



# Fatigue Management for Motor Carriers

Washington Trucking Associations  
Advanced Safety Workshop  
Walla Walla, WA - May 22, 2023



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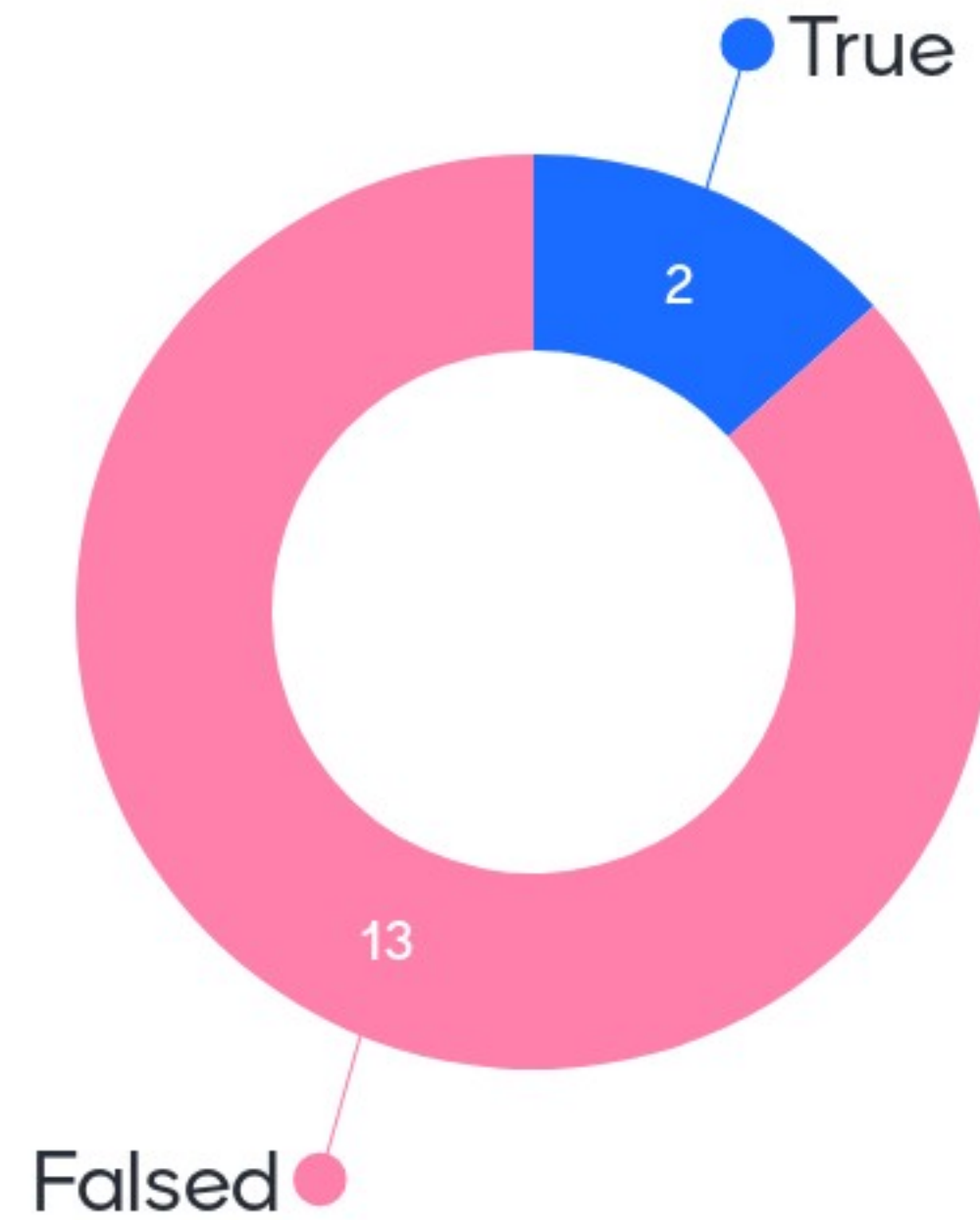
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# Overview

1. Problem of Fatigue
2. Safety Culture
  1. Driver Education (Knowledge) & Training (Skills)
3. Fatigue Risk Management Systems
  1. Predictive
  2. Proactive
  3. Reactive
4. FMP Implementation Steps
5. Resources & Next Steps



# Alertness and Sleep is like an on or off switch



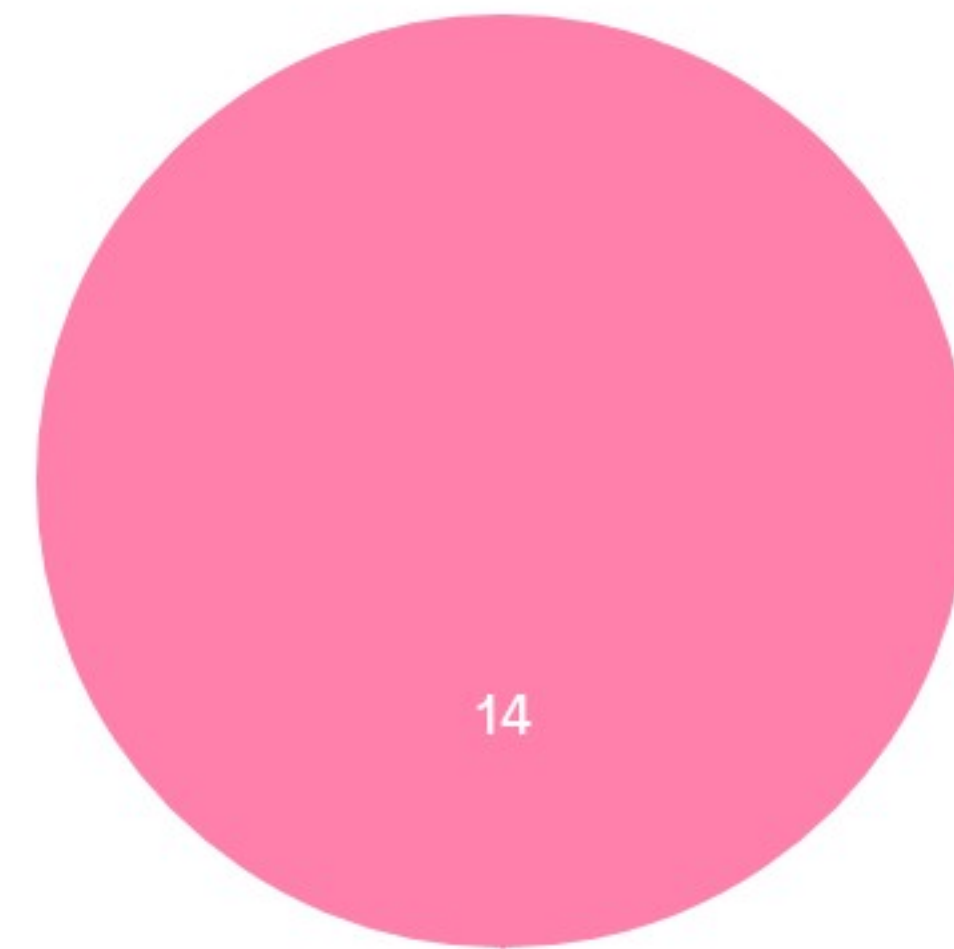


# Vigilance Spectrum

- **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 conscious. 30 to 80 Hertz



# The only cause of fatigue is insufficient sleep...



False

# Alertness Has Supply & Demand

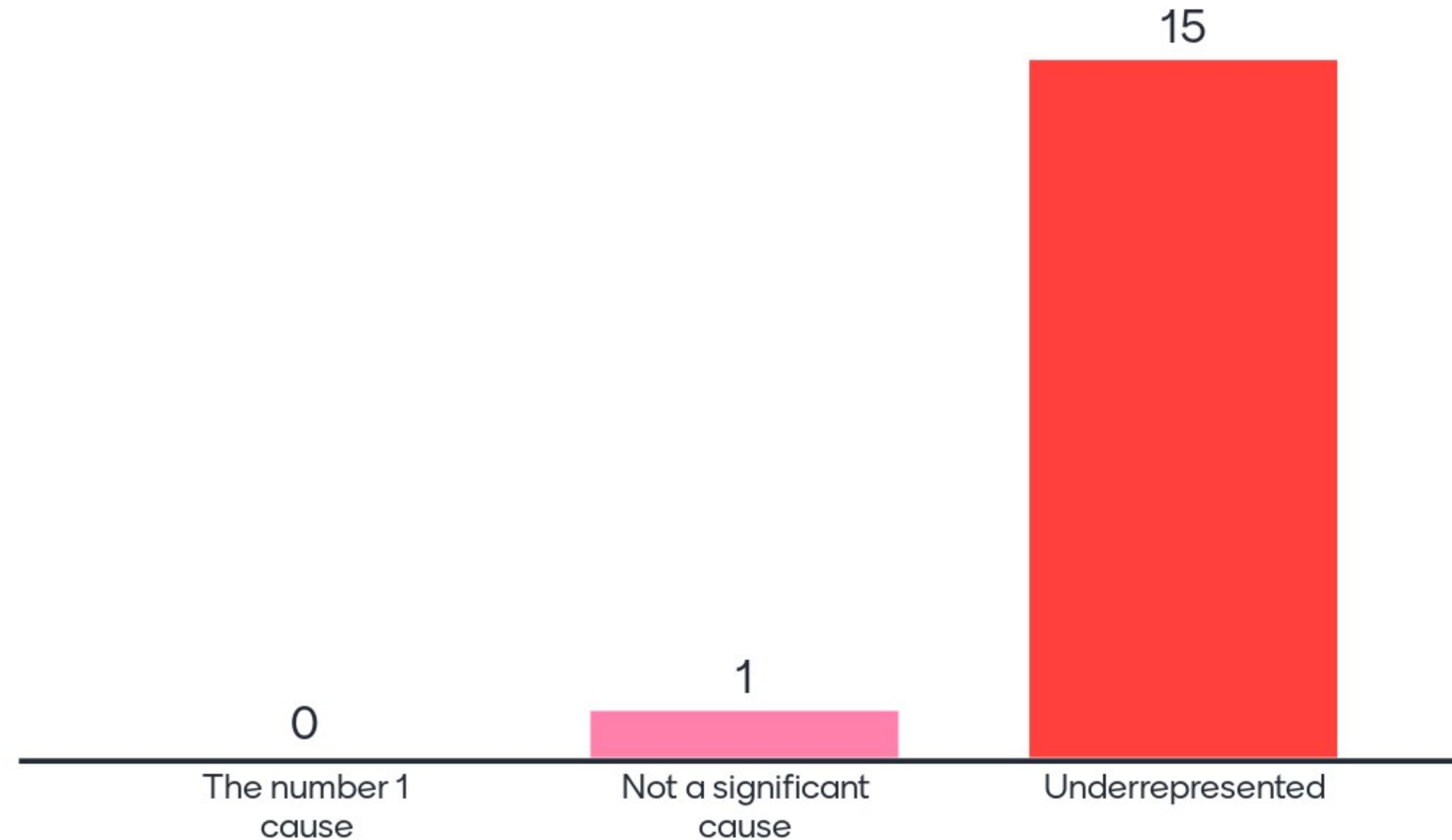
- Supply Factors
  - Internal individual susceptibility: circadian rhythm, amount of sleep, time of day, time awake, stimulants, other drugs, health, genes, mood
- Demand Factors
  - Task related: Time on task, task complexity, task monotony
  - Environmental: Road conditions, weather, stress (heat,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



# Fatigue Crash Characteristics

- Usually single-vehicle
- Road departure
- Driver alone
- Often on monotonous roads
- Most in early morning, between 2-7 am
- Usually, serious crashes

# In crash statistics, driver fatigue is...





- 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.



# Crash Causation: 87% Driver Related

- **Non-Performance:** Driver fell asleep, was disabled by heart attack or seizure, or physically impaired for another reason
- **Recognition:** The driver was inattentive, distracted by something inside or outside the vehicle, or failed to observe the situation adequately for some other reason
- **Decision:** Driver was driving too fast for conditions, misjudged the speed of other vehicles, or followed other vehicles too closely
- **Performance:** Driver panicked, overcompensated, or exercised poor directional control



# Crash Causation Associated Factors

- 14% Inadequate Surveillance
- 13% Fatigue
- 10% Felt Under Work Pressure From Carrier
- 9% Inattention
- 8% External Distraction
- **54% Total: Crashes where diminished vigilance was involved**

## How does CMV driving make fatigue worse?

5

Answers

 Mentimeter

Hours vary

Stress

Fix eyes on roadway. No eye movements

Schedule 14 hour rule.

Strange sleep schedule

4





# 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

# Comprehensive Approach





# Benefits

- Lower Fatigue Related Crashes
- Lower Legal Liability Exposure
- Cost Reduction
  - Driver retention
  - Medical costs
  - Maintenance
- Labor force
  - Safer
  - More productive
  - Healthier & happier

# Fatigue Management Program (FMP)

## 1. Safety Culture

- Education & Training

## 2. Fatigue Risk Management System

- Sound Scheduling Practices
- Sleep Disorder Screening & Treatment Program
- Fatigue Management Technologies



# FMP 1: Safety Culture

- Top management buy-in
- Empowering staff and generating commitment to FMP
- Build driver trust and instill accountability
- Driver recognition
- Corporate culture change

Module 2: Safety Culture & Management Practices

# Education & Training

- eLearning & PowerPoint
  - Motor carrier executives and managers
    - Module 1 (Intro), 2 (Safety Culture), 7 (Sleep Disorders), 10 (Technologies)
  - Motor carrier trainers
    - Module 5 (Train-the-Trainer)
  - Motor carrier dispatchers and driver managers
    - Module 9 (Scheduling)
  - Freight Shippers, Receivers, Brokers
    - Module 6 (Role of shippers & receivers on driver safety)
  - Drivers
    - Module 3 (Driver Ed), 8 (Sleep Disorders) & 9 (Scheduling)
  - Driver Families
    - Module 4 (Family Ed)



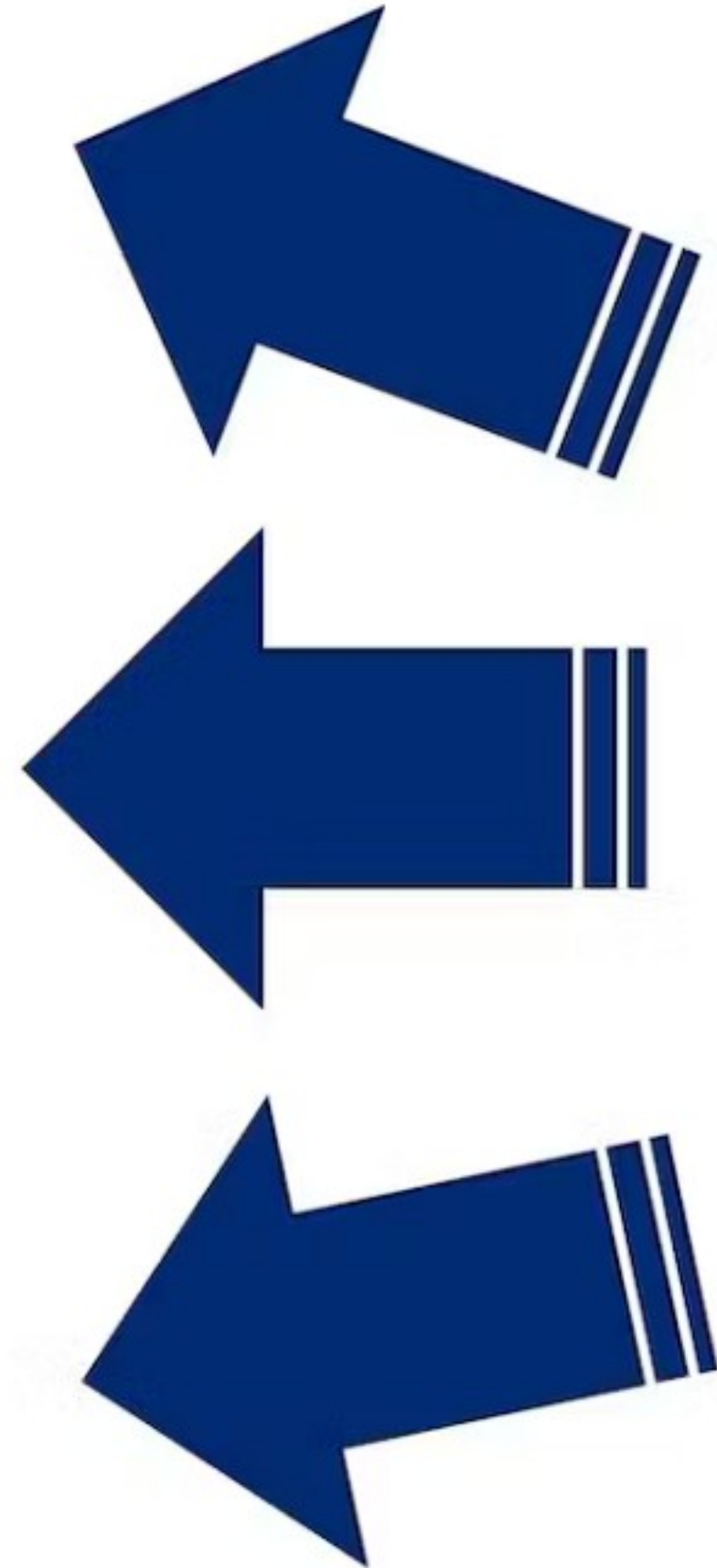
# Reminders, Please

- 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



# Wellness Affects All Body Systems

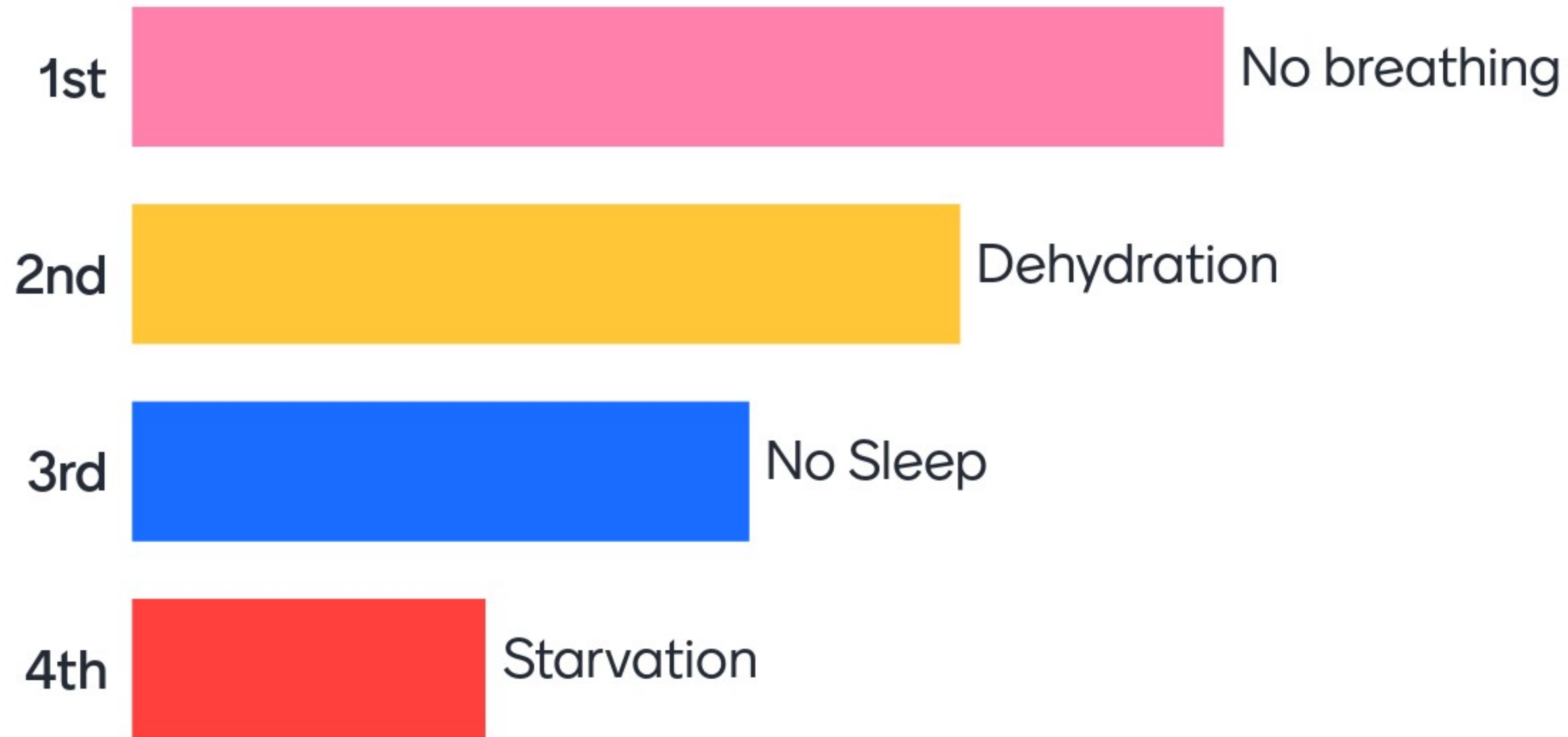
- Messaging
  - Nervous
  - Endocrine
  - Immune
  - Reproductive
- Plumbing
  - Respiratory
  - Cardiovascular
  - Digestive
  - Urinary
- Support
  - Skeletal
  - Muscular
  - Integumentary



- Sleep
- Positive Relationships
- Positive Behaviors
- Nutrition
- Exercise



# What will kill you faster?



# Importance of Sleep: Biology

## Sleep Functions

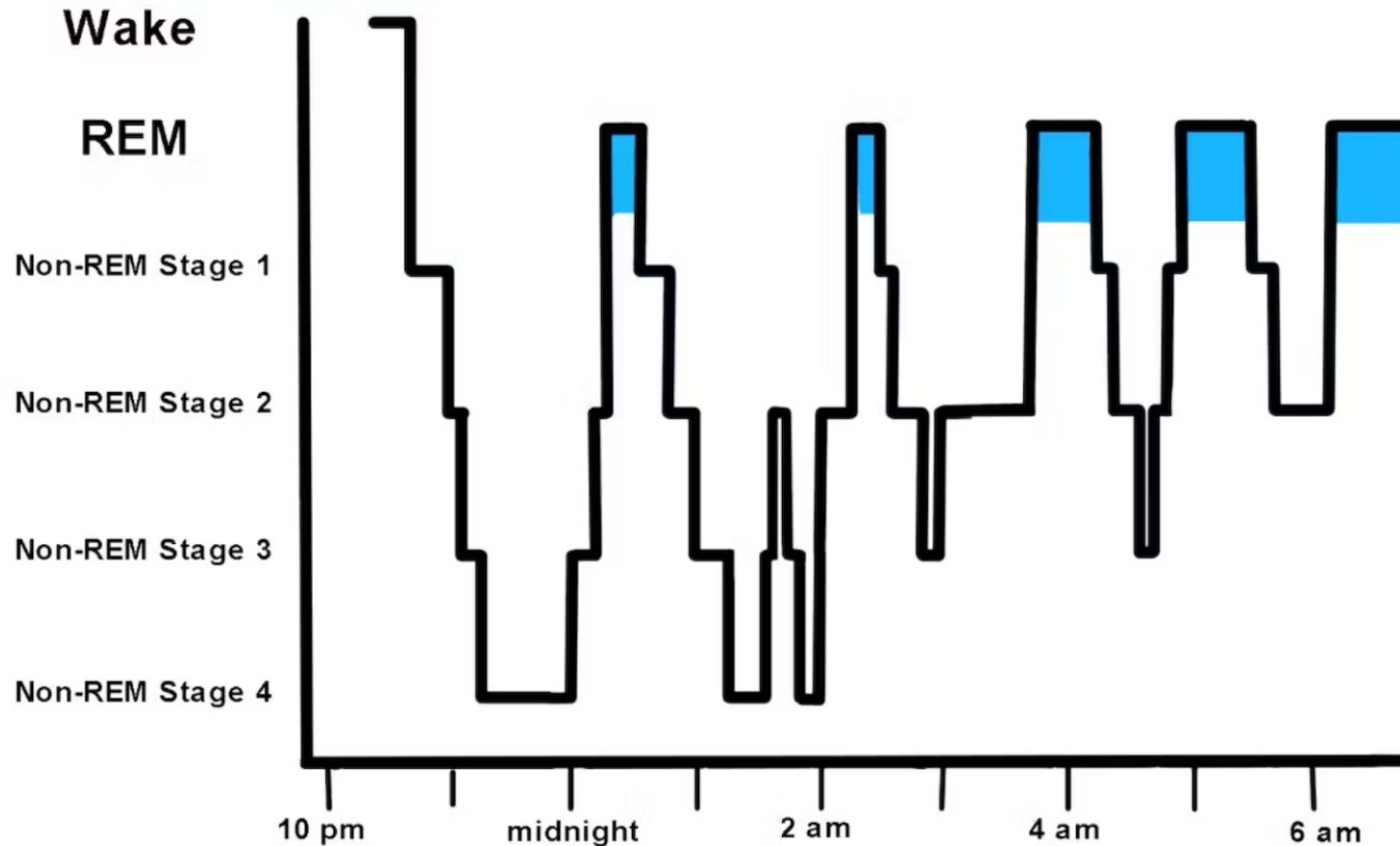
- Energy recharge
- Cellular restoration
- Brain function
- Emotional wellbeing
- Metabolism maintenance
- Immunity enhancement
- Heart health

## Sleep Deprivation Effects

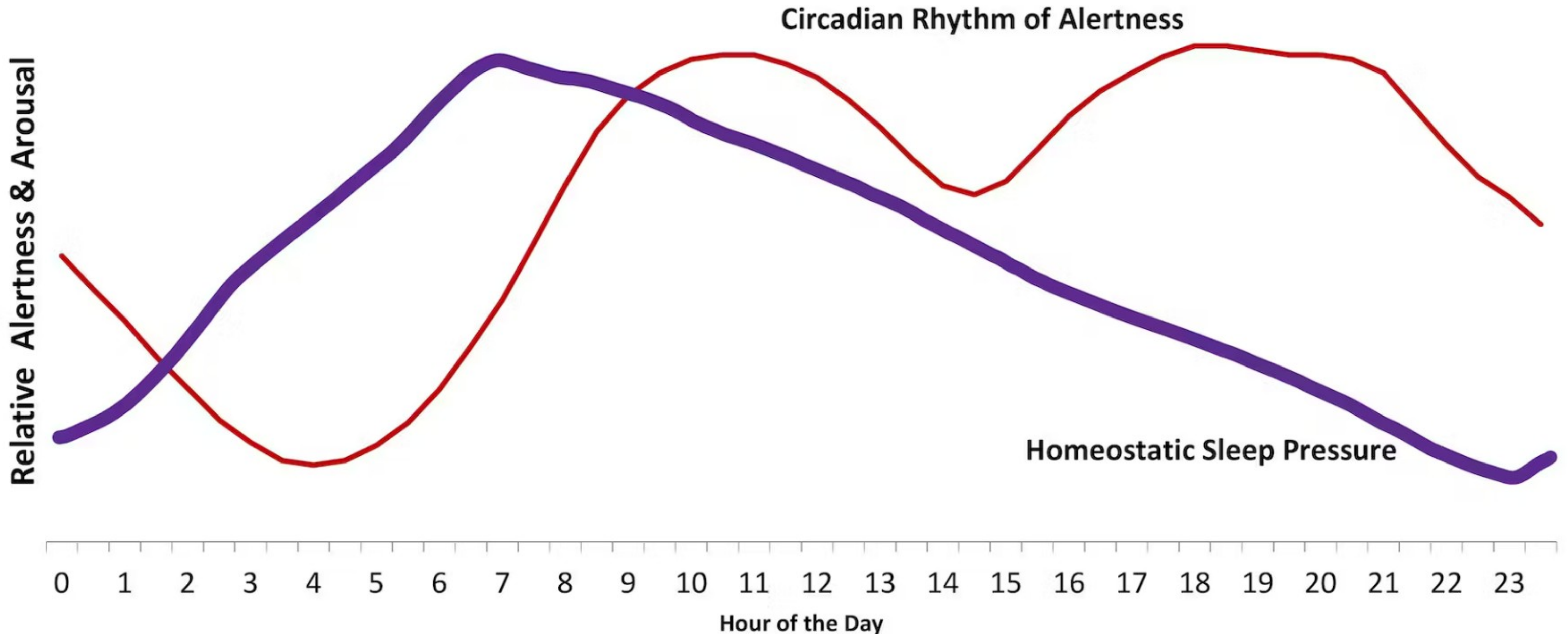
- Metabolic disorder
  - Increased appetite
  - Obesity
  - Increased diabetes risk
  - Increased blood pressure
  - Increased risk of heart disease
- Reduced immune system functioning
- Gastrointestinal problems
- Disrupts relationships
  - Irritability
  - Infertility
- Worsens psychiatric conditions
  - Alzheimer's disease, anxiety, depression, bipolar disorder, suicide, stroke, chronic pain
- Decreased quality of life & Increased sick days



# Sleep Architecture



# Sleep Drivers: The Clock & the Timer





# Energy Stimulation Hygiene

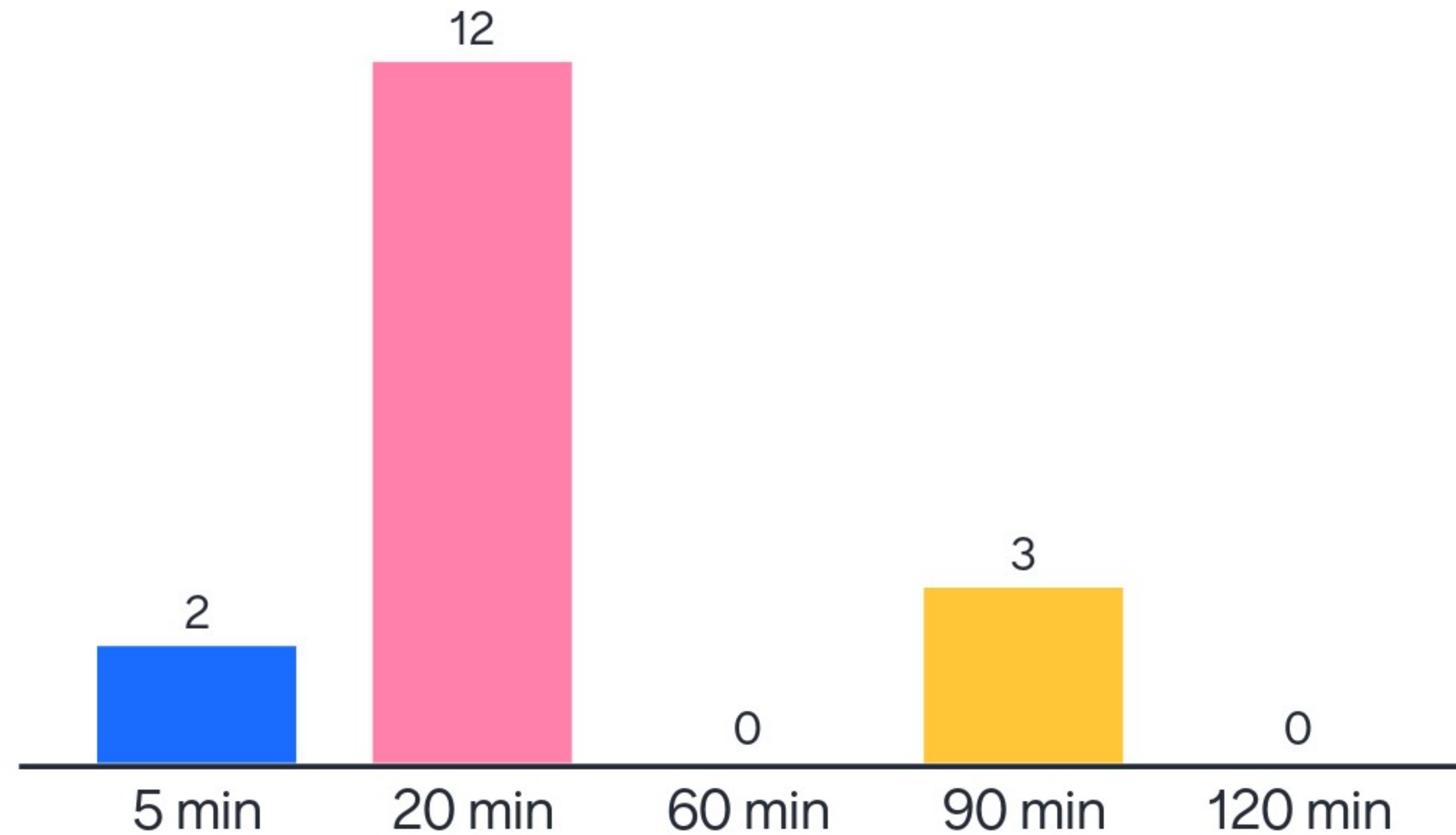
- Light
- Temperature
- Sound
- Substances
  - Food
  - Caffeine
  - Alcohol
  - Nicotine
  - Amphetamines
  - Medications

# 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

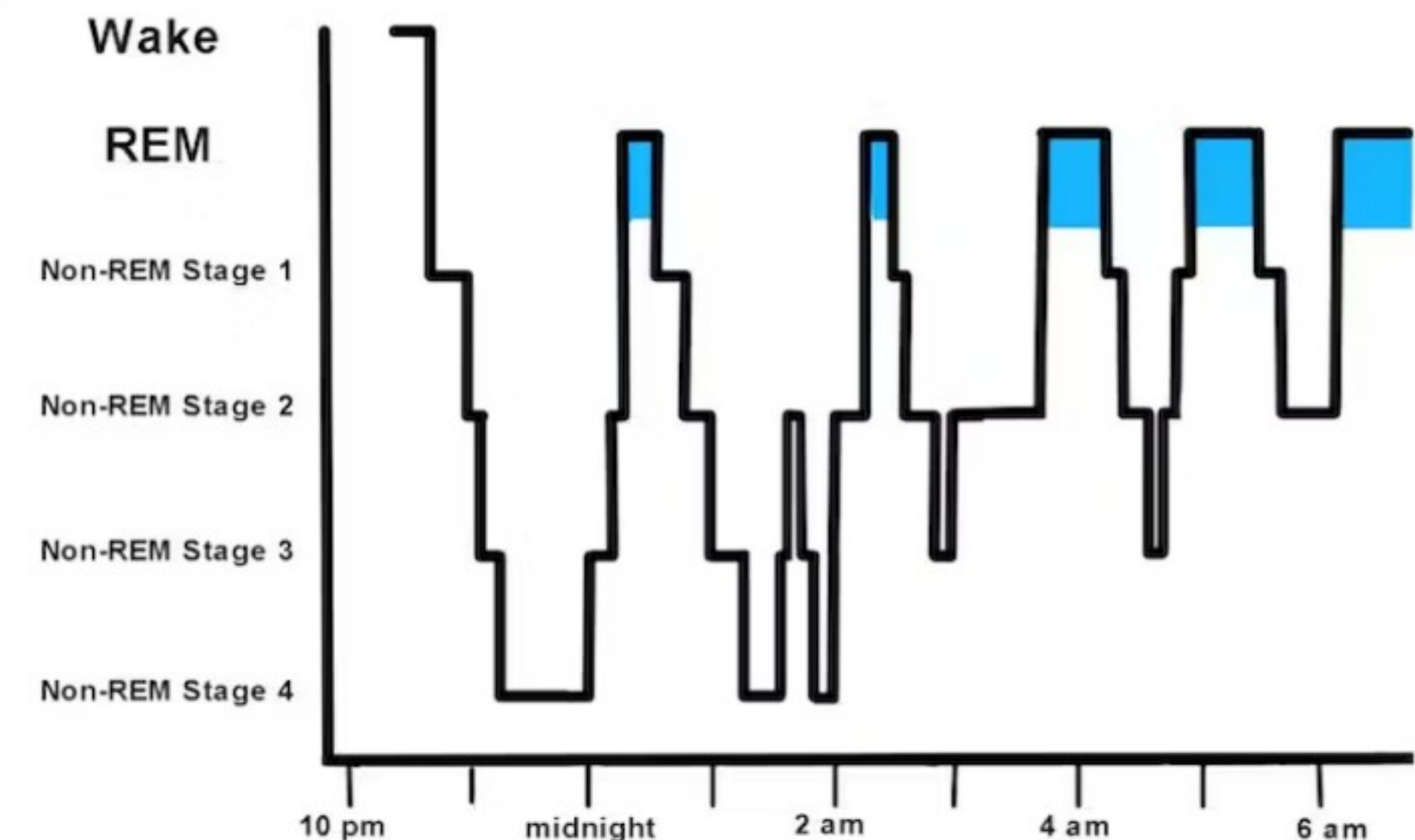


# What is the optimal duration of a nap?



# 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



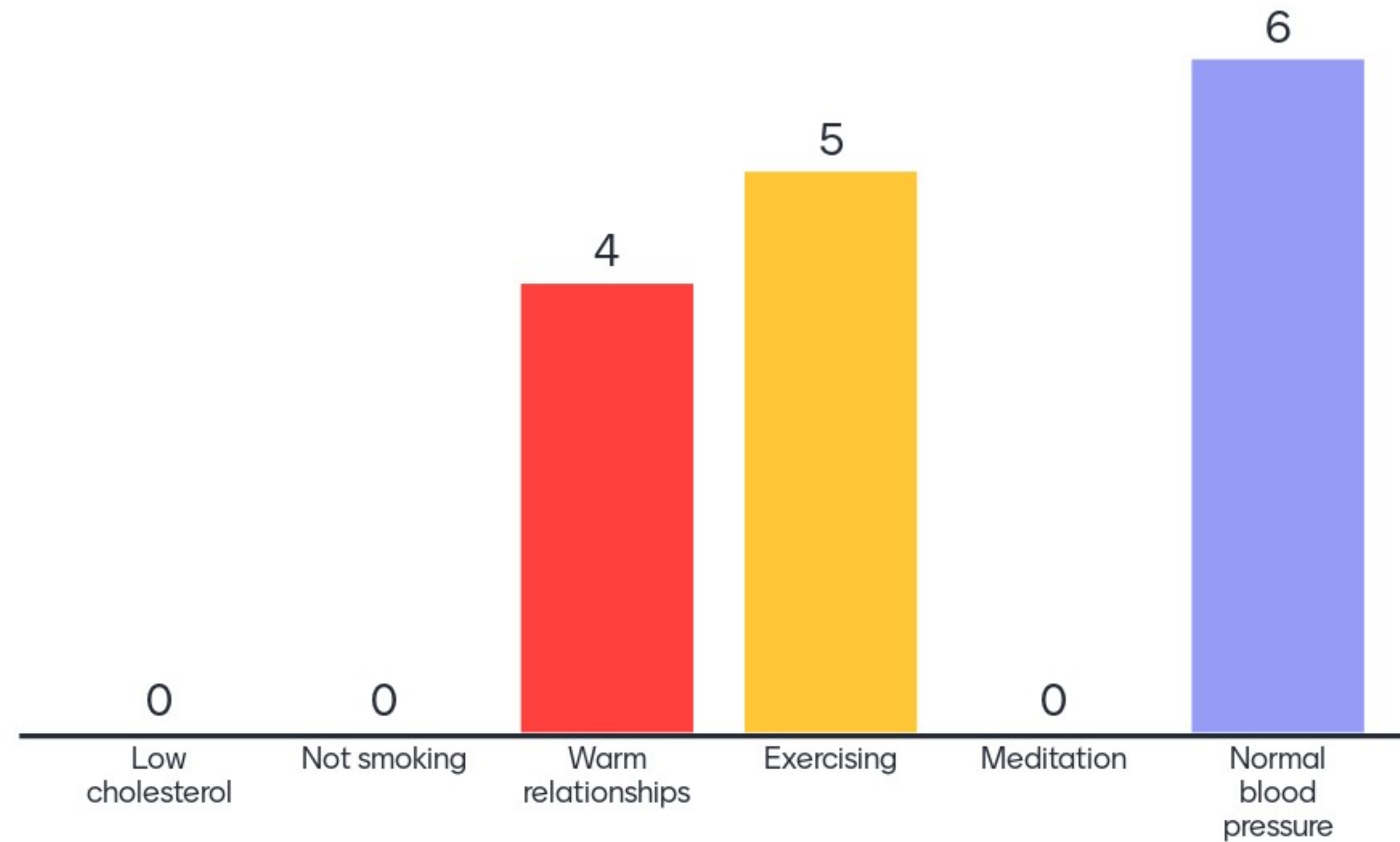


# How to Payback a Sleep Debt?

- Sleep debt
- Full night sleep
- May require several nights of full sleep
- Avoid deprivation
- Sleep until you wake up
- Make extra deposits on the weekend

December 7, 2022 – Webinar: Sleep Hygiene

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





# 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)

# Stress Effects

- Headaches
- Sleep disturbances
- Difficulty concentrating
- Short temper
- Upset stomach
- Job dissatisfaction
- Low morale

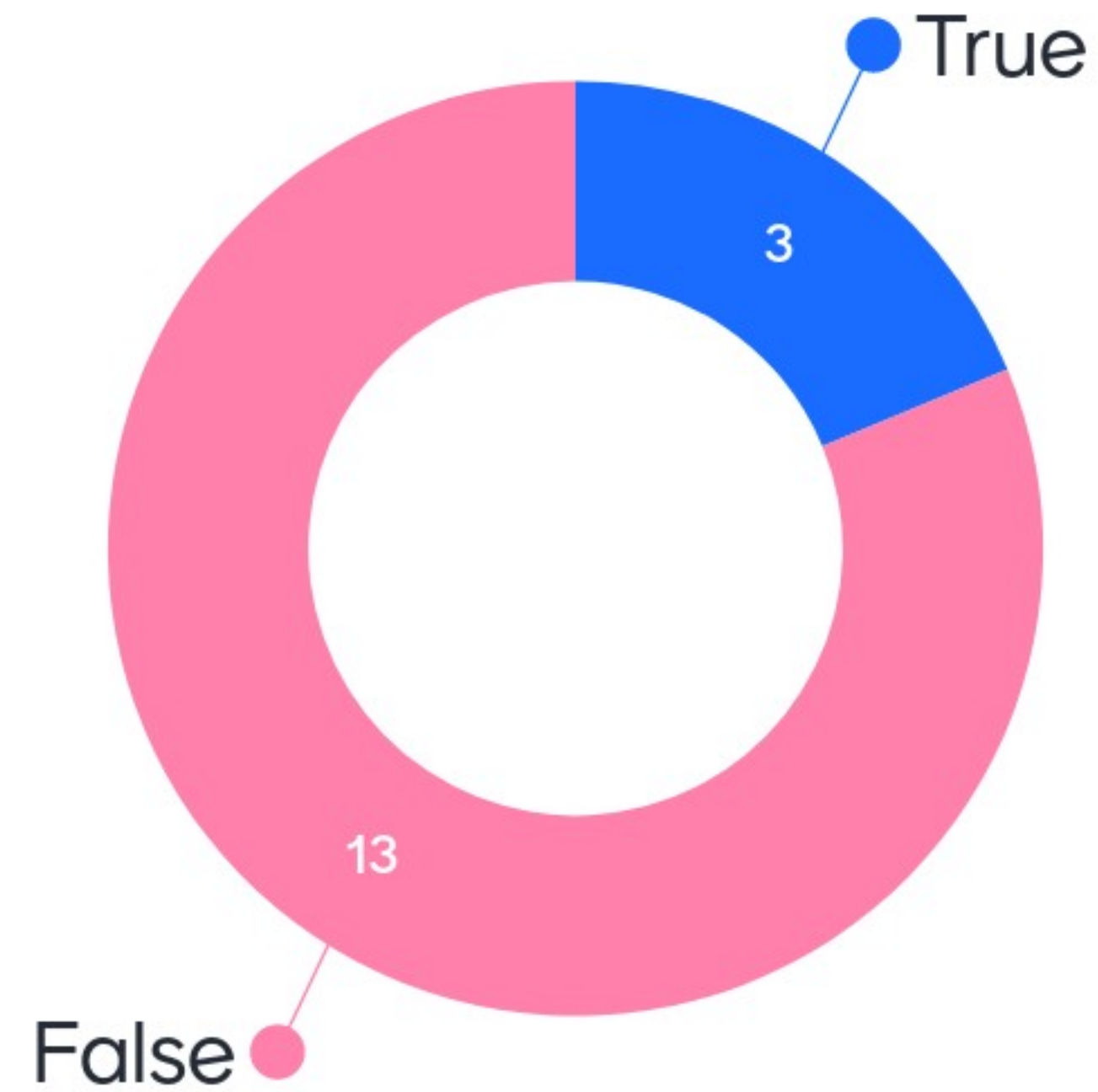


# Positive Behaviors

- 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

May 17, 2023 – Webinar: Mindfulness

# The purpose of diets is to lose weight





# Weight Loss Is the Wrong Goal

## Where Does Body Weight Come From

- Liquids, Muscles, Bones, Subcutaneous Fat, Visceral Fat
- Weight loss is regained in 1-5 years
- May lack essential nutrients and may be harmful
- May take pleasure out of eating
- May lead to eating disorders
- Snake oil is medical quackery
- Goal is to stay healthy, enjoy food and share it with others



# Obesity vs Metabolic Syndrome

- U.S. Adults (240 million)
  - 70% Non-Obese (168 million)
    - 60% Healthy (101 million)
    - 40% Metabolic Syndrome (TOFI) (67 million)
  - 30% Obese (72 million)
    - 20% Healthy (14 million)
    - 80% Metabolic Syndrome (58 million)
  - Total healthy: 115 million
  - Total Metabolic Syndrome: 125 million
- Metabolic Syndrome
  - Non-alcoholic fatty liver disease
  - Diabetes
  - Cardiovascular disease
  - Hypertension
  - Lipid abnormalities
  - Polycystic ovarian cancer
  - Dementia



- 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

# 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
  - 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



# I drink caffeinated drinks all day and sleep just fine

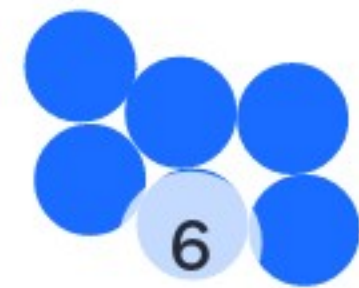
1  
Fact

14  
Myth

- 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



# To unwind and sleep better, it helps to take a night cap



Fact



Myth

# 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 and deep 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](http://www.smokefree.gov) or
  - Click [www.hc-sc.gc.ca](http://www.hc-sc.gc.ca)

# Amphetamines

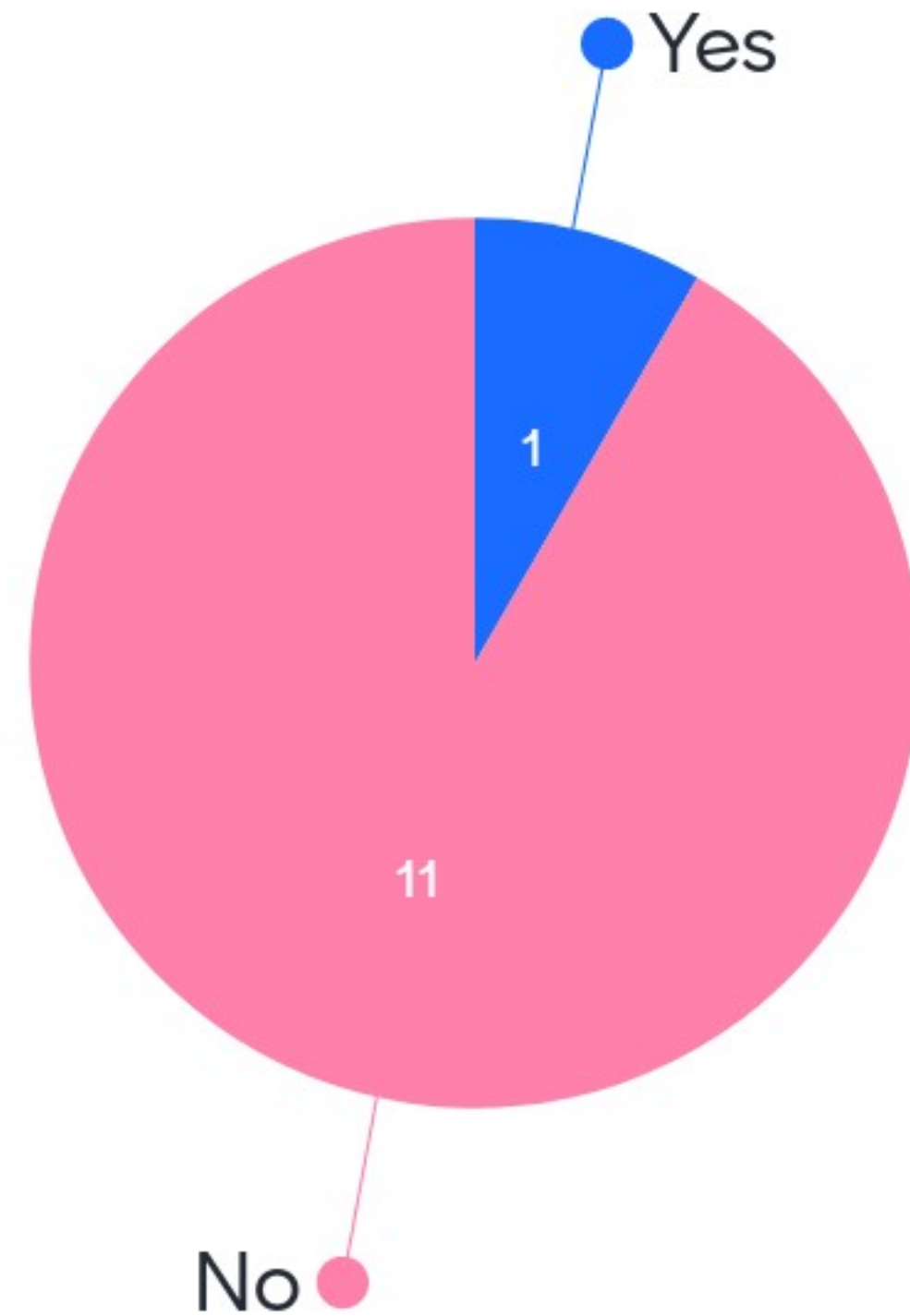
- Illegal or available only with a prescription
- Too strong for general use
- Increase activity level but do not improve performance reliably
- Increase heart rate and metabolism, sometimes dangerously
- Often you “crash” several hours after use



# 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

# Based on what I learned today, I should stop taking sleeping pills immediately

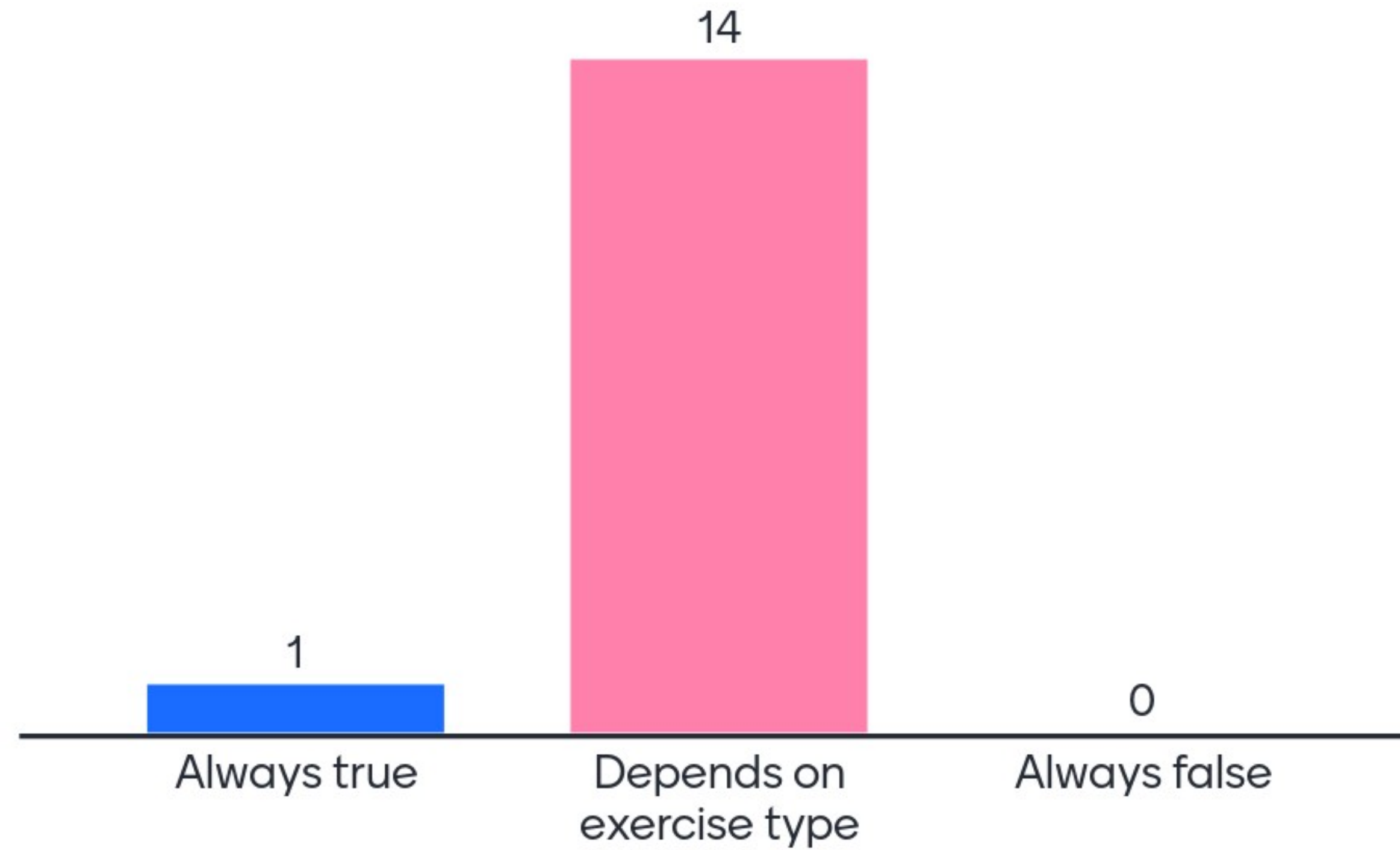




# Other Medications

- 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

# Exercising right before going to sleep is not recommended...





1. Cardiopulmonary
  - Enhances alertness
  - Promotes better sleep
  - Lowers stress
2. Strength bearing
  - 10-minute walks twice or more per day
  - Work out more vigorously on weekends
3. Stretching & balancing
  - 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

# 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)

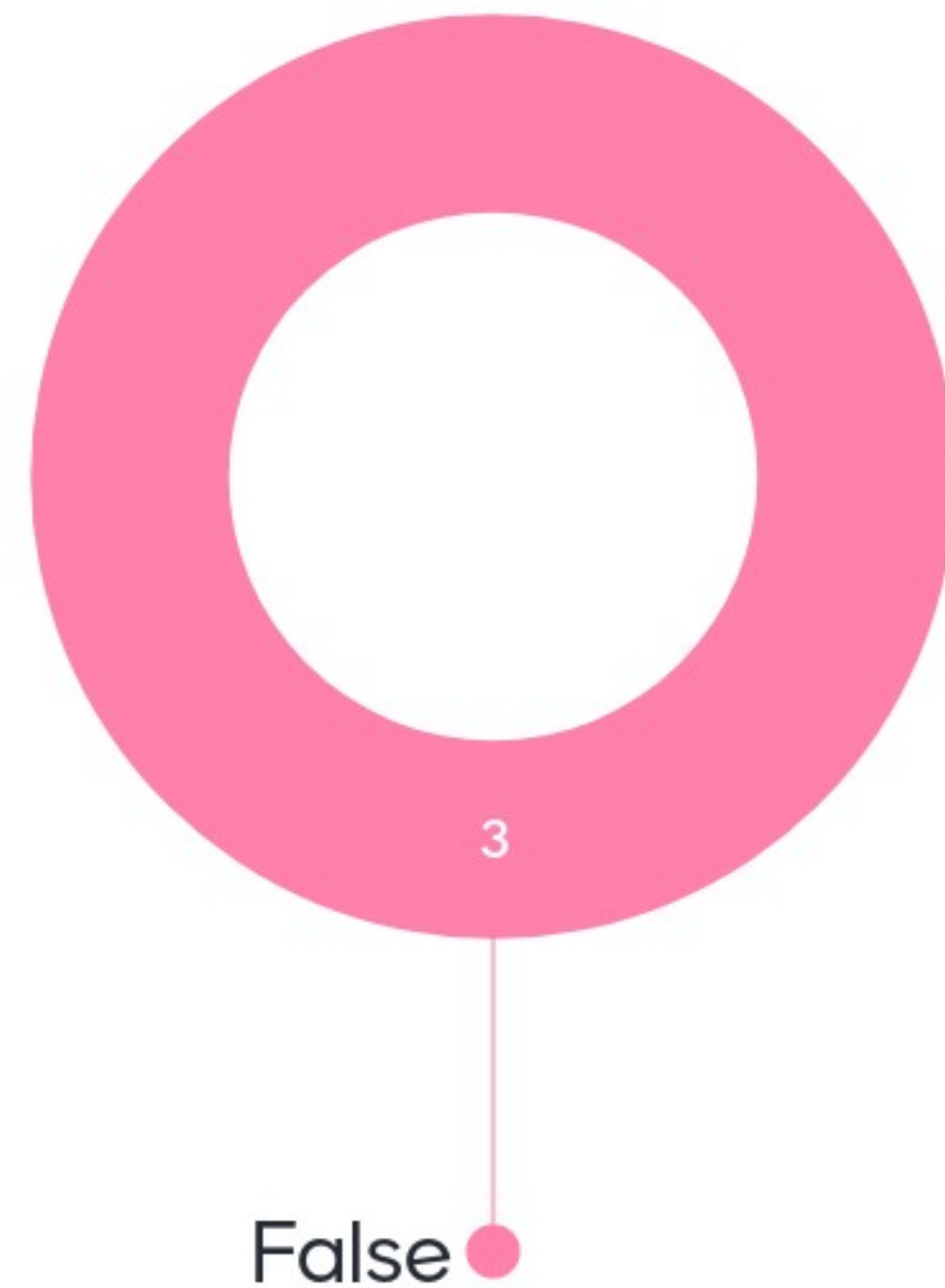


# Obstructive Sleep Apnea

- **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
  - $\geq 5$  = OSA
- OSA severity (mild, moderate, severe) based on rate
- Some people with severe OSA can have 100 per hour



# OSA diagnosed and treated drivers are medically disqualified from operating a CMV





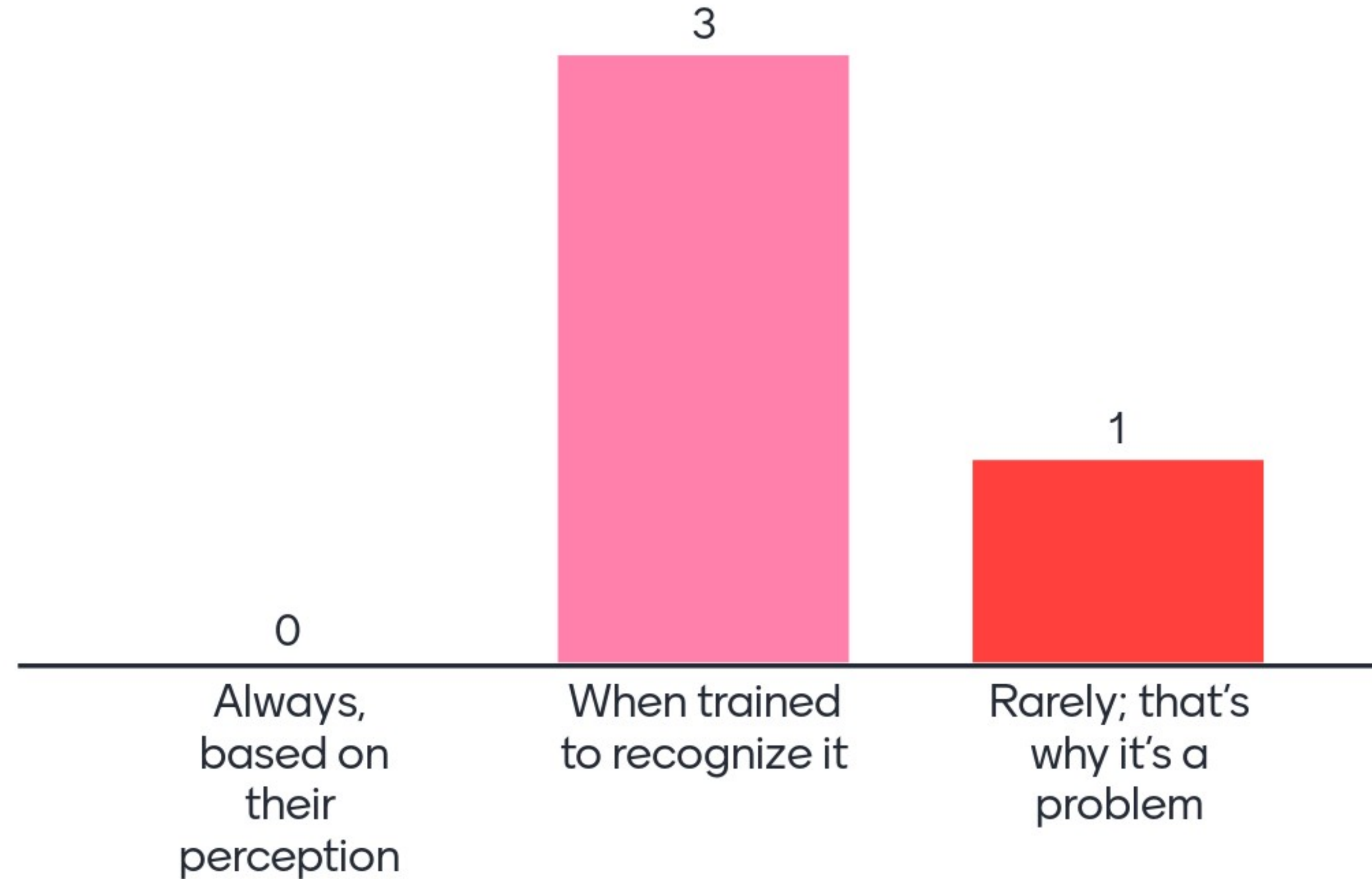
# OSA Risk and Warning Signs

- 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)

- May 4, 2022 Webinar:  
A Motor Carrier's Guide to Establishing a Sleep Disorders Management Program

# Drivers can tell when they are fatigued...





# 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

# General Strategies

- SLEEP!!!
  - Main sleep
  - Naps
- Maintain a healthful lifestyle
  - Follow the five wellness basics
- Practice sleep hygiene
  - Try to keep a regular schedule
  - Go with your circadian rhythm – don't fight it
  - Wind down before sleep
    - Less physical activity
    - Lower lights
- Be smart about caffeine use



# At-Home Strategies

- Get the best sleep possible before starting a trip or work week
- Communicate your sleep needs and get your family's support
- Bedroom should be:
  - Completely dark
  - Cool
  - Quiet
- Pre-sleep routine
- Be active but don't exhaust yourself. Take time to relax

# On-the-Road Strategies

- Try to get as much sleep on the road as you get at home
- Rest breaks with **naps** are most beneficial
- Rest breaks without naps
- Moving your body
- Conversation if it is not distracting
- Exercise
- Avoid heavy meals
- Wear your safety belt



# Night Driving Strategies

- Advantage of night driving: less traffic
- Disadvantages:
  - Fatigue, related to circadian rhythms
  - More drunk/reckless motorists
  - Poor visibility
- Use light and dark to “fool” your body:
  - Bright lights simulate daybreak
  - Dark simulates night and bedtime
- Use caffeine, but carefully
- Consider taking sleeper berth period/nap in pre-dawn hours
- Get more recovery sleep on weekends
- Not for everybody



# Dealing with Shift/Time Zones Strategies

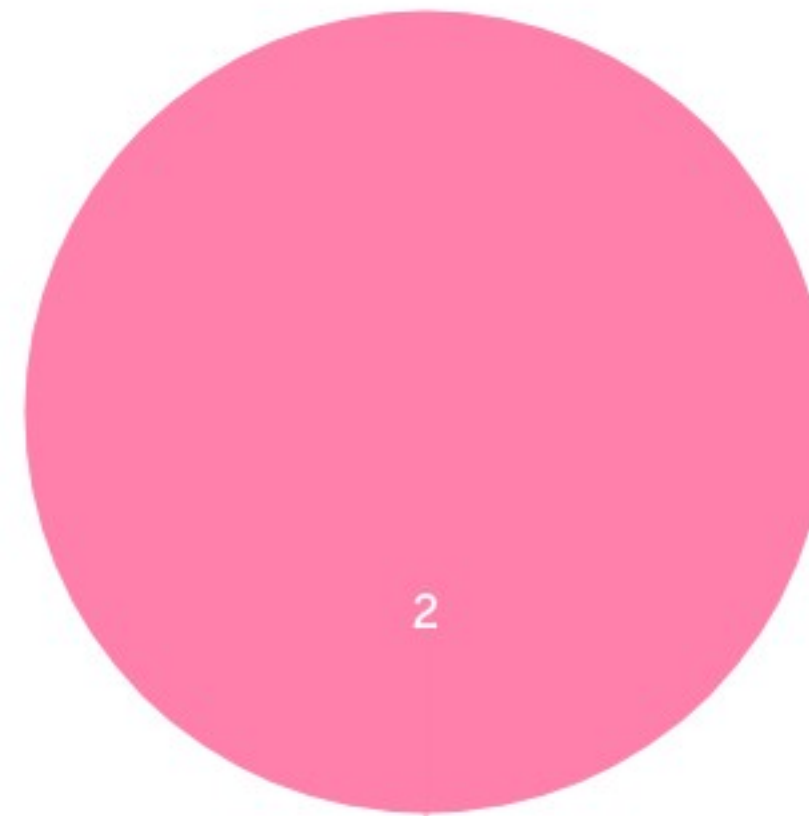
- Be aware of your “body clock”
- Short trips/shift changes: stick with your regular sleep schedule
- Longer changes:
  - “Pre-adjust” before change
  - Shift your pre-bed, “evening” routine
  - Use light and dark to help you adjust
  - To stay awake, be physically active and interact with others
- Getting more sleep generally makes changes easier



# Team Driving Strategies

- Plan sleeper berth periods in advance to be compliant and beneficial
- When possible, take sleep periods during circadian valleys
- Avoid both caffeine and strenuous activity in hours before breaks
- Keep sleeper berth totally dark or use eyeshades
- Don't drive immediately after awakening
- Team driving is a partnership
- To sleep well, each driver must have full confidence in the other driver
- Driver should strive to be a "smooth operator"
- Agree on a game plan for sleep and rest that meets each driver's needs

A safety culture is nice to have but not necessary for an effective fatigue risk management system?



False



# Effectiveness of FRMS

*“While FRMS are likely to be effective, in organizations where safety cultures are insufficiently mature and resources are less available, these systems may be challenging to implement successfully”*

[How effective are Fatigue Risk Management Systems \(FRMS\)? A review](#)

February 2022



# FMP 2: Fatigue Risk Management System

1. **Applicability:** Operations at risk
  2. **Identification:** Data collection, analysis and risk determination
    - **Predictive:** Previous experience, evidence-based scheduling, math models
    - **Proactive:** Self-reported, questionnaires, performance reviews, scientific literature review, planned vs actual time worked
    - **Reactive:** Determine if fatigue was a factor in crash, near crash or violation
  3. **Assessment:** Target hazards based on **probability + severity**
  4. **Management:** Strategies to set measures/countermeasures to reduce/eliminate
  5. **Evaluation:** Strategies effectiveness
- Implementation Manual: Chapter 4, Pages 57-74
  - Slides: Fatigue Risk Management Systems at the CVSA Workshop in Memphis



# Predictive Processes

- Predictive fatigue hazard identification focuses on detecting factors that negatively impact driver alertness
- This information is used to develop driver schedules and workplace conditions that minimize the future effects of driver fatigue
- Three different ways to accomplish this: previous experience, evidence-based scheduling, and bio-mathematical models



# Proactive Processes

- Proactive fatigue hazard identification focuses on monitoring and analyzing reports of fatigue in the fleet operation
- Multiple data sources for fatigue identification should be used to create a more detailed and complete picture of fatigue in the operation
- Approaches to collecting proactive fatigue hazard identification
  - Self-reports of fatigue related risks
  - Fatigue-Related Driver Performance Reviews
  - Fitness for Duty Testing
  - Driving Performance Data
  - Peer Observation
  - Review of Fatigue-Related Scientific Literature
  - Planned Versus Actual Time Worked



# Reactive Processes

- For identifying fatigue hazards involve responding to identified fatigue-related events
- Include incident reporting, fatigue-related accident investigations, and near-miss reporting
- Triggered by fatigue reports, crashes, near-crashes, and violations
- Designed to identify how driver fatigue may have contributed to incidents
- Goals are to identify how fatigue may have been mitigated and prevent future occurrences

# Assess Safety Risk of Fatigue Hazards

- There are two aspects of risk assessments: measuring the likelihood of the fatigue hazard and evaluating the severity of possible outcomes from it
- A dual assessment helps in prioritizing measures to control or mitigate identified fatigue hazards



# Define Risk Probability

Category	Meaning	Value
Frequent	Likely to occur many times (has occurred many times)	5
Occasional	Likely to occur sometimes (has occurred infrequently)	4
Remote	Unlikely to occur but possible (has occurred rarely)	3
Improbable	Very unlikely to occur (not known to have occurred)	2
Extremely Improbable	Almost inconceivable the event will occur	1



# Define Fatigue Risk Severity

Category	Meaning	Value
Catastrophic	<ul style="list-style-type: none"><li>• Multiple deaths</li><li>• Equipment destroyed</li></ul>	A
Hazardous	<ul style="list-style-type: none"><li>• A large reduction in safety margins, physical distress, or a workload such that drivers cannot be relied upon to perform their tasks accurately or completely</li><li>• Serious injury</li><li>• Major equipment damage</li></ul>	B
Major	<ul style="list-style-type: none"><li>• A significant reduction in safety margins or a reduction in the ability of drivers to cope with adverse operating conditions as a result of increased workload or as a result of conditions impairing efficiency</li><li>• Serious incident</li><li>• Injury to persons</li></ul>	C
Minor	<ul style="list-style-type: none"><li>• Nuisance</li><li>• Operating limitations</li><li>• Use of emergency procedures</li><li>• Minor incident</li></ul>	D
Negligible	<ul style="list-style-type: none"><li>• No significant consequences</li></ul>	E



# Fatigue Risk Assessment Matrix

Risk Probability		Risk Severity				
		Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent	5	5A	5B	5C	5D	5E
Occasional	4	4A	4B	4C	4D	4E
Remote	3	3A	3B	3C	3D	3E
Improbable	2	2A	2B	2C	2D	2E
Extremely Improbable	1	1A	1B	1C	1D	1E



# Risk Tolerability Matrix

Fatigue Risk	Assessment Risk Index	Suggested Criteria
Intolerable Region	5A, 5B, 5C, 4A, 4B, 3A	Unacceptable under the existing circumstances.
Tolerable Region	5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C	Acceptable based on risk mitigation. May require management decision.
Acceptable Region	3E, 2D, 2E, 1A, 1B, 1C, 1D, 1E	Acceptable.



# Scheduling Practices

- Sound scheduling and routing
- Shared responsibility mitigating driver fatigue in work schedules
- Regular schedules
- Forward vs backward scheduling
- Consider travel time to employment location
- Consider rests and naps during work shift
- Maximum of 16 hrs. per day or less
- Maximize benefits of scheduling tools
- Develop customized strategies for managing fatigue

Module 9 (Scheduling)



# Sleep Disorder Management Program

- Insomnia, narcolepsy, restless leg syndrome, sleepwalking, abnormal circadian rhythms
- Most common: Obstructive Sleep Apnea (OSA)
- Treatments can be very effective
  - Continuous Positive Airway Pressure (CPAP) Machine
  - Health and wellness behavioral changes

Sleep Disorders Management Module 7 (Carriers)

Module 8 (Drivers)

May 4 , 2022 Webinar: A Motor Carrier's Guide to Establishing a Sleep Disorders Management Program



# Fatigue Management Technologies

- FMTs are only one piece of the puzzle
  - Part of overall FMP to shape positive safety culture
  - Technology can reshape driving behavior leading to fewer errors
- Types of fatigue management technologies
  - Fitness for duty, performance monitoring, driver performance
- Implementation Considerations
  - Cost & ROI
  - Legal implications
  - Driver (compliance, acceptance, training)
  - Operational protocols & performance measures
- Best practices

Module 10 (Technologies)

June 9, 2022 - Webinar: The Alertness Toolkit



# Step-by-Step FMP Implementation

1. Assemble Steering Committee
2. Develop Policy
3. Develop Documentation Process
4. Define Roles & Responsibilities
5. Develop Implementation Timeline
6. Introduction & Awareness
7. Education & Training
8. Provide Ongoing Communication
9. Monitor & Evaluate

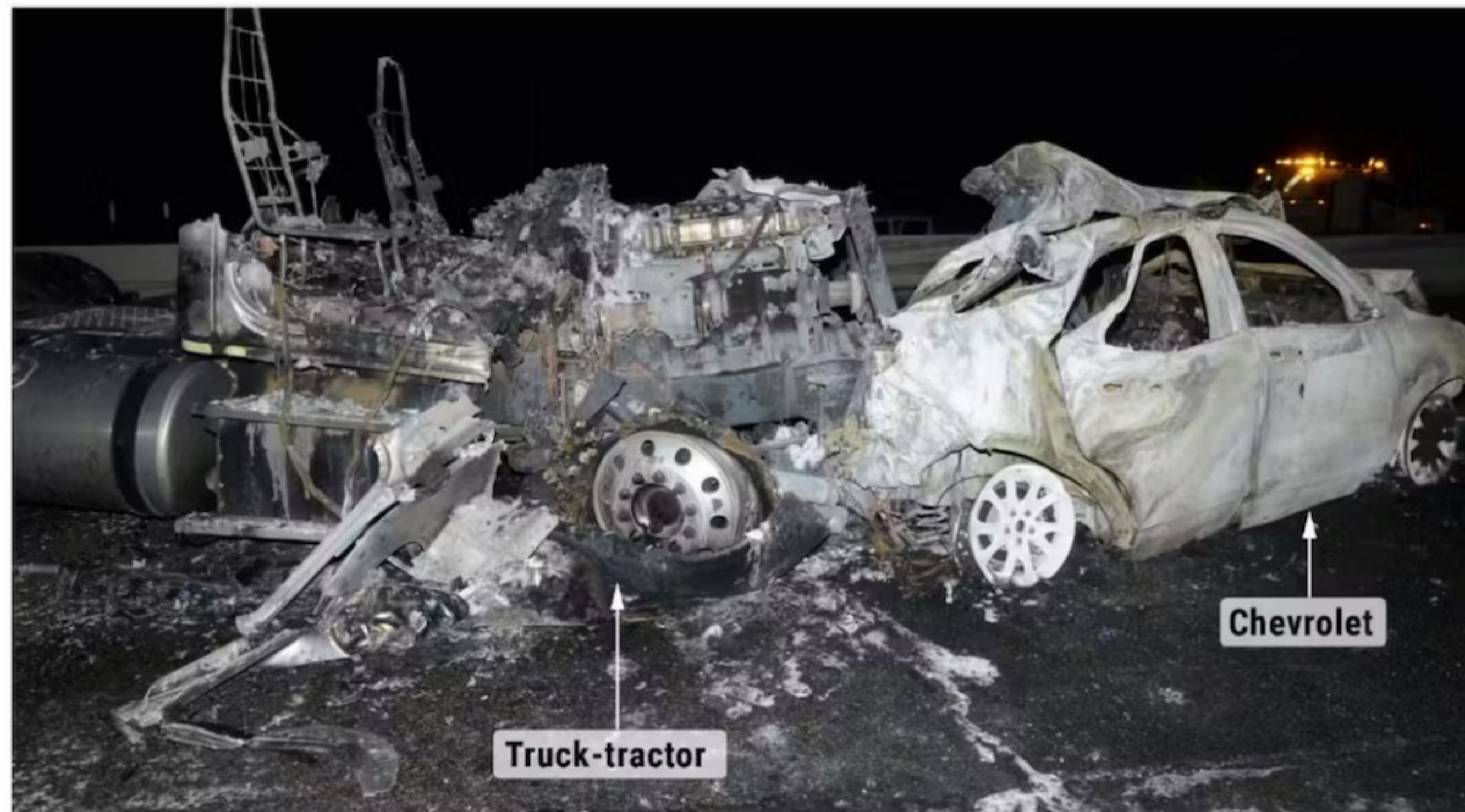
Implementation Manual, Chapter 3, Pages 49-56

Feb 24, 2022 - Webinar: Step-by-Step Guide for Implementing an FMP



# NTSB Crash Investigation

<https://www.nts.gov/investigations/Pages/HWY21MH008.aspx>



At-rest position of the truck-tractor and Chevrolet. (Source: AZDPS with annotations by the NTSB.) Alt-text : On-scene, postcrash photo of the severely collision-damaged and burned-out remnants of the truck-tractor and the Chevrolet, seen from the right-side.



# NTSB Video

- Includes animation with collision sequence of events
- [Video](#) duration: 6 minutes 20 seconds



# NTSB Selected Findings

- The carrier safety culture was inadequate
- The carrier had no fatigue management program that would have reduced the risk of fatigued operation by its drivers
- The carrier's oversight of its drivers and enforcement of its own policies regarding the maximum daily and weekly on-duty hours was poor, as the crash-involved driver and several other examined drivers regularly violated those policies



# NTSB Crash Cause Determination

- We determined that the probable cause of this multivehicle crash was the truck driver's failure to respond to the fully conspicuous traffic queue, likely as the result of fatigue
- Contributing to the crash was the carrier's
  - **Poor oversight of its drivers**
  - **Lack of fatigue management program**
  - **Failure to enforce its own policies, such as those regarding on-duty hours**
- All a consequence of its inadequate **safety culture**



# Resources

1. [nafmp.org](http://nafmp.org)
2. [Implementation Manual](#)
3. [eLearning Platform](#)
4. [Train-the-Trainer: Module 5](#)
5. [PowerPoint Presentations](#)
6. [ROI Calculator](#)
7. [Webinars – Slides/Recording & Future](#)



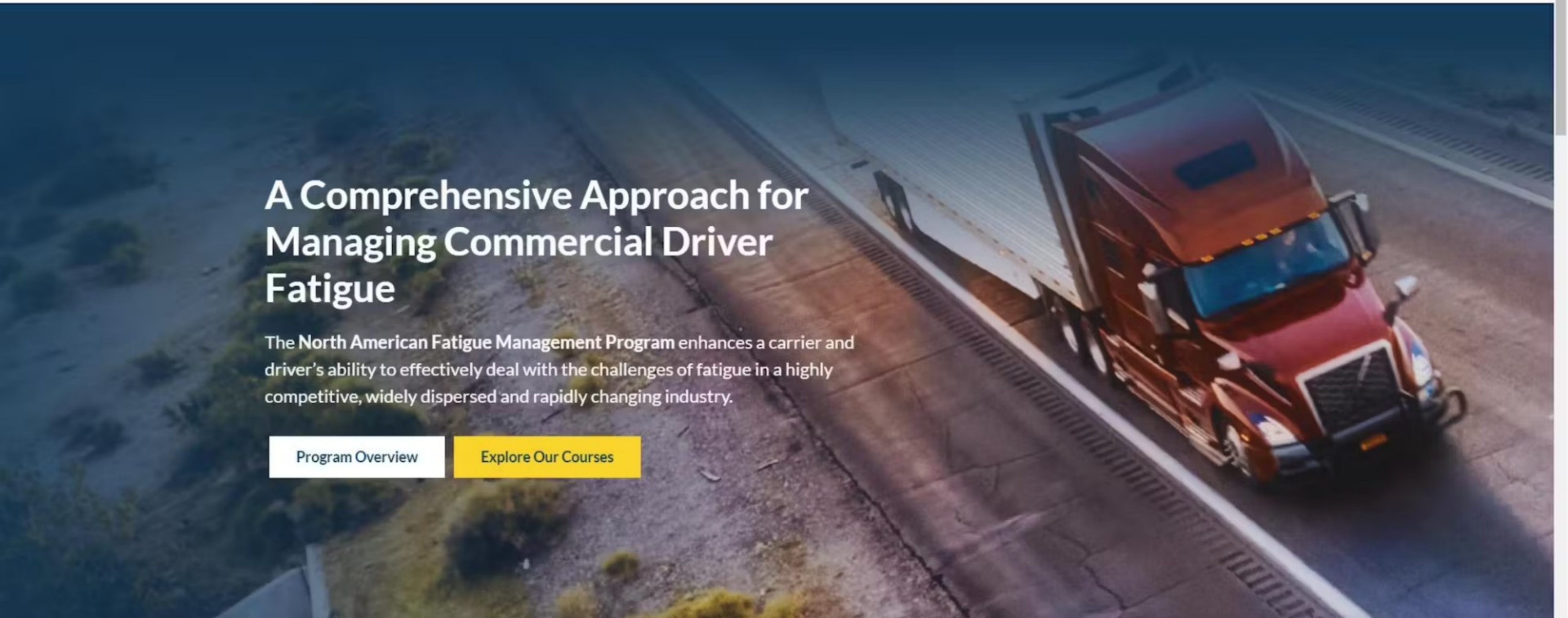


## A Comprehensive Approach for Managing Commercial Driver Fatigue

The North American Fatigue Management Program enhances a carrier and driver's ability to effectively deal with the challenges of fatigue in a highly competitive, widely dispersed and rapidly changing industry.

Program Overview

Explore Our Courses





# Implementation Manual



**Guidelines and Materials to Enable  
Motor Carriers to Implement  
a Fatigue Management Program**

## **IMPLEMENTATION MANUAL**

Sponsored by the North American Fatigue Management Program

# eLearning Platform: lms.nafmp.org

Mentimeter

CVSA®



NAFMP

English (en) ▾

You are not logged in. (Log in)



 Fatigue Management Community Forum

No matter your role in managing fatigue, you are welcome to join in the conversation. Questions, comments, and feedback are encouraged. Thank you for your participation. [Please select here to log in or create a new free account.](#)



## Available courses

### Module 01



#### FMP Introduction and Overview

**Target Audience:** Carrier executives and other managers

**Estimated Duration:** 45 min

### Module 02



#### Safety Culture and Management Practices

**Target Audience:** Carrier executives and other managers

**Estimated Duration:** 1.5 hours



# PowerPoint Presentations

Mentimeter



Français English



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Training ▾

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Webinars



## Training

Training Overview

Motor Carrier Executives & Managers

Safety Managers & Other Trainers

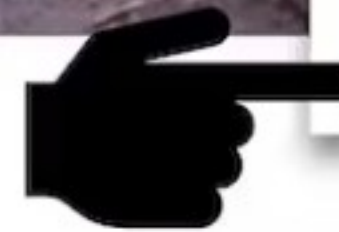
Dispatchers & Driver Managers

Commercial Vehicle Drivers

Driver Spouses & Families

Freight Shippers & Receivers

PowerPoint Training (Downloads)



## PowerPoint Training (Downloads)

NAFMP online training is a comprehensive, interactive experience. We encourage you to participate in the program via our free and [self-paced e-learning system](#). Through the system, you'll have access to periodic check-ins, quizzes and scores. Motor carriers can also encourage their drivers and other personnel to register and complete the appropriate modules through the online system.

### PowerPoints with Audio Narration

Access the Complete Training Program Online →

How to get started (PDF)

### Improve Driver Safety

Reduce fatigue-related risks, reduce crashes, improve alertness and



# ROI Calculator

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ROI Calculator

Contact

Webinars



## ROI Calculator

### Return on Investment (ROI) Calculator

Estimate the monetary benefits of implementing the North American Fatigue Management Program either in its entirety or in select components in a customized program, i.e., fatigue management training, sleep disorder screening and treatment, technology deployment, and scheduling tools.

Click on the links below to download the ROI Calculator and User Guide:

Calculator User Guide (PDF)

Calculator Download (Excel)

Access the Complete Training Program Online →

How to get started (PDF)

#### Improve Driver Safety

Reduce fatigue-related risks, reduce crashes, improve alertness and promote job satisfaction.



# Webinars

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ROI Calculator

Contact

Webinars



## Webinars

### Webinars and Courses

Register for upcoming live NAFMP webinars and courses or check out previous recordings below.

#### Upcoming

Course: [Fatigue Management Program Roadmap](#)

Virtual: June 14, 2023

Access the Complete  
Training Program Online →

How to get started (PDF)

#### Improve Driver Safety

Reduce fatigue-related risks, reduce crashes, improve alertness and promote job satisfaction.



# Next Steps

1. Create an account at [lms.nafmp.org](https://lms.nafmp.org) to watch NAFMP courses
2. Download PowerPoint Files at [nafmp.org](https://nafmp.org)
3. Watch recordings, download slides and register for [NAFMP webinars](#)



# Next NAFMP Course

## Fatigue Management Program Roadmap

Virtual: June 14, 2023

- This North American Fatigue Management Program virtual training course will:
  - Outline the main components of a fatigue management program
  - Cover key fatigue-management educational and training elements
  - Include coursework, instruction, presentations, quizzes and individual assignments
  - Include a fatigue management program roadmap drafting and development session

[Check out the Course Information and Register](#)

# Questions?

Please keep safe, well & alert

Thank you!



The CVSA logo is rendered in a large, white, stylized font. The 'C' and 'V' are connected, and the 'S' is a single continuous stroke. The 'A' is also connected to the 'S'. A registered trademark symbol (®) is located to the right of the 'A'. The logo is centered over the front of a white commercial truck.

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