

The Ability of Various Measures of Fatness to Predict Application for Disability Insurance

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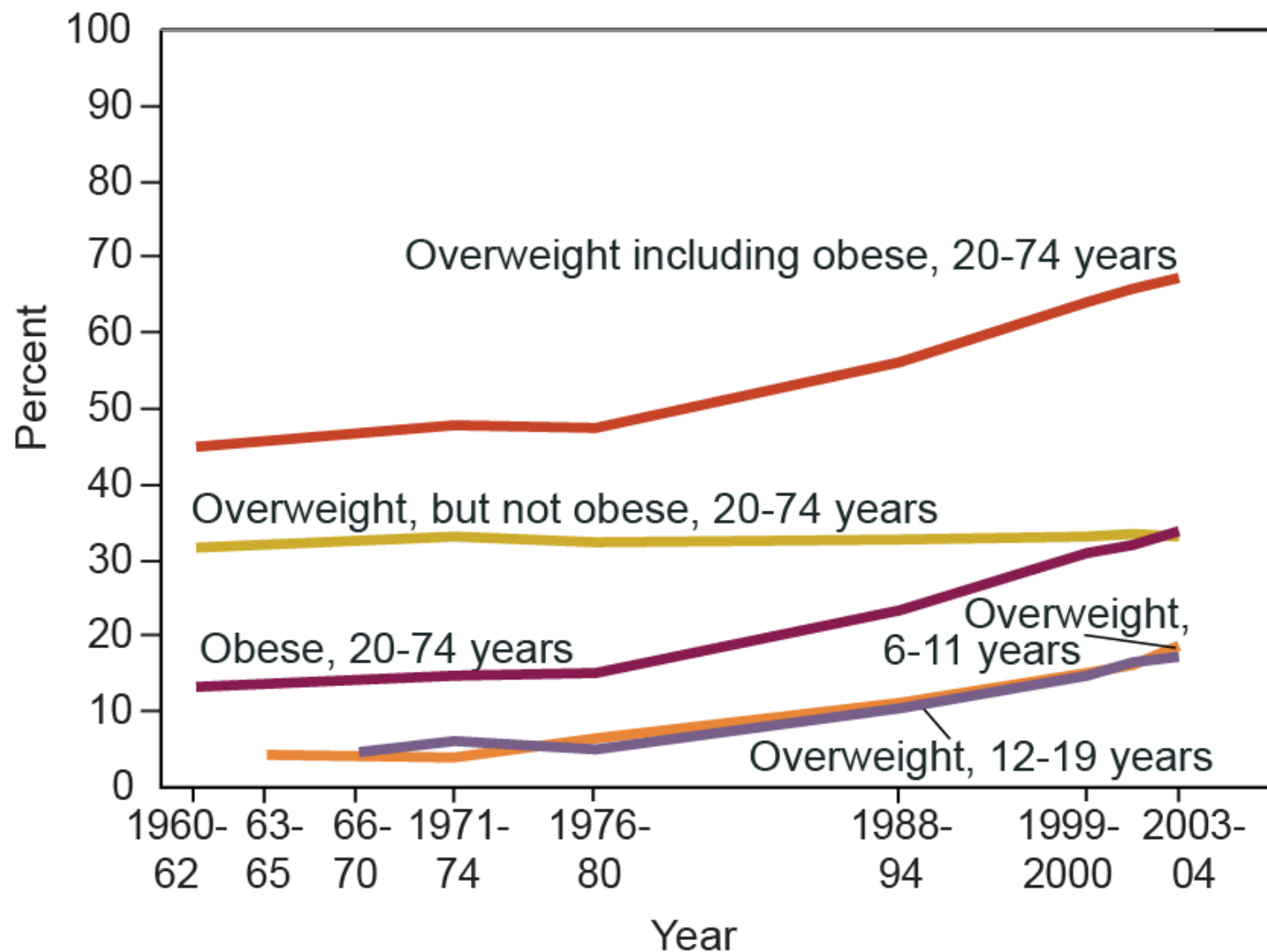
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Overweight and obesity

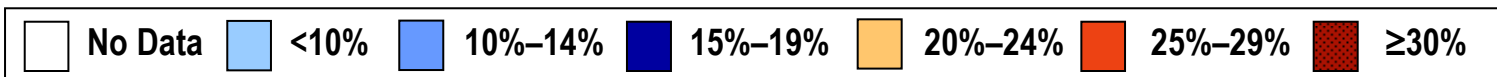
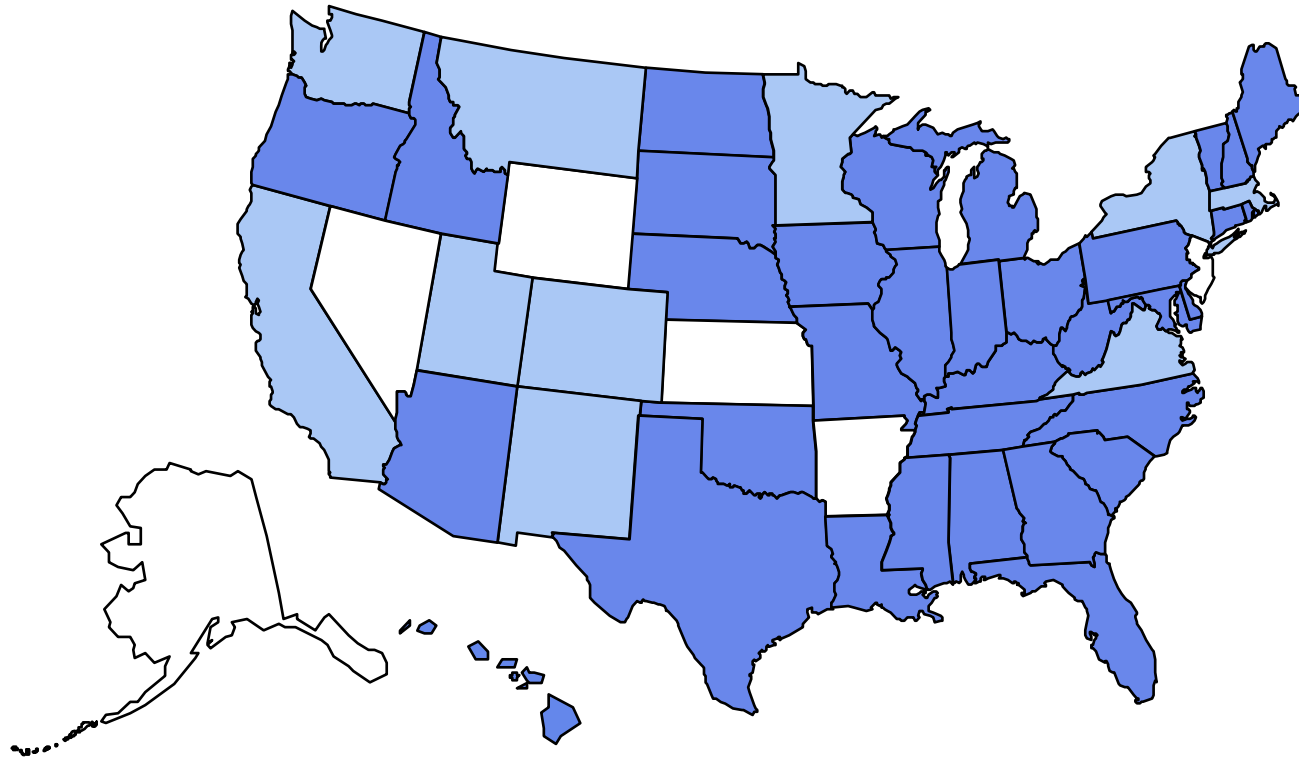


SOURCES: Centers for Disease Control and Prevention, National Center for Health Statistics, *Health, United States, 2006*, Figure 13. Data from the National Health and Nutrition Examination Survey.

Obesity Trends* Among U.S. Adults

BRFSS, 1990

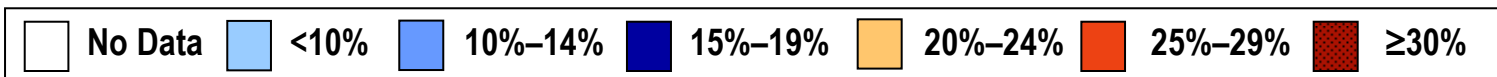
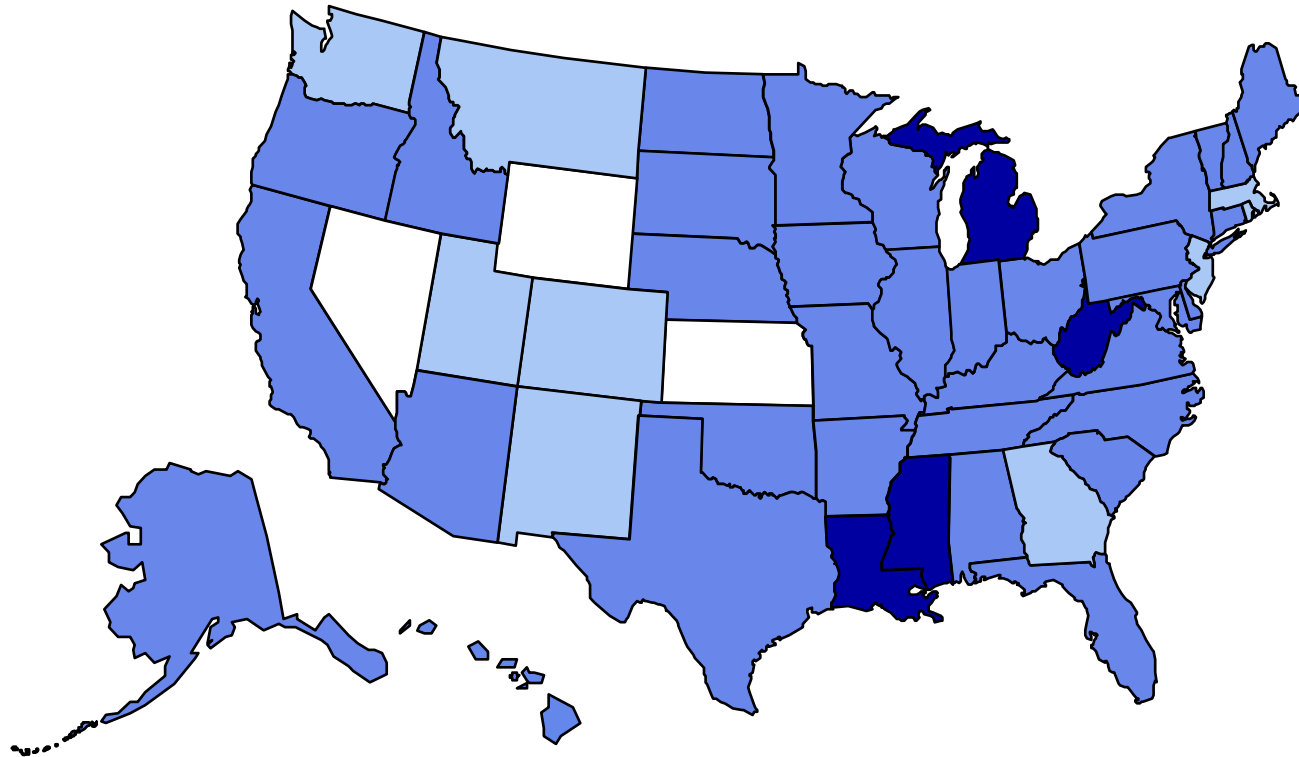
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Obesity Trends* Among U.S. Adults

BRFSS, 1991

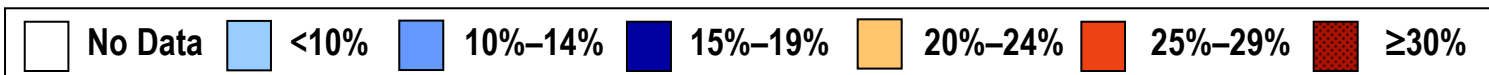
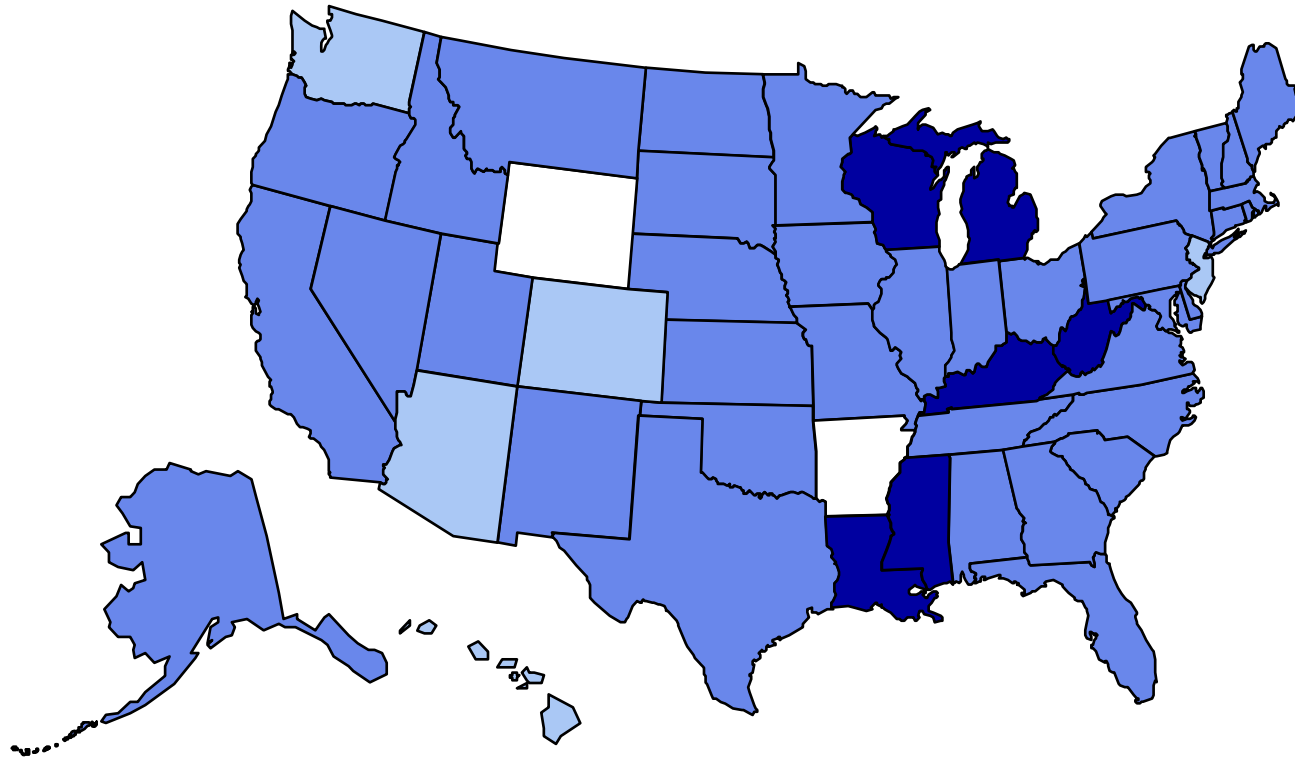
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Obesity Trends* Among U.S. Adults

BRFSS, 1992

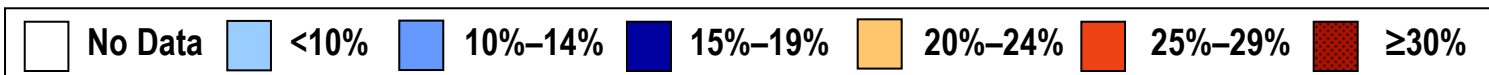
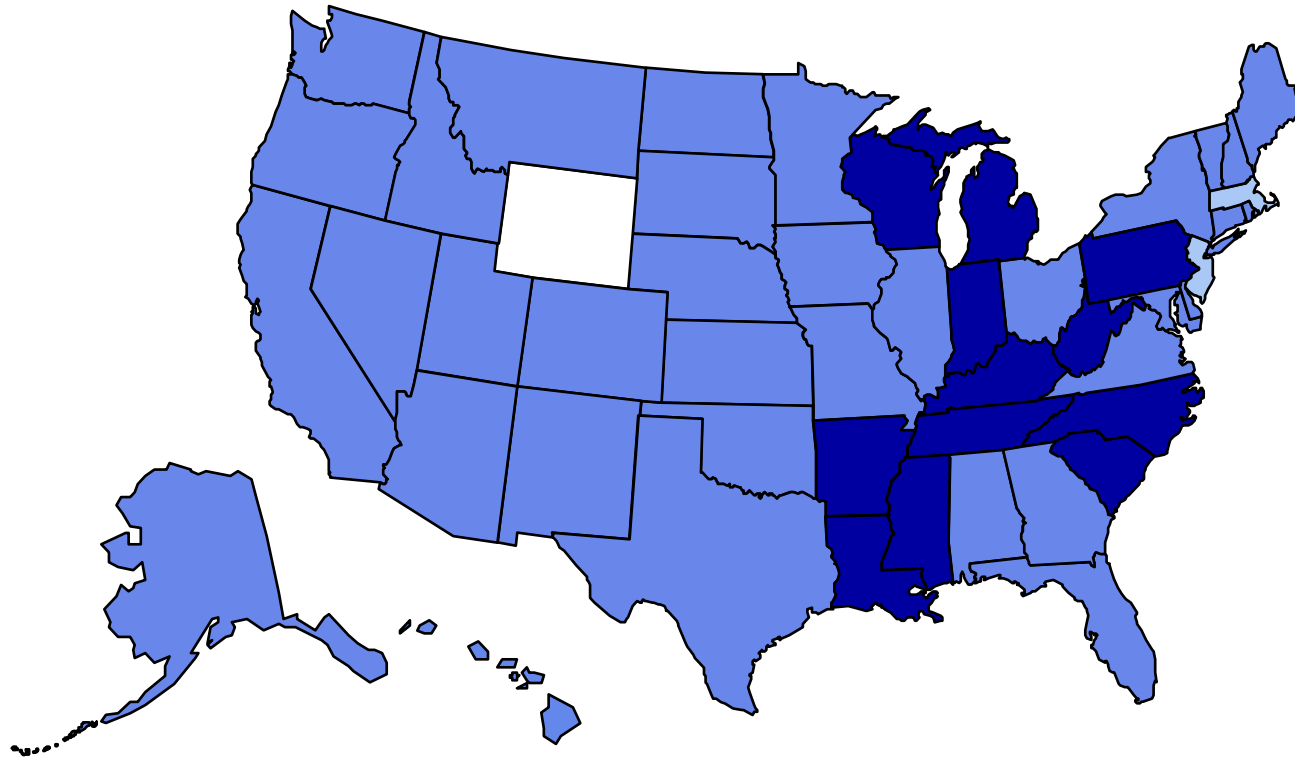
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Obesity Trends* Among U.S. Adults

BRFSS, 1993

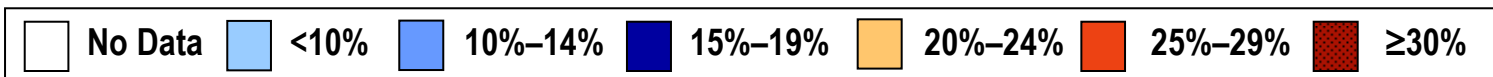
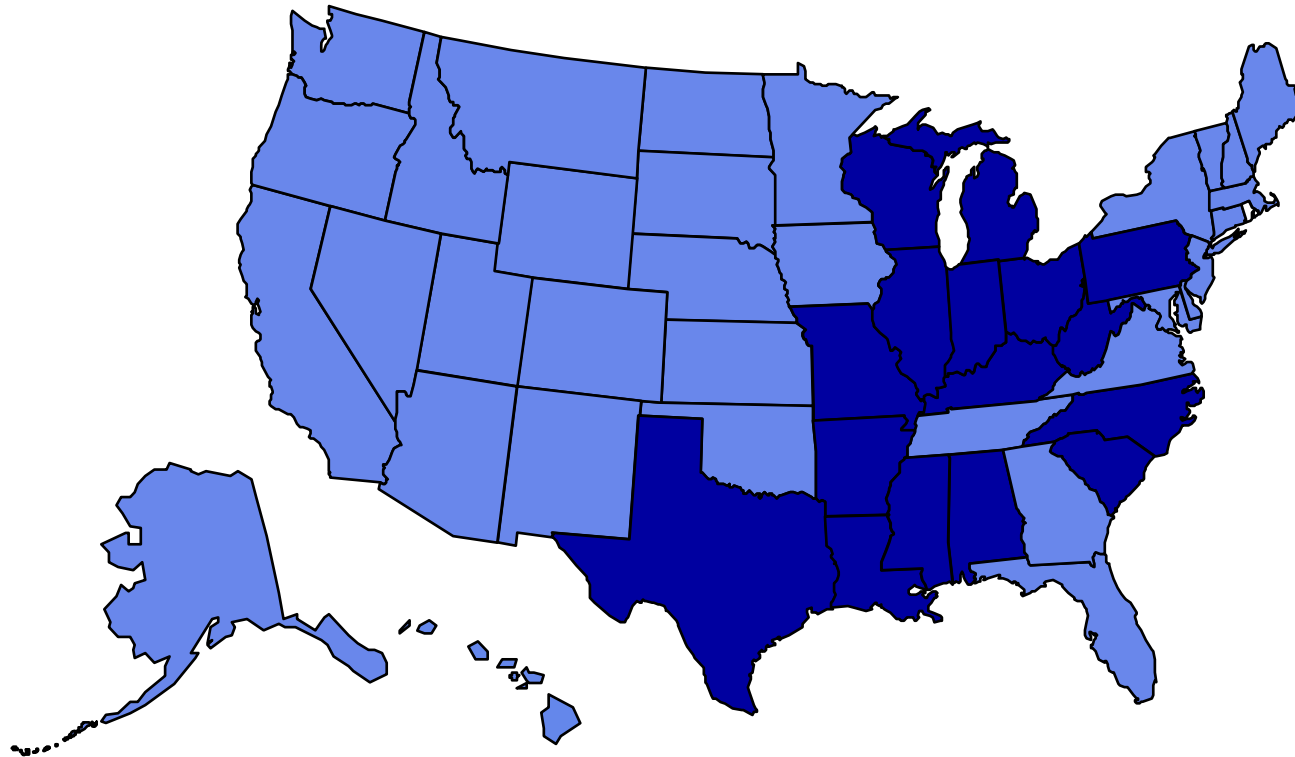
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Obesity Trends* Among U.S. Adults

BRFSS, 1994

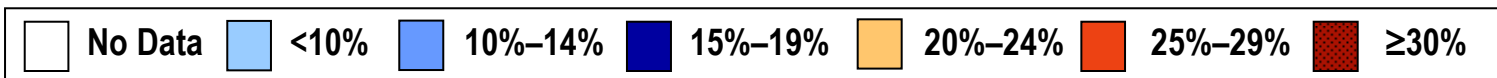
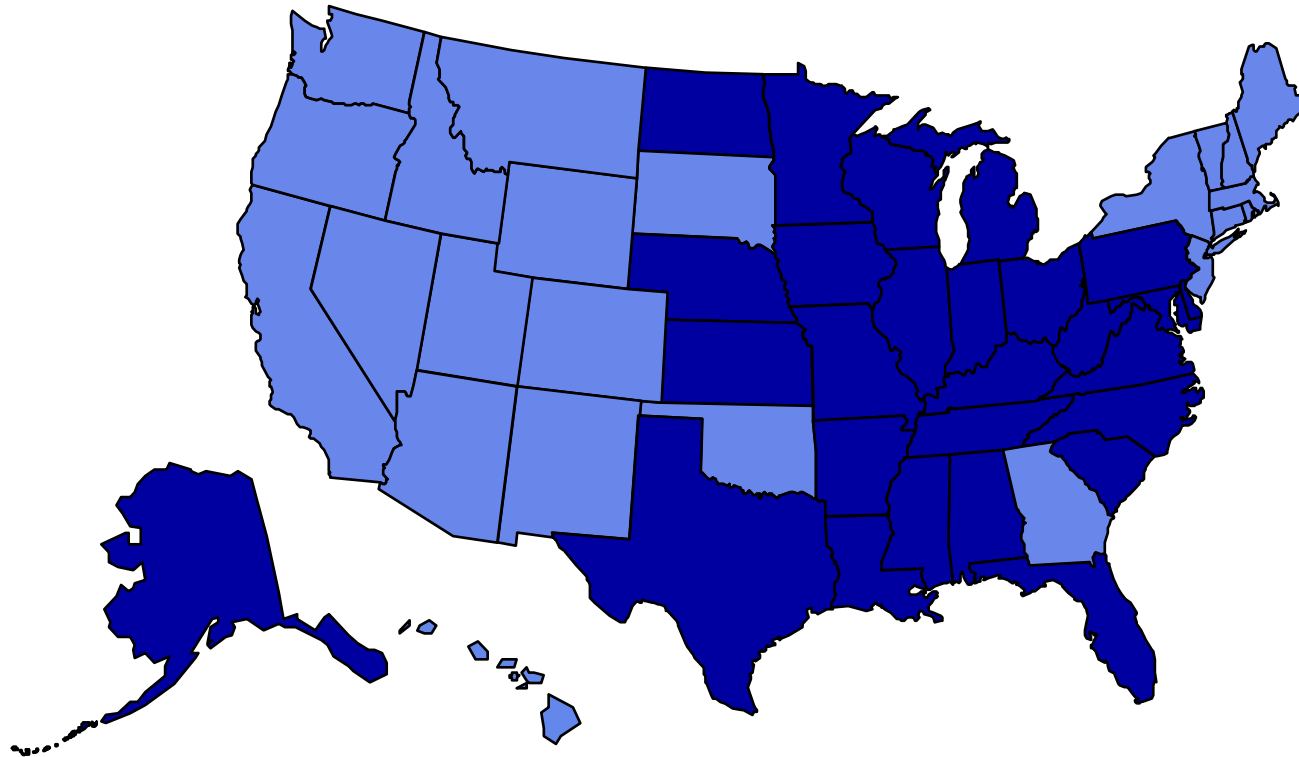
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Obesity Trends* Among U.S. Adults

BRFSS, 1995

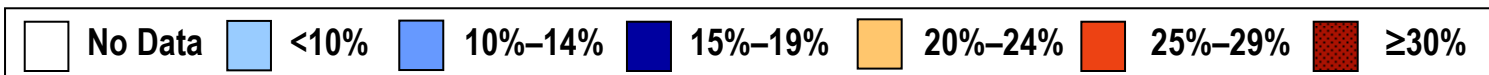
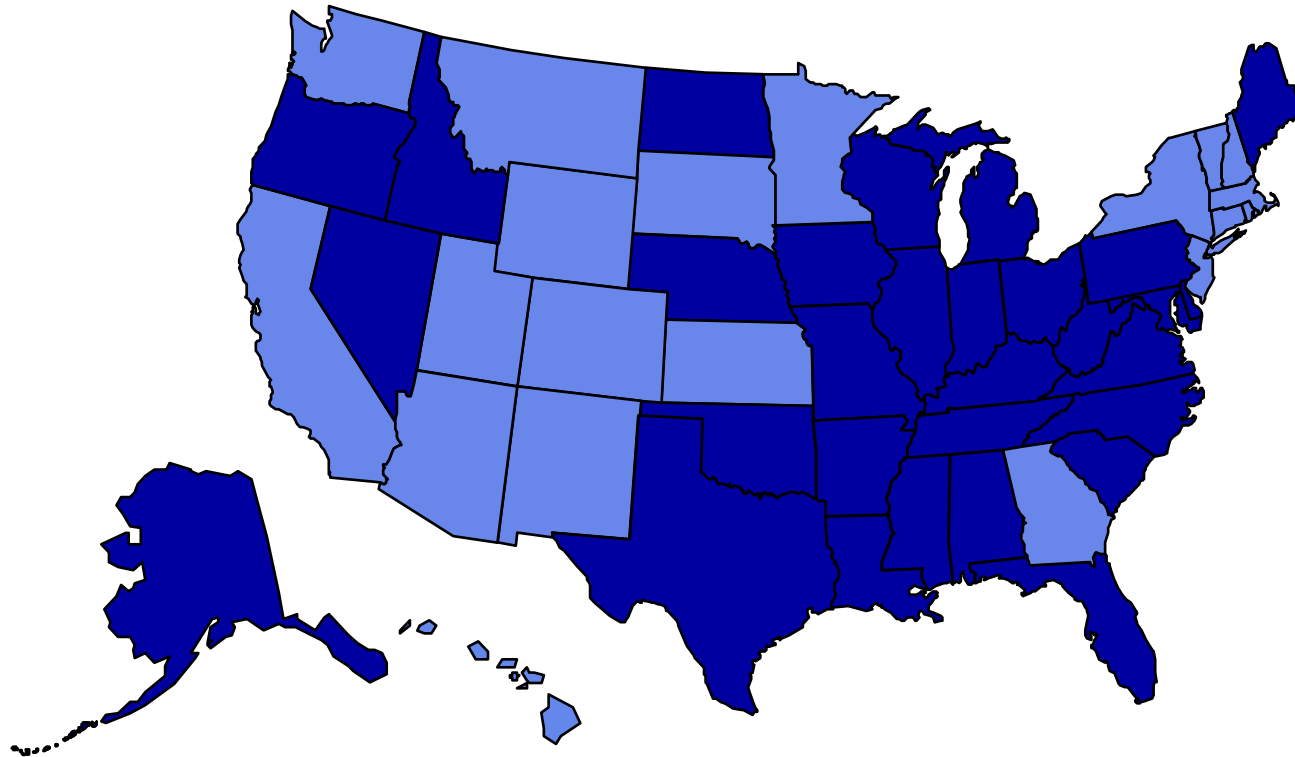
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Obesity Trends* Among U.S. Adults

BRFSS, 1996

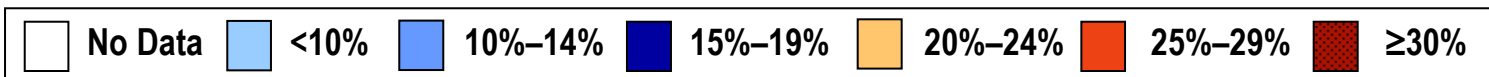
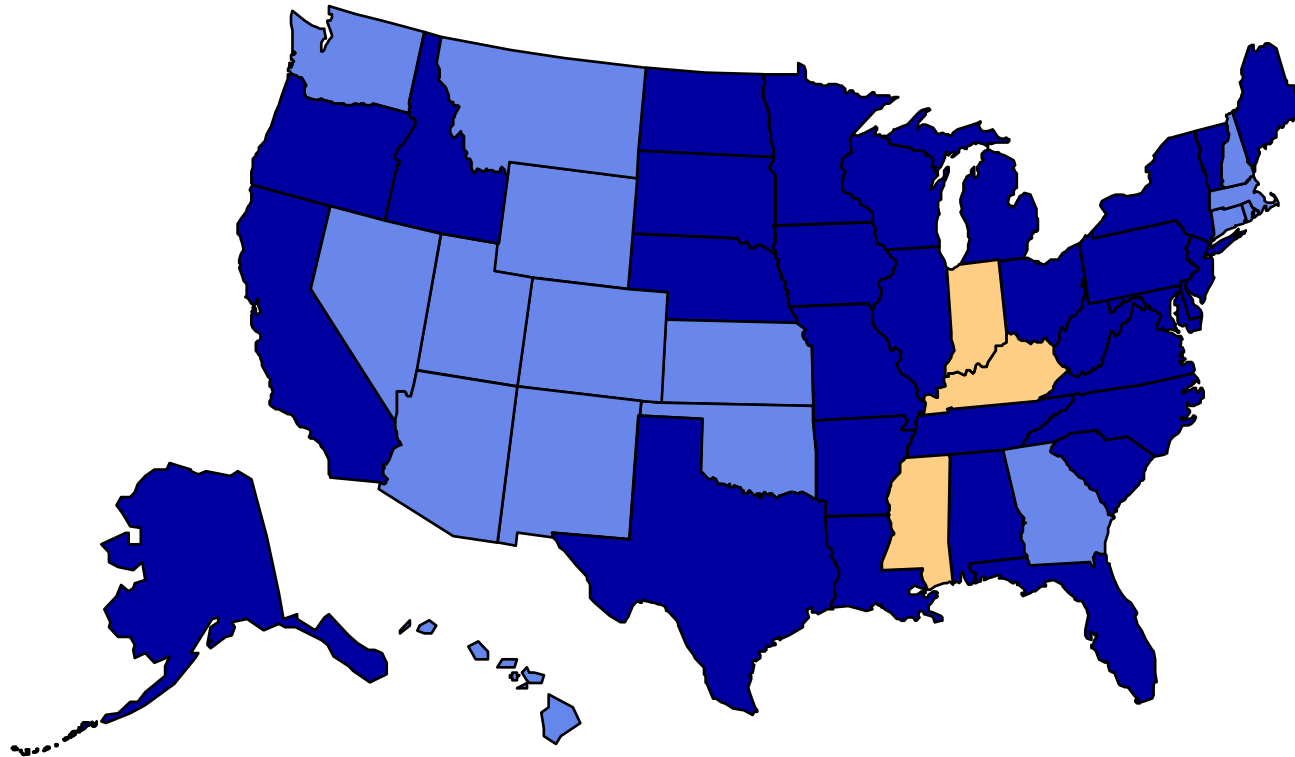
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Obesity Trends* Among U.S. Adults

BRFSS, 1997

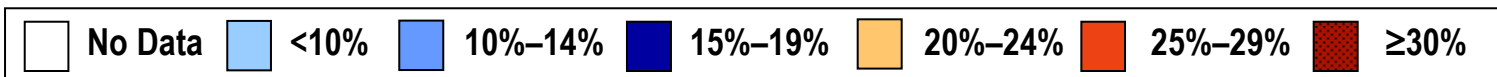
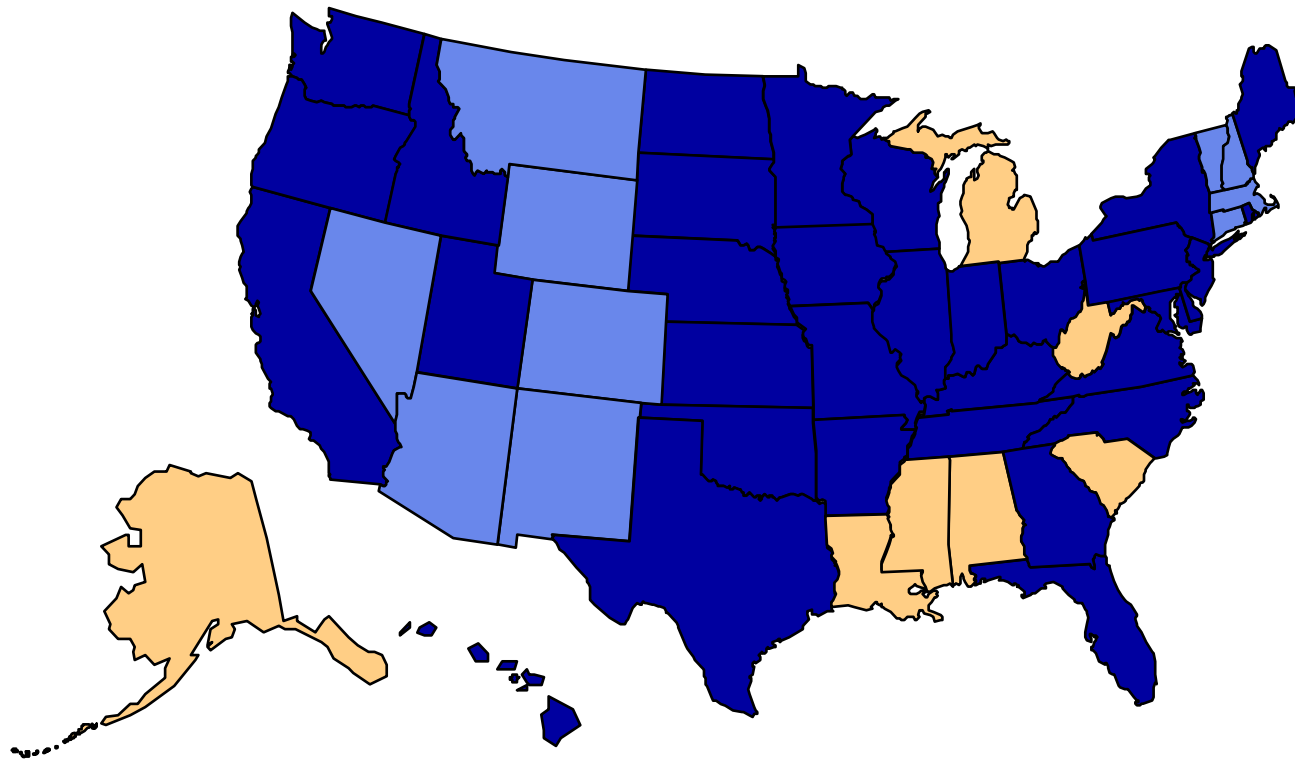
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Obesity Trends* Among U.S. Adults

BRFSS, 1998

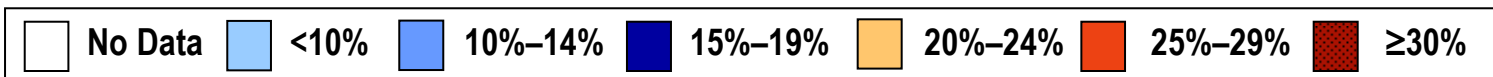
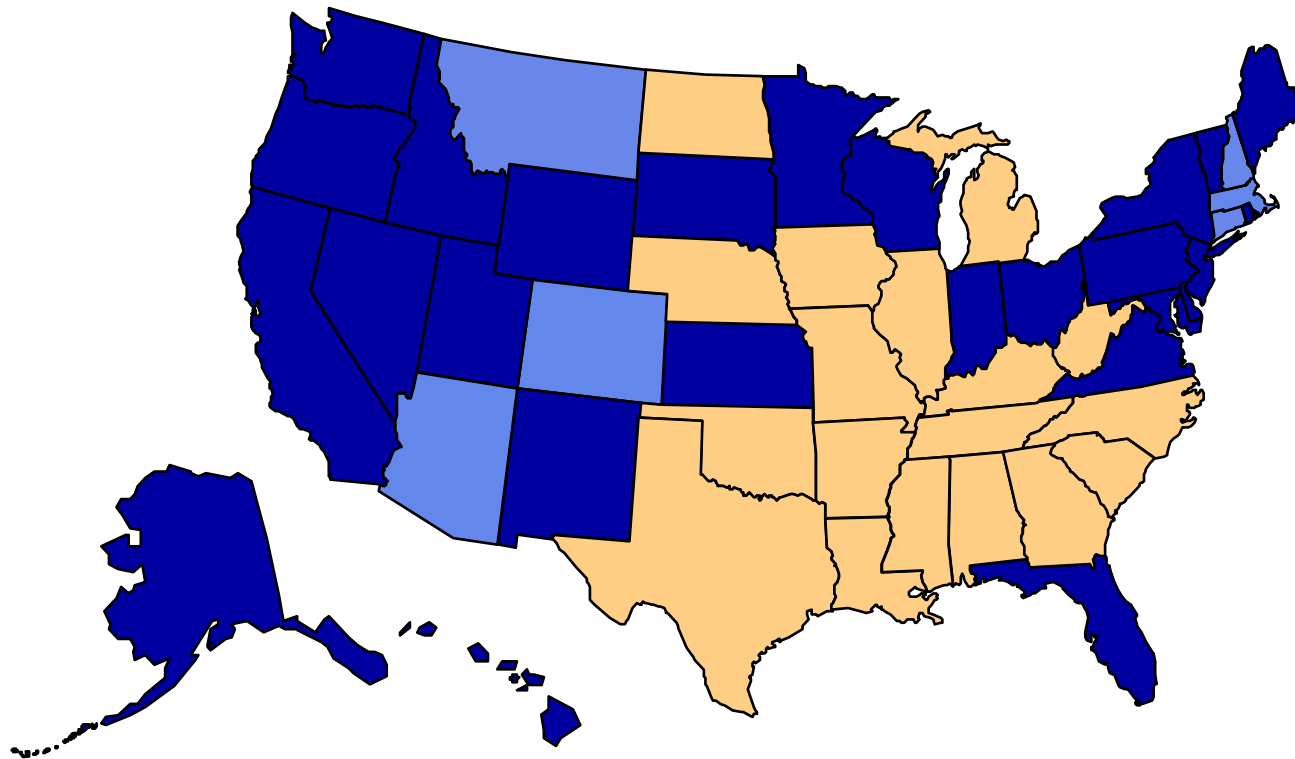
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Obesity Trends* Among U.S. Adults

BRFSS, 1999

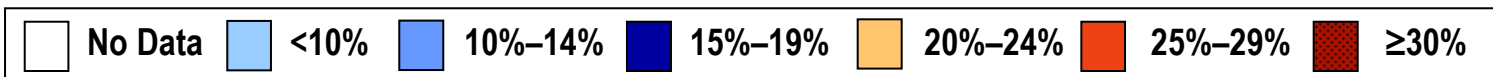
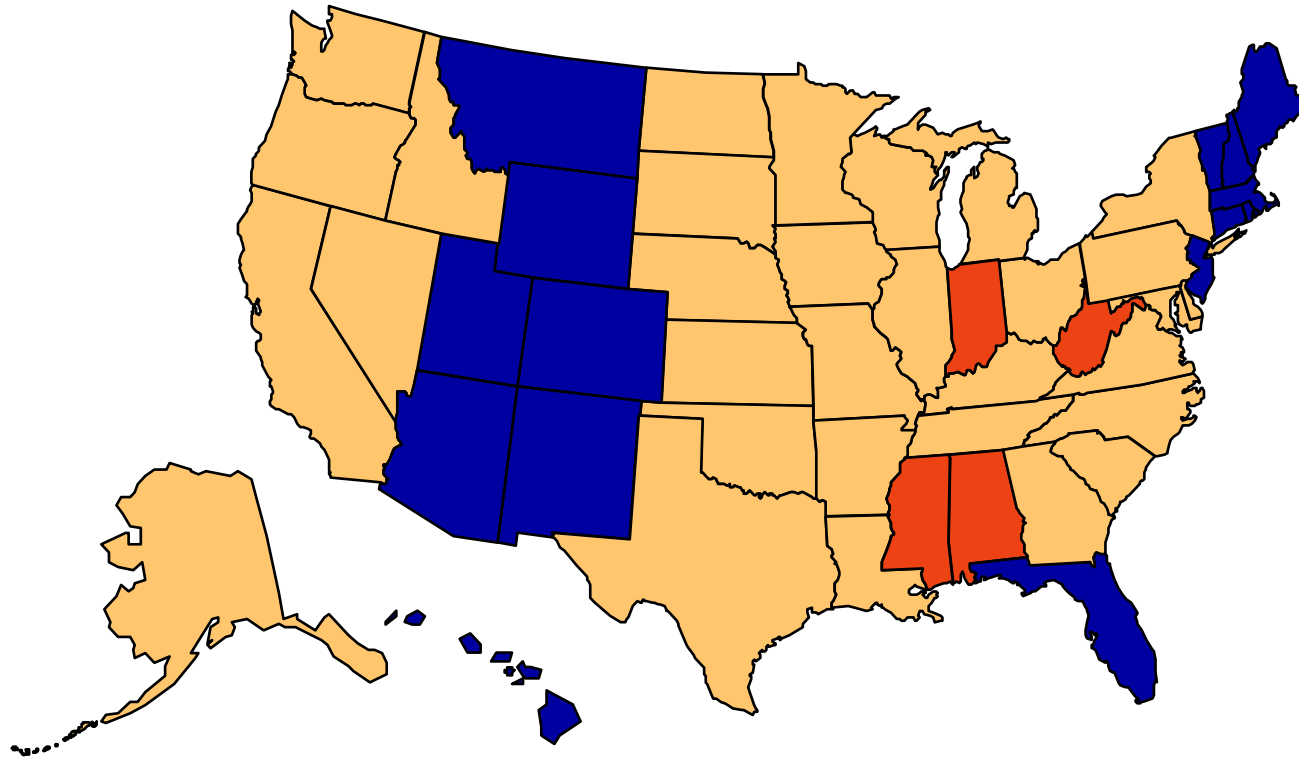
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Obesity Trends* Among U.S. Adults

BRFSS, 2003

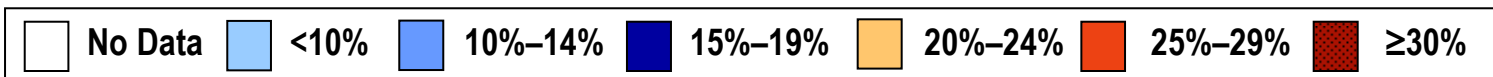
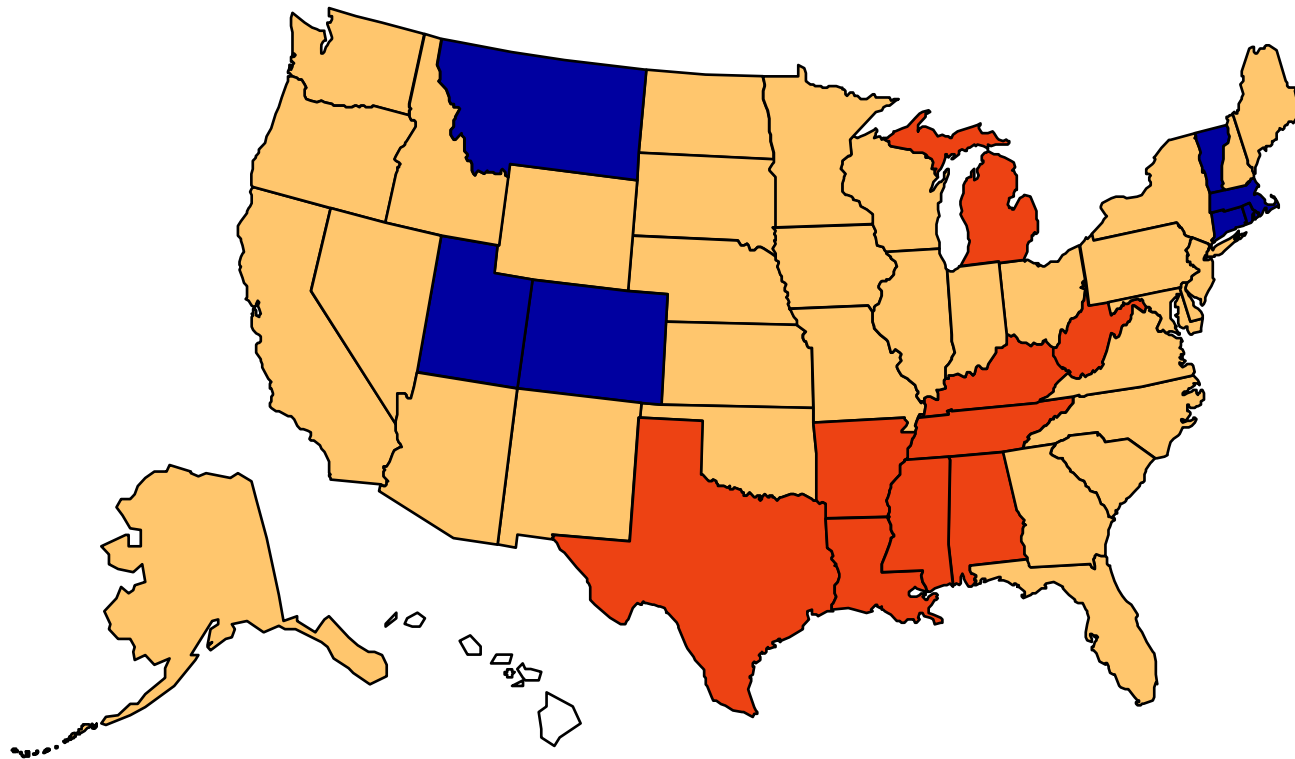
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Obesity Trends* Among U.S. Adults

BRFSS, 2004

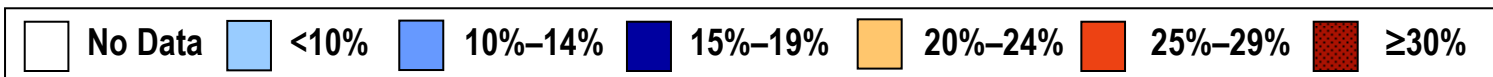
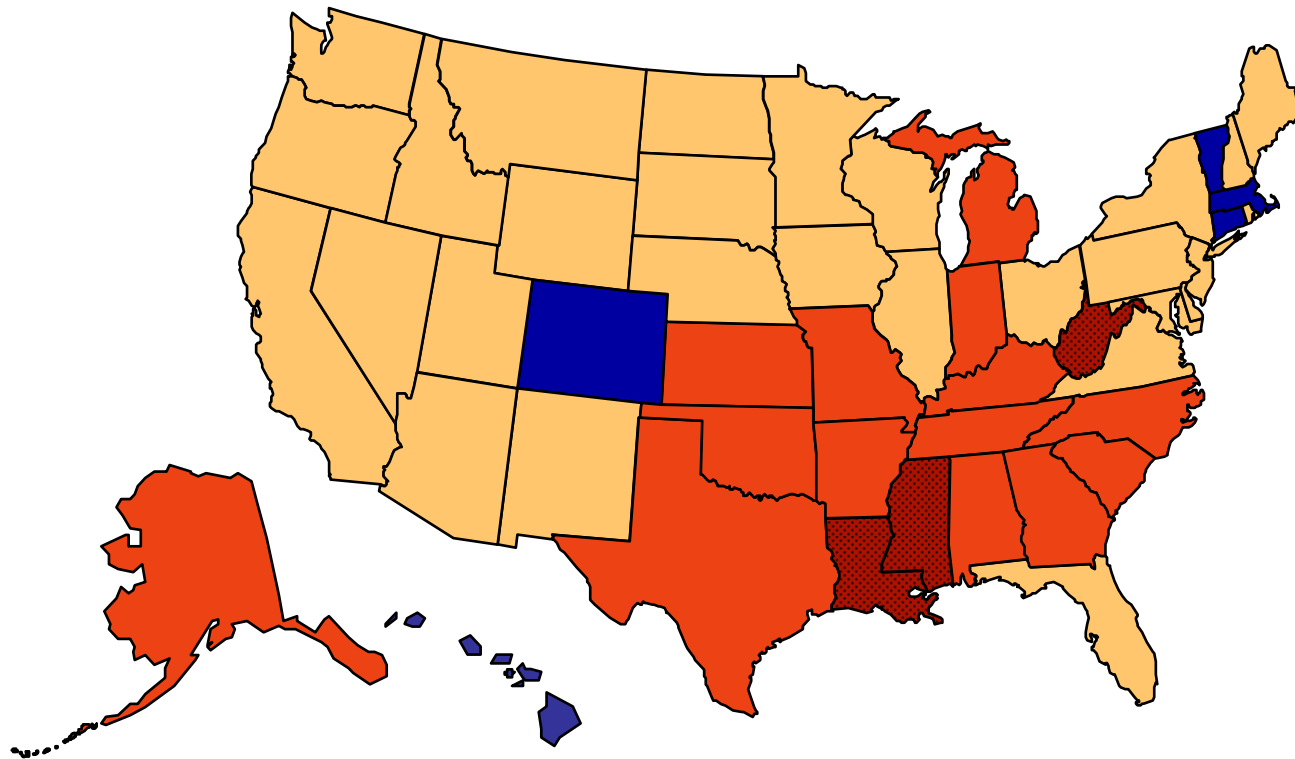
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Obesity Trends* Among U.S. Adults

BRFSS, 2005

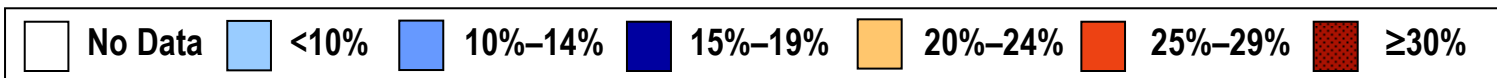
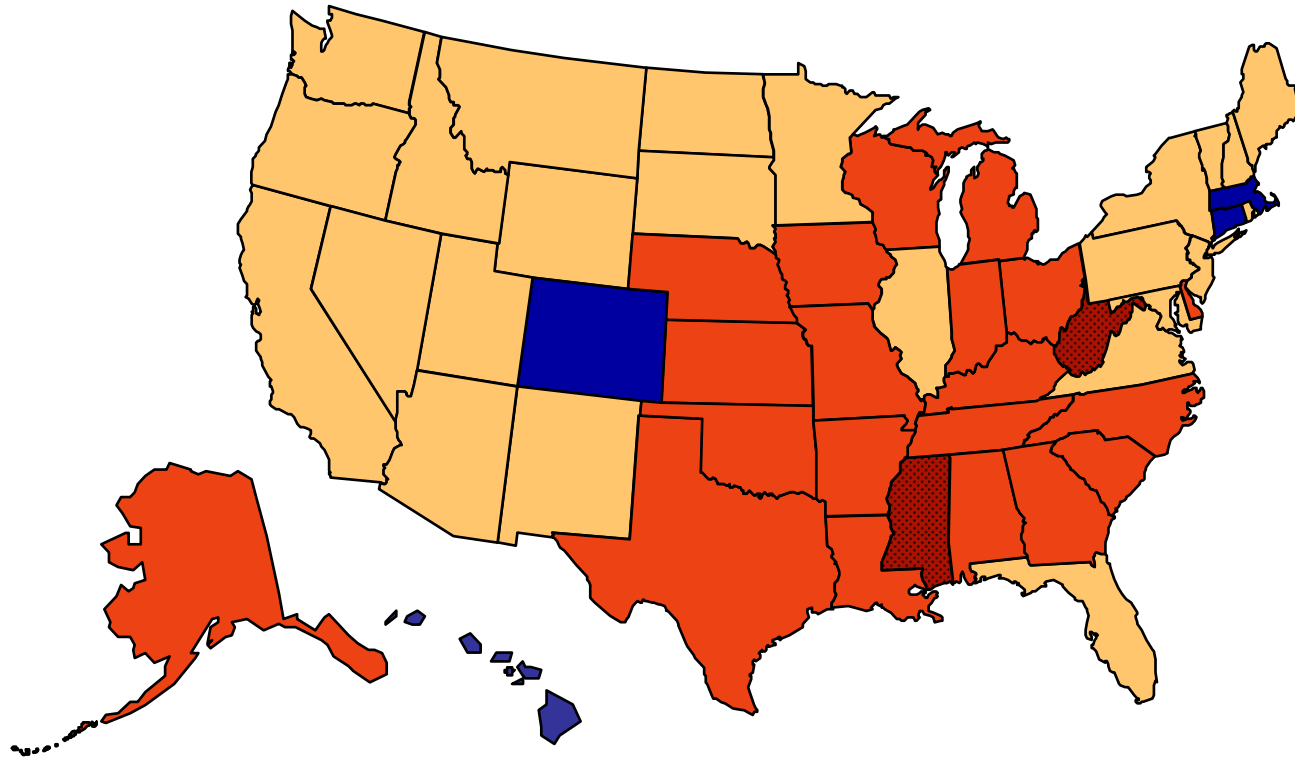
(*BMI ≥ 30 , or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults

BRFSS, 2006

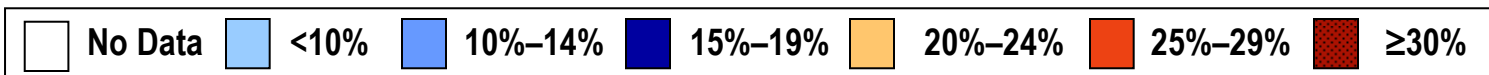
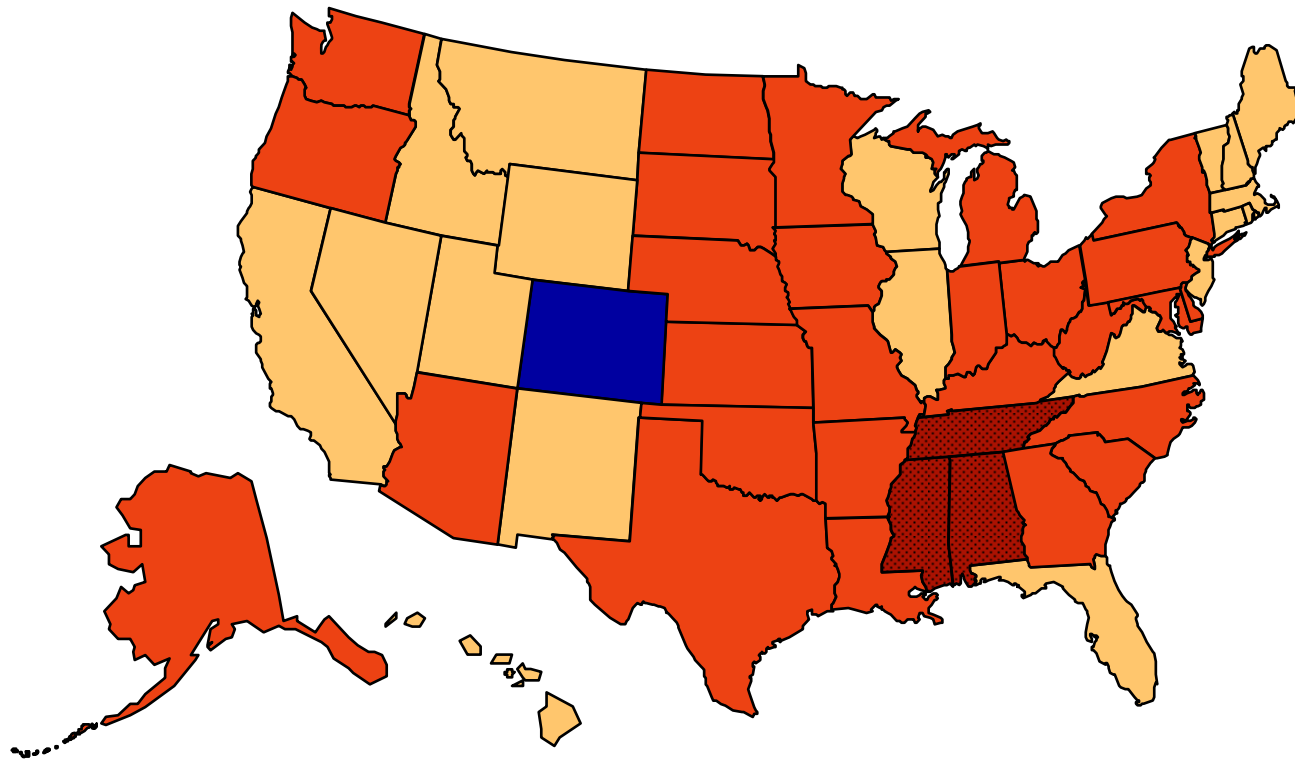
(*BMI ≥ 30 , or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults

BRFSS, 2007

(*BMI ≥ 30 , or ~ 30 lbs. overweight for 5' 4" person)



Measuring Fatness

- Fatness most commonly measured using body mass index (BMI)
 - Formula: $\text{weight (kg)} / [\text{height (m)}]^2$
- Main advantage is widespread availability of self-reported weight and height in social science datasets
 - Can also be calculated using measured weight and height or self-reported adjusted values (Cawley and Burkhauser, 2006)
- Obesity refers to excessive fatness (Bjorntorp, 2002; Bray, Bouchard, and James, 1998)
 - Most common definition of obesity is $\text{BMI} \geq 30$

Why Worry About Measuring Fatness?

- Obesity has been linked to an increased risk of morbidity and mortality
 - Obesity associated with high blood pressure, high blood cholesterol, type II diabetes mellitus, coronary heart disease, osteoarthritis, etc. (Must et al., 1999; Mokdad et al., 2003)
 - Significantly increases risk of mortality (Calle et al., 1999) and is a leading cause of preventable death (Mokdad et al., 2005)

Fatness and Public Policy

- Obese persons have higher annual medical expenditures than healthy weight persons
 - ~37% or \$732 (Finkelstein et al., 2003; Sturm, 2002)
- Treating obesity attributable illnesses costs \$92.6 billion (2002 \$) per year in the U.S., or 9.1% of total health expenditures (Finkelstein et al., 2003)
 - Half paid by Medicaid/Medicare
- Exit labor force via DI and early Social Security retirement benefits (Burkhauser and Cawley, 2005; 2006)

Problems with BMI

- Much of the current social science research on obesity uses BMI as the measure of fatness
- But...
 - BMI fails to distinguish important physical differences between people with identical BMI levels
 - BMI does not distinguish between fat and muscle
 - BMI is a less accurate measure of fatness for blacks than whites (Burkhauser and Cawley, 2008)

THEN



"I'll be back!"

NOW



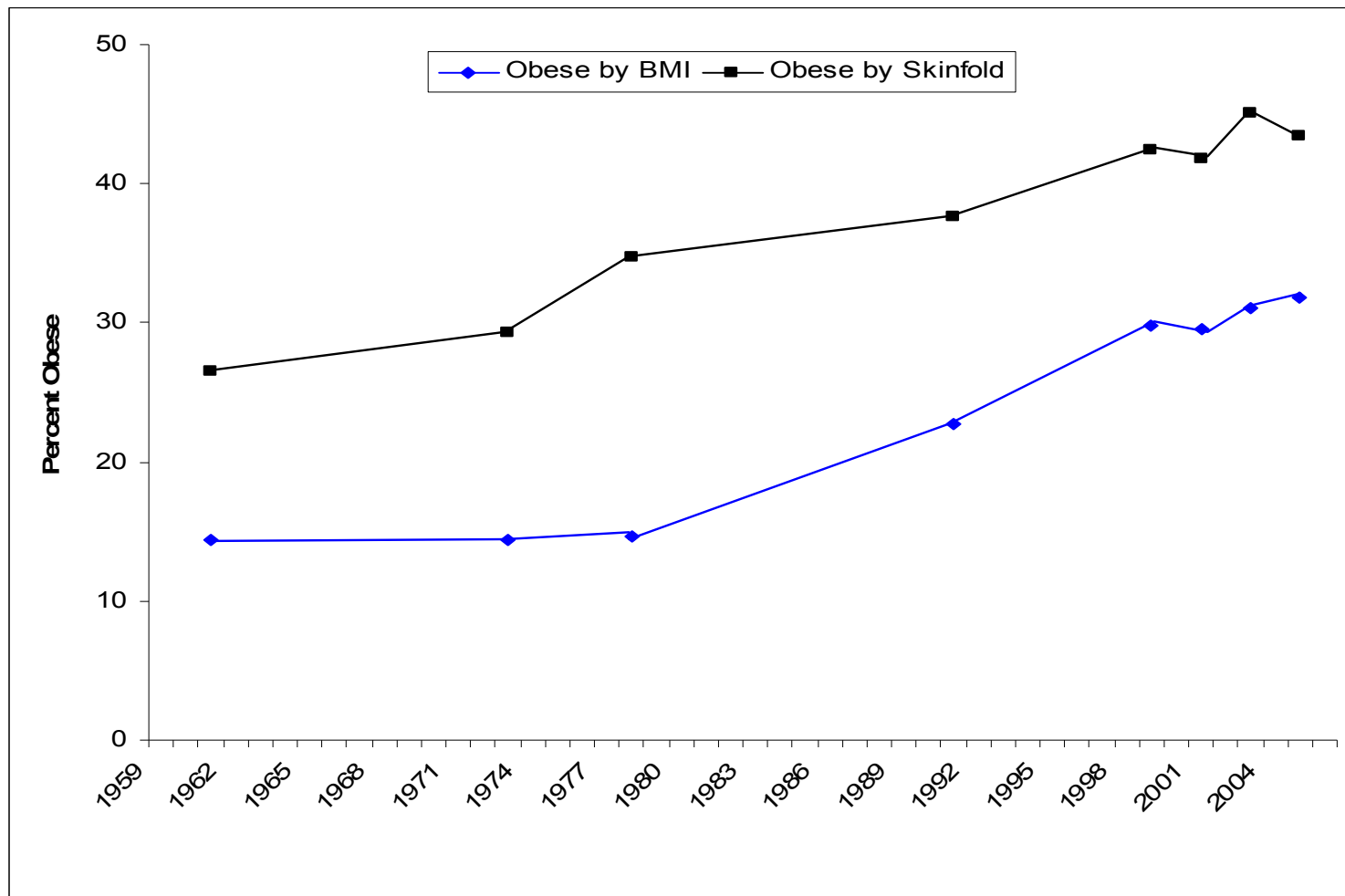
"Oh, my back!"

Problems with BMI

- If BMI does not accurately measure fatness, it may also prove a poor tool for health surveillance

Did we miss the early signs?

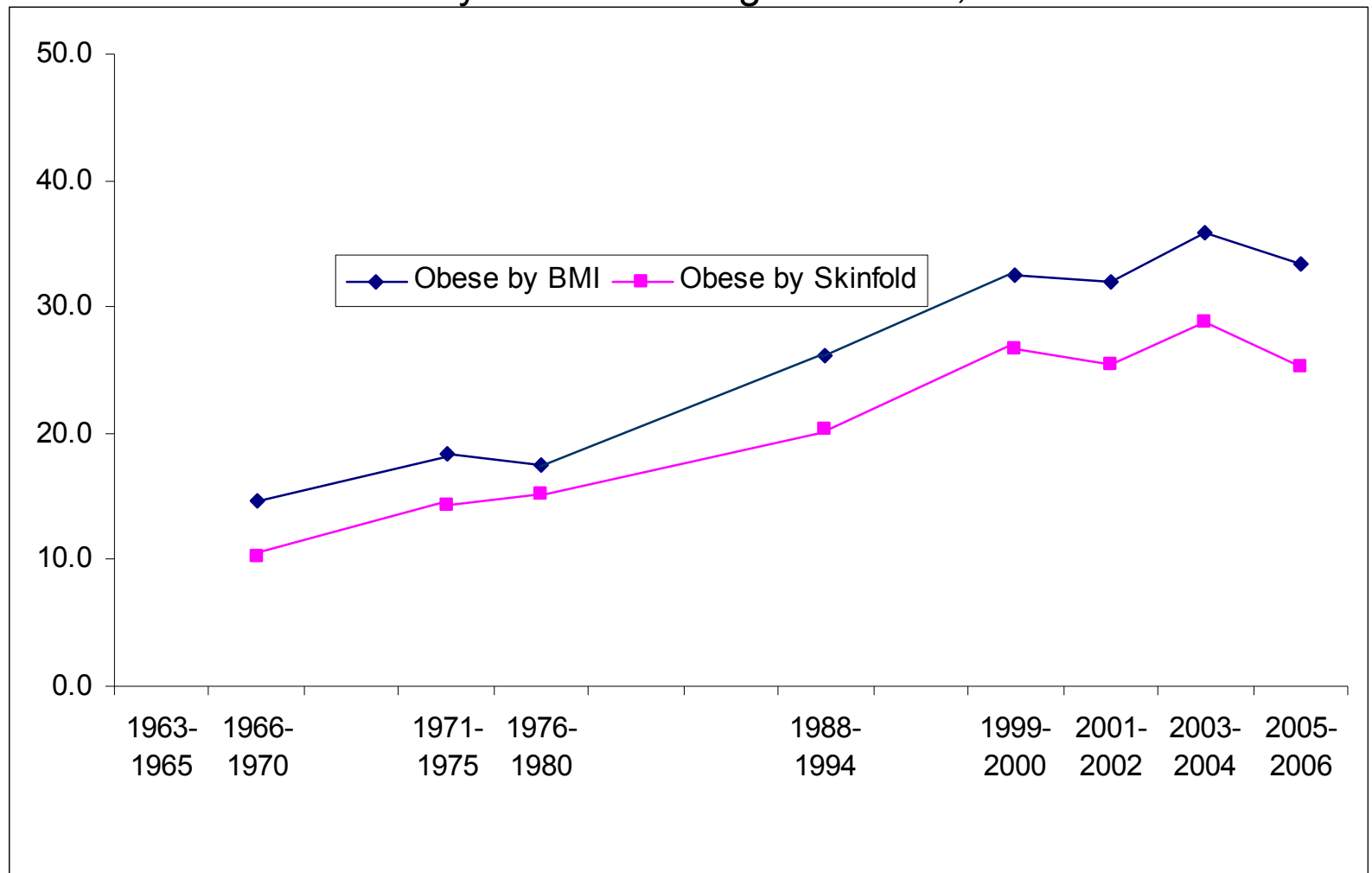
Trends in Adult Obesity, 1959-2006



Source: Burkhauser, Cawley, and Schmeiser (2007)

Did we miss the early signs?

Trends in Obesity for Children ages 12 to 19, 1966-2006



Source: Burkhauser, Cawley, and Schmeiser (2007)

Alternative Measures of Fatness

- Numerous alternative measures of fatness exist:
 - Percent Body Fat (PBF) from BIA or skinfolds
 - Total Body Fat (TBF) and Fat Free Mass (FFM)
 - Waist Circumference (WC)
 - Waist-to-Hip Ratio (WHR)
- Alternative definitions of excessive fatness:
 - PBF: > 25 for men, > 30 for women (NIDDK, 2006)
 - WC: > 102 cm (40") for men, > 88 cm (35") for women (NIH, 1998)
 - WHR: ≥ 0.95 for men, ≥ 0.80 for women (Han et al., 1995)

Alternative Measures More Accurate?

- Medical literature suggests that fat is a risk factor for morbidity and mortality (Pi-Sunyer, 2002; U.S. DHHS, 2001)
 - WC and WHR are better predictors of mortality than BMI (Zhang et al. 2007; Hu et al. 2004; Folsom et al. 1993)
- Total amount of fat has been associated with Type II diabetes and CVD (Trayhurn and Beattie, 2001)

Alternative Measures More Accurate?

- Location of fat may also affect health outcomes
- Abdominal visceral fat (located around the internal organs) is associated with an elevated risk of morbidity (Bray, Bouchard, and James, 1998)
 - Easily measured using WC or WHR

Fatness and Disability

- Over the time period obesity in the U.S. doubled, the number of DI beneficiaries almost doubled
- Obesity associated with increased risk of disability (Burkhauser and Cawley, 2005; Lakdawalla, Bhattacharya, and Goldman, 2004; Ferraro et al., 2002; Narbro et al., 1996)
 - Use BMI as measure of fatness
 - Use self-reports of disability and DI benefit receipt
- No previous research has examined whether more medically accurate measures of fatness are better predictors of disability

Research Question

- Which measures of fatness are most predictive of application for Disability Insurance benefits? Does the best measure vary by gender or race?
 - Application within 5 year and 10 year period
- Contribution:
 - Use various measures of fatness
 - Know application for DI from SSA records

Data

- Use restricted access National Health and Nutrition Examination Survey (NHANES) III linked SSA Master Beneficiary Record and Mortality files
- NHANES III:
 - Nationally representative cross-sectional survey conducted from 1988 to 1994
 - Interview and medical exam components
 - Collect numerous measures of fatness
 - 31,311 examined respondents

Data

- Social Security Administration (SSA) Master Beneficiary Record (MBR) file
 - Contains Old-Age, Survivors, and Disability Insurance (OASDI) eligibility and benefit information from 1962 through 2003
- Death certificate information found in the National Death Index (NDI) from 1988 through 2000
- Greater than 90% match rate from NHANES III respondents to Social Security records

Data

- Sample restrictions:
 - Working age population (respondents ages 21 to 48 at time of medical exam)
 - Were not already recipients of DI
 - Did not die within 5 or 10 years of medical exam
- Hispanics excluded because the sample used to generate PBF equations excluded Hispanics
- Sample Sizes:
 - Black Men: 1,026
 - White Men: 1,083
 - Black Women: 1,187
 - White Women: 1,169

Calculating Fatness

- TBF and PBF are calculated using two measures: BIA and skinfold thicknesses
- BIA:
 - Convert Valhalla system measurements of BIA resistance from NHANES III into RJL system numbers using Chumlea et al. (2002) equations
 - Then use Sun et al. (2003) prediction equations to generate FFM
 - $TBF = \text{Total Body Weight (TBW) (in kg)} - FFM$
 - $PBF = TBF / TBW$

Calculating Fatness

- Skinfolds
 - Use caliper measurements of tricep and subscapular skinfold thicknesses
 - Converted to PBF using two-step process: predict body density based on the age and gender specific formulas provided in Durnin and Womersley (1974); compute PBF using Siri (1956) body density conversion equation

Calculating Fatness

- We use three different measures of BMI based on:
 - Self-reported weight and height
 - Self-reported weight and height adjusted using Cawley and Burkhauser (2006) factors
 - Measured weight and height

Calculating Fatness

- WC is recorded in cm and taken directly from the NHANES III
- WHR is also taken directly from the NHANES III
- All measures of fatness are also dichotomized into indicators of excessive fatness using the previously mentioned thresholds

Measures of Fatness

- Use a total of 17 measures of fatness
- TBF, FFM, PBF (BIA), PBF (skinfold), PFFM, BMI (self), BMI (self adj.), BMI (measured), WC, WHR, Obese based on each BMI (3), Obese based on each PBF (2), High Risk WC, High Risk WHR

Table 1. Descriptive statistics for Combined Sample

Variables:	Mean (Standard deviation)			
	Men		Women	
	Application for DI within: 5 years	10 years	Application for DI within: 5 years	10 years
Age in Months at Exam	414.737 (92.455)	413.450 (92.163)	415.227 (89.732)	414.738 (89.687)
High School	0.369 (0.483)	0.368 (0.482)	0.410 (0.492)	0.410 (0.492)
Greater than High School	0.440 (0.497)	0.445 (0.497)	0.421 (0.494)	0.422 (0.494)
Married	0.554 (0.497)	0.555 (0.497)	0.513 (0.500)	0.516 (0.500)
Divorced	0.065 (0.247)	0.066 (0.248)	0.122 (0.328)	0.120 (0.325)
Separated	0.028 (0.166)	0.027 (0.162)	0.054 (0.226)	0.054 (0.227)
White	0.514 (0.500)	0.517 (0.500)	0.508 (0.500)	0.509 (0.500)
Black	0.486 (0.500)	0.483 (0.500)	0.492 (0.500)	0.491 (0.500)
Family Income from \$0 to \$9,999	0.115 (0.319)	0.110 (0.313)	0.158 (0.364)	0.156 (0.363)
Family Income from \$10,000 to \$19,999	0.230 (0.421)	0.231 (0.422)	0.223 (0.416)	0.222 (0.416)
Family Income from \$20,000 to \$29,999	0.174 (0.380)	0.175 (0.380)	0.170 (0.376)	0.170 (0.376)
Family Income from \$30,000 to \$39,999	0.163 (0.370)	0.164 (0.371)	0.138 (0.345)	0.138 (0.345)
Family Income from \$40,000 to \$49,999	0.125 (0.330)	0.123 (0.329)	0.121 (0.327)	0.122 (0.328)
Family Income >\$50,000	0.193 (0.395)	0.196 (0.397)	0.190 (0.393)	0.191 (0.394)
Sample Size	2109	2073	2412	2387

Variables:	Men		Women	
	Application for DI within:		Application for DI within:	
	5 years	10 years	5 years	10 years
Fat Free Mass	63.518 (10.285)	63.492 (10.263)	46.049 (7.374)	45.995 (7.353)
Total Body Fat	19.608 (9.456)	19.600 (9.397)	26.083 (12.415)	26.010 (12.395)
Percent Body Fat (PBF)	22.686 (6.697)	22.699 (6.649)	34.467 (8.011)	34.430 (8.012)
Percent Body Fat (Skinfold)	13.726 (11.199)	13.691 (11.146)	29.189 (14.814)	29.122 (14.811)
Percent Fat Free Mass	77.314 (6.697)	77.301 (6.649)	65.533 (8.011)	65.570 (8.012)
Body Mass Index (Measured)	26.369 (5.078)	26.359 (5.050)	26.873 (6.820)	26.834 (6.808)
Body Mass Index (Self-reported)	26.222 (4.499)	26.205 (4.476)	26.244 (6.167)	26.200 (6.149)
Body Mass Index (Self-reported, Adjusted)	26.284 (4.838)	26.265 (4.813)	26.935 (6.491)	26.887 (6.471)
Waist Circumference (WC)	92.175 (13.725)	92.126 (13.656)	87.681 (15.847)	87.565 (15.811)
Waist-to-Hip Ratio (WHR)	0.922 (0.068)	0.921 (0.068)	0.844 (0.077)	0.843 (0.077)
Obese PBF	0.369 (0.483)	0.370 (0.483)	0.702 (0.458)	0.700 (0.458)
Obese Skinfold	0.164 (0.370)	0.162 (0.368)	0.523 (0.500)	0.521 (0.500)
Obese BMI Measured	0.189 (0.391)	0.187 (0.390)	0.269 (0.444)	0.267 (0.442)
Obese BMI Self-reported	0.156 (0.363)	0.154 (0.361)	0.224 (0.417)	0.221 (0.415)
Obese BMI Self-reported, Adjusted	0.169 (0.375)	0.168 (0.374)	0.261 (0.439)	0.258 (0.437)
High Risk WC	0.198 (0.398)	0.196 (0.397)	0.416 (0.493)	0.413 (0.492)
High Risk WHR	0.299	0.298	0.724	0.721

The SSDI Program

- SSDI is an insurance program that provides covered persons benefits in the event of the onset of a disability that meets or exceeds the medical listing
 - SSI is a separate means tested disability benefit program
- In general, to be eligible for DI benefits an applicant must have been covered by the Social Security Program for at least 20 of the previous 40 quarters

The SSDI Program

- What is the relationship between fatness and SSDI application?
 - Obesity is itself is considered a disability if it significantly limits an individual's physical or mental ability to do basic work activities
 - Adjudicators are also instructed to consider the effects of obesity when evaluating disability
 - Obesity is associated with numerous health conditions that can impair someone's work

Model of SSDI Application

- Assume that individual applies for DI benefits if their health (H) falls below some limit (H^*)
- Health is a function of fatness (F) and other characteristics (X)

$$H_i = F_i \beta + X_i \delta + u_i$$

Model of SSDI Application

- Health is unobserved, but we observe DI application
- Applying for DI benefits is related to health:

$$DI_app_i = 0 \text{ if } H_i \geq H^* \text{ or } DI_app_i = 1 \text{ if } H_i < H^*$$

- Normalizing H^* at $H=0$, the probability that one applies for DI benefits can be estimated using a probit regression

Empirical Methods

- Probit model for DI application:

$$DI_app_i = F_i \beta + X_i \delta + u_i$$

- Estimated separately for men and women and for non-Hispanic blacks and non-Hispanic whites
- $DI_app = 1$ if individual i applies for DI benefits and $DI_app = 0$ otherwise
- F_i = measure of fatness
- X_i = demographic characteristics (age, age squared, education, marital status, family income to poverty ratio, family income category)

Table 2. Social Security Disability Insurance Application Probits for Non-Hispanic White Persons Ages 21 to 48

Measure of Fatness:	Men		Women	
	Application for DI within:		Application for DI within:	
	5 years	10 years	5 years	10 years
Total Body Fat (w/ Fat Free Mass)	-0.00123 (-1.21)	-0.00009 (-0.087)	0.00089 (1.43)	0.00237** (2.65)
Fat Free Mass (w/ Total Body Fat)	0.00046 (0.66)	0.00087 (0.99)	-0.00044 (-0.57)	-0.00209 (-1.08)
Percent Body Fat (BIA)	-0.00156 (-1.40)	-0.00100 (-0.73)	0.00088 (0.98)	0.00206** (2.32)
Percent Body Fat (skinfold)	-0.00052 (-0.76)	-0.00023 (-0.36)	0.00042 (1.28)	0.00099** (2.41)
Percent Fat Free Mass	0.00156 (1.40)	0.00100 (0.73)	-0.00088 (-0.98)	-0.00206** (-2.32)
Body Mass Index (measured)	-0.00008 (-0.053)	0.00228* (1.87)	0.00117* (1.70)	0.00261*** (3.24)
Body Mass Index (self-reported)	-0.00011 (-0.070)	0.00265** (2.02)	0.00117* (1.89)	0.00272*** (2.98)
Body Mass Index (self-reported, adjusted)	-0.00019 (-0.13)	0.00251** (2.03)	0.00112* (1.81)	0.00252*** (2.78)
Waist Circumference	-0.00021 (-0.35)	0.00063 (1.27)	0.00072** (2.44)	0.00125*** (2.99)
Waist-to-Hip Ratio	0.00466 (0.053)	0.15039 (1.22)	0.07869* (1.84)	0.12859* (1.84)
Obese by PBF (BIA)	-0.00221 (-0.21)	-0.00131 (-0.12)	0.01377 (1.28)	0.02135 (1.56)
Obese by PBF (skinfold)	-0.00988 (-0.99)	0.01423 (0.88)	0.01319 (1.41)	0.02370** (2.09)
Obese by BMI (measured)	0.01461 (0.72)	0.03378* (1.73)	0.01674 (1.33)	0.04378*** (2.72)
Obese by BMI (self-reported)	0.03244 (1.23)	0.05851** (2.20)	0.02468* (1.69)	0.05966*** (2.88)
Obese by BMI (self-reported, adjusted)	0.02232 (0.94)	0.04494* (1.79)	0.01490 (1.23)	0.04496** (2.51)
High Risk WC	0.00527 (0.31)	0.02274 (1.14)	0.02813** (2.20)	0.03485** (2.61)
High Risk WHR	0.00189 (0.13)	0.01459 (1.03)	0.01175 (1.33)	0.00677 (0.54)

Table 3. Social Security Disability Insurance Application Probits for Non-Hispanic Black Persons Ages 21 to 48

Measure of Fatness:	Men		Women	
	Application for DI within:		Application for DI within:	
	5 years	10 years	5 years	10 years
Total Body Fat (w/ Fat Free Mass)	0.00015 (0.11)	-0.00092 (-0.60)	-0.00020 (-0.32)	-0.00045 (-0.45)
Fat Free Mass (w/ Total Body Fat)	0.00019 (0.21)	0.00168 (1.21)	0.00153 (1.02)	0.00210 (1.06)
Percent Body Fat (BIA)	-0.00008 (-0.048)	-0.00129 (-0.75)	0.00048 (0.70)	-0.00002 (-0.022)
Percent Body Fat (skinfold)	0.00032 (0.45)	-0.00013 (-0.14)	0.00025 (0.52)	-0.00006 (-0.086)
Percent Fat Free Mass	0.00008 (0.048)	0.00129 (0.75)	-0.00048 (-0.70)	0.00002 (0.022)
Body Mass Index (measured)	0.00052 (0.42)	0.00061 (0.40)	0.00113 (1.26)	0.00132 (0.90)
Body Mass Index (self-reported)	0.00079 (0.67)	0.00052 (0.31)	0.00057 (0.60)	0.00086 (0.52)
Body Mass Index (self-reported, adjusted)	0.00071 (0.66)	0.00078 (0.52)	0.00059 (0.65)	0.00082 (0.53)
Waist Circumference	0.00017 (0.30)	0.00015 (0.21)	0.00065* (1.85)	0.00078 (1.30)
Waist-to-Hip Ratio	0.00540 (0.040)	-0.04677 (-0.29)	0.15520** (2.71)	0.20426** (2.10)
Obese by PBF (BIA)	0.01119 (0.66)	0.01113 (0.50)	-0.00529 (-0.37)	-0.01827 (-0.98)
Obese by PBF (skinfold)	0.00727 (0.37)	0.00581 (0.23)	-0.00897 (-0.64)	-0.00795 (-0.42)
Obese by BMI (measured)	0.01082 (0.61)	0.01372 (0.59)	0.02552 (1.63)	0.02881 (1.35)
Obese by BMI (self-reported)	0.01146 (0.58)	0.02983 (1.05)	0.01522 (0.91)	0.01698 (0.70)
Obese by BMI (self-reported, adjusted)	0.00585 (0.31)	0.02721 (1.00)	0.02382 (1.66)	0.01831 (0.87)
High Risk WC	0.00812 (0.40)	0.01612 (0.56)	0.02148** (2.17)	0.03160* (1.87)
High Risk WHR	0.00937 (0.43)	0.00761 (0.33)	0.01104 (0.83)	0.01659 (0.84)

Table 4. Social Security Disability Insurance Application Probits for Non-Hispanic White Persons Ages 21 to 48, w with Family Income

Measure of Fatness:	Men		Women	
	Application for DI w within: 5 years	10 years	Application for DI w within: 5 years	10 years
Total Body Fat (w / Fat Free Mass)	-0.00137 (-1.46)	-0.00049 (-0.46)	0.00049 (0.87)	0.00183** (2.34)
Fat Free Mass (w / Total Body Fat)	0.00072 (1.09)	0.00145 (1.61)	0.00004 (0.056)	-0.00122 (-0.77)
Percent Body Fat (BIA)	-0.00164 (-1.57)	-0.00099 (-0.76)	0.00055 (0.66)	0.00171* (1.88)
Percent Body Fat (skinfold)	-0.00045 (-0.76)	0.00016 (0.25)	0.00025 (0.84)	0.00081* (1.90)
Percent Fat Free Mass	0.00164 (1.57)	0.00099 (0.76)	-0.00055 (-0.66)	-0.00171* (-1.88)
Body Mass Index (measured)	-0.00011 (-0.091)	0.00220* (1.95)	0.00088 (1.18)	0.00233** (2.52)
Body Mass Index (self-reported)	-0.00035 (-0.29)	0.00225* (1.88)	0.00074 (1.10)	0.00233** (2.23)
Body Mass Index (self-reported, adjusted)	-0.00038 (-0.33)	0.00221* (1.94)	0.00071 (1.07)	0.00218** (2.12)
Waist Circumference	-0.00021 (-0.43)	0.00063 (1.36)	0.00057* (1.80)	0.00107** (2.24)
Waist-to-Hip Ratio	-0.04142 (-0.52)	0.03475 (0.31)	0.04417 (1.18)	0.07743 (0.97)
Obese by PBF (BIA)	-0.00165 (-0.17)	-0.00106 (-0.091)	0.01292 (1.21)	0.02130 (1.59)
Obese by PBF (skinfold)	-0.01003 (-1.05)	0.01360 (0.81)	0.00853 (0.96)	0.01870* (1.68)
Obese by BMI (measured)	0.01556 (0.93)	0.03530* (1.88)	0.00870 (0.74)	0.03187* (1.94)
Obese by BMI (self-reported)	0.02807 (1.34)	0.05167** (2.28)	0.01352 (1.09)	0.04617** (2.26)
Obese by BMI (self-reported, adjusted)	0.01794 (0.94)	0.03850* (1.74)	0.00674 (0.61)	0.03506* (1.90)
High Risk WC	0.00615 (0.44)	0.02172 (1.19)	0.02099 (1.58)	0.02530* (1.84)
High Risk WHR	-0.00352 (-0.28)	0.00254 (0.19)	0.00907 (0.98)	-0.00424 (-0.31)

Table 5. Social Security Disability Insurance Application Probabilities for Non-Hispanic Black Persons Ages 21 to 48, with Family Income

Measure of Fatness:	Men		Women	
	Application for DI within: 5 years	10 years	Application for DI within: 5 years	10 years
Total Body Fat (w / Fat Free Mass)	0.00019 (0.15)	-0.00080 (-0.53)	-0.00019 (-0.29)	-0.00046 (-0.53)
Fat Free Mass (w / Total Body Fat)	0.00026 (0.28)	0.00206 (1.49)	0.00145 (0.98)	0.00208 (1.12)
Percent Body Fat (BIA)	0.00003 (0.022)	-0.00081 (-0.46)	0.00056 (0.85)	0.00016 (0.17)
Percent Body Fat (skinfold)	0.00043 (0.65)	0.00022 (0.23)	0.00037 (0.82)	0.00020 (0.34)
Percent Fat Free Mass	-0.00003 (-0.022)	0.00081 (0.46)	-0.00056 (-0.85)	-0.00016 (-0.17)
Body Mass Index (measured)	0.00059 (0.51)	0.00115 (0.76)	0.00104 (1.28)	0.00117 (0.91)
Body Mass Index (self-reported)	0.00089 (0.77)	0.00087 (0.49)	0.00028 (0.33)	0.00039 (0.27)
Body Mass Index (self-reported, adjusted)	0.00080 (0.78)	0.00117 (0.76)	0.00034 (0.42)	0.00043 (0.32)
Waist Circumference	0.00022 (0.40)	0.00037 (0.54)	0.00056* (1.75)	0.00063 (1.21)
Waist-to-Hip Ratio	-0.00162 (-0.012)	-0.05953 (-0.35)	0.11745* (1.90)	0.12412 (1.26)
Obese by PBF (BIA)	0.01323 (0.80)	0.01488 (0.61)	-0.00409 (-0.29)	-0.01551 (-0.90)
Obese by PBF (skinfold)	0.00957 (0.50)	0.01171 (0.43)	-0.00350 (-0.26)	0.00121 (0.072)
Obese by BMI (measured)	0.01063 (0.61)	0.01608 (0.66)	0.02619* (1.74)	0.02982 (1.53)
Obese by BMI (self-reported)	0.01419 (0.71)	0.03089 (0.98)	0.01227 (0.82)	0.01375 (0.65)
Obese by BMI (self-reported, adjusted)	0.00777 (0.41)	0.02993 (1.00)	0.02275* (1.73)	0.01794 (0.92)
High Risk WC	0.01015 (0.51)	0.01999 (0.69)	0.02095** (2.20)	0.03030* (1.91)
High Risk WHR	0.01243 (0.59)	0.00872 (0.37)	0.00812 (0.55)	0.00921 (0.44)

Summary

- For white men BMI consistently predicts future application for DI
- For black men no measure of fatness significant predictor of future application for DI
- For white women nearly every measure consistently predicts future application for DI
- For black women only WC and WHR significantly predict future application for DI

Conclusions

- The measure of fatness most predictive of DI application clearly varies depending on race and gender
- Most predictive measure also appears to vary depending on outcome examined i.e. PBF for Employment (Cawley and Burkhauser, 2008)
- Therefore social science data sets should make more of an effort to collect multiple measures of fatness, and researchers should consider the use of multiple measures of fatness where possible

About Me

Research

- Research in the areas of Health Economics and Labor Economics, with an emphasis on the economics of obesity and disability
- Focus on four main areas:
 - What are the economic causes and consequences of the increasing prevalence of obesity?
 - Which measure of fatness best predicts various health and socioeconomic outcomes?
 - How does the Earned Income Tax Credit alter the economic decisions of low-income families?
 - How has the Americans with Disabilities Act affected the employment and economic wellbeing of the disabled?

Some Current Research

- “A Cross-National Comparison of Relative Employment and Economic Well Being of Working Age Men with Disabilities.” (With Richard Burkhauser and Mathis Schroeder).
- “Bringing Home the Bacon: The Impact of Family Income on Child Obesity.”
- “Expanding Waistlines and Wallets: The Impact of Family Income on the BMI of Women and Men Eligible for the Earned Income Tax Credit.” *Health Economics*, Forthcoming.
- “Disability Discrimination Laws and Employer Accommodations: Evidence from the Health and Retirement Study.” (With Richard Burkhauser and Robert Weathers)
- “The Impact of Food Stamps Program Participation and Benefits on Adult Obesity.”

Thank You