A Complete Street Intervention for Walking to Transit, Non-Transit Walking, and Bicycling: A Quasi-Experimental...

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Article Title: A Complete Street Intervention for Walking to Transit, Non-Transit Walking, and Bicycling: A Quasi-Experimental Demonstration of Increased Use

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Abstract

Background: Complete streets require evaluation to determine if they encourage active transportation. **Methods:** Data were collected before and after a street intervention provided new light rail, bike lanes, and better sidewalks in Salt Lake City, Utah. Residents living near (<800 m) and far (≥801-2000 m) from the street were compared, with sensitivity tests for alternative definitions of near (<600 and <1000 m). Dependent variables were accelerometer/global positioning system (GPS) measures of transit trips, non-transit walking trips, and biking trips that included the complete street corridor. **Results:** Active travel trips for Near-Time 2 residents, the group hypothesized to be the most active, were compared to the other three groups (Near-Time 1, Far-Time 1, and Far-Time 2), net of control variables. Near-Time 2 residents were more likely to engage in complete street transit walking trips (35%, adjusted) and non-transit walking trips (50%) than the other three groups (24-25% and 13-36%, respectively). Bicycling was less prevalent, with only one of three contrasts significant (10% of Near-Time 2 residents had complete street bicycle trips compared to 5% of Far-Time 1 residents). **Conclusions:** Living near the complete street intervention supported more pedestrian use and possibly bicycling, suggesting complete streets are also public health interventions.

Key words: global positioning system (GPS), light rail, active transportation

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Background

Complete streets are constructed or modified to support active transportation use by pedestrians, cyclists, and transit riders.[1] Complete street policies have gained popularity in recent years, and have been adopted in 30 of 50 U.S. states.[2] However, they have seldom been evaluated for their abilities to encourage more active use by nearby residents. The current study evaluates whether a complete street intervention in Salt Lake City, Utah that involves a new light rail extension, better and more complete bike paths, and wider more aesthetically pleasing sidewalks increases the proportion of nearby residents who make use of the street for walking, using transit, or biking.

To assess whether exposure to a new active transportation intervention increases use of the facilities by residents whose behavior had been measured at baseline, researchers compare "Near" or "exposed" residents close to the intervention, such as < 1000 ft [3] or < 1 mile,[4] with "Far" or "unexposed" quasi-experimental control groups. Yet according to recent reviews, few studies of new active transportation infrastructure have both pre- and post-evaluations for Near and Far residents.[5,6] Although some promising results have been shown from countries in Western Europe or Australia,[7-11] these results may be more difficult to achieve in U.S. cities where car use is more dominant and active travel fairly unusual.[12,13] Among the few relevant U.S. studies, one found that residents living Near (<0.5 mile) a new light rail line reported walking more when the line opened, but so did Far residents (.5 – 3 miles).[14] For residents living near a new greenway, both Near (0.5 miles) and Far (0.51-1.0 miles) residents reported more walking.[15] A follow-up study expanded the Near (<1 mile) and Far (2-3 miles) boundaries, but again showed that both groups reported more walking after the intervention.[16] Similarly, both Near and Far residents reported more physical activity after a 6-block walking path was constructed.[17]

The null results in the U.S. studies are perplexing, because they conflict with reviews [6,18] or research that demonstrate that self-reported or measured proximity to paths are frequently associated with use,[7,19-21] with few exceptions.[22] One unexamined possibility is that more Far residents than anticipated are attracted to and actively use the intervention area, accounting for reported increases in uses across both Near and Far groups. Alternatively, residents may become sensitized to study goals and report more active transportation at follow-up. The present study addresses both possibilities suggested by past research. We tested three alternative definitions of whether residents were considered to live near to the complete street. Past research has shown that there is no fixed distance that can be considered the optimal distance for attracting pedestrians to light rail. Past studies have found mean or median distances walked to light rail stops vary from 326m in Calgary,[23] to 564m in Montreal,[24] to 805m in Sydney,[25] to 933m in Portland and San Francisco,[26] to 1000 m in Perth.[27] Furthermore, few studies address exposure distances most likely to attract nearby residents to walking paths or bike lanes. By testing alternative distances to define Near residents, the current study addresses the possibility that results are sensitive to variations in proximity. In addition, we mitigate the possibility that post-construction measures of use of a new facility are inflated by self-presentational or other biases. Thus, instead of self-reported active use, we utilize GPS and accelerometry data to detect active travel trips that include the complete street corridor.

For bicycling, a recent review uncovered no U.S. studies designed to test whether new bike paths can increase use among nearby adults.[28] Furthermore, two U.S. studies revealed no effects of proximity to new paths, with one study finding only 2 bicycle trips per 386 travel diary days [29] and the other finding only 2 of 366 residents making any bicycle trips pre-trail construction and a decrease in cycling time post-trail construction.[30] Even after screening for bike ownership, a recent Portland study showed no increase in biking among nearby bike owners near a new greenway.[3] Thus given the rarity of biking in the U.S. and the lack of effects for new bike paths upon nearby residents, no predictions were made for the effects of the complete street on biking behavior, although the data are explored.

In sum, planned contrasts are tested to determine whether Near-Time2 residents (<800 m) are more likely to walk for transit and other purposes on trips involving the complete street than the other three groups: Near-Time 1, Far- Time 1, and Far-Time2. [31] Next, we test whether results vary when different distances are chosen to capture the exposure effect. Finally, similar planned comparisons for bicyclists are tested for exploratory purposes.

Methods

Sample. As part of the Moving Across Places Study (MAPS), residents living Near (≤800 m) and Far (801-2000 m) from the complete street renovation in Salt Lake City, Utah, were contacted by door-to-door recruiters. We selected adults (≥ 18) who were not pregnant, spoke English or Spanish, could walk for a few blocks, could complete the informed consent process from the first author's Institutional Review Board, wear the equipment, and who planned to stay in the neighborhood at least a year (additional details in [32]). Nine hundred-ten residents participated in 2012 with sufficient accelerometer data (minimum 3 10-hour days[33]); they represented a 28.93% response rate based American Association of Public Opinion Researchers response rate formula 3.[34] In the 2013 follow-up there were 536 residents who remained in the area and provided post-intervention data; 34 residents refused to participate in 2013 with the rest either moving or becoming ineligible. Sample size met power calculation requirements (i.e., testing the conservative assumption that use increases from 5% to 10%, which required N=210 for 80% power for an alpha of .05). Accelerometer non-wear hours were defined as 60 minutes with zero counts per minute, following procedures used in past research.[35] Research assistants instructed participants how to wear the accelerometers (Actigraph GT3X+) and to wear and recharge the Global Positioning System (GPS) data loggers (GlobalSat DG-100). Research assistants returned to the participant's home after one week of wear to collect devices and administer additional surveys.

Site. The street improvements completed a sporadic bike lane and widened sections of it so that it is now designated a “high comfort” bike lane on the city bike map. A light rail line (6.7 miles 10.7 km) was extended from downtown westward to the airport. The study is focused along the eastern section, which included 5 new rail stops spread across 3.5 km within walking distances of residents. Complete street improvements also included narrowed automotive lanes and wider and better lit sidewalks. The complete street corridor is fronted by multiple commercial and office areas; some multifamily rental, condominium, and hotel lodging; the state fair park; some industrial sites; and a variety of services.

Measures. Participants completed surveys to provide sociodemographic information. These variables, used as controls in subsequent analyses, included dummy variables for female gender, white race, currently married, currently employed, and having access to an automobile. Household income was reported in categories coded at the midpoint, ranging from < $10,000 up to $150,000. Days of exposure to the complete street intervention were calculated as the difference between the Time 2 interview data and the opening date of the light rail line in April, 2013.

To assess travel mode, data from accelerometers and GPS units were integrated and trip reports produced by the company GeoStats (now Westat). Based upon combinations of acceleration, speed, and location indicated by the GPS loggers and physical activity intensities measured by the accelerometers, modes of travel were assigned to trip segments, following a procedure that yields valid mode assignment.[36 37,38] Specifically, GeoStats (now Westat) assigned an initial mode of travel based on whether the trip’s average speed was within 1.96 SDs of the average speed for that mode[39] (see additional methodological details in Miller et al., 2015, Appendix A). Average speeds across modes included 4.55 kph for walking, 16.80 kph for biking, 20 kph for bus, and 38.62 kph for automobiles. The underlying GIS data for transit lines helped identify and distinguish between light and commuter rail. If a trip included a light rail, bus, and/or commuter rail trip, it was considered a transit use trip. If a trip did not involve any of those three transit modes and involved walking, it was considered a non-transit walking trip. If a trip involved a bicycle ride, it was considered a bike trip. Note that walking trips were based on GPS and accelerometer evidence of walking and were not excluded if walking did not meet particular physical activity intensity thresholds. If the GPS data indicated that a trip was at least partially within a 40 m buffer from the complete street centerline, the entire trip was considered a complete street trip. The 40m buffer was similar to the buffer distances adopted in other studies to identify use of a corridor.[40,41]

Based on past research and planning practice, we defined residents as living Near to new light rail lines when they lived within 800 m.[23-25] We also conducted sensitivity tests using shorter (600 m) and longer (1000 m) distances to acknowledge that exposure to the intervention might be optimal at distances other than 800 m.

Statistical analyses. The quasi-experimental design allowed a comparison of Near and Far residents before and after the complete street intervention. Control variables were retained if they were related to the active travel modes or Near/Far group membership, for any of the three distance specifications, based on chi-squared and independent group t-tests. Descriptive statistics (means and standard deviations) were computed for all variables. Bar graphs summarized the means, adjusted for control variables, for proportions of residents demonstrating each type of complete street access (cycling, non-transit walking, and transit walking) at each of the three definitions of Near (≤800 m, ≤600 m, and ≤1000 m) to the complete street, at both Times 1 and 2. Line graphs summarize the use of the complete street by residents' distance from home to the complete street. Generalized linear mixed model analyses (using SPSS v21) treated participant as a random effect.

Results

Control variables and descriptive statistics. Residents from Near and Far areas were not significantly different for most of the demographic variables: female gender (proportion = .51 (SD= .50))

Hispanic ethnicity (proportion =.24 (SD=.43)), college graduation status (proportion =.37 (SD=.48)), whether they had children in the home (proportions = .41 (SD=.49)), renter status (proportion=.49 (SD=.50), size of household (M= 2.99 (SD =1.79)), years of residence (M=7.50 (SD=10.10)), or age (M=41.72 (SD=14.77)). As shown in Table 1's descriptive summaries of control variables, Near residents were significantly less likely to report being white, married, or employed. They also were less likely to have cars and they reported lower household incomes. Analyses also controlled for days between opening of the light rail line and the resident's participation week; residents participated at about the same time each year (March-December 2012 and May –November 2013) to control for seasonal effects, although the Far sample completed participation slightly earlier than the Near sample. In addition, female gender was controlled due to significant relationships to travel mode (overall, 22% of females vs. 28% of males walked and 3% of females vs. 8% of males biked along the complete street, both significant effects in the mixed model below). Because over 5% of residents (n=75) did not report income, missing income values were imputed by multiple regression, with random residuals chosen from complete cases.[42] Residents did not show any significant changes over time in socio-demographic variables (e.g., college completion).

Time and Distance effects: Transit-related active transportation. Proportions of residents who used active transportation for transit trips that included the complete street corridor are summarized in Table 2. Proportionally more Near-Time 2 residents made transit-related active transportation trips than the three other groups in the planned contrasts[31] : Near-Time 1, Far-Time 1, and Far-Time 2. The unadjusted means (Table 2) show that 20% of Near-Time 1 residents used active travel for transit trips that included the complete street corridor; after light rail opened, 25% of Near-Time 2 residents used active travel for such transit trips. Complete street trips with transit ridership was at 15% for both Far-time 1 and Far-Time 2 residents. Means adjusted for the effects of control variables are charted in Figure 1.

Table 3 reports results of the mixed models estimated for the planned contrasts[31] of Time and Distance, net of controls. Prior tests revealed no problematic levels of collinearity[43] among the control variables (all condition indices < 10; tolerances > .80). Near-Time 2 residents were more likely to take transit-related complete street active transportation trips than any other group (all $p < .04$). With the Near-Time 2 residents as the reference group, the odds ratios for residents who took complete street transit-related active trips varied from 0.61 for Near-Time 1 residents, to 0.57 for Far-Time 1 residents, to 0.60 for Far-Time 2 residents.

Time and Distance effects: Non-transit-related walking. For non-transit walking trips in the complete street corridor, more Near-Time 2 residents took walk trips that included the complete street more than any other group (all $p < .001$). Among Near-Time 1 residents, 34% of residents walked on complete street trips prior to construction and this increased to 47% at Time 2. Among Far-Time 1 residents, 11% took walking trips involving the complete street and this increased to 18% at Time 2. Compared to the reference group of Near-Time 2 residents, the odds ratio for Near-Time 1 residents was .55; for Far residents odds ratios were .15 and .27 (Table 3).

Time and Distance effects: Bicycling. For bike trips associated with the complete street corridor, the Near Time 2 residents were more likely to cycle than any of the other three groups. However, absolute levels of cycling were low compared to walking and differences in cycling across groups were small. Among Near residents, 8% were detected cycling the complete street at Time 1 and this rose to just 10% at Time 2 (adjusted values, Table 2). For Far residents, complete street cycling rose from 5% Time 1 to 7% Time 2. The mixed model revealed that differences were significant for one of the three planned contrasts. The proportions of Near Time-2 cyclists were higher than the proportions of Far-Time 1 cyclists, net of controls (10% > 5%, Table 2; $p = .04$, Table 3).

With respect to the control variables, the consistent significant relationships across distances are that transit trip takers in the complete street corridor are more likely to be unmarried, non-white race individuals, and those without car access. Non-transit walkers are more likely to be males and cyclists are more likely to be males, white race individuals (non-significant at 600 m), and individuals without cars (full models available from the authors).

Sensitivity tests: Varying distances. Table 2 summarizes means and Table 3 summarizes the mixed models that tested different definitions of Near residents. By defining Near as 200 m closer to and farther from the complete street corridor than the above analyses (set at 800 m distance), it is possible to determine how robust the findings are across different definitions of proximity to the complete street. The results show that the non-transit walks are most robust with respect to variations in definitions of Near vs. Far distances; all contrasts retain significance regardless of whether Near is defined as <600 m, <800 m, or <1000 m. For transit trips, two of six contrasts become non-significant when these new distances are tested. For bicycling, the significant effect found at <800 m, in which Near-Time 2 residents are more likely to cycle the complete street than Far-Time 1 residents, is confirmed for the <1000 m definition of Near. In sum, these tests suggest that the 800 m distance generally captures exposure to the complete street intervention as well as or better than alternative definitions of Near.

Figures 2 through 4 illustrate these patterns by plotting residents' home distances from the complete street against their engagement in the three complete street active transportation modes: active transport associated with transit use, and walks for non-transit purposes, and cycling. The figures show that walking for transit or non-transit trips along the complete street is less likely the further away a resident lives from the complete street. The data plotted are also fitted with a third order polynomial curve, which confirms the general decay of active transportation access with greater distance to the complete street site. Note that bicycling is less common than walking, so data are summarized in 200 m increments, and show less clear relationships with distance from the complete street. Finally, the figures show the greater proportion of residents walking to or from the complete street after construction of the complete street.

Discussion

As hypothesized, the Near-Time 2 residents showed more active use of the complete street than any other cell in the Time X Distance design: Near Time 1, Far Time 1, and Far Time 2. The most consistent significant results show that non-transit walking trips that include the complete street corridor, as detected by GPS/accelerometer data, are more likely for Near-Time 2 residents than the three other cells, regardless of whether Near is defined as 800 m, 600 m, or 1000 m. For transit trips, these comparisons are significantly different for the 800 m Near definition and largely significant for 600 m and 1000 m variations (significant for 2 of 3 contrasts, respectively). Results support the idea that complete streets can provide environmental opportunities for active travel that are adopted by significant numbers of nearby residents after improvements are in place.

The finding that Near-Time 2 residents were also more likely to have complete street transit trips, with all three contrasts significant at the 800 m distance (about 0.5 mile) is consistent with some past research. For example, 75% of rail users lived within 840 m in Calgary,[23] and the mean distance to light rail in Sydney was 804 m[25] and the mean distance in this study was 812 m. Objectively measured distances from two BART heavy rail transit stations averaged 548m [44] and the 85th percentile of Montreal subway riders walked up to 873 m.[24] National Household Travel Survey data suggest that all walking trips average about 0.5 miles (804 m).[45]

As noted earlier, past research demonstrated such a low level of cycling in the U.S. that no hypotheses were proposed for cycling. Nevertheless, 5-10% of residents had bicycle trips that involved the complete street during their week of data collection (adjusted values, Table 2). These are low numbers but higher than the 2.5% (±.3) city average for reported bike commuting to work from the American Community Survey 2008-2012 data.[46] The data collected in the current study did not distinguish work-commute biking from other biking. Bicycling among Near-Time 2 residents is sufficient to be statistically higher than bicycling among the Far-Time 1 residents. Although the significant differences are confined to one of three contrasts, this significant effect was not seen in prior U.S. studies of adult cyclists living near new bike lanes. It is possible that the effects are larger than past research cited earlier because biking is becoming more popular nationwide or because the multiple improvements to a centrally located urban street—the synergistic effect of a complete street-- may have more substantial impacts on ridership than adding new bike routes at city edges that might only attract leisure rides. It should be noted that the transit agency allows bicycles on the light and commuter rail lines and two to three bikes can also fit onto each city bus. These efforts to enable multimode bike trips may also be important for nearby cyclists.

Interestingly, both the non-transit walkers and the cyclists in the Far areas showed, in Table 2, increases in their use of the complete street over time. This recalls the trends noted earlier for four other studies of new rail or walking paths, where both Near and Far groups increased their active use over time.[14-17] It is desirable to encourage more active transportation, as these facilities may be, unexpectedly, serving a subset of even distant residents. Additional research is needed to discover why some residents go beyond rules of thumb for walksheds to access transit areas; perhaps social network members or especially attractive destinations, routes, or services account for the drawing power. However, from a quasi-experimental perspective, some Far residents are exposed to the intervention and are not strictly a pure control group. When natural community interventions attract both Near and Far residents, this diffusion of treatment effects makes it difficult to detect treatment effects.[47] Although the effects were powerful enough to be significant in the current study, the effectiveness of interventions to entice some use by Far residents may explain why other studies with Far control groups fail to detect significant increases among Near residents relative to Far residents. In future research, testing multiple definitions of Near, including potential nonlinear effects, may enable researchers to be more confident that they have detected exposure effects.

Although the study provided strong methods for establishing that physical activity took place along the complete street corridor, the study faced other limitations. The sample was limited to residents living adjacent to five stops along a new light rail line and other complete street improvements in one city. Although a number of socio-demographic variables were controlled, it is possible that some unmeasured variables were influential. Our sampling of whether residents used the complete street was limited to about one week of activity each year and residents had been exposed to the complete street for less than a year. It is possible that results strengthen over time as residents become familiar with the new routes; this is what was found in a UK study where residents reported using new nearby walking/biking paths during a Year 2 follow-up but not a Year 1 follow-up.[9]

Nevertheless, this research has demonstrated that complete street intervention was associated with increased use among nearby residents. Complete street evaluations for physical activity are in their infancy. One study demonstrated, with repeated cross-sectional observations, no increase in bicycling but a 37% increase in pedestrians along a newly constructed complete street route.[48] The current study demonstrates that increases in use by pedestrians and transit riders occur when the same individuals are followed over time. As noted in the introduction, past research has not found strong increases in active use in the U.S. after new transportation infrastructure interventions.[3,29,30] The complete street implementation in this instance targeted a wide street that had been dominated by cars and which was not known as a pedestrian-friendly street. In the U.S., new light rail installations are often placed along existing streets or old freight rail corridors, where land uses have not favored pedestrian access. Under such circumstances, it may take years for adjacent land uses to evolve before the street fulfills its potential as a pedestrian destination. Thus, the results in the current study may apply best to transit-enriched streets in urban settings. In contrast, many of the more suburban implementations of transit include "park and ride" lots that allow driving to the transit stop and may not entail physical activity at that end of the transit trip. Both in the U.S. [49] and internationally [50] the land surrounding transit stations can be developed in ways more or less supportive to pedestrians; national advocates for complete streets recognize that a goal is to encourage active travel but also fit the physical and social context.[51] The evidence of active transit to the complete street in the current study suggests that the complete street transformation, albeit not yet mature, is sufficient to attract increased active use. These results should encourage other communities to optimize complete street designs and the areas adjacent to transit stops to create opportunities for more physical activity.

It is also instructive that the positive results in the current study are consistent with positive results found in Western European and Australian contexts. For example, new cycling infrastructure in 18 UK towns was associated with an increase from 5.8% to 6.8% of residents reporting bike commutes; this increase was 0.69% higher than the increase in more distant control towns.[52] A new busway with adjacent biking/walking paths showed an increased use by residents commuting to work in Cambridge England, with 10% of the sample reporting a substantial 30% increase in trips made by active travel.[53] Similarly, residents living near new bicycling lanes have been shown to increase their bike use in countries of Western Europe or Australia, where cycling is more common.[10,11,28] It is possible that, until base rates of active travel improve in the U.S., complete street interventions that improve many aspects of the streets at one time will be needed to attract active use. Alternatively, the urban location of this complete street intervention might have been crucial to its success. Future research is needed to determine whether the increases in active use of a complete street, a novel achievement of the current study, can be replicated elsewhere.

Conclusion

In sum, this novel test of a complete street intervention showed that Near residents, at least for some distances, were more likely to have active trips along the complete street than they had at Time 1 and more than comparison Far residents had at either Time 1 or Time 2. Unlike other studies that rely on self-reports, the current study required accelerometer and GPS evidence of use of the complete street. Although some of the significant effects are modest, many people are exposed to streets, which enhances the reach of complete street interventions. Furthermore, these participants were not enrolled in a physical activity program, perhaps reducing the role of exercise motivation, and the pedestrian-friendly improvements to the corridor did not extend into the residents' neighborhoods. In sum, the increased active travel after the community intervention were consistent with the idea that complete streets can encourage more active transportation and should not be considered just a transportation intervention but a potential health benefit to communities.

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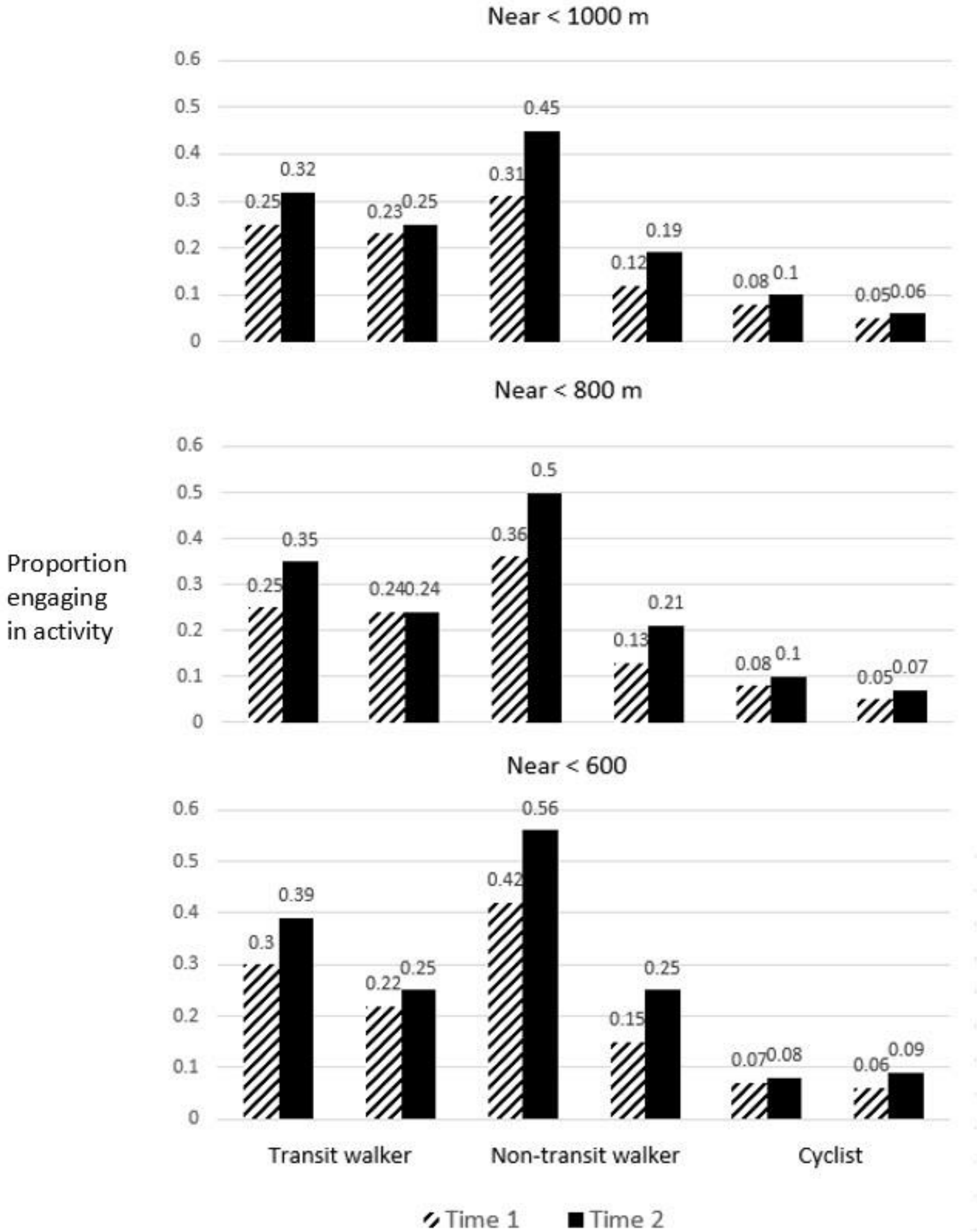

Figure 1. Proportions of residents who engage in the three complete street activity modes, by Time and three variations of Distance from the complete street. Adjusted proportions control for gender, white race, married status, employed, household income, and days of exposure to the new light rail line.

“A Complete Street Intervention for Walking to Transit, Non-Transit Walking, and Bicycling: A Quasi-Experimental Demonstration of Increased Use” by Brown BB] et al.
Journal of Physical Activity & Health

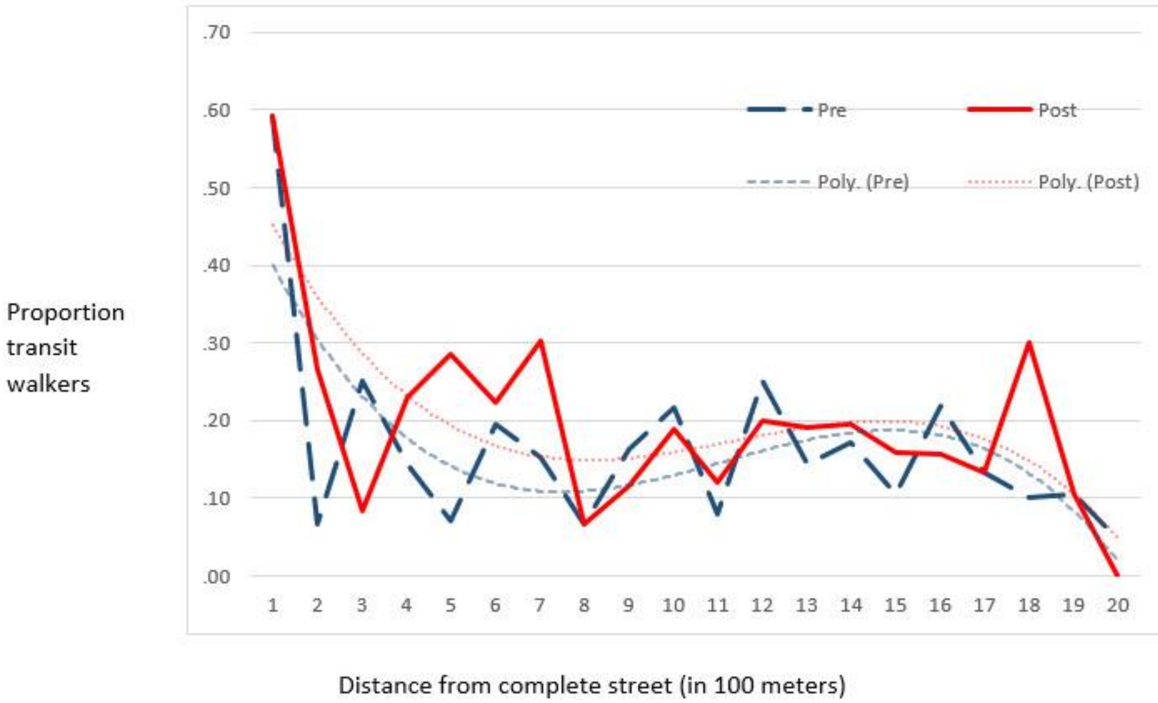

Figure 2. Proportion taking a complete street transit trip by home distance from site (in 100s of meters).

"A Complete Street Intervention for Walking to Transit, Non-Transit Walking, and Bicycling: A Quasi-Experimental Demonstration of Increased Use" by Brown BB] et al.
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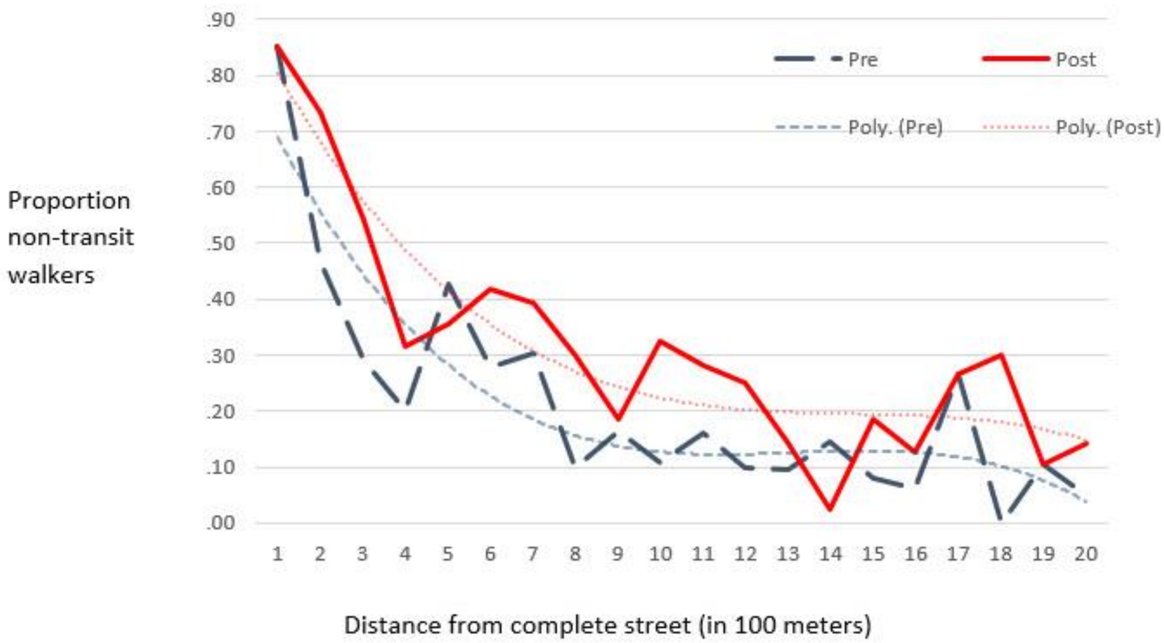

Figure 3. Proportion taking a complete street non-transit walking trip by home distance from site (in 100s of meters)

"A Complete Street Intervention for Walking to Transit, Non-Transit Walking, and Bicycling: A Quasi-Experimental Demonstration of Increased Use" by Brown BB] et al.
Journal of Physical Activity & Health

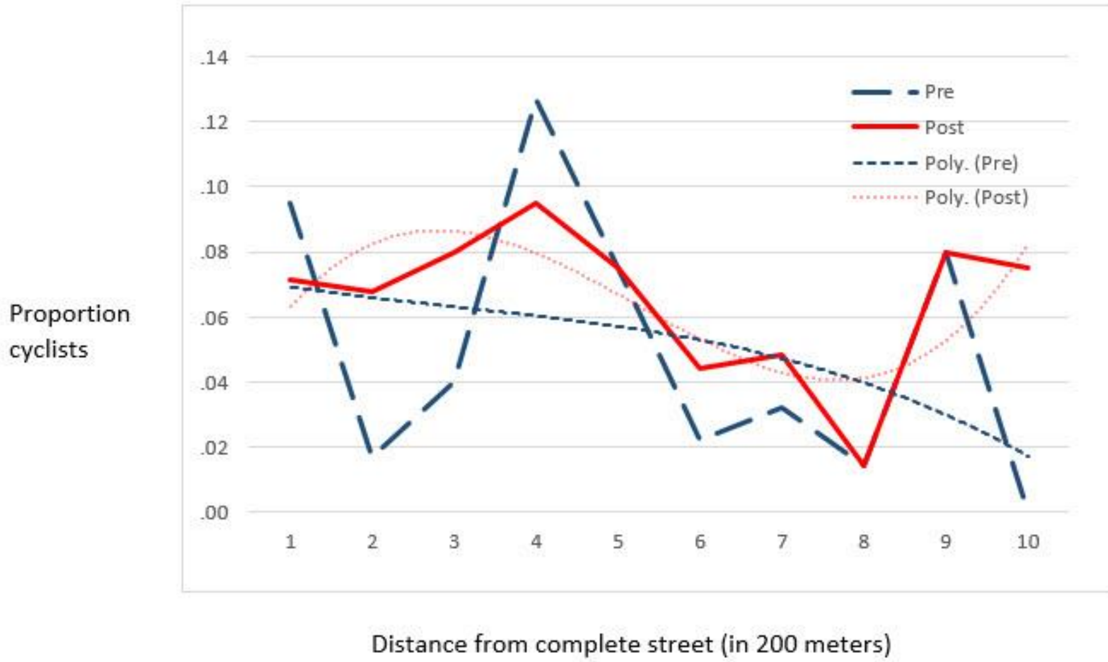

Figure 4. Proportion taking a complete street bike trip by home distance from site (in 200s of meters)

Table 1. Sample differences and descriptive statistics for residents in Far (1-2 km) group and Near group (< 1 km)

	Far		Near	
	M	SD	M	SD
White race (proportion)	.74	.44	.64*	.48
Married (proportion)	.52	.50	.41*	.49
Employed (proportion)	.74	.44	.63**	.48
Have a car (proportion)	.92	.27	.83**	.37
Household income (M, in thousands of dollars)	47.59	35.15	36.60**	27.88
Exposure days (M)	108.22	49.52	118.40*	50.15
Female (proportion)	.51	.50	.51	.50
Complete street trip modes:				
Transit	.15	.35	.21	.41
Non-transit walk	.13	.34	.35	.48
Bike	.04	.18	.07	.26

Tests included chi-square tests of dummy variables representing categories and independent t-tests for continuous variables. Km means kilometer.

*p < .05; ** p< .01

Table 2. Proportions of complete street active transportation users (unadjusted)

	Near < 800		Near < 600		Near < 1000	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Transit riders						
Near	0.20	0.25	0.24	0.28	0.20	0.22
Far	0.15	0.15	0.25	0.16	0.14	0.15
Non-transit walkers						
Near	0.34	0.47	0.40	0.52	0.29	0.41
Far	0.11	0.18	0.13	0.21	0.11	0.16
Cyclists						
Near	0.07	0.08	0.05	0.07	0.07	0.08
Far	0.04	0.05	0.05	0.06	0.02	0.05

Table 3. Time and Distance effects for taking complete street transit trips, non-transit walks, and bike trips: Planned contrasts against Near-Time 2 trips for three different distances

		Odds Ratio	95% Confidence Interval		
			Lower	Upper	*P* ≤
Near definition		Transit trips			
800 meters	Far-Time 1 (referent = Near-Time 2)	0.57	0.35	0.93	0.02
	Far-Time 2	0.60	0.37	0.97	0.04
	Near-Time 1	0.61	0.40	0.93	0.02
600 meters	Far-Time 1	0.44	0.27	0.72	0.01
	Far-Time 2	0.52	0.32	0.86	0.01
	Near-Time 1	0.68	0.42	1.10	0.12
1000 meters	Far-Time 1	0.65	0.39	1.07	0.09
	Far-Time 2	0.72	0.44	1.17	0.18
	Near-Time 1	0.71	0.49	1.02	0.07
		Non-transit walks			
800 meters	Far-Time 1	0.15	0.10	0.24	0.00
	Far-Time 2	0.27	0.18	0.40	0.00
	Near-Time 1	0.55	0.39	0.78	0.00
600 meters	Far-Time 1	0.14	0.09	0.22	0.00
	Far-Time 2	0.26	0.17	0.40	0.00
	Near-Time 1	0.57	0.38	0.86	0.01
1000 meters	Far-Time 1	0.17	0.11	0.28	0.00
	Far-Time 2	0.28	0.19	0.44	0.00
	Near-Time 1	0.55	0.40	0.75	0.00
		Bike trips			
800 meters	Far-Time 1	0.53	0.28	0.98	0.04
	Far-Time 2	0.69	0.37	1.30	0.25
	Near-Time 1	0.86	0.49	1.53	0.62
600 meters	Far-Time 1	0.73	0.37	1.44	0.36
	Far-Time 2	0.85	0.43	1.68	0.63
	Near-Time 1	0.69	0.35	1.38	0.30
1000 meters	Far-Time 1	0.45	0.25	0.82	0.01
	Far-Time 2	0.61	0.33	1.12	0.11
	Near-Time 1	0.85	0.52	1.38	0.51