

# Cavemen in the drive-thru: understanding the obesity epidemic

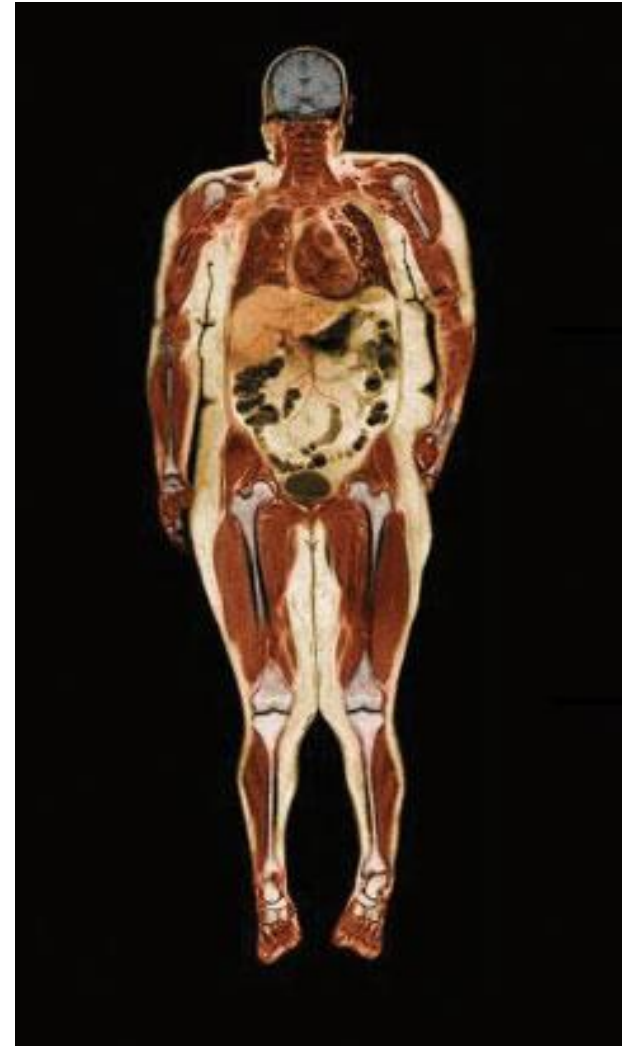
Brad Appelhans, PhD

Rush University Prevention Center



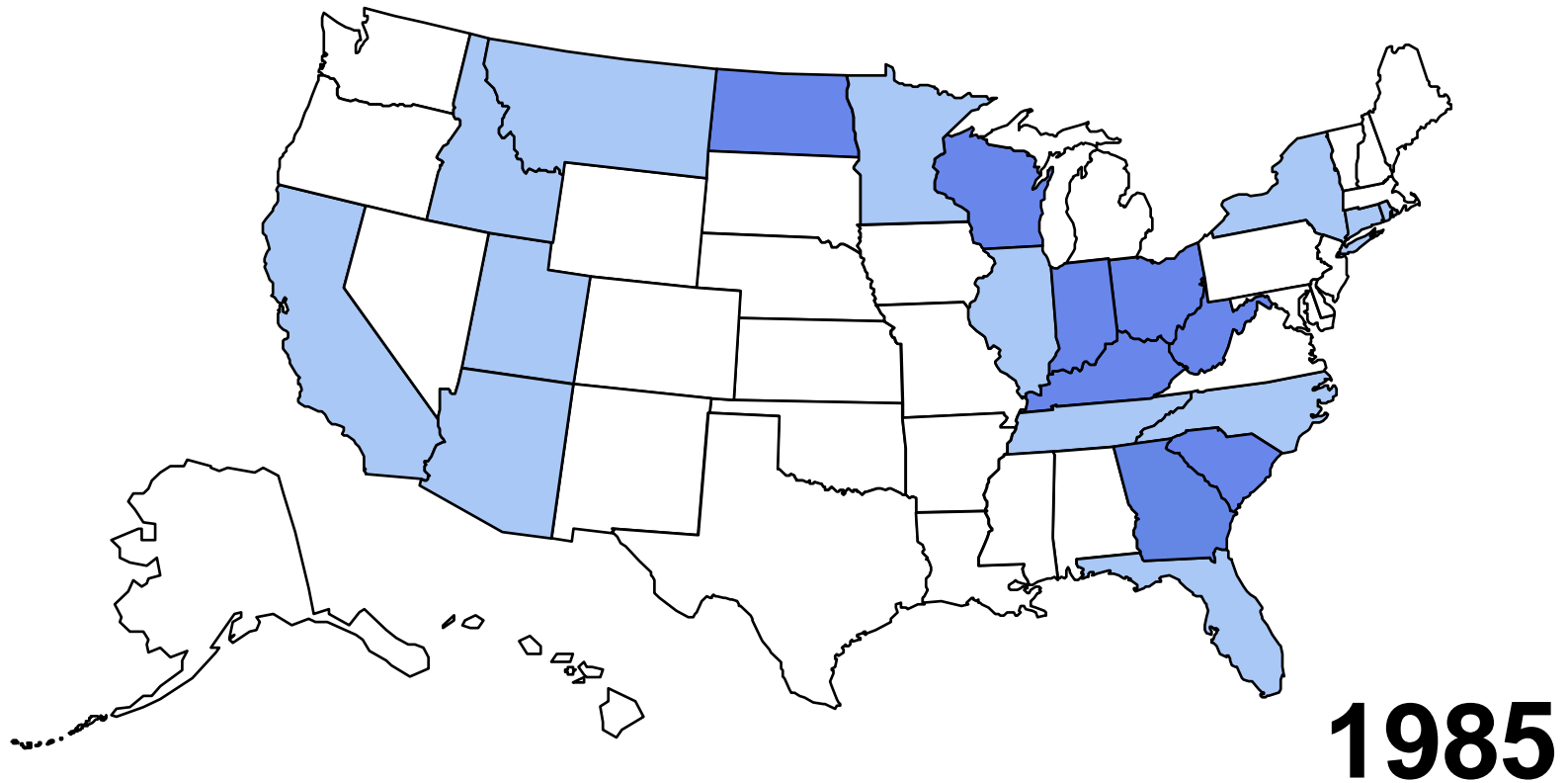
# Overview

- The obesity epidemic
- Why is obesity a big deal?
- Causes of obesity
  - Cavemen brains
  - Modern environments
- Are we destined to be fat?



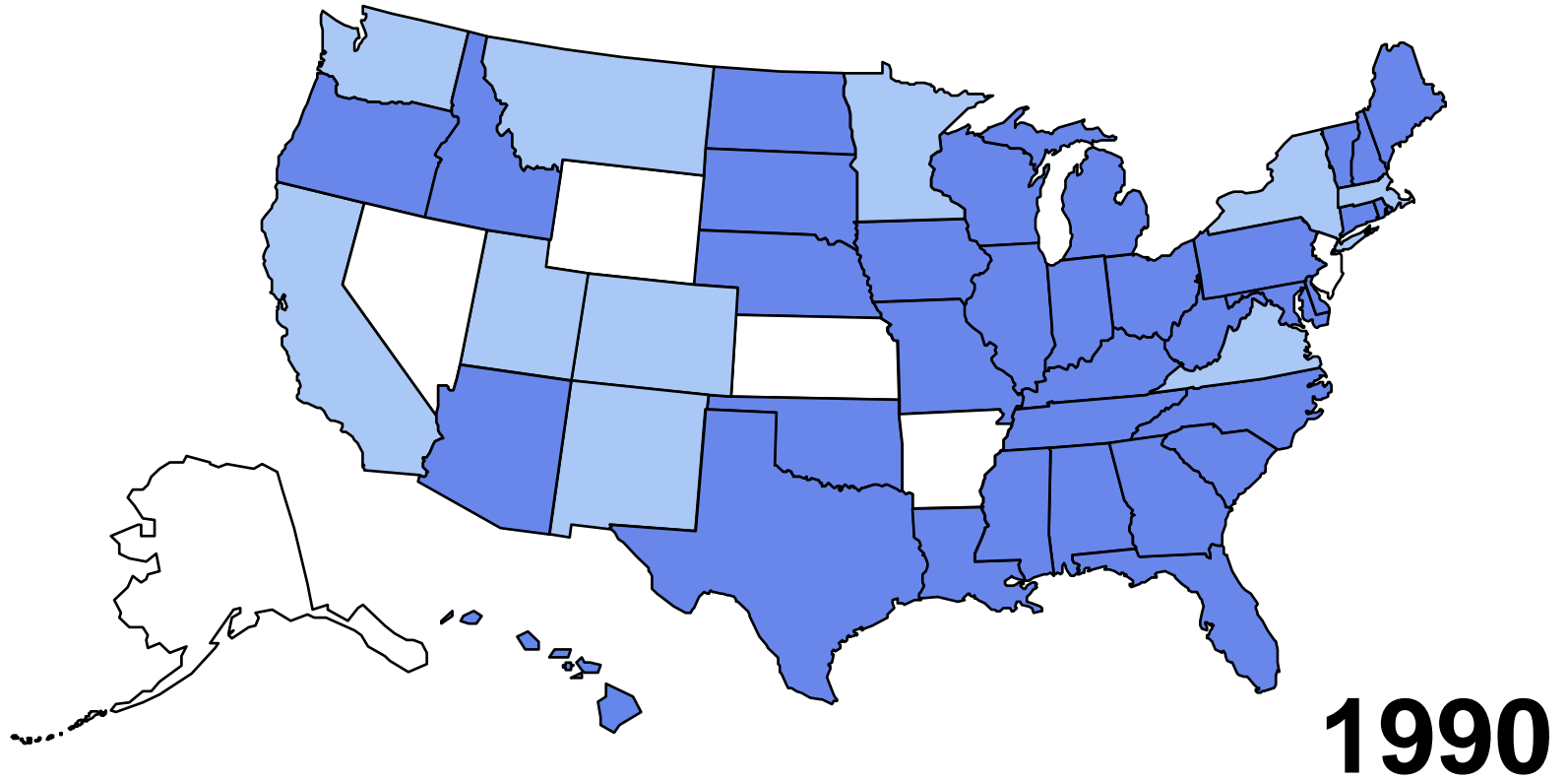
# Obesity Trends Among U.S. Adults

(BMI  $\geq 30$ )



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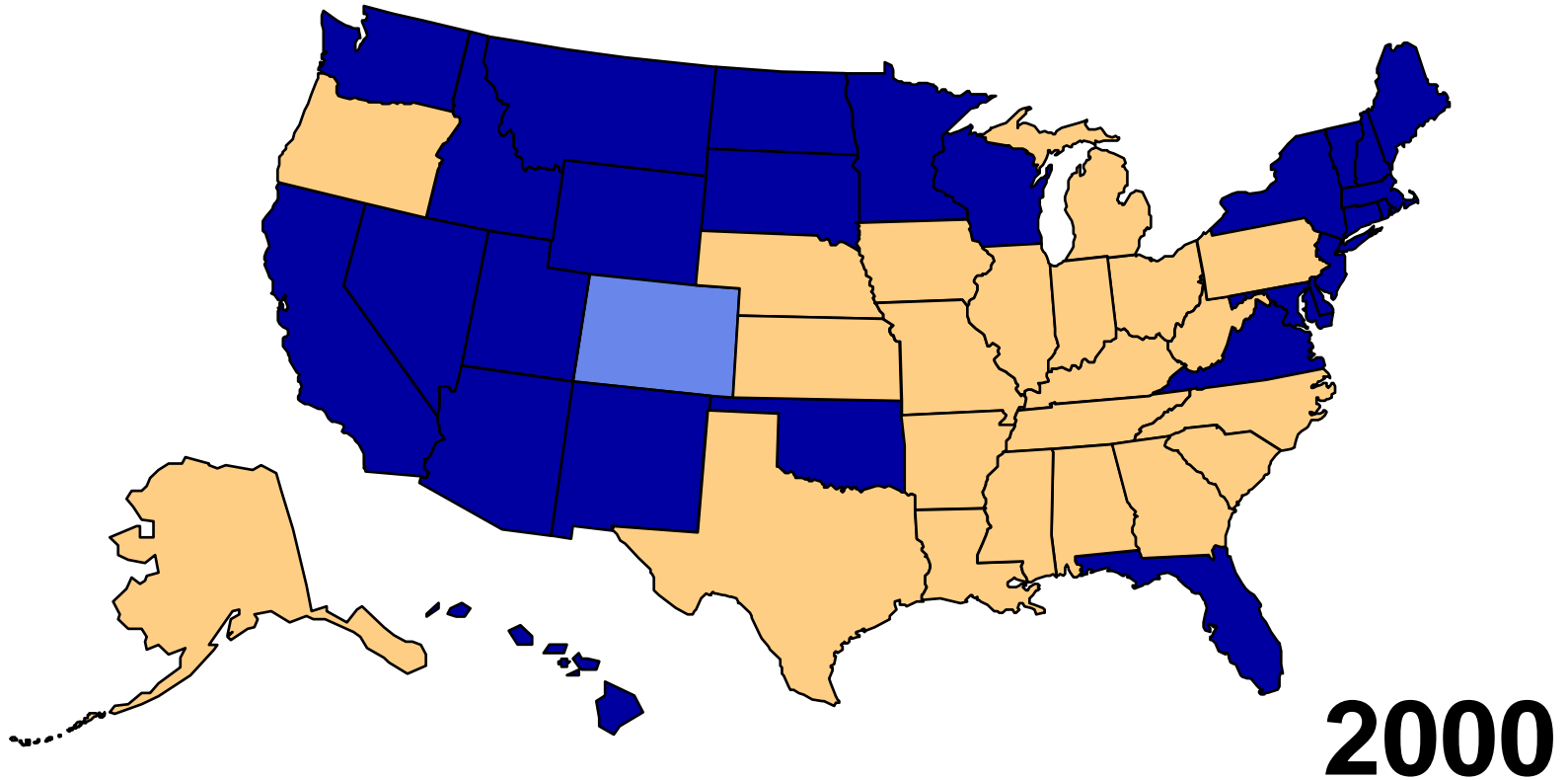
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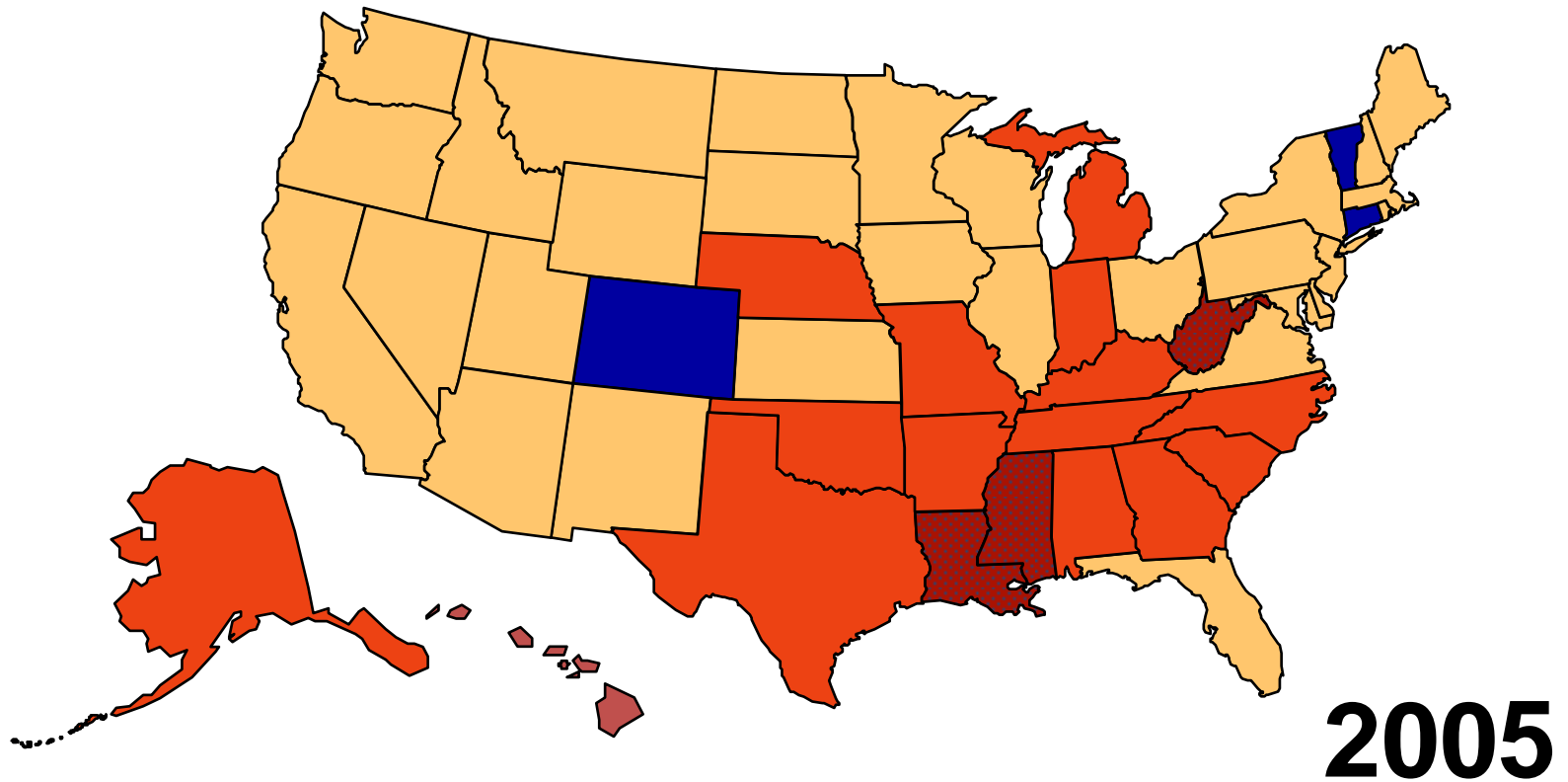
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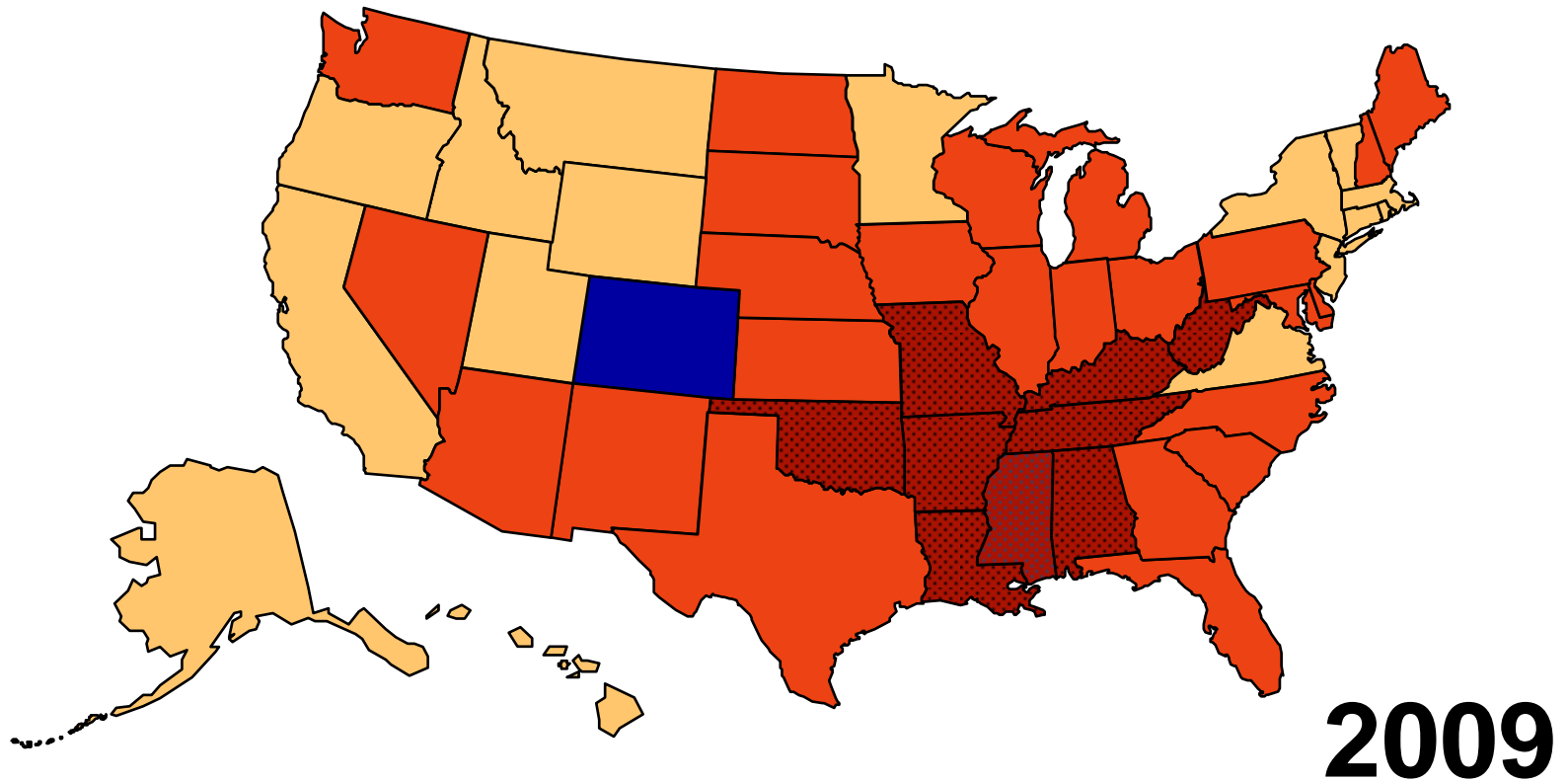
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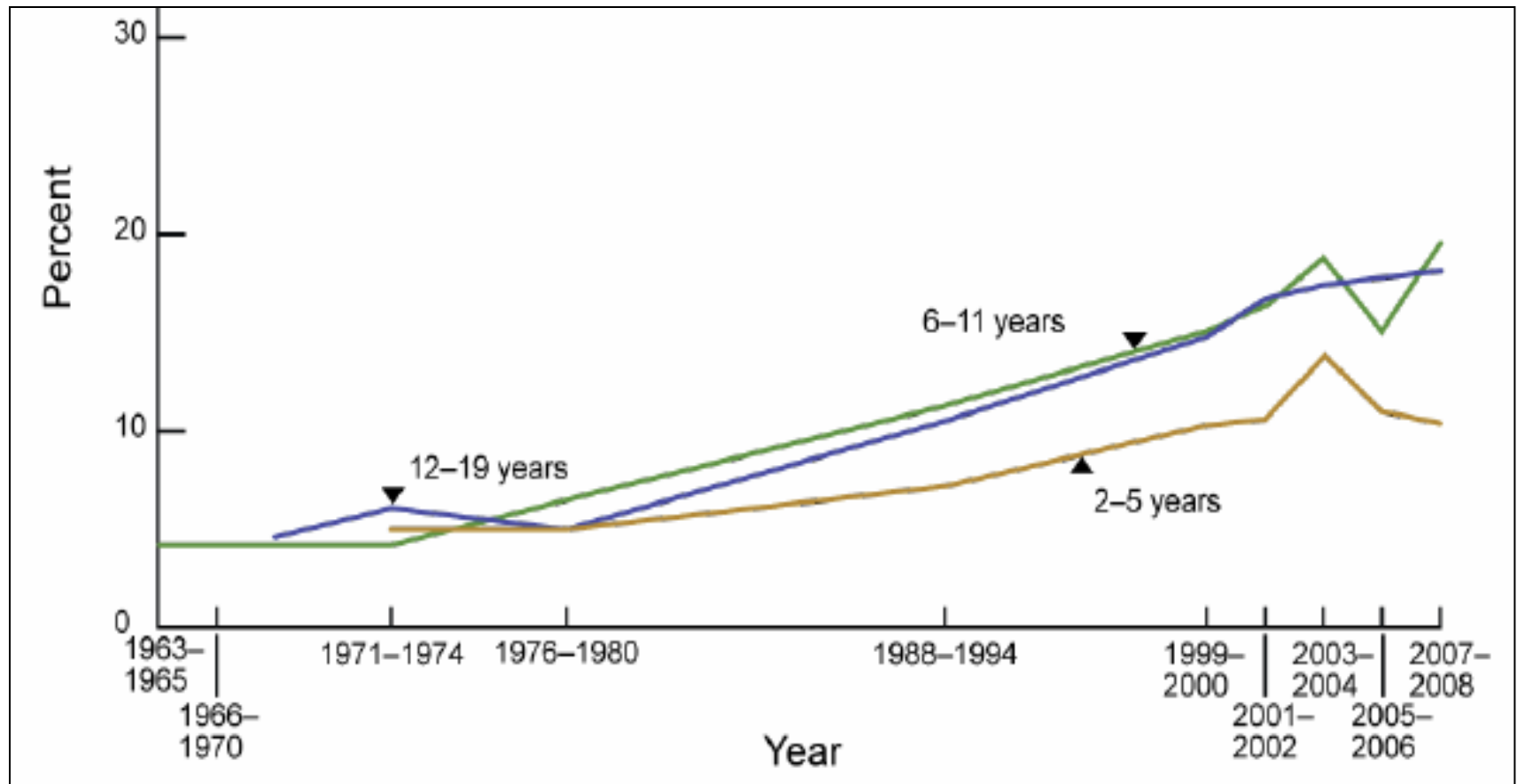
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(BMI  $\geq 30$ )

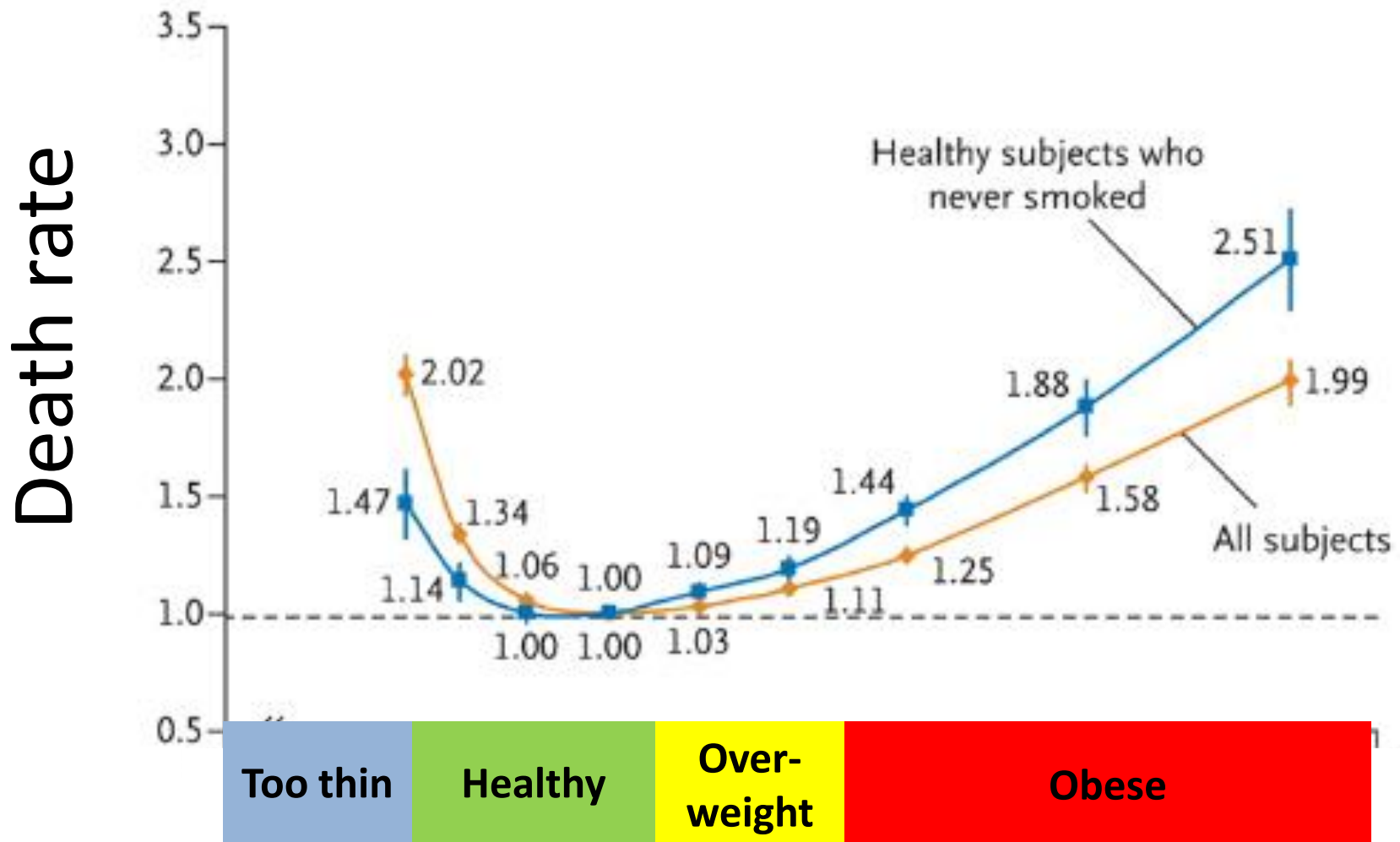


# 1 out of 6 children are obese

(% with BMI >95<sup>th</sup> percentile)

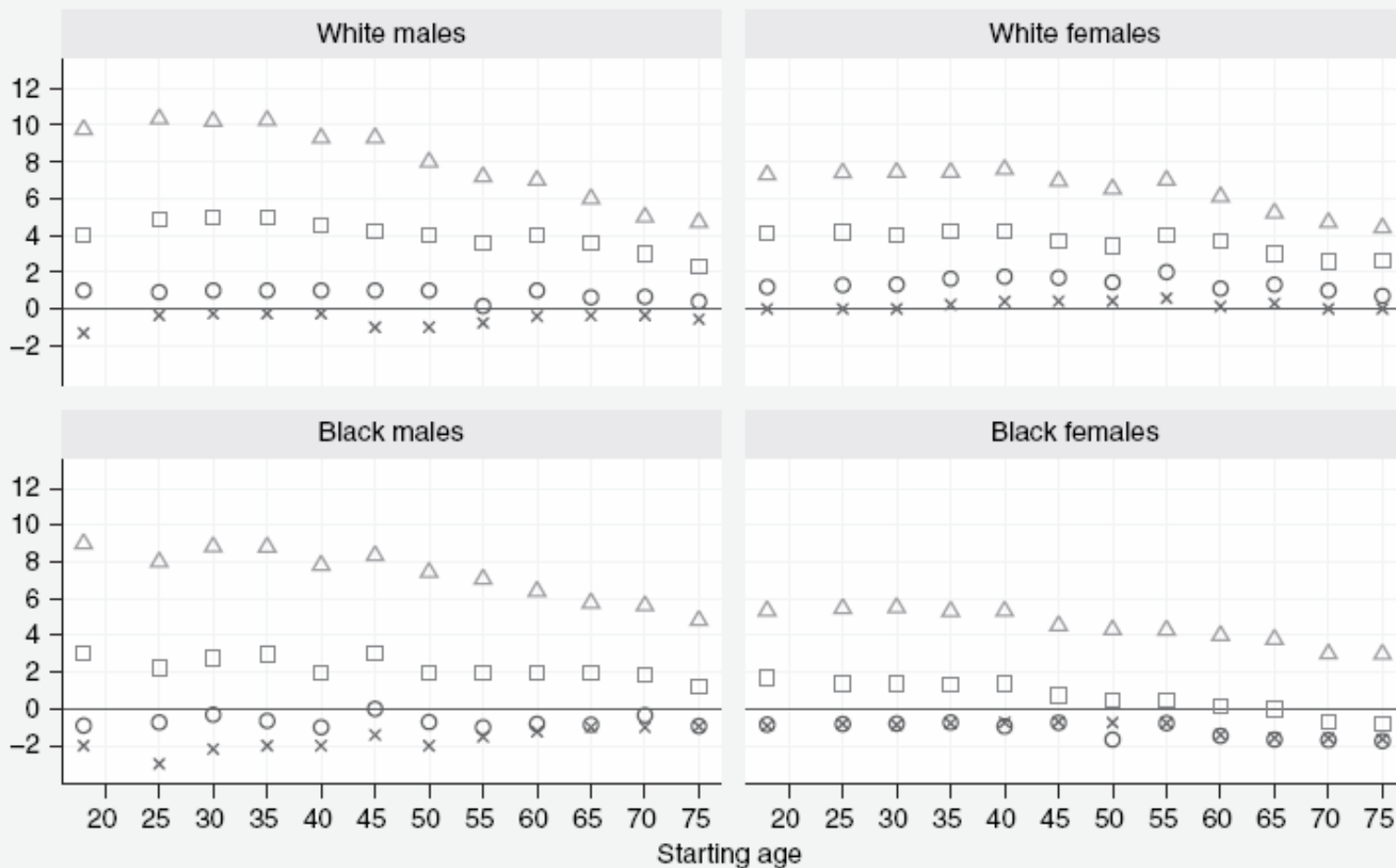


# Why is obesity a big deal?



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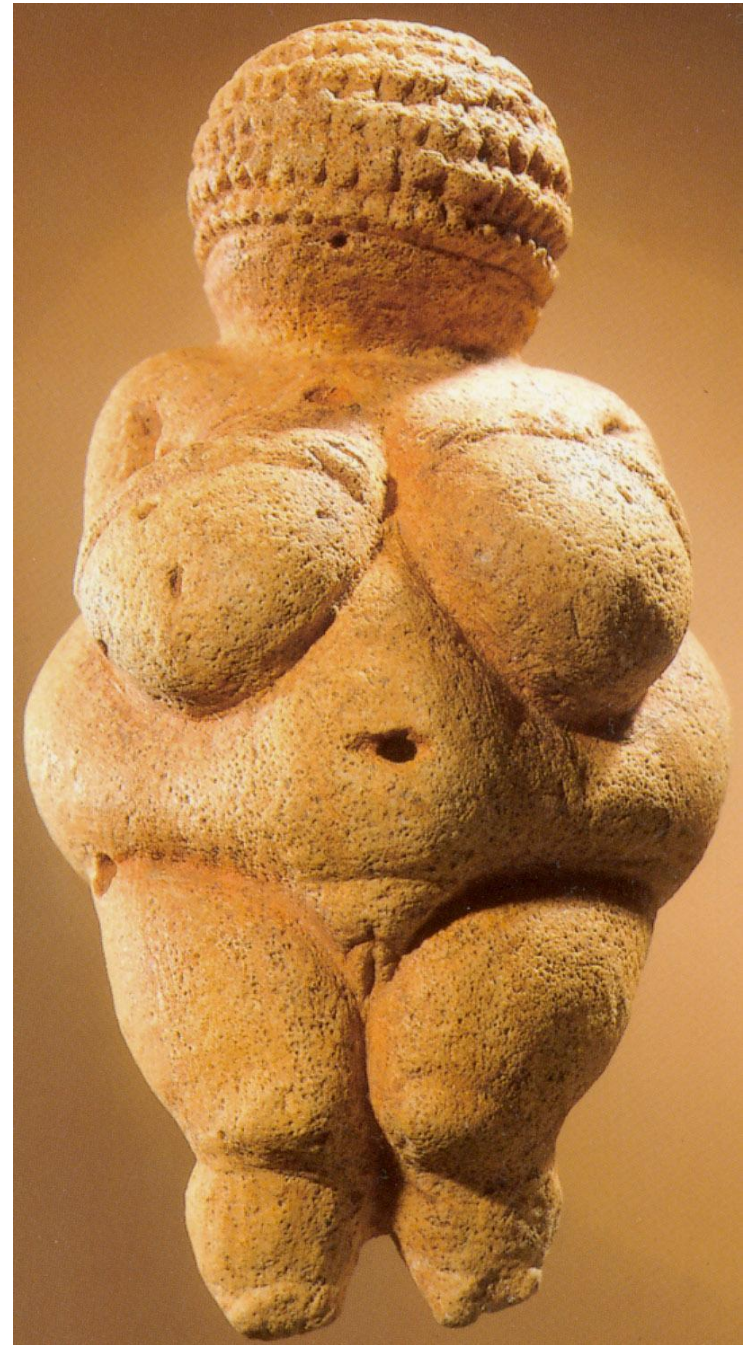
Years of lost life



x Overweight (25-29.9)    o Obese I (30-34.9)    □ Obese II (35-39.9)    △ Obese III (40+)

# Venus of Willendorf

(around 20,000 to 30,000 B.C.)



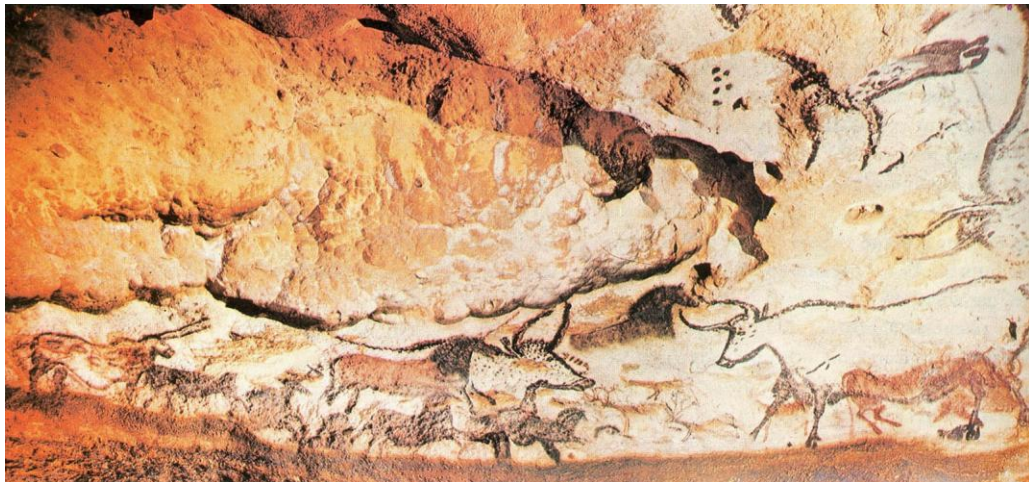
# What's driving the obesity epidemic?

- Caveman brains?
  - Eating is controlled by the brain, not the stomach
  - Cavemen had to survive in an environment where food was often scarce



# Caveman rules to live by

1. Store fat to protect against starvation
2. Eat as much as you can when its available
3. Seek out different tastes
4. Be motivated by sweet (fruits) and fatty foods (animal meat)



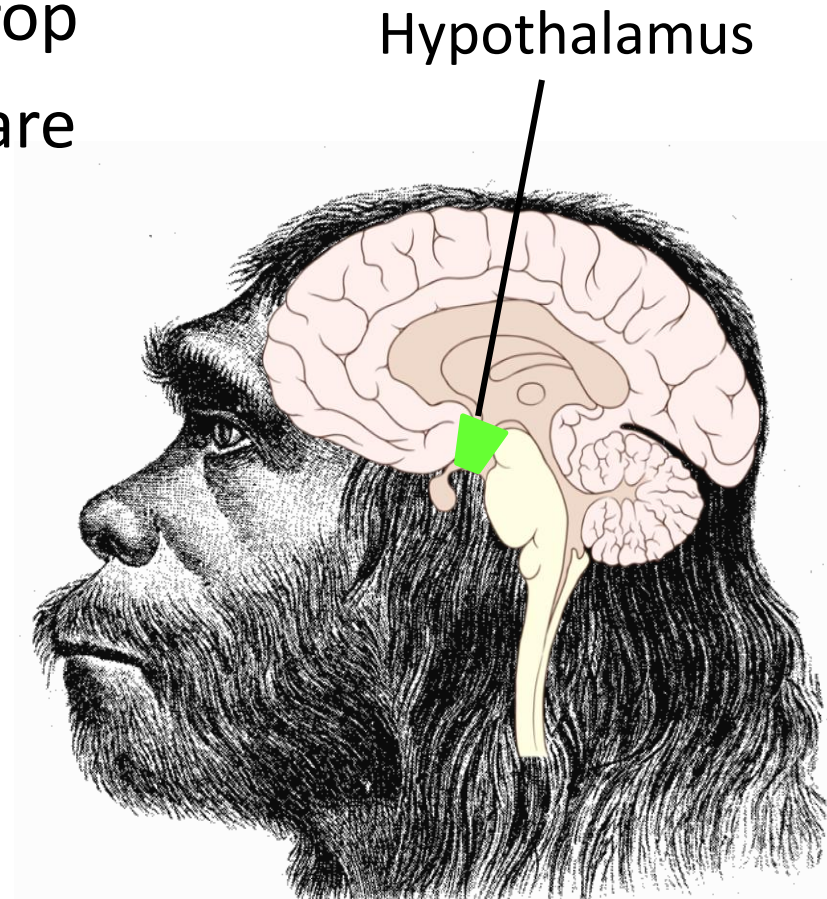
Lascaux cave in France from ca. 15000 BC



Humans didn't farm until 11,000 BC

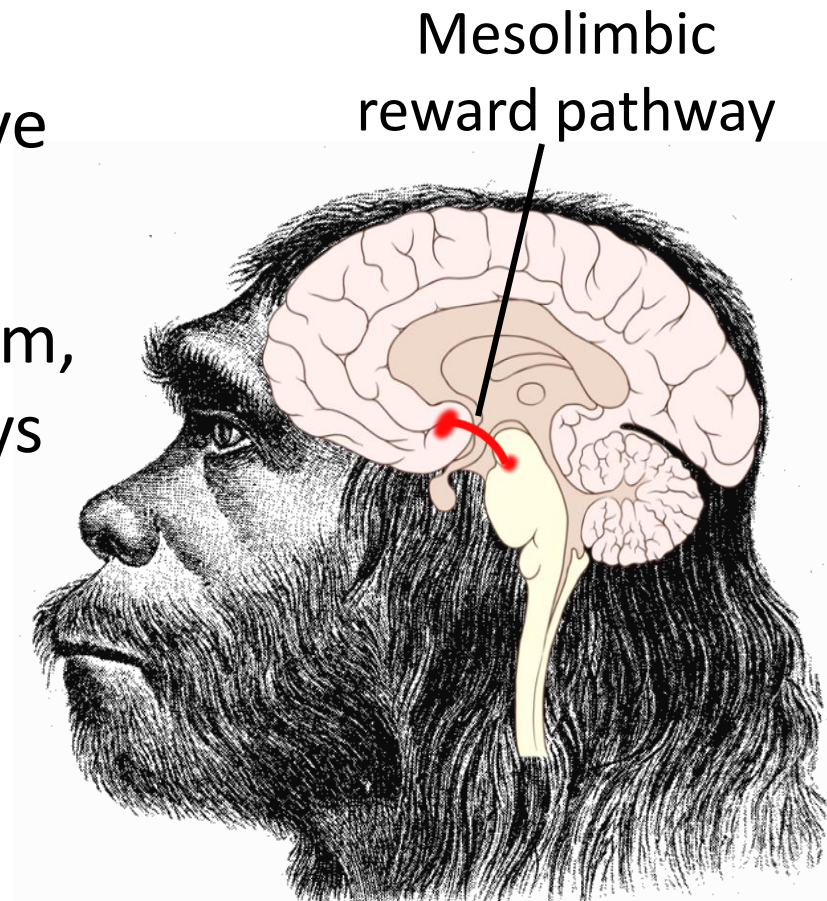
# The energy system

- Hypothalamus:
  - Eat when energy signals drop
  - Stop when energy signals are present



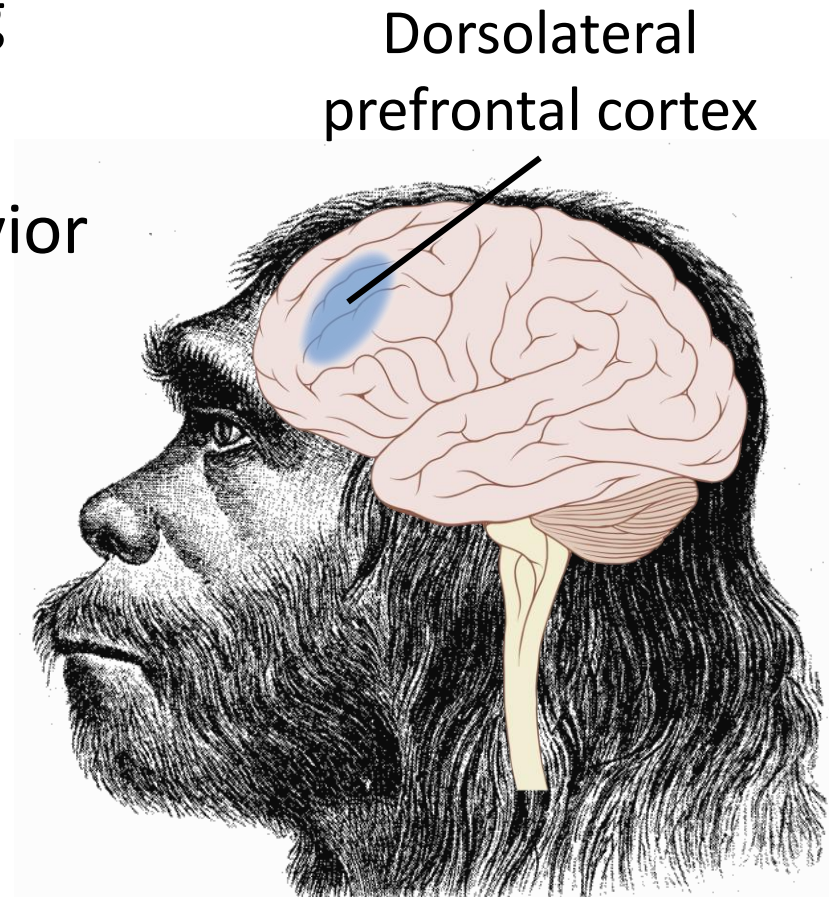
# The pleasure system

- Mesolimbic reward pathway
  - The “pleasure center”
  - Source of motivational drive
  - Sex, food, drugs, gambling
  - Overrides the energy system, which is why there is always room for dessert!



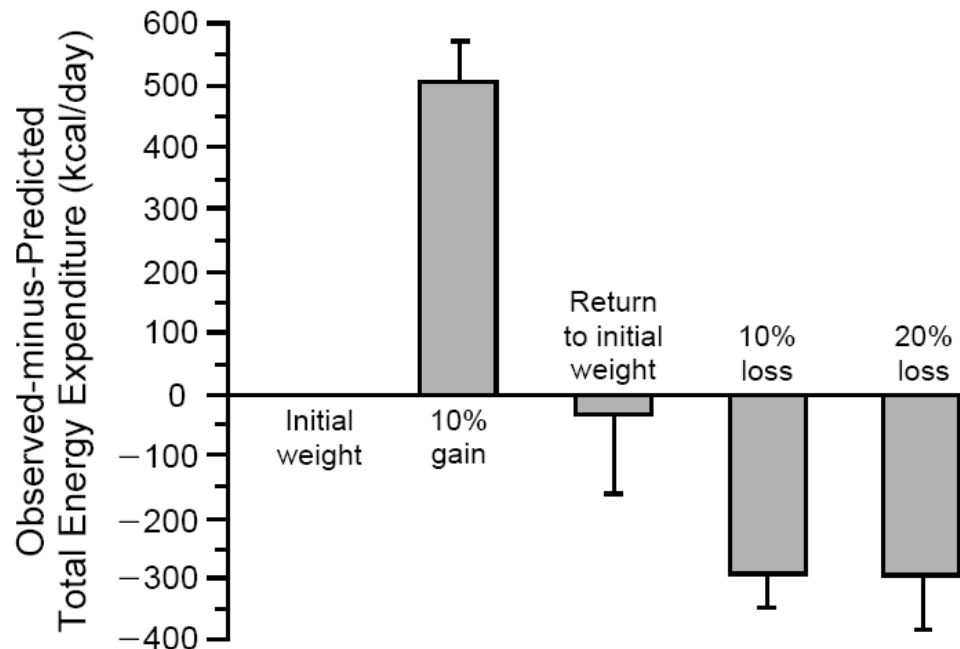
# The “executive” system

- The CEO of your brain
  - High-level decision-making
  - Planning
  - Monitoring our own behavior
  - Pursuing goals
  - Delaying rewards
- Relevant to weight loss!



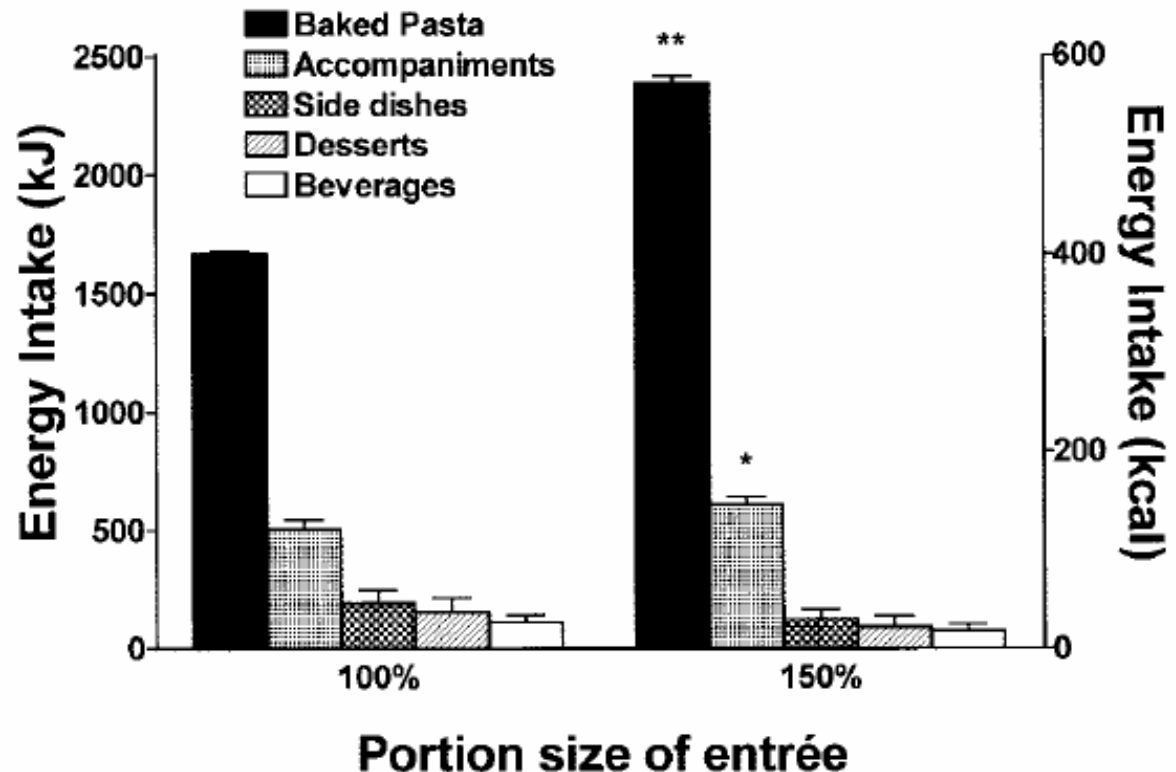
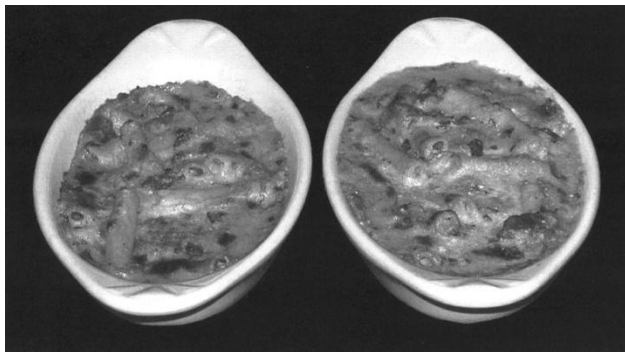
# We still have caveman eating patterns!

1. We store fat to protect against starvation
  - Hunger increases and metabolism slows with weight loss (the “plateau”)



# We still have caveman eating patterns!

2. We eat as much as we can when its available
  - Portion sizes determine how much we eat



# We still have caveman eating patterns!

## 3. We seek out different tastes

- We eat more calories when we have more foods to choose from (or eat less with fewer choices)



# We still have caveman eating patterns!

4. We are motivated by sweet and fatty foods
  - We “design” foods to fit our caveman preferences!

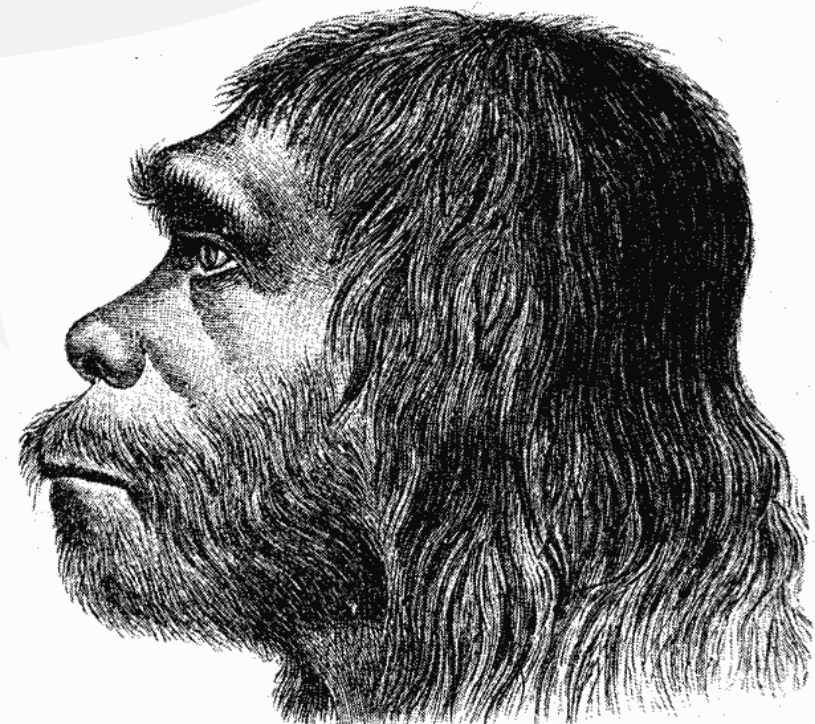
## Twinkies:

- 39 bizarre ingredients
- 19 g sugar
- 4.5 g fat
- 160 cals each
- 2 for \$1.09

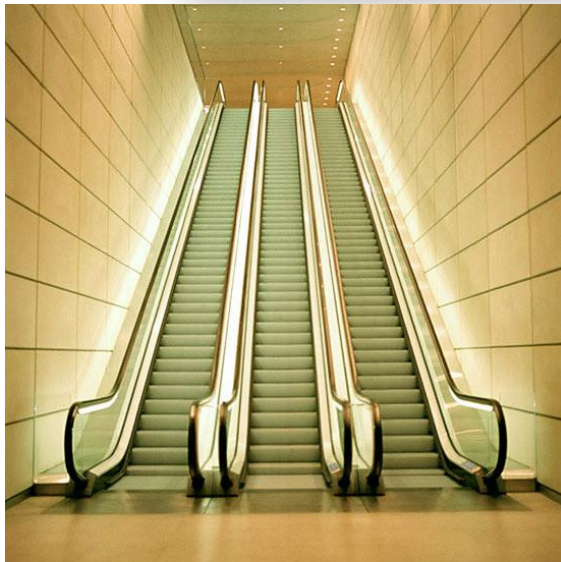


Does our caveman brain explain  
the obesity epidemic?

No way, man!  
You have a similar model!



# The modern food environment



# The modern food environment



Twinkies!

# Obesity in a nutshell

Twinkies!



# Are we destined to be fat?

- Biology determines the functioning of the energy, pleasure, and executive systems
  - Obesity is not a character flaw
- BUT, weight loss can be achieved
  - Public health measures should be implemented to improve the modern environment
  - Individuals can modify their local environment
  - Behavioral, medical, and nutritional approaches to weight control

# Behavioral weight loss treatment

- Individual meetings
- Focus on modifying your environment to promote healthier eating and activity
- Techniques to enhance motivation, improve sleep, manage time, and reduce stress
- Covered by many insurance carriers
  - May need to be obese or have weight-related complications
  - May need physician referral
  - Rush University Prevention Center: 312-942-3133