

Cannabinoids and Health

Module 7

Lecture 1: Definition and Epidemiology of Obesity and
Type II Diabetes

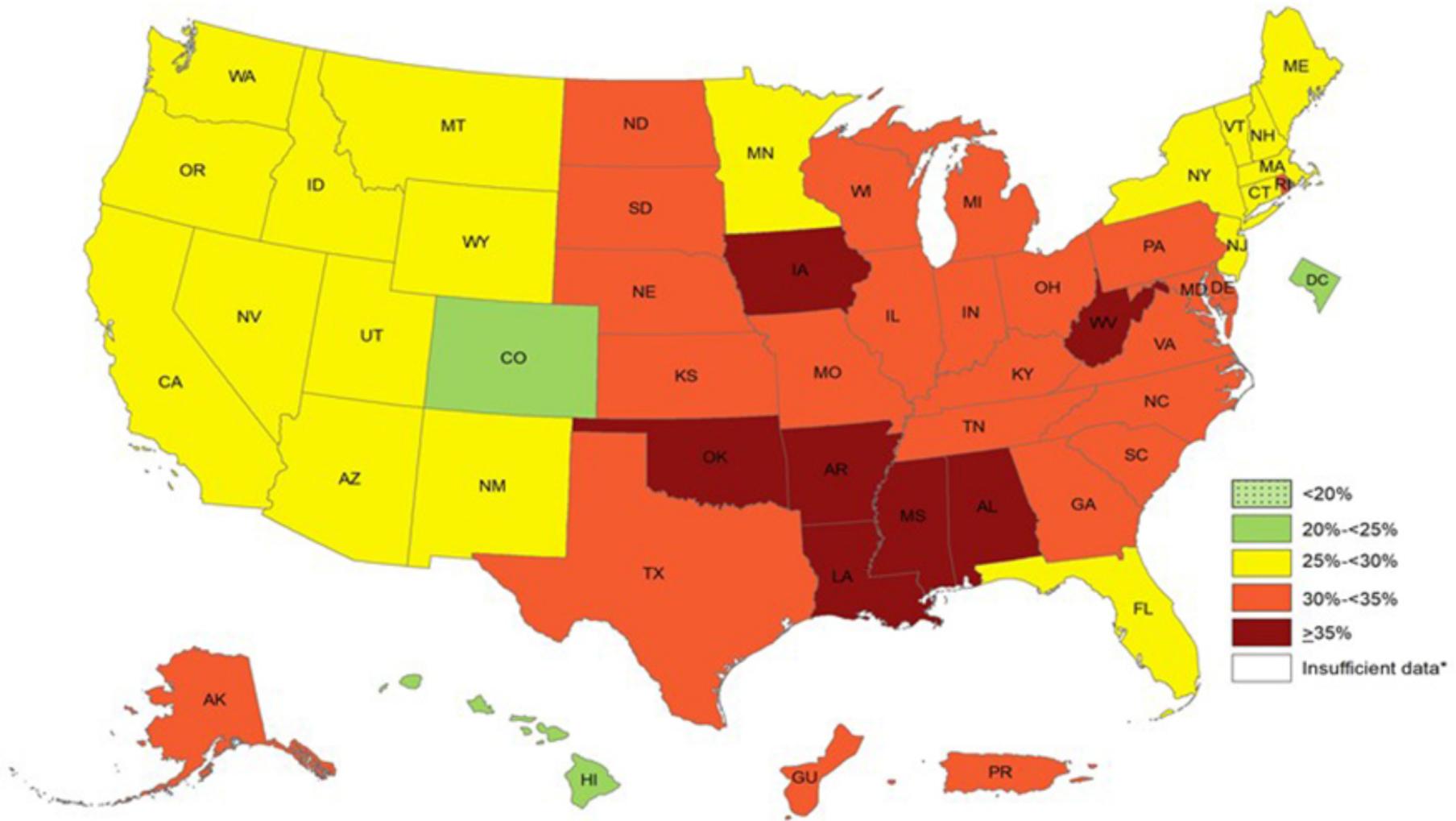
Scope of the Obesity Problem

- There is currently an obesity epidemic in the United States
- More than two-thirds of US adults (68.8%) are currently overweight or obese
- As of 2017, every state in the US had more than 20% of adults with obesity
 - But there is geographic diversity

How is obesity versus overweight determined?

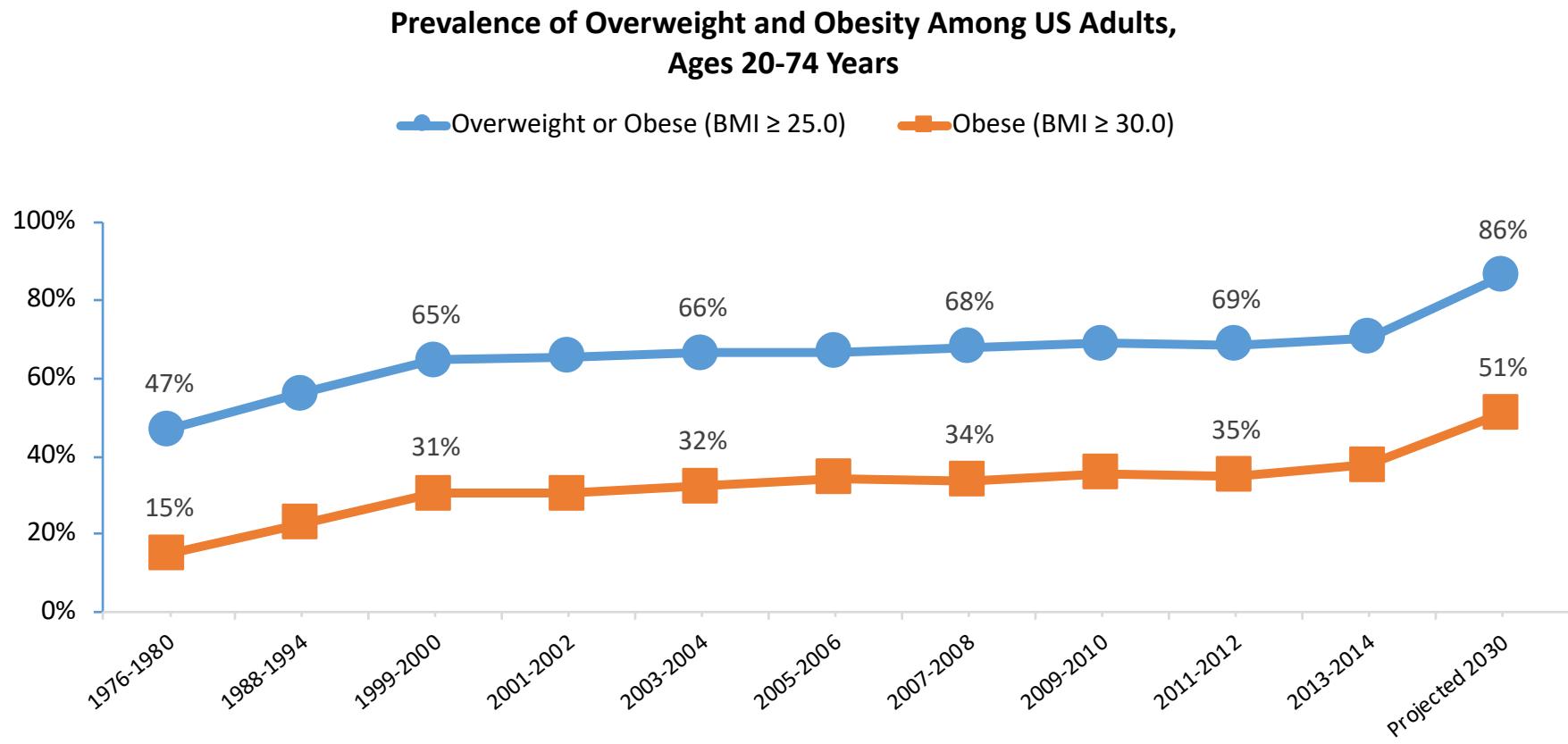
- Measure used to assess body weight is Body Mass Index or BMI
- $\text{BMI} = \text{weight (kg)}/\text{height (m)}$
- To calculate your BMI, see:
https://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/english_bmi_calculator/bmi_calculator.html
- If BMI is less than 18.5, it falls within the **underweight range**
- If BMI is 18.5 to <25, it is in the **normal range**.
- If BMI is 25.0 to <30, it falls within the **overweight range**.
- If BMI is 30.0 or higher, it falls within the **obese range**.

Geographic Distribution of Obesity



SOURCE: CDC, Behavioral Risk Factor Surveillance System, 2017

Trends in Overweight and Obesity

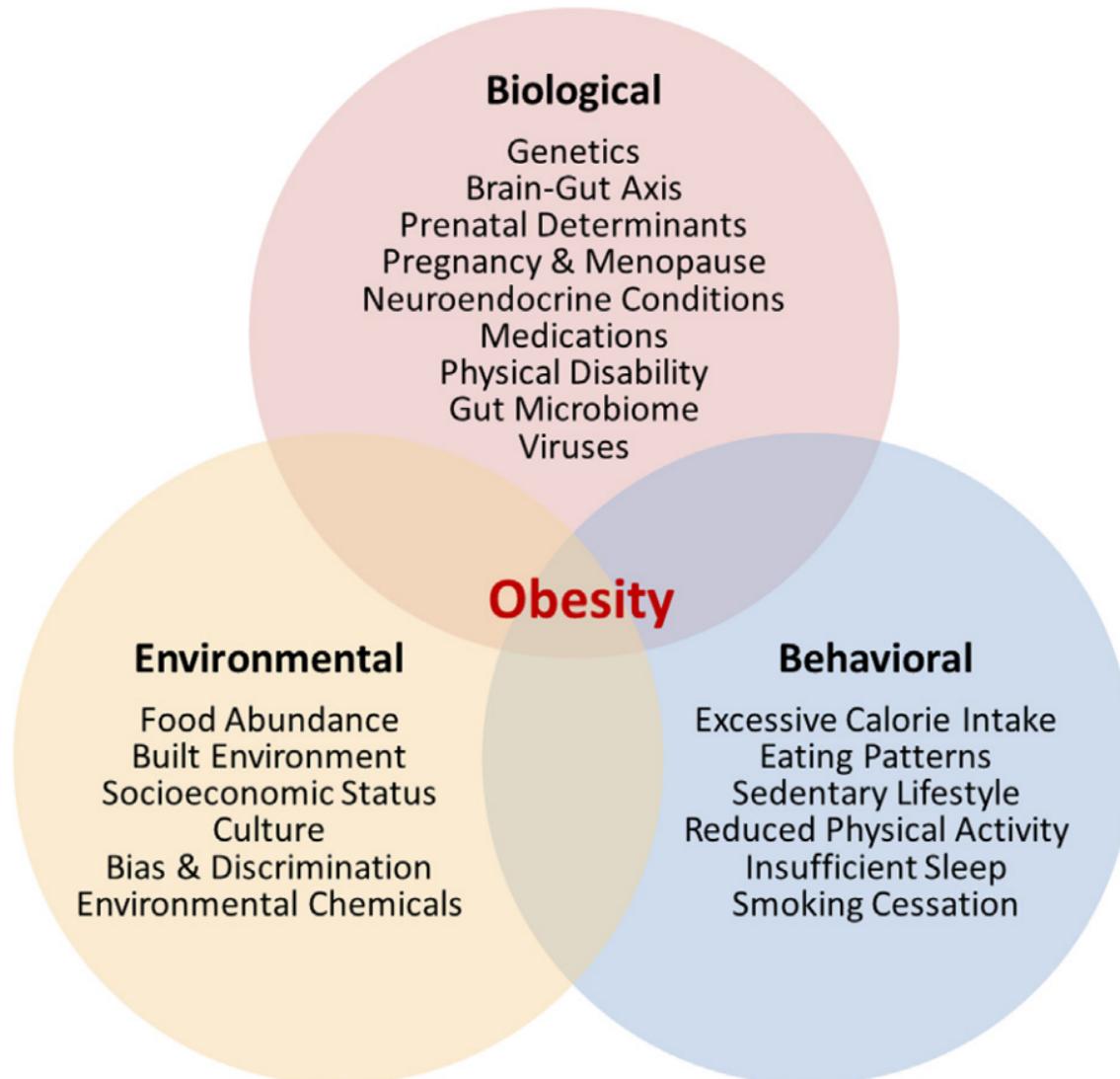


SOURCE: NCHS, National Health and Nutrition Examination Survey.

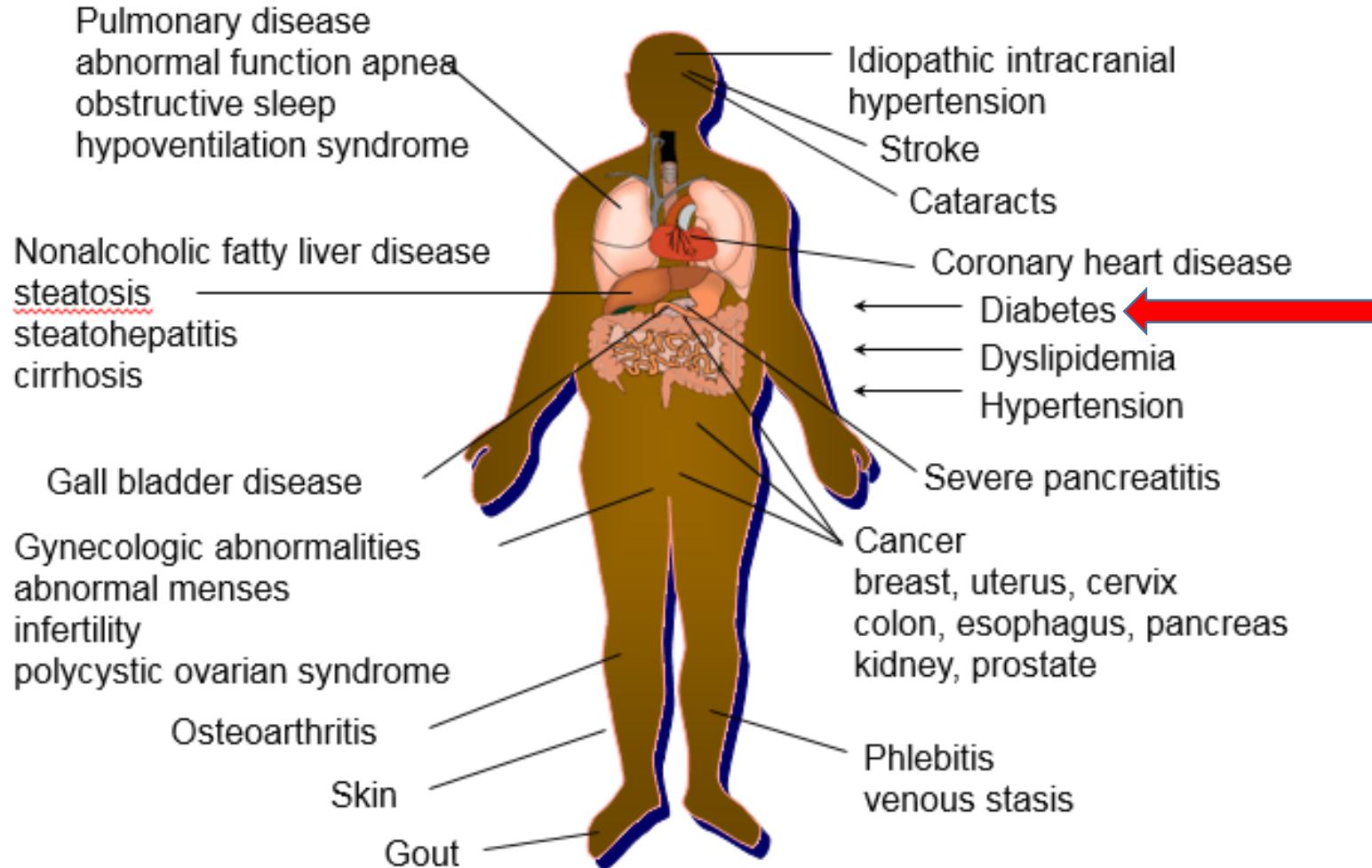
Risk Factors for Overweight/Obesity

- Individual Factors
 - Genetics, microbiome, family environment, medication use, education, race/ethnicity
- Behavior
 - Dietary patterns, physical activity, inactivity (sedentary behavior)
- Environment
 - Food availability, build environment that is conducive (or not) to physical activity, food marketing/promotion

Obesity is Multifactorial



Consequences of Obesity

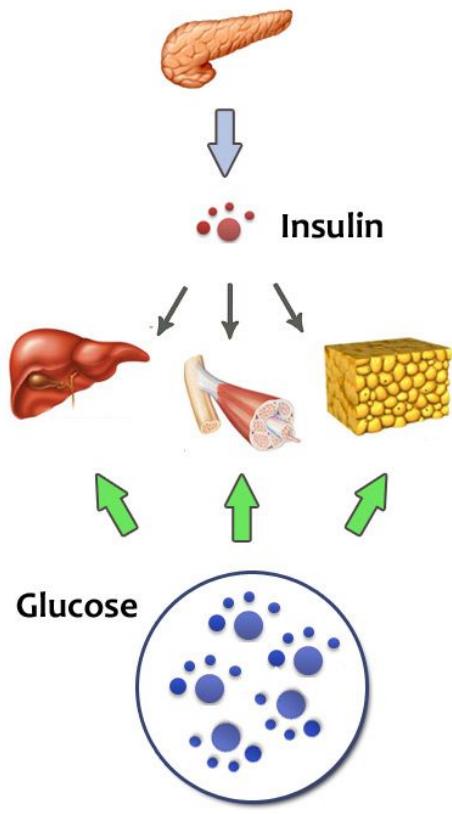


What is Diabetes?

- Diabetes: Occurs when blood glucose (sugar) is too high. Insulin (a hormone made by the pancreas) gets glucose from food into cells to be used for energy. When insulin is absent or does not function well, glucose stays in blood
 - **Type 1 Diabetes:** Immune system attacks and destroys the cells in the pancreas that make insulin, glucose remains in blood. Not related to behavior or obesity.
 - **Type 2 Diabetes:** The body does not make or use insulin well, glucose remains in blood. Associated with behavior (poor diet, lack of physical activity) and obesity.
 - **Prediabetes:** Blood glucose levels are higher than normal but not high enough to be diagnosed as diabetes. HUGE risk factor for Type 2 Diabetes.

Insulin Resistance versus Insulin Sensitivity

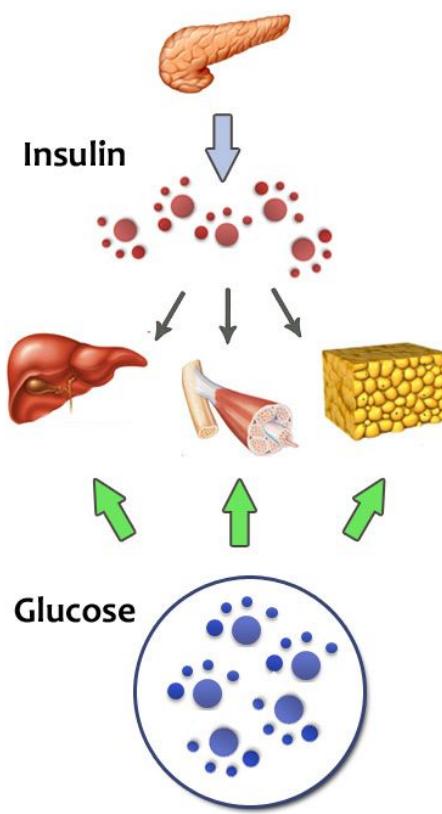
HEALTHY STATE



INSULIN SENSITIVE

When a small amount of insulin can push large amounts of glucose into body tissues

UNHEALTHY STATE (associated with prediabetes)



INSULIN RESISTANT

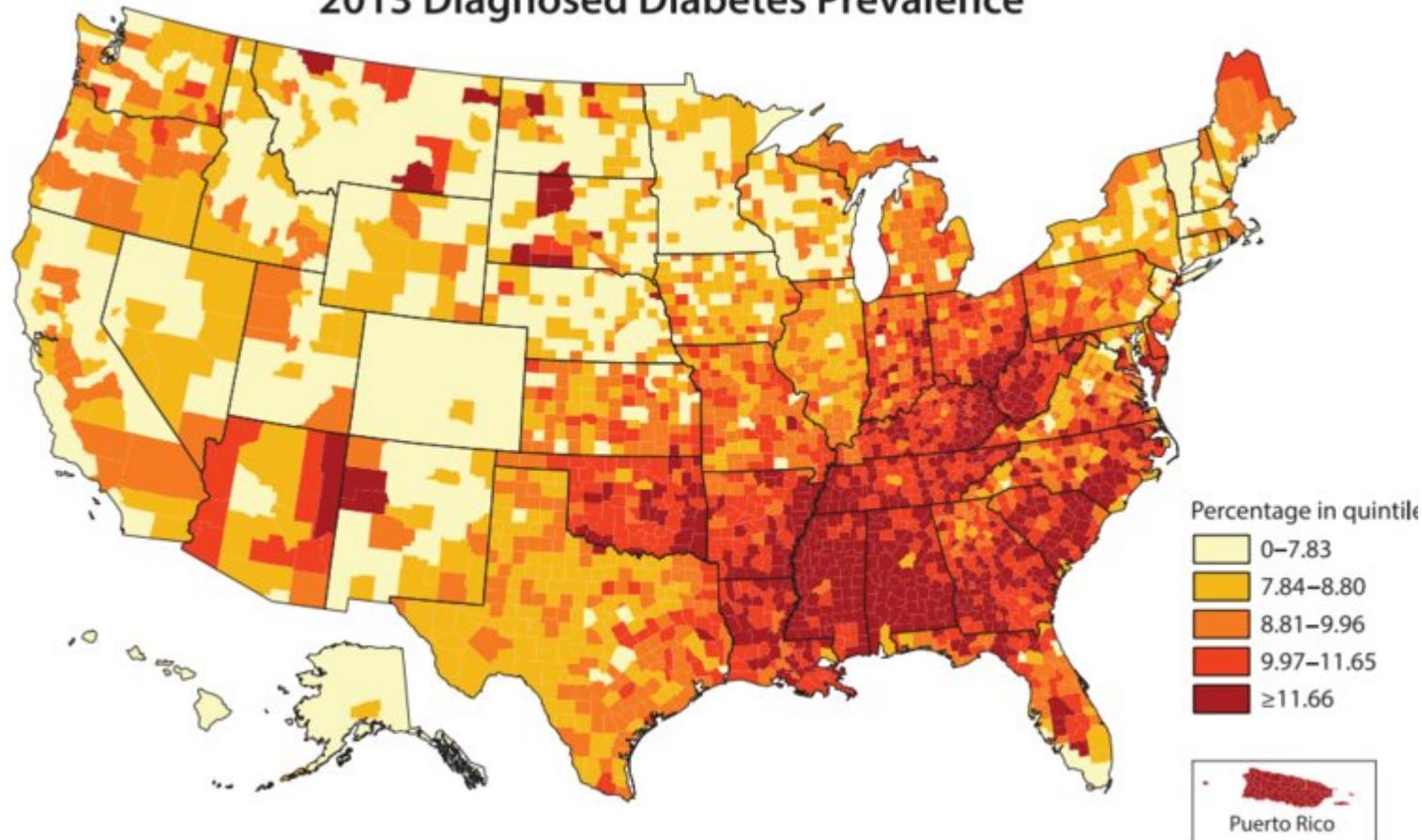
When a large amount of insulin is needed to push glucose into body tissues

Consequences of Diabetes

- **If it is not managed well,** diabetes can lead to problems such as
 - heart disease and stroke
 - nerve damage
 - kidney disease
 - foot problems (including amputation)
 - eye disease
 - gum disease and other dental problems
 - sexual and bladder problems
 - nonalcoholic fatty liver disease
 - sleep apnea
 - depression
 - some types of cancer
 - dementia

Age-adjusted, county-level prevalence of diagnosed diabetes among adults aged ≥20 years, United States, 2013

2013 Diagnosed Diabetes Prevalence



United States Diabetes Surveillance System.

Prevalence of Diabetes

- According to National Institute on Diabetes and Digestive and Kidney Disease, over 30 million people in the US have diabetes
- Just over 84 million people in the US have prediabetes
- Understanding the public health impact of behaviors that might either exacerbate or potentially reduce diabetes should be a public health priority



Risk Factors for Type II Diabetes

- OVERWEIGHT OR OBESITY
- Physical inactivity



Modifiable
Risk Factors

- Age 45 or older
- Family history of type II diabetes
- History of high blood pressure, abnormal cholesterol levels, gestational diabetes, heart disease, stroke, polycystic ovarian syndrome
- African American, Alaska Native, American Indian, Asian American, Hispanic/Latino, Native Hawaiian, or Pacific Islander American ethnicity

Conclusions

- Obesity is an epidemic in the US and, increasingly, around the world
- Obesity is a direct contributor to the stark rise in rates of Type 2 Diabetes
- Type 2 Diabetes is a serious illness that, if not managed well, has a number of negative consequences
- Although obesity and type 2 diabetes have a complex etiology, both are strongly influenced by modifiable risk factors including diet and physical activity

Discussion

- Enumerate and describe the ways in which widespread access to cannabis might impact the obesity epidemic and Type II diabetes?