

## Appendix 2 – Non-Canadian reviews

### Childhood obesity: trends and potential causes

Anderson,P. M.; Butcher,K. E.

2006 The Future of children 16, 1 page(s) 19 - 45

**Keywords** Adolescent; Adult;Child;Child Nutrition Physiology;Child Rearing;Child, Preschool;Energy Intake;Energy Metabolism;Environment;Food Supply;Humans;Obesity/epidemiology/etiology/prevention & control;Social Change;United States/epidemiology

#### Abstract or Excerpt

The increase in childhood obesity over the past several decades, together with the associated health problems and costs, is raising grave concern among health care professionals, policy experts, children's advocates, and parents. Patricia Anderson and Kristin Butcher document trends in children's obesity and examine the possible underlying causes of the obesity epidemic. They begin by reviewing research on energy intake, energy expenditure, and "energy balance," noting that children who eat more "empty calories" and expend fewer calories through physical activity are more likely to be obese than other children. Next they ask what has changed in children's environment over the past three decades to upset this energy balance equation. In particular, they examine changes in the food market, in the built environment, in schools and child care settings, and in the role of parents-paying attention to the timing of these changes. Among the changes that affect children's energy intake are the increasing availability of energy-dense, high-calorie foods and drinks through schools. Changes in the family, particularly an increase in dual-career or single-parent working families, may also have increased demand for food away from home or pre-prepared foods. A host of factors have also contributed to reductions in energy expenditure. In particular, children today seem less likely to walk to school and to be traveling more in cars than they were during the early 1970s, perhaps because of changes in the built environment. Finally, children spend more time viewing television and using computers. Anderson and Butcher find no one factor that has led to increases in children's obesity. Rather, many complementary changes have simultaneously increased children's energy intake and decreased their energy expenditure. The challenge in formulating policies to address children's obesity is to learn how best to change the environment that affects children's energy balance.

#### descriptors

Research subject	food access/nutrition, physical activity; obesity, energy balance, environment, built environment., behaviours
Research Type	discussion, review
Population	children
Place	n/a
Reference Type	Journal

**Land use planning and the control of alcohol, tobacco, firearms, and fast food restaurants**

descriptors

**Ashe,M.; Jernigan,D.;Kline,R.;Galaz,R.**

2003 American Journal of Public Health 93, 9 page(s) 1404 - 1408

**Keywords** Alcohol Drinking/legislation & jurisprudence; City Planning/legislation & jurisprudence;Commerce/legislation & jurisprudence;Community Health Planning/legislation & jurisprudence;Firearms;Food Industry/legislation & jurisprudence;Humans;Law Enforcement;Local Government;Nutrition Policy;Ownership/legislation & jurisprudence;Police;Public Health/legislation & jurisprudence;Restaurants/legislation & jurisprudence;Tobacco Industry/legislation & jurisprudence;United States

Research subject	planning; legal tools, public health
Research Type	review
Population	general
Place	n/a
Reference Type	Journal

**Abstract or Excerpt**

We desired to understand how legal tools protect public health by regulating the location and density of alcohol, tobacco, firearms, and fast food retail outlets. We reviewed the literature to determine how land use regulations can function as control tools for public health advocates. We found that land use regulations are a public health advocacy tool that has been successfully used to lessen the negative effects of alcohol retail outlets in neighborhoods. More research is needed to determine whether such regulations are successful in reducing the negative effects of other retail outlets on community health.



**Expanding the Agenda for Healthy Urban Planning****Corburn, Jason**

2006 Journal of the American Planning Association 72, 1 page(s) 119 - 121

**Keywords** City planning; Public health; Planning -- Periodicals**Abstract or Excerpt**

The authors review three special issues in 2003 from some of America's leading public health journals, the American Journal of Public Health, the American Journal of Health Promotion, and the Journal of Urban Health, to examine the extent to which they can inform planning practice. While the three special issues provide some groundbreaking research and have clearly helped shift the public health discourse toward a consideration of some aspects of planning practice, particularly land use, they ultimately fall short in expanding the agenda for healthy urban planning. One possible explanation for these limitations is that many of the articles seemed to be constrained by private foundation and federal agency research support that has tended to encourage a domestic planning and public health agenda focused on a limited set of hot-button issues and questions.

**descriptors**

Research subject	general, planning; healthy urban planning, gaps in literature and discussion topics
Research Type	review
Population	general
Place	n/a
Reference Type	Journal
Page length	3

**Comment**

The author argues that much of the recent work reconnecting planning and health reflects a "limited "functionalist" agenda", attending to how characteristics of the built environment influence behaviours and thus health, rather than delving into the complexities of how planners can meaningfully incorporate public health into their practice. To address these concerns, the author draws attention to special issues of three public health journals, recommending that they provide substantive material for consideration. Strengths of these issues include: they begin from practice; they draw attention to place, neighbourhood, and context; and they advocate and/or describe collaboration among health and planning practitioners. Weaknesses include: little attention to governance, political power, and politics, to health inequities, and to local knowledge. Despite these limitations, the author recommends each of the special issues and also draws attention to international work that may help facilitate the integration of planning and public health.

**Other Information**

<http://proquest.umi.com/pqdweb?did=987425151&Fmt=7&clientId=16746&RQT=309&VName=PQD>

**Concepts guiding the study of the impact of the built environment on physical activity for older adults: a review of the literature**

**Cunningham,G. O.; Michael,Y. L.**

2004 American Journal of Health Promotion 18, 6 page(s) 435 - 443

**Keywords** Aged; Environment;Exercise;Humans;Middle Aged;United States

**Abstract or Excerpt**

**OBJECTIVE:** To identify theoretical models and key concepts used to predict the association between built environment and seniors' physical activity on the basis of a comprehensive review of the published literature.

**DATA SOURCE:** Computer searches of Medline (1966-2002), PubMed (1966-2002), and Academic Search Elite (1966-2002) were conducted, and 27 English-language articles were found. Search terms included built environment, physical activity, exercise, walking, neighborhood, urban design, seniors, aging, aging in place, and physical environment.

**STUDY INCLUSION AND EXCLUSION CRITERIA:** The primary inclusion criterion included the relation between the built environment and the physical activity among seniors living in neighborhoods. Studies assessing physical activity or overall health of a community-based population were included if underlying theoretical models and concepts were applicable to a senior population. Studies solely assessing social or psychosocial characteristics of place were excluded, as were review articles.

**DATA EXTRACTION:** Extracted data included theoretical model, aspect of built environment studied, methods, and outcomes.

**DATA SYNTHESIS:** Tables present key definitions and summarize information from empirical studies.

**RESULTS:** Twenty-seven articles that focused on the environment-behavior relation in neighborhoods, six specific to seniors, were found. This area of research is in its infancy, and inconsistent findings reflect difficulties in measurement of the built environment.

**CONCLUSIONS:** The relation between the built environment and the physical activity among seniors has been the subject of a limited number of studies. The choice of theoretical model drives the selection of concepts and variables considered. Safety, microscale urban design elements, aesthetics, and convenience of facilities are consistently studied across models. Few validated instruments have been developed and tested to measure neighborhood built environment.

**descriptors**

Research subject	physical activity, methodology; built environment, measurement challenges
Research Type	review, research design
Population	older adults
Place	n/a
Reference Type	Journal



## Do attributes in the physical environment influence children's physical activity? A review of the literature

descriptors

Davison,Kirsten; Lawson,Catherine

2006 International Journal of Behavioral Nutrition and Physical Activity 3, 1 page(s)  
19 - 35

Research subject	physical activity
------------------	-------------------

Research Type	review
---------------	--------

Population	children
------------	----------

Reference Type	Journal
----------------	---------

Page length	17, large table
-------------	-----------------

### Abstract or Excerpt

**BACKGROUND:**Many youth today are physically inactive. Recent attention linking the physical or built environment to physical activity in adults suggests an investigation into the relationship between the built environment and physical activity in children could guide appropriate intervention strategies.

**METHOD:**Thirty three quantitative studies that assessed associations between the physical environment (perceived or objectively measured) and physical activity among children (ages 3 to 18-years) and fulfilled selection criteria were reviewed. Findings were categorized and discussed according to three dimensions of the physical environment including recreational infrastructure, transport infrastructure, and local conditions.

**RESULTS:**Results across the various studies showed that children's participation in physical activity is positively associated with publicly provided recreational infrastructure (access to recreational facilities and schools) and transport infrastructure (presence of sidewalks and controlled intersections, access to destinations and public transportation). At the same time, transport infrastructure (number of roads to cross and traffic density/speed) and local conditions (crime, area deprivation) are negatively associated with children's participation in physical activity.

**CONCLUSION:**Results highlight links between the physical environment and children's physical activity. Additional research using a transdisciplinary approach and assessing moderating and mediating variables is necessary to appropriately inform policy efforts.

### Comment

Recognizing that environmental factors will affect children differently than adults, this review focuses on studies looking at the influences of the built environment on the physical activity of children. The results are grouped in three sections. The first section is recreational infrastructure, including private, public and commercial infrastructure. While home equipment did not have a strong positive association with physical activity, proximity or availability of parks, playgrounds, recreation areas, and other facilities did have such an association - although not in all cases. Transport infrastructure, including the provision of sidewalks, crossings and other amenities and the presence/lack of road hazards were seen to have more consistent associations than recreational infrastructure. The last section, local conditions, briefly reports on studies covering a range of factors, including safety and neighbourhood disorder, aesthetics, weather, and urban/suburban location.

A large table lists the references, listing the number, gender, ethnicity, country, and age group of the study participants; the research design; the environmental attributes and physical activity behaviours studied and the significant associations found. In closing, the authors draw attention to concerns around method and measurement, making suggestions for further research and the need for a transdisciplinary approach.

### Other Information

<http://www.ijbnpa.org/content/3/1/19>

## Perceived environment and physical activity: a meta-analysis of selected environmental characteristics

descriptors

Duncan,Mitch; Spence,John;Mummary,W. Kerry

2005 International Journal of Behavioral Nutrition and Physical Activity 2, 1 page(s)  
11 - 19

Research subject physical activity, perceptions

Research Type review and meta analysis

Population general

Place US, Australia, UK

Reference Type Journal, online, open access

Page length 9, 2 tables

### Abstract or Excerpt

Background: Several narrative reviews have been conducted on the literature examining environmental correlates of physical activity (PA). To date these reviews have been unable to provide definitive summaries of observed associations. This study utilizes meta-analytical techniques to calculate summaries of associations between selected environmental characteristics and PA.

Methods: Published studies were identified from electronic databases and searches of personal files. Studies were examined to determine the environmental constructs most frequently studied. Included studies (N = 16) examined at least one identified construct and determined associations between perceived environmental constructs and PA using logistic regression. Data were analyzed separately for crude and adjusted Ors using general-variance based fixed effect models.

Results: No significant associations emerged between environmental characteristics and PA using crude OR. The perceived presence of PA facilities (OR 1.20, 95% 1.06–1.34), sidewalks (OR 1.23, 95% 1.13–1.32), shops and services (OR 1.30, 95% 1.14–1.46) and perceiving traffic not to be a problem (OR 1.22, 95% 1.08–1.37) were positively associated with activity using adjusted Ors. Variance in PA accounted for by significant associations ranged from 4% (heavy traffic not a problem) to 7% (presence of shops and services).

Conclusion: Results of the meta-analysis support the relevance of perceived environmental characteristics for understanding population PA. These results should encourage the use of comprehensive ecological models that incorporate variables beyond basic demographic information.

### Comment

Noting that the "burden of disease attributable to physical inactivity" is high in countries such as Canada, Australia and the United States, the authors point to the increasing amount of research that acknowledges a relation between natural and built environments and activity. They note, however, that much of the existing research is ambiguous, citing a few divergent results. This paper reports the results of a meta analysis, designed to "identify the strength and direction of relationships between characteristics of the perceived environment and PA." Papers included in the analysis were studies from the US, two from Australia and one from the UK. Although the authors note some cautions, their results support a significant correlation between perceived environment and physical activity. Discussion covers some details of these relations as well as limitations of the study.

### Other Information

<http://www.ijbnpa.org/content/2/1/11>

**The Built Environment and Human Activity Patterns: Exploring the Impacts of Urban Form on Public Health.**

**Frank, Lawrence D.; Engelke, Peter O.**

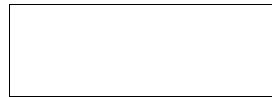
2001 Journal of Planning Literature 16, 2 page(s) 202 - 218

**descriptors**

Research subject	physical activity; walking, biking, and the environment, policy on transportation and land use
Research Type	review of the literature, analysis, policy and research suggestions
Population	general
Place	US
Reference Type	Journal

**Abstract or Excerpt**

An increasing body of evidence suggests that moderate forms of physical activity (such as walking and bicycling), when engaged in regularly, can have important beneficial effects on public health. This article reviews current public health, planning, and urban design research to determine, first, how walking and bicycling might be critically important exercise behaviors for improving public health, second, how urban form affects the frequency of walking and bicycling as a form of physical activity, and third, how the public health considerations outlined in this article might reorient planners' thinking toward the realization of health-promotive environments. The current lack of emphasis on the interdependencies between built form and overall quality of life, as measured by health, safety, and welfare considerations, suggests the need for a rethinking of public policy approaches to transportation investment and land development.



**Other Information**

<http://www.act-trans.ubc.ca/publications.htm>

**Land Use and Transportation Interaction: Implications on Public Health and Quality of Life**

**Frank, L. D.**

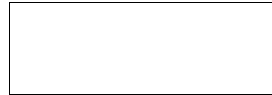
2000 Journal of Planning Education and Research 20, 1 page(s) 6 - 22

**descriptors**

Research subject	physical activity, air quality; analysis/critique of research and method
Research Type	review, critique on method
Population	general
Place	n/a
Reference Type	Journal

**Abstract or Excerpt**

Increases in per capita vehicle usage and associated emissions have spawned an increased examination of the ways in which our communities and regions are developing. Associated with increased vehicle usage are decreased levels of walking and biking, two valid forms of physical activity. The Surgeon General's 1996 report, Physical Activity and Health, highlights the increasing level of physical inactivity as a growing cause of mortality. The costs and benefits of contrasting land development and transportation investment practices have been the subject of considerable debate in the literature. Findings have been refuted based on methodological grounds and inaccurate interpretation of data. Several of these studies, their methodological approaches, and their critiques are analyzed. While most agree that the built environment influences travel, considerable disagreement exists over the likely impacts of increased density, mix, and street connectivity on air quality, and on transportation system performance and household activity patterns.



**Other Information**

<http://www.act-trans.ubc.ca/publications.htm>



**Urban health: Evidence, challenges, and directions**

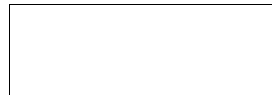
**Galea,S.; Vlahov,D.**

2005 Annual Review of Public Health 26, page(s) 341 - 365

**Keywords** multilevel; methods;social epidemiology;cities;mechanisms;SELF-RATED HEALTH;NEW-YORK-CITY;PUBLIC-HEALTH;PHYSICAL-ACTIVITY;RISK-FACTORS;INCOME INEQUALITY;BUILT ENVIRONMENT;UNITED-STATES;RESIDENTIAL SEGREGATION;NEIGHBORHOOD CONTEXT

**Abstract or Excerpt**

Urbanization is one of the most important demographic shifts worldwide during the past century and represents a substantial change from how most of the world's population has lived for the past several thousand years. The study of urban health considers how characteristics of the urban environment may affect population health. This paper reviews the empirical research assessing urban living's impact on population health and our rationale for considering the study of urban health as a distinct field of inquiry. The key factors affecting health in cities can be considered within three broad themes: the physical environment, the social environment, and access to health and social services. The methodologic and conceptual challenges facing the study of urban health, arising both from the limitations of the research to date and from the complexities inherent in assessing the relations among complex urban systems, disease causation, and health are discussed.



**descriptors**

Research subject	general; research, challenges and interest
Research Type	review, discussion
Population	general
Place	n/a
Reference Type	Journal

**The relationship of urban design to human health and condition.**

**descriptors**

**Jackson, L. E.**

2003 Landscape and Urban Planning 64, 4 page(s) 191 - 200

**Keywords** Ecological design; Public health; Social capital

**Abstract or Excerpt**

The population of the United States of America is currently experiencing increased illness from dispersed and synergistic causes. Many of the acute insults of the past have receded due to centralized health care and regulatory action. However, chronic ailments including asthma and allergies, animal-transmitted diseases, obesity, diabetes, heart disease, and depression are on the rise. These diverse illnesses join with forest fragmentation, stream degradation, wetlands destruction, and the concomitant loss of native species to suggest detrimental contributions from the built environment.

This paper surveys the state of the science on the impacts of urban design on human health and well-being. Drawing primarily on recent peer-reviewed literature in a broad array of health, planning, and environmental fields, it outlines the influence of design at three spatial scales on aspects of physical and mental health, and social and cultural vibrancy. Selected ecological effects are also discussed to illustrate shared associations with urbanization. While causal chains are generally complex and not always completely understood, sufficient evidence exists to reveal urban design as a powerful tool for improving human condition.

Solutions are discussed at the personal and professional level, emphasizing cross-disciplinary collaboration in urban planning and design, and the participation of residents in shaping their living environment. At the parcel scale, greenery and access to it visually and physically are the principal keys to health. These elements must be incorporated into relatively high-density neighborhood designs that include public buildings, open space, mixed land use, and pedestrian walkways to increase physical exercise and enhance civic life. Finally, neighborhoods must be embedded in existing urban infrastructure to provide larger cultural and business opportunities and reduce reliance on the automobile. Further research is recommended to strengthen the associations between design and health. Increased communication on this subject is also necessary between design and health practitioners and their clients and colleagues.

Research subject	physical activity, social capital; health, neighbourhoods, walkability, sprawl
Research Type	review
Population	general
Place	US
Reference Type	Journal
Page length	10



**Comment**

This review is separated into three sections, roughly corresponding to scale: buildings and grounds, neighbourhoods, and towns/regions. Each section draws on literature from landscape architecture as well as planning and health studies. In the first, smallest, section, the author notes that the literature predominantly focuses on the positive affects of visual and physical access to the outdoors. In the second section, the importance of social capital is introduced. In discussing high densities and mixed use, the author notes that many claims of the positive health impacts of high density, such as increased activity, less use of cars, positive associations with community are yet to be substantiated. The presence of public buildings, civic amenities and landmarks are also noted as important. This section also covers walkability. While emphasizing the importance of physical activity, the author, again, points to some discrepancies around what aspects of the built environment are conducive to walking. In the last section, on town/regions, the car becomes the centre of focus - with respect to challenges of commuting, problems arising from prevalence of impervious surfaces and the increasing amount of urban sprawl. A number of health related concerns are noted in association with sprawl, including longer response time for ambulance and fire trucks, social inequities and increased levels of wildlife-transmitted diseases. A brief section on 'Solutions' recommends that the design of living spaces must attend to public health issues, that health practitioners must attend to environmental considerations and that citizens will benefit from taking a more active role in shaping their living environments, neighbourhoods and regions.

**A site-specific literature review of policy and environmental interventions that promote physical activity and nutrition for cardiovascular health: what works?**

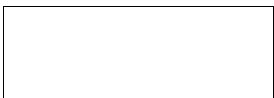
**Matson-Koffman, D. M.; Brownstein, J. N.; Neiner, J. A.; Greaney, M. L.**

2005 American Journal of Health Promotion 19, 3 page(s) 167 - 193

**Keywords** Adult; Cardiovascular Diseases/diet therapy/prevention & control; Environment; Exercise; Female; Health Promotion/organization & administration; Humans; Male; Middle Aged; Nutrition Physiology; United States

**Abstract or Excerpt**

**OBJECTIVE:** To review the literature to determine whether policy and environmental interventions can increase people's physical activity or improve their nutrition. **DATA SOURCES:** The following databases were searched for relevant intervention studies: Medline, Chronic Disease Prevention File, PsychInfo, Health Star, Web of Science, ERIC, the U.S. Department of Transportation, and the U.S. Department of Agriculture. **STUDY SELECTION:** To be included in the review, studies must have (1) addressed policy or environmental interventions to promote physical activity and/or good nutrition; (2) been published from 1970 to October 2003; (3) provided a description of the intervention; and (4) reported behavioral, physiological, or organizational change outcomes. Studies that had inadequate intervention descriptions or that focused on determinants research, individual-level interventions only, the built environment, or media-only campaigns were excluded. **DATA EXTRACTION:** We extracted and summarized studies conducted before 1990 (n = 65) and during 1990-2003 (n = 64). **DATA SYNTHESIS:** Data were synthesized by topic (i.e., physical activity or nutrition), by type of intervention (i.e., point-of-purchase), and by setting (i.e., community, health care facility, school, worksite). Current studies published during 1990-2003 are described in more detail, including setting and location, sample size and characteristics, intervention, evaluation period, findings, and research design. Findings are also categorized by type of intervention to show the strength of the study designs and the associations of policy and environmental interventions with physical activity and nutrition. **CONCLUSIONS:** The results of our review suggest that policy and environmental strategies may promote physical activity and good nutrition. Based on the experimental and quasi-experimental studies in this review, the following interventions provide the strongest evidence for influencing these behaviors: prompts to increase stair use (N = 5); access to places and opportunities for physical activity (N = 6); school-based physical education (PE) with better-trained PE teachers, and increased length of time students are physically active (N = 7); comprehensive work-site approaches, including education, employee and peer support for physical activity, incentives, and



**descriptors**

Research subject	physical activity, planning, interventions
Research Type	review
Population	general
Place	n/a
Reference Type	Journal

Appendix 2 – Non-Canadian reviews

access to exercise facilities (N = 5); the availability of nutritious foods (N = 33), point-of-purchase strategies (N = 29); and systematic officer reminders and training of health care providers to provide nutritional counseling (N = 4). Further research is needed to determine the long-term effectiveness of different policy and environmental interventions with various populations and to identify the steps necessary to successfully implement these types of interventions.

**Environmental influences on food choice, physical activity and energy balance****Popkin,B. M.; Duffey,K.;Gordon-Larsen,P.**

2005 Physiology and behavior 86, 5 page(s) 603 - 613

**Keywords** built environment; food prices;food choice;activity patterns;adolescents;INSULIN-RESISTANCE SYNDROME;EXPANDING PORTION SIZES;CORONARY-HEART-DISEASE;HIGH-SCHOOL-STUDENTS;UNITED-STATES;YOUNG-ADULTS;NEIGHBORHOOD CHARACTERISTICS;PUBLIC-HEALTH;LOW-FAT;CARDIOVASCULAR-DISEASE

**Abstract or Excerpt**

In this paper, the environment is defined as the macro- and community-level factors, including physical, legal and policy factors, that influence household and individual decisions. Thus, environment is conceived as the external context in which household and individual decisions are made. This paper reviews the literature on the ways the environment affects diet, physical activity, and obesity. Other key environmental factors discussed include economic, legal, and policy factors. Behind the major changes in diet and physical activity in the US and globally lie large shifts in food production, processing, and distribution systems as well as food shopping and eating options, resulting in the increase in availability of energy-dense foods. Similarly, the ways we move at home, work, leisure, and travel have shifted markedly, resulting in substantial reductions in energy expenditure. Many small area studies have linked environmental shifts with diet and activity changes. This paper begins with a review of environmental influences on diet and physical activity, and includes the discussion of two case studies on environmental influences on physical activity in a nationally representative sample of US adolescents. The case studies illustrate the important role of physical activity resources and the inequitable distribution of such activity-related facilities and resources, with high minority, low educated populations at strong disadvantage. Further, the research shows a significant association of such facilities with individual-level health behavior. The inequity in environmental supports for physical activity may underlie health disparities in the US population. (c) 2005 Elsevier Inc. All rights reserved.

**descriptors**

Research subject	physical activity, food access/nutrition, social justice
Research Type	review, survey, statistical analysis, cross sectional studies
Population	adolescents
Place	US
Reference Type	Journal

Page length 11

**Comment**

In considering the connections between health and the built environment, this review takes a specific focus on diet and the eating environment as well as physical activity and the role of environment. After reviewing dietary trends, the paper notes the role of food stores, of the eating environment/context and of food prices. In all cases, socioeconomic inequities are highlighted. In the second section, the paper draws attention to the physical environment and activity, again, highlighting inequities. In addition to these review sections, the paper reports on two case studies. Both are longitudinal studies of adolescents and illustrate the important influence of environmental (including built environment) and sociodemographic determinants on physical activity.

**Other Information**

<http://scholarsportal.info/pdflinks/07061815530617344.pdf>

**A Review of Evidence-Based Traffic Engineering Measures Designed to Reduce Pedestrian-Motor Vehicle Crashes**

descriptors

**Retting, Richard A.; Ferguson, Susan A.; McCartt, Anne T.**

2003 American Journal of Public Health 93, 9 page(s) 1456 - 1463

Research subject	injury, interventions; lowering pedestrian injuries
Research Type	review and assesment, of countermeasures
Population	general
Place	n/a
Reference Type	Journal

**Keywords** Traffic safety -- United States; Public health -- United States; Pedestrians; Traffic accidents -- Prevention

**Abstract or Excerpt**

We provide a brief critical review and assessment of engineering modifications to the built environment that can reduce the risk of pedestrian injuries. In our review, we used the Transportation Research Information Services database to conduct a search for studies on engineering counter-measures documented in the scientific literature. We classified countermeasures into 3 categories--speed control, separation of pedestrians from vehicles, and measures that increase the visibility and conspicuity of pedestrians. We determined the measures and settings with the greatest potential for crash prevention. Our review, which emphasized inclusion of studies with adequate methodological designs, showed that modification of the built environment can substantially reduce the risk of pedestrian--vehicle crashes.



**Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures**

descriptors

**Saelens,B. E.; Sallis,J. F.;Frank,L. D.**

2003 Annals of Behavioral Medicine 25, 2 page(s) 80 - 91

Research subject physical activity; walkability, cyclability, neighbourhood design

Research Type review

**Keywords** Bicycling/statistics & numerical data; City Planning/trends;Environment Design/trends;Forecasting/methods;Humans;Residence Characteristics;Social Environment;Transportation/statistics & numerical data;United States;Urban Health;Urban Population;Walking/statistics & numerical data

Reference Type Journal

**Abstract or Excerpt**

Research in transportation, urban design, and planning has examined associations between physical environment variables and individuals' walking and cycling for transport. Constructs, methods, and findings from these fields can be applied by physical activity and health researchers to improve understanding of environmental influences on physical activity. In this review, neighborhood environment characteristics proposed to be relevant to walking/cycling for transport are defined, including population density, connectivity, and land use mix. Neighborhood comparison and correlational studies with nonmotorized transport outcomes are considered, with evidence suggesting that residents from communities with higher density, greater connectivity, and more land use mix report higher rates of walking/cycling for utilitarian purposes than low-density, poorly connected, and single land use neighborhoods. Environmental variables appear to add to variance accounted for beyond sociodemographic predictors of walking/cycling for transport. Implications of the transportation literature for physical activity and related research are outlined. Future research directions are detailed for physical activity research to further examine the impact of neighborhood and other physical environment factors on physical activity and the potential interactive effects of psychosocial and environmental variables. The transportation, urban design, and planning literatures provide a valuable starting point for multidisciplinary research on environmental contributions to physical activity levels in the population.



**The role of built environments in physical activity, eating, and obesity in childhood**

descriptors

**Sallis,J. F.; Glanz,K.**

2006 The Future of children 16, 1 page(s) 89 - 108

Research subject other; built environment, childhood obesity; strength of linkage

Research Type review

Population children

**Keywords** Child; City Planning;Environment Design;Exercise;Food Habits;Food Services;Humans;Motor Activity;Obesity/etiology/prevention & control;Public Policy;Transportation;United States

Reference Type Journal

**Abstract or Excerpt**

Over the past forty years various changes in the U.S. "built environment" have promoted sedentary lifestyles and less healthful diets. James Sallis and Karen Glanz investigate whether these changes have had a direct effect on childhood obesity and whether improvements to encourage more physical activity and more healthful diets are likely to lower rates of childhood obesity. Researchers, say Sallis and Glanz, have found many links between the built environment and children's physical activity, but they have yet to find conclusive evidence that aspects of the built environment promote obesity. For example, certain development patterns, such as a lack of sidewalks, long distances to schools, and the need to cross busy streets, discourage walking and biking to school. Eliminating such barriers can increase rates of active commuting. But researchers cannot yet prove that more active commuting would reduce rates of obesity. Sallis and Glanz note that recent changes in the nutrition environment, including greater reliance on convenience foods and fast foods, a lack of access to fruits and vegetables, and expanding portion sizes, are also widely believed to contribute to the epidemic of childhood obesity. But again, conclusive evidence that changes in the nutrition environment will reduce rates of obesity does not yet exist. Research into the link between the built environment and childhood obesity is still in its infancy. Analysts do not know whether changes in the built environment have increased rates of obesity or whether improvements to the built environment will decrease them. Nevertheless, say Sallis and Glanz, the policy implications are clear. People who have access to safe places to be active, neighborhoods that are walkable, and local markets that offer healthful food are likely to be more active and to eat more healthful food-two types of behavior that can lead to good health and may help avoid obesity.





## Does the built environment influence physical activity?: examining the evidence

Transportation Research Board, Institute of Medicine

2005 The National Academy of Sciences Washington, D.C

**Keywords** Exercise--United States; Physical fitness--United States;Urban health--United States;Transportation--Health aspects--United States;Health behavior--United States

### Abstract or Excerpt

[from the Executive Summary]

Physical activity is the leading health indicator in Healthy People 2010, a national agenda for reducing the most significant preventable threats to health. The scientific evidence is strong that regular physical activity—even at moderate levels, such as walking briskly for 30 minutes on 5 or more days per week—reduces the risk of premature mortality and the development of numerous chronic diseases, improves psychological well-being, and helps prevent weight gain and obesity by keeping caloric intake in balance with energy expenditure. Yet despite the scientific evidence, Americans have not taken sufficient initiative to meet federal guidelines on appropriate levels of total daily physical activity. Fully 55 percent of the U.S. adult population fall short of the guidelines, and approximately

25 percent report being completely inactive when not at work. Nearly one-third of high-school-age teenagers report not meeting recommended levels of physical activity, and 10 percent classify themselves as inactive. No corresponding summary assessment exists for children.

Over the past half-century or longer, major technological innovations — automation and the consequent decline of physically active occupations, labor-saving devices in the home, and the dominance of the automobile for personal travel—have substantially reduced the physical requirements of daily life. In addition, the steady decentralization of metropolitan area population and employment to low-density, widely dispersed suburban locations has increased travel distances to many destinations (e.g., schools, neighborhood shopping, transit stops) and made the private vehicle the most practical and convenient transport mode. Lifestyle and cultural changes, such as increases in television watching and other sedentary activities, have also played a role in reducing physical activity. The built environment has recently come under scrutiny as an important potential contributor to reduced levels of physical activity.

The purpose of this study is to contribute to the debate on this issue by examining the role of land use and travel patterns in the physical activity levels of the U.S. population. The charge to the study committee was to review the

### descriptors

**Research subject** physical activity; examination of evidence for connection between physical activity and health

**Research Type** review

**Population** general

**Place** US

**Reference Type** Book

**Page length** 269, tables, figures, photos



### Comment

The 16 page Executive Summary provides a helpful synopsis of the report, summarising the findings, conclusions and recommendations.

In the context of increasingly sedentary lifestyles among Americans - and the subsequently increasing concerns about negative health impacts and the role of the built environment - this study was focused on reviewing trends and relationships among physical activity, health, transportation and land use; summarizing what is known; making suggestions for policy decisions; and identifying priorities for future research. The particular emphasis of the study was the role of the built environment, broadly defined to include land use patterns, the transportation system and design features that provide/prohibit physical activity.

The report is comprehensive, covering the following sections: physical activity and health, long-term trends affecting physical activity levels, contextual factors affecting physical activity, designing research, current state of knowledge and future directions.

While establishing a "clear connection between physical activity and health" (p19), the report notes that obesity is not a direct result of inadequate physical activity, but a result of energy imbalance - an equation in which physical activity plays a critical but not sufficient role. The report is also careful to point out that the relation between the built environment and physical activity involves a complex set of relationships and cannot be determined with certainty.

For simplification, physical activity is categorized in four types: leisure time recreation and exercise, transport or utilitarian travel, household production and maintenance, and occupation-related activity.

In addition to chapters that discuss the link between physical activity and health, and historical data, Chapter 4 covers multiple aspects of the built environment - including individual, social, institutional, regulatory and political forces - that affect levels of physical activity. Chapter 5 discusses the design of research to study the relationship between the built environment and physical activity. Chapter 6, which provides a

#### Appendix 2 – Non-Canadian reviews

broad trends affecting the relationships among physical activity, health, transportation, and land use; summarize what is known about these relationships, including the strength and magnitude of any causal connections; draw implications for policy; and recommend priorities for future research.

critical review of the literature includes a long table listing many studies, their sampling/survey techniques, control and confounding variables, built environment variables and a brief comment of their results. The report closes with a set of eight recommendations for future research.

#### Other Information

[http://www.trb.org/news/blurbs\\_detail.asp?id=4536](http://www.trb.org/news/blurbs_detail.asp?id=4536)