INTERVENTION TABLE 22

Street Design

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
United States						
Wells, Yang (2008) Georgia, Florida, Alabama	Accessibility before and after a move to a newly designed neighborhood Homes were built by Habitat for Humanity and families were relocated to new areas. ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Land-use mix before and after the move *Complex:* Not reported	***DESIGN:*** Prospective cohort study ***DURATION:*** Not reported ***SAMPLE SIZE:*** 70 women total post-move; 32 women pre-and post-move; all women received housing through Habitat for Humanity in 4 towns in Southeast USA ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Height and weight (body mass index) 2. Digiwalker2 pedometers (step counts) 3. Geographic Information System data (street griddedness, total length of street, total area of network buffer zone, number of intersections, number of cul-de-sacs, land-use mix and density, neighborhood type) 4. Activity log (physical activity) 5. 2000 Census and 2000 Census Transportation Planning Package (land-use, population, household, and employment density) ***DATA COLLECTION:*** Data were collected in 2003–2006. Post-move neighborhoods were characterized as either neo-traditional (porches, sidewalks, high density, mixed-land use) or suburban (large lots, no sidewalks, no shared recreation space). Data was captured using a Network Buffer Zone (NBZ). 2000 Census data were computed at the level of census tract or Traffic Analysis Zone (TAZ). Trained researchers collected sociodemographic data. Female head of household completed a brief activity log for 4 days; two weekdays and a full weekend. Steps per week were calculated based on 3 days of data. ***LIMITATIONS:*** Activity logs used self-reporting; data availability was limited; sample was not randomly selected; sample size was modest; pedometer-based walking data prevents an examination of neighborhood effects; pedometers cannot capture all kinds of activity	Adults Female, mean age of 37.6 (range 23-60) 77.1% African-American, 17.1% White, 5.7% Other (Asian, Latina, Native American), Mean annual income $15,967 (lower income) [evaluation sample] ***ELIGIBILITY:*** Written informed consent was acquired from each participant. ***EXPOSURE/ PARTICIPATION:*** Not reported	***LEAD AGENCY:*** Researchers were from Cornell University and the University of Oregon. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not reported ***ADOPTION:*** Not reported ***IMPLEMENTATION:*** Not reported ***FORMATIVE EVALUATION***: Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** 1. Labor and supplies for building 2. Land for building 3. Moving costs ***FUNDING:*** Robert Wood Johnson Foundation and the Bronfenbrenner Life Course Center at Cornell University ***STRATEGIES:*** Not reported	***PHYSICAL ACTIVITY:*** 1. In terms of street network patterns, moving to an area with fewer cul-de-sacs was associated with about 5,303 more steps per week (757 more steps per day, std. error; 2219.76, p=0.025) from pre- to post-move. 2. With respect to land-use mix, increases in the service-jobs-to-residents ratio from pre-to-post-move were associated with fewer steps per week (31,820 fewer steps per week, or 4,645 fewer steps per day, std. error; 11921.57, p=0.013). 3. Levels of walking in neo-traditional neighborhoods were slightly higher (62,207 steps/week) than in the suburban neighborhoods (58,617 steps/week) but not significantly (p=0.600).

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Li, Harmer (2009); Li, Harmer (2008); Li, Harmer (2009) Oregon	Neighborhood walkability (street connectivity) ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Density of neighborhood fast food outlets 2. Density and access to transit stations 3. Neighborhood walkability (mixed land-use) *Complex:* Not reported	***DESIGN:*** Prospective cohort and cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** Total=1,221 adults aged 50-75 residing within Portland's Growth Management Boundary; random selection of households from 120 neighborhoods; block groups represented variety of urban forms, in ethnically and socioeconomically diverse populations. ***PRIMARY OUTCOME:*** Overweight/obesity and physical activity ***MEASURES:*** 1. In-person interview (individual level measures: body mass index [anthropometric measures of height and weight]; eating out behavior [frequency fast-food / buffets]; eating self-efficacy for fruit and vegetable consumption; fried food consumption; fruit and vegetable consumption; physical activity [assessed with BRFSS questions]; sociodemographics) 2. Geographic Information System (GIS) data (fast food outlet locations and density) 3. Existing geographic databases managed by the Portland Regional Land Information System (land use mix, residential density [no. people per residential acre in each block group], density of street connectivity, density of public transit stations, green spaces) 4. Walkability index (land-use mix, street connectivity, public transit stations, green and open spaces) ***DATA COLLECTION:*** An in-person interview was used to collect sociodemographic info, dietary and physical activity behaviors, weight and height measurements at baseline (2006-2007) and one year follow-up (2007-2008). Fast-food restaurant information was purchased, compiled, spatially geocoded and integrated within GIS using ArcView software. Land use mix data were generated using existing geographic databases managed by the Portland Regional Land Information System and land use mix index was generated. Walkability was assessed as a composite score. Scores were divided into quartiles, individuals in or above the 75th percentile resided in high walkability neighborhoods. *(continued next page)*	Adults aged 50-75 27% lower- income 92% White 57% male (evaluation sample) ***ELIGIBILITY:*** Between 50 and 75 years of age, English speaking, independently ambulatory, and no history of major mental deficits ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Oregon Research Institute, Willamette University, Oregon State University, and Metro Regional Services, Portland, OR ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The evaluation was supported by a research grant from the National Institute of Environmental Health Sciences ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. (n=1145) Multi-level analyses show that after adjustment for neighborhood- and resident-level socio-demographic characteristics high walkability was associated with a decrease in 2.65 pounds in weight and 0.62 inches in waist circumference among residents who increased their levels of vigorous physical activity ($p<0.05$). 2. (cross-sectional data) Using Poisson regression model analyses, a 10% increase in the even distribution of square footage across all land uses (i.e., residential, public [offices and institutions], commercial) was associated with a 25% reduction in prevalence of overweight/obesity ($p<0.01$). 3. (cross-sectional data) Residents living in high density fast food outlet neighborhoods who visited fast food or buffet restaurants 1 or 2 times weekly or more, were 1.878 (95% CI: 1.063,3.496; $p<0.05$) times more likely to be obese than those who lived in low density fast food outlet neighborhoods. Similar results for high density fast food outlet neighborhoods compared to low density fast food outlet neighborhoods were found for residents who did not meet recommended levels of physical activity, OR=1.792 (95%, CI:1.006, 3.190, $p<0.05$); reported low self efficacy in eating healthy food; OR=1.212 (95%, CI:1.057, 1,391, $p<0.005$) or were non-Hispanic Black residents, OR=8.057 (95%, CI:1.705, 38.086, $p<0.005$). 4. (n=1145) Multi-level analyses show that after adjustment for neighborhood- and resident-level socio-demographic characteristics a high density of fast-food outlets was associated with an increase of 3.09 pounds in weight and 0.81 inches in waist circumference among residents who frequently ate at fast-food restaurants ($p<0.05$). 5. (Cross-sectional data) A one standard deviation increase in the density of fast-food outlets was associated with a 7% increase in the prevalence of overweight/obesity ($p<0.01$). ***PHYSICAL ACTIVITY:*** 6. (Cross-sectional data) A one standard deviation increase in street connectivity increased walking prevalence by 16% for neighborhood walking ($p=0.034$), 20% for transportation ($p=0.004$) and 11% for errands ($p=0.025$). 7. (Cross-sectional data) A one unit increase in mixed land-use was associated with a 5.76 times increase in walking for transportation ($p<0.001$), a 4.066 times increase in neighborhood walking ($p<0.0001$), 1.495 increase in walking for errands ($p<0.047$) and 1.463 times increase in meeting physical activity recommendations ($p=0.025$). *(continued next page)*

(Continued from previous study)						
		LIMITATIONS: Cross-sectional design precludes causality conclusions; observing change in built environment requires long periods of time, which is a challenge in the study of interaction effects of individual and environmental food outlet factors on obesity; factors related to the built environment surrounding participants' places of work or homes, such as absence of sidewalks and neighborhood environment features such as automobile dependent or live and work suburban style environments, were not measured; participants self-reported measures of fast food restaurant visits; because the exact location of each restaurant visit was not recorded, researchers could not verify visits were within the study area				8. (Cross-sectional data) The density of public transit stations (access) was associated with more walking for transportation (estimated prevalence = 1.147, p=0.011) and meeting physical activity guidelines (estimated prevalence = 1.069, p=0.03); green and open spaces for recreation was also associated with more neighborhood walking (estimated prevalence = 1.119, p=0.032) and meeting physical activity requirements (estimated prevalence = 1.065, p<0.001).

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Reed, Wilson (2006) South Carolina	Presence of neighborhood sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* Not reported *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 1,148 residents of a rural southeastern community of Sumter County consisting of 21 census tracts ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. 2001 Behavioral Risk Factor Surveillance System Physical Activity Module –BRFSS (frequency and duration of moderate and vigorous physical activity) 2. Perceptions of Environmental Supports Questionnaire (home address, length of residency, race, age, education level, presence of sidewalks) ***DATA COLLECTION:*** Residents were surveyed from January to February 2001 using the 2001 Behavioral Risk Factor Surveillance System (BRFSS). Participants were categorized according to the Centers for Disease Control and Prevention/American College of Sports Medicine recommendations as; 1 (≥30 min/per day for ≥ 5 days/week; regular walker), or 2 (some walking but less than amounts indicated for regular walking or no walking reported; not a regular walker). Neighborhood was defined as a 0.5 mile radius or 10 minute drive from the respondent's residence. Test-retest reliability for perceptions of environmental support variables ranged between -0.02 to 0.37 and 0.42 to 0.74. ***LIMITATIONS:*** Study was cross-sectional; data was self-reported; some of the measures used were not validated; generalizability was limited as the survey was conducted during the winter in a predominantly rural, southeastern community with only 1 small metropolitan area	Adults 18-75 years old Households were selected from each county census tract to guarantee a balance in racial and geographic distributions however, males and Caucasians were slightly overrepresented. ***ELIGIBILITY:*** Informed consent was required ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from the University of South Carolina, Arizona State University, the University of Sydney, the Prevention Research Center at the University South Carolina, and the Centers for Disease Control and Prevention ***THEORY/ FRAMEWORK:*** Not applicable ***EVIDENCE-BASED:*** Not applicable ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not reported ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Two pretests (interviews) were conducted with the community to assess facilitators and barriers to physical activity and the questionnaire was revised. ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Cardiovascular Health Branch from the Centers for Disease Control and Prevention (CDC) ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. For walking, the perceived presence of sidewalks increased the odds for irregular walking only (OR=1.88; 95% CI=1.13, 3.11). 2. No associations were observed for physical activity levels and the presence of sidewalks (p>0.05). 3. In whites, perceiving the presence of sidewalks increased the odds for meeting recommended levels of physical activity (OR=3.59, 95% CI=1.05, 12.24, p=0.0212) compared to inactive adults. 4. Perceived presence of sidewalks was not associated with regular walking in whites (p>0.05). ***OTHER:*** 5. In non-whites, no significant associations were observed between the presence of sidewalks and physical activity levels or walking (p>0.05). 6. The percentage of respondents who reside in areas where sidewalks were present was 44.3% (SE=4.4) and 61.4% (SE=2.2) lived where sidewalks were absent. 7. This is in comparison to non-white respondents, 55.7% (SE=4.4) of which resided in areas where sidewalks are present and 38.6% (SE=2.2) who reside in areas where sidewalks are absent from their neighborhood (p=0.0008).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Suminski, Heinrich (2008) Midwest United States	Length, quality, and presence of streets and sidewalks and aesthetic quality of the neighborhood ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* Not reported *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 473 individuals in 3,600 minutes of observations in 12 US Census block groups ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Block Walking Method ([BWM] observational method: number of individuals on street segment, functional and safety aspects of the sidewalk and streets, traffic volume, street lights, obstructions, cracks/overgrowth, landscaping, graffiti) (valid) 2. Stanley Dual Measuring Wheel and metal tape (distance [e.g., property width]) ***DATA COLLECTION:*** Observers were trained to use the Block Walking Method (BWM). Each segment was observed for 10 minutes on six different days (weekdays and weekends) during summer months. The number of individuals walking during 60 minutes of observation for a given segment was dichotomized at the median value creating two groups (highly walked was >5 walkers per 60 minutes per segment and non-highly walked was <4 walkers per 60 min per segment). 2 trained members of the research team measured the environmental characteristics of each segment in June and July. (Agreement between observers was good to excellent ICC; >0.85 for all measures.) ***LIMITATIONS:*** The study was cross-sectional, therefore causal inferences could not be determined; segment sample was specific and not generalizable; observations do not allow one to determine why an activity was performed; larger-scale aspects of the environment (e.g., street connectivity, land-use mix) and some segment-level factors (segment population, income level) were not included; with observational data participants may have been recorded multiple times	Adults Urban Block groups were in an urban area with high population density (>8 dwellings per residential acre) and a grid pattern street design. Total population for the 12 block groups was 9,066 (49.9% men), who were primarily Caucasian (92.1%) and educated (36.0% with a bachelors degree or higher). 98% of the structures on the street were residential housing units ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from Kansas City University, the University of Hawaii at Manoa, and the University of Missouri-Kansas City ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not reported ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. In a profile of the segments, highly walked (n=30 segments; 244 walkers/1800 min of observation), compared with non-highly walked (n=30 segments; 71 walkers/1800 min of observation) segments had a greater percentage of the sidewalks were defective [highly walked mean =3.4 (standard deviation=5.1) vs. non-highly walked=1.4 (1.8); p<0.05), there were more pieces of litter [highly walked=135.6 (141.9) vs. non-highly walked 42.4 (58.7); p<0.005] and greater percentages of properties with graffiti [highly walked=6.0 (9.3) vs. non-highly walked =0.4 (2.0); p<0.005] and chipped paint [highly walked= 27.7 (15.8) vs. non-highly walked 17.7 (15.9); p<0.05], and a lower percentage of properties had flowers [highly walked= 42.2 (17.4) vs. non-highly walked= 60.5 (24.9); p<0.005]. 2. The percentage of sidewalks that were incongruent was the only environmental characteristic in the highly walked segments that was in the expected direction (highly walked mean=0.25±0.05, non-highly walked mean=0.40±0.31, p<0.05). 3. More individuals were seen walking in segments with a higher volume of traffic (r=0.026, p<0.05), a greater percentage of defective sidewalks (r=0.39, p<0.005), more litter (r=0.43, p<0.001), less landscapable area (r=-0.27, p<0.05), a greater percentage of properties with graffiti (r=0.30, p<0.05), and a lower percentage of properties with flowers (r=-0.26, p<0.05). 4. None of the environmental characteristics were significantly related with jogging. 5. Bicyclists were more likely to be seen in segments with a less landscapable area (r=-0.28, p<0.05).

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Lee, Tudor-Locke (2008); Sisson, Lee (2006) Arizona	Neighborhood walkability (presence of sidewalks, street connectivity) ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* Not reported *Complex:* 1. Influence of high- and low-busing in areas surrounding elementary schools	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 739 ± 122 (range=473-980) students per school. A total of 14 schools with the highest and lowest busing proportions were selected; 7 schools with busing proportions of 0% to 4% (representing the lowest of the distribution) and 7 schools with 45% to 69% (the highest of the distribution). ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Walking suitability assessment tool (curb zone, walking zone [i.e., sidewalk]) 2. Bikeablity instrument (average daily traffic, number of through lanes, speed limit, outside lane width, bike lane width, pavement factors, location factors) 3. ArcView Geographic Information System software (0.25 mile radius buffer using school as epicenter, mapped out county street files) 4. 2004 Annual Average Daily Traffic (volume of vehicles using the specified road segment) 5. Observations (speed limits posted, number of through lanes, presence of a sidewalk, sidewalk characteristics including width and problems, buffer width, total street lights, intersections, and traffic counts) 6. Interviews with school principals (school-level bicycling and helmet-usage polices) 7. Maricopa County street files mapping (walkability) 8. Mesa Public Schools, Arizona database (ethnic composition, total number of students) ***DATA COLLECTION:*** This study was one component of a larger environmental assessment study. ICC of the walking suitability tool was r=0.79 and the criterion-related validity (Pearson) correlation was r=0.58 (from previous use). Individual street scores were then averaged to represent a composite bikeability score for each elementary school. Scores were interpreted using of scale of 5 measures, ranging from very good to very poor. *(continued next page)*	5-13 years old 53.7% non-Hispanic White students (high-busing) 36.5% non-Hispanic White students (low-busing) 39.8% Male (high-busing) 53.3% Male (low-busing) 55.2% free/ reduced lunch (high-busing) 72.1% free/ reduced lunch (low-busing) ***ELIGIBILITY:*** School had to represent one extreme of busing in order to participate. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from Arizona State University-East and Arizona State University. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not reported ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** A non-experimental preliminary analysis of bikeability (including school policies) allowed researchers to examine bicycle travel and prevalence of proportion of students biking to school, at the street segment level, relative to the student population. In addition to determining how many days of bike counting were necessary to reliably assess biking prevalence. ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Walking suitability scores were not statistically different between the busing strata (high-vs.-low), as indicated by the Mann-Whitney U test; U(12)=11.0, p=0.09. 2. Regarding individual components (i.e., sidewalk, buffer) of the assessment, the average scores for sidewalks (i.e., whether a sidewalk was continuous, partial, etc.) was the only item indicating a significant difference between the high-busing and low-busing schools; 21.7 vs. 0.03, respectively (p<0.01). 3. No significant difference was noted for bikeability between high- and low-busing schools (z(20,48)=-0.58, p=0.57) for street ranking. 4. A significant difference (z(3,24)=2.41, p=0.016) existed in biking prevalence between high and low busing schools. 5. A Spearman correlation revealed that bikeability scores and biking prevalence yielded a non-significant, low-negative correlation (r(12)=-0.20, p=0.53). ***POLICY CHANGE:*** 6. One school identified a formal biking policy that designated approved bike trails and restricted bicycle use to students in at least fourth grade without parental permission. 7. Two other schools required parental permission for anyone to bike to school and the remaining three schools had informal policies from biking. 8. All schools required students to park and lock their bikes in designated bike rack areas on campus; four schools had cages around the bike racks that were locked during the day. 9. All schools required cyclists to dismount on campus and walk their bikes to the rack.

(Continued from previous study)						
		LIMITATIONS: There were missing variables; causal inferences could not be made because of the cross-sectional design; there were differences in low- and high-busing areas for economic status, race, and gender; the environment may not have been represented well with the instrument used; some sidewalk characteristics (lighting, ramps, aesthetics, quality) and the role of parents on commute choice were not considered for the bikeability assessment; some schools in Mesa are "no-busing schools" which may have limited generalizability				

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Joshu, Boehmer (2008); Brownson, Baker (2001) United States	Presence of sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to places to exercise (e.g., shopping malls, parks, trails) 2. Perceptions of traffic barriers (safety) 3. Community sprawl *Complex:* 1. Social and personal barriers	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 1,818 United States adults of diverse ethnicity and income level ***PRIMARY OUTCOME:*** Overweight/obesity and physical activity ***MEASURES:*** 1. Height and weight (calculated body mass index -BMI) 2. County Sprawl Index (metropolitan counties gross population density, percentage of county population living in suburban and urban densities, net density, block size, percentage of blocks with less than 1/100 square miles) 3. Survey (perceived barriers to physical activity including hills, lack of sidewalk, personal barriers including fear of injury, limited time, and intensity and frequency of physical activity) ***DATA COLLECTION:*** Data used for this study was collected by researchers who conducted interviews between September 1999 and January 2000. Respondent zip codes were matched to county of residence on the basis of Federal Information Processing Standard codes and a level of urbanization (e.g., large metropolitan, rural) was assigned to each respondent. The survey instrument was developed using a combination of questions from the Behavioral Risk Factor Surveillance System (BRFSS), the National Health Interview Survey and other surveys. Personal barrier scores were totaled to create a summary score. Larger values of the sprawl index indicate more compact counties whereas smaller values indicate more sprawling counties. ***LIMITATIONS:*** Data was self-reported; some BRFSS items have not been systematically examined; study design is cross-sectional restricting causal inferences; perceived measures of neighborhood barriers were used rather than observed measures	Adults, 45.7% Minority: 54.3% White, 29.4% Black, 2.1% Asian/Pacific Islander, 2.7% Indian/Alaskan native, 11% Other, 0.4% missing/ unknown, 39.3% Lower-income 67.1% Female (evaluation sample) To obtain a representative sample of lower income individuals, zip codes were over sampled in which 32% or more of residents were below the federal poverty level. The sample tended to under-represent men, Whites, and higher income groups (in comparison with data from the US census). ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from Saint Louis University Prevention Research Center ***THEORY/ FRAMEWORK:*** Ecological framework ***EVIDENCE-BASED:*** Previous investigation of the macro-environment has shown that communities differ in demographic, physical, social and economic factors depending of level of urbanization. ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** This study was funded through the Centers for Disease Control and Prevention including support from the Community Prevention Study of the National Institutes of Health Women's Health Initiative. ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. An increase in the number of perceived neighborhood barriers increased the odds of being obese (chi-square for linear trend, $p<0.05$). 2. Heavy traffic was associated with obesity within large metropolitan (adjusted OR= 1.9, 95% CI: 1.3-2.9), micropolitan (adjusted OR= 2.2, 95% CI: 1.03-4.5) and rural areas (adjusted OR= 1.7, 95% CI: 0.8-3.3. 3. Hierarchical linear modeling found that the effect of sprawl on BMI is greater for individuals who report a greater number of personal barriers. The effect of sprawl on BMI increased by -0.006 with each additional personal barrier. ***PHYSICAL ACTIVITY:*** 4. Neighborhood characteristics, including the presence of sidewalks (OR=1.28, 95% CI=1.02, 1.59), enjoyable scenery (OR=1.46, 95% CI=1.13, 1.88), heavy traffic (OR=1.28, 95% CI=1.04, 1.58), and hills (OR=1.28, 95% CI=1.04, 1.58), were positively associated with physical activity. 5. The presence of sidewalks was the most important neighborhood variable among those with higher incomes (OR = 1.46, 95% CI = 1.08, 1.97). 6. Among individuals indicating some degree of physical activity, the following environmental supports were associated with reports of increases in activity: neighborhood streets (22.6% of respondents), shopping malls (25.9%), parks (28.5%), walking and jogging trails (29.9%), treadmills (30.6%), and indoor gyms (33.7%). 7. Among those with lower incomes, the most important neighborhood variable was enjoyable scenery (OR = 1.53, 95% CI = 1.07, 2.18). 8. Access to parks (adjusted OR=1.95, 95% CI=1.52, 2.52), indoor gyms (adjusted OR=1.94, 95% CI=1.45, 2.60), and treadmills (adjusted OR=1.48, 95% CI=1.13, 1.93) were positively associated with physical activity. 9. Two policy variables were positively associated with physical activity: believing that employers should provide time for exercise (adjusted OR=1.27, 95% CI=1.01, 2.01), and support for the use of local government funds for walking or jogging trails (adjusted OR=1.42, 95% CI=1.00, 2.01). ***OTHER:*** 10. An increase in the number of personal barriers increased the odds of being obese (chi-square for linear trend, $p<0.001$). 11. Obese individuals in small metropolitan (adjusted OR= 2.3, 95% CI: 1.05-5.2) and micropolitan areas (adjusted OR= 4.8, 95% CI: 1.6-14.2) were more likely to report being self-conscious about the appearance while active. 12. Obesity residents of micropolitan areas were more likely to report no time for activity (adjusted OR= 2.6, 95% CI: 1.1-6.1), and fear of injury (adjusted OR= 4.1, 95% CI: 1.2-14.1) and dislike of exercise (adjusted OR= 3.9, 95% CI: 1.3-11.7) were strongly associated with obesity in rural areas compared with other areas.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Cervero (2002) Maryland	Sidewalk infrastructure ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Land-use mix density *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 5,167 trip records from Montgomery County, Maryland residents (multiple trips for multiple purposes, among respondents) ***PRIMARY OUTCOME:*** Physical activity (travel mode choice) ***MEASURES:*** 1. 1994 Household Travel Survey (trip behavior) 2. Calibration files used for developing Version 2 Model of the Metropolitan Washington Council of Government- MWCOG (comparative travel times and travel costs of competing modes of travel, socio-demographic characteristics of trip-makers, origin and destination) ***DATA COLLECTION:*** Trip records were drawn from the 1994 Household Travel Survey compiled for the Metropolitan Washington Council of Government region. For land use measures the 318 Montgomery County traffic analysis zones (TAZs) were used. Land-use, activity location, urban design, and accessibility measures associated with the TAZs of the origin and the destination of each trip record were added to the calibration files. A number of additional variables (e.g., land-use diversity, gross densities) were created using input variables of each TAZ. "Total Activity Density" of a TAZ for a trip end was used, expressed as the total of population and employment divided by total square miles of the TAZ. Diversity compared the degree of jobs to the population balance of a TAZ relative to the county wide average and ones that relied on entropy measures of mixtures across activity categories. The ratio of sidewalk miles to centerline miles of roadway (serving as an index of sidewalk provisions) was used to predict mode choice. ***LIMITATIONS:*** Causal inferences cannot be made using cross-sectional data; data was self-reported from the survey; study design did not account for self-selection; the sample size was limited	General Population Residents enjoy a wide array of mobility options that are available in the Washington metropolitan area, providing a good setting to study variations in mode choice behavior. ***ELIGIBILITY:*** Montgomery County was selected because it maintains fairly rich data on land-use characteristics of its traffic analysis zones (TAZs). ***EXPOSURE/ PARTICIPATION:*** Not reported	***LEAD AGENCY:*** Researchers from the University of California, Berkeley ***THEORY/ FRAMEWORK:*** The built-environment is defined in terms of 3 core dimensions, or the "3-Ds"; density, diversity, and design. ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Neighborhoods with fairly well developed sidewalk infrastructure appear to have influenced mode choice to some degree, ostensibly by providing more attractive settings for taking a bus or joining a vanpool (ratio of sidewalk miles to road miles; origin TAZ; coefficient; -0.7282, standard error= 0.2628, p=0.0056; destination TAZ; coefficient; -0.8371, standard error= 0.2664, p=0.0017). 2. Having relatively complete sidewalk networks at the trip destination promoted transit usage (coefficient estimate=0.4701, p=0.2935). 3. A longer (in-vehicle and out of vehicle) travel time aboard transit relative to the private automobile lowered the odds of taking transit (coefficient; -0.0150, standard error= 0.0044, p=0.0009). And where transit fares exceeded the direct cost of motoring (including tolls and parking fees), residents tended to travel by car (coefficient; -0.0100, standard error= 0.0027, p<0.0001). 4. Having high shares of apartments and condominiums near one's place of residence lowered the odds of driving alone or ride-sharing relative to transit riding (coefficient; -1.64, standard error= 0.814, p=0.151). 5. Activity density at both the trip origin and destination significantly increased the odds of transit usage (coefficient estimate=0.0386, p<0.0001 and coefficient estimate=0.0258, p=0.0265, respectively). 6. Land-use mixtures at both trip ends lowered the probability of driving alone or ride-sharing versus taking a bus or train (origin: coefficient estimate= -2.488, p=0.016 for drive-alone and coefficient estimate= -2.679; p=0.011 for group ride and destination: coefficient estimate= -1.984: p=0.048 for drive alone and coefficient estimate= -2.222; p=0.027 for group-ride).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Sharpe, Granner (2004) South Carolina	Availability and condition of sidewalks and biking routes ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to places for physical activity 2. Perceived safety in the community *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 1936 respondents in two adjacent counties ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Questionnaire (knowledge, perceptions, environmental and policy supports [i.e. trails, bicycling routes]). This included 6 questions from the Behavioral Risk Factor Surveillance Survey [BRFSS] (moderate-to-vigorous physical activity) ***DATA COLLECTION:*** Data was collected in May and June of 2008. The questionnaire included the 2001 Behavioral Risk Factor Surveillance Survey questions for moderate and vigorous physical activity, items adapted from other surveys, and items developed specifically for this project. The BRFSS physical activity questions assessed the number of days per week and total time spent per day in moderate and vigorous physical activity. Reported physical activity levels were computed into 3 categories; meeting the guidelines for moderate or vigorous physical activity, insufficient activity, or inactivity. Individuals were placed into categories for meeting or not meeting recommendations. Questions from the survey have not been subjected to validity/reliability testing; however, a similar survey conducted in one of the same South Carolina counties has reported validity and reliability data for such items. An interviewing supervisor periodically monitored the professional interviewers for quality control. ***LIMITATIONS:*** Seasonal variation was not accounted for in this study; data was self-reported and may have been subject to over and under-reporting; the validity and reliability of the self-reported perceptions of policy and environmental factors has not been established; because this study was cross-sectional causality cannot be asserted	Adults General population 63.1% White 36.9% African-American (sample) ***ELIGIBILITY:*** Participants had to be able to engage in moderate physical activities. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from the University of South Carolina Survey Research Laboratory. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** The questionnaire was pretested and minor revisions were made prior to administration. ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** This study was supported by a cooperative agreement to the US Prevention Research Center from the Centers for Disease Control and Prevention. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Prior to adjustment, significant associations with physical activity included perceived condition of neighborhood sidewalks for walking or jogging; knowledge of mapped-out bicycling routes in the county; knowledge of mapped-out routes for walking or jogging on sidewalks or beside roadways in the county; perceived safety of areas in the county to walk, job, ride a bike, or do other physical activities; and some worksite supports (data not shown). 2. After adjustment, odds ratios remained significant for perceived condition of neighborhood sidewalks for walking or jogging (OR=2.04, 95%CI: 1.25-3.35, p<0.05), knowledge of mapped-out bicycling routes in the county (OR=1.39, 95%CI: 1.10-1.76, p<0.05), knowledge of mapped-out walking or jogging routes in the county (OR=1.33, 95%CI: 1.09-1.62, p<0.05), and worksite-provided sports teams (OR=1.30, 95%CI: 1.02-1.64, p<0.05). While the presence or absence of a sidewalk on at least one side of neighborhood streets was not significantly associated with greater odds of meeting the physical activity recommendation, the perception of well-maintained neighborhood sidewalks among the 27.6% of respondents who reported the presence of sidewalks in their neighborhoods was significantly associated with physical activity (adjusted OR=2.04, 95%CI: 1.25-3.35). 3. General linear models were computed. For both unadjusted and adjusted models, the odds of meeting the physical activity recommendation were greater for higher numbers of known routes for walking or jogging in the county (least squares mean=1.41, F=5.28, p=0.02); numbers of known routes for bicycling in the county (least squares mean=0.58, F=9.45, p<0.01); number of days in a typical month respondents used a public track, trial, pathway, or mapped-out route for any type of physical activity (least squares mean =3.51, F=34.74, p<0.01); and number of days in a typical month respondents used public parks and other outdoor recreation areas for any type of physical activity (least squares mean=2.79, F=23.92, p<0.01) [statistics all from adjusted general linear model]. 4. The odds ratios for gender, race, and across levels of age and income were significantly associated with decreased likelihood of meeting physical activity recommendations (data not shown).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Frank, Kerr (2007) Georgia	Street connectivity ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to open and recreation spaces 2. Land use diversity *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 3,161 youth ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Strategies for Metropolitan Atlanta's Regional Transportation and Air Quality (SMARTRAQ) household travel survey (2-day survey; destinations visited, travel mode and purpose, time of day) 2. ArcView Geographic Information System ([GIS] network buffer) 3. Tax assessor's parcel data (land-use density and mixing of uses, street network files) 4. Census data (land-use density, land-use mix, street network files [street connectivity]) ***DATA COLLECTION:*** Data used for this study was collected in 2001 and 2002 for the SMARTRAQ. ArcView GIS was used to define a 1-km road network buffer to be developed around each respondent's place of residence. Intersection density and household density scores were categorized by tertiles. The lowest tertile was used as the referent. ***LIMITATIONS:*** Cross-sectional study design restricted causal inferences; this study was restricted to one geographic region with low-walkability; walking variables were self-reported; the study did not include measures of the pedestrian environment	5-20 year olds (target sample) 38% Minority 20% Lower income 20% had a household income less than $30,000 ~50% Female (evaluation sample) ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from the University of British Columbia, San Diego State University, and Lawrence Frank & Company. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** This work was supported by Active Living Research, a national program of the Robert Wood Johnson Foundation. Data was based in part from the "Strategies for Metropolitan Atlanta's Regional Transportation and Air Quality" (SMARTRAQ) program funded by the Georgia Department of Transportation Authority, Centers for Disease Control and Prevention, and Environmental Protection Agency. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Living in the top tertiles for residential density (walking ≥ 1 time per 2 days= 2nd tertile; OR= 1.4, CI: 1.0-1.9, p<0.05; 3rd tertile; OR= 2.4, CI: 1.8-3.2, p<0.001; walking ≥0.5 miles/ day; 3rd tertile; OR=2.7, CI:1.7-4.4, p<0.001) and street connectivity (3rd tertile; walking ≥ 1 time per 2 days; OR=1.7, CI:1.3-2.2, p<0.001; walking ≥ 0.5 miles/day; OR=1.8, CI: 1.2-2.7, p<0.01) was significantly related to both walking outcomes, specifically when the odds ratio for density was greater for walking 0.5 mile or more. 2. Land-use mix (walking ≥ 1 time per 2 days; OR=1.8, CI: 1.4-2.3, p<0.001; walking ≥ 0.5miles per day; OR=1.9, CI:1.3-2.9, p<0.001), commercial destinations (walking ≥1 time per 2 days; OR=1.8, CI: 1.4-2.3, p<0.001; walking ≥0.5 miles/day; OR=1.8, CI: 1.2-2.7, p<0.01), and recreation destinations (walking ≥1 time per 2 days; OR= 2.1, CI: 1.7-2.6, p<0.001; walking ≥0.5 miles/day; OR=2.1, CI: 1.5-2.9, p<0.001) within 1-km were all significantly related to walking. *Results for only top tertile are shown;* 3. For 12-15 year olds reporting that they walked at least once over 2 days, number of intersections (OR=1.7, CI: 1.1-2.8, p<0.05), density (OR=3.7, CI: 2.2-6.4, p<0.001), mixed land use (OR=2.5, CI: 1.6-3.8, p<0.001), at least one commercial use (OR=2.6, CI: 1.7-4.0, p<0.001), and at least one recreation/open space (OR=2.5, CI: 1.7-3.6, p<0.001) were significant factors. 4. For 12-15 year olds reporting that they walked ≥0.5 miles/ day, number of intersections (OR=2.4, CI: 1.1-5.1, p<0.05), highest density (OR=4.9, CI: 2.1-11.4, p<0.001), mixed land use (OR=2.7, CI: 1.4-5.3, p<0.01), at least one commercial use (OR=2.7, CI: 1.4-5.4, p<0.001), and at least one recreation/ open space (OR=2.4, CI: 1.3-4.2, p<0.001) were significant factors. 5. For the 16-20 year olds reporting that they had walked at least once over 2 days, intersection density (OR=2.0, CI: 1.1-3.6, p<0.05), mixed land use (OR=1.9, CI: 1.0-3.2, p<0.05), and recreation land use (OR=1.8, CI: 1.1-2.9, p<0.01) were significant. For those reporting that they had walked ≥ 0.5 miles per day, intersection density (OR=3.1, CI: 1.3-7.4, p<0.01), residential density (OR=3.2, CI: 1.1-9.1, p<0.05), and recreation land use (OR=2.1, CI: 1.1-3.7, p<0.05) were significant factors. 6. Intersection density, land use mix, commercial land usage, gender, and household size were not significant in the multivariate model. 7. For 5-8 year olds, living near recreation or open space (walking ≥1 time per 2 days; OR=2.1, CI: 1.3-3.4, p<0.001; walking ≥0.5 miles/day; OR=2.4, CI: 1.2-5.1, p<0.05) was significantly related to walking at least once over 2 days as well as walking ≥0.5 miles per day. *(continued next page)*

(Continued from previous study)						
						8. For 9-11 year olds reporting that they had walked at least once over 2 days, residential density (OR=2.3, CI; 1.2-4.3, p<0.05) and living near recreation or open space (OR=1.8, CI; 1.1-2.9, p<0.05) were significant. None of the variables was significantly related to walking ≥0.5 miles per day for this age group. 9. Having up to 5 acres of recreation space in a 1-km buffer was significantly related to walking (5-8 years; OR=2.2, CI: 1.2-4.1, p<0.01)(12-15 years; OR=2.2, CI: 1.3-3.7, p<0.01) (16-20 years; OR=2.6, CI: 1.5-4.6, p<0.001), however more than 6 acres of recreation or open space did not appear to be related to walking. 10. In 9-11 year olds, only four or more recreation spaces (OR=2.6, CI: 1.3-5.4, p<0.01) were associated with an increased likelihood of walking, size of park was not related to walking behavior. 11. In the multivariate analyses, having no car, access to recreation and open spaces (walking ≥1 time per 2 days; OR=1.9, CI: 1.3-2.3, p<0.001; walking ≥0.5 miles/day; OR=1.7, CI: 1.2-2.4, p<0.01), and greater residential density (walking ≥1 time per 2 days; OR=1.7, CI: 1.1-2.3, p<0.01; walking ≥0.5 miles/day; OR=1.8, CI: 1.0-3.1, p<0.05) were significantly related to walking.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Hoehner, Brennan (2005) Missouri and Georgia	Presence and absence of sidewalks **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Access to recreational areas 2. Land-use and access to locations 3. Access to public transit 4. Access to a safe environment to participate in active transportation *Complex:* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 1,053 adults (Savannah [n=600] and St Louis [n=473]) in 1,158 street segments **PRIMARY OUTCOME:** Transportation and recreational physical activity **MEASURES:** 1. ArcView Geographic Information [GIS] (street segment attributes [sums, counts, frequencies, means, buffers]) 2. Global Positioning System (street location, attribute data, neighborhood features [walking trails]) 3. Audit (data on each street segment). Audits were constructed from a review of >30 existing tools. 4. Telephone survey (perceived environmental measures, access to recreational facilities, presence/absence of facilities, minutes walked, land-use, street segments, access to destinations, sidewalks). 5. 2000 US Census/TIGER line road files (tract data, line segment data) **DATA COLLECTION:** From February to June 2003 telephone survey data was collected. Most questions used Likert- or ordinal-type response categories. Audits were conducted during daylight hours from March to May 2003. The telephone survey contained the long version of the International Physical Activity Questionnaire [IPAQ] (7-day physical activity over 4 domains [occupation, transportation, house/yard work, recreation/leisure]). Extensive reliability and validity testing of the IPAQ has been conducted by the International Consensus Group on Physical Activity Measurements across 12 countries; it has a test-retest reliability coefficient of ~0.80. Physical and social environmental variables were chosen from an expert consensus development process carried out between October 2001 and June 2002 to be measured in parallel by the telephone survey and audit. Cut-points for objective environmental measures were based on quartiles, individuals in higher quartiles had increased scores. Mapping survey respondents (as points) and the environmental audit data (as vectors) with GIS software provided a linkage between survey and audit data. *(continued next page)*	Adults 18 to 96 years old 63.6% White, 32.6% Black, 3.8% other minority (sample) The sample was diverse with respect to age, ethnicity, and educational attainment, and slightly under-represented men. **ELIGIBILITY:** Adults were eligible if their residence could be geocoded and they were physically able to perform tasks. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers were from the Saint Louis University Prevention Research Center and the University of California at Davis. **THEORY/ FRAMEWORK:** Not applicable **EVIDENCE-BASED:** Not applicable **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Robert Wood Johnson Foundation and the Centers for Disease Control and Prevention. **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. Levelness of sidewalks as assessed by the audit showed a significant negative association (OR=0.6, 95%CI: 0.4-0.9) for engaging in any transportation activity and with meeting recommendations (OR=0.5, 95%CI: 0.3-0.8) through transportation activity (p<0.05 for trend). 2. Those in the top quartile for street segments of bus stops were 1.5 times more likely to engage in transportation activity (95%CI: 1.0-2.3) and 1.6 times more likely to meet recommendations through transportation activity (95%CI: 0.99-2.6) compared to those in the lowest quartile as assessed by the audit (p<0.05 for trend). 3. Those in the highest quartile for segments with minimal garbage, litter, or broken glass were 0.4 times less likely (95%CI: 0.3-0.7) to engage in transportation activity and 0.4 times less likely (95%CI: 0.2-0.7) to meet recommendations through transportation activity than those in the lowest quartile (p<0.05 for trend). Similarly, those in the highest quartile of physical disorder were 0.5 (95%CI: 0.3-0.8) and 0.4 (95%CI: 0.2-0.7) times less likely to engage in transportation activity or meet recommendations through transportation activity, respectively (p<0.05 for trend). 4. People in the highest quartile for the total number of nonresidential destinations were two to three times more likely to engage in any transportation activity (OR=3.5, 95%CI: 2.3-5.5) or meet recommendations (OR=3.3, 95%CI: 2.0-5.4) through transportation activity than respondents in the lowest quartile (p<0.05 for trend). 5. Those who agreed that they had many places to exercise in their community and who reported more facilities within a 5-minute walk were slightly more likely to meet recommendations, but the direction of the trends and significance of the associations at different levels of these measures were inconsistent (data not shown). 6. Compared with never using the park in the last 30 days, the odds of meeting recommendations through recreational activity individuals were 1.2 (95%CI: 0.8-1.7) for using it 1 to 5 days; 2.1 (95%CI: 1.3-3.4) for using it 6 to 10 days; and 4.3 (95%CI: 2.9-6.2) for using it >10 days (p<0.05 for trend). 7. Compared to never using the nearest trail in the past 30 days, the odds of meeting recommendations through recreational activity were 1.4 (95%CI: 0.97-2.0) for 1 to 5 days; 2.4 (95%CI: 1.4-4.1) for 6 to 10 days; and 3.4(95%CI: 2.2-5.1) for >10 days (p<0.05 for trend). For use of the nearest private fitness facility, individuals were 1.3 times more likely (95%CI: 0.8-1.9) for 1 to 5 days; 2.3 times more likely (95%CI: 1.3-4.0) for 6 to 10 days; and 5.3 times more likely (95%CI: 3.3-8.6) for > 10 days (p<0.05 for trend) to meet recommendations through recreational activity. *(continued next page)*

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		LIMITATIONS: Audit instrument provided limited variation and was not systematic; not all crime and income variables were accounted for; not all street network characteristics and distances within the fringe area were examined; the IPAQ-long form is long, repetitious, and associated with over-estimation; there may have been measurement error, low statistical power, and/or a limited direct effect related to features measured				8. Respondents with >92 active people observed within 400 m of their home (highest quartile) were about two to three times more likely to engage in any (OR=2.1, 95%CI: 1.4-3.2) or recommended levels of activity (OR=2.7, 95%CI: 1.7-4.3) through transportation compared to those with <47 active people.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Grow, Saelens (2008) Massachusetts, Ohio, California	Street connectivity, pedestrian infrastructure, and neighborhood aesthetic quality ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Neighborhood traffic safety 2. Access to recreational facilities 3. Land-use mix 4. Perceptions of neighborhood crime *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 87 parents of children and 124 matched parents and their adolescents from Boston, Cincinnati, and San Diego areas. ***PRIMARY OUTCOME:*** Physical activity (PA) ***MEASURES:*** 1. Survey (demographics, frequency and use of physical activity resources [e.g., exercise facility, swimming pool], proximity to sites [≤or≥10 min walk], active transport to each site) 2. Neighborhood Environment Walkability Scale [NEWS] (perceived land-use mix, street connectivity, pedestrian infrastructure, neighborhood aesthetics, traffic safety, crime threat) ***DATA COLLECTION:*** A test-retest study design was used to evaluate the reliability of all measures except demographic information. Average time between completing the 2 surveys was 27 days. Parents, children, and adolescents completed the surveys. Only responses from the first survey were used in the analyses. Site types for the survey were based on formative research using qualitative interviews and prior research. Test-retest reliability for active use of, proximity to, and active transport to/ from recreation sites range from fair to good for parents (ICC=0.32-0.75) and adolescents (ICC=0.25-0.77). ***LIMITATIONS:*** Causal inferences cannot be drawn from cross-sectional design; data was self-reported; the study was not designed to be nationally representative; potentially ambiguous survey phrases may have led to confusion; particular sites were not specified by the respondents	11-18 year old adolescents *Parents:* 80.5% White, 9.2% Black, and 5.7% Other *Adolescents:* 75.0% White, 18.8% Black, 2.7% Asian/Pacific Islander, and 3.6% Other ***ELIGIBILITY:*** Parental written consent and participant assent were required. Parents of 5-18 year-old children were eligible; the 11-18 year-old adolescents of these parents were also eligible ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from the University of Washington, San Diego State University, the University of Alabama, and the University of California, San Diego. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Robert Wood Johnson Active Living Research program ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Parents and adolescents who usually walked/biked to at least 5 sites reported higher perceptions for pedestrian infrastructure and traffic safety. Only adolescents reported higher land-use mix and street connectivity (no statistics). 2. On the basis of adolescent and parent report multivariate regression models revealed that positive estimates were found for street connectivity, pedestrian infrastructure, and traffic safety and a negative estimate was found for crime threat in relation to the number of sites to which adolescents walked/biked. After adding proximity to the model, only traffic safety remained highly significantly associated with usual walking/biking to sites for both parent (β=0.55, $p<0.01$) and adolescent (β=0.3, $p<0.01$) reports. 3. Adolescents who usually walked/biked to at least 5 sites (site median) had higher scores on perceived pedestrian infrastructure and on traffic safety both by parent report and self-report and had higher land use mix and street connectivity for adolescent report only (no statistics). 4. Living within a 10-min walk of large parks (Report for children; 69.2% active, $p<0.05$, Report for adolescents; 55.9% active, $p<0.01$, Adolescent report; 47.6% active; $p<0.01$) and public open spaces (Report for children; 59.5% active, $p<0.01$, Report for Adolescents; 30.4% active, $p<0.05$, Adolescent report; 36% adolescents active, $p<0.01$) were associated with increased likelihood of being active at those sites. 5. Multivariate analysis of self-reported data revealed that walking/biking was the frequent transport for 9 of 12 sites (swimming pools: RR=1.9, $p<0.05$; basketball courts, RR=2.1, $p<0.05$; walking/running tracks: RR=3.3, $p<0.01$; school recreation sites: RR=2.3, $p<0.05$; small parks: RR=6.9, $p<0.01$; large parks: RR=2.9, $p<0.05$; playgrounds: RR=5.1, $p<0.05$; bike/hike/walk trails: RR=4.7, $p<0.01$; open spaces: RR=9.8, $p<0.01$) and also 8 of 12 by parent report (basketball courts: RR=4.5, $p<0.01$; walking/running tracks: RR=4.6, $p<0.01$; school recreation sites: RR=4.4, $p<0.01$; small parks: RR=6, $p<0.01$; large parks: RR=4.1, $p<0.01$; playgrounds: RR=5, $p<0.01$; bike/hike/walk trails: RR=3.7, $p<0.01$; open spaces: RR=7.3, $p<0.01$). 6. For adolescents, walking/biking to sites was associated with use of play fields and courts (parental report only: 54.5% active, $p<0.05$), swimming pools (self-report only: 58.5% active, $p<0.01$), beach/lack/river/creek (parent report: 42.9% active, $p<0.01$; self report: 48.5% active, $p<0.01$), and bike/hike/walk trail (parent report: 52% active, $p<0.01$; self-report: 49.1%, $p<0.01$). 7. Multivariate analysis of parent report revealed that site proximity was only associated with adolescents' swimming pool use (RR=2.1, $p<0.05$). 8. Parents reported that children walking/biking to the site was significantly associated with active use of most recreation sites: indoor recreation sites (72.7% active, $p<0.05$), basketball courts (45.5% active, $p<0.01$), walking/running tracks (68.8% active, $p<0.01$), school recreation site (70.8% active, $p<0.01$), small (73.7% active, $p<0.01$) and large public parks (68.8% active, $p<0.05$), public playgrounds (71.1% active, $p<0.05$), and open space (63% active, $p<0.01$). The same trend was found for parental report for adolescents (indoor recreation facilities: 54.5% active, $p<0.05$; basketball courts: 57.5% active, $p<0.01$; walking/running tracks: 62.5% active, $p<0.01$; school recreation site: 56.7% active, $p<0.01$; small parks: 52.4% active, $p<0.01$; large parks: 59% active, $p<0.01$; playgrounds: 43.1% active, $p<0.01$; open spaces: 45.5% active, $p<0.01$) and adolescent self-report (indoor recreation facilities: 53.8% active, $p<0.05$; basketball courts: 43.4% active, $p<0.01$; walking/running tracks: 56.8% active, $p<0.01$; school recreation sites: 44.4% active, $p<0.01$; small parks: 50% active, $p<0.01$; large parks: 48.1% active, $p<0.01$; playgrounds: 37.3% active, $p<0.01$; open spaces: 50% active, $p<0.01$).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
McGinn, Evenson (2007) Mississippi and North Carolina	Street connectivity and presence and absence of sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of high-speeds and traffic as barriers for physical activity 2. Access to diverse neighborhood destinations *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 1,270 non-institutionalized adults from two communities in Forsyth County, North Carolina and the city of Jackson, Mississippi. ***OUTCOME:*** Physical activity ***MEASURES:*** 1. 1996-2000 Behavioral Risk Factor Surveillance System [BRFSS] data (frequency, duration, and intensity of physical activity including leisure, walking, and transportation activity, 2 most common activities in past month, demographic data) 2. Perceived environment survey (neighborhood perceptions of connectivity, and walkability [high-speed traffic, heavy traffic, lack of cross walks, lack of sidewalks]) 3. Geographic information system [GIS] and U.S. Census Bureau Topologically Integrated Geographic Encoding and Referencing [TIGER] data (one-mile radius around participant address [n=1482], street connectivity [e.g., number and type of intersections, census block density], traffic speed and volume, neighborhood population density, crash and AADT locations) 4. 2001 Annual Average Daily Traffic [AADT] counts (24-hour period NC, 48-hour period MS, car counts) 5. University of North Carolina Highway Safety Research Center and North Carolina Department of Motor Vehicles data (1993-2002 public area traffic crashes involving pedestrians or bicyclists) ***DATA COLLECTION:*** Data for this study was collected from January to July 2003 using a random digit dial telephone survey written at an eighth grade reading level. The (BRFSS) walking questions came from the 2001 optional BRFSS module on physical activity. Intensity was derived using sex, age, and published metabolic equivalents of the specific leisure activities reported. Leisure activity was coded into three levels; meets recommendations, insufficiently active, and inactive. A test-retest survey of a sample of 106 survey respondents was conducted to assess the reliability of physical activity measures and perceived environmental measures, which revealed poor agreement. ***LIMITATIONS:*** Objective measures may not have matched items related to perceptions; an inability to control self-selection; cross-sectional study design; response rate was not as high as expected	57.0% White, 38.2% Black (evaluation sample) A disproportionate sampling strategy was adopted for the NC sample frame to ensure representation for areas outside of the Winston-Salem metropolitan area within the county. ***ELIGIBILITY:*** Eligible participants had residences in areas that could be geo-coded and reported no health problems or disabilities. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from the University of North Carolina, Chapel Hill and the Albert Einstein College of Medicine ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not applicable ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** This study was funded by the American Heart Association. The lead author was also funded, in part, by NIH, NHLBI, and NRSA grants. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** *Both Sites* 1. Perceiving that there were enough crosswalks in the neighborhood was associated with decreased odds of engaging in any transportation activity (OR=0.7, 95%CI=0.5-1.0, p<0.05 for both sites). 2. Perceptions that high-speed traffic, heavy traffic, and lack of sidewalks were a problem in an individual's neighborhood were not associated with any of the physical activity outcomes. *Forsyth County, NC* 3. Individuals with perceptions of walkable destinations present within their neighborhoods were associated with meeting recommendations for walking for any purpose and any transportation activity (OR=1.7, 95%CI= 1.1-2.8, p<0.05). 4. Individuals that perceived the absence of crosswalks as not a barrier for physical activity were associated with decreased odds of being active (OR=0.6, 95%CI=0.4-1.0, p<0.05). 5. Individuals that perceived the absence of sidewalks as not a barrier for physical activity were associated with increased odds of activity particularly when examining insufficiently active versus inactive individuals during outdoor leisure activity (OR=1.4, 95%CI=1.0- 2.1, p<0.05). 6. Individuals in areas with low-traffic speed were more likely to meet recommendations for leisure activity than to be inactive for all three buffer sizes, compared to those living in areas of high-traffic speed (One-Mile; OR=1.7, 95%CI=1.0-2.7, p<0.05, Half-Mile; OR=1.6, 95%CI=1.0-2.6, p<0.05, Eighth-Mile; OR=2.1, 95%CI=1.3-3.4, p<0.05). 7. When examining the eighth mile buffer, individuals in areas with low-traffic volume were more likely to be insufficiently active during leisure physical activity and outdoor leisure activity than to be inactive and engage in any transportation activity (OR=1.6, 95%CI=1.0-2.3, p<0.05, OR=1.4, 95%CI=1.0-2.0, p<0.05, and OR=1.4, 95%CI=1.0-2.1, p<0.05, respectively). 8. Those whose half-mile neighborhoods had high connectivity were more likely to be insufficiently active than inactive during outdoor leisure activity (OR=1.5, 95%CI=1.0-2.2, p<0.05). 9. When examining the eighth-mile buffer, neighborhoods with high connectivity were less likely to meet recommendations or to be insufficiently active than to be inactive during leisure activity and for walking for any purpose (meets recommendations; OR=0.7, 95%CI=0.4-1.0, p<0.05, insufficiently inactive; OR=0.7, 95%CI=0.5-1.0, p<0.05, insufficiently inactive; OR=0.7, 95%CI=0.4-1.0, p<0.05). *(continued next page)*

(Continued from previous study)						
						10. Individuals within the one-mile buffer, in areas where there was a low occurrence of crashes were more likely to meet recommendations for leisure physical activity for the one mile and half mile neighborhoods (OR=1.9, 95%CI 1.0-3.4, p<0.05). 11. Individuals within the one and half mile buffers, in areas with low occurrence of crashes were less likely to engage in any transportation activity compared with those who live in areas with a high occurrence of crashes (OR=0.6; 95%CI 0.4, 1.0; p<0.05 and OR=0.6; 95%CI 0.4, 0.9; p<0.05, respectively). 12. Individuals with perceptions that the absence of crosswalks were not a barrier for physical activity were associated with decreased odds of being active, particularly for being insufficiently active vs. inactive during outdoor leisure activity (OR=0.6, 95% CI= 0.4, 1.0, p<0.05). *Jackson, MS* 13. No associations were seen between objectively measured speed and street characteristics for any of the outcomes in any of the three neighborhood sizes in Jackson. 14. Individuals perceiving that a lack of crosswalks was not a problem were associated with being insufficiently active rather than inactive for leisure activity and outdoor leisure activity (OR=1.7, 95%CI=1.1-2.6, p<0.05 and OR=1.4, 95%CI=1.0-2.2, p<0.05, respectively). 15. Individuals who did not perceive a lack of crosswalks as a barrier for physical activity had increased odds of being active during leisure activity and outdoor leisure activity (OR=1.8, 95%CI=1.0-3.2, p<0.05 and OR=2.3, 95%CI=1.4-3.9, p<0.05, respectively). 16. Those whose one-mile neighborhoods had low-traffic volumes were more likely to not meet recommendations and be insufficiently active than inactive during leisure activity, outdoor leisure activity, or walking for any purpose, with significant associations for being insufficiently active compared to inactive during leisure activity and walking for any purpose (OR=0.5, 95%CI=0.3-1.1 and OR=0.5, 95%CI=0.3-1.0, p<0.05, respectively).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Jago, Baranowski (2006); Jago, Baranowski (2005) Texas	Availability of sidewalks in good condition, street connectivity, and intersection density ***OTHER INTERVENTION COMPONENTS:*** *Multi-component* 1. Perceptions of neighborhood safety from crime and unattended dogs 2. Proximity to playgrounds *Complex* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 210 Boy Scouts from 36 Troops in the Houston, TX area ***PRIMARY OUTCOME:*** Overweight/obesity and physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Accelerometer (physical activity) 3. Demographic information (parental education and ethnic composition) 4. Systematic Pedestrian and Cycling Environmental Scan [SPACES] (walking and cycling ease, tidiness, sidewalk characteristics, street access and condition [within 400-m radius of residence]) 5. Environmental assessment (perceptions of environmental characteristics [proximity to playgrounds, neighborhood safety and crime, presence or absence of features like sidewalks, presence of dogs and gangs]) 6. Geographic Information Systems [ArcGIS] software (geocoded address, environment features, street connectivity [intersection density]) 7. Park Boundaries and Categorization (types of parks, boundaries, and present amenities) 8. Yellow pages, City Council and City Public Health records (location of gymnasiums, health clubs, and recreation centers, and the number of food establishments within a 1-mile radius of residence) 9. North American Industry Classification System [NAICS] codes (types of restaurants and grocery stores) 10. Local transit authority (all city transit stops [bus and light rail]) 11. US Census Bureau (block group data; residential density) 12. TETRAD ("Crime-risk" data set; prevalence of crime in the neighborhood) ***DATA COLLECTION:*** Accelerometers were attached to participants and worn for 3 consecutive days. 3 observers attended a 6-day SPACES training session that began with categorization and progressed to coding city segments. Observers were required to achieve an agreement rate of at least 85% during training and attend a monthly retraining session. Residence was geo-coded and boundaries with a radius of 400 m were developed. Observers walked streets in either a south-to-north or west-to-east direction. Transit locations were geo-coded to provide an indication of participant access. For the environmental assessments, respondents were given six statements and asked whether they agreed that the statement characterized their neighborhood. ***LIMITATIONS:*** Small sample size was limited to one gender and a homogenous ethnic composition; only 2 days of completed accelerometry data were necessary for inclusion; accelerometry data, troop meetings, and thus observations occurred on different nights of the week, which may have limited the ability to detect relationships with physical activity	Male, 10-14 year olds (mean age=12.8), 69% Anglo-American, 3.3% African-American, 18.6% Hispanic, 9.1% other ethnicity (evaluation sample) ***ELIGIBILITY:*** Informed consent was obtained for all participants. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The researchers were from University of Bristol, and Baylor College of Medicine. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Robert Wood Johnson Active Living Research Program, American Cancer Society, US Department of Agriculture ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. BMI was significantly negatively associated (t= -2.09, p=0.037) with minutes of moderate-to-vigorous activity. ***PHYSICAL ACTIVITY:*** 2. Only sidewalk characteristics were associated with physical activity, with a positive association with light intensity physical activity (r=0.204, p=0.003) and a negative association with sedentary behavior (r= -0.199, p=0.004). 3. In the spatial regression model, sidewalk characteristics were significantly negatively associated with minutes of sedentary activity (t= -2.70, p=0.008), while age was positively associated (t= 2.25, p=0.025). 4. Sidewalk characteristics were positively (t= 2.85, p=0.005) and age negatively (t= -2.74, p=0.007) associated with minutes of light-intensity physical activity. 5. Walking and cycling ease was positively associated with tidiness (r=0.198, p=0.004) and negatively associated with street access and condition (r= -0.197, p=0.005), parks (r= -0.136, p=0.05), and crime (r= -0.325, p<0.001). ***OTHER (FACTOR LOADING VARIANCE):*** 6. Sidewalk characteristics were negatively associated with street access and condition (r=-0.292, p<0.001), parks (r=-0.198, p=0.004), and crime (r=-0.446, p<0.001). 7. Street access and condition was positively associated with self-reported environmental features (r=0.229, p=0.001). 8. Self-reported difficulty, and self-reported access and safety were positively correlated with each other (r=0.591, p<0.001). 9. Self-reported difficulty (r=0.224, p<0.05) and self-reported access and safety (r=0.230, p<0.001) were both positively associated with street access and condition. 10. Crime was positively associated with gyms (r=0.156, p=0.023). More results in text related to age, educational attainment, and physical activity.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Zhu, Lee (2009) Texas	Availability and quality of sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood traffic safety 2. Access to land-use mix 3. Access to public transit *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 2,695 parents/guardians from 19 of the 74 elementary schools in the Austin Independent School District (AISD) in Austin, Texas. ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. 3-Page Questionnaire [PedsQL] (family information form, sociodemographic data, personal attitude, child's travel mode to school, social and physical environment [parent's perceptions of safety and the environment: sidewalk availability and quality, maintenance and condition of neighborhood amenities, presence of tree shade and street lighting, presence of bus stops, land-use mix diversity]) ***DATA COLLECTION:*** This study was conducted in collaboration with the city's Child Safety Program and the Austin Independent School District. The first phase was conducted in April, 2007 and the second phase was conducted in November, 2007. The questionnaire used information gathered from literature and 3 previously validated instruments. Bilingual questionnaires (English and Spanish) were distributed. The PedsQL Family Information Form has adequate reliability and validity. 2 other validated questionnaires with moderate-to-high reliability were used. Sidewalk availability and quality was a factor captured by maintenance, width, buffers from traffic, and no obstructions. ***LIMITATIONS:*** Cross-sectional study design limits causal inferences; study sampling process was not randomized, and a few schools had low response rates; reliability of several survey items is unknown: there is potential non-response bias; the risk of Type I error is present because of the reduced variations resulting from this clustering	5-12 year olds, Urban and Suburban (evaluation sample) 55.4% Hispanic, 60.3% eligible for free or reduced lunch (2005-2006 Austin Independent School District) ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from the Departments of Architecture and Landscape Architecture and Urban Planning at Texas A&M University. ***THEORY/ FRAMEWORK:*** Social ecological perspective ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Preparation of this study was supported by a grant from the Robert Wood Johnson Foundation Active Living Research Program. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Sidewalk availability and quality (maintenance, width, buffers from traffic, and no obstructions) was not significantly associated with children's walking behaviors. 2. Maintenance, tree shade, quietness, street lighting, and perceived convenience of walking were marginally significantly related to walking (coefficient= 0.108, OR=1.114, 95% CI= 0.991-1.252, p<0.1). 3. The presence of bus stops (coefficient= -0.305, OR=0.737, 95% CI= 0.580-0.936, p<0.05) and certain features such as convenience stores (coefficient= -0.548, OR=0.578, 95% CI= 0.432-0.774, p<0.001) and office buildings (coefficient=-0.536, OR=0.585, 95% CI=0.393-0.872, p<0.05) en route were negative correlates with walking behavior. 4. Children were less likely to walk (coefficient= -1.201, OR=0.301, 95% CI=0.224-0.404, p<0.001) if schools provided bus services. 5. A child was about 4 times more likely to walk if the parent perceived the distance to be close enough for the child to walk (coefficient= 1.390, OR=4.014, 95% CI=3.128-5.150, p<0.001). 6. Parents' safety concerns (range: -2.8 to 2.0) and the need to cross highways or freeways were negative correlates to children's walking behaviors (coefficient= -0.253, OR=0.776, 95% CI= 0.695-0.867, p<0.001; coefficient= -0.485, OR=0.616, 95% CI= 0.422-0.898, p<0.05, respectively).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Addy, Wilson (2004); Wilson, Ainsworth (2007) South Carolina	Presence or absence of sidewalks and aesthetically pleasing environments **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Access to recreational facilities *Complex:* 1. Perceptions of social support	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 1,194 residents of 21 census tracts in Sumter County **PRIMARY OUTCOME:** Walking behavior, physical activity, meeting physical activity recommendations and overweight/obesity **MEASURES:** 1. Survey (height and weight [body mass index-BMI], physical activity [duration and frequency per week], length of residency, socio-demographic data, perceived supports [sidewalks, public recreation facilities, streetlights, having a pleasant neighborhood for walking, physically active neighbors] and barriers [traffic volume, unattended dogs, crime, perception of neighbors being untrustworthy] of physical activity in the neighborhood; perceived supports [walking/bike trails, swimming pools, recreation facilities, parks, playgrounds, sports fields, schools, malls, places of worship, waterways] and barriers [crime and safety concerns associated with recreation facilities] of physical activity in the community; n=1,111) **DATA COLLECTION:** Residents were surveyed by telephone from January to February. For the survey, test-retest reliabilities ranged from 0.42 to 0.74 for neighborhood variables and from 0.28 to 0.56 for community variables. This survey used the 2001 Behavioral Risk Factor Surveillance System (BRFSS) physical activity module and BRFSS BMI self-reported survey items. Participants were categorized according to the Centers for Disease Control and Prevention (CDC)/American College of Sports Medicine recommendations as active (≥30 min/per day for ≥ 5 days/week; regular walker), insufficiently active (some walking but less than amounts indicated for regular walking or no walking reported; not a regular walker) or inactive. Neighborhood was defined as a 0.5-mile radius (10-min walk) of the respondent's home and community was defined as a 10-mile radius (20-minute) of the home. **LIMITATIONS:** Study was cross-sectional study; self-reported data; some of the measures used were not validated; generalizability was limited as the survey was conducted during the winter in a predominantly rural, southeastern community with only 1 small metropolitan area	Adults 18-75 years old Sumter County has an approximate population of 108,000. Households were selected from each county census tract to guarantee a balance in racial and geographic distributions however, males and Caucasians were slightly over-represented. **ELIGIBILITY:** Informed consent was required for participation. **EXPOSURE/ PARTICIPATION:** Not reported	**LEAD AGENCY:** Researchers from the University of South Carolina, Arizona State University, the University of Sydney, the Prevention Research Center at the University South Carolina, and the CDC **THEORY/ FRAMEWORK:** Not applicable **EVIDENCE-BASED:** Not applicable **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Survey items were developed from a literature review, expert input, and community focus groups conducted with residents for assessing facilitators and barriers to physical activity. **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Cardiovascular Health Branch from the CDC **STRATEGIES:** Not applicable	**OVERWEIGHT/OBESITY:** 1. Among participants not meeting recommendations for regular moderate or vigorous physical activity (n=723), trusting neighbors (OR=2.19, 95%CI: 1.01-4.74, p<0.05), the presence of recreational facilities (OR=2.07, 95%CI: 95%CI: 1.13-3.77), and use of walking/biking trails (as opposed to not having trails available, OR=2.14, 95%CI: 1.01-4.52) were associated with approximately twice the odds of being overweight as opposed to obese. 2. Among participants who were not regular walkers (n=679), using trails (OR=2.72, 95%CI: 1.15-6.42, p<0.05) (as opposed to not having trails available) was associated with 2.7 times the odds of being overweight as opposed to obese in the subpopulation not engaging in regular recreational walking. **PHYSICAL ACTIVITY:** 3. Participants who were physically active at recommended levels were 3.6 times more likely to be normal or underweight versus obese (95%CI: 1.98-6.48, p<0.05) and 4.9 times more likely to be overweight versus obese (95%CI: 2.71-8.66, p<0.01) than inactive participants. 4. Participants who were irregularly active were 2.0 times more likely to be normal or underweight versus obese (95%CI: 1.16-3.34, p<0.05) and 3.1 times more likely to be overweight versus obese (95%CI: 1.84-5.34, p<0.05). Participants who were regular walkers were also 2.2 times more likely to be normal or underweight versus obese (95%CI: 1.29-3.85, p<0.05) than non-walkers. 5. Participants reporting trust in their neighbors were found to be 2.8 times more likely to be regularly active versus inactive (95% CI: 1.48-5.44, p<0.05) and were 4.4 times more likely to be irregularly active versus inactive (95% CI: 2.32-8.29, p<0.05). 6. Participants who reported living in a pleasant neighborhood were 1.9 times more likely to be regularly active versus inactive (95% CI: 1.08-3.52, p<0.05) and were 2.1 times more likely to be irregularly active versus inactive (95% CI: 1.22-3.72, p<0.05). 7. Participants reporting the presence of neighborhood sidewalks were 1.9 times more likely to report engaging in irregular walking versus no walking (95% CI: 1.11-3.11, p<0.05). 8. Participants reporting the use of malls for physical activity were 2 times more likely to report engaging in irregular walking versus no walking (95% CI:1.11-3.77). 9. Participants using trails were 3.1 times more likely to be regularly active versus inactive (95% CI: 1.36-6.98) and 2.3 times more likely to be irregularly active versus inactive (95% CI: 1.04-5.16, p<0.05).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Boehmer, Lovegreen (2006) Arkansas, Missouri, Tennessee	Presence of sidewalks and shoulders on streets and neighborhood aesthetics ***OTHER INTERVENTION COMPONENTS:*** *Multi-component* 1. Access to recreational facilities 2. Land-use mix and distance to grocery stores 3. Perceptions of safety from crime 4. Access to fruits and vegetables and the distance to a grocery store 5. Perceptions of neighborhood traffic safety *Complex* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 2,210 adults from 13 rural communities in Arkansas, Missouri, and Tennessee ***PRIMARY OUTCOME:*** Overweight/obesity ***MEASURES:*** 1. Weight and height (body mass index [BMI]) 2. Survey (moderate-to-vigorous physical activity [MVPA], walking behavior, sedentary leisure-time activity, perceived recreational facilities, land use, barriers related to traffic safety and crime, aesthetics, food environment, demographic characteristics, presence of quality sidewalks and shoulders on streets, availability of fruits and vegetables) ***DATA COLLECTION:*** The present study used data from a previously administered survey that used a modified version of the BRFSS and was collected between July and September 2003. Demographic characteristics and moderate and vigorous physical activity were measured using standard BRFSS questions with established psychometric properties. Open-ended environmental perception items were calculated using a four-level, ordinal response scale, with most items having been tested for reliability. MVPA was stratified into 3 categories; meeting recommendations, insufficient activity, and not active. BMI and MVPA were combined to create risk categories. The lowest risk group was defined as normal weight and active (recommended MVPA) and the highest risk group was defined as obese and inactive (insufficient and not active). ***LIMITATIONS:*** Causal inferences cannot be achieved using cross-sectional data; the study did not account for selection bias or response bias; social, intrapersonal, and biological factors that interact with environmental factors were not accounted for; non-response bias may limit the representativeness of the sample; the sample over-represented women and older individuals and cannot accurately estimate the prevalence of obesity in the study population; there was a small sample size for some subgroups	Adults, 74.4% female, 93.4% white, 36.8% income <$25,000, 59.1% income >$25,000; 27% obese; 31% overweight (evaluation sample) 8 communities met the US Census definition of rural; 12 were located within a nonmetropolitan county. The communities in TN and AR were selected to match the MO sites on size, race/ethnicity, and proportion of the population living below the poverty level. ***ELIGIBILITY:*** Communities with established walking trails were eligible for participation. Households within those communities within a 2-mile radius of the existing walking trails were eligible. English speaking adults were eligible to participate. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from Saint Louis University (evaluation) ***THEORY/ FRAMEWORK:*** Ecological framework ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** National Institutes of Health ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** *Stratified Analysis:* 1. Having no sidewalks or shoulders on most streets was not significantly associated with obesity nor was the availability and quality of fresh fruits and vegetables. Further distance to the nearest supermarket was associated with increased odds of obesity (OR=1.8, 95% CI= 1.3-2.4). 2. Neighborhood perceptions of a lack of places to be physically active (OR=1.46, 95%CI= 1.1-1.94), no available equipment (OR=1.55, 95%CI=1.19-2.02), few or moderate number of destinations within close proximity (3-6 destinations: OR=1.49, 95%CI= 1.08-2.06; 1-2 destinations: OR=1.42,95%CI= 1.03-1.97), feeling unsafe from crime (OR=2.09, 95%CI= 1.5-2.92, p<0.05), feeling unsafe from traffic (OR=1.65, 95%CI=1.2-2.27, p<0.05), finding the community somewhat pleasant (OR=1.44, 95%CI= 1.13-1.92) or not pleasant (OR=1.85; 95%CI=1.31-2.59, p<0.05), and having an unmaintained community (OR=1.48, 95%CI=1.09-1.99) were all associated with being obese. 3. Neighborhood perceptions of having no or a few destinations within close proximity (3-6 destinations: OR=2.03, 95%CI= 1.33-3.09; 1-2 destinations: OR=1.72,95%CI= 1.13-2.62; none: OR=1.63, 95%CI= 1.07-2.5), feeling unsafe from crime (OR=2.91, 95%CI= 1.86-2.55, p<0.05), feeling unsafe from traffic (OR=2.46, 95%CI= 1.63-3.71, p<0.05), and finding the community somewhat pleasant (OR=1.73, 95%CI= 1.28-2.34) or not pleasant (OR=2.02, 95% CI= 1.29-3.15, p<0.05) were all associated with being obese/inactive. 4. Perceived lack of equipment for physical activity was associated with being obese (OR= 1.8, 95% CI= 1.3-2.4) and obese/inactive (OR= 1.8, 95% CI= 1.2-2.7) among only women. 5. Women had stronger associations between obesity and indicators of poor aesthetics (OR= 1.3, 95% CI= 1.0-1.7 for interesting things; OR= 1.7, 95% CI= 1.2-2.3 for well-maintained) and feeling slightly/not at all safe from crime (OR= 2.4; 95% CI= 1.6-3.5). *Multivariate Analysis:* 6. Furthest distance (>20 minutes) to the nearest recreational facility (OR=2.74, 95% CI= 1.68-4.48), having 3-6 destination types near home (OR=1.76, 95%CI= 1.09-2.84), and feeling unsafe from crime (OR=2.59, 95% CI= 1.56-4.28) were neighborhood environmental perceptions associated with being obese. 7. Furthest distance (>20 minutes) to the nearest recreational facility (OR=1.53, 95% CI= 1.1-2.11) and feeling unsafe from crime (OR=1.71, 95% CI= 1.19-2.46) were neighborhood environmental perceptions associated with being obese.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Ainsworth, Wilcox (2003) South Carolina	Presence and absence of sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood traffic safety *Complex:* 1. Neighborhood social support (belonging to community groups)	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 917 African-American women ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Women and Physical Activity Survey (sociodemographic characteristics, social environment, safety [traffic volume, unattended dogs, crime], lack of sidewalks, access to facilities) 2. 2001 Behavioral Risk Factor Surveillance System (BRFSS) survey items (physical activity module [intensity, recommendations]) ***DATA COLLECTION:*** Data for this study had been collected for the Women and Physical Activity Survey conducted in Sumter County (July 31 - September 25, 2001) and Orangeburg County (April 18 - June 20, 2002), South Carolina. The survey was developed through focus groups held for the Women's Cardiovascular Health Network Project (physical activity: ICC=0.50). Women who reported no participation in either moderate or vigorous physical activity were classified as inactive. Women were classified as meeting current recommendations for moderate or vigorous physical activity if they participated in moderate physical activity at least 5 days per week for at least 30 minutes per day or participated in vigorous physical activity at least 3 days per week for at least 20 minutes per day. All other women were classified as insufficiently active. ***LIMITATIONS:*** Causal inferences cannot be made using cross-sectional data: survey data was self-reported: the sample area was geographically limited: the sample was very specific and may have limited variability and thus generalizability	Adults, African-American, Females (target sample) 20 to 50 years old (evaluation sample) 46.7% African-American,14.0% Adults below poverty level (Sumter County): 60.9% African-American, 19.0% Adults below poverty level (Orangeburg County) ***ELIGIBILITY:*** African-American women aged 20-50 years were eligible for participation ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from the University of South Carolina and the University of North Carolina at Chapel Hill. ***THEORY/ FRAMEWORK:*** Ecological model ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not reported ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** This study was supported by the Centers for Disease Control and Prevention given to the Prevention Research Center at the University of South Carolina, Columbia. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. 22.8% of respondents reported the presence of sidewalks in the neighborhood and were more likely to meet recommendations for physical activity (OR=1.57, CI=1.14-2.17). 2. The most commonly cited barriers for physical activity were lack of recreation facilities (18.6%, 15.8%), not enough sidewalks (9.9%, 8.7%), unattended dogs (8.4%, 8.1%), and no street lighting (7.7%, 9.0%). 3. The most commonly cited enablers were building a fitness center nearby (33.5%, 34.6%), providing better street lighting (10.1%, 10.3%), nearby organized exercise groups (11.0%, 6.8%), and more sidewalks (8.7%, 7.2%). 4. 34% of respondents reported having light traffic in the neighborhood and approached statistical significance for meeting physical activity recommendations (OR=1.53, CI=1.00-2.34). ***OTHER:*** 5. The most commonly cited reasons for not exercising more were personal barriers, enablers, and motivators, lack of time (36.2%, 34.5%); lack of willpower (15.0%, 10.9%); and being too tired or lacking energy (12.2%, 9.2%). 6. The most commonly cited factors that would get participants to exercise more were more time (24.6%, 23.3%), greater willpower or self-motivation (19.6%, 15.4%), and support from a friend (8.9%, 6.5%). 7. There was a statistically significant relationship between seeing people exercise in the neighborhood and (1) having insufficient or recommended levels of physical activity (versus being inactive) (OR=1.63, CI= 1.07-2.48) or (2) meeting recommendations (OR=1.57, CI= 1.16-2.12). 8. Women reporting lower social role strain (social roles score) were more likely to meet recommendations than women with high strain. (Mean= 2.93 +/- 0.41, OR=1.49, CI=1.06 – 2.10).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Sanderson, Foushee (2003) Alabama	Presence or absence of sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of safety from crime 2. Access to places for physical activity 3. Access to neighborhood destinations within walking distance 4. Perceptions of traffic safety *Complex:* 1. Neighborhood social support and self-efficacy	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 567 respondents in Greene, Lowndes, and Wilcox counties in Alabama. ***PRIMARY OUTCOME:*** Physical activity (PA) ***MEASURES:*** 1. Survey (sociodemographic information, general health, physical activity, and personal, social environment, safety [traffic, crime, dogs, lighting], lack of sidewalks, places within walking distance, places for physical activity) ***DATA COLLECTION:*** The University of Alabama at Birmingham's Survey Research Unit within the Center for Health Promotion conducted the telephone surveys. The study used a questionnaire developed and pilot tested through the Women's Cardiovascular Health Network Project. A higher social score indicated less negative factors influencing participation in physical activity. Open-ended questions were included to identify potential strategies for promoting physical activity within the target community. Women were grouped into three categories that described their physical activity pattern: (1) inactive (not engaging in any activities); (2) insufficient (not meeting recommendations for activities); and (3) meeting recommendations (engaging in moderate physical activity for at least 30 minutes for five times per week or vigorous activity for at least 20 minute for three times per week). Interclass correlation coefficients (ICCs) for social issue scale ranged from 0.46 to 0.75, indicating a moderate agreement comparable to the range across all sites (0.42–0.68). ***LIMITATIONS:*** Causal inferences cannot be made by using a cross-sectional study; survey data was self-reported; the sample was limited to a very specific location as well as individual type and results may not be generalizable; walking was not distinguished from other types of physical activity	Rural, Female, Adults, 20-50 years old, 75-77% African American (evaluation sample) The data was collected from a predominately impoverished rural area. Education level from the evaluation sample was similar to the Alabama BRFSS demographic data for African-American women, however, income level was somewhat lower. ***ELIGIBILITY:*** Females 20-50 years old were eligible to participate. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from the University of Alabama at Birmingham. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** The test-retest reliability, specific to this study population was only examined on the social issue scale with 47 respondents. ***PROCESS EVALUATION:*** Not applicable	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Women reporting good lighting at night were less likely (OR=0.48, 95% CI= 0.27- 0.88) to report any physical activity. 2. Researchers found no physical environmental variables that were significantly associated with comparison of either activity-level group. ***SOCIAL SUPPORT:*** 3. Women meeting recommendations (n=221) compared to women who did not (n=346) were more than twice as likely to see people exercising in the neighborhood (87.2%, OR=2.02, CI=1.08-3.77) and to attend religious services (84.9%, OR=2.10, CI=1.21-3.65). 4. Women who reported any activity (n=481) compared with inactive women (n=86) were more likely to know people who exercise (OR=1.82, 95% CI=1.06-3.15), have higher social issue scores (OR=1.29, 95% CI=1.11-1.49), and were more than 3 times as likely to report attending religious services (OR=3.82, 95% CI=2.16-6.75).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Lee, Vernez Moudon (2006) Washington	Length of sidewalks and street vegetation (trees) **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Distance to grocery stores, restaurants, parks and trails, block size, and density 2. Perceptions of traffic safety and volume *Complex:* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 438 Seattle adult residents (final sample was a subset from the Walkable and Bikeable communities) **OUTCOME:** Physical activity **MEASURES:** 1. Survey (demographic data, transit use, weekly walking and biking, difficulty walking or biking, vehicle miles traveled per month, frequency of walking for transport and recreation, number of cars in household, dogs in household, awareness of the importance of physical activity, the need to walk/bike, knowledge of congestion and air problems, neighborhood perceptions [type of neighborhood, architecture, awareness of neighbors, traffic problems, air pollution]) 2. Geographic Information System (GIS) data (buffer measures [type and intensity of land use/pedestrian and other transportation infrastructure conditions], distance to individual and agglomerations of destinations, and topography) **DATA COLLECTION:** Survey data came from a telephone survey conducted as part of the Walkable and Bikeable Communities (WBC) project. The survey was administered in fall of 2002 by a professional survey company. The instrument was developed using validated questions from existing surveys. The raw data used for the GIS analysis came from the county's parcel-level and building level assessor's data, park layer, METRO bus ridership data, and the Puget Sound Regional Council's regional transportation network data (including trails). Environmental variables were measured using a custom-made GIS tool, called Walkable and Bikeable Communities Analyst, developed as part of the WBC project. 11 types of distance agglomerations were included, called Neighborhood Centers (NCs). Variables were measured and ranked by importance VIP (very important) and Non-VIP (not very important). **LIMITATIONS:** Cross sectional study design does not allow for causal inferences; self reported data possibly leads to bias; some variables were excluded because of problems with interpretation	Adults, 10% Minority, 90% White, 54% Female,16% age 66 years or older (evaluation sample) **ELIGIBILITY:** Eligible participants of the Walkable and Bikeable Communities were at least 18 years of age, had little or no difficulty walking three city blocks, English speaking, and lived at the same address as the database showed and had a working telephone. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** The research team was from the University of Washington Health Promotion Research Center. **THEORY/ FRAMEWORK:** A multi-or trans-disciplinary approach to active living research; the social ecological model; and the Behavioral Model of Environment **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** The survey instrument was pilot tested on 50 random samples drawn from the same sample frame. Interview protocols followed the methods used by Behavioral Risk Factor Surveillance System. **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Robert Wood Johnson Foundation through the Active Living Research program and the Walkable and Bikeable Communities (WBC) project, funded by Centers for Disease Control and Prevention through the University of Washington Health Promotion Research Center. **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** *Objective Correlates of Walking* 1. Route related variables, such as block size, traffic volume, sidewalk, and street trees, did not show a statically significant association with transportation walking; but longer sidewalks was positively associated with recreation walking (frequent walking; OR=1.117, CI: 1.001-1.245, p<0.05). 2. Distance to the closest office and mixed use neighborhood centers for both-walkers (OR=2.591, CI: 1.463-4.587, p<0.01), the recreation walker (OR=2.233, CI: 1.198-4.161, p<0.05), and the transportation walker (OR=2.503, CI: 1.314-4.768, p<0.01) was significant in all models. 3. Area level residential density was found significant in all models for both recreational and transport walkers (OR=0.135, CI: 0.036-0.511, p<0.01), and independently for the recreation walkers (OR=0.101, CI; 0.024-0.421, p<0.05), and the transportation walker (OR=0.186, CI: 0.043-0.798, p<0.05). 4. Parcel-level density (OR=2.740, CI: 1.239-6.056, p<0.05) showed a positive association with the likelihood of walking for both purposes relative to not walking at all. 5. Area based density (OR=0.135, CI: 0.036-0.511, p<0.001) showed a negative association with the likelihood of walking for both purposes relative to not walking at all. 6. Moderate walkers had a 56% decreased odds of perceiving their neighborhood as having a mix or only commercial atmosphere when (OR=0.441, CI: 0.200-0.972, p<0.05) compared to non-walkers. 7. Both socio-demographic and physical environmental variables had a stronger association with transportation walking than with recreation walking. The Frequency Models showed the fit of the recreational model (pseudo r^2=0.349) to be much poorer than that of the transportation model (pseudo r^2 =0.641). **OTHER:** 8. The odds of transportation walking were 1.7 times higher for moderate walkers (OR=1.765, CI: 1.247-2.494, p<0.01) and 2.7 times higher for frequent walkers when compared to non-walkers with increased social support (OR=2.652, CI: 1.673-4.203, p<0.01). 9. Frequent walkers have a 17% decreased odds of walking (OR=0.825, 95% CI: 0.688-0.989, p<0.05) for transportation compared to non-walkers in a sloped environment. 10. Frequent walkers have a 15% increased odds of walking for recreation compared to non-walkers in a sloped environment. **ENVIRONMENT:** 11. The objectively measured environmental variables captured up to 20% of the variation in the models, whereas the socio-demographic variables including perceived environmental variables, captured about 10% to 40% of the variation depending on the model.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Fulton, Shisler (2005) United States	Access to sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Level of urbanization *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 1,395 parent-child pairs residing in the United States Primary Outcome: Physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Interview/Survey (physical activity, neighborhood characteristics, transport mode to school, demographic data, behavioral/attitudinal, psychosocial, perceptions of safety) ***DATA COLLECTION:*** From September to October 1996, trained staff completed interviews. Active transportation to school (ATS) was used as the dependent variable. ***LIMITATIONS:*** Causal and temporal inferences cannot be determined because the study was cross-sectional; the validity of ATS is not known; researchers did not examine why girls and older youth are less likely to use ATS; distance to school was not used as a measure; the response rate limits generalizability	5-18 year olds, 7% African-American, 8% Hispanic , 4% Other, 80% White (evaluation sample) ***ELIGIBILITY:*** Parental consent and youth assent were obtained. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from the Centers for Disease Control and Prevention. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Children who had sidewalks in the neighborhood were more likely to walk than those without sidewalks (OR=3.4; 95%CI=2.3-5.1). 2. Compared to children in rural areas, children in central cities, suburbs, or small cities/towns were more likely to walk (OR=2.2, 95%CI=1.0-4.6; OR=2.4, 95%CI= 1.3-4.5, and OR=2.3, 95%CI=1.3-4.2, respectively). 3. Compared to girls, boys have 1.8 times the odds of using ATS (95% CI=1.3-2.5).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Vernez Moudon, Lee (2007) Washington	Complete sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Land-use mix, density, and distance to commercial facilities 2. Access to a grocery store and restaurant *Complex:* 1. Perceptions of social supports	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 608 adults from 4 parts of urbanized areas (88 non-contiguous square miles) within the Urban Growth Boundary of King County, Washington. (105 sub-sample personal characteristics) ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Geographic Information System (GIS) data (parcel level data: urban and non-suburban environment, buffer and proximity measures) 2. Survey (walking behavior, attitude, perceptions [visual quality, social supports for walking, street amenities], demographics, household characteristics, the environment) 3. Behavioral Risk Factor Surveillance System (BRFSS) (total walking) 4. National Health Interview Survey (NHIS) (total walking) 5. International Physical Activity Questionnaire-Long (IPAQ) (total walking) 6. King County tax assessor (environmental factors [data ca. 2001]) 7. King County park and Metro data (street connectivity, land-use mix, residential density, distance to locations, presence of sidewalks, bike lanes, and trails [data ca. 2001]) 8. Puget Sound Regional Council (trails, sidewalks, street connectivity) ***DATA COLLECTION:*** With the exception of questions about walking behavior, attitude, and perception, the survey used validated questions from the Behavioral Risk Factor Surveillance System (BRFSS), the National Health Interview Survey (NHIS), and the International Physical Activity Questionnaire-Long (IPAQ). Three categories for weekly walking minutes were developed; "nonwalker," "moderate walker" (<149 minutes per week), and "sufficient walker" (>150 minutes per week). Measures were taken using both airline (straight line) and network (actual street line) distances. Clustered destination areas were labeled Neighborhood Centers or NCs. ***LIMITATIONS:*** Objective measures were not used; the study was cross-sectional; response rate was low	Adults, General population, Urban and Suburban environments ***ELIGIBILITY:*** Participants had to be 18 years or older, having little or no difficulty in walking a quarter of a mile, living at the same address as listed in the database, speaking English, and being able to communicate via telephone. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from the University of Washington, Texas A&M University, Centers for Disease Control and Prevention, and the Seattle Pacific University. ***THEORY/ FRAMEWORK:*** The previously developed Behavioral Model of Environment (BME) provided conceptual framework for selecting attributes for the environment. The BME used 3 spatial constructs to model the walking environment: (1) points of origin/ destination, (2) route, and (3) area around origin/destination. ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** The survey was pilot-tested on a random sample of 50 respondents drawn from the same sample frame and administered in the summer and early fall of 2002. *(continued next page)*	***RESOURCES:*** Not applicable ***FUNDING:*** This study was supported by Cooperative Agreement Number 1-U48/ CCU209663 from CDC through the University of Washington Health Promotion Research Center. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Living in an area with more complete sidewalks along major streets (airline [sufficient relative to walking] OR=1.090, 95%CI=1.008-1.179, p<0.05) was significant in the airline but not in the network models and was positively associated with the likelihood of walking sufficiently (p<0.05). 2. Survey variables strongly associated with walking sufficiently to enhance health included using transit, perceiving social support for walking, walking outside of the neighborhood, and having a dog (p<0.01). 3. Having too many grocery stores near home was negatively associated with walking in one airline model (airline model [walking sufficiently relative to not walking] OR=0.667, 95%CI=0.454-0.980, p<0.05). 4. Walking was negatively associated with distance to NC5 (office and mixed-use; airline model, odds of walking sufficiently relative to not walking: OR=1.274, 95%CI=1.041-1.559, p<0.05) and distance to (office only network model; odds of walking sufficiently relative to not walking, OR=1.581, 95%CI=1.146-2.180; network model odds of walking sufficiently relative to walking moderately; OR=1.235, 95%CI=1.020-1.495, p<0.05) as well as the size of the closest NC8 (office, airline model, odds of walking sufficiently relative to walking moderately; OR= 0.779, CI= 0.0.655-0.927, p<0.05; odds of walking sufficiently relative to walking moderately, OR=0.801, 95%CI=0.712-0.901, p<0.05) to home. 5. Living closer to a grocery store/market (airline model odds of walking moderately relative to not walking; OR=0.375, 95%CI= 0.189-.743, p<0.01) (airline model odds of walking sufficiently relative to not walking OR=0.443, 95% CI=0.219-0.896, p<0.05)], an eating/drinking place (airline model odds of sufficient walking relative to walking moderately OR=0.688, 95%CI=0.493-0.959, p<0.05), a bank (network model odds of walking moderately relative to not walking OR=0.775, 95% CI=0.620-0.968)), and a NC2 ([grocery, restaurant, retail] network model odds of walking sufficiently relative to not walking OR=0.640, 95%CI= 0.441-0.928, p<0.05) were correlated with increased walking. 6. Two route directness (airline/network ratio) variables, showed moderately significant (all p<0.05) associations with walking to the closest grocery store/market (network; walking sufficiently relative to not walking, (OR=1.025, 95%CI=1.004-1.047) and to the school (OR=0.987, 95%CI=0.974-1.00). 7. The density of the respondent's parcel was also strongly associated with walking sufficiently (airline sufficient not walking, OR=1.959, 95%CI=1.148-3.346) (network sufficient relative to not walking, OR=2.021, 95%CI=1.239-3.294) (network sufficient to moderate, OR=1.457, 95%CI=1.118-1.899) (p<0.01 for all) and significantly correlated with both the network and airline models. *(continued next page)*

(Continued from previous study)						
				PROCESS EVALUATION: Not reported		***PSYCHOSOCIAL:*** 8. Perceived social support for walking in the neighborhood had the strongest association with increased odds of walking. Odds of walking moderately to not walking, (OR= 1.622, 95%CI=1.216-2.165, p<0.01) and odds of walking sufficiently relative to not walking, (OR=1.855, 95% CI=1.366-2.520, p<0.01).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Smith, Brown (2008) Utah	Street connectivity and intersection density ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Population density and land-use diversity *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 453,927 individuals ***PRIMARY OUTCOME:*** Overweight/obesity ***MEASURES:*** 1. Height and weight (body mass index [BMI] from Utah Population database driver license data) 2. 2000 Census data (racial composition, income, median age of block residents, land-use diversity [proportion of individuals walking to work, home age], population density) 3. Salt Lake County assessor's office (pedestrian friendly street design [street network, intersection density]) ***DATA COLLECTION:*** License data is linked to census-block groups via Universal Transverse Mercator (UTM) coordinates by the UPDB staff. For the 2000 Census, the median age of houses is based on an item that is bottom-coded for homes built in 1939 or earlier. Pedestrian friendly design is measured as street connectivity or the number of intersections within 0.25 mile of the resident's home. The DIGIT Lab calculated intersections within buffers that extend 0.25 miles from a point that approximates the location of the home. Respondents were placed into walkability quartiles, with the highest 25% quartile having the most walkable neighborhood. ***LIMITATIONS:*** Data is self-reported; this study did not account for self-selection; few individual measures were not available; the sample is based on one county; causality cannot be determined through cross-sectional studies; the low percentage of individuals who walk to work may limit the utility of this predictor in small samples	25-64 year olds, Adults, General Population ***ELIGIBILITY:*** The age range was chosen in order to exclude young adults who have not established their post-adolescence residence and elderly adults who are increasingly less likely to hold a driver license and for whom BMI has more complex associations with health. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from the University of Utah. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The Institute of Public and International Affairs at the University of Utah ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. The higher the number of intersections within 0.25 miles of the home, the more reduced the risk for overweight and obesity is in men (OR=0.991, 95%CI=0.985-0.997, p=0.004 and OR=0.988, 95%CI= 0.980-0.996; p=0.004, respectively) and the more reduced the risk is for overweight in women (OR=0.993, 95%CI=0.985-1.0, p=0.042). 2. For men, being in the top 25% of all four walkability measures (defined as highest levels of density, pedestrian-friendly street design, neighborhood age, and walking to work) is associated with approximately a 1.28-point reduction in BMI. For women, the reduction is 0.95 points. For a hypothetical 6-foot, 200-pound man, the least walkable neighborhood would be associated with approximately 10 more pounds than the most walkable neighborhood. Using the female sample's average height and weight (5 feet, 5 inches; 149 pounds), the most walkable neighborhood would be associated with nearly 6 fewer pounds than the least walkable neighborhood. 3. Higher density reduces the risk of overweight among men (OR=0.997; 95%CI= 0.993, 1.00; p=0.051). Higher population density increases the obesity risk for women (OR=1.06; 95%CI= 1.001, 1.011; p=0.026). 4. An analysis of weight across quartiles of walkability factors, including density, reveals the expected negative relationship (p=0.039) between the top quartile of density (compared to the lowest quartile) and women's obesity odds. The unexpected overall positive relationship is attributable to the large effect of the third quartile (50th-74th percentile, p=0.002) 5. As the age of the housing in the neighborhood increases, BMI declines, as do the odds of overweight and obesity (men: OR=0.922, 95%CI=0.915-0.929, p<0.001 and OR=0.879, 95%CI=0.87-0.889, p<0.001, respectively and women: OR=0.933, 95%CI=0.924-0.924, p<0.001 and OR=0.925, 95%CI=0.915-0.936, p<0.001, respectively).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Frank, Schmid (2005) Georgia	Intersection density and street connectivity ***OTHER INTERVENTION COMPONENTS*** *Multi-component:* 1. Land-use mix and residential density *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 357 people from 13 counties in the Atlanta region ***PRIMARY OUTCOME:*** Moderate-intensity physical activity ***MEASURES:*** 1. Travel survey (travel and objective physical activity data) 2. Accelerometer and MTI software (2-day physical activity) 3. SMARTRAQ 2001 land use database (parcel-level, land-use mix) 4. Street center line files (street connectivity) 5. 2000 Census data and regional land cover data from aerial photos (net residential density) 6. Walkability index (land use mix, residential density, intersection density) ***DATA COLLECTION:*** Data for the present study came from the Strategies for Metropolitan Atlanta's Regional Transportation and Air Quality (SMARTRAQ) and was collected between 2001 and 2003. A computer telephone-aided interview was used for recruitment, at which time all sociodemographic data was gathered. A valid accelerometer hour was ≤30 consecutive minutes of 0 activity counts at any point during the hour. Eight or more hours defined a valid day (has been shown to be reliable in adults and with moderate activity). Net residential density was measured at the block group level due to a lack of consistent reporting on number of dwelling units for multifamily parcels across the 13-county region. ***LIMITATIONS:*** Self-selection, attitudinal pre-determinants, and causation cannot be assessed with a cross-sectional design; data was self-reported; physical activity measures were limited to 2 days; the Atlanta region has limited variability in land use; accelerometers do not measure activities such as swimming and bicycling; this study did not account for the influence of sidewalks and bikeways on levels of physical activity; low-levels of vigorous intensity activities made it difficult to account for other health related variables; the people who agreed to wear monitors were more likely to be white and affluent than the region	Adults, General Population (target sample) 74.9% White, 15.9% Black, 43.8 average years old (evaluation sample) Study participants were more likely to be female (55.7%), and well educated, as 66.4% had at least a bachelor's degree. Study participants were 74.9% white as compared to 53.9% in the Atlanta region and 15.9% black. ***ELIGIBILITY:*** Eligible participants were between the ages of 20 and 70, had a household income of <$45,000 or >$54,999, and lived in low and high density, connectivity, and commercially active environments. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from the University of British Columbia, Centers for Disease Control and Prevention, San Diego State University, Lawrence and Frank Company, Inc., and the University of Cincinnati. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Funding for this research was provided by the Georgia Department of Transportation, the Georgia Regional Transportation Authority and Centers for Disease Control and Prevention. ***STRATEGIES***: Not applicable	***PHYSICAL ACTIVITY:*** 1. A natural log of the minutes of moderate physical activity per day was significantly correlated with land use mix (r=0.145, p<0.01), net residential density (r=0.179, p<0.01), and intersection density (r=0.111, p<0.01). 2. The walkability index was a significant correlate for meeting the ≥30-minute physical activity recommendation. Individuals were on average thirty percent more likely to record ≥30 minutes of activity with each increase in the walkability index quartile. 3. Thirty-seven percent of individuals in the highest walkability index quartile met the minimum of ≥30 minutes for physical activity, while only eighteen percent of individuals in the lowest walkability quartile met the recommendation. 4. Results demonstrate that the odds of meeting the recommended ≥30 minutes of moderate activity per day was 2.4 (OR) times greater for the fourth quartile group than the referent group (least walkable) with a reported confidence interval (CI) of 1.18 to 4.88 (p=0.015). However, the third quartile group approaches a significant difference from the referent group as well (OR=2.02, 95%CI=0.99–4.12, p=0.055).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Frank, Andresen (2004) Atlanta	Street connectivity and intersection density ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Land-use mix, distance to locations, and net residential density *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 10,878 participants from 13 counties in the Atlanta region ***PRIMARY OUTCOME:*** Overweight/obesity and physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Geographic Information Systems (GIS) (household buffers, mapping, street network, actual trip distance, connectivity, land-use mix) 3. 2-day Travel Diary (distance walked, time spent in a motor vehicle, origin and destination of trips) 4. 2000 US Census and land use data from Atlanta Regional Commission and parcel level data (net residential density, sociodemographic variables) 5. County level tax assessor's data, aerial photography, street network data, Census data (combined identified residence urban form characteristics including connectivity, net residential density, and mixed use) 6. Atlanta Regional Commission's Regional Travel Model (expected travel times) ***DATA COLLECTION:*** This study used travel survey data from the Strategies for Metro Atlanta's Regional Transportation and Air Quality (SMARTRAQ) study. The shortest path between the origin and destination was found, and actual network distances were calculated for each trip. A 1-kilometer network buffer size was placed around a household within a disconnected urban environment (small buffer) and a household within connected (large buffer) urban environment. An equation of land-use mix was created using the proportion of estimated square footage attributed to land use and the number of land-uses. Land-use mix ranges from zero to one, with zero representing a single land-use environment and one representing a perfectly even distribution of square footage across all four land uses with several destinations within walking distance. Mixed land-use was organized in quartiles. ***LIMITATIONS:*** Causality cannot be determined with a cross-sectional design; there was a potential for item, participation, and non-response bias; the diary relied on self-reported data; Atlanta has a limited range of urban forms; the study did not consider time associated with transit use or the relationship among transit service, walking, and driving.	Adults African-American Caucasian 65% White (sample) 35% African-American (sample) Higher-density locations were oversampled to ensure a sample of households within a range of different types of urban environments. ***ELIGIBILITY:*** Participants had to meet one of the ethnic/gender combinations (black, white, male, female) to be eligible. The ethnic combinations comprised 91% of the SMARTRAQ sample. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from the University of British Columbia, Simon Fraser University, and the Centers for Disease Control and Prevention ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not reported ***IMPLEMENTATION:*** Not reported ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The Centers for Disease Control and Prevention, the Georgia Department of Transportation, and the Georgia Regional Transportation Authority ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. For white males, all three urban form variables; mixed use (r=-0.11; p<0.001), intersection density (r=-0.089; p<0.001), and net residential use (r=-0.096; p<0.001) , were inversely correlated with BMI. 2. For each quartile increase in land-use mix there was a 12.2% reduction associated with the odds of being obese (OR=0.878, 95%CI= 0.839-0.919, p<0.001). 3. The odds of obesity decline by 4.8% for each additional kilometer walked, but conversely increased by 6% for each hour spent in a car per day. 4. The change from a land use mix of zero to the average land use mix in the region (0.15) decreases the odds of obesity for the average person by 4.65%. Increasing the land use mix to 0.25, the 90th percentile in the Atlanta metropolitan area, decreases the odds of obesity by 6.85%. 5. The proportion of obese persons in the sample declined from 20.2% in the lowest to 15.5% in the highest land-use-mix quartile. 6. Mixed use (r=-0.086; p<0.001) and residential density (r=-0.039; p=0.02) were negatively associated with BMI for white females. 7. No linear relationships were found between BMI and urban form for blacks. ***PHYSICAL ACTIVITY:*** 8. Walking distance was positively related to intersection density for black females (r=0.051, p=0.02), white males (r=0.062, p<0.001), and white females (r=0.084, p<0.001). 9. Walking distance was positively associated with land use mix for white males (r=0.046, p=0.01), black females (r=0.059, p=0.01), and white females (r=0.051, p<0.001) 10. Walking distance was positively related to residential density for white males and females (r=0.050, r=0.065, respectively, p<0.001). 11. No linear relationships were found between urban form and walk distance for black males. 12. Minutes spent in the car per day was negatively associated with land-use mix for white males (r=-0.107, p<0.001) and females (r=-0.108, p<0.001). 13. Minutes spent in the car per day was positively associated with land-use mix for black females (r=0.042, p=0.05). 14. Car time was negatively associated with intersection density for black females (r=-0.046, p<0.05), white males (r=-0.039, p<0.05), and white females (r=-0.046, p=0.01). 15. Car time was negatively associated for all ethnic/sex combinations for residential density: black males (r=-0.076, p<0.001), white males (r=-0.074, p<0.001), black females (r=-0.050, p<0.05), white females (r=-0.090, p<0.001).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Frank, Sallis (2006) Washington	Street connectivity **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Land-use mix, residential density, and retail floor ratio *Complex:* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 1,228 adults from the Neighborhood Quality of Life Study (NQLS) and 5,766 adults for the Land Use, Transportation, Air Quality and Health Study (LUTAQH) **PRIMARY OUTCOME:** Overweight/obesity and physical activity **MEASURES:** 1. Height and weight (body mass index [BMI]) 2. Walkability index/scale (built environment) 3. International Physical Activity Questionnaire [IPAQ] (7-day frequency and duration of walking and biking) 4. Travel diary (travel and activity behavior) 5. Puget Sound Regional Council's 1999 Travel and Activity Survey (walkability, travel data, vehicles miles traveled per person, demographics) 6. MOBILE model (vehicle emissions) **DATA COLLECTION:** Data for the present study came from the Neighborhood Quality of Life study (NQLS), which was collected from May, 2002 through December, 2003 from neighborhoods with highest and lowest walkability deciles. The walkability index used a 1-kilometer network buffer for each respondent's geo-coded residence. The IPAQ is reliable. The Puget Sound Regional Council's 1999 Travel and Activity Survey was collected as part of the King County Land Use, Transportation, Air Quality and Health Study (LUTAQH). Participants provided data for two consecutive weekdays between August and November of 1999. Daily grams of oxides of nitrogen (NOx) and volatile organic compounds (VOCs) were estimated for each trip made by the participant. The Environmental Protection Agency's emission rate model (MOBILE) was used for estimates. Shortest time-path network distance between reported origins and destinations was used to assess vehicle miles of travel. **LIMITATIONS:** Data was self-reported; this study relied on modeled emissions rather than actual; causality cannot be inferred from cross-sectional data	Adults, General Population (target sample) The sample was well balanced by gender, education, household income, and vehicle ownership **ELIGIBILITY:** In order to be eligible for the NQLS neighborhoods had to be in the highest and lowest decile, have moderately low or high income, and have a listed telephone number or valid mailing address. In addition, block groups had to have a population of at least 1,000 households. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers were from University of British Columbia, San Diego State University, LFC, Inc., King County, and the Puget Sound Regional Council. **THEORY/ FRAMEWORK:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** The research on which the article is based was funded by a grant from the National Institutes for Health and King County, Washington. **STRATEGIES:** Not applicable	**OVERWEIGHT/OBESITY:** 1. The demographic and socioeconomic covariates explained 5.6% of variance in the BMI, the walkability index explained 1.1% of additional variance, which was significant (β =-0.113, t= -3.898, p<0.0001, partial correlate -0.107, r^2=0.067). **PHYSICAL ACTIVITY:** 2. Those individuals living in a neighborhood with higher neighborhood walkability had fewer vehicle miles of travel when compared to individuals living in less walkable neighborhoods (β= -0.157, t=-10.740, p<0.0001, partial correlation= -0.134). 3. When the walkability index was compared to minutes per week devoted to active transportation and BMI there were expected relationships, with walkability positively related to active transportation (β= 0.304, t=10.659, p<0.0001, partial correlate=0.289), but negatively related to body mass (β= -0.113, t=-3.898, p<0.0001, partial correlate -0.107). 4. Researchers found a 5% increase in walkability associated with a per capita 32.1% increase in time spent in physically active travel, a 0.23-point reduction in body mass index, 6.5% fewer vehicle miles traveled, 5.6% fewer grams of oxides of nitrogen (NOx) emitted, and 5.5% fewer grams of volatile organic compounds (VOC) emitted. 5. The walkability index was significantly related to emissions that cause the formation of ozone (β=-0.140, t=-10.841, p<0.0001, partial correlation=-0.131). 6. All six covariates explained 1.4% of the variance in the active transportation variable, while the walkability index explained 8.3% of additional variance in active transportation (adjusted r^2 values, 0.097). 7. The walkability index explains 1.81% of the variance in the prediction of vehicle miles of travel (adjusted r^2=0.106). All of the variables in the model were significant at the 0.01 level or better. Only educational attainment explained more of the variation in vehicle miles traveled than walkability.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Khattak, Rodriguez (2005), Brown, Khattak (2008), Rodriguez, Khattak (2006) North Carolina	Street connectivity **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Land-use mix and residential density *Complex:* 1. Neighborhood self-selection	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 711 individuals (393 surveys, 370 travel diaries) A sub-analyses compared single-family households in the conventional neighborhood (n=122) with the same households in the neo-traditional neighborhood (n=188). **PRIMARY OUTCOME:** Overweight/obesity and physical activity **MEASURES:** 1. Height and weight (body mass index [BMI]) 2. Mail-in-mail-back survey (sociodemographic data, number and type of trips per week, attitudinal data [self-selection], physical activity) 3. 1 day travel diary ([1995 NPTS and 2001 NHTS] active travel, origin and destination, duration, time of day, purpose, mode, distance, travel expense, sociodemographic data) 4. 2001 Behavioral Risk Factor Surveillance System [BRFSS] data (moderate to vigorous physical activity [MVPA], duration of physical activity, activity recommendations) 5. 1995 Activity Survey ([Triangle Transit Authority, regional comparisons] number of trips, trip length, internal trip capture rates, travel modes) **DATA COLLECTION:** This study used data collected from March through May 2003, matching a large neo-traditional/new-urbanist neighborhood (town center, mix of office, commercial, and residential space, more street connectivity) with conventional suburban neighborhoods (50% more residential buildings, twice the land). Section 1 of the survey was filled out by the head of household, while section 2 was filled out by members of the household 16 years or older. Diary design and questions were based on the 1995 National Personal Transportation Survey (NPTS) and the 2001 National Household Transportation Survey (NHTS). 2001 BRFSS items were used for physical activity questions, which are reliable. Household heads were categorized as meeting activity recommendations, active but insufficient, and physically inactive or no participation. **LIMITATIONS:** Data was self-reported; causal inferences are restricted using cross-sectional data; sites were geographically specific; participant preference was not assessed; some survey items were restricted to certain individuals limiting overall household behavior; there may be non-response errors; study had a low-response rate; binary variables can limit potential responses	Adults, General population Responding individuals compared well in terms of socioeconomic characteristics with census and the regional survey. Number of people and vehicles per household are largely consistent with the National Household Travel Survey. **ELIGIBILITY:** Eligible participants could not live in condominiums or town homes and were required to live in neighborhoods that fell into the neo-traditional or conventional category. All participants had to be 16 years of age or older and have a BMI above 18.5. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers were from the University of North Carolina-Chapel Hill, the Carolina Transportation Program, and Old Dominion University. **THEORY/ FRAMEWORK:** Socioecological conceptual model/ framework **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Financial support for this study was provided in part by the North Carolina Department of Transportation. **STRATEGIES:** Not applicable	**OVERWEIGHT/OBESITY:** 1. Heads of households in the new urbanist multi-family units had an average BMI (23.8, p=0.03) lower than the BMI (24.9) of household heads in conventional neighborhoods. The difference in overweight prevalence between households from multi-family dwellings (27.9 %) and conventional suburban neighborhoods (40.3%) approached, but did not achieve significance. 2. Indirectly through duration of MVPA the association between both new urbanist dwelling types and BMI was not significantly associated with a reduction in BMI. 3. Indirectly through the number of utilitarian physical activity trips the association between the new urbanist neighborhood and BMI show a significant 0.119 reduction in BMI (0.390 [main effect] X -0.304 [coefficient] =-0.119) for household heads from the single-family dwellings compared with household heads from the conventional suburban neighborhood. 4. Indirectly through utilitarian physical activity trips for the household heads residing in the new urbanist multi-family dwellings the association between the neighborhood and BMI was not significant. **PHYSICAL ACTIVITY:** 5. Residents of the new urbanist neighborhoods (mean=2.03) spend more time being physically active in their neighborhood than did residents of the conventional neighborhoods (mean=1.20) (moderate or vigorous physical activity t=2.890, p<0.001). 6. On average, each daily utilitarian trip (travel diary) taken via walking or bicycling was related to a 0.30 lower BMI (p=0.031). 7. Each hour per week spent obtaining MVPA was significantly associated with a 0.14 (p<0.0001) reduction in BMI for household heads. 8. Households in neo-traditional neighborhoods generate 22.1% (e(0.20)-1) fewer auto trips and 23.4% fewer external trips than households in the conventional neighborhood (after controlling for other factors and accounting for self-selection). The walk trips show a dramatic 305.5% increase in neo-traditional developments. 9. The marginal effect corresponding to the new urbanist single-family dwelling indicates that heads of household make 0.39 (p=0.02) more utilitarian physical activity trips than their counterparts residing in the conventional suburban neighborhoods.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Frank, Saelens (2007) Georgia	Street connectivity **OTHER INTERVENTION COMPONENTS:** *Multi-component* 1. Land-use mix, density, retail floor ratio, and distance to locations *Complex* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 3,511 individuals from 2 sub-samples (Neighborhood selection = 2,056 individuals and Neighborhood preference = 1,455 individuals) of the 2001-02 SMARTRAQ from 13 counties near Atlanta **PRIMARY OUTCOME:** Overweight/obesity and physical activity **MEASURES:** 1. Height and weight (body mass index [BMI]) 2. Strategies for Metropolitan Atlanta's Regional Transportation and Air Quality (SMARTRAQ) survey (2-day travel diary [destinations, mode, time of day, day of week, duration, distance], walkability index (land-use mix, residential density, retail floor area ratio, street connectivity], Neighborhood Selection Questionnaire [reasons for moving], Stated Preference survey [preferences for travel convenience and neighborhood design], and sociodemographic characteristics) 3. Geographic Information System ([GIS] number of vehicle miles traveled, urban form characteristics [street network], immediate neighborhood buffer around residence) 4. County level tax assessor's data (urban form characteristics) **DATA COLLECTION:** Neighborhood selection items included 10 questions assessing reasons for moving to one's neighborhood using a 5-point Likert scale. The items "ease of walking," "low transportation costs," and "near to public transit" loaded most highly on this factor labeled "non-motorized selection." Individuals' composite scores were averaged for their responses and placed into quartiles. The stated preference survey for SMARTRAQ used for this study used an 11-point Likert type response and gauged the extent of demand for aspects of travel convenience and neighborhood design. Respondents were placed into quartiles based on walkability score, the higher the quartile indicated better neighborhood walkability. **LIMITATIONS:** Observed neighborhood-associated differences may be spurious and merely reflect shared underlying lifestyle preferences that impact both location and travel choice; longer and more complete assessments of walking (walking duration) are necessary to better specify the health impact; the models were incomplete, accounting for only a modest proportion of the variance; there are likely many factors that influence neighborhood selection and preference that were not measured, including availability, cost, and other neighborhood characteristics	General population The sample was not weighted to be representative of regional demographic or urban form characteristics. Both samples were representative of the regional distribution across gender and household size. The selection sample was closer to the regional distribution in terms of ethnicity and income. The neighborhood preference sample was derived from a representative sample of the larger SMARTRAQ survey across income and net residential density. **ELIGIBILITY:** Eligibility for the SMARTRAQ neighborhood selection sub-sample required participants to be 18 years or older, the head of household, a home renter or owner, and having residentially moved within the past 3 years. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** The University of British Columbia, Children's Hospital and Regional Medical Center and the University of Washington, Public Health and Epidemiology Consultant in Atlanta, and Lawrence Frank and Company. **THEORY/ FRAMEWORK:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** The Georgia Department of Transportation funded this cross-sectional study. **STRATEGIES:** Not applicable	**OVERWEIGHT/OBESITY:** 1. Unexpectedly, obesity prevalence was higher in the second versus 1st non-motorized selection quartile. As expected, prevalence was lower in the fourth (most walkable) versus the first (least walkable) walkability quartile. Obesity prevalence was much higher (23.8%) for those that prefer the least versus the most walkable environments (9.0%). Obesity prevalence was also higher for those in the least (22.2%) versus those in the most walkable environments (15.3%). **PHYSICAL ACTIVITY:** 2. Individuals in both the third and fourth quartiles for the non-motorized selection factor and walkability had significantly higher odds of any walk trips (3rd; OR=1.52, 95%CI=1.06-2.15, 4th; OR=2.49, 95%CI=1.80-3.36) and non-discretionary walk trips (3rd; OR=1.52, 95%CI=1.04-2.19, 4th; OR=2.43, 95% CI=1.71-3.36) than first quartile individuals for the selection and walkability factors (p-values not reported). 3. Only the fourth quartile on walkability showed significantly greater odds of a discretionary walk trip (OR=3.3, 95%CI=2.93-7.10, p-value not reported). 4. Overall model fit for obesity was lower than for the walking outcomes (r^2=0.08). 5. Lower age, fewer motorized vehicles, lower proportion of licensed drivers, increased importance of non-motorized selection, and increased walkability were all significant predictors of increased likelihood of any walk trips (pseudo r^2=0.15). Being younger, having access to fewer vehicles, greater preference for pedestrian oriented neighborhoods, and greater walkability (significant for the 4th quartile, p=0.07) where one lives were associated with an increased likelihood of any walk trips (pseudo r^2=0.20).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Atkinson, Sallis (2005); Saelens, Sallis, Black (2003) California	Street connectivity ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to equipment and places to be physically active 2. Land-use mix and residential density *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 107 adults from 2 nonadjacent neighborhoods (high walkability; n=54 and low walkability; n=53). ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Survey (duration [minutes] of walking to and from school in past week, duration of walking during breaks and lunch, duration of walking for errands, exercise, and to and from transit stops, demographic questions, anthropometric data, recreational variables, availability of home sports equipment, convenience to recreational/exercise facilities within a 5 minute or 10 minute walk) 3. Neighborhood Environment Walkability Survey [NEWS] (perceptions of neighborhood residential density, mixed land use, accessibility, connectivity, infrastructure, aesthetics, traffic safety, and crime within a 10-15 minute walk) 4. Godin-Shephard Leisure Time Exercise Questionnaire (leisure time physical activity, frequency and intensity of physical activity over a 7-day period) 5. Accelerometers (physical activity) ***DATA COLLECTION:*** This study assessed data taken from adults in two neighborhoods with different walkability scores. Participants wore an accelerometer on their hips for 7 consecutive days during all waking hours except water related activities. A survey was mailed to respondents 4-5 days after receiving accelerometers. This survey contained the NEWS instrument, the Godin-Shephard Questionnaire, as well as other measures from previous surveys and developed specifically for this survey. NEWS scales used a four-point Likert-type scale and had test-retest interclass correlations >0.58 with six of the eight scales being >0.75. Test-retest reliability for the Godin-Shephard Leisure Time Exercise Questionnaire for adults was previously found to be 0.24-0.94. Test-retest reliability correlations for items added to the survey related to home environment and convenience were 0.89 and 0.80 respectively. One week after receiving completed surveys a second survey was sent to respondents, which contained only the environmental perception subscales. ***LIMITATIONS:*** Small sample with only two neighborhoods recruited; recruitment rate was low; neighborhoods may not have been heterogeneous enough to observe differences; neighborhood self-selection may have been a problem; cross-sectional study design limits causal interpretations; accelerometers are not sensitive to all activities and not usable in aquatic environments and do not distinguish type, location, or purpose of activity	Adults 81% White, 9% Hispanic/Latino, 5% Asian/Pacific Islander, 1% African-American, 34% Multiple ethnicities; 52% Female; >90% With some college/ vocational training; mean age=48.2 years (SD=11.6) (evaluation sample) The neighborhoods differed in respect to mean age (p=0.008) and percentage of residents completing college differed significantly (p=0.026). ***ELIGIBILITY:*** Participants were eligible if they lived within the identified neighborhoods (based on walkability), were aged between 18-65 years, did not have a disability precluding walking, and were able to complete surveys in English. Participants gave written consent to participate. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from San Diego State University and the Cincinnati Children's Hospital Medical Center. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Two of the authors and a community group composed of transportation, environmental protection, and urban planning professionals created the survey, which was based on literature. ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** National Institutes of Health grant ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Residents in the high-walkability neighborhood engaged in almost 60 more minutes of moderate-intensity physical activity during the past 7 days than did low-walkability residents (194.8 min vs. 130.7 min, F1,105=6.02, p=0.016). This was the primary contributor to greater overall objectively measured physical activity among high- vs. low-walkability neighborhood residents (F1,105=6.8, p=0.01). 2. Percentage of residents walking for errands was higher in the high-walkability neighborhood than in the low-walkability neighborhood (85.2% vs. 59.6%; $X^2[1]=8.72$, p=0.003). 3. Self-reported vigorous physical activity (VPA) was significantly and positively correlated with residential density at a moderate level (r=0.35, p<0.01), with more modest, but significant, positive correlations with home equipment availability (r=0.27, p=0.01) and the total environment index (r=0.28, p<0.01) 4. Self-reported total physical activity was positively correlated with home equipment availability at a moderate level (r=0.34, p<0.01). 5. Accelerometer-derived VPA was significantly and positively correlated with the residential density at a moderate level (r=0.39, p=0.00), having more modest correlations with connectivity (r=0.25, p=0.01) and the environmental index (r=0.23, p=0.02). 6. Accelerometer-derived total physical activity was positively correlated with connectivity at a modest level (r=0.21, p=0.04).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Forsyth, Hearst (2008), Forsyth, Oakes (2007), Oakes, Forsyth (2007) Minnesota	Street connectivity ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Residential density 2. Perceptions of neighborhood safety from crime 3. Access to places for physical activity 4. Access to transit *Complex:* 1. Social environment	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 716 individuals from 36 neighborhoods ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. International Physical Activity Questionnaire (IPAQ: n=716) (physical activity, metabolic equivalent times scale [METs]) 3. 7-day travel and walking diary (n=709) (modified version of National Household Travel Survey) (mean miles walked) 4. Geographic Information Systems (GIS) (focus areas, street pattern, residential density) 5. Accelerometers (n=712) (physical activity [activity counts]) 6. US Census (density, street connectivity) ***DATA COLLECTION:*** The data reported is from the Twin Cities Walking Study, which was collected from April to November. The IPAQ and Travel diary, modified National Household Travel Survey, were used to assess walking behavior and overall physical activity. Accelerometer data were processed as mean total activity counts per 24-hour day and were calculated by summing counts within all valid days then dividing by the number of valid days. Accelerometer reliability in children and adolescents is ICC=0.76, and is reliable in adults as well. High density was defined as greater than 24.7 persons per gross hectare excluding water bodies only; low density was defined as less than 12.4 persons/hectare(ha). Small median block size was defined as below 2 ha, which was related to standard block sizes in the area. Large blocks were larger than 3.2 ha. Twenty per cent of participants, or 147 people, completed repeated measures for a reliability assessment. ***LIMITATIONS:*** Only the first 20 volunteers from each area were taken for the study; all potential confounders were not controlled; the threat of residual confounding was severe; self-selection was not controlled; cross-sectional study design restricts temporal and causal inferences; data was self-reported	Adults 65% Female 81% Caucasian (sample) 51% Female 76% Caucasian (2000 Census) Study participants appear relatively homogenous with respect to SES but heterogeneous with respect to density and street connectivity. The northern sector of the Minneapolis-St. Paul metropolitan area was chosen for its environmental diversity. ***ELIGIBILITY:*** Participants were ≥25 years of age, had primary residence in one of the 36 neighborhoods, and were able to walk for 20 minutes unaided. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from the University of Minnesota, Cornell University, University of Pennsylvania ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not reported ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** This study was supported by a grant from the Robert Wood Johnson Foundation through the Active Living Research program. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Larger blocks seem to increase odds ratios for leisure walking by about 40% (OR=1.40; 95%CI 0.96, 2.05, p-value not reported). 2. Total walking in mean miles per day is positively correlated with sidewalks (length per unit area; CE; 0.4510; length divided by road length; CE; 0.3449), street lights (CE; 0.4874), traffic calming (CE; 0.3629), and several of our many measures of connected street patterns (signs vary) (p<0.05). 3. Travel walking measured both by survey and diary was positively correlated with social land uses (IPAQ; CE; 0.4166; Diary; CE; 0.3379), sidewalks (length per unit (lpu)/IPAQ; CE; 0.4866; lpu Diary; CE; 0.6224; length/road(l/r) IPAQ; CE; 0.5282; l/r Diary; CE; 0.5945), transit (IPAQ; CE; 0.3716, Diary; CE; 0.4652), litter/graffiti (IPAQ; CE; 0.3325; Diary; CE; 0.5238) and connected street patterns (# access pts./IPAQ; CE; 0.5176, # pts/Diary; CE; 0.5384; intersections IPAQ; CE; 0.4052, int. Diary; CE; 0.5279; 4-way IPAQ; CE; 0.4602; 4-way Diary; CE; 0.5782; nodes IPAQ; CE; 0.4284, nodes Diary; CE; 0.4673; ratio 4-way IPAQ; CE; 0.4164, 4-way Diary; CE; 0.4698) (all p<0.05). 4. Leisure walking was negatively correlated with some of the same features; transit (IPAQ CE; -0.4882; Diary CE; -0.3360), sidewalks (length/road IPAQ CE; -0.3318), street lights, connected street patterns (IPAQ # access points CE; -0.3349; IPAQ connected nodes CE; -0.3643), social land uses (IPAQ CE; -0.5067), as well as tax exempt land uses (IPAQ CE; -0.4214) (all p<0.05). 5. There are small positive correlations between mean and median accelerometer counts of total physical activity with straight-line and network distances to the nearest video store, hardware store, and pharmacy, although not to other destinations. Park distance was negatively correlated with accelerometer readings, however while the values were significant they were low (data not shown). 6. Using Spearman's correlations there was significant positive association with accelerometry, physical activity and whether people spoke to others in their neighborhood, perceptions of crime, having places to go in walking distance from their home, hills, nearness to book stores and participant's job, and access to bicycle and pedestrian paths (although significant, r values were low with the highest being r=0.13 for closeness to job or school) (data not shown). 7. High density areas have twice the odds of increased travel walking as low density areas (OR=1.99; 95%CI 1.29, 3.06), but block size has no similar effect. For the negative binomial model the odds ratio was 1.47 (p<0.10). 8. Regression models reveal high density areas are marginally associated with an increase in total walking and, in some cases, total physical activity for racial minorities, those without college degrees, the less healthy, and the obese (data not shown). 9. There are very few correlations with the 3 measures of total physical activity and these are all negative correlations with measures of retail (accelerometer mean; CE; -0.3488, p<0.05) and commercial uses (accelerometer mean; CE; -0.3473, p<0.05). 10. Notably absent were any positive correlations with mixed use-apart from a modest one with miscellaneous retail (CE; 0.3505, p<0.05).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Bungum, Lounsbery (2009) Utah	Access to available street networks for Active Transportation to School (ATS) and intersection density ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* Not reported *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 2,692 students (one junior high and two high schools in northern Utah) ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Survey (transportation to school, amount of physical activity, dietary habits, health related items, and television viewing habits) 2. Modified version of Children's Attitudes Toward Physical Activity (CAPTA) measure (attitudes toward physical activity [psychosocial]) 3. MapQuest assessments (street connectivity; total number of intersections) ***DATA COLLECTION:*** Data for the present study came from an evaluation of students involved in an ongoing school-based nutrition and physical activity project. Specifically, baseline data and data from the school-based surveys were used. Students not in the project completed a survey composed of the same items, but it was administered in the context of an annual evaluation. The CAPTA has seven items and has been shown to be valid and reliable. Using Mapquest, the researchers placed the entrance of each school in the center of a circle and all intersections within 4000 feet were manually counted. ***LIMITATIONS:*** Self-reporting; missing data did not assess certain variables; cross-sectional design is problematic; external validity unknown	11-13 year olds, 14-18 year olds (target sample) 3.3% Hispanic, 1.2% American Indian, 1.2% Asian-Pacific Islander, 0.5% African-American, 2.3% Mixed racial composition, 88% White, 3.5% did not report ethnic composition, 15.1 ± 1.5 years old [mean age] (evaluation sample) Males and females were represented by approximately equal numbers. ***ELIGIBILITY:*** Students and parents completed an informed consent as part of the intervention program. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from the University of Nevada-Las Vegas and Utah University. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Those who attended the most connected school were 2.08 (CI=1.19-3.60, p=0.011) times more likely to use active transport to school than were those at the other schools. 2. Males were 2.69 (CI=1.63-4.43, p<0.001) times more apt to use active transport to school than were females, while neither physical activity benefits nor physical activity barriers predicted use of active transport to school.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Handy, Cao (2008); Handy, Cao (2006) California	Street connectivity **OTHER INTERVENTION COMPONENTS:** *Multi-component* 1. Access to public transit 2. Perceptions of safety (crime) 3. Land-use mix and distance to destinations *Complex* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 1,682 adult "movers" and "non-movers" from 8 neighborhoods **PRIMARY OUTCOME:** Walking and biking **MEASURES:** 1. 12-page survey (sociodemographic data, mobility constraints, residential tenure, frequency of transport and leisure walking and walking to specific destinations in the past 30 days, change in walking and biking before the move [for movers] or from one year ago [for non-movers], perceptions and preferences for accessibility, activity and socializing opportunities, attractiveness, presence of outdoor spaces, and safety [crime, lighting], travel attitudes [pro-bike/walk, pro-transit, pro-travel, travel minimizing, safety of car, car dependency], frequency and intensity of activity in past week) 2. Geographic Information Systems [GIS] data (geo-coded residential address, street network distance from residence to destination) 3. New Neighborhoods Contact service (2 residential databases for names of "movers" and "non-movers") 4. Yellow pages (commercial destinations; institutional [e.g., church], maintenance [e.g., grocery store], eating out [e.g., bakery], and leisure [e.g., health club]) **DATA COLLECTION:** The New Neighbors Contact Service databases identified "movers" and "non-movers" to traditional neighborhoods (built in pre-World War II, more connectivity) and suburban (built more recently, less connectivity) neighborhoods. Database contacts were mailed 2 rounds of questionnaires at the end of September 2003. In November, a second copy of the survey was sent to non-responders. Surveys questions were developed using previous research projects and items from the International Physical Activity Questionnaire, which was then pretested with UC Davis students, staff, and area residents. A reliability test for frequency of neighborhood physical activity (NPA) produced an intra-class correlation coefficient (ICC) of 0.20 (n=23). Reliability testing for the change in physical activity over the last year produced an ICC of 0.89 (n=16). *(continued next page)*	Adults, General population, Urban, Suburban (target sample) According to the 2000 US Census the evaluation sample tended to be older on average than neighborhood residents and the percent of households with children is lower among the evaluation sample for most neighborhoods. Median household income for the evaluation sample was higher than the census median for all but one neighborhood. **ELIGIBILITY:** Eligible participants had to have addresses that could be geo-coded. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers were from the University of California-Davis. **THEORY/ FRAMEWORK:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** University of California, Davis-Caltrans Air Quality Project, Robert Wood Johnson Foundation, and the University of California Transportation Center **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. A significantly higher share of residents in traditional neighborhoods reported walking to a store at least once in the last 30 days compared to suburban neighborhoods (data not shown). Over 86% of residents in traditional neighborhoods strolled at least once in the last 30 days versus 79% of residents in suburban neighborhoods, with an average frequency of 10.1 strolls compared to 7.7 strolls. 2. Compared to suburban residents, residents in traditional neighborhoods perceived their neighborhoods on average as having higher accessibility (mean=0.15 vs. mean=-0.18, $p<0.0001$), opportunities for socializing (mean=0.09 vs. mean=-0.12, $p<0.0001$), and attractiveness (mean=0.28 vs. mean=-0.33, $p<0.0001$). Residents in suburban neighborhoods on average perceived their neighborhoods as having greater safety (mean=0.16 vs. mean=-0.14, $p<0.0001$) and outdoor spaciousness (mean=0.06 vs. mean=-0.05, $p=0.02$). 3. Objective measures for minimum distance to a bank (coefficient=0.082, $p=0.035$), number of banks within 800m (coefficient=0.091, $p=0.005$), and number of types of businesses within 1600m (coefficient=0.073, $p=0.040$) were positively associated with increased walking. 4. Individuals living in mixed-use neighborhoods (coefficient=0.0471, $p=0.017$) and living farther from health clubs (coefficient=0.0561, $p=0.004$) had higher neighborhood physical activity. 5. Individuals with higher perceptions of physical activity options (coefficient=0.0395, $p=0.083$), the social environment (coefficient=0.0447, $p=0.026$), attractiveness (coefficient=0.0866, $p<0.0001$), and stores within walking distance (coefficient=0.0549, $p=0.004$) engaged in neighborhood physical activity more frequently. 6. Respondents who preferred to be physically active (coefficient=0.118, $p=0.004$) and had stores within walking distance (coefficient=0.168, $p<0.0001$) walked to the store more frequently. Respondents who preferred to be safe (coefficient=-0.102, $p=0.008$) and had cul-de-sacs (coefficient=-0.065, $p=0.084$) walked less frequently, suggesting a self-selection effect. After controlling for these effects, distance to potential destinations, both objective (coefficient=-0.144, $p<0.0001$) and perceived (coefficient=0.268, $p<0.0001$) remained positively associated with neighborhood walking. Perceived safety (coefficient =-0.071, $p=0.029$) remained negatively associated with walking and attractiveness (coefficient=0.078, $p=0.038$) remained positively associated. *(continued next page)*

(Continued from previous study)						
		LIMITATIONS: Data was self reported; causality cannot be determined using cross-sectional data; total activity perceptions, and duration and intensity of activity were not assessed; neighborhood preference was measured retrospectively; there was temporal inconsistency between the two groups; there was no differentiation between home and neighborhood exercise; biking and walking substitute for one another; may have been response bias; there is a need to separate direct and indirect effects of attitudes on physical activity behavior; this analysis did not account for individual qualities or subsets of qualities of the built environment				7. Changes in perceptions of physical activity options (NPA coefficient=0.0586, p=0.046; walking coefficient=0.103, p<0.0001), attractiveness (NPA coefficient=0.151, p<0.0001), accessibility (walking coefficient=0.103, p<0.0001), socializing (NPA coefficient=0.0549, p=0.052; walking coefficient=0.14, p<0.0001), and current safety (NPA coefficient=0.0672, p=0.025; walking coefficient=0.15, p<0.0001) were associated with increased neighborhood physical activity and walking. 8. The current number of household maintenance businesses within 1600 m (coefficient=0.090, p=0.012) and the minimum distance to a health club had (coefficient=0.071, p=0.045) positive effects on changes in biking. ***OTHER:*** 9. Travel-minimizing attitude (coefficient=-0.077, p=0.014), pro-transit attitude (coefficient=-0.121, p<0.0001), and preference for spaciousness (coefficient=-0.111, p=0.002) were all negatively associated with changes in biking, while attractiveness preference (coefficient=0.074, p=0.019) was positively associated. More results are in the text related to sociodemographic factors, physical and psychological limitations, and pro-walking/biking attitudes related to neighborhood physical activity.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Doyle, Kelly-Schwartz (2006) United States	Neighborhood walkability including: intersection density, street connectivity, and road density ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood safety *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 9,252 adults (total sample); 2,231 lifelong residents (Analysis repeated with individuals in the same residence for entire life) ***PRIMARY OUTCOME:*** Overweight/obesity and physical activity ***MEASURES:*** 1. Weight and height (body mass index) 2. National Health and Nutrition Examination Survey III, 1998-1994 [NHANES] (frequency of physical activity [within the last month], anthropometric data, health scores physician and self-rated [diabetes, hypertension], sociodemographic data) 3. Walkability index (connectivity, block area < 0.01 miles2, number of intersections/total number of roads) 4. 1991 Uniform Crime Report [UCR] (county crime rate) ***DATA COLLECTION:*** Researchers used the National Health and Nutrition Examination Survey III (NHANES III), 1988-1994. Data for the survey were gathered through personal interviews in respondents' homes and through medical examinations conducted in a mobile examination center. Each rating used a five-point scale, with 1 being "poor" and 5 being "excellent." Safety was measured as the 1991 county crime rate from the Uniform Crime Report (UCR), except in New York City, for which crime rates are reported as adjusted. A composite measure of walkability was calculated based on three county-level indicators: the negative of average block size, which should be positively related to connectivity; the percent of all blocks having areas of less than 0.01 square miles; and the number of 3-, 4-, and 5-way intersections divided by the total number of road miles. All three measures were highly correlated (Pearson's r ranged from 0.80 to 0.88; coefficient alpha=0.94). Higher scores indicated a more walkable environment. Duration of residence in the same location was assessed to understand exposure to local environment. ***LIMITATIONS:*** Results may only generalize to large urban areas; sample sizes were smaller for questions based on examination data than for questions based on interview data	Adults, Urban, Mean age= 46.8 (±20.03), 32% Non-Hispanic White, 28% Non-Hispanic Black, 33% Mexican American Income/poverty level: mean=2.41, SD=1.81 (5-point scale, ratio of income to poverty level, higher score=higher income) (evaluation sample) Respondents in the interview sample, tended to be somewhat older, less healthy, and more often non-Hispanic White. ***ELIGIBILITY:*** Eligible participants for the NHANES III were individuals 18 years and older, who were not institutionalized, and were civilians of the United States. Participants were eligible if they lived in areas with populations of 500,000 or more. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from Cornell University's Department of Campus Life and the Department of Planning, Public Policy and Management at the University of Oregon. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Previous research (health, street connectivity, block size, and urban sprawl) assisted the present study in finding basis for their own examination. ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. Individuals who live in counties that are more walkable and have lower crime rates tended to walk more and to have lower body mass indices than people in less walkable and more crime-prone areas, even after controlling for a variety of individual variables related to health (walkability; coefficient= -0.054, standard error=0.028, p<0.05, crime; coefficient= -2.00, standard error=4.20, not significant). ***PHYSICAL ACTIVITY:*** 2. Individuals who live in counties that are more walkable and have lower crime rates tended to walk more than people in less walkable and more crime-prone areas (coefficient=0.053, standard error=0.020, p<0.01 for walkability, crime not significant). ***OTHER:*** 3. Among lifelong residents of an area, lesser walkability and more crime were also associated with respondents reporting weight related chronic illness (diabetes and hypertension; walkability coefficient= -0.001, standard error=0.011and crime coefficient= -0.978, se=1.70) and lower ratings of their own health (self-rated; walkability coefficient= 0.006, standard error= 0.006 and crime coefficient=0.692, se=0.80, physician health; walkability coefficient=0.031,se=0.025, and crime coefficient=-0.910, se=2.80, no significant association).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Heinrich, Lee (2008); Heinrich, Lee (2007) Midwest United States	Neighborhood street networks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to places to be physically active 2. Neighborhood incivilities *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 452 residents in 12 public housing developments ***PRIMARY OUTCOME:*** Overweight/obesity and physical activity ***MEASURES:*** 1. Pathways to Health (PATH) study data. This study collected data using questions from the National Health Interview Survey (physical activity [frequency, intensity], age, gender, education level, and ethnicity). These questions have demonstrated a significant test-retest correlation in ethnic minority samples (r=0.33, p<0.05). Questions regarding physical activity have shown test-retest reliability ranging from 60% to 84% and validity correlations of r=0.5 and r=0.53 with accelerometers. PATH data was also collected through interviews at health fairs (verification of survey data, height, weight). 2. Understanding Neighborhood Determinants of Overweight and Obesity (UNDO-KC) in Kansas City study data. This study collected data using the Physical Activity Resource Assessment (PARA) instrument (type of physical activity resource, number of features used for physical activity, number of visitor amenities, quality of each feature or amenity present, number of incivilities, cost of use), area maps (street connectivity), and windshield surveys (verification of street connectivity). The PARA has shown good inter-rater reliability (ks>0.77). ***DATA COLLECTION:*** Cross-sectional data was compiled from 2 studies. Data were linked by geographic area. The PATH study held health fairs at 12 public housing developments in a large metropolitan area for all adult residents between October 2001 and May 2003. Each health fair participant completed a questionnaire. Trained PATH team members interviewed participants to verify questionnaire data and completeness and conduct height and weight measurements. Body mass index (BMI) was calculated. The UNDO-KC study measured characteristics of neighborhoods surrounding PATH housing development locations using the PARA instrument between February 2003 and May 2004. Neighborhoods were designated as an 800 m radius circle area around the center of each development. Staff members counted the number of three-street intersections in each neighborhood. ***LIMITATIONS:*** Self-selection and low participation rates; individual variation was not considered; individual and environmental data were not collected during the same time-frame; cross-sectional design restricts causal and temporal outcomes	Adults 18-93 years old 100% Lower income Housing developments served 2523 residents. All participants met the 2004 US Department of Health and Human Service's poverty guidelines [i.e., annual household income of ≤$18,850 per year for a family of four].) 79.6% African-American,10.0% Caucasian, 3.3% Hispanic, 0.2%, Asian, 6.9% Other One housing development had only 38.2% African-American (sample) ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from the University of Hawaii at Manoa, the University of Houston, Kansas City University, Castleton State College, American River College, University of Missouri-Kansas City, and the University of Minnesota. ***THEORY/ FRAMEWORK:*** Ecological model ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** National Institute of Diabetes and Digestive and Kidney Diseases ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. At the aggregated neighborhood level (n=12), 71% of the variance in obesity prevalence was accounted for by accessibility (β=-1.02, p=0.05), average feature quality (β=1.05, p=0.09), average number of amenities per resource (β=-1.19, p=0.03), and average incivilities per resource (β=0.70, p=0.04), (F(4,11) 4.32, p<0.05). 2. Male gender and increased quality of features (F(11,407)37.19 and 12.66, p<0.001) predicted lower body mass index among residents. 3. A statistically significant relationship was found between both the number of amenities per resource and obesity prevalence (r=-0.61, p=0.04) and amenity quality and obesity prevalence (r=-0.60, p=0.04). 4. As resource accessibility increased obesity prevalence decreased (r=-0.51, p=0.09). 5. Neighborhoods with greater connectivity had residents with lower average BMI (r=-0.58, p=0.05). ***PHYSICAL ACTIVITY:*** 6. Greater neighborhood street connectivity (β=0.672, p=0.001) and fewer average incivilities per neighborhood (β=-0.54, p=0.005) were associated with more days walked per week [F=21.8 (2,11); p<0.001; r^2=0.83]. 7. Higher street connectivity (β=0.902, p=0.001) and fewer physical resources were correlated with meeting moderate physical activity guidelines [F=39.18 (2,11); p<0.001; r^2=0.90) 8. A greater percent of accessible physical activity resources (β=0.584, p=0.046) was related to the number of days vigorous physical activity was performed during the past week [F=5.17 (2,11); p<0.05; r^2=0.34] 9. Females walked half as many days per week as males did (OR=0.623, 95%CI: 0.428-0.905, p=0.013), while greater street connectivity resulted in 1-2 more days walked per week (OR=1.553, 95%CI: 1.105-2.183, p-0.011). 10. Females were up to one-third less likely to meet moderated physical activity guidelines than were males (OR=0.602, 95%CI: 0.37-0.978, p=0.41), while having greater street connectivity was linked to a 1.2 to 3.3 greater chance of meeting moderate physical activity guidelines (OR=1.987, 95%CI: 1.21-3.263, p=0.007).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
King, Toobert (2006) California, Oregon, Georgia, Rhode Island, Tennessee	Street connectivity ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Land-use mix and distance to locations 2. Perceptions of neighborhood safety from crime 3. Perceptions of neighborhood traffic safety *Complex:* 1. Perceptions of social support	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 639 individuals from 5 Behavior Change Consortium (BCC) sites; California (n=94 men and women); Oregon (n=122 post-menopausal women with type 2 diabetes); Georgia (n=255 men and women, African-American); Rhode Island (n=109 participants); Tennessee (n=64 obese, sedentary, lower-income, minority participants). ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Neighborhood Environment Walkability Scale [NEWS] (perceived environment; residential density, land use mix, access to restaurants and retail stores, street connectivity, walking and cycling facilities, aesthetics, traffic safety, and safety from crime) 2. Community Health Activities Model Program for Seniors (CHAMPS) questionnaire (frequency, intensity, duration of physical activity over past month, meeting national recommendations, walking for errands and leisure, demographic characteristics) ***DATA COLLECTION:*** Data from 5 BCC sites used for the current investigation contributed cross-sectional data on physical activity (3 sites) and the perceived neighborhood environments (all 5 sites). Each site conducted a randomized, controlled trial evaluating one or more interventions aimed at changing single or multiple health behaviors. The NEWS was collected at 6 months post-baseline for Stanford, 12 months post-baseline for Atlanta, and 24-36 months post-baseline for Memphis, Rhode Island, and Oregon (ICC≥0.75). The NEWS has been shown to significantly discriminate among neighborhoods varying in objectively defined levels of walkability. All subscales were calculated as mean across items. The CHAMPS questionnaire is concurrent with the NEW and has been shown to discriminate among groups varying in physical activity levels (ICC 0.62-0.76). ***LIMITATIONS:*** Time point across studies for data collection could not be standardized; the number of variables tested was large; data for questionnaires was self-reported	Adults, Elderly, African-American, Lower-income (target sample) 55 years and older (Stanford); 18-72 years old (Atlanta); 65 years and older (Rhode Island) 10.6% minorities (California); 3.3% minorities (Oregon); 97.7% minority (Georgia); 1.9% minority (Rhode Island); 100% minority (Tennessee) (evaluation sample) ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from Stanford University, Oregon Research Institute, Northeastern University, San Diego University, and the Universities of Michigan, Tennessee, and Rhode Island. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** The National Institutes of Health Behavior Change Consortium (BCC) Initiative, funded health behavior intervention studies between 1999 and 2002, provided data for this study. ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The current investigation was funded by the Robert Wood Johnson Foundation Active Living Research Program grant. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Having many alternative routes when going from place to place was positively associated with minutes per week of walking for errands at the Oregon site (parameter estimate=0.35(121), p=0.02, total r^2=6.6). 2. Stores within easy walking distance of home were positively associated with minutes per week of walking for errands at the Stanford site (parameter estimate=0.34(93), p=0.048, total r^2=15.6) and minutes per week of leisurely walking at the Atlanta site (parameter estimate=0.25(251), p=0.03, total r^2=6.3). 3. Living in a neighborhood of mostly detached, single-family homes was positively associated with minutes per week of moderate-and/or-vigorous intensity physical activity at the Oregon site (parameter estimate=139.0(121), p=0.02, total r^2=7.7) and negatively associated with minutes per week of leisurely walking at the Rhode Island site (parameter estimate= -1.1(94), p=0.05, total r^2=11.2). 4. Seeing stray or loose dogs in one's neighborhood was negatively associated with minutes per week of moderate-intensity or more vigorous physical activity in the Atlanta sample (parameter estimate=-63.2(218), p=0.006, total r^2=6.7) and was negatively associated with hours per week walking for errands at the Memphis site (parameter estimate = -0.27(73), p=0.04, total r^2=26.0). Seeing stray or loose dogs in one's neighborhood was negatively associated with minutes per week of leisurely walking at the Memphis (parameter estimate=-0.45(73), p=0.03, total r^2=13.9) and Atlanta sites (parameter estimate=-0.30(251), p=0.017, total r^2=6.3). 5. In Oregon, the interaction term involving the item that states "the crosswalks in my neighborhood help walkers feel safe crossing busy streets" reached significance [F for interaction term=5.2(1,1170, p=0.02)]. Participants who strongly agreed with this item showed more minutes per week of 24-month moderate-intensity or more vigorous physical activity (by approximately 100 minutes/week) relative to intervention participants endorsing lower levels of this item. 6. In Atlanta, the interaction involving a variable of perceived neighborhood safety-the presence of crosswalks in the neighborhood that helped walkers feel safe crossing busy streets-reached statistical significance (F for interaction term=3.1(2,197), p=0.048). Participants randomized to the physical activity intervention involving tailored messages plus telephone follow-up who strongly agreed that "the crosswalks in my neighborhood help walkers feel safe crossing busy streets" showed more minutes per week of 12-month moderate-intensity or more vigorous physical activity (by more than 100 minutes/week) relative to intervention participants reporting lower values on this item. *(continued next page)*

(Continued from previous study)						
						7. In Stanford, participants who strongly agreed with "most drivers exceed the posted speed limits while driving in the neighborhood" showed fewer minutes per week of 6-month moderate-intensity or more vigorous physical activity (by approximately 90 minutes or more per week) relative to intervention participants reporting speeding drivers to be less of an issue this interaction effect reached significance (F for interaction term= 3.8, [1,89], p=0.05). 8. In Oregon, participants who strongly agreed that their neighborhood was generally safe showed more minutes per week of 24-month moderate-intensity or more vigorous physical activity (by approximately 150 minutes or more per week) relative to intervention participants reporting their neighborhoods as being less safe. 9. In Oregon, the neighborhood traffic and crime-related safety subscale reached statistical significance (F for interaction term= 5.9[1,117], p=0.016). Participants who strongly agreed that "my neighborhood is safe enough that I would let a 10-year old boy walk around my block alone in the daytime" showed more minutes per week of 24-month moderate-intensity or more vigorous physical activity (by approximately 150 minutes per week) relative to intervention participants reporting lower levels of this item. ***SOCIAL SUPPORT:*** 10. Seeing or speaking with others when walking in one's neighborhood was positively associated with minutes per week of moderate-and/or-vigorous intensity physical activity at the Stanford (parameter estimate=70.4(93), p=0.009, r^2=13.3) and Atlanta sites (parameter estimate=59.3(218), p=0.029, total r^2=6.7). While seeing or speaking with others when walking in the neighborhood was positively associated with minutes per week of walking for errands at the Stanford (parameter estimate=0.46(93), p=0.02, total r^2=15.6) and Memphis sites (parameter estimate=0.25(73), p=0.05, total r^2=26.0).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Kerr, Frank (2007) Georgia	Intersection density and street connectivity ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to recreation spaces 2. Density and land-use mix *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 3161 youth from the Strategies for Metropolitan Atlanta's Regional Transportation and Air Quality (SMARTRAQ) household travel survey ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Strategies for Metropolitan Atlanta's Regional Transportation and Air Quality (SMARTRAQ) household travel survey (destinations visited, travel mode and purpose, time of day). This included a structured diary which captured travel data over a 2-day period. 2. Tax assessor's parcel data (land-use density and mixing of uses, street network files) 3. Census data (residential density, mixed-land use, street connectivity) 4. ArcView (network buffer) 5. Computer aided telephone interview [CATI] (sociodemographic [age, gender, ethnicity, income, house-hold size, and car ownership] and attitudinal information) ***DATA COLLECTION:*** Self-reported travel data were captured in a structured diary for youth between 5 and 18 years of age. A legal guardian filled out diaries for those less than 14 years old. A head of household provided socio-demographic information through use of a CATI protocol. ArcView enabled a one kilometer buffer to be developed for each respondent's place of residence based on street network distances. A combination of county-level Tax Assessors parcel data and census data was used to measure residential density and mixing of land uses, and street network files were used to measure street connectivity based on the number of intersections per square kilometer. Within the land use codes, parks, open spaces, and commercial use were also available. Intersection density and residential density scores were categorized in tertiles. Only the relationship between the highest and lowest tertiles was represented in the results. ***LIMITATIONS:*** Data was self-reported; the study design was cross-sectional, which restricts causal and temporal inferences	5-18 year olds ~33% non-White, 50% male, 50% with annual household income >$60,000 ***ELIGIBILITY:*** Participants were required to give informed consent. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from San Diego State University, the University of British Columbia, and Lawrence Frank & Company. SMARTRAQ data was collected by the Georgia Department of Transportation and the Georgia Regional Transportation Authority. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Robert Wood Johnson Foundation Active Living Research program. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Residential density, intersection density, and mixed land use were all significantly related to walking in both males and females. The relationship between urban form and walking appeared to be stronger in females for the variables intersection density (OR=1.8, 95%CI: 1.2-2.7, p<0.01), land use mix (OR=2.2, 95%CI: 1.5-3.1, p<0.001), and commercial land use (or=2.1, 95%CI: 1.5-3.1, p<0.001) than males (intersection density: OR=1.5, 95%CI: 1.1, p<0.05; land use mix: OR=1.5, 95%CI: 1.1-2.1, p<0.01; commercial land use: OR=1.6, 95%CI: 1.1-2.2, p<0.01). 2. Access to recreation space (OR=2.3, 95%CI: 1.7-3.2, p<0.001) and high residential density (OR=2.5, 95%CI: 1.6-3.8, p<0.001) appeared to have a stronger association among males with than females (access to recreation: OR=1.7, 95%CI: 1.2-2.4, p<0.001; residential density: OR=2.3, 95%CI: 1.5-3.5, p<0.001). 3. All five urban form variables were strongly and significantly related to walking in white participants in the expected direction at the p<0.001 level (intersection density (OR=1.9, 95% CI: 1.4-2.8); residential land use (OR=3.2, 95% CI: 2.2-4.5); mixed land use (OR=1.8, 95% CI: 1.4-2.5); at least 1 commercial land use (OR=2.0, 95% CI: 1.5-2.7); at least 1 recreation/open space land use (OR=2.7, 95% CI: 2.0-3.6), all p<0.001). 4. Only land use mix (OR=1.7; 95% CI: 1.1-2.7; p<0.05) and access to recreation spaces (OR=1.4; 95% CI: 1.0-2.0, p<0.05) were significantly related to walking in non-whites. 5. Participants were significantly more likely to walk if they had fewer than 3 cars; 25% as opposed to 8.9% walked at least once over the 2 days. 6. In households with 1 car, only land use mix (OR=2, 95%CI: 1.1-3.5, p<0.05) and commercial land use (OR=2, 95%CI: 1.2-3.6, p<0.05) were significantly related to walking. 7. Participants with more than 2 cars in the household were almost 3 times as likely to walk if they had access to recreation space (95%CI: 1.6-4.2, p<0.001) or lived in an area of high residential density (95%CI: 1.6-5.1, p<0.001). (See text for more results related to socioeconomic and demographic variables.)

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Norman, Nutter (2006) California	Street connectivity and intersection density **OTHER INTERVENTION COMPONENTS:** *Multi-component* 1. Access to neighborhood parks and size of parks 2. Land-use, residential density, and retail floor area ratio *Complex* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 799 adolescents (11-15 years) recruited into a health promotion intervention trial from 45 primary care providers at 6 clinic sites in San Diego County **PRIMARY OUTCOME:** Overweight/obesity and physical activity **MEASURES:** 1. Height and weight (body mass index [BMI]) 2. Accelerometers (physical activity) 3. Geographic information systems (GIS) (geocode participant address, street network including land-use mix, retail floor area ratio, intersection density, and buffers) 4. Walkability index (intersection and residential density, retail floor area ratio, land-use mix) 5. San Diego Association of Governments database files- SANDAG (land cover data, location of parks and schools) 6. 2000 Census (density/number of residential units) **DATA COLLECTION:** Over a 13-month period researchers recruited and collected information on households. Physical activity was measured for 7 days in 1-minute intervals. Age-specific cut-points were used to estimate intensity levels of activity. Intensity scores were summed and average across the valid days. Each measure was taken twice and the averages of the 2 readings were used. GIS variables were calculated for the 1-mile network buffer around each participant's residence using SANDAG and other data (SanGIS and DataQuick). The walkability index was derived by taking the sum of the z-scores for all 4 community design variables. Adolescents received $10 for completing all measurements and were entered in to a lottery drawing for one of 10 cash prizes ranging between $10 and $50. **LIMITATIONS:** Overall physical activity measures may have obscured associations between specific subsets of variables; accelerometers may underestimate common adolescent activities; measures of access to facilities assessed only proximity; many hypothesized built environment correlates were not measured in the present study; generalizability is limited to communities similar to those found in San Diego County (predominantly suburban with low walkability and few areas with high land use mix); for many of the participants geocoding for their address was not possible	Suburban 11-18 year olds 3.6% Asian/Pacific Islander, 6.4% African American, 0.8% Native American, 13.1% Hispanic, 56.8% White, 19.3% Other (evaluation sample) **ELIGIBILITY:** Adolescents were ineligible if they were unable to read English at a minimum of 6th-grade reading level or had any disability that would make exercise or nutrition counseling contraindicated. Verbal consent and child assent was obtained from each participant and parent. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers were from San Diego University and the University of California-San Diego. **THEORY/ FRAMEWORK:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not reported **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** The National Cancer Institute; the National Heart, Lung, and Blood Institute; and The Active Living Research program of The Robert Wood Johnson Foundation **STRATEGIES:** Not applicable	**OVERWEIGHT/OBESITY:** 1. No statistically significant correlations were found between environmental variables and BMI percentile for girls or boys. 2. BMI percentile was marginally correlated with number of recreation facilities for boys ($r=0.08$, $p<0.11$). **PHYSICAL ACTIVITY:** 3. For girls, significant correlations were found for total minutes/day of moderate-to-vigorous physical activity with number of recreation facilities ($r=0.11$, $p<0.05$), number of parks ($r=0.14$, $p<0.01$), and intersection density ($r=-0.14$, $p<0.01$). 4. The number of recreation facilities (adjusted $r^2=0.25$, $\beta=0.11$, $p=0.016$) and intersection density ($r^2=0.25$, $\beta=-0.127$, $p=0.006$) remained significant after multiple linear regression, but the number of parks became non-significant. 5. For boys, total minutes/day of physical activity was correlated only with retail floor area ratio ($r=0.12$, $p<0.05$). Retail floor area ratio remained a significant contributor after multiple linear regression ($r^2=0.23$, $\beta=0.135$, $p=0.007$).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Roemmich, Epstein (2007) New York	Street connectivity ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to parks and recreation areas 2. Neighborhood density and diversity, design *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 88 children ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Accelerometers (objective daily physical activity) 3. Geographic Information System [GIS] (geo-coded participant residence and measured neighborhood environmental characteristics [housing density, street connectivity, street width, percentage of park area, park area, etc.]) 4. Parent Questionnaire (family socio-economic status, child's ethnic composition) 5. Habit Book (start/end time of wear for accelerometer, duration of sedentary behaviors) ***DATA COLLECTION:*** This study was based on a cross-sectional analysis of the screening data from a longitudinal study. Four cohorts were recruited over a 2-year period. Two cohorts were completed during the spring season and two during the fall season. Children were instructed to wear the accelerometer for at least 4 of 6 days, including 4 hr on weekdays before or after school hours and at least 6 hours on weekends. Children recorded the time, each occasion they put the monitor on, and when it was taken off for the day. Each child recorded in the habit book for 6 days, dividing the day into half hour increments with the help of a parent. Researchers compared activity level reported in the book with accelerometry data to determine an accurate activity count. The neighborhood environment data was measured in 2004. The activity data were collected over a two year period between 2003 and 2005. ***LIMITATIONS:*** The lack of concurrent measures of where the activity occurred is problematic; data was self-reported; accelerometers cannot measure all types of activity	8-12 year olds (10.5±1,4); 9% Black; 2% Other; 89% White (evaluation sample) ***ELIGIBILITY:*** Eligible participants had a BMI < 90th percentile, had no physical conditions limiting mobility, were willing to attend an orientation session, lived in areas that could be geo-coded, and watched 15 or more hours of TV per week including VCR use and video game playing. Parental consent was obtained from the parents of all participants. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from the University at Buffalo ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** University at Buffalo Interdisciplinary Research and Creative Activities Fund ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. For boys, neighborhood street connectivity (coefficient=0.30), percentage park area (coefficient=0.34), and percentage park and recreation area (coefficient=0.32) were positively correlated to total physical activity (p≤0.05 for all). 2. For boys, street connectivity (0.34) was positively correlated with moderate-to-vigorous physical activity (MVPA) (p≤ 0.05). 3. When combining the boys and girls into a single group, total physical activity was correlated to street connectivity (r=0.25, p≤ 0.05) and percentage park area (r=0.22, p≤0.04). 4. Street connectivity was correlated with MVPA (r=0.26, p≤0.05). 5. Percentage park area + recreation were inversely correlated with television watching in boys but not girls (p≤0.05). 6. Home environment, rather than neighborhood environment, variables were correlated with sedentary behaviors in that the number of televisions in the home was related to television watching time (r=0.31, p≤0.01).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Samimi, Mohammadian (2008) United States	Road and intersection density and block size ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Population density, land-use diversity, and urbanization *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** >300,000 individuals ***PRIMARY OUTCOME:*** Overweight/obesity ***MEASURES:*** 1. Behavioral Risk Factor Surveillance System [BRFSS] data (body mass index [weight and height], demographic and socio-economic data, general health) 2. 2001 National Household Travel Survey [NHTS] from the US Highway Administration (land-use, transportation, built environment) 3. 2000 Census Transportation Planning Package [CTPP 2000] data (land-use, transportation, built environment) 4. Census 2000 Topologically Integrated Geographic Encoding and Referencing [TIGER] database/Line Geographic Information Systems [GIS] database (county level land-use, transportation, built environment) 5. Transit-friendly measure (proportion of transit-users to the population) 6. Neighborhood Pedestrian Friendliness measure (auto use, intersection density, road density, block size) ***DATA COLLECTION:*** Researchers used multiple data sources. This study used BRFSS data, prepared by the National Center for Chronic Disease Prevention and Health Promotion, from 2005 from over 300,000 individuals. Transportation, land-use, and built environment variables were examined at the county-level. Since the zip code for each individual was not accessible, the lowest level of geography (county of residence) available was used. A measure estimating the proportion of transit-users to the number of workers using CTPP 2000 data was used to determine if each census tract is transit-friendly. Measures for auto-use and intersection density, road density, and block size were combined to determine pedestrian friendliness of a neighborhood. ***LIMITATIONS:*** Not reported	Adults General Population ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from the University of Illinois at Chicago and the University of Chicago. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not reported ***FUNDING:*** Not reported ***STRATEGIES:*** Not reported	***OVERWEIGHT/OBESITY:*** 1. Using forward selection, positive correlations for auto-use (coefficient; 0.41, standard error; 0.03, $p<0.001$) and block size (coefficient; 0.28, standard error; 0.03, $p<0.001$) are seen for obesity. 2. Using forward selection, negative coefficients for road density (CE; -0.45 E-02, SE; 0.64E-03), intersection density (CE; -0.46E-03, SE; 0.56E-04), and population density (CE; -0.61E-05, SE; 0.75E-06) were found, suggesting that people living in urbanized areas are less likely to be obese ($p<0.001$). 3. Using backward selection methods, positive correlations for auto-use (marginal effects=0.120; elasticity=0.425; and $p<0.001$) and block-size (marginal effects; 0.074; elasticity=0.055; and $p<0.001$) were seen for obesity. 4. A one percent decrease in the use of automobiles can decrease obesity by 0.4%. ***GENERAL HEALTH:*** 5. Using backward selection methods, positive correlations for transit-use (marginal effects; 0.092, elasticity; 0.002, $p<0.001$) and block size (marginal effects; 0.026, elasticity; 0.006, $p=0.001$) were seen for general health.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Zenk, Wilbur (2009) Illinois	Neighborhood connectivity and aesthetics ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood safety 2. Access to recreational facilities and open spaces *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 252 African American females that were recruited within 3 miles of the health centers (156 exposed, 125 unexposed) ***PRIMARY OUTCOME:*** Adherence to walking plan ***MEASURES:*** 1. Heart rate monitors and Walking Log Books (physical activity/ walking patterns) 2. Geographic Information Systems (ArcGIS) (geo-coded address, created 1 mile radius around home to determine neighborhood, typology of built environment including land use patterns, transportation systems, design) 3. 2004 US Census Bureau TIGER/Line street file (street intersection) 4. Neighborhood Walkability Index (land-use mix, street connectivity, residential and public transit stop density) 5. 2000 US Census Summary File 1 (block level data, housing unit density, demographic data, vacant housing, aesthetics including unpleasant neighborhood, physical deterioration, industrial land use) 6. 2004 Chicago Transit Authority, Metra and Pace, Regional Transportation Authority data (public transit stop density) 7. 2001 Land Use Inventory (entropy Index that is a range of land-use mix; residential, retail, professional/office, institutional, cultural/ entertainment and the availability of outdoor walking space) 8. 2004 data set for Chicago, 2006 Web sites and telephone calls to other municipalities (government run fitness centers and recreation centers) 9. 2003 National Research Bureau data from NIPC/CMAP (presence of an indoor shopping mall within 5 miles of residence) 10. 2002-2005 Chicago Police Department data and Annual Illinois Uniform Crime Report Database (exact counts of reported crime incident, crime count assigned to individual's area during the 24 week adoption phase) ***DATA COLLECTION:*** This was a secondary analysis for the Women's Walking Program, a 12-month intervention trial that included a 24-week adoption phase and a 24-week maintenance phase. The adoption phase was completed between 2002 and 2005. Adherence to walking frequency was calculated as the percentage of the prescribed minimum 68 walks completed during the adoption phase. The entropy index, rated higher scores as having an evenly distributed land uses. All facility inquiries were made in the summer of 2006. Higher scores on the 4-item walkability index indicated greater walkability. ***LIMITATIONS:*** There was temporal mismatch between data collection years; much of the data collected was done at the municipal level, while physical activity was done at individual level, and Census data at block-level; small sample size; participants were from suburban and urban areas and results may not be easily generalized	40-65 year olds African-American Females; Urban and Suburban; 100% Minority (evaluation sample) ***ELIGIBILITY:*** Eligible participants for the walking prescription program had to be an Illinois resident, physically healthy and able to move, in the preparation or contemplation stage of motivational readiness. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from the University of Illinois, Chicago ***THEORY/ FRAMEWORK:*** Ecological framework ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The Robert Wood Johnson Foundation, Active Living Research and the National Institute for Nursing Research ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Presence of a public recreation center with an indoor track or treadmill in the neighborhood or a shopping mall within 5 miles was associated with a 44% increase in adherence as compared without having the facility (p=0.06). Presence of both indoor facility types (recreation centers and shopping malls) was associated with a 66% increase in adherence (p=0.02). 2. Neighborhood walkability, aesthetics, recreational open space, and safety were not statistically significantly associated with adherence. There was no evidence that the environment moderated the effect of intervention group on adherence (results not shown). 3. Among suburban neighborhood residents, having one or both indoor facilities in relatively close proximity were associated with a 140% and 252% increase in walking adherence, respectively.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Suminski, Poston (2005) Midwestern United States	Aesthetic quality of the environment and integrity of sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood safety from crime 2. Access to shops 3. Perceptions of traffic safety 4. Accessible destinations in the neighborhood *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 474 participants from a large, Midwestern metropolitan area ***PRIMARY OUTCOME:*** Walking behavior (transportation, exercise, and dog walking) ***MEASURES:*** 1. Questionnaire (frequency and duration of walking behavior, forms of physical activity, physical environment [construction/integrity of sidewalks and streets, neighborhood traffic volume and speed, lighting, crime, aesthetics, availability of shops, parks, work, and schools], demographic data, dog ownership) 2. County Auditor Records (list of participants and locations) ***DATA COLLECTION:*** Door-to-door interviews were conducted by trained interviewers in 2003 over a 13-day period in July. An analysis was conducted in 2004. Men and women were analyzed separately. For the interview, intra-class correlations for the physical environment questionnaire ranged from 0.85 to 0.94, and the Cronbach's alpha coefficient of internal consistency was 0.83. The scores from each of the items were summed and divided by the number of items per feature to yield an average score. The average feature scores were transformed into categorical variables with three levels - the lowest, middle, and highest tertiles. The questionnaire used was reliable (correlation coefficient r=0.58) and valid (relationship with physical activity log; correlation coefficient r=0.71) for assessing walking behavior and other forms of physical activity. ***LIMITATIONS:*** Questionnaire data was self-reported; environment data was based on perception rather than objective measures; cross-sectional study design does not allow for causal inferences to be made	Adults 89.7% White, 1.7% Hispanic, 1.5% African American, and 1.3% Asian American (evaluation sample) ***ELIGIBILITY:*** Eligible participants resided in the interview neighborhood, were 18 years of age and older, and were not physically limited because of a health condition. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from Ohio State University, University of Missouri-Kansas City, and the Mid-America Heart Institute ***THEORY/ FRAMEWORK:*** Social ecologic models ***EVIDENCE-BASED:*** Findings from cross-sectional and longitudinal investigations suggest that features of the physical environment are related to walking (multiple references). ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Funding for this study was provided by the Centers for Disease Control and Prevention. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Women were 5.7 times more likely to walk for transportation if they indicated having an average number of available places in and around their neighborhood to which they could walk (95%CI 1.63-19.73; p<0.01). 2. Women were 4.5 times more likely to walk for exercise in their neighborhood if neighborhood safety was average compared to below average (95%CI 1.01-20.72; p<0.05). 3. Women were more likely (threefold) to walk their dog if neighborhood safety was average versus below average (95% CI 1.01-11.08; p<0.05). 4. For men, environmental features were not associated with walking the dog or for exercise. However, inverse relationships between walking for transportation and environmental features were noted in men. 5. Men were less likely to walk for transportation in the neighborhood if the functional (OR=0.22, 95%CI=0.06-0.89) or aesthetic (OR=0.17, 95%CI=0.03-0.89) features of the neighborhood were average versus below average (p<0.05). 6. Women with an average number of neighborhood destinations were more likely to walk for transportation in the neighborhood (OR=5.7, 95%CI=1.63-19.73) than women with a below average number of neighborhood destinations (p<0.01).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Kerr, Rosenberg (2006) Washington	Street connectivity and perceptions of neighborhood aesthetics ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood safety (crime) 2. Perceptions of neighborhood traffic 3. Perceived access to recreational facilities 4. Perceived access to local shops and facilities *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 259 parents in neighborhoods of King County, WA ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Survey (physical activity [number of days per week their child walked or biked, rode in a car or school bus, or took public transportation to and from school], self-reported sociodemographic variables and perception of the local environment) 2. The Neighborhood Environment Walkability Scale [NEWS] (participant address [geo-coded], 1 km buffer around residence, residential density, proximity and ease of access to nonresidential land uses [e.g., restaurants], street connectivity, walking or cycling facilities, aesthetics, pedestrian traffic safety, and crime safety) ***DATA COLLECTION:*** Data for this study used information from the Neighborhood Quality of Life Study (NQLS), which combines Geographic Information Systems (GIS) data and Census data. Parents answered supplemental questions with regard to the youngest or only child in the household between 4-16 year of age. Data was collected throughout an entire year, to allow for variations in activity because of weather. The NEWS is a GIS based index combining net residential density, retail floor area ratio, intersection density, and land use mix. ***LIMITATIONS:*** The small sample size and cross-sectional data limit the ability to infer causal relationships.	Parents; 20-65 years old, 83.3% White, 16.7% Minority Children; 45.9% >12 years old (evaluation sample) ***ELIGIBILITY:*** Eligible participants had children 4 to 18 years old, provided consent, had a working telephone, and lived within the neighborhood study areas. Parents of children with disabilities were not included in the study. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from San Diego State University, Cincinnati Children's Hospital and Health Center and the University of British Columbia. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** National Heart Lung, Blood, and Blood Institute of the National Institutes of Health ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Parent concerns and neighborhood aesthetics were independently associated with active commuting (parent concerns; OR=4.9, 95% CI=2.54-9.40, p<0.05, aesthetics; OR=2.4, 95% CI=1.23-4.56, p<0.05). 2. In high-income neighborhoods, more children actively commuted in high-walkable (34%) than low-walkable neighborhoods (23%) (odds ratio= 2.1, 95% CI= 1.12-3.97, p<0.05), but no differences were noted in low-income neighborhoods. 3. Parent concerns, neighborhoods aesthetics, and stores within a 20-minute walk were independently associated with active commuting (parent aesthetics; OR= 5.2, 95%CI =2.71-9.96, p<0.05, aesthetics; OR=2.5, 95% CI=1.33-4.80, p<0.05, store distance; OR= 3.2, 95%CI= 1.68-6.01, p<0.05). 4. Perceived access to local stores and biking or walking facilities accounted for some of the effect of walkability on active commuting (OR=2.0, 95% CI=1.03-4.00, p<0.05). 5. In high-income neighborhoods, more children actively commute in high-walkable (34%) than in low-walkable neighborhoods (23%), but no differences are noted in low-income neighborhoods. 6. Parent concerns about their child walking or biking to school were significantly inversely associated with residential density and neighborhood-level walkability (OR= 2.0, 95%CI= 1.08-3.84, p<0.05 and OR=1.7, 95%CI=1.00-2.85, p<0.05, respectively). 7. Parents of children aged 12-18 had significantly fewer concerns about active commuting (p=0.004) than parents of children 5-11 years old, but child gender and parent education or gender were not significantly related to parent concerns. 8. A parental concerns scale was most strongly associated with child active commuting (OR=5.2, 95% CI= 2.71-9.96, p<0.05).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Tilt, Unfried (2007) Washington	Street connectivity and aesthetics ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access and distance to multiple destinations (land-use mix) *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 529 residents of Washington ***PRIMARY OUTCOME:*** Overweight/obesity and physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Self-report postal survey (frequency of walking trips per month, distance to destinations within 0.5 mile/10-15 minutes/10 block to residence, individual perception of greenness and natural features in neighborhood and satisfaction with these features, importance rating of destinations on individual quality of life, anthropometric data) 3. ArcView Geographic Information Systems (GIS) Network (residential parcels within 0.4-miles of 15 types of destinations [determined through street networks] defined by property boundaries) 4. Normalized Difference Vegetation Index (NDVI) (amount of photo synthetically active light that is absorbed in each 30m x 30m survey pixel, or its greenness) 5. Geospatial data (Washington State Geospatial Data Archive) for City of Seattle (residential parcels, street networks, and the following destinations types: churches, community centers, libraries, p-patches [community garden spaces], parks, playgrounds, post offices, schools, swimming pools, and theaters) ***DATA COLLECTION:*** Addresses for the postal survey were randomly selected and stratified using the Normalized Difference Vegetation Index and accessibility. GIS analysis excluded highways and used street network rather than straight line distances. Data for banks, bars, grocery stores, and restaurants were obtained with permission from the Urban Form Laboratory at the University of Washington. Self-reported total number of destinations was referred to as subjective accessibility, and total number of natural features was reported as subjective greenness. Frequency of walking was reported using a five-point Likert scale. Satisfaction with greenness was calculated as mean satisfaction of the number of all natural feature items. Destination index score was determined by examining access to a variety of destinations in the neighborhood. ***LIMITATIONS:*** Data was self-reported, response rate from the surveys was 17.5%	General population ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from the University of Washington. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Urban Ecology Program at the University of Washington ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. In areas with high accessibility, BMI was lower in areas that had high NDVI, or more greenness (r^2=.129428, model p<.0001; t test of interaction p=.0257). Low NDVI areas were associated with overestimation of the number of destinations with walking distance (F1, 499=11.009, p=0.001). 2. Having a destination within walking distance had a significant positive relation with walking trips per month, BMI was not significantly correlated with walking trips per month (r=-.08198, p=0.0701). ***PHYSICAL ACTIVITY:*** 3. Objective accessibility was related to walking trips per month (r^2=.051, p<.0001), although objective measures of actual greenness were not. 4. There was a strong association between the importance of destination index score and walking trips per month (r^2=.341410, p<.0001; regression coefficient for importance of destinations index =0.0197742, p<0.0001).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Liu, Wilson (2007) Indiana	Presence of vegetation in the neighborhood ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to various types of food retail locations *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 7,334 subjects from 9 townships in Marion County, Indiana. 6,897 individuals were from more densely populated townships (Center, Wayne, Perry, Lawrence, Washington, and Warren). 437 individuals were from less densely populated townships (Franklin, Decatur and Pike). ***PRIMARY OUTCOME:*** Overweight/obesity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Indianapolis Mapping and Geographic Infrastructure System and Geographical Information System (ArcGIS) data (patient address, network distance along street centerlines) 3. Landsat Enhanced Thematic Mapper plus satellite imagery and Normalized Difference Vegetation Index (NDVI) (neighborhood vegetation) 4. Community design (proximity to food retail locations) 5. 2000 US Census (township density, socioeconomic status [census block data]) 6. 1997 North American Industry Classification System codes (modified) (food retail categories) 7. Marion County Hygiene Grading (food retail locations) ***DATA COLLECTION:*** Indiana University Medical Group provided researchers with access to a registrar of patients. Marion County Health Department contributed information related to food locations for the county. Patient records previously calculated by medical staff provided researchers with anthropometric data. Neighborhood vegetation was measured in July, 2000. Food retail locations were categorized as large brand-name supermarkets, smaller non-brand-name grocery stores, fast-food restaurants, and convenience stores. ***LIMITATIONS:*** Racial distribution and restricted geographic barrier limit generalizability; causality cannot be assessed using cross-sectional data	3-18 year olds, 77.2% Minority (evaluation sample) ***ELIGIBILITY:*** Single individual homes were diluted from the study. In order to be eligible, participants had to maintain residency in Marion County, have their routine check-up and anthropometric data taken on the same day, and they could not be pregnant. Eligible participants could not have congenital heart disease, chromosomal abnormalities, anomalies of the adrenal gland, multiple congenital anomalies, cystic fibrosis, or cerebral palsy. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from Indiana University-Purdue University Indianapolis, Indiana University, and the University of Cincinnati. ***THEORY/ FRAMEWORK:*** The overall framework for the research is the Health Field Model. This model postulates that health status is a function of social, environmental, economic, and genetic factors. ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. In the Higher Population Density Townships vegetation (adjusted odds 0.899 standard error 1.038; $p<0.01$) was negatively associated with risk of overweight (fully adjusted model). 2. With regard to findings for the Lower Population Density Townships, distance to the nearest supermarket (adjusted odds 1.038 standard error 0.019; $p=0.03$) was positively associated with risk of overweight.

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King, Castro (2000) United States	Presence and absence of sidewalks and neighborhood aesthetics ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood safety from crime and unattended dogs *Complex:* 1. Social factors	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 2,912 women (712 White, 646 African American, 653 American Indian-Alaskan Native, 622 Hispanic, 279 unidentified/other) ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Survey (physical activity, sociodemographic data, general health and functioning, self-consciousness, fear of injury, lack of time, energy level, safe place for exercise, type of physical activity program, presence of sidewalks, streetlights, hills, traffic, aesthetics, unattended dogs, crime, others exercising in neighborhood) 2. Behavioral Risk Factor Surveillance System (BRFSS) and National Health Interview Survey items (leisure-time, occupational, home-based physical activity over past 2-weeks) ***DATA COLLECTION:*** The data used in this investigation were collected as part of a large-scale the U.S. Women's Determinants Study (Brownson et al., 1999). Valid and reliable scales were used when possible. The survey was conducted in English only and was developed through a combination of items from the BRFSS, the National Health Interview Survey, and other surveys. Data were collected over a 1-year period from July 1996 to June 1997 to cover seasonal variations by trained interviewers. Interviews were conducted by experienced interviewers who completed 8 or more hours of training. Physical activity level was divided into three categories: sedentary; underactive; and active. Likert-type scales were used for barriers and psychosocial factors with 1 being a low (never/very unsafe) score and 5 being a high (very often/very safe) score. For comparison purposes, a group of White women 40 years of age and older was also surveyed via standard BRFSS techniques. ***LIMITATIONS:*** Data was self-reported; there is a lack of validity reported for the physical activity variables collected for the BRFSS and similar surveys; the survey was collected in English only; causal inferences cannot be made using a cross-sectional design	Female, Adults, 40 years of age and older, 26.4% White, 25.6% Black, 25.3% American Indian/ Native Alaska, 22.7% Hispanic, 60% reported annual household income < $35,000 (evaluation sample) White, adult, female (comparison sample) This study was able to obtain a representative distribution of minority and low-income women. The study was unable to obtain sufficient numbers of Asian-Pacific Island women to be in the sample because of language difficulties and cultural barriers. ***ELIGIBILITY:*** Females 40 years and older living in zip codes with 20% or more of each of the following racial categories: African-American, American Indian-Alaskan Native, and Hispanic were eligible for the study. ***EXPOSURE/ PARTICIPATION:*** Each of the four racial-ethnic subgroups (white, black, American Indian/Alaskan Native, and Hispanic) targeted constituted approximately 25% of those sampled.	***LEAD AGENCY:*** The research team was from Stanford University, Saint Louis University, the University of South California, and San Diego State University. ***THEORY/ FRAMEWORK:*** Social Cognitive Theory ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTION:*** Not applicable ***ADOPTION:*** Not reported ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The study was funded through Centers for Disease Control and Prevention, National Institutes of Health Women's Health Initiative and the National Institute on Aging. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Females reporting the presence of hills (OR=1.46, 95% CI=1.22-1.75, p<0.001) and enjoyable scenery (OR=1.42, 95% CI=1.12-1.79, p<0.01) in their neighborhoods were more likely to be physically active. 2. Females reporting the presence of unattended dogs were more likely to be physically active (OR=1.20, 95% CI=1.01-1.42, p<0.05). 3. Through regression analyses four variables were found to be significantly associated with White women and physical activity; age and lack of energy (OR=0.78, 95% CI=0.67-.92, p<0.01) were negatively associated with physical activity, while education and the presence of hills in the neighborhood (OR=1.48, 95% CI=1.04-2.10, p<0.05) were positively associated with physical activity. These results showed the same direction of effect described for the total sample (overall model: $X^2(28, N=712)=76.7$, p<0.0001). 4. Through regression analyses three of the variables achieved statistical significance in African-Americans: frequently observing others exercising in one's neighborhood (OR=2.08, 95% CI=1.45-2.98, p<0.001) and the presence of unattended dogs in one's neighborhood (OR=1.51, 95% CI=1.06-2.15, p<0.05) were positively associated with physical activity while care-giving (OR=0.84, 95% CI=0.74-0.96, p<0.05) was negatively associated with physical activity (overall model, X^2 (28, N=646)=70.2, p<0.0001). 5. Four of the variables entered into the regression model for the Hispanic subgroup achieved statistical significance: the presence of hills in one's neighborhood (OR=1.89, 95% CI=1.21-2.93, p<0.01), discouragement form others about exercise (OR=1.25, 95% CI=1.03-1.51), and education were positively associated with physical activity, while being too tired (OR=0.78, 95% CI=0.66-0.92, p<0.01) was negatively associated with physical activity (overall model, $X^2(28, N=622) = 64.8$, p<0.0001). ***OTHER:*** 6. Females reporting frequent observations of others exercising in their neighborhood were associated with more physical activity (OR=1.26, 95%1.06-1.50, p<0.01). 7. Females who were more self-conscious about their appearance were more likely to be physically active (OR=1.08, 95% CI=1.01-1.14, p<0.05). 8. Females reporting that they were too tired (OR=0.92, 95% CI=0.85-0.99, p<0.05), lacked energy (OR=0.90, 95% CI=0.84-0.97, p<0.01), and not in good health (OR=0.93, 95% CI=0.86-0.99, p<0.05) were less likely to be physically active. 9. Through regression analyses three of the variables achieved statistical significance for American Indian–Alaskan Natives: education (OR=1.21, 95% CI=1.02-1.44, p<0.05) and being self-conscious about physical appearance were positively associated with physical activity while reporting that an individual was not in good health (OR=0.83, 95%CI=0.70-0.97, p<0.05) was negatively associated with physical activity (overall model, $X^2(28, N=653)=60.6$, p<0.0003).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Sallis, Saelens (2009) Washington and Maryland	Street connectivity and intersection density ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Net residential density and mixed land use *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 2,199 participants from 32 neighborhoods in Seattle and Baltimore ***PRIMARY OUTCOME:*** Overweight/obesity and physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Walkability index (density, mixed land use, street connectivity, retail floor area ratio) 3. Accelerometer (physical activity) 4. International Physical Activity Questionnaire (physical activity, psychosocial measures, frequency and duration of walking past week) 5. US Census (neighborhood selection, walkability [net residential density, retail floor area ratio, land-use mix, intersection density]) 6. Neighborhood satisfaction items (social interaction, traffic and crime safety, school quality) 7. 12-item Short-Form (SF-12) Health Survey (quality of life, mental quality of life) 8. Depression scale (depressive symptoms [Center for Epidemiologic Studies']) ***DATA COLLECTION:*** Data for this study was collected from the neighborhood quality of life study (NQLS), conducted from 2001 to 2005. A higher retail floor ratio indicated a more pedestrian oriented design and lower ratios suggested more land area devoted to parking. A five point Likert scale was used for neighborhood social cohesion and satisfaction ranging from strongly dissatisfied (1) to strongly satisfied (5). To control for walkability-related to self-selection of neighborhoods, a scale (internal consistency alpha=0.76) of "reasons for moving" to the current home was computed by averaging ratings of importance of three items; "desire for nearby shops and services," "ease of walking," and "closeness to recreational facilities". ***LIMITATIONS:*** Data was self-reported; recruitment and participation were low; cross-sectional design does not allow for causal inferences to be made; the specific tools had limited capabilities of measuring certain variables	Adults, General population, 20-65 years (age range), 26% Minority (evaluation sample) ***ELIGIBILITY:*** Eligibility was defined as being between 20 and 65 years, not residing in a group living establishment, ability to complete written surveys in English, and absence of a medical condition that interfered with the ability to walk. Participants gave written informed consent. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from San Diego State University, University of Washington and Children's Hospital in Seattle, University of British Columbia, and the Lawrence and Frank Company. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** This study was supported by a grant from the National Heart, Lung, and Blood Institute. ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. The walkability main effect was significant (p=0.007), with the odds of being overweight or obese 35% higher for participants living in low vs. high-walkability neighborhoods (OR=1.35, 95% CI; 1.09-1.69). ***PHYSICAL ACTIVITY:*** 2. Overall, the significant walkability main effect indicated a higher average of number of minutes per week of walking for transportation in high-walkability neighborhoods 44.3 minutes per week, compared to low-walkability neighborhoods 12.8 minutes per week (walkability main effect p<0.0001). 3. Walking for transportation was significantly higher in high-walkability neighborhoods compared to low-walkability neighborhoods for both high- and low-income neighborhoods; however, the differential was larger in high-income neighborhoods at 5.1 minutes compared to low-income neighborhoods at 2.3 minutes (walkability-by-income interaction p=0.027). 4. The leisure walking main effect was significant (p=0.012), with people living in high-walkability neighborhoods averaging 18.5 minutes per week of leisure walking compared to 14.2 minutes per week in low-walkability neighborhoods. 5. On average, participants in high-walkability neighborhoods had 5.8 more minutes per day of objectively measured moderate to vigorous physical activity than those in low-walkability (main effect p=0.0002). 6. When the "reasons for moving here" score was added to control for preferences related to "activity-friendly" environments, the walkability main effect was still significant (p<0.0001). For minutes of leisure walking, the walkability main effect was no longer significant (p=0.36).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Greenwald, Boarnet (2001) Oregon	Street griddedness and sidewalk continuity ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Land-use mix and population density *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 3 counties surrounding Portland, Oregon ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Geographic Information Systems (GIS) (percentage ¼ mile buffer zone covered by a grid street pattern) 2. 1994 Portland Travel Diary (sociodemographic data, trip speeds, distances, nature or related activities) 3. 1990 US Census (block-level data; income, educational attainment, racial composition, type of home [rural, farm, urban]) 4. Pedestrian Environment Factor ([PEF] ease of street crossing, sidewalk continuity, street connectivity, topography) ***DATA COLLECTION:*** Researchers used data from the 2-day Portland Travel Diary for 1994. GIS software was used to create a buffer within one quarter mile of the home location of each individual respondent. The land area of all street sections within that buffer that were of a quadrilateral nature was summed. That sum was then divided by the area of the quarter mile radius circle to get a proportion of the buffer area covered by a grid street pattern. All the attributes for PEF were scored on a scale ranging from a maximum of 12 to a minimum of four. ***LIMITATIONS:*** Data was self-reported; the sample was limited to individuals sharing the same travel costs and those in the Portland area	General Population ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not reported	***LEAD AGENCY:*** Researchers from the University of Wisconsin and the University of California-Irvine ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. The percentage of area in a ¼ mile buffer zone of the residence that is covered by a street grid format was significantly associated with non-work walking travel in the ordinary least squares model (coefficient= 0.9931173, T=2.774, p<0.05), but became insignificant when instrumented. 2. Using an ordered probit model for non-work walking trips at the census block group level, population density positively affects the likelihood of non-work travel being completed by walking trips (coefficient= 0.0000282, Z=2.985; p<0.05). 3. Using an ordered probit model for non-work walking trips at the census block group level, as trip cost variables (median walking distance and speeds for individuals) are added, block group density becomes an even stronger predictor for walking (coefficient= 0.0000291, Z= 3.061; p<0.05). 4. Using an ordered probit model for non-work walking trips at the zip code level, regional densities are not as important in determining individual walking behavior, as indicated by the insignificance of the population and retail density variables. Additionally, individual trip costs become insignificant when analyzed in the context of regional variables, lending further support to the idea that land use impacts on pedestrian travel have highly localized impacts. 5. Using ordinary least squares and instrumental variable regressions, block group population density and PEF score show support for non-work walking travel. Block group population density and PEF score are both individually significant in the ordinary least squares (coefficient= 0.0000569, T= 6.122; p<0.05; and coefficient; 0.0606048, T=3.649; p<0.05, respectively) and the instrumented variable regressions (coefficient= 0.0000596, T= 2.292, p<0.05; and coefficient= 0.0792254, T=2.38, p<0.05, respectively).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Catlin, Simoes (2003) Missouri	Presence and absence of neighborhood sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceived criminal safety 2. Access to facilities for physical activity (indoor and outdoor, trails, parks) 3. Perceived traffic safety *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 2,370 adults completing the Missouri Cardiovascular Disease Survey ***PRIMARY OUTCOME:*** Overweight/obesity (body mass index) ***MEASURES:*** 1. Missouri Cardiovascular Disease (MCD) Survey (self-reported weight and height [body mass index], community perceptions [perceived criminal safety, traffic safety, pleasantness of neighborhood], community infrastructure [walking/biking trails, parks, public outdoor exercise facilities, public indoor exercise facilities, the availability of fresh fruits and vegetables, sidewalks/shoulders], worksite infrastructure [access to facilities and equipment for physical activity, time for physical activity, and availability of healthy food choices]) ***DATA COLLECTION:*** Participants were interviewed for the Missouri Cardiovascular Disease survey between July 1999 and January 2000. This survey included standardized questions on health status, demographics, and health behaviors from the Behavioral Risk Factor Surveillance Survey [BRFSS] (tobacco-use, fruit and vegetable consumption, exercise/leisure time physical activity). Questions pertaining to demographics, tobacco use, and physical activity from the BRFSS are well established regarding reliability and validity. Items on fruit and vegetable consumption are less reliable. A 4-level neighborhood composite variable was computed for perceived community factors. ***LIMITATIONS:*** Telephone surveys may underestimate low socioeconomic status, overweight, and obese individuals; possible participation bias; self-reported data; cross-sectional data restricts the ability to apply causation	Adults 71% White, 27.3% Black, 1.8% other ethnicity, 35.2% overweight, 23.9% obese, 52% female (sample) Employed participants differed from the total sample in that there was a higher prevalence of men, younger age groups, post-high school education, and current smokers. A disproportionate stratified sampling design was used to randomly select households in the state of Missouri. Minority and low-income zip codes in urban centers were oversampled. ***ELIGIBILITY:*** Participants were required to be 18 years or older and have a working telephone within their home. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from St. Louis University and the Missouri Department of Health and Senior Services. ***THEORY/ FRAMEWORK:*** Ecological framework ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. Employed persons reporting the absence of sidewalks and shoulders were 1.74 times more likely to be overweight (95% CI: 1.26-2.40). 2. The absence of public outdoor exercise facilities was significantly associated with overweight (OR=1.21; 95% CI: 1.00-1.45). 3. Compared with persons who met the recommendation for physical activity, those classified as insufficient, irregular, or inactive were increasingly more likely to be overweight (data not shown). 4. Individuals who perceived their neighborhood or community to have 1, 2, or 3 negative characteristics were 14% (95%CI: 0.93-1.4), 23% (95%CI: 0.91-1.66), and 56% (95%CI: 1.06-2.28) more likely to be overweight, respectively, than individuals who perceived their neighborhood to be safe and pleasant. 5. Employed persons with 1 or 2 negative community perceptions were 1.45 times more likely to be overweight (95%CI: 1.07-1.96 and 95%CI: 0.92-2.26, respectively). Those with 3 negative perceptions were 2.83 times more likely to be overweight (95%CI: 1.53-5.24). 6. Persons who were given time to exercise at work were nearly 20% less likely to be overweight (OR=0.83; 95% CI: 0.63-1.09).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Kligerman, Sallis (2007) California	Intersection density ***OTHER INTERVENTION COMPONENTS:*** *Multi-component* 1. Land-use mix, residential density, retail floor area ratio, and number of schools 2. Access to parks and recreational facilities *Complex* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 98 adolescents from San Diego County. These individuals came from a larger cohort study that used participant data from preschools throughout San Diego County, California conducted in the mid-1980s (at age 4). These children were followed periodically until the final measurements at a mean age of 16.2 years. ***PRIMARY OUTCOME:*** Moderate to vigorous physical activity and overweight/obesity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Accelerometers (physical activity) 3. ArcView Geographic Information Systems (GIS) (land-use patterns, buffered areas around participant's residence) 4. Walkability index (land-use mix, retail, intersection, and residential density) ***DATA COLLECTION:*** Data was collected from children until they were 16.2 years (mean age). Accelerometry data was taken for at least four of the seven days the device was worn. Anthropometric data was calculated for each participant. Environmental variables were created using geographic information systems (GIS). Three buffer sizes were used for each participant's home 0.25 mile, 0.5 mile, and 1 mile. Land-use mix, net residential and intersection density, retail floor area ratio, number of schools, number of parks, acres of parks, number of private recreation facilities, nearest park, nearest private recreation facility, and nearest beach were all assessed through GIS. A walkability index was created using measures from four of the built environment variables; land-use mix, retail floor area ratio/retail density, intersection density, and residential density. Telephone books were used to identify private recreation facilities. ***LIMITATIONS:*** The small sample size and large attrition from cohort data limit generalizability; this study was restricted by age range and geographic area; GIS was not used initially thus environmental attributes may have changed and altered behavior without having been documented; location of participant physical activity was not recorded; because the study was cross-sectional there may have been self-selection bias; proximity to recreation facilities is too limited an evaluation and it is necessary to assess characteristics such as fees and quality of parks, walking trails, and recreation centers	14-18 year olds (mean age 16.2 years) 61.2% Mexican-American ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from San Diego State University, the University of British Columbia, and the University of California-San Diego. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not reported ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. All correlations between environmental variables and BMI were low and non-significant (data not shown). ***PHYSICAL ACTIVITY:*** 2. Land-use mix ($r=0.285$, $p<0.004$) and the walkability index ($r=0.168$, $p<0.098$) for the 0.5-mile buffer were the only measures to yield significant or marginal bivariate correlations with moderate-to-vigorous physical activity. 3. None of the recreation facilities variables were related to moderate-to-vigorous physical activity (data not shown). 4. In a linear regression, the walkability index was related to minutes of moderate to vigorous physical activity within 0.5 mile of homes, explaining approximately 4% of variance.

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Troped, Saunders (2003) Massachusetts	Presence of sidewalks and street connectivity ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions heavy traffic in the neighborhood 2. Land-use mix *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 413 respondents ***PRIMARY OUTCOME:*** Recreation and transportation physical activity ***MEASURES:*** 1. Arlington Physical Activity and Bikeway Survey (recreation and transport activity, demographic, interpersonal, and environmental variables, self-efficacy, perceptions about presence/absence of neighborhood attributes [e.g., sidewalks]) 2. Monitoring of Trends and determinants in Cardiovascular Disease Optional Study of Physical Activity (MOSPA) survey items (transportation physical activity) 3. Geographic information systems (ArcView GIS) and Topologically Integrated Geographic Encoding Reference (TIGER) system (road network, distance from residence to access point of rail-trail, shortest route) ***DATA COLLECTION:*** Surveys were administered in the fall of 1998. Self-efficacy for exercise was assessed with four, 5-point Likert-scaled items based on a 3-item scale (Sallis et al., 1989). Factor analysis examined validity, all 4 items loaded strongly on one factor 0.73 or higher. Cronbach's alpha for the 4 items was 0.87. Perceived neighborhood safety was assessed with a 5-point Likert-type scale with a higher score indicative of greater safety. Respondents characterized their neighborhood as residential, mixed-residential-commercial, or mostly commercial. Minutes of activity was multiplied by frequency to create a continuous measure of recreational physical activity per week (minutes/week). Minutes of walking or bicycling on an average day was multiplied by 7 (days) to generate minutes of walking and/or bicycling per week. ***LIMITATIONS:*** Survey data was self-reported; study design did not account for self-selection; the sample is fairly homogenous; causal inferences cannot be made with cross-sectional data; survey items for transportation related activity was part of a more general community survey other factors that may have been important correlates were not examined	General population 18 years and older, 51.2 ± 16.8 years of age (average), 93.6% White (evaluation sample) Arlington is a Boston suburb with a mostly well educated (40.4% college degree), Caucasian population (93.9%). The town has a substantial older population with about 18% of residents aged 65 years and older. The sample is not representative of the whole United States but rather populations with similar demographic and geographic variables. ***ELIGIBILITY:*** Registered 1997 Arlington Census town respondents, 18 years and older were eligible. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from Harvard University, the University of South Carolina, and the University of Texas. ***THEORY/ FRAMEWORK:*** Social cognitive theory ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** This study was supported with a mini grant from the Massachusetts Governor's Committee on Physical Fitness and Sports and in-kind support from the Arlington Planning and Community Development Department and the Massachusetts Department of Public Health. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Participants who reported sidewalks in their neighborhood and heavy traffic also reported a higher level of participation in recreational physical activity (mean [sd]: sidewalks=138.3[94.4] and heavy traffic=151.9[168.1], respectively both $p \leq 0.01$). 2. Participants responding "yes" to seeing people exercising (mean[sd]: 148.1[185.6], $p<0.005$), having enjoyable scenery in the neighborhood (152.7[189.0], $p<0.005$), or sidewalks (151.1[185.2], $p<0.05$) had higher levels of transportation physical activity. 3. Enjoyable scenery, presence of sidewalks, and traffic did not show statistically significant independent associations with recreational physical activity. 4. Presence of streetlights (coefficient=42.07, $p \leq 0.05$), enjoyable scenery (coefficient=48.94, $p=0.03$), and neighborhood sidewalks (coefficient=47.75, $p<0.05$) were all positively associated with minutes of transportation physical activity. 5. Distance to a community paved rail-trail showed a negative association with transportation physical activity (coefficient=-54.65, $p \leq 0.05$). 6. In one final model only self-efficacy and self-report of enjoyable neighborhood scenery (coefficient=59.63, $p \leq 0.01$) remained statistically significant.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Bell, Wilson (2008) Indiana	Green space near the residence ***OTHER INTERVENTION COMPONENTS:*** *Multi-component* 1. Residential density *Complex* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 3,831 youth from Marion County Indianapolis, Indiana ***PRIMARY OUTCOME:*** Overweight/obesity ***MEASURES:*** 1. Survey of medical records (height and weight [body mass index-BMI], racial/ethnic composition, gender, and health insurance status) 2. Normalized Difference Vegetation Index (urban form and greenness) 3. Geographic Information System [GIS] data (geo-coded address, urban form and residential density defined as the number of housing units per acre devoted to residential land use within a child's census block-group or residence) ***DATA COLLECTION:*** Data for this study was taken from records collected at a medical facility from 1996 through 2000. The analysis was conducted in 2007 and 2008. A primary care clinic network in Indianapolis, IN provided researchers with electronic medical records. Time 1 data was collected in the beginning of the 1996 period from patients and Time 2 data was any follow-up data taken during that same four year period. Greenness was measured using the normalized difference vegetation index (NDVI), derived by converting pixel values in satellite images encompassing 30x30 meter areas to continuous measurements that can range from -1(usually water) to +1 (dense, healthy green vegetations). Because of weather changes specific dates were not always surveyed, rather a summer measurement was chosen that corresponds to high green biomass in residential environments. Mean NDVI was calculated within a 1-kilometer straight line circular and a road-based network buffer surrounding each child's residence. Network buffers varied in size, based on level of street connectivity. A dichotomous variable was developed to categorize BMI z-scores as increasing between Time 1 and Time 2 or remaining constant or declining between the two time frames. ***LIMITATIONS:*** The study region, geographic scale, and sample limit generalizability; results may reflect selection bias; omitted variables, including more-robust measures of SES and neighborhood attributes such as crime and the presence of resources and amenities, may also influence the findings; physical activity is not available in medical records	3-16 year olds, 64% Minority, 58% Black, 83% Lower income (evaluation sample) The average block group median family income was lower than in the county as a whole ($36,917/year vs. $49,387/year). ***ELIGIBILITY:*** Children aged 3-16 years of age, residing in Marion County at the same address for 24 consecutive months, receiving well-child care from the network during 1996-2002, and having same-day clinical measurements for height and weight recorded 2 years apart were eligible for the study. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** University of Washington and Indiana University-Purdue University ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The Agency for Healthcare Research and Quality and the Department of Health and Human Services ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. Residential density was not significantly associated with BMI at Time 2 when modeled without the greenness (NDVI). 2. A 0.01-unit increase in greenness (NDVI) was associated with lower BMI at Time 2 (β= -0.06 SD, 95% CI=-0.09, -0.02, p<0.01). 3. A higher greenness (NDVI) was associated with lower Time 2 BMI (β= -0.07 SD, 95% CI=-0.11, -0.03, p<0.01), and residential density was marginally associated with lower Time 2 BMI (β= -0.01, 95%CI; -0.01, 0.01, p<0.06) when greenness and density were modeled together. 4. Relationships between greenness (NDVI) and Time 2 BMI were significantly modified by insurance status (F-test, p<0.01), with results of greater magnitude for children and youth with private/other insurance (β=-0.13, SD, 95% CI=-0.21, -0.04, p<0.01) versus Medicaid (β=-0.06 SD, 95% CI=-0.10, -0.01, p=0.01). 5. Associations between greenness (NDVI) and Time 2 BMI were similar with radial and network buffers (β=-0.07 SSD, 95% CI=-0.11, -0.03; not shown in tables), and the model fits were identical (adjusted r^2=0.53). 6. Higher greenness was associated with lower odds of increasing BMI (OR=0.87; 95% CI=0.79, 0.97; not shown in tables, for the logistic regression model).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Cohen, Ashwood (2006) Washington DC, Maryland, South Carolina	Presence of shaded areas **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Access to parks and amenities 2. Presence of street lights 3. Distance to neighborhood parks *Complex:* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 1,556 sixth-grade girls in 6 middle schools **PRIMARY OUTCOME:** Moderate-to-vigorous physical activity **MEASURES:** 1. Accelerometer (non-school moderate to vigorous physical activity [moderate-to-vigorous physical activity; MVPA]) 2. Geographic Information Systems [ArcView GIS] (geo-coded participant address) 3. US Census Bureau's Topologically Integrated Geographic Encoding and Referencing/Line street centerline data [TIGER] (street network [connectivity and segment]) 4. Direct observations with checklist (presence or absence of amenities at the park [lighting, restroom, shaded areas, fountains, fencing, open spaces, playing fields, courts]) 5. 2000 US Census data (block-level demographic data within 1 mile of residence) 6. School database (percentage of participants receiving free or reduced lunches at school [socioeconomic status]) 7. Departments of Recreation and Parks and local maps (locate and identify parks within 1 mile of participant address) **DATA COLLECTION:** Baseline data collected for the Trial of Activity for Adolescent Girls (TAAG) were used for this study. Girls wore accelerometers for 6 consecutive days during the winter and spring of 2003. MVPA was calculated for the hours outside school time. A secondary analysis used half-minute counts and 2 different cut-points; MVPA equivalent to slow walking (2.5 mph) and activities that are at or above a brisk walk (3.5 mph). Data were analyzed by summing counts from 5am to midnight. Trained staff documented park facilities within one mile of each participant's house. In Tucson, a comprehensive database of local park facilities was used, and data was verified by visiting only 10% of the parks. Parks were classified using the National Recreation and Parks Association definitions. **LIMITATIONS:** The study did not account for neighborhood self-selection; study design did not connect girl's activity to a particular location; degree of importance was not established between features; there was no differentiation between travel to the park and activity at the park	11-13 year old females White 45%, Hispanic 22%, Black 21%, Asian 4%, and Native American/ mixed 8% (evaluation sample) 20% Black and 6% Hispanic, and 10% of households were below poverty level (neighborhood average; ½ mile radius) **ELIGIBILITY:** Eligible participants for TAAG could not be planning on transferring to another school. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** For the TAAG study researchers from universities in each of the six study areas managed data collection. The study was coordinated by the University of North Carolina and the National Heart, Lung, and Blood Institute Program Office. **THEORY/ FRAMEWORK:** Not reported **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** National Institutes of Health; National Heart, Lung, and Blood Institute **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. For the average girl having 3.5 parks within a 1-mile radius of home, accounted for an additional 68 minutes of non-school 3.0 MET MVPA and an additional 36.5 minutes of non-school 4.6 MET MVPA per 6 days. 2. For every park, regardless of type, within a half mile radius from home there was an increase in non-school MVPA by 33 minutes for 3.0 METs (coefficient estimate=0.02, p<0.005) and 17.2 minutes for 4.6 METs (coefficient estimate=0.03, p=0.04) per 6 days. Each additional park past the half-mile increased non-school MVPA by 12 minutes for 3.0 Mets (coefficient estimate=0.01, p<0.009) and 6.7 minutes for 4.6 Mets (coefficient estimate=0.01, p=0.09) per 6 days. 3. For the linear model, having either a neighborhood or community park within a half-mile of home was associated with 45.5 more 3.0 MET minutes (coefficient estimate=0.03, p<0.05) and 24.2 more 4.6 MET minutes (coefficient estimate=0.04; p<0.05) per 6 days. In the half-mile to 1-mile distance, MVPA increased by 29.6, 3.0 MET minutes (coefficient estimate=0.02, p<0.05) and 18.6, 4.6 MET minutes (coefficient estimate=0.03; p<0.05) per 6 days. 4. Additional non-school MVPA minutes increased when girls had neighborhood/community parks (3.0 MET 42 min, p<0.05; 4.6 MET 22 min, p<0.05), mini-parks (3.0 MET 92 min, p<0.05; 4.6 MET 40 min; p<0.10), natural resource areas (3.0 MET 36 min, p<0.05), walking paths (3.0 MET 59 min, p<0.05; 4.6 MET 13 min; p<0.05), and running tracks (3.0 MET 208 min, p<0.05; 4.6 MET 82 min; p<0.05) within a half mile of their homes. 5. Playgrounds (39 min for 3.0 MET; 28 min for 4.6 MET, p<0.05 for both), shaded areas (20 min for 3.0 MET; 14 min for 4.6 MET, p<0.10 for both), drinking fountains (24 min for 3.0 MET, p<0.05; 14 min for 4.6 MET, p<0.10), streetlights (28 min for 3.0 MET; 18 min for 4.6 MET, p<0.05 for both), basketball courts (37 min for 3.0 MET, p<0.10; 30 min for 4.6 MET, p<0.05), multipurpose rooms (13 min for 3.0 MET and 4.6 MET, p<0.05 for both), park offices (14 min for 3.0 MET, p<0.10), an ice rink (28 min for 3.0 MET, p<0.10), a running track (208 min for 3.0 MET, p<0.05), a swimming area (32 min for 4.6 MET, p<0.05), and an amphitheater (16 min for 3.0 MET, p<0.10) were associated with increased MVPA. 6. Lawn games (-161 min for 3.0 MET, p<0.05; -55 min for 4.6 MET, p<0.10) and skateboard areas (-94 min for 3.0 MET; -48 min for 4.6 MET, p<0.05 for both) were negatively associated with increased MVPA. 7. Special use parks were negatively associated with both 3.0 MET and 4.6 MET MVPA (each p<0.05). (Note: Metabolic equivalent–weighted moderate-to vigorous physical activity [MET MVPA] was calculated for the hours outside of school time using two different cut points: activity levels ≥3.0 metabolic equivalents and ≥4.6 metabolic equivalents, the latter indicating activity at the intensity of a brisk walk or higher.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Lindsey, Han (2006) Indiana	Street connectivity and greenness in the neighborhood ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Population density and neighborhood parking lot coverage *Complex:* Not reported	***DESIGN:*** Non-comparative study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** ~800,000 trail users on the Monon White River, Canal Towpath, Fall Creek, and Pleasant Run ***PRIMARY OUTCOME:*** Trail use ***MEASURES:*** 1. Geographic Information Systems (GIS) (urban form, neighborhood characteristics) 2. Infrared monitor (total traffic counts) 3. Geographic positioning system and Personal digital assistant -GPS, PDA (monitor location and use of trails) 4. 2000 Census TIGER/US Census (network mobility model including neighborhood boundaries, road features, greenway vectors, socio-demographic, gross population density, parcel-level land-use mix) 5. Bio-physical remote sensing techniques (vegetation) 6. Weather data (daily and long-term average weather) 7. Satellite imagery (urban form, neighborhood characteristics) 8. Government agency files (urban form [e.g., gross population density, land-use mix], demographics) ***DATA COLLECTION:*** Results were monitored at four locations on one trail from February 2001-July 2005, two locations on a second trail from June 2002-July 2005, and 24 locations on five trails from May 2004-July 2005. Trail traffic was tracked 24 hours per day, 7 days per week at 30 locations on five multi-use greenway trails in Indianapolis using infrared monitors. Monitors were located approximately 1 mile apart covering 33-miles of trail network, reflecting barriers such as arterial crossings. The counts do not distinguish between types of users. To adjust for error, the authors periodically recalibrated and conducted field observations (the correction equation is (r squared = 0.99). Detailed land use categories were residential, commercial, industrial, special use, park, water, parking lot, and transportation. To control for the effects of variations in daily weather, long-term average daily measurements from the National Oceanic and Atmospheric Administration were used to define a set of weather variables that were computed as deviation from the long-term daily mean. ***LIMITATIONS:*** Not reported	General population, 58% Male, 83% White, 14% African-American, 3% Other (evaluation population) ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not reported	***LEAD AGENCY:*** Researchers were from Indiana University-Purdue University Indianapolis. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not reported ***ADOPTION:*** Not reported ***IMPLEMENTATION:*** Not reported ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not reported ***FUNDING:*** Active Living Research Program of the Robert Wood Johnson Foundation, The Indiana Department of Natural Resources, The Greenways Division of the Indianapolis, Department of Parks and Recreation, The Center for Urban Policy and the Environment in the School of Public and Environmental Affairs at IUPUI ***STRATEGIES:*** Not reported	***PHYSICAL ACTIVITY:*** 1. Daily traffic is positively and significantly correlated with increases in population density (parameter estimate=0.0002, t=18.69, p<0.0001), greenness (parameter estimate=1.988, t=9.36, p<0.0001), the percentage of trail neighborhood in commercial use (parameter estimate=0.0465, t=23.56, p<0.0001), the area in trail neighborhoods in parking lots (parameter estimate=0.0346, t=16.02, p<0.0001), and mean length of street segment (parameter estimate=0.1172, t=6.27, p<0.0001). 2. An increase in population density in trail neighborhoods of 100 persons per square kilometer for example, is associated with an increase in trail traffic of nearly 2%. Every 1% increase in the area of parking lots is correlated with an increase in traffic of less than one-tenth of a percent. A 1% increase in the length of the mean street segment length is associated with an increase in trail traffic of 0.117%. 3. Daily traffic ranged from 52 to 6,155. For the year, the mean daily traffic was 87% higher on weekend days (2,553) than on weekdays (1,360).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
International						
Jenum, Lorentzen (2009); Lorentzen, Ommundsen (2009); Lorentzen, Ommundsen (2007); Jenum, Lorentzen (2003); Jenum, Anderssen (2006) Norway	"Romsås in Motion"- community environment changes to increase the accessibility of physical activity arenas in the community, including labeling of walking paths, improved street lighting, snow clearing and gritting of pavements and walking paths during the winter season. ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. "Walk the stairs" posters placed at block entrances and in public buildings to encourage people to use the stairs instead of escalators and elevators. *Complex:* 1. Weekly sessions of outdoor walking groups, indoor aerobic exercise programs and a test of physical fitness twice a year 2. Physical activity, health and program promotion through local TV, radio, newspaper, posters, brochures, mailing and lectures	***DESIGN:*** Non-randomized trial ***DURATION:*** 3 years ***SAMPLE SIZE:*** 1,766 adults (890 intervention, 876 control) from Romsås, a lower income district in Oslo, Norway ***PRIMARY OUTCOME:*** Overweight/obesity and physical activity ***MEASURES:*** 1. Anthropometric data (height, weight, waist and hip circumference) 2. Biochemical indicators (blood pressure, serum total cholesterol and high-density lipoprotein cholesterol (HDL), triglycerides, glucose) 3. Demographic data 4. Self-administered questionnaire (health status, self-reported disease, physical activity, smoking, nutrition, socioeconomic factors, participant's stage of change) 5. International Physical Activity Questionnaire- IPAQ (occupational, transportation, household, and leisure-time physical activity and psychosocial variables related to physical activity) 6. Participation/Exposure Questionnaire (exposure/participation to specific intervention components) ***DATA COLLECTION:*** All measurements were conducted in mobile units in each district (intervention and control) between March and May 2000, with follow-up measurements taken 3 years later. Statistics Norway provided the demographic data. The National Health Screening Service collected data from participants. Participation/Exposure questionnaire completed by intervention participants at follow-up only. ***LIMITATIONS:*** Potential selection bias; slightly more healthy participants in the control district at follow-up; contamination of the control district may have occurred due to exposure to some of the same media information; self-reported data (questionnaires); possibility of type 1 errors due to multiple testing	Adults Urban Lower income ***ELIGIBILITY:*** All 30-67 year old adults in Romsås were eligible to participate. ***EXPOSURE/ PARTICIPATION:*** All 6,700 individuals living in Romsås were exposed to the environment changes. A higher proportion of Westerners, people with high BMI, physically active persons at baseline, women and persons aged 50+ years participated more in some intervention components.	***LEAD AGENCY:*** The research team ***THEORY/ FRAMEWORK:*** Social Cognitive Theory, Social-ecological Model and Transtheoretical Model ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not reported ***ADOPTION:*** A local resource group consisting of lay people in the community was established, and helped to plan and implement the intervention. ***IMPLEMENTATION:*** Local political and lay leaders and health and welfare workers assisted in the planning and implementation of the program. The intervention was mainly tailored towards physically inactive groups with low psychosocial readiness for behavior change. Exercise leaders from the community led the weekly physical activity sessions. ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** 1. Media resources 2. "Walk the Stairs" posters 3. Exercise leaders 4. Committed political and lay leaders 5. Materials for labeling the walking paths and improving street lighting 6. Personnel to remove snow and grit from the pavements 7. Materials for recruitment mailings ***FUNDING:*** Norwegian Institute of Public Health; The Directorate for Health and Social Affairs; The Norwegian Research Council; The Norwegian Foundation for Health and Rehabilitation; and The Romsås District Administration ***STRATEGIES:*** The project was incorporated into the strategic plans of the community. More than 5 years after the project period the physical activity groups still meet. The group now consists of both original study participants and newcomers. The project has also led directly or indirectly to several new initiatives in the nearby districts to promote physical activity.	***OVERWEIGHT/OBESITY:*** 1. In the intervention district, body mass was reduced in 23.7% and increased in 37.9% of the participants, compared with 15.6% and 44.5% in the control district. 2. The net proportion of individuals that increased their body mass were significantly lower in the intervention district versus the control district. This was found overall (14.2%, $p<0.001$) and across non-Western immigrants (27.5%, $p=0.001$). ***PHYSICAL ACTIVITY:*** 3. At baseline, the proportion reporting no heavy activity was 40.5% in the intervention district versus 35.7% in the control district, with a net reduction in favor of the intervention district of 8.1% (95% CI: 2.4 to 13.8, $p=0.005$). The net reduction in the proportion of inactive people measured by stages of change was 6.9% (95% CI: 1.2 to 12.6, $p=0.019$) in favor of the intervention district. Measured by the heavy activity question, the net increase in favor of the intervention district in heavy physical activity was 9.5% ($p=0.008$) and by the stages of change 8.1% ($p=0.024$). ***OTHER:*** 4. The net proportion quitting smoking was 2.9% (95% CI: 0.1-5.7; $p=0.043$) in favor of the intervention district, with the largest net change in women aged <50 years (6.8%; $p=0.012$).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Giles-Corti, Knuiman (2008); Tudor-Locke, Giles-Corti (2008); Giles-Corti, Timperio (2006); Giles-Corti, Knuiman (2007) Australia	State implemented neighborhood housing development (RESIDE-The Residential Environments Project) with a pedestrian/ bicycling friendly street design relating to proximity, access to, and use of local businesses ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* Not reported *Complex:* 1. Neighborhood self-selection	***DESIGN:*** Prospective cohort study ***DURATION:*** Not reported ***SAMPLE SIZE:*** 1,813 movers in 74 new housing developments ***PRIMARY OUTCOME:*** Overweight/obesity and physical activity and walking behavior ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Neighborhood Physical Activity Questionnaire (NPAQ) (frequency, intensity, and duration of recreational and transport-related walking and cycling, neighborhood characteristics instrument [choice of housing, walking duration to business and recreation], attitude, confidence, social support, demographic data, duration of to/from work travel) 3. Pedometer (digi-walker) (step counts) 4. Diary (duration of pedometer wear, step counts) ***DATA COLLECTION:*** Participants were recruited every 6 months from September 2003 to March 2005. Measures were taken at baseline (T1), 12 months after moving (T2), and 2 years later over a five year period with each collection undertaken in the same season. Baseline activity was measured using the NPAQ, which is acceptably reliable and was developed for RESIDE. For 7 days, on 3 different weeks, over the course of 4 years participants wore a pedometer, which has been shown to be valid and reliable. Mean steps/day for T1 and T2 were computed from the total weekly steps divided by the total days (6.5 +or- 1.3 days overall) the pedometer was worn. Participants self-reported neighborhood measures using likert-type scales (1=not important-5=very important) or (1=less than 5 min walk-5=more than 20 minutes). ***LIMITATIONS:*** Pedometers do not account for non-ambulatory, water activities, or intensity levels; data was self-reported; attrition was problematic; this study was specific to location (Perth, Western Australia) and building homes in new estates; lower socio-economic groups were not included; initial response rate was low; this study could not control for the low-level of transport related walking	Adults, General population, 25% of households income was <$50,000 The state government's Department for Planning and Infrastructure (DPI) classified the developments; 18 as 'Liveable" (LDs), 11 as "Hybrid" (i.e., those identified as having many, but not all of the LN elements) and 45 Conventional housing developments (i.e., LDs, HDs, and CDs, respectively). ***ELIGIBILITY:*** Participants were either building homes or selling land. Requirements also included proficiency in English, ≥18 years, plans to move into the new house by December 2005 and willingness to complete surveys and wear a pedometer for a week on three separate occasions over 4 years. ***EXPOSURE/ PARTICIPATION:*** Not reported	***LEAD AGENCY:*** Researchers were from the University of Western Australia, Deakin University, Loughborough University, and the National Heart Foundation. ***THEORY/ FRAMEWORK:*** Ecological framework ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not reported ***ADOPTION:*** In 1998, the Western Australian state government began implementing a new subdivision design code (the 'Liveable Neighborhood (LN) Guidelines'), based on new urbanism principles. ***IMPLEMENTATION:*** The Water Corporation, the state water supply agency, wrote to all its customers building homes and selling land to be a part of the study. ***FORMATIVE EVALUATION:*** The NPAQ was designed for RESIDE. The first trial run (n=121) was unacceptable. The modified NPAQ used the International Physical Activity Questionnaire (IPAQ) and the Active Australia survey (walking: ICC 0.91: 95% CI: 0.84-0.94) (MET minutes: ICC: 0.82, 95%CI: 0.73-0.89). The reliability of physical activity was fair to good (k = 0.67). ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not reported ***FUNDING:*** Funding was received from the Western Australian Health Promotion Foundation (Healthway) and the Australian Research Council. The first author is supported by a NHMRC/ NHF Career Development Award. Another author is supported by a VicHealth Public Health Fellowship (2004 0536). ***STRATEGIES:*** Not reported	***OVERWEIGHT/OBESITY:*** *ΔT1-T2 (Change from Time 1 to Time 2):* 1. For both sexes, the relative change in steps/day defined by BMI categories was significant (χ^2 = 22.28, p=0.001 and χ^2 = 15.70, p=0.015, respectively). ***PHYSICAL ACTIVITY:*** *Baseline* 2. Those moving into CDs remained significantly more likely than those moving into HDs to meet the threshold for both sufficient walking and physical activity (OR=1.41, 95% CI; 1.07-1.86; OR=1.31, 95% CI 1.02-1.69, respectively). 3. The odds of achieving sufficient physical activity were also higher for those moving into LDs compared with HDs (OR=1.32, 95% CI; 1.00-1.75), although for walking, the adjusted difference did not reach statistical significance. 4. There were no differences in perceived access to destinations in their baseline neighborhoods among participants moving into different types of developments. *ΔT1-T2 (Change from Time 1 to Time 2):* 5. Overall, females appeared to be taking more steps per day after the move (Spearman's r=0.551; Δ T1-T2= 34 ± 3.071). 6. The relative change in steps/day was not significant across age groups in males (χ^2=17.35, p=0.137) but was in females (χ^2=50.00, p<0.001). 7. In females, 60+ years of age; the Spearman correlation (0.304; moderate) was statistically significant suggesting a negative change in steps per/day (Δ=T2-T1= -408 ± 3,747). Pearson's and Spearman's correlations were moderate (r=0.30-0.59) to moderately high (r=0.60-0.70). ***ENVIRONMENT:*** *Baseline:* 8. Participants moving into CDs remained significantly less likely than those moving into LDs to rate as important a desire to be nearby shops and services (OR=0.65, 95% CI; 0.52-0.82); ease of walking (OR=0.76, 95% CI; 0.60-0.95); sense of community (OR=0.64, 95% CI; 0.51-0.81); the presence of footpaths (OR=0.65, 95% CI; 0.52-0.82); closeness to parks (OR=0.69, 95% CI; 0.55-0.86); closeness to the beach (OR=0.59, 95% CI; 0.47-0.73); closeness to transit (OR=0.59, 95% CI; 0.47-0.73); and ease of cycling (OR=0.69, 95% CI 0.54-0.87). 9. The only differences in perceived importance between those moving into HDs compared with LDs related to the development's sense of community (OR=0.73, 95% CI 0.55-0.97); access to a variety of parks (OR=0.66, 95% CI 0.50-0.87); and access to beach (OR=0.30, 95% CI; 0.22-0.41).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Humpel, Owen (2004); Humpel, Marshall (2004) Australia	Perceptions of neighborhood aesthetics ***OTHER INTERVENTION COMPONENTS:*** *Multi-components* 1. Perceptions of traffic safety 2. Access to public transit 3. Accessibility of paths, parks, and other walking opportunities 4. Access to neighborhood shops *Complex* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 800 faculty and general staff (n=398 women, n=402 men) of an Australian university ***PRIMARY OUTCOME:*** Walking behavior and physical activity ***MEASURES:*** 1. Survey (frequency and duration of neighborhood weekly walking, type of walking [e.g., transport] perceptions of neighborhood aesthetics, convenience, access to services, and traffic) 2. International Physical Activity Questionnaire [IPAQ] short form items (intensity, frequency, and duration of physical activity, total physical activity) 3. Australian Bureau of Statistics 1996 Census data (postal code data, distinguishing coastal from non-coastal regions) ***DATA COLLECTION:*** The results of this study came from a larger study examining a physical activity intervention trial designed to test the efficacy of a Web site delivered self-help physical activity program in a workplace setting. The researchers administered the survey to participants via telephone and used a rating scale of 1-10 to determine participants' perception of their environment; higher scores meant more positive perceptions of the environment. The intra-class correlation and 95% confidence interval for the total sample were 0.92 (0.88-0.95). The survey also combined items from the IPAQ-short form, which has been designed and evaluated for reliability and validity by the International Consensus Group on Physical Activity Measurement. Activity categories could be analyzed separately or summed to gain an overall estimate of the total physical activity performed in one week. ***LIMITATIONS:*** Causality cannot be determined using cross-sectional data; the generalizability of the sample was limited, with the majority having college educations and living in coastal areas, which may also introduce selection bias; specific and detailed environmental characteristics were not accessible through the study design	General, Population (target sample) Ages ranged from 18 to 71 years of age (mean age 43 years), 49.8% women (evaluation sample) Participants did not differ in their responses whether they were part of the original sample or follow-up. ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not reported	***LEAD AGENCY:*** The research team was from the University of Wollongong, the University of Queensland, and the University of New South Wales. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Heart Foundation of Australia ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Men with moderate aesthetics scores (OR=1.77, 95% CI=1.06-2.97, p<0.05), high aesthetic scores (OR=1.91, 95% CI=1.08-3.37, p<0.05), high scores for convenience (OR=2.20, 95% CI=2.21-3.99, p<0.01) and access (OR=1.98, 95CI=1.12-3.49, p<0.05) were more likely to walk in their neighborhood than individuals with lower scores. 2. Men who increased their perception of aesthetics (OR=2.25, 95% CI=1.24-4.05, p<0.01) and convenience (OR=1.95, 95% CI=1.10-3.45, p<0.05) were more likely to have increased walking and twice as likely to have increased walking more than 30 minutes (aesthetics; OR=2.0, 95%CI=1.12-3.79, p<0.05, convenience; OR=2.02, 95% CI=1.12-3.65, p<0.05) compared to men with no perception change. Men with increased perceptions of convenience were also 1.98 (95%CI=1.08-3.61; p<0.05) times more likely to have increased their walking to more than 60 minutes. 3. Men with a high convenience score were 1.82 times more likely to engage in total physical activity than those with a lower score (95%CI=1.02-3.24, p<0.05). 4. Women with increased perceptions of convenience were twice as likely to report increased walking (any increase; OR=2.58; 95%CI=1.46-4.56, p<0.001, increase of 30 minutes or more; OR=2.31, 95% CI=1.29-4.14, p<0.01, increase of 60 minutes or more; OR=2.01, 95%CI=1.09-3.70, p<0.05) compared to those who did not positively change perceptions. 5. Participants with a low aesthetic scores at baseline reported a mean relative increase of 0.42 (SD=0.46), whereas those with a high initial scores reported a decrease, with a relative change score of -0.16 (SD=0.18). 6. Participants with low baseline convenience scores reported a mean relative change increase of 0.79 (SD=0.87) and those with high baseline scores reported a relative change decrease of -0.21 (SD=0.22). 7. Participants with low aesthetic scores at baseline reported a mean relative change increase of 0.42 (SD=0.46), whereas those with high scores reported a decrease, with a relative change of -0.16 (SD=0.16). 8. Participants with low baseline convenience scores reported a mean relative change increase of 0.79 (SD=0.87), and those with high scores reported a relative change decrease of -0.21 (SD=0.22). 9. Women with moderate convenience (OR=3.19, 95% CI=1.81-5.59, p<0.001) and access (OR=1.92, 95% CI=1.10-3.37, p<0.05 for walking; total physical activity non-significant, p>0.05) were more likely to report higher levels of walking and higher total physical activity, respectively. Women with a high convenience scores were 3.78 times more likely (95% CI=2.12-6.73, p<0.001) to report the highest levels of neighborhood walking, whereas women with high access scores were 52% less likely (OR=0.48, 95% CI=0.27-0.87, p<0.05) to walk in the neighborhood when compared to those with low scores. *(continued next page)*

(Continued from previous study)						
						10. Men who perceived traffic as being less of a problem were found to be less likely to have increased their walking across all three outcome variables (any increase in walking; OR=0.40, 95%CI=0.22-0.72, p<0.01, increase of 30 minutes; OR=0.29, 95%CI=0.15-0.54, p<0.001, increase of 60 minutes; OR=0.39, 95%CI= 0.21-0.73, p<0.01). 11. Increased perceptions that traffic was not a problem were significantly associated with women being 1.76 (95%CI=1.01-3.05, p<0.05) times more likely to have increased their walking for 30 minutes or more. 12. Participants with low initial access scores reported a mean relative change increase of 0.35 (SD=2.14), and a decrease score of -0.24 (SD=0.24) was reported for those with an initial high score. 13. Participants with low baseline scores reporting traffic as a problem had a relative change increase of 1.13 (SD=1.83), whereas those with high initial scores reported a decrease of -0.2 (SD=0.22).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Santos, Silva (2008) Portugal	Aesthetic quality of the neighborhood ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to destinations (land-use mix) and residential density 2. Availability of places to be active *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 7,330 adult residents of Azorean islands that participated in the Azorean Physical Activity and Health Study. ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Anthropometric measures (self-reported weight and height, body mass index [BMI]) 2. International Physical Activity Questionnaire (IPAQ) short form items (intensity and frequency of physical activity) 3. Environmental Module of the International Physical Activity Prevalence Study questionnaire items (perceptions of residential density, access to destinations [presence and quality of sidewalks, places to bicycle, free or low-cost recreational facilities, land-use diversity, distance to locations], aesthetics, social environment, street connectivity, interpersonal and traffic safety, number of household vehicle, access to public transit, and housing type) 4. Questionnaire (IPAQ-short form items, Environmental Module of the IPAQ items, and educational level [Portuguese Educational System categorization; 4 years, 4-9 years, 10-12 years and higher education]) ***DATA COLLECTION:*** Data for the present study was taken from results of the Azorean Physical Activity and Health study. Questionnaires were mailed to adult residents of all islands. The questionnaires were sent through school children to their parents or relatives aged ≥ 18 years. The Environmental Module of the International Physical Activity Prevalence Study questionnaire has previously shown good reliability. Total physical activity was expressed as metabolic equivalent (MET) minutes/ week, by weighting the reported minutes/week, in each activity category, by the MET specific to each category. ***LIMITATIONS:*** BMI and education were categorized by very specific criteria; data relied on self-reported variables; study design was cross-sectional; proportions of total variability were low; professional physical activity was not controlled	Adults (18 years and older) Azorean The nature of the sampling design was not random and generalizability is limited. ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team the University of Porto in Portugal. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Azorean Government - Department of Sports and by the FCT grants (Portuguese Department of Science) ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Women with a positive overall perception of the dimension infrastructures; access to destinations, social environment, and aesthetics were 32.5% (95%CI: 1.150-1.528; p<0.001) more likely to have a moderate physical activity level and 31.9% (95%CI: 1.121-1.551; p<0.001) more likely to have a health enhancing physical activity (HEPA) level. 2. Normal weight women (BMI <25 kg/m^2) with a positive overall perception of the dimension infrastructures; access to destinations, social environment, and aesthetics were 44.5% (95%CI: 1.166-1.791; p<0.001) more likely to have moderate physical activity levels, whereas overweight/ obese women (BMI ≥ 25 kg/m^2) 22% (95%CI: 1.007-1.478; p<0.05) more likely to have moderate physical activity levels and 34.5% (95%CI: 1.3451.080-1.675; p<0.05) more likely to have HEPA levels. 3. Normal weight men (BMI<25kg/m^2) with a positive perception of the dimension infrastructures; access to destinations, social environment, and aesthetics were 51.4% (95% CI: 1.091-2.101; p<0.05) more likely to have moderate physical activity levels.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Carnegie, Bauman (2002) Australia	Land-use mix ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood traffic safety 2. Perceptions of neighborhood perceptions of safety (dogs barking) 3. Access to open spaces (beaches and parks) 4. Neighborhood land-use mix *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 1,197 adults ***PRIMARY OUTCOME:*** Walking behavior ***MEASURES:*** 1. Survey (environment, intensity, frequency, and duration of physical activity [2 week and 6 month recall], sociodemographic data, stage of change, perceived walking, friendliness of neighborhood, pleasantness, accessibility to facilities, traffic) ***DATA COLLECTION:*** This study used data from interviews conducted from October 25 to November 13, 1995. The questionnaire was field tested with 30 respondents to ensure that all of the items were comprehensible. Total duration of each type of exercise/physical activity reported was multiplied by MET values (9, 3.5, and 3.5 for high-, moderate-intensity, and walking respectively). Respondents were categorized as active (>800 kcal per week) or inactive (<800 kcal/week). The reliability and validity of these two (physical activity) measures have been shown to be adequate. Behavioral and motivational questions were combined to assess identification of the respondent's stage of change for physical activity. Perception responses were recorded on a 5-point Likert scale ranging from strongly agree (1) to strongly disagree (5) (items from previous research). ***LIMITATIONS:*** Causal inferences cannot be made using cross-sectional data; survey data was self-reported; aspects of the practical environment may have been addressed in too large-scale of an area	General population, Adults, 40-60 years old, 57.4% Female (evaluation sample) The demographic composition of the sample was very similar to that provided by the most recent national census data. Respondents aged 40-45 were slightly overrepresented (29.2%), and those aged 56-60 years were slightly underrepresented (20.1%). Two percent of the resident population within the target age range were sampled for this study. ***ELIGIBILITY:*** Participants 40-60 years old were eligible. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from University of Sydney, University of New South Wales, South Western Sydney Area Health Service, Illawarra Area Health Service, and the Children's Hospital at Westmead. ***THEORY/ FRAMEWORK:*** Stages of Change (transtheoretical) Model ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The Australian Commonwealth Department of Health Family Services funded the Illawarra Physical Activity Project. ***STRATEGIES:*** Not reported	***PHYSICAL ACTIVITY:*** 1. Those who did little walking (20 minutes or less per week) reported more negative perceptions of their aesthetic environment than those who reported walking for between 20 minutes and 2 hours and those who reported walking for more than 2 hours ($F(2,1.163)=5.19$, $p<0.01$). 2. There was an independent association between the stage of change variable and the aesthetic environment ($F(2, 1.168)=5.67$; $p<0.01$) and with the practical environment factor ($F(2, 1.157)=12.05$; $p<0.001$). 3. Those who walked for less than 20 minutes and those who walked for between 20 minutes and 2 hours both reported that shops, parks, and beaches were less near to their home than those who reported walking more than 2 hours per week ($F(2, 1.168)=11.24$, $p<0.001$). 4. Those who did little waking (20 min or less per week) reported more negative perceptions of their aesthetic environment than those who reported walking for between 20 minutes and 2 hours and those who reported walking for more than 2 hours ($F(2, 1.163)=5.19$, $p<0.01$). 5. Those who walked more than 2 hours per week ($M=2.96$, $SD=1.1$) strongly agreed that they perceived traffic to be bothersome more than those who walked less than 20 minutes per week ($M=3.15$, $SD=1.12$; $F(2, 1.168)=5.19$; $p=0.006$). 6. The "dogs barking" variable showed no relationship with walking activity nor did the "safety at night" question. 7. The "feel safe walking at night" question was much more of an issue for women than men ($M=3.7$ for women and 2.4 for men, $p<0.001$), showing that women felt much less safe than men walking at night.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Kirby, Levesque (2007) Canada (Moose Factory Island)	Neighborhood aesthetic quality ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of safety for walking in the community 2. Convenience of neighborhood destinations *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 263 Adult community members of Moose Factory ***PRIMARY OUTCOME:*** Walking behavior and various intensities of physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. 15-item survey (environmental perceptions [convenience, safety, aesthetics, accessibility, home-level environmental supports], walking, physical activity, sociodemographic data, anthropometric data) 3. Godin Leisure-Time Questionnaire (frequency, duration, and intensity of physical activity) ***DATA COLLECTION:*** The brief survey used items that were drawn from standardized, validated questionnaires and refined with community input. The Godin-Leisure Time Exercise Questionnaire required participants to separately recall frequency of physical activity over the past 7-days (ICC; vigorous, moderate, and light intensities: 0.94, 0.46, and 0.48, respectively). Total weekly walking scores were calculated. Safety and aesthetics were used as predictor variables. Total weekly walking scores and safety and aesthetics were transformed into square root transformations, to normalize the positively skewed data. ***LIMITATIONS:*** Cross-sectional study design limits causal conclusions; convenience sampling limits the generalizability of results; objective measures of the environment were not collected; data was self-reported	Adults in an Aboriginal Community 130 women (mean age 35.6 years ±12.3), 133 men (mean age=36.3 years ±12.7) (evaluation sample) Statistics Canada did not completely enumerate Moose Factory during the 1996 and 2001 Censuses; it is not possible to confirm the representativeness of the sample. ***ELIGIBILITY:*** For the study at Moose Factory, individuals were eligible if they were; physically able to participate in activities, 18 years of age or older, and had lived in the community for greater than 5 years. Verbal informed consent was obtained prior to participation. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The researchers were from the Kahnawake School Diabetes Prevention Project Centre for Research and Training in Diabetes Prevention, Memorial University of Newfoundland, Queen's University, and Wilfrid Laurier University. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Canadian Institutes for Health Research, The Kahnawake School Diabetes Prevention Project, and the Kahnawake Community Advisory Board. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Both the square root of safety and aesthetics were significantly related to total weekly walking ($p<0.05$; $\beta=0.130, 0.186$ respectively). 2. Total weekly physical activity involvement decreased with increasing BMI (χ^2 (4, N=253)=11.72, p=0.02) and total weekly walking decreased with increasing BMI (χ^2 (4, N=253)=19.59, p=0.001). 3. Hierarchical regressions revealed that perceived environmental variables were not related to the variation in response for all intensity, strenuous, moderate, and light physical activity ($p>0.05$).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Hume, Salmon (2005) Australia	Ease of walking in the neighborhood and perceptions of neighborhood aesthetic quality ***OTHER INTERVENTION COMPONENTS:*** *Multi-component* 1. Perceptions of neighborhood safety 2. Safety from traffic 3. Land-use mix and distance to neighborhood destinations *Complex* 1. Social support (presence of friends in the area)	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 147 children from three Victorian metropolitan government funded coeducational primary schools of more than 500 students enrolled ***PRIMARY OUTCOME:*** Low and moderate intensity physical activity and sedentary behavior ***MEASURES:*** 1. Mapping through use of drawings (perceptions of importance in home and neighborhood [places and things]) 2. Photograph Mapping (perceptions of importance [places and things in the home and neighborhood environment]) 3. Accelerometers (duration of physical activity) 4. Qualitative Assessments (features drawn and photographed were analyzed for common themes, 6 themes identified [family home, opportunities for physical activity and sedentary pursuits; food items and locations; green space and outside areas; the school and opportunities for social interaction]) 5. 1998 SEIFA index from the Australian Bureau of Statistics (socioeconomic status and disadvantage) ***DATA COLLECTION:*** The map drawing lessons were 1 week apart, with the home map completed in the first week and the neighborhood map completed the following week. The word "home" and boundaries of the home were specified to children to create a standard of understanding. The word 'environment' was explained as 'our surroundings, the places and things that are around us'. A subsample of children (n = 44) were given disposable cameras and asked to take about 8 photos. One week after camera distribution, film was collected and processed. Photographs were developed and returned to each child to provide a brief written explanation for each of their photos. The children wore the accelerometers approximately 6 weeks prior to completing the maps and taking the photographs for 8 consecutive days. Only children with more than 10,000 steps per day were included. Day 1 and 8 were not included in data report because of fittings and collection. Children wore the accelerometers during March/April of 2002. All children received individualized feedback about their physical activity participation in the form of a brief report and were given compensation (e.g. sports drink bottle, balls, Frisbees) for participating in the study. ***LIMITATIONS:*** Data was based on child perception; study design was cross-sectional; the sample was homogenous, as only 3 schools were used, making generalizations difficult; the sample was small which limited statistical power	10.1 ± 0.4 years old (evaluation sample) ***ELIGIBILITY:*** Schools were eligible for participation if: they were government funded coeducational primary schools, they had more than 500 students enrolled, and facilities were adequate for fundamental motor skill lessons and physical education. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from Deakin University in Australia ***THEORY/ FRAMEWORK:*** Ecological Systems Theory ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The Victorian Health Promotion Foundation ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. There were no associations between perceived environmental variables and low or moderate intensity activity among boys. 2. Among girls, physical activity opportunities in the neighborhood were positively associated with low intensity activity [$F(1, 51)=5.29$, $p=0.03$, $r^2=0.09$]. 3. Sedentary and vigorous intensity activity was not associated with any environmental variables among girls. 4. Opportunities for sedentary behaviors drawn at home showed a significant positive association with vigorous activity [$F(1, 60) =4.06$, $p=0.05$, $r^2=0.06$] and an inverse association with time spent being sedentary [$F(1, 60)=3.65$, $p=0.06$, $r^2=0.06$]. 5. Food locations drawn within the neighborhood showed a significant positive association with moderate intensity activity [$F(1, 48) =4.16$, $p=0.05$, $r^2=0.08$].

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Ball, Bauman (2001) Australia	Neighborhood aesthetic quality ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Convenience of locations within walking distance from residence *Complex:* 1. Neighborhood social factors (companionship for walking)	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 3,392 respondents ***PRIMARY OUTCOME:*** Walking behavior ***MEASURES:*** 1. 1996 Physical Activity Survey for the state of New South Wales [NSW] (leisure time and work-related physical activity, sociodemographic factors, walking behavior, perceptions of neighborhood aesthetics, safety, and convenience to facilities, companionship for walking [social factor]) 2. Medical Outcomes Study Short-Form General Health Survey [SF-12] (health status) ***DATA COLLECTION:*** This study was based on data collected for the New South Wales Health Department, as part of the 1996 New South Wales Physical Activity Survey. The analyses did not use data on walking for transport. Walking for exercise data were dichotomized into any or no walking in the past 2 weeks. Perceptions of environment influences were assessed using items derived from the findings of an earlier Australian qualitative study. For all the items, a 5-point Likert scale, ranging from strongly agree (1) to strongly disagree (5), was applied. The sum of scores on these items provided a convenience score, ranging from 3 to 15. The physical and mental health component scores (PHCS and MHCS) were used to categorize respondents as having "good" (above the median) or "poor" (below the median) physical health and mental health status. ***LIMITATIONS:*** Causal inferences cannot be made using cross-sectional data; the survey data were self-reported; exercise measures were placed in a dichotomous measure rather than a measure varying degree which eliminates a lot of variation; only one indicator was used to describe the social environment	General population, Adults, 54.2% Females (evaluation sample) Demographic data for the sample (age, gender, and household size) were weighted to the NSW population of 4.22 million adults ages 18 years and over. The sample was taken from a statewide representative population of Australian adults. ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from Deakin University, the University of Wollongong, and the University of New South Wales. ***THEORY/ FRAMEWORK:*** Social ecological framework ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Those reporting more convenient (both men; χ^2=19.1, p<0.05; and women; $\chi^2$11.2, p<0.05) and more aesthetically pleasing (women only; χ^2=23.5, p<0.05) environments had higher proportions of walkers. 2. Compared to those reporting a highly favorable aesthetic environment, individuals with a moderately aesthetic environment were 16% less likely (OR=0.84, 95%CI=0.71-0.99, p<0.05) to walk for exercise, while those reporting a low aesthetic environment were 41% less likely (OR=0.59, 95%CI=0.47-0.75, p<0.01) to walk for exercise. 3. Compared to those reporting a highly convenient environment, individuals with a moderately convenient environment were 16% less likely to walk for exercise (OR=0.84, CI=0.71-1.00, p<0.05), while those with a low environmental convenience were 36% less likely (OR=0.64, 95%CI=0.54-0.77, p<0.01) to walk for exercise. ***OTHER:*** 4. Individuals with poor PHCS and individuals with good PHCS with lower environmental aesthetics (poor PHCS; OR=0.62, 95%CI=0.46-0.85, good PHCS; OR=0.57, 95%CI=0.41-0.79) and convenience ratings (poor PHCS; OR=0.72, 95% CI=0.56-0.93, good PHCS; OR=0.60, 95%CI=0.46-0.77), and with no company to walk with (poor PHCS; OR=0.64, 95%CI=0.52-0.78, good PHCS; OR=0.72, 95%CI=0.59-0.89), had a decreased likelihood of walking for exercise. 5. Those with poor MHCS were comparable with those with good MHCS, although there was a trend for those with poorer mental health to have slightly weaker associations between walking and both environmental aesthetics (poor MHCS; OR=0.72, 95%CI=0.54-0.97, good MHCS; OR=0.46, 95%CI=0.33-0.64) and convenience (poor MHCS; OR=0.68, 95%CI=0.53-0.87, good MHCS; OR=0.61, 95%CI=0.48-0.79). 6. Having company was significantly associated with the likelihood of walking for exercise in the past 2 weeks (OR=1.00), individuals without company were 31% less likely to report walking for exercise in the past 2 weeks (OR=0.69, 95%CI=0.59-0.80, p<0.01).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Fein, Plotnikoff (2004) Canada	Neighborhood availability of roads and sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to convenient recreational facilities and equipment for physical activity *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** A subsample of 610 participants from four rural high schools in Alberta ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Godin Leisure-Time items (number of exercise bouts, duration of bouts, frequency of exercise [valid]) 2. Questionnaire (perceived availability and importance of environmental resources [e.g., roads and sidewalks], perceived neighborhood safety, physical activity, demographics, psychosocial factors, self-efficacy, influence of peer, family, and friends) ***DATA COLLECTION:*** Availability of environmental resources was assessed by measures of three environmental subscales (the home, neighborhood, and convenient facilities). The instrument was modified to include the school environment as a fourth context for physical activity. Means were calculated for each of the four environmental contexts. Metabolic equivalent value (MET) scores used the mean range for each intensity level of physical activity. The energy expenditure score ranges were adapted from the Seven-day Physical Activity Recall and are valid and reliable for eleventh grade children. Cronbach's alpha for the 5-item self-efficacy scale was 0.75. The energy expenditure was calculated for both moderate and hard intensity activities. Hard physical activity is defined as jogging, jazz dancing, basketball and mountain biking, while moderate activities was defined as walking or bicycling. ***LIMITATIONS:*** Data was self-reported; the sample was convenient and limited generalizability; because the study was cross-sectional causation cannot be assumed; most of the measures used are validated in university-aged students not high school youth	14-18 year olds 62% Female (final sample) There was a relatively even distribution of participants across grades: Grade 9=21% Grade 10=28% Grade 11=26% Grade 12=25% ***ELIGIBILITY:*** Each student provided informed consent ***EXPOSURE/ PARTICIPATION:*** The populations of these schools comprised 1,595 students. Principals granted access to students allowing 1,291 individuals to be eligible for the study. In total, 914 students completed the questionnaire.	***LEAD AGENCY:*** Researchers from the University of Toronto and the Alberta Centre for Active Living and Faculty of Physical Education and Recreation ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not reported ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** The study instrument was initially pilot tested with 30 high school students, it took approximately 45 minutes to complete before the study took place. ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The Alberta Sport, Recreation, Parks, and Wildlife Foundation ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. The environmental resource scales were positively correlated with energy expenditure (home $r=0.16$, neighborhood $r=0.16$, facilities $r=0.12$, school $r=0.15$, $p<0.01$) as were the perceived importance scores (home $r=0.22$, neighborhood $r=0.16$, facilities $r=0.20$, school $r=0.27$, $p<0.01$). 2. Perceived importance of the school environment was the only environmental measure showing a significant association ($\beta=0.14$, $p<0.01$) with energy expenditure. 3. Males were strongly associated with energy expenditure ($\beta=-0.24$, $p<0.05$) among respondents reporting high levels of perceived importance in the school environment.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Mota, Gomes (2007) Portugal	Street connectivity and intersection density ***OTHER INTERVENTION COMPONENTS:*** *Multi-component* 1. Perceived neighborhood safety *Complex* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 705 girls in grades 7-12 in 11 urban public secondary schools in Aveiro District, Portugal ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Student questionnaire (transportation behaviors to and from school (walk, bike, car, bus), screen time in the previous week) 3. Parent questionnaire (occupation [International Classification of Professions], education level) 4. Perceived Neighborhood Environments questionnaire (access to destination, street connectivity, infrastructure for walking and cycling, neighborhood safety, social environment, aesthetics, and recreation facilities) ***DATA COLLECTION:*** The student questionnaire data used for this study had been collected during physical education classes in Spring 2004. The parent questionnaire was sent to the students' residences. The environment questionnaire used the Environmental Module (Perceived Neighborhood Environments) of the International Physical Activity Prevalence Study categorizing response on a four-point scale. ***LIMITATIONS:*** No analysis of distance traveled to school; cross-sectional design; participants who did not travel home in the same way that they traveled to school were excluded from analyses	13-18 year old females (mean age 17.7 ± 1.6 years evaluation sample) ***ELIGIBILITY:*** Informed written consent was obtained from the participants and their parents. Eligible participants had to travel to and from school using the same mode. ***EXPOSURE/ PARTICIPATION:*** Potential sample included all 841 girls from the 7th to 12th grades registered at the participating schools (90% response rate).	***LEAD AGENCY:*** The research team was from the University of Porto, Portugal (evaluation) ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Programa de Apoio Financeiro à Investigação no Desporto (PAFID) ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. No statistically significant differences were found for BMI between active and passive travelers. ***PHYSICAL ACTIVITY:*** 2. For neighborhood environment characteristics, only street connectivity was significantly different between the travel groups. 56.0% of active vs. 46.1% of passive travelers agreed that there were many 4-way intersections in their neighborhood (p=0.02). 3. Girls who agreed that there were many four-way intersections in their neighborhood were more likely to be active travelers (OR=1.63, 95%CI=1.08-2.45, p≤0.05). 4. Neighborhood safety was of borderline statistical significance (p=0.07). 21.8% of active vs. 28.8% of passive travelers agreed that neighborhood crime made it unsafe or unpleasant to walk. ***SCREEN TIME:*** 5. No statistically significant differences were seen for screen time between active vs. passive travel groups.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
De Bourdeaudhuij, Sallis (2003) Belgium	Quality of and access to sidewalks ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood safety from crime 2. Access to shops, residential density, land use mix, connectivity 3. Access to public transportation 4. Access to physical activity facilities and bike lanes *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 521 residents of Ghent, Belgium ***OUTCOME:*** Overweight/obesity and physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Seven-page questionnaire (IPAQ-items [physical activity], environmental perceptions and factors, demographic data, anthropometric data) 3. International Physical Activity Questionnaire (IPAQ) short-form items (past 7 day duration and intensity of physical activity and sedentary behavior) 4. Environmental items from 2 questionnaires (residential density, land use mix, access to public transportation, availability of sidewalks and bike lanes, neighborhood aesthetics, perceived safety from crime and traffic, connectivity of the street network, satisfaction with the neighborhood and its services, recreational physical activity [worksite environment, physical activity equipment in the home, convenience of physical activity facilities]) ***DATA COLLECTION:*** A seven page questionnaire was mailed with a letter explaining the purpose of the study and addressed to the randomly selected person who was requested to answer to the questionnaire. At 6 and 12 weeks non respondents received additional requests to complete the questionnaire. Two existing questionnaires were combined to measure environmental correlates of physical activity. A separate study was executed to test the reliability of the newly combined items it had interclass coefficients ranging from 0.40 to 0.97 and validity coefficients ranging from 0.21 to 0.91. The International Physical Activity Questionnaire short, self-administered, 7 items to identify physical activity in the past 7 days. Validity and reliability results in 12 countries demonstrate that the IPAQ has comparable reliability and validity to other self-report measures of physical activity. ***LIMITATIONS:*** Purpose of walking was not distinct; survey data was self-reported; study conducted in one city limits generalizability; causal relations cannot be obtained using cross-sectional data; there was a lack of context specific physical activity measures; using the IPAQ short form, the difference between the purpose or context of an activity could not be disentangled	Adults,18-65 year olds (target sample) 41 ± 12.22 (mean) years, 48.3% Female, 70.1% employed, 39.3% urban dwellers, 54.9% suburban, 5.9% countryside (evaluation sample) Respondents appear to have better jobs, have a higher education, are more often employed, and under represent the number of individuals living alone compared with the Flemish reference population. ***ELIGIBILITY:*** Not reported ***EXPOSURE/ PARTICIPATION:*** The local government from the pool of all residents of Ghent, a city with 224,000 inhabitants and consisting of a city center, suburbs, and countryside.	***LEAD AGENCY:*** Researchers were from Ghent University in Belgium and San Diego State University in California ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** A separate study was executed to test the reliability of the newly combined environmental items. It was translated to Flemish and pretested with a small sample (n=40). ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. Participants with a higher BMI reported less safety from crime (Pearson r= -0.11, p<0.05), less physical activity equipment in the home (Pearson r= -0.15, p<0.001), and fewer convenient physical activity facilities (Pearson r=-0.11, p<0.05). ***PHYSICAL ACTIVITY:*** 2. Greater availability of sidewalks in the neighborhood was associated with walking in males (semi-partial correlate; 0.14, p≤0.05). 3. In females, more walking was associated with greater ease of the walk to public transportation stops (semi-partial correlate; 0.16, p≤0.05) and to longer distances to shops and businesses (semi-partial correlate; 0.15, p≤0.05). 4. In males, the amount of sitting was related to higher perceived criminality in the neighborhood (semi-partial correlate; -0.22, p≤0.01), longer distances to shops and businesses (land use mix, diversity) (semi-partial correlate; 0.14, p≤0.05), and more convenience of shopping in local stores (land use mix, access to local shopping) (semi-partial correlate; 0.15, p≤0.01). 5. In males, moderate intensity activity was related to more satisfaction with neighborhood services (semi-partial correlate; 0.15, p≤0.05). In females, more moderate intensity physical activity was related to better access to shopping in local stores (semi-partial correlate; 0.16, p≤0.05) and more emotional satisfaction with the neighborhood (semi-partial correlate; 0.13, p≤0.05). 6. In males, vigorous intensity physical activity was related to more convenient physical activity facilities (semi-partial correlate; 0.11, p≤0.05). 6. In females, vigorous intensity physical activity was related to more convenient physical activity facilities (semi-partial correlate; 0.14, p≤0.05) and supportive worksite environment was related to more high intensity activity (semi-partial correlate; 0.12, p≤0.05). ***OTHER:*** 7. For females, less emotional satisfaction with the neighborhood was associated with greater amounts of sitting (semi-partial correlate= -0.15, p≤0.05).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Burton, Turrell (2005) Australia	Presence of footpaths (sidewalks) ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to recreation facilities 2. Perceptions of neighborhood traffic safety 3. Access to public transportation 4. Access to street lighting and perceived safety *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 1,827 participants from the Australian Commonwealth electoral roll current as of October 1999 ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Questionnaire (frequency, duration, intensity, and types of physical activity, perceived health, cognition, self-efficacy, anticipated benefits, perceived barriers, social support, neighborhood environment [physical environment: footpaths, transit, streetlights, aesthetics, traffic, facilities], and demographic data) ***DATA COLLECTION:*** The mail surveys were delivered in September 2000. The psychological, social, and environmental correlates were measured using a battery of scales that were previously developed using qualitative and quantitative research. The questionnaire had an internal consistency of Cronbach's alpha values ranging from 0.69 to 0.89. The maximum "allowable" time doing any one of the three types of activity was 14 hours/week; any greater time was recoded to 14 hours. The maximum "allowable" time across the 3 activities was 28 hours /week, any greater time was recoded to 28 hours. For each type of activity, the total time (in minutes) was multiplied by an intensity value of METs. To measure total activity participation, the time and MET product scores for walking and intensity were summed to provide a total energy expenditure score for the preceding week. ***LIMITATIONS:*** Cross-sectional design does not allow for causal or temporal inferences to be made; questionnaire data is self-reported	Adults, 18-64 years old ***ELIGIBILITY:*** Eligible participants were registered as Australian adult citizens, 18 to 65 years of age living in Brisbane. ***EXPOSURE/ PARTICIPATION:*** Not reported	***LEAD AGENCY:*** Researchers were from the University of Queensland, St. Lucia, Queensland University of Technology, and San Diego State University ***THEORY/ FRAMEWORK:*** Contemporary ecological models ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The Queensland University of Technology and the National Heart Foundation of Australia ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Environmental variables contributed the least to vigorous intensity activity. 2. The proportion of unique variation (Nagelkerke r^2) accounted for in walking, moderate-intensity, vigorous-intensity activity, and total physical activity by the environmental correlate group is 0.6, 1.1, 0.4, and 1.2, respectively. 3. Neighborhood aesthetics contributed more to walking (Nagelkerke r^2=0.4%), and the barrier of family obligations contributed more to total and moderate-intensity activity.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Carver, Timperio (2008) Australia	Intersection density and street accessibility ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Presence of traffic calming features (e.g., speed bumps) *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 534 children: 8-9 year olds (n=188), adolescents: 13-15 year olds (n=346) from 19 state primary schools in areas of varying socioeconomic status across Melbourne, Australia. ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Active Transport Survey (frequency of walking/ cycling to destinations) 2. Accelerometers (physical activity) 3. Geographic Information System (GIS) data (800 m radius buffer to participant's home, length of local roads, local road index, proximity to cul-de-sac, intersection density, length of walking tracks, numbers of speed bumps, gates and barriers on roads, and total number of traffic/pedestrian lights) ***DATA COLLECTION:*** Data was compiled using only the 3-year follow-up from the Children Living in Active Neighborhoods (CLAN) study, which coincided with initial evaluation of the road environment using GIS. Data collection took place between July and December, 2004. Parents filled out the Active Transport Survey for children, while adolescents completed the survey themselves. Children wore accelerometers for 8 consecutive days. Mean duration (minutes/day) spent in physical activity of moderate-to-vigorous intensity was calculated for three specific periods on weekdays (before and after school and evening) and for whole weekend days using an established regression equation. ***LIMITATIONS:*** Cross-sectional study design limits causal inference; self reported data; other measures that were not assessed may have affected physical activity (e.g., proximity of shops, parks, and recreational facilities)	8-9 year olds, 13-15 year olds ***ELIGIBILITY:*** Participants for the present study were part of the CLAN study. Parental consent was required to participate. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from Deakin University in Australia ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The evaluation was supported by the National Health and Medical Research Council ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. The number of intersections and total length of walking tracks was negatively associated with younger boys' moderate-to-vigorous physical activity on weekends (adjusted β=-0.262, p<0.05, adjusted β=-0.235, p<0.05, respectively). 2. The number of traffic/pedestrian lights, was negatively associated with younger girls moderate-to-vigorous physical activity on weekends (adjusted β=-0.312, p<0.05). 3. For children, there were no significant associations between the road environment and the likelihood of making seven or more walking/cycling trips per week. 4. Adolescent girls residing in neighborhoods with two to three traffic/pedestrian lights were more likely to make seven or more walking/cycling trips per week than those whose neighborhoods had fewer traffic lights (OR=2.74, 95% CI=1.21-6.19, p<0.05). 5. Adolescent boys residing in neighborhoods with a medium total length of local roads (i.e., 14.5-17.8 km) were more likely than those residing in areas with a low total length to make seven or more such trips (OR= 3.02, 95% CI=1.01-9.06, p<0.05). 6. Adolescent boys whose neighborhoods contained medium (i.e., two to seven) rather than low numbers of speed humps were less likely to make seven or more walking/cycling trips per week (OR=0.31, 95% CI=0.11-0.86, p<0.05). 7. Adolescent boys that resided on a cul-de-sac rather than a through road were associated with an increase in moderate-to-vigorous physical activity of 9 minutes after school, 5 minutes in the evenings (adjusted β= 0.231, p<0.01) and 22 minutes on weekend days.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Giles-Corti, Donovan (2002); Giles-Corti, Donovan (2002); Giles-Corti, Donovan (2003); Giles-Corti, Macintyre (2003); McCormack, Giles-Corti (2007); McCormack, Giles-Corti (2008) Australia	Neighborhood perceptions of access to sidewalks **OTHER INTERVENTION COMPONENTS:** *Multi-component* 1. Access to transit stations 2. Access to destinations, land-use, and road network distance 3. Access to recreation destinations 4. Neighborhood perceptions of traffic safety 5. Neighborhood perceptions of safety *Complex* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 1,755 participants in Perth, Australia **PRIMARY OUTCOME:** Overweight/obesity and physical activity **MEASURES:** 1. Survey (physical activity [type, frequency, duration, and intensity during past 2 weeks], streetscape of the respondents home, attractiveness of open spaces, physical activity club memberships, access to a motor vehicle, recreation destinations [inside or outside neighborhood, free or pay parking], perceptions of safety and interest [traffic and hazards], perceptions of the social environment, perceptions of access [sidewalks, etc.], opportunities for activity within walking distance, height and weight [body mass index; BMI]) 2. Geographic Information Systems [GIS] (geo-coded address, shortest road network distance [destination present within 400m and 1500m of home], individual access for destinations and facilities [Hansen's spatial accessibility model; objective factors for access]) 3. Environmental Scan (access to footpaths, shops, traffic, aesthetic environment) 4. Yellow and White Pages Telephone Directory, the Australian postal service, the Western Australian Department of Transport, and the Western Australian Ministry of Planning (total count for available destinations, commercial addresses for post boxes, convenience stores, newsagents, schools, bus stops, transit stations, parks, the river, and beaches) 5. Socioeconomic Index for Areas [SEIFA; Australian Bureau of Statistics] (socioeconomic status, demographic data) **DATA COLLECTION:** This study used data from the Study of Environmental and Individual Determinants of Physical Activity (SEID 1). Only items with an intra-class coefficient or k greater than or equal to 0.60 were included in the main study. The survey was modified using items from other major Australian studies. Objective assessments were made on the street in front of the respondent's home. Data collection began in late spring 1995 and took 5 months to complete (August 1995-March 1996). One household participant was interviewed in a face-to-face meeting. Interviews were followed-up with a telephone survey 2-4 weeks later. Perceptions of access were placed into quartiles. *(continued next page)*	Adults, 18-59 years old (evaluation sample) The sample was comprised of relatively young, healthy, sedentary workers and homemakers living in high or low SES areas. **ELIGIBILITY:** Eligible participants were under the age of 59, employed, residing in their suburb for 1 or more years, could not regularly exercise at work, could not have a medical condition restricting physical abilities, and had to be proficient in English. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** Researchers were from the University of Western Australia and the University of Glasgow. **THEORY/ FRAMEWORK:** Theory of Planned Behavior and the Theory of Trying; These are derived from the theory of reasoned action an 'expectancy model' that states that individuals are more motivated to perform behaviors they believe will result in highly valued outcomes. **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** The reliability of newly developed items was assessed in the extensive pilot phase. Modified weights for attractiveness were derived from a survey of urban planners. **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Western Australian Health Promotion Foundation (Healthway) Health Promotion Research Scholarship, a NHMRC/ NHF Career Development Award. **STRATEGIES:** Not applicable	**OVERWEIGHT/OBESITY:** 1. Overweight individuals were more likely to live on highways (OR=4.24; 95%CI: 1.62-11.09), streets with no sidewalks (OR=1.4, 95%CI: 1.01-1.95), streets with sidewalks on one side only (OR=1.32; 95%CI: 0.98-1.79) and perceive no paths within walking distance (OR=1.42; 95% CI: 1.08-1.86). 2. Those who always had access to a motor vehicle were about half as likely to be obese as those who never had access to a motor vehicle (OR=0.56, 95%CI: 0.32-0.99). 3. Obese individuals were nearly twice as likely as others to perceive that there was no shop within walking distance (OR=1.84, 95%CI: 1.01-3.36). 4. Individuals with poor access to 4 or more recreational facilities were 68% more likely to be obese compared with others (95%CI: 1.11-2.55). **PHYSICAL ACTIVITY:** 5. Those who exercised vigorously were more likely to live in high SES areas (OR=1.00), to be in the top quartile of access to the beach (OR=1.38, 95%CI: 1.07-1.79, p=0.013), to perceive their neighborhood as being attractive, safe, and interesting (OR=1.39, 95%CI: 1.08-1.79; p=0.01); and to claim that there were sidewalks in the neighborhood (OR=1.52, 95%CI: 1.05-2.21, p=0.027). 6. In comparison with those who had major traffic and no trees on their street, the odds of achieving recommended levels of walking were nearly 50% higher among those who lived on a street with one or both of these features (combined OR=1.49, 95%CI: 0.96-2.33). 7. In comparison with those who had no sidewalk and no shop on their street, those who had access to either or both of these attributes were about 25% more likely to achieve recommended levels of walking (combined OR=1.25, 95%CI: 0.90-1.74). 8. Among individuals who frequented pay for use recreational destinations, each additional pay destination (OR=1.51, 95%CI: 1.32-1.73, p<0.001), having access to a motor vehicle (OR=0.51, 95%CI: 0.26-0.99, p<0.05), and having a club membership (OR=6.83, 95%CI: 3.39-13.73, p<0.001) were associated with the use of pay-destinations located in the neighborhood. 9. Those who used a pay destination located within or outside (OR=8.46, 95%CI: 3.98-18.00, p<0.001 and OR=3.48, 95%CI: 2.59-4.66, p<0.001, respectively) the neighborhood were more likely than those who did not use a pay destination to achieve sufficient vigorous-intensity physical activity. 10. Respondents using free destinations within and outside (OR=1.56, 95%CI: 1.00-2.33, p<0.05 and OR=2.13, 95%CI: 1.56-2.89, p<0.001, respectively) the neighborhood were more likely to achieve sufficient levels of vigorous-intensity physical activity than those not using a free recreational destination. *(continued next page)*

(Continued from previous study)						
		LIMITATIONS: Individual measures were self-reported; Perth has a higher standard of living than national and international standards; study only used data from participants in the top and bottom quintile of social advantage; study area was restricted by available resources; this study used distance-only model to determine spatial accessibility; use of cross-sectional data limits assumptions of causality; random chance cannot be ruled out; several destinations that may be important for transport-related and vigorous-intensity physical activity were not included				11. Residing within 1500 m of destinations including schools (OR=1.75, 95% CI: 1.28-2.39, p<0.001), convenience stores (OR=1.89, 95% CI: 1.26-2.84, p<0.001), shopping malls (OR=2.07, 95% CI: 1.43-3.00, p<0.001), newsagents (OR=2.20, 95% CI: 1.60-3.03, p<0.001), and transit stations (OR=2.38, 95% CI: 1.67-3.39, p<0.001) was significantly associated with regular walking for transport. 12. Having a transit station located within 1500 m was positively associated with regular walking for recreation (OR=1.50, 95% CI: 1.09-2.05, p<0.05), while having a beach within 1500 m was positively associated with irregular walking for recreation (OR=1.97, 95% CI: 1.01-3.83, p<0.05) and regular vigorous physical activity (OR=1.93, 95% CI: 1.20-3.13, p<0.01). 13. For each additional different type of destination (including recreational and utilitarian destinations) within 400 and 1500 m, the odds of regular walking for transport increased by 43% (95% CI: 1.27-1.61, p<0.001) and 41% (95% CI: 1.26-1.58, p<0.001) and the odds of irregular walking for transport increased by 27% (95% CI: 1.12-1.44, p<0.001) and 23% (95% CI: 1.12-1.35, p<0.001). 14. For each additional type of destination located within 1500 m the odds of regular walking for recreation increased by 16% (95% CI: 1.06-1.27, p<0.01), while the odds of irregular walking increased by 12% (95% CI: 1.01-1.26, p<0.05). 15. The mix of utilitarian destinations within 1500 m was positively associated with regular walking for recreation (OR=1.17, 95% CI: 1.05-1.29, p<0.01). 16. Destination mix was not associated with time spent walking for recreation or vigorous physical activity. 17. Respondents were more likely to walk for transport if they were in the top quartile for access to attractive public open space (OR=1.35, 95%CI: 1.05-1.73, p=0.02) and if they perceived that their neighborhood had sidewalks (OR=1.65, 95%CI: 1.12-2.41, p=0.011), a shop within walking distance (OR=3, 95%CI: 2.04-4.4, p<0.0001), and more traffic and busy roads (OR=1.26, 95%CI: 1.01-1.56, p=0.038). 18. The likelihood of walking for recreation was higher in residents in the top quartile of access to the beach (OR=1.49, 95%CI: 1.14-1.93, p=0.003) and those who perceived their neighborhood as being attractive safe and interesting (OR=1.49, 95%CI: 1.14-1.95, p=0.003), and that there was support for walking locally (OR=1.8, 95%CI: 1.36-2.4, p<0.0001). 19. Respondents were more likely to walk as recommended if they were in top quartile of access to public open space (OR=1.43, 95%CI: 1.07-1.91, p=0.015) and perceived their neighborhood as being attractive, safe, and interesting (OR=1.50, 95%CI: 1.08-2.09, p=0.017), and supportive of walking locally (OR=1.52, 95%CI: 1.09-2.11, p=0.014). ***OTHER:*** 20. The greater the number of significant others who exercised weekly with the respondent, the more likely recommended levels of activity were achieved (four or more vs. none, OR=1.37, 95%CI: 0.83-2.25) test for trend p<0.001). 21. Walking at recommended levels was significantly associated with perceived behavioral control, frequency of a behavioral skill used in past month, intention to be active (high vs. low, OR=1.83, 95%CI: 1.14-2.94, p=0.13), having a club membership (OR=0.53, 95%CI: 0.39-0.74, p<0.0001), owning a dog (OR=1.58, 95%CI: 1.19=2.09), social support for physical activity in the past 3 months, and being in the top quartile of access to attractive public open space (OR=1.47, 95%CI: 1-2.15, p=0.048). 22. Relative to respondents in the lowest determinant score categories, the odds of achieving recommended levels of walking were 3.1 times higher among those in the high individual determinant score category (95%CI: 2.2-4.37, p<0.0001), 2.79 times higher among those in the high social environmental determinant score category (95%CI: 2-3.9, p<0.0001), and 2.13 times higher among those in the high physical environmental determinant score category (95%CI: 1.54-2.94, p<0.0001). More associations with socioeconomic, demographic, irregular walking, minutes of walking, social support and attractive environment in text, not shown.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Lee, Kawakubo (2007) Japan	Street connectivity (alternate routes to locations) and neighborhood aesthetics ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood safety from crime 2. Access to parks and trails 3. Neighborhood perceptions of traffic safety 4. Distance to destinations in the community *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 432 adults in two wards: one in metropolitan Tokyo (high walkability region, n=237) and one in rural northeastern Japan (low walkability region, n=195) ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Questionnaire (demographic data, daily walking, frequency and duration of walking for exercise, for commuting, and for purposes other than exercise, perception of neighborhood environment, total walking time, accessibility, safety, convenience, aesthetics, weather) ***DATA COLLECTION:*** Data was taken from a questionnaire collected for a local government health promotion program in January 2004. Total walking time (walking time for exercise, commuting or shopping and others) was used as neighborhood walking time. Responses regarding the perception of neighborhood characteristics were selected from a 6-point Likert scale ranging from strongly disagree (0) to strongly agree (5). The higher the score the more positive participants' perceptions were. Previous studies provided the definition for high walkability and low walkability regions. Questions were developed for Japanese neighborhood environmental characteristics by modifying questions from earlier studies, ICC of questionnaire 0.70. ***LIMITATIONS:*** Variation in participant's environment was not accounted for in this study; causal relationships cannot be established using a cross-sectional study design: because this study is cross-sectional it does not represent all respondents in the region; data came from participants in a health promotion study which may have led to selection bias	Adults, 56% Female (evaluation sample) ***ELIGIBILITY:*** Eligibility for the health promotion program was not discussed. Participants signed a consent form. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from the University of Tokyo, Kyoritsu Women's University, Alliant International University, and the University of Tokyo. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** This study was based on earlier studies that showed comparisons between different regions with large variations in neighborhood's physical environments that correlate to the factors affecting the walking behavior of residents, such as residential density, mixed land use and street connectivity. ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not reported ***FUNDING:*** The Japan Ministry of Health, Labor and Welfare as a part of the Study of the Evaluation of Community Environments for the Effective Health Promotion Plan, and by a grant from the Japan Ministry of Education, Culture, Sports, Science, and Technology as part of the Study of the Evaluation of Neighborhood Environments Affecting Residents' Daily Physical Activity. ***STRATEGIES:*** Not reported	***PHYSICAL ACTIVITY:*** 1. In the high walkable region, those who had high scores for "There is a park nearby that is suitable for taking a walk in" (low perception mean [sd]: 190.8[195.0] vs. high perception mean [sd] 300.2[279.5], p<0.05), "There is a river (or a beach) within walking distance" low perception mean [sd]: 217.2[211.7] vs. high perception mean [sd] 299.1[283.6], p<0.05), and "The neighborhood is conducive for taking a walk" (low perception mean [sd]: 245.0[233.5] vs. high perception mean [sd] 323.4[308.5], p<0.05) spent significantly more walking time. 2. In the low walkable region, those who had high scores for "There are several ways to get to one place" (low perception mean [sd]: 124.9[139.9] vs. high perception mean [sd]: 201.4[249.4], p<0.05), "It is easy to cross streets" (low perception mean [sd]: 145.1[162.7] vs. high perception mean [sd]: 214.6[270.2], p<0.05), "The sidewalks have few inclines and are easy to walk on" [low perception mean [sd]: 89.7[88.2] vs. high perception mean [sd]: 215.6[245.9], p<0.01) and "The sidewalks are wide enough to walk on" (low perception mean [sd]: 132.2[138.8] vs. high perception mean [sd]: 232.8[284.5], p<0.01) spent significantly more walking time. 3. Those who had high scores for "There are sidewalks suitable for walking in the neighborhood" (high walkable: low perception mean [sd] 191.7[200.6] vs. high perception mean [sd] 302.9[279.7], p<0.05) (low walkable: low perception mean [sd] 125.9[182.1] vs. high perception mean [sd] 211.3[234.5], p<0.05) spent significantly more walking time in both regions. ***OTHER:*** 4. In the safety category, the score for "Vehicular traffic does not hinder taking a walk" was significantly higher in the low walkable region (high; mean [sd]; 2.49[1.48], vs. low; 3.08[1.55], p<0.01). In the safety category the variable, "The sidewalk is well-lit even at night", showed significantly higher scores in the high walkable region (high; mean [sd]; 2.97[1.32] vs. low; 2.11[1.42], p<0.01). 5. In the convenience category, the score for "The sidewalks are wide enough to walk on" was significantly higher in the low walkable region (high; mean [sd]; 2.54[1.50] vs. low; 3.04[1.50], p<0.01), whereas that for "The walking map of the neighborhood is useful" was significantly higher in the high walkable region (high; mean [sd]; 3.58[1.29], vs. low; 2.45[1.64], p<0.01). 6. Those who had high scores for "Residents in the neighborhood are friendly" spent significantly more walking time in both regions (high walkable: low perception mean [sd]: 234.2[212.2] vs. high perception mean [sd] 381.0[254.5], p<0.01) (low walkable: low perception mean [sd]: 135.9[157.1] vs. high perception mean [sd]: 228.3[271.0], p<0.05).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Owen, Cerin (2007) Australia	Street connectivity **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Land-use mix and net retail area ratio *Complex:* 1. Neighborhood self-selection	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 2,650 participants from 8 neighborhoods stratified as follows: high walkable/ high SES, high walkable/low SES, low walkable/ high SES, and low walkable/low SES totaling 156 districts. **PRIMARY OUTCOME:** Physical activity **MEASURES:** 1. Survey (walking for transport and recreation, frequency, duration [items from International Physical Activity Questionnaire-Long Form (IPAQ)], neighborhood self-selection [adapted from the Strategies for Metropolitan Atlanta's Regional Transportation and Air Quality (SMARTRAQ) study]) 2. Geographic Information System [GIS] (walkability index [dwelling, density, street connectivity, land-use mix, and net retail area]) 3. Adelaide Bureau of Statistics census (district-level socioeconomic status) **DATA COLLECTION:** Data for this study was taken from participants in the Physical Activity in Localities and Community Environments (PLACE). Validated surveys were collected in a series of waves, between July 2003 and June 2004, which accounted for seasonal variation. All four components of the walkability index were classified into deciles to provide a standard score from 1 to 10, with 1 indicating low walkability and 10 indicating high walkability. This allowed a possible score of 4 to 40 which was further classified into quartiles (1st=low-walkable districts and 4th=high-walkable districts), validated technique. Using a 5-point Likert-type scale was used for perceived importance of neighborhood selection. **LIMITATIONS:** Survey data was self-reported; IPAQ is not able to differentiate where walking occurs; low-response rate; walkability index did not capture access to recreational destinations nor the quality of the pedestrian environment	General population, Adults, Urban Survey respondents were more likely to be older, female, and employed (all χ^2 tests significant at $p<0.01$) compared to the 2001 Adelaide Bureau of Statistics Census data. **ELIGIBILITY:** Eligible respondents were English-speaking adults, aged 20 to 65 years, residing in private dwellings such as houses, apartments, or units, and able to walk without assistance. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** The researchers were from the University of Queensland, the University of Hong Kong, the University of Adelaide, the University of British Columbia, the University of Sydney, the University of Washington, Children's Hospital, and San Diego State University. **THEORY/ FRAMEWORK:** Ecological model **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Not reported **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. Living in areas with a walkability index that was one standard deviation above the average was associated with 37 minutes more walking than living in areas with a walkability index that was one standard deviation below the average. 2. Neighborhood self-selection was the only significant moderator of the relationship between neighborhood walkability and weekly minutes of walking for transport ($\beta=1.59$; SE=0.73; Wald test: $\chi^2(1)=4.78$; $p=0.029$). 3. Neighborhood walkability was associated with more walking for transport in residents for whom access to services was an important reason for living in a specific neighborhood (data not shown). 4. Weekly frequency of walking for transport was independently related to neighborhood walkability and neighborhood self-selection (Model 1: $\beta=0.02$; Wald test=37.6, df=1; $p<0.001$ and Model 2: $\beta=0.01$; Wald test=29.1, df=1; $p<0.001$ and for neighborhood self-selection Model 2: $\beta=0.13$; Wald test=109.9, df=1; $p<0.001$, respectively). 5. No significant effect of neighborhood walkability on weekly minutes of walking for transport was observed among residents for whom access to services was not an important reason for living in their neighborhood. 6. For weekly minutes of walking for transport, there were no significant effects of objective walkability and neighborhood SES. 7. No statistically significant relationships between neighborhood walkability and walking for recreation were found. 8. No statistically significant moderators of the relationship between neighborhood walkability and walking for recreation were found. **OTHER:** 9. Neighborhood self-selection was a significant independent predictor of weekly minutes of walking for transport ($\beta=29.8$; Wald Test=25.8, df=1; $p<0.001$). 10. Weekly minutes and weekly frequency of walking for recreation were independently associated with neighborhood self-selection ($p<0.05$, no other results shown). 11. Choosing to live in a specific neighborhood because of its access to services was predictive of more weekly minutes of walking for transport.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Spence, Cutumisu (2008) Canada	Street connectivity ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Density and land use mix *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** Complete bodyweight and geographic data were available for 501 children (boys=239, girls=262) residing in 171 neighborhoods and attending one of the 10 health centers for preschool immunization within the Capital Health region encompassing Edmonton, Canada. ***PRIMARY OUTCOME:*** Overweight/obesity ***MEASURES:*** 1. Anthropometric data (height, weight, body mass index [BMI]) 2. Health Care Visit (demographic data [age and sex]) 3. 2001 Canada Census (neighborhood-level; education, income, and employment status) 4. Parent/guardian Questionnaire (duration of physical activity and play, duration of software, video, and TV time, dietary intake) 5. Geographical Information Systems [GIS] (respondent's address, intersection density, dwelling density, street connectivity, land use mix [4 factors=walkability index], number of physical activity facilities within 1500m radius of neighborhood) ***DATA COLLECTION:*** Data for the present study was collected from a study that conducted recruitment and data collection between March 22 and October 1, 2004. Questionnaires were sent by mail once and then given to parents again at health visit if they forgot to bring the completed version from home. Researchers conducted an in-service program on childhood obesity issue. A walkability index was derived for each neighborhood by taking the sum of the z-scores for intersection density, dwelling density, and land use mix with intersection density being weighted twice that of dwelling density and land use mix. Two different measures for bodyweight status were used to run regressions (Centers for Disease Control and Prevention [CDC] and International Obesity Taskforce [IOTF] cut-offs/criteria. Any significant results were then individually examined. ***LIMITATIONS:*** Self reported dietary and activity levels; cross-sectional study design; low response rate; the sample may have been biased because of the proportion of overweight children and parental attitudes	3-4 year olds 5-10 year olds ***ELIGIBILITY:*** Must attend one of the 10 health centers for preschool immunization and provide informed consent. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers were from Capital Health and the University of Alberta. ***THEORY/ FRAMEWORK:*** Authors used the "3 D's of urban form" that influence physical activity for measurements; diversity, density, and design. ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The Young Family Wellness funding through the Capital Health ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. The odds of girls being overweight were lower if they lived in walkable neighborhoods (CDC OR=0.78, 95% CI, 0.66-0.91; IOTF OR=0.73, 95% CI, 0.61-0.88) with more intersections (CDC OR=0.57, 95% CI, 0.39-0.86; IOTF OR=0.48, 95% CI, 0.30-0.76). 2. No significant associations were found between boys' body weight status and intersection density. 3. Neither physical activity nor junk food consumption was associated with overall bodyweight status. 4. Significant interactions were found between sex and intersection density for both CDC, χ^2 (2, N=501)=9.01, p=0.011, and IOTF criteria, χ^2 (2, N=501)=11.76, p=0.003) when examining components of walkability.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Panter, Jones (2008) England	Street connectivity and neighborhood aesthetics ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to indoor and outdoor facilities for physical activity, access to green space and biking and walking facilities for physical activity 2. Residential density 3. Neighborhood traffic safety *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 401 respondents from six neighborhoods of varying socio-economic deprivation in Norwich, England. ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Questionnaire (personal characteristics, neighborhood perceptions of physical activity, access to facilities, parks, and green spaces, residential density, street connectivity, walking/ cycling facilities including sidewalks and trails, aesthetics, and pedestrian traffic safety) 2. Geographical Information System [ArcGIS] (accessibility of leisure facilities and green spaces from respondent's home) 3. Global Positioning System [GPS] (residential location of each respondent) ***DATA COLLECTION:*** Questionnaires were delivered in person to each neighborhood during July 2005. Questionnaires were collected after 3 days. The physical activity section of the questionnaire was adapted from the European Prospective Investigation into Cancer Study Physical Activity Questionnaire (ICC >0.68). Respondents were asked whether they agreed with 16 statements, adapted from the Neighborhood Environmental Walkability Survey (NEWS; ICC ≥0.58), related to neighborhood perceptions. A composite score was produced from the 16 items whereby a high score indicated a more favorable environment. GIS and the Ordnance Survey digital road network were combined to obtain accurate distances to facilities. Shortest road distance between residence and nearest facility was used. All respondents' scores from the NEWS and the questionnaire were calculated and placed into tertiles, with the highest tertiles having the best scores. ***LIMITATIONS:*** Cross sectional study design limits ability to determine causality; differential response rate as less affluent members of the population were under-represented; self-reported data; no information on utilization of facilities, quality or cost of the facilities or duration of physical activity	Adults When compared with 2001 census data for the neighborhoods from which the sample was drawn, respondents tended to be older and contain a greater percentage of females. Respondents also tended to be better educated with only 17.5% of local residents reporting a postgraduate qualification in the census compared with 29.4% of survey respondents. ***ELIGIBILITY:*** Participants were eligible if they were over 16 years of age, able to complete the questionnaire in English and were not precluded from walking because of a disability. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from the University of East Anglia, Norwich, United Kingdom. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Participants that reported 5 sessions of activity per week, lived closer to sports facilities (mean distance [standard error] =1268.9 [104.99], $p<0.05$) and had higher neighborhood walkability scores (mean=48.10 [0.79]. $p<0.01$) than their less active counterparts (mean distance=1,479.9 [34.25] and mean walkability scores=44.46 [0.37]). 2. Individuals that reported 5 or more weekly aerobic activity sessions gave a higher neighborhood walkability score (mean=46.05 [0.48]) than individuals who did not (mean=43.79 [0.54]), although this association was not apparent when walking alone was considered ($p<0.01$). 3. Respondents rating their neighborhood as having intermediate or good walkability were over 3 times as likely to report 5 or more sessions of physical activity per week compared to those who gave the lowest rating (OR=3.14, $p=0.02$; and OR=3.04, $p=0.03$ respectively). 4. Those who lived in the closest tertile to a park or green space were over twice as likely to report five or more sessions of physical activity (OR=2.17, 95% CI=1.00-4.78, $p\leq0.05$). 5. None of the associations with access to leisure facilities were statistically significant and were generally in a contrary direction to that expected; those living nearest to the facilities generally reported lower levels of activity than those farther away.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
De Vries, Bakker (2007) The Netherlands	Neighborhood intersection density ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Land use mix and residential density 2. Access to neighborhood recreation spaces 3. Neighborhood traffic safety *Complex:* 1. Neighborhood social structure	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** Total of 422 children from 20 elementary schools in 10 neighborhoods in six cities in the Netherlands. ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI) 2. 7-day activity diary (duration and type of at least moderate intensity physical activity) 3. Neighborhood Walkability Scale –NEWS (built environment categories; residential vs. commercial space, type of residence, sports/ recreation facilities and playgrounds, green space and water, safe walking and cycling, garbage and dirt, traffic safety, and the activity friendliness of the neighborhood) ***DATA COLLECTION:*** Researchers used previously collected data from the Spatial Planning and Children's Exercise [SPACE] study that collected data from pre- and post-World War II neighborhoods that had variation in type of residences (private and rented properties, low- and high-rise buildings) amount of green space, and presence of at least two elementary schools. Five neighborhoods were chosen from a list of 56 disadvantaged neighborhoods designated by the government for spatial restructuring. All measurements (i.e., physical activity diary, neighborhood observations, and anthropometric measures) were collected between October 2004 and January 2005. Two trained research assistants collected data after school in the neighborhoods using a checklist identifying built environment variables. The checklist is based on the Neighborhood Environment Walkability Scale (test-retest reliability: ICC=0.58-0.80) but was modified to reflect the Dutch built environment. Residential areas were assessed by type and period of construction, socioeconomic status, and age distribution of residents. Neighborhood boundaries were defined by city councils and varied in size and population. ***LIMITATIONS:*** The sample had a low response rate; the final sample varied significantly in age from the original sample; cross-sectional design does not allow for causal relationships to be made; the 10 neighborhoods chosen for study had limited variance	6 to 11 years 8.3 ± 1.4 years (mean) No difference was found in weight, sex, or maternal education between the final and original samples. ***ELIGIBILITY:*** Informed consent was obtained from the parents ***EXPOSURE/ PARTICIPATION:*** Not reported	***LEAD AGENCY:*** Researchers were from the University Medical Center, Amsterdam, the Netherlands and the Department of Physical Activity and Health, TNO Quality of Life, Leiden, Leiden, the Netherlands. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** This study was supported by a grant from the Dutch Ministry of Health, Welfare, and Sport and the Dutch Ministry of Housing, Spatial Planning, and the Environment. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Children's physical activity was negatively associated with the frequency of staircase entrance flats (3-4 stories without elevator) (β=-1.472; 95% CI=1.992- -0.953), unoccupied (boarded up) houses (β=-3.080; 95% CI=-4.625, -1.535), dog waste (β=-1.182; 95% CI=-2.104, -0.260), heavy traffic (lorry and bus) (β=-2.356; 95% CI=-3.587, -1.125), intersections in the neighborhood (β= -1.035; 95% CI=-1.825, -0.246), frequency of paved playgrounds (β= -1.372; 95% CI=-2.549, -0.195) and frequency of stripped crossings (β= -1.815; 95% CI=-2.854, -0.776) (p<0.05 for all). 2. Children's physical activity was positively associated with the proportion of green space (β=0.865; 95% CI=-0.494, 2.225) and with the frequency of terrace houses (β=1.508; 95% CI=0.726, 2.290), blocks of flats with fewer than 6 stores (β=-1.472; 95%CI=-1.992, -0.953), water (β=2.662; 95%CI=1.453, 3.871), cycle tracks (β=2.445; 95%CI= 0.439, 4.451), and 30-km speed zones (β=1.815; 95% CI=0.700, 2.929) in the neighborhood (p<0.05 for all). 3. Children's physical activity was also positively associated with the frequency of parallel parking spaces (β=2.152; 95%CI=1.408, 2.897) and parking lots (β=3.169; 95% CI=2.055, 4.284) in the neighborhood with the residential density (β=0.009; 95% CI=0.001, 0.017), and with the general rating of activity-friendliness of neighborhood (β=1.990; 95%CI=1.255, 2.724) (p<0.05 for all). 4. No significant associations were found for sports and recreation facilities, except for sports fields (p<0.05).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Kondo, Lee (2009) Japan	Street connectivity ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Residential density and land use mix-diversity 2. Perceptions of neighborhood safety from crime 3. Perceptions of neighborhood traffic safety 4. Access to neighborhood recreational facilities *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 156 residents; 83 residents were in the Type A region (high residential density, land use mix-diversity, and street connectivity). 73 residents were in the Type B region (low residential density, land use mix-diversity, and street connectivity). ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. Geographical Information System (GIS) Data (500-m radius residence buffer, household count, land use type count, length of streets and sidewalks, intersection count, width of streets) 2. Fieldwork and Tokyo City Planning Basic Survey (land use) 3. Abbreviated version of the Neighborhood Environment Walkability Scale (ANEWS) data (residential density, land use mix-diversity, land use mix-access, street connectivity, aesthetics, and traffic and crime safety) 4. Accelerometer ([Type A=48; Type B=64] total number of walking steps) 5. International Physical Activity Questionnaire (IPAQ) (types and duration of physical activity) ***DATA COLLECTION:*** Subjects were stratified and selected using the Basic Resident Register in September 2006. This study was part of the Study on the Evaluation of Neighborhood Environments Affecting Residents' Daily Physical Activity. A self-administered questionnaire was sent by mail. After acceptance to participate an accelerometer was sent to the subjects, who had their height, weight, and age programmed into the device. Subjects were asked to wear the accelerometer for 1 week, 8 hours per day, and return it by mail. For this study the ANEWS, was translated into Japanese and pretested (n=72) finding Cronbach's alpha coefficients were 0.57-0.94 and the reliability scores were 0.61-0.95, except for street connectivity (0.46). ***LIMITATIONS:*** Low response rate; causal information cannot be assessed using cross-sectional data	Adults, 30-69 years old (evaluation sample) ***ELIGIBILITY:*** Participant consent was required. The city has a relatively small population of 57,990 in a 699-km^2 area. Those who responded to the questionnaire and wore accelerometers were significantly older than those who did not. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from the University of Tokyo and Kyoritsu Women's University. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Previous studies were used to incorporate a study high residential density, high land use mix-diversity, high street connectivity and accessibility to facilities. ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Support came from a grant provided by the Japan Ministry of Education, Culture, Sports, Science and Technology ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. There were no significant differences in walking steps related to land use type, length of streets or sidewalks, number of intersections, and width of streets between the high and low scoring groups. There were no differences in walking time for leisure or transport associated with objective neighborhood measures between the high and low scoring groups. There were no differences in mean walking time for transport or cycling time for transport related to neighborhood environment perception scores between the high and low scoring groups. 2. For females, mean cycling time for transport was significantly longer in the high scoring group than in the low scoring group for the number of land use types (mean ± standard error: 11.9 ± 3.0 vs. 0.8 ± 4.4; $p<0.05$) including post offices (12.1 ± 3.1 vs. 1.5 ± 4.2; $p<0.05$), banks/credit unions (15.4 ± 3.8 vs. 3.1 ± 3.3; $p<0.05$), gymnasiums/fitness facilities (31.9 ± 7.8 vs. 5.8 ± 2.5; $p<0.01$), and/or amusement facilities (16.4 ± 4.6 vs. 4.8 ± 3.0; $p<0.05$) in the area when compared to subjects without these facilities. 3. For females, mean total walking steps was significantly higher in the high scoring group than in the low scoring group for the walking places score (mean± standard error: 9488±511 vs. 7957 ± 538; $p<0.05$). 4. For males, mean walking time for leisure was significantly longer in the high scoring group than in the low scoring group for the aesthetics score (mean ± standard error: 20.6 ± 6.0 vs. 0.6 ± 6.7; $p<0.05$) and for individuals with parks in the area compared to those without (26.2 ± 6.4 vs. 2.7 ± 6.9; $p<0.05$). 5. For males, mean total walking steps was significantly higher for subjects with bookstores (10,568 ± 898 vs. 6,983 ± 881; $p<0.01$) or rental video stores (10,336 ± 962 vs. 7,422 ± 873; $p<0.05$) in the area (within 10-minute walk) than for subjects without these facilities. 6. For males, there were no differences in walking steps between the high scoring group and the low scoring group for residential density, land use mix-diversity, land use mix-access, street connectivity, and safety.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Craig, Brownson (2002) Canada	Access to walkable routes for pedestrians ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of safety from crime 2. Access to different transportation modes 3. Perceptions of traffic safety 4. Level of neighborhood urbanization *Complex:* 1. Social support in the environment	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** Approximately 296,541 residents from a convenience sample of 27 neighborhoods in Ontario, Quebec, and Alberta. ***PRIMARY OUTCOME:*** Physical activity ***MEASURES:*** 1. 1996 Canadian Census self-administered questionnaire (education, income, mode of transportation, family size) 2. Neighborhood observations: Environment Score (level of urbanizations, number of facilities, mix of facilities, accessible to pedestrian, potential to see other people, walking routes, meets pedestrians' needs, connection to transport modes and traffic, amount and variety of stimuli, aesthetics, time and effort, traffic threats, safety from crime, potential for crime) ***DATA COLLECTION:*** The current study was designed to merge data from two Canadian sources, a neighborhood observational study (27 observations) and the 1996 Canadian Census. Data collectors received a two-day training before conducting observations. Ratings were compiled for the neighborhoods using a ten-point Likert-type scale between late fall 1999 and early spring 2000. Observations were taken during the morning and afternoon over both weekday and weekend days. In a small sub-study, the same observers independently coded environmental factors in two or four assigned neighborhoods, which yielded 156 values. Environment score was a composite score of 18 items. 3-level hierarchical linear models estimated inter-rater reliability, correlations ranged from 0.9-1.0. One fifth of the Census respondents received a longer version, including questions on education, income, and usual mode of transportation to work, with the latter including "walking to work" as a distance response category. ***LIMITATIONS:*** Cross-sectional study design does not allow for causal or temporal inferences to be made; distance of destination was not accounted for in the study design	General Population (target population) The observed neighborhoods were known for diversity of urban design, social class, and economic status. ***ELIGIBILITY:*** All citizens, landed immigrants, and nonpermanent residents were eligible to participate. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from the Canadian Fitness and Lifestyle Research Institute, Saint Louis University, and the Cooper Institute for Aerobics Research. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** The Physical Activity Unit, Health Canada, Government of Canada ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. The predicted environment score was lower in both small urban (T-ratio (23)=-3.61, p=0.002; Coefficient; -0.77) and suburban neighborhoods (T-ratio (23)=-4.42, p<0.0001; Coefficient=-0.12) than in urban neighborhoods. 2. The environment score was related to the percentage walking to work, controlling for degree of urbanization (T-ratio (23)=2.03, p=0.054; Coefficient=0.02). 3. Walking to work was significantly related to the environment score (T-ratio (25)=3.32, p=0.003), with a one-unit increase in the score being associated with a 25-percentage-point increase in the percentage walking to work. 4. The degree of urbanization altered the relationship between the environment score and walking to work (no statistical data). ***OTHER:*** 5. The environmental factor coefficients ranged from -1.82 to 2.20. Each factor was a significant contributor to the variation of the environment score (mean p=0.10 for "transportation system" and p<0.05 for other factors), except for visual interest and aesthetics. The inclusion of environmental factors (destinations, social dynamics, transportation system, and traffic) reduced the variation in the score by 46%.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Duncan, Mummery (2005) Australia	Street connectivity and neighborhood aesthetics ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Neighborhood safety 2. Distance to park space in the area 3. Access to physical activity opportunities *Complex:* 1. Social support and self-efficacy	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 760 respondents from Rockhampton, Queensland ***PRIMARY OUTCOME:*** Meeting physical activity recommendations, recreational walking ***MEASURES:*** 1. Active Australia Physical Activity Questionnaire (sociodemographic factors, self-efficacy, walking for leisure and transport, intensity, duration, and frequency of physical activity, safety, aesthetics, accessibility) 2. Geographic Information Systems (GIS) (linking residence with environmental measures, Euclidian and street distance, amount of streetlights) 3. Electronic White Pages (location of news agent outlets) ***DATA COLLECTION:*** Data used for this study was collected in August 2001 and September 2001. Levels of self-efficacy (Cronbach alpha=0.76) for performing physical activity and 4 social support items (Cronbach alpha=0.77) were assessed individually using a five-point Likert scale from 'not at all confident'/'never' to 'very confident'/'very often'. All items were subsequently summed to form a single item for self-efficacy and social support and dichotomized into high and low categories using a mean split. The Active Australia Physical Activity Questionnaire has shown good test-retest reliability. Participation in 'sufficient' levels of physical activity was defined as attaining 150 minutes of activity throughout the previous week in all activities excluding vigorous gardening, derived from national activity guidelines. Lighting information was provided to RCC in 2002 by the State's electrical supplier. ***LIMITATIONS:*** Survey data was self-reported; causal inferences cannot be made using a cross-sectional study; geo-coding was performed 17 months after the questionnaire was given; dog registration and street lightning data were taken one year after questionnaire collection; sample was taken from a very specific geographic location	General population Ages 18 and older ***ELIGIBILITY:*** All participants were 18 years of age or older at the time of the survey and lived in a residence that was accessible by land-based telephone and could be geo-coded. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from Central Queensland University ***THEORY/ FRAMEWORK:*** Social-ecological framework ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Queensland Health as part of 10,000 Steps Rockhampton ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. People who had unacceptable route directness to the nearest parkland were 41% more likely to achieve sufficient levels of activity than those people who had acceptable route directness to parkland (OR=1.41, CI=1.00-1.98). 2. People who did not agree that the neighborhood footpaths were in good condition were 38% more likely to participate in recreational walking than those who thought the footpaths were in good condition (OR=1.38, CI=1.00-1.91). 3. Euclidian distance of 0.4 km from their home were 69% less likely to walk in the previous week than those who had a footpath within that distance from their place of residence (OR=0.31, CI=0.18-0.55). 4. People with the most proximal parkland beyond a network distance of 0.6 k, were 41% more likely to achieve recommended levels of activity than those with parkland within this distance (OR=1.41, CI=1.01-1.97). 5. Overweight people were 64% more likely to engage in walking than healthy weight individuals (OR=1.64, CI=1.15-2.33). 6. People whose home was classed as being in the middle tertile of registered dog numbers within 0.8 km were 66% more likely to have reported some recreational walking than those people living in a residence with the lowest tertile of registered dog numbers (OR=1.66, CI=1.13-2.43). 7. People not agreeing that their neighborhood was clean and tidy were 2.67 times more likely to attain sufficient levels of activity than those people who agreed with the statement (OR=2.67, CI=1.28-5.55). ***OTHER:*** 8. People reporting high levels of self-efficacy were 93% more likely to attain sufficient activity than those people reporting low levels of self-efficacy (OR=1.93, CI=1.40-2.64). 9. People reporting high levels of social support for activity were 65% more likely to participate in recreational walking than those people who reported low levels of social support [OR=1.65, CI=(1.17-2.34)]. (No p-values provided)

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Mota, Gomes (2007) Portugal	Access to destinations ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to recreation facilities 2. Perceptions of neighborhood safety *Complex:* 1. Social environment	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 1,561 adolescents (815 girls, 746 boys) in grades 7-12 from 11 public secondary schools from Aveiro District, Portugal ***PRIMARY OUTCOME:*** Leisure time physical activity ***MEASURES:*** 1. Height and weight (body mass index [BMI]) 2. Leisure Time Physical Activity [LTPA] Questionnaire (student engagement in organized and non-organized sports) 3. International Classification of Professions (parent socioeconomic status [occupation]) 4. Portuguese Educational system (parent socioeconomic status [education level]) 5. Screen time (duration of television and computer use [hours] past week) 6. Perceptions of Environment Questionnaire (Environmental Module of the International Physical Activity Prevalence Study: access to destinations, street connectivity, walking and cycling infrastructure, neighborhood safety, social environment, aesthetics, recreation facilities) ***DATA COLLECTION:*** A questionnaire using the Environmental Module (Perceived Neighborhood Environments) of the International Physical Activity Prevalence Study and a questionnaire for physical activity was administered. Questionnaires were completed during physical education classes in spring 2004. Questions from the survey neighborhood perception survey were previously used for Portuguese adolescents and showed good reliability (ICC = 0.36–0.79). The reliability of the leisure time activities questionnaire (in a 1-week interval) was high (intraclass correlation coefficients [ICC] = .91 and .92). Individuals who did not report organized or non-organized physical activity were classified as non-active specifically defined as NLTPA=no leisure time physical activity; ALTPA=active during leisure time physical activity. Three groups were developed for screen time; watching TV and using the computer less than 1 hour per day, 2-3 hours per day, and more than 4 hours per day. ***LIMITATIONS:*** Cross-sectional design limits inferences of causality	General population, Urban, 11-18 year olds, average age: 14.7 (±1.6) years, (evaluation sample) ***ELIGIBILITY:*** Informed written consent was obtained from participants and parents. ***EXPOSURE/ PARTICIPATION:*** 1800 students from the 11 schools were potentially able to complete the surveys.	***LEAD AGENCY:*** Researchers were from the Research Centre in Physical Activity and Leisure, University of Porto, Porto, Portugal. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** This study was supported by two grants Fundacão Calouste Gulbenkian and PAFID. ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. In girls, access to recreational facilities (Rho = 0.10, p≤0.02) and aesthetics features (Rho = 0.12, p≤0.006) were positively associated with LTPA while personal safety (crime rate) was significantly and negatively (Rho = -0.10, p≤0.02) associated with LTPA. 2. Logistic regression analysis (data not shown) showed that girls who agreed that "the crime rate in my neighborhood makes it unsafe or unpleasant to walk in my neighborhood" were more likely to be NLTPA (OR = 0.60, 95% CI = 0.39–0.91, p = .02) and that those who agreed that "there are many interesting things to look at while walking in my neighborhood" were more likely to be LTPA (OR = 1.59, 95% CI = 1.07–2.34, p ≤ 0.02). The analysis also showed in girls that the increase in 1 hr of TV watching (1 hr category to 2–3 hr category) was a significant predictor of LTPA (OR = 0.38, 95% CI = 0.15–0.99, p ≤ 0.05). 3. In girls, screen time (TV watching: Rho = -0.09, p ≤?.05, p=.007; computer use: Rho = -0.10, p ≤ 0?.05, p=.006) was negative and significantly associated with leisure time physical activity (LTPA). 4. Social environment for boys (Rho = 0.11, p≤0.05) and girls (Rho = 0.08, p≤0.02) showed to be significantly associated with LTPA.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Li, Dibley (2006) China	Access to sidewalks **OTHER INTERVENTION COMPONENTS:** *Multi-component:* 1. Perceptions of safety 2. Access to recreational facilities (playgrounds, gyms, sports equipment, and public open spaces) 3. Access to physical activity during recess *Complex:* Not reported	**DESIGN:** Cross-sectional study **DURATION:** Not applicable **SAMPLE SIZE:** 1787 adolescents attending 30 junior high schools in Xi'an, China **PRIMARY OUTCOME:** Sedentary behavior **MEASURES:** 1. Height and weight (body mass index [BMI]) 2. Adolescent Physical Activity Recall Questionnaire (time spent in organized or non-organized activities over an average week) 3. Parent Questionnaire (sociodemographic and environmental factors at the community and household levels including recreation facilities in the community, places around the home for children to play, level of residence, safety concerns, parents' involvement with children doing exercise, household facilities for playing games, and family rules for playing games) 4. School Doctor Questionnaire (environmental factors at the school level [availability of playgrounds, gyms, sports equipment, sports meetings, recess exercises, physical education, bicycle riding policies]) **DATA COLLECTION:** Questionnaires were completed by adolescents, parents, and school doctors. Trained research staff measured the students' height and weight. Environmental factors used for survey items were based on focus group identification with students, parents, and school doctors. An expert panel reviewed items and studies conducted in Western countries. **LIMITATIONS:** Causal inferences cannot be made using cross-sectional data; socially desirable responses may have influenced respondents; questionnaires measuring environmental factors were not validated for use in a Chinese city	Urban, 11-17 year olds **ELIGIBILITY:** Participants provided written informed consent. **EXPOSURE/ PARTICIPATION:** Not applicable	**LEAD AGENCY:** The research team was from the Xi'an Jiaotong University and the University of Newcastle. **THEORY/ FRAMEWORK:** A conceptual framework was developed and linked to physical activity in adolescents. **EVIDENCE-BASED:** Not reported **REPLICATION/ ADAPTATION:** Not applicable **ADOPTION:** Not applicable **IMPLEMENTATION:** Not applicable **FORMATIVE EVALUATION:** Not reported **PROCESS EVALUATION:** Not reported	**RESOURCES:** Not applicable **FUNDING:** Health Consequences of Population Change Program of the Welcome Trust **STRATEGIES:** Not applicable	**PHYSICAL ACTIVITY:** 1. Access to public facilities (OR=1.4, 95% CI=1.0-1.9, p=0.03 for moderate access and OR=1.7, 95% CI=1.2-2.4, p<0.01 for difficult access) and concerns about neighborhood safety (OR=2.1, 95% CI=1.1-4.1, p=0.03) were positively associated with inactivity. 2. Lack of recreational facilities was associated with a higher percentage of inactivity in girls (OR=2.4, 95%CI=1.6-3.5, p<0.001). 3. Perceived unsafe neighborhoods were associated with a higher percentage of inactive adolescents, but the difference was not statistically significant (p=0.08). *School Level* 4. Lack of extracurricular sports (OR=1.3, 95% CI=1.1-1.6, p=0.01) and sports meetings (OR=2.0, 95% CI=1.4-2.9, p<0.01) were significantly associated with physical inactivity, but physical education was inversely associated with inactivity (OR=3.1, 95% CI=1.6-6.0, p<0.01 for twice a week and OR=2.6, 95% CI=1.3-5.1, p=0.01 for three times a week). 5. Lack of recess exercise or sports meetings was associated with higher percentages of inactivity in boys (OR=2.2, 95% CI=1.2-4.0, p=0.02 and OR=1.5, 95% CI=1.0-2.2, p=0.05, respectively). 6. For boys, lack of class recess sports (OR=2.2, 95% CI=1.2-4.0, p=0.02) and sports meetings (OR=1.5, 95% CI=1.0-2.2, p=0.05) were associated with low levels of physical activity, and boys at schools forbidding bike riding to school were 60% less likely to be inactive (OR=0.4, 95% CI= 0.2-0.8, p=0.02). 7. For girls, fewer sports meetings (OR=1.7, 95% CI=1.03-2.8, p=0.04) was associated with inactivity. 8. Adolescents living in a house without sidewalks were 30% more likely to be inactive (OR=1.3, 95% CI=1.0-1.6, p=0.01). 9. Adolescent boys living in surroundings without vacant fields were 1.7 times (95% CI=1.2-2.5, p=0.01) more likely to be inactive. 10. Unavailability of video game shops around the home was associated with a higher percentage of inactive boys (OR=1.5, 95% CI=1.1-2.1, p=0.02). 11. Lack of sidewalks around the house was associated with physical inactivity in girls (OR=1.5, 95% CI=1.04-2.0, p=0.03).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Humpel, Owen (2004) Australia	Aesthetic perceptions of the neighborhood ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of neighborhood safety 2. Access to areas for physical activity (beach, lake, facilities) 3. Distance to facilities *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 399 respondents: clients from a health insurance organization ***PRIMARY OUTCOME:*** Neighborhood walking, walking for exercise, walking for pleasure ***MEASURES:*** 1. Neighborhood Environment Walkability Scale – NEWS (adapted measures on environment attributes including aesthetics, accessibility, safety, and weather) 2. Self-reported survey (walking for transport, exercise, and pleasure, walking frequency, walking duration, postal codes, and sociodemographics) 3. 1996 Australian Bureau of Statistics Census data (coastal and non-coastal locations) ***DATA COLLECTION:*** The survey was sent in the spring. Reported frequency of walking was multiplied by the number of usual minutes, to give an index of estimated minutes of walking each week, for each type of walking. Reliability of the neighborhood walking item had been examined previously. Neighborhood environment attribute items were collected from previous studies and the Neighborhood Environment Walkability Scale items (NEWS-valid instrument), (ICC range 0.73-0.91). The scores of aesthetics, accessibility, safety, and weather were transformed into categorical variables with three levels: low, a less positive perception of the environment; moderate; or a highly positive perception of the environment. A structured query language identified postal areas that intersect the coastline for non-coastal (27%) and coastal (73%) locations. ***LIMITATIONS:*** Causal inferences cannot be made using a cross-sectional study design; survey data was self-reported; there was a low response rate; the sample was from an extremely specified primarily coastal region	Adults 57% Female ***ELIGIBILITY:*** A list of clients aged >40 years from a health insurance organization were eligible for the study. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Researchers from the University of Wollongong, the University of Queensland, and the University of New South Wales ***THEORY/ FRAMEWORK:*** Ecologic model of health behavior ***EVIDENCE-BASED:*** Previous Australian studies have found physical activity to be higher among coastal residents, after adjusting for education attainment and other demographic factors. ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not applicable ***PROCESS EVALUATION:*** Not applicable	***RESOURCES:*** Not applicable ***FUNDING:*** The Carelink, a division of the Australian Health management Group, a registered health benefits organization ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. A higher proportion of those with the most positive perceptions for all four environmental perception categories reported more neighborhood walking (data not shown). 2. Higher proportions of neighborhood walkers were found among those with high perceptions for aesthetics (66.7%; χ^2=17.08, p<0.001). 3. Significantly higher proportions of those walking for exercise were found among those with the most positive perceptions for all four environmental perception categories (results not shown). 4. A higher proportion of those with the most positive perceptions for accessibility reported more walking for pleasure (45.2%; χ^2=7.28, p<0.05). 5. No significant differences in proportions were found for walking to get from place to place. 6. Participants living in coastal locations (mean [M]=189 minutes) walked significantly more minutes in their neighborhood (F(1,382)=5.10, p<0.05) than did participants in noncoastal locations (M=149 minutes). 7. Participants reporting that a beach/lake was within easy walking distance reported significantly more neighborhood walking minutes (M=224) than did those reporting a beach/ lake was not within walking distance (M=139; F(2,379)=11.0, p<0.0001); significantly more exercise walking (M=163 compared to M=100 minutes; F(2,382)=9.72, p<0.0001); and significantly more walking for pleasure compared to those perceiving that a beach/lake is not within walking distance (M=33 and M=21, respectively; F(2,380)=3.88, p<0.02). 8. Men with the most positive perceptions about the aesthetic nature of the environment were more than seven times more likely to be high neighborhood walkers (OR=7.43; 95%CI 1.92-28.82; p<0.05). 9. For men, accessibility of facilities for walking demonstrated a negative relationship with neighborhood walking (for high walkers: OR=0.30; 95% CI 0.09-0.91; p<0.05). 10. No evidence of a relationship between safety and neighborhood walking was found for men or women. 11. Men with a high score on aesthetics were nearly four times as likely to walk for exercise (OR=3.86; 95%CI 1.03-14.46; p<0.05). 12. Men who perceived their environment as highly safe for walking were less likely to walk for pleasure (OR=0.22; 95% CI 0.06-0.78; p<0.05). 13. Women with moderately positive perceptions about accessibility were more than three times more likely to walk for pleasure (OR=3.51; 95% CI 1.64-9.15, p<0.01).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Kamphuis, Van Lenthe (2008) The Netherlands	Neighborhood aesthetics and density ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Access to places for physical activity 2. Neighborhood safety *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 3,839 adults in 177 neighborhoods in Eindhoven and surrounding areas ***PRIMARY OUTCOME:*** Participation in sports ***MEASURES:*** 1. 2004 GLOBE postal survey (neighborhood [safety, attractiveness, places for physical activity, poor weather, social network, social cohesion, feeling at home, social disorganization, length of residence], household [indicators of material deprivation, indicators of social deprivation], and individual factors [positive and negative expectancies of physical activity, social influences, self-efficacy]; physical activity cognitions; socioeconomic status and demographic data [educational attainment, age]) 2. Short Questionnaire to Assess Health-enhancing Physical Activity [SQUASH] (sports participation [up to 4 sports participants participated in weekly for the previous month] frequency, duration, and intensity of sports participation and physical activity) ***DATA COLLECTION:*** Data for this study was collected from the results of a large-scale postal survey, a wave of the longitudinal GLOBE study in October 2004. Selection of items for the GLOBE questionnaire was based on a literature review, expert meetings, and focus groups conducted with residents living in the city of Eindhoven. Items measuring neighborhood, household, and individual factors were mostly derived from existing scales. SQUASH is a validated Dutch questionnaire to measure various types of physical activity among an adult population: commuting, leisure time, sports, occupational, and housekeeping activities. ***LIMITATIONS:*** Self-reported data; cross-sectional study design; objective neighborhood factors were not included; classification system used has not been standardized; individual-level cognition items were not behavior specific for sports participation	Adults, 25-75 years old Mean number of participants per neighborhood =21; range=3-70. Compared with higher educational groups, people in the lowest education group were more likely to be female, and to be born in a country other than the Netherlands. (evaluation sample) ***ELIGIBILITY:*** Participants for the GLOBE study were eligible if they did not have health problems that prohibited physical activity and if they fell into neighborhoods that had too few participants. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The authors were from Erasmus University Medical Centre, Queensland University of Technology, University Medical Center Groningen, and VU University Medical Center. ***THEORY/ FRAMEWORK:*** Social Cognitive Theory and the Theory of Planned Behavior were included in developing the survey. ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Ministry of Public Health, Welfare and Sport and the Health Research and Development Council ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Unsafe neighborhood (OR=1.77, 95%CI: 1.18-2.65, p=0.005), unattractive neighborhood (OR=1.45, 95%CI: 1.2-1.75, p<0.0001), insufficient places (OR=1.16, not significant), poor weather (OR=1.19, 95%CI:1-1.41, p=0.051), small social network (OR=1.23, 95%CI: 1.05-1.45, p=0.006), low social cohesion (OR=1.17, 95%CI: 1-1.38, p<0.0001) increased the likelihood of not participating in sports. 2. In the full model, two neighborhood factors (safety and social cohesion), three household factors (material deprivation [crowding] and social deprivation [going out fortnightly and going on holiday yearly], and nine individual factors (six outcome expectancies, social support modeling, self-efficacy, and intention) remained statistically significant. Compared with the basic model, all factors together reduced the odds of doing no sports among the lowest educational group by 57% (OR=2.29, 95%CI: 1.7-3.07), for the second-lowest by 48% (OR=1.62, 95%CI: 1.34-1.96), and for the second-highest by 26% (OR=1.48, 95%CI: 1.23-1.78). 3. People indicating not feeling at home in their neighborhood (OR; 1.26, CI; 1.07-1.48, p=0.018) were also more likely to do no sports, but this was not significantly prevalent among any of the educational groups (p=0.093).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Maas, Verheij (2008) Netherlands	Neighborhood green space ***OTHER INTERVENTION COMPONENTS:*** *Multi-component* Not reported *Complex* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 4,899 respondents from the DNSGP-2 ***PRIMARY OUTCOME:*** Meeting physical activity recommendations, sports activities, walking and cycling, active transportation ***MEASURES:*** 1. The Second Dutch National Survey of General Practice [DNSGP-2] (self-reported health status, age, gender, socioeconomic and demographic status, level of physical activity) 2. National Land Cover Classification database [LGN4] (type of land use [including urban/built, agricultural, and natural green space] of each 25x25 meter grid cell, urbanicity [number of households per square km]) 3. Short Questionnaire to assess health enhancing physical activity [SQUASH] (frequency per week, duration per day, and intensity of commuting physical activities [e.g., walking, bicycling], occupational physical activity, household activity, and leisure-time physical activity [e.g., walking, gardening]) ***DATA COLLECTION:*** The data used for this study were collected from two different datasets. Data from the DNSGP-2 was collected in 2001 in 104 health care facilities. The LGN4 was collected in 2001 and matched using respondents' postal codes. The percentage of green space within a 1-km and 3-km radius was calculated. SQUASH interviews were completed by people aged 12 and over during a 12-month period to avoid seasonal differences. ***LIMITATIONS:*** Study did not account for attractiveness of the streetscape and small green areas; the study did not account for the walking and cycling culture in the Netherlands; where people were physically active was not requested; data was self-reported; SQUASH was not validated for each of the specific physical activities; cross-sectional study design	General population Respondents were between 12 and 65 years of age. 67.3% of participants were between 26 and 65 years old. (evaluation sample) ***ELIGIBILITY:*** Individuals registered with a health care provider were eligible, which is the majority of the Dutch population. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** Research team was from the Netherlands Institute for Health Services Research ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Netherlands Organization for Scientific Research ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. Logistic multilevel analyses showed that there was no significant relationship between the percentage of green space and meeting the public health recommendations for physical activity. 2. There was no relationship between the percentage of green space in the living environment, individual's participation in sports activities, and the amount of time people spent on sports activities. 3. People walked less during leisure time when there was more green space in their direct living environment (1-km radius; coefficient= -0.007, standard deviation=0.002, p<0.001, 3-km radius; coefficient= -0.006, standard deviation= -0.006, p<0.009). 4. There was a negative relationship between the percentage of green space within 1-km radius of home and whether or not people cycle during leisure time (coefficient= -0.006, standard deviation=0.002, p<0.001). 5. There was no significant relationship between the percentage of green space in the living environment and the time spent on cycling during leisure time. 6. There was no significant relationship between the percentage of green space and walking for commuting purposes. 7. There was a negative relationship between the percentage of green space in a 1-km radius and whether or not people cycled for commuting purposes (coefficient= -0.005, standard deviation=0.002, p=0.032). People who reported cycling for commuting, were likely to spend more time doing so if they had a higher percentage of green space in a 1-km and 3-km radius around their homes (1-km radius; coefficient=0.83, standard deviation=0.2, p<0.001, 3-km radius; coefficient=0.62, standard deviation=0.25, p=0.014). 8. People with a higher percentage of green space in a 1-km radius around their home gardened more often (coefficient=0.008, standard deviation=0.002, p<0.001). People who report gardening spend more time doing so when they have more green space in a 1-km or 3-km radius around their home (1-km radius; coefficient=1.4, standard deviation=0.3, p<0.001; 3-km radius; coefficient=1.45, standard deviation=0.45, p=0.001).

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Timperio, Giles-Corti (2008) Australia	Neighborhood aesthetics ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Perceptions of safety from unguarded dogs 2. Access to public open spaces and recreational facilities near the home *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** 497 students (163 approximately 9 years, 334 approximately 14 years) from 19 elementary schools in high and low socioeconomic areas of metropolitan Melbourne, Australia ***PRIMARY OUTCOME:*** Moderate to vigorous physical activity (PA) ***MEASURES:*** 1. Parent questionnaire 2. Accelerometers (child's physical activity levels) 3. Public open space audit (features of public open spaces for physical activity [excluding golf courses and educational institutions]) 4. Geographic Information System [GIS] (geo-code of participant address, closest free public open space to the residence) ***DATA COLLECTION:*** The study drew on data collected in 2004 for the first follow-up of the Children Living in Active Neighborhoods (CLAN) study. Each child wore an accelerometer for 1 week. Total duration (minutes) of moderate-to-vigorous physical activity was calculated for each weekend day and after-school hour during the week. Geographic Information System was used to calculate open spaces along the road network using information gathered from the Open Space 2002 spatial dataset (provided by the Australian Research Centre for Urban Ecology). Trained auditors visited each public open space in 2004 and 2005 (k=0.65, ICC>80% for all items). ***LIMITATIONS:*** Small sample size; the 'closest' public open space may not have included public open space visited by participants; the study did not consider accessibility to closest open public space; physical activity performed in the open space was not considered	5-18 year olds ***ELIGIBILITY:*** Participants were eligible if they had participated in the CLAN study, had complete accelerometry measures, and gave a valid residence that was able to be geo-coded. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from the Deakin University and the University of Western Australia. ***THEORY/ FRAMEWORK:*** Not reported ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** National Health and Medical Research Council ***STRATEGIES:*** Not applicable	***PHYSICAL ACTIVITY:*** 1. There were no associations between any features of the child's closest public open space and younger boys' moderate-to-vigorous physical activity after school. 2. The presence of playgrounds was positively associated with younger boys' weekend moderate-to-vigorous physical activity (β=24.9 min/day; p<0.05), and lighting along paths was inversely associated with weekend moderate-to-vigorous physical activity (β= -54.9 min/day, p<0.05). 3. The number of recreational facilities was inversely associated with younger girls' moderate-to-vigorous physical activity after school (β= -2.6 min/day, p<0.05) and on the weekend (β= -8.7 min/day, p<0.05). 4. There were no associations between any features of the closest public open space and adolescent boys' moderate-to-vigorous physical activity after school. 5. Adolescent girls had more moderate-to-vigorous physical activity after school if their closest public open space had trees that provided shade (β= 5.8 min/day, p<0.01) and had signage regarding dogs (β=6.8 min/day, p<0.05), compared with other girls. 6. There were no significant associations between public open space features and adolescents boys' or girls' moderate-to-vigorous physical activity on the weekend.

Source	Intervention Components	Study Design and Execution	Reach	Adoption, Implementation and Process Evaluation	Enforcement/ Sustainability	Impacts and Outcomes
Rabin, Boehmer (2007) Europe	Density of motorways ***OTHER INTERVENTION COMPONENTS:*** *Multi-component:* 1. Urbanization (urban population density) 2. Public transportation 3. Neighborhood availability of fruits and vegetables in food stores *Complex:* Not reported	***DESIGN:*** Cross-sectional study ***DURATION:*** Not applicable ***SAMPLE SIZE:*** Approximately 591 million participated in this study that was conducted in 24 European countries. ***OUTCOME:*** Overweight/obesity ***MEASURES:*** 1. National-level Surveys and Databases (self-reported body mass index [BMI], disease prevalence, total amount of food available for consumption, percent of total energy available from fat, average available fruits and vegetables per person, urbanization, number of people living in a household, number of vehicles per household, price of gasoline, percentage of paved roads, density of motorways, government policies [accountability, stability, effectiveness, regulatory quality, control of corruption, rule of law], economic components [gross domestic product, students in tertiary education, unemployment rates]) 2. Geographical Information System (GIS) software (mapped data of obesity prevalence) ***DATA COLLECTION:*** A search was performed to identify physical, economic, and policy macro-environmental indicators from databases of international health, economic, and other governmental organizations for the selected countries. Databases included: World Health Organization non-communicable diseases InfoBase, World Health Organizations European Health for All Databases; the United Nations Economic Commission for Europe/ Environment and Human Settlements Division trends in Europe and North America; the World Bank Institute World Development Indicators; the Panorama of transport, statistical overview of transport in the EU, European Commission, and Eurostat; and the World Bank Institute Governance indicators for 1996-2002. Average governance indicator was calculated as a mean of the six policy variables for each country. ***LIMITATIONS:*** Cross-sectional study design introduces potential biases and cannot establish temporality; conclusions are limited to country-level associations, ignoring within-country variations and individual-level associations; self-reported obesity data was used; quality of data identified from international databases may differ depending upon the accuracy and methodology used by reporting countries; not all countries had the same types of information	General Population As part of the selection criteria only studies that were nationally representative (both rural and urban samples) and based on self-reported data were used. ***ELIGIBILITY:*** Countries were eligible if they had data in all 3 of the obesity categories. ***EXPOSURE/ PARTICIPATION:*** Not applicable	***LEAD AGENCY:*** The research team was from Saint Louis University. ***THEORY/ FRAMEWORK:*** Ecological model ***EVIDENCE-BASED:*** Not reported ***REPLICATION/ ADAPTATION:*** Not applicable ***ADOPTION:*** Not applicable ***IMPLEMENTATION:*** Not applicable ***FORMATIVE EVALUATION:*** Not reported ***PROCESS EVALUATION:*** Not reported	***RESOURCES:*** Not applicable ***FUNDING:*** Not reported ***STRATEGIES:*** Not applicable	***OVERWEIGHT/OBESITY:*** 1. Overall obesity prevalence was inversely associated with economic variables (real domestic product: β=-0.175, p=0.002; gross domestic product: β=-0.168, p<0.001), food availability (available fat: β=-0.323, p=0.010, available fruits/vegetables: β=-0.019, p=0.049), urbanization (urban population: β=-0.095, p=0.080), transportation (total passenger cars: β=-0.017, p<0.001, new passenger cars: β=-0.081, p=0.018, price of gasoline: β=-0.095, p=0.042, paved roads: β=-0.064, p=0.033, motorways: β=-0.224, p=0.022), and policy (governance indicator: β=-2.528, p=0.007). 2. Female obesity prevalence was inversely associated with economic variables (real domestic product: β=-0.257, p=0.001), food availability (available fat: β=-0.399, p=0.004), transportation (passenger cars: β=-0.020, p<0.001, new passenger cars: β=-0.087, p=0.028, price of gasoline: β=-0.096, p=0.041, paved roads: β=-0.073, p=0.032, density of motorways: β=-0.227, p=0.030), and policy (governance indicator: β=-3.575, p<0.001). 3. Male obesity prevalence was inversely associated with available fruits/vegetables (β=-0.022, p=0.028) and density of motorways (β=-0.197, p=0.067).

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