

School Policies and Childhood Obesity

Cambio De Colores

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School Policies and Childhood Obesity

- Objective
- Obesity rates
- Data sources
- Results

Objective

- To determine how a child's Body Mass Index (BMI) is affected by state school policies, specifically those focused on food services and physical education policies, and whether such relationships vary by ethnicity

Childhood Obesity

- Between 1963-1965 and 1999-2002
 - The weight of the average child aged 6-11 increased by 9 pounds
 - Boys aged 12-17 average weight increased by 15 pounds
 - Girls aged 12-17 average weight increased by 12 pounds

Source: Center for Disease Control

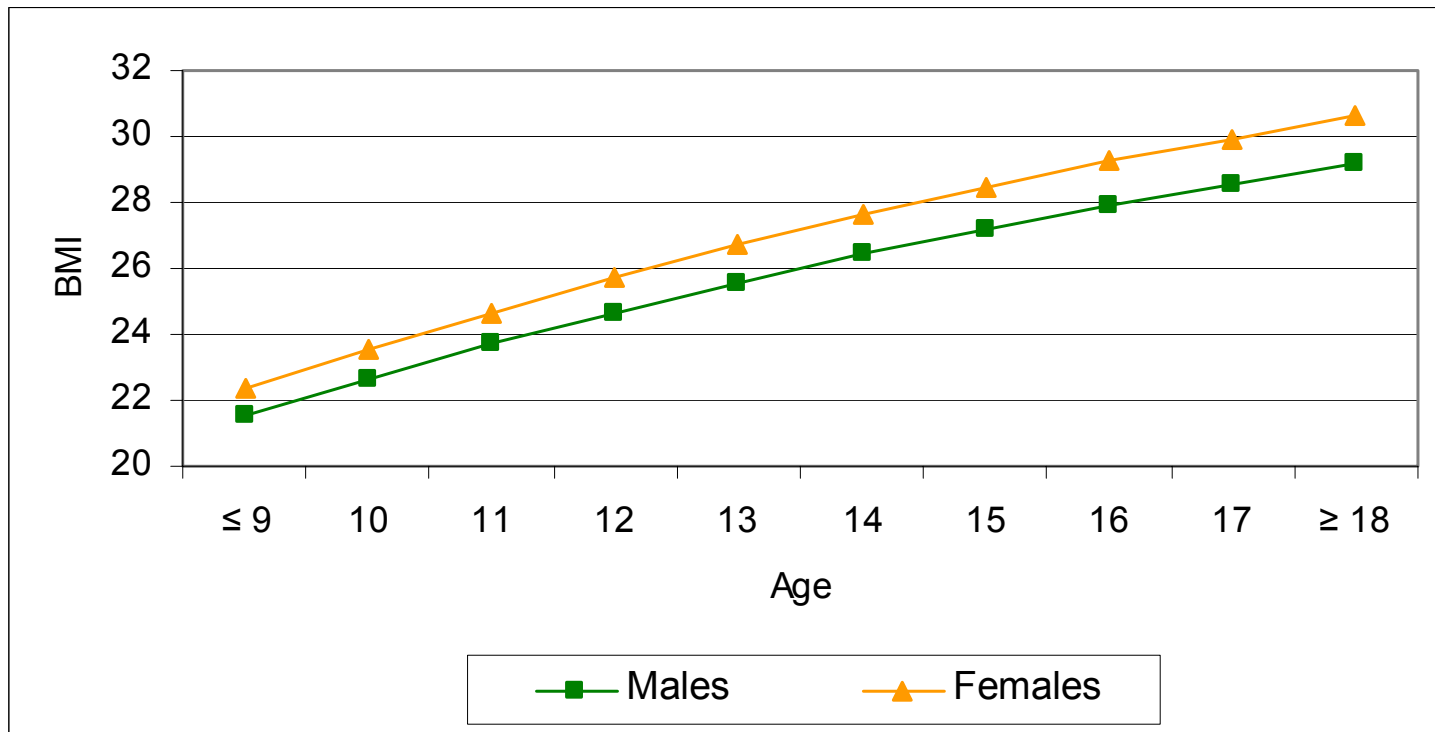
Data Sources

- 2003 Youth Risk Behavior Surveillance Study (YRBSS)
 - 27 states
 - Approximately 65,000 individuals
- 2000 School Health Policies and Programs Study (SHPPS)

Body Mass Index

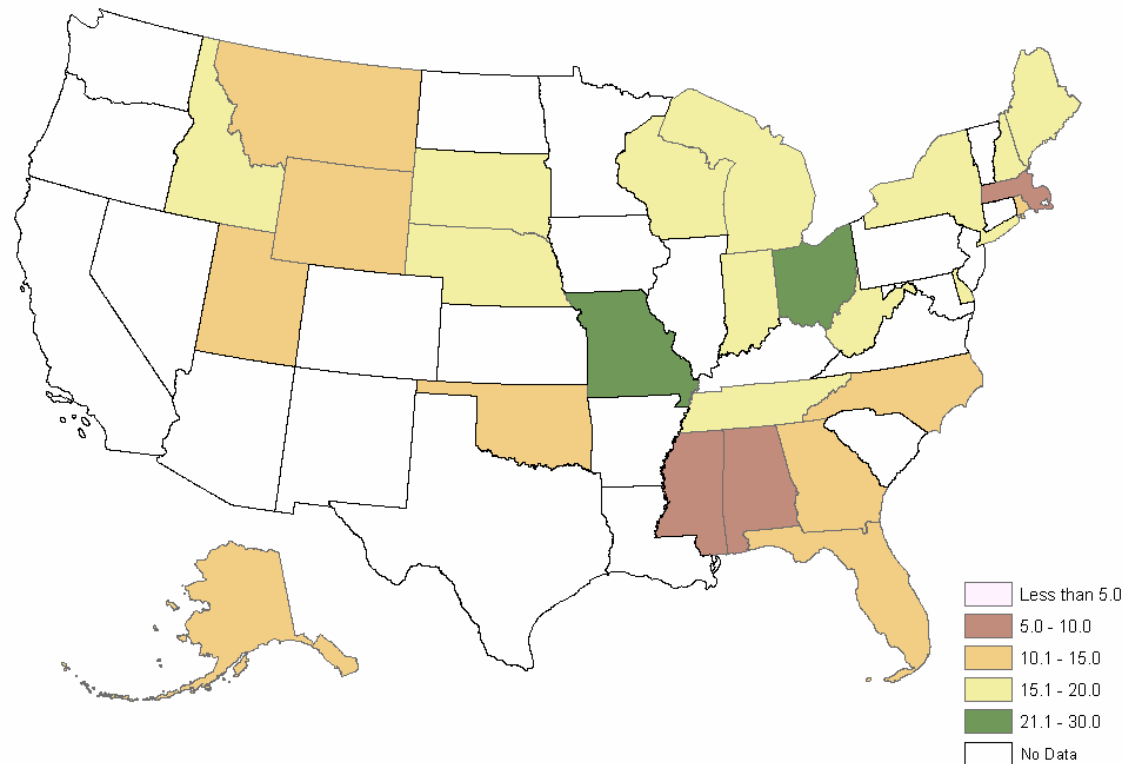
$$\text{BMI} = \left(\frac{(\text{Weight in pounds})}{(\text{Height in inches})^2} \right) \times 703$$

95th BMI Percentile

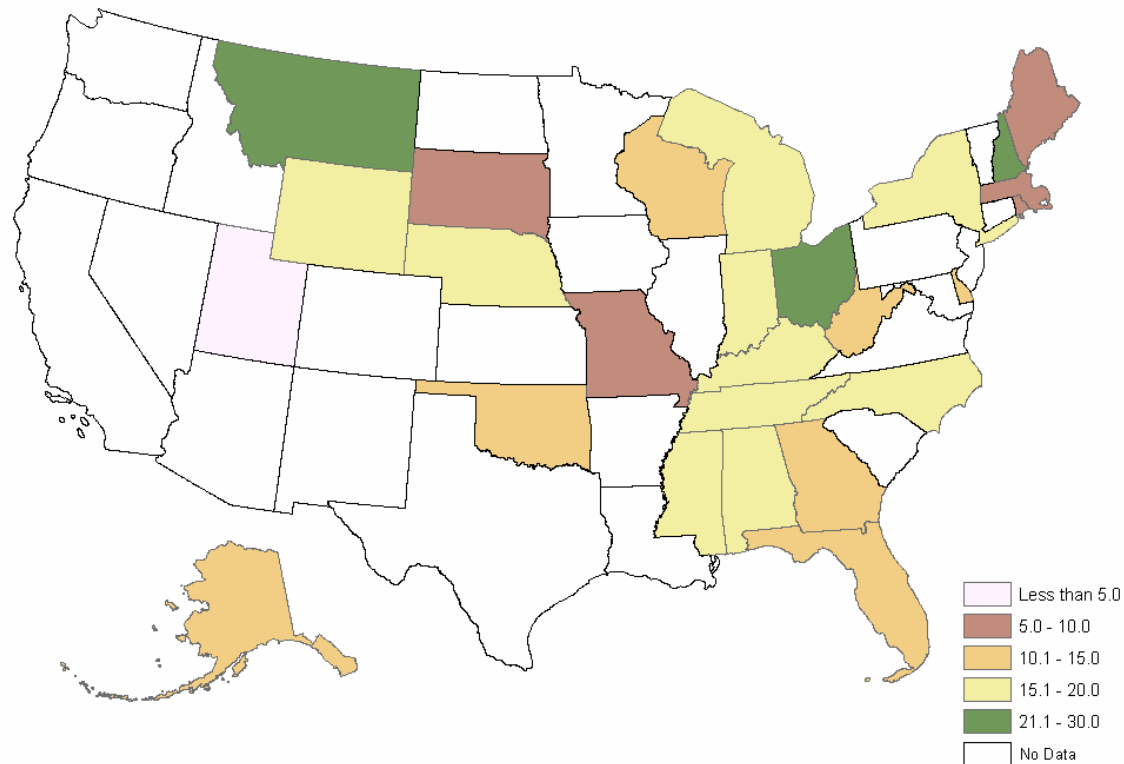


Source: Center for Disease Control

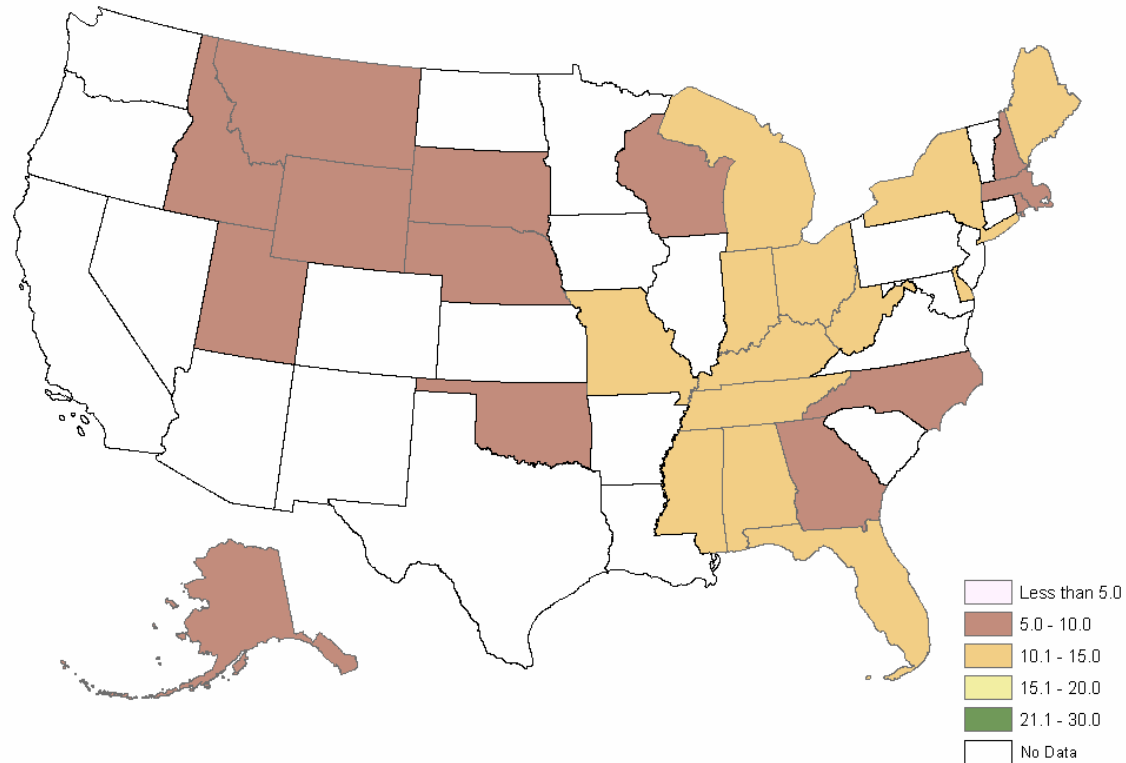
Percentage of Overweight Hispanic or Latino Youth by State 2003



Percentage of Overweight Black or African American Youth by State 2003



Percentage of Overweight White Youth by State 2003



School Policies

- Physical Education
 - 63 policies included in SHPPS
 - Require PE Coordinators
 - Adopt PE goals, objectives, and expected outcomes
 - Provide funding for staff development on Physical Education Topics

School Policies

- Food Service

- 44 policies included in SHPPS

- Require districts to have Food Service Coordinator
 - Require schools to offer breakfast and lunch
 - Restrict foods provided in vending machines
 - Prohibit “junk food” in various locations
 - Provide funding for staff development on Food Service Topics

Model Includes

- Child Level Characteristics
 - Age
 - Gender
 - Trying to lose weight
 - Exercising to lose weight
 - Eating less to lose weight
 - Taking pills to lose weight
 - Vomiting to lose weight
 - Eating green salad

Model Includes

- Child's physical activity
 - Vigorous activity
 - Hours watching TV
 - Sport team participation

Model Includes

- “Junk Food” Policies

- Prohibiting junk food in

- A la carte during breakfast and lunch
 - Concession stands
 - In vending machines
 - In school stores

“Junk Food” is defined as foods which provide calories primarily through fats or added sugars and have minimal amounts of vitamins and minerals.

Model Includes

- High School PE Policies

If the state

- Adopted goals, objectives, and expected outcomes
- Requires written, skills, and performance tests
- Requires student to teacher ratio
- Provides information or plans to assess or evaluate students

Model Includes

- State Control Variables
 - State per capita income
 - Percent female headed households
 - Percent low birth weight
 - Minimum January temperature

Quantile Regression

- Mechanism for estimating models for the conditional median function
- 50th quantile similar to OLS regression
- Examine any percentile of the dependent variable distribution

Why Quantile Regression

- Allows focus to be on the individual with higher BMI
- Allows examination of how policies affect different sections of the population

Hispanic or Latino Quantiles

	Hispanic or Latino Youth			
	75	85	90	95
Constant	28.43 **	34.24 **	35.78 **	44.63 **
Age	0.37 **	0.38 **	0.43 **	0.52 **
Male	2.30 **	2.77 **	2.89 **	2.91 **
Trying to lose weight	-0.93 **	-1.13 **	-1.25 **	-1.12 **
Exercising to lose weight	-1.45 **	-1.16 **	-1.51 **	-1.12 *
Eating less to lose weight	-2.16 **	-2.50 **	-2.43 **	-2.27 **
Fasting to lose weight	0.29	0.19	0.67	0.97
Taking pills to lose weight	-0.94 *	-1.31 **	-1.78 **	-4.43 **
Vomiting to lose weight	-0.08	-0.31	0.00	0.04
Eat green salad	-0.07	-0.04	-0.03	-0.06
Vigorous exercise	-0.13 **	-0.14 **	-0.16 **	-0.17
Hours watching TV	0.13 **	0.27 **	0.26 **	0.38 **
Sport team participation	-0.38 *	-0.31 **	-0.34 **	-0.36
"Junk Food" Policies	0.27	0.19	0.25	-0.11
High School PE Policies	-0.03	0.01	-0.02	-0.11
State per capita income	-0.11	-0.11	-0.12	-0.29 *
Female headed households	0.84 **	0.36	0.46	0.80
Low birth rate	-0.07	0.03	-0.09	-0.01
Minimum January temperature	-0.03 **	-0.06 **	-0.06 **	-0.08 **

Hispanic or Latino Youth

- Vigorous exercise – decreases
- Hours watching TV – increases
- Sport team participation – decreases

Black or African American Quantiles

	Black or African American Youth			
	75	85	90	95
Constant	31.79 **	35.16 **	42.57 **	41.55 **
Age	0.44 **	0.57 **	0.65 **	0.62 **
Male	0.64 **	0.81 **	0.68 *	1.13 *
Trying to lose weight	-0.99 **	-1.08 **	-1.19 **	-1.42 **
Exercising to lose weight	-1.63 **	-1.85 **	-2.04 **	-1.34 **
Eating less to lose weight	-2.43 **	-3.01 **	-3.23 **	-3.81 **
Fasting to lose weight	-0.27	-0.89 *	-0.64	-0.95
Taking pills to lose weight	-1.49 **	-1.17	-2.22 **	-1.40
Vomiting to lose weight	0.31	-0.88	-1.14	-0.17
Eat green salad	-0.06	-0.15	-0.14	-0.02
Vigorous exercise	-0.11 **	-0.13 **	-0.19 **	-0.30 **
Hours watching TV	0.09 *	0.14 *	0.23 **	0.30 *
Sport team participation	-0.19 **	-0.38 **	-0.49 **	-0.73 **
"Junk Food" Policies	-0.58 **	-0.67 **	-0.66 *	-0.73
High School PE Policies	0.04	0.09	0.09	-0.04
State per capita income	-0.02	0.00	-0.03	-0.10
Female headed households	-0.52	-0.58	-0.57	-0.10
Low birth rate	0.98 **	1.22 **	0.94 *	0.86
Minimum January temperature	-0.01	0.00	0.01	0.03

Black or African American Youth

- Vigorous exercise – decreases
- Hours watching TV – increases
- Sport team participation – decreases
- “Junk Food” policies – decreases

White Quantiles

	White Youth			
	75	85	90	95
Constant	23.65 **	25.88 **	27.93 **	31.83 **
Age	0.40 **	0.44 **	0.54 **	0.48 **
Male	2.70 **	3.20 **	3.48 **	3.92 **
Trying to lose weight	-0.82 **	-0.88 **	-0.93 **	-0.86 **
Exercising to lose weight	-1.16 **	-1.40 **	-1.65 **	-1.86 **
Eating less to lose weight	-1.53 **	-1.78 **	-1.83 **	-2.12 **
Fasting to lose weight	0.26 **	0.17	-0.01	-0.19
Taking pills to lose weight	-1.01 **	-0.91 **	-1.28 **	-1.57 **
Vomiting to lose weight	0.65 **	0.50 **	0.51	0.08
Eat green salad	0.00	-0.03	0.00	0.05
Vigorous exercise	-0.11 **	-0.17 **	-0.19 **	-0.23 **
Hours watching TV	0.22 **	0.28 **	0.38 **	0.59 **
Sport team participation	-0.29 **	-0.48 **	-0.62 **	-0.83 **
"Junk Food" Policies	-0.04	-0.06	-0.01	-0.10
High School PE Policies	-0.01	0.01	-0.02	0.03
State per capita income	-0.05 **	-0.07 **	-0.09 **	-0.08 *
Female headed households	0.29 **	0.29 **	0.41 **	0.33
Low birth rate	0.12 **	0.19 **	0.17 *	0.22 *
Minimum January temperature	-0.01 **	-0.01 **	-0.01	-0.01

White Youth

- Vigorous exercise – decreases
- Hours watching TV – increases
- Sport team participation – decreases

Conclusions

- Child's physical activity reduces BMI
- Results vary based on the policy examined
- No clear evidence that statewide policies affect overweight kids

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