

















OneBayArea Innovation Starts Here

MTC's Climate Initiatives Program Evaluation

Regional Safe Routes to School Program

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Executive Summary

Project Overview

The Metropolitan Transportation Commission's (MTC) Climate Initiatives Program provided funding to local governments in the San Francisco Bay Area for projects to reduce greenhouse gas (GHG) emissions. One of the eligible funding categories, the regional Safe Routes to School (RSRTS) program, aims to decrease traffic and air emissions while increasing public health by promoting walking and biking to school. SRTS projects include capital improvements, education, community engagement, and encouragement efforts.

As part of the Climate Initiatives Program Cycle 1 (FY 2009-2010 through FY 2011-2012), MTC distributed \$5 million per year of Federal Congestion Mitigation Air Quality Improvement Program (CMAQ) funds through the RSRTS program to the nine counties in the Bay Area; MTC used school enrollment to determine each county's portion. Each congestion management agency (CMA) implemented Safe Routes to School projects in a different manner and many used RSRTS funds to leverage additional money to provide activities at participating schools.

This evaluation documents the results of a four-year data collection effort and analysis process that identifies key successes and findings from the safe routes activities made possible by the RSRTS funding.

Evaluation

Methodology and Objectives of Analysis

The primary data collected for this evaluation included student hand tallies and parent surveys:

- Student hand tallies involved a staff person, volunteer, or teacher asking students to raise their hands to report how they got to and from school over the course of three days.
- Parent surveys asked about students' travel mode to and from school, travel distance, and opinions about active (walking, biking, and "other") and shared (transit, school bus, and carpooling) modes of transportation.

Limitations

The data were provided by county and contracted Safe Routes implementers. Data collection methods and instruments have been standardized by the National Center for Safe Routes to School (NC-SRTS) and were slightly modified for the purposes of this analysis. Limitations of this analysis include:

- Some data collection methods vary between programs.
- The amount of time between baseline and follow up data collection periods varies.
- As data collection occurs over multiple years, students change classrooms, which impacts the tracking of individual classrooms.



Data are based on parents' self-reported responses, which impacts both trip distance and mode measurements.

Results

Results from the analysis of past RSRTS program implementation include the following:

Current transportation mode split:

- Over half of students in the Bay Area use the family car for their school commute (55 percent).
- Almost a quarter of students in the Bay Area walk to and from school (23 percent).
- Four percent of students in the Bay Area bike to and from school.

Bus, 6.8% 1.8% Carpool, Walk, 9.3% 23.0% Bike, 4.2%

Figure 1. Overall Follow-Up Mode Split,

Student Hand Tally

Other,

- Marin and San Francisco Counties have the lowest rate of family vehicle use (50 percent).
- Alameda County has the highest use of active transportation modes (walk, bike, other; 35 percent).

Changes in mode split:

- Overall, schools participating in Safe Routes programs saw an increase in walking (3 percent) and biking (14 percent).
- Overall, schools involved in Safe Routes programs saw a decrease in the use of the family vehicle (-2 percent).

Change in distance traveled:

- Students participating in Safe Routes to School programs collectively walked almost 200,000 more miles and biked almost 150,000 more miles annually.
- Per student annual miles biked increased by 2.8 miles.
- Per student annual miles driven in the family car decreased by 6.2 miles.

GHG emissions:

- The MTC RSRTS program resulted in an average 4.8 percent reduction in GHG emissions per student for trips one mile or less from school.
- If all students enrolled in public schools at all nine counties received Safe Routes programming, it could reduce as much as of 5.3 million pounds of GHG emissions from transportation due to school trips (extrapolating the results to the 1.9 million public school students throughout the Bay Area).



Lessons Learned

The data, combined with positive feedback from program participants and Safe Routes to School implementers, indicate that Safe Routes to School activities and events educate students and their parents about the benefits of active and shared transportation, and lead to mode shifts and trips away from driving alone. Key findings include the following:

- Safe Routes to Schools programs increase the use of active transportation. All counties but one show increases in walking and biking.
- Schools initiating new programs show greater mode shifts than schools that have had ongoing programs in place for several years. Schools that have participated in Safe Routes programs for fewer than two years show significantly greater increases in active transportation mode shares than schools with longer running programs, indicating a plateau. Higher relative mode shifts can be realized in the first years of the program. However, counties with a longer program tenure still continue to experience increases in active transportation use, implying that investments in sustainable safe routes programs continue to see benefits beyond the first years of the programming but at lower rates.
- Specific Safe Routes activities are correlated with increasing walking, biking, and carpooling. Activities that are related to higher active transportation mode shifts include frequent walk and roll programs, walking school bus and bike train programs. In addition, schools that offer more different activities and more activities that are ongoing, rather than one-time, are related to higher active transportation mode shifts. Schools that participate in National Bike to School Day have higher biking mode splits, while schools that encourage carpooling have higher carpooling mode splits.
- Parents' positive perceptions of walking and biking are correlated with a higher walking and biking mode split. Schools tend to have higher rates of walking and biking during the follow up time period (most recent period for which data were collected) whose parents thought that walking and biking are fun, important for health, encouraged by the school, and something they wished they did more often.
- Underserved populations tend to have higher rates of walking but lower rates of biking or carpooling. The percentage of students eligible for free or reduced lunch correlates with higher walk mode share, as well as lower bike and carpool share. Higher rates of English language learners correlate with higher active mode splits in the follow up period.
- Higher rates of crashes near the school deter families from walking or biking. Family vehicle mode shift is positively correlated with crashes involving bicyclists or pedestrians within a quarter-mile and a half-mile of the school, indicating that where crashes occurred, families were discouraged from walking and biking. This finding suggests that, in addition to reducing safety concerns, infrastructure improvements can have a significant impact on mode choice.



Recommendations for Implementing Organizations

Specific recommendations for organizations evaluating future programs include the following:

- Continue collecting mode split data primarily through twice-yearly student hand tallies, preferably near the beginning and end of each school year. This information provides a snapshot of activity at each school and tracks progress over time.
- Continue surveying parents about their perceptions of transportation options but do so every three years, rather than annually, to maximize participation.
- Consistently track activity participation at schools around the Bay Area to promote comparisons between programs by adhering to National SRTS Foundation reporting standards.
- Work directly with schools that have shown increases in family car use to determine outside factors that may be diminishing the impacts of the Safe Routes to School programming.

Recommendations for MTC

The RSRTS program has significantly expanded Safe Routes to School programming beyond what had previously been sustainable based on local funding levels.

Specific recommendations for MTC include the following:

- Continue distributing Safe Routes to School funding to counties based on public school enrollment to promote Safe Routes to School activities throughout the region.
- Consider requiring program implementation at the countywide level, rather than sub-allocating funding or providing a pass-through, to decrease administrative costs and encourage greater participation at the county level.
- Continue to provide technical assistance for data collection and evaluation to ensure consistent and regular data collection. This could include training or assistance for administering hand tallies and parent surveys, as well as developing tools for collecting program participation and implementation data.
- Encourage local jurisdictions to seek outside funding through the Active Transportation Program (ATP), OneBayArea Grant (OBAG), and other grant programs, as well as tax measures and vehicle registration fees, which can provide additional ongoing funding for Safe Routes to School programming.

The following pages summarize key findings in each county included in the analysis.



Alameda County Safe Routes to School Evaluation

Program Administrator

Alameda County Transportation Commission (Alameda CTC)



METROPOLITAN TRANSPORTATION COMMISSION

Primary Implementer

TransForm

BY THE NUMBERS

2006

Program began as a Caltrans grant-funded pilot program at two schools in Oakland.

Municipalities served.

FUNDING FOR 2011-2014:

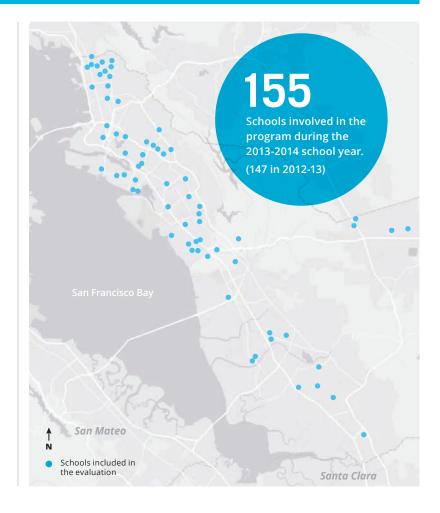
\$3.2 MILLION

Cycle 1 RSRTS funding from MTC's Climate Initiatives Program

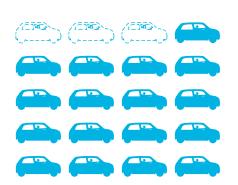
\$0.5 M San Leandro Federal Cycle 3 SRTS grant and local Measure B funds. grant and local Measure B funds.

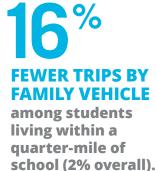
\$0.5 M Climate Initiatives Creative Grant for BikeMobile.

\$0.27_M Measure B local transportation sales tax matching funds.

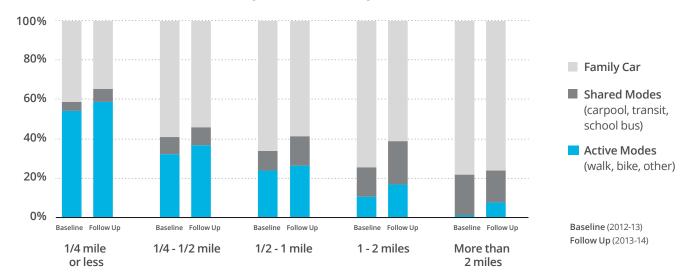








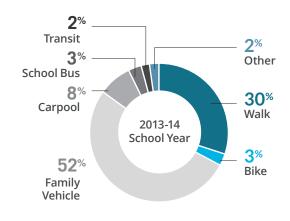
How Students Traveled to and from School by Distance Family Lives from School



Overall, the program saw a



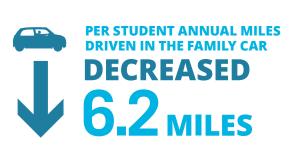
How Students Currently Travel to and from School





PER STUDENT ANNUAL MILES BIKED

1 INCREASED 2.8 MILES





15%
more parents felt
that walking and
biking to school is fun
for their children.

92%
of schools participated
in International
Walk & Roll to School Day.

Contra Costa County Safe Routes to School Evaluation







Program Administrators

511 Contra Costa Contra Costa County Health Services Street Smarts San Ramon Valley



METROPOLITAN
TRANSPORTATION
COMMISSION

BY THE NUMBERS

3 SAFE ROUTES TO SCHOOL PROGRAMS

Street Smarts Diablo

covers Central and East County

San Ramon Valley Street Smarts

covers the San Ramon Valley

West Contra Costa Safe Routes to School

covers Richmond, Hercules, Pinole, San Pablo, Concord, Pittsburg, and Bay Point

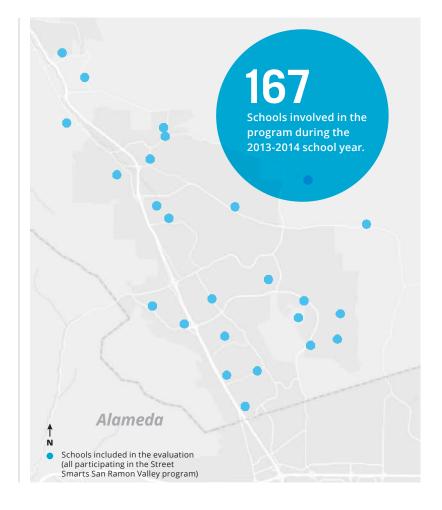
FUNDING FOR 2011-2014:

\$2.5_{MILLION}

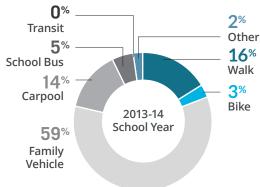
Cycle 1 RSRTS funding from MTC's Climate Initiatives Program

\$10,000 Each

from City of San Ramon, Town of Danville, Contra Costa County, and San Ramon Unified School District











33%

MORE STUDENTS
RIDING THE SCHOOL
BUS TO SCHOOL

between 2011 and 2014



Marin County Safe Routes to School Evaluation

Program Administrator

Transportation Authority of Marin (TAM)

Primary Implementers

Marin County Bicycle Coalition Parisi Transportation Consulting Alta Planning + Design



METROPOLITAN
TRANSPORTATION
COMMISSION

BY THE NUMBERS

2000

First funded by the National Highway Traffic Safety Administration to develop a national model Safe Routes to School program. 14

School districts served.

FUNDING FOR 2011-2014:

\$475,000

Cycle 1 RSRTS funding from MTC's Climate Initiatives Program

\$36.5M

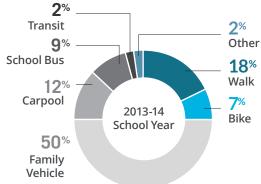
Measure A sales tax (includes infrastructure projects), 2004-2024 forecast

\$383,000

MTC SRTS Creative Grant for Green Ways to School program









20% MORE STUDENTS BICYCLING TO SCHOOL



San Francisco Safe Routes to School Evaluation

Program Administrator

San Francisco Department of Public Health

Primary Implementers

San Francisco Unified School District

San Francisco Bicycle Coalition



METROPOLITAN
TRANSPORTATION
COMMISSION

BY THE NUMBERS

2009

Program began at five schools in San Francisco.

9 PARTNERS

San Francisco Department of Public Health

San Francisco County Transportation Authority

Shape Up San Francisco

San Francisco Bicycle Coalition

San Francisco Unified School District

San Francisco Department of the Environment

San Francisco Municipal Transportation Agency

YBike

Walk San Francisco

FUNDING FOR 2011-2014:

\$1.08 MILLION

Cycle 1 RSRTS funding from MTC's Climate Initiatives Program





MORE STUDENTS
BICYCLING
TO SCHOOL
between 2011 and 2014







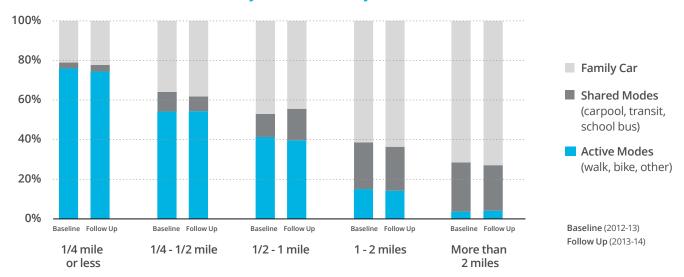


37%

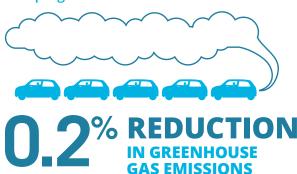
INCREASE IN SHARED MODES

among students living between a half-mile and a mile of school (carpool, school bus, and transit).

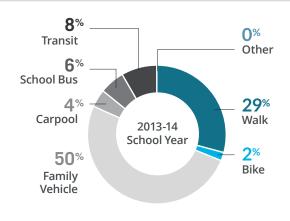
How Students Traveled to and from School by Distance Family Lives from School



Overall, between 2011 and 2014 the program saw a



How Students Currently Travel to and from School





PER STUDENT
ANNUAL MILES BIKED



3.6

Average number of Safe Routes to School programs offered at each school.

12

Schools participated in Bike Safety Lessons.

PER STUDENT ANNUAL MILES DRIVEN IN THE FAMILY CAR DECREASED

0.6 MILES

Schools participated in Walking School Bus and Walk & Roll programs.

San Mateo County Safe Routes to School Evaluation



Program Administrator

San Mateo County Office of Education



Primary Implementers

Individual school staff, teachers, and parent volunteers METROPOLITAN
TRANSPORTATION
COMMISSION

BY THE NUMBERS

2011

Program began with MTC's Climate Initiatives program, providing walk audits & training countywide.

7

School districts served via Safe Routes to School coordinators.

FUNDING FOR 2011-2014:

\$1.4 MILLION

Cycle 1 RSRTS funding from MTC's Climate Initiatives Program



TRANSPORTATION CHANGES BETWEEN 2012 AND 2015

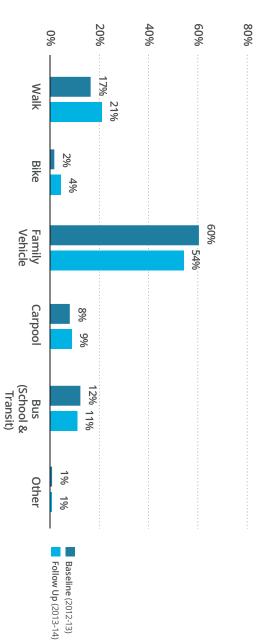




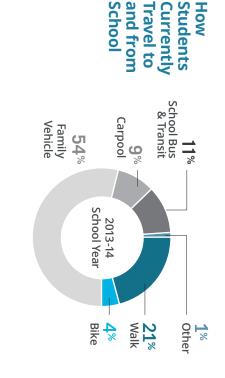


142% MORE STUDENTS BICYCLING TO SCHOOL

and from School by Distance Family Lives from School How Students Traveled to













Santa Clara County Safe Routes to School Evaluation









Program Administrators

Santa Clara County Public Health Department (Traffic Safe Communities Network) City of Mountain View City of Palo Alto City of San Jose City of Santa Clara

City of Palo Alto



METROPOLITAN
TRANSPORTATION
COMMISSION

BY THE NUMBERS

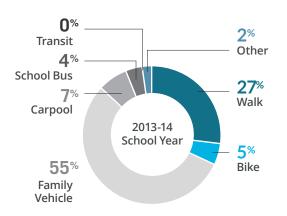
Safe Routes to School Programs supported by Regional SRTS funding.

FUNDING FOR 2011-2014:

\$4.04 MILLION

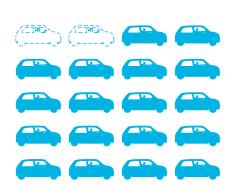
Cycle 1 RSRTS funding from MTC's Climate Initiatives Program

HOW STUDENTS CURRENTLY TRAVEL TO AND FROM SCHOOL





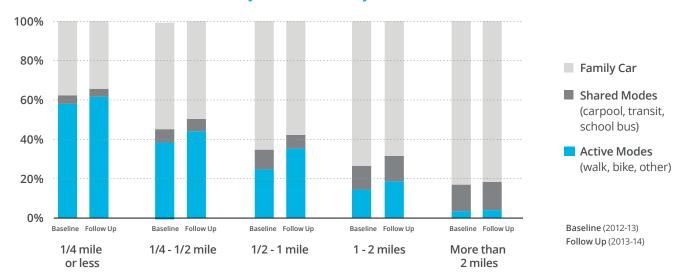




FEWER TRIPS BY
FAMILY VEHICLE
among students
living within a
half-mile to a mile of

school (2% overall).

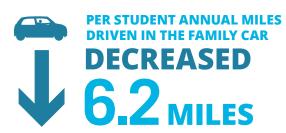
How Students Traveled to and from School by Distance Family Lives from School



Overall, the program saw a







HOURS OF PHYSICAL ACTIVITY INCREASED due to students shifting to active modes.

more parents felt that walking and biking to school is fun for their children.

more parents felt that walking and biking to school is something they wish they did more often



Solano County Safe Routes to School Evaluation



METROPOLITAN
TRANSPORTATION
COMMISSION

Primary Implementer Solano County Public Health

BY THE NUMBERS

2008

Program began as a Caltrans grant-funded infrastructure and non-infrastructure program. 6

School districts served.

FUNDING FOR 2011-2014:

\$942,000

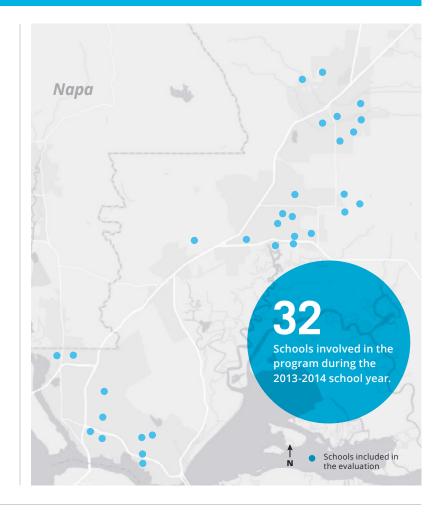
Cycle 1 RSRTS funding from MTC's Climate Initiatives Program

\$250,000

MTC SRTS Creative Grant for Mapping project.

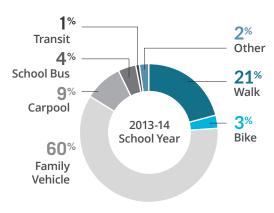
\$500,000

Federal SRTS grant for walking school bus program.











Sonoma County Safe Routes to School Evaluation

Program Administrator

Sonoma County Department of Public Health



METROPOLITAN
TRANSPORTATION
COMMISSION

Primary Implementer

Sonoma County Bicycle Coalition

BY THE NUMBERS

2007

First program was funded in Sebastopol through a Federal Safe Routes to School grant. School districts served.

FUNDING FOR 2011-2014:

\$1.03 MILLION

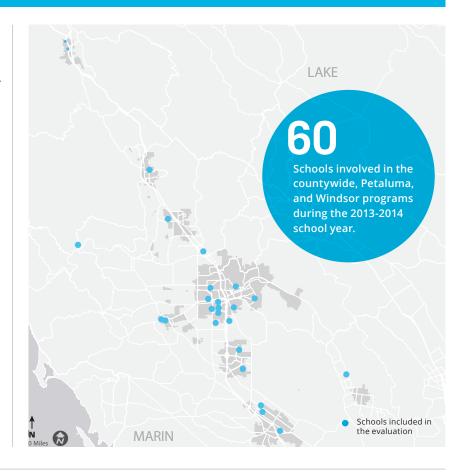
Cycle 1 RSRTS funding from MTC's Climate Initiatives Program

\$130,000

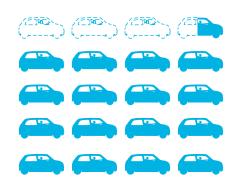
Federal SRTS grant for City of Petaluma

\$820,000

Federal SRTS grant for Town of Windsor

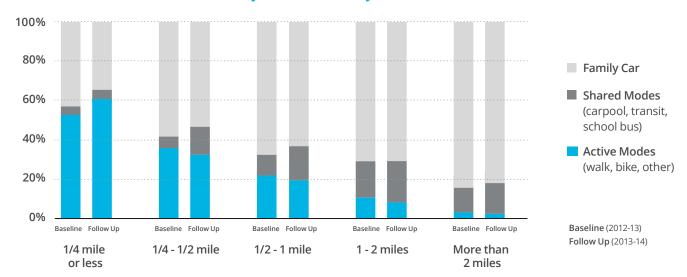






FEWER TRIPS BY FAMILY VEHICLE among students living within a quarter-mile of school (4% overall).

How Students Traveled to and from School by Distance Family Lives from School



Overall, the program saw a

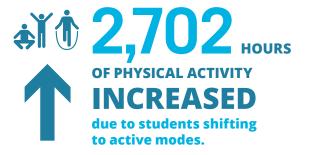


PER STUDENT
ANNUAL MILES BIKED

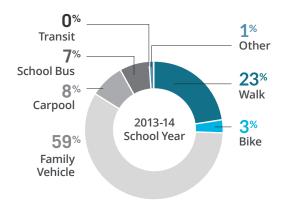


PER STUDENT ANNUAL MILES DRIVEN IN THE FAMILY CAR DECREASED

3.4 MILES



How Students Currently Travel to and from School





more parents felt that walking and biking to school is fun for their children. 32%
more parents felt that walking and biking to school is something they wish they did more often.



1 Project Overview

1.1 MTC Climate Initiatives Grant Program

In December 2009, the Metropolitan Transportation Commission (MTC) programmed \$80 million over a three-year period to implement the Climate Initiatives Program; a program designed to test innovative ways of reducing greenhouse gas (GHG) emissions.

Phase I (also called Cycle I; FY 2009-10 through 2011-12) included \$17 million for Regional Safe Routes to School (RSRTS) activities. Of that, \$15 million was distributed to the nine counties in the Bay Area based on a formula using pro-rata shares of total public and private school enrollment for grades K-12. Funding was administered by the county Congestion Management Agencies (CMAs). The additional \$2 million was used to implement competitive Safe Routes to School (SRTS) Creative Grants.

A contractor team led by ICF International conducted evaluations of all projects funded through the Climate Initiatives Program. The goal of these evaluations is to improve future grant and funding programs aimed at reducing GHG emissions, and to promote best practices in GHG reduction among local governments in the Bay Area. Accomplishing these goals requires a common evaluation framework in order to compare the GHG impacts of a wide variety of projects. It also requires an independent evaluator to provide an unbiased analysis to MTC and its stakeholders.

This evaluation documents the results of a four-year data collection and analysis process that identifies key successes and findings from the RSRTS program.

1.2 Overview of the Regional Safe Routes to School Project

Safe Routes to School is a nationally-recognized program established in 2005 to empower communities to make walking and biking to school a safe and routine activity. The San Francisco Bay Area has some of the longest-running Safe Routes to School programs in the country. Through the Climate Initiatives program, MTC provided RSRTS funding to all nine county CMAs, which decided how to implement activities in their respective jurisdictions.

Typical Safe Routes to School Activities and Events

Typical Safe Routes to School programs provide a variety of activities and events using five complementary strategies, referred to as the "Five E's":

• **Education** – Educational programs that teach students bicycle, pedestrian, and traffic safety skills, and teach drivers how to share the road safely. These typically include in-classroom and on-bicycle lessons that may include parents as well as students.

Project Overview 1



- Encouragement Special events, clubs, contests and ongoing activities that encourage more
 walking, biking, or carpooling through fun activities and incentives. Events popular in the Bay
 Area include Walk to School Day (October), Bike to School Day (May), and a variety of friendly
 competitions, such as Golden Sneaker, Pollution Punchcards, poster or video contests, and other
 activities.
- Enforcement Strategies to deter the unsafe behavior of drivers, bicyclists, and pedestrians, and encourage all road users to obey traffic laws and share the road. These typically include enhanced police presence at the start of the school year, crosswalk enforcement, and speed reader boards.
- **Evaluation** Evaluating the projects and programs is fundamental to assessing successes of each of the "E's" above and helps to determine which programs were most effective and helps to identify ways to improve programs. Standard tools include the student hand tally and parent surveys, described in this report.
- Engineering Design, implementation, and maintenance of signage, striping, and infrastructure that improve the safety of pedestrians, bicyclists, and motorists along school commute routes. In Contra Costa, Santa Clara, and Solano Counties, RSRTS money funded infrastructure projects. In addition, several jurisdictions have opted to spend local money or seek state or federal SRTS or active transportation grant funding.

Comparison of SRTS Implementation at the County Level

Of the nine Bay Area counties, most run RSRTS-funded activities at the countywide level, while Contra Costa and Santa Clara sub-allocate their funding to other organizations, as shown in Figure 2. In Contra Costa County, RSRTS funding is sub-allocated to three programs: Street Smarts Diablo covers much of Central and East County; San Ramon Valley Street Smarts covers the San Ramon Valley; and West Contra Costa Safe Routes to School covers Richmond, Hercules, Pinole, San Pablo, Concord, Pittsburg, and Bay Point. In Santa Clara County, the Valley Transportation Authority (VTA) distributed RSRTS funds through a competitive pass-through grant called the Vehicle Emissions Reductions Based at Schools (VERBS). Active Safe Routes programs in Santa Clara County during the analysis time period include: the Traffic Safe Communities Network (TSCN), a program of the Santa Clara County Public Health Department and the City of Sunnyvale; City of Santa Clara SRTS; City of Mountain View Suggested Routes to School; City of Palo Alto SRTS; and City of San Jose Walk 'n' Roll.



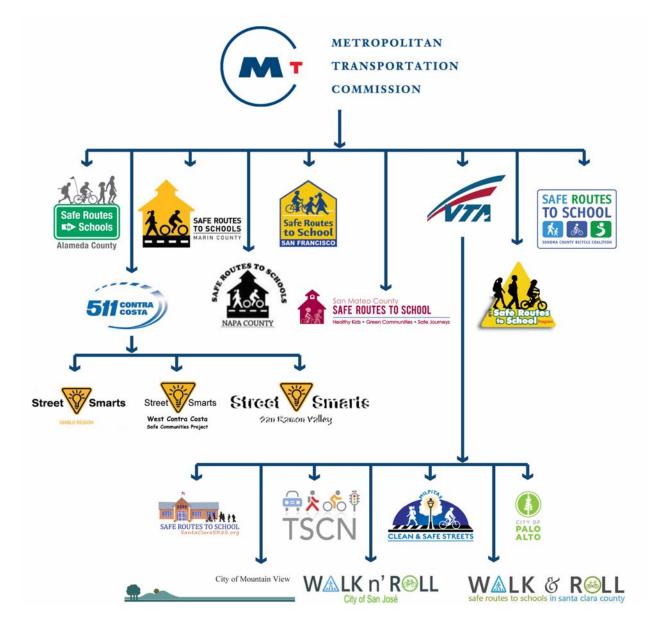


Figure 2. Safe Routes to School in the Bay Area

The MTC-provided RSRTS funds were administered differently in each county, shown in Table 1. Each county leveraged other funding opportunities to increase programming. For example, in Alameda County, the City of San Leandro received a Federal SRTS grant, which enabled expansion of the countywide program into all schools in the city, as well as funding more intensive education and encouragement activities. In comparison, the two communities in Sonoma County that received similar Federal funds opted to remove their schools from the countywide program and administer independent programs that were implemented by the bicycle coalition.

Project Overview 3



This analysis considers all activities offered through any Safe Routes funding source as it was not possible to differentiate the activities funded through the MTC RSRTS program.

Table 1. Snapshot of Safe Routes Non-Infrastructure Program Funding by County

| County | Funding (thousands) | Administering Agency | Implementing Organizations | Schools Involved | |
|--------------------------------------|--|--|---|--|--|
| Alameda | \$3,220 – MTC Cycle 1 RSRTS \$266 – Measure B sales tax \$410 – Federal Cycle 3 SRTS grant to City of San Leandro \$110 – City of San Leandro Measure B funds \$500 – MTC SRTS Creative Grant for Alameda County BikeMobile | Alameda County Transportation Commission (Alameda CTC) Bike East Bay (BEB, formerly East Bay Bicycle Coalition) Cycles of Change City of San Leandro Alameda County Public Health (BikeMobile only) | | 105 comprehensive assistance schools (2013/14) Approx. 50 technical assistance schools BikeMobile visited 200-275 schools per year | |
| Contra Costa | \$2,467 – MTC Cycle 1 RSRTS (included infrastructure funding) | Sub-allocated as shown below. | | | |
| Street Smarts Diablo | Not available | 511 Contra Costa | 511 Contra Costa | 116 schools | |
| Street Smarts San Ramon Valley | \$10 each - City of San Ramon, Town of Danville, Contra Costa County, and San Ramon Unified School District | Street Smarts San Ramon Valley | Street Smarts San Ramon Valley | 33 schools | |
| West Contra Costa SRTS | Not available | Contra Costa County Health Services | Contra Costa County Health Services | 18 schools | |
| Marin | \$475 – MTC Cycle 1 RSRTS \$36,500 – Measure A sales tax (includes infrastructure projects), 2004-2024 forecast \$383 - MTC SRTS Creative Grant for Green Ways to School program | Transportation Authority of Marin (TAM) | Marin County Bicycle Coalition Parisi Transportation Consulting Alta Planning + Design | 63 schools | |



| County | Funding (thousands) | Administering Agency | Implementing Organizations | Schools Involved | |
|---|---|---|---|------------------|--|
| Napa | \$315 – MTC Cycle 1 RSRTS | Napa County Office of Education | Napa County Office of Education | 7 schools | |
| San Francisco | \$1,079 – MTC Cycle 1 RSRTS | San Francisco Department of Public Health (SF DPH) | San Francisco Unified School District San Francisco Bicycle Coalition YBike | 40 schools | |
| San Mateo | \$1,429 – MTC Cycle 1 RSRTS | San Mateo County Office of Education (SMCOE) | Individual school staff, teachers, and parent volunteers | Not tracked | |
| Santa Clara | \$4,039 – MTC Cycle 1 RSRTS (includes infrastructure funding) | Distributed through competitive grant as shown below. | | | |
| Traffic Safe Communities Network (TSCN) | \$65- Sunnyvale local match | Santa Clara County Public Health Department | Silicon Valley Bicycle Coalition (SVBC) City of Sunnyvale Stanford Hospital Trauma Department | 12 schools | |
| City of Mountain View VERBS | \$65 - local match | City of Mountain View | SafeMoves | 19 schools | |
| City of Palo Alto Safe Routes to School | \$132 - local match | City of Palo Alto | Alta Planning + Design SVBC | 17 schools | |
| City of San Jose Walk n' Roll | \$214 - local match | City of San Jose | Street Smarts Lucille Packard Children's Hospital Operation Safe Passage | 35 schools | |
| City of Santa Clara VERBS | \$65 - local match | City of Santa Clara | Alta Planning + Design SVBC | 7 schools | |

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| County | Funding (thousands) | Administering Agency | Implementing Organizations | Schools Involved |
|--------|---|--|---|---|
| Solano | \$942 – MTC Cycle 1 RSRTS (includes infrastructure funding) \$250 - MTC SRTS Creative Grant for Mapping project \$500 - Federal SRTS grant for walking school bus program | Solano Transportation Authority | Solano County Public Health Alta Planning + Design, Brian Fulfrost & Associates, Finger Design (mapping) | 50+ schools – countywide program 17 schools – mapping project 16 schools – walking school bus program |
| Sonoma | \$1,034 – MTC Cycle 1 RSRTS \$130 – Federal SRTS grant for City of Petaluma \$820 – Federal SRTS grant for Town of Windsor | Sonoma County Department of Public Health City of Petaluma Town of Windsor | Sonoma County Bicycle Coalition (all programs) | 15 schools – countywide program 14 schools – Petaluma 5 schools - Windsor |

The varying frameworks for how the RSRTS funding is distributed within counties impacts the proportion of schools in each county that participate, shown in Figure 3. Some programs focus exclusively on elementary or middle schools, while Alameda, Marin, and some jurisdictions in Santa Clara also have high school programs. Sonoma County and some other counties have school transportation programs for high school students that are not funded by RSRTS funding and are considered separately from the main Safe Routes to School programs, and are therefore not included in this analysis. Data from Napa County is not included in this analysis due to follow up data for both parent surveys and hand tallies being collected in fall 2014, after the cut-off period for data collection.



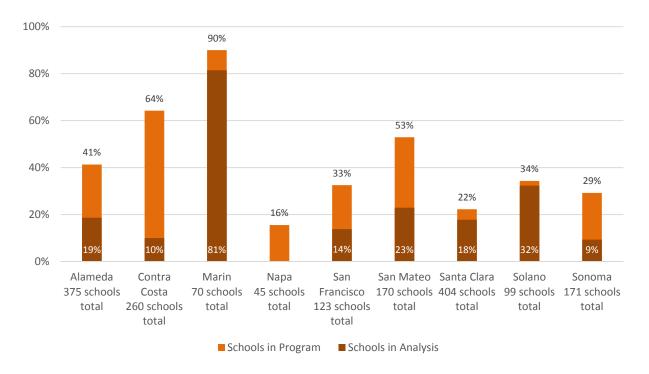


Figure 3. Comparison of Public Schools in Safe Routes Program and Analysis by County

Most programs have selection criteria for including schools in their Safe Routes program, considering need and underserved populations, as well as potential for increased walking and biking (usually determined by density of students within a half-mile of the school, demonstrated interest in Safe Routes to School programming, and presence of parent champions and/or a task force). Figure 4 compares the ratio of schools with more than 75 percent of students eligible for free and reduced lunches countywide versus schools included in the analysis. Note that this analysis considers only schools for which data are available, not all schools involved in each Safe Routes program.



50% 40%41% 40% 31% 29% 30% 25% 25% 23% 23% 20% 20% 14% 13% 13% 10% 10% 0% 0% Alameda Contra Costa Santa Clara Solano Marin San Francisco San Mateo Sonoma ■ Countywide ■ Schools in the Analysis

Figure 4. Percent of Schools with Over 75 Percent of Students Eligible for Free and Reduced Lunch

1.3 Data Included in Analysis

Parent Surveys and Student Hand Tallies

Program-wide, student hand tallies were collected regularly in fall and spring, while initial parent surveys were administered in fall 2011 through spring 2013 (depending on program readiness) and follow up surveys were administered in spring 2013 through spring 2014. When multiple data points were available for a specific school, the earliest data as of fall 2011 and most recent as of spring 2014 were used. Figure 5 shows the timeline of the evaluation efforts.



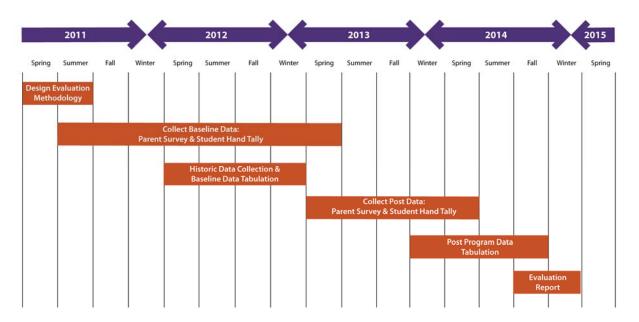


Figure 5. RSRTS Program Evaluation Timeline

The analysis includes data from schools where a baseline and follow up time period were available, shown in Table 2. Post-processing of the data included analyzing outliers; data that were clearly collected during an event day or were otherwise inaccurate were excluded.

Table 2. Schools Included in Analysis by County

| County | Student Hand Tallies | Parent Surveys | Schools in Program |
|---------------|----------------------|----------------|--------------------|
| Alameda | 71 | 18 | 155 |
| Contra Costa | 26 | 0 | 167 |
| Marin | 57 | 0 | 63 |
| Napa | 0 | 0 | 7 |
| San Francisco | 17 | 14 | 17 |
| San Mateo | 39 | 25 | 90 |
| Santa Clara | 72 | 36 | 90 |
| Solano | 32 | 0 | 50+ |
| Sonoma | 16 | 14 | 34 |

Student hand tallies used the National Center for Safe Routes to School (NC-SRTS) forms and methodology, and data were entered into the NC-SRTS online database. Parent surveys were modified for the RSRTS evaluation, although some programs opted to use an alternative survey form. Surveys were generally made available online and/or in hard copy and in English, Spanish, and in some cases Chinese.

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Participation in Safe Routes Activities

Most Safe Routes programs maintain a list of activities that have been implemented at each school participating during each school year. This information was requested from program providers for the correlations analysis, to identify the type and frequency of events at each school. Figure 6 shows the average number of activities at each school, including only activities that were specifically tracked and organized into categories for comparison purposes. These databases also provided the tenure of the school in the Safe Routes program. Figure 6 shows the average number of activities at each individual school, averaged among each county. This analysis excludes San Mateo County, which did not track activities at schools, and Napa County, where parent survey and student hand tally data were not available.

To determine the effectiveness of a Safe Routes to School activity, the analysis evaluated the correlation coefficient between participation in individual activities and subsequent mode share and mode split. Note that correlation is not the same as causality; the analysis does not determine the impetus for the change observed but can determine if the change is statistically correlated with participation in an activity.

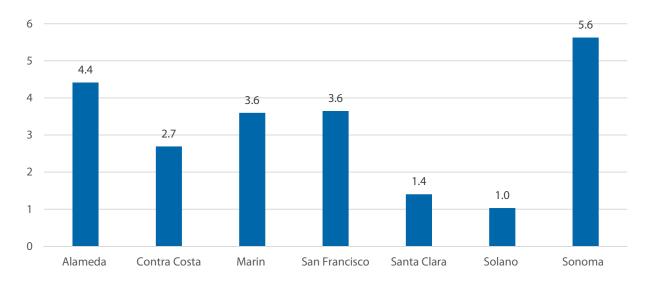


Figure 6. Average Number of Tracked Activities per School by County



Demographic and Land Use Factors

Supplemental data were also collected for the analysis to provide more insight into the outside factors that may impact mode split and mode shift at schools. These data came from readily-available sources and included the following:

- Demographics
 - School enrollment
 - Students receiving free and reduced meals
 - English language learners
- Census mode split

- Urban Form
 - WalkScore
 - Population density
 - Collisions involving bicyclists or pedestrians
 - Presence of transit

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2 Changes in Travel Behaviors and Impacts

This section presents the key mode split and mode shift results from the four-year evaluation of the RSRTS program. Mode split is the breakdown of how students get to and from school, while mode shift is the percent change in mode split from the baseline to the follow-up time period.

2.1 Mode Shift Comparison

Regional Overall Results

Figure 7 shows the baseline (pre-MTC RSRTS funding) and follow-up average mode split data for all reporting schools, based on the student tally results. Overall, schools that are involved in the RSRTS program have a statistically significant increase in walking and biking and a reduction in family vehicle use.

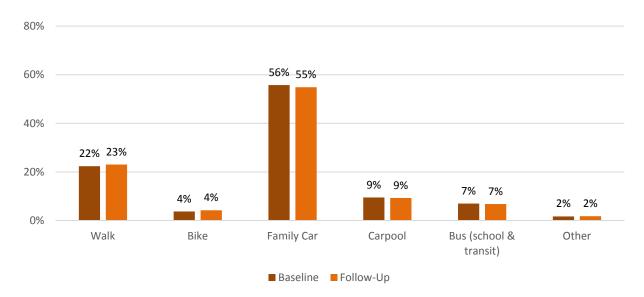


Figure 7. Mode Split to and from School, Student Hand Tally

Table 3. Mode Split to and from School, Student Hand Tally

| | Walk | Bike | Family Vehicle | Carpool | School Bus | Transit | Other | Number of Trips Reported |
|-----------------------------|-------|--------|-------------------|---------|------------|---------|---------|--------------------------------|
| Baseline | 22.4% | 3.7% | 55.7% | 9.5% | 7.0% | 1.7% | 598,377 | 22.4% |
| Follow Up | 23.0% | 4.2% | 54.9% | 9.3% | 6.8% | 1.8% | 533,283 | 23.0% |
| Mode shift (percent change) | 3.0%* | 13.7%* | -1.6%* | -2.2% | -2.6% | 6.2% | -10.9% | 3.0% |

^{*} Denotes statistically significant percent change at a 95% confidence interval.



Comparison by County

While the overall change is small, there is substantial variation in the active, shared, and family vehicle mode splits between the eight counties in this analysis, shown in Figure 8. Alameda County has the highest overall active mode share, followed by Santa Clara and San Francisco. Marin has the highest shared mode split, followed by Contra Costa. Solano County has the highest family vehicle use, closely followed by Contra Costa and Sonoma Counties.

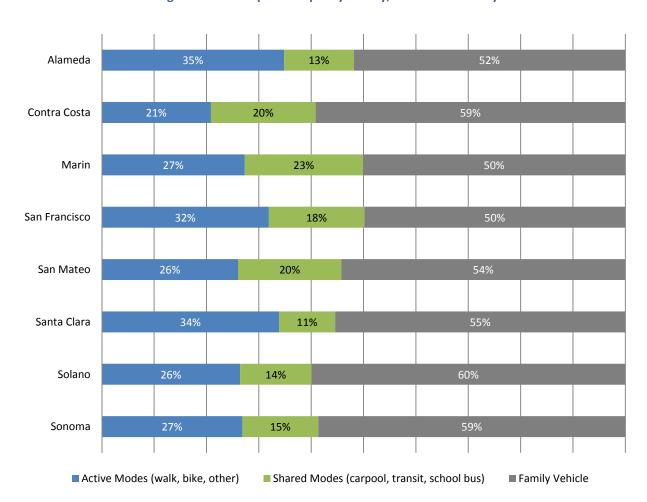


Figure 8. Follow Up Mode Split by County, Student Hand Tally

Figure 9 shows the mode shift by county. All counties except Contra Costa experienced increases in active transportation modes. The largest shifts occurred in San Mateo and Sonoma, followed by San Francisco and Solano. Contra Costa County experienced a drop in both active and shared modes. This is partially due to the minimal data available for the county, and may be due to a delayed project start up. As shown in Figure 3, only 16 percent of schools involved in Safe Routes programs in Contra Costa County are included in this analysis, and the data should not be considered representative of the current level of programming.



Alameda
Contra Costa

Marin

San Francisco

San Mateo

Santa Clara

Solano

Sonoma

Active Modes (walk, bike, other)

Shared Modes (carpool, transit, school bus)

Family Vehicle

Figure 9. Mode Shift by County, Student Hand Tally

Interestingly, counties with longer histories of Safe Routes to School programs, such as Marin, Alameda, and Santa Clara, showed lower percent changes, as shown in Figure 10. These programs have shown consistent increases in walking and biking since they began, indicating that during the program initiation there are significant "low hanging fruit" or populations amenable to switching to walking and biking. This incremental change may decrease over time, particularly as the overall active mode share increases. However, the fact that ongoing Safe Routes programs continue to show improvements of active and shared transportation is auspicious for continued program success beyond the first years.

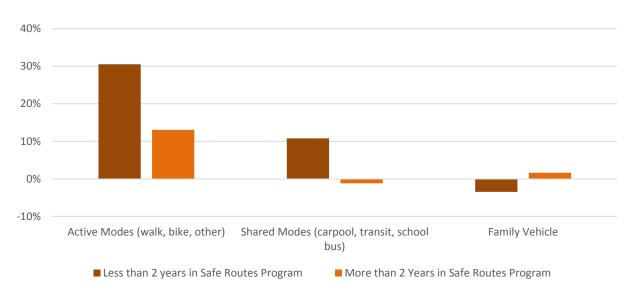


Figure 10. Mode Shift by School Tenure in Safe Routes Program



2.2 Change in Mode Split by Distance from School

Parent survey data was used to analyze mode split by distance from school. Note that this data source differs from the student hand tally data presented previously. The parent survey indicates that students are more likely to walk or bicycle if they live within one-half mile of their school, and that a high proportion of students who live within a quarter-mile of school use active transportation, as can be seen in Figure 11 and Table 4. Importantly, the parent survey data confirms the finding from student hand tallies that family vehicle travel to school declined over the course of the evaluation period. However, many families still drive in the family car, even if they live within walking or biking distance.

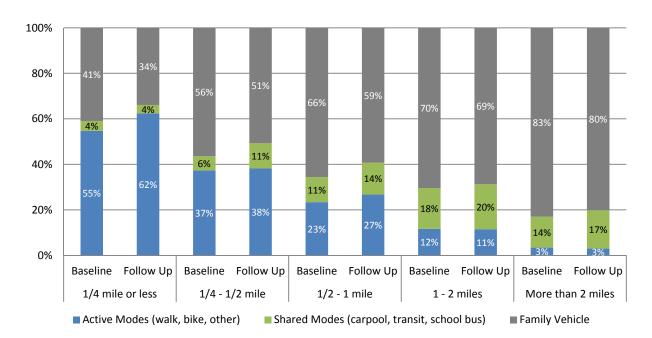


Figure 11. Mode Split by Distance from School, Parent Survey

Table 4. Mode Shift by Distance from School, Parent Survey

| | Change in Active Transportation Mode Split | Change in Shared Transportation Mode Split | Change in Family Vehicle Mode Split |
|-------------------|---|---|--|
| 1/4 mile or less | 14%* | -15% | -17%* |
| 1/4 - 1/2 mile | 2% | 74%* | -10%* |
| 1/2 - 1 mile | 14%* | 28%* | -10%* |
| 1 - 2 miles | -1% | 10% | -2%* |
| More than 2 miles | -12% | 24%* | -3%* |

^{*} Percent change values marked with an asterisk are significant at a 95% confidence interval.



-14,723

-0.2

50,436

0.77

-6,935

-0.1

2.3 Change in Per Student Annual Miles Traveled by Mode

To analyze the impact of RSRTS funding on greenhouse gas emissions (GHGs), the parent survey data was used to track the change in trip length and mode from the baseline to the follow up time period. Note that this different data source resulted in slightly different mode splits than the hand tally data presented previously.

Change in Annual Miles Traveled

Overall, students involved with Safe Routes to School programs collectively walked almost 200,000 miles and biked almost 150,000 miles more annually than they did before the program (based on follow up year enrollment), shown in Table 5.

| | Walk | Bike | Family Vehicle | School Bus | Carpool | Other |
|---|------|------|-------------------|---------------|---------|-------|
| Change in Total Annual Miles Traveled (based on follow up year | | | | | | |

-372,888

-5.7

Table 5. Change in Annual Miles Traveled, Parent Survey

148,777

2.3

199,489

3.1

Comparisons by County

Change in Per Student Annual Miles

enrollment)

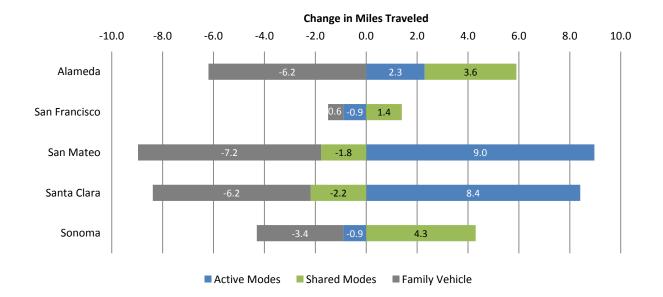
Traveled

For the counties with parent survey data, the change in annual miles traveled varied substantially. San Mateo saw the greatest increase in miles walked and biked, followed by Santa Clara. In Sonoma County, there was an increase in active miles traveled for students living close to school. However, a higher proportion of parents reported living more than two miles from school, which caused an overall decline in active transportation and resulted in reduced miles traveled by walking and biking.

In San Francisco, there was a small decrease in active modes according to the parent survey data, but the shift was not statistically significant. While the distance San Francisco students traveled using shared modes increased a small amount, this reflects significant increases in carpooling and transit use. During the analysis period, school bus programs were terminated at several schools in San Francisco, resulting in a 46 percent decrease in overall school busing and a 17 percent increase in transit use. All counties with parent survey data experienced a decrease in miles traveled via family vehicle.



Figure 12. Change in Per Student Annual Miles Traveled, Parent Survey





2.4 GHG Emissions Impacts

Shifting school trips away from family vehicles reduces start-up emissions and per-mile trip emissions. As shown previously in Section 2.1, active transportation increased in all but one county, while vehicle miles traveled decreased in all counties analyzed. This translates to a reduction in GHG emissions, based on trip length as well as number of trips (i.e. student enrollment and mode split).

Shown in Table 6, the MTC RSRTS projects resulted in an average 4.8 percent reduction in GHG emissions per student for trips one mile or less from school. If this number were extrapolated to all students enrolled in all public schools in all nine counties (1.9 million students), it would result in a reduction of 5.3 million pounds of emissions from transportation due to school trips.

Table 6. Summary of GHG Emissions Impacts of the Regional Safe Routes to School Program¹

| County | Total Annual Change in Emissions (lbs) | Public School Enrollment | Percent Change in GHG Emissions |
|---------------|---|-----------------------------|------------------------------------|
| Alameda | -53,982 | 9,761 | -9.3% |
| San Francisco | -273 | 5,299 | -0.2% |
| San Mateo | -136,360 | 14,877 | -17.2% |
| Santa Clara | -196,560 | 29,256 | -10.9% |
| Sonoma | -16,637 | 5,992 | -5.6% |
| Total | -403,812 | 65, 185 | -4.8% |

Results in this table are the per student daily changes multiplied by 175 (the typical number of school days) and then by the follow up period enrollment to reflect changes over an entire school year for all counties included. Note that this analysis includes trips within one mile of school only.







3 Factors Impacting School Travel Decisions

The impact of specific activities and events is a perennial question for SRTS providers and agencies deciding what program elements to invest time and resources in. This analysis considers whether participation in specific activities is correlated with mode split, mode shift, or a change in parental perceptions of walking and biking. Throughout the report, the "baseline" is the earliest time period during fall 2011 to spring 2013 for which data are available, while the "follow up" is the most recent time period during spring 2013 to spring 2014. Baseline and follow up were calculated individually for each school included in the analysis, to include the maximum data possible.

The following correlations are significant the 0.05 level (two-tailed test). The Pearson Correlation coefficient indicates the strength of the relationship, with numbers closer to 1 or -1 being more strongly correlated.

3.1 Participation in Safe Routes to School Program Activities

This analysis found that schools that participate in specific Safe Routes activities are more likely to have higher rates of walking, biking, and carpooling.

- Activities correlated with higher follow up walking mode share include:
 - School participation in frequent walk and roll programs (r=0.15)
 - School participation in walking school bus and bike train programs (r=0.16)
 - School participation in more activities overall (r=0.12)
 - School participation in more ongoing events (r=0.16)
- School participation in National Bike to School Day was correlated with higher biking follow up mode share (r=0.20)
- School participation in carpool encouragement activities was correlated with higher carpool mode shift (r=0.22)

3.2 Parental Perceptions of Walking and Biking

The parent survey asked about parents' options about walking and biking. When parents are more positive toward walking and biking, schools tend to have higher rates of walking and biking during the follow up time period.

- Parental perceptions correlated with higher follow up active mode share include:
 - Biking and walking are fun for my children (r=0.38).
 - Biking and walking are important for my children's health (r=0.49).
 - Biking and walking are encouraged by my children's school (r=0.41).



- Biking and walking are something I wish we did more often (r=0.26).
- The percent of students eligible for Free and Reduced Lunch is negatively correlated with parents feeling that biking and walking are fun for their children (r=-0.28).

3.3 Demographics and Land Use

In addition to the data collected in the parent surveys and student hand tallies, this analysis collected readily-available demographic, urban form, and safety information.

Key results from this analysis include the following:

- Underserved populations tend to have higher rates of walking but lower rates of biking or carpooling.
 - The percentage of students eligible for free or reduced lunch is correlated with higher walk follow up share (r=0.33), as well as lower bike follow up share (r=0-.34) and carpool follow up share (r=-0.35).
 - Higher rates of English language learners are correlated with the 10 percent most active schools (r=0.16) as well as higher active mode splits in the follow up period (r=0.22).
- Higher rates of crashes near the school deter families from walking or biking.
 - Family vehicle mode shift is positively correlated with crashes involving bicyclists or pedestrians within a quarter-mile (r=0.26) and a half-mile (r=0.17) of the school.
- Higher population densities near the school support walking, biking, and carpooling.
 - Carpool mode shift is positively correlated with population density within a quarter mile (.224) and a half mile (r=0.25).
 - The least active schools (bottom 10 percent) are correlated with lower population density at both a quarter-mile (r=0.22) and a half-mile (r=0.21).



4 Lessons Learned and Recommendations

4.1 Overall Results

- Safe Routes to Schools programs increase the use of active transportation. All counties but one show increases in walking and biking.
- Schools new to the program show greater mode shifts than schools that have been part of the program for several years. Schools that have participated in Safe Routes programs for fewer than two years show significantly greater increases in active modes than schools with longer tenures, indicating a plateau. There are likely relatively easy modifications or encouragement that result in high relative mode shift, which can be implemented in the first years of the program. The fact that counties with a longer program tenure continue to experience increases in active transportation use implies that sustainable programs continue to see benefits beyond the first years of the programming.
- Specific Safe Routes activities are correlated with increasing walking, biking, and carpooling. Activities that are related to higher active mode share include frequent walk and roll programs, walking school bus and bike train programs. In addition, schools that offered more different activities and more activities that were ongoing, rather than one-time, are related to higher active transportation mode shifts. Schools that participated in National Bike to School Day have higher biking mode splits, while schools that encourage carpooling have higher carpooling mode splits.
- Parents' perceptions of walking and biking are correlated with walking and biking mode split.

 Schools tended to have higher rates of walking and biking during the follow up time period (most recent period for which data were collected) when parents thought that walking and biking are fun, important for health, encouraged by the school, and something they wish they did more often.
- Underserved populations tend to have higher rates of walking but lower rates of biking or carpooling. The percentage of students eligible for free or reduced lunch is correlated with higher walk mode share, as well as lower bike and carpool share. Higher rates of English language learners were correlated with higher active mode splits in the follow up period.
- Higher rates of crashes near the school correlate with reduced rates of families walking or biking. Family vehicle mode shift is positively correlated with crashes involving bicyclists or pedestrians within a quarter-mile and a half-mile of the school, indicating that where crashes occurred, families were discouraged from walking and biking. This finding indicates that, in addition to reducing safety concerns, infrastructure improvements can have a significant impact on mode choice.
- Higher population densities near the school support walking, biking, and carpooling. Carpool mode shift is positively correlated with population density within a quarter mile and a half mile. The least active schools (bottom 10 percent) are correlated with lower population density at both a quarter-mile and a half-mile.



4.2 Lessons Learned from Each County

Table 7 presents the key findings and interpretations about the impacts of implementation policies and practices in each county.

Table 7. Key Lessons Learned by County

| County | Key Lessons Learned |
|--------------|--|
| Alameda | ■ Leverage RSTS funding with other local and grant funds to expand activities. The Local Measure B sales tax and a Federal SRTS grant significantly expanded countywide program offerings, enabling more schools to participate and offering a higher level of programming at participating schools (Alameda County schools participated in an average of 4.4 activities per school, the second-highest number of activities region-wide). |
| | ■ Program impacts extend to students living within two miles of their schools. Alameda County experienced a 57 percent increase in active modes and a 45 percent increase in shared modes for students living between one and two miles of their school. This is a significant shift for students living outside the standard walking and biking range (usually one mile), and implies a high degree of success with the level and type of programming, for carpooling as well as for walking and biking. |
| | Several years of participation in Safe Routes activities resulted in high active mode shares. Alameda County had the highest follow up active mode share (35 percent of students walking and biking), which suggests a program success in previous years, prior to those in this evaluation. |
| Contra Costa | ■ Data from Contra Costa County was inconclusive, but the emerging program is well positioned for success. A relatively longer project initiation phase resulted in insufficient data in Contra Costa County. However, the three programs include 64 percent of the county schools, second in program coverage only to the long-running Marin program. |
| | Safe Routes programs that are sub-allocated within the county may lack the coordination benefits and resources of countywide programs. All Contra Costa Safe Routes programs are less likely to participate in regional initiatives or take advantage of regional resources than other county programs. |
| | Additional training or support for evaluation may be necessary. Two of the three local Safe Routes programs in Contra Costa did not provide useable data and are therefore not included in this analysis. In one case, data were collected during an event day and were not representative of typical behavior. |



| Marin | Long-running Safe Routes programs can leverage additional partners and funding sources to provide a wider variety of program activities. In addition to having the largest proportion of schools included in the program (90 percent), Marin Safe Routes to School includes a high school program, Green Ways to School outreach, planning assistance, SchoolPool system, Safe Pathways infrastructure element, and StreetSmarts traffic calming program, as well as robust elementary and middle school education, encouragement, and enforcement programming. |
|---------------|---|
| | Established Safe Routes programs may be more challenged to change evaluation techniques or instruments than newer programs. Marin uses a distinct parent survey and specific schedule, which limited the useable data for this analysis, despite having many participating schools. |
| Napa | Additional assistance may be required to maintain an ongoing Safe Routes program in Napa. While baseline surveys were collected, follow up surveys were not collected during the evaluation period, due to a gap in funding that resulted in a lack of coordinator position during the analysis time period. |
| San Francisco | Changes to school transportation policies, particularly availability of school busing, has a large impact on mode split. During the analysis period, school bus programs were terminated at several schools, resulting in a 46 percent decrease in overall school busing and a 17 percent increase in transit use, as well as a small increase in family vehicle use (1.2 percent increase). |
| | Personal safety and crime are a major deterrent to walking in some urban settings. The program coordinator reported that the two schools that saw large reductions in walking experienced crime that impacted families walking to school. |
| | Intensive programming reaches a small proportion of schools in the city/county. While San Francisco has well-established programming, only 14 percent of the schools in the county participate – the lowest rate in the region. It is notable that disadvantaged schools participate in the San Francisco program at a higher rate than in other counties, and these schools may require additional resources for ongoing success than more advantaged schools. In addition, San Francisco's school choice model results in students attending schools further from their homes, rather than their neighborhood schools, which is challenging to walking and bicycling. |

² 'Disadvantaged' is defined using the California Active Transportation Program defibnition of more than 75 percent of students eligible for Free and Reduced Lunches. In San Francisco, 40% of schools are considered disadvantaged schools, and 41% of participating schools are disadvantaged.



| San Mateo | An opt-in approach of providing trainings, technical assistance, and other resources to interested schools was a successful way of launching a new program and reaching many schools. No schools in the county had previously been involved in Safe Routes activities, but San Mateo County experienced the highest increase in active mode split and decrease in family vehicle use, while |
|-------------|---|
| | Resources should be provided to assist programs in tracking activity participation at schools. This allows the program and region to evaluate the reach and impact of the activities and events, and enables comparisons between schools and programs. San Mateo County does not track the specific activities offered at each school, barring an assessment of the success of individual activities or events. |
| Santa Clara | Sub-county programs benefit from regional coordination. While the TSCN provides resources and coordination for schools outside of city-specific programs, several programs developed similar materials, increasing administrative costs. Underserved schools are less likely to be included in Safe Routes activities. The proportion of schools involved in Safe Routes where more than 75 percent of students eligible for free and reduced lunches is 18 percent, compared to the countywide average of 23 percent. |
| Solano | School support and buy-in is important for increasing parent survey response rates. Surveys were provided during two semesters in the baseline collection due to low response rates. With a Coordinator transition and other challenges, follow up surveys were not collected at the same schools or with sufficient response rates for inclusion in this analysis. |
| Sonoma | ■ An intensive program (with more activities provided to each participating school) results in successful mode split and mode shift results. Sonoma saw some of the greatest increases in active transportation and has the highest average programs per school (5.6 activities). |



4.3 Recommendations

Recommendations for Implementing Organizations

Specific recommendations for organizations evaluating future programs include the following:

- Continue collecting mode split data primarily through twice-yearly student hand tallies, preferably near the beginning and end of each school year. This information provides a snapshot of activity at each school and tracks progress over time.
- Continue surveying parents about their perceptions of transportation options but do so every three years, rather than annually, to maximize participation.
- **Consistently track activity participation at schools** around the Bay Area to promote comparisons between programs by adhering to National SRTS Foundation reporting standards.
- Work directly with schools that have shown increases in family car use to determine outside factors that may be diminishing the impacts of the Safe Routes to School programming.

Recommendations for MTC

The RSRTS program has significantly expanded Safe Routes to School programming beyond what had previously been sustainable based on local funding levels.

Specific recommendations for MTC include the following:

- Continue distributing Safe Routes to School funding to counties based on public school enrollment to promote Safe Routes to School activities throughout the region.
- Consider requiring program implementation at the countywide level, rather than sub-allocating funding or providing a pass-through, to decrease administrative costs and encourage greater participation at the county level.
- Continue to provide technical assistance for data collection and evaluation to ensure consistent and regular data collection. This could include training or assistance for administering hand tallies and parent surveys, as well as developing tools for collecting program participation and implementation data.
- Encourage local jurisdictions to seek outside funding through the Active Transportation Program (ATP), OneBayArea Grant (OBAG), and other grant programs, as well as tax measures and vehicle registration fees, which can provide additional ongoing funding for Safe Routes to School programming.