Commercial Driver Medical Exams
Multiple Medical Conditions and Trends Over Time

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Background and Introduction

- Matthew Thiese, Chief Executive Officer of SafeLane Health, Inc.

- SafeLane Health has an online tool to help carriers and examiners track and perform exams that follow the most current guidance for medical certification of commercial motor vehicle (CMV) drivers.

- Received multiple grants, and currently submitting additional grants to the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC).

- Assistant Professor at the University of Utah.

Data Sources: Road Ready, Inc.

- Commercial driver medical exams (CDMEs) performed by numerous examiners in all 48 contiguous States.

- Study included drivers employed by private carriers and those who are independent owner-operators.

- Most were over-the-road or long-haul drivers.

- CDMEs performed between January 1, 2005, and October 31, 2012, were analyzed.

- Only the first CDME was analyzed when drivers had multiple, consecutive CDMEs in the database. The remaining CDMEs were excluded.

Body Mass Index (BMI)

- Data were stratified by BMI category:
  - Underweight (BMI <18.5kg/m2).
  - Normal weight (BMI ≥18.5 to <25.0 kg/m2).
  - Overweight (BMI ≥25.0 to <30.0 kg/m2).
  - Obese (BMI ≥30 to <35 kg/m2).
  - Morbidly Obese (BMI ≥35 kg/m2).
- A 5'10" driver would weigh:
  - Normal Weight: 129–173 pounds.
  - Overweight: 174–209 pounds.
  - Obese: 210–243 pounds.
  - Morbidly Obese: 244 pounds or more.

NIH National Heart, Lung, and Blood Institute: Obesity Criteria
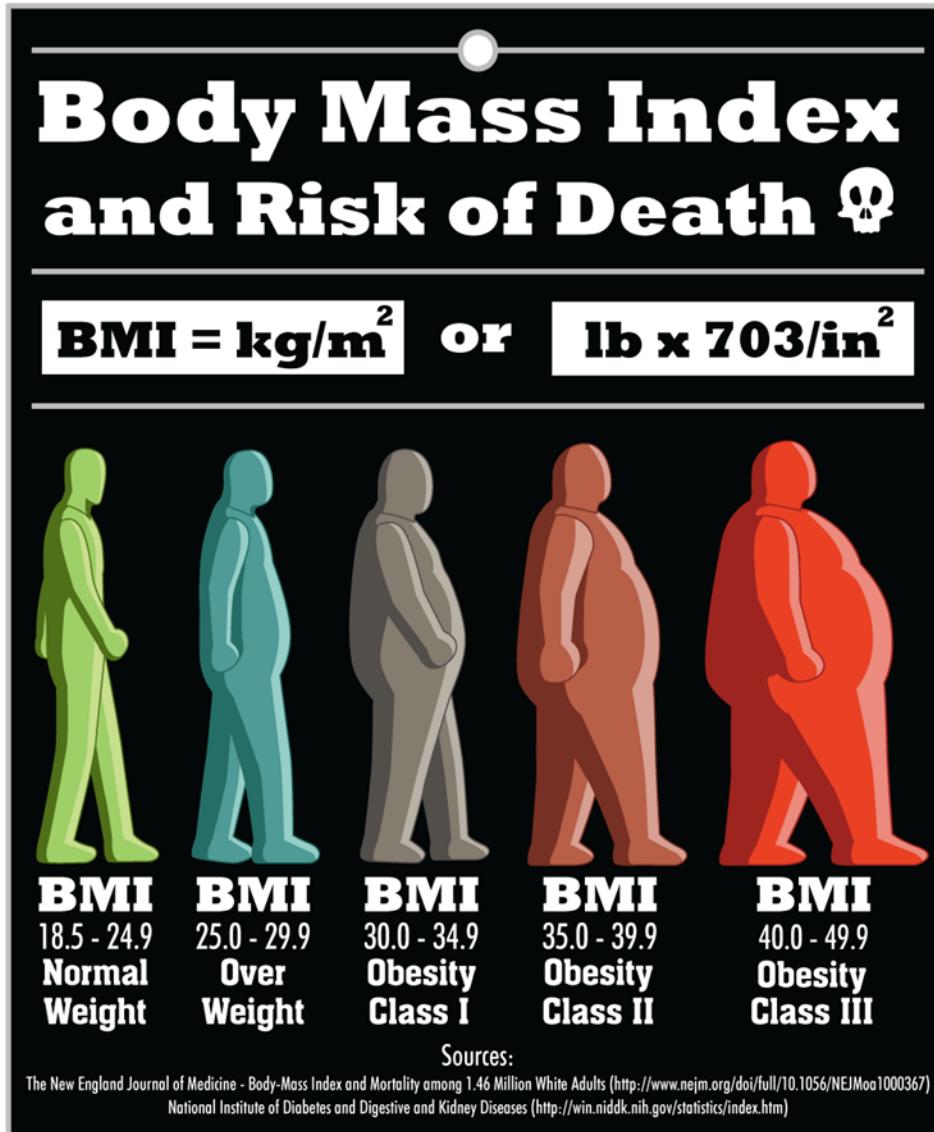
https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmi_dis.htm
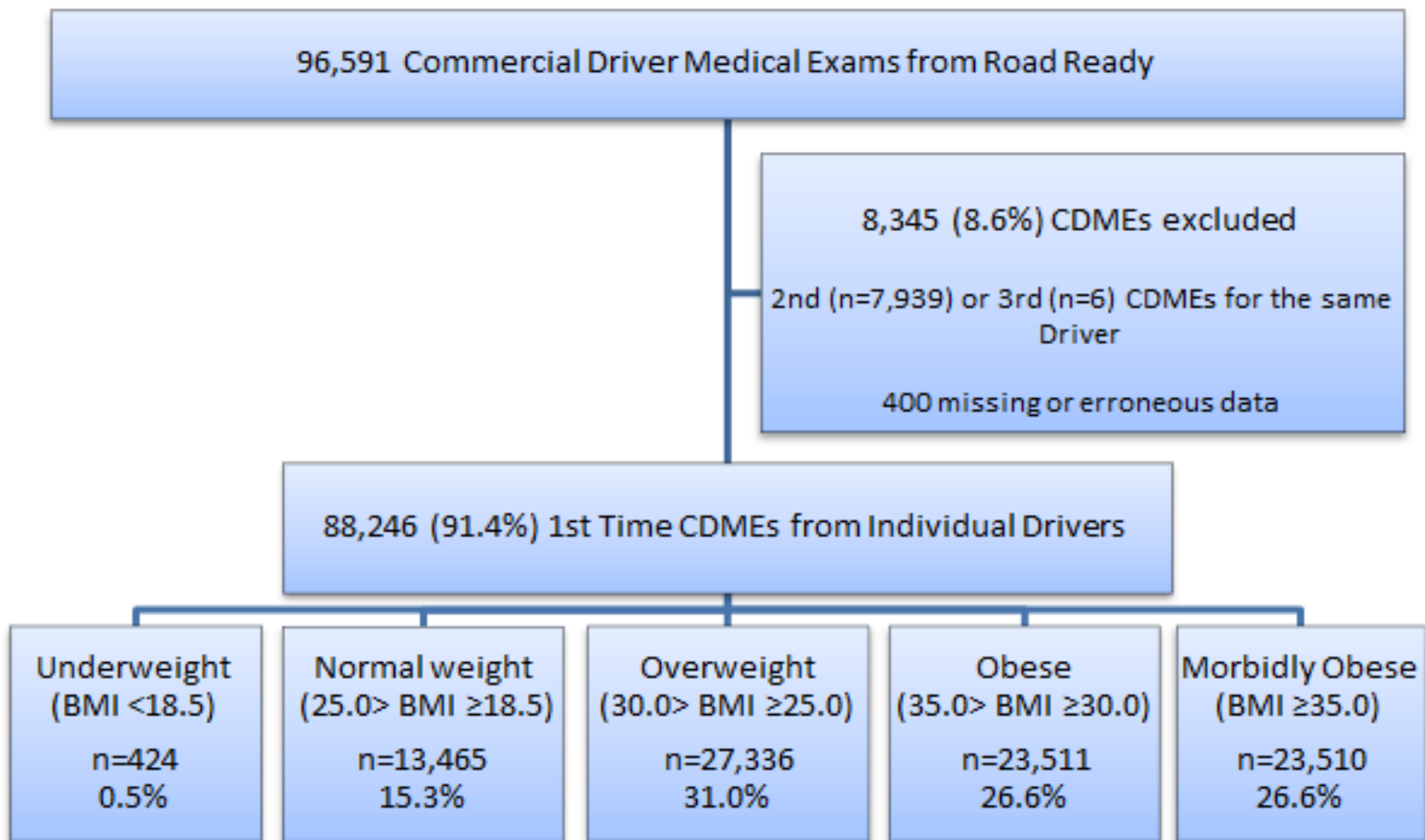
Flow Chart of CDME Data

More than half of drivers were obese or morbidly obese (total 53.2 percent).

Relationships between BMI Categories and Demographic Data

Measure	Underweight BMI <18.5 n = 424	Normal weight 25 > BMI ≥ 18.5 n = 13,465	Overweight 30.0 > BMI ≥ 25.0 n = 27,336	Obese 35 > BMI ≥ 30 n = 23,511	Morbidly Obese BMI ≥ 35 n = 23,510
Age (year)	42.3	44.6	46.9	46.9	45.1
Systolic blood pressure (BP)	116.8	121.1	125.7	128.1	130.3
Diastolic BP	74.6	77.4	80.5	82	83.1
Male (#, %)	390 92.0%	12,878 95.6%	26,450 96.8%	22,584 96.1%	22,057 93.8%
Female (#, %)	34 8.0%	587 4.4%	886 3.2%	927 3.9%	1,453 6.2%
Certification Time: 2-year (#, %)	358 84.4%	10,940 81.2%	19,417 71.0%	14,470 61.5%	10,870 46.2%
Certification Time: Periodic (#, %)	33 7.8%	1,748 13.0%	6,145 22.5%	7,261 30.9%	9,942 42.3%
Certification Time: Temporarily Disqualified (#, %)	15 3.5%	301 2.2%	798 2.9%	763 3.2%	1,076 4.6%
Not Certified (#, %)	18 4.2%	476 3.5%	976 3.6%	1,017 4.3%	1,622 6.9%

Comparing Driver Population with Other Studies

- Sieber et al., *Data from 2010 National Survey of Truck Drivers* (AJIM and JOEM, 2015).

- Thiese et al., *Cross-sectional Study of Truck Drivers*, conducted from 2008–10 (JOEM 2015).

Variable	Sieber et al. (n=1,265)	Thiese et al. (n=797)	Current Data (n=88,246) A = Total B = 2010	
Age	~48	47.2	A=46.0	B=45.9
Percent Female	6.5%	14.1%	A=4.2%	B=3.7%
BMI	32.60	32.90	A=31.70	B=32.50
BMI ≥ 35 (men)	31.3%	28.8%	A=26.6%	B=30.1%
High blood pressure	26.3%	28.9%	A=23.9%	B=31.8%
Cardiovascular disease	4.4%	6.0%	A=3.4%	B=4.4%

Relationships between Obesity and Driver Health

- Many CMV drivers (53.2 percent) in this study are obese and 26.6 percent have a BMI over 35.0 kg/m^2.

- BMI is related to many medical conditions:
  - Cardiovascular issues.
  - Diabetes mellitus.
  - Sleep disorders.
  - Lung disease.
  - Shortness of breath.
  - Spinal injuries or disease.
  - Digestive problems.
  - Illness or injuries in the past 5 years.
  - Requiring vision correction.

- Influences of obesity are abundant and may be beyond those commonly recognized among CMV drivers.

Multiple Medical Conditions

- January 2010 recommendations from the Medical Review Board (MRB) of the U.S. Department of Transportation's Federal Motor Carrier Safety Administration (FMCSA)

- List of 13 conditions; limited certification with increasing number of conditions.

Number of Conditions	Certification Length
0 or 1	Maximum 2 years
2	Maximum 1 year
3	Maximum 6 months
4 or more	Not eligible until resolution of at least one condition

MRB recommendation, January 6, 2010, for fitness for duty with multiple medical conditions:

https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/Final_Jan_6_2010_MRB_Meeting_Summary.pdf

Data Used from the CDME Form for Each Condition

- Body mass index > 35 kg/m^2.

- Diabetes mellitus controlled by medication.

- Heart disease, heart surgery, or heart abnormalities.

- Elevated blood pressure above 140/90, hypertension medication, or self-reported history of hypertension.

- Corrected vision in both eyes worse than 20/40 or horizontal field of vision <70 degrees in either eye.

- Sleep problems.

# Data Used from the CDME Form for Each Condition

- Kidney disease.

- Lung and chest abnormalities.

- Seizures or epilepsy.

- Spine or other musculoskeletal disorders.

- Stroke or paralysis.

- Nervous or psychiatric disorders.

- Opioid or benzodiazepine medication, including generic and trade names.
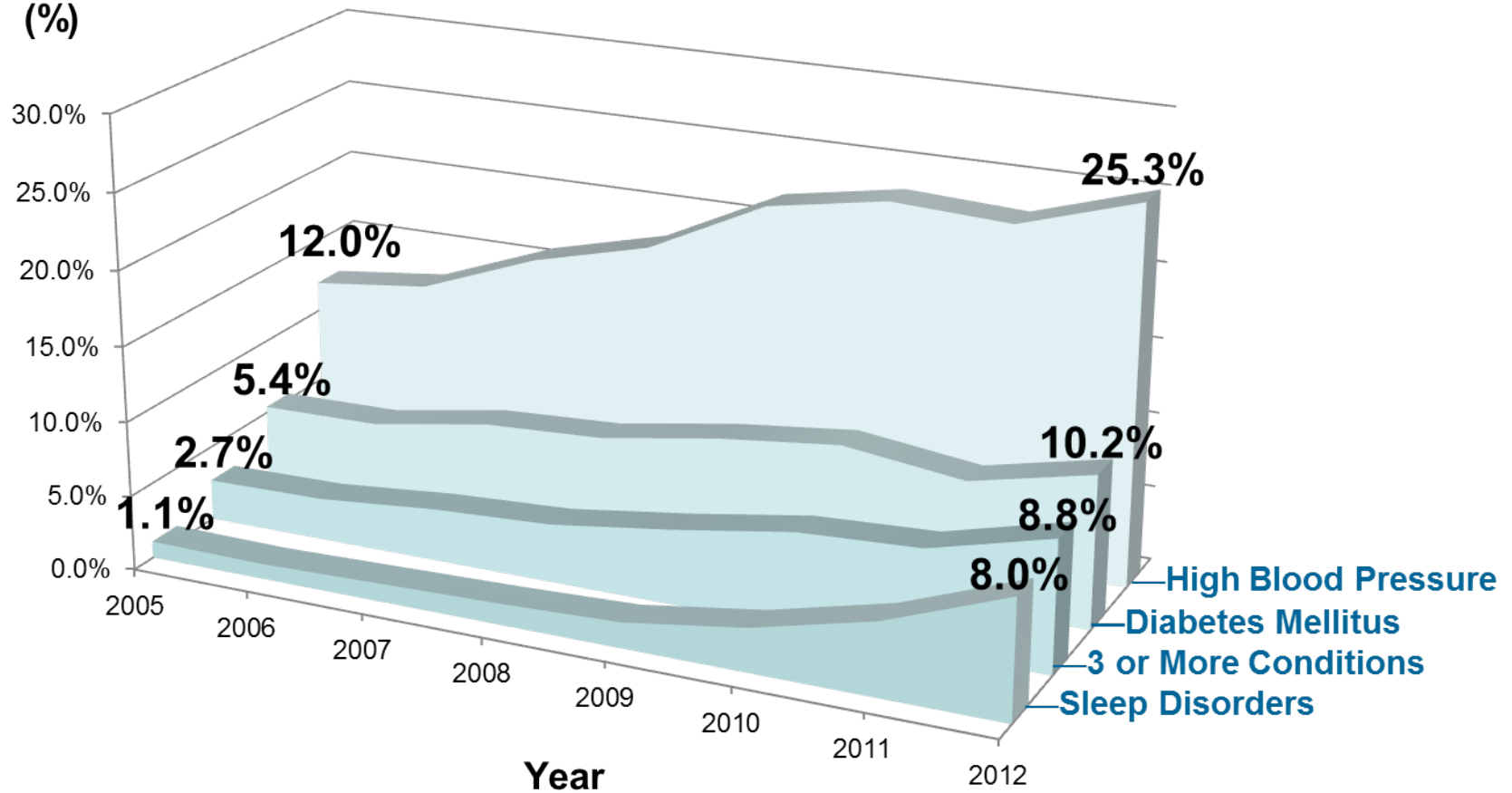
Change over Time for Select Conditions

- Meaningful increase in the prevalence of medical conditions.
- Standards for diagnoses not changed over time for these conditions.
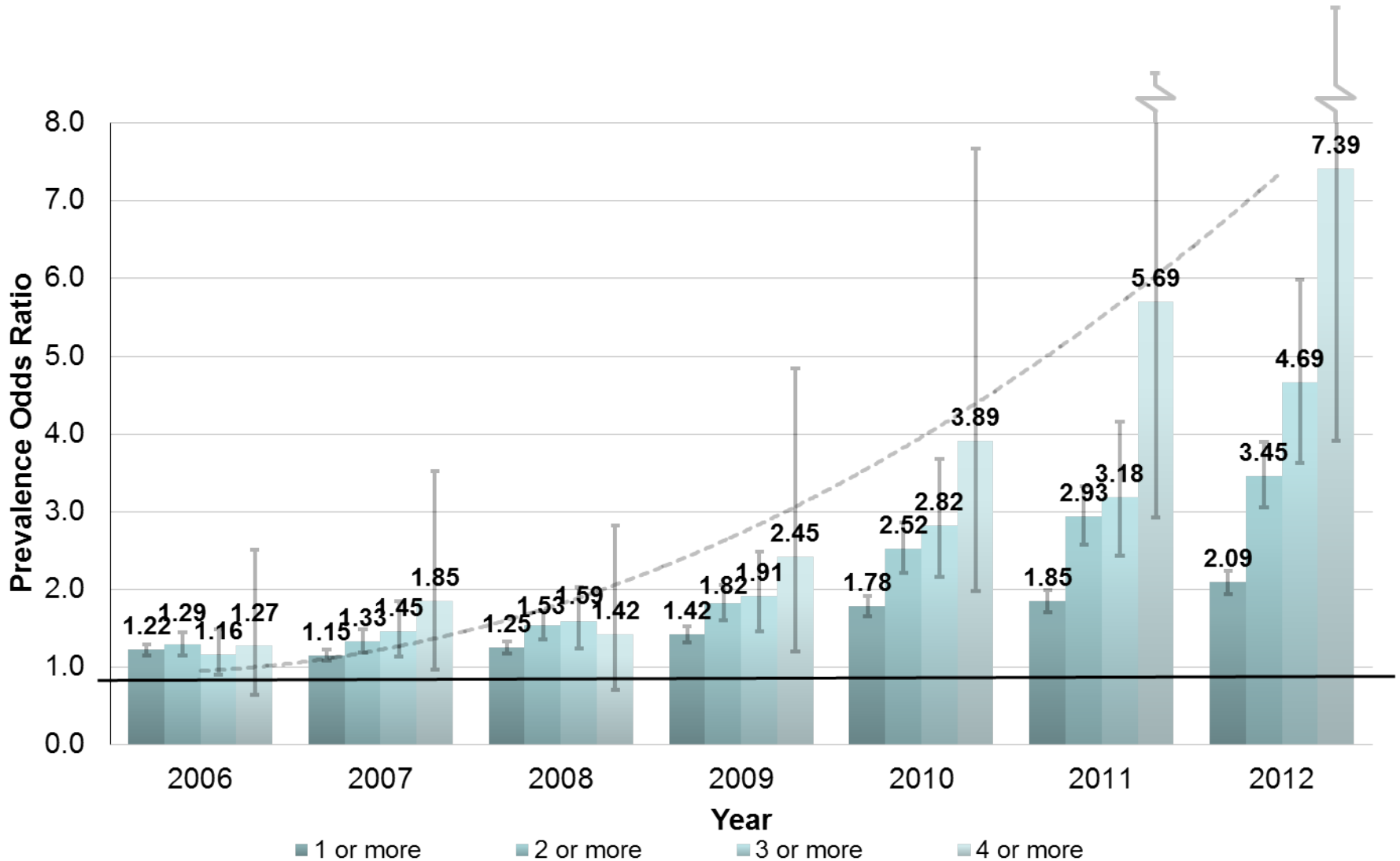
Prevalence odds ratio and 95-percent confidence interval for number of multiple conditions per year compared to 2005, adjusted for age, gender, and body mass index

Relationships between Obesity and Driver Health

- 8 of 13 conditions changed significantly over time.

- Significant increases over time for:

  1. Opioid or benzodiazepine use.

  2. BMI >35 kg/m$^{2.}$

  3. Sleep disorders.

  4. Hypertension.

  5. Diabetes mellitus.

  6. Cardiovascular disease.

  7. Psychiatric disorders.

Relationships between Obesity and Driver Health

- Vision problems were the only condition where the prevalence meaningfully decreased.

- Prevalence of multiple concomitant conditions also significantly increased.

- Data suggest drivers may be becoming more unhealthy over 8-year period.

Disclosures

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- The CDC/NIOSH is not involved in the study design, data analyses, or interpretation of the data.

Published Reports

- Thiese, M. S., Moffitt, G., Hanowski, R. J., Kales, S. N., Porter, R. J., & Hegmann, K. T. (2015). Commercial Driver Medical Examinations: Prevalence of Obesity, Comorbidities, and Certification Outcomes. *Journal of Occupational and Environmental Medicine*. http://journals.lww.com/joem/Citation/2015/06000/Commercial _Driver_Medical_Examinations__Prevalence.8.aspx

- Thiese, M. S., Moffitt, G., Hanowski, R. J., Kales, S. N., Porter, R. J., & Hegmann, K. T. (2015). Repeated Cross-Sectional Assessment of Commercial Truck Driver Health. *Journal of Occupational and Environmental Medicine*, *57*(9), 1022-1027. http://journals.lww.com/joem/Abstract/2015/09000/Repeated_ Cross_Sectional_Assessment_of_Commercial.13.aspx

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