



# THE COMMUNITY FOOD ENVIRONMENT AROUND LOW-INCOME CHILDREN



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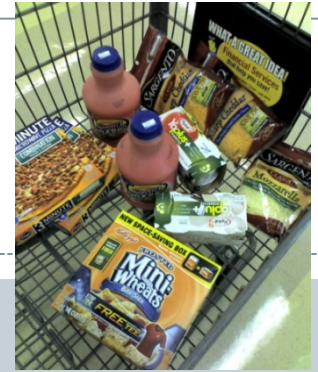
## Location, location, location

“Yes, I walk home now.  
I walk home the 7-11 way.  
It’s great.”

- 16 year old patient in weight management clinic



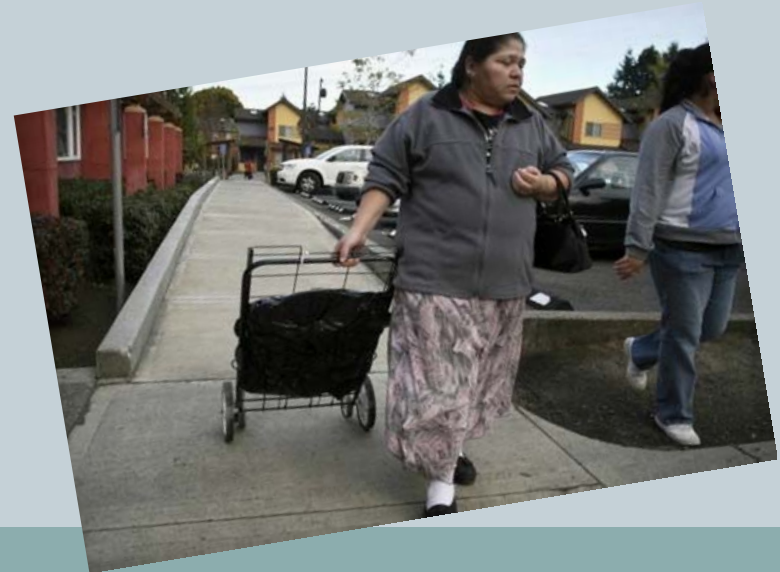
# Logistics



“We shop at the Save Maxx close to us, and I buy whatever is on sale.

A farmer’s market?... Do you know how many buses I would have to take to get to the closest one?

- harried parent



## It takes a village



“My mom stopped giving me spending money because she knows I like to go to the corner store and get Hot Cheetos or something after school.

Now I just get money from the teacher by cleaning the classroom after school.”

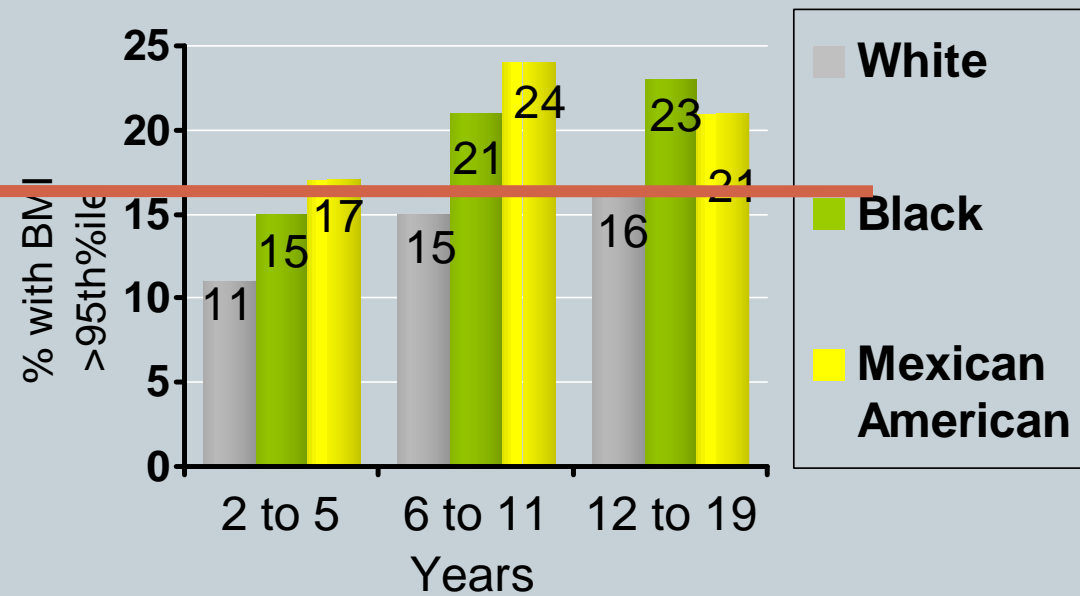
- 11 year old patient



# Who is at highest risk of childhood obesity?

- In the US, obesity is more prevalent in low-income populations (Wang, 2001)
- African-American and Hispanic youth have highest rates of obesity (Ogden, 2008)

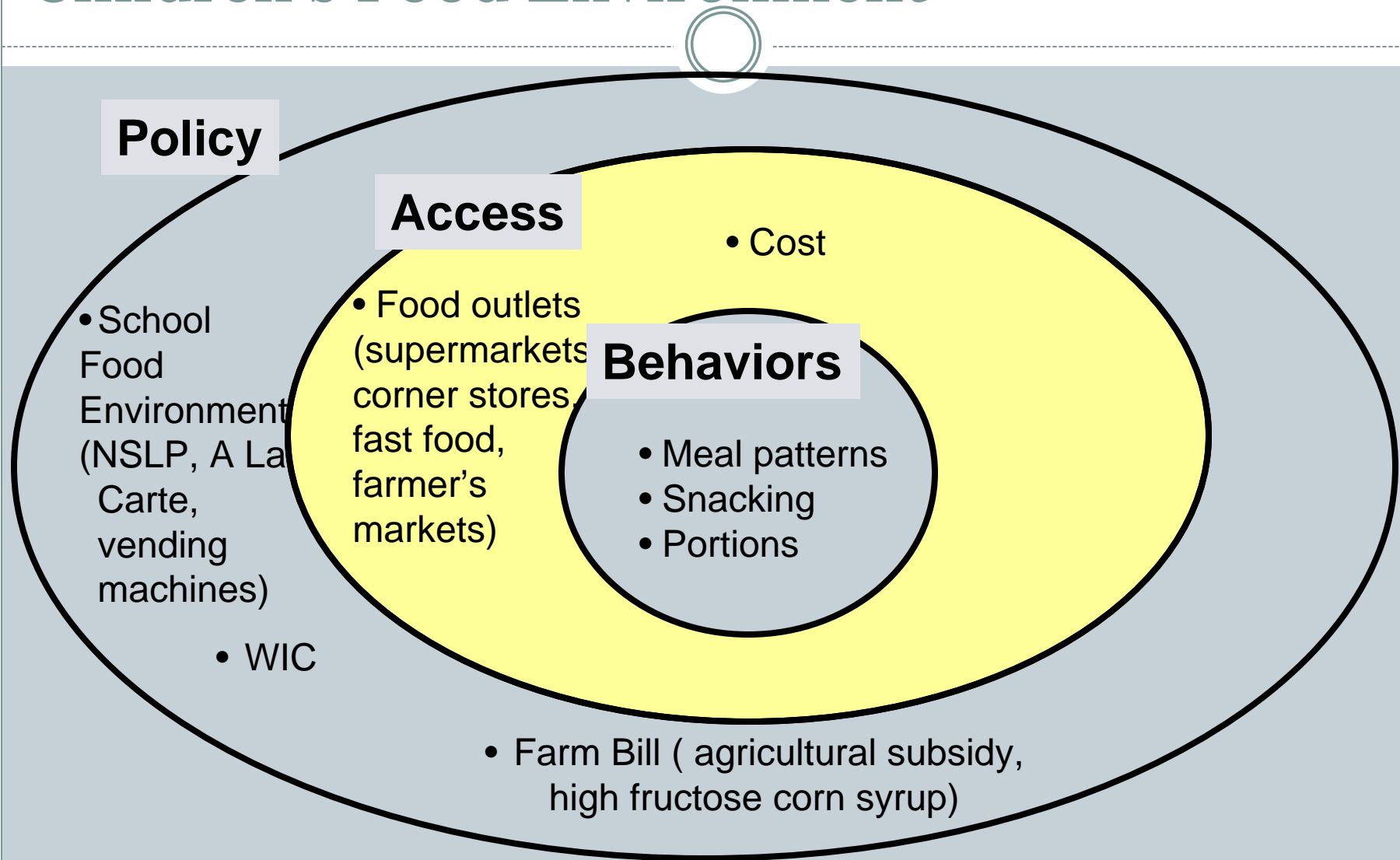
Overall average:  
16%





How can we characterize the food environment  
among those children who are at highest risk of  
obesity?

# Components of the Children's Food Environment



# Food environment: Fast food outlets



Fast food outlets are concentrated around low-income and African-American neighborhoods (Block, 2004)





# Disparities in supermarket access



- “Urban Grocery Store Gap” = 30% fewer supermarkets in poor neighborhoods (Cotteril, 1995; Morland, 2002; Powell, 2007; Larson 2009)
- In Chicago, wealthier communities have twice as many supermarkets as low-income communities
- Supermarkets in low income neighborhoods don’t have the same merchandise as those in high income neighborhoods (Franco 2008)



# Food environment: Corner stores

- Residents in areas with few supermarkets often rely on “corner stores” or small urban stores to fill household shopping needs
- 70 percent of urban children in grades 4-6 report shopping at corner stores at least once a day
- Students buy an average of 600 calories in snacks and beverages on the way to and from school, spending an average of \$2/day

(Karpyn, 2006)





## Food environment: Farmer's markets



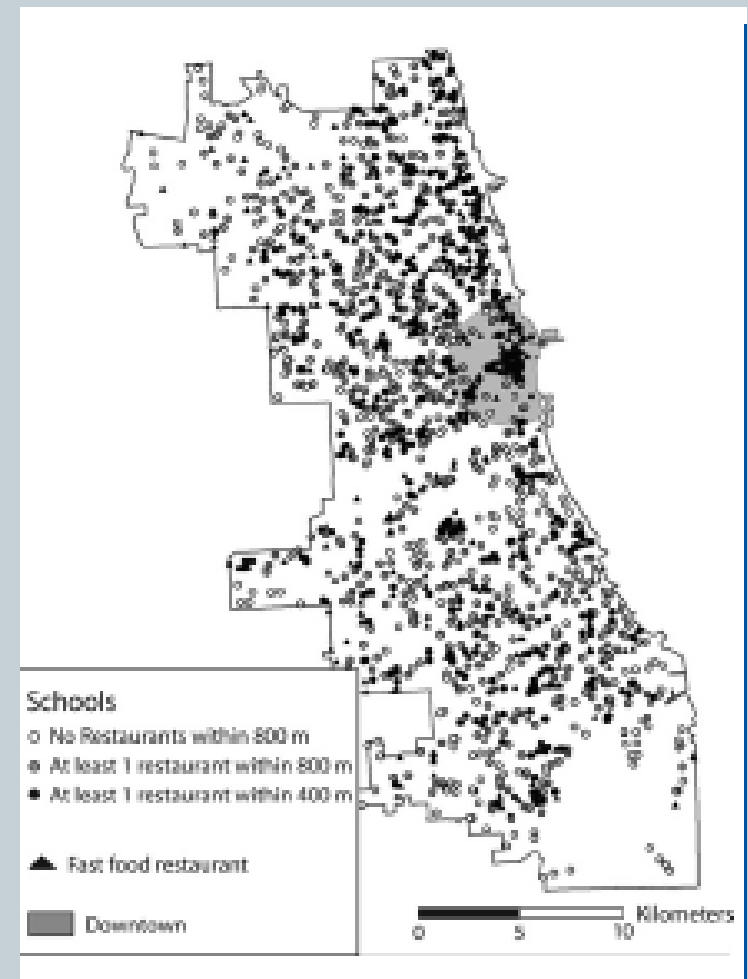
- There is movement to increase farmer's markets in low-income areas, but it is relatively new
- Price, location, hours of operation are large barriers
- WIC Farmer's Market Nutrition Program (FMNP) is under-utilized by eligible clients



California State Electronic Benefit Transfer Card  
Photo: Justin Sullivan/Getty Images

# School food environment

- Fast food outlets are concentrated around schools (Austin, 2005; Simon, 2008)
- It is insufficient to only consider what is consumed within the school walls.



# School food environment is nested within the community food environment

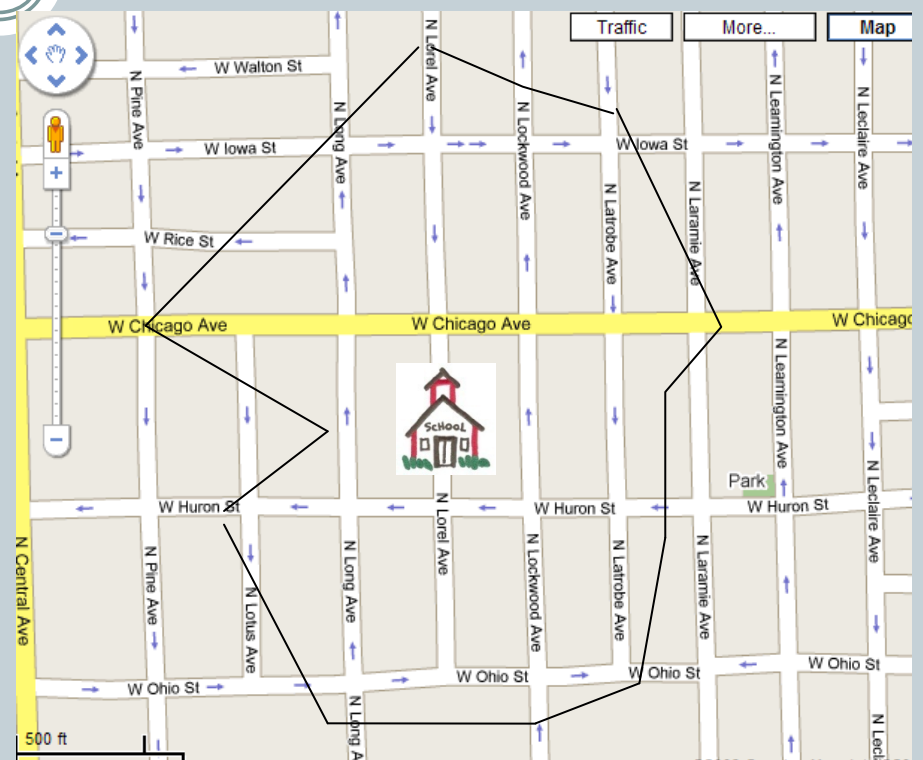
- National rate of walking to school: 13% (McDonald, 2007)
- Among families earning <\$30,000, 23% of elementary and middle school children walk to school
- 30% of Hispanic elementary and middle school kids walk to school (McDonald, 2008)



# What exactly is on that walk to school? A local example

## Howe School of Excellence

- Teach Chicago Turnaround School
- 98.6% FRPL eligible
- 99% African American
- Walk to School Day



Network buffer of 1/4 mile  
walk around Howe School  
in all directions



# Fast food and restaurants within 1/4 mile of Howe Elementary



## Restaurants/ Fast Food

- Liquor and Pizza
- Kennedy Chicken
- Vienna Hot Dogs
- Vo's Place Soul Food
- National Pizza
- Dunkin Donuts
- McDonald's



# Food outlets within 1/4 mile of Howe Elementary

## Corner Stores/ Grocers

- Bargain Food Inc
- Super Low Food Market
- Frank's Place
- Chicago Ave Food Mart
- Belmonte Liquor





# Food outlets within 1/4 mile of Howe Elementary

## Other

- Family Dollar (discount store)
- Citgo Gas Station
- Mobile vendor



## Now There's More In-Store

- More Food
- More Paper
- More Pet

 <p><b>\$1.25</b></p>	 <p><b>\$1</b></p>	 <p><b>\$3</b></p>	 <p><b>\$2.25</b></p> <p>Available in most stores</p>
 <p>Milk &amp; Eggs Available In Most Stores.</p>			
 <p><b>\$1</b></p>	 <p><b>\$2</b></p>	 <p><b>\$1.65</b></p>	 <p><b>\$1</b></p>
 <p><b>\$1</b></p>	 <p><b>\$1</b></p>	 <p><b>\$1</b></p>	 <p><b>\$1</b></p>

# Healthy Foods Checklist



- Result of collaboration of RWJ Healthy Eating Corner Stores Working Group
- Designed to collect information on the availability of healthy food options in small urban stores
- Intentionally short list (28 items)



# Healthy Foods Checklist



<i>Category</i>	<i>Food/beverage items included</i>
Fresh fruit & vegetable	Fresh fruit Fresh vegetables Pre-packaged salads
Processed fruit & vegetables	Frozen (or canned) vegetables Canned fruit (in light syrup or juice only) No-sugar added applesauce
Healthy beverages & low-fat dairy	Bottled/flavored water 100% fruit juice 1% or skim milk Low- or reduced-fat cheese (<10% DV for fat) Low-fat or non-fat yogurt (<10% DV for fat)
Healthy snacks	Low-fat crackers (<10% DV for fat) Nuts Low-fat popcorn (<10% DV for fat) Low-fat trail mix and/or dried fruit (<10% DV for fat) Low-sugar/low-fat granola bars (10g sugar, ≥10% DV for fiber) Baked or low-fat potato chips Pretzels Graham crackers or Animal crackers
Other healthy staple foods	Peanut butter High-fiber bread (≥10% DV for fiber) Brown rice Beans or chickpeas Lentils High-fiber cereal (≥10% DV for fiber) Low-sugar cereal (<10g sugar) Low-sugar pudding packs Jello Pre-made sandwiches

# Healthy Foods Checklist: Multi-city comparison

- Food stores around low-income schools (>50% FRPL)
- Stores categorized into 3 sizes
  - single-aisle
  - small (2-5 aisles)
  - large ( $\geq 6$  aisles)
- Multi-city comparison for analysis
  - Baltimore (45 stores)
  - Minneapolis (16 stores)
  - Oakland (28 stores)
  - Philadelphia (19 stores)



*(gas stations, drug stores excluded from this analysis)*

# Healthy Foods Checklist: Overall average scores

	Score range	One-aisle	Small (2-5 aisles)	Large (6+ aisles)
Fresh produce	0 to 3	0.5	1.1	1.3
Processed F/V	0 to 3	1.2	1.8	2.2
Healthy beverages & lowfat dairy	0 to 5	2.0	2.6	4.5
Healthy snacks	0 to 8	1.6	3.5	5.7
Healthy household staples	0 to 9	2.0	3.9	6.0

Larger stores score higher for each domain





# Healthy Foods Checklist: Multi-city comparison

	One-aisle	Small	Large
Low fat milk (1% or skim)	10%	43%	100%
High fiber bread	10%	12%	33%
High fiber cereal	44%	61%	100%
Low sugar cereal	29%	63%	100%
Pretzels	49%	75%	100%

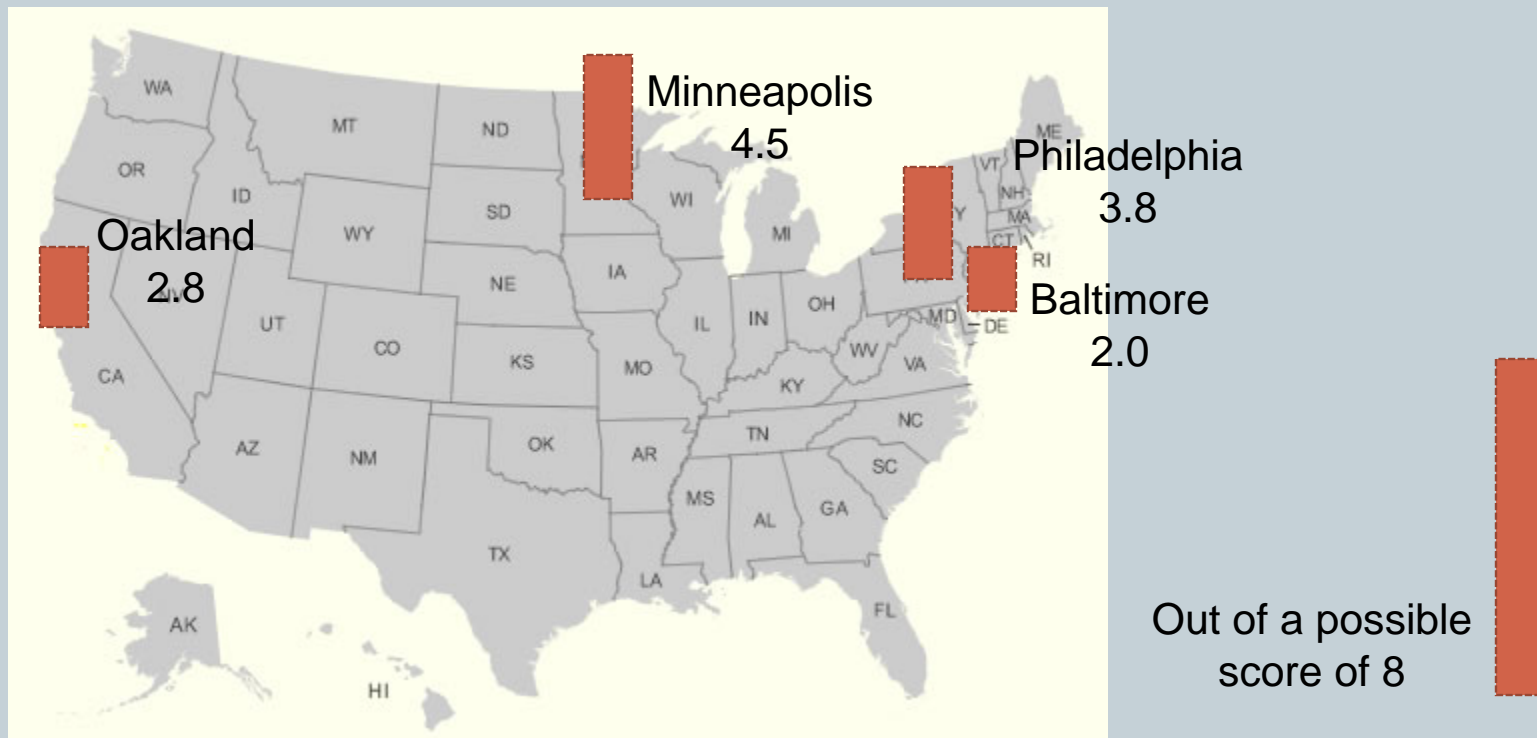


Larger stores carry more healthy items



# Healthy Foods Checklist: Multi-city comparison

Significant variation in score on Healthy Snacks domain between the small stores (2 to 5 aisles) in the comparison cities.



# Healthy Foods Checklist: Multi-city comparison



Plenty of variability with specific food items

	Baltimore	Minneapolis	Oakland	Philadelphia	Overall
Pretzels	70%	82%	45%	92%	75%
Baked chips	0%	29%	18%	15%	18%
Low fat milk (1% or skim)	10%	82%	9%	46%	43%
High fiber bread	0%	6%	0%	38%	12%
High fiber cereal	80%	82%	18%	54%	61%
Low sugar cereal	60%	94%	36%	46%	63%



# Back to our local example



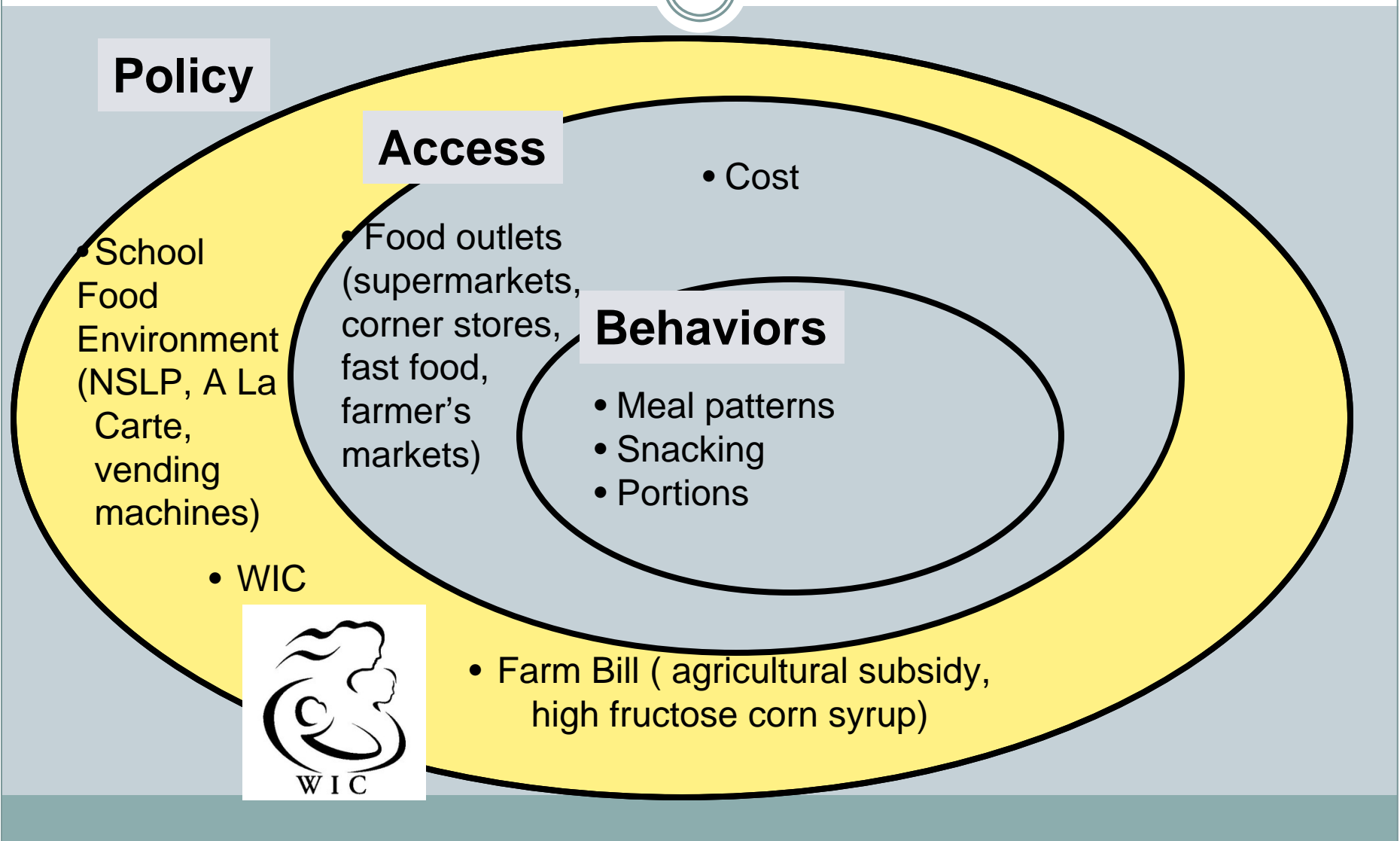
No skim or 1% milk available in the stores around Howe Elementary.



# What can we do?



# Components of the Children's Food Environment



# Components of the Children's Food Environment

## Policy

- School Food Environment (NSLP, A La Carte, vending machines)

- WIC

## Access

- Food outlets (supermarkets, corner stores, fast food, farmer's markets)

- Cost

## Behaviors

- Meal patterns
- Snacking
- Portions



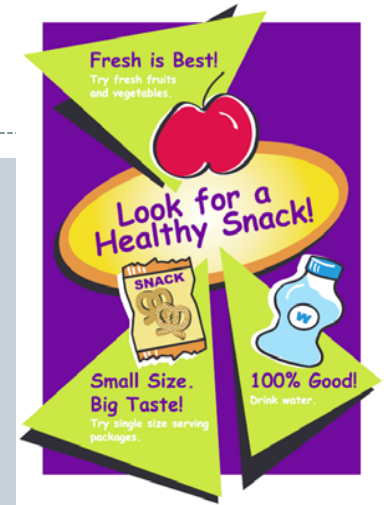
	Calories	
	meal**	
Hot Cakes	450	Hot Cakes
Hot Cakes	600	Hot Cakes
Big Breakfast	580	Big Breakfast
Deluxe Breakfast	660	Deluxe Breakfast



- Farm Bill ( agricultural subsidy, high fructose corn syrup)

# Improve neighborhood access to healthy food

- Improve the food outlets that already exist
  - higher nutritional value in eateries
  - store layout improvements
  - promotions
  - store owner education and community collaboration
- Bring in and support entities that bring healthy food
  - supermarkets
  - farmer's markets
  - healthy vendors





## Successful partnership



- South Los Angeles Healthy Eating Active Community
- Partnership with restaurant vendors at Mercado La Paloma
- HEAC provided nutritionists who did
  - Menu analysis
  - Assistance with menu labeling
  - Coaching for having healthier options on the menu
- Other marketplace vendors decided to label menus even though not required to (because not chains)



# Addressing the Grocery Gap



- Philadelphia-based non-profit organization since 1992

Works to improve the health of children and adults by:

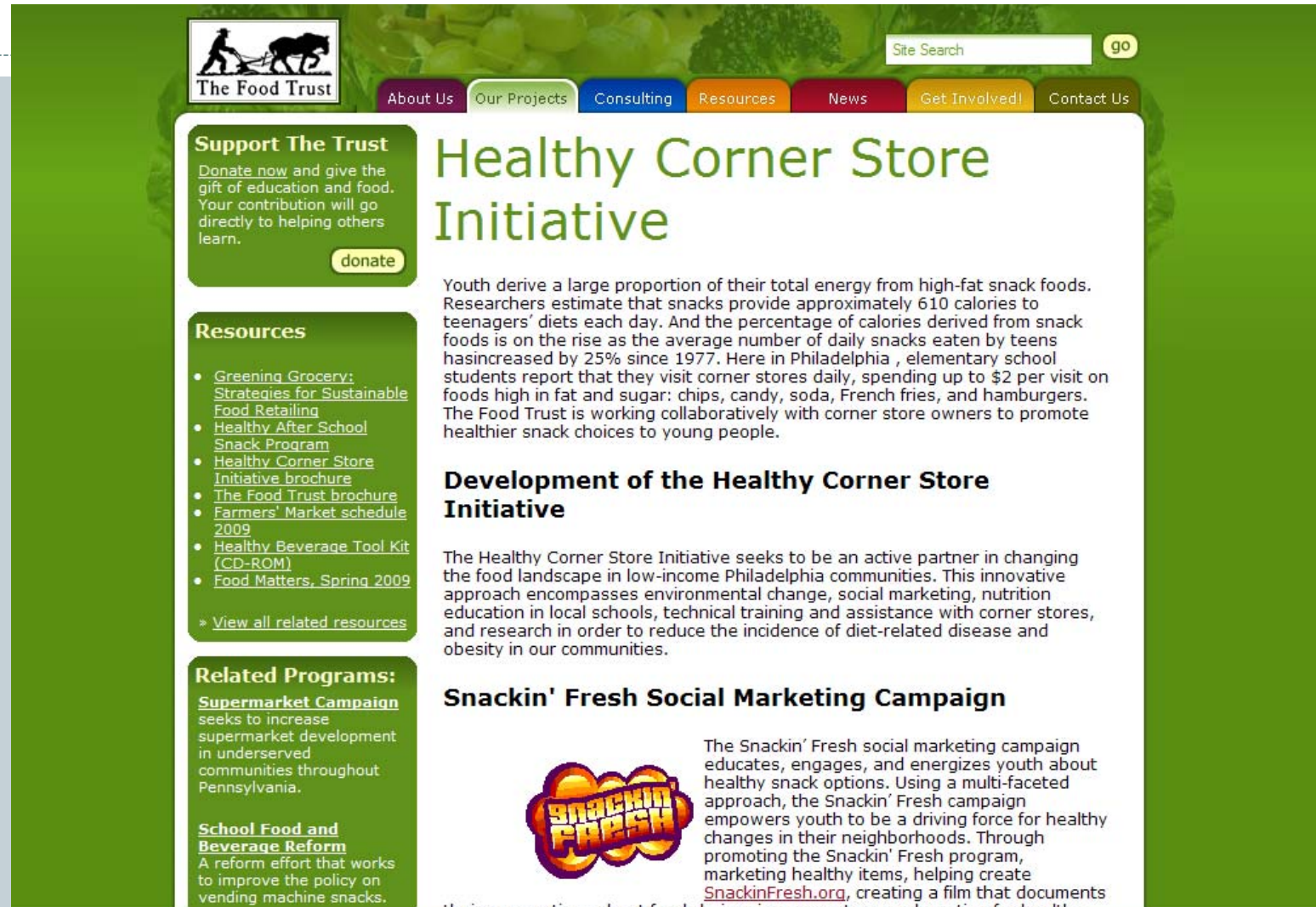
- promoting good nutrition
- increasing access to nutritious foods
- advocating for better public policy



- In 2008, “The Need for More Supermarkets in Chicago” led to a task force in Illinois that is actively focused on increasing supermarkets in low-income areas.



# Improving Corner Stores



The screenshot shows the website for The Food Trust. At the top left is the logo featuring a silhouette of a person plowing a field with an ox, with the text "The Food Trust" below it. To the right of the logo is a navigation menu with buttons for "About Us", "Our Projects", "Consulting", "Resources", "News", "Get Involved!", and "Contact Us". Further right is a "Site Search" box with a "go" button. The main content area has a green background with a white box containing the following text:

**Support The Trust**  
Donate now and give the gift of education and food. Your contribution will go directly to helping others learn.  
[donate](#)

**Resources**

- [Greening Grocery: Strategies for Sustainable Food Retailing](#)
- [Healthy After School Snack Program](#)
- [Healthy Corner Store Initiative brochure](#)
- [The Food Trust brochure](#)
- [Farmers' Market schedule 2009](#)
- [Healthy Beverage Tool Kit \(CD-ROM\)](#)
- [Food Matters, Spring 2009](#)

» [View all related resources](#)

**Related Programs:**

**Supermarket Campaign**  
seeks to increase supermarket development in underserved communities throughout Pennsylvania.

**School Food and Beverage Reform**  
A reform effort that works to improve the policy on vending machine snacks.


## Healthy Corner Store Initiative

Youth derive a large proportion of their total energy from high-fat snack foods. Researchers estimate that snacks provide approximately 610 calories to teenagers' diets each day. And the percentage of calories derived from snack foods is on the rise as the average number of daily snacks eaten by teens has increased by 25% since 1977. Here in Philadelphia, elementary school students report that they visit corner stores daily, spending up to \$2 per visit on foods high in fat and sugar: chips, candy, soda, French fries, and hamburgers. The Food Trust is working collaboratively with corner store owners to promote healthier snack choices to young people.

### Development of the Healthy Corner Store Initiative

The Healthy Corner Store Initiative seeks to be an active partner in changing the food landscape in low-income Philadelphia communities. This innovative approach encompasses environmental change, social marketing, nutrition education in local schools, technical training and assistance with corner stores, and research in order to reduce the incidence of diet-related disease and obesity in our communities.

### Snackin' Fresh Social Marketing Campaign



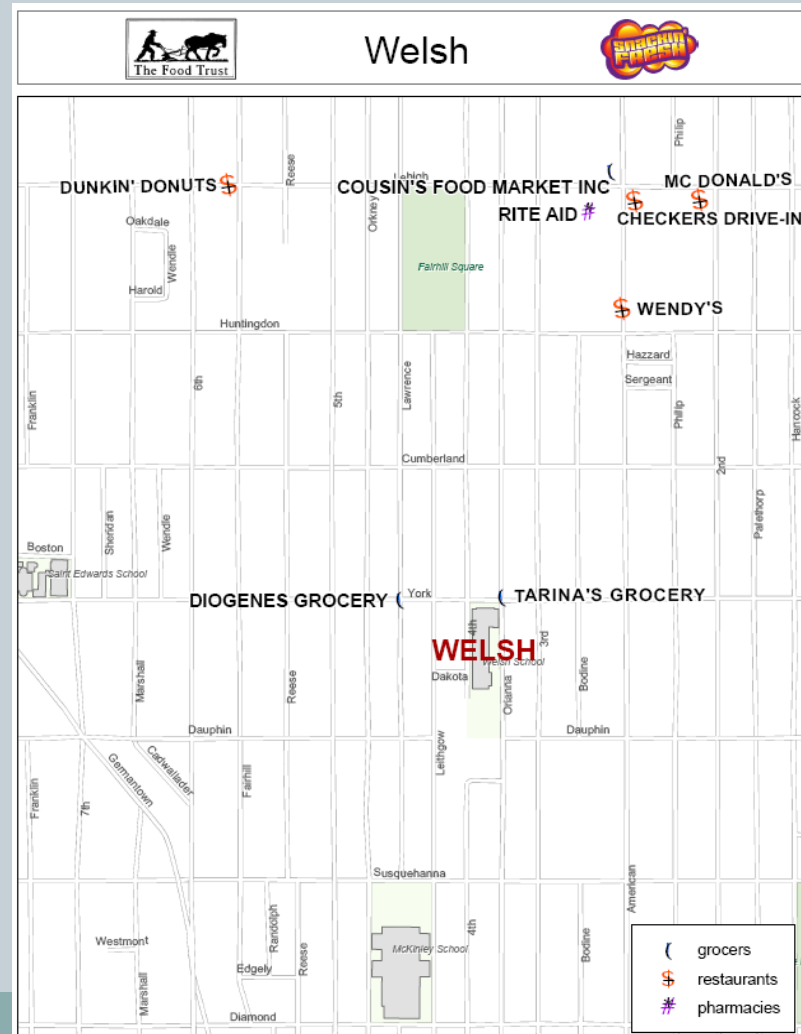
The Snackin' Fresh social marketing campaign educates, engages, and energizes youth about healthy snack options. Using a multi-faceted approach, the Snackin' Fresh campaign empowers youth to be a driving force for healthy changes in their neighborhoods. Through promoting the Snackin' Fresh program, marketing healthy items, helping create [SnackinFresh.org](#), creating a film that documents their perspective about food choices in corner stores, educating for healthy

[www.thefoodtrust.org](http://www.thefoodtrust.org)



# Healthy Corner Store Initiative

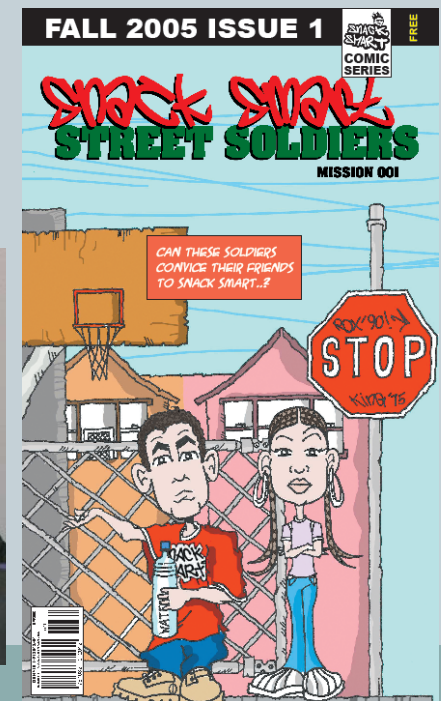
- Low-income communities of Philadelphia
- Stores & recreation centers around 5 intervention schools
- Total of 11 corner stores
- 750 participating students (out of 2,800)



# Healthy Corner Store Initiative

## Snackin' Fresh social marketing

- Street soldiers
- Monthly nutrition class in school
- Leadership projects
- Corner store owner training and education
- Product distribution



# Healthy Corner Store Initiative



- Children visited corner stores less often making 0.4 fewer visits/week to corner stores.
- Children purchased snacks with less fat and fewer calories
- Children spent less money
- Store owners purchased more healthy snacks to stock store shelves



# Baltimore: Healthy Stores



- Increase availability and access to healthy foods for residents of Baltimore City.
- Promote these foods at the point of purchase
- Work in collaboration with community agencies, the city of Baltimore, and local food sources.
- Funded by USDA, Food Assistance and Nutrition Research Program, and Center for Livable Future at Johns Hopkins



# Baltimore: Healthy Stores

## Phases of Healthy Stores Program

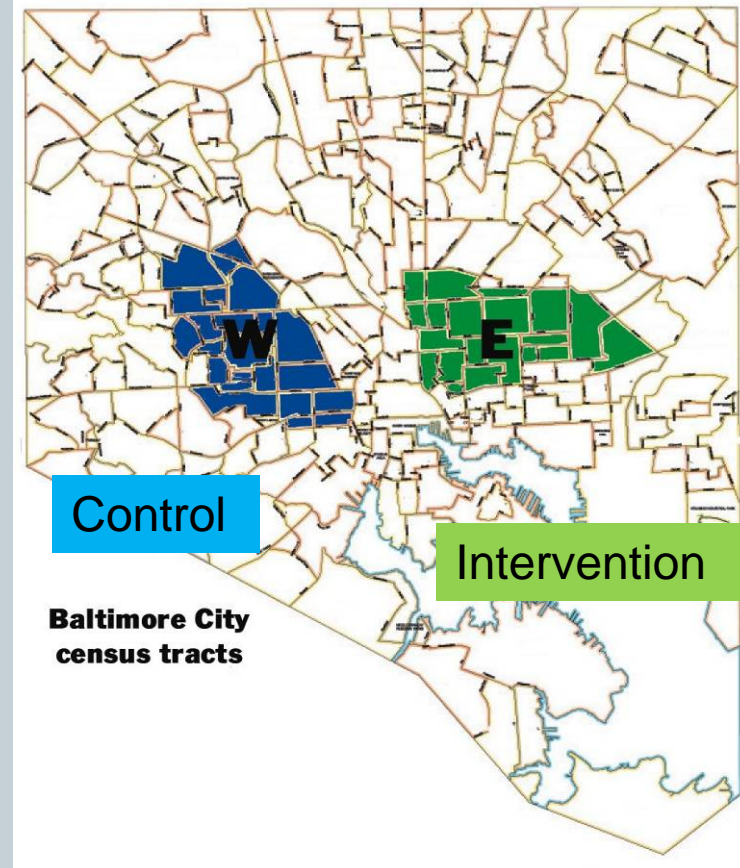
0. Recruitment of store owners
1. Healthy Eating for Your Kids
2. Cooking at Home
3. Healthy Snacks
4. Carry Out Foods
5. Low Calorie Drinks





# Baltimore: Healthy Stores Evaluation Plan

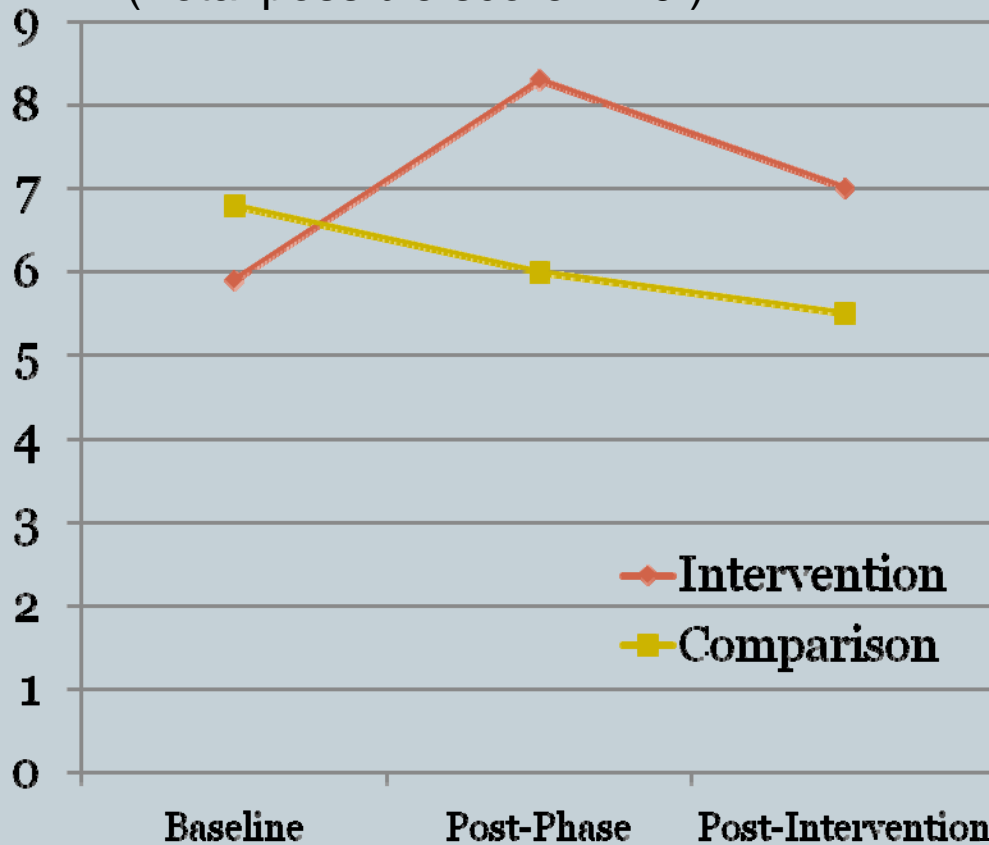
- **Sample characteristics**
  - 2 supermarkets/area
  - 6-7 small stores/area
  - 87 customers/area
- **Evaluation tools included:**
  - Interviews with store owners and customers
  - Process evaluation
  - Taste test evaluations associated with cooking demonstrations
  - Bi-weekly food sales
  - Store owner impact questionnaire
  - Customer impact questionnaire & more tools not listed here



# Baltimore Healthy Stores



Stocking of healthy items  
(Total possible score = 10)

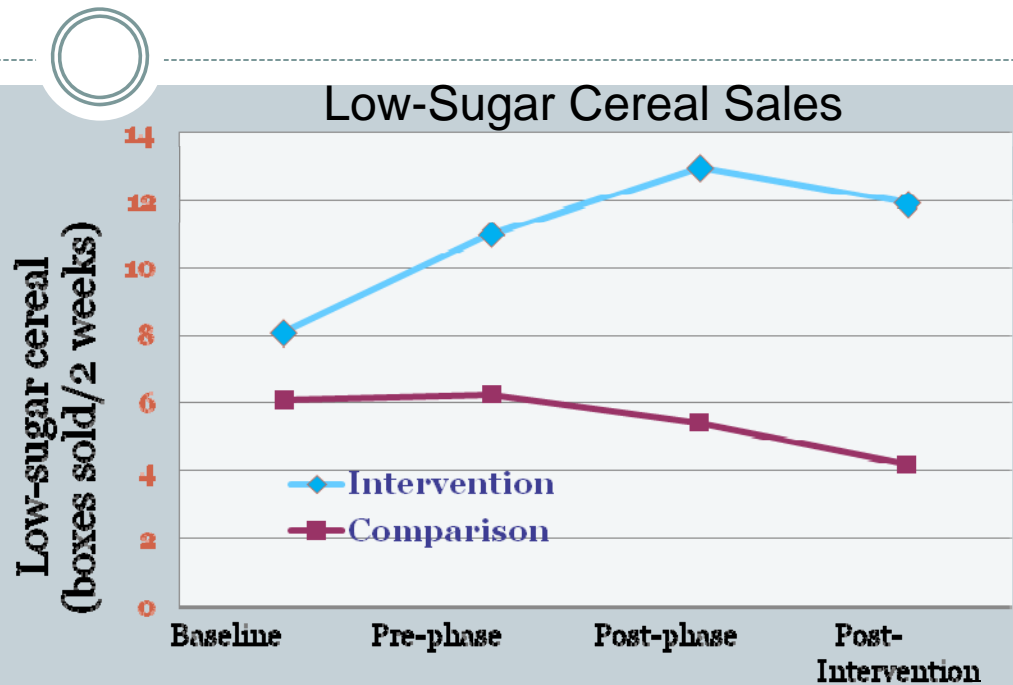


Intervention period led to an increase in

1. Healthy items stocking score
2. Healthy items sales

# Baltimore Healthy Stores

- Sales of specific healthy items increased
- Consumers (n=85, pre- and post-intervention) had improved food preparation methods and frequency of purchase of promoted foods.





# Putting mobile food vendors on the community food environment map...



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[Sign in](#) | [Help](#)

Google maps

mobile food vendor

Search Maps

[Show search options](#)

Find businesses, addresses and places of interest. [Learn more.](#)

[Get Directions](#) | [My Maps](#)

[Print](#) [Send](#) [Link](#)

Narrow by: [User Rating](#) ▼

## mobile food vendor

Categories: [Government Offices](#) [Local](#)

### (A) [City of Chicago Health Dept of Public: Food & Dairy Protection](#) - [more info](#) »

Chicago, IL - (312) 746-8030

[Write a review](#)

"**Food Vendor** must have current (dated 2009) health inspection of the kitchen listed on the city application where **food** is being prepared and/or prepped ..." [do-divisionstreetfest.com](#)

### (B) [City of Chicago: Department of Business Affairs and Licensing](#) - [more info](#) »

Chicago, IL - (312) 744-6249

[Write a review](#)

"If you are renewing a **mobile food** dispenser license, you must be inspected by the Department of Public Health – **Food Protection Division**. ..." [cityofchicago.org](#)

### (C) [West Town Chamber of Commerce](#) - [more info](#) »

1851 W Chicago Ave, Chicago, IL - (312) 850-9390

[Write a review](#)

"Please send this application, the city temporary **food vendor** application, plus copies of sanitation certificate, insurance, kitchen inspection, signed ..." [westfestchicago.com](#)

### (D) [Beverlywood Social Events](#) - [more info](#) »



# Why study street vendors and children?



- Mobile food vendors in low-income neighborhoods with lot of ethnic minorities (Taylor, 2000)
- Low-income children are at higher risk for obesity and have higher exposures to environment surrounding school. (McDonald, 2008)
- Some research about what kids are buying at corner stores on the way home from school but no existing work about children's stops at street vendors. (Karpyn, 2006)

# Why study street vendors in Oakland?



- School principals

- *Lately, I have seen a lot of cotton candy vendors. At one time, we had fruit vendors in the neighborhood, which is something that I would support and encourage.*
- *“The ice cream vendor who comes down the street about 5-10 minutes after school closes is driving me crazy. I tried to appeal to his “better nature” and he informed me that he's got a right to make a living.”*

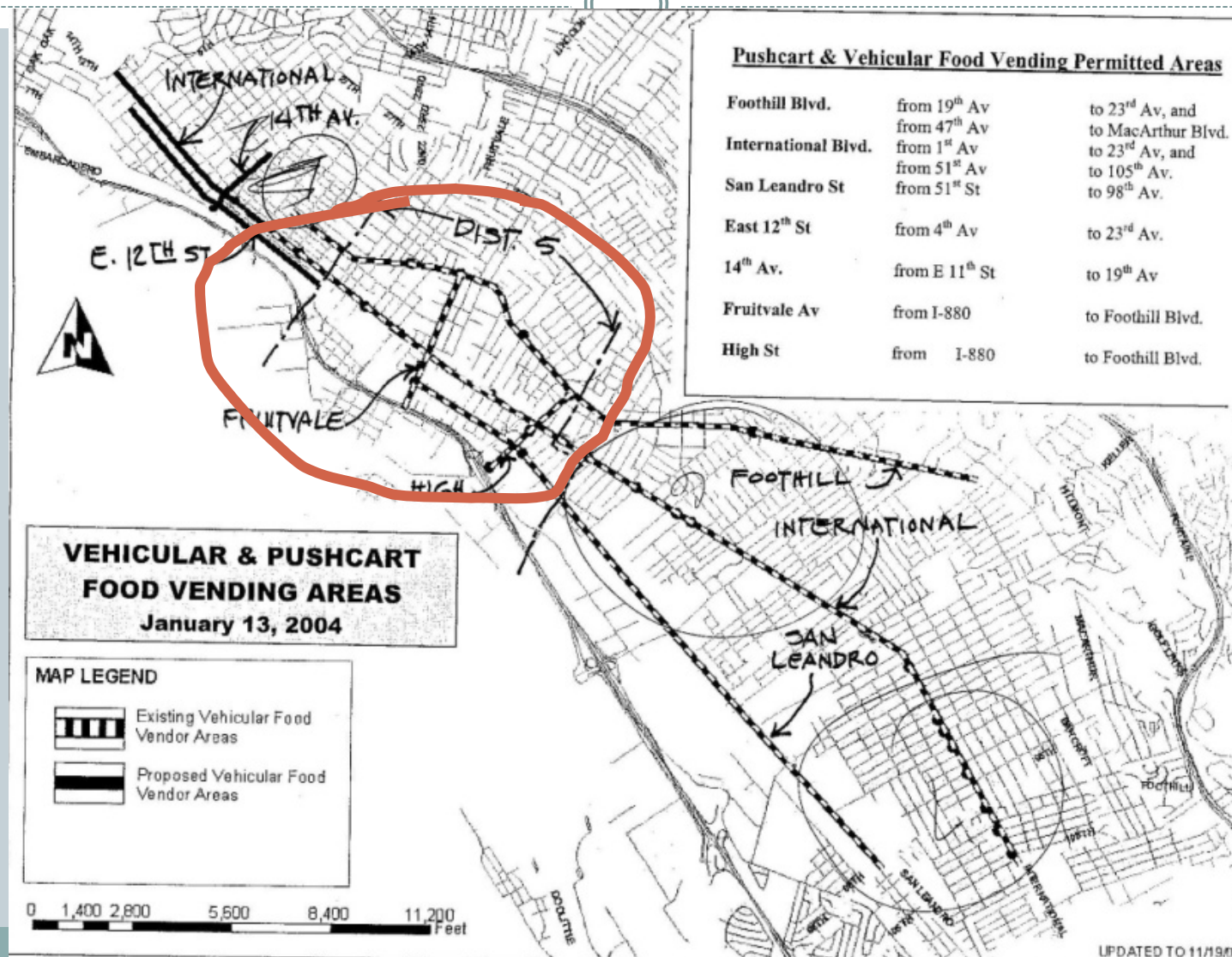
# Research Plan



- 1. Interviews** with city officials, school principals, and street vendors in Oakland, CA
- 2. Document vendor presence** near schools and conduct **observations of transactions** at mobile vendors within 1/4 mile walk of schools
- 3. Pilot intervention** to increase access to healthy food for students after school
4. Expansion of intervention to explore **price manipulation**



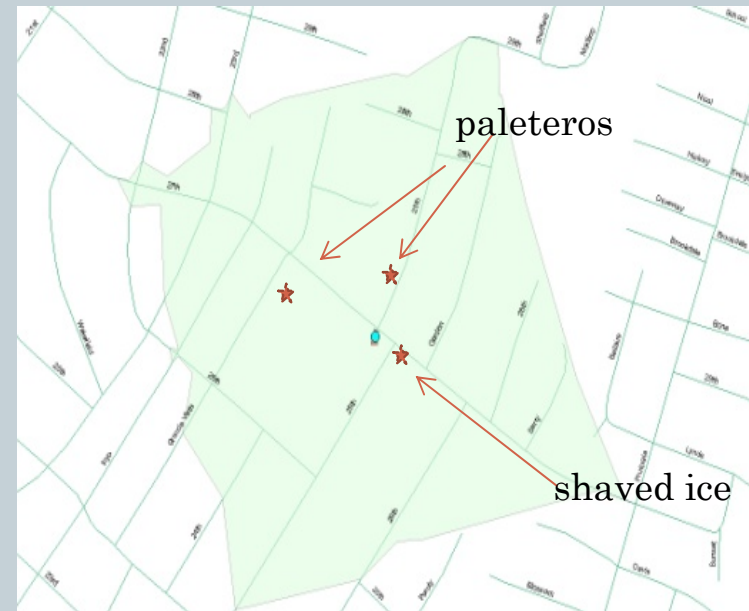
# Zoning for mobile pushcarts





# Documenting the presence of street vendors in the after school environment

- 1/4 mile network buffers
- Observed within 30 minutes of the end of the school day
- 6 had street vendors consistently near them (average of 5.2)
- Variety of vendor types





# Documenting the presence of street vendors in the after school environment



Homemade cart



Ice cream truck



Paletero



Frutero



Ice cream truck

# Transaction Observations

Transaction checklist

Date: 5/4 Circle: M Tu W Th F School: ANMSCHOOL Bell ring: 3:00 Start Time: 3:05 Finish time: 3:35

Observer name: June

5/7/2008

Type of cart (Circle): Truck Large cart Homemade cart ("renegade") Pushcart Stationary (no cart) On foot

Type of vendor: Frutero Paletero Taco truck Snow Cone "Churro Factory" Other

Gender of vendor: M F Ethnicity (circle) L W A B O (country if known) Mexico Level of English: None Limited Mostly fluent Fluent

#	Time	Location Closest street address or intersection (if no address given, please mark on map to indicate which intersection/side of street)	Transaction		Customer characteristics				Items in transaction		Cost per item
			On foot/ in car F or C	Who is paying \$	Gender M F	Age group P = Pre School (0-4) S = School kid (5-12) T = Teen (13-19) A = Adult (20+)	Ethnicity L Latino W White A Asian B Black O Other or ?	Who item is for (X or arrows)	Item(s) purchased e.g. bag of mango, frozen fruit popsicle (paleta), ice cream sandwich, snow cone.		
1	3:07	2825 1st St. (@ 28th)	F	\$	M (F)	P S T A	L W A B O		←	Bag mango	2.50
					M (F)	P S T A	L W A B O		←	Bag Wagon wheel "clavitos"	
					M (F)	P S T A	L W A B O				
2	3:11	"	F	\$	M (F)	P S T A	L W A B O		X	Elite (corn meal)	\$1.50
3	3:12	"	C	\$	M (F)	P S T A	L W A B O			Bag of mix fruit	\$2.50
4	3:14	"	F	\$	M (F)	P S T A	L W A B O		←	Bag of coconut	\$2.00
			F	\$	M (F)	P S T A	L W A B O				
			F	\$	M (F)	P S T A	L W A B O				
5	3:20	"	F	\$	M (F)	P S T A	L W A B O		X	Bag of doritos	1.50
			F	\$	M (F)	P S T A	L W A B O				

- 23 data collection days
- 36 hours and 58 minutes
- 999 transactions
- 1,221 consumers
- 1,355 items

Observed at street vendors within 1/4 mile of:

- 5 elementary schools and
- 1 middle school

# Transaction Observations



Consumers were predominantly but *not exclusively* Latino.

Customers mirror demographics of schools sampled.

	<b>Customers</b>	<b>School Stats</b>
Hispanic/Latino	72%	70%
African-American	12%	12%
Asian/ Pacific Isl.	5%	10%
White	2%	1%
Other/unspecified	11%	9%

# Transaction Observations



The ice cream truck sells a lot more than just ice cream.

Of the 290 items sold, frozen treats were the most common (32% ice cream bars, 12% popsicles).

However, a large proportion of the sales were chips or cookies (29%) and candy (21%).



# Transaction Observations



While plenty of junk food was sold, fruit and vegetables were often purchased by youth.

Children and teens *at transactions with no adults present bought*

- 30% of the bagged fruits and vegetables at frutereros
- and 42% of the fruit at “*fruit stands*”

Each schoolchild consumes about \$1.43 worth of food items at vendors after school.

	Overall	Preschool	School	Teen	Adult
Total spent per individual	<b>\$1.98</b>	\$1.47	\$1.43	\$2.38	\$2.75



# Reinventing the Ice Cream truck



Partial product replacement on ice cream truck with 12 healthier snack options for 16 days.



SMART SNACKS MENU		
 Water / Agua 0.50	 Mango punch 0.75	 Berry Lemonade 0.75
 Yogurt cup 0.75	 Yogurt drink 1.00	 Yogurt smoothie 1.25
 Cheese/ Queso 0.50	 Milk / Leche 1.00	 Cheerios 1.00
 Raisins / Pasas 0.25	 Carrots/ Zanahorias 0.75	 Almonds/ Almendras 0.50



# Reinventing the Ice Cream truck

- 92 healthy items sold (10% of overall sales)
- 75% of healthy items went to children
- Most popular items:
  - Low-sugar juice (30% of healthy items)
  - Water (21% of healthy items)
  - Low-fat cheese sticks (15% of healthy items)
- Least popular items:
  - Cheerios (3% of healthy items)
  - Milk (3% of healthy items)



# Upcoming work



- Expansion to 3 ice cream trucks that sell in front of schools in order to study the effect of price manipulation.
- Further exploration of the regulatory and policy issues related to potential creation of Healthy Mobile Vending Ordinances in Oakland, CA and in Richmond, CA



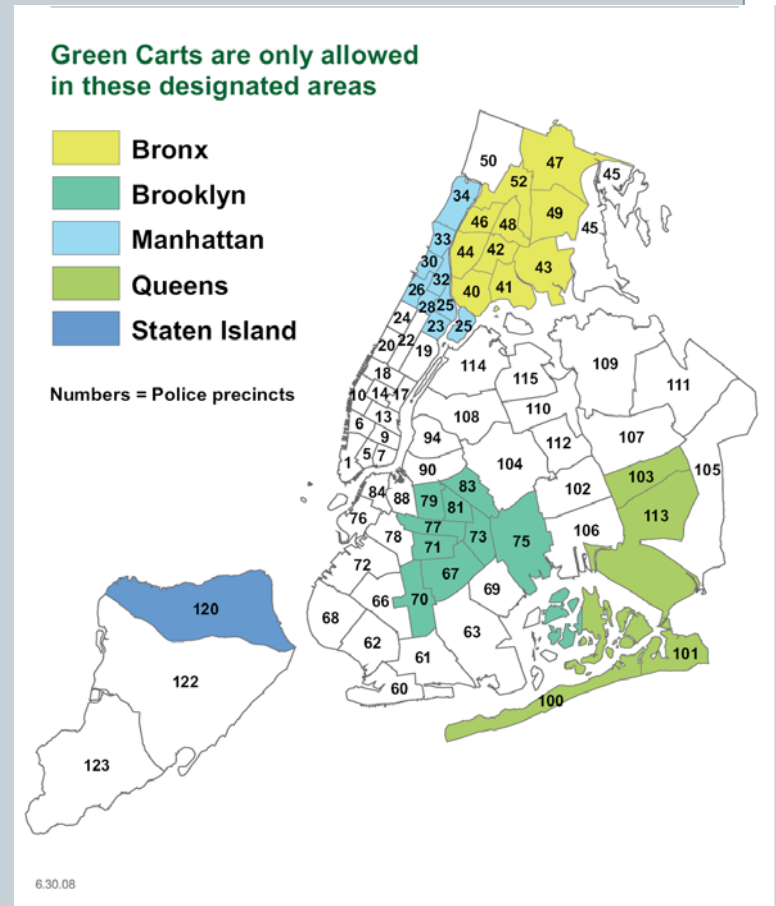
public health law & policy



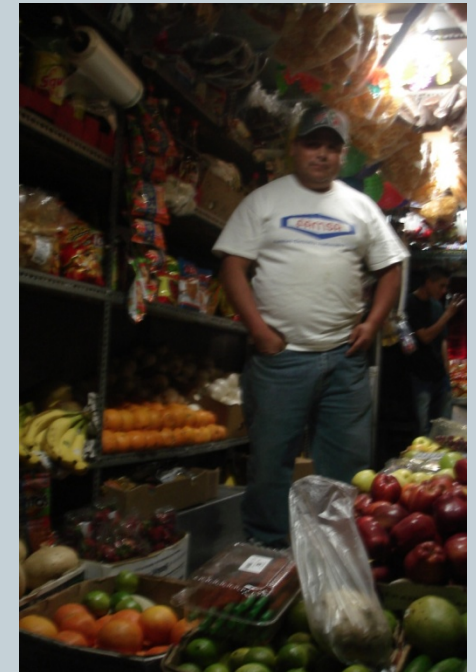
NATIONAL POLICY & LEGAL ANALYSIS NETWORK  
TO PREVENT CHILDHOOD OBESITY

# New York City Green Carts Program

- New York City Local Law 9
- Whole, unprocessed fruits
- Special status for “Healthy Vendors”
- 1,000 new permits
- Permits only for areas with low access to fresh produce



# Corner store on wheels?



Truck stocked like a mini grocer.

Residential neighborhood in greater Los Angeles area, October 2008



# Mobile fruit in Copenhagen



# Can we imagine a different walk to school for these kids?



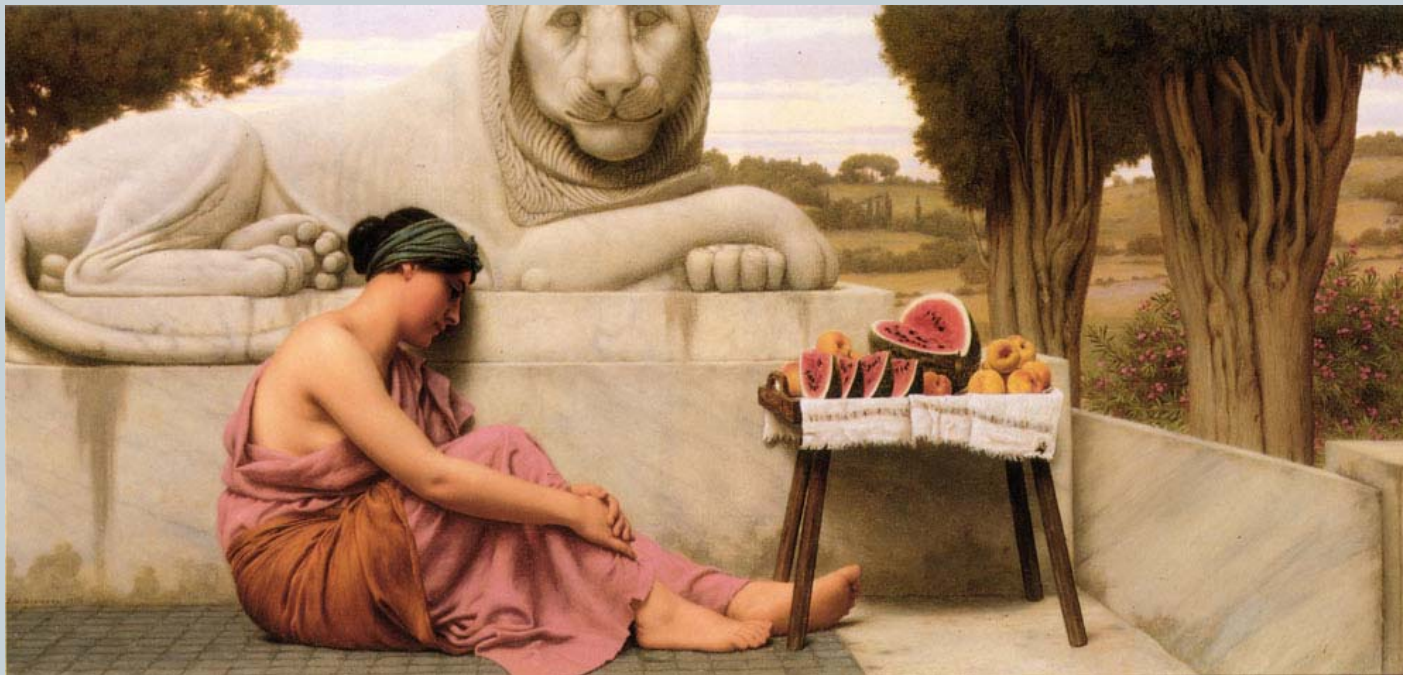


# Aknowledgements



- Mary Story (U Minn)
- Robert Wood Johnson Healthy Eating Research
- RWJ Corner Stores Working Group
- Joel Gittelsohn (Johns Hopkins)
- Sandy Sherman (Food Trust)
- Melissa Nelson (U Minn)
- Kelley Borradaile and Gary Foster (Temple)
- Irene Yen and Barbara Laraia (UCSF)

thank you



*The fruit vendor*, John William Godward, 1917

# References



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