

# Healthcare Disparities in Obesity Treatment

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MassGeneral Hospital  
for Children

# Objectives

## Discuss

Discuss racial and ethnic disparities in the prevalence, treatment, and pathophysiology of obesity.

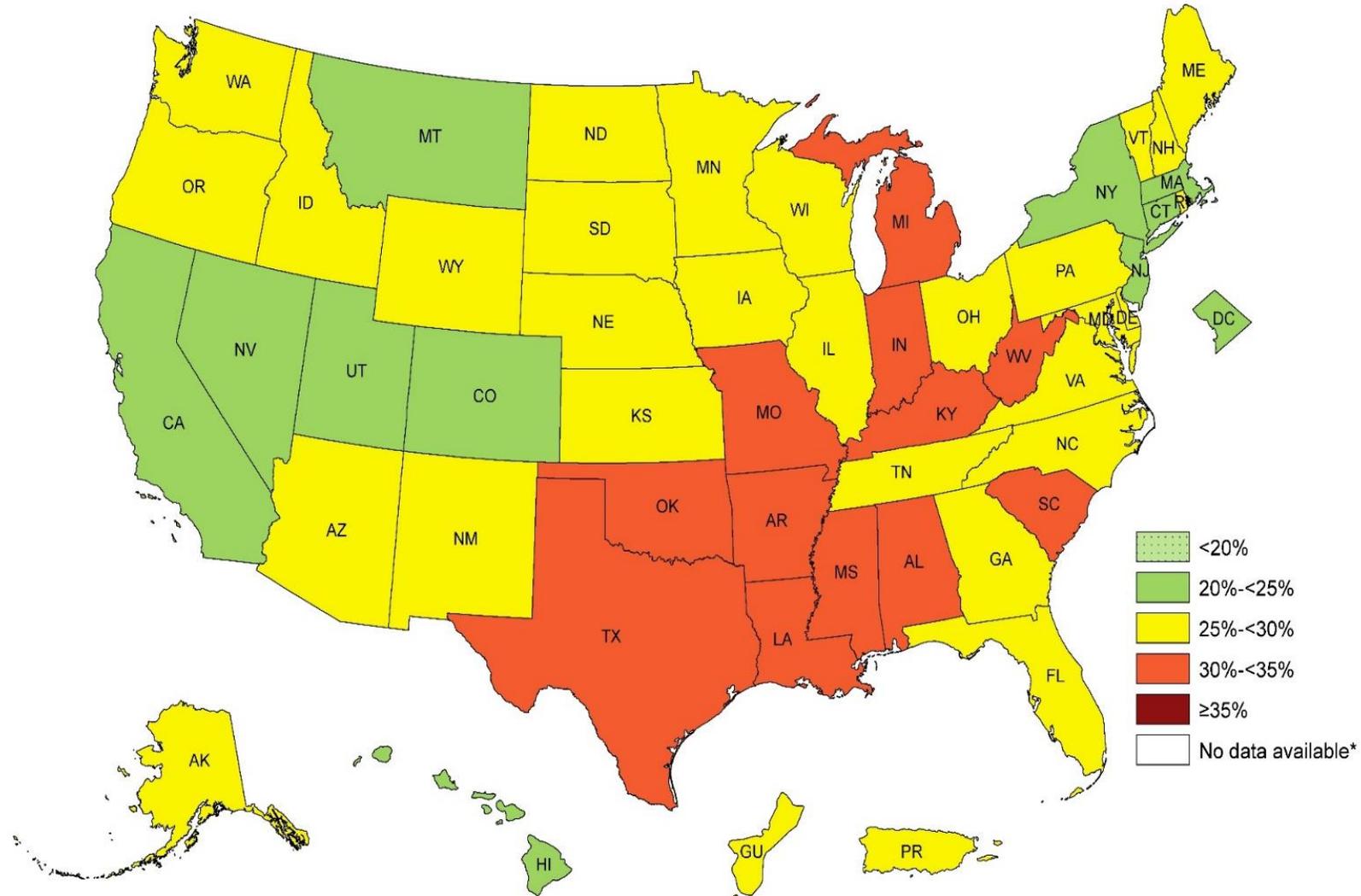
## Explore

Explore issues surrounding obesity and socioeconomic status, education level, weight perception, provider diagnosis, and medical expenditures in obesity.

## Understand

Understand differences in response to treatment of racial and ethnic minorities with regards to pharmacotherapy and weight loss surgery.

# Prevalence<sup>†</sup> of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2011

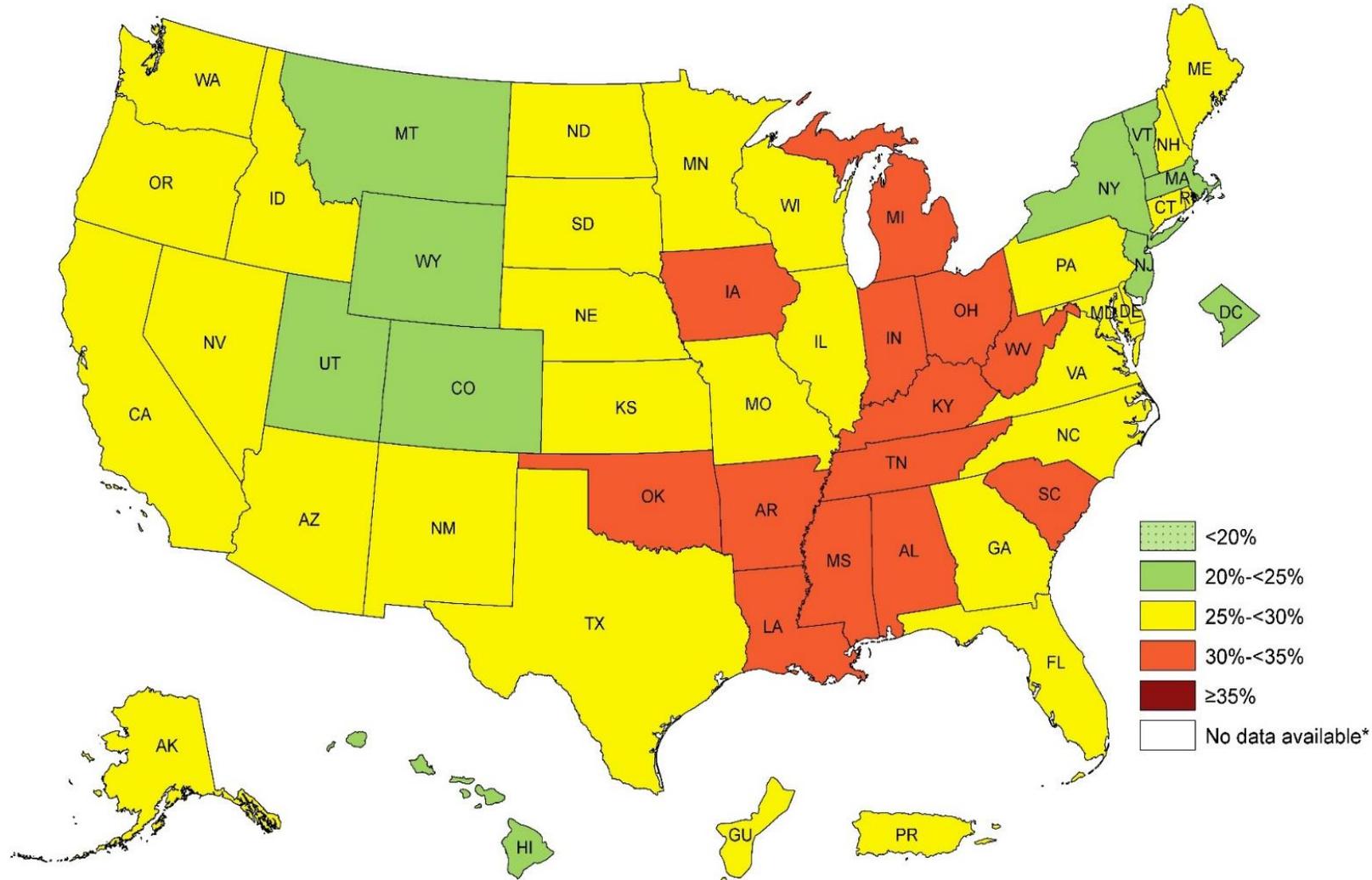


<sup>†</sup> Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.

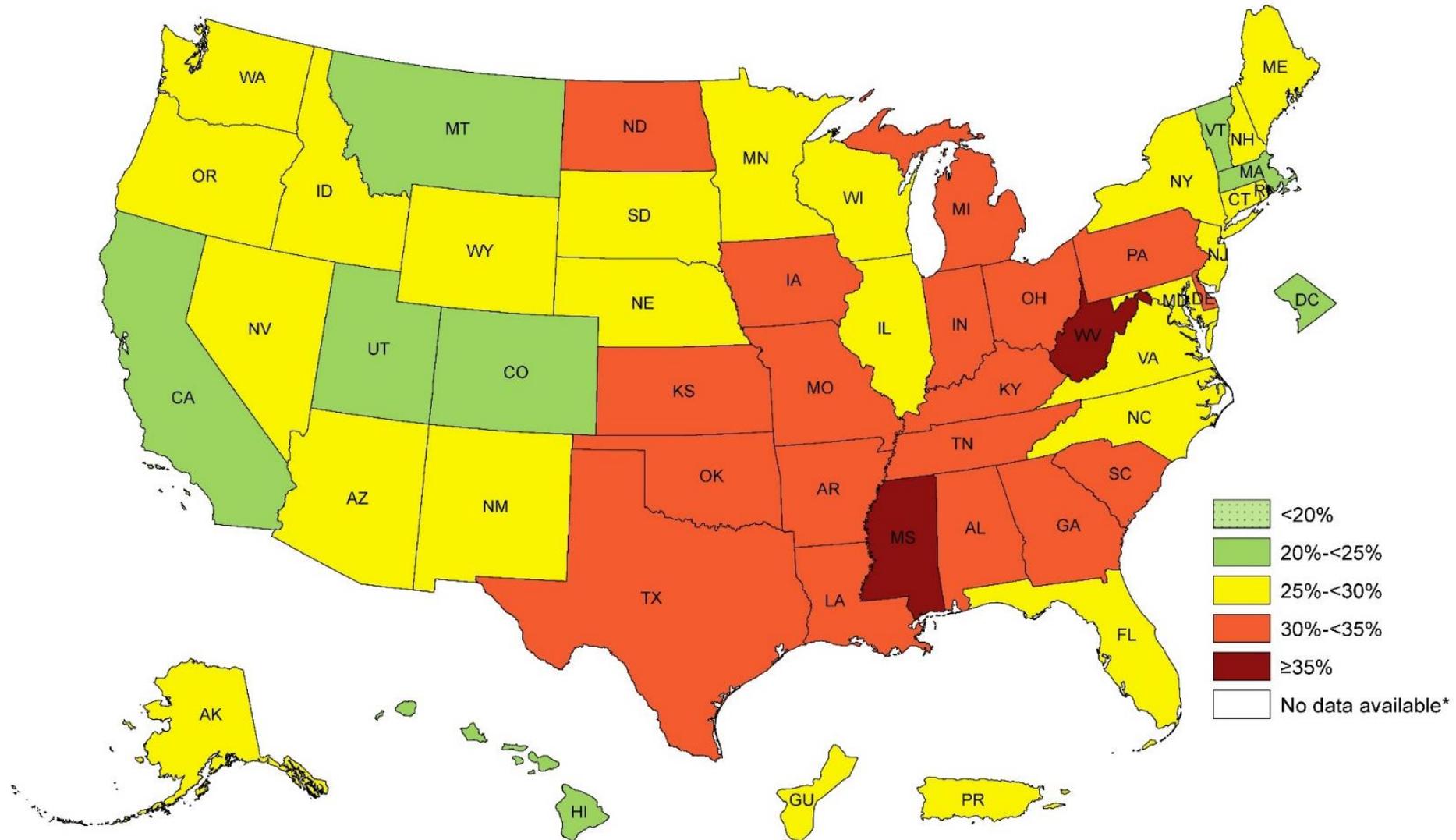
\*Sample size <50 or the relative standard error (dividing the standard error by the prevalence) ≥ 30%.



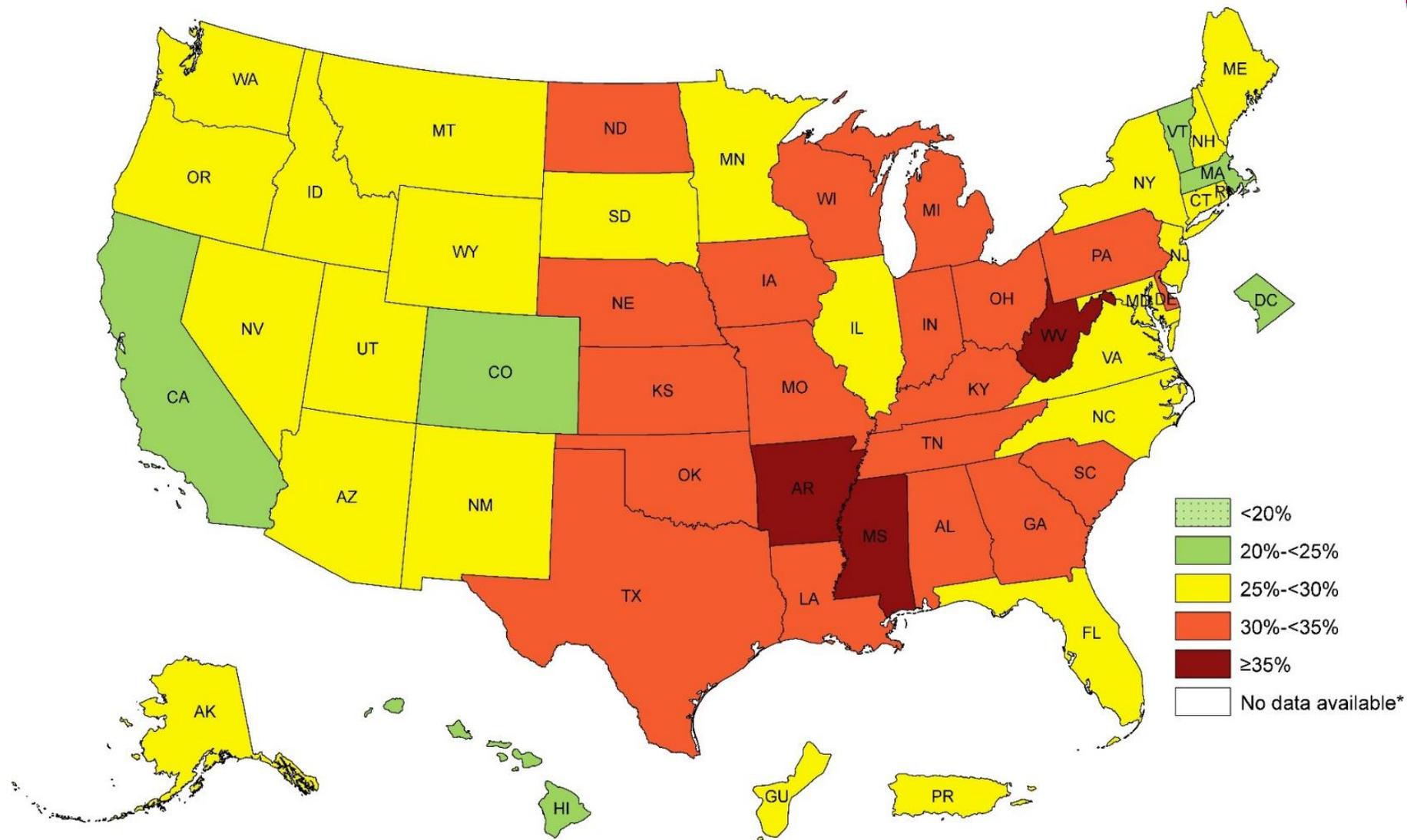
# Prevalence<sup>1</sup> of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2012



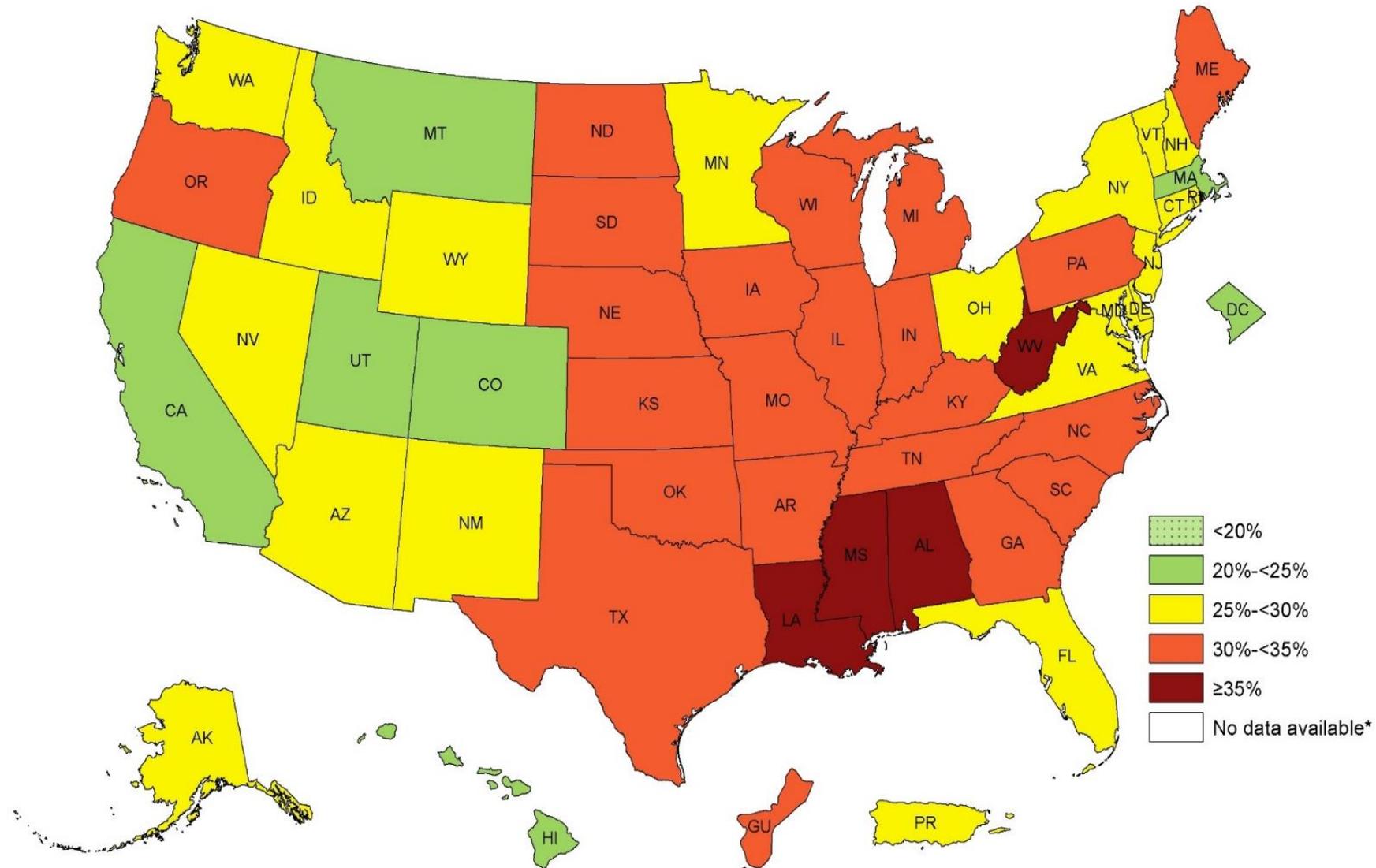
# Prevalence<sup>1</sup> of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2013



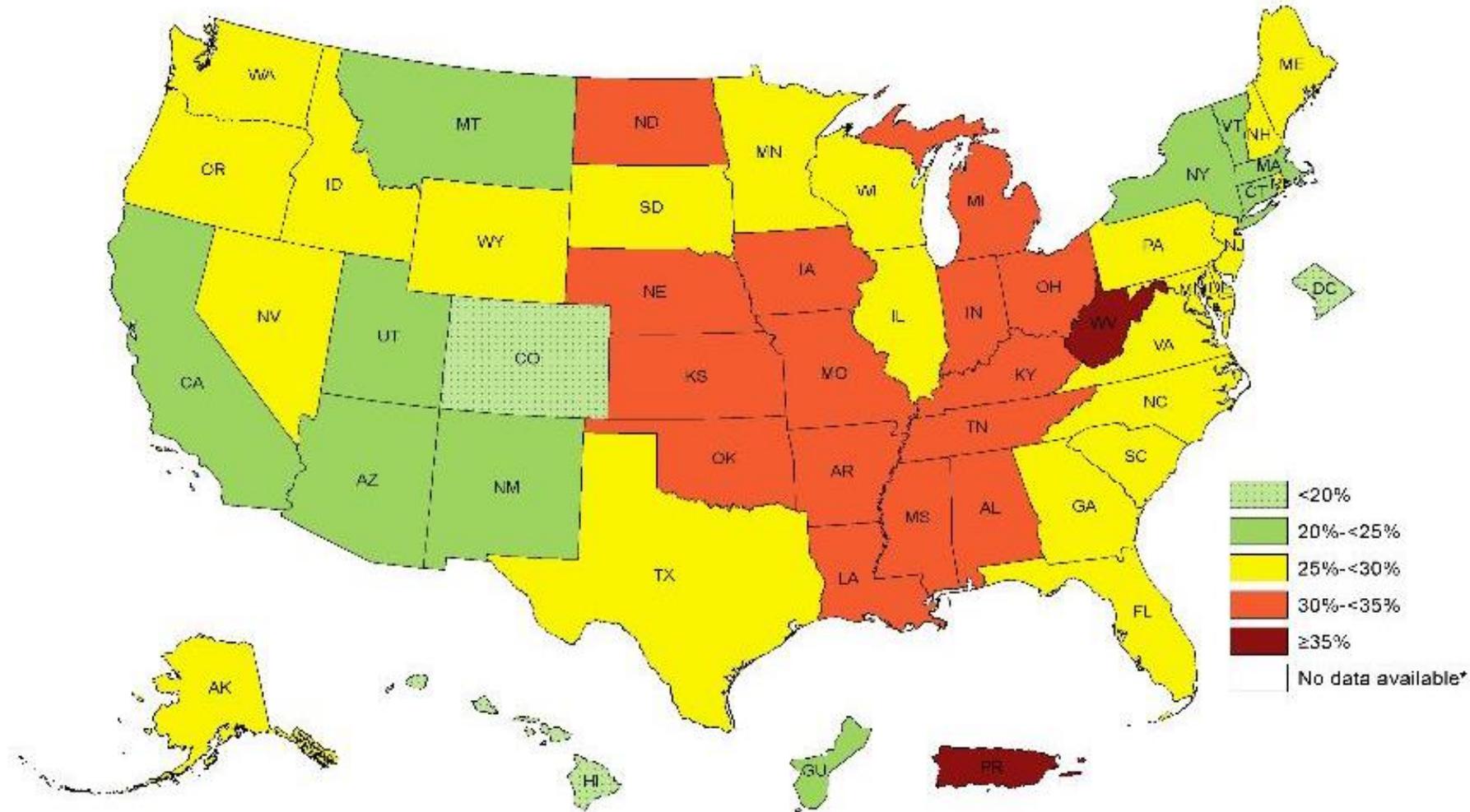
# Prevalence<sup>1</sup> of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2014



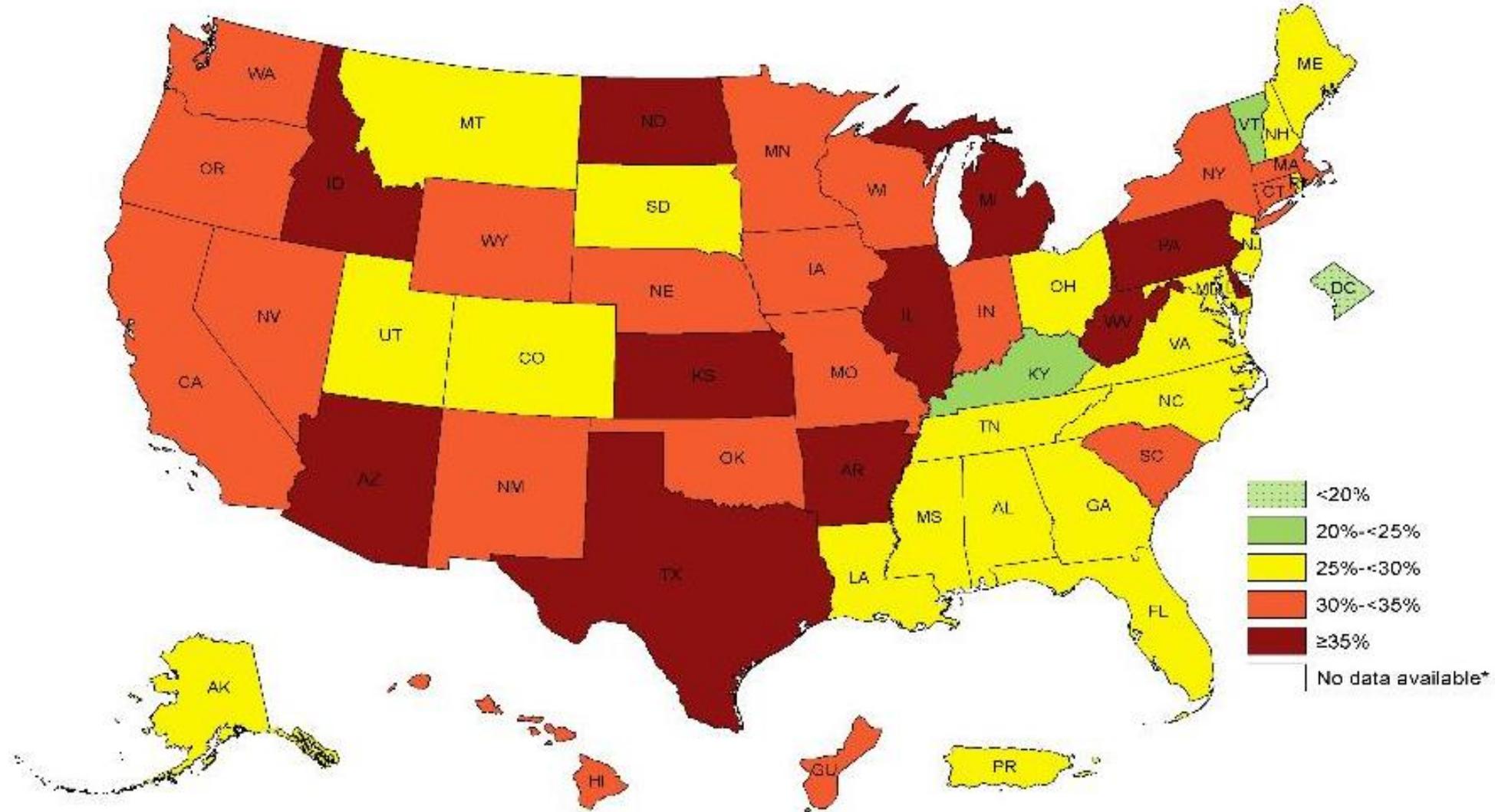
# Prevalence<sup>1</sup> of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2015



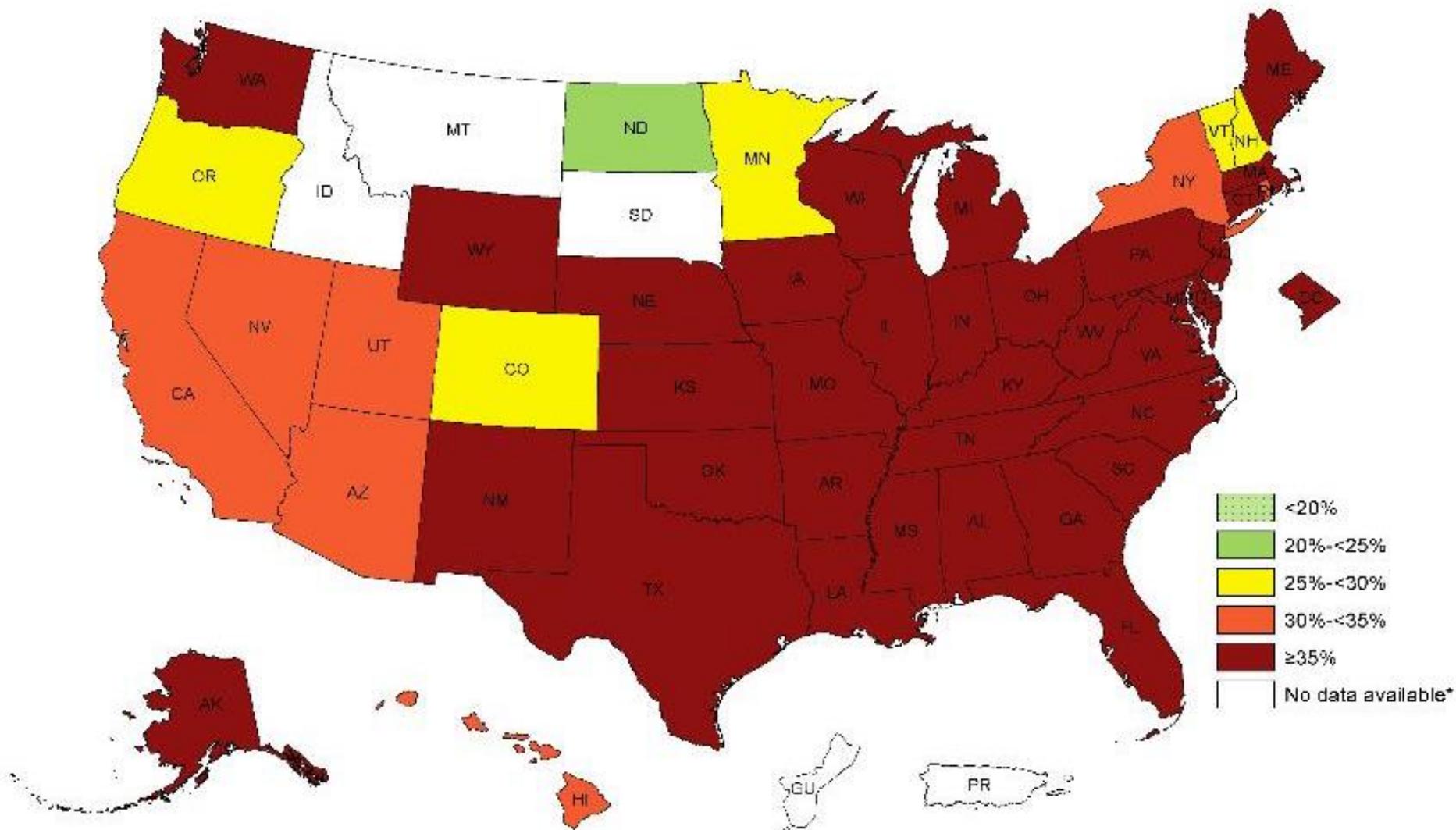
# Prevalence of Self-Reported Obesity Among Non-Hispanic White Adults, by State and Territory, BRFSS, 2013-2015



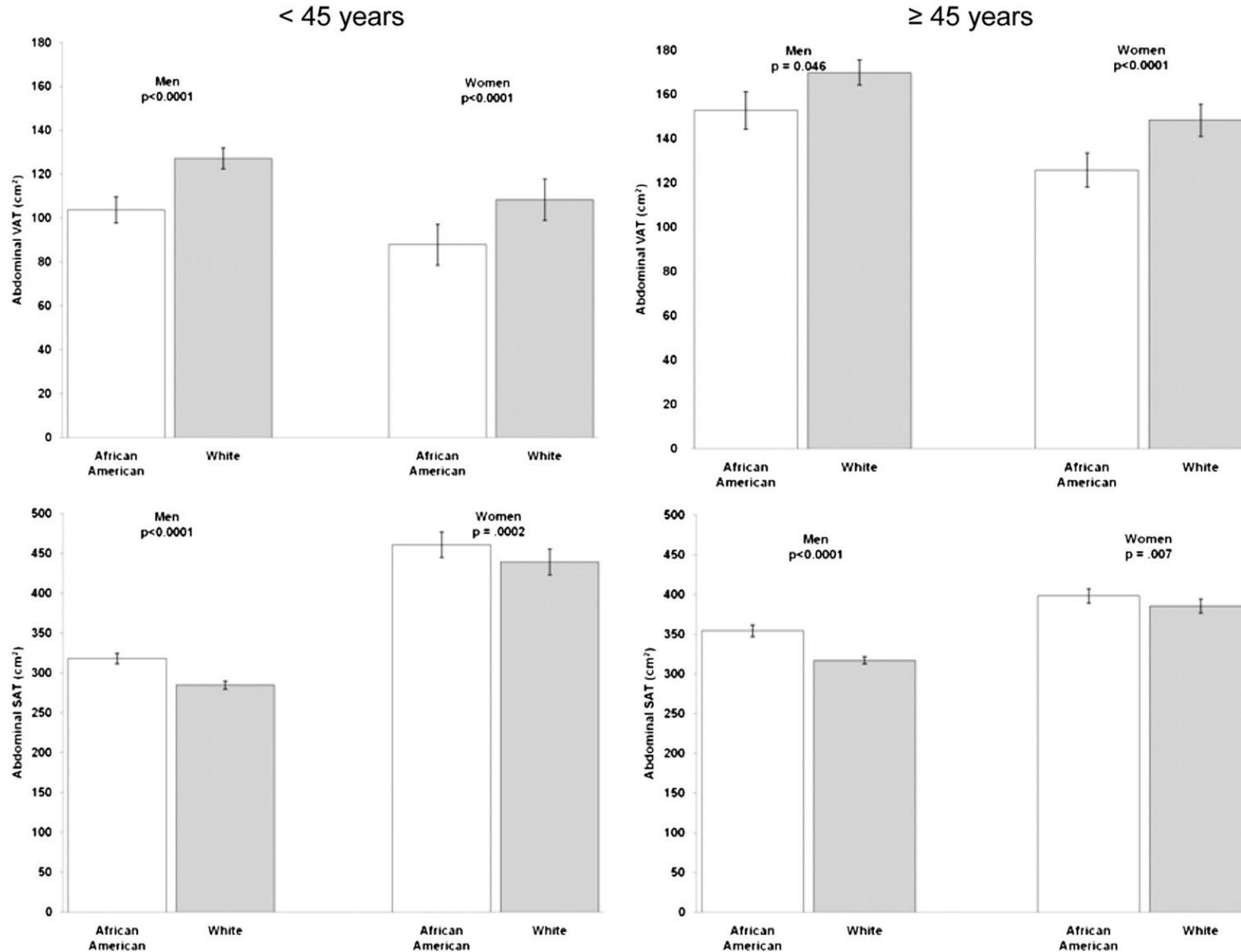
# Prevalence of Self-Reported Obesity Among Hispanic Adults, by State and Territory, BRFSS, 2013-2015



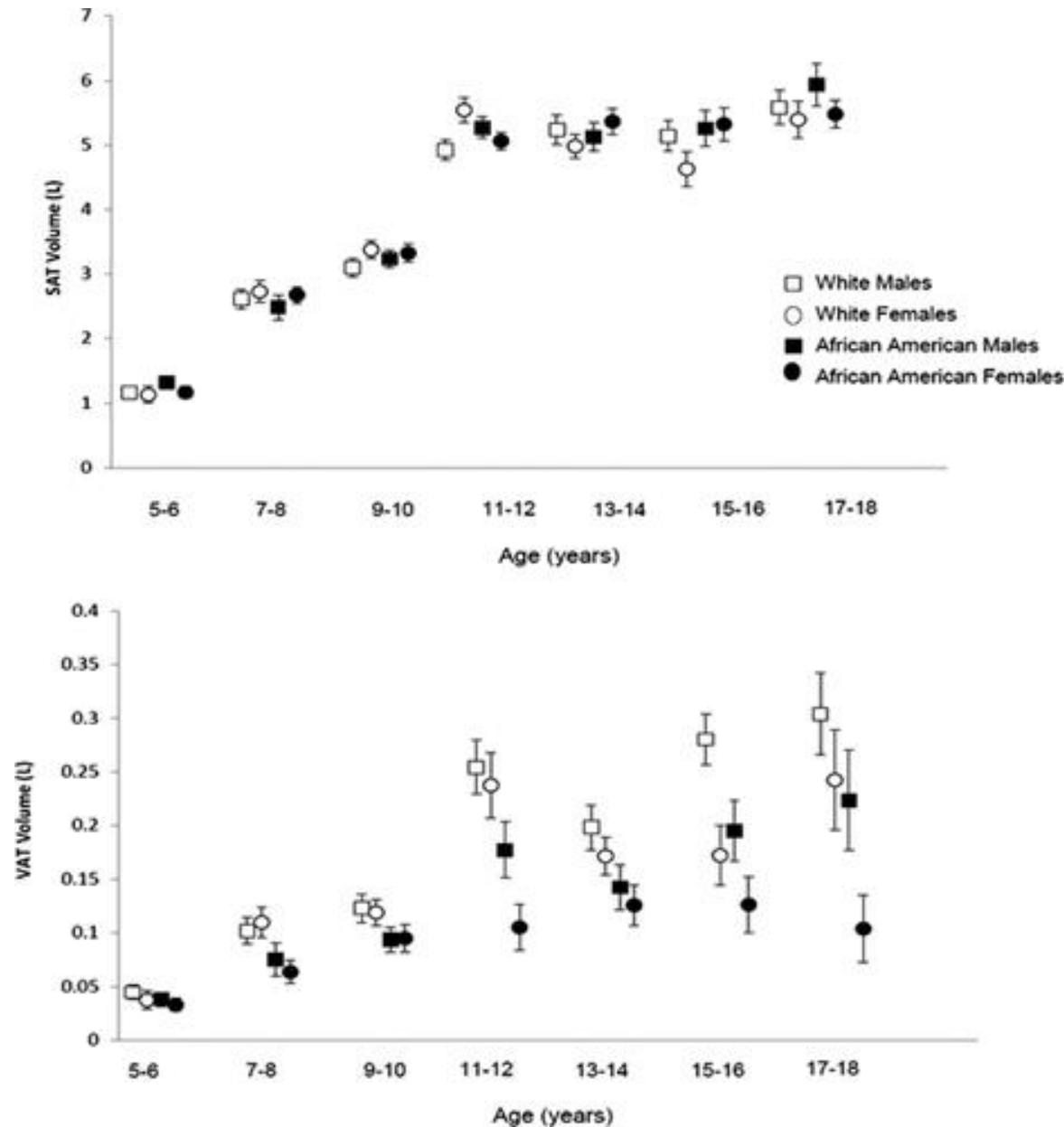
# Prevalence of Self-Reported Obesity Among Non-Hispanic Black Adults, by State and Territory, BRFSS, 2013-2015



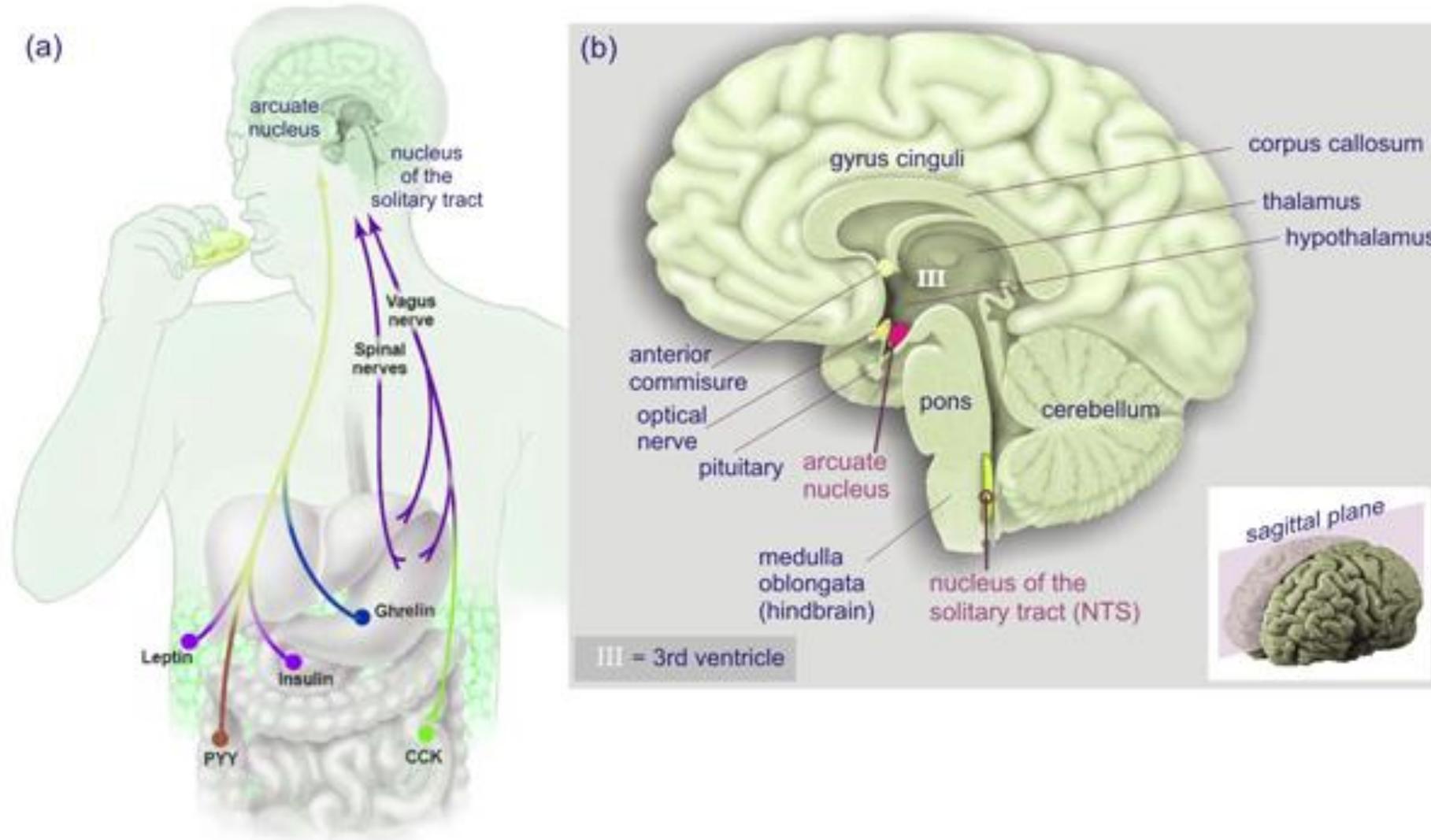
Mean (95% CI) abdominal visceral adipose tissue (VAT) area (top panels) and subcutaneous adipose tissue (SAT) area (bottom panels) in African American and white men and women aged <45 and ≥45 y.



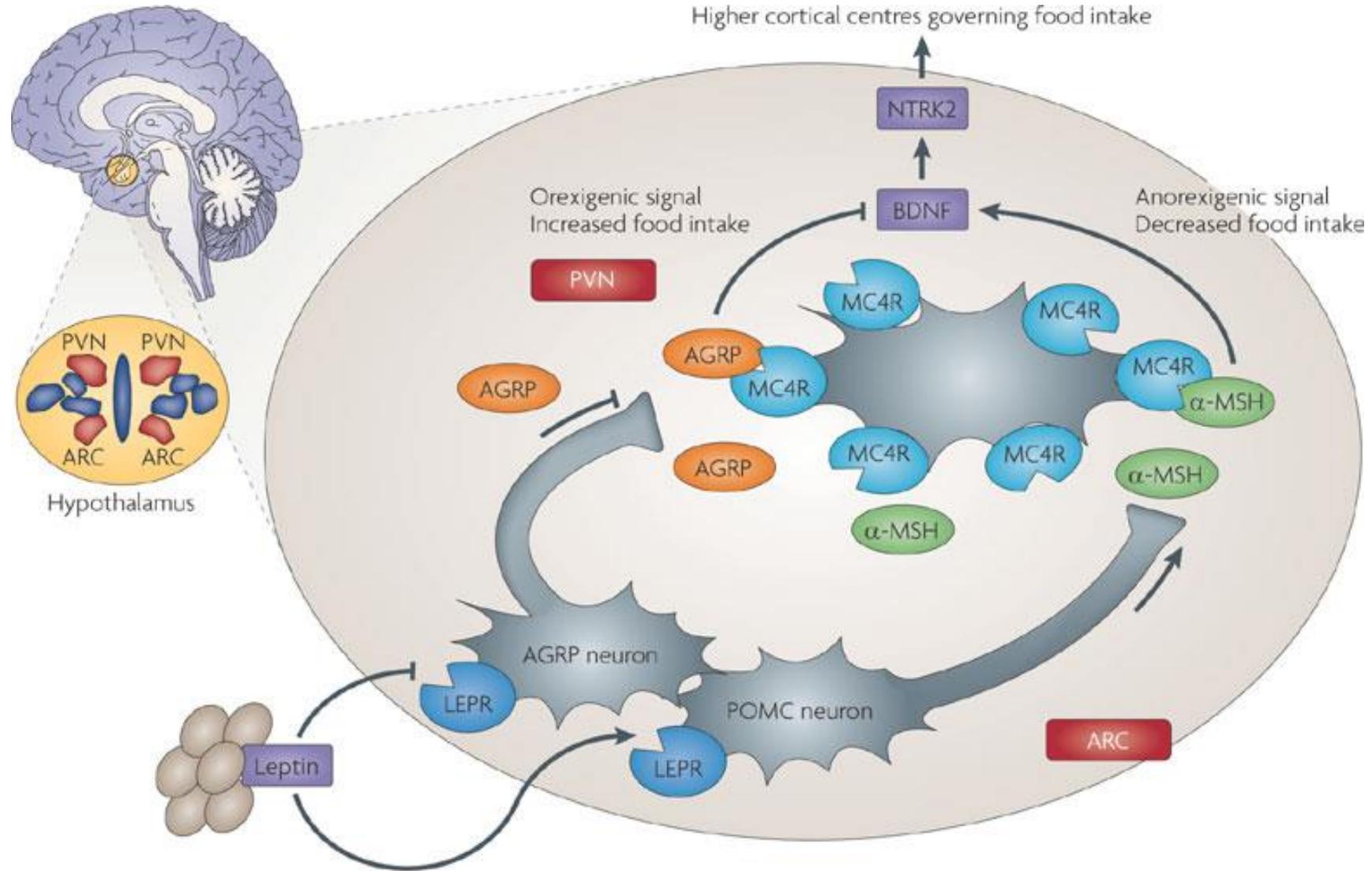
# Ethnic and sex differences in visceral, subcutaneous, and total body fat in children and adolescents



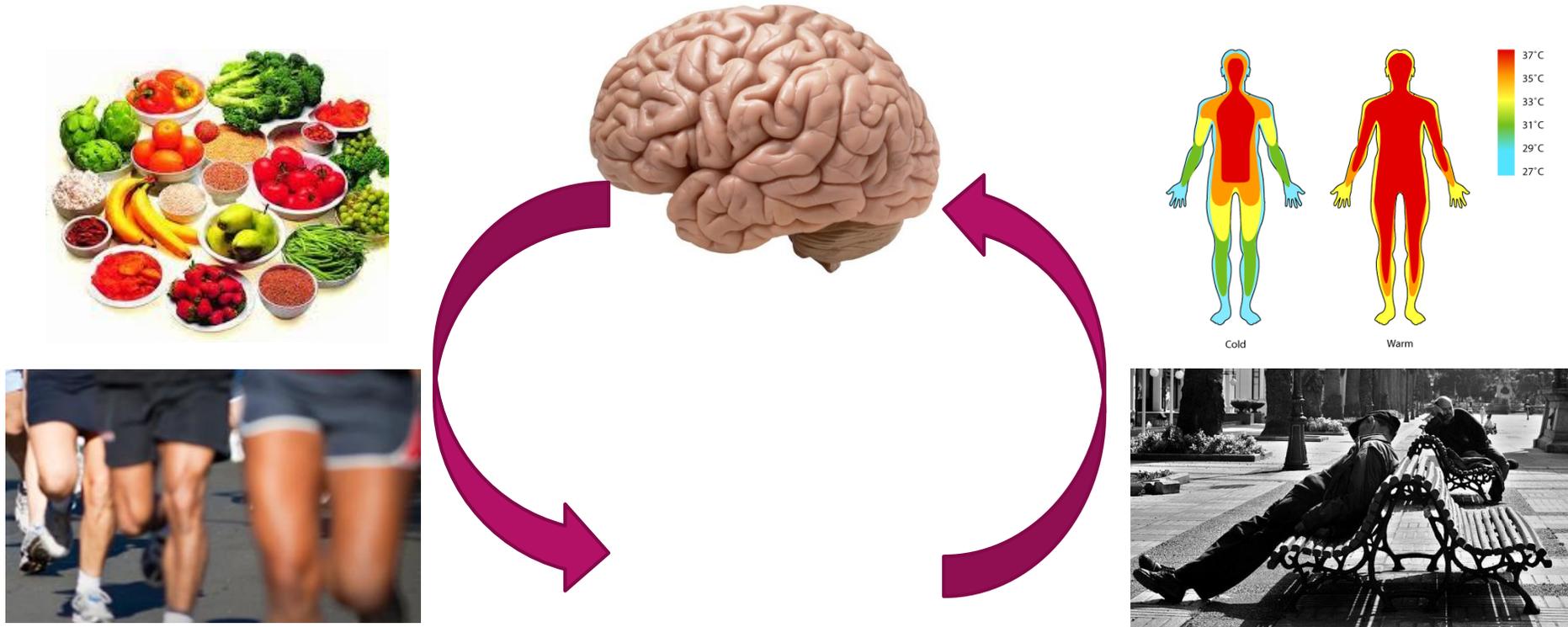
# Regulation of Food Intake



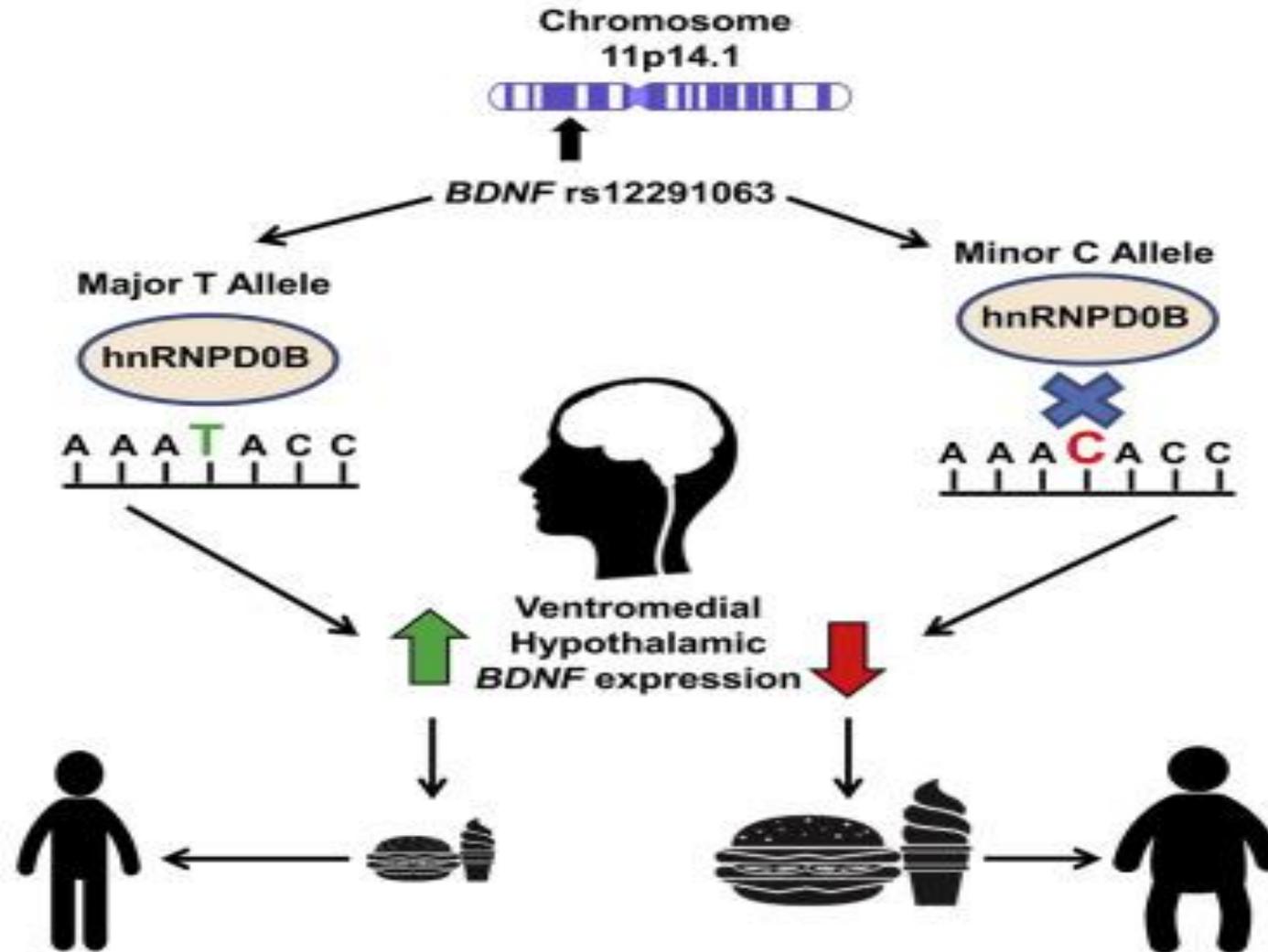
# Regulation of Food Intake



# Central Nervous System regulates weight

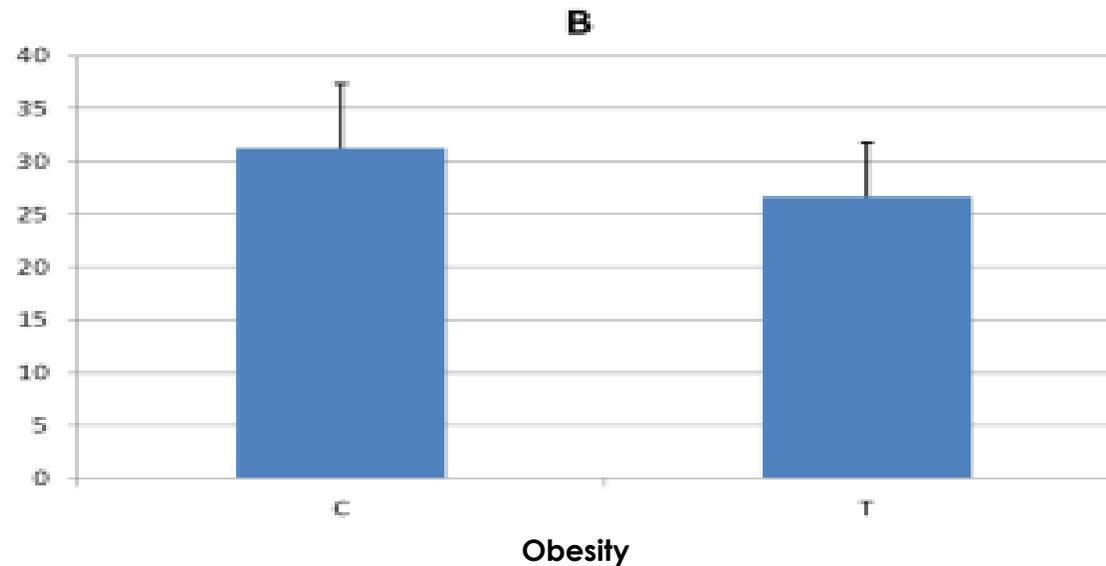
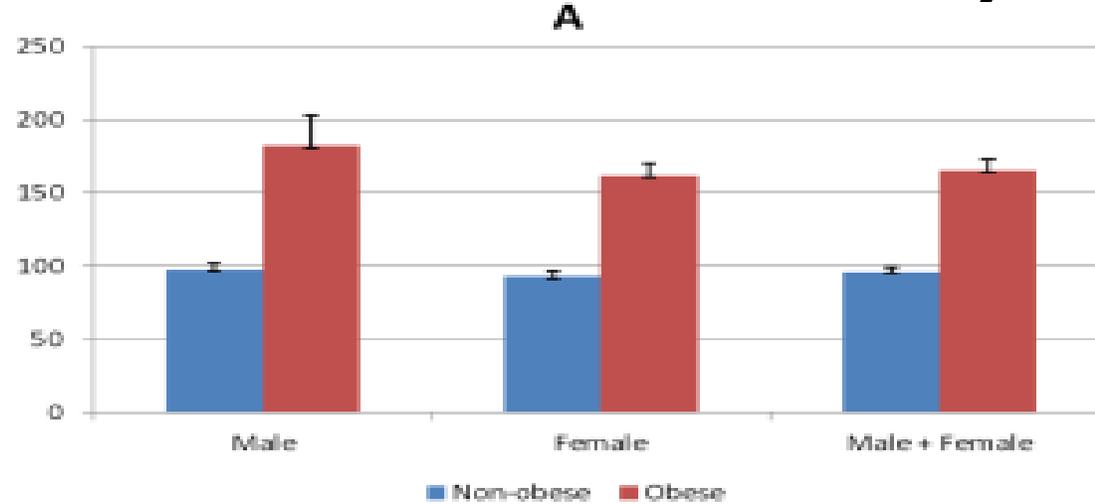


# BDNF Regulation and Obesity



Cell Rep. 2015 Nov 10;13(6):1073-80.

# Genome-wide analysis-African-specific variant in *SEMA4D* associated with body mass index



13 MAR 2017 DOI: 10.1002/oby.21804

<http://onlinelibrary.wiley.com/doi/10.1002/oby.21804/full#oby21804-fig-0003>



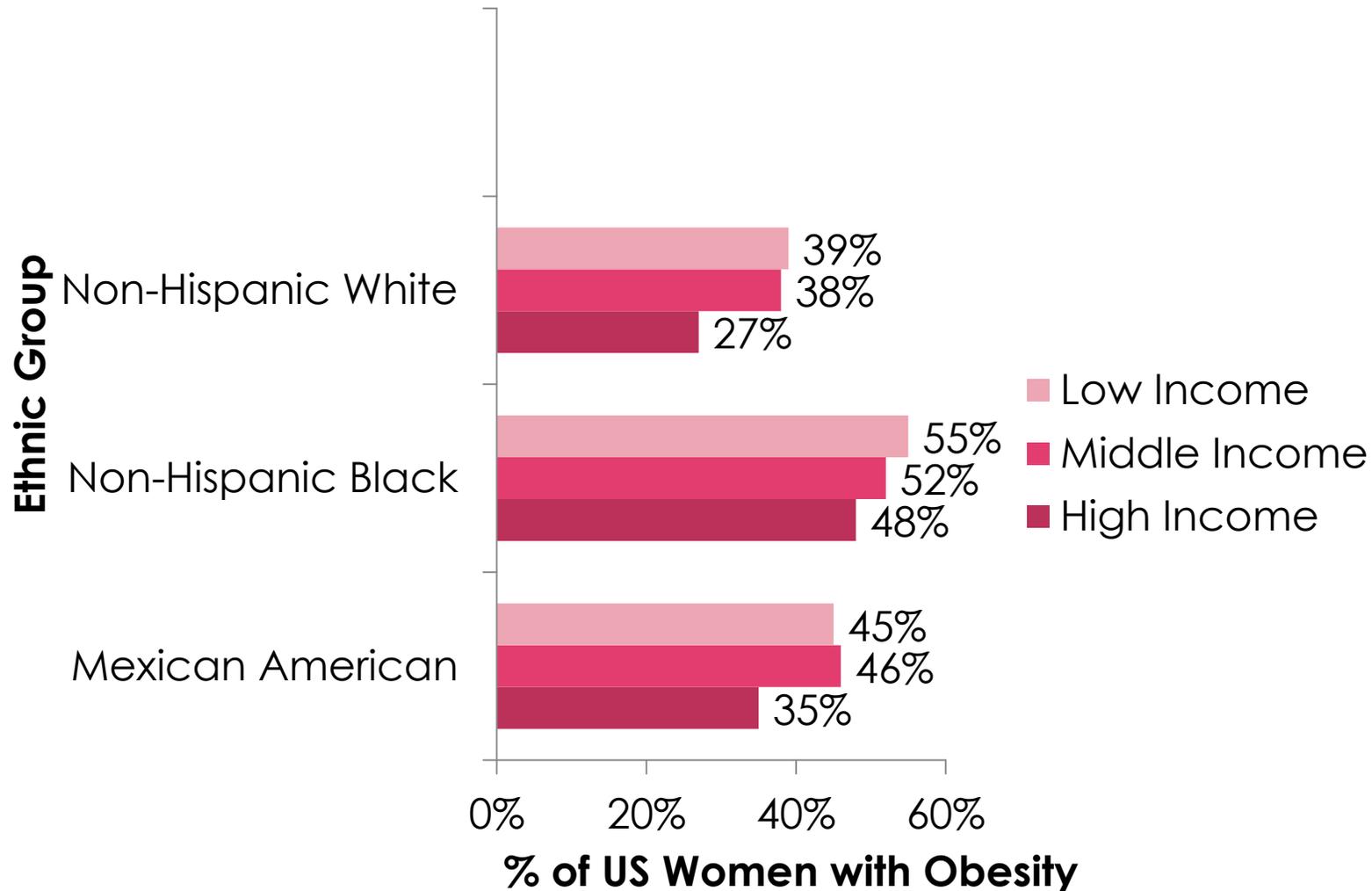
# Foreign Born Persons Have Lower Likelihood of Obesity than those Born in the US

National Health Interview Survey 1997-2005

<b>Ethnicity/ Nativity Status</b>	<b>Men</b>	<b>Women</b>
<b>US Born White</b>	1.0	1.0
<b>US Born Black</b>	1.4	2.09
<b>US Born Hispanic</b>	1.53	1.51
<b>Foreign Born White</b>	0.63	0.62
<b>Foreign Born Black</b>	0.55	1.22
<b>Foreign Born Hispanic</b>	0.72	0.83

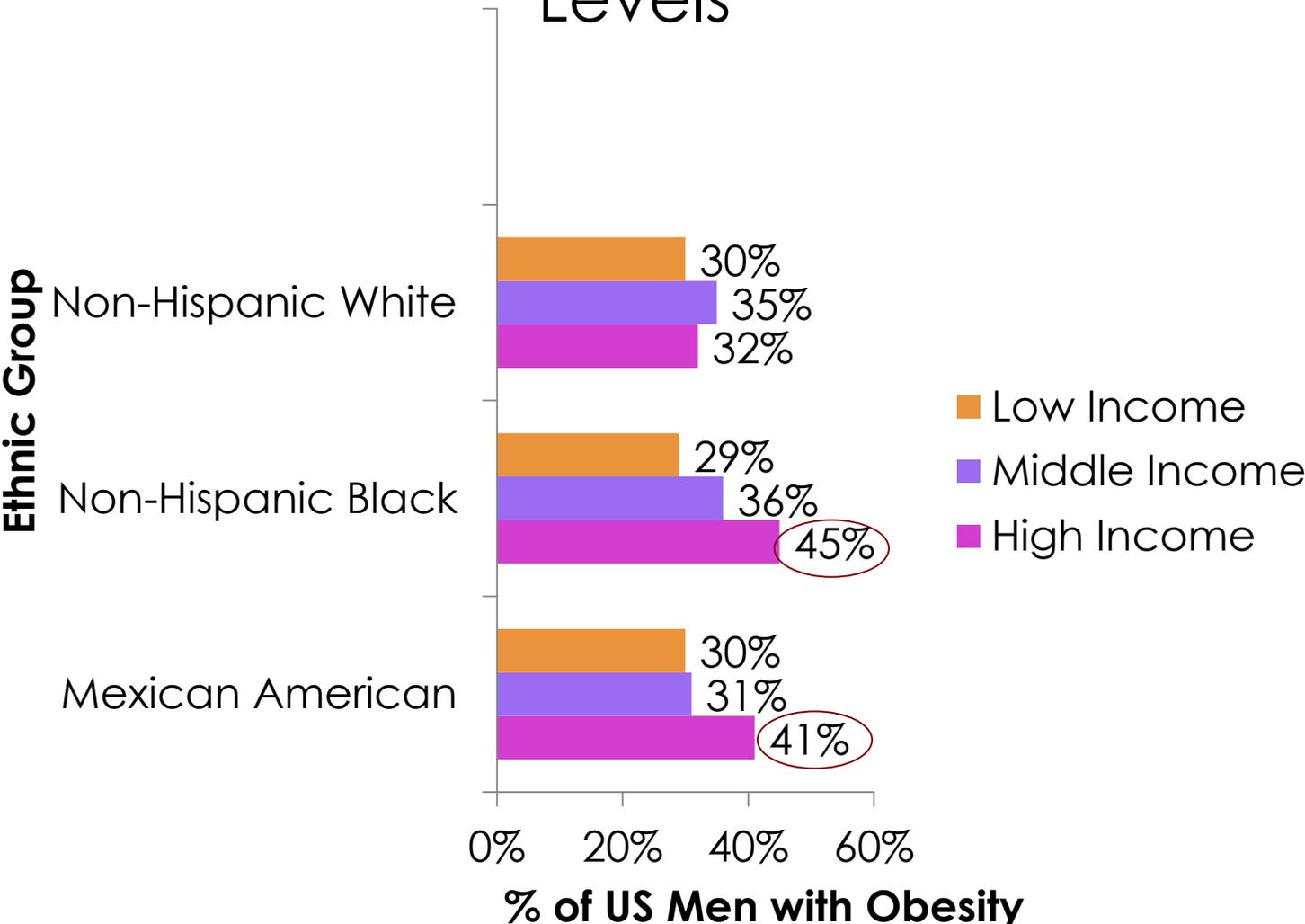


# Women with Lower Income have Higher Obesity in the US

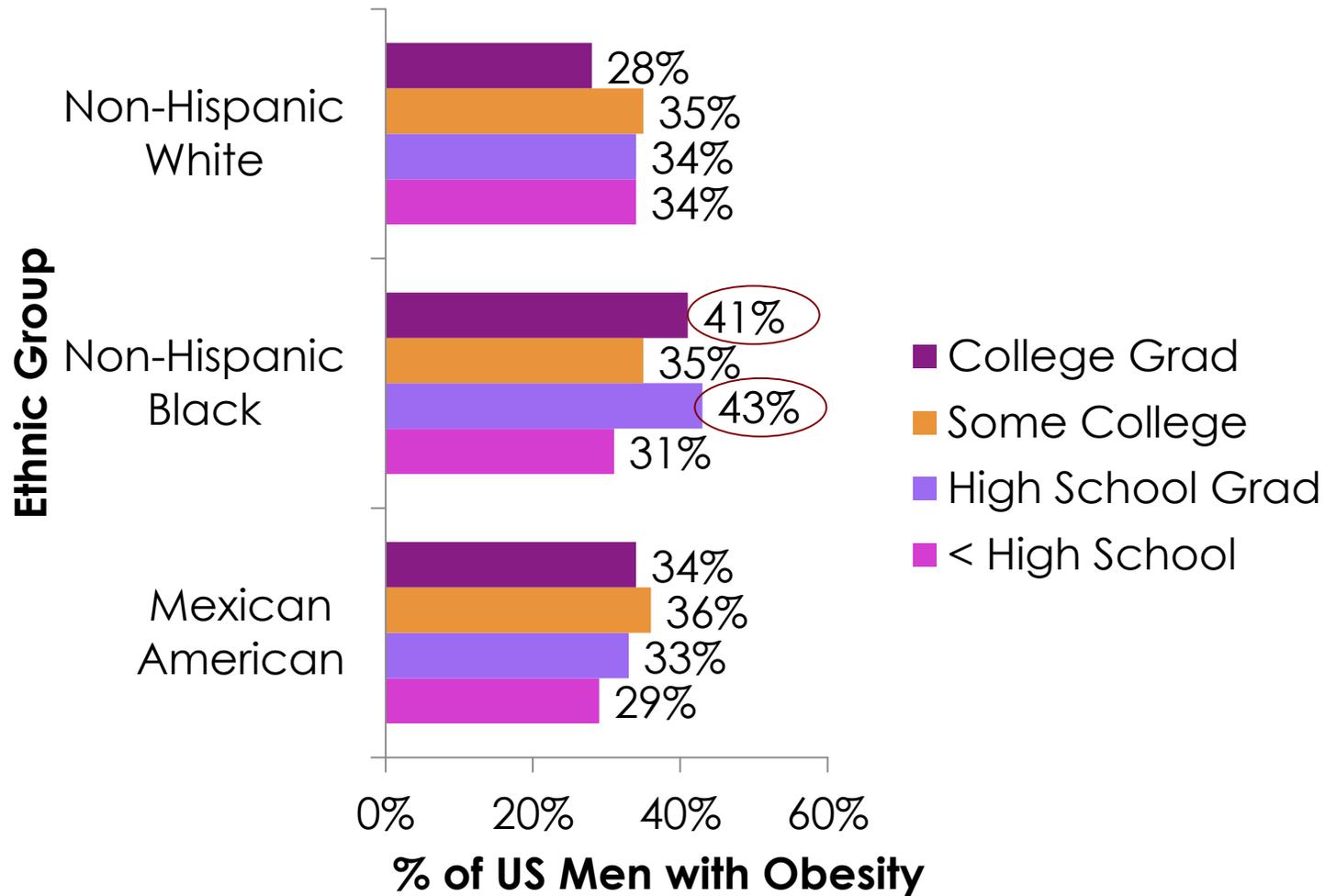


Ogden CL et al. NCHS Data Brief 2010

# Non-Hispanic Black and Mexican American Men have Higher Obesity Rates at Higher Income Levels



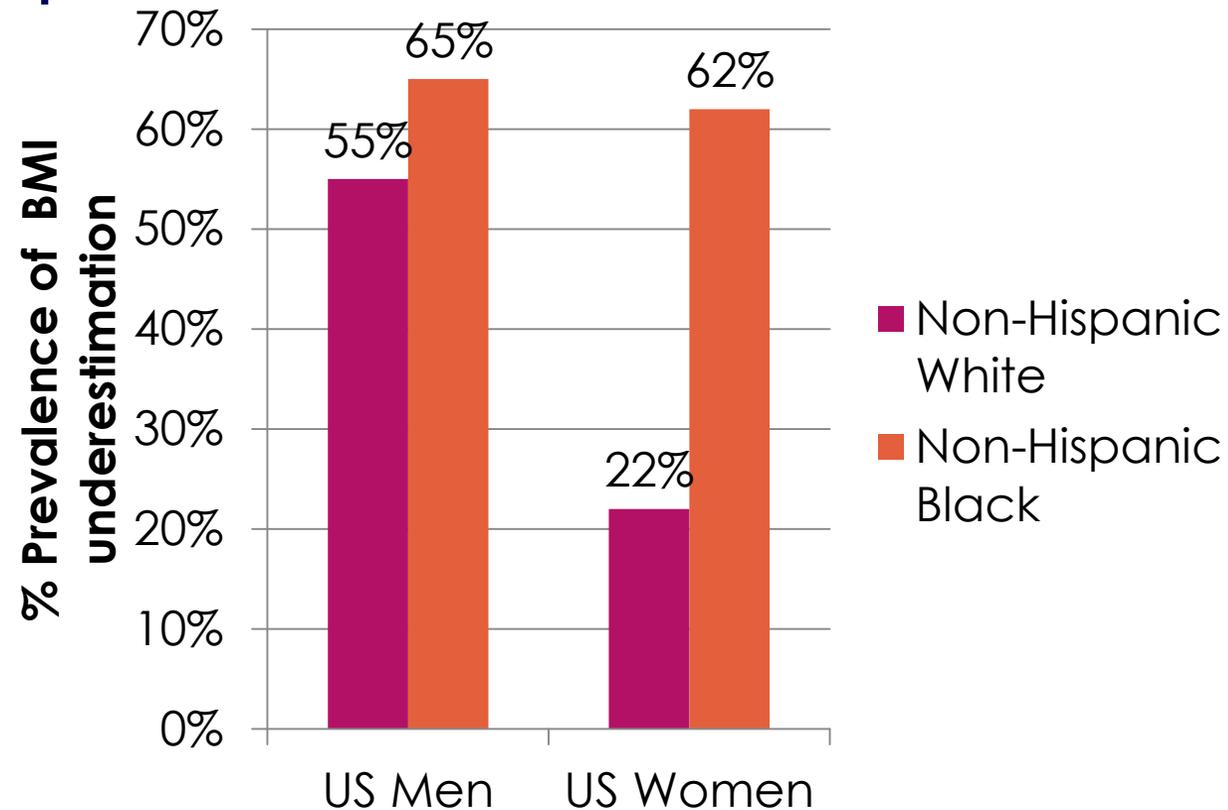
# Non-Hispanic Black Men Who Graduate From College or High School Have More Obesity



Ogden CL et al. NCHS Data Brief 2010

# Non-Hispanic Black Men and Women are more Likely to Underestimate BMI

## Comparison of self-described BMI with measured BMI



Hendley Y et al. Journal of Women's Health 2002

# Ethnic Minority Adolescents are More Likely to have Discordant Weight Perception

Race/ Ethnicity	% with Discordant Weight Perception
Non-Hispanic White	27%
Native American	34%
Non-Hispanic Black	31%
Hispanic	32%
Asian/ Pacific Islander	31%
Mixed Race	31%

Park E. Journal of School Health 2011



# Ethnic Minorities are Less Commonly Diagnosed as Overweight/Obese

## NHANES 1999-2004 for Persons with BMI>30

Race/ Ethnicity	Odd Ratio
Non-Hispanic White	1.0
Non-Hispanic Black	0.6
Hispanic	0.7

# Ethnic Minorities have Smaller Response to Weight Loss Pharmacotherapy

	Sibutramine	Orlistat
Non-Hispanic Whites	-4.4kg	-2.8 kg
Ethnic Minorities	-2.7 kg	-2.3 kg

# African-Americans Achieve Less Weight Loss After Bariatric Surgery

Mean Absolute Difference in Estimated Weight Loss in Caucasians versus African-Americans

-8.4%

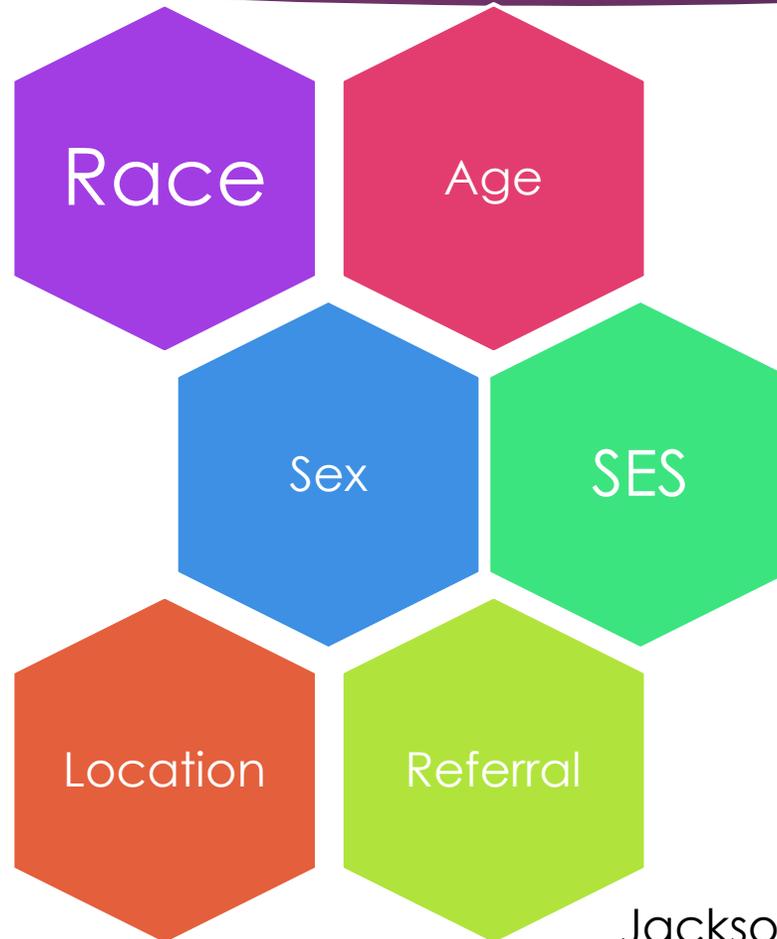
% Estimated Weight Loss



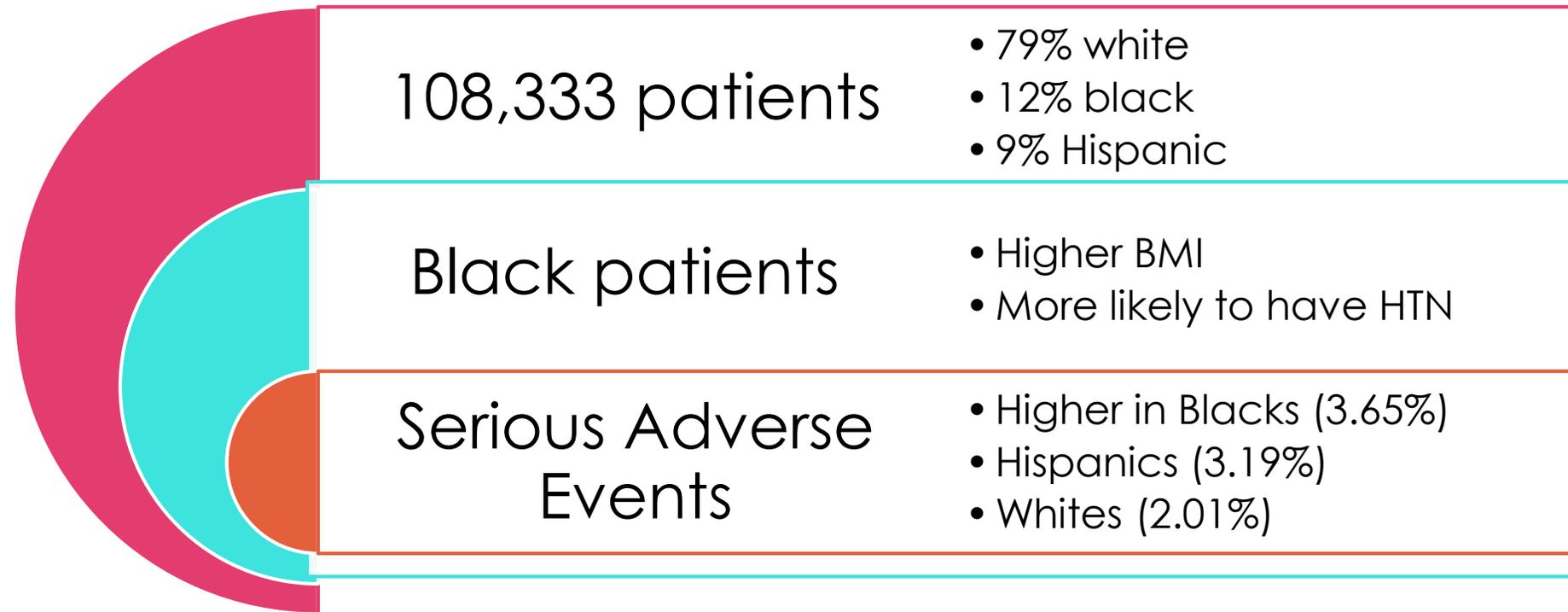
# Potential Reasons for Ethnic Disparities in Obesity

- ▶ ↑↑ Energy Intake
- ▶ ↓ Energy Expenditure
- ▶ ↑↑ Life Stressors
  - ▶ Racism
  - ▶ Lack of Career Options
  - ▶ Family Illness/ Death
- ▶ Cultural Influences
- ▶ Genetics

# Factors which affect access to weight loss surgery



# Access to RYGB in the United States



# Are minorities less likely to proceed with weight loss surgery?

- ▶ 651 patients at 2 academic medical centers in Boston
- ▶ Evaluated whether racial and ethnic minorities were less likely to proceed with weight loss surgery
- ▶ Once referred, racial and ethnic minorities just as likely to proceed with surgery as their non-white counterparts
- ▶ Comorbid illness burden was similar, but there was difference in baseline BMI

# What accounts for difference in response from weight loss surgery?

Demographics

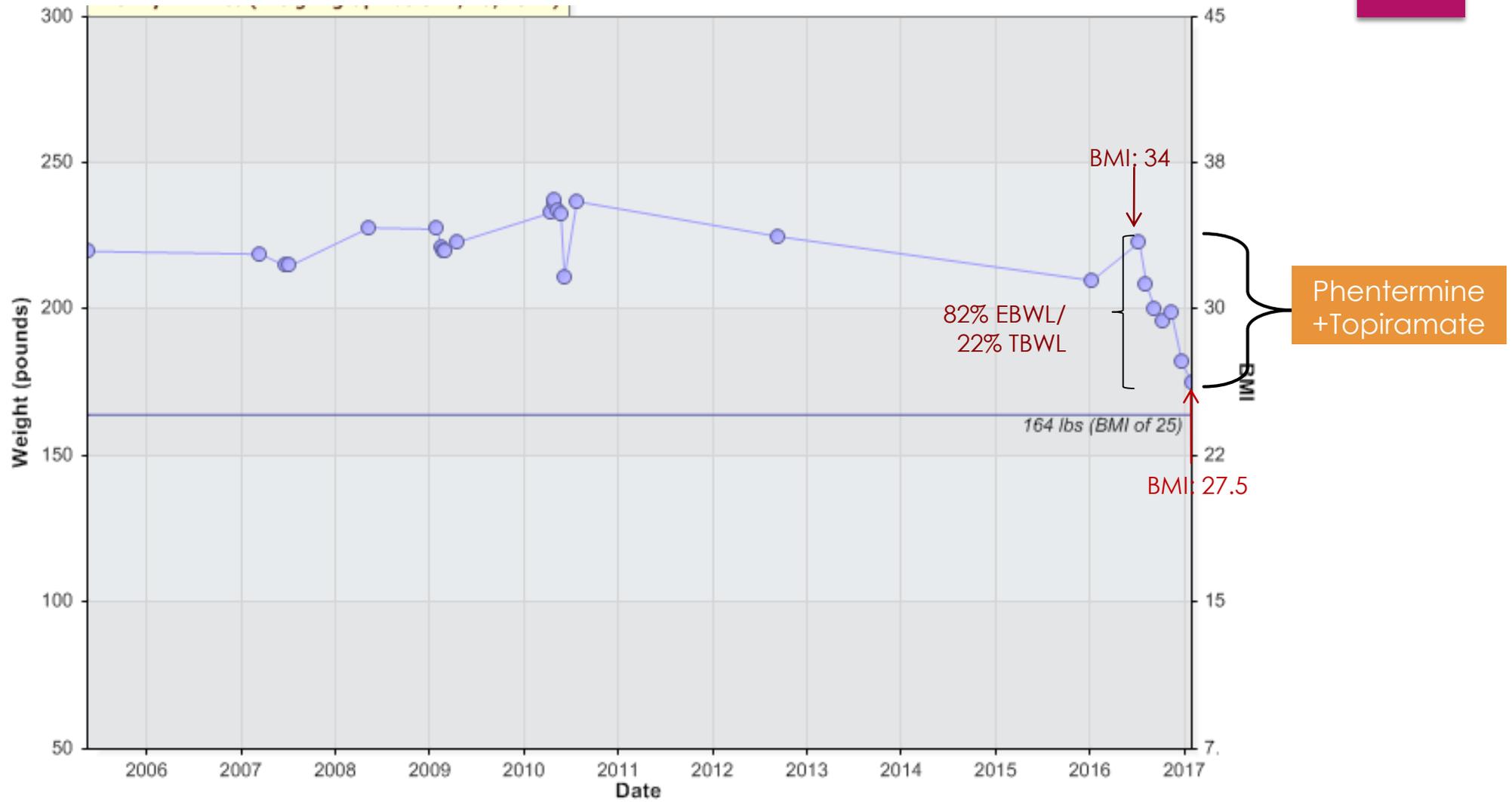
Clinical (BMI, comorbidities, QOL)

Behavioral (Eating, PA, ETOH intake)

# Case #1

- ▶ 58 year old African-American woman
- ▶ **Past medical history:**
  - ▶ Hypertension
  - ▶ GERD
  - ▶ Depression
- ▶ **Diet:**
  - ▶ Breakfast: Scrambled eggs with spinach, onions, peppers, or sausage; OR Oatmeal with nuts/ blueberries/ blackberries
  - ▶ Snack: Fruit; Protein Bar (KIND bars or Jif creamy peanut butter)
  - ▶ Lunch: Leftovers (Baked chicken, vegetables, brown rice)
  - ▶ Snack: Almonds, Protein Bar
  - ▶ Dinner: Baked chicken, vegetables, brown rice
- ▶ **Exercise:** 4 days a week (1 hour); 2 days of cardio; 2 days of strength (meets with trainer twice a week)
- ▶ **Sleep:** 6-7 hours (feels well rested)
- ▶ **Stress:** Normal
- ▶ Post partum weight retention; Night Shift Nurse for 4 years

# 58 year old woman



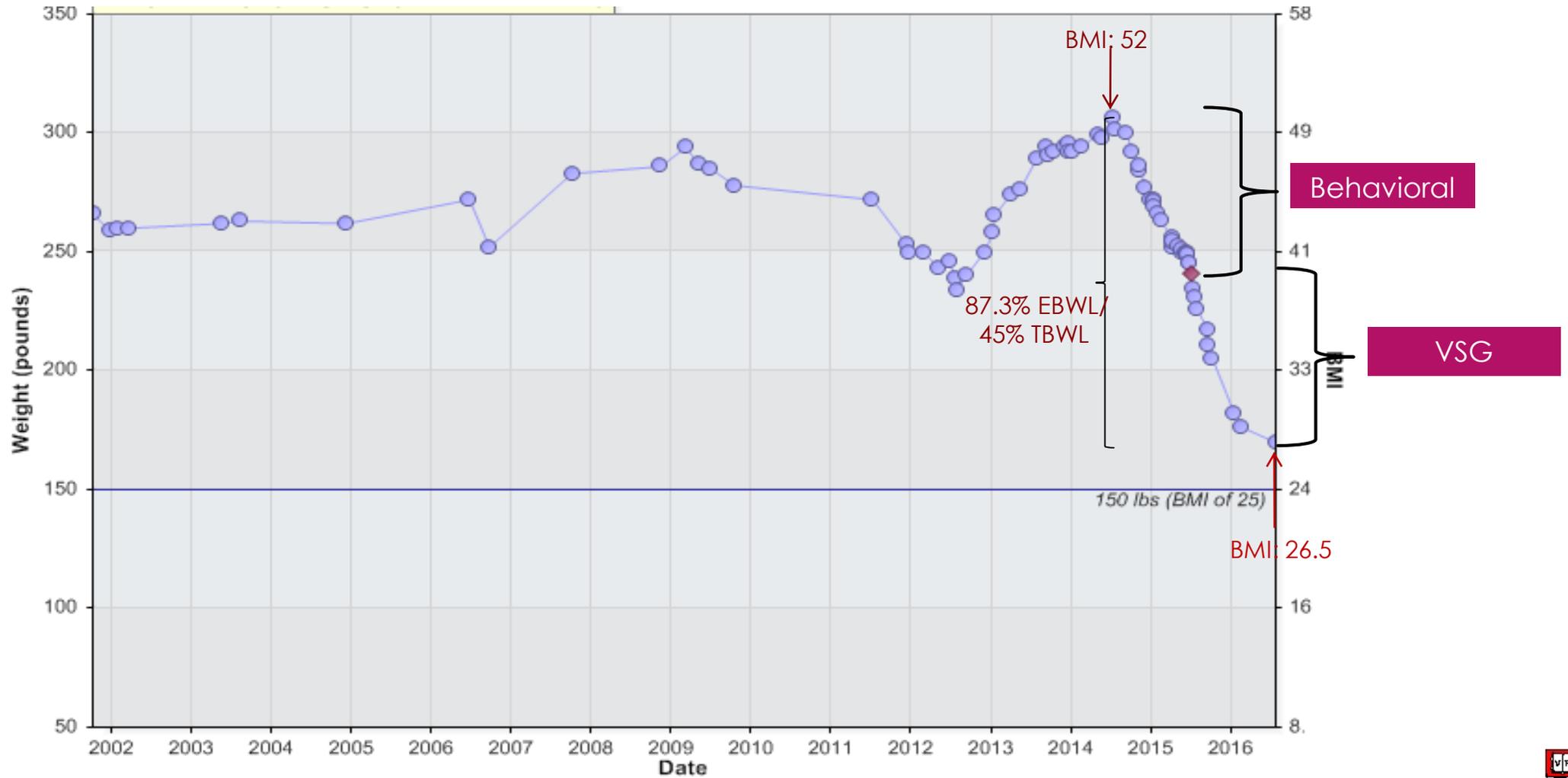
Phentermine  
+Topiramate

# Case #2

- ▶ 49 year old Hispanic woman
- ▶ **Past medical history:**
  - ▶ Anxiety/Depression
  - ▶ Ventricular tachycardia s/p ablation
  - ▶ Mixed connective tissue disease
  - ▶ Hypertension
  - ▶ GERD
- ▶ **Diet :**
  - ▶ Breakfast: Fruit, Vitamins
  - ▶ Snack: Vitamin Water, Sobe Life Water, Fruit
  - ▶ Lunch: Lettuce (romaine and iceberg); cheese; ham, tomato, peppers, lite Italian dressing, OR vinegar/oil
  - ▶ Snack: Fruit (sometimes)
  - ▶ Dinner: Spinach, Smart Ones
  - ▶ Snack: Denies
- ▶ **Exercise:** Walking, some form of cardio, Walks 5 miles a day, Goes to Planet Fitness (Elliptical); Zumba (1 times per day; 7 days a week)
- ▶ Weight gain became prominent after childbirth (10 lbs. with each pregnancy X6); tobacco cessation, with metoprolol



# 49 year old woman

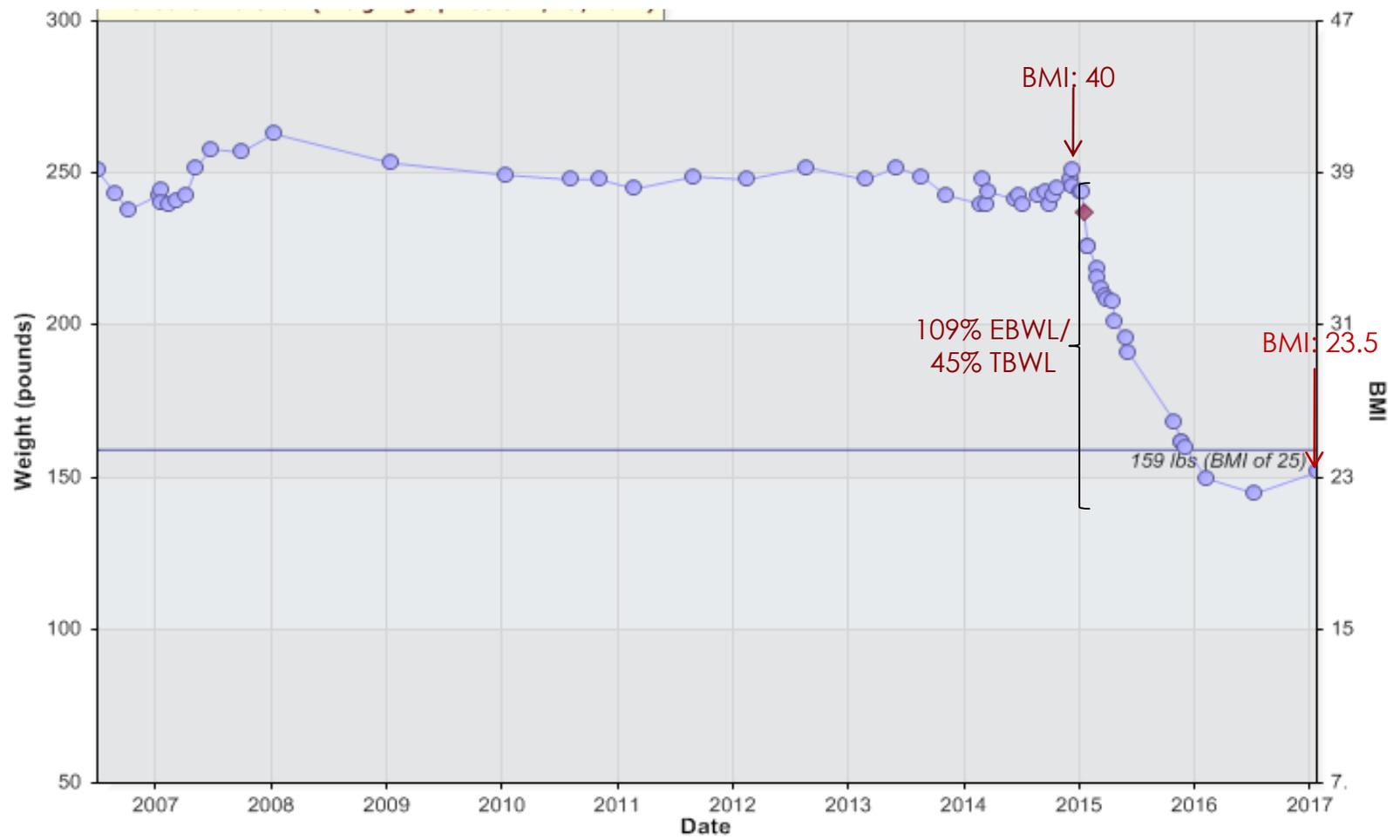


# Case #3

- ▶ 67 year old African-American woman
- ▶ **Past medical history:**
  - ▶ Type 2 Diabetes Mellitus
  - ▶ Hypertension
  - ▶ CAD
  - ▶ CHF
  - ▶ NASH
  - ▶ Breast Cancer
  - ▶ GERD
- ▶ **Diet :**
  - ▶ Breakfast: Regular Yogurt with Fruit (may snack)
  - ▶ Snack: Occasionally popcorn
  - ▶ Lunch: Chicken or Fish with vegetables and/or fruit
  - ▶ Snack: Fruit (apple, oranges, and watermelon)
  - ▶ Dinner: Fish (Haddock, Tilapia) or Chicken with occasional vegetables
  - ▶ Snack: Nuts
- ▶ **Exercise:** Walking, some form of cardio; 1/2 hour per day; joined a gym (started on the treadmill)
- ▶ Weight gain became prominent in peri-menopause

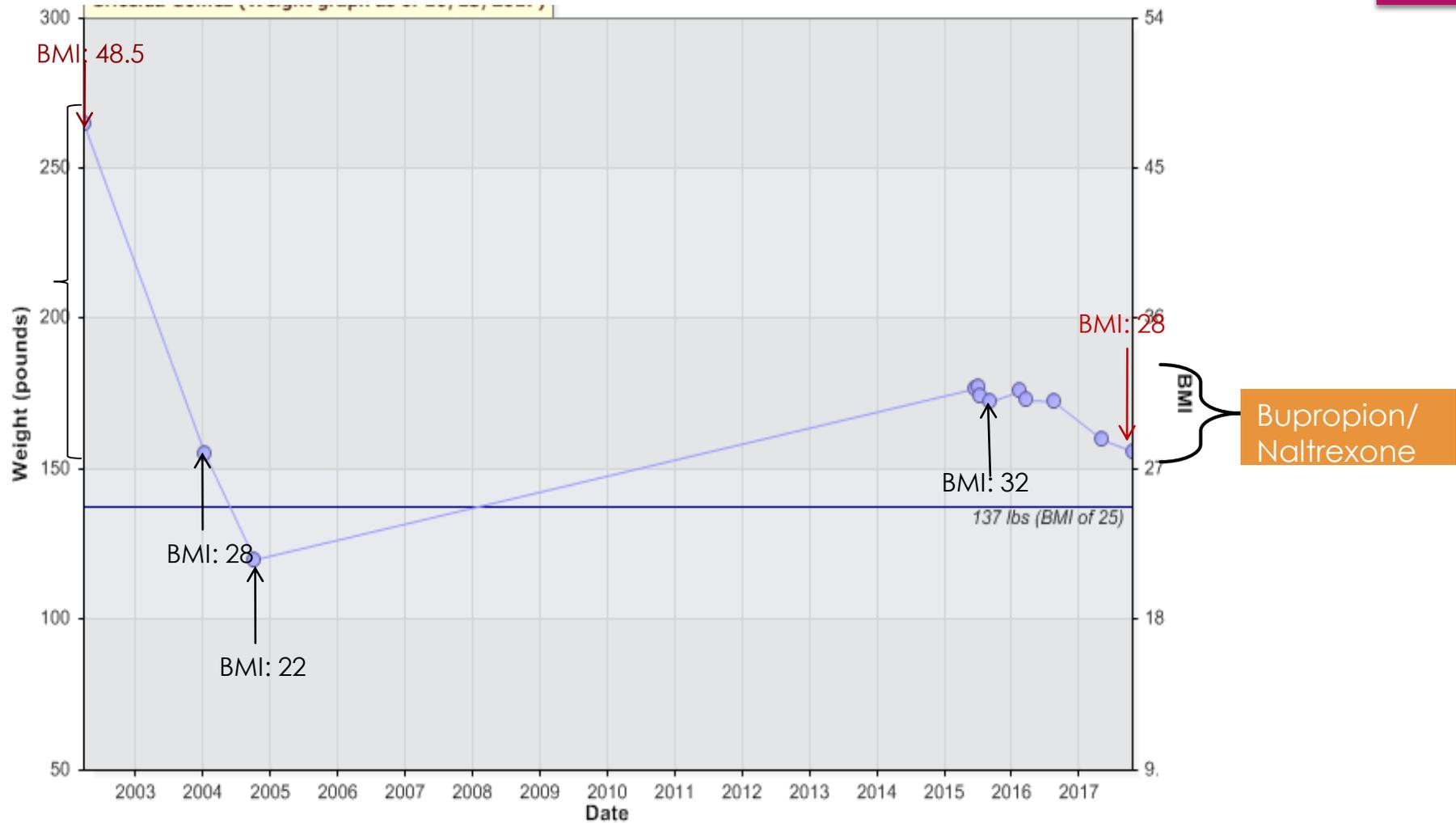


# 67 year old woman s/p VSG

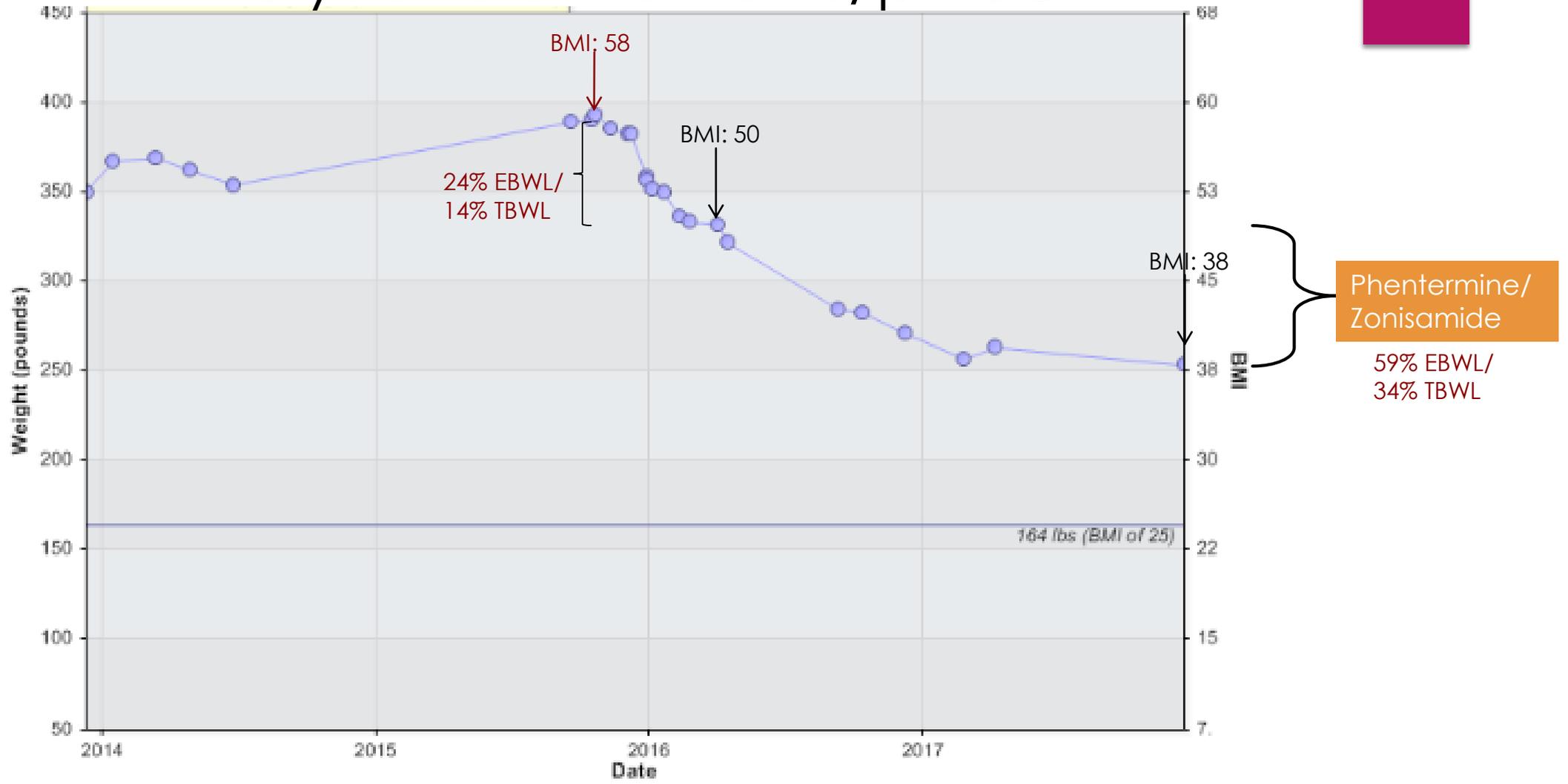


# 30 year old woman s/p RYGB

86% EBWL/  
41.5% TBWL



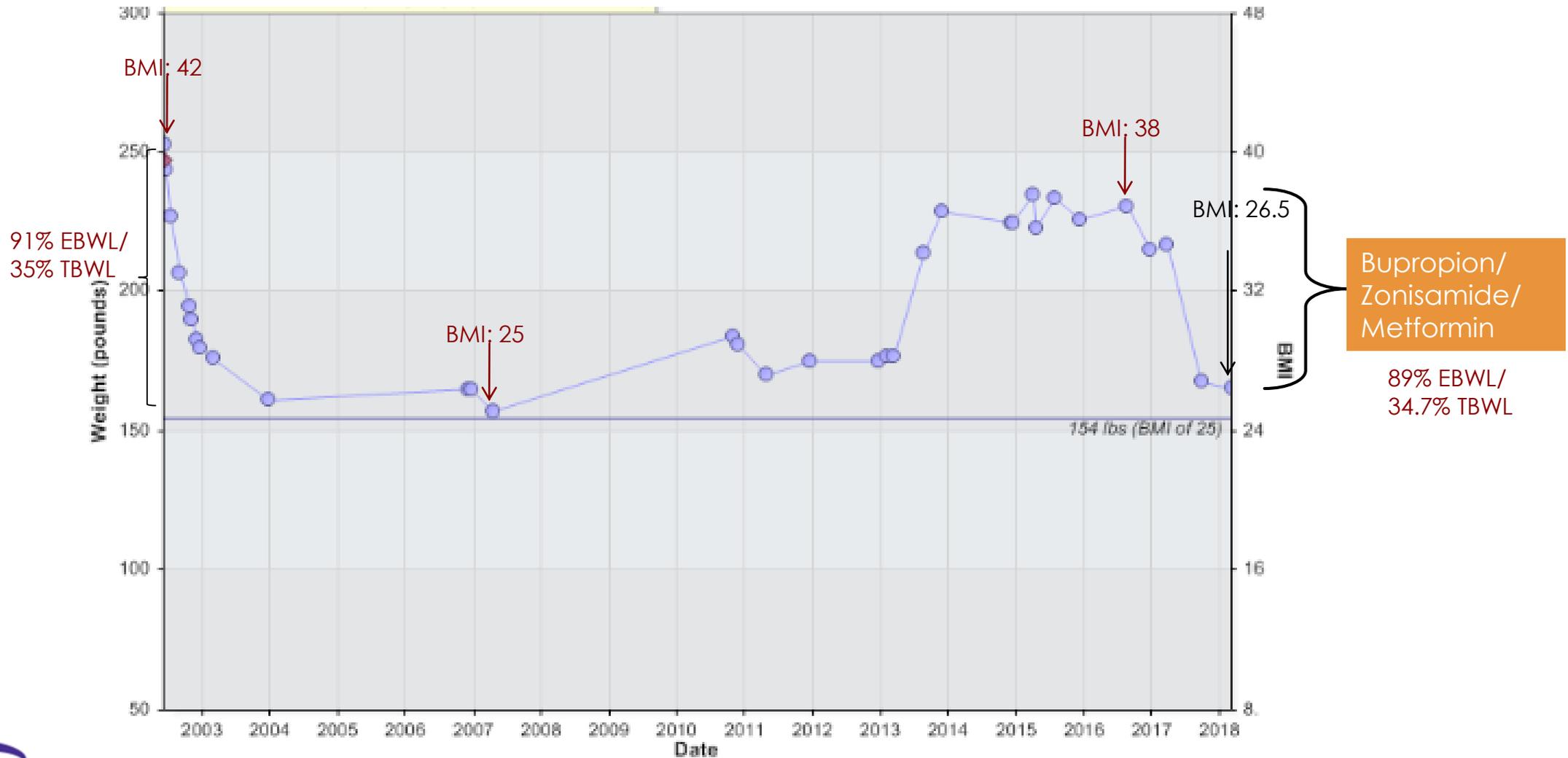
# 45 year old woman s/p VSG



Phentermine/  
Zonisamide  
59% EBWL/  
34% TBWL



# 59 year old woman s/p RYGB



# Summary

- ▶ Obesity is a Multi-factorial disease process
- ▶ Regulation of food intake is complex
- ▶ ↑ Prevalence of Obesity in Ethnic Minorities
- ▶ ↓ Prevalence of Obesity in Foreign Born
- ▶ Persons vary with response to education level and obesity
- ▶ Ethnic Minorities are more likely to have discordant weight perception
- ▶ Health Care Providers are less likely to diagnose ethnic minorities with overweight/obesity
- ▶ Ethnic minorities have less pronounced response to weight loss surgery and pharmacotherapy

# Action Items

- ▶ Steps should be taken to ascertain etiology of higher prevalence of obesity in ethnic minorities
- ▶ Health care providers should be more vigilant about giving appropriate diagnosis of overweight/obesity in ethnic minorities
- ▶ Strategies should be employed to address disparities in prevention and treatment of obesity in ethnic minorities

Thank You For Your Time

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