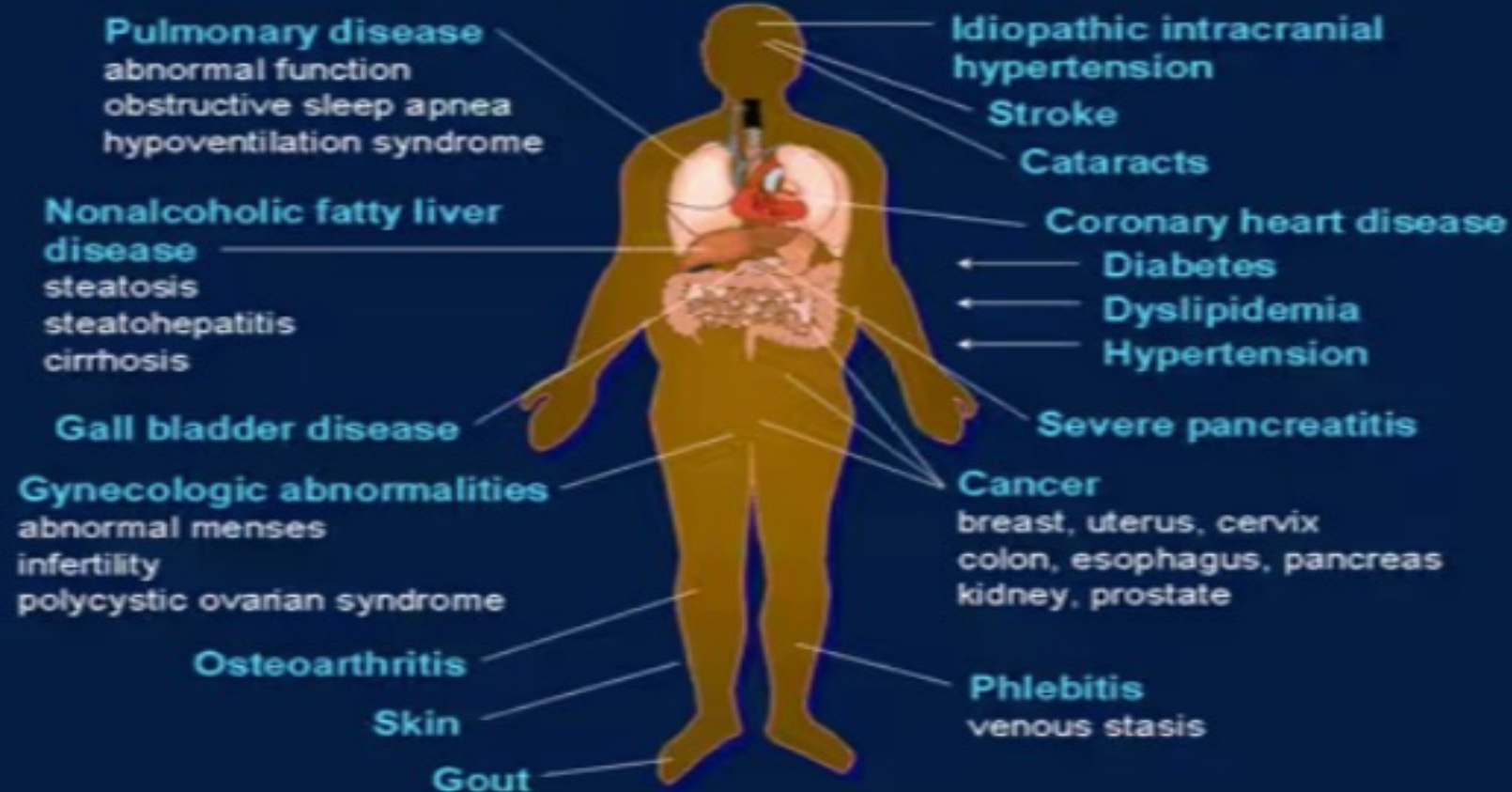


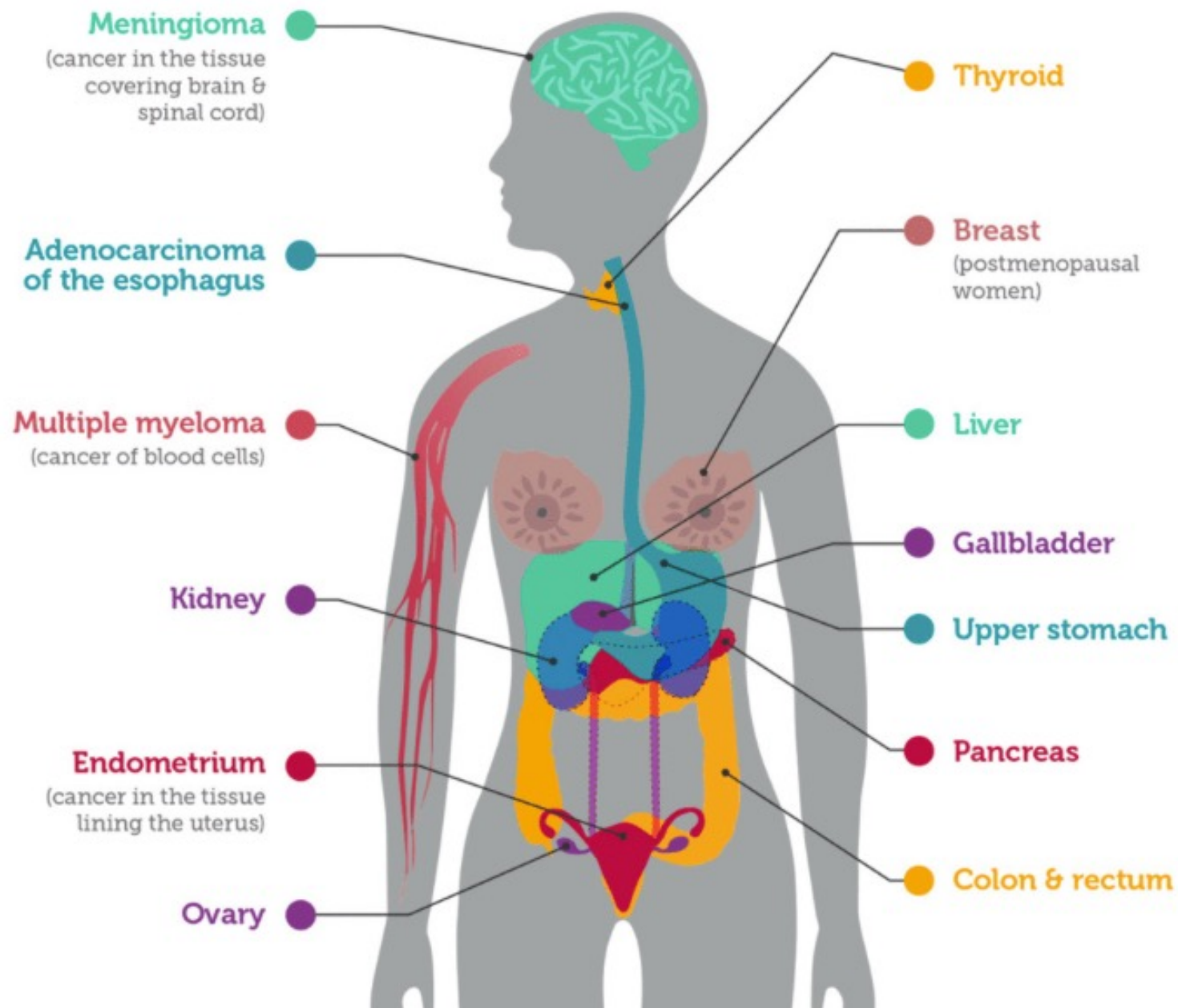
Obesity: Medical Management

Kelly Velasquez, PharmD

Medical Complications of Obesity



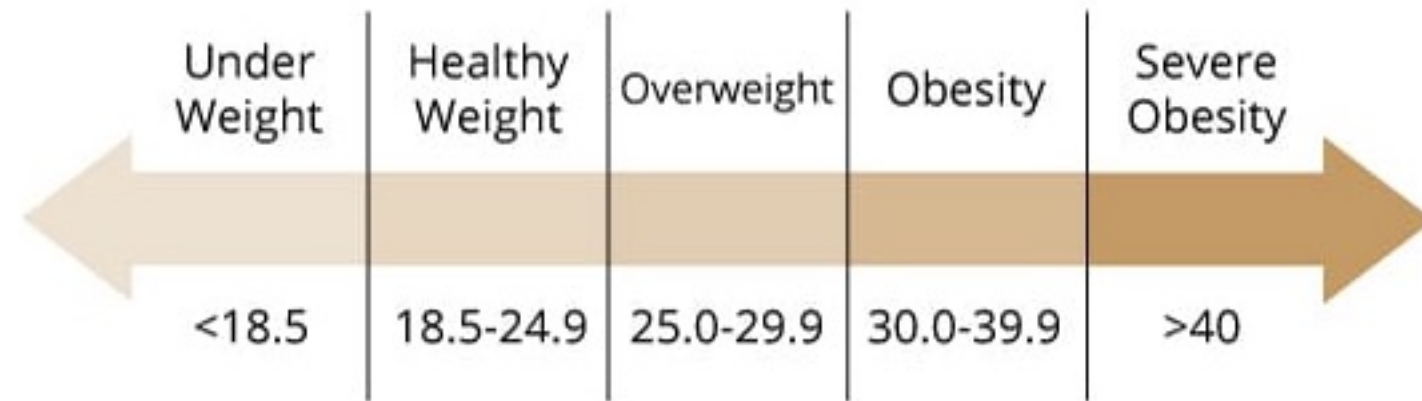
Cancers Associated with Overweight & Obesity



Definition and Weight Categories

- Obesity: Body Mass Index (BMI) of 30 or higher
- Body Mass Index (BMI):
 - A measure of an adult's weight in relation to height, calculated by using the adult's weight in kilograms divided by the square of height in meters.
 - Google "BMI calculator" for easy access.

Weight Categories Based on BMI

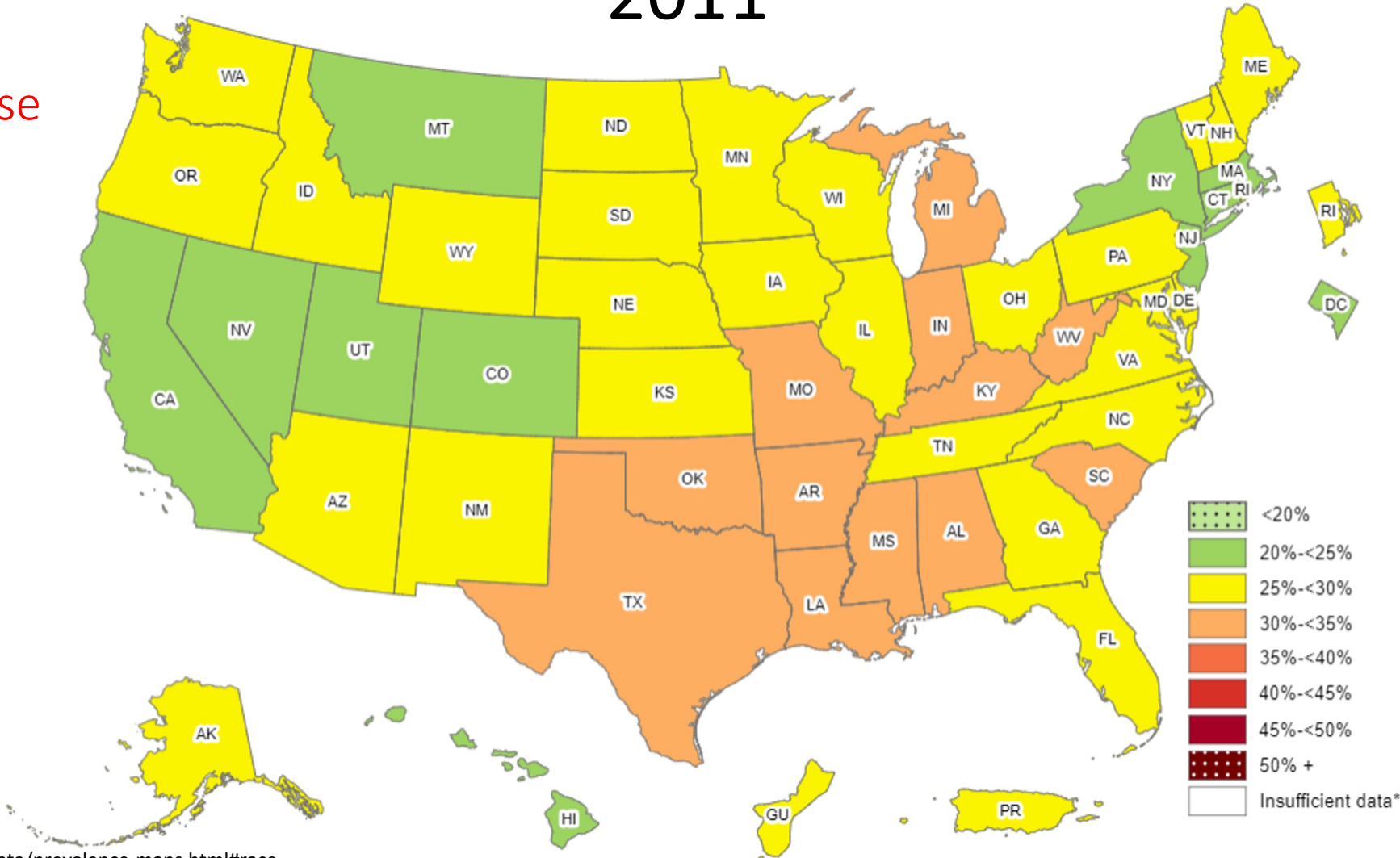


Obesity in the US

US Adults: Prevalence of Self-Reported Obesity

2011

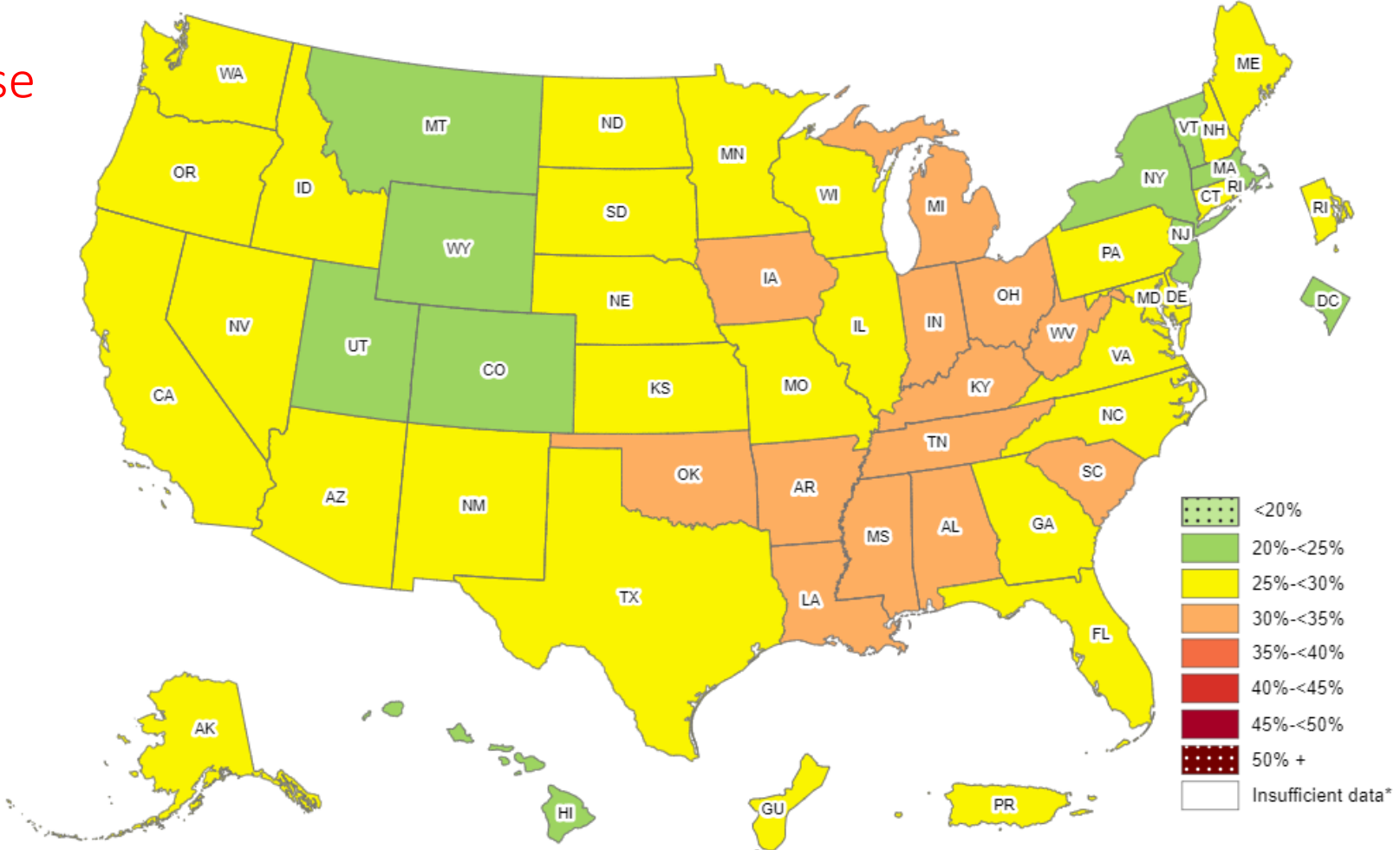
Texas:
30.4% obese



US Adults: Prevalence of Self-Reported Obesity

2012

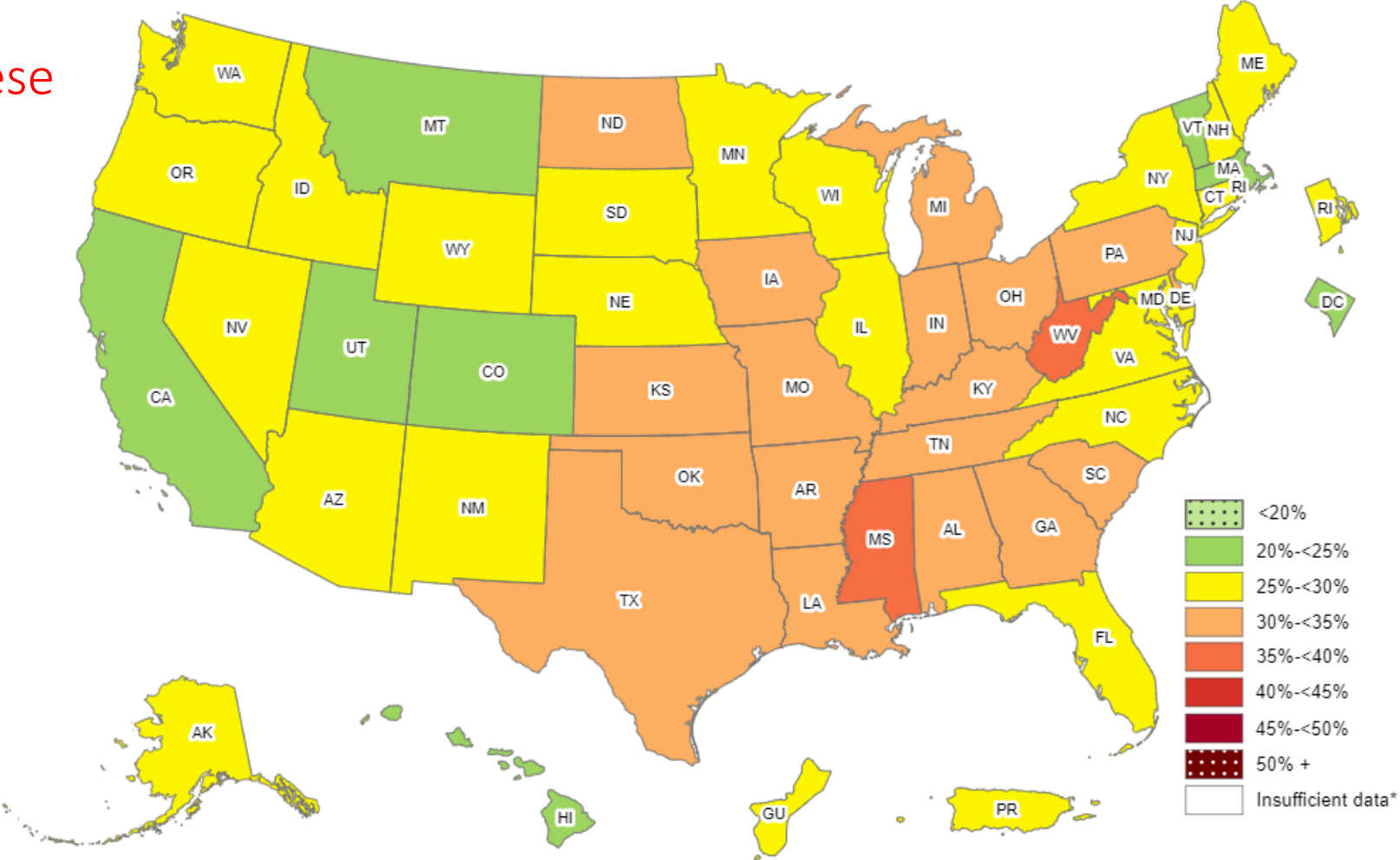
Texas:
29.2% obese



US Adults: Prevalence of Self-Reported Obesity

2013

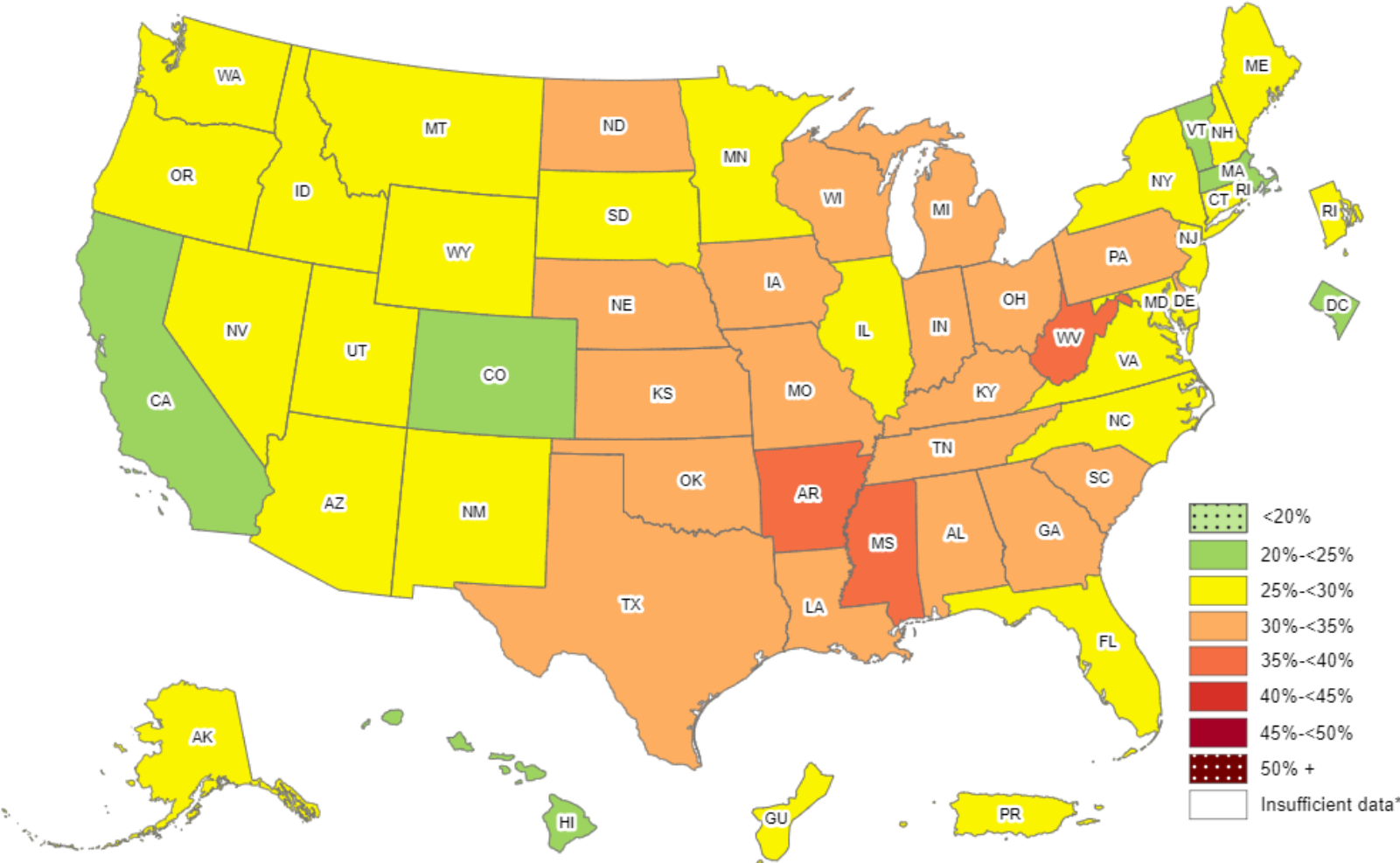
Texas:
30.9% obese



US Adults: Prevalence of Self-Reported Obesity

2014

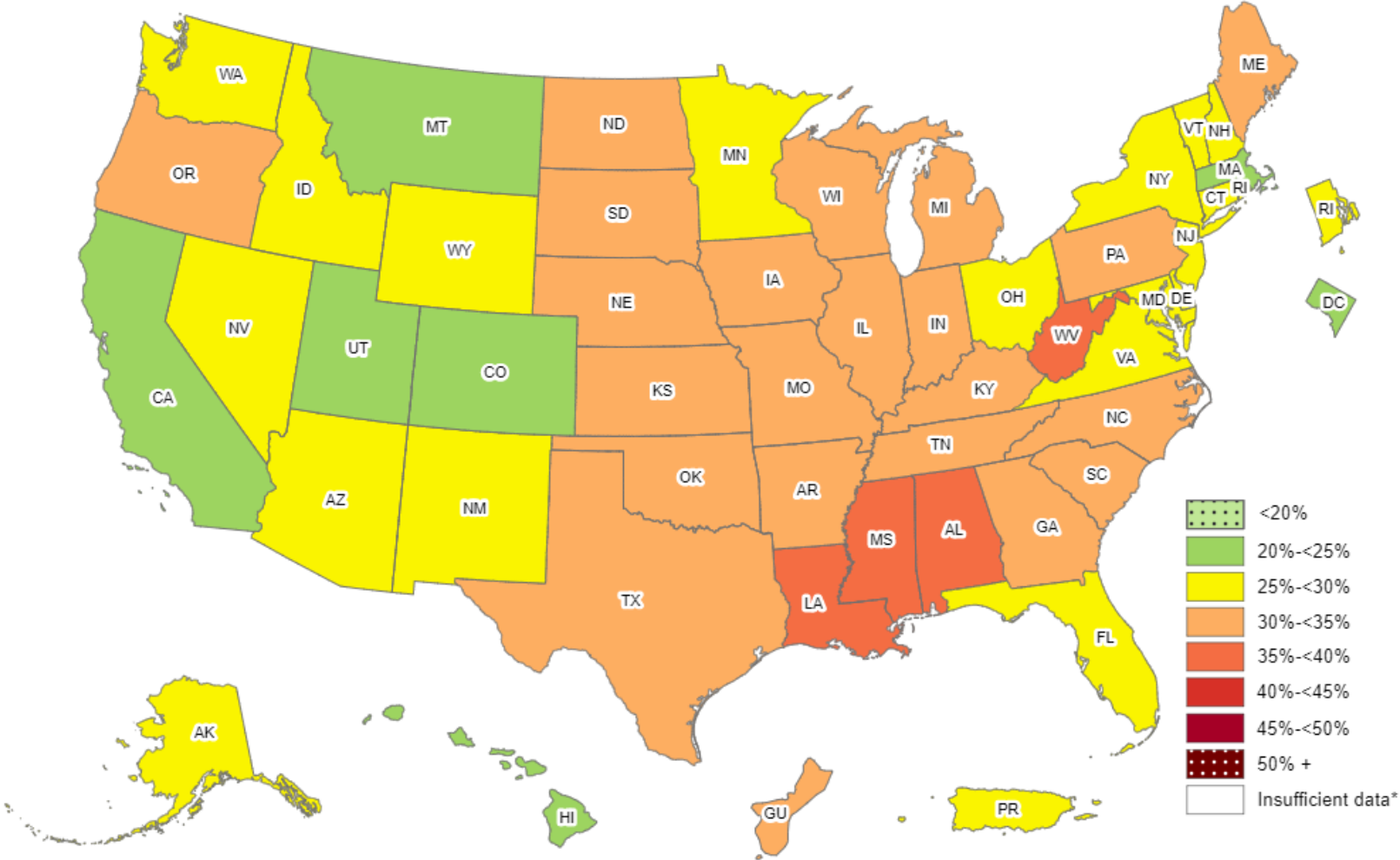
Texas:
31.9% obese



US Adults: Prevalence of Self-Reported Obesity

2015

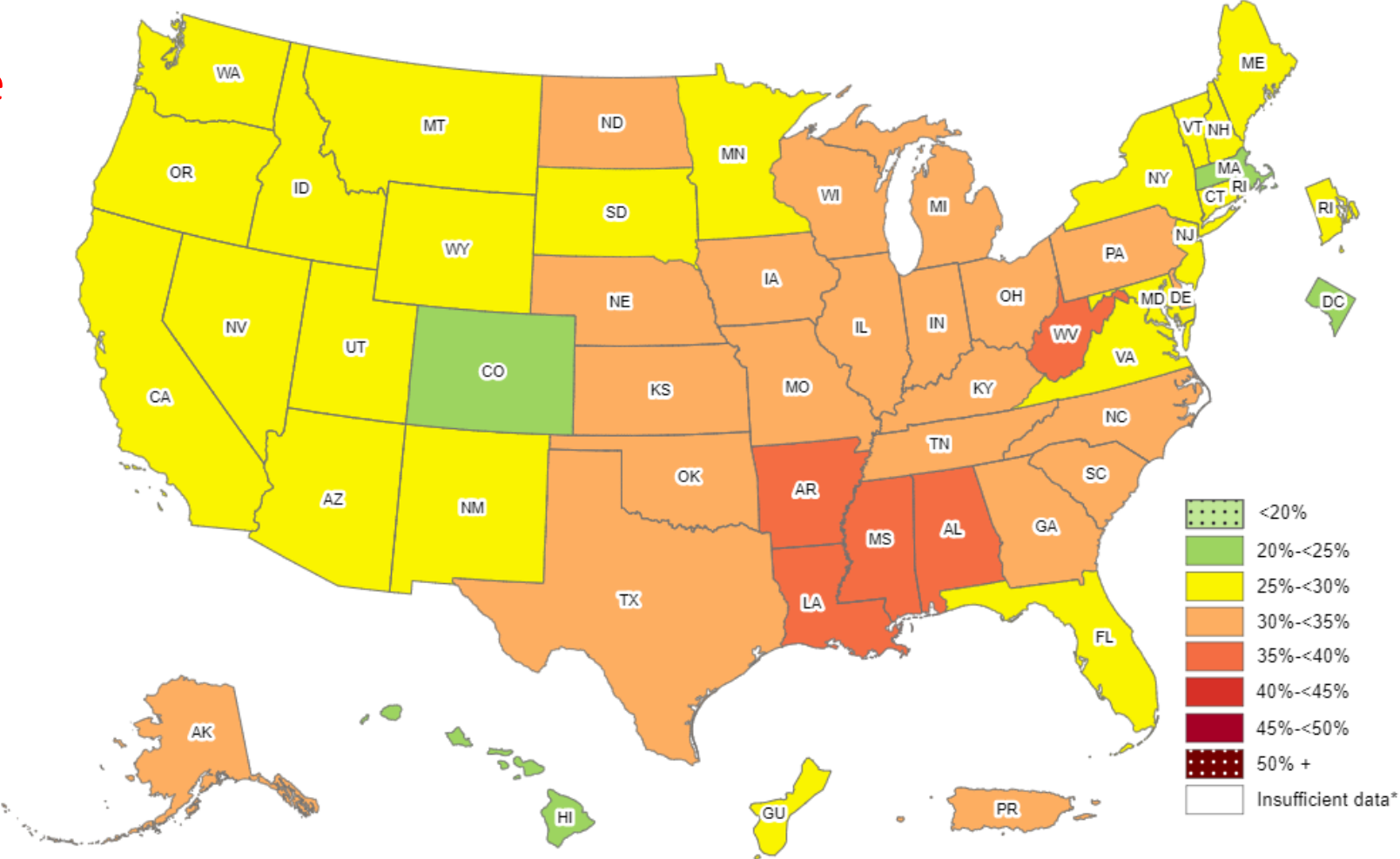
Texas:
32.4% obese



US Adults: Prevalence of Self-Reported Obesity

2016

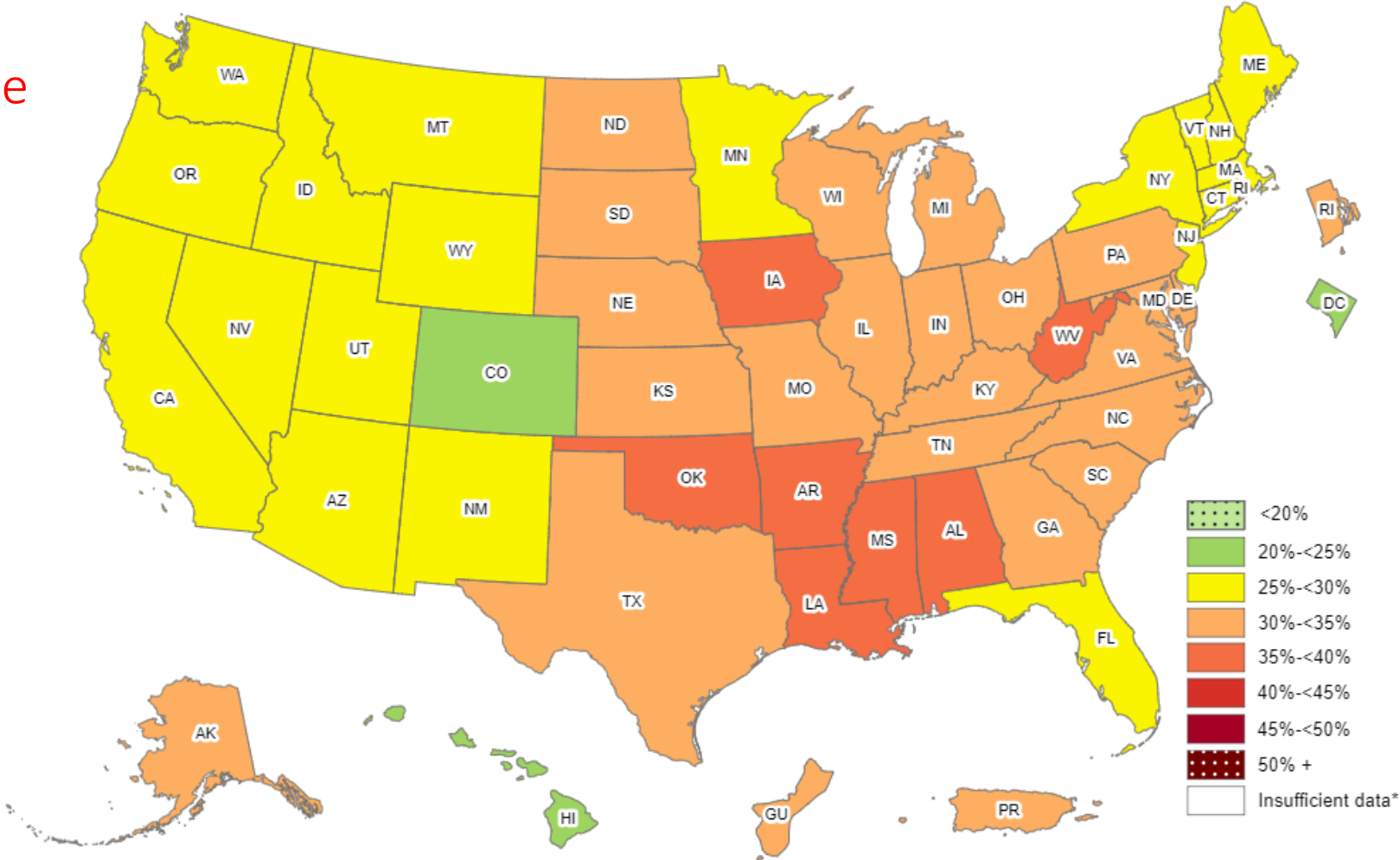
Texas:
33.7% obese



US Adults: Prevalence of Self-Reported Obesity

2017

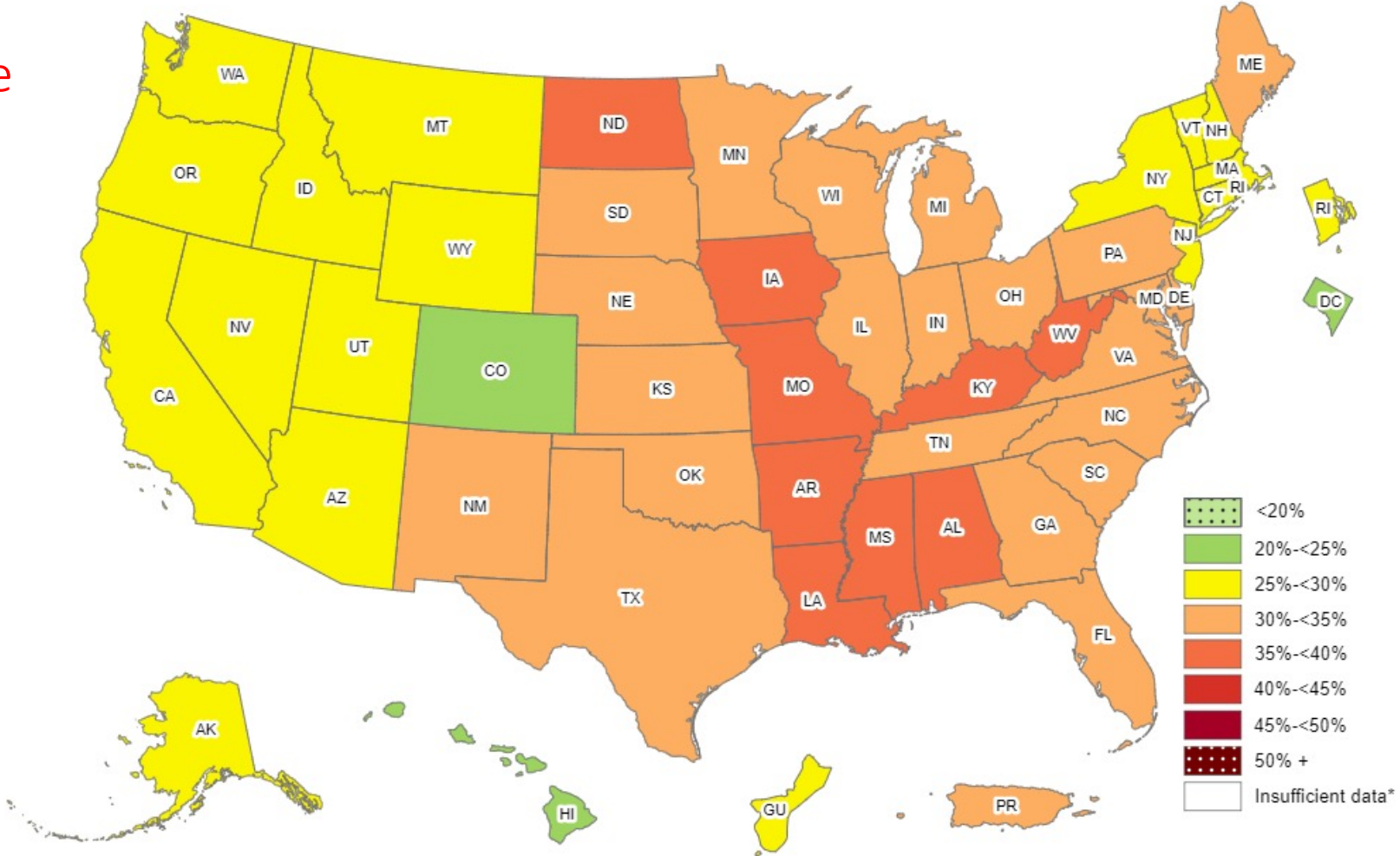
Texas:
33.0% obese



US Adults: Prevalence of Self-Reported Obesity

2018

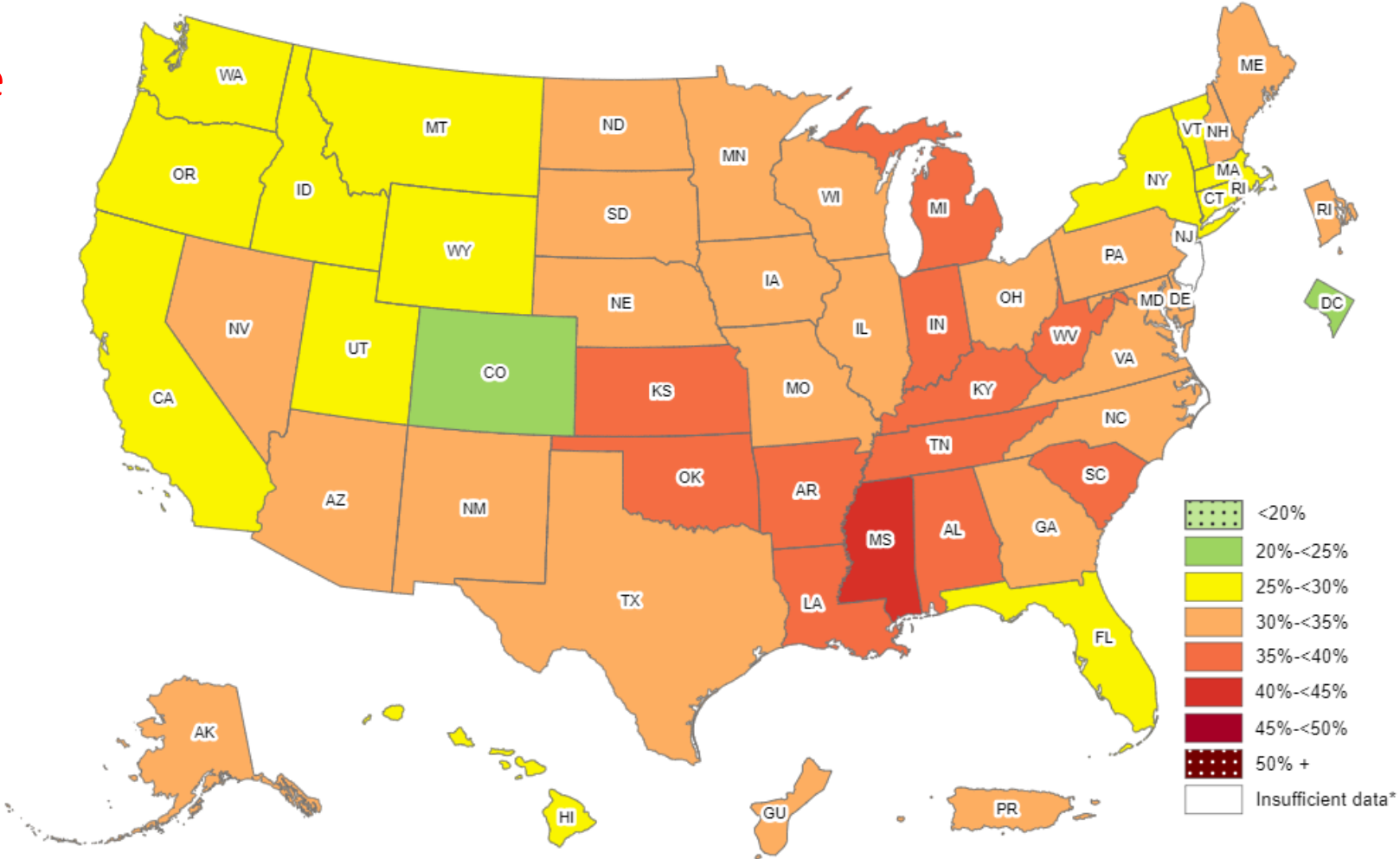
Texas:
34.8% obese



US Adults: Prevalence of Self-Reported Obesity

2019

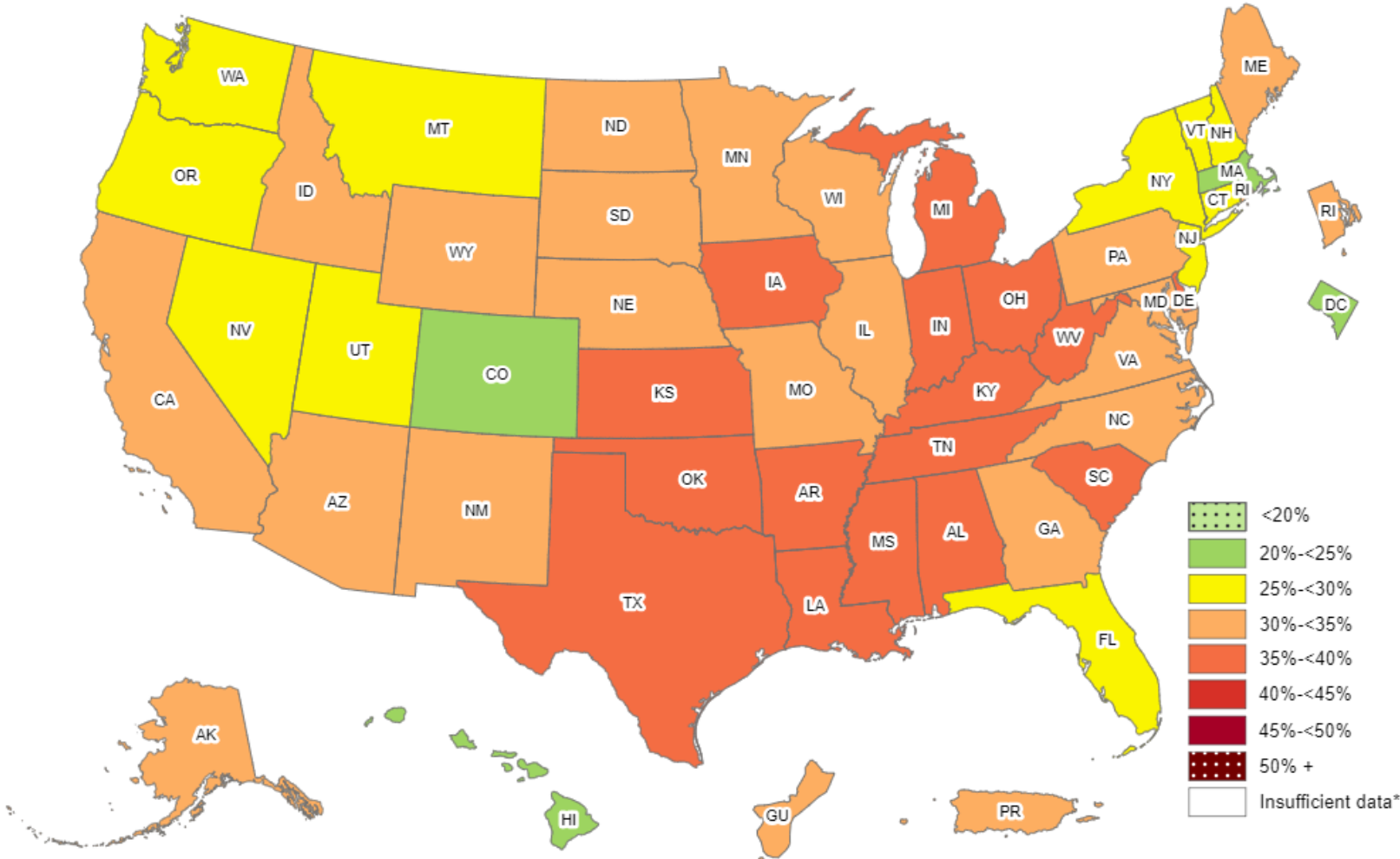
Texas:
34.0% obese



US Adults: Prevalence of Self-Reported Obesity

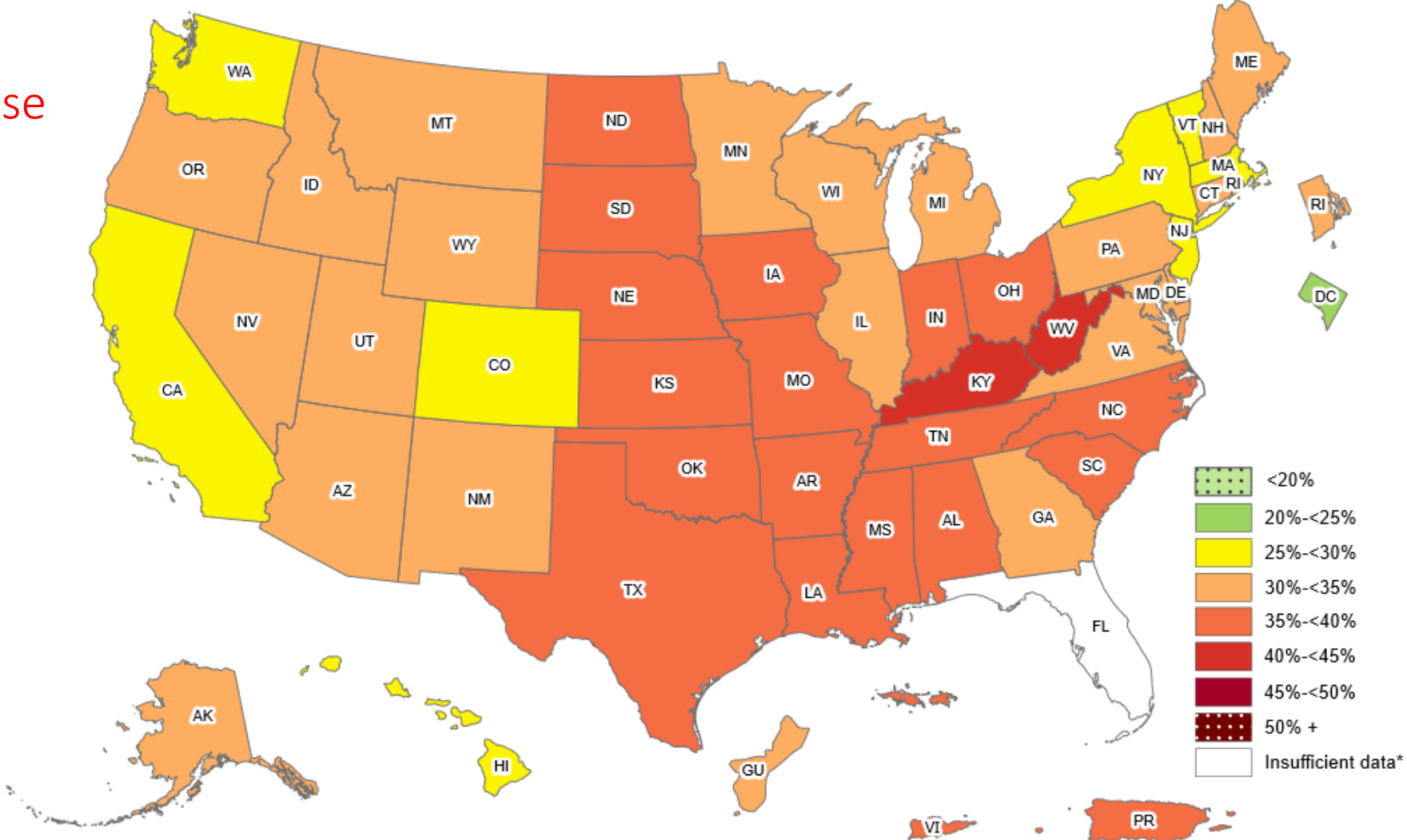
2020

Texas:
35.8% obese



US Adults: Prevalence of Self-Reported Obesity 2021

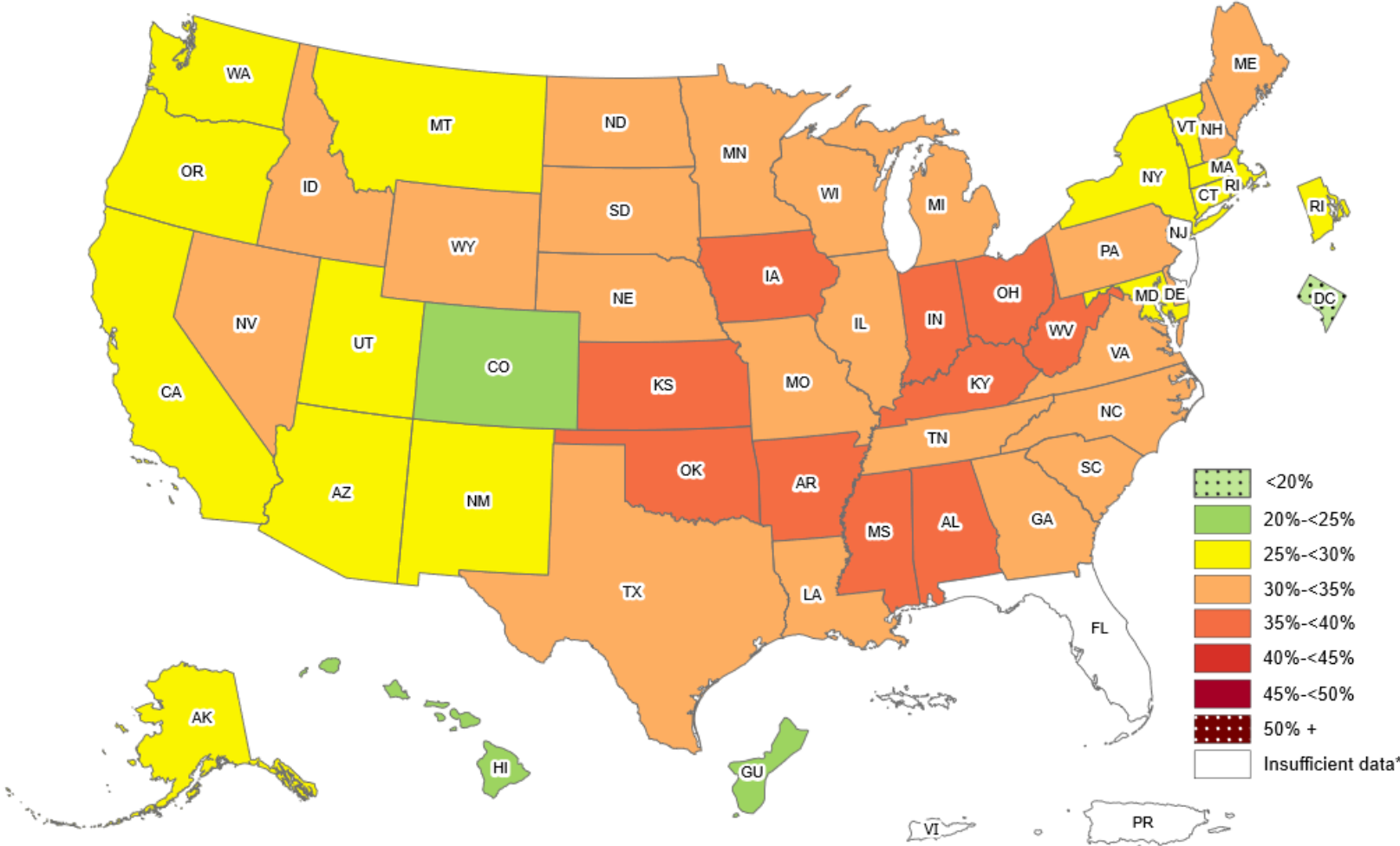
Texas:
36.1% obese



Non-Hispanic White Adults: Prevalence of Self-Reported Obesity

2019-2021

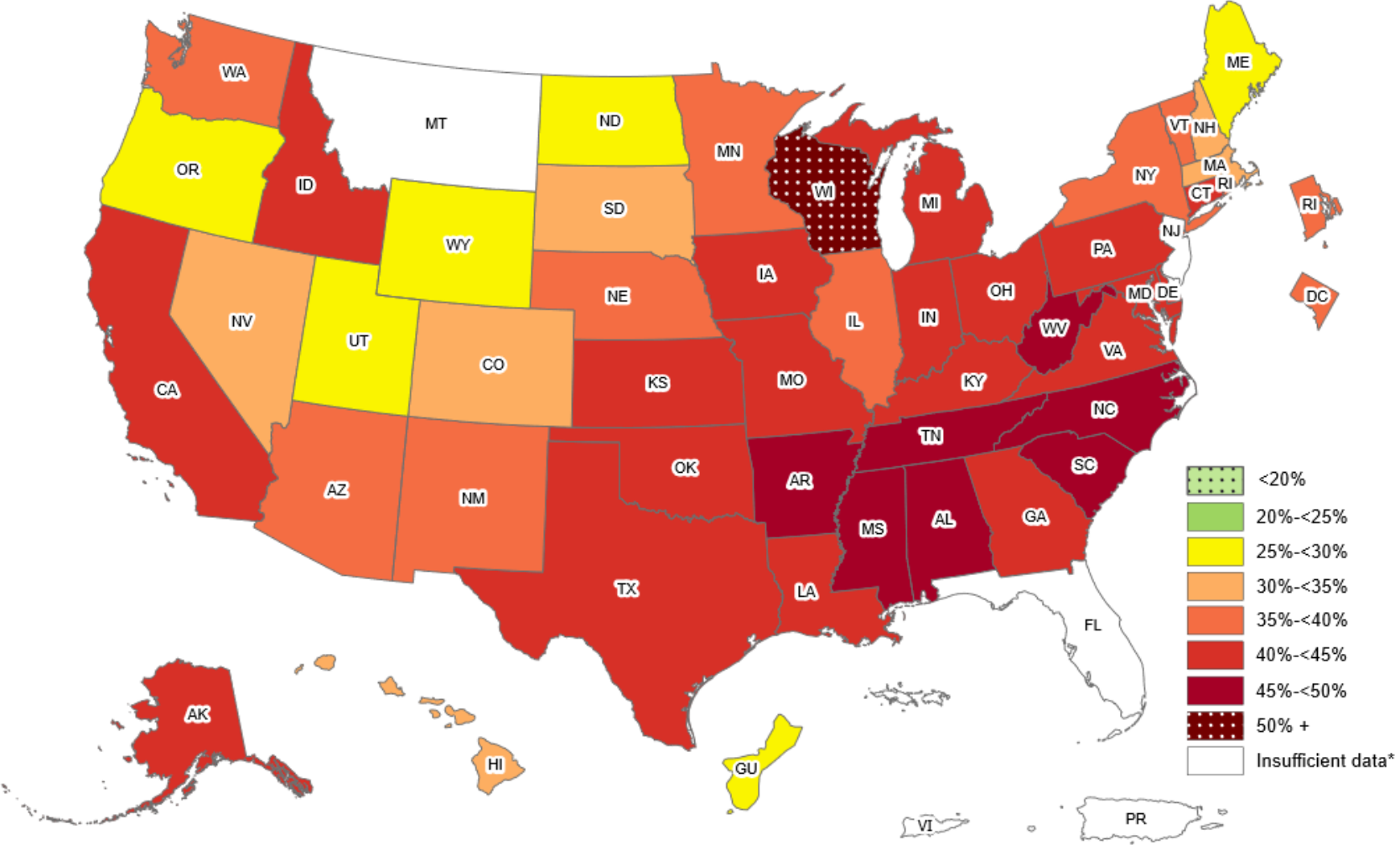
Texas:
31.6% obese



Non-Hispanic Black Adults: Prevalence of Self-Reported Obesity

2019-2021

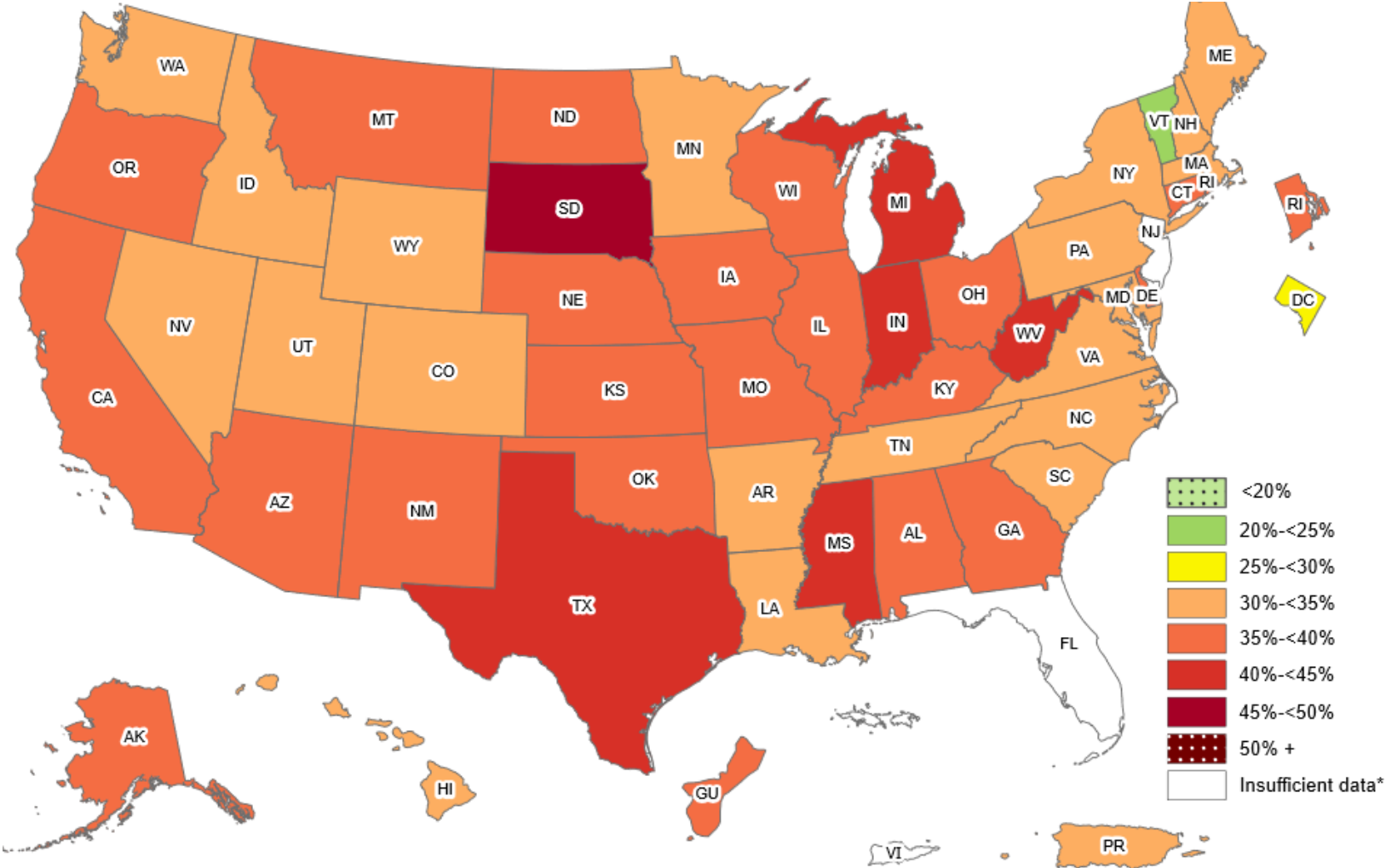
Texas:
40.5% obese



Hispanic Adults: Prevalence of Self-Reported Obesity

2019-2021

Texas:
41.0% obese



Things to Consider

- In 1990, no US state had an obesity prevalence >15%.
- The statistics in the maps are based on self-reported of height and weight captured via phone call.
- NHANES surveys capture office visit data...and are worrisome.

Table 5. Prevalence of adults aged 20 and over with obesity, by demographic characteristics: United States, 2017–March 2020

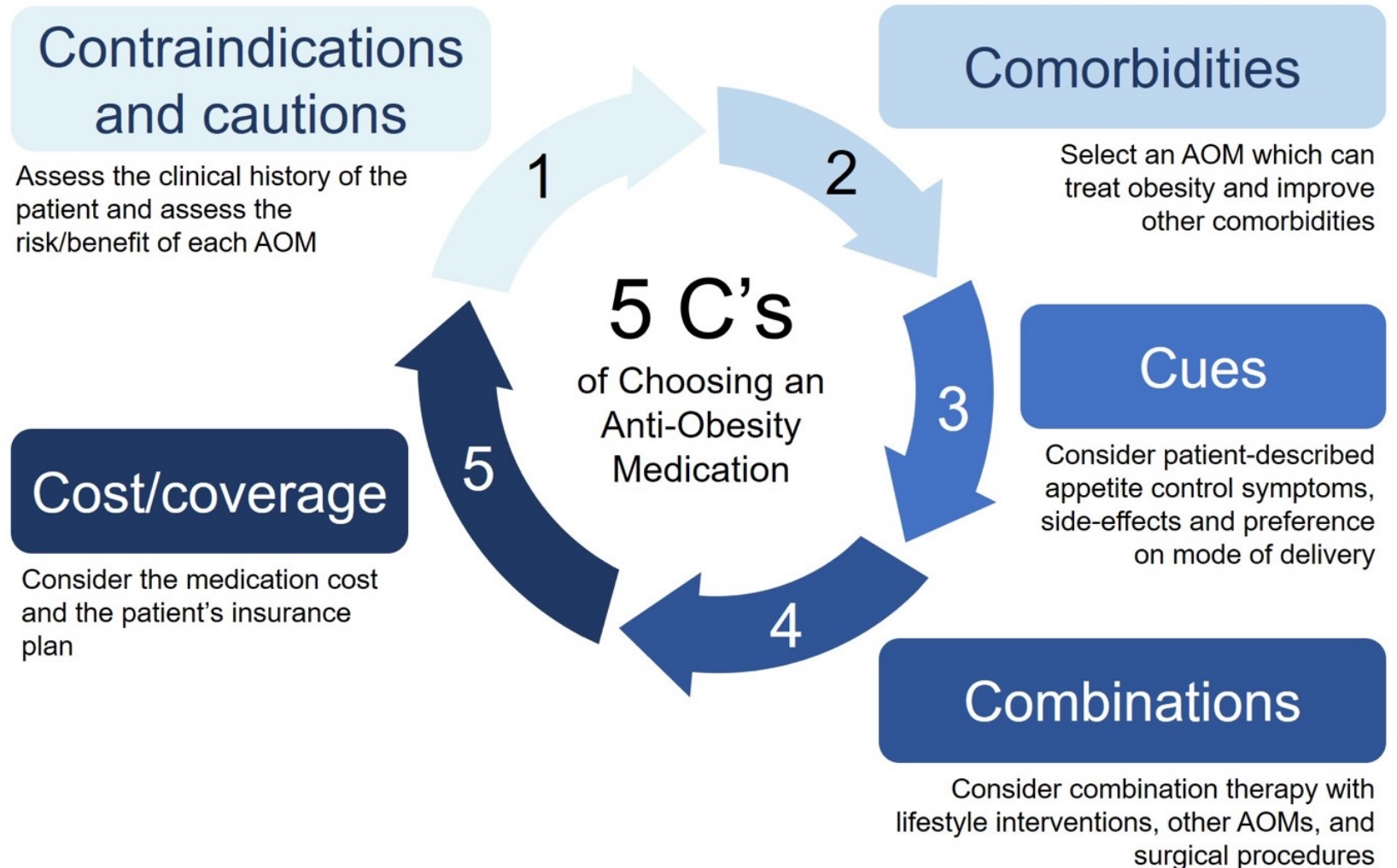
Characteristic	Both sexes		Men		Women	
	Sample size	Prevalence	Sample size	Prevalence	Sample size	Prevalence
Total (age adjusted)	8,295	41.9%	4,051	41.8%	4,244	41.8%
Age group (years):						
20–39	2,489	39.8%	1,177	39.9%	1,312	39.6%
40–59	2,765	44.3%	1,320	45.9%	1,445	42.8%
60 and over	3,041	41.5%	1,554	38.4%	1,487	44.2%
Race and Hispanic origin:						
Non-Hispanic white	2,866	41.4%	1,432	43.1%	1,434	39.6%
Non-Hispanic black	2,213	49.9%	1,058	40.4%	1,155	57.9%
Non-Hispanic Asian	1,014	16.1%	466	17.6%	548	14.5%
Hispanic	1,806	45.6%	880	45.2%	926	45.7%
Family income relative to federal poverty level (FPL):						
130% or less FPL	2,019	43.9%	892	38.6%	1,127	47.9%
More than 130% through 350% FPL	2,815	46.5%	1,400	43.9%	1,415	48.8%
More than 350% FPL	2,312	39.0%	1,189	42.4%	1,123	35.1%
Education:						
Less than high school diploma	1,538	40.1%	803	35.3%	735	45.3%
High school diploma or some college	4,709	46.4%	2,259	45.9%	2,450	46.8%
College degree or above	2,037	34.2%	984	36.3%	1,053	32.2%

Anti-Obesity Medications (AOMs)

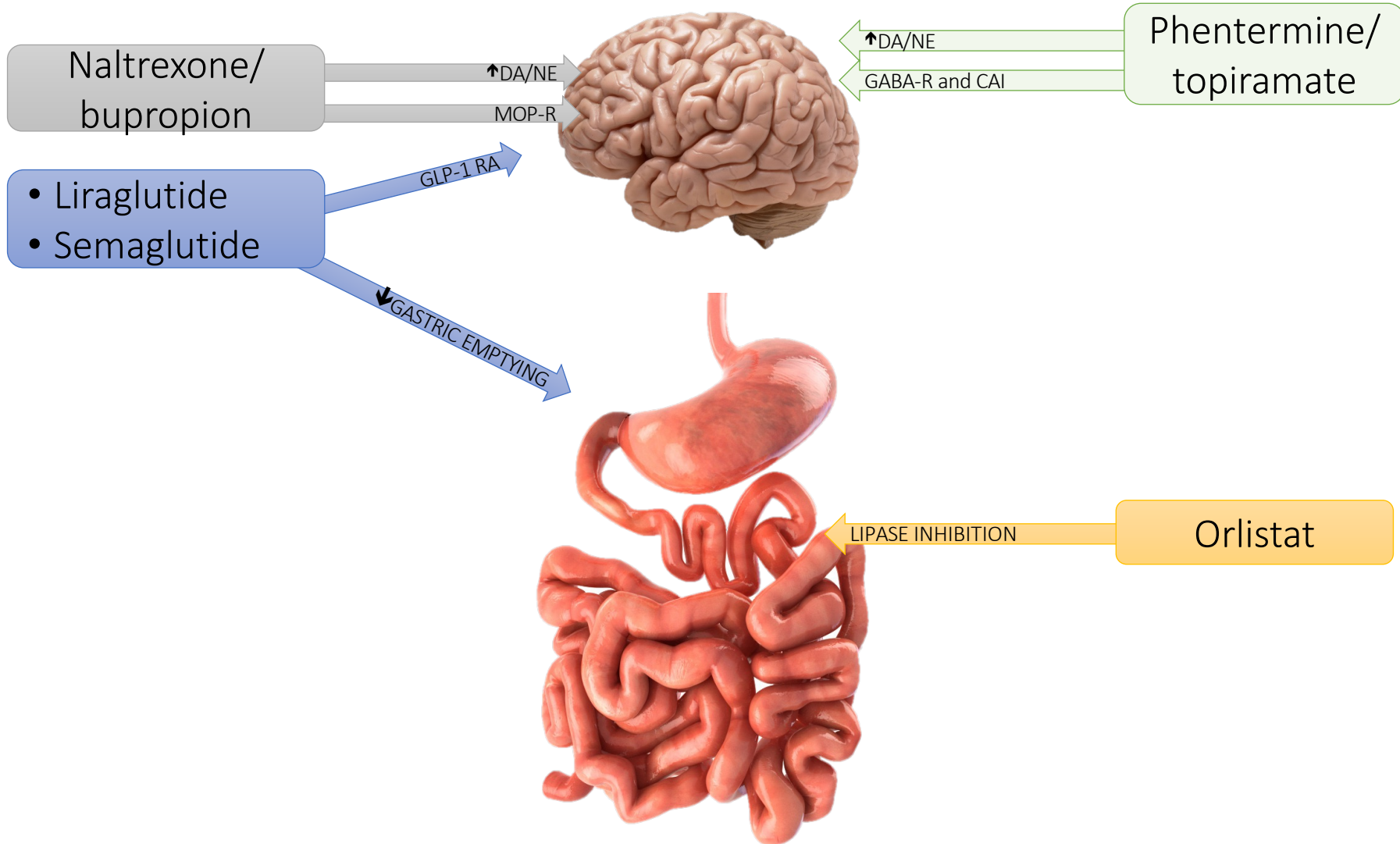
Anti-Obesity Medications (AOMs)

Obesity Treatment Guidelines AHA - ACC -TOS

Medications work to reinforce lifestyle change and should be prescribed as an adjunct to lifestyle interventions...



FDA Approved AOMs

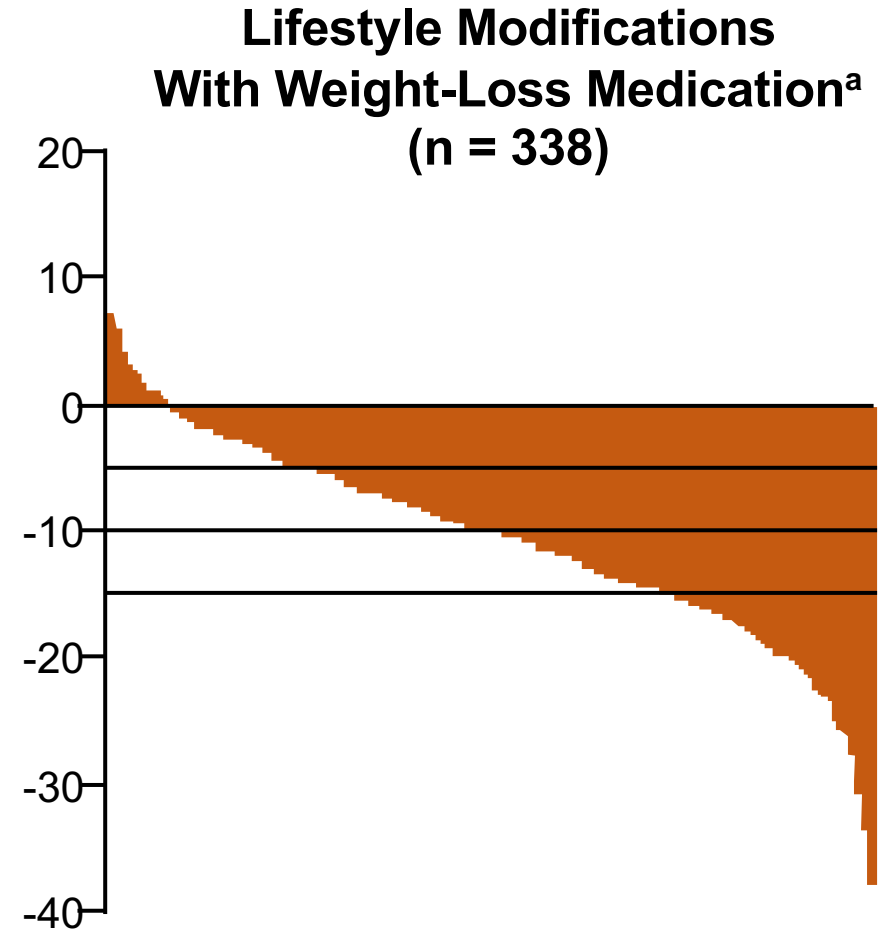
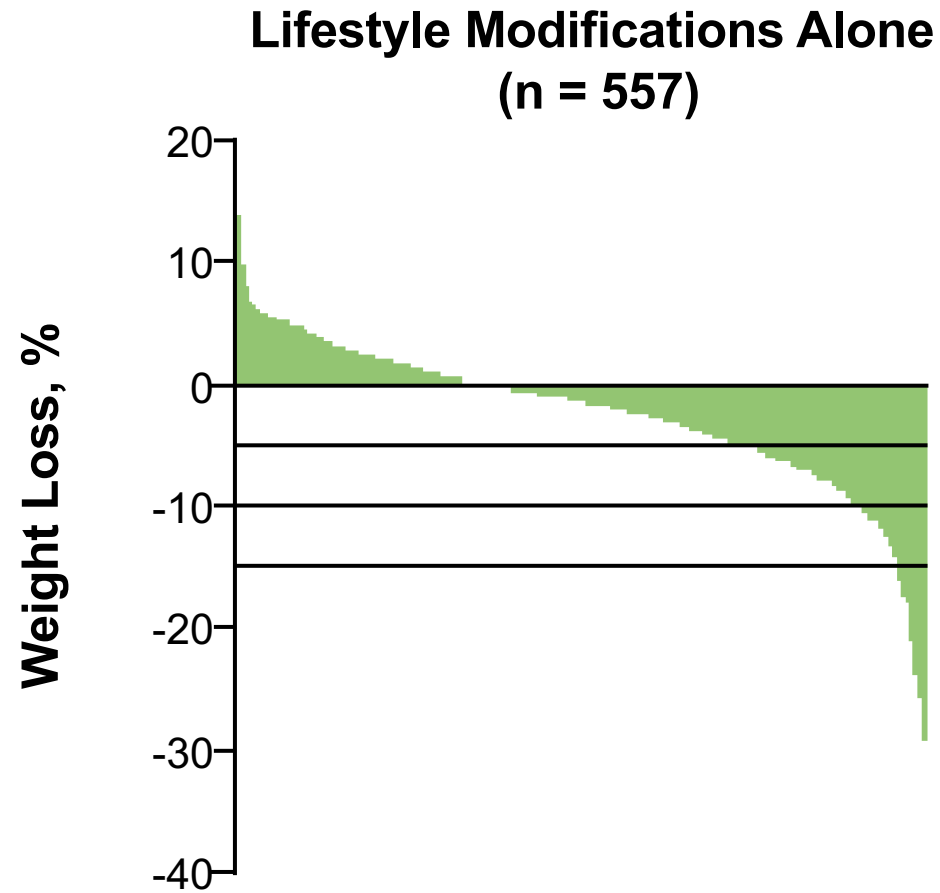


1. Tak YJ, Lee SY. *Curr Obes Rep.* 2021;10:14-30. 2. Giruzzi N. *Clin Diabetes.* 2020;38:313-314. 3. Angelidi AM et al. *Endocr Rev.* 2022;43:507-557. 4. Brandt SJ et al. *Peptides.* 2018;100:190-201.

Society Guidelines and FDA Labeling

- Patient population
 - BMI ≥ 30
 - BMI ≥ 27 with weight-related complications
- Lifestyle interventions (e.g., diet and exercise)
 - Must have an inadequate response to lifestyle interventions alone.
 - AOMs must be used in conjunction with lifestyle interventions (add on).
- Achievement of 5-10% of total body weight loss is associated with favorable long-term health outcomes.

AOMs Increase the Proportion of People Achieving Meaningful Weight Loss with Lifestyle Interventions



Each vertical bar represents the experience of an individual who completed the 56-week study

^a Phentermine/topiramate ER 7.5/46 mg/d.

1. <https://pro.aace.com/sites/default/files/2018-11/3.3.weight-loss-medications.pdf>.

Orlistat (Xenical)

Mechanism of action

- Reduces the amount of fat your body absorbs from the food you eat

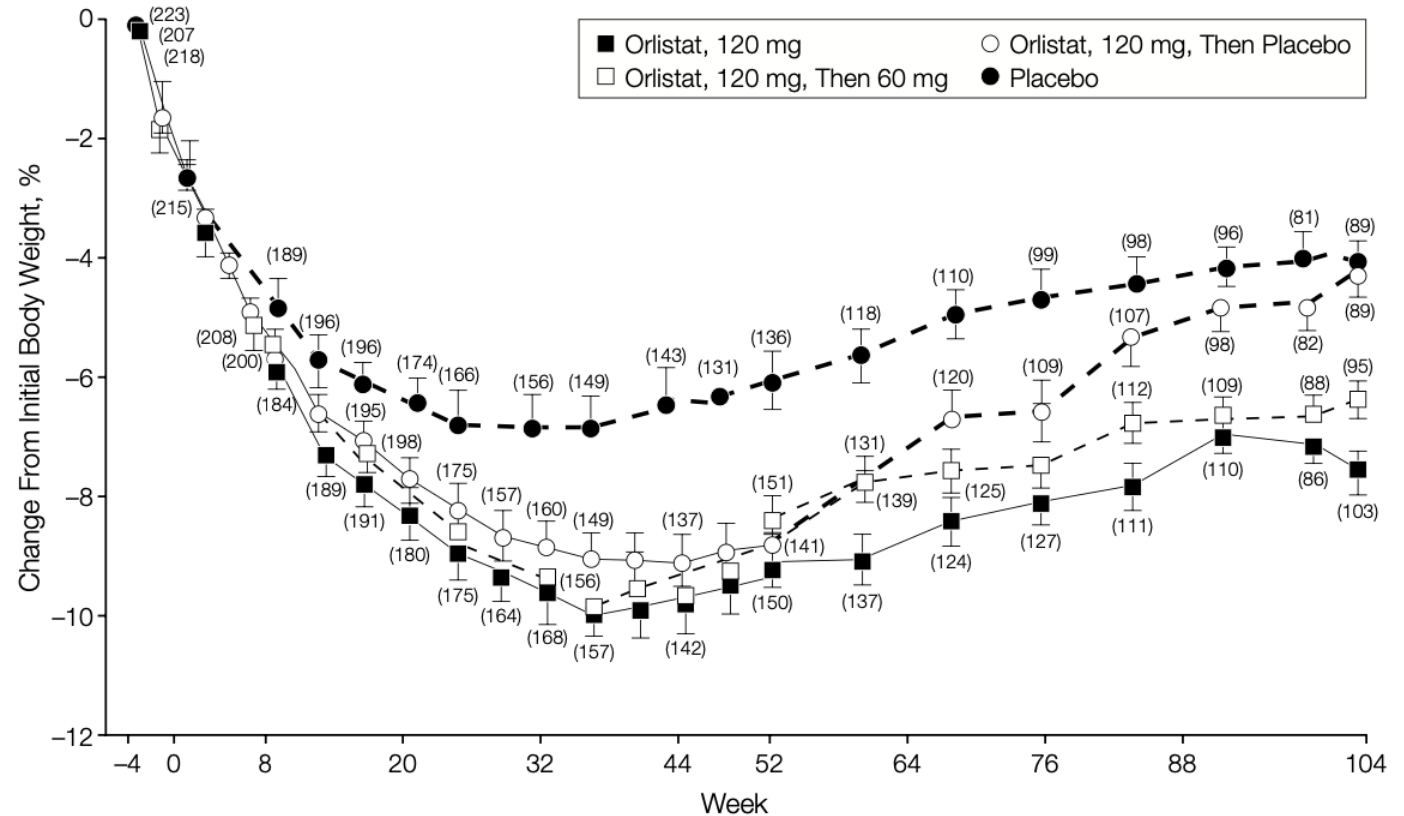
Dosing

- Oral TID before meals
- Approved for adults and children 12+
- Lower dose available OTC (Alli)

Side effects & considerations

- Diarrhea
- Gas
- Leakage of oily stools
- Malabsorption
- Nephrolithiasis
- Take multivitamin

Not recommended by AGA due to low benefit/risk ratio.



	Orlistat	Placebo
Weight loss 1 year	8.8%	5.8%
>5% weight loss	65.7%	43.6%
>10% weight loss	38.9%	24.8%

Naltrexone-Bupropion ER (Contrave)

Mechanism of action

- Naltrexone is used to treat alcohol and drug dependence; bupropion used to treat depression and smoking cessation.

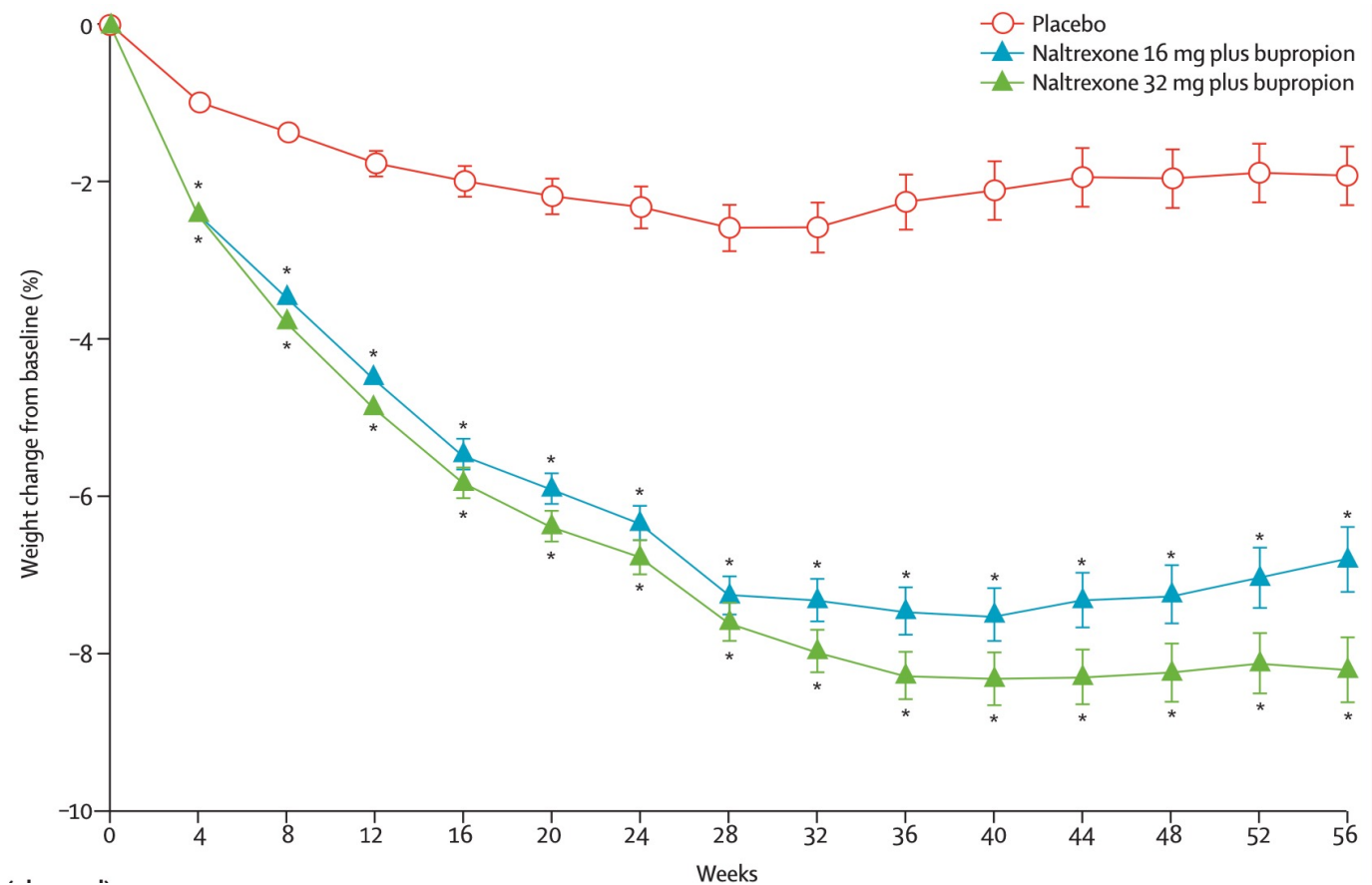
Dosing

- Oral BID
- Adults 18+ only

Side Effects & Considerations

- Gastrointestinal upset
- Insomnia, mood changes, suicidal thoughts
- Cannot use if uncontrolled high blood pressure, seizures or history of anorexia or bulimia nervosa.
- Cannot use if dependent on opioids or withdrawing from drugs/alcohol

Lancet 2010; 376: 595–605



	NAL/BUP	Placebo
Weight Loss	6.1%	1.3%
>5% weight loss	48%	16%
>10% weight loss	21%	7%

Phentermine-Topiramate ER (Qsymia)

Mechanism of action

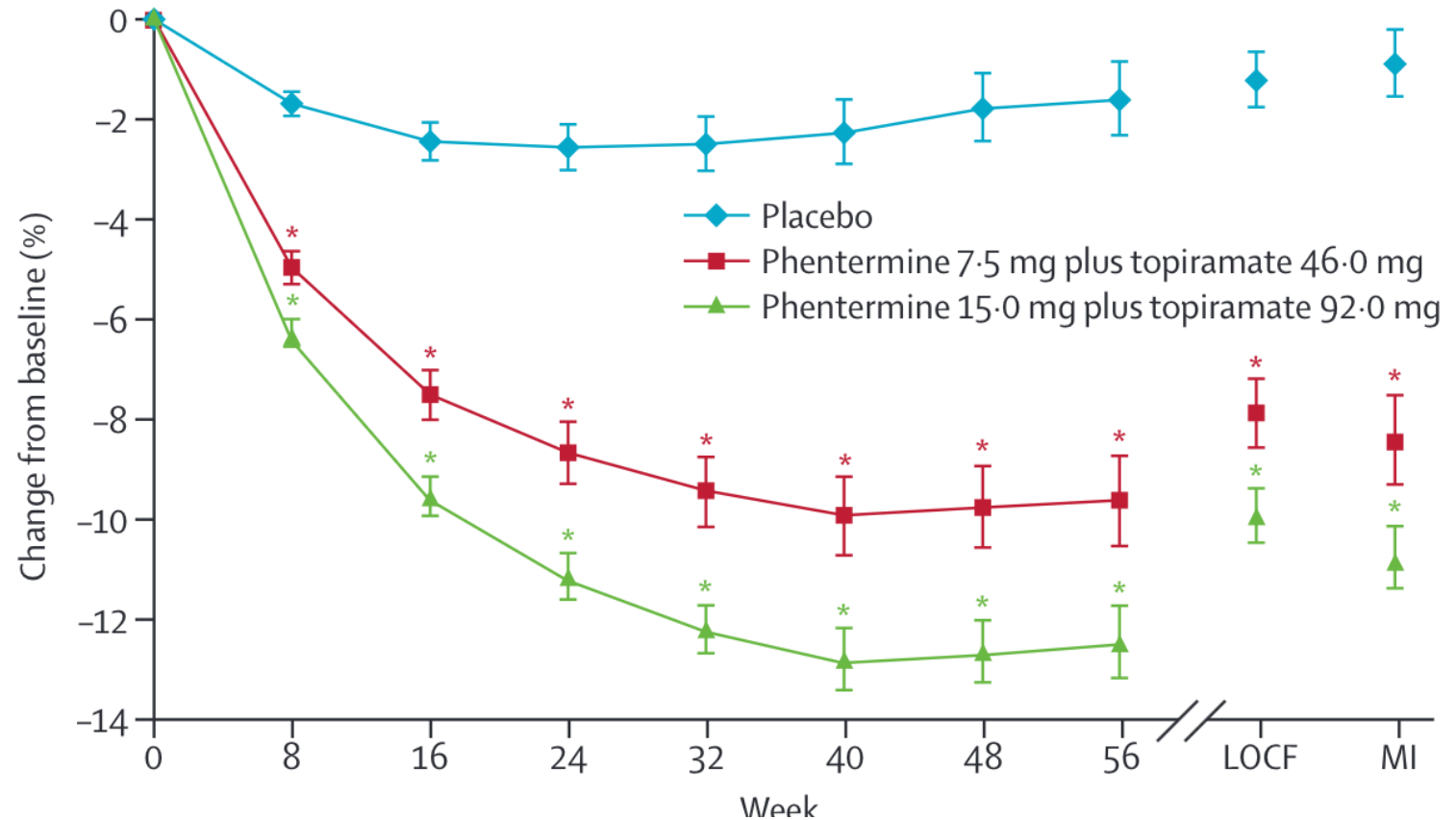
- Phentermine (Schedule IV controlled substance) lessens your appetite and topiramate mechanism on weight loss unknown.

Dosing

- Oral QD
- Approved for adults and children 12+

Side Effects & Considerations

- Paraesthesias
- Dysguesia
- Memory, fatigue
- Kidney stones
- Cannot use if pregnant, planning to become pregnant or breastfeeding (teratogenicity)
- Dose adjustment for moderate hepatic impairment; do not use in severe.



	PHN/TOP	Placebo
Weight Loss	9.8%	1.2%
> 5% weight loss	70%	21%
>10% weight loss	48%	7%

Liraglutide (Saxenda)

Mechanism of Action

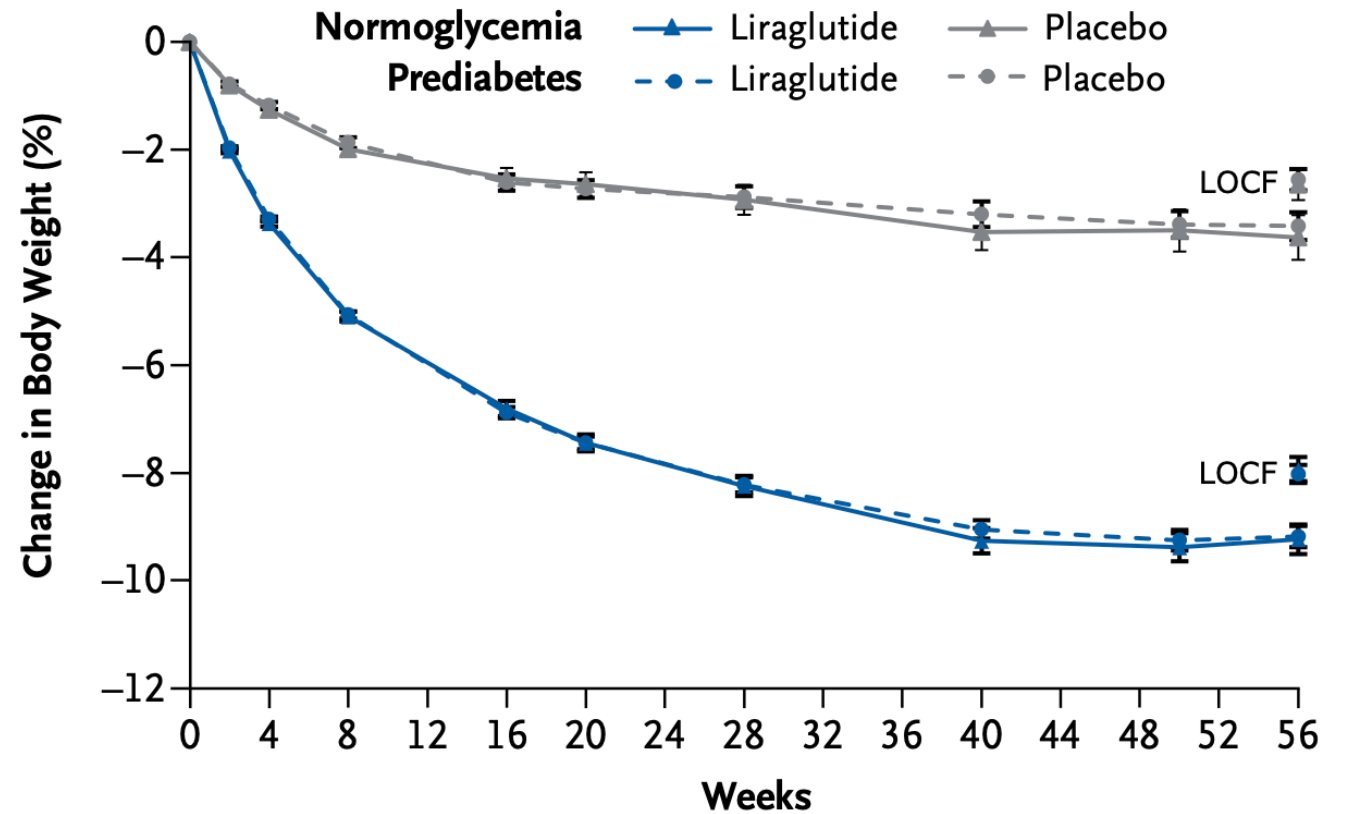
- Mimics GLP-1 (hormone in brain that regulates appetite and food intake)

Dosing

- 3.0 mg SubQ injection daily
- Increased weekly in 0.6 mg increments
- Approved for adults and children 12+
- Lower dose approved for Type 2 diabetes (Victoza)

Side Effects & Considerations

- Delayed gastric emptying
- Nausea (40%)
- Diarrhea, Constipation (20%)
- Pancreatitis (0.2%)
- Medullary thyroid cancer, MEN-2B



	Liraglutide	Placebo
Weight loss at 1 yr	8.0%	2.6%
>5% weight loss	63.2%	27.1%
>10% weight loss	33.1%	10.6%

Semaglutide (Wegovy)

Mechanism of Action

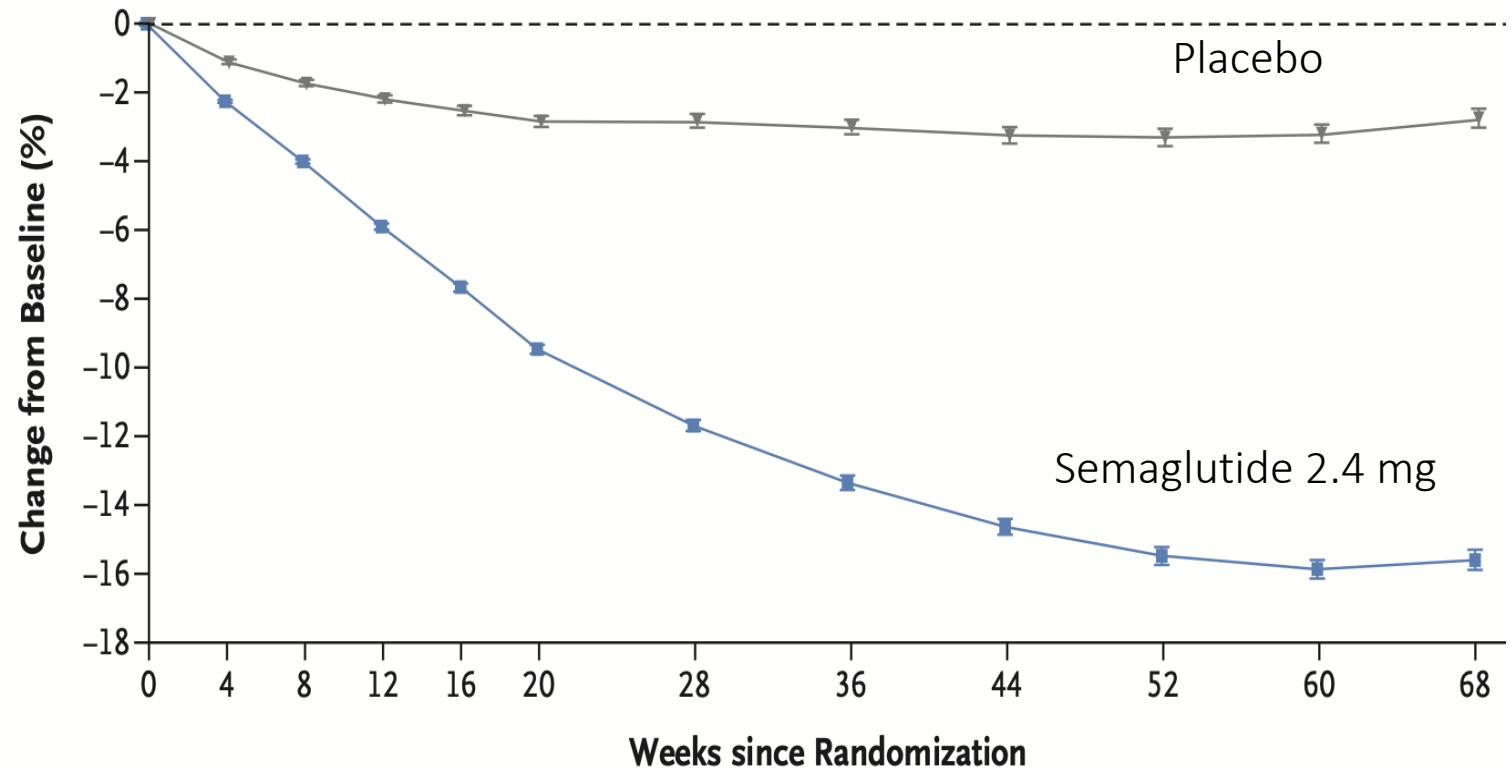
- Mimics GLP-1 (hormone in brain that regulates appetite and food intake)

Dosing

- 2.4 mg SubQ injection weekly
- Dose increased every 4 weeks
- Approved for adults and children 12+
- Lower dose subQ injectable (Ozempic) and oral (Rybelsus) approved for Type 2 diabetes.

Side Effects & Considerations

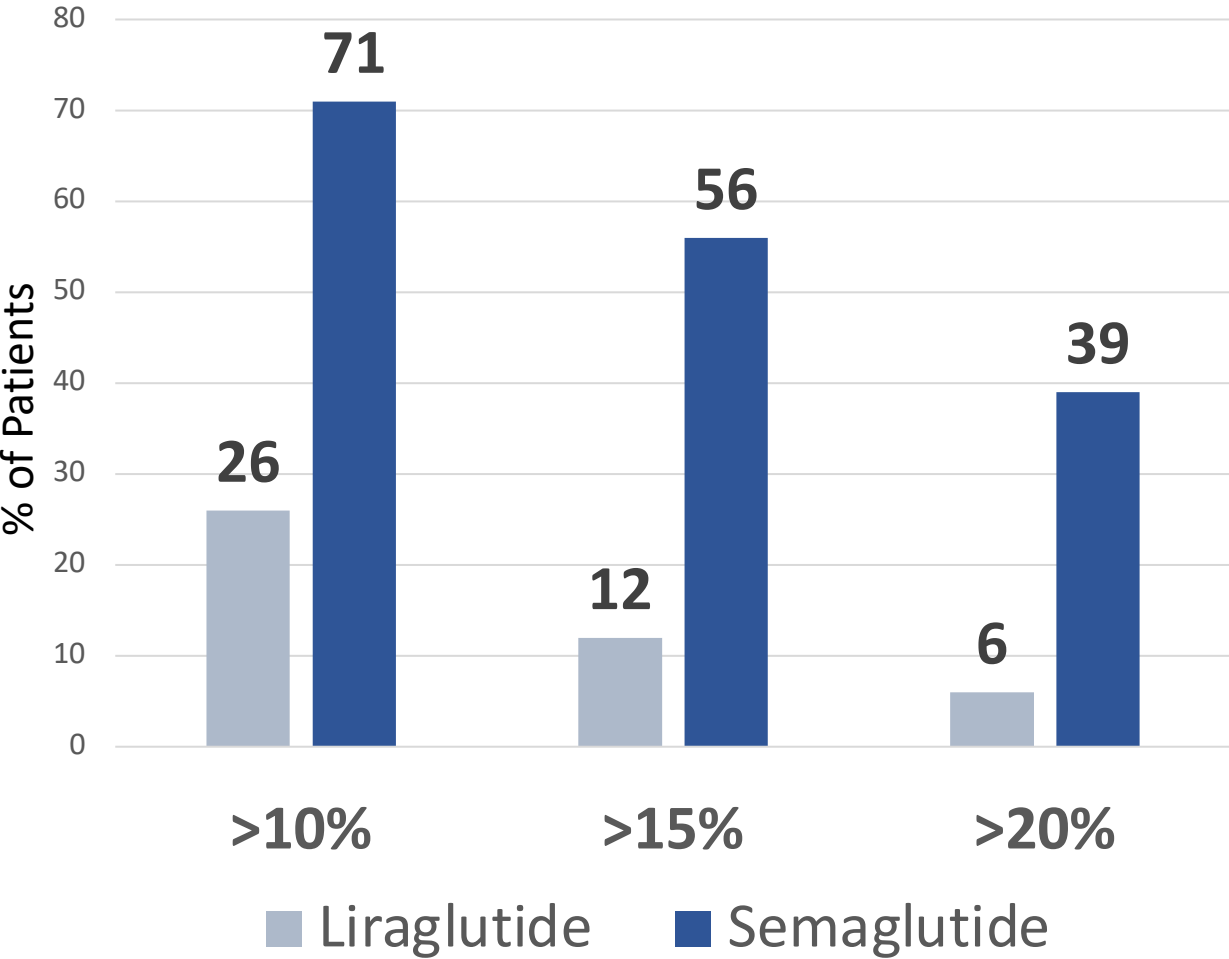
- Delayed gastric emptying
- Nausea (44%)
- Diarrhea (32%)
- Constipation (24%)



	Semaglutide	Placebo
Weight loss at 68 wk	14.9%	2.4%
>10% weight loss	69.1%	12.0%
>20% weight loss	32.0%	1.7%

Semaglutide (Wegovy) vs Liraglutide (Saxenda) Study

- Head-to-head study in obese patients (BMI \geq 30) or overweight (BMI $>$ 27) + 1 or more weight-related comorbidities.
- Patients with diabetes were not eligible.
- Patients treated for up to 68 weeks
- % body weight loss at end of treatment
 - Semaglutide: 15.8%
 - Liraglutide: 6.4%
- \geq 5% weight loss
 - Semaglutide: 87.2%
 - Liraglutide: 58.1%
- Side effects similar in the 2 arms.



On the horizon...better things to
come?

Tirzepatide

Mechanism of Action

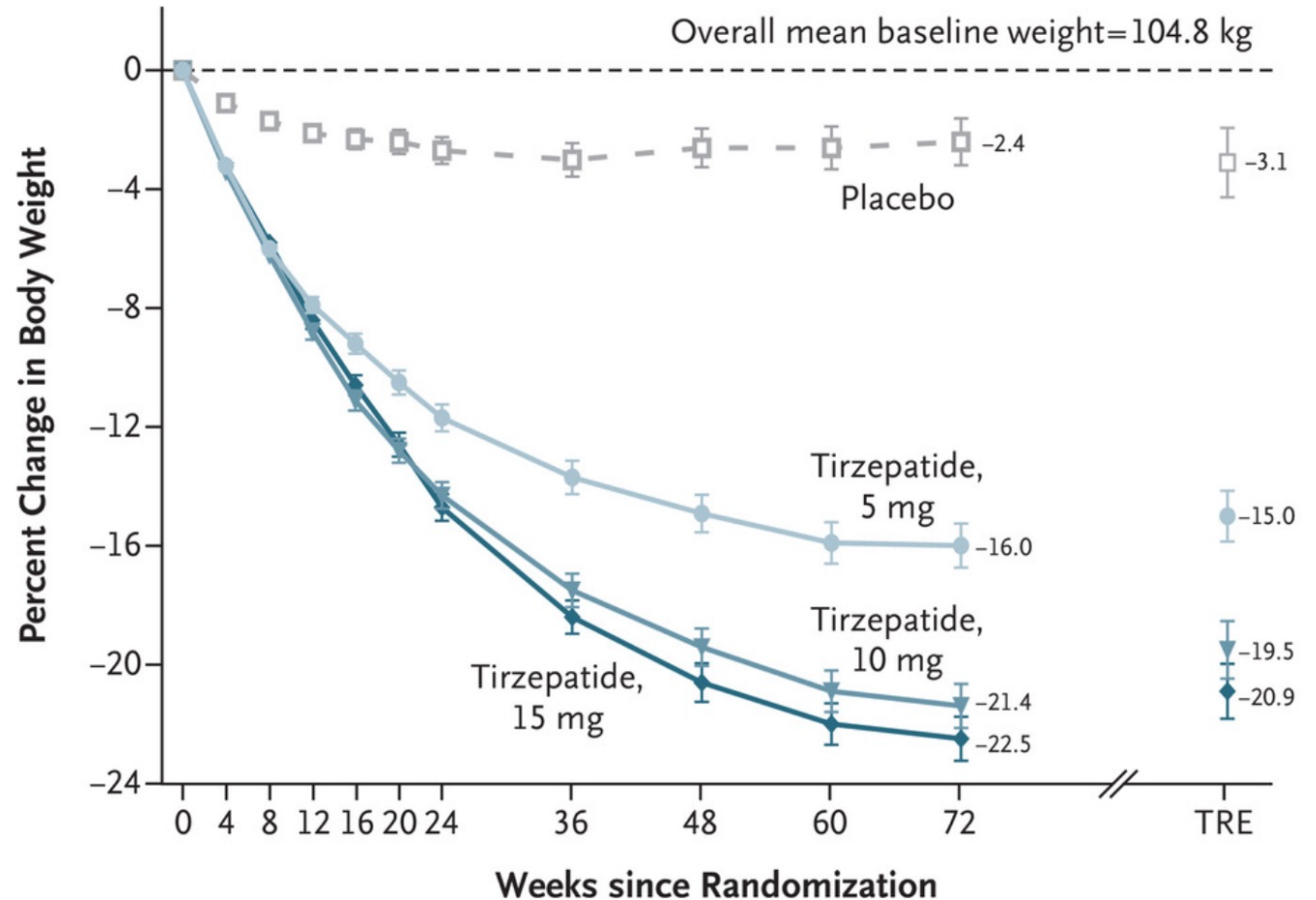
- Dual receptors: Mimics GLP-1 (hormone in brain that regulates appetite and food intake) and GIP.

Dosing

- 5 mg, 10 mg, or 15 mg subQ weekly
- Titrated every 4 wks
- Currently only approved for adults with T2DM (Mounjaro).

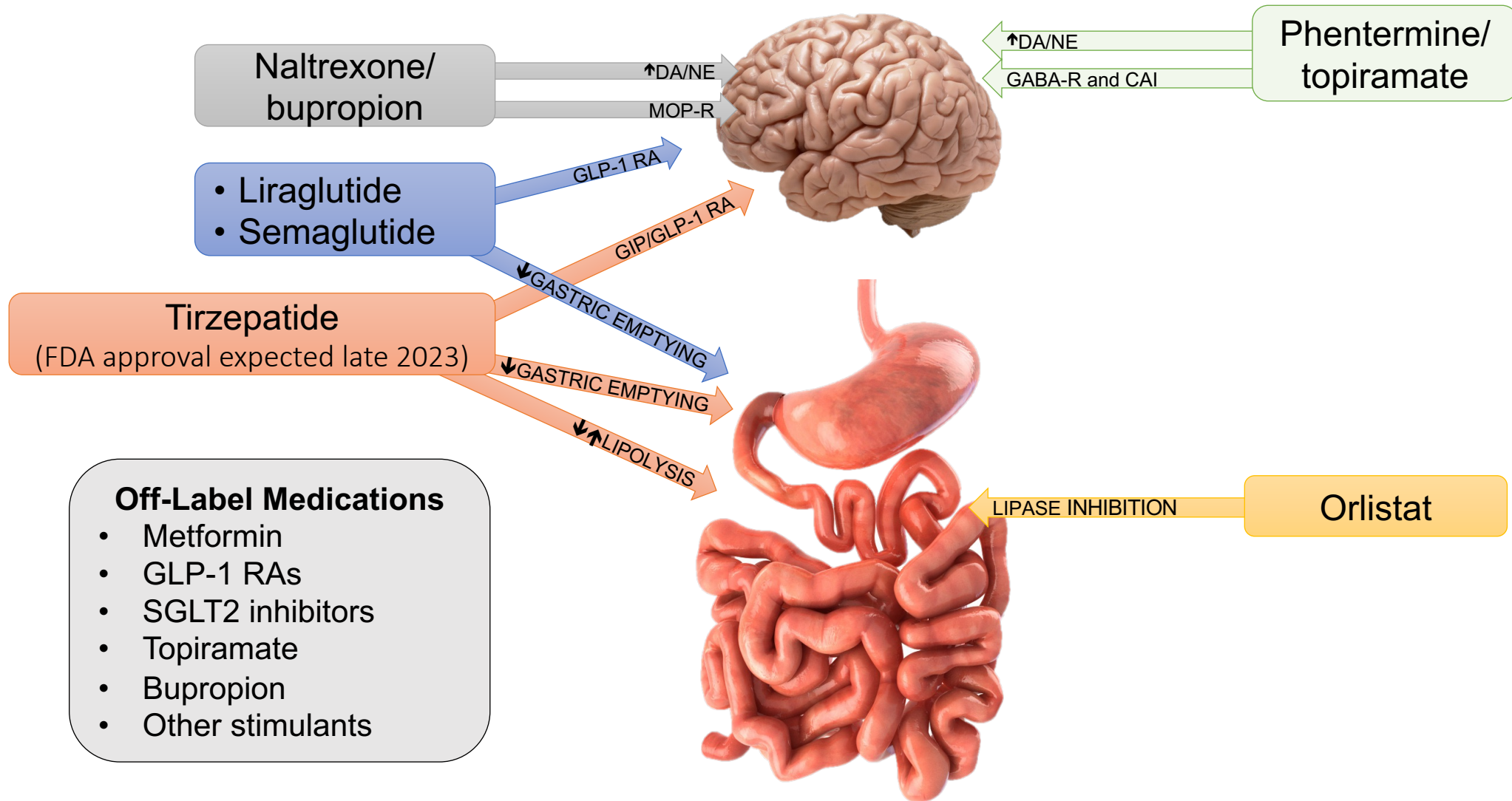
Side Effects & Considerations

- Nausea (24.6%, 33.3%, 31.0%)
- Vomiting (8.3%, 10.7%, 12.2%)
- Diarrhea (18.7%, 21.2%, 23.0%)
- Constipation (16.8%, 17.1%, 11.7%)



	Tirzepatide	Placebo
Weight loss at 72 wk	20.9%	3.1%
>5% weight loss	90.9%	34.5%
>20% weight loss	56.7%	3.1%

Summary of AOMs: Approved, Off-Label and Pipeline



Weight Loss Medications Summary

- Pros
 - Effective for weight loss when used in conjunction with dietary changes and physical activity.
 - Approved by FDA for weight management.
 - Other health benefits (e.g., improved blood sugar, blood pressure and cholesterol)
 - Safer/more effective therapies on the horizon.
- Cons
 - Not suitable for everybody.
 - Weekly subQ injection?
 - Weight regain can occur once medication stopped if other lifestyle changes not followed.
 - High demand for new medications makes access challenging in some circumstances.

What Should We Be Doing?

- US Preventative Services Task Force (USPSTF) 2018 recommendation
 - “Clinicians offer or refer adults with BMI ≥ 30 to intensive, multicomponent behavioral interventions.”
- Guidance currently being updated with expected issuance in 2024.
- USPSTF guidance important for policy (e.g., hepatitis C universal screening).

Risk Factors	Normal Weight (BMI 18.5 to <25) ^a	Overweight (BMI 25 to <30) ^a	Obese (BMI ≥ 30) ^a
No hypertension, dyslipidemia, or abnormal blood glucose levels	Individualize the decision to provide or refer to behavioral counseling	Individualize the decision to provide or refer to behavioral counseling	Provide or refer to intensive behavioral counseling
Hypertension, dyslipidemia, or both	Individualize the decision to provide or refer to behavioral counseling	Provide or refer to intensive behavioral counseling	Provide or refer to intensive behavioral counseling
Abnormal blood glucose levels or diabetes	Provide or refer to intensive behavioral counseling ^b	Provide or refer to intensive behavioral counseling	Provide or refer to intensive behavioral counseling

Take Home Points

- Obesity and the associated complications are a medical crisis in the US.
- Counseling patients on the importance of lifestyle modifications geared to lose weight is critical.
- As little as 5% loss of body weight can have positive long-term health outcomes.
- If lifestyle modifications aren't enough, approved medications can be added on.
- Newer medications are likely to offer better efficacy with less side effects.