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URBAN HEALTH

Knowledge Hub Booklet

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Led by:

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We have conducted a review of observational epidemiological studies analysing the relationship between the urban environment and the prevalence/incidence of Non-Communicable Diseases (NCDs) – specifically, Type 2 Diabetes Mellitus (T2DM) and Cardiovascular Disease (CVD) – and associated risk behaviours. The purpose of this booklet is to provide a synthesis of the available evidence on the impact of interventions and characteristics of the urban built environment on NCDs. This booklet will be updated periodically throughout the life cycle of the project.

Glossary

BMI: Body Mass Index.

CVD: Cardiovascular Disease.

GIS: Geographic Information System.

HR: Hazard Ratio.

IRR: Incidence Rate Ratio.

MET: Metabolic Equivalent.

MVPA: Moderate to Vigorous Physical Activity.

OR: Odds Ratio.

PA: Physical Activity.

QoL: Quality of Life

SES: Socio-Economic Status.

SOPARC: System for Observing Play and Recreation in Communities.

Background

Access to healthcare, nutritious food, and recreational facilities is associated with better health outcomes for older adults, whereas a **decline in the quality of the surrounding environment** (i.e., high density of liquor stores, pawn shops, and fast-food outlets) poses a risk to health. This study aims to explore how living in deteriorating environments over time affects health, using a longitudinal approach.

Objectives

Prior research links the built service environment to health through **multiple direct and indirect pathways**. However, some studies found no association. This study aims to **overcome possible inconsistencies** based on residential self-selection and short-term versus prolonged exposure. This will contribute to the discussion on **associations between neighbourhoods and health**.

Design

Data: 3,240 Americans aged 45 or older from the Panel Study of Income Dynamics.

Outcome: First onset of fair or poor self-rated health.

Built environment: Five-category typology based on density of health-supportive services and commercial decline.

- **Health-supportive services:** supermarkets, pharmacies, health care services, hospitals, residential care facilities, senior services and recreational facilities.
- **Commercial decline:** liquor stores, pawn shops and fast-food outlets.

Statistical analysis: Inverse Probability of Treatment-weighted logistic regression.

Results

Participant profile: On average, respondents were just older than 56 years, 48% were male and 52% were female, most were non-Latino white (76%), most were married (76%) and employed (69%), and their annual family incomes were \$79,261. All self-reported good health at baseline.

Conventional model: Long-term exposure to low-density (OR = 1.224, $p < 0.05$) or commercially declined environments (OR = 1.493, $p < 0.05$), are at heightened risk of poor health compared to respondents in average environments.

IPT-w logistic model: Only long-term exposure to commercially declined neighbourhoods was significant (OR = 1.851, $p < 0.05$).

Non-associations for short term exposure in both models.

Background

Cardiovascular diseases (CVD) are the leading cause of death globally. In Europe, CVDs accounts for 3.9 million deaths annually, costing €210 billion. Evidence suggests that **greenspace** is associated with reduced CVD mortality through promoting **Physical Activity (PA)**, a key factor in CVD prevention. This study examines the link between greenspace and incident CVD, considering PA as a **potential mediator**.

Objectives

The study aims to **assess** the **link** between neighborhood **greenspace** and **incident CVD** using longitudinal data. It evaluates if **PA** is a **mediating factor** in this relationship, using hospital data for CVD verification and detailed greenspace measurements. The research advances prior work by focusing on incident CVD as a critical public health issue influenced by **modifiable behaviors**.

Design

Data: Longitudinal health and lifestyle data from the EPIC Norfolk, UK cohort.

Outcome: Incident CVD identified through hospital admission records.

Neighborhood greenspace: Percentage of greenspace around homes, measured using classified satellite imagery.

PA measurement: Activity levels assessed from questionnaire. **Covariates:** Age, sex, Body Mass Index (BMI), diabetes, socio-economic status (SES).

Statistical analysis: Cox regression models to determine the impact of greenspace on CVD incidence.

Results

Participant profile: Mean age was 59.2 years, 54.7% female, with a mean follow-up of 14.5 years.

Greenspace vs. CVD:

- Residents in the greenest quartile saw a 7% reduced hazard for CVD (HR = 0.93, 95% CI [0.88, 0.97], p = 0.003) after adjustment.
- Predicted CVD incidence could drop by 4.8% in the least green areas if greenspace increased to average levels (HR = 0.95, 95% CI [0.91, 0.99], p = 0.003).

PA's role: PA did not act as a mediator (HR = 0.99, 95% CI [0.97, 1.01], p = 0.416).

Occupation: The greenspace-CVD association was non-significant in manual workers.

Background

The research builds on the premise that **multi-use trails** offer a viable solution for encouraging active lifestyles within urban populations.

Authors highlight the inherent **challenges** of **Randomised Clinical Trials** (RCTs) and the previous shortcomings of **natural experimentation** methods in assessing the impact of the built environment on health outcomes.

Objectives

To determine if the **expansion** of **multi-use PA trails** in an urban centre (**Winnipeg**, Canada) is associated with reduced rates of **incident CVD** events - CVD-related mortality, ischemic heart disease, cerebrovascular events and congestive heart failure - and **CVD risk factors** - hypertension, diabetes and dyslipidemia -.

Design

Data: Administrative health, census and built environment data.

Intervention: Building of four multi-use trails, 2010-2012.

Population: Winnipeg residents aged 30 years and older.

Outcome: Major CVD events and risk factors.

Statistical analysis: Difference-in-differences regression with propensity score matching.

Citizen participation in all phases of the study.

Protocol study at clinicaltrials.gov

Results

Trail use: Most users (over 85%) travelled less than 15 minutes to access the trail.

Comparison between intervention and control (400 m buffer):

- **CVD events:** In intervention areas the incidence rate was a non-significant 6% higher compared to control areas (IRR = 1.06, 95% CI [0.90, 1.24], $p = 0.51$).
- **CVD risk factors:** In intervention areas the incidence rate was a non-significant 8% lower compared to control areas (IRR = 0.92, 95% CI [0.84, 1.02], $p = 0.10$).

Sensitivity: In areas near the longest and most used trail (400 m buffer), the incidence rate of CVD risk factors was 15% lower compared to control areas (IRR = 0.85, 95% CI [0.75, 0.96]).

Background

This study investigates how the **availability** of different **food retail** types like supermarkets and produce markets affects **CVD** and **diabetes** incidence among older adults. Natural experiments and prospective studies suggest variable health impacts related to food store availability, highlighting the **complexity** of linking **food retail changes** to **health outcomes**.

Objectives

This study aims to evaluate the **impact** of the **presence** of **food retail types** (supermarkets/produce markets vs. convenience/fast food outlets) on the **incidence** of **CVD** and **diabetes** among older adults. Using longitudinal data from the Cardiovascular Health Study (CHS), it assesses how changes in nearby food retail environments influence health outcomes in an older population, considering the effects of newly available or consistently present food retail options.

Design

Data: Adults aged 65+ from the CHS, with 2,939 and 2,497 included for CVD and diabetes analyses, respectively.

Outcome: Incident CVD and diabetes, tracked via adjudicated events and elevated serum glucose or medication use.

Statistical Analysis: Cox proportional hazards regression assessing time-to-event based on food retail type presence (supermarkets/produce markets vs. convenience/fast food), adjusted for demographics and health.

Adjustments for individual and area-based confounders

Results

CVD incidence:

- Baseline supermarket/produce market presence within a 1-km radial buffer was associated with excess incident CVD before adjustment (HR = 1.12, 95% CI [1.01, 1.24]). The association was attenuated and no longer statistically significant after adjustment (HR=1.02, 95% CI [0.90, 1.15]).
- Time-varying presence of convenience/fast food retail within 1-km buffers was not significantly associated with incident CVD.

Diabetes incidence:

- Neither supermarket/produce market nor convenience/fast food retail was associated with incident diabetes.

Background



Researchers have hypothesized that "food deserts" are prevalent in **deprived areas**, potentially exacerbating diet-related diseases. The relationship between retail provision and diet quality is debated, though interventions like introducing large-scale food retailers have shown potential benefits in consumption patterns and socio-economic conditions, enhancing community health and psychological well-being.

Objectives



This study evaluates the **impact** of a new **large-scale food retail provision** on **food consumption patterns** and **general health** in a "food desert" area. It hypothesizes that enhanced retail opportunities can lead to improved diet and health, thereby indicating broader local economic regeneration. The investigation leverages a natural experiment design to validate the effectiveness of such interventions in communities with poor food access.

Design



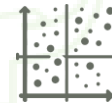
Study Type: Prospective controlled "before and after" postal survey.

Data: 412 residents of two areas in East Glasgow, differentiated into intervention and comparison sites. Random sampling from highly deprived areas (DEPCAT 7) was employed to minimize bias.

Outcome: Changes in diet and psychological health post-intervention.

Statistical Analysis: ANCOVA for diet, logistic regression for health outcomes, controlling for age, sex, economic activity, and education. Interactions and potential confounders were also assessed.

Results



Dietary Impact: Intervention had minimal effect on fruit (-0.03, 95% CI [-0.25, 0.30]) and vegetable consumption (-0.11, 95% CI [-0.44, 0.22]). Combined fruit and vegetable intake showed no significant change (-0.10, 95% CI [-0.59, 0.40]).

Health Outcomes: Adjusted odds of fair to poor self-rated health increased in the intervention group (OR = 1.52, 95% CI [0.77, 2.99]). However, poor psychological health slightly improved, but not significantly (OR = 0.57, 95% CI [0.29, 1.11]).

Switchers: Showed a protective effect on psychological health after adjusting for confounders (OR = 0.24, 95% CI [0.09, 0.66]), though changes in self-rated health were not significant (OR = 0.50, 95% CI [0.19, 1.32]).

Background

The built environment influences **PA**, but most evidence comes from cross-sectional studies. Natural experiments with **quasi-experimental designs** are key to establish causality. In 2005, a **greenway/trail construction** in Knoxville TN allowed to examine the impact of neighborhood connectivity on PA. This study used direct observation to assess changes in PA pre- and post-intervention.

Objectives

This study aimed to examine the **impact of neighborhood connectivity** on PA through a natural experiment in Knoxville, TN. The intervention involved retrofitting a neighborhood with an **urban greenway/trail**. The main objective was to determine if improvements in the built environment led to increased PA by using **direct observation** to compare pre- and post-intervention activity levels in both intervention and control neighborhoods.

Design

Data: Direct observation of PA was conducted pre-intervention (March 2005) and post-intervention (March 2007) in intervention and control neighborhoods.

Outcome: Changes in PA levels, observed directly.

Statistical Analysis: Nonparametric tests (Fisher's exact tests and Wilcoxon rank sums test).

Methodology: Quasi-experimental design with two control neighborhoods.

Setting: Neighborhood and school levels, using consistent observation times and locations.

Results

At **baseline**, **no significant difference** in 2-hour PA counts was observed between experimental and control neighborhoods ($p=0.370$). **Post-intervention**, total PA counts **significantly increased** in the **experimental** neighborhood ($p=0.028$), including walkers ($p=0.002$) and cyclists ($p=0.036$). Median PA counts rose by 8 in the experimental neighborhood and decreased by 1 in control neighborhoods ($p=0.001$). For active transport to school (ATS), the control schools had higher counts, significantly so in 2007 ($p=0.026$), but no significant pre-post difference was found ($p=0.2061$).

Background

Many communities seek to enhance parks to boost **PA**, but the impact is rarely assessed. Previous reviews show varied cost-effectiveness of interventions, with community-wide efforts generally more efficient. **Facility renovations** have mixed results, with some increasing usage and others failing due to poor marketing. Installing **Fitness Zones (FZs)** in **public parks** provides accessible, durable exercise equipment.

Objectives

This study aims to evaluate the **impact** of installing **FZs in public parks** on PA levels among diverse community groups in **Los Angeles**. It examines the usage patterns of the new equipment by different demographic groups, the overall increase in park usage and PA, and the **cost-effectiveness** of the equipment based on the incremental change in park-based PA compared to parks without the FZs.

Design

Data: The study utilized the System for Observing Play and Recreation in Communities (SOPARC) to observe park usage before and after.

Intervention: FZ installations in 12 parks, compared with 10 control parks without FZs.

Outcome: Park usage and PA levels.

Statistical Analysis: Mixed effects models compared changes in PA between FZ parks and control parks, using propensity score weighting to account for demographic differences. Cost-effectiveness was calculated by estimating Metabolic Equivalents (METs) gained per dollar spent on FZ installations.

Results

Observations of Park Users: A total of 23,577 people were observed, with park usage increasing by 11% at the first follow-up. FZ users engaged in more moderate to vigorous PA (MVPA) (66% vs. 31% at first follow-up).

Self-Reported Park Use: Interviews showed FZ users visited parks more frequently (3.5 vs. 2.4 visits/week) and exercised more (3.9 vs. 2.7 sessions/week).

Possible insufficient statistical power with a sample size of only 20 parks.

Cost Effectiveness: FZ parks gained 1,909 METs annually, costing 10.5 cents per MET. Compared to non-FZ parks, the cost was 2.4 cents per MET, though the increase was not statistically significant.

Background

Playgrounds are believed to increase **children's PA**, but evidence is unclear. Most studies show increased activity after **school playground** upgrades, though adding supervision is often necessary. These studies, using heart-rate monitors, accelerometers, or pedometers, typically focus on schools, ignoring **home** and **community** activity.

Objectives

The study aims to evaluate **changes in children's PA** when **playgrounds in public parks** are upgraded. The hypothesis is that these upgrades will **increase the total daily PA (TDPA)** of children, measured by accelerometers, compared to a control community. The objectives are to assess the **impact of improved playground** facilities on children's overall PA and determine whether such interventions can enhance their daily exercise levels.

Design

Intervention: Two playgrounds were upgraded with new equipment in Dunedin.
Data: 156 children aged 5-10 participated. The intervention group was from a community with upgraded playgrounds. A similar control community was selected. Baseline data were collected before upgrades. Follow-up data were collected a year later.

Outcome: PA was measured using GT1M accelerometers worn for eight days.
Statistical Analysis: Data were analyzed using linear mixed models, controlling for repeated measures within each child and clustering by schools.

Results

The final model found **no significant difference in mean TDPA** between the intervention and control communities. However, there was a significant **interaction** between **BMI z-scores** and community ($p = 0.006$). In the intervention community, children with BMI z-scores less than 0.4 showed increased activity, while those with BMI z-scores greater than 0.4 showed decreased activity (Figure 1). This suggests that **playground upgrades** may **benefit children with lower BMIs** but potentially decrease activity in those with higher BMIs. Further studies are needed to confirm these findings.

Background

Exposure to **parks** positively impacts health and promotes PA, particularly in disadvantaged neighborhoods. However, over half of park users in the U.S. engage in sedentary behavior. Park **aesthetics** and specific **features** are linked to **visitation** and **PA**. **Natural experiments** are crucial for studying the built environment's effect on activity levels, yet such research is rare due to financial and logistical challenges.

Objectives

This study aims to examine whether **improvements** to **park facilities** in a **disadvantaged neighborhood** in **Victoria, Australia**, lead to changes in (1) **park use**, (2) the nature of **activities** (active or sedentary) undertaken in the park, and (3) whether these changes are **sustained** over time. The study involves refurbishing an intervention park and comparing it with a control park before and after the refurbishment.

Design

Intervention: The study compared a refurbished intervention park (25,200 m²) with a control park (10,000 m²) in a disadvantaged neighborhood.

Data: Data were collected at baseline, post-improvement, and 12 months later.

Outcome: PA was assessed using SOPARC, recording gender, age group, and activity level every 15 minutes during three 1.5-hour periods daily over 9 days.

Statistical Analysis: Counts of park users, walkers, and vigorous activity were transformed and analyzed using two-way ANOVAs to examine park and time effects.

Results

There was a significant **interaction** between **park** and **time** for the total counts of park users ($F(2, 154) = 14.99, p < 0.0005$), counts of people **walking** ($F(2, 154) = 11.70, p < 0.001$), and counts of people being **vigorously active** ($F(2, 154) = 4.98, p = 0.008$).

Intervention Park: Increased total users, walkers, and vigorous activity at T2 and T3 compared to T1.

Control Park: Fewer users at T3 compared to T2; no changes in walkers or vigorous activity across time points.

Background

Access to **green spaces** has been linked to improved health and wellbeing. Studies indicate that natural environments encourage PA, social interactions, and reduce stress, with stronger effects in **deprived communities**. However, the **quality** of green spaces significantly impacts these benefits. **Glasgow**, despite its abundant green spaces, shows disparities in access and quality, particularly in deprived areas.

Objectives

This study aims to explore the **impact** of **urban woodland improvements** on a **deprived Glasgow community** through the WIAT (Woods In and Around Towns) scheme. The objectives are: 1. Assess if the WIAT intervention improves **community perceptions** of **environmental quality** and **Quality of Life (QoL)**. 2. Determine if the WIAT intervention increases **local woodland use** and **outdoor PA**. 3. Identify other **differences in perceptions** or **experiences** of local woodlands due to the WIAT intervention.

Design

Data: Cross-sectional surveys pre- (2006) and post-intervention (2009). Random sampling within 500 m of green spaces, matching census profiles for age, gender, and socio-economic group. About 100 participants per community.

Intervention: Drumchapel (intervention) and Milton (comparison).

Outcome: Environmental perception, quality of life, woodland use, and PA.

Statistical Analysis: Mann-Whitney U tests compared pre- and post-intervention differences within and between sites.

Results

QoL and Environment: Satisfaction increased more at the intervention site (+27%) than the comparison site (+19%).

Use of Local Woodlands: Visits increased significantly at the intervention site (+25%); no change at the comparison site.

Outdoor PA: Activity levels increased significantly at the intervention site (+25%); decreased at the comparison site (-17%).

Experience and Perception: Perception on local woodlands as places where they can pursue healthy activities increased at the intervention site (+28%); no change at the comparison site.

Background

Safe bicycling infrastructure is crucial for increasing cycling rates among adults and children. Most studies have focused on on-street bicycle lanes and separated paths. **Bicycle boulevards**, low-volume streets designed for cycling, are less studied but preferred by cyclists. Research on new infrastructure's effects on cycling is limited by a **lack of longitudinal studies** with control groups.

Objectives

The study aims to evaluate the **impact** of installing new **bicycle boulevards** on PA and **active transportation**. It hypothesizes that active transportation levels will increase in neighborhoods with the new infrastructure. The research focuses on comparing pre- and post-installation activity levels in treatment and control groups while accounting for socio-demographic factors and attitudes towards bicycling and walking. This longitudinal design aims to address the lack of controlled studies in existing infrastructure research.

Design

Data: Longitudinal panel (2010–11 and 2012–13) of adults with children (n = 353) in Portland, Oregon, split between 8 treatment and 11 control street segments.

Intervention: Installation of bicycle boulevards on 8 street segments in Portland.

Outcome: Changes in PA and active transportation, measured by surveys, accelerometers, and GPS data.

Statistical Analysis: Difference-in-differences regressions (binomial logit, negative binomial, and linear regression, adjusting for demographic, geographic, and attitudinal covariates).

Results

The **interaction** term (treatment * post) was not significant for most models, indicating no significant effect of bicycle boulevards on daily MVPA, walking over 20 minutes, or making a bike trip.

Weather: Rain negatively affected bicycling over 10 minutes, making a bike trip, and minutes of walking.

Proximity to Downtown: Closer distance to downtown correlated with higher MVPA and more active transportation.

Gender: Women engaged in less MVPA and cycling.

Attitudes: Positive attitudes towards bicycling and walking were linked to higher engagement in these activities.

Background

Evidence shows that there is an association between the built environment and PA. However, **links between the built environment and sedentary behaviour remain largely unexplored**. This study aims to contribute to a deeper understanding of this association.

Objectives

The study aims to investigate the extent to which the objectively assessed and **self-reported neighbourhood walkability**, controlling for other sociodemographic, behavioural and health-related characteristics, were **associated with leisure-based television and computer screen time** in adults.

Design

Participant profile: Adults in Calgary, Alberta, Canada.

Lifestyle data: Standardised survey on leisure-based screen time, MVPA.

Environment attributes: Neighbourhood walkability was both self-reported and objectively measured using the Neighbourhood Environmental Walkability Scale.

Analysis: The association between hours of leisure-based screen time per day and neighbourhood walkability was assessed using multiple linear regression, adjusting for sociodemographic and health-related covariates.

Results

The study found that women living in **objectively high walkable neighbourhoods**, with college education, at least one child at home, a household income of \$120,000 or more per year, and a registered motor vehicle at home, reporting very good-to-excellent health and healthy weight, and achieving 60 min/week of MVPA were **associated** ($p < 0.05$) **with less leisure-based screen time**.

Increased **walkability** could **reduce screen-time** and therefore **sedentary behaviour**. However, PA, sociodemographic and health status should also be considered in targeted programmes.

Background

Providing well-maintained public open spaces like parks promotes **PA**, crucial as over half of Australian adults are inactive. Enhancing park quality supports health, especially in urbanized Sydney, where open spaces are dwindling. While park features are linked to increased activity, research on the **impact** of interventions like **outdoor gyms**, which offer free fitness opportunities, is limited and inconclusive.

Objectives

This study aimed to assess the **impact** of installing and promoting an **outdoor gym** in a **park** on the PA levels of park users. It also aimed to examine the characteristics, motivations, enablers, and barriers for outdoor gym users. The research intended to provide evidence on how environmental interventions like outdoor gyms can influence recreational PA, addressing the lack of conclusive data on their effectiveness.

Design

Data: Methods for data collection included SOPARC observations of park users' activity levels and demographics, and intercept interviews. 9 data collection periods.

Intervention: An outdoor gym was installed in March 2013 in a park located in Maraoubra, Eastern Sydney. No comparable parks were identified that could be considered as a control park for this study

Outcome: Measured changes in park user numbers, activity levels, and gym area usage before and after the intervention.

Statistical Analysis: Used descriptive statistics and chi-square tests-

Results

Overall Findings: 23,905 park users observed: 36% baseline, 30% post-installation, 34% follow-up. Activity: 63% sedentary, 26% walking, 11% MVPA.

Intercept Interviews: 2266 interviews with a 65% response rate. Higher response from adults (70%) vs. seniors (50%).

Activity Levels: MVPA increased post-installation, then decreased slightly at follow-up. Notable increases in children and male adults.

Outdoor Gym Use: Usage doubled post-installation but remained higher than baseline at follow-up. MVPA at the gym increased from 6% to 36% post-installation and 40% follow-up.

User Characteristics: Gym users were often local residents and frequent park visitors.

Background



The importance of PA for health and well-being is widely recognized. However, the **features of the built environment around schools** might **limit students' opportunities to be physically active**, leading to significant differences in PA levels among students from different schools.

Objectives



The study focuses on the relationship between the built environments around schools, and the levels of PA practiced by students. It explores whether **built environments characteristics**, relating to physical and psychosocial factors can explain **between-school variations** in terms of PA.

Design



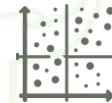
Participant profile: School children (fifth-grade students)

Lifestyle data: Baseline data from the Food, Health and Choices obesity prevention trial, on PA levels.

Environment attributes: Park access, public transport density, total crime and walkability in the school's neighbourhood.

Analysis: multilevel linear models of the relationship between PA and related psychosocial factors and characteristics of the built environment of the school's neighbourhood, controlling for age and body mass index z scores.

Results



Built environment characteristics explained **67% of between-school variation** for boys and **97% of the between-school variation** in girls' self-efficacy in walking for exercise. Crime rates were inversely associated with boys' light PA duration ($\beta = -0.189$; $P = .02$) and behavioural intention for PA ($\beta = -0.178$; $P = .03$). Girls' frequency of light PA was positively associated with park access ($\beta = 0.188$; $P = .04$).

As a result, it encourages **multi-stakeholder partnerships**, involving **public health practitioners, policy-makers, and school administrators** to decrease crime rates and increase park access in areas surrounding schools, thus shaping the built environment to promote PA.

Background



Urban parks benefit mental and emotional health and support PA and social interaction. Evidence on how **park modifications influence usage** is limited. Some studies show that new equipment and landscaping can increase park use and activity, while others do not. Parks also promote PA through **dog-walking**, especially near off-leash areas.

Objectives



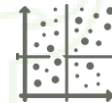
This study aimed to assess how creating **off-leash areas** in urban parks **impacts the demographics of park visitors** and their **activity patterns**. It focused on whether these modifications could change visitor characteristics and the types and intensities of park-based activities.

Design



Data: Observations were conducted in four Calgary parks (Alberta, Canada) from May to July in 2011 and 2012, collecting data on visitor demographics and activities.
Intervention: Taradale Park and Martindale Park. West Hillhurst and Meadowlark Parks: No changes; control sites.
Outcome: Measured changes in visitor demographics and activities.
Statistical Analysis: Used Chi-square tests with Bonferroni adjustments, binary logistic regression, and multiple linear regression to compare activity types and intensities, adjusting for visitor characteristics

Results



Visitor Characteristics: More visitors in modified parks (Taradale and Martindale) in 2012 compared to 2011. **Martindale:** Increase in adults (41.3% to 56.5%, $p < 0.05$) and weekend visitors (56% to 69.4%, $p < 0.05$). **Taradale:** Increase in children and dog-related visits; decrease in proportion of afternoon visitors (72.5% to 55.5%, $p < 0.05$).
Visitor Activities: walking, cycling, dog-related. **Martindale:** Decrease in dog-related activities (OR = 0.55, 95% CI [0.33, 0.93]). **Meadowlark:** Increase in walking (58.0% to 68.3%, $p < 0.05$); decrease in cycling (25.9% to 15.9%, $p < 0.05$).
Activity Intensity: No significant change in adult activity intensity in modified parks. **Meadowlark:** Decrease in activity intensity ($\beta = -0.44$, 95% CI [-0.88, -0.01]). Lower intensity for visitors with dogs (e.g., Taradale: $\beta = -2.56$, 95% CI [-2.87, -2.24]).

Background



Prior research has studied **associations between neighbourhood food environment** and diet quality, and **neighbourhood SES** and diet quality **independently**. This study aims to uncover the **joint effects of both characteristics** in relation to **diet quality**.

Objectives



This cross-sectional study aims to estimate the **independent associations** and **interaction effects** of the objectively assessed **neighbourhood food environment** and **neighbourhood SES** on diet quality in Canadian adults.

Design



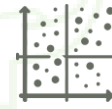
Participant profile: Adults

Lifestyle data: Canadian Diet History Questionnaire II (C-DHQ II) and the Past Year Physical Activity Questionnaire (PAQ)

Environment attributes: Geographic Information System (GIS) analysis was used to assess density, diversity and presence of food destination types within 400m of participant's home (i.e., walkshed).

Analysis: Multivariable linear regression was used to test for associations between walkshed food environment variables, neighbourhood SES, and diet quality.

Results



Neighbourhood deprivation vs. food destination and diversity:

Greater walkshed deprivation was significantly correlated with higher food destination density ($r = 0.23$, $p < 0.05$) and higher food destination diversity ($r = 0.31$, $p < 0.05$).

After adjustment for covariates, **food destination density was positively associated with the Canadian adapted Healthy Eating Index (C-HEI)**, though the magnitude of the association was small ($\beta = 0.06$, 95 % CI [0.01, 0.12], $p = 0.04$). These results indicate that having more local food options nearby might be linked to higher diet quality in adults.

Background

Physical inactivity, a global pandemic causing over 5 million deaths annually, is targeted by the UN to reduce Non-Communicable Diseases (NCDs). Enhancing urban environments to promote PA is recommended. Studies show that walkable neighborhoods increase PA but are limited to a few countries and self-reported data.

Objectives

This study aimed to investigate the **associations** between **neighborhood environment attributes** and total **MVPA** across 14 cities in 10 countries. It utilized objective measures to enhance precision and credibility, aiming to document the strength, shape, and generalizability of these associations. The study also sought to improve the quality of evidence by including diverse urban environments and standardized measures.

Design

Study Design: The International Physical Activity and Environment Network (IPEN) adult study is a multicountry, cross-sectional epidemiological study involving 14 cities across 10 countries on five continents.

Data: 6822 adults aged 18–66 years. Participants were selected from neighborhoods varying in walkability and SES.

Outcome: MVPA measured in minutes per day, obtained from accelerometer data.

Statistical Analysis: Generalised additive mixed models (GAMMs) were used to analyse associations between environmental variables and MVPA, adjusting for covariates.

Results

Significant Attributes: Net Residential Density ($e^{\beta} = 1.006$, 95% CI [1.003–1.009], $p = 0.001$), Intersection Density ($e^{\beta} = 1.069$, 95% CI [1.011–1.130], $p = 0.019$), Public Transport Density ($e^{\beta} = 1.037$, 95% CI [1.018–1.056], $p = 0.0007$), Number of Parks ($e^{\beta} = 1.146$, 95% CI [1.033–1.272], $p = 0.010$).

Non-significant Attributes: Mixed Land Use, Distance to Nearest Public Transport

Impact on: Difference between most and least activity-friendly neighbourhoods: 68-89 min/week, which represents 45–59% of the 150 min/week recommended by WHO guidelines.

Background

Walking in outdoor spaces has been found to be beneficial for **healthy aging and active lifestyles**. However, research shows that adults in **deprived areas** have **lower levels of** . Previous research has focused on how structural attributes of built environments (i.e., density, land-use) can influence walking, but not specifically on other attributes that can shape **route characteristics**.

Objectives

This study focuses on **the micro attributes of the built environment**, that can be **quicker and less costly to change** than other structural macro attributes. By focusing on these attributes, the study aims to demonstrate the links between **perceived neighbourhood safety, pedestrian infrastructure and aesthetics** in high- and low-income settings, and **outdoor walking levels**.

Design

Data: Mixed-method design, quantitative study (GPS-measured walking levels) and qualitative information on perceived neighbourhood built environment attributes.

Participant profile: Older adults (aged 65+), living in high- or low-deprivation areas, able to walk, independent and mentally health.

Analysis: Hierarchical linear regression was applied to examine links between neighbourhood attributes and outdoor walking levels (quantitative data). Thematic analysis of qualitative data led to defining three themes: safety, pedestrian infrastructure, aesthetics.

Results

The findings reveal **disparities in how safe neighbourhoods are perceived** ($r = 0.49, p < 0.001$), the **quality of pedestrian infrastructure** ($r = 0.50, p < 0.001$), and **aesthetics** ($r = 0.81, p < 0.001$) **between high- and low-deprivation areas**. These differences appear to **affect the amount of outdoor walking** done by participants. It's suggested that enhancing perceived neighbourhood safety, pedestrian infrastructure, and aesthetics in high-deprivation areas could help address these disparities.

Background



Many children and adolescents in Western countries do not meet the recommended 60 minutes of MVPA daily. The **built environment** significantly influences PA levels. **Public outdoor spaces** are crucial for promoting PA, especially in urban areas with limited private outdoor space. The neighborhood environment is particularly important for **children's and adolescents' PA** due to limited travel opportunities.

Objectives



This study aims to evaluate the **impact of urban renewal** in the Haraldsgade district of Copenhagen on **adolescents' PA levels**. The renewal included **renovations and new constructions of green spaces, playgrounds, and sports facilities**. Adolescents aged 11–16 from local schools were assessed before (2010) and after (2012) the renewal using accelerometry and GPS to measure PA and location. The objective was to determine if these **urban changes led to increased PA** among adolescents in this deprived neighborhood.

Design



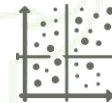
Data: Adolescents aged 11-16 from four schools in the Haraldsgade district, Copenhagen, with 354 participants at baseline (2010) and 319 post-renewal (2012).

Intervention: From 2010 to 2012, a 35 million Euro urban renewal project in the Haraldsgade district.

Outcome: Time spent in the district and levels of PA, measured using accelerometers and location data with GPS trackers.

Statistical Analysis: General linear mixed models adjusted for age, gender, BMI, valid days, daily wear time, and residential status.

Results



PA in the District

Total Time in District: Increased by 24.6 minutes/day post-renewal ($p = 0.017$).

Light (LPA): Increased by 7.8 minutes/day ($p = 0.012$).

MVPA: Increased by 4.5 minutes/day ($p < 0.001$).

Sedentary Time (SED): Increased by 13.1 minutes/day ($p = 0.043$).

Effect Moderation: No significant differences based on gender, age, or district residency in time spent and activity level.

Background

Sedentary behavior and obesity are highest in low-income, minority communities. Built environments, including parks and active transportation infrastructure, promote **PA**. However, these neighborhoods often lack walkability and face safety issues. Few studies have evaluated the influence of pedestrian infrastructure changes on park use and park-based **PA**.

Objectives

This study aimed to evaluate the **impact of new pedestrian infrastructure on park use and park-based PA** in a low-income, predominantly African American community in Columbia, Missouri.

Design

Study Population: Low-income, majority African American neighborhood in Columbia, Missouri, comprising 477 households, with 57% living below the poverty level.

Intervention: In 2013, a signalized pedestrian crosswalk with a median was installed to replace an unsafe pedestrian bridge, improving access to a local park. No control site.

Data: Data were collected over three years (2012-2014) using SOPARC, recording park use and PA by age, gender, and race/ethnicity.

Statistical Analysis: ANCOVA models, controlling for temperature, assessed changes in park use and **Energy Expenditure (EE)**.

Results

Total park use: Increased from 2080 (2012) to 2275 (2013), then stable at 2276 (2014). Between 53% and 60% of the observed park-based PA was sedentary

Changes in Total Park Counts: Significant year effect on park counts ($F = 114.98$; $p < 0.001$). Increase from 2012 to 2013 ($p < 0.001$), decrease from 2013 to 2014 ($p < 0.001$). 2014 counts still higher than 2012.

Changes in Total EE: Significant year effect on total EE ($F = 11.75$; $p < 0.001$). Decrease from 2012 to 2013, maintained in 2014.

Significant interactions between year and demographics for changes in total EE: Two-Way ANCOVA interaction (Year * Age): $F = 14.200$; $p < 0.001$. (Year * Gender): $F = 32.059$; $p < 0.001$. (Year * Race/Ethnicity): $F = 36.606$; $p < 0.001$.

Background

Urban green **Public Open Spaces** (POS) are crucial for creating healthy, livable, and sustainable urban environments. POS, such as **parks**, support **PA**, **mental health**, and **social interaction**. However, key questions remain about the optimal amount, type, and location of POS. Current planning standards are often not empirically based and lack scientific evaluation.

Objectives

This study aims to inform urban planning policies related to POS by:

- Identifying **POS Planning Standards**.
- Creating **Spatial Measures**.
- Assessing **Associations** between **POS policy standards** and **recreational walking and PA**.
- Comparative Analysis.

The overarching goal is to understand how POS policies influence the **health** and **wellbeing** of residents, contributing to the creation of healthy, livable urban environments.

Design

Data: Participants from 73 new housing developments. Baseline (n = 1,813) and follow-up surveys assessed public open space (POS) using state-based and national GIS layers.

Intervention: Participants moved to new developments in Perth, Australia, with POS classified and measured. The study analysed POS provision and access using GIS data.

Outcome: Walking for recreation and total PA within a 1.6 km area.

Statistical Analysis: Logistic regression models with generalized estimating equations (GEE) compared POS measures with walking and PA. Models adjusted for demographic factors.

Results

The review identified 16 POS policy standards across five states, focusing on land area, population ratios, and access distances.

POS Provision Measures: 69.6% of participants had $\geq 10\%$ POS in their 1.6 km service area (mean = 12.5%). Nearly 80% had access to a park within 400 m.

PA Associations: 54% of participants walked for recreation, and 44% engaged in MVPA. Living in suburbs with $\geq 95\%$ of dwellings located within a 400 m catchment of any POS (park) was associated with a three-fold increased odds of doing any MVPA in the neighbourhood (OR = 3.17, 95% CI [1.02, 9.81])

National Indicator Dataset Validity: The national dataset overestimated POS provision. Including natural areas improved comparability and reliability with state data.

Background

Physical inactivity contributes to chronic diseases. Parks provide key opportunities for PA and health benefits. Despite significant investment, little evidence exists on the impact of **park refurbishments** on **visitation** and **activity**. Natural experiments suggest park improvements boost these metrics, but more research is needed, particularly on **playground installations** in **disadvantaged** areas, to guide equitable public health strategies.

Objectives

To evaluate the **impact** of installing a **children's play-scape** in a **large metropolitan park** in a **low SES** area of **Melbourne**, Australia, this study compares park **visitation** and **park-based PA** between the intervention park and a control park. The primary objective is to assess whether the play-scape installation increases park visitation and PA among different age groups. This research aims to inform public health strategies by providing evidence on the benefits of park refurbishments, particularly in socio-economically disadvantaged areas, to promote equitable access to recreational facilities and PA opportunities.

Design

Data: The study involved observations from SOPARC, path usage monitoring, car traffic counts, intercept surveys, and resident surveys.

Intervention: A \$1.1 million play-scape was installed in a large metropolitan park in a low SES area of Melbourne. The control park, located in a High SES area, had an older adventure playground.

Outcome: Park visitation and park-based PA levels among different age groups.

Statistical Analysis: Negative binomial regression models for analysing visitor and traffic counts. Logistic regression models for regular visitation and PA levels.

Results

Visitor counts increased by 176% at the intervention park from T1 to T2 compared to the control park (IRR = 2.76, 95% CI [1.04, 7.33]). **Visitors** engaging in **MVPA** increased by 119% from T1 to T2 (IRR = 2.19, 95% CI [1.14, 4.20]) and by 128% from T1 to T3 (IRR = 2.28, 95% CI [1.19, 4.38]). **Visitation** at the **intervention park's play-scape** increased significantly from T1 to T2 (IRR = 18.12, 95% CI [5.51, 59.59]) and from T1 to T3 (IRR = 15.05, 95% CI [4.61, 49.16]). The odds of **children's regular visitation** to the intervention park increased at T2 (OR = 2.67, 95% CI [1.08, 6.64]). Other measures showed no significant differences between the parks.

Background



In June 2013, a 1.5-mile **greenway** was built in a **disadvantaged**, predominantly **African-American neighborhood** in Philadelphia. The greenway included sidewalks, pedestrian signals, ADA ramps, and street trees. This study tests if the new greenway increases **MVPA**, as greenways can promote activity by serving as transit corridors and leisure destinations. Evidence in **low-income** areas is limited.

Objectives



This study aims to **test** whether the **new greenway** **increases MVPA** levels in a **low-income urban area**. A **quasi-experimental pre-post design** is used to observe changes in PA. Additionally, an environmental audit documents changes in the greenway and comparison sites.

Design



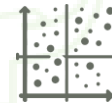
Data: Systematic observations using SOPARC. Post-construction intercept surveys were collected at the greenway (N = 175)

Intervention: A 1.5-mile greenway in a deprived neighborhood in Philadelphia. A 1-mile section of arterial streets in a demographically similar area served as a control.

Outcome: Changes in MVPA.

Statistical Analysis: Difference-in-difference analysis to compare changes in PA between the greenway and control sites. Hierarchical logistic models for estimating ORs of engaging in MVPA pre- and post-construction.

Results



PA Observations: Pre-construction, 100 people per hour were observed using the greenway, with less than 20% engaging in MVPA. Post-construction, the number slightly increased to 116 per hour, with a small rise in MVPA. Cycling increased by 4%, and running or fast walking increased by 2%. However, these changes were similar to those in the comparison area. The adjusted analysis showed a 45% increase in MVPA odds at the greenway (OR = 1.45, 95% CI [1.06, 1.98]), but no significant difference between the greenway and comparison sites.

Greenway User Characteristics: Most users were local residents, with over 60% using the greenway daily, primarily for transportation rather than leisure. Users largely agreed that the greenway was an improvement and felt safe during the day (92%), though 58% felt unsafe at night. Many still noted pavement cracks post-construction.

Background

Urban parks enhance neighborhoods and encourage **PA**. **Renovations**, guided by community input, can boost **park use** and **activity**. Despite their potential, few studies evaluate **renovations' long-term effects on MVPA**. Existing research often shows mixed results due to varying methodologies and typically includes only short-term assessments.

Objectives

This study addresses this gap by examining **park use** and **MVPA** at three time points over six years, during which **five** of the six **parks** were **renovated** by the **San Francisco Recreation and Parks Department (SFRPD)**. The goal is to assess both **immediate** and **longer-term impacts** of these **renovations on park use and PA**.

Design

Data: Observations from SOPARC were made at three time points: baseline (2009), wave 1 (2012), and wave 2 (2015). Observations recorded user characteristics and activity levels, converted to METs.

Intervention: Five parks were renovated by the SFRPD, with community input influencing design features. One park served as a control with no renovations.

Outcome: Changes in park use and MVPA.

Statistical Analysis: Difference-in-differences approach with mixed-effect models to estimate short-term and long-term park renovation effects.

Results

Park Use and PA: Renovated parks saw a net increase in users, while the unrenovated park had a decrease. Playground use tripled, and seating area use more than tripled. MET-hours per observation increased by at least 70% in all renovated parks. The unrenovated park saw a 45% decrease.

Overall Impact: Renovated parks had a 480% increase in users and a 636% increase in MET-hours from 2009 to 2015 ($p < 0.001$). Short-term effects showed a 580% increase in users and 800% increase in MET-hours ($p < 0.001$), while long-term effects were negative (-53% users and -60% MET-hours, $p < 0.05$).

Age Group Differences: The effect sizes differed among age groups. The effects for children and adults were similar to the overall effects, but not for seniors and teenagers.

Background



Public Bicycle Share Programs (PBSPs) provide rentable bicycles for short trips and aim to **increase cycling**, ease public transport connections, and reduce traffic congestion. Despite rapid expansion, the **impact of PBSPs** on overall cycling levels remains **unclear** due to limited and inconsistent studies.

Objectives



This study aims to evaluate the **impact of PBSPs** on **population-level cycling** in eight North American cities from 2012 to 2014: newly implemented (Chicago, New York), existing (Boston, Montreal, Toronto), or no PBSP (Detroit, Philadelphia, Vancouver). It hypothesizes that **cities with newly implemented PBSPs** will show the **greatest increase in cycling**, followed by cities with existing programs. The study also examines potential **gender differences** in cycling behavior changes associated with PBSP implementation.

Design



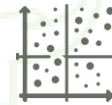
Data: 23,023 residents (aged 18+) across 8 North American cities.

Intervention: Implementation and presence of PBSPs. Cities with PBSPs had docking stations within 500m of participants' homes. For control cities, hypothetical service areas were assigned based on future docking station locations.

Outcome: Binary measure of self-reported cycling for any purpose (transportation or leisure) for at least 10 minutes in the past week.

Statistical Analysis: Triple difference-in-differences logistic regression. Sensitivity analysis and gender-stratified models were also used.

Results



Cycling Rates: Past-week cycling increased from 18.1% in 2012 to 24.8% in 2013 and 24.5% in 2014. Men reported higher cycling rates than women, but both groups showed increases over time. PBSP usage rose from 9.0% in 2012 to 14.3% in 2014.

Impact of PBSP on Cycling: Logistic regression models showed higher odds of past-week cycling for those living near docking stations in cities with newly implemented PBSPs, with OR = 2.14 (95% CI [1.11, 4.12]) at the first follow-up and OR = 2.08 (95% CI [1.14, 3.77]) at the second follow-up, compared to cities with no PBSP. The effect remained significant after adjusting for covariates at the second follow-up (OR = 1.84, 95% CI [1.003, 3.39]). There was no significant change for cities with existing PBSPs.

Gender: Women in newly implemented PBSP cities showed higher cycling odds at the first follow-up (OR = 2.61, 95% CI [1.08, 6.32]), but this was not sustained.

Background

In westernized countries, including Canada, the **winter holiday season** often leads to weight gain and **reduced PA**, particularly in sub-zero regions. Behavioural interventions during this period can prevent typical weight gains but may not reach all affected populations. The start of the year presents a critical time for adopting healthy habits. **Urban frozen waterway trails**, supporting **winter recreational activities**, offer a potential solution.

Objectives

This study aimed to assess the **impact** of a **frozen waterway trail** on **user visits** and **PA** patterns. The main hypothesis was that **daily visits** to an urban trail network would significantly **increase** with the creation of a **frozen waterway** trail compared to days without it. Additionally, the study aimed to describe trail user demographics, PA levels, and perceived benefits.

Design

Data: Daily user counts and field survey data during the 2017/2018 and 2018/2019 winter seasons. Participants were trail visitors, with a convenience sample of adults over 18 for surveys and pedometer data.

Intervention: Seasonal trail on frozen waterway for ~10 weeks post-Christmas in Winnipeg, Canada, featuring art displays and warming huts.

Outcome: Daily trail user counts using a PYRO-Box people counter. Secondary outcomes included PA levels and perceived health impacts.

Statistical Analysis: Multivariate regression and ARIMA models for user counts.

Results

Impact of Intervention on Visitors: Daily trail visits increased 2- to 4-fold during the intervention in both 2017/2018 and 2018/2019 ($p < 0.001$), with counts returning to pre-intervention levels post-intervention.

PA Levels: Users averaged 4195 steps and 39 minutes of activity per visit. 37% achieved 30 minutes of MVPA. Weekday users had more steps and MVPA than weekend users.

User Profiles and Perceived Health Outcomes: Of 466 users, 58% were female, 60% had incomes $> \$50,000$, and 58% were over 35. Most traveled ≤ 15 minutes to the trail and used it for recreation. Over 90% used the trail for > 30 minutes per visit. 53% reported improved health and 58% noted better mental/emotional health.

Background



Promoting **PA in children** is crucial for combating childhood obesity. Access to **PA spaces in neighborhoods** is important, but there is limited evidence on whether these spaces increase PA or if active families choose to live near them. While RCTs are ideal for establishing causality, they are impractical for assigning play facilities. **Natural experiments** offer an alternative by using variations in access to PA spaces to determine intervention effects.

Objectives



This study aimed to assess the **impact** of 18 new **PA spaces** on children's **outdoor play** and **sedentary behavior** in Rotterdam. It also aimed to evaluate whether these effects varied by family income, parental education, and ethnicity. The primary hypothesis was that the **introduction of PA spaces** would significantly **increase outdoor play** and **reduce sedentary behavior** among children.

Design



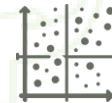
Data: Prospective birth cohort including 1841 children who were assessed at ages 6 and 10, with relevant data collected via parent-reported questionnaires.

Intervention: 18 new PA spaces introduced in Rotterdam from 2008 to 2015 in deprived neighborhoods to encourage PA among children.

Outcome: Outdoor play and sedentary behavior, measured via parent-reports. Secondary outcomes included sport participation and active transport to school.

Statistical Analysis: Fixed-effects regression models controlled for time-variant and time-invariant confounders. Sensitivity analyses tested different forms of exposure.

Results



Intervention Group included 171 children. They were more often non-Western, less often participated in sports, and came from families with lower SES.

Outdoor Play and Sedentary Behavior: Cross-Sectional Analysis: Intervention group children played 40 min/week more outside (95% CI: -6, 87). With lower maternal education, outdoor play increased by 96 min/week (95% CI: 18, 174). Sedentary behavior differences were non-significant. **Buffer Analysis:** No effect on outdoor play (-25 min/week, 95% CI: -101, 51) or sedentary behavior (55 min/week, 95% CI: -57, 167).

Distance Analysis: Reducing distance by 100 m had no effect on outdoor play (-3 min/week, 95% CI: -31, 25) or sedentary behavior (42 min/week, 95% CI: -16, 99).

Sensitivity Analyses: Consistent results across different buffer sizes, inclusion of movers, and varying exposure times.

Background

Individuals in deprived inner cities face high rates of obesity, diabetes, cancer, and cardio-metabolic conditions due to stress and physical inactivity. These conditions incur significant medical costs. Low-income neighborhoods exhibit low PA and high stress, leading to chronic disease. **Greenspaces**, like parks, promote **PA** and **reduce stress**, with 'green PA' proving more effective than indoor or non-green outdoor PA.

Objectives

The StAND study aims to observe the **effects of park ecological restoration on PA, stress, and cardio-metabolic health** over three years. The **hypotheses** are: 1. Increased PA in intervention (INT) park neighborhoods. 2. Increased 'green PA' in INT park neighborhoods. 3. Visual and auditory exposures affect PA levels. 4. Lower stress levels in INT park neighborhoods. 5. Higher PA and 'green PA' correlate with lower stress. 6. Visual and auditory exposures affect stress levels. 7. Improved A1C and CRP in INT park neighborhoods. 8. Lower blood pressure, BMI, and hip-to-waist ratios in INT park neighborhoods.

Design

The Study of Active Neighborhoods in Detroit is a **quasi-experimental**, longitudinal panel **natural experiment** with two conditions (**restored park** intervention (INT) and control (CNT)) and annual measurements at baseline and 3-years post-restoration. **Intervention:** Restoration (n = 4 parks) involves replacing non-native plants and turf with native plants; creating trails; posting signage; and leading community stewardship events. The CNT condition (n = 5) is an unmaintained park, matched to INT based on specified neighborhood conditions.

Results

Authors reported problems in implementing the study protocol. See:

Pearson, A. L., Pfeiffer, K. A., Buxton, R. T., Horton, T. H., Gardiner, J., & Asana, V. (2023). Four recommendations to tackle the complex reality of transdisciplinary, natural experiment research. *Frontiers in Public Health*, 11, 1240231. <https://doi.org/10.3389/fpubh.2023.1240231>

Background

By 2050, 84% of Europe's population is expected to live in cities. Urban ecosystems need to support higher quality of life and sustainability. **Urban green spaces (UGSs)** are vital for **physical and mental health**, economic, and environmental wellbeing. However, UGSs face threats from urban development. While evidence shows UGSs benefits, such as improved health and social inclusion, they are **not equitably distributed**.

Objectives

The aim of this study is to investigate the public health impact of the Connswater Community Greenway (CCG), an **urban greenway intervention**, on **PA, health, wellbeing**, social capital, and perceptions of the environment. The study focuses on understanding the influence of this systems-level intervention, with outcomes stratified by exposure to the CCG and levels of deprivation.

Design

Data: Adult residents (≥ 16 years) within a 1-mile radius of the greenway (intervention) and beyond 1-mile (control). Repeated cross-sectional survey was conducted pre-intervention (2010/2011) and 6 months post-intervention (2016/2017).

Intervention: £40 million urban regeneration including a 9 km greenway in Belfast.

Outcome: Primary Outcome: PA. **Secondary Outcomes:** Quality of life, mental wellbeing, social capital, and perceptions of the built environment.

Statistical Analysis: Linear regression and Multi-level models with random intercepts. Ordered logit for assessing changes in the social patterning of outcomes over time.

Results

PA: Pre-intervention: 68% met guidelines. **Post-intervention:** 65% within ≤ 400 m (adjusted OR = 0.60, 95% CI [0.35, 1.00]), 60% within ≥ 1200 m (adjusted OR = 0.64, 95% CI [0.41, 0.99]). **Deprivation:** Similar reduction in PA across all quintiles.

Quality of Life: Intervention Area: Declined less than **control** (adjusted difference in mean EQ5D: -11.0, 95% CI [-14.5, -7.4] vs. -30.5, 95% CI [-37.9, -23.2]).

Mental Wellbeing: No significant change observed.

Social Capital: Improvements in some indicators.

Environmental Perceptions: Increased attractiveness, traffic, and safety perceptions.

Background

Meeting national PA guidelines is crucial for preventing chronic diseases and enhancing QoL. Built environment strategies, such as **park availability** and amenities, are known to promote **PA**. Research indicates that combining these with formal programming activities has a greater impact on PA. **Natural experiments**, which evaluate interventions before and after implementation, and **community engagement** in **park improvements** can further boost PA levels.

Objectives

The objective of this study was to **evaluate** whether built environment **changes** in **two suburban parks** outside Denver, Colorado, involving **community engagement** and **PA programming**, **increased park use** and **PA levels**. This natural experiment tracked community participation in the redesign process, diversity of partners on the steering committee, and measured park use and PA before and after improvements using the SOPARC instrument.

Design

Data: Residents of a suburban community near Denver, Colorado, participated in redesigning two parks from 2015 to 2018.

Intervention: Park A added a trail, fitness equipment, natural pavilion, benches, and picnic shelter. Park B added a trail, dog park, fitness equipment, picnic shelter, benches, trees, and lighting. Community engagement included planning meetings.

Outcome: Changes in average park users and activity levels, using SOPARC to measure park use and PA levels before and after improvements.

Statistical Analysis: T-tests and Chi-square tests compared baseline and follow-up.

Results

Twenty-one community meetings, with 10-100 attendees each, and annual park festivals increased community engagement. The steering committee had 47 partners, including residents, community organizations, local businesses, government agencies, faith-based organizations, and educational institutions.

Park A: Visitors increased by 53% ($p < .05$), mainly in the evenings. Very active visitors increased from 20% to 24%; sedentary visitors decreased from 45% to 41% (not significant).

Park B: Visitors increased by 50% ($p = .10$), with significant evening increases ($p < .0001$). Very active visitors decreased from 21% to 15%; sedentary visitors increased from 40% to 43% (not significant); walking visitors increased from 39% to 42% (not significant).

Background



Overall health and QoL are influenced by individual and environmental factors, including urban planning choices. **Urban interventions**, like low-emission zones, have been implemented to improve conditions but **lack extensive real-life health assessments**. The **natural experiment** approach can help evaluate such interventions. Studies show mixed results on health impacts due to methodological challenges.

Objectives



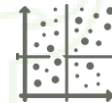
The UrbASanté study aims to assess how **urban interventions impact environmental exposures, health-risk behaviors, and self-reported health** using a natural experiment protocol in **Paris**. Specific objectives are to: (i) develop methods to assess and monitor these factors, (ii) collect relevant local data during experimentation, and (iii) analyse the data to understand the effects of urban transformations on health and inform public health and urban planning policies.

Design



The study employs a **natural experiment** with a before/after protocol to evaluate **changes in environmental exposures, health-risk behaviours, and self-reported health** among residents in Paris. Data will be collected from intervention and control neighbourhoods at baseline (T0, 2022) and follow-up (T1, 2025). The **intervention area**, Porte de la Chapelle, will undergo **urban changes**, while control areas will not. Participants must be adults residing in the neighbourhoods and able to complete the survey. Recruitment will utilize various community outreach methods. Analyses will include multivariate regressions and spatial models to assess changes over time.

Results



Results are not yet available as the cited paper is a recent study protocol.

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