Measuring the Impact of Complex Community Programs:

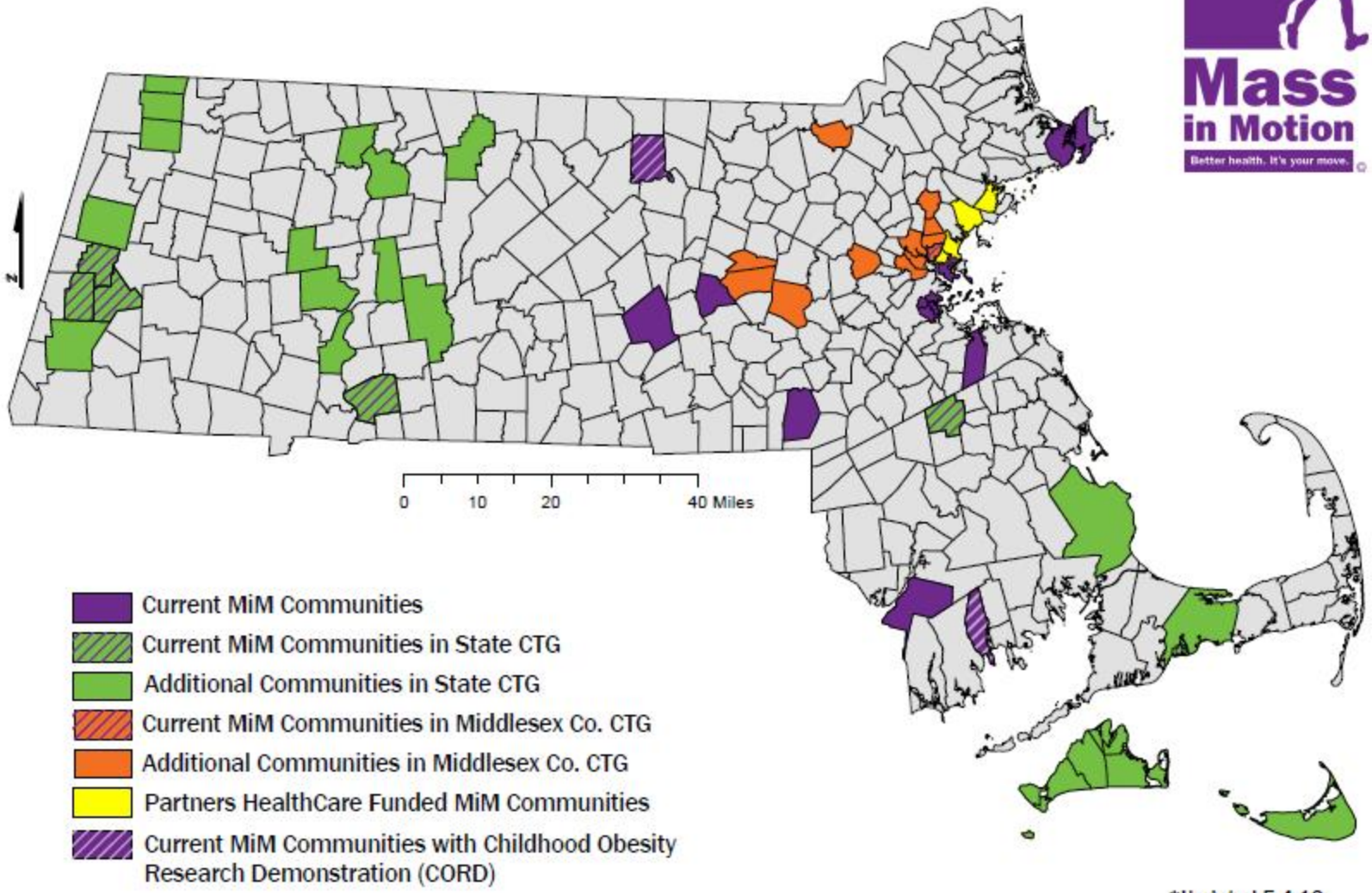
Using Mass in Motion as a Case Study

December 11, 2013

Recurring Evaluation Themes

- Continuous data collection
- Careful use of resources
- An analytic approach that is person-centric
- Simultaneous collection of confirmatory data
  - Small area estimates (BRFSS)
  - Grocery store receipts
  - Clinical outcomes
- Flexible analytic design to permit expansion

Current Mass In Motion Communities



*Updated 5.4.12

Mass In Motion: General Logic Model

Collecting Data o

Healthy

Active

Short-Term

Self-Reported Aw

Mass in Motion Con

Data Portal Usage

Confirmatory Dat

Requests for inform

Demonstration of in

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Mid-Term Outcomes

Self-Reported Behavior

Mass in Motion Comn

BRFSS town level estir

Healthy eating

Active Living

Confirmatory Data

BRFSS town level estir

Changes in restaurant

WIC/SNAP purchases

Hubway usage

School BMI data

Parental reports of wa

Grocery stores sales

Long-Term Outcomes

Self-Reported Health Improvement

Mass in Motion Community Survey

BRFSS town level estimates

Obesity

Diabetes

Blood pressure

Confirmatory Data

APCD records by town

Hospitalization and ED data by town

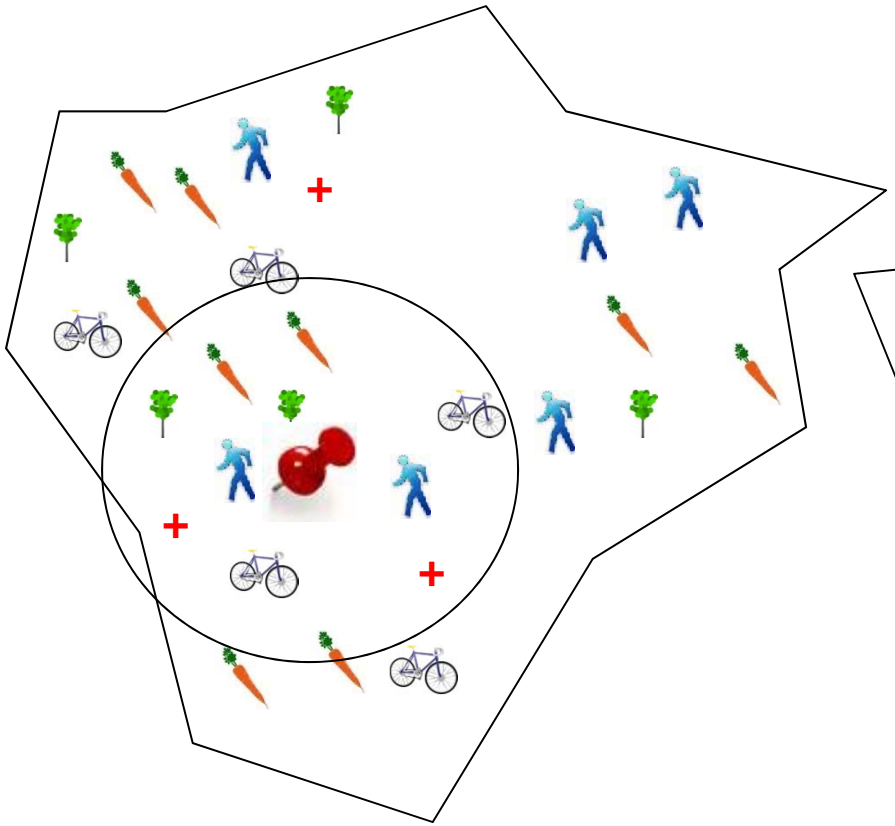
Community health center clinical data

Long-Term Outcomes

Long-Term Outcomes

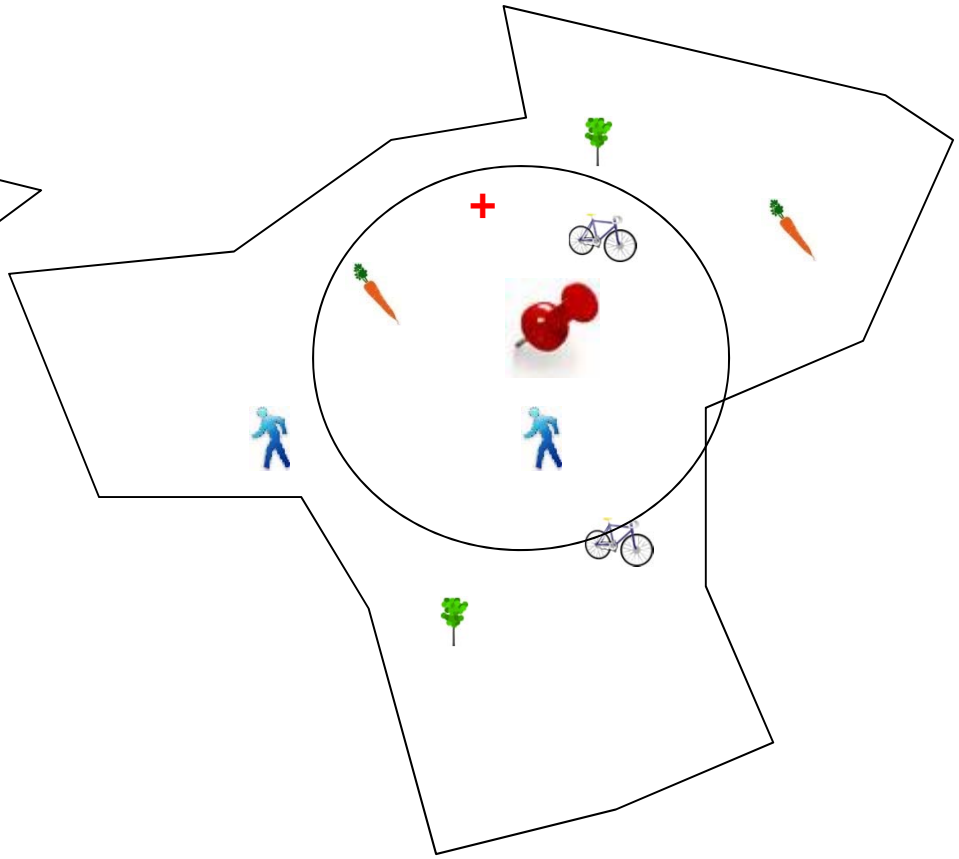
Confirmed

Making the Healthy Choice the Easy Choice



Mass-in-Motion Community

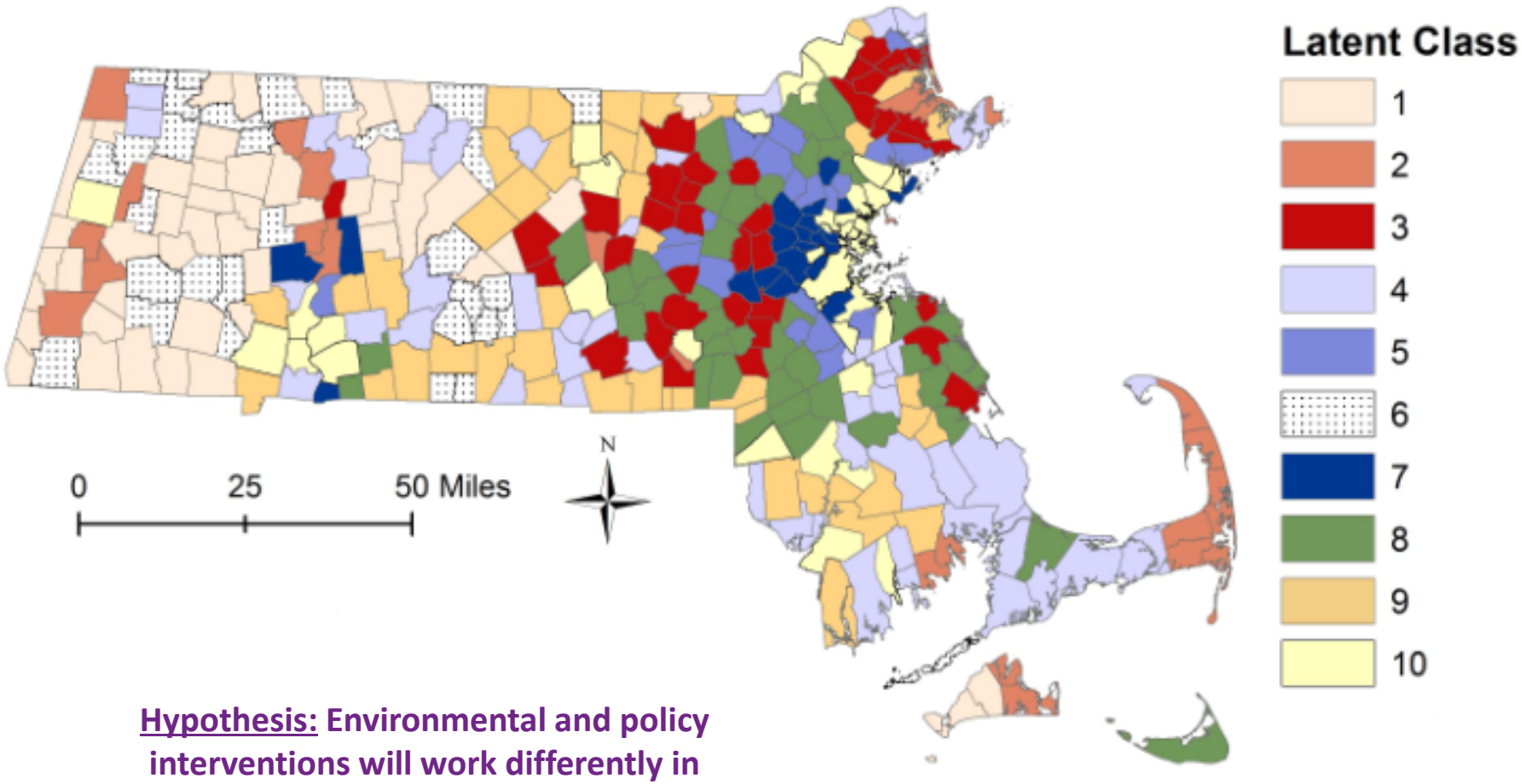
2014



Comparison Community

2014

10 Types of Communities in Massachusetts



<u>Hypothesis:</u> Environmental and policy interventions will work differently in different types of communities.

Target & Comparison Communities

Target Communities *

1. Barnstable
2. Belchertown
3. Brockton
4. Chelsea
5. Chilmark
6. Everett
7. Fitchburg
8. Framingham
9. Franklin
10. Gloucester
11. Great Barrington
12. Holyoke
13. Hudson
14. Lee
15. Lenox
16. Lowell
17. Lynn
18. New Bedford
19. Northampton
20. Northborough
21. Plymouth
22. Revere
23. Salem
24. Somerville
25. Springfield
26. Stockbridge
27. West Tisbury
28. Worcester

Comparison Communities

1. Chicopee
2. Dedham
3. Hadley
4. Haverhill
5. Holden
6. Lawrence
7. Longmeadow
8. Monterey
9. Randolph
10. Salisbury
11. Southwick
12. Watertown

Special Selection Consideration Given To

"Highly Rated" Communities
Driving Distance between communities
Childhood Obesity Communities
Partners Healthcare
Evaluation partner (Worcester)
Potential access to grocery store data

***Additional communities have been trained by UMASS to collect their own data.**

Data Collection Timeline

Community reports on local activities (quarterly)

Mass in Motion Community Survey, March 2012 (2,310 respondents)

Field surveys (Food stores and restaurants), summer 2012

Pilot survey testing geocoding and social capital questions, June 2012 (500 respondents)

MiM Community Survey, August-September 2012 (4,000 respondents)

Field surveys (Parks and sidewalks), fall/winter 2012-13

Mini-awareness survey, October 2012 (600 respondents in 6 communities)

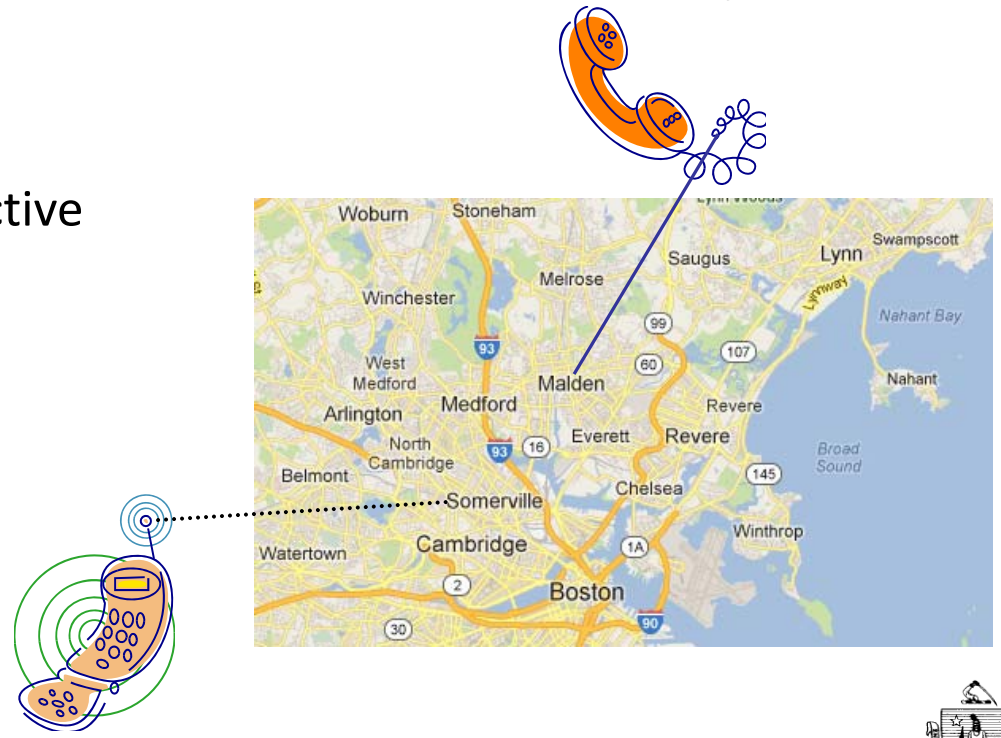
MiM Community Survey, March 2013 (2,500 respondents)

Clinical data from participating community health centers (monthly)

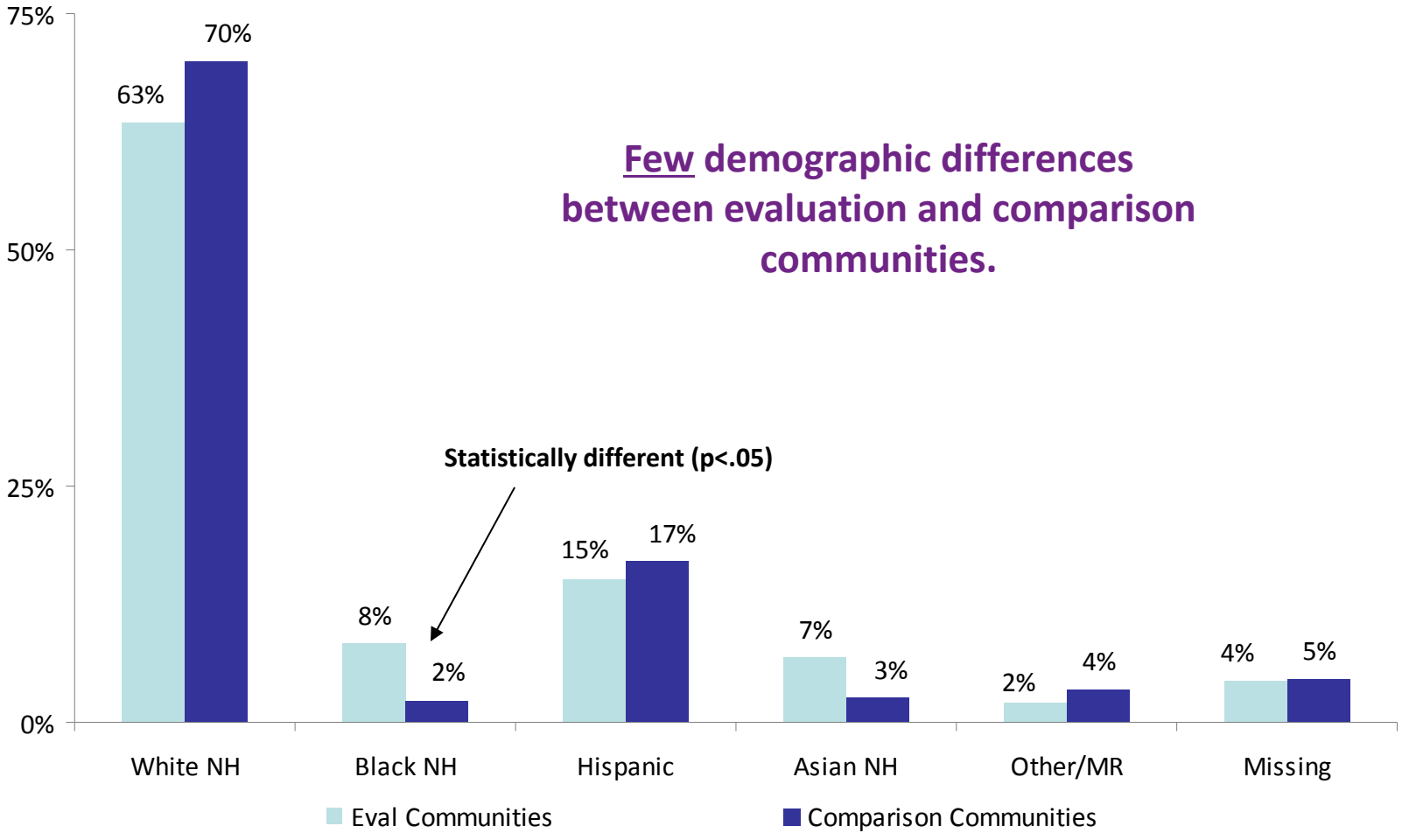
Mass in Motion Telephone Survey

- Semi-annual telephone survey fielded to ~ 5,000 respondents per year
  - ~ 75% of calls to target Mass in Motion and comparison communities
  - ~ 25% of calls to all other Massachusetts communities
- Target landline/cell split: 80%/20%
- Geo-codes allow for assessment of differences within a community

  - 5 surveys completed to date
  - Focus on healthy eating and active living:
    - **Awareness**
    - **Behavior**
    - **Self-Reported Health and Health Risk**



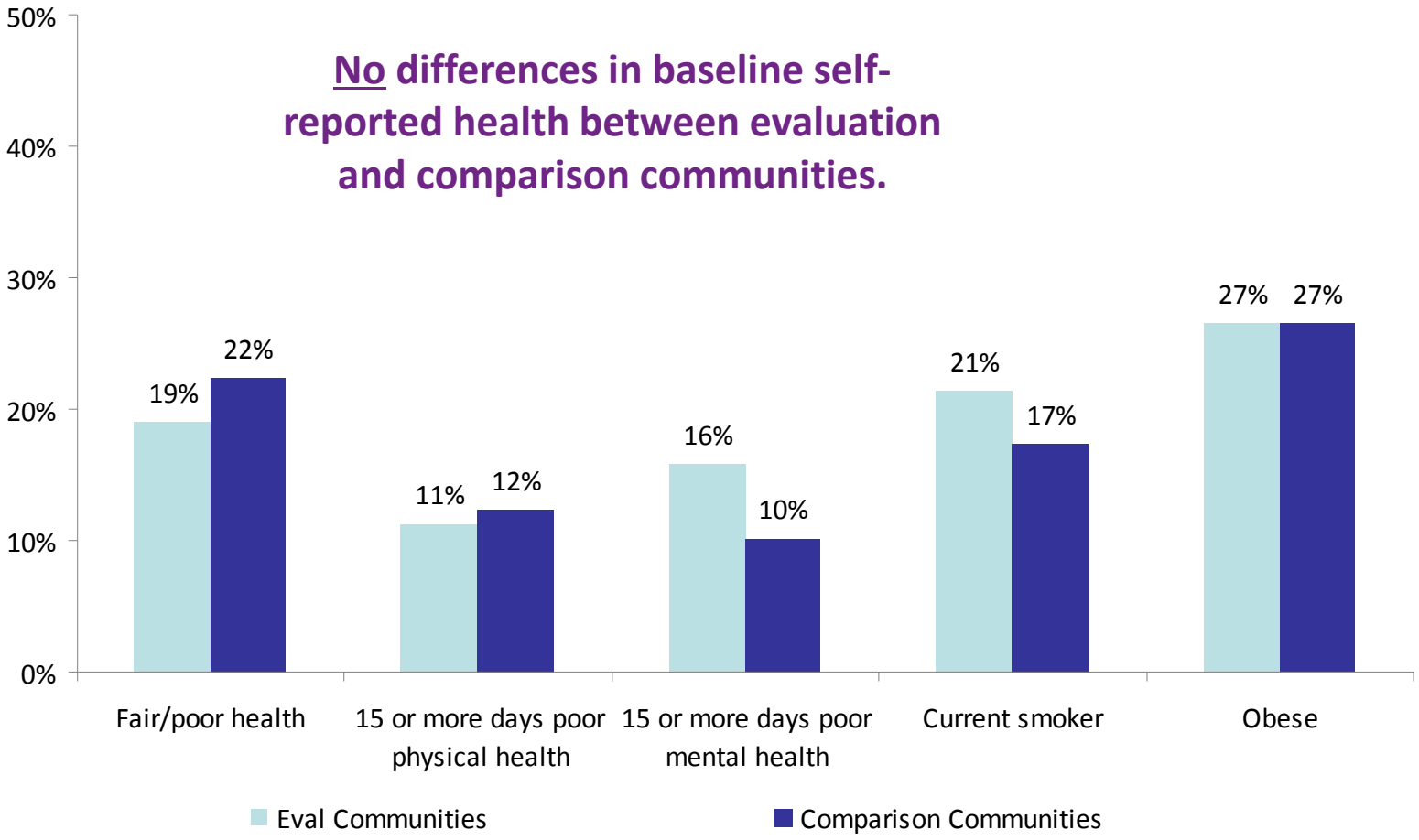
Evaluation vs. Comparison: Race/Ethnicity



Few demographic differences between evaluation and comparison communities.

Source: MDPH Mass in Motion Community Survey, August 2012

Evaluation vs. Comparison: Self-Reported Health



Source: MDPH Mass in Motion Community Survey, August 2012

Field Surveys: Overview

Field Surveys

- **Restaurants**
- **Grocery and Convenience Stores**
- **Parks, Streets, and Sidewalks**

Availability, accessibility, and price of foods such as:

- Milk (including skim and 1%)
- Fresh fruits and vegetables
- Canned beans and vegetables
- Frozen vegetables
- Ice creams and frozen fruits

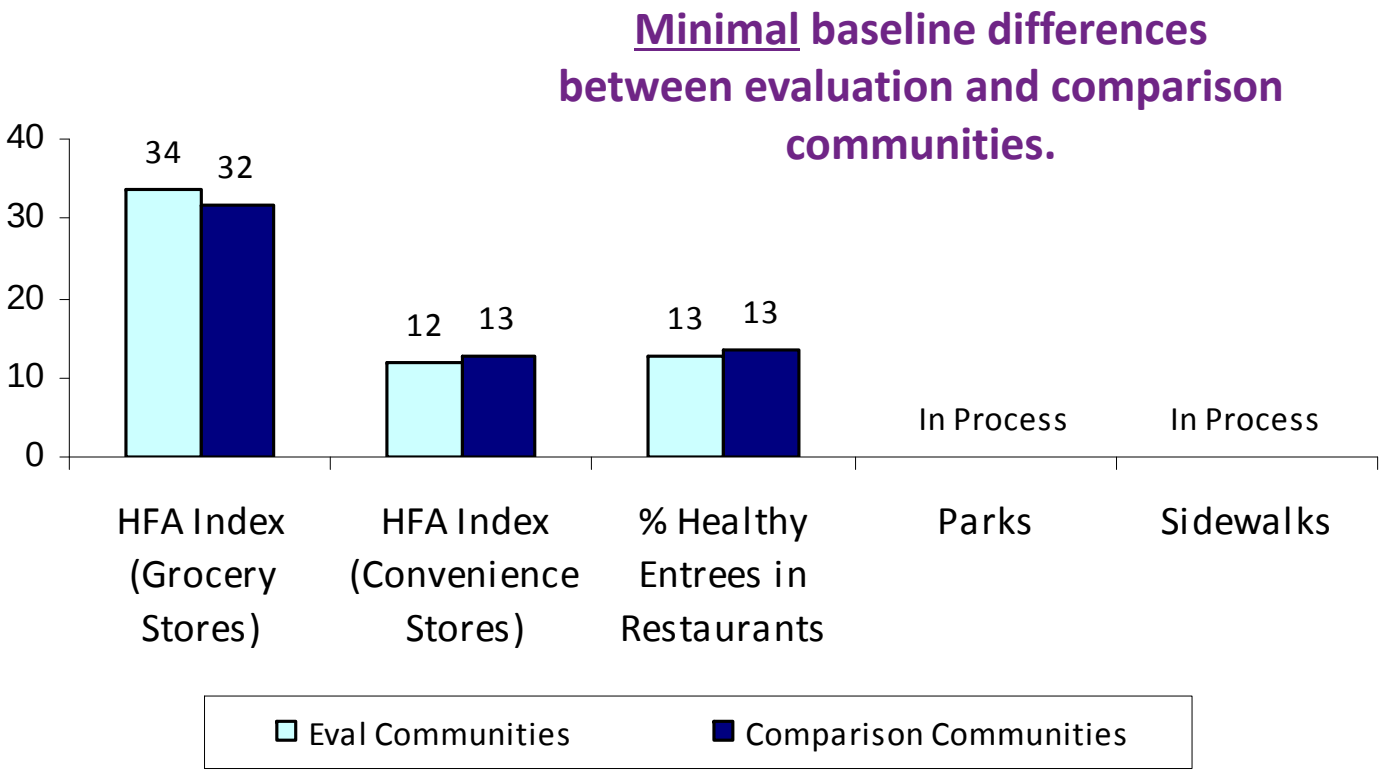
Accessibility of local parks and sidewalks

- Condition of pavement
- Traffic
- Maintenance of parks

Characteristics of area restaurants such as:

- Service type (buffet, sit-down)
- Menu

Evaluation vs. Comparison: Field Surveys



Source: Mass in Motion Fields Surveys conducted by UMASS (August 2012 – present)

194 Grocery Stores, 370 Convenience Stores, 657 Restaurants, 76 Parks, and 1200 sidewalk segments.

Park/Sidewalk surveys to be completed 5/2013

All data automatically geo-coded

Annual updates planned.

Measuring Outcomes:

Tracking Changes in Environment, Awareness, Behavior, & Health

Main questions to answer

Question #1: Has the healthy choice become easier?

Question #2: Can we attribute this to Mass In Motion?

Question #3: Have there been behavior changes and overall improvement in BMI?

Question #4: Have these changes led to improvements in health outcomes?

We use geo-coded data to help answer these questions

- Telephone survey responses
- Field survey data
- Interventions (where applicable)

Early Positive Indications

- **Rate of increase in adult obesity slower in Mass In Motion communities**
  - Growth rates computed as ratios
  - Uses small area estimates with 3-year averages (2002 – 2004, 2005 – 2007, and 2008- 2010)
  - Comparison for Legacy communities only
  - Possible selection bias

- **Child obesity rates dropped in Mass in Motion communities compared to rest of state :**
  - 5 MiM communities versus 47 comparisons
  - Based on BMI computed for 60,000 children in 1st, 4th, 7th, and 10th grades
  - No adjustments for community type or racial/ethic composition
  - Also statewide decrease (3.7%) led by Mass in Motion communities

Person-Centric Analysis – Building a Model

- **Implications of the phrase "Making the Healthy Choice the Easy Choice"**
  - Implicit sense of geography
  - Physical proximity amplifies any intervention effect
  - Time is a part of any solution

- **A Very Simple Model**
  - Healthy Food Availability Index – 564 geo-coded grocery & convenience stores
  - Mass In Motion Community Survey – 3,514 respondents
    - In the past month, would you say your family or members of your household bought more fruits and vegetables than in the same month one year ago?
  - 171,925 Person/Store combinations (within 10 miles of each other)
  - Additional variables
    - Age of respondent
    - Employment
    - Awareness of the Mass In Motion program

Person-Centric Analysis – Sizing the Neighborhood

Combining Data

Younger

Older

Employed

Not-Employed

Aware MiM

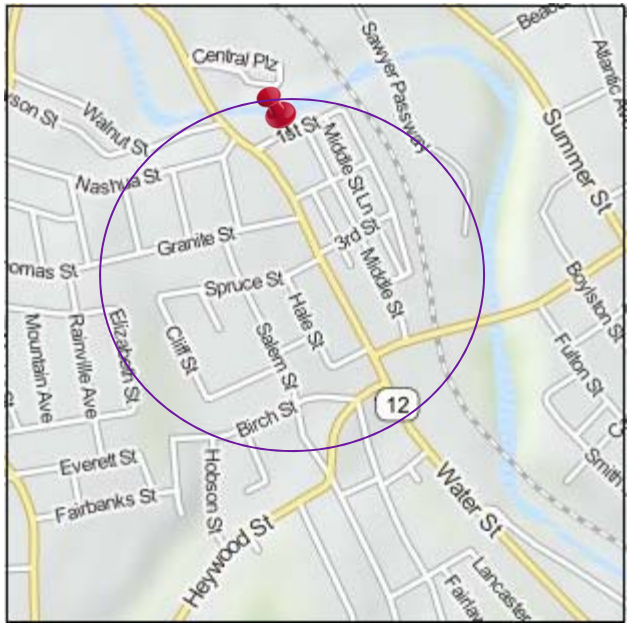
Not-Aware MiM

Independent Assessments

1. "Difficult to find them in a local store."
2. Healthy Food Availability Index

Person-Centric Analysis – What Can Drive Change?

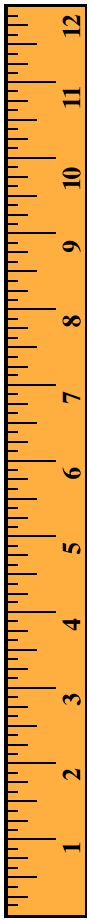
Eating More Fruits & Vegetables



Question: In the past month, would you say your family or members of your household bought more fruits and vegetables than in the same month one year ago?

Age
Race
Ethnicity
Children in the home
Employment status
Income
Social Capital
Healthy Markets
Awareness of MiM & Healthy Living
Interaction Effect
Awareness x Healthy Markets

Bigger Effects



Smaller Effects

Person-Centric Analysis – What's Next?

1. Adding other geo-coded data

Healthy restaurants menus
Park and sidewalk assessments
Dual-use facilities
Walking and bicycle trails
Farmer's markets
Pedestrian counts
Walkability audits
Etc.

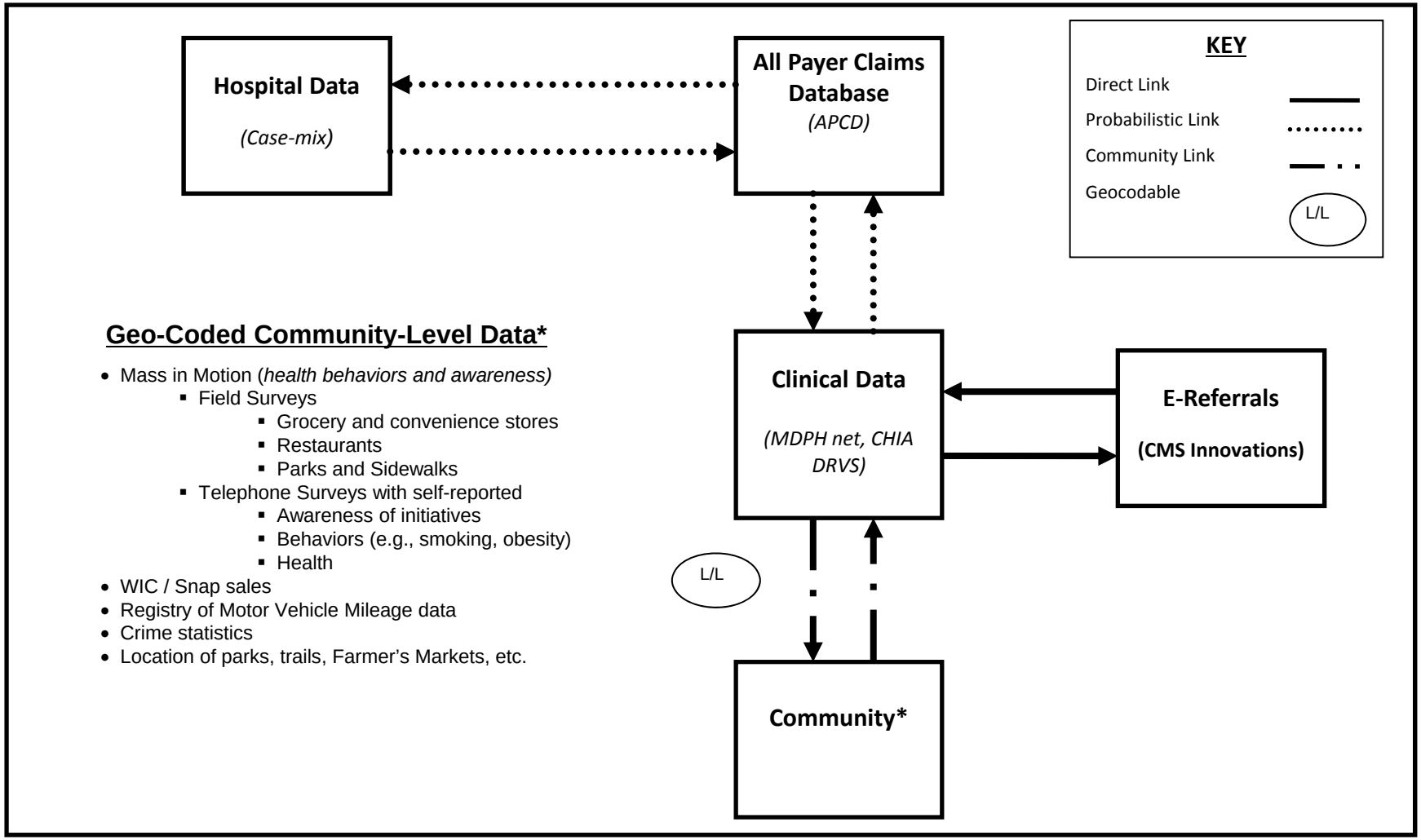
2. Adding Non-geo-coded data

Complete Streets Policies
Healthy design standards
Nutritional standards for food pantries
Affordable transportation modes
Nutritional standards for vending machines
Healthy Meeting Guidelines
Snow clearance plan
Etc.

3. Refining and Applying the Model

- Careful use resources
- Continuous data collection
- Use data to drive change (QI)
- Develop person-centric models
- Use secondary data to confirm the model
  - Grocery store receipts
  - Clinical outcomes
  - Etc.

Fitting Together the Pieces



Geo-Coded Community-Level Data*

- Mass in Motion (*health behaviors and awareness)*
  - Field Surveys
    - Grocery and convenience stores
    - Restaurants
    - Parks and Sidewalks
  - Telephone Surveys with self-reported
    - Awareness of initiatives
    - Behaviors (e.g., smoking, obesity)
    - Health
- WIC / Snap sales
- Registry of Motor Vehicle Mileage data
- Crime statistics
- Location of parks, trails, Farmer's Markets, etc.

Mass in Motion
Better health. It's your move.

The work presented here has been a collaborative effort of teams located at Massachusetts Department of Public Health, University of Massachusetts Medical School - Health Geography Lab, and the Metropolitan Area Planning Council.

Thank You.

University of Massachusetts UMASS Medical School

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