



# Promoting Healthy Eating in Children and Adolescents

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July 10, 2008

March 17, 2005



# Overview of Key Topics

- Epidemiology of Obesity
  - Measurement issues, prevalence, trends
- Causes of Obesity
  - Genetic, behavioral, environmental
- Macronutrients
  - Carbohydrates, protein, fat
- Overall Healthy Eating
  - Portion control and recommendations

# Body Mass Index (BMI)

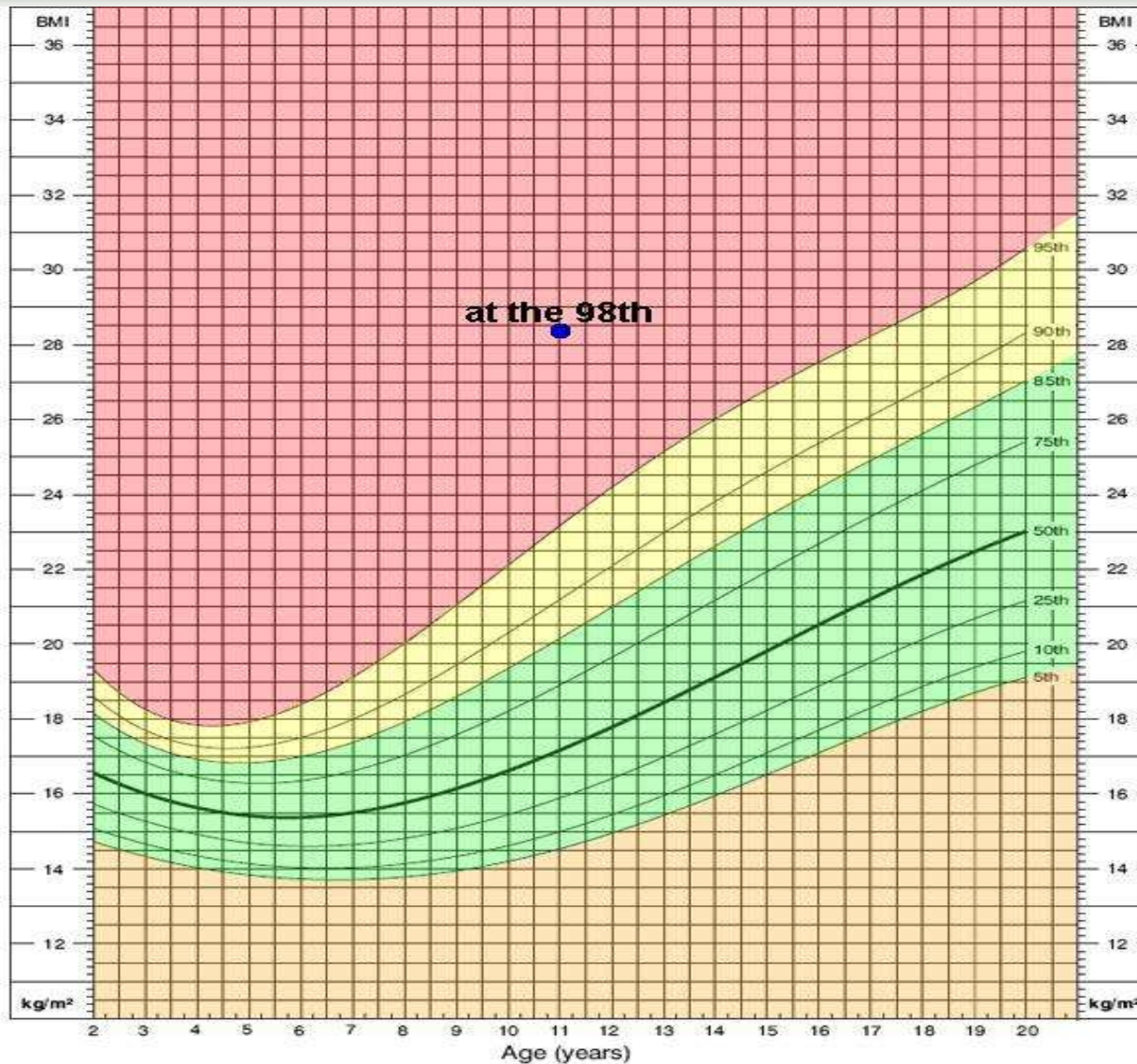
- Advantages of BMI
  - Easy to measure
  - Data are available in charts and records
- $BMI^* = \text{weight (kg)} / [\text{height (m)}]^2$
- Limitations of BMI
  - Not a measure of body composition
  - Does not specify location of fat deposition

\*To interpret BMI in children/adolescents, use the CDC growth chart

# New Terminology

<b>BMI Category</b>	<b>Former Terminology</b>	<b>Recommended Terminology</b>
< 5 <sup>th</sup> percentile	Underweight	Underweight
5 <sup>th</sup> -84 <sup>th</sup> percentile	Healthy weight	Healthy weight
85 <sup>th</sup> -94 <sup>th</sup> percentile	At risk of overweight	Overweight
≥ 95 <sup>th</sup> percentile	Overweight or obesity	Obesity

# BMI Chart



March 1

# Why should we care?

- Obesity among children increases their risk for co-morbidities
- Parental obesity increases the risk of obesity among their children



# Why should we care?

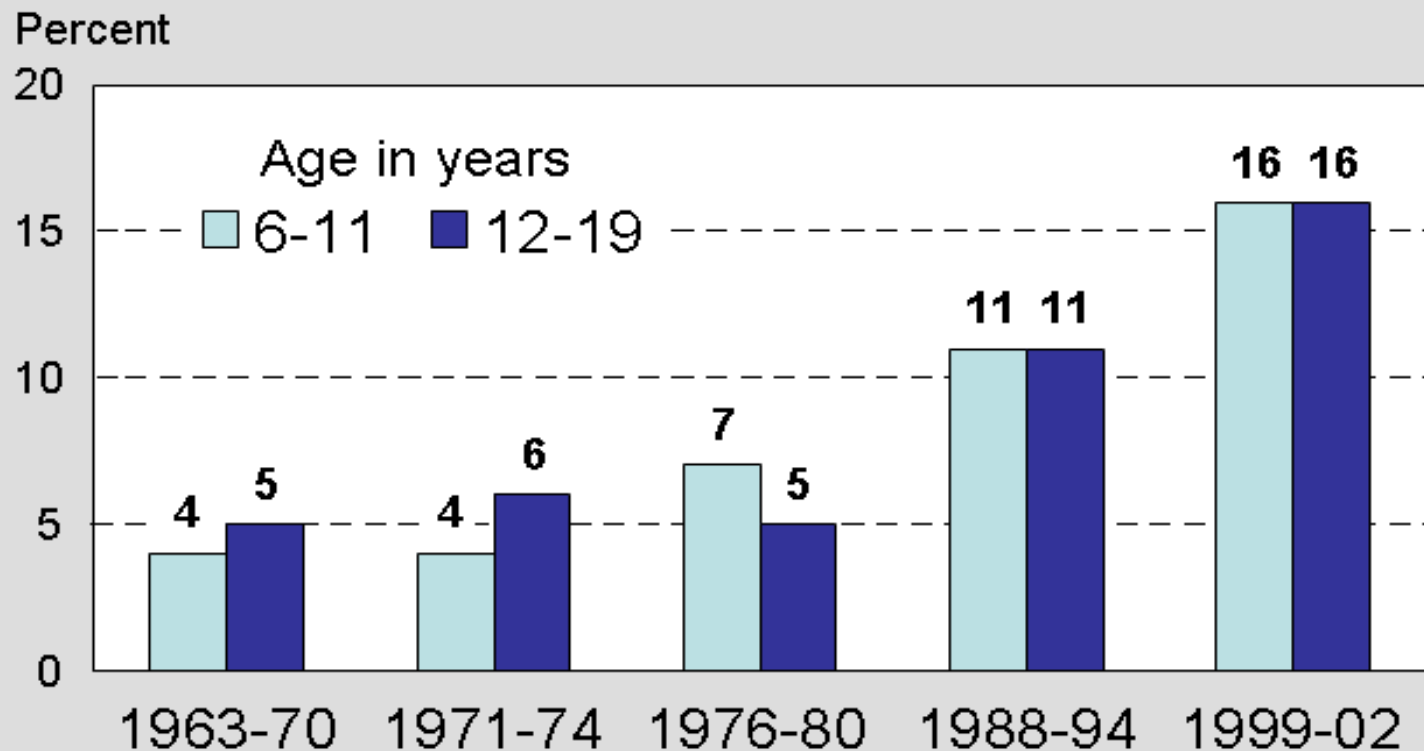
- Obesity in childhood leads to obesity in adulthood
  - 80% of adolescent obese girls and 30% of adolescent obese males remain obese during adulthood



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# Overview

**Figure 1. Prevalence of overweight among children and adolescents ages 6-19 years**

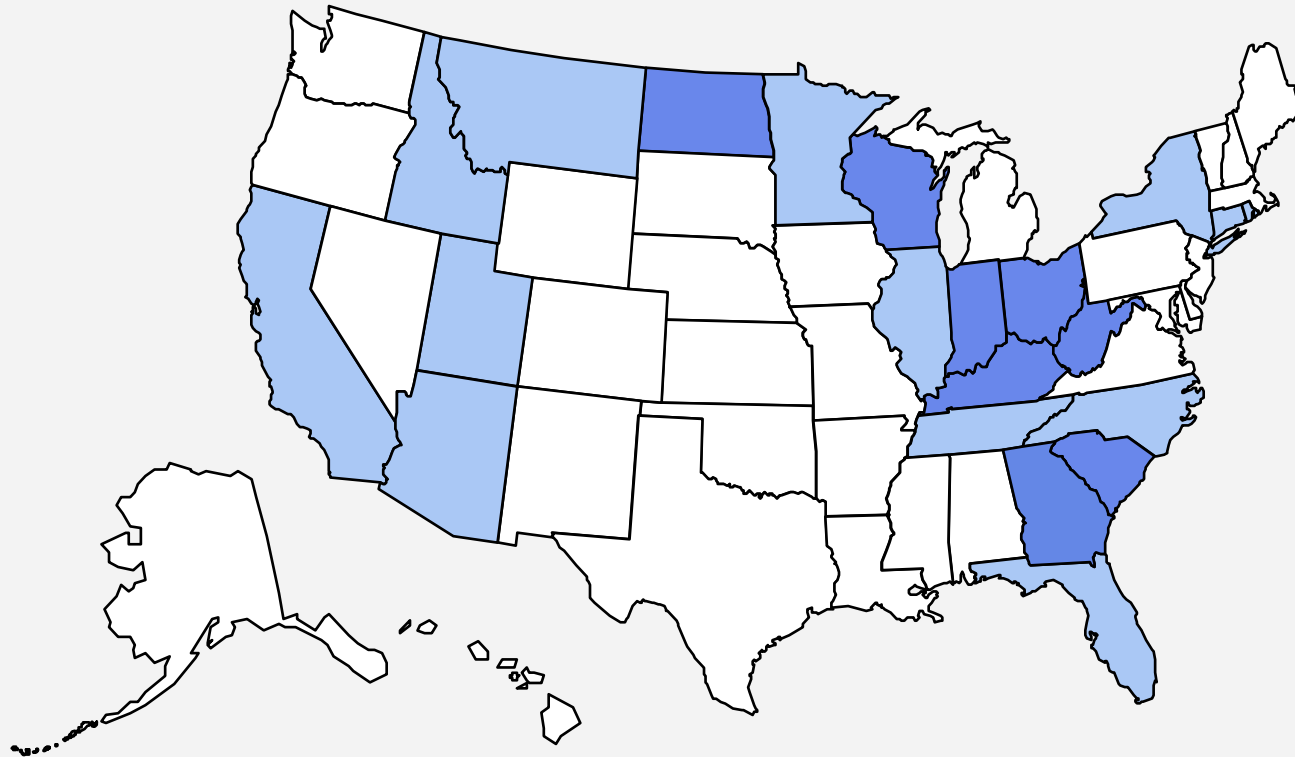


NOTE: Excludes pregnant women starting with 1971-74. Pregnancy status not available for 1963-65 and 1966-70. Data for 1963-65 are for children 6-11 years of age; data for 1966-70 are for adolescents 12-17 years of age, not 12-19 years.  
SOURCE: CDC/NCHS, NHES and NHANES

# Obesity Trends\* Among U.S. Adults

## BRFSS, 1985

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs. overweight for 5' 4" person)

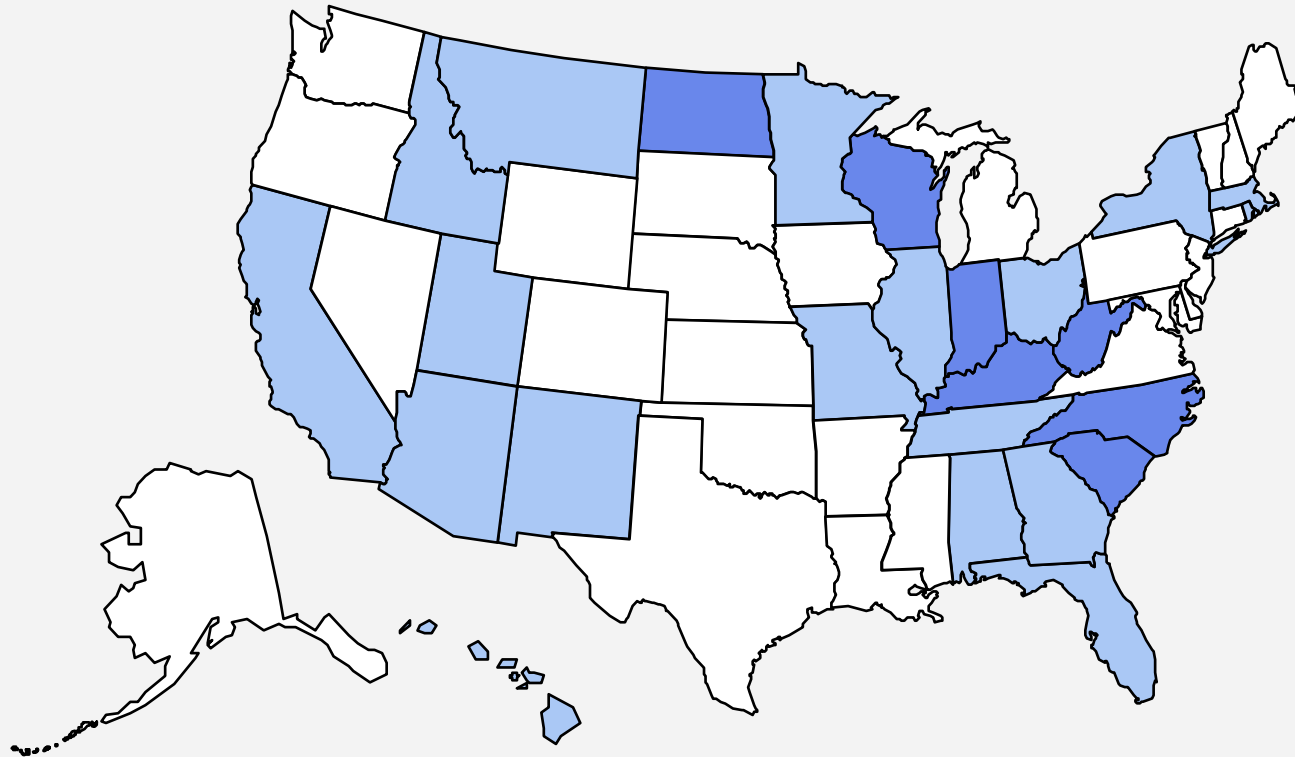


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 1986

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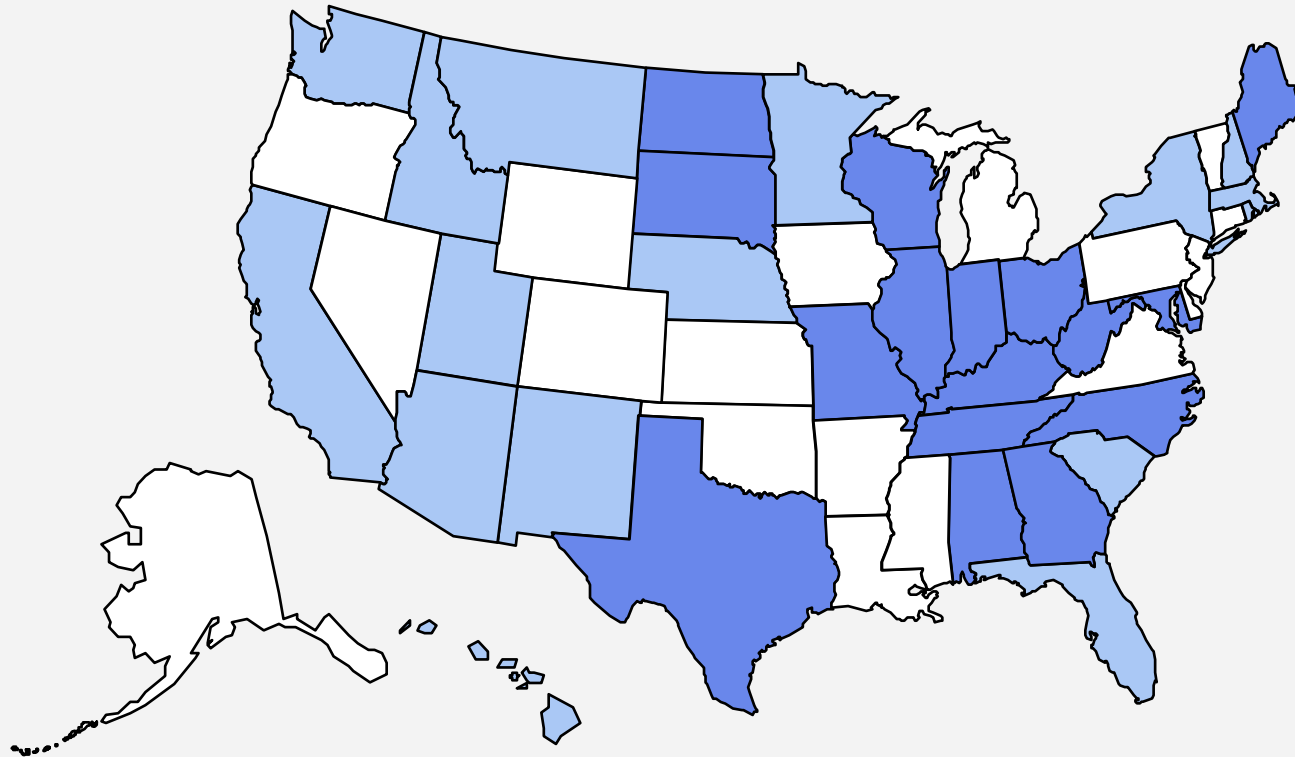


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 1987

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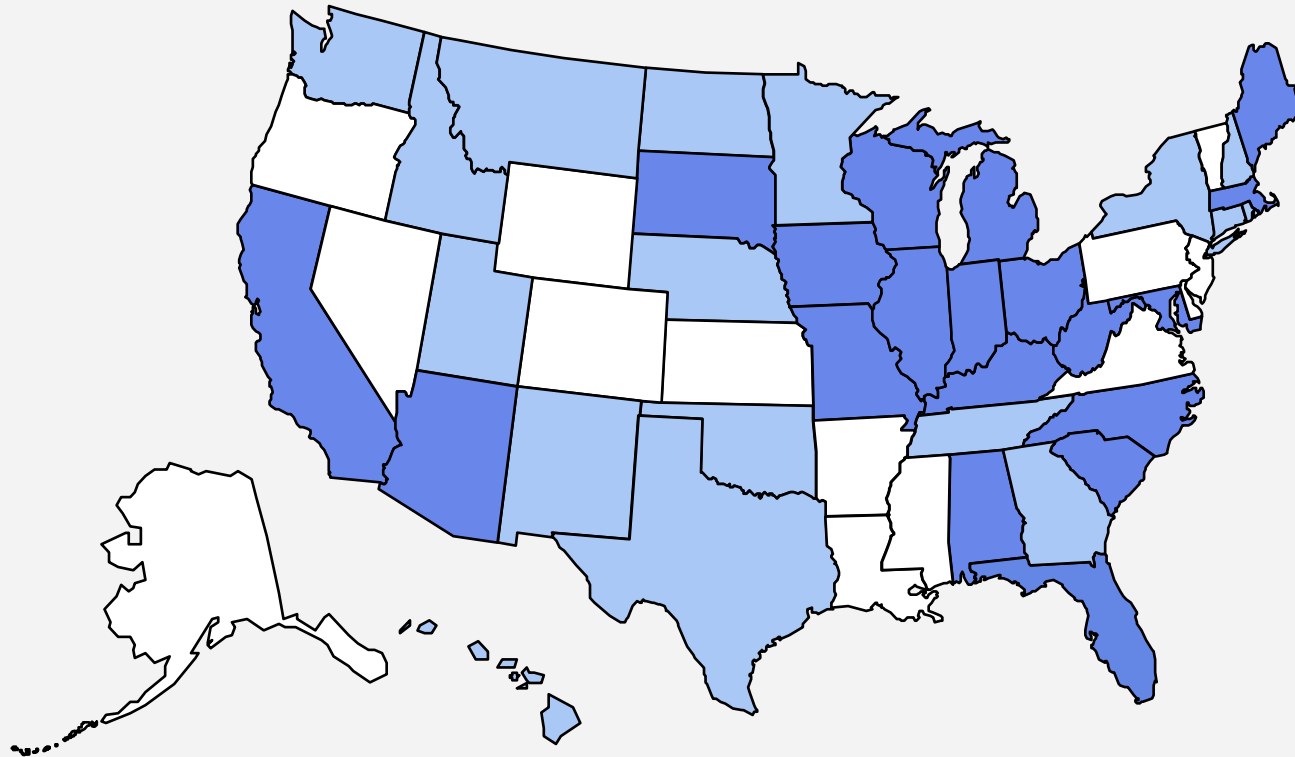


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 1988

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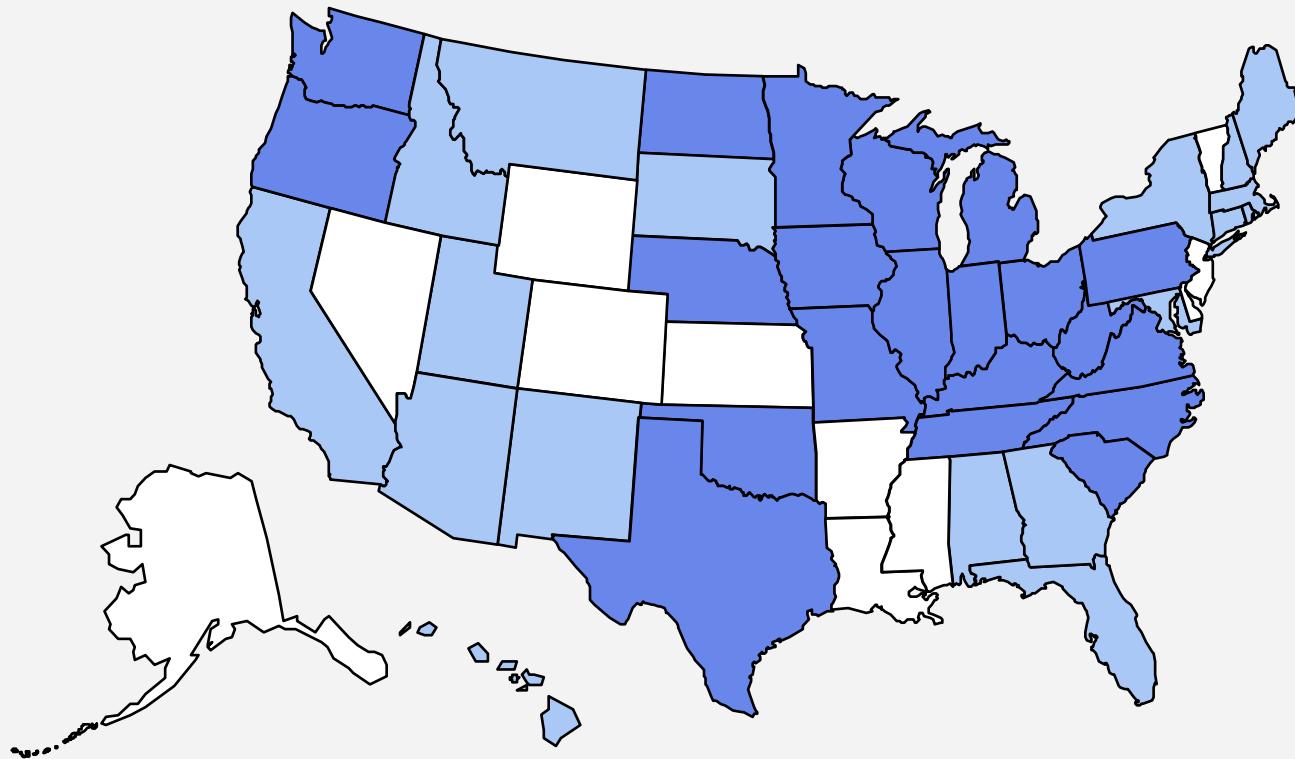


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 1989

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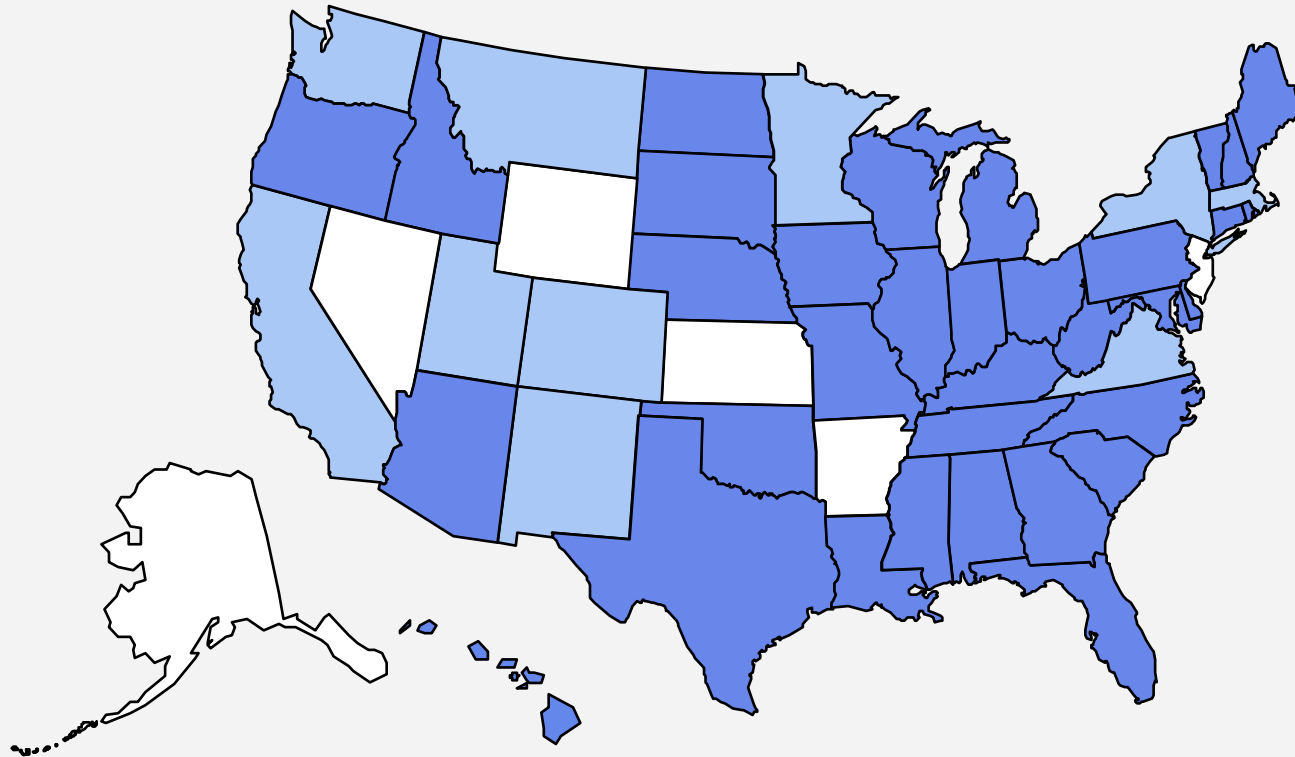


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 1990

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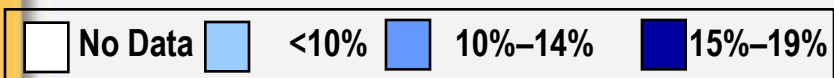
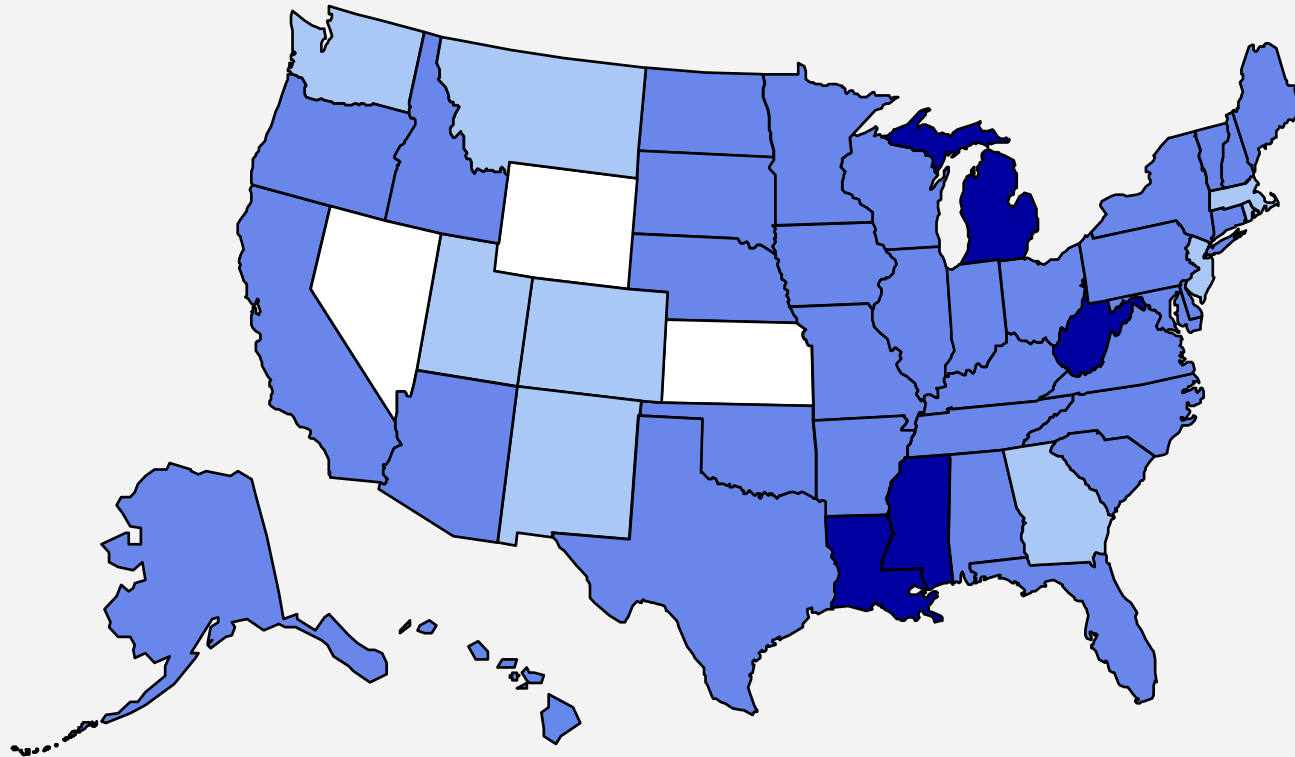


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 1991

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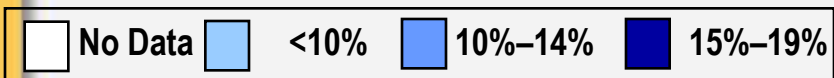
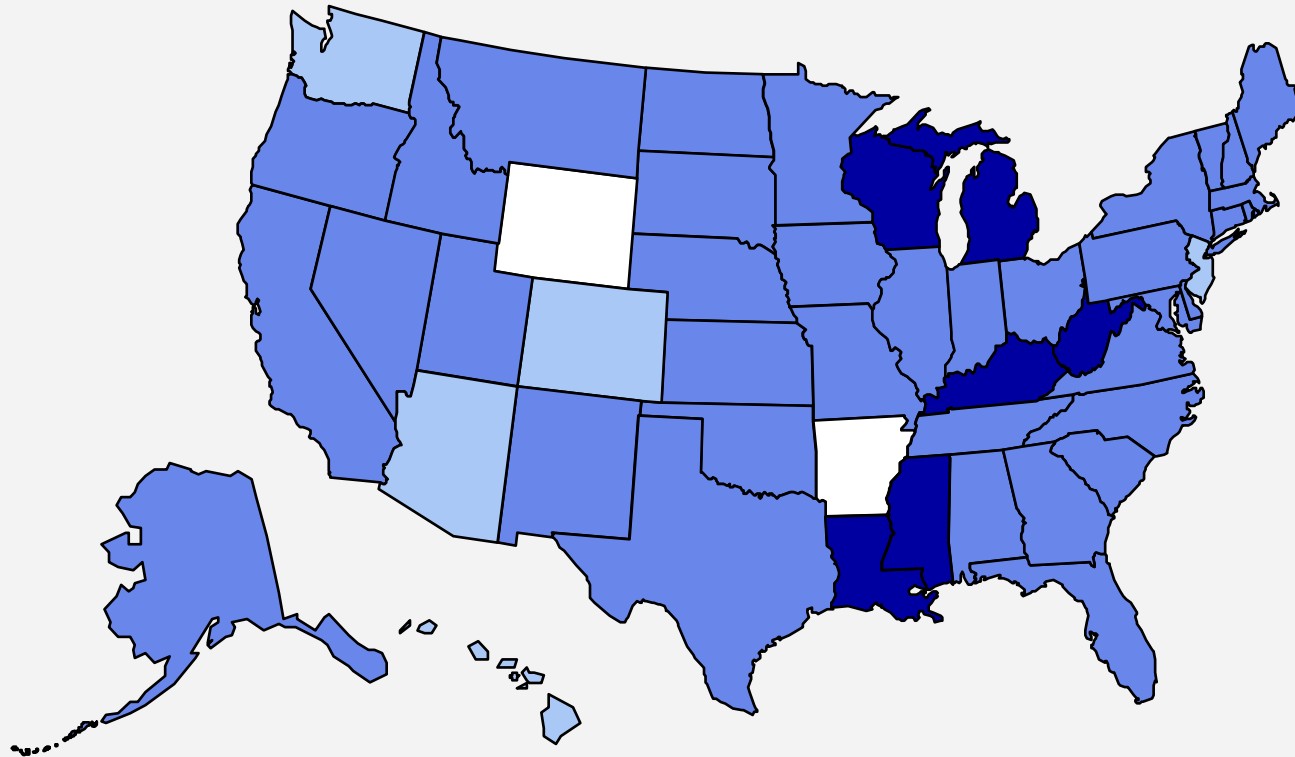


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 1992

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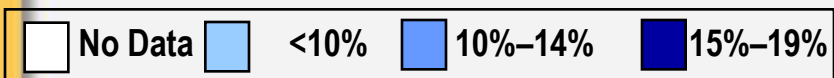
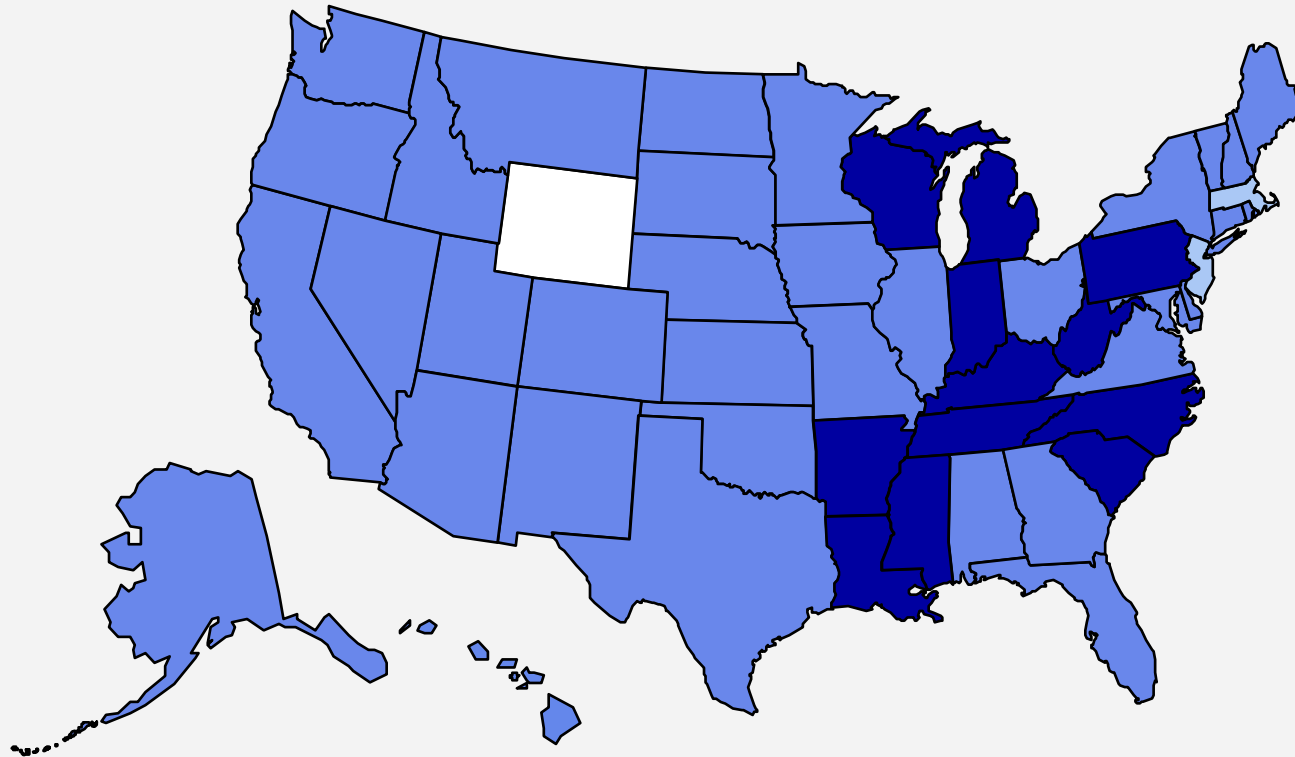


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 1993

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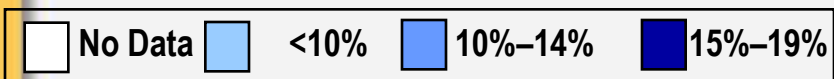
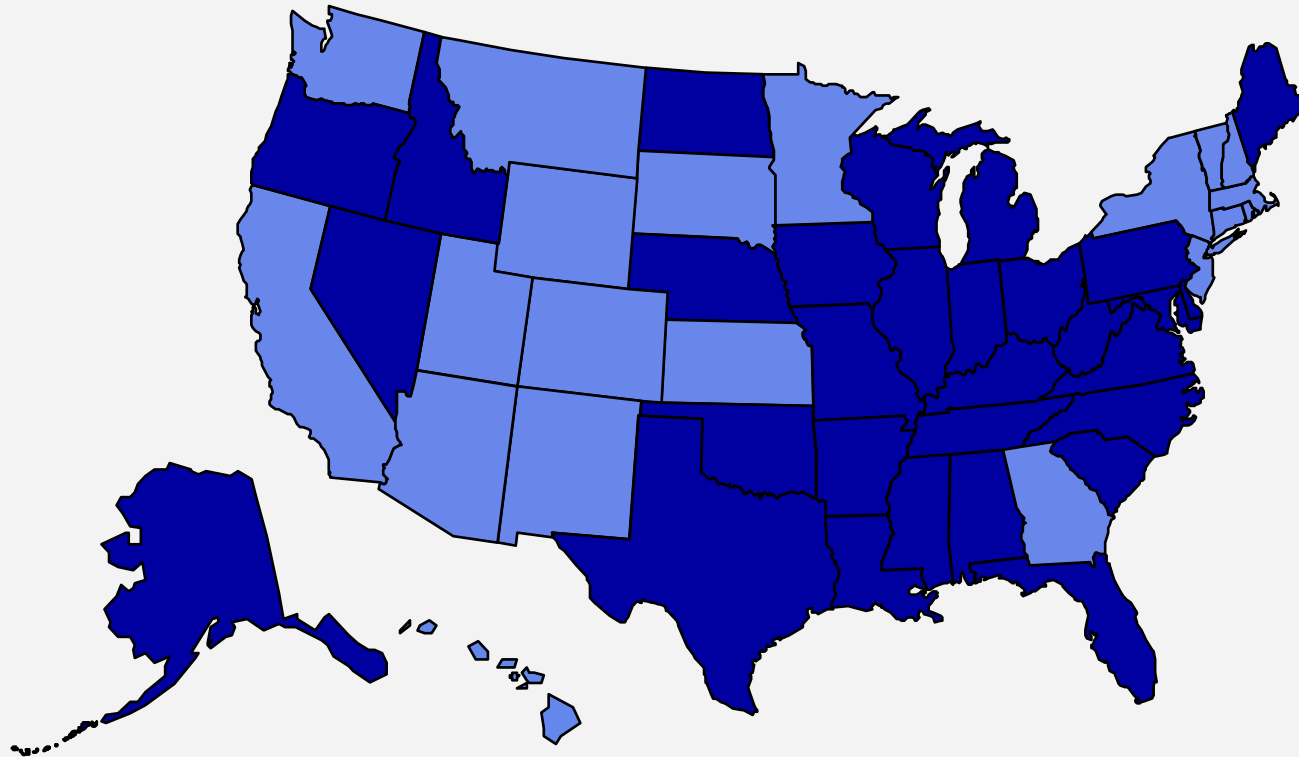




# Obesity Trends\* Among U.S. Adults

## BRFSS, 1996

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs. overweight for 5' 4" person)

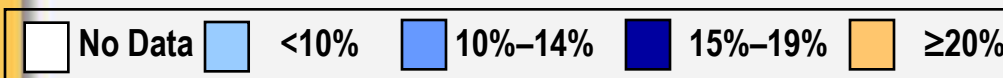
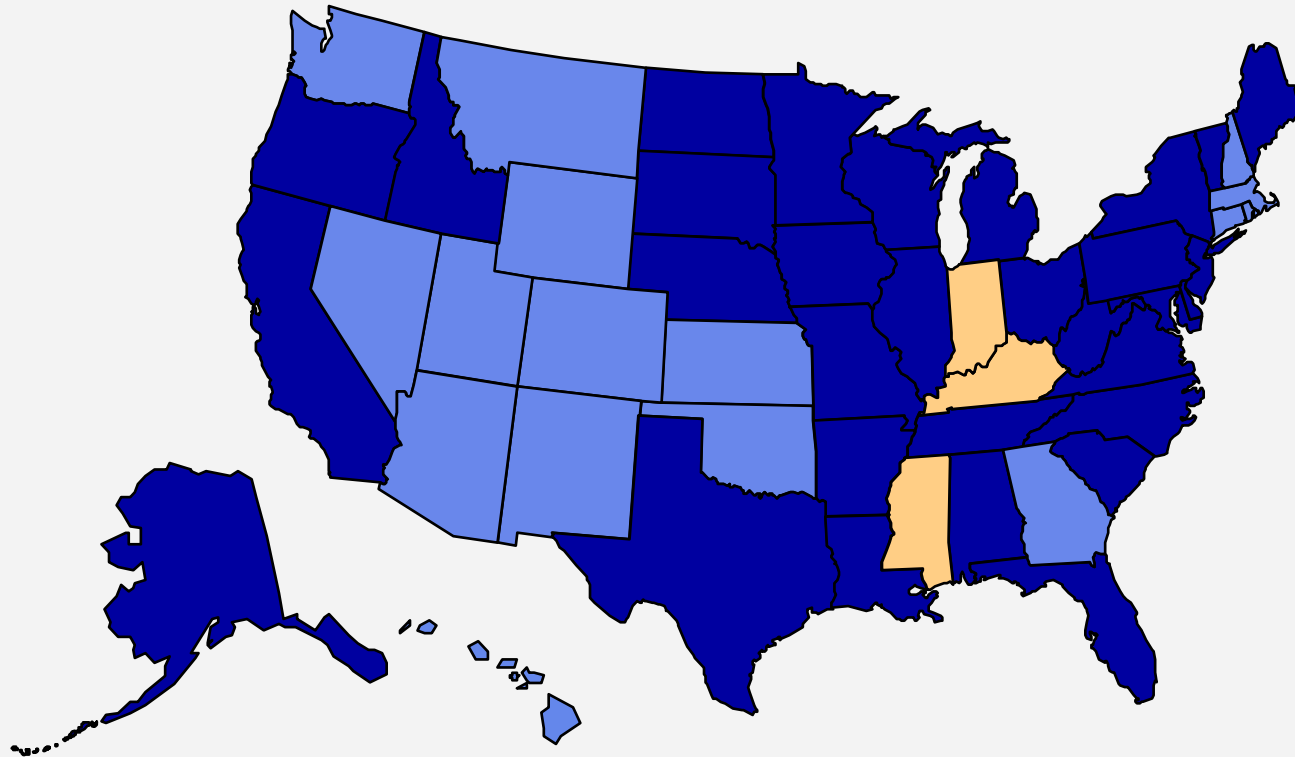


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 1997

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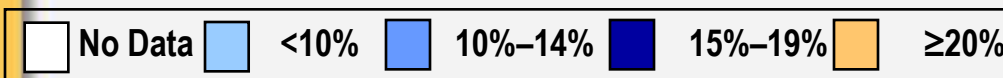
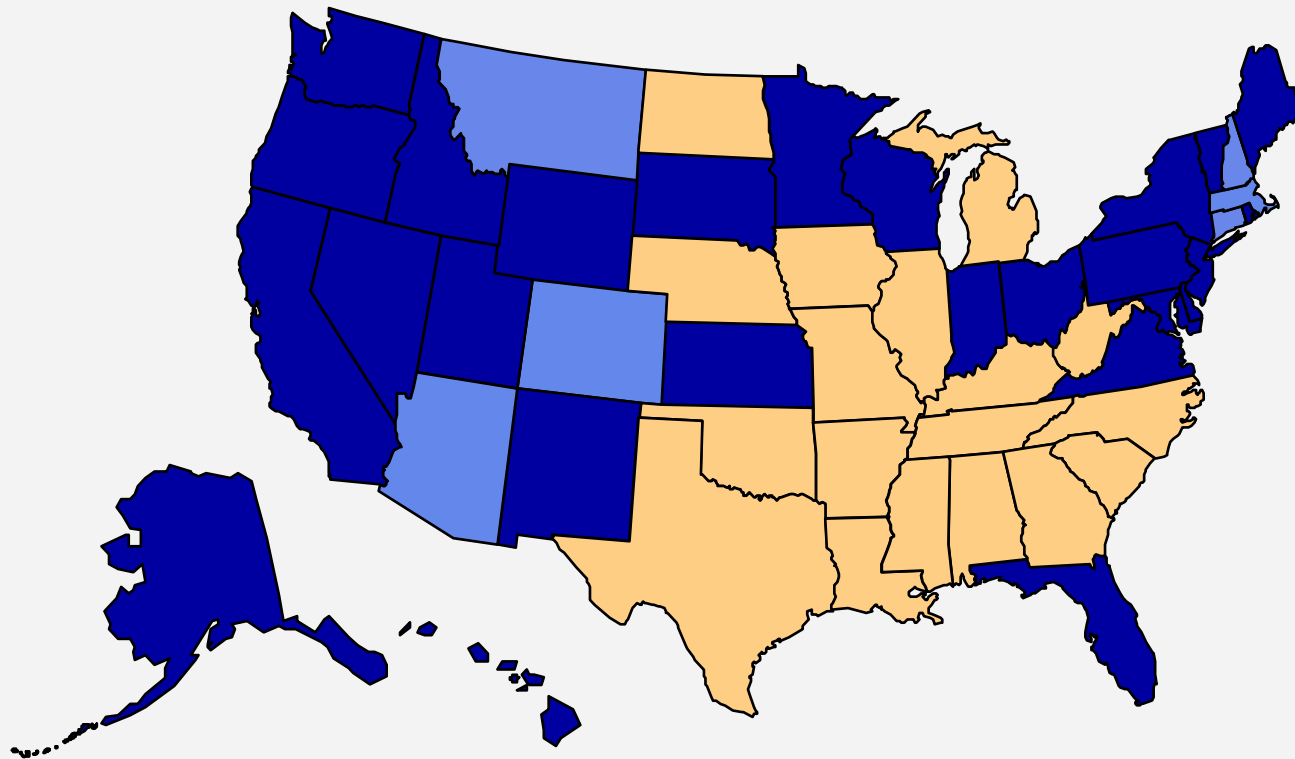


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 1999

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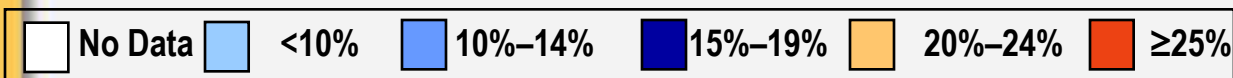
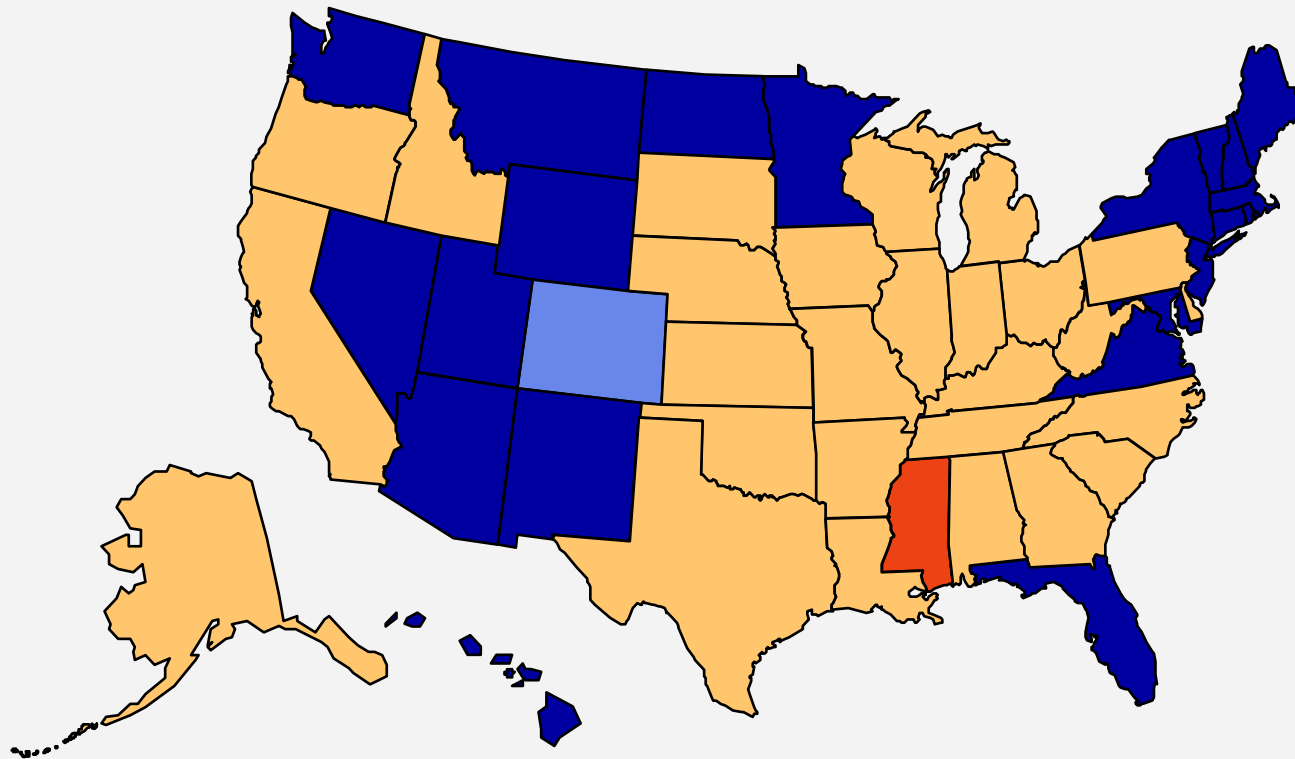
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# Obesity Trends\* Among U.S. Adults

## BRFSS, 2001

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs. overweight for 5' 4" person)



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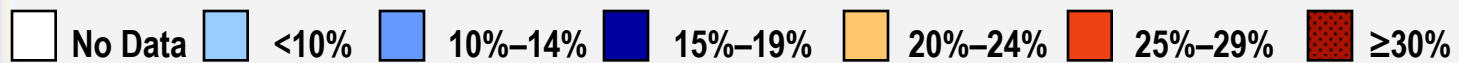
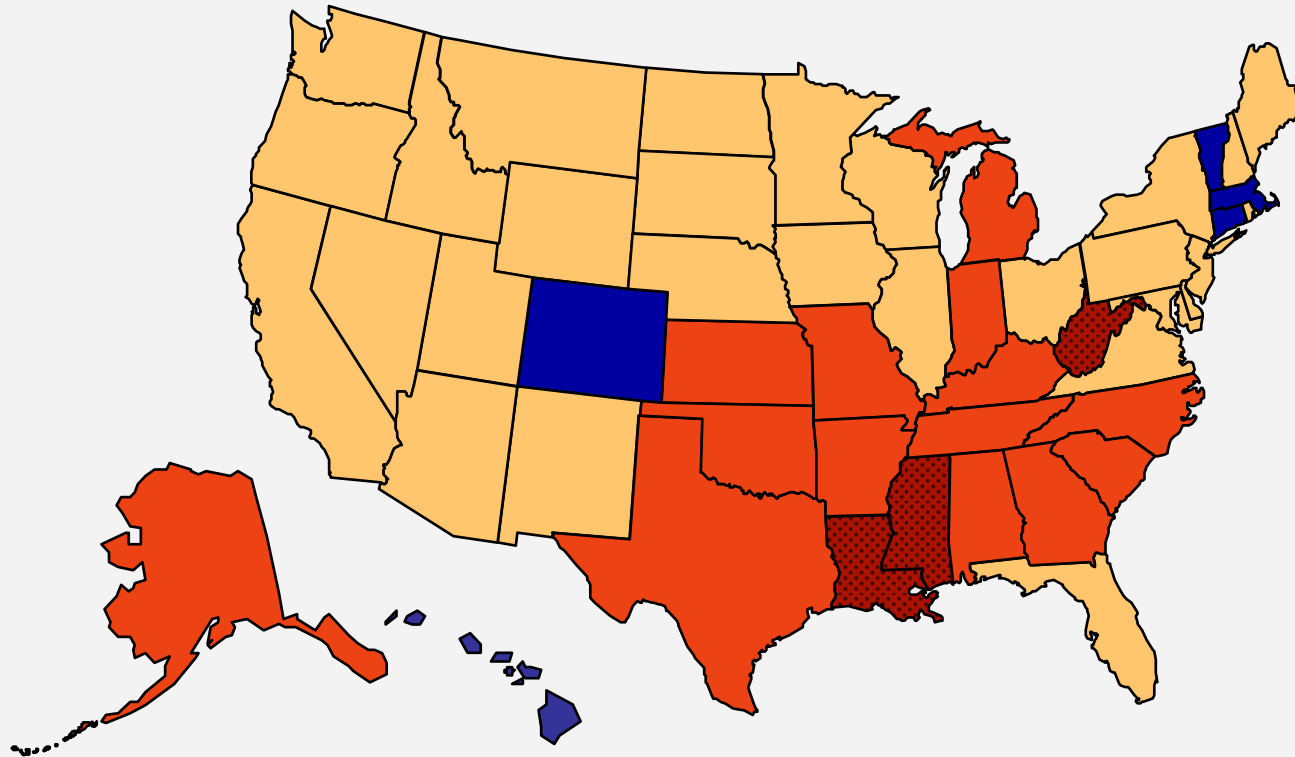




# Obesity Trends\* Among U.S. Adults

## BRFSS, 2005

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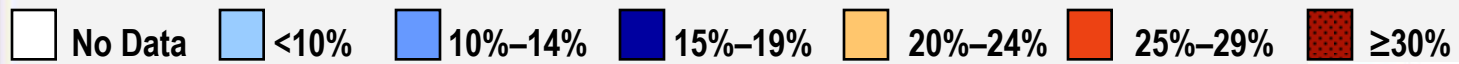
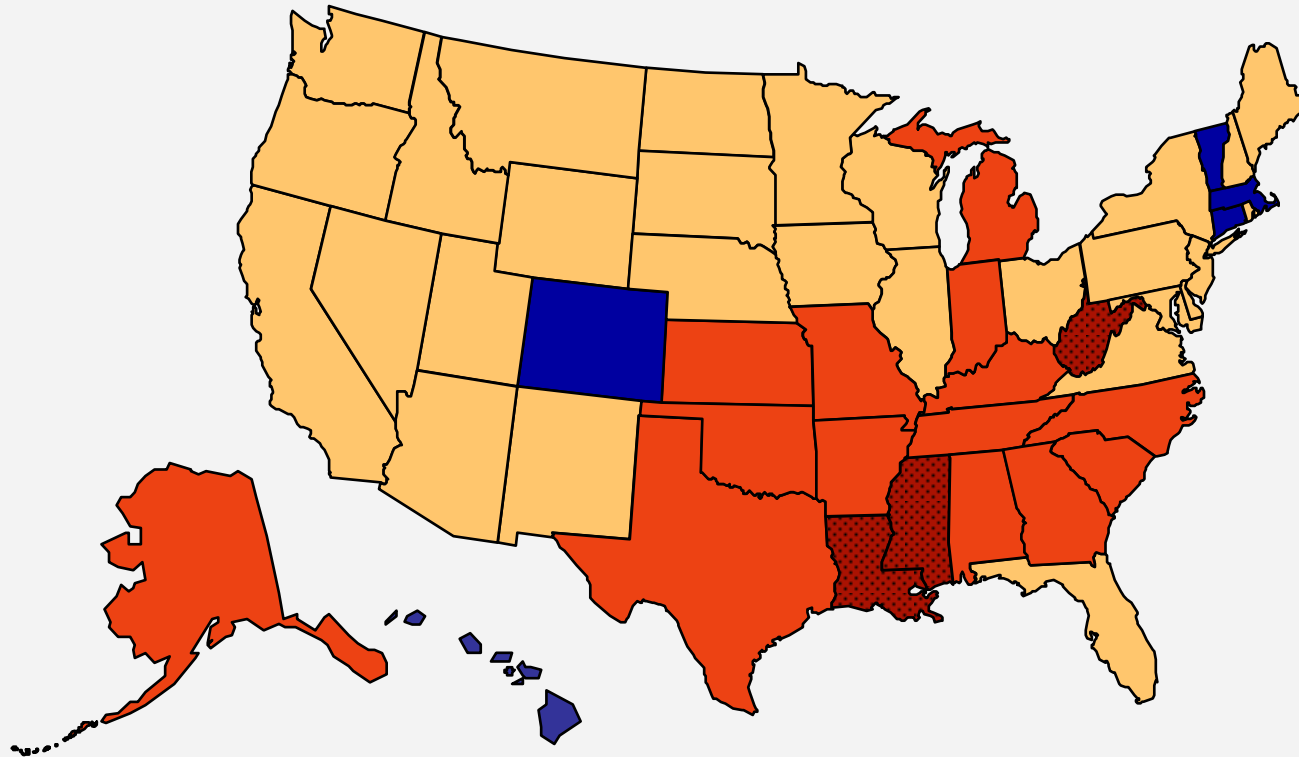


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# Obesity Trends\* Among U.S. Adults

## BRFSS, 2005

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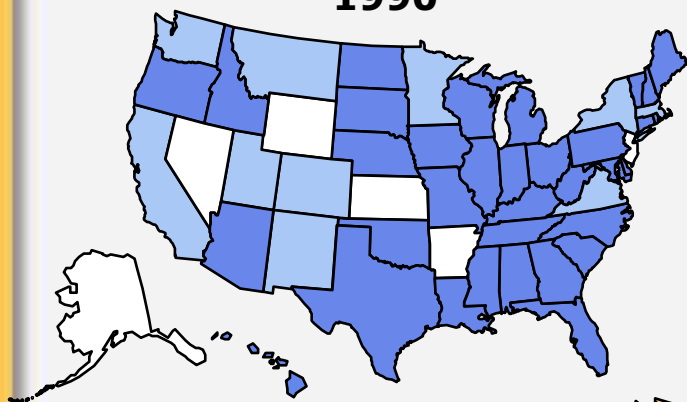
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# Obesity Trends\* Among U.S. Adults

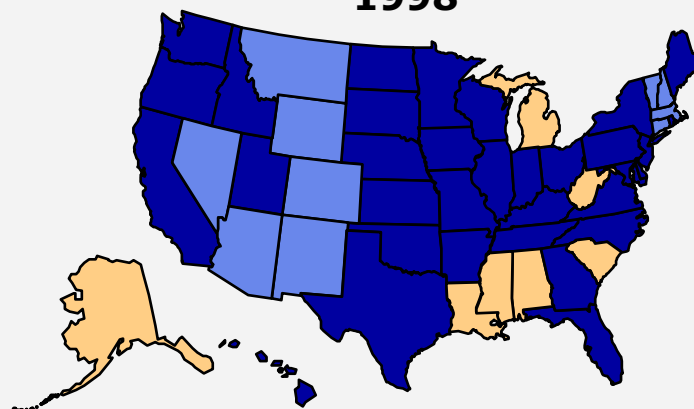
## BRFSS, 1990, 1998, 2006

(\*BMI  $\geq 30$ , or about 30 lbs. overweight for 5'4" person)

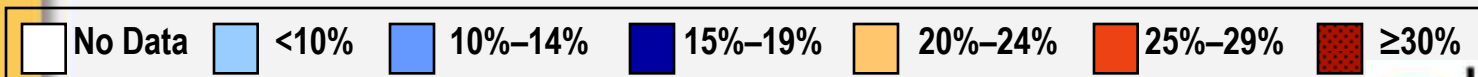
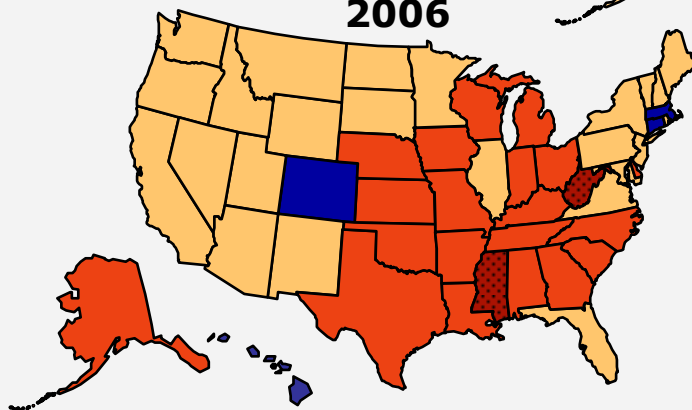
1990



1998



2006

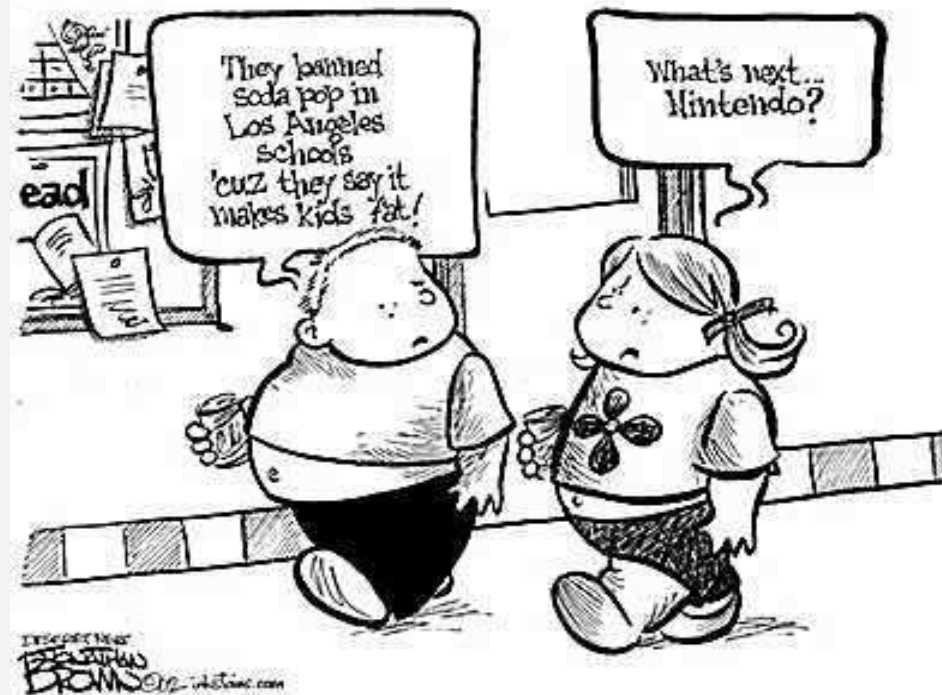


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# Causes of Obesity

- **Genetic factors- 40-70%**
  - Difficult to separate genetic effects from family lifestyle behaviors
  - Genetically controlled hormones affect obesity risk by influencing appetite, fat storage, weight gain
  - There is no “obesity” gene
- **Behavioral and Environmental Factors**
  - Daily intake and physical activity

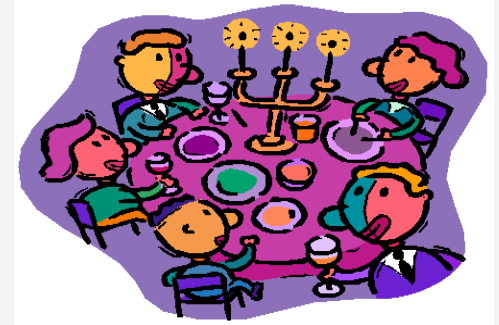
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# Behavioral/Lifestyle Factors

- Faster paced lifestyles
  - Less time for meal preparation
  - Less opportunity for family meals
  - Less time for family physical activities
- More sedentary behaviors
  - TV, DVD's, computers, video games
  - Less daily physical activity



# Behavioral Factors



- **Daily intake**

- 17% of NC students reported eating >5 servings per day of fruit or vegetables
- 20% of NC students admitted to not eating fruit in the last 7 days

- **Physical Activity**

- 36% of NC students watched more than 3+ hours of television per day (25% of all US children watch 4+)
- 22% of NC students participated in moderate exercise for 30 min at least 5 days/week

# Environmental Factors:

- Fast food access: drive thru, take out, order in, eat and run
- Super-sizing: more calories per serving
- Food marketing practices
- School meals and vending policies



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# Fast Food

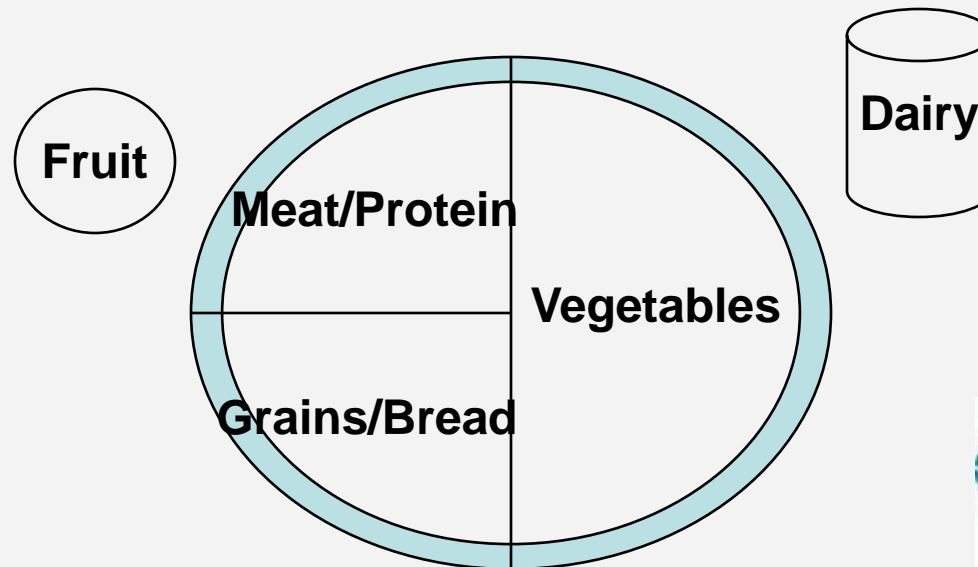
<u>Fast Food Item</u>	<u>Calories</u>
Burger King Double Whopper w/ Cheese	1020
McD's French Fries, super size	610
Baskin Robbins Milkshake, large	1130
Cheesecake Factory Carrot Cake 1 slice	1560
Cheese Fries with Ranch Dressing	3010

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# Prevention

- What should we be doing?
- What to eat?
- How much physical activity?
- Recommendations



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# Macronutrients

- Provide calories and energy for growth, metabolism, and other body functions
- Carbohydrates (4 Calories/gram)
- Protein (4 Calories/gram)
- Fat (9 Calories/gram)

# Carbohydrates

- Daily recommendations- 45-65% of our daily intake should come from Carbohydrates
- Carbohydrates are the body's preferred and primary source of energy
- Are needed for the central nervous system, kidneys, brain, and muscles to function properly
- Important in intestinal health and waste elimination

# Carbohydrates

- Sources: “Starchy” food like grains, cereals, bread, rice, pasta, some vegetables like potatoes, corn and peas, fruit and fruit juice, milk and yogurt



# Carbohydrates

- Serving size examples

- ½ cup canned fruit

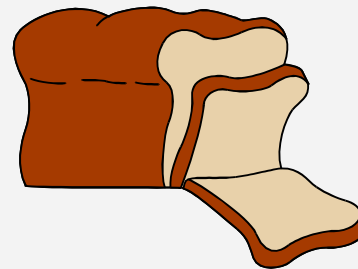
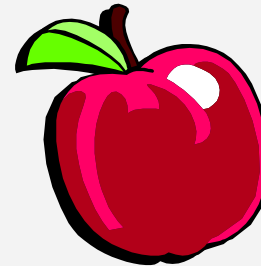
- 1 cup milk

- ½ cup (or 4 oz) fruit juice

- 1 small apple

- ½ cup corn, cooked cereal, mashed potatoes

- 1 slice of bread




# Carbohydrates

- FIBER- improves digestion and cholesterol levels as well helps with blood glucose control and increases fullness.
  - Recommendation: 25-30 grams/day total
  - Undigested and not used for energy
  - Insoluble and Soluble
  - Increase your water consumption as you increase the amount of fiber you eat
  - Found in fruits, vegetables, dried beans and whole grains products



# Carbohydrates

ENJOY	LIMIT or AVOID
<u>Fruit</u> : whole, frozen, or canned without syrup	Fruit: juices, frozen and canned with syrup
<u>Vegetables</u> : raw, cooked from raw, frozen, or canned without sauces	Vegetables: frozen and canned with sauces
<u>Milk &amp; Yogurt</u> : skim or low-fat	Milk & Yogurt: full fat
<u>Whole Grains</u> : whole wheat bread, whole wheat pasta, brown rice, high-fiber cereals, plain oatmeal, whole wheat crackers, whole wheat bagels, whole wheat English muffins	"White Grains": white bread, regular pasta, white rice, sugary cereals & oatmeal, grits, white crackers
<u>Dried Beans</u> : kidney beans, chick peas, and black beans without sauces	Dried Beans: baked beans with sugar
	Sweets: cookies, cakes, candy
<p>March 17, 2005</p>	<p>Regular soda</p> 

# Protein

- Daily recommendations- 10-35% of our daily intake should come from Protein
- Growth and development
- Repairing and rebuilding tissue
- Promotes immune function
- Making essential hormones and enzymes
- Preserving lean muscle mass

# Protein

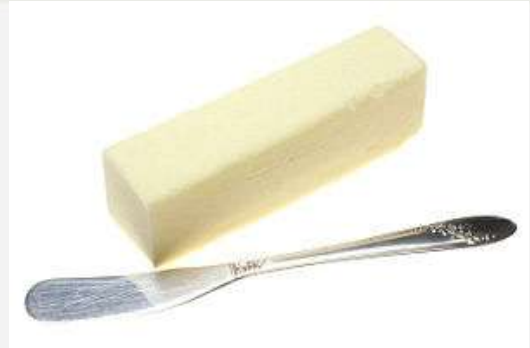
- Sources- Meats, poultry, fish, meat substitutes like tofu and soy, eggs, cheese, milk, nuts, and legumes
- Serving size examples (1 oz)
  - ¼ cup tofu
  - 2 Tbsp humus
  - ¼ cup dried beans, cooked
  - 1 large egg
  - 12 almonds, 24 pistachios, 7 walnut halves

# Fat

- Daily recommendations- 20-35% of our daily intake should come from fat
- It provides energy (and essential fatty acids) and support cell growth
- Helps keep our skin, nails and hair healthy
- Plays a role in many body functions, like cushioning organs and maintaining body temperature
- Aids in the absorption of vitamins A, D, E, K
- Has a key role in early brain development

# Fat

- Types of fat we eat
  - Saturated Fat
  - Trans Fat
  - Monounsaturated Fat
  - Polyunsaturated Fat

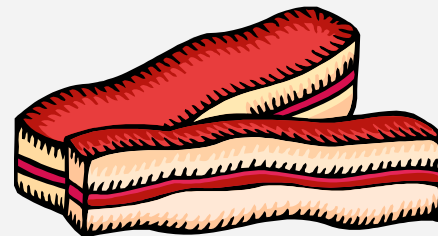


SHORTENING >



# Fat

- Saturated fat- used by the liver to make cholesterol and can raise LDL levels
  - Sources- whole fat dairy products, butter, marbling in meats, bacon drippings, coconut and palm oils



# Fat

- Trans fat- “hydrogenated” fats to make oil solid at room temperature; increases LDL and can lower HDL levels
  - Sources- solid shortenings like Crisco, tub and stick margarine, processed food w/ hydrogenated vegetable oil like cakes, cookies, pies, crackers, etc.



SHORTENING >

# Fat

- Monounsaturated fat- helps lower total cholesterol (including LDL levels) and protects HDL levels
  - Sources- canola, olive, and sesame oil, nuts, natural peanut butter, whole grain wheat, avocados, olives



# Fat

- Polyunsaturated fat- helps lower total cholesterol including LDL
  - Sources- sunflower, safflower, and soybean oil, fish (omega 3)\*- salmon, mackerel, herring, trout, albacore tuna
    - \*omega 3 fatty acids- prevent blood platelets from clotting and sticking to artery walls, thus lowering risk for heart disease

# Fat

## Serving Size Examples

Butter/Margarine	1 tsp
Mayonnaise	1 Tbsp
Salad Dressing	1 Tbsp
Nuts	¼ cup
Peanut Butter	2 Tbsp



# Portion Sizes

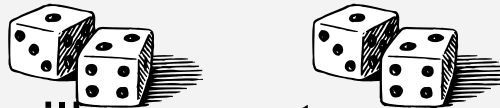
- A 1/2 cup serving of canned fruit, vegetables, or potatoes looks like half a tennis ball sitting on your plate



- 3 ounces of meat, fish, or chicken is about the size of a deck of playing cards or the palm of your hand



- A 1 ounce serving of cheese is about the size of 4 dice



- A 1 cup serving of milk, yogurt, or fresh greens is about the size of your fist



- 1 teaspoon of oil is about the size of your thumb tip

# Overall

- What should I be eating?
  - Eat more (5-9) servings of fruits and vegetables every day (include a variety of colors such as green, yellow, orange, and red)
  - Aim for six servings of grains, breads, and cereals ( $\frac{1}{2}$  should come from whole grains)

# Overall

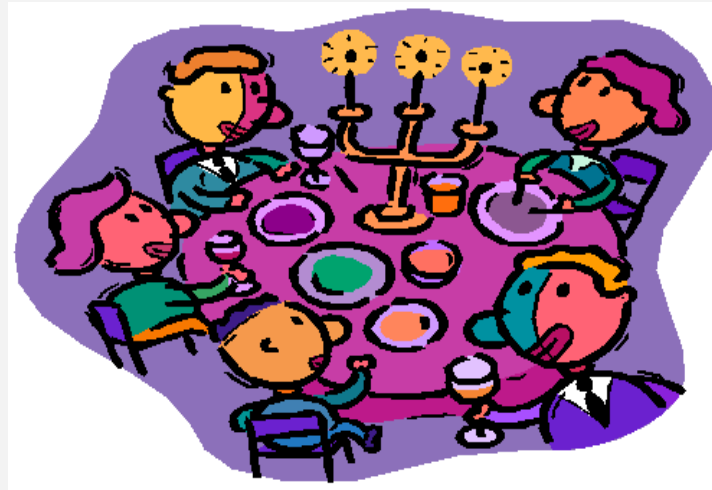
- Choose two - three servings of low-fat dairy products like skim or 1% milk or yogurt
- Choose lean meats, chicken, and fish
  - Pick meats without visible fat and remove skin from chicken and other poultry.
  - Try to include two - three servings of fish a week
  - Avoid fried meats

# Overall

- Cut back on sweets and desserts (most desserts are high in calories and do not contain many vitamins and minerals)
- Substitute saturated and trans fats for monounsaturated and polyunsaturated

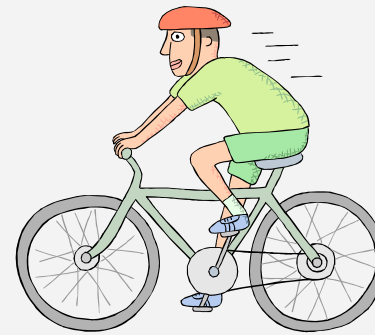
# Mealtime

- Make meals enjoyable and add variety
- Eat at least one family meal a day



# Physical Activity

- Limit TV time to 1-2 hours per day
- 60 minutes of physical activity per day
  - Plan family activities
  - Make it fun!



# THANK YOU

## Questions?

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