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Price, Access and Education at Philadelphia Farmers' Market

Anna M. Quinn

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Worldwide

The World Health Organization (WHO)

- 2.7 million lives could be saved annually with sufficient fruit and vegetable consumption
- Low fruit and vegetable intake is in the top ten risk factors for global mortality

Background

- A diet high in fruits and vegetables is associated with decreased risk for chronic diseases (CDC)
 - Stroke
 - Coronary heart disease
 - Diabetes
 - Some cancers (Cyzman et. al.)
- Adequate fruit and vegetables consumption may assist with
 - Weight loss
 - Maintaining a healthy weight (Rolls, Ello-Martin, &Tohill, 2004)

CDC Recommendations

- 4 servings of fruits per day
- 5 servings of vegetables per day



**9 servings
a day?!?**

Healthy People 2010

- 75% of the population (aged ≥ 2 years) eat at least two servings of fruit a day
- 50% of the population (aged ≥ 2 years) eat at least three servings of vegetables a day

U.S.

- 2005 Behavioral Risk Factor Surveillance System (BRFSS)
 - 32.6% of adults consumed two or more servings of fruit per day
 - 27.2% of adults consumed three or more vegetable servings per day
- CDC reported a 2% decrease in fruit and vegetable consumption from 2007- 2009

Fruit and Vegetable Consumption and BMI in the US

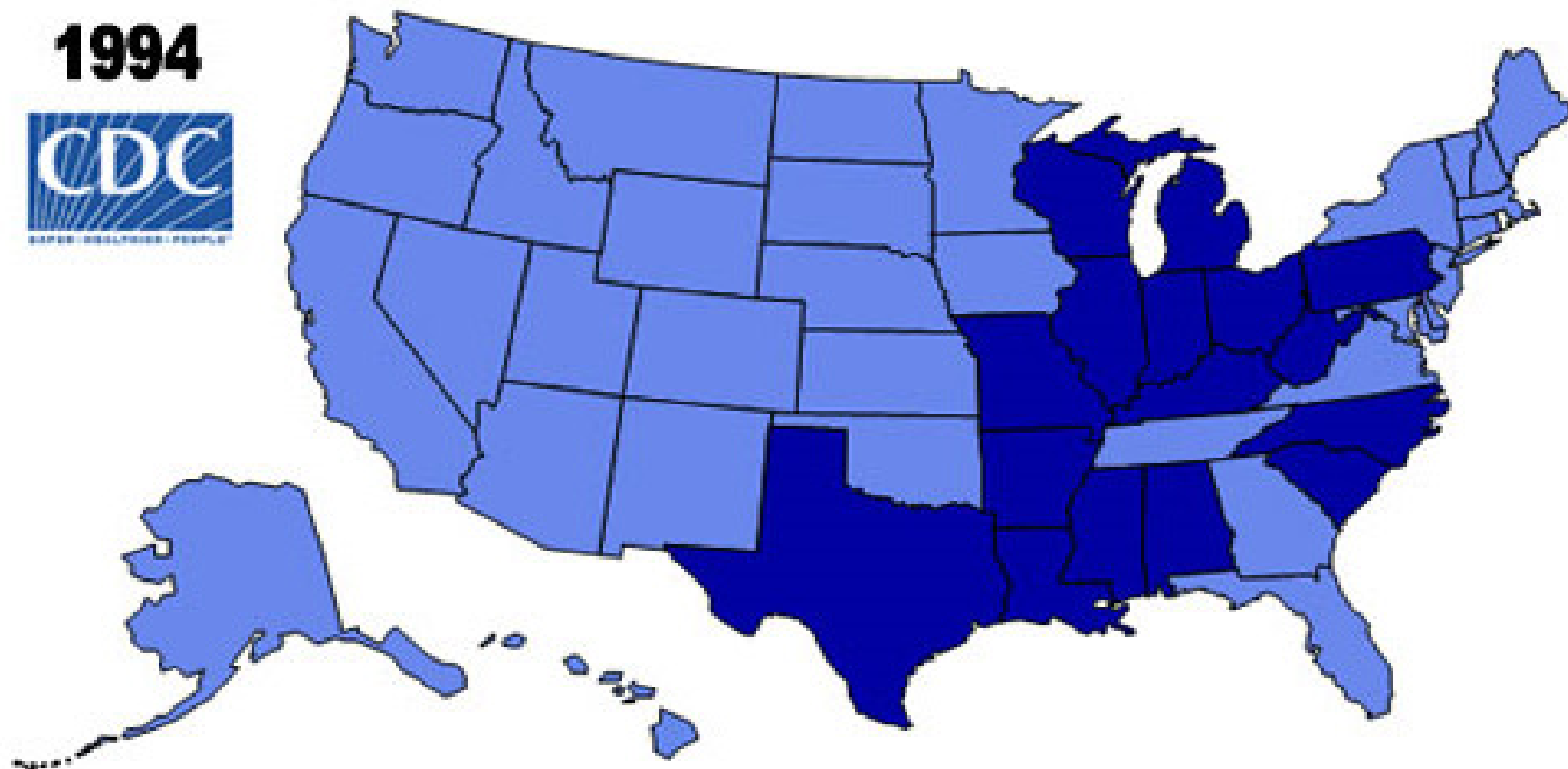
- Increased fresh fruit and vegetable consumption is associated with lower BMI
- Increased farmers' market availability correlates with lower BMI

(Practice Fusion)

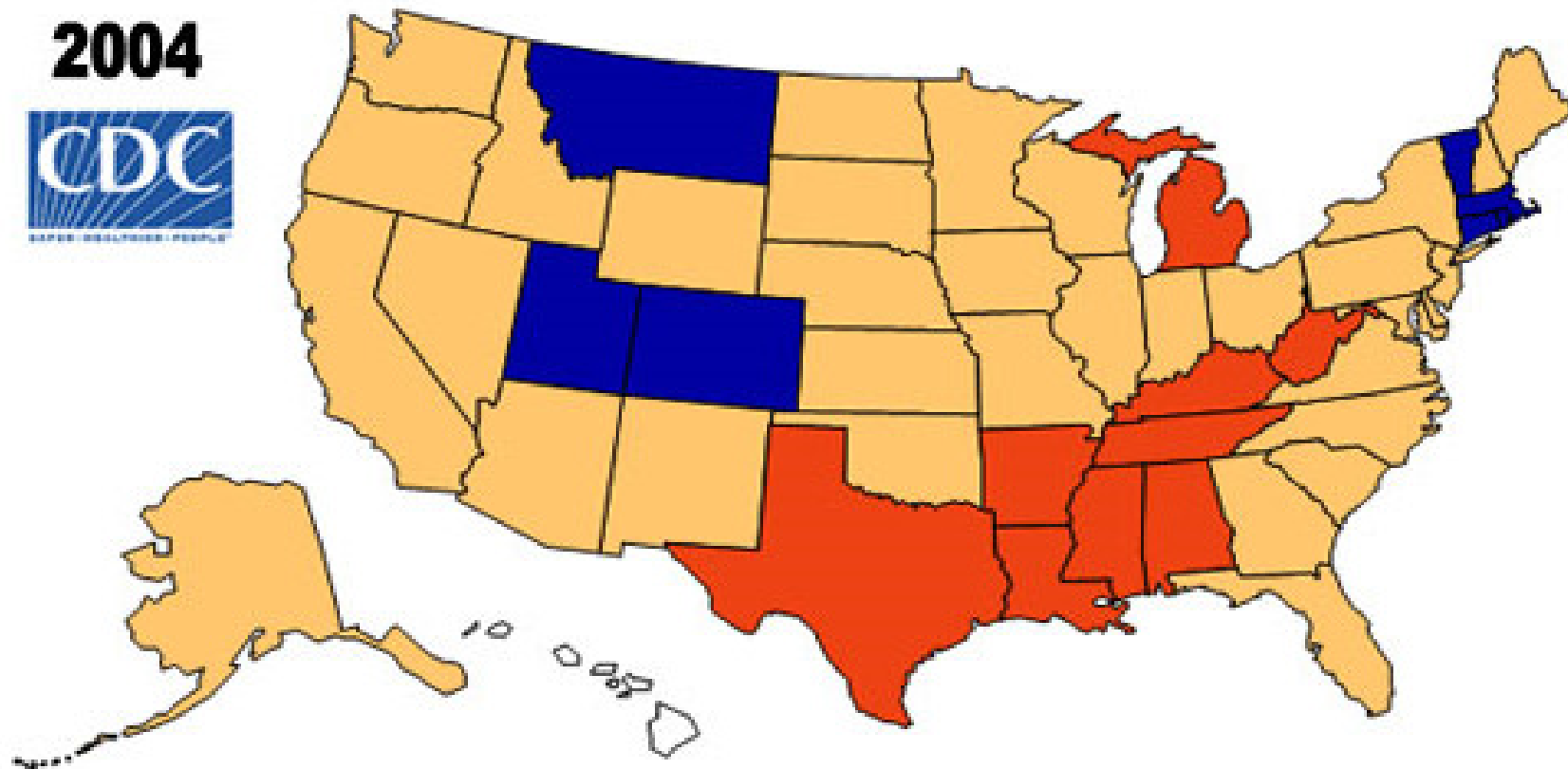
Measuring Obesity

- Body Mass Index (BMI) is a number calculated from a person's weight and height
- BMI per the CDC
 - Underweight < 18.5
 - Normal $18.5 - 24.9$
 - Overweight $25.0 - 29.9$
 - Obese > 30.0

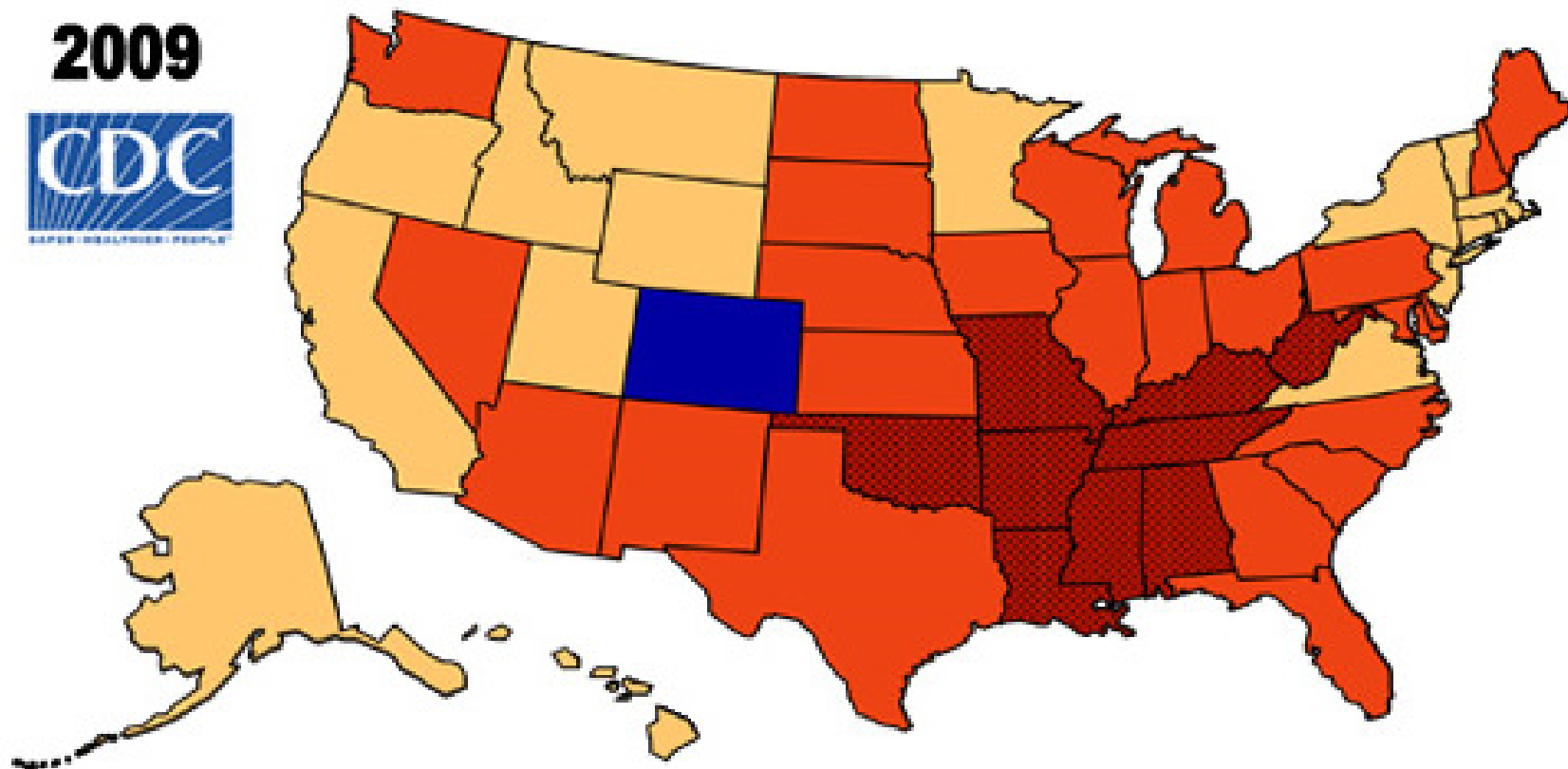
1994



2004



2009



“About 900,000 people in Philadelphia are overweight or obese, including over 150,000 children. In fact, it is now

more common to be overweight or obese
than to be at a healthy weight.”

-Food Fit Philly

Total population = 1,447,395 (2008 Census)

Obesity and U.S. Cities

American Obesity Association

Overweight (Defined by Environmental Factors)

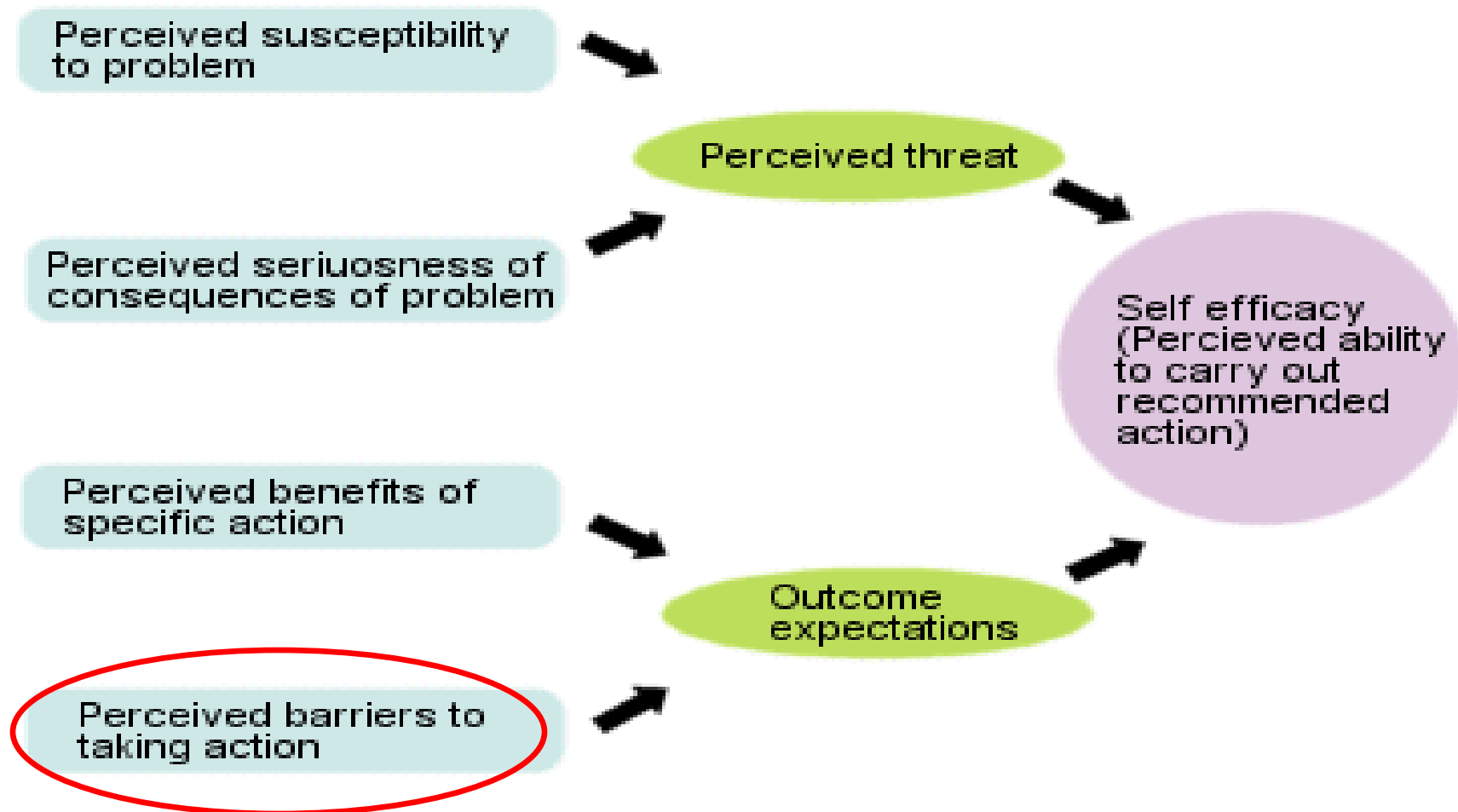
Table 5. Cities with Highest Rating						
	2005	2004	2003	2002	2001	2000
1.	Houston, TX	Detroit, MI	Houston, TX	Houston, TX	Houston, TX	Philadelphia, PA
2.	Philadelphia, PA	Houston, TX	Chicago, IL	Chicago, IL	Detroit, MI	Kansas City, MO
3.	Detroit, MI	Dallas, TX	Detroit, MI	Detroit, MI	Philadelphia, PA	Houston, TX
4.	Memphis, TN	San Antonio, TX	Philadelphia, PA	Philadelphia, PA	New Orleans, LA	Indianapolis, IN
5.	Chicago, IL	Chicago, IL	St. Louis, MO	Dallas, TX	Columbus, OH	New Orleans, LA
6.	Dallas, TX	Fort Worth, TX	Cleveland, OH	Columbus, OH	Mesa, AZ	Chicago, IL
7.	New Orleans, LA	Philadelphia, PA	Atlanta, GA	San Antonio, TX	Kansas City, MO	Detroit, MI
8.	New York, NY	Arlington, TX	Columbus, OH	Fort Worth, TX	Phoenix, AZ	Columbus, OH
9.	Las Vegas, NV	Cleveland, OH	Dallas, TX	St. Louis, MO	Cleveland, OH	Memphis, TN
10.	San Antonio, TX	Columbus, OH	Charlotte, NC	Indianapolis, IN	Chicago, IL	Omaha, NE

CDC on Fighting Obesity at the Individual Level

- **Eat more fruits and vegetables and fewer foods high in fat and sugar.**
- Drink more water instead of sugary drinks.
- Limit TV watching in kids to less than 2 hours a day and don't put one in their room at all.
- Support breastfeeding.
- **Promote policies and programs at school, at work, and in the community that make the healthy choice the easy choice.**
- Try going for a 10-minute brisk walk, 3 times a day, 5 days a week.

The Health Belief Model

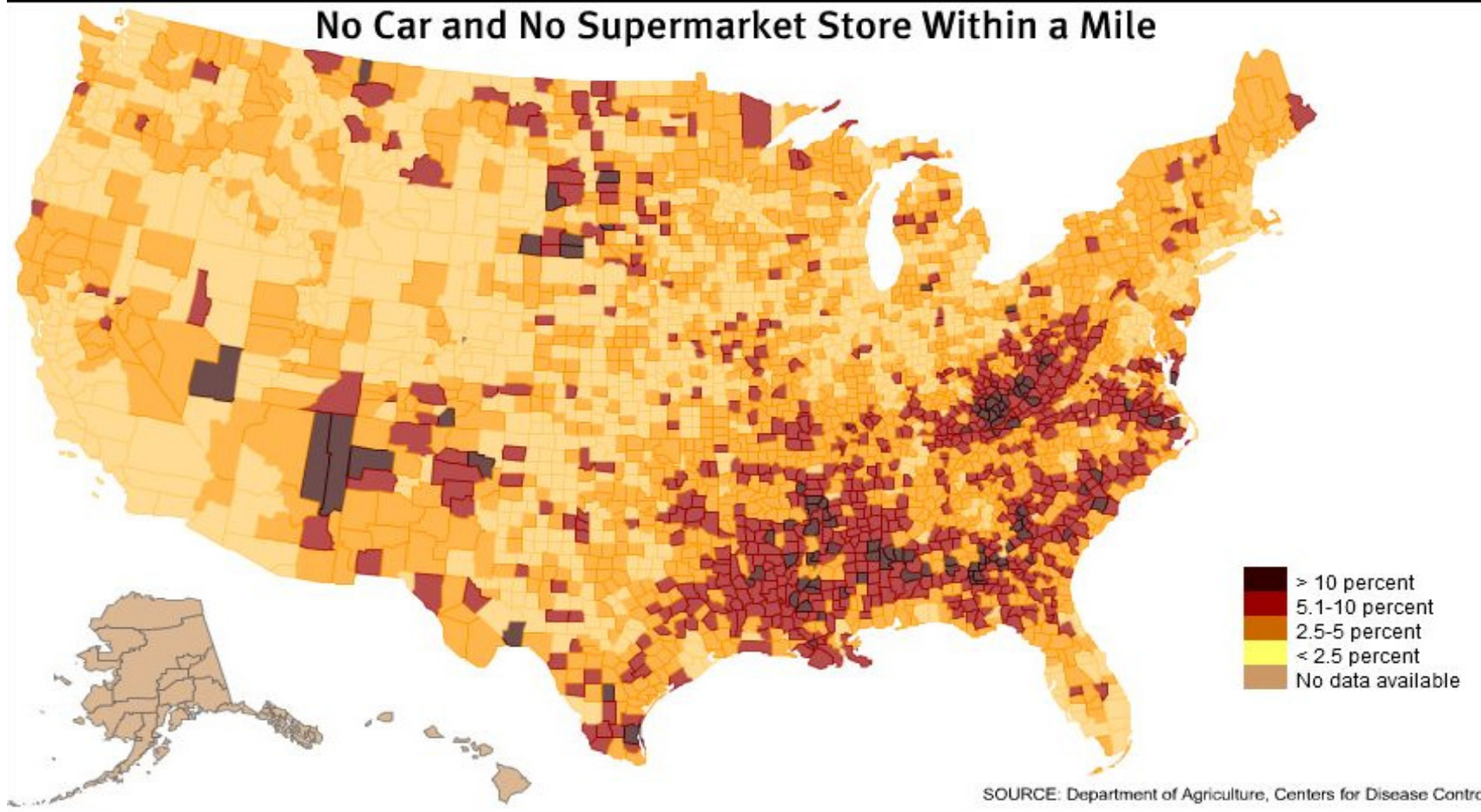
Ontario Health Promotion Resource System



To Make a Behavior Change

- The benefit of making the behavior change must outweigh the costs
- The barrier must be reduced or eliminated

No Car and No Supermarket Store Within a Mile



Barriers

- Food environment
 - Access
 - Food availability
 - Food price
- Farmers' markets increase access, specifically in food deserts
 - Belief – farmers' markets are not for low income communities

Number of Operating Farmers Markets

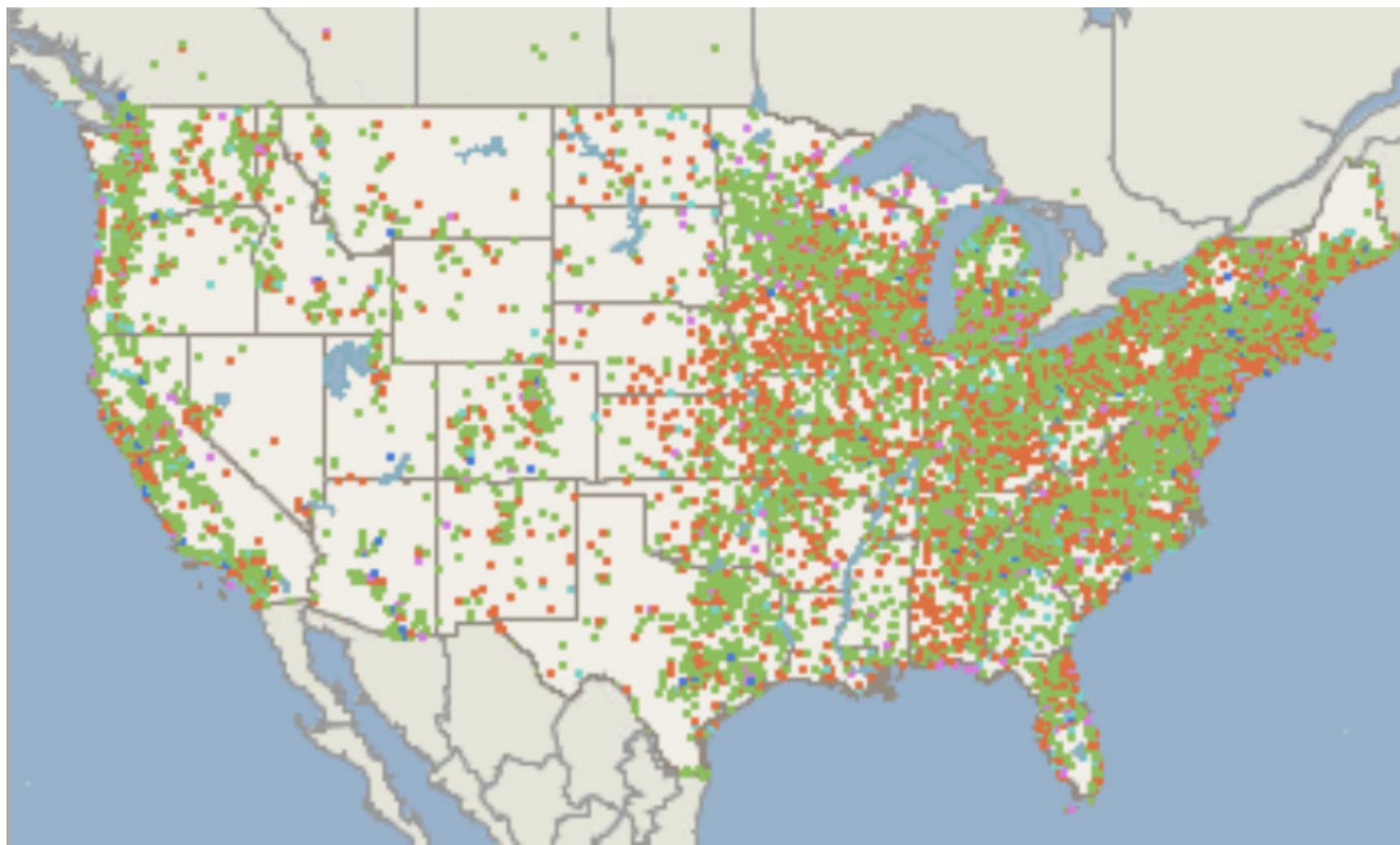


Source: USDA-AMS-Marketing Services Division

Why Farmers' Markets?



<http://www.localharvest.org/>



■ Farm ■ Frm Market ■ Restaurant ■ Grocery ■ Other

Price at Farmers' Markets vs. Grocery Stores

Jefferson Farmers' Market

- 2009 survey (n=560) asked what was more expensive, farmers' markets or grocery stores
 - 35.9% thought the prices at FM were sometimes less expensive
 - 26.6% thought prices at FM were more expensive
 - 15.1% thought they were equal in price
 - **5.4% thought FM were less expensive**
 - 3.1% reported that they were unfamiliar with prices at FM

Is Price a Perceived Barrier to Farmers' Markets?

Jefferson Farmers' Market Survey

- 2009 survey (n= 560)
 - 21% of respondents reported cost as a barrier to shopping at the Jefferson Farmers' Market
- 2010 survey (n= 407)
 - 15% of respondents found cost as a barrier to shopping at the Jefferson Farmers' Market

PUFFA Focus Groups

- Perception that farmers' markets are more expensive than area grocery stores

What does this all mean?

- Fruit and vegetable consumption is important for health
- Philadelphians are not eating enough F&V and it's linked to obesity
- Barriers, such as access and price, prohibit F&V consumption
- Farmers' markets increase access
- If consumers believe farmers' markets to be more expensive in comparison to grocery stores, then price is a barrier, and access is not truly increasing

The Cost of Eating

- U.S. Department of Agriculture reviewed price trends of healthy versus non-healthy from 1980 to 2000
 - “Prices for healthy and unhealthy foods declined at about the same rate relative to all other goods”.

(ERS Report Summary)

Food and Price Literature

- Higher levels of fruit and vegetable consumption were associated with lower prices (L.M. Power et. al.)
- In an underserved urban neighborhood the opening of a farmers' market in a food desert affected grocery store prices. A 12% drop in was seen over a three year period (K. Larson and J. Gilliland)

Literature Continued

- Concepts and Measures of “Alternative” Retail Food Outlets: Considerations for Facilitating Access to Health Local Food (Wegener and Hanning)
 - Farmers’ markets were a viable option to buy produce
- Price and availability reviewed in Birmingham, Alabama (J. Ard et. al.)
 - Neighborhood demographics have little consistent influence on fruit and vegetable prices



Is it more expensive at
farmers' markets?

Aims

- **AIM 1:** To determine if produce is less expensive at farmers' markets compared to grocery stores in Philadelphia, PA.
- **AIM 2:** To assess if the established Health Education Table at the Jefferson Farmers' Market is a suitable environment to provide health education and to disseminate the results of Aim 1.

Methodology

- To compare produce items
 - Determine farmers' markets and grocery store sites
 - Determine which produce items
 - Determine time frame for data collection
 - Find a common unit for comparison



- Determine if consumers visit the Health Education Table at the Jefferson Farmers' Market

Markets

- 2000 US Census Data reviewed per zip code
 - Race
 - Median household income
 - Median home value
- Philadelphia farmers' market schedule
- Three farmers' markets (FM) and three grocery stores (GS) were selected based on socio - demographic differences per zip code.

Locations

Vendor	Location
Thomas Jefferson University and Hospital FM	10 th and Chestnut St.
Temple University FM	Cecil B. Moore and Broad St.
Haddington FM	52 nd and Haverford St.
Whole Foods	10 th and South St.
Superfresh	10 th and South St.
Fresh Grocer	1501 N. Broad St.

Produce Items

- The results of the study *Choices Made by Low-Income Women Provided with an Economic Supplement for Fresh Fruit and Vegetable Purchase*, of what women receiving WIC vouchers purchased at farmers' markets and grocery stores.
- The characteristics of the South Eastern Pennsylvania growing region



HARVEST CALENDAR

	May	June	July	Aug	Sep	Oct	Nov	Dec
FRUIT								
APPLES								
BLUEBERRIES								
CHERRIES								
GRAPES								
MELONS								
PEACHES								
PEARS								
PLUMS								
RASPBERRIES								
STRAWBERRIES								
VEGETABLES								
BEANS								
BEETS								
BROCCOLI								
CABBAGE								
CARROTS								
CAULIFLOWER								
CELERY								
CORN								
CUCUMBERS								
EGGPLANT								
LETTUCE								
ONIONS								
PEAS								
PEPPERS								
POTATOES								
PUMPKINS								
RADISHES								
RHUBARB								
SPINACH								
SQUASH								
TOMATOES								
CHRISTMAS TREES								
CHRISTMAS TREES								



Produce Items For Data Collection

- Acorn squash
- Blueberries
- Butternut squash
- Corn
- Gala apples
- Green beans
- Green peppers
- Green squash
- Onions
- Peaches
- Potatoes
- Red potatoes
- Raspberries
- Sweet potatoes
- Tomatoes
- Yellow squash

Data Collection Points

Data Collection Point	Time Frame
1	June 3 – 9
2	June 17 – 23
3	June 24 – 30
4	July 1 – 7
5	July 29 – Aug 4
6	Aug 5 – 11
7	Aug 12 – 19
8	Sep 9 – 15
9	Oct 20 – 26

Data Collection Standards

- Consumer perspective
- For each data collection point, three of each produce item was weighed (to create a common unit if the price was not per pound) and averaged for each location.
- After the data from the nine time points was collected, all data per product for each location was averaged.

Data Collection Analysis Plan

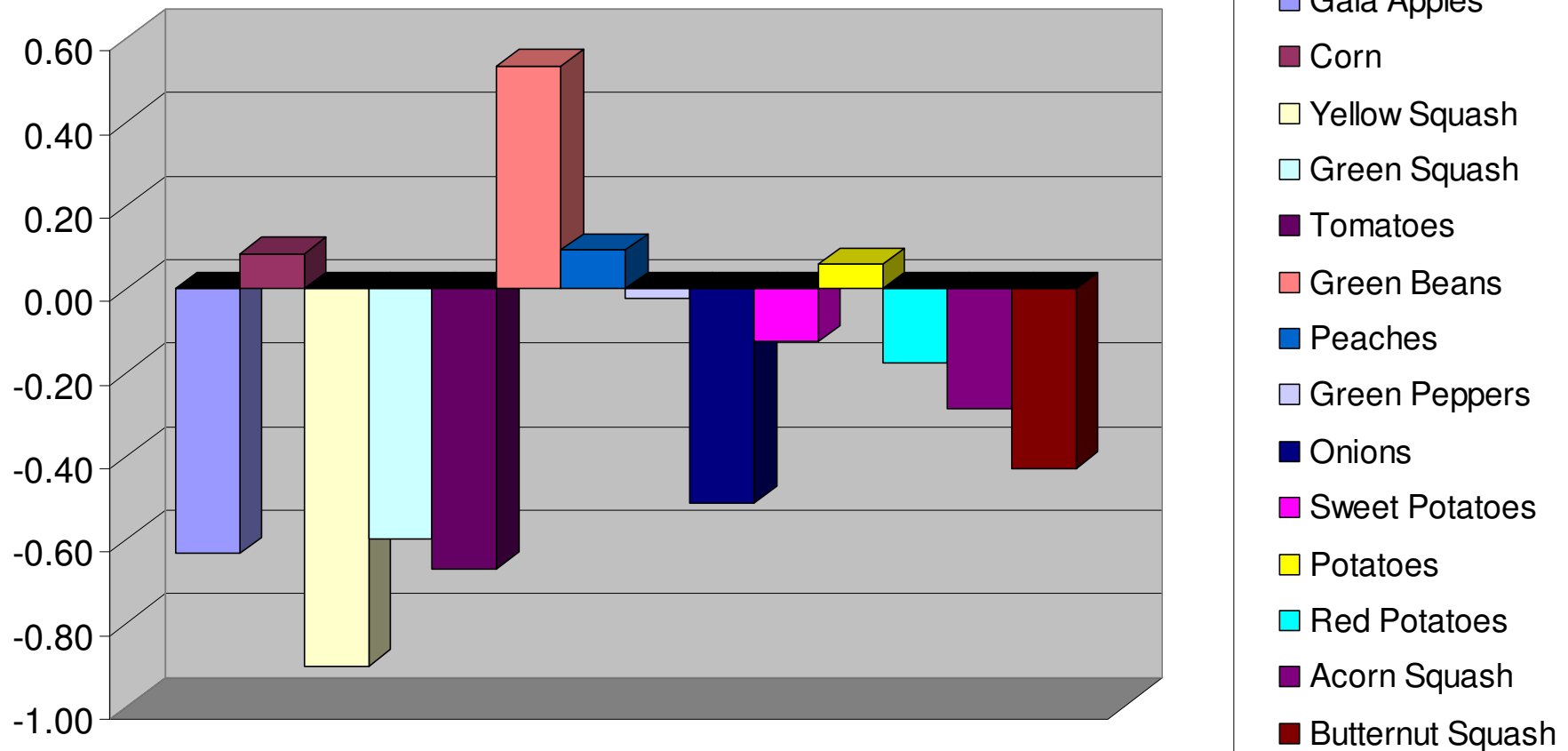
- Average Price Calculated
 - Per location per product
 - Per product for all FM
 - Per product for all GS
 - Overall difference between FM and GS for all products

Results: AIM I

- FM vs. GS
 - Farmers' markets were \$0.26 per pound less expensive than grocery stores
 - Range in US dollars (-0.90 to 0.53)

	FM (\$)	GS (\$)	Difference (\$)
Gala Apples	1.50	2.14	-0.63
Corn	0.50	0.42	0.09
Yellow Squash	0.92	1.82	-0.90
Green Squash	1.13	1.73	-0.60
Tomatoes	1.94	2.61	-0.67
Green Beans	2.16	1.62	0.53
Peaches	1.58	1.49	0.09
Green Peppers	1.48	1.50	-0.02
Onions	1.00	1.51	-0.51
Sweet Potatoes	1.45	1.57	-0.13
Potatoes	1.24	1.18	0.06
Red Potatoes	1.27	1.44	-0.18
Acorn Squash	1.20	1.49	-0.29
Butternut Squash	1.06	1.49	-0.43

Average Difference in Price Per Product Per Pound: Farmers' Market Versus Grocery Store



Results: AIM I

- The only item more expensive than \$0.10 per pound at farmers' markets was green beans.
- Greater than \$0.50 per pound savings at a FM
 - Gala apples
 - Yellow squash
 - Green squash
 - Tomatoes
 - Onions
- If one pound of each item was bought each week for a year, the total savings would be \$186.51

Results: AIM 2

Jefferson Farmers' Market
Survey 2010

*Did you visit the Health
Education Table during
the 2010 farmers' market
season?*

Cooking demo	8.6%
Food sample	18.4%
Recipe	19.4%
Stroke assessment	2.5%
Blood pressure screening	6.4%
General visit	18.7%
Bookstore	5.7%

Street Assessment, n=49

Employed by TJU	9	18.40%
Employed by TJUH	17	34.70%
Work in Center City	3	6.10%
Community Resident	7	14.30%
Patient	6	12.20%
Other	6	12.20%

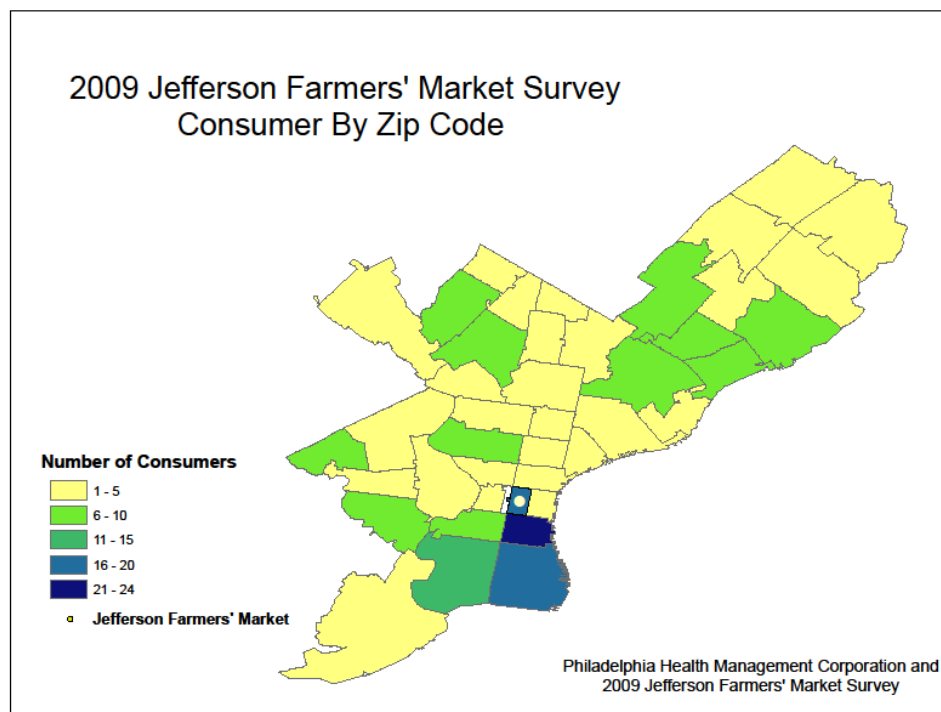
Discussion

- Farmers' markets are a viable option when purchasing fruits and vegetables in Philadelphia
- The Jefferson Farmers' Market is an effective point of education
- Communicate study findings to the public to decrease the barrier
- Results will be shared with The Food Trust and Farm to City
- Supplemental Nutrition Assistance Program (SNAP) and access
- Women, Infant, Children (WIC) and access
 - 2008 a study estimated at six out of ten farmers' markets accepted WIC vouchers and other government funded vouchers
- These results are in line with the results of an unpublished study conducted in New York City

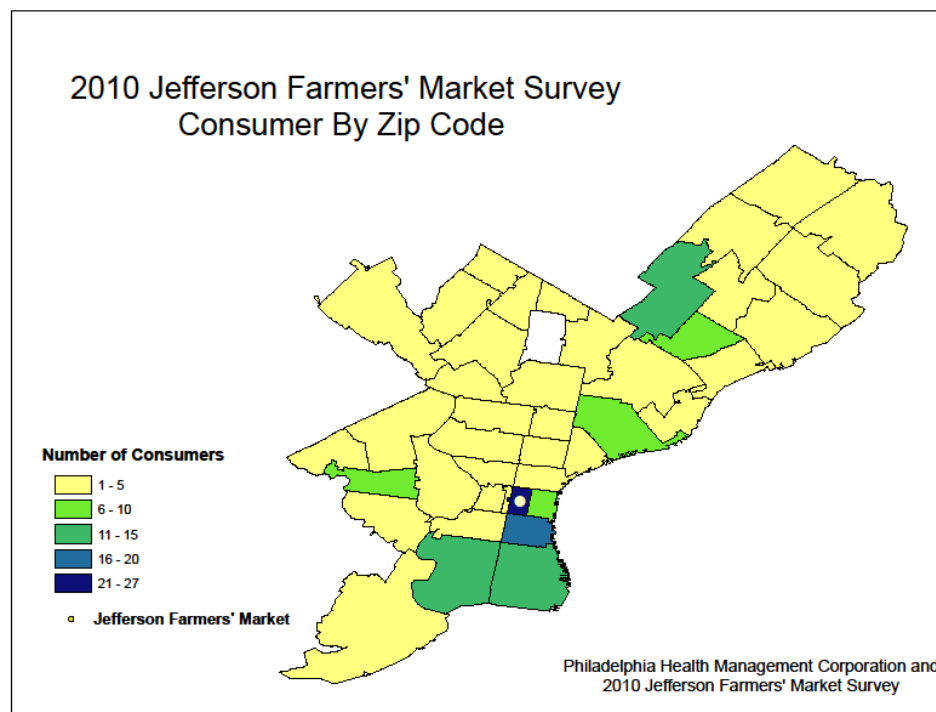
Did the Jefferson Farmers' Market increase access?

- Having education and access to fresh fruits and vegetables at Jefferson can positively impact other neighborhoods

2009 n=306



2010 n=265



Limitations

- Only three farmers' markets and three grocery stores were compared
- A limited number of food items were used for data collection
- Some items (green and yellow zucchini) were \$0.75 each or two for \$1.00
 - “Two for” prices were not taken into account and would only increase the overall savings at the farmers' market
- The Jefferson Farmers' Markets Surveys are available to Jefferson employees, students and volunteers who use the internet
 - Lack of community data

Recommendations

- A summary report and educational tools for farmers' markets to disseminate the data
- Develop health communication materials and pilot test at Jefferson (To be implemented in 2011)
 - Assist farmers communication to consumers
 - Assist the community
 - Change community norms
- Larger study similar to this to review other neighborhoods
- Study to determine why individuals believe it is more expensive at farmers' markets
- Study to determine nutrient differences and quality between farmers' market and grocery stores

- 
- **Rickie Brawer, PhD, MPH**
 - **Shelley Chamberlain, R.D.**
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 - **Mona Sarfaty, MD, MPH**
 - **David Madison**
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 - **Elise Levin**
 - **Jana Slipski**
 - **Haley Vandermeer**
 - **Laura Miller**
 - **Jefferson Farmer's Market, Farm to City**
 - **Temple University's Farmers' Market, The Food Trust**
 - **Haddington's Farmers' Market, Farm to City**
 - **Amy Leader, DrPH, MPH**
 - **Melissa DiCarlo, MPH**
 - **Heidi Swan, MPH**
 - **Mia Dalia**
 - **Nutrition and Dietetics Department TJUH**

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