

Is the Program Working?



New spatially-discrete tools for rapid assessment and program evaluation of SRTS mode shift impacts

Transportation Research Board

Moving Active Transportation to Higher Ground: Opportunities for Accelerating the Assessment of Health Impacts

April 13, 2015

Timothy G. Reardon

Assistant Director of Data Services

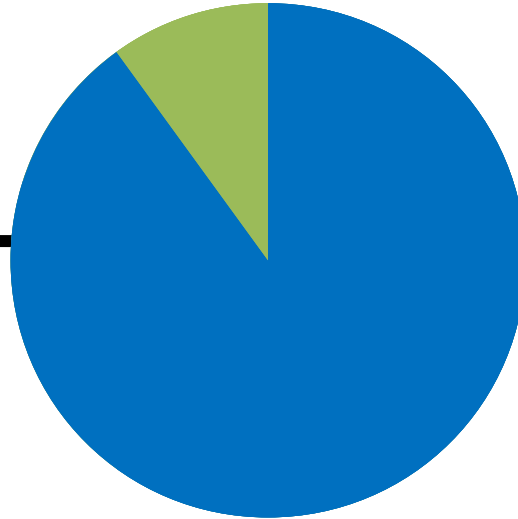
Metropolitan Area Planning Council



Partners



Finding the Walk-to-School “Target Market”



A different kind
of mode shift



Living close to their school
and
Safe walking routes are available
and
Currently being driven to school

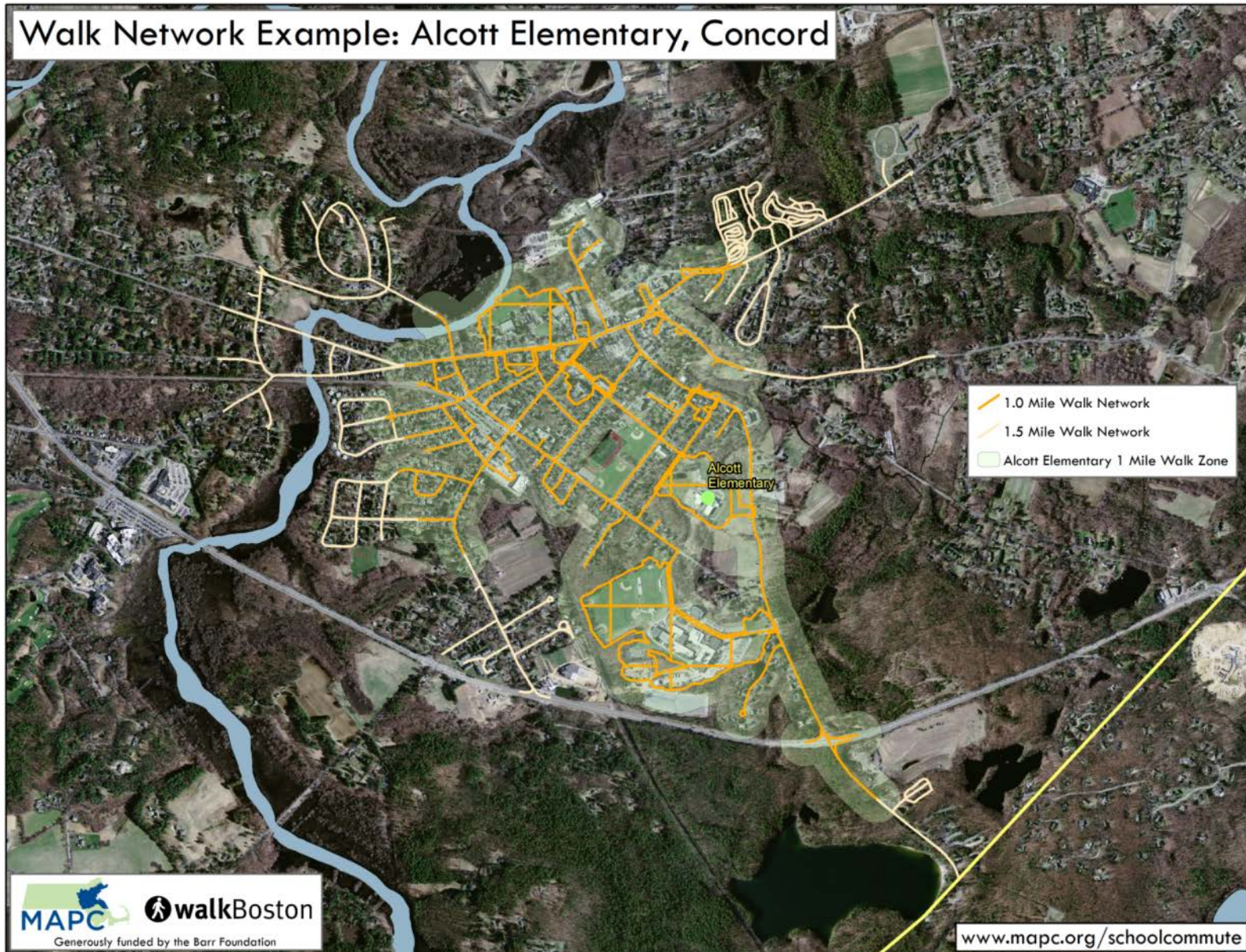
Where do we find these
Proximate Auto Commuters?

How many kids?

How many miles?

***How much
emissions?***

Defining School “Walksheds”



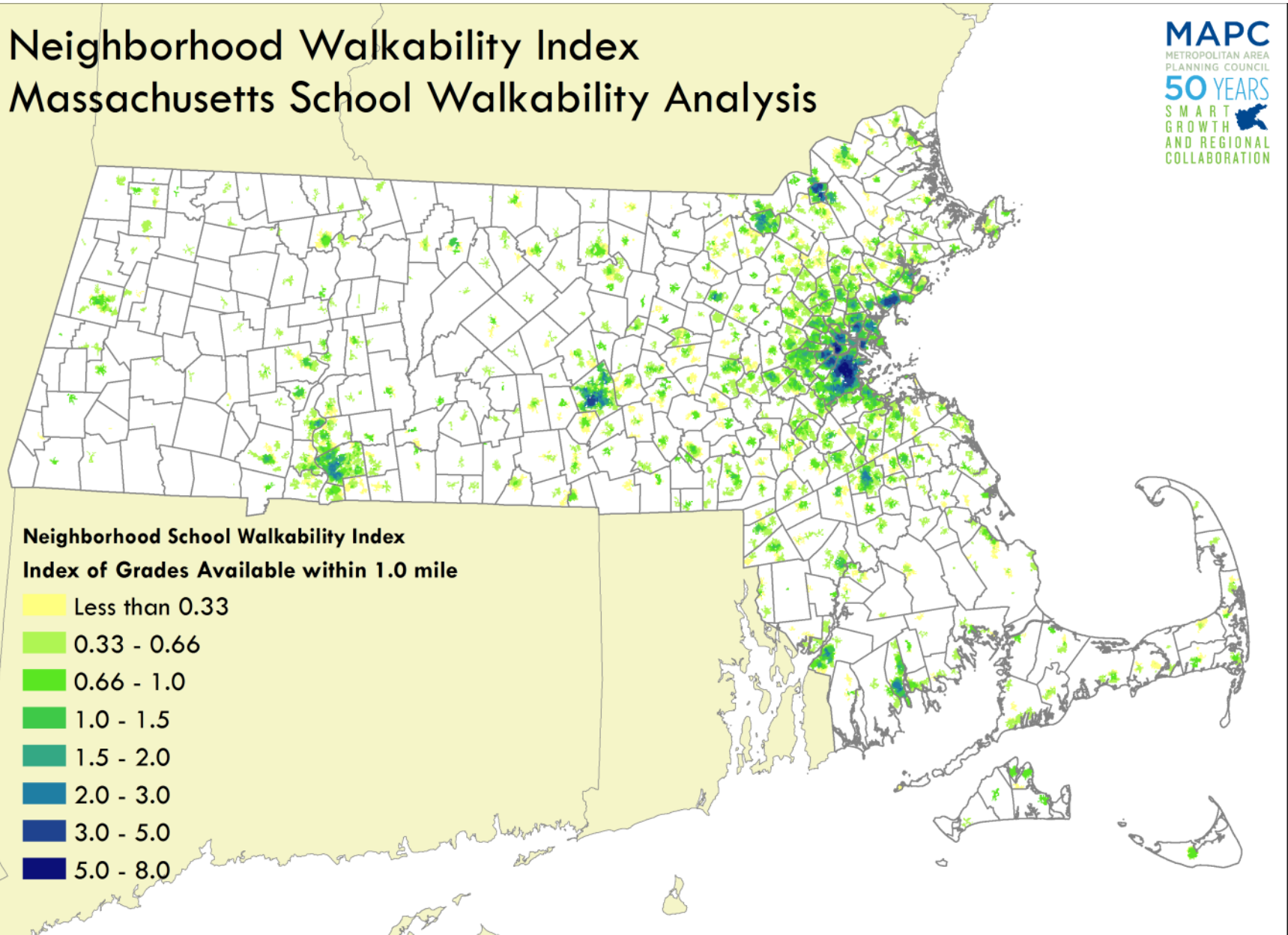
School Walkability Index

Neighborhood Walkability Index Massachusetts School Walkability Analysis



Neighborhood School Walkability Index Index of Grades Available within 1.0 mile

- Less than 0.33
- 0.33 - 0.66
- 0.66 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- 2.0 - 3.0
- 3.0 - 5.0
- 5.0 - 8.0



MySchoolCommute Survey Instrument

New, 6-question school commute survey

English and eight most common foreign languages

Pilot survey in two schools

On-line map interface

51% response rate during initial 2011 deployment

Paul Revere School
Important School Travel Survey

Dear Parent or Guardian,

Paul Revere School would like to learn how students get to and from school.

This information will be used to plan safe and healthy walking options for students.

The survey will take less than 3 minutes to complete.

Please complete one survey for each child at Paul Revere School by **Friday, May 20.**

Your school earns money when you complete this survey! If surveys are completed for 203 students, WalkBoston (a nonprofit group) will donate \$250 to the school. If surveys are completed for 304 students, WalkBoston will donate \$400!

You can also fill out the survey online at myschoolcommute.org/revere

Please complete EITHER the online survey or this form – NOT BOTH!

1. What grade is your child in? K 1 2 3 4 5 6 7 8

1a. On what day of the month was your child born?

2. What street do you live on?
Name of your street:

Name of nearest cross-street:
(nearest intersection)

3. How does your child get TO school on most days? (choose one)

School Bus Carpool (with children from other families) Other (skateboard, scooter, inline skates, etc.)
 Bike Walk
 Family Vehicle (only children in your family) Transit (city bus, subway, etc.)

3a: If you selected "family vehicle" or "carpool" for travel to school, do you usually drop off your child on your way to work or another destination?
 Yes No Not applicable

4. How does your child get home FROM school on most days? (choose one)

School Bus Carpool (with children from other families) Other (skateboard, scooter, inline skates, etc.)
 Bike Walk
 Family Vehicle (only children in your family) Transit (city bus, subway, etc.)

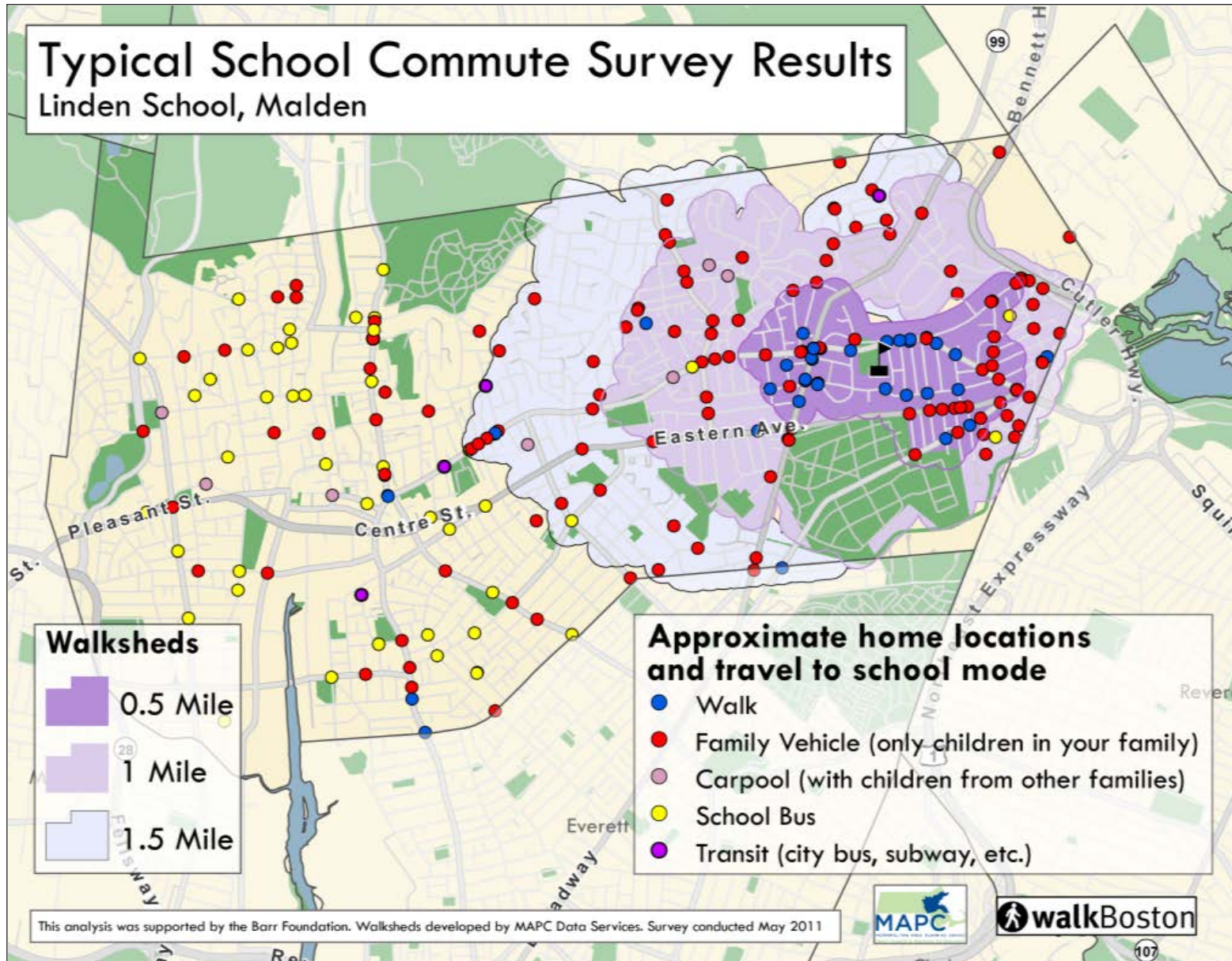
4a: If you selected "family vehicle" or "carpool" for travel home from school, do you usually pick up your child on your way from work or another location?
 Yes No Not applicable

5. How many vehicles do you have in your household?

6. How many people in your household have a driver's license?

That's all! Thank You! RP-a

Survey Results on the Map

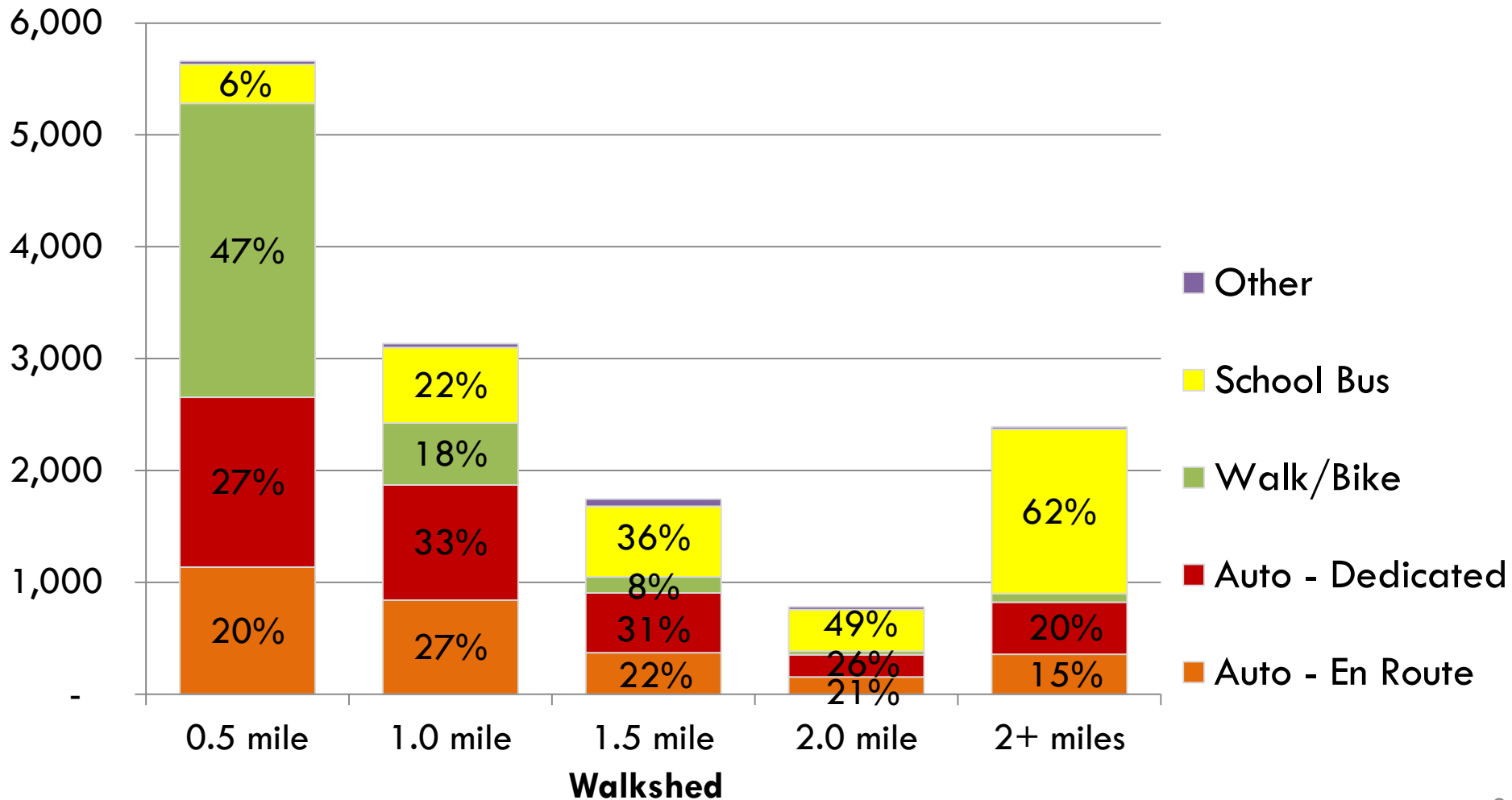


Mode Choice by Walkshed

Morning Commute Mode

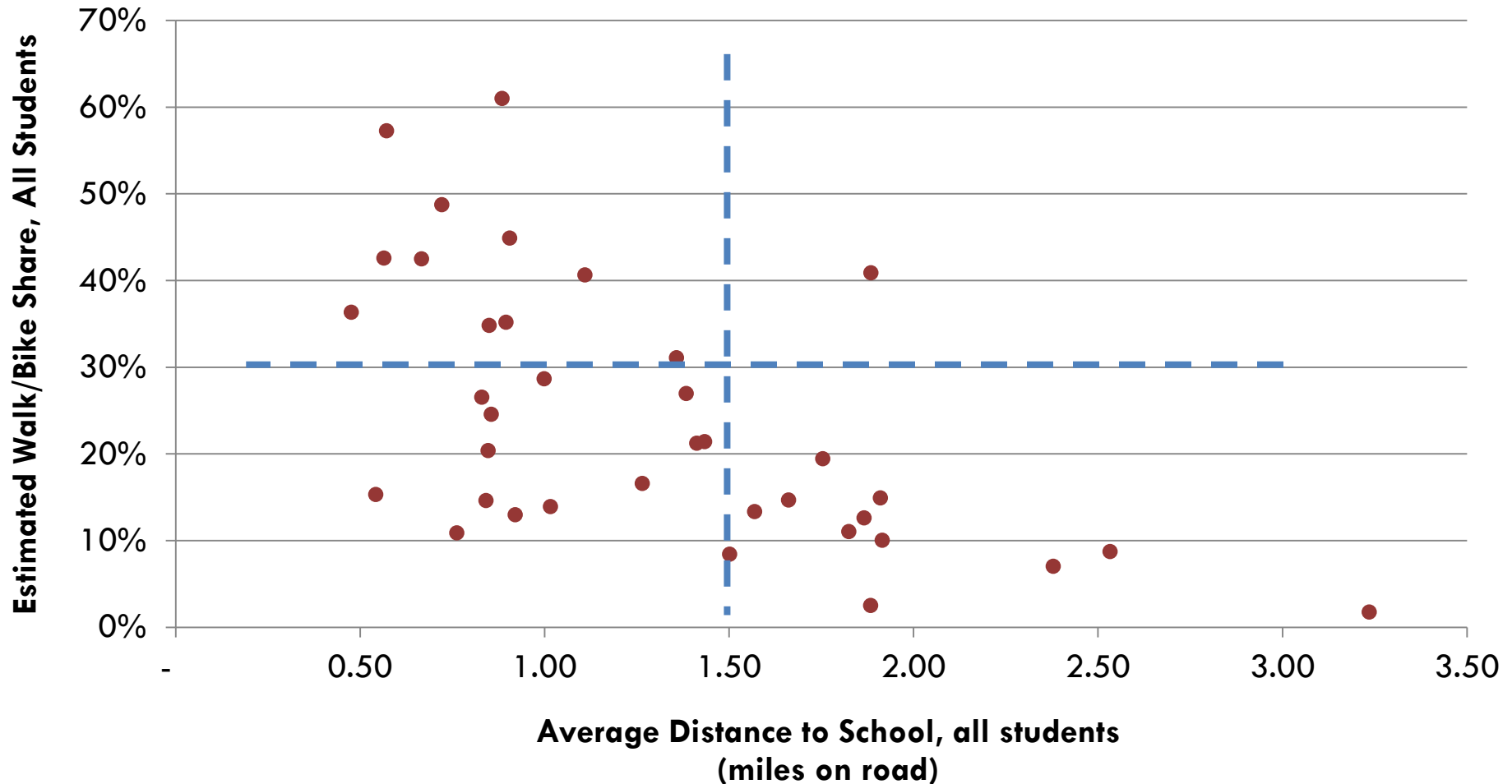
MA SafeRoutesSurvey.org surveys, July 2013 - March 2015

N=13,712

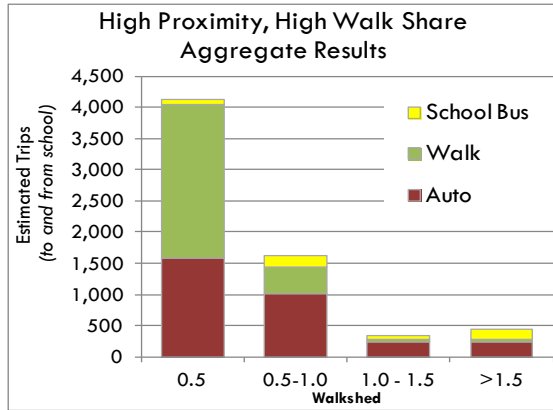
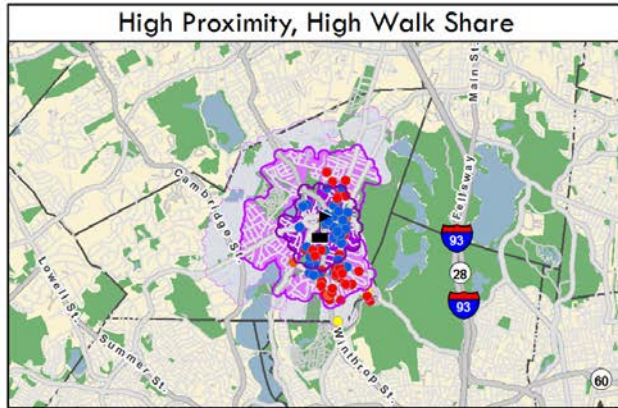


Walk Share vs. Proximity

**Average Distance to School and Walk Share,
MA SafeRoutesSurvey.org surveys, July 2013 - March 2015
38 "high response" schools (>150 surveys)**

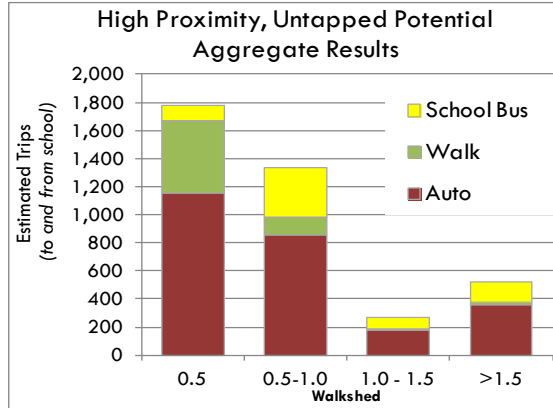
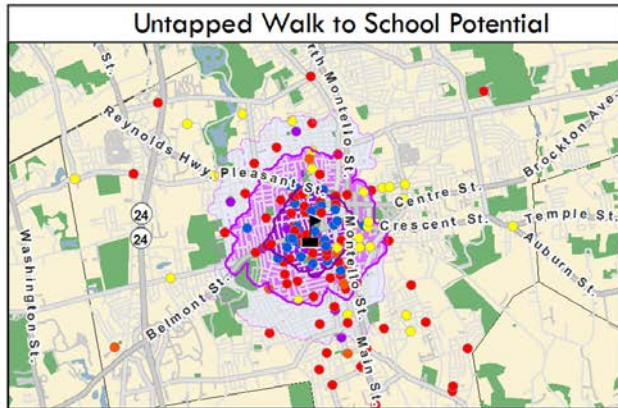


School Commute “Profiles”



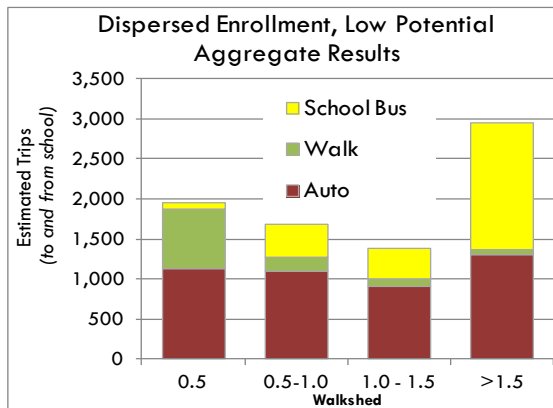
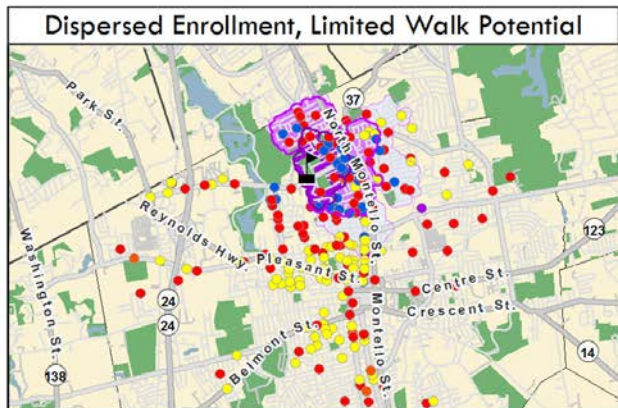
Students in 1-mile walkshed:
more than 75%

Walk/bike mode share:
35% - 55%



Students in 1-mile walkshed:
more than 75%

Walk/bike mode share:
less than 25%



Students in 1-mile walkshed:
35% - 55%

Walk/bike mode share:
Less than 25%

MA Safe Routes Survey.org

MA Safe Routes Survey.org

About

English

español

português

français

Haitian Creole

Việt

Khmer

中国的

العربية



Would you like to help create safe routes to school for students in your community?

The survey takes less than 3 minutes and will help your school plan for more transportation choices. All responses are voluntary and confidential.

[More information about the survey...](#)

The Massachusetts Safe Routes to School (SRTS) program partners with schools throughout the Commonwealth to help reduce traffic congestion and air pollution near schools while increasing the health, safety, and physical activity of students. Evaluating trends in how students and families travel to and from school is a key component to building a successful Safe Routes to School program. Parent responses to this survey provide valuable information and help determine how we can improve the environment around the school, target investments, track progress toward goals and ultimately develop local programs that benefit students, parents and our communities.

To learn more about your school's efforts or to find out how to get involved, visit MassDOT's Safe Routes to School Program at www.commute.com/schools/ or call us at 857-368-8638.

Take the Survey

Please select your school district

Scroll or start typing your district name

Please select your school

Scroll or start typing your school name

[Open School Survey Form](#)

[My school isn't on the list](#)



Online Survey Form

Abington High School

Travel to School Survey

Dear Parent or Guardian,

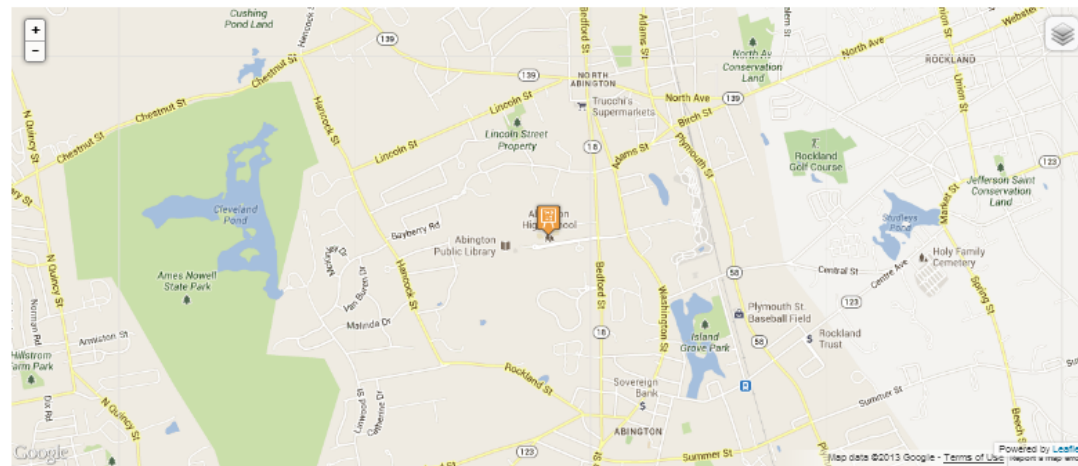
Your child's school is conducting a survey to learn how students get to and from school. This information will be used to plan safe and healthy transportation choices for all students. The survey will take less than 3 minutes to complete. All responses are voluntary and confidential.

- If more than one child attends this school, use the "Add Another Child" feature to report additional students.
- If a child's home location or commute is not the same every day, choose the option that reflects the most common location and travel pattern.
- If you already completed a paper survey, do not complete this online form.
- If you have questions, please contact a school administrator or call Safe Routes to School at 857-368-8850.

We appreciate your time and effort!

What is your approximate home location? (required)

Please click the map at an intersection on your street, near your home:



...or tell us the street intersection closest to your home.

What grade is your child in?

 (required)

How does your child get TO school on most days?

 (required)

How does your child get home FROM school on most days?

 (required)

Add another child at this school

How many vehicles do you have in your household?

How many people in your household have a driver's license?

school Co... masafero... masafero... masafero... MySchool... masafero... masafero... Re: TIM... Draft Wall... masafero...

g/en/revere/garfield-elementary/edit/

MASafeRoutesSurvey.org Accounts District Resources Districts Boston Schools

About English español português français Haitian Creole Việt Khmer 中国語 العربية

Revere, Garfield Elementary School

Summary - 04/09/2015

- 0 surveys in past 24 hours
- 0 surveys in past week
- 662 surveys in total
- Survey is inactive

Paper Surveys

For paper survey templates and other resources for a successful survey, visit the District Resources page

Click here for a school walkedmap

Survey Instances

Surveys	Status	Report	Begin	End	Delete
448	Finished	View	May 26, 2014	June 9, 2014	<input type="checkbox"/>
399	Finished	View	May 5, 2011	May 27, 2011	<input type="checkbox"/>

New Survey Instance

Survey management and report generation

school Co... masafero... masafero... masafero... MySchool... masafero... masafero... Re: TIM... Draft Wall... masafero...

resources/

MASafeRoutesSurvey.org Accounts District Resources Districts Boston Schools

About English español português français Haitian Creole Việt Khmer 中国語 العربية

District Resources

On this page you will find resources to help you implement the MA Safe Routes Survey in your school. If you need more assistance, please contact MassDOT's Safe Routes to School program at 857-369-8638.

Paper Survey Forms

The paper survey forms include the same questions as are found in the online survey. The generic versions can be printed and distributed "as is." The Customizable versions have a field where you can enter your school name, the due date for the survey, and the school-specific web address of the online survey (e.g. <http://masaferroutesurvey.org/en/boston/kenedy/>). Customizing the paper survey forms requires the free Adobe Acrobat Reader (download here.)

Language	Generic	Customizable
English	Generic	Customizable
Spanish	Generic	Customizable
Portuguese	Generic	Customizable
Chinese	Generic	Customizable
Vietnamese	Generic	Customizable
Haitian Creole	Generic	Customizable
Khmer	Generic	Customizable
French	Generic	Customizable
Arabic	Generic	Customizable

© MAPC 2011

Resources and materials

school Co... masafero... masafero... masafero... MySchool... masafero... masafero... Re: TIM... Draft Wall... masafero...

en/revere/garfield-elementary/batch/

MASafeRoutesSurvey.org Accounts District Resources Districts Boston Schools

About English español português français Haitian Creole Việt Khmer 中国語 العربية

Garfield Elementary School

New survey

Show Map

Name of your street

Name of nearest cross-street

What grade is your child in? (required)

How does your child get TO school on most days? (required)

How does your child get home FROM school on most days? (required)

How many vehicles do you have in your household?

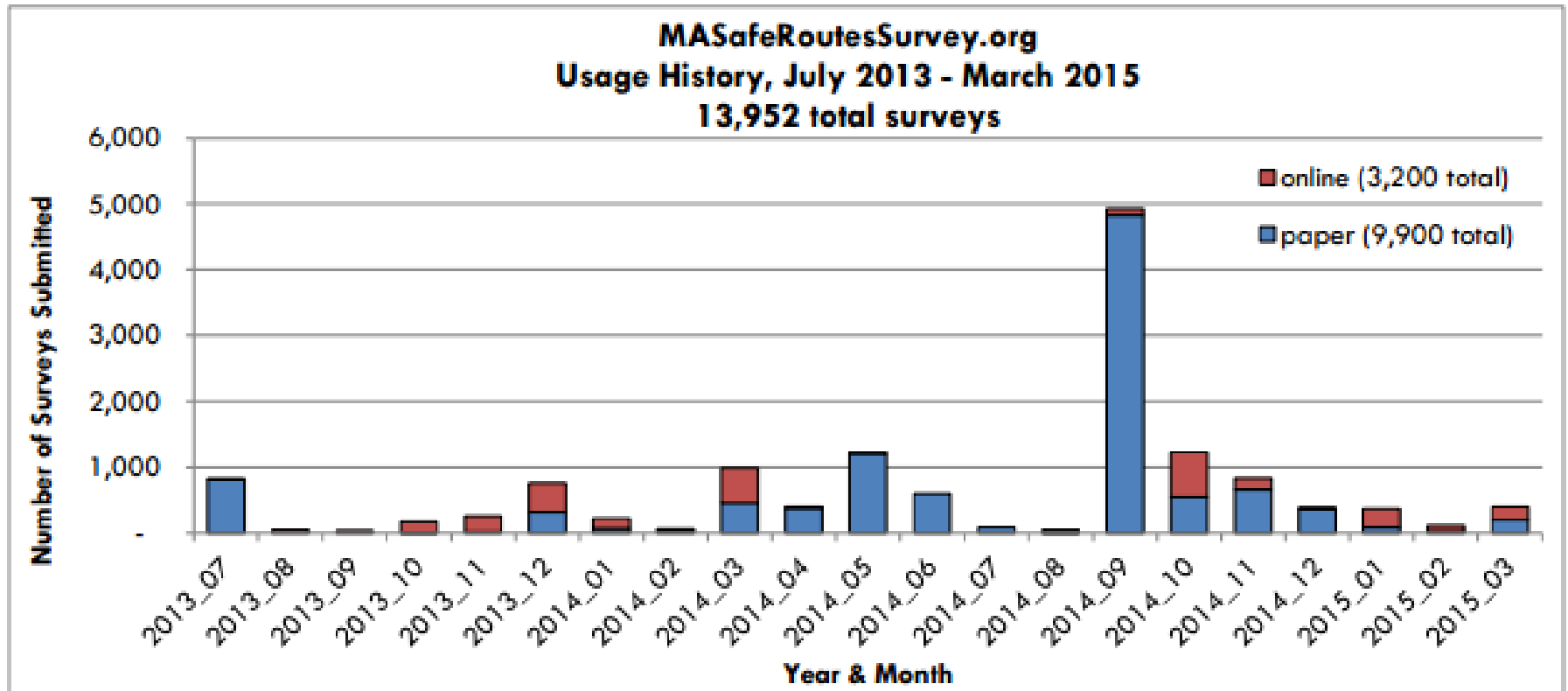
How many people in your household have a driver's license?

Survey Creation Date

Questions? Please click here to email us.
[Administration Account](#)
 © MAPC 2011

Bulk data entry interface

Site Utilization



~14,000 surveys since July 2013

38 schools with >150 surveys

~16% online surveys

1,000 surveys since April 1, 2015

Automated Reports



MA Safe Routes Survey.org
Survey Report
Worcester - Canterbury
September 11, 2013

Introduction

This report will help your school plan safe transportation options for all students. It contains the results of a survey conducted at Worcester - Canterbury from July 2013 to July 2013. Participating parents provided information about how students travel to school and their approximate home location. If your school is interested in

- reducing traffic congestion,
- encouraging walking and biking,
- increasing safety, or
- tracking progress towards community goals,

then this information can help you identify the right strategies and best opportunities for new projects and investments.

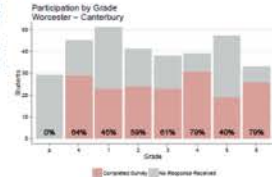
How to Read This Report

This report measures distance to school in terms of walksheds and bikesheds. A walkshed includes all the homes within a certain distance to school, based on mapped sidewalks, pedestrian paths, and low volume roadways. We define walksheds for 0.5, 1.0, and 1.5 mile walking distances to school. A bikeshed of 2.0 miles also includes multi-use paths and on-road cycle facilities, where mapped. For a map of the walksheds and bikesheds, see the back cover or last page of the report. Where "walkshed" is used alone, it always includes the bikeshed of the same distance.

Survey Statistics

- Survey Dates: 2013-07-18 to 2013-07-23
- Responses Received: 175
- School-wide Participation Rate: 54%

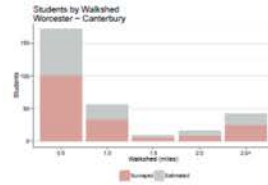
The figure below shows the survey participation rate for each grade. Total enrollment (Complete + No Response) is current as of October, 2013, per Department of Elementary and Secondary Education. Survey responses from each grade were used to estimate the distance and travel choice for the entire grade. The higher the participation rate, the more reliable the survey results are.



Student Proximity

- Average Distance to School: 1.9 miles
- Within 1.0 Mile Walkshed: 77%
- Within 2.0 Mile Bikeshed: 100%

The chart and table below show the number of students surveyed and the total estimated students by walkshed. Student totals by walkshed are estimated assuming that the proportion of surveyed students within each walkshed and grade is proportional to the enrolled students within each walkshed and grade.



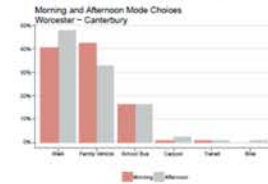
Students	0.5	1.0	1.5	2.0	2.0+
Est. Total	171	56	9	16	42
Surveyed	101	34	6	9	25
Percent	58%	19%	3%	5%	14%

Table 1: Surveyed and Estimated Total Students by Walkshed

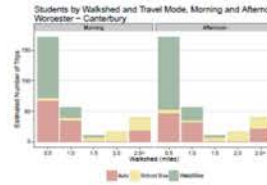
Student Travel Choices

- Trips Made by Family Vehicle(Carpool): 39%
- Trips Made by Walking/Biking: 44%

The chart below shows what percent of trips are made by each travel mode in the morning and afternoon.



Walk share is 40.3% in the morning and 48.4% in the afternoon. The auto share is lower in the afternoon, indicating that as many as 18.6% of those who are driven to school in the morning get home by other means in the afternoon.



Greenhouse Gas Emissions

- Per-student GHGs within 1 mile: 72 kg
- Per-student GHGs beyond 1 mile: 2553 kg

GHG emissions per student vary by walk/bikeshed. The following table shows total and per student GHG emissions, and the percent of total GHG emissions by walk/bikeshed for Worcester - Canterbury.

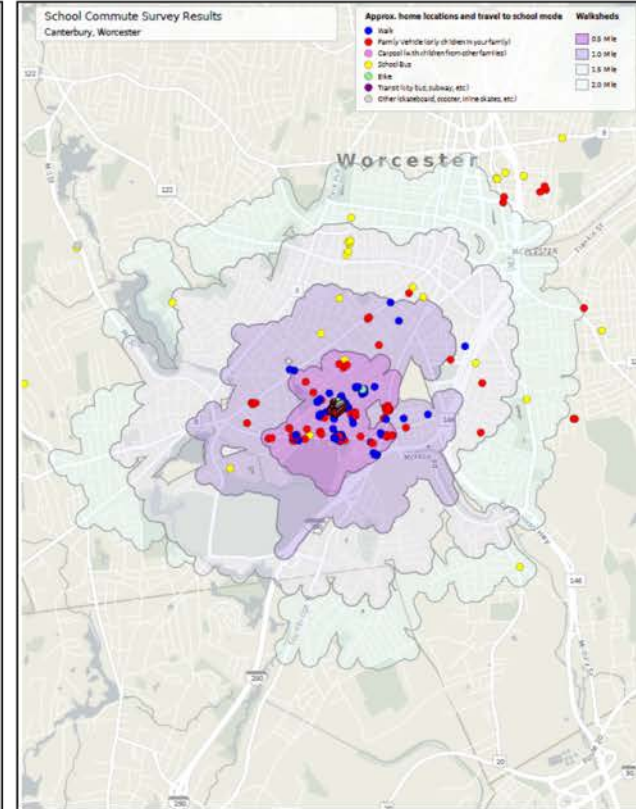
Buffer	Total (kg)	Per Student	Percent
0.5	8716	47	4%
1.0	9255	147	4%
1.5	918	83	0%
2.0	798	47	0%
2.0+	187208	4070	90%

Table 4: GHG Emissions by Walkshed, Worcester - Canterbury

How Your School Compares

	1 Mile Walk	GHG Per Student
Your School	77%	56%
Peer Schools	78%	38%

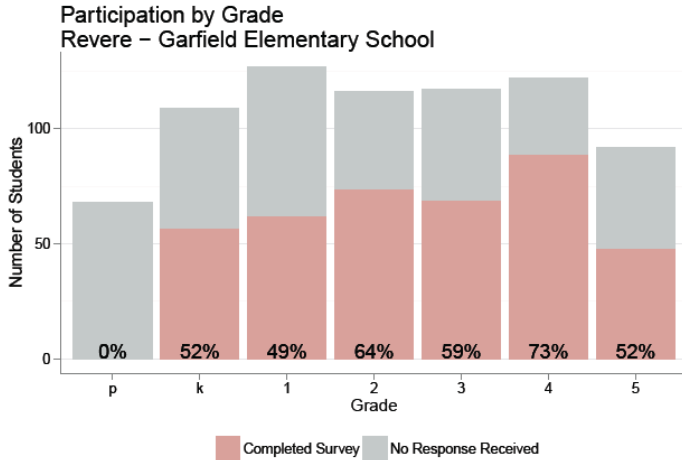
Table 5: 1.0 Mile walk share and GHG emissions. Peer schools are those whose share of students within 1.0 mile of school is within 25% of the share at your school. 1 Mile is the percent of students who live within one mile of school. Walk is the percent of students within one mile who walk. GHG Per Student is per student GHG emission in kg for all students.



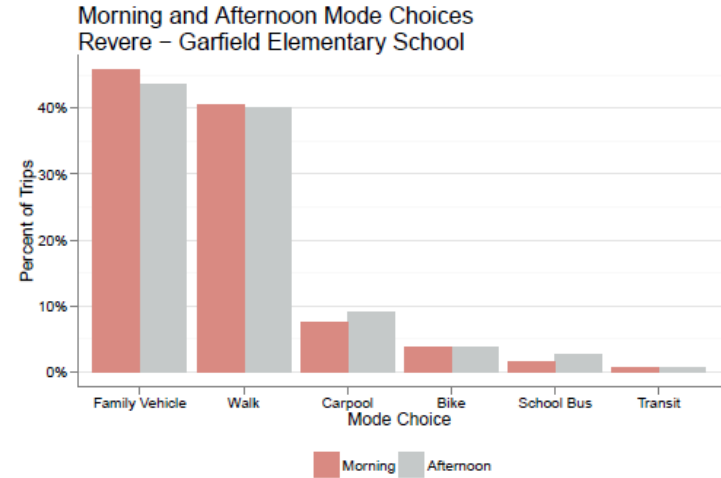
Pages from the automated survey report available at www.MySchoolCommute.org

Report Elements

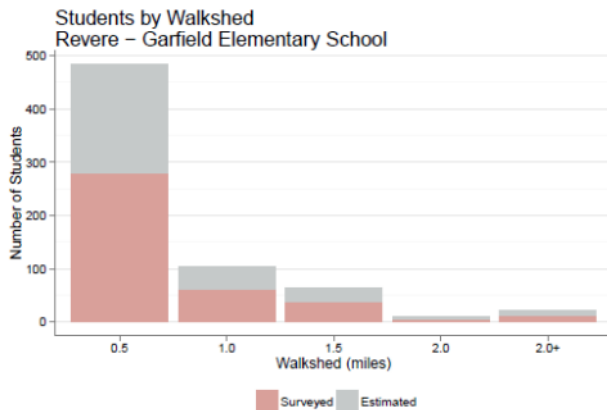
Response rate



Overall mode choice



Student proximity

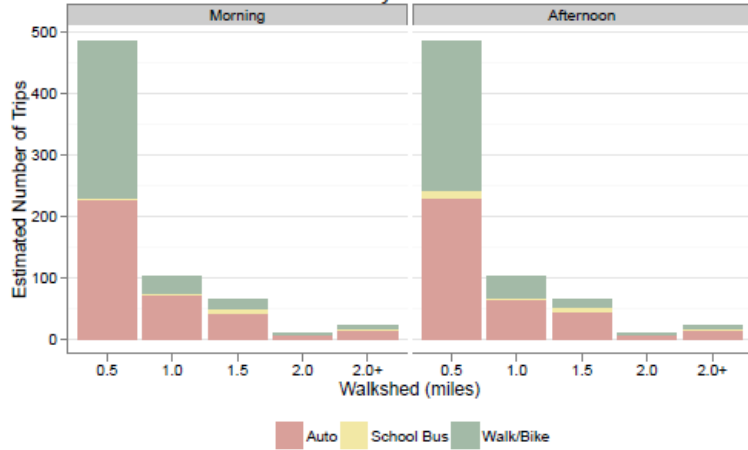


GHG emissions

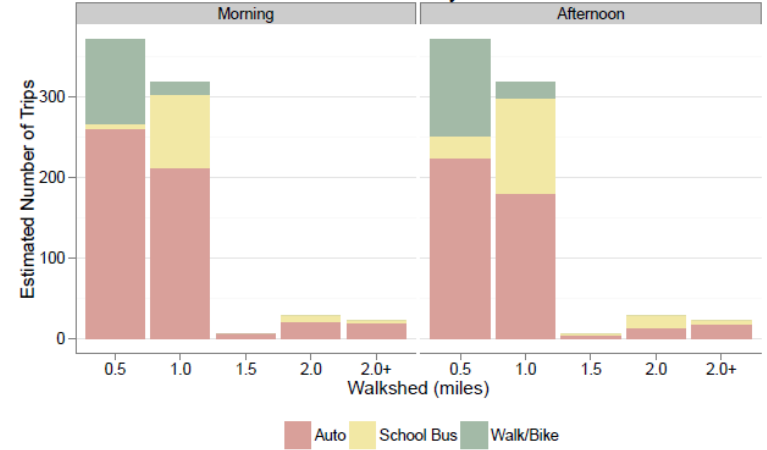
Walkshed	Annual Auto Commute GHG (kg)	Estimated Enrollment	Estimated kg per Student
0.5 mile	700,090	485	1,443
1.0 mile	331,377	103	3,217
1.5 mile	391,307	64	6,114
2.0 mile	75,242	9	8,360
2+ miles	181,712	22	8,260
Total	1,679,728	683	2,459

Mode Choice by Walkshed

Students by Walkshed and Travel Mode, Morning and Afternoon
Revere – Garfield Elementary School



Students by Walkshed and Travel Mode, Morning and Afternoon
Revere – A. C. Whelan Elementary School



Travel Mode, Morning and Afternoon

	0.5	1.0	1.5	2.0	2.0+
Morning					
Auto	227	72	43	7	15
School Bus	4	4	7	0	1
Walk	254	28	14	2	5
Afternoon					
Auto	230	65	43	7	15
School Bus	12	2	8	0	1
Walk	243	37	13	2	5

Actual and Expected Walk\Bike Share

	0.5	1.0	1.5	2.0	2.0+
Actual	51%	31%	21%	19%	25%
Expected	61%	29%	8%	4%	3%

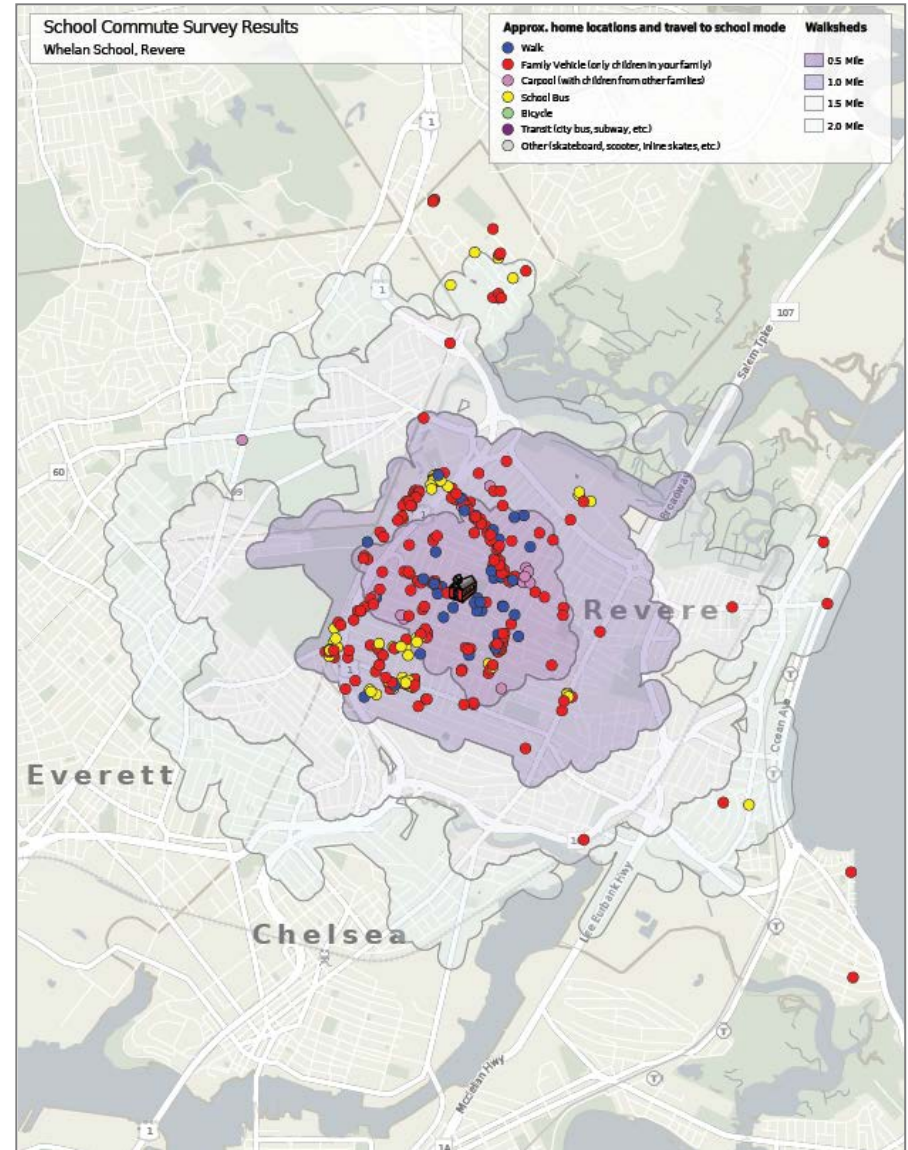
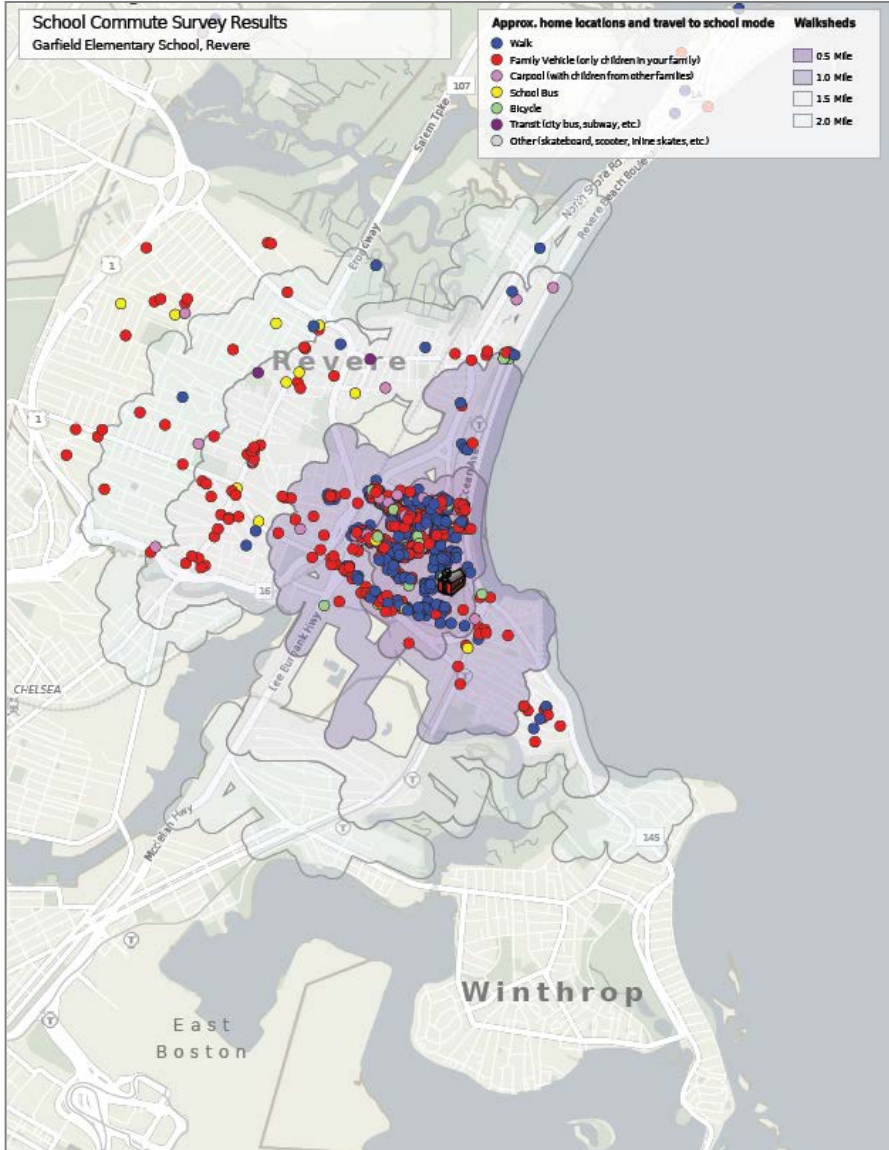
Travel Mode, Morning and Afternoon

	0.5	1.0	1.5	2.0	2.0+
Morning					
Auto	262	212	6	21	20
School Bus	6	91	0	8	2
Walk	104	16	0	0	0
Afternoon					
Auto	225	180	4	14	18
School Bus	27	119	2	15	4
Walk	119	20	0	0	0

Actual and Expected Walk\Bike Share

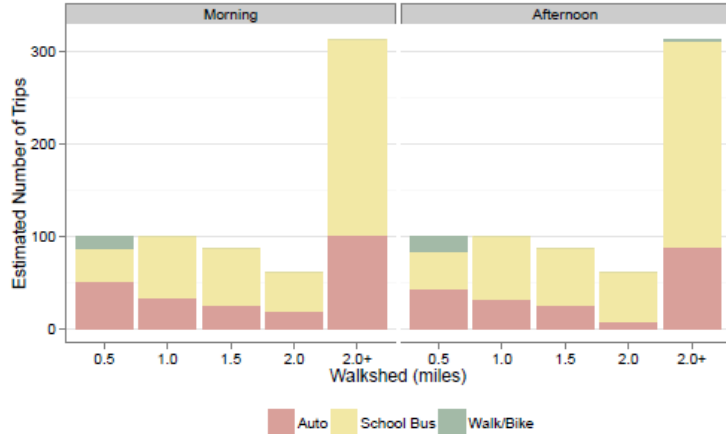
	0.5	1.0	1.5	2.0	2.0+
Actual	30%	6%	0%	0%	0%
Expected	60%	29%	4%	4%	3%

School Comparison -- Mapped



Dispersed Enrollment, Limited Potential

Students by Walkshed and Travel Mode, Morning and Afternoon
New Bedford – Casimir Pulaski

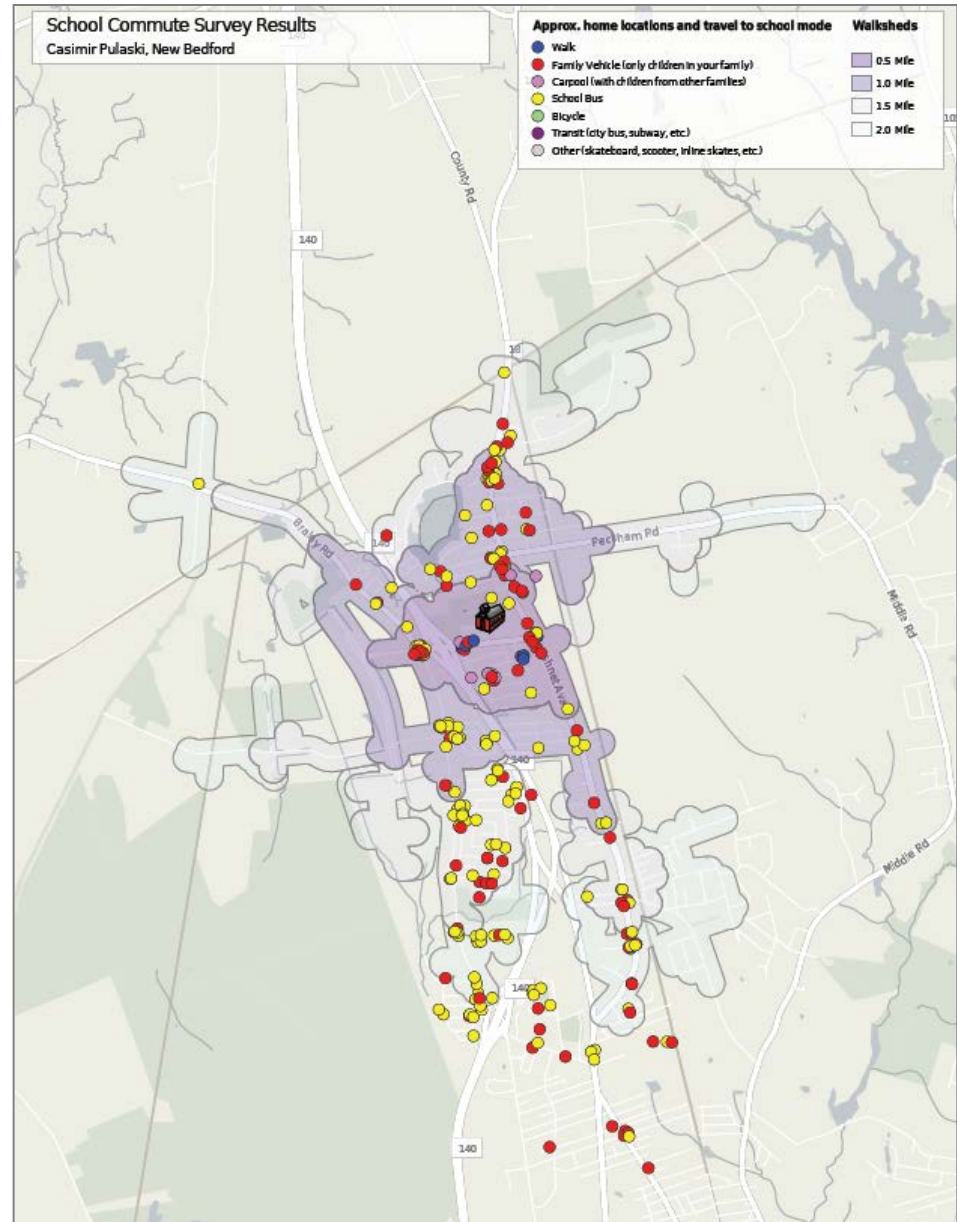


Travel Mode, Morning and Afternoon

	0.5	1.0	1.5	2.0	2.0+
Morning					
Auto	50	33	26	19	101
School Bus	37	66	61	42	212
Walk	12	0	0	0	0
Afternoon					
Auto	43	31	26	8	88
School Bus	40	68	61	53	222
Walk	16	0	0	0	2

Actual and Expected Walk\Bike Share

	0.5	1.0	1.5	2.0	2.0+
Actual	14%	0%	0%	0%	0%
Expected	61%	29%	6%	4%	3%



Revere SRTS Program: 2011 - 2014

District-wide task force

Walking school buses led by school staff

New dropoff/pickup policies

Safety training program

Promotional activities

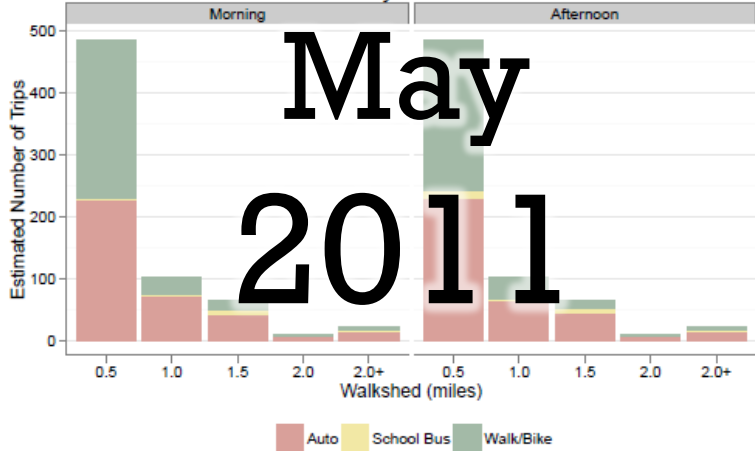
Incentives for student walkers (extra gym time)

Weekly walk to school day; designated park & walk locations

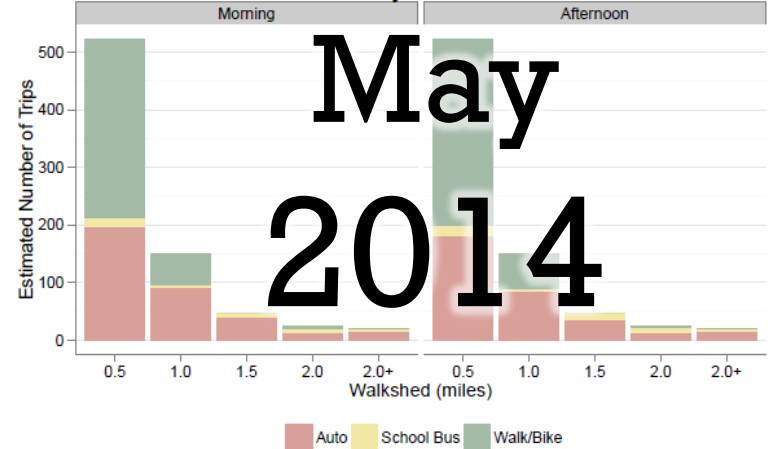
Specific activities/programs varied by school

Tracking Progress over Time

Students by Walkshed and Travel Mode, Morning and Afternoon
Revere – Garfield Elementary School



Students by Walkshed and Travel Mode, Morning and Afternoon
Revere – Garfield Elementary School



Travel Mode, Morning and Afternoon

	0.5	1.0	1.5	2.0	2.0+
Morning					
Auto	227	72	43	7	15
School Bus	4	4	7	0	1
Walk	254	28	14	2	5
Afternoon					
Auto	230	65	43	7	15
School Bus	12	2	8	0	1
Walk	243	37	13	2	5

Actual and Expected Walk\Bike Share

	0.5	1.0	1.5	2.0	2.0+
Actual	51%	31%	21%	19%	25%
Expected	61%	29%	8%	4%	3%

Travel Mode, Morning and Afternoon

	0.5	1.0	1.5	2.0	2.0+
Morning					
Auto	197	91	39	12	16
School Bus	14	4	8	8	3
Walk	310	55	0	4	2
Afternoon					
Auto	182	84	36	14	16
School Bus	17	4	11	8	3
Walk	323	62	0	3	2

Actual and Expected Walk\Bike Share

	0.5	1.0	1.5	2.0	2.0+
Actual	61%	39%	0%	14%	10%
Expected	60%	29%	8%	4%	3%

Garfield School Comparison Results

Indicator	Observed Change: 2011 - 2014
0.5 mile walkshed Walk/bike mode share	10 percentage point increase (from 51% to 61%)
1.0 mile walkshed Walk/bike mode share	8 percentage point increase (from 31% to 39%)
Daily walking trips to/from school	26% increase
Daily auto trips to/from school	5% decrease
GHG emissions per student	5.5% decrease

The program is working!

Open Source and Transferable

Programming “Stack”

- Django
- Leaflet
- PostGIS & pgRouting
- R & LaTeX

Input files

- School locations & district designations
- Pedestrian network
- Enrollment by grade

<https://github.com/MAPC/myschoolcommute>

Future Directions

Document data and publish via API

Cross-reference with school-level BMI metrics

Develop web infrastructure for school-level comparison, multi-school aggregation, and “add-on” questions

Automated network analysis to identify key infrastructure links

Use data to refine mode choice model of regional transportation plan

Thank You!

Timothy Reardon

Assistant Director of Data Services

Metropolitan Area Planning Council, Boston

treardon@mapc.org

