

Urban Form and Physical Activity: Insights from a Quasi-Experiment

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Background and Research Design

- California Safe Routes to Schools program as a quasi-experiment
 - \$43 million in funded for improvements near schools
 - 186 projects funding in first 2 cycles
 - Intention: safety, increase non-motorized travel
- Before/After observations of built environment changes intended in part to influence travel

Methods

- Survey of parents of 3rd and 5th graders
- For this analysis, “after construction” survey used
- Key Survey Question for analysis:
Would you say that your child now walks or bicycles to school:
 - a. Less** than before the project described above was built.
 - b. The same amount** as before the project was built.
 - c. More** than before the project was built.

Methods (continued)

- Additional questions on whether SR2S project is “along child’s usual route to school” also used
- Intuition of quasi-experimental approach:
 - Identify effect of SR2S project on walk/bike to school by:
 - Before/After Variation (survey question)
 - Differences in walk/bike more/less depending on whether project was along usual route to school
 - Project Type

Schools Studied

Cesar Chavez (South Los Angeles)

Glenoaks (Glendale)

Jasper (Rancho Cucamonga)

Juan Cabrillo (Malibu)

Mt. Vernon (San Bernardino)

Murrietta (Murrietta)

Newman (Chino)

Sheldon (Contra Costa County)

Valley (Yucaipa)

West Randall (San Bernardino County)

Types of Projects

- Sidewalk Improvement: 5 projects
- Pedestrian/Bicycle Crossing: 3 projects
- Traffic Control: 2 projects

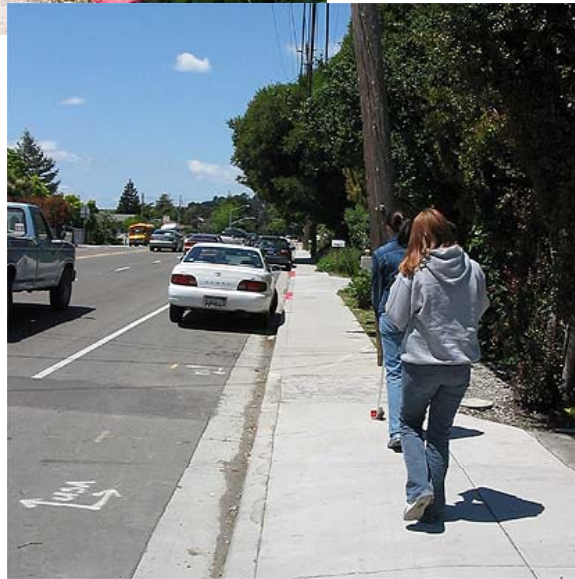
Sheldon ES



Before

Before

After



West Randall ES



After

Data

- 1244 returned “after construction” surveys from 10 schools
- School response rates varied from 23% to 54%
- Full Sample Response Rate: 40%

Results

% Walk/Bike More	% No Change	% Walk/Bike Less
10.5%	71.69%	17.81%

Sort by Whether SR2S Project Along Route to School

- Survey asked if project was along child's usual route to school
- 52% of parents said “yes”; 48% said “no”

Results, by “Project Along Usual Route”

% More, Project Along Route	% More, Project Not Along Route	Difference	t-statistic
15.43%	4.26%	11.18%	5.76

Results, By Type of Project

	Along	Not Along	Diff	t-stat
Sidewalk	16.99%	3.18%	13.77%	4.84
Crossing	12.10%	5.65%	6.45%	1.80
Traffic Control	15.91%	4.21%	11.70%	3.08

What's Happening

- Samantha Runion Kidnapping, July 2002 (four schools had “before construction” data collection before 2002)
- General decline in walking/bicycle, mitigated by SR2S if project is along usual route
- Hawthorne effect – if you said the project was along your child's route, you might view the child as walking/bicycling more

Change in Perception of Safety, Before vs. After

% Walk More if Spanned July, 2002	% Walk More if not Spanned July, 2002	Difference	t-stat
12.50%	9.06%	3.44%	1.61

% Walk Less if Spanned July, 2002	% Walk Less if not Spanned July, 2002	Difference	t-stat
19.57%	16.54%	3.03%	1.15

Hawthorne Effect

% Walk More if Noticed Project	% Walk Less if Noticed Project	Diff	t-stat
11.21%	7.99%	3.23%	1.33

Hawthorne Effect (cont.)

% Walk Less if Noticed Project	% Walk Less if Not Noticed Project	Diff	t-stat
16.88%	21.47%	-4.59	-1.31

Results, by School

	% Walk More Along Route	% Walk More Not Along Route	Diff	t- statistic	n
Cesar Chavez	20.59%	6.15%	14.43%	2.52	151
Glenoaks	12.00%	7.69%	4.31%	0.76	126
Jasper	3.13%	0.00%	3.13%	1.02	57
Juan Cabrillo	6.67%	0.00%	6.67%	1.04	32
Mt. Vernon	19.05%	5.71%	13.33%	1.85	87
Murrietta	13.73%	2.38%	11.34%	2.12	101
Newman	10.94%	0.00%	10.94%	2.80	101
Sheldon	15.63%	0.00%	15.63%	2.43	62
Valley	11.59%	0.00%	11.59%	3.01	97
West Randall	28.57%	7.41%	21.16%	3.15	139

Did SR2S Project Have Effect on % Who Walked/Bike Less?

% Walk Less, Project Along Route	% Walk Less, Project Not Along Route	Diff	t-stat
17.49%	18.62%	-1.13	-0.43

Lessons About SR2S Program)

- Hypothesis that SR2S influenced walking/bicycling to school is supported
- Support is fairly strong
- Generalizability – A Case Study
- Magnitude – potential to bound cost effectiveness estimates

Lessons For Quasi-Experimental Research Designs

- It is possible, challenging, and opportunities not numerous
- Look for programs that generate many design changes within mandated timeframes
 - Other State SR2S
 - RWJF Active Living by Design
 - Networks to Link Individual Opportunities
- Ideally track same person before versus after, but not doing so can also give insights
- Control sites are ideal, but again can sometimes find controls “within” the experimental site