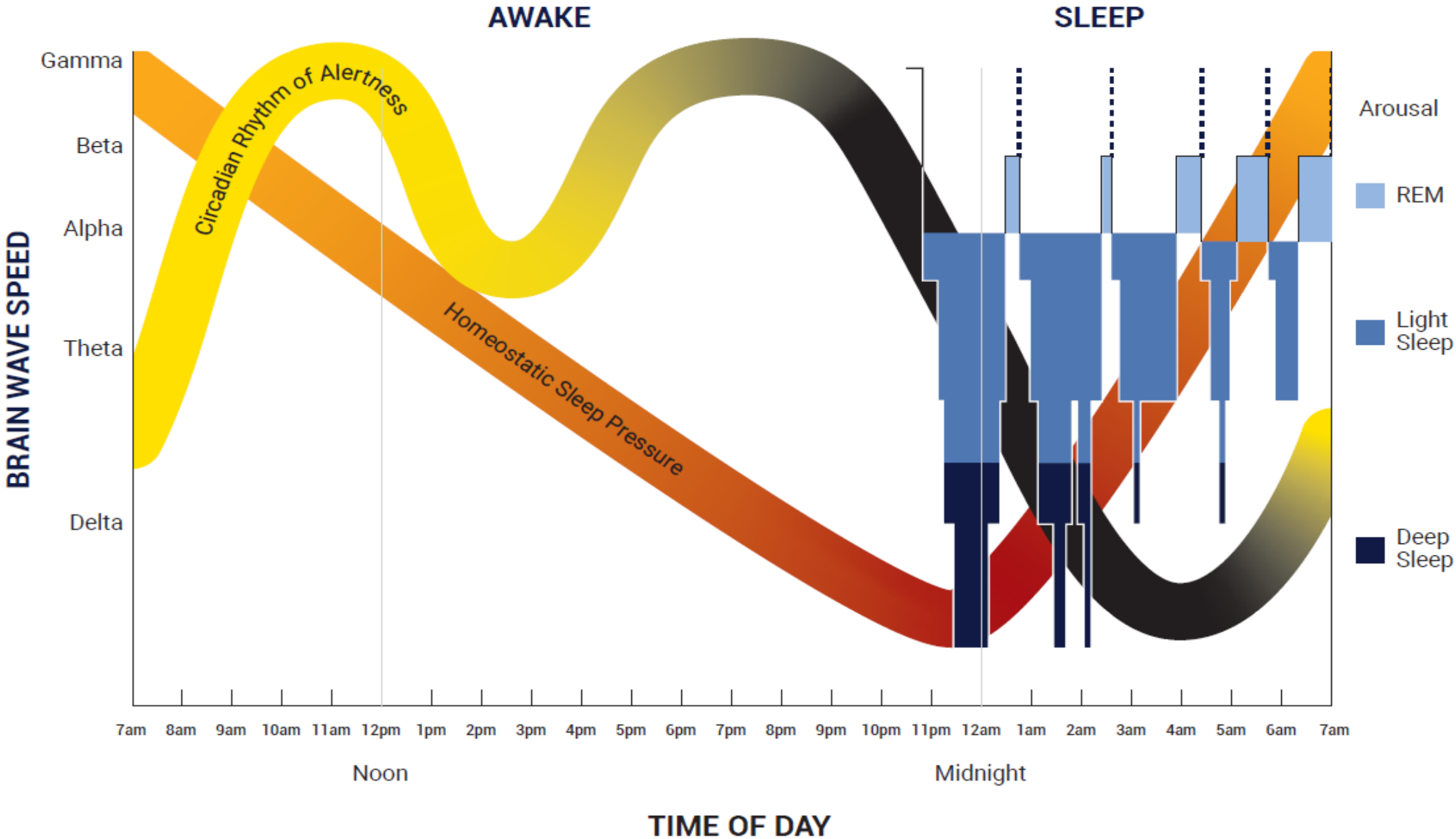
Sleep Functions

- Energy recharge
- Cellular restoration
- Brain function
- Emotional wellbeing
- Metabolism maintenance
- Immunity enhancement
- Heart health

- Webinar: Sleep Hygiene

Sleep Deprivation Effects

- Metabolic Syndrome
- Reduced immune system functioning
- Gastrointestinal problems
- Disrupts relationships
- Worsens psychiatric conditions
- Decreased quality of life
- Increased sick days


AWAKE
SLEEP
Gamma
Beta
Alpha
Theta
Delta
BRAIN WAVE SPEED
Circadian Rhythm of Alertness
Homeostatic Sleep Pressure
Arousal
REM
Light Sleep
Deep Sleep
7am 8am 9am 10am 11am 12pm 1pm 2pm 3pm 4pm 5pm 6pm 7pm 8pm 9pm 10pm 11pm 12am 1am 2am 3am 4am 5am 6am 7am
Noon
Midnight
TIME OF DAY

Energy Stimulation Hygiene

- Light
- Temperature
- Sound
- Substances
  - Food
  - Caffeine
  - Alcohol
  - Nicotine
  - Amphetamines
  - Medications

Energy Release Hygiene

- Exercise
  - Early: Cardio & Strength
  - Anytime: Stretching & Breathing (Blow your nose & sleep position)
- Make bed the sleep trigger
  - Spine alignment
    - Supportive bed & pillows
- If cannot sleep and are anxious
  - Get up
  - Don’t throw a party
  - Do something relaxing
- Relax
  - Land worries on paper
  - Meditate, practice yoga, pray or read something calming
  - Intimacy

Poll

What is the optimal duration of a nap?

- 5 min
- 20 min
- 60 min
- 90 min
- 120 min

Naps & Sleep Inertia

- Naps
  - Best fatigue countermeasure
  - Improves alertness & performance
  - Planned naps reduced subsequent dozing by 50% & errors by 34%
  - Optimal duration 20 min / 90 min
  - Longer naps may delay onset of next main sleep
- Sleep inertia
  - Grogginess upon awakening
  - May last 20 minutes or more
  - May affect driving
  - Caffeine may help

Facts

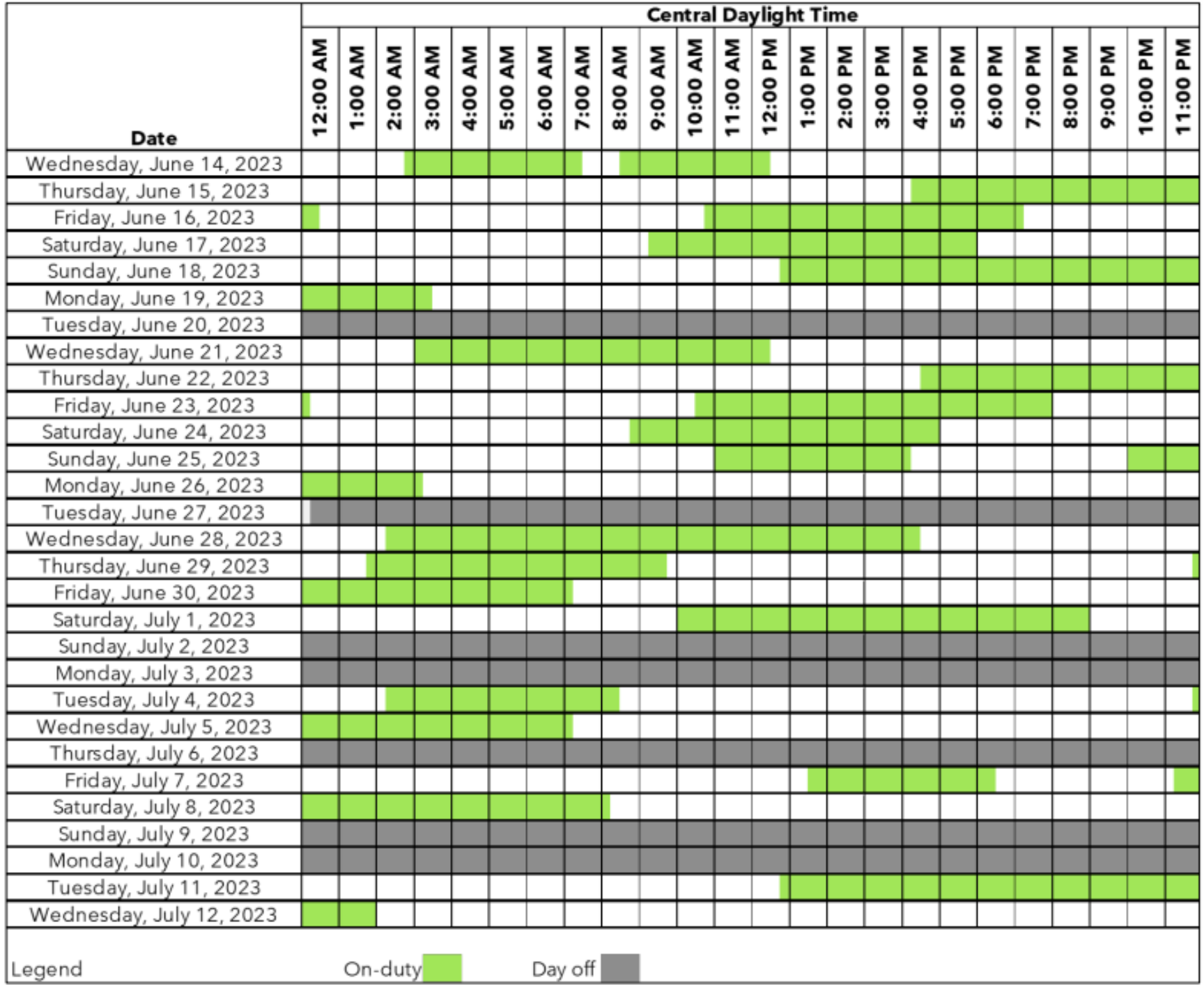
- At 1:48 a.m. July 12 2023, a motorcoach carrying 21 people veered off Interstate 70 near Highland, Illinois, colliding with three parked combination vehicles
- Three passengers died
- The driver and 11 other passengers sustained injuries of varying severity

Source: NTSB
https://www.ntsb.gov/investigations/Pages/HWY23MH015.aspx

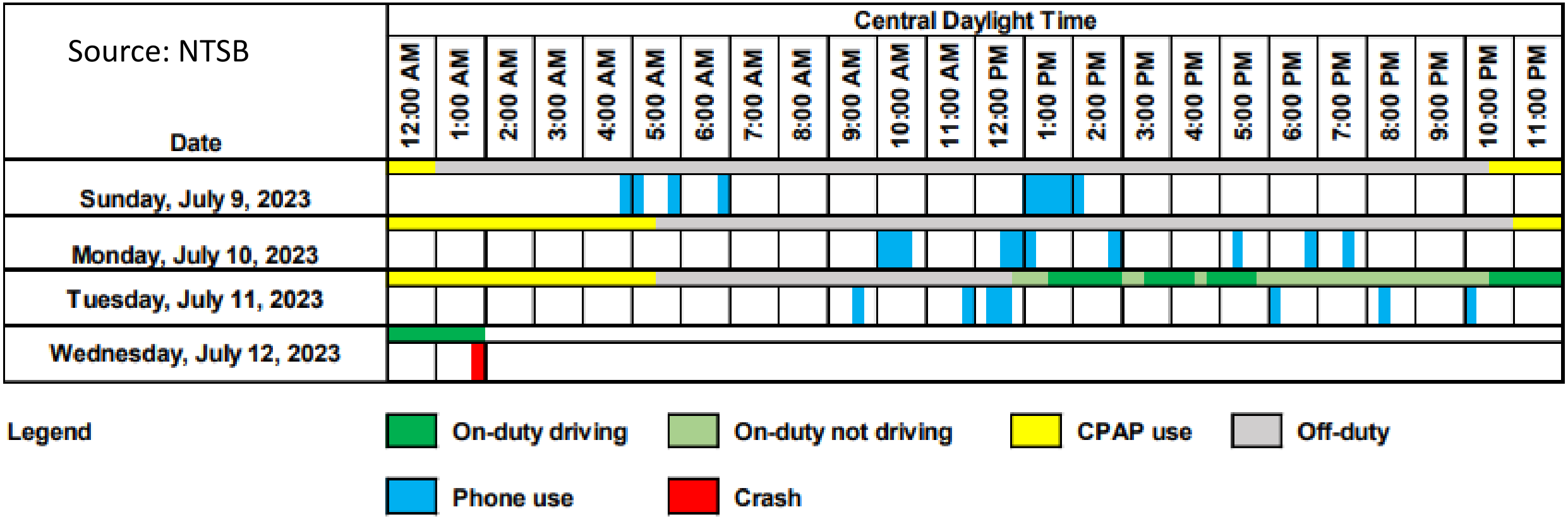

Mack combination unit
Kenworth combination unit
Prevost motorcoach
Freightliner combination unit
Direction of travel
N
Source: NTSB

Schedule

Source: NTSB



Schedule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Central Daylight Time
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7:00 AM
8:00 AM
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10:00 AM
11:00 AM
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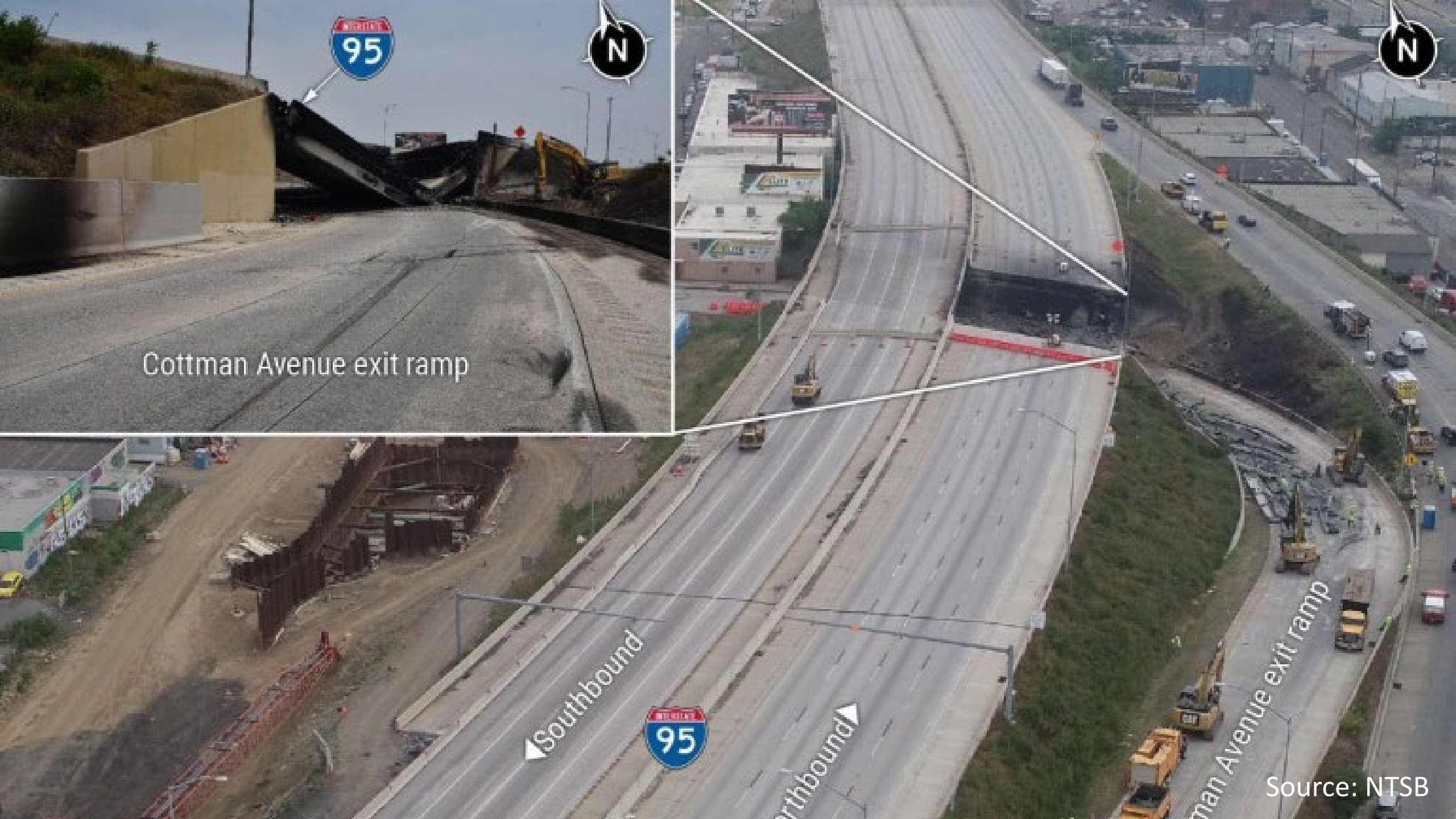
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Sunday, July 9, 2023
Monday, July 10, 2023
Tuesday, July 11, 2023
Wednesday, July 12, 2023
Legend
On-duty driving
On-duty not driving
CPAP use
Off-duty
Phone use
Crash

Facts

- At 6:17 a.m. June 11 2023, a truck-tractor with a tank trailer carrying 8,500 gallons of gasoline crashed while exiting northbound I-95 in Philadelphia, Pennsylvania
- The driver lost control on a curved exit ramp, causing the truck to overturn and strike a concrete barrier
- The resulting fire destroyed the truck, caused the collapse of northbound I-95 lanes and fatally injured the truck driver

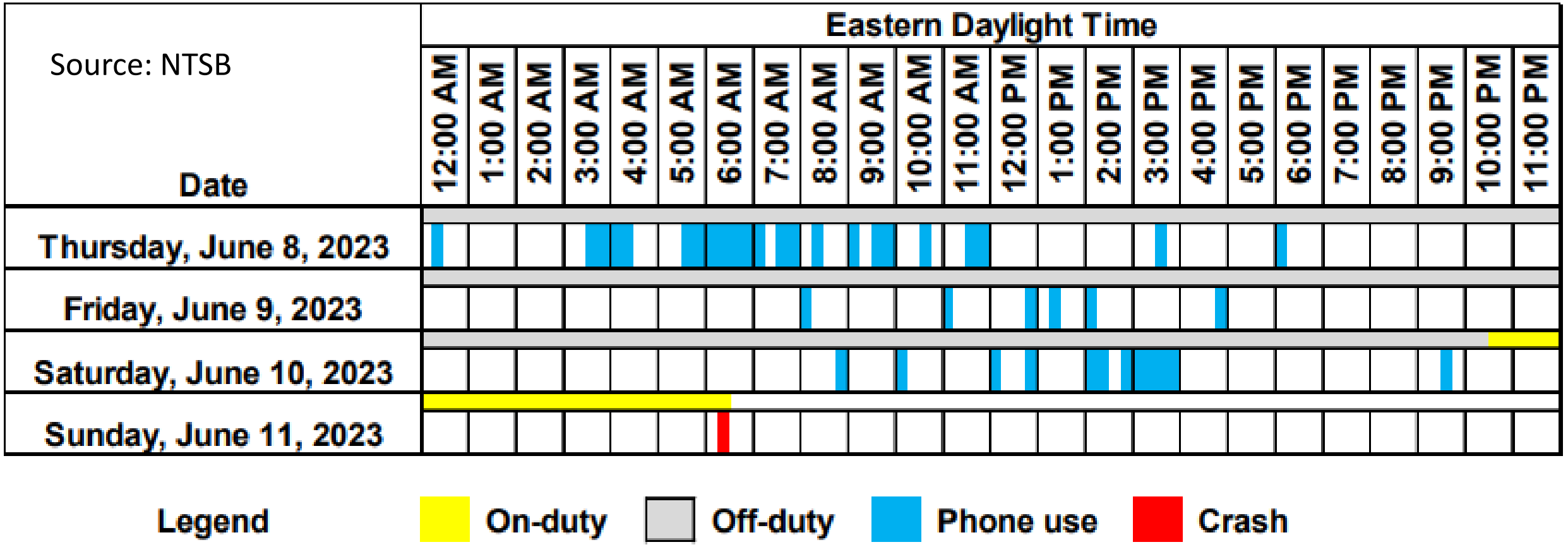
Source: NTSB

https://www.ntsb.gov/investigations/Pages/HWY23FH014.aspx


95
N
Cottman Avenue exit ramp
Southbound
95
N
Cottman Avenue exit ramp

Source: NTSB

Schedule


Source: NTSB
Eastern Daylight Time
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2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Date
Thursday, June 8, 2023
Friday, June 9, 2023
Saturday, June 10, 2023
Sunday, June 11, 2023
Legend
On-duty
Off-duty
Phone use
Crash

Facts

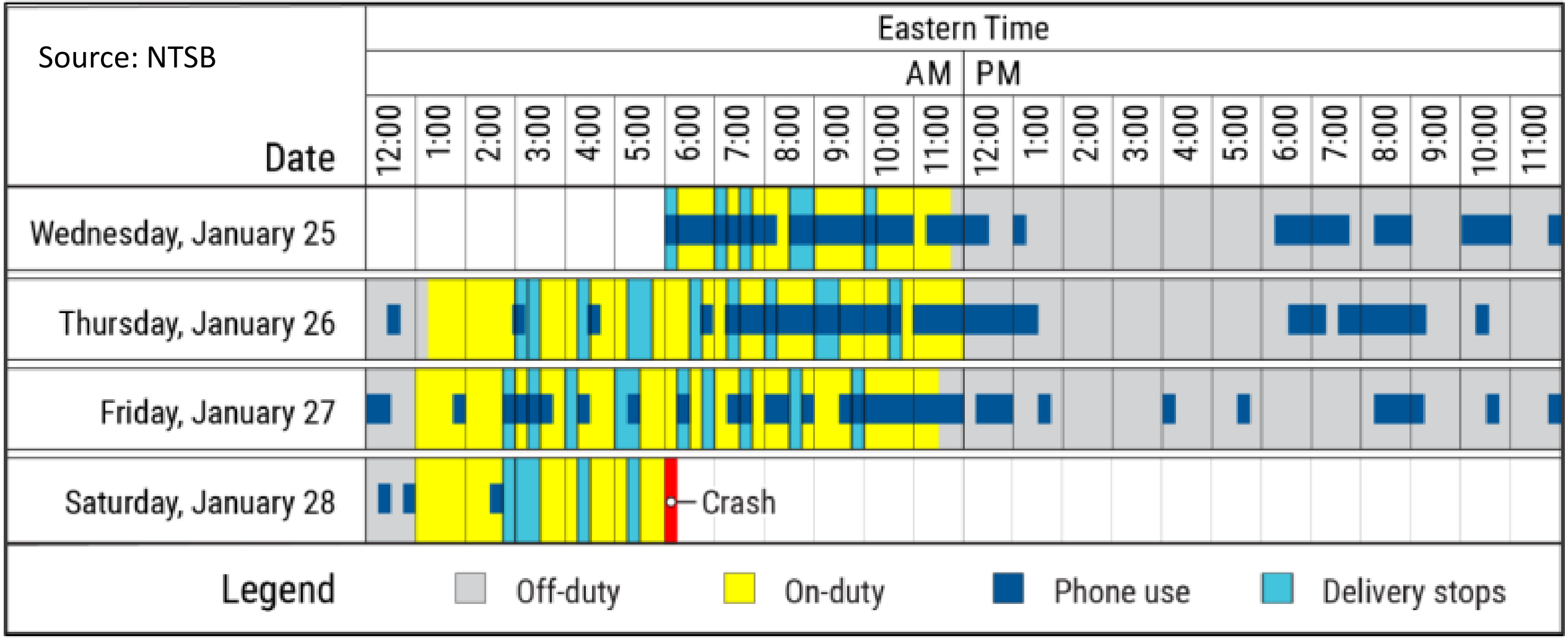
- At 6 a.m. Jan. 28 2023, a bus and a box truck collided head-on on New York State Route 37 in Louisville, New York
- The truck crossed the centerline striking the bus, which was transporting workers to a construction site
- This crash resulted in six fatalities, two serious injuries and five minor injuries among the bus passengers, along with minor injuries to the bus driver and serious injuries to the truck driver

Source: NTSB

https://www.ntsb.gov/investigations/Pages/HWY23FH005.aspx

Source: NTSB

Schedule


Source: NTSB
Eastern Time
AM
PM
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12:00
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3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
Wednesday, January 25
Thursday, January 26
Friday, January 27
Saturday, January 28
Crash
Legend
Off-duty
On-duty
Phone use
Delivery stops

Facts

- At 1:36 a.m. Dec. 16 2022, a truck-tractor with a semitrailer crashed into the rear of a slower-moving bus on Interstate 64 near Williamsburg, Virginia
- The truck, traveling between 65 and 70 mph with cruise control, did not brake before impact, while the bus was moving at 20 to 25 mph
- The collision resulted in the deaths of three bus occupants, serious injuries to nine bus occupants and the truck driver, and minor injuries to 11 bus occupants

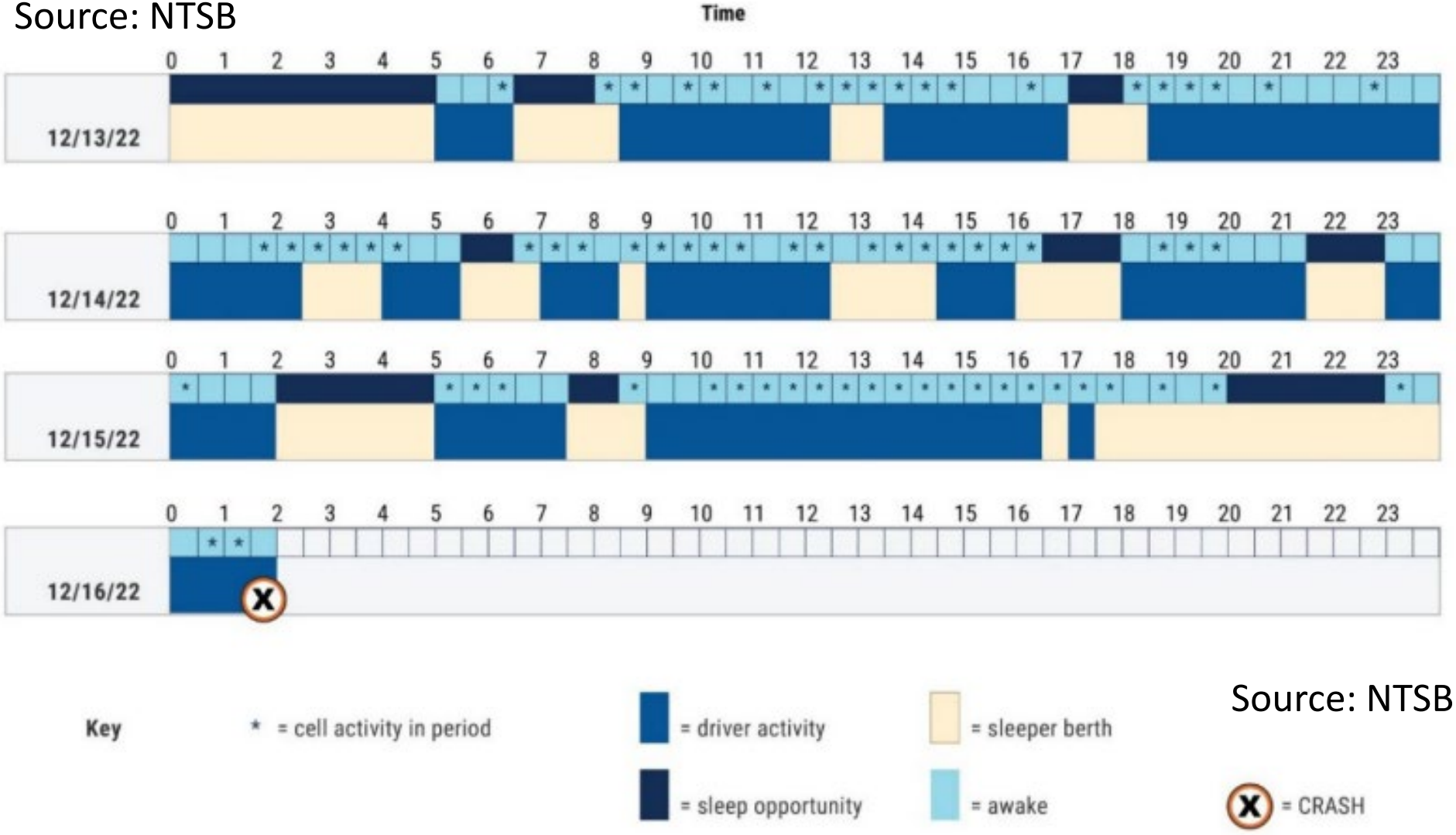
Source: NTSB

https://www.ntsb.gov/investigations/Pages/HWY23MH004.aspx

Source: NTSB

Schedule

Source: NTSB



Source: NTSB

Facts

- At 10:07 p.m. June 9 2021, a truck-tractor with a tank trailer crashed into a queue of stopped passenger vehicles on SR-202 in Phoenix, Arizona
- Traveling at 62-64 mph without slowing or steering, the truck initiated a chain-reaction collision involving seven other vehicles
- The crash resulted in four fatalities and 11 injuries among passenger vehicle occupants, with the truck-tractor and one car consumed by fire

Source: NTSB

https://www.ntsb.gov/investigations/Pages/HWY21MH008.aspx

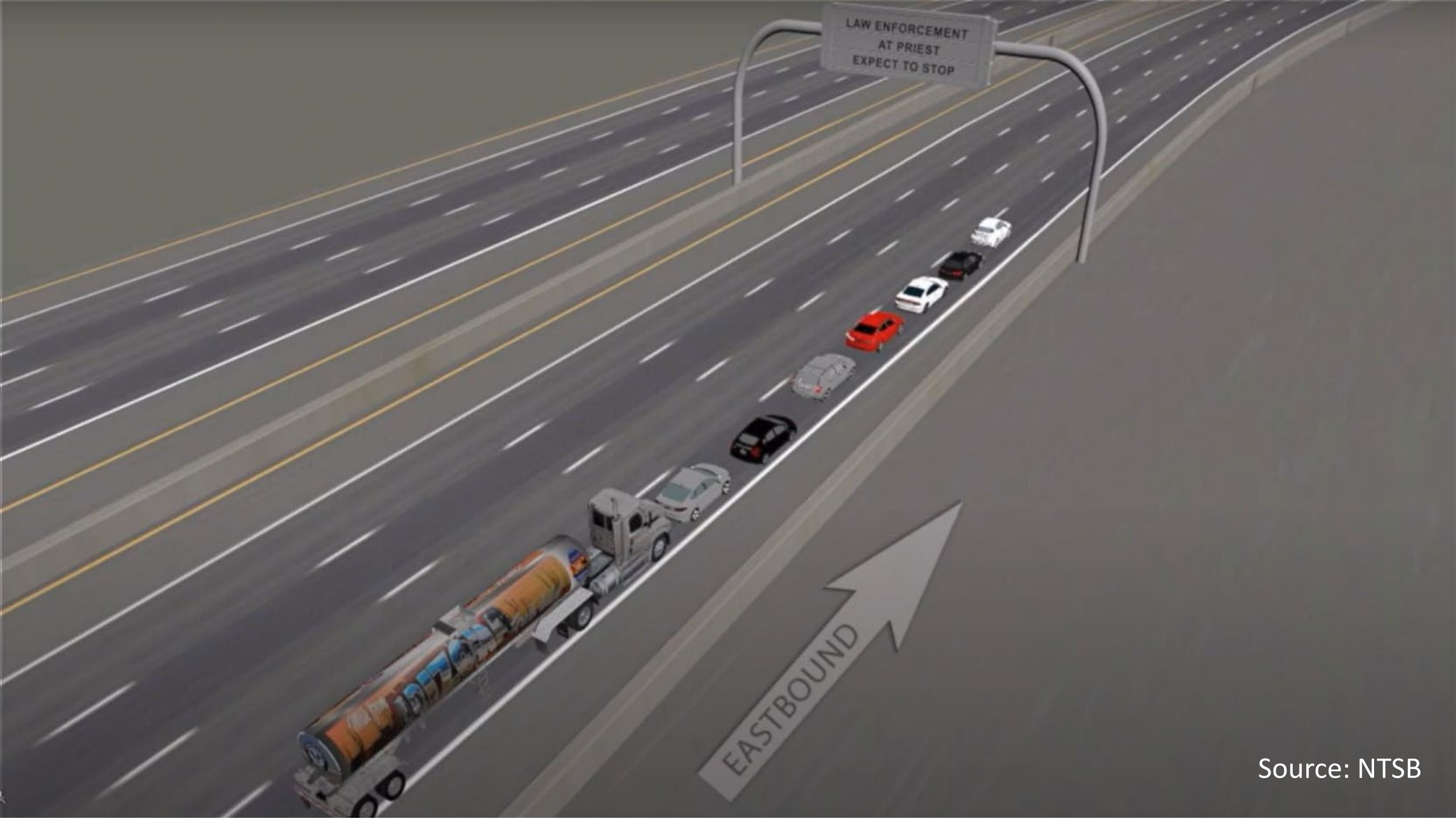
Source: NTSB

Source: NTSB

Source: NTSB


Source: NTSB

Source: NTSB



Source: NTSB


Tank trailer
Chevrolet
Truck tractor
Nissan
Lexus
Mercedes
Dodge
EASTBOUND
Toyota
Ford
Fatally injured: 4 persons
Hospitalized: 11 persons

Source: NTSB

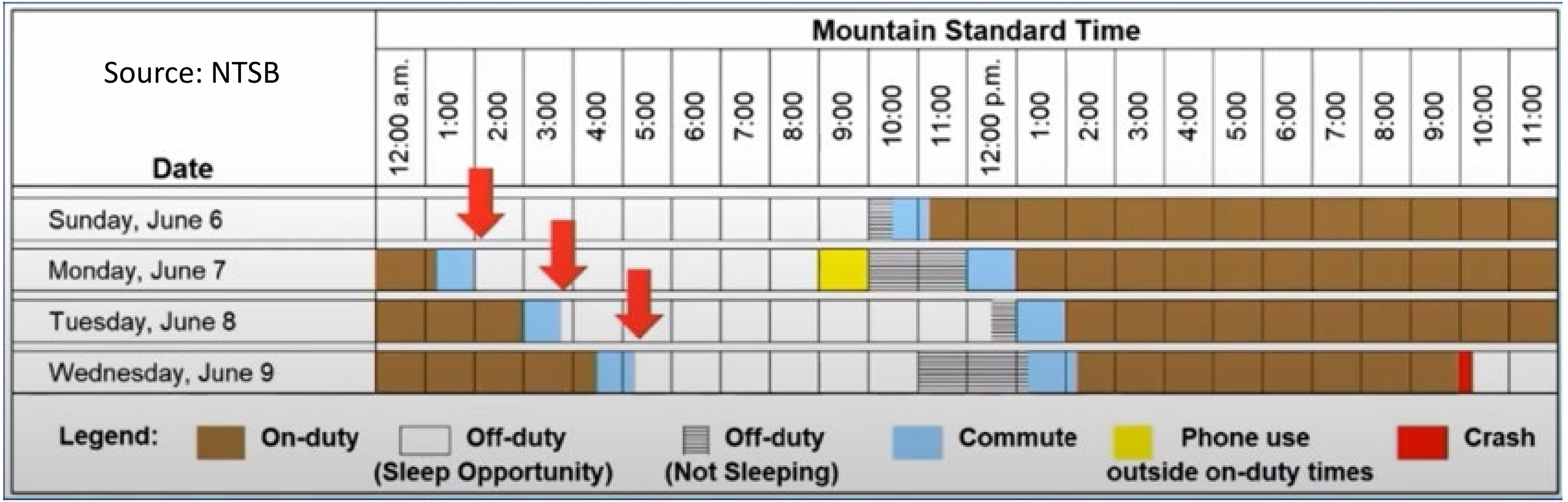

Toyota
Mercedes
Ford
Right shoulder barrier


Truck-tractor
Chevrolet

Source: NTSB

Schedule

Source: NTSB



Facts

- At 6:45 a.m. June 12 2020, a truck-tractor with a semitrailer struck the end of a slowed and stopped traffic queue on Interstate 39 near Arlington, Wisconsin, which had formed due to prior collisions
- This initiated an eight-vehicle crash that resulted in four fatalities and three serious injuries

Source: NTSB

https://www.ntsb.gov/investigations/Pages/HWY20FH006.aspx


Peterbilt truck-tractor
Mack truck
Freightliner truck-tractor
VW sedan
Kia SUV
Source: NTSB

Poll

What is the single most important predictor of wellbeing and longevity?

1. Low cholesterol
2. Not smoking
3. Warm relationships
4. VO_2 max
5. Meditation
6. Normal blood pressure

Relationships Affect Wellness

- Stress with isolation from family & friends
- Finding and sustaining network of family, friends & coworkers
- Keep in touch, communicate
- Value and foster each relationship
- Do fun things together
- Be positive
- Show support
- Have family take Module 4 (Family Ed)

Webinar: Nurturing Positive Relationships

Positive Behaviors

- Positive outlook and behaviors
- Balance between work and personal life
- Pursue personal interests
- Support network
- Try to improve job environment
- Get serious about relaxing
  - Relaxation breathing
  - Short walks
  - Meditation
  - Reading
  - Find method that works best for you

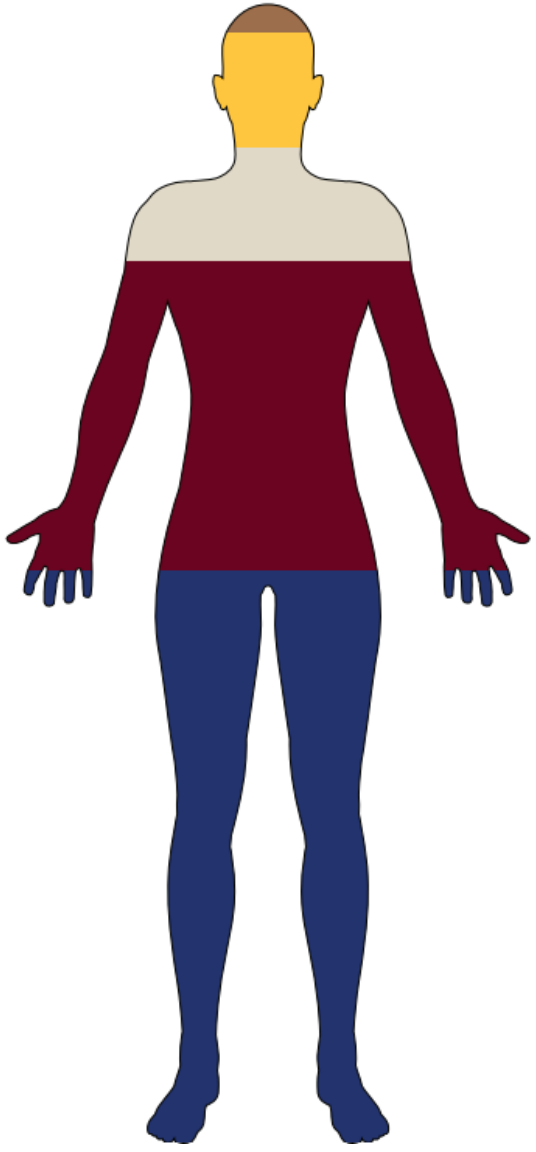
Webinar: Mindfulness

Poll

Where does weight come from in the body (heaviest to lightest)?

- Visceral fat
- Bones
- Subcutaneous fat
- Liquids
- Muscle

What Makes Up Body Weight?



- LIQUIDS
- MUSCLE
- BONES
- SUBCUTANEOUS FAT
- VISCERAL FAT

Nutrition

- Essential Macronutrients
  - Carbs with Fiber (veggies, fruits, whole grains)
  - Fats except artificial trans fats (fatty fish, nuts, seeds, avocado, milk products)
  - Proteins (fish, seafood, chicken, beef, pork)
  - Water
- Essential Micronutrients
  - Vitamins
  - Minerals
- Nutritious food
  - No ingredients list
  - No nutrition label
  - No health claims

Webinar: Nutrition

Malnutrition

- Ultra processed food
  - Lack of fiber
  - Excess sugar, salt, oils, fats and other additives
  - Engineered to taste good
  - Cheap & convenient
  - Aggressively marketed
  - Addictive
- Liquid candy
  - Soda
  - Juice
  - Any caloric drink

- Toxic to the liver and brain
  - Excess sugar
  - Excess protein
  - Drugs

10 Types of Snacks for the Road

1. Unsweetened drinks: Water, sparkling water with lime/lemon, coffee, tea, herbal infusions
2. Any seeds: Pumpkin, sunflower, cacao nibs, flax, chia, hemp
3. Any nuts: Almonds, walnuts, pecans, cashews, pistachios
4. Any veggies: Romaine hearts, celery, carrots, cucumber, cherry tomatoes, bell peppers
5. Any fruits: Berries, apples, oranges, clementines, bananas, plums, pears, pineapple
6. Spreads: Guacamole, hummus, plain yogurt/Greek, plain nut butters, cheese, pesto
7. Not so smooth smoothies (keep the fiber): Made with any of those above
8. Any protein: Boiled eggs, rotisserie chicken, ribs, lamb/steak skewers, sashimi, fish fillet
9. Beans: Pinto, black, kidney, edamame, chickpeas
10. Minimally processed cereals: Steel cut oatmeal, barley, bulgur, brown rice, plain popcorn

Sample Food Choices on the Road

- Breakfast
  - Eggs any style with veggies instead of fries, veggie omelet
  - Fruit with nuts, plain yogurt, or cheese
  - Drop at least one side of the bread on egg sandwich
  - Avoid cereals
- Lunch & Dinner
  - Any protein with cooked veggies
  - Any protein with uncooked veggies (salads, bare burger/sandwich loaded w/veggies)
  - Order steak or ribs with collard greens, spinach or other veggies
  - Drop ultra processed sides: fries, mashed potatoes, mac & cheese and other
  - Have the burrito bowl without the tortilla
  - Make fruits your go to dessert alone or with nuts, plain yogurt, or cheese
- Don’t feel guilty when deviating into wrong lane, just don’t stay there

Caffeine

- Alerting effects:
  - Begin in ~20 minutes
  - Peak in 60-90 minutes
  - Can last for hours
- Caffeine content in coffee varies widely
- Tea has about ½ the caffeine of coffee
- Large individual differences in the time required to metabolize caffeine
- Drink in small sips to “nurse” the cup over a longer period
- Like any stimulant, caffeine makes sleep more difficult
- Generally, avoid caffeine within 6-8 hours of main sleep period
- Effects vary - some people are even more sensitive
- Reduce caffeine intake
- Increase time between last dose & bedtime

Alcohol

- Not permitted in CMVs
- Some drivers may use alcohol as a sleep aid at home.
- Alcohol may make you sleepy, but it actually *disrupts* sleep:
  - Disrupts REM sleep
  - Causes “rebound” awakening after a few hours
- Disruptive effects increase with age
- Performance impairment effects greater when you are also sleepy
- Alcohol makes OSA worse

Smoking & Tobacco Use

- Leading preventable cause of disease, death, and disability
- ~20% of Americans smoke, but nearly **half** of CMV drivers do
- Causes lung cancer, COPD and other lung diseases, heart disease, and many other medical conditions
- >$1,000 per year in medical costs for each smoker
- Reduces oxygen flow to the brain; worsens OSA
- Strategy: ***QUIT!!!***
  - See your doctor
  - Call 1-800-QUIT-NOW
  - Click www.smokefree.gov or
  - Click www.hc-sc.gc.ca

Amphetamines

- Illegal or available only with a prescription
- Too strong for general use
- Increase activity level but do not improve performance reliably
- Increase heart rate and metabolism, sometimes dangerously
- Often you “crash” several hours after use

Sleeping Pills

- Hypnotics = drugs used to induce sleep
- Some also used to treat anxiety and stress disorders
- General categories:
  - Non-prescription Over-The-Counter (OTC); e.g., Tylenol PM, Benadryl
  - Prescription:
    - Benzodiazepines (e.g., Halcion, Restoril)
    - Nonbenzodiazepines (e.g., Ambien, Lunesta)
- No sleeping pill provides 100% natural sleep
- Most have side effects
- Most are habit-forming
- Some cause withdrawal symptoms
- Must allow full time for drug to leave your body before driving

Other Medications

- Common side effects:
  - Drowsiness
  - Other fatigue
  - Insomnia
- Accordingly, many prescriptions specify when the drug should be taken (e.g., at bedtime)
- Follow dosage instructions carefully
- Safety regulations restrict driver on-road use of medications with stated fatigue side effects

Exercise

1. Cardiopulmonary
2. Strength bearing
3. Stretching & balancing

- Enhances alertness
- Promotes better sleep
- Lowers stress
- 10-minute walks twice or more per day
- Work out more vigorously on weekends
- Take exercise equipment with you on trips
- Keep a record of your exercise
- Set daily and weekly goals
- Find out what you like and do it

Webinar: Exercise

2026 Q1 Guardian

The Second Single Most Important Predictor of Wellness and Longevity

*By **Rodolfo Glacoman**, Fatigue Management Specialist, Commercial Vehicle Safety Alliance*

If you have seen my presentations, chances are you heard me say that the single most important predictor of well-being and longevity is positive personal relationships. I was surprised to learn how our social interactions have such an overwhelming impact on our physical health. The underlying reason is that warm relationships are a powerful stress regulator. If you are interested in the scientific evidence validating it, please see the previous two pages and check out the fourth quarter 2023 "Guardian" article, "The Alertness Equation: How Positive Relationships Add Up."

So, based on that, should we just concentrate on positive relationships and forget about mindfulness, exercise, nutrition and sleep hygiene? Should we just party with others, including drinking alcohol and smoking? Don't I wish.

Wellness and longevity, just like fatigue, are multifactorial. And while maintaining positive relationships may be the most important factor, it is not the only one. The second single most important predictor of wellness and longevity is cardiorespiratory fitness measured by the "VO2 max rate." VO2 max is the maximum volume of oxygen our body can utilize during intense or maximal exercise. It measures how many milliliters (Volume) of oxygen (O2) our body can process per minute.

Solid Predictor of Longevity

Large-scale studies, including a landmark 2018 study published in JAMA Network Open involving over 120,000 participants, found that cardiorespiratory fitness, measured by VO2 max, is a stronger predictor of death than traditional risk factors like smoking, diabetes or high blood pressure.

The data suggests that the higher our VO2 max, the lower our risk of premature death. Most notably, there appears to be no ceiling to this benefit as extreme fitness is associated with the lowest risk of mortality.

Healthspan vs. Lifespan

While VO2 max predicts how long we will live (lifespan), it is even more critical for healthspan, the period of life spent in good health. VO2 max naturally declines with age, roughly 10% per decade after age 30. By starting with a higher peak, we ensure that even after decades of decline, we remain above the threshold of frailty.

High aerobic fitness is linked to better insulin sensitivity and mitochondrial function, significantly lowering the risk of Type 2 diabetes and metabolic syndrome, a group of conditions that increase the risk of heart disease, stroke and Type 2 diabetes. The evidence shows that improving VO2 max provides a protective effect across multiple systems.

It reduces arterial stiffness and strengthens the heart muscle, thereby lowering the risk of stroke and heart attack. Higher fitness levels are correlated with a lower risk of dementia and Alzheimer's disease, likely due to increased blood flow and oxygen delivery to the brain. Higher VO2 max levels are associated with lower rates of certain cancers, particularly lung and colorectal cancers.

For drivers, VO2 max acts as a physiological buffer. A high VO2 max means that the cost of daily life (walking, lifting, staying alert) represents a smaller percentage of total capacity. This results in less systemic stress, lower cortisol levels and better recovery from the physical demands of the driving task.

What It Actually Measures

VO2 max measures the efficiency of our entire oxygen supply chain, from the moment we take a breath to the moment that oxygen is converted into energy in our muscles.

The Oxygen Supply Chain System

Here are the five stages of the oxygen supply chain system from a logistics perspective:

Supply Chain Stage	Biological Component	Logistical Process	Potential Bottleneck
Port of Entry	Lungs, Pulmonary Ventilation	Oxygen is offloaded from the atmosphere into the bloodstream via the alveoli	Limited air exchange or restricted dock surface area
Loading Cranes	Heart, Cardiac Output and Stroke Volume	The heart generates the lifting power to push the oxygen-filled blood into the transport network	Small stroke volume, the crane moves less volume per cycle, and not fast enough crane or heart rate
Delivery Fleet	Blood, Hemoglobin and Red Blood Cells	The trucking fleet that physically holds the oxygen containers and moves them through the system	Low red blood cell count, fewer trucks available to be loaded
Local Infrastructure	Capillaries, Micro-circulation	The last-mile delivery streets that branch off the main highway to reach individual muscle cells	Low capillary density, lack of off-ramps to get trucks to the factories
Factory	Muscles, Mitochondria	The end user that consumes oxygen containers to manufacture the final product, ATP or cell energy	Low mitochondrial density, fewer production lines to process the supply

When measuring VO2 max, we are measuring the total capacity of this system to move oxygen from the port of entry all the way to the factory at peak demand. If any single stage of this supply chain reaches its limit, the VO2 max rate will plateau.

Methods to Measure or Calculate VO2 Max

Laboratory vs. Clinical Standards
The Metabolic Cart and Bruce Protocol are the most rigorous. While the Metabolic Cart measures actual gas exchange, the Bruce Protocol uses a specific treadmill formula. These are excellent for drivers who need a definitive medical-grade baseline for their health records or U.S. Department of Transportation (DOT) exam readiness. *(See Important Safety Notice.)*

Performance-Based Estimates
The Cooper 12-Minute Run and Beep Test use high-intensity performance to work backward and predict oxygen use. These are great for drivers who are already active and want a benchmark of their engine's maximum power without needing a lab. *(See Important Safety Notice.)*

Low-Impact and Accessible Methods
The Rockport Walk and Step Test are the most practical for life on the road. They provide a solid estimate of your cardiovascular health without requiring you to run at full speed, making them safer to perform at a truck stop. *(See Important Safety Notice.)*

Data-Driven and Stationary Calculations
The CERG Calculator is a research-based desktop method. It requires zero physical exertion, using population data to estimate your fitness based on your age, BMI, resting heart rate and exercise habits.

The Heart Rate Ratio is the most convenient calculation of all. By simply knowing resting and maximum heart rates, we can get a quick ballpark figure of the heart's efficiency anywhere.

Continuous Monitoring
Wearables (watches, rings, etc.) calculate the trend of your supply chain efficiency over months. For a driver, seeing this score improve over the long haul is a great sign that the cardiovascular system is becoming more resilient.

How to Improve VO2 Max

To upgrade your oxygen supply chain, you need a two-pronged approach: Building a massive infrastructure (Zone 2 training) and upgrading your loading cranes (high-intensity interval training (HIIT)). *(See Important Safety Notice.)*

Building Infrastructure: Zone 2 Training
Zone 2 is low-intensity, steady-state cardio exercise where one can hold a conversation uncomfortably without gasping for air. For drivers, this is the most sustainable way to train. The goal is to build more local infrastructure, or capillaries, and more factories, or mitochondria. Zone 2 training makes our bodies better at burning fat for fuel. This keeps our energy levels stable during a long day shift and prevents energy crashes that lead to fatigue.

Drivers should start with 30-45 minutes and increase it gradually, three to four times a week. Heart rate should stay at roughly 60-70% of maximum or when it is still possible to speak entire sentences, but uncomfortably.

Upgrading Loading Cranes: HIIT Training
HIIT involves short bursts of maximum effort followed by recovery. The goal is to upgrade the loading cranes or heart. HIIT forces the heart to pump the maximum amount of blood possible per beat, which physically stretches and strengthens the heart chambers, increasing stroke volume. This raises the ceiling. It makes physical tasks – like tarping a load or cranking a landing gear – feel significantly easier because your heart is now over-indexed for the task.

Drivers should start with 2-4 minutes of hard effort, followed by 1-3 minutes of easy movement. Repeat this at least four times. Doing this once or twice a week will result in observable gains in VO2 max.

Efficiency Barrier: The Lactate Threshold
While VO2 max is the total horsepower, the lactate threshold determines how much of that power can be used for a long time. Lactate is a byproduct of energy production. At lower intensities, the body clears it as fast as it makes it. But as we push harder, we hit a point where lactate builds up in the blood faster than we can remove it, and this is the Lactate Threshold.

If our threshold is low, we will feel burned out and physically exhausted very quickly. By doing both Zone 2 and HIIT, we push our threshold higher. This allows us to work at a higher percentage of VO2 max without redlining the system.

Continued on next page

IMPORTANT SAFETY NOTICE

The information provided here is for educational and informational purposes only and is not intended as medical advice. VO2 max testing, especially high-intensity protocols like the direct lab test, Bruce Protocol, Cooper Run or Beep Test, places significant stress on the cardiovascular and respiratory systems.

Before attempting any VO2 max test, starting a new exercise program or changing your physical activity level, you must consult with a qualified healthcare professional (such as a doctor, cardiologist or U.S. DOT medical examiner). This is especially critical if you:

- ⚠ Have a history of heart disease, high blood pressure or respiratory issues
- ⚠ Are managing chronic conditions like diabetes or obesity
- ⚠ Experience chest pain, dizziness or shortness of breath at rest or during activity
- ⚠ Have been sedentary for a long period

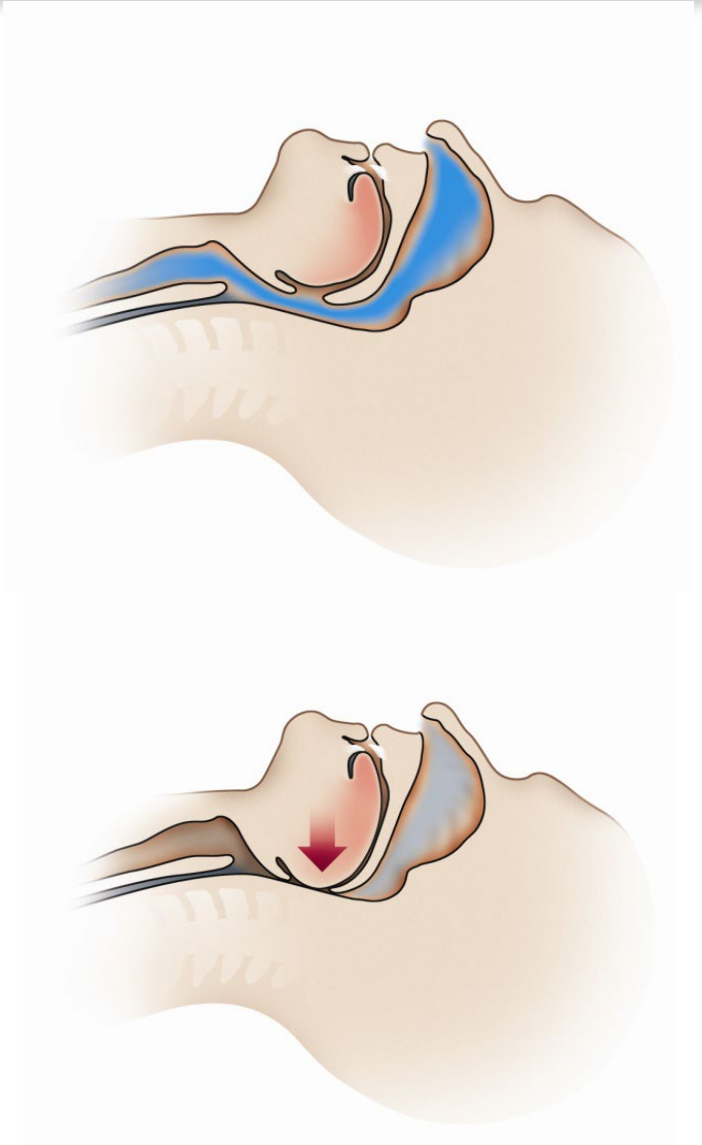
Stop exercising immediately and seek medical attention if you feel any discomfort, unusual pain, lightheadedness, nausea or extreme fatigue during a test or workout. Your safety and long-term health are more important than any fitness score.

Fatigue Susceptibility

- Sleep Deprivation
  - Sleep-related behaviors
  - Sleep hygiene
- Individual Differences
  - Genetic variations
  - Health & fitness
- Medical conditions
  - Medications
  - Sleep disorders
    - Insomnia, narcolepsy, restless leg syndrome, sleepwalking, abnormal circadian rhythms, obstructive sleep apnea (OSA)

Obstructive Sleep Apnea

- **Apnea** = stoppage of breathing lasting 10+ seconds
- OSA = breathing stops repeatedly during sleep due to closures of the upper airway
- Apnea rate per hour:
  - <5 = normal
  - ≥5 = OSA
- OSA severity (mild, moderate, severe) based on rate
- Some people with severe OSA can have 100 per hour



OSA Risk and Warning Signs

- OSA higher risk
  - Obese individuals, male, 40+ years old, large neck size, recessed chin, small jaw, large overbite, family history

- OSA warning signs
  - Reduced performance, loud and irregular snoring especially with gasping, high blood pressure, diabetes

Module 8: Driver Sleep Disorders Management (Module 7 for Motor Carriers)

- Webinar: A Motor Carrier's Guide to Establishing a Sleep Disorders Management Program

Poll

Drivers can tell when they are fatigued…

1. Always, based on their perception
2. When trained to recognize it
3. Rarely; that's why it's a problem

Objective Signs of Fatigue

- Eyelid drop or loss of focus
- Yawning
- Wandering, scattered or disjointed thoughts, dreamlike visions
- Head movements, gentle swaying, jerking
- Reduced field-of-view (AKA: tunnel vision, highway hypnosis, white line fever)
- Fidgeting, shifting positions, adjusting windows & HVAC
- Progressive weaving, crossing rumble strip, drift and jerk steering
- Delayed or incorrect responses
- Microsleeps

Fatigue Management Strategies

- General
- At home
- On the road
- Night driving
- Changing time zones
- Team driving

Module 3: Driver Education

NAFMP

North American Fatigue Management Program

nafmp.org

NAFMP Website Free Resources

- Tools
  - FMP Template
  - Implementation Manual
  - ROI Calculator
- Courses
  - eLearning Platform
  - PowerPoints with and without audio
  - For carrier's executives, safety managers, dispatchers, instructors, drivers, driver's families, shippers & receivers
- Webinars, Info Sessions & Articles
  - Gallery
  - List
  - Categories
  - Sing up for article notifications
- Podcast
  - The NAFMP Pod
  - Available from eight platforms
- Events
  - Download individual event
  - Subscribe to Calendar of future events

Connect with me to coordinate a free fatigue management session for your organization

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Scan vCard and add me to your contacts

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