

# Obesity Prevention in Young Children Attending Child Care

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2.11.10



# Child care attendance in the US

- Nearly 3/4 of children ages 2 to 6 years are in some form of child care
  - Close to half attend child care centers
  - Other half in home-based settings
    - Family child care home
    - Family, friend, neighbor care

# Child care attendance and obesity

1. Children who attended part-time child care ages 3 to 5 years had decreased risk of obesity between ages 6 to 12 compared to no child care

Lumeng JC GK, Appugliese D, Cabral HJ, and ZuckermanB. Preschool child care and risk of overweight in 6-to-12year-old children. *International Journal of Obesity and Related Metabolic Disorders*. 2005;29:60-66.

# Child care attendance and obesity

2. Children who attended child care the year prior to kindergarten had ↑ risk of obesity at start of kindergarten compared to no child care

- Children at greatest risk were cared for in home of family, friend, or neighbor

Maher EJ, Li G, Carter L, Johnson DB. Preschool child care participation and obesity at the start of kindergarten. *Pediatrics*. Aug 2008;122(2):322-330.

# Child care attendance and obesity

## 3. Infants in child care first 6 months of life

- Heavier at 1 year and still at 3 years
- Children at greatest risk cared for in someone else's home

## 4. Infants cared for by a relative first 9 months of life

- Less likely to have been breastfed
- More likely to eat solid foods too early
- Greater weight gain in first 9 months

Benjamin SE, Rifas-Shiman SL, Taveras EM, Finkelstein J, Haines J, Kleinman K, Gillman MW. Early child care and adiposity at 1 and 3 years. *Pediatrics*. 2009 Aug; 124: 555-562 .

Kim J, Peterson, K.E. Association of infant child care with infant feeding practices and weight gain among US infants. *Archives of Pediatric and Adolescent Medicine*. 2008;162(7):627-633.

# Does child care attendance contribute to childhood obesity?

- Poor dietary intake of children in child care
  - *Low fruits, vegetables, fiber*
- Inadequate physical activity in child care
  - *Insufficient time for active play*



# Two approaches to promoting healthy eating and physical activity in child care

1. Policy

2. Intervention



# Regulation of child care in the US

- Each US state has own policies for child care facilities, including DC, Puerto Rico, Virgin Islands, and Dept Of Defense
- Most states regulate 2 main types of facilities: child care centers (“centers”) and family child care homes (“homes”)



**CHAPTER 9 - CHILD CARE RULES**  
**Effective July 1, 2008**

<b>SECTION</b>	<b>.0100 DEFINITIONS</b>	<b>PAGE</b>
.0101	RESERVED FOR FUTURE CODIFICATION	<b>1</b>
.0102	DEFINITIONS	
<b>SECTION</b>	<b>.0200 GENERAL PROVISIONS RELATED TO LICENSING</b>	<b>4</b>
.0201	INSPECTIONS	
.0202	RESERVED FOR FUTURE CODIFICATION	
.0203	RESERVED FOR FUTURE CODIFICATION	
.0204	CHANGES REQUIRING LICENSING	
.0205	PARENTAL ACCESS	
.0206	CAPACITY OF THE CHILD CARE CENTER	
.0207	RESERVED FOR FUTURE CODIFICATION	
<b>SECTION</b>	<b>.0300 PROCEDURES</b>	
.0301	PRE-LICENSING REQUIREMENTS	
.0302	APPLICATION FOR A LICENSE	
.0303	RESERVED FOR FUTURE CODIFICATION	
	<p><b>10A NCAC 09 .1718 REQUIREMENTS FOR DAILY OPERATIONS</b></p> <p>The operator shall provide the following on a daily basis for all children in care:</p> <ol style="list-style-type: none"> <li>(1) Meals and snacks which comply with the Meal Patterns for Children in Child Care standards which are based on the recommended nutrient intake judged by the National Research Council to be adequate for maintaining good nutrition. The types of food and number and size of servings shall be appropriate for the ages and developmental levels of the children in care. The Meal Patterns for Children in Child Care nutrition standards are incorporated by reference and include subsequent amendments. A copy of these standards is available free of charge from the Division at the address in Rule .0102 of this Chapter.</li> <li>(2) No child shall go more than four hours without a meal or a snack being provided.</li> <li>(3) Drinking water shall be freely available to children and offered at frequent intervals.</li> <li>(4) When milk, milk products, or fruit juices are provided by the operator, only pasteurized products or products which have undergone an equivalent process to pasteurization shall be used. Any formula which is prepared by the operator shall be prepared according to the instructions on the formula package or label, or according to written instructions from the child's health care provider.</li> <li>(5) Each infant shall be held for bottle feeding until able to hold his or her own bottle. Bottles shall not be propped. Each child shall be held or placed in feeding chairs or other age-appropriate seating apparatus to be fed.</li> <li>(6) The parent or health care provider of each child under 15 months of age shall provide the operator an individual written feeding schedule for the child. This schedule shall be followed at the home. This schedule shall include the child's name, be signed by the parent or health care provider, and be dated when received.</li> </ol>	

# Model child care policies

## Model Healthy Eating Regulations

- High fat\*, high sugar, and high salt foods are served less than one time per week or are not served
- Sugar sweetened beverages are not served
- Children older than two years are served reduced fat milk (skim or 1%)
- Clean, sanitary drinking water is available for children to serve themselves throughout the day
- Nutrition education is offered to child care providers at least one time per year
- Juice is limited to a total of 4-6 ounces or less per day for children over one year of age
- Child care providers do not use food as a reward or punishment
- Nutrition education is offered to children at least three times per year
- At least one child care provider sits with children at the table and eats the same meals and snacks
- Providers encourage, but do not force, children to eat

*\*saturated fat and trans fat*

## Model Physical Activity Regulations

- Children are provided with 60 minutes of physical activity per day, a combination of both teacher led and free play
- Television, video, and computer time are limited to one time per week or less and not more than 30 minutes each time
- Child care providers do not withhold active play time as punishment
- Children with special needs are provided opportunities for active play while other children are physically active
- Children are provided outdoor active play time at least two times per day
- Physical activity education is offered to child care providers at least one time per year
- At least one provider joins children in active play at least one time per day
- Shaded area provided during outdoor play
- Children are not seated for periods longer than 30 minutes except when sleeping or eating
- Physical activity education is offered to children at least three times per year

# STATE RANKINGS FOR HEALTHY EATING AND PHYSICAL ACTIVITY REGULATIONS

Georgia	B
Nevada	B
Colorado	B-
Illinois	B-
Mississippi	B-
Ohio	B-
South Carolina	B-
Tennessee	B-
Alaska	C+
Delaware	C+
Hawaii	C+
Maine	C+
Missouri	C+
New Jersey	C+
New Mexico	C+
Oklahoma	C+
Rhode Island	C+
Texas	C+
Vermont	C+
Virginia	C+
Washington	C+
West Virginia	C+

Alabama	C
Arizona	C
Arkansas	C
California	C
Florida	C
Indiana	C
Iowa	C
Kansas	C
Maryland	C
Massachusetts	C
Michigan	C
Minnesota	C
Montana	C
New Hampshire	C
New York	C
North Carolina	C
Oregon	C
Pennsylvania	C
Utah	C
Wisconsin	C
Wyoming	C
Washington DC	C
Connecticut	C-
Kentucky	C-
Louisiana	C-
Nebraska	C-
North Dakota	C-
Virgin Islands	C-
Department of Defense	C-
South Dakota	D
Puerto Rico	D
Idaho	F

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Hawaii	C+
Maine	C+
Missouri	C+
New Jersey	C+
New Mexico	C+
Oklahoma	C+
Rhode Island	C+
Texas	C+
Vermont	C+
Virginia	C+
Washington	C+
West Virginia	C+

Alabama	C
Arizona	C
Arkansas	C
California	C
Florida	C
Indiana	C
Iowa	C
Kansas	C
Maryland	C
Massachusetts	C
Michigan	C
Minnesota	C
Montana	C
New Hampshire	C
New York	C
North Carolina	C
Oregon	C
Pennsylvania	C
Utah	C
Wisconsin	C
Wyoming	C
Washington DC	C
Connecticut	C-
Kentucky	C-
Louisiana	C-
Nebraska	C-
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Maine	C+
Missouri	C+
New Jersey	C+
New Mexico	C+
Oklahoma	C+
Rhode Island	C+
Texas	C+
Vermont	C+
Virginia	C+
Washington	C+
West Virginia	C+

Alabama	C
Arizona	C
Arkansas	C
California	C
Florida	C
Indiana	C
Iowa	C
Kansas	C
Maryland	C
Massachusetts	C
Michigan	C
Minnesota	C
Montana	C
New Hampshire	C
New York	C
North Carolina	C
Oregon	C
Pennsylvania	C
Utah	C
Wisconsin	C
Wyoming	C
Washington DC	C
Connecticut	C-
Kentucky	C-
Louisiana	C-
Nebraska	C-
North Dakota	C-
Virgin Islands	C-
Department of Defense	C-
South Dakota	D
Puerto Rico	D
Idaho	F

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Missouri	C+
New Jersey	C+
New Mexico	C+
Oklahoma	C+
Rhode Island	C+
Texas	C+
Vermont	C+
Virginia	C+
Washington	C+
West Virginia	C+

Alabama	C
Arizona	C
Arkansas	C
California	C
Florida	C
Indiana	C
Iowa	C
Kansas	C
Maryland	C
Massachusetts	C
Michigan	C
Minnesota	C
Montana	C
New Hampshire	C
New York	C
North Carolina	C
Oregon	C
Pennsylvania	C
Utah	C
Wisconsin	C
Wyoming	C
Washington DC	C
Connecticut	C-
Kentucky	C-
Louisiana	C-
Nebraska	C-
North Dakota	C-
Virgin Islands	C-
Department of Defense	C-
South Dakota	D
Puerto Rico	D
Idaho	F

# Preventing Obesity In The Child Care Setting: Evaluating State Regulations



## ROLE OF CHILD CARE IN OBESITY PREVENTION

Over the past few decades, the prevalence of childhood obesity has risen dramatically in the US. Today, 24.4% of children ages two through five years are classified as either overweight or obese.<sup>1</sup> The preschool period is a critical time for growth and active play.

In the US, children ages two to six are in child care just over half the time. With such high rates of child care, child care settings have the potential to support and promote physical activity.

In the US, child care is the responsibility of each state, and each state has a different approach to regulation and enforcement. As a result, regulations vary considerably.

## EVALUATION OF STATE CHILD CARE REGULATIONS

For this study, experts in nutrition, physical activity, early care and education, and policy and regulation reviewed a number of standards and recommendations that were developed to help child care facilities prevent obesity in young

**NORTH CAROLINA** **OVERALL GRADE: C**

### Healthy Eating Grades

Centers

**C-**

Homes

**C-**

### Physical Activity Grades

Centers

**B-**

Homes

**C-**

To view the full report or individual state report cards, please visit:  
<http://cfm.mc.duke.edu/childcare>

# NC child care regulations

Centers	Homes	Healthy Eating Regulations in North Carolina
✓		Foods of low nutritional value are served infrequently
		Sugar sweetened beverages are not served
		Children older than two years are served reduced fat milk
✓	✓	Clean, sanitary drinking water is available for children to serve themselves throughout the day
		Nutrition education is offered to child care providers
		Juice is limited to a total of 4-6 ounces per day for children over one year of age
	✓	Child care providers do not use food as a reward or punishment
		Nutrition education is offered to children
		At least one child care provider sits with children at the table and eats the same meals and snacks
		Providers encourage, but do not force, children to eat

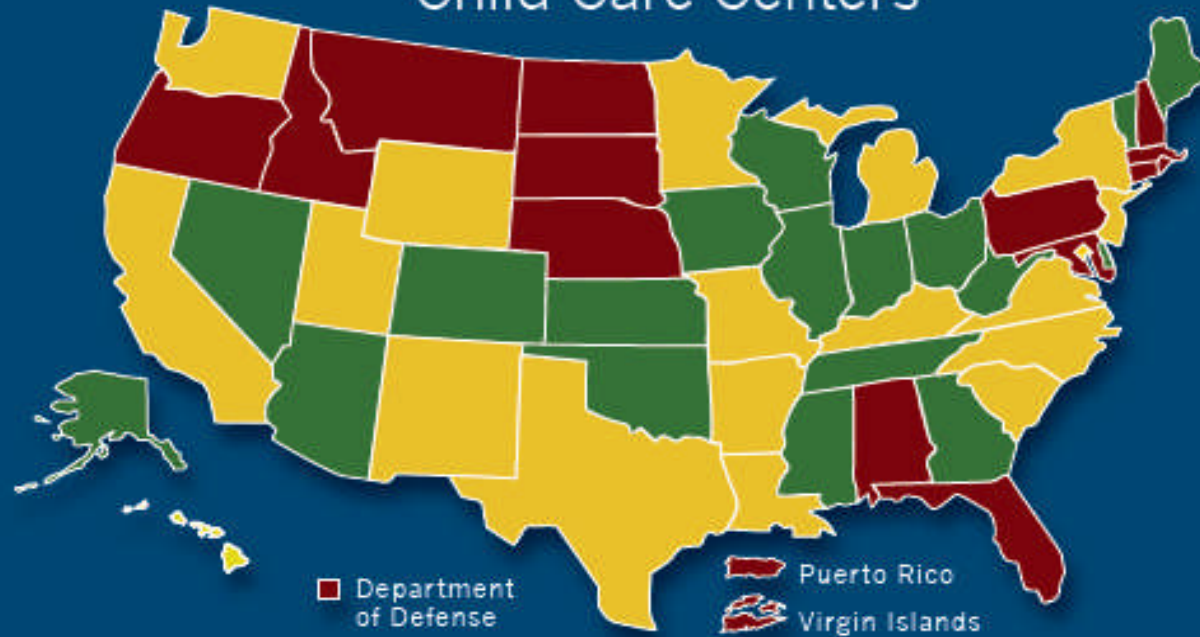
\*Checkmark indicates presence of state regulation

Centers	Homes	Physical Activity Regulations in North Carolina
✓	✓	Children are provided with physical activity daily
		Television, video, and computer time are limited
		Child care providers do not withhold active play time as punishment
		Children with special needs are provided opportunities for active play while other children are physically active
✓	✓	Children are provided outdoor active play time
✓		Physical activity education is offered to child care providers
		At least one provider joins children in active play
✓		Shaded areas are provided during outdoor play
✓		Children are not seated for long periods of time
		Physical activity education is offered to children

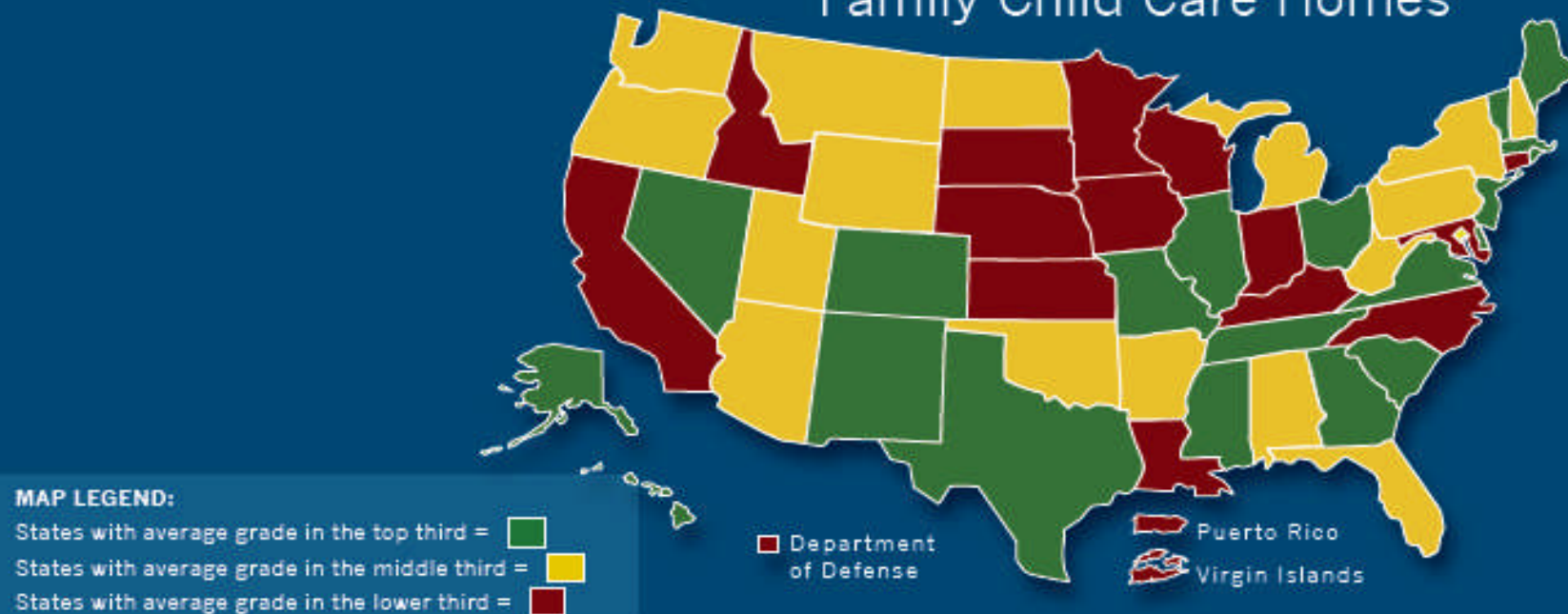
\*Checkmark indicates presence of state regulation



## Child Care Centers



## Family Child Care Homes



# Conclusions

- Most states lacked adequate healthy eating and physical activity policies, esp. for family child care homes
- North Carolina average scores for child care centers and low scores for family child care homes



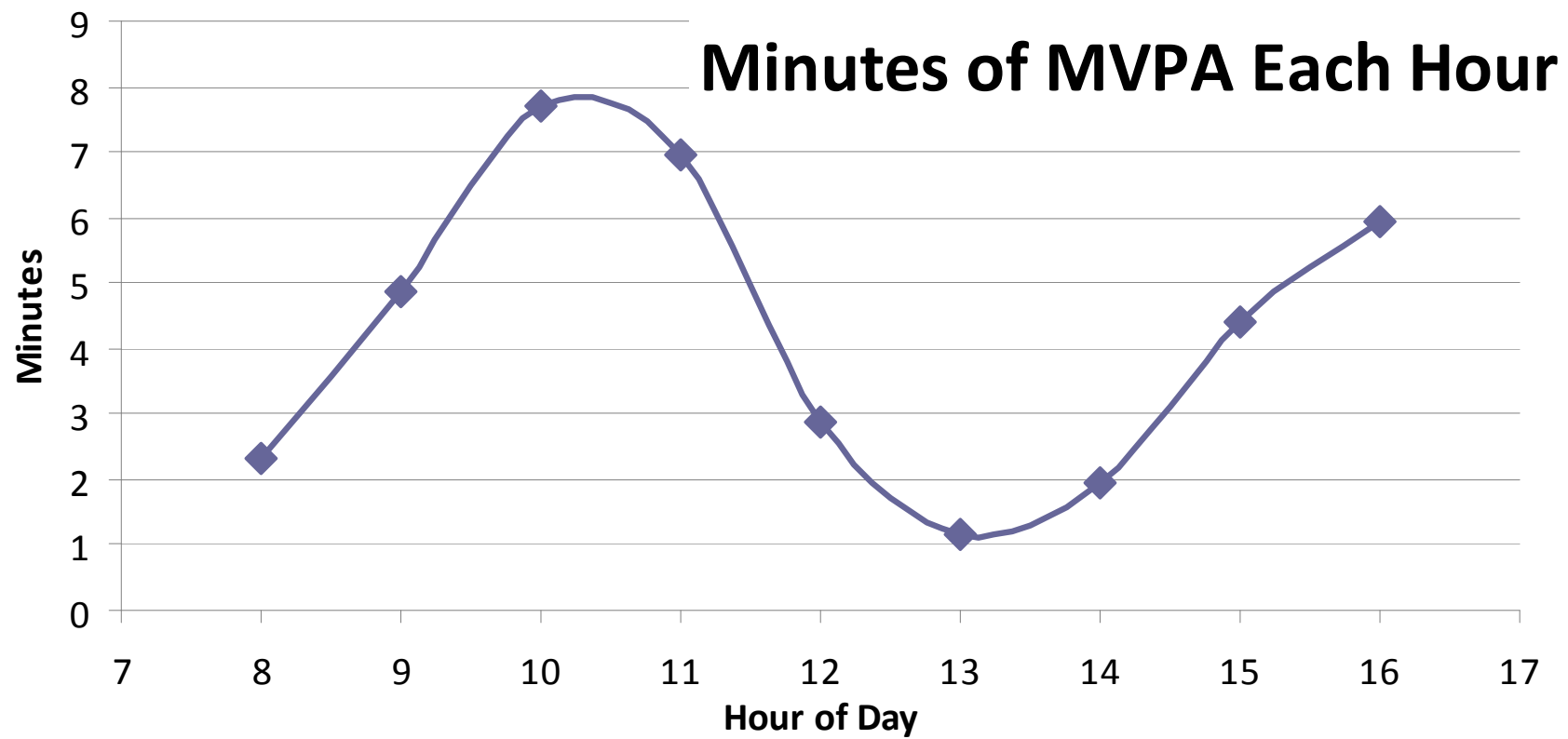
# Physical activity policy

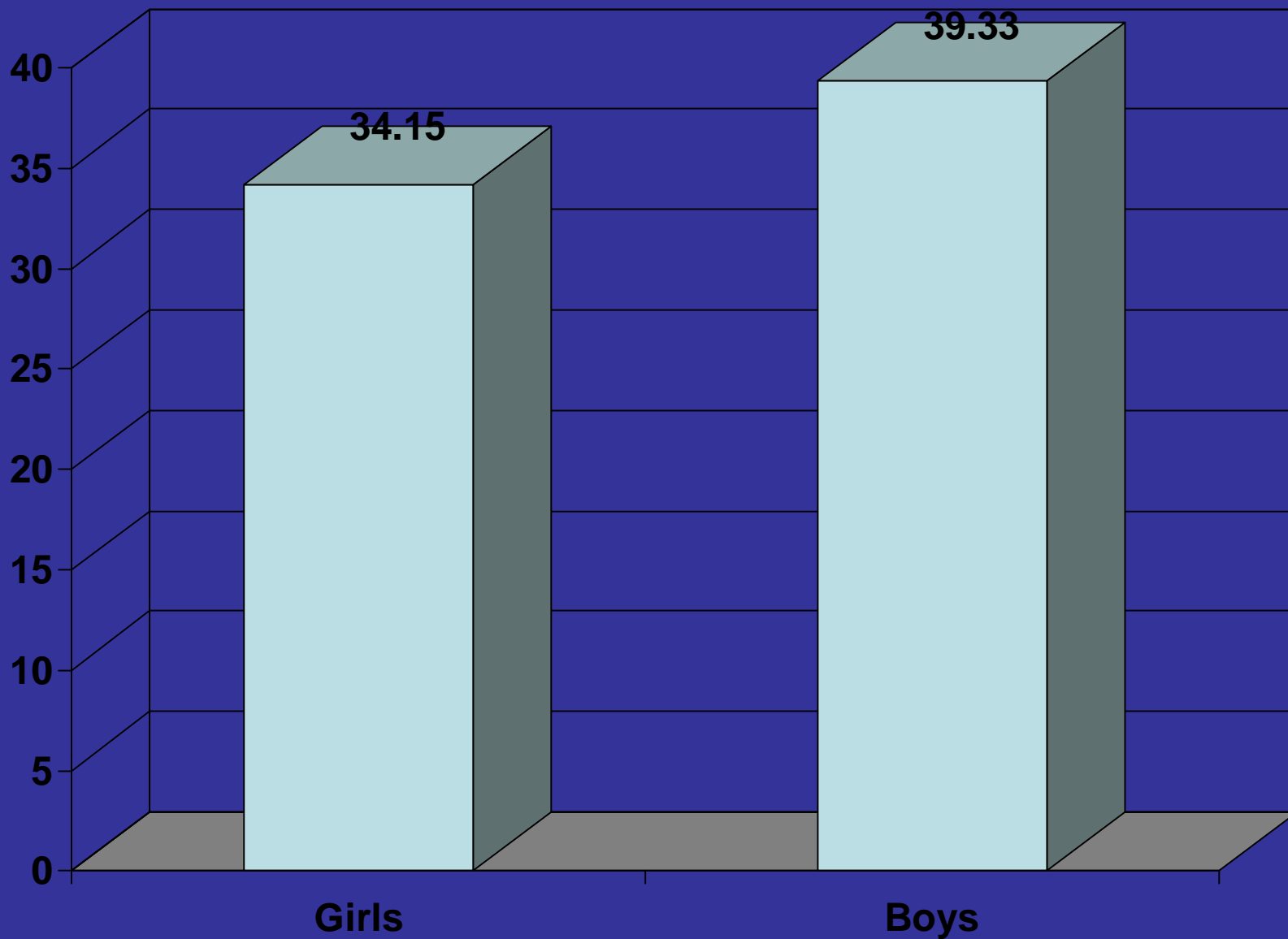
- Delaware, Alaska, and Massachusetts require specific amount of time for physical activity
  - 20-30 minutes for half day care
  - 60 minutes for full-day care

# Physical activity in child care

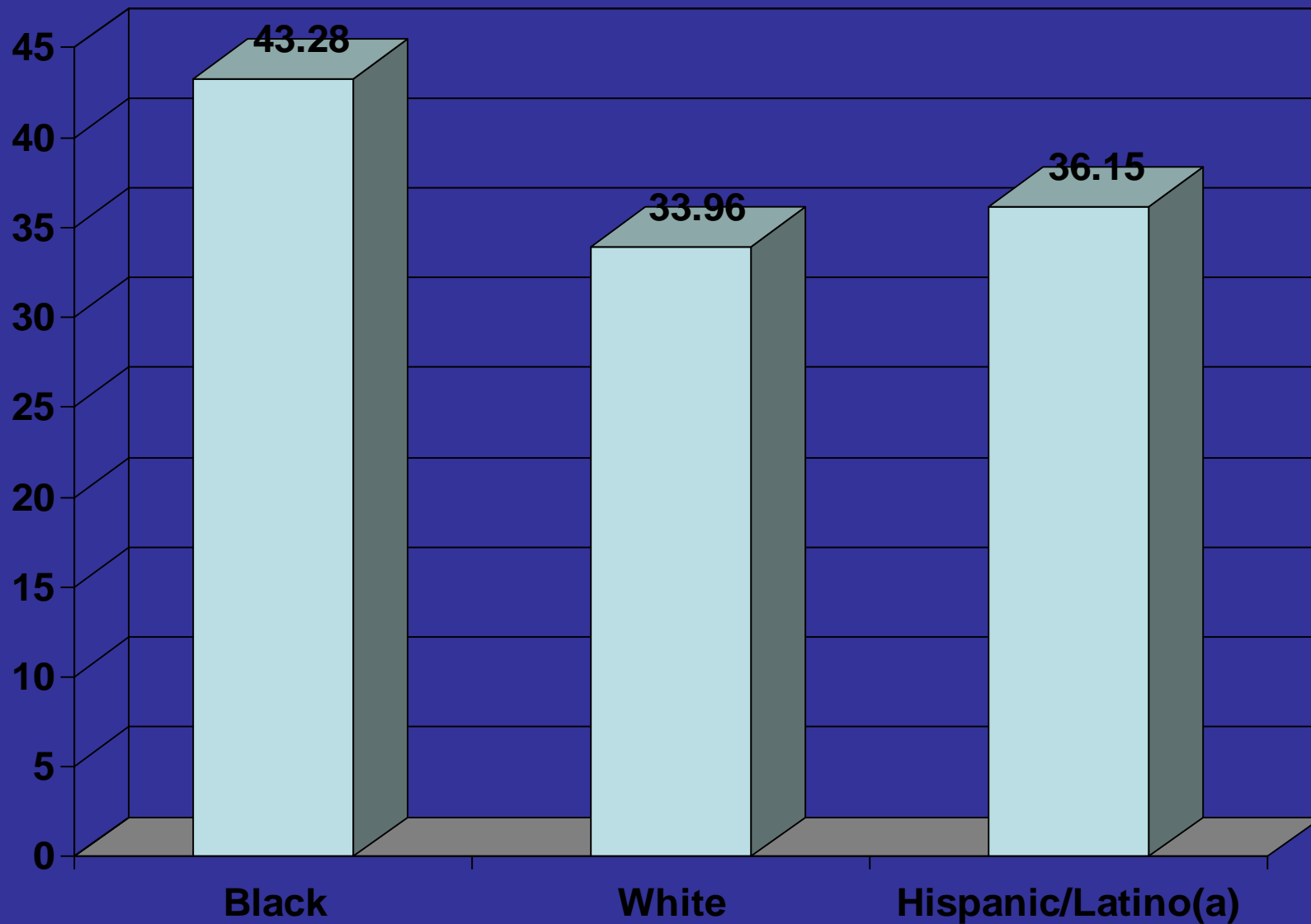
State	Sedentary activity,* minutes	Moderate/vigorous activity, minutes
	<i>Mean (SD, range)</i>	
MA	150 (91-178)	42 (6-88)
RI	165 (93-243)	29 (1-66)
NC	206	43

\*Does not include minutes of slow and easy movement or minutes children spent eating and sleeping





**Minutes of MVPA per day accumulated while in child care for girls and Boys.  
Control for race, how long monitor worn, age, and center.  $P < 0.0001$**



Minutes of MVPA time per day accumulated while in child care. Control for gender, how long monitor worn, age, and center.  $P < 0.0001$

# Healthy eating policy

- Delaware enacted new regulations requiring
  - Low-fat milk for children over 2 years
  - Majority of grains to be whole grains
  - Limit juice (no juice for infants)
  - No sugar-sweetened beverages



# Dietary intake in NC child care

- Children consumed less than recommended for all food groups except milk
- Children consumed 1/3 cup fruit and 1/4 cup vegetables (21% of recommended amount fruit and 16% vegetables)

**Table 1. Foods served to and consumed by 3 to 5 year old children (n=117) in NC child care centers, compared to**

Food/Group	MyPyramid Rec, <sup>a</sup> Daily	Amt. Served		Amt. Consumed	
		Amount	% Rec	Amount	% Rec
Vegetables, total	1.5 C	0.37 C	24.7	0.25 C	16.7
Vegetables, dark <sup>b</sup>	0.5 C	0.07 C	14	0.04 C	7
Fruit	1.5 C	0.48 C	32	0.32 C	21.3
100% Fruit Juice	≤6 oz	3.48 oz	58	2.80 C	46

<sup>a</sup>Based on 1400 kcal diet for 4-year-old girl active 30-60 minutes/day

<sup>b</sup>Based on amounts recommended weekly



# The Nutrition and Physical Activity Self Assessment for Child Care Project (NAP SACC)

Promoting healthy eating and physical activity in  
child care and preschool settings



# NAP SACC Nutrition Areas


1. Fruits and Vegetables
2. Fried Foods/High Fat Meats
3. Beverages
4. Menus and Variety
5. Meals and Snacks
6. Foods Outside of Meals and Snacks
7. Modeling
8. Nutrition Education
9. Nutrition Policies

# NAP SACC Physical Activity Areas

1. Active and Inactive Play
2. TV Use and Viewing
3. Play Environment
4. Modeling
5. Physical Activity Education
6. Physical Activity Policies

# NAP SACC Self-Assessment

- Child care providers self-assess their nutrition and physical activity environments
- Providers work with a trained health professional to identify goals for improvement


**Nutrition And Physical Activity Self-Assessment for Child Care**

Your Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Child Care Center/Home Name: \_\_\_\_\_

Please read each statement or question carefully and check the response that best fits your child care center or home. Your honest responses will help us work with you to build a healthy nutrition and physical activity environment at your center or home.

### SECTION I: NUTRITION

(N1) Fruits and Vegetables				
A. Fruit (not juice) is served:	<input type="checkbox"/> 2 times per week or less	<input type="checkbox"/> 3-4 times per week	<input type="checkbox"/> 1 time per day	<input type="checkbox"/> 2 or more times per day
B. Fruit is served fresh, frozen, or canned in own juice:	<input type="checkbox"/> Rarely or never	<input type="checkbox"/> Some of the time	<input type="checkbox"/> Most of the time	<input type="checkbox"/> All of the time
C. 100% fruit juice is served:	<input type="checkbox"/> 2 or more times per day	<input type="checkbox"/> 1 time per day	<input type="checkbox"/> 2-4 times per week	<input type="checkbox"/> 1 time per week or less
D. Vegetables (not including french fries or fried potatoes) are served:	<input type="checkbox"/> 2 times per week or less	<input type="checkbox"/> 3-4 times per week	<input type="checkbox"/> 1 time per day	<input type="checkbox"/> 2 or more times per day
E. Vegetables served are dark green, red, orange, or yellow in color:	<input type="checkbox"/> Less than 1 time per week	<input type="checkbox"/> 1-2 times per week	<input type="checkbox"/> 3-4 times per week	<input type="checkbox"/> 1 or more times per day
F. Cooked vegetables are prepared with added meat fat, margarine or butter:	<input type="checkbox"/> 1 or more times per day	<input type="checkbox"/> 3-4 times per week	<input type="checkbox"/> 1-2 times per week	<input type="checkbox"/> Less than 1 time per week

(N2) Fried Foods and High Fat Meats				
A. Fried or pre-fried meats (chicken nuggets) or fish (fish sticks) are served:	<input type="checkbox"/> 1 or more times each day	<input type="checkbox"/> 3-4 times per week	<input type="checkbox"/> 1-2 times per week	<input type="checkbox"/> Less than once a week or never
B. Fried or pre-fried potatoes (french fries, tater tots, hash browns) are served:	<input type="checkbox"/> 1 or more times each day	<input type="checkbox"/> 3-4 times per week	<input type="checkbox"/> 1-2 times per week	<input type="checkbox"/> Less than once a week or never
C. High fat meats (sausage, bacon, hot dogs, bologna, ground beef) are served:	<input type="checkbox"/> 1 or more times each day	<input type="checkbox"/> 3-4 times per week	<input type="checkbox"/> 1-2 times per week	<input type="checkbox"/> Less than once a week or never

# NAP SACC

## The Intervention Process

### Step 1

Centers self-assess nutrition and physical activity environments

### Step 2

Centers identify areas for improvement and map out strategies with NAP SACC Consultant

### Step 3

NAP SACC Consultants conduct continuing education workshops for center staff

### Step 4

NAP SACC Consultants provide monthly technical assistance

### Step 5

Centers self-assess nutrition and physical activity environments

# NAP SACC

## Nutrition Improvements



- Moved vending machine from lobby to less visible area
- Wrote nutrition policies
- Revised menus
- Switched to low-fat milk for children over two years

# NAP SACC

## Physical Activity Improvements

- Wrote physical activity policies
- Created indoor play space





# What Providers Said About NAP SACC

*“We started looking at our menus more closely.”*

*“Until this program some of the staff did not realize that fat free milk was ok for children.”*

*“It was surprisingly easy to make these changes.”*

*“The only change that cost money was adding more vegetables to the menu”*

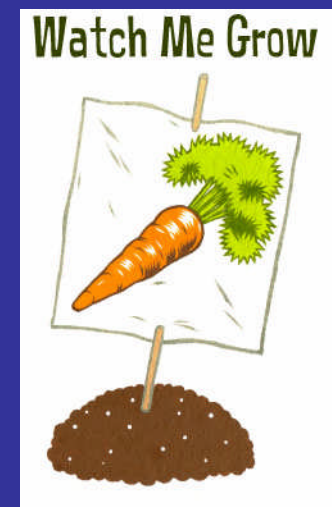


# Children will eat fruits and vegetables

- Providing greater amounts of fruits and vegetables to children increases their consumption
  - Spill and colleagues found that increasing amount of carrots served to preschool children resulted in greater consumption
  - Fisher et al. doubled portion of fruit and vegetables (75g to 150g) served to 4 to 6 year old children and found intake increased by 70% and 38%, respectively

# Watch Me Grow Intervention

- Watch Me Grow (WMG) is a preschool garden program rooted in the community
- Worked with Duke Center for Community Research to engage 3 community partners in Durham County, NC to help deliver the WMG intervention:
  1. SEEDS
  2. Child Care Services Association
  3. Durham County Health Department



# Watch Me Grow Intervention

- Establish gardens in child care to grow fruits and vegetables over the course
- Child Care Nutritionists deliver a coordinated Watch Me Grow curriculum planned around harvest of month.
  - Activity
  - Book
  - Recipe



## Collaborators

Jonathan Finkelstein, MD, MPH (Harvard Medical School)

Matthew Gillman, MD, SM (Harvard Medical School)

Dianne Ward, EdD (UNC-Chapel Hill)

Derek Hales, PhD (UNC-Chapel Hill)

## State Partners

MA Early Education and Care

MA Department of Public Health

Rhode Island Department of Health

Thank you!

