

# Factors associated with Sleep Quality

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# Introduction

- ▶ Truck drivers face many fatigue issues
- ▶ Fatigue associated with crashes (Presentation later today)
- ▶ Sleep and fatigue issues also related to obesity and other modifiable factors
- ▶ Can we impact that causal chain to reduce crash risk
  - ▶ Benefits of improving health
  - ▶ Increased retention
  - ▶ Reduction of other safety issues (e.g. falls)



# Methods

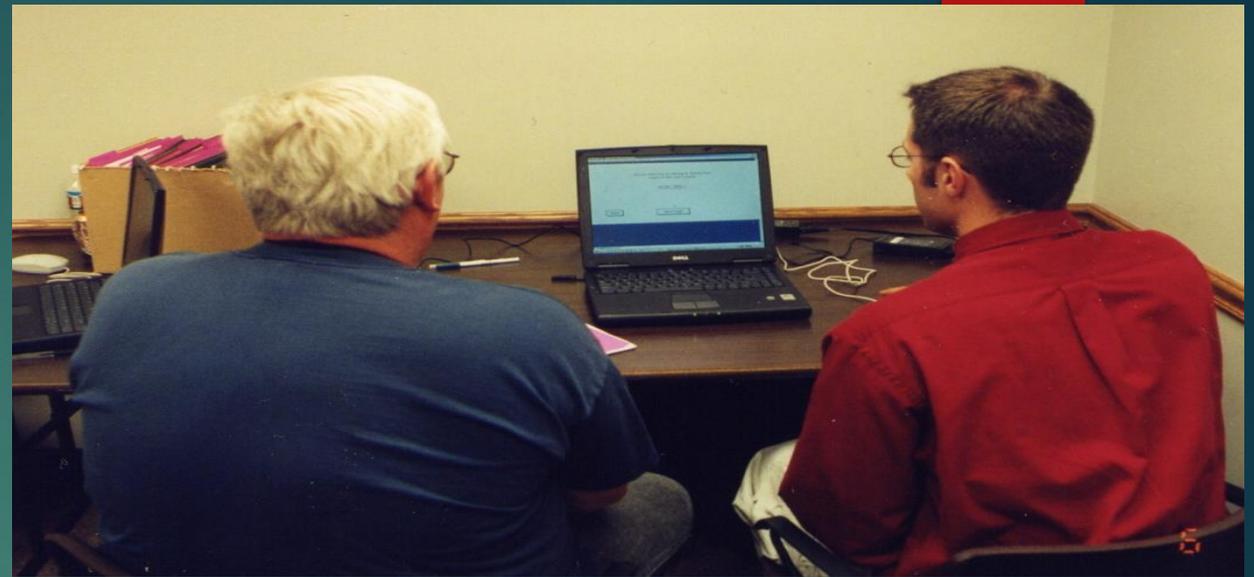
Study Design: Cross Sectional.

N=812 Drivers from 46 States

- ▶ All drivers had current CDL
- ▶ Driving for 1 year or more
- ▶ Laptop questionnaire
- ▶ ~ 1 hour to complete
- ▶ Measured Weight, Height, Lipids, BP
- ▶ \$20 gift card
- ▶ Certificate of Confidentiality



# Enrollment



- ▶ Computerized Questionnaire
  - ▶ Crash, Near Miss history
  - ▶ Personal Factors
  - ▶ Medical history
  - ▶ Occupational Factors
  - ▶ Psychosocial factors

# Sleep Quality Measures

How well do you sleep at night?

Very Well

Well

Fair

Poorly

Very Poorly

How often during the past month has your sleep been restless?

Never

Sometimes

Often

Always



<b>Table 1. Demographic Statistics</b>		
	Mean	Standard Deviation
<b>Age</b>	47.3	10.5
<b>Body Mass Index Category</b>	Frequency	Percent
<b>Underweight</b>	5	0.6
<b>Normal</b>	80	9.8
<b>Overweight</b>	225	27.5
<b>Obese</b>	393	48.1
<b>Morbidly obese</b>	114	14.0
<b>Female Gender</b>	112	13.7
<b>Diagnosed with a Sleep problem</b>	100	12.2
<b>Use of a Sleep Aid</b>	88	10.8
<b>Do Anything to Help to Stay Awake while Driving</b>	525	64.3
<b>Use Caffeine or other products to help stay awake while driving</b>	199	24.4

<b>Table 1. Demographic Statistics</b>		
<b>Restless Sleep</b>	Frequency	Percent
Never	185	22.7
Seldom	426	52.3
Often	159	19.5
Always	44	5.4
<b>Average Hours of Sleep Per Night while on the Road</b>		
Less than 4	16	2.0
4 to 5	85	10.4
5 ½	26	3.2
6	128	15.7
6 ½	63	7.7
7	105	12.9
7 ½	52	6.4
8	130	16.0
8 ½	48	5.9
9	37	4.6
More than 9	64	7.9
I Sleep at Home Every Night	60	7.4

Table 2. Adjusted Odds Ratio for Restless Sleep	Odds Ratio (95% Confidence Interval)	
	Sleep Quality	Restless Sleep
Sleep Hours on the Road		
Less than 4	<b>7.12*</b> (2.09, 24.27)	1.51 (0.42, 5.41)
4 to 5	<b>16.55*</b> (7.02, 39.01)	<b>7.30*</b> (2.88, 18.51)
5 1/2	<b>6.48*</b> (2.26, 18.56)	<b>4.39*</b> (1.17, 16.42)
6	<b>4.47*</b> (2.03, 9.84)	<b>3.26*</b> (1.64, 6.50)
6 1/2	2.32 (0.95, 5.70)	<b>5.25*</b> (2.05, 13.44)
7	2.20 (0.96, 5.04)	<b>2.44*</b> (1.22, 4.90)
7 1/2	<b>2.57*</b> (1.02, 6.49)	<b>5.21*</b> (1.92, 14.12)
8	1.33 (0.57, 3.07)	1.64 (0.87, 3.10)
8 1/2	1.13 (0.40, 3.22)	0.62 (0.29, 1.35)
9	0.63 (0.17, 2.28)	0.91 (0.39, 2.11)
More than 9	1.00 (Reference)	1.00 (Reference)
Does Not Apply	<b>2.90*</b> (1.19, 7.08)	<b>2.66*</b> (1.17, 6.01)

Table 2. Adjusted Odds Ratios	Odds Ratio (95% Confidence Interval)	
	Sleep Quality	Restless Sleep
Using Caffeinated Beverages to stay awake while driving	<b>1.49*</b> (1.07, 2.09)	<b>2.10*</b> (1.34, 3.29)
Using other things to stay awake while driving	<b>1.63*</b> (1.19, 2.25)	<b>1.93*</b> (1.38, 2.70)
Using a Sleep Aid	<b>2.10*</b> (1.32, 3.33)	<b>12.94*</b> (3.14, 53.30)
<b>Job Satisfaction</b>		
Very Satisfied	1.00 (Reference)	1.00 (Reference)
Satisfied	<b>1.63*</b> (1.15, 2.29)	<b>1.91*</b> (1.33, 2.74)
Neither satisfied nor dissatisfied	<b>2.88*</b> (1.80, 4.61)	<b>2.94*</b> (1.56, 5.54)
Dissatisfied	<b>7.04*</b> (3.06, 16.21)	2.76 (0.93, 8.19)
Very dissatisfied	<b>4.08*</b> (1.46, 11.41)	1.75 (0.48, 6.37)
<b>Depressive Symptoms</b>		
Never	1.00 (Reference)	1.00 (Reference)
Seldom	<b>1.44*</b> (1.04, 2.00)	<b>3.85*</b> (2.66, 5.58)
Often	<b>6.48*</b> (3.76, 11.17)	<b>21.86*</b> (5.27, 90.69)
Always	<b>4.62*</b> (1.46, 14.60)	3.13 (0.68, 14.48)

# Other interesting Findings

- ▶ Using alcohol as a sleep aid and restless sleep, OR=8.63 (1.67, 44.56)
- ▶ CPAP use trending protective for restless sleep, OR=0.53 (0.09-1.37)
- ▶ BMI
  - ▶ Overweight associated with restless sleep, OR=1.91 (1.04, 3.27)
  - ▶ Obesity trending toward association, OR=1.83 (0.96, 3.49)

# Conclusions

- ▶ Factors associated with poor sleep quality
  - ▶ Psychological factors
  - ▶ Using a sleep aid (possibly except CPAP)
  - ▶ Doing things to stay awake while driving
  - ▶ Overweight and obesity
  - ▶ Less than 8 hours of sleep
- ▶ Poor sleep quality associated with both near misses and crashes
  - ▶ ~2 fold increased likelihood of near miss

# Questions?



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