

Availability of Healthy and Unhealthy Beverages in Vending Machines in West Virginia Schools



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 - Coronary Artery Risk Detection in Appalachian Communities (CARDIAC) Project

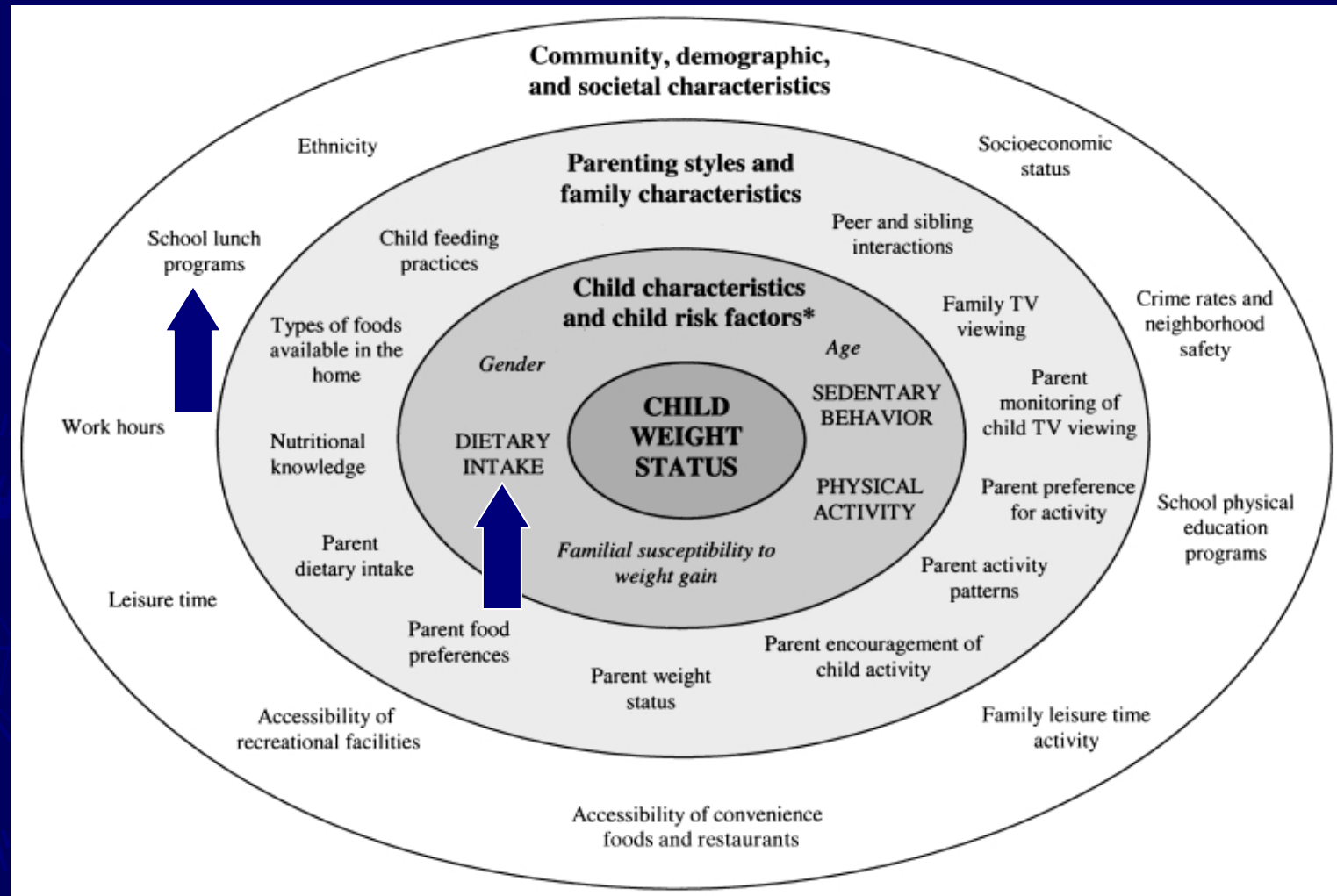
Objectives

- ▶ Background
- ▶ Potential dangers of sugar-sweetened beverages
- ▶ Pertinent regulations in West Virginia
- ▶ Overview of guidelines related to beverages sold in schools
- ▶ Methods of the study
- ▶ Results
- ▶ Conclusions

Childhood Obesity

- ▶ Leads to increased risk in adulthood of:
 - Type 2 diabetes
 - Hypertension
 - Hypercholesterolemia
 - Poor quality of life
- ▶ 32% of children and adolescents in the US are overweight or obese
- ▶ WV ranks in the top five states in the nation in childhood obesity

Ecological Model of Predictors of Childhood Overweight



Sugar-Sweetened Beverages (SSB)

- ▶ Examples: sodas, teas, flavored waters, and fruit drinks
- ▶ Account for 47% of total added sugars in diet
- ▶ Little nutritional benefit, low satiety, high glycemic load
- ▶ Compensation for energy consumed is less for energy in liquid forms than in solid forms
- ▶ Associated with increased BMI
- ▶ Can contribute to diabetes, fractures, dental caries

Sugar-Sweetened Beverages (SSB)

- ▶ Each additional daily serving of SSB increased odds ratio for becoming obese 1.6 times among children ($p=0.02$)
 - Ludwig, Peterson, and Gortmaker, 2001
- ▶ A positive energy balance of 120 kcal per day is associated with a 110-pound increase in weight over a 10-year period
 - Ebbeling, Pawlak, and Ludwig, 2002

Legislation and Policy in West Virginia

- ▶ Standards for School Nutrition 4321.1
- ▶ West Virginia Healthy Lifestyles Act

WV Standards for School Nutrition

- ▶ WV Board of Education Policy 4321.1 – passed 2004
- ▶ Juice or juice products must contain at least 20% real juice.

WV Standards for School Nutrition

▶ Soft Drinks

- Sale of soft drinks is prohibited during the school day in elementary and middle schools, and prohibited during meal times for high schools.
- High schools that permit the sale of soft drinks during the day should make equally available water and 100% fruit or vegetable juice.
- Wherever and whenever soft drinks are sold, reduced or lower fat milk should be made available.

▶ Revenues

- 75% of the profits from the sale of beverages shall be allocated by a majority vote of the faculty senate of each school and 25% of the profits shall be allocated to the purchase of necessary supplies by the principal of the school.

WV Healthy Lifestyles Act

- ▶ HB 2816 – passed April 2005
- ▶ "Healthy beverage"
 - defined as water, one hundred percent fruit and vegetable juice, low-fat milk and other juice beverages with a minimum of twenty percent real juice.
- ▶ Differences from 4321.1
 - Does not require milk to be made available wherever and whenever soft drinks are sold
 - Does require that machines containing "healthy beverages" be in similar locations as soft drink vending machines

Guidelines

- ▶ American Academy of Pediatrics
- ▶ Alliance for a Healthier Generation
- ▶ Institute of Medicine's Nutrition Standards for Foods in Schools

American Academy of Pediatrics 2004

Schools should:

- ▶ Eliminate sweetened beverages
 - Offer real fruit/vegetable juice, water, and low-fat flavored or unflavored milk
- ▶ Prohibit sale of soft drinks as part of or in competition with school lunch programs
- ▶ Enforce the following vending restrictions
 - Avoid creating vended food or beverage contracts without first inviting public discussion
 - Do not place vending machines in cafeterias
 - Turn off vending machines during school hours
 - Prohibit vended soft drinks/fruit-flavored drinks in elementary
 - Preferentially vend sugar free or low in sugar drinks
- ▶ Prohibit consumption of or advertising for food or drinks in classrooms

Alliance for a Healthier Generation 2006

▶ Differences

- Maximum serving sizes on milk products, 100% fruit juice, and other drinks
 - No or low-calorie beverages allowed only in high schools
 - “Other drinks” allowed in high schools if < 66 cal/8 oz serving
 - At least 50% of non-milk beverages in high schools must be water or low- or no-calorie options
 - Restrictions should also apply to after-school programs
 - No restrictions on advertising
- ▶ Beverage industry agreed to make “diligent efforts to encourage their bottlers to adopt this policy,” and strive to fully implement guidelines by the start of 2009-2010 school year

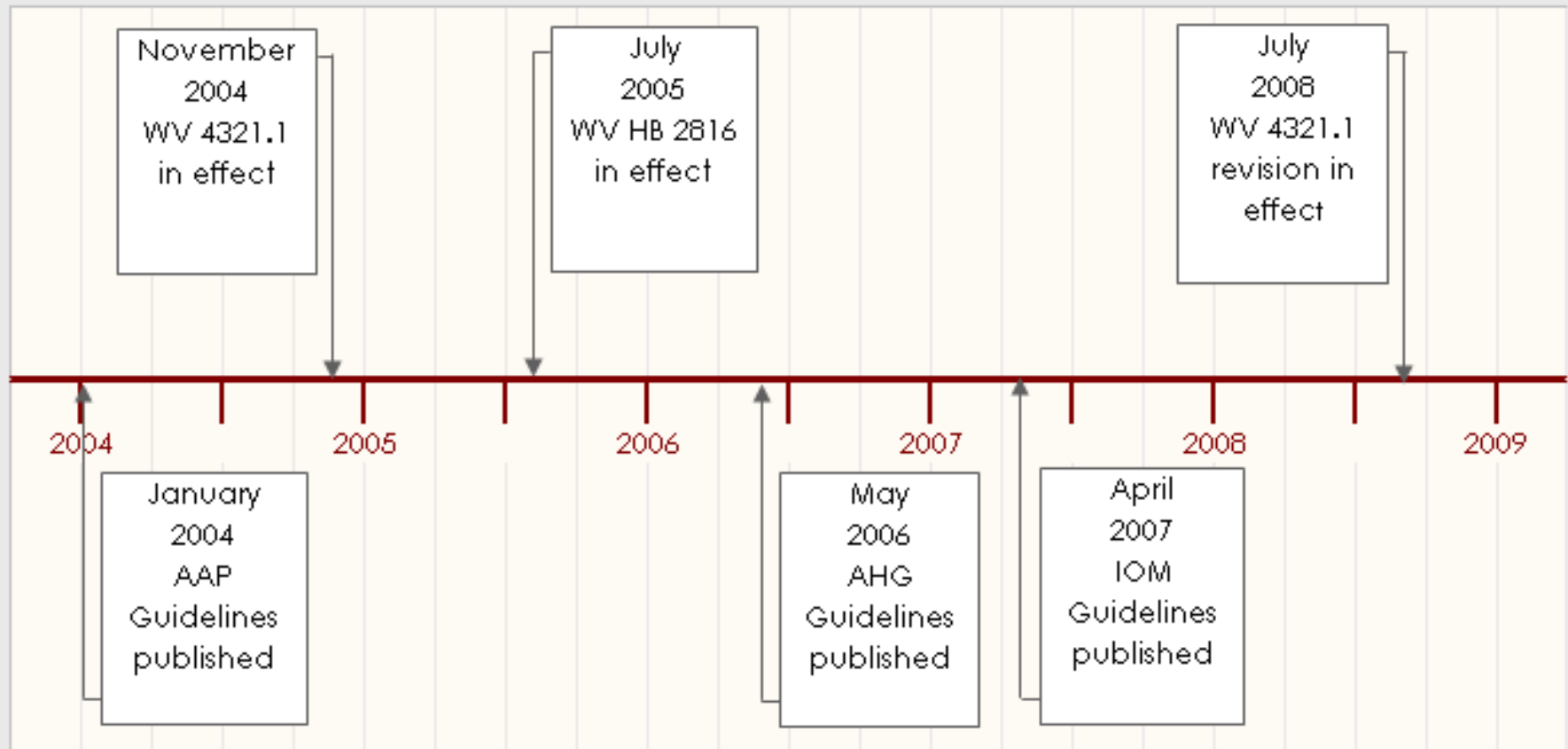
Institute of Medicine

2007

Further recommendations

- ▶ Reduced serving size limits on milk and 100% fruit juice
- ▶ Non-dairy products should have no more than 35% of total calories from sugars
- ▶ Nonnutritive sweeteners (i.e. aspartame or saccharin) should be allowed only in high schools and only after regular school hours
- ▶ Flavored, carbonated, and fortified waters should be restricted
- ▶ Guidelines do not support sale of caffeinated beverages to students of any grade level
- ▶ Sports drinks should only be available at the discretion of coaches to students engaged in vigorous activity ≥ 1 hr
- ▶ Vending machines with non-milk and non-juice beverages should be limited to low traffic areas
- ▶ No product logos on vending machine exteriors

National Guidelines and WV Legislation Timeline



"Dry" Counties in WV

- ▶ 46 of 55 counties in WV no longer allow the sale of soft drinks in schools to students during the school day (all grades)

2007-2008	2008-2009
25	46

Methods

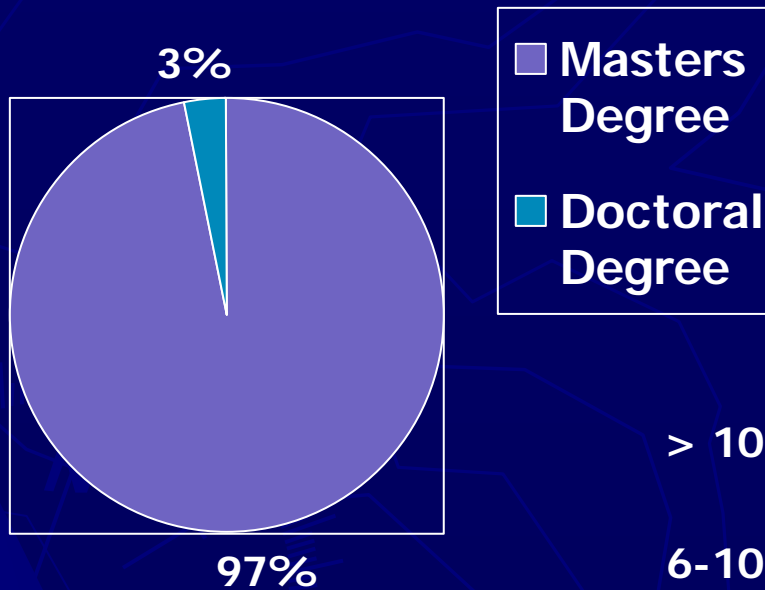
- ▶ Analyses performed in conjunction with an evaluation of the West Virginia Healthy Lifestyles Act
- ▶ Questionnaires administered to principals (696) of all traditional public schools in WV
 - Online survey; mail survey if no response
- ▶ Separate questionnaires for elementary, middle, and high school principals
- ▶ Descriptive statistics were calculated using SPSS v. 16

Results

- ▶ 586 questionnaires completed (84%)
- ▶ 39% indicated that vending machines were available at their school ($p < 0.001$)
 - 15% of elementary schools
 - 78% of middle/junior high schools
 - 97% of high schools

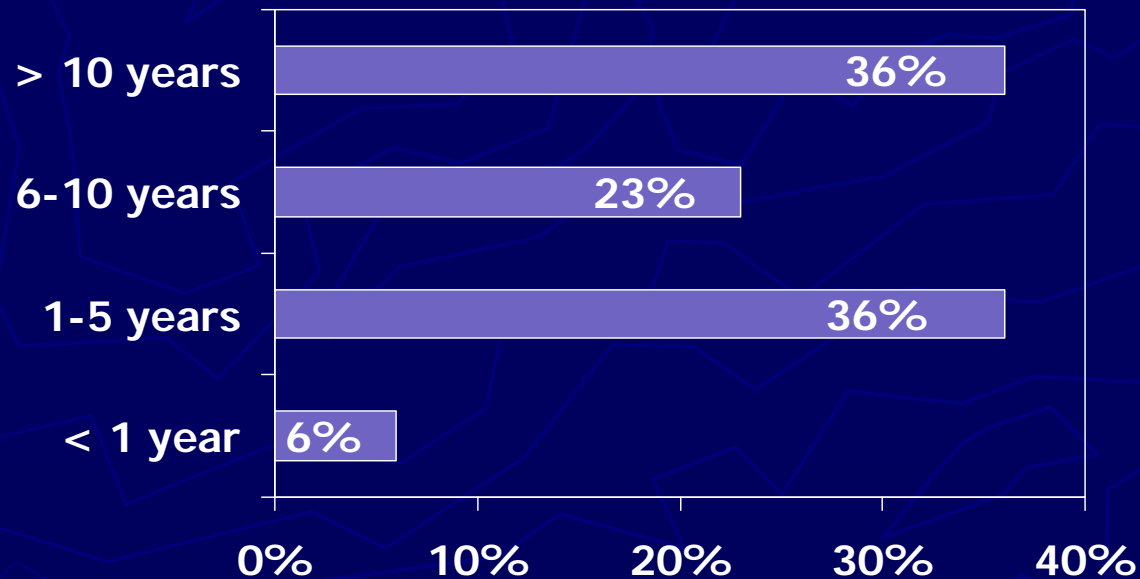
Demographics

Education Level

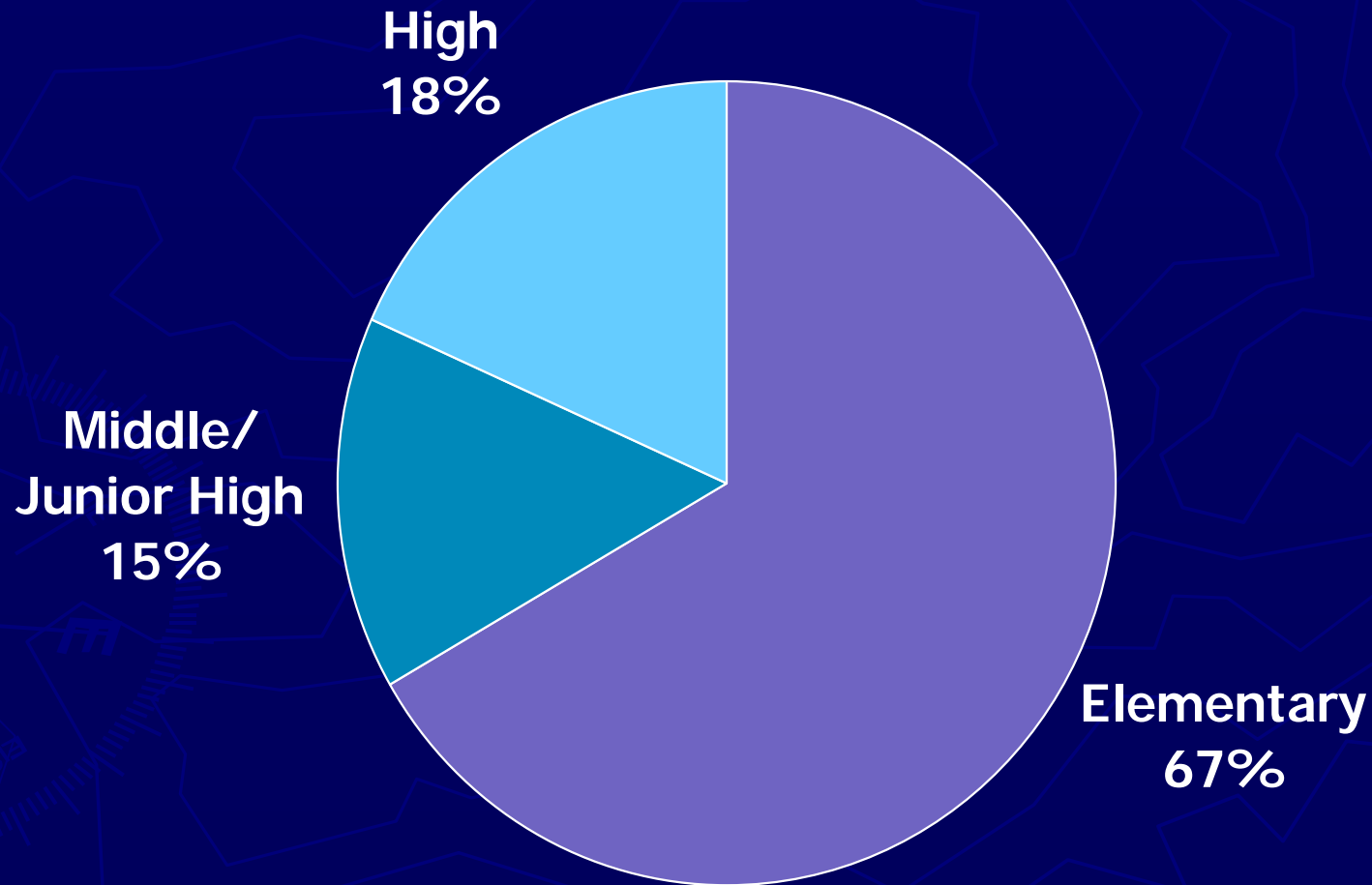


- ▶ Mean age = 50 yr
- ▶ 54% male

Years Experience



Respondent by School Level

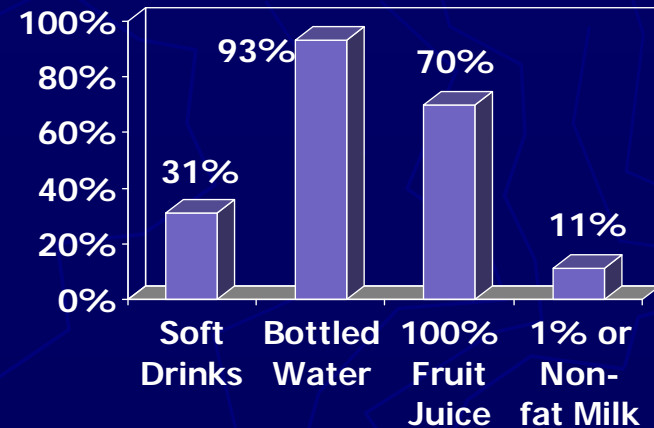


Results

▶ Contents of vending machines

- 31% had soft drinks
- 93% had bottled water
- 70% had 100% fruit juice
- 11% had 1% or non-fat milk

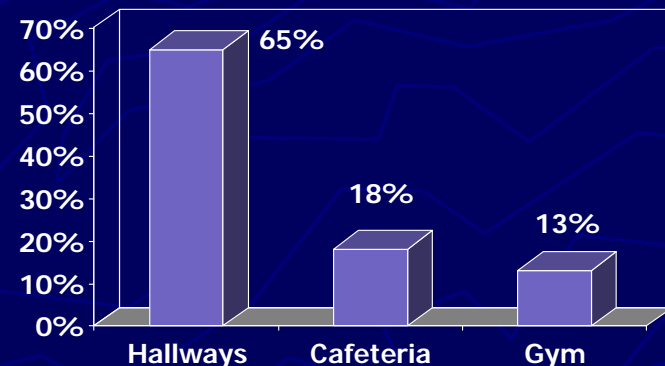
Contents of Vending Machines



▶ Placement

- 65% reported machines in hallways
- 18% reported machines in cafeteria
- 13% reported machines in gym

Placement of Vending Machines



Results

▶ Availability

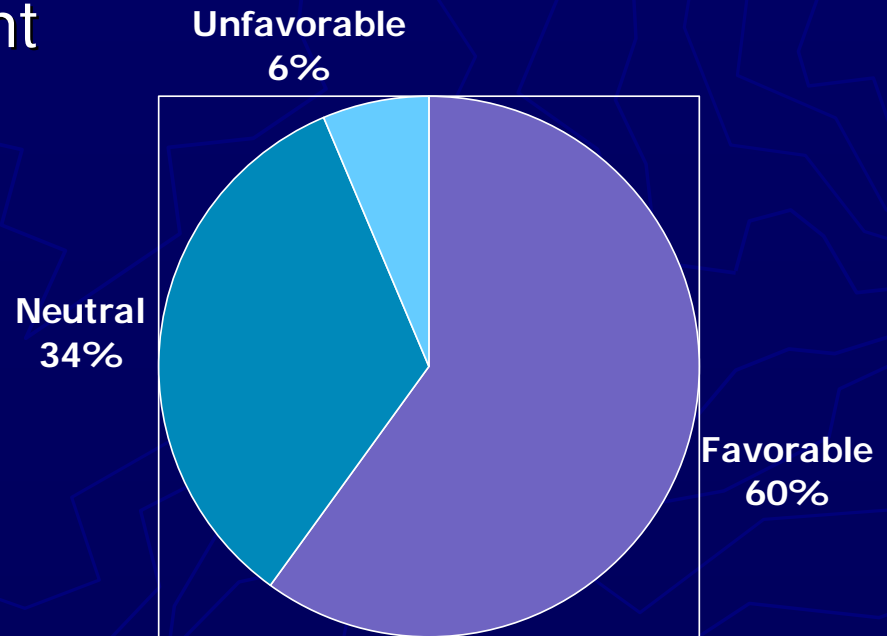
- 12% reported that vending machines were available at all times
 - ▶ 77% of these indicated that revenues from vending machines were somewhat or very important to the school's overall budget
- Elementary schools made vended beverages available least often, high schools the most often

Results

▶ Reaction to the Healthy Beverage requirement

■ Rating of the requirement

- ▶ 60% favorable
- ▶ 34% neutral
- ▶ 6% unfavorable



- This differed significantly by school level ($p < 0.001$), with more high school principals rating the provision negatively

Results

- ▶ When asked, “What food and beverage changes were made?”
 - Soft drinks were eliminated or in some way restricted in
 - ▶ 15 elementary schools
 - ▶ 10 middle/junior high schools
 - ▶ 17 high schools
 - Some or all vending machines were eliminated in
 - ▶ 6 elementary schools
 - ▶ 4 middle schools
 - ▶ 1 high school

Other Findings

- ▶ 67% of schools had serving size guidelines for vended beverages
- ▶ 61% indicated that they were somewhat or very concerned about dietary messages sent to students by items offered in vending machines

WV 4321.1 Revisions

2004	2008
	Beverages other than water, 100% juice, and milk should contain no more than 35% calories from sugar Limit total calories to no more than 200/package
Juice beverages should contain at least 20% juice	Strongly recommends that other juice beverages not contain added sugar Fruit/vegetable juice portion sizes should be limited to no more than 4 oz (elem) or 8 oz (middle/high) per package
Prohibits sale of soft drinks during the school day in elementary and middle/junior high and during mealtimes for high school. High schools selling soft drinks should make equally available water and 100% fruit juice Whenever and wherever soft drinks are sold, reduced or lower fat milk should also be made available	Strongly recommends that only water, 100% juice, and 1% or no-fat milk be sold during the school day at all grade levels
	Prohibit the sale of coffee and coffee-based products during the school day
	Prohibit caffeine-containing beverages
75% of the profits from the sale of beverages shall be allocated by a majority vote of the faculty senate of each school and twenty-five percent of the profits shall be allocated to the purchase of necessary supplies by the principal of the school.	All contracts shall be approved and signed by the county board or county superintendent

Current Events in WV

- ▶ A current member of WV Board of Education
 - Noted that the Healthy Lifestyles Act conflicts with the new School Nutrition Standards and suggested a change in the language of the law
 - Asked State legislature to defer to the Board as the governing body that determines which beverages should allowed in schools

Conclusion/Significance

- ▶ Available data support limits on SSB and ready access to healthy beverages
- ▶ There are conflicting guidelines at the national level
- ▶ While the number of schools in WV that offer healthy beverages (water or 100% fruit juice) are substantial, a moderate amount of unhealthy beverages (such as soft drinks) were available in school vending machines in the 2007-2008 school year
- ▶ This issue is addressed in new state nutrition standards, which strongly recommend that only water, 100% fruit or vegetable juice, or 1% or nonfat milk be sold or distributed during the school day.

References

- ▶ Alliance for a Healthier Generation. Alliance school beverage guidelines. <http://www.healthiergeneration.org/beverages/>. Accessed December 2, 2008.
- ▶ American Academy of Pediatrics Committee on School Health. Soft drinks in schools. *Pediatrics* 2004; 113: 152-4.
- ▶ Beverage Regulations for Mississippi Schools
- ▶ <http://www.cn.mde.k12.ms.us/documents/VendingRegForMSSchools06.pdf>. Accessed December 2, 2008.
- ▶ Davidson KK, Birch LL. Childhood overweight: A contextual model and recommendations for future research. *Obes Rev* 2001; 2(3):159-71.
- ▶ Dixon HG, et al. The effects of television advertisements for junk food versus nutritious food on children's food attitudes and preferences. *Soc Sci Med* 2007; 65: 1311-23.
- ▶ Ebbeling CB, Pawlak DB, Ludwig DS. Childhood obesity: Public-health crisis, common sense cure. *Lancet* 2002; 360: 473-82.
- ▶ Finkelstein DM, Hill EL, Whitaker RC. School food environments and policies in US public schools. *Pediatrics* 2008; 122: e251-9.
- ▶ Institute of Medicine. Nutrition standards for foods in schools: Leading the way toward healthier youth. Institute of Medicine Web site. <http://www.iom.edu/CMS/3788/30181/42502.aspx>. Accessed December 2, 2008.
- ▶ Ludwig DS, Peterson KE, Gortmaker SL. Relation between consumption of sugar-sweetened drinks and childhood obesity: A prospective, observational analysis. *Lancet* 2001; 357: 505-8.
- ▶ Malik VS, Schulze MB, Hu FB. Intake of sugar-sweetened beverages and weight gain: A systematic review. *Am J Clin Nutr* 2006; 84: 274-88.
- ▶ Nicklas TA, Hayes D; American Dietetic Association. Position of the American Dietetic Association: Nutrition guidance for healthy children ages 2 to 11 years. *J Am Diet Assoc* 2008; 108(6): 1038-47.
- ▶ West Virginia University, Health Research Center. Year One Report of the West Virginia Healthy Lifestyles Act, 2009. <http://www.hsc.wvu.edu/som/hrc>