

Beverages Sold in City Parks and the Impact of Nutrition Policy: Lessons Learned from Carson, California

Kimberly Narain, MD, MPH¹, Alfred Mata² & Jeanette Flores²

1. Specialty Training and Advanced Research Fellow, UCLA, 2. California Center for Public Health Advocacy

Introduction

- 17% of children are obese-3X the proportion from one generation ago.¹
- Children eat more calories than they did several decades ago.²
- 50% of excess calories consumed by children come from sugar-sweetened beverages.²
- The environments where children spend time impact the number of calories they consume.³

Research Questions

1. What type of beverages are sold in park vending machines?
1. How does implementation of a municipal nutrition policy impact the types of beverages sold in park vending machines?

Demographic Data

	Carson	Comparison City	Los Angeles County
Children Age 0-17	24%	27%	25%
Childhood Obesity	26%	27%	23%
White	23.8%	23.3%	71.8%
Black	23.8%	43.9%	9.3%
American Indian	0.6%	0.7%	1.5%
Asian	25.6%	1.4%	14.2%
Native Hawaiian	2.6%	0.3%	0.4%
Two or More Races	4.8%	4.1%	2.8%
Other Race	18.7%	26.3%	
Latino Ethnicity	38.6%	50.6%	48.1%
Household Income	\$68,965	\$44,021	\$56,266

Childhood obesity prevalence data was obtained for fifth, seventh and 9th graders attending public schools that participated in the Physical Fitness Testing program between the 2007-2008 school years. Children were considered obese if their BMI exceeded the 95th percentile for their age and weight. Racial, ethnic and age composition data along with median household income data were taken from the 2010 United States Census.

Research Design & Methods

Study Overview: We analyzed the beverage content of park vending machines before and after passage of a nutrition policy in Carson, California. We also analyzed the beverage content of park vending machines in a comparison city, that did not implement a nutrition policy.

Study Design: Natural Experiment (Pre-Post design with comparison group)

Data Collection Strategy:

- 1) **Carson (pre-policy period):** Reviewed vendor records
- 2) **Carson (post-policy period):** Performed field observations of vending machines
- 3) **Comparison city:** Performed field observations of vending machines

Data Abstraction/Beverage Classification:

Nutrition Environment Measurement Survey-Vending (NEMS-V)

NEMS-V Rating System

Rating Criteria	Color
<ul style="list-style-type: none"> • H₂O or • Provides 1 serving of fruit or low-fat dairy • Is <5 calories/serving & < 36% sugar 	Green
<ul style="list-style-type: none"> • Is <5 calories/serving & < 36% sugar 	Yellow
<ul style="list-style-type: none"> • Does not meet criteria for green or red beverages 	Red

Outcomes Measured:

- 1) Average vending machine proportion of green, yellow & red beverages
- 1) City-wide ratio of green/yellow to red beverages

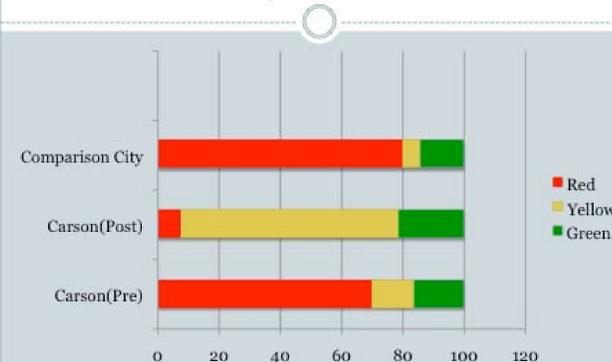
Results

Average Beverage Category % Before and After Nutrition Policy Implementation

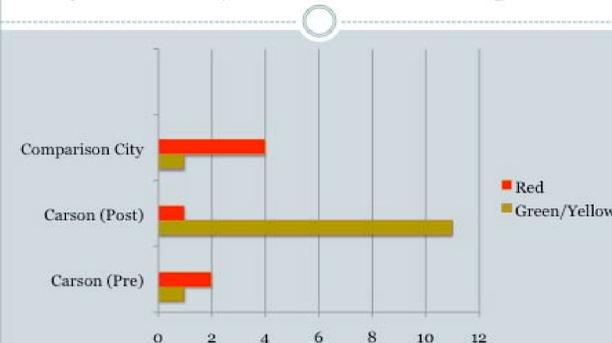
Beverage NEMS-V Categories	Carson (Before)	Carson (After)	Comparison City
Red	70	8	80
Yellow	14	71	6
Green	16	21	14

Vending Machines were surveyed using the Nutrition Environment Measurement Survey-Vending. Values displayed represent the average category percentage across all vending machines surveyed in the city. N=10 (Carson), N=4 (Comparison City)

Average Beverage Category % Before and After Nutrition Policy Implementation



Citywide Green/Yellow to Red Beverage Ratios



Conclusions

1. In Carson, the mean vending machine proportions of red, yellow, and green beverages were 70%, 14%, and 16% before policy implementation
2. After policy implementation the mean vending machine proportions of red, yellow, and green beverages were 8%, 71%, and 21%.
1. In Carson, the ratio of green/yellow to red beverages was 1:2 before policy implementation and 11:1 after policy implementation.

Policy Implications

1. The findings of this study suggest that beverages sold in city parks can be a source of excess caloric consumption for children.
1. This study suggests that nutrition policies can have a significant impact on the types of beverages sold in city parks.

References

1. Bersharov D. Growing overweight and obesity in America: The potential role of federal nutrition programs.2003.
2. Gortmaker S, Long M, Chang W, C. The negative impact of sugar-sweetened beverages on children's health. . 2009;Robert Wood Johnson Foundation.
3. Babey S, Wolstein J, Diamont A. Food environments near home and school related to consumption of soda and fast food.2011.

Acknowledgments

We would like thank the City of Carson for allowing us to do this work as well as the Built Environment Assessment Training Institute, The Robert Wood Johnson Foundation Clinical Scholars Program at UCLA, Arleen Brown, Robert Brook Chi-Hong Tseng and D' Artagnan Scorza.