

**Minnesota Heart Disease and Stroke Prevention (HDSP) Initiative
Literature Review – October 2004
Environmental Setting: Land Planning & Transportation**

HDSP Literature Review Summary of Land Planning & Transportation Interventions

A literature review was commissioned by the Minnesota Department of Health with funding through the Centers for Disease Control and Prevention (CDC) for the purpose of seeking out information and research regarding cardiovascular health. The intended use for the study was defined in five environmental settings.

- Community and Community Organizations,
- Healthcare,
- Land and Transportation,
- Schools, and
- Worksites.

Several questions were used in the formulation of the review in order to organize the information. These questions were addressed within the context of each of the defined environmental settings.

What is the evidence that environmental or policy change impacts behavior of individuals?

The Minnesota Heart Disease and Stroke Prevention Plan 2004-2010 emphasizes,

“In addition to the work that the health care system, several initiatives and programs, and other organizations are doing, policies and environmental improvements are essential arenas in which significant impact can be made on cardiovascular health in Minnesota.”

In defining these interventions, it is recognized there needs to be multiple approaches or strategies which involve changes in environments and policies in order to impact changes in behavior to ultimately impact cardiovascular health.

Environmental Interventions

Environmental interventions can be defined as including changes to the economic, social and/or physical environments. Examples of this are:

- incorporating walking paths and recreation areas into new community development designs;
- planting trees near roadways to slow down traffic;
- painted bike lanes to warn drivers of potential presence of persons on bicycles.

Policy Interventions

Policy interventions are defined as including laws, regulations, and rules (formal and informal).

Examples of policy interventions are:

- policies and regulations related to the built environment (both new and existing);
- policies related to drop-off distances for vehicles delivering children to school (for those able to walk).

As illustrated in the literature review, there are examples of single-approach or multiple-approach strategies which address the reduction of risk factors as essential to cardiovascular health. Risk factors addressed include:

- physical inactivity,
- tobacco use,
- high blood pressure,
- high cholesterol,
- inadequate nutrition,
- diabetes, and
- obesity.

In multiple interventions, examples are given that involve targeting several risk factors at the same time working with environmental and policy change. An illustration of this in the environmental setting of land and transportation is the *Guide to Community Preventive Services*.

“Regular physical activity is associated with a healthier, longer life. Physically active people have a lower risk of heart disease, high blood pressure, diabetes, obesity, and some types of cancer. Despite all the benefits of physical activity, most people in this country are sedentary. Given that regular physical activity helps people enjoy better health, an important question is: what strategies work best in helping people become more physically active?”

A systematic review of published studies, conducted on behalf of the Task Force on Community Preventive Services by a team of experts, found that people will become more physically active in response to the creation of or improved access to places for physical activity, combined with distribution of information. Based on this review, the Task Force issued a strong recommendation to implement such efforts.”⁷

The following summarizes the background on the interventions:

- *“These interventions involve the efforts of worksites, coalitions, agencies, and communities in attempts to change the local environment to create opportunities for physical activity.*
- *Such changes include creating walking trails, building exercise facilities, or providing access to existing nearby facilities.*
- *Many of these programs also train participants to use the equipment and offer health behavior education, risk factor screening, referrals to physicians or additional services, health and fitness programs, and support or buddy systems.”*

What does environmental or policy change mean in the land planning and transportation setting?

In order to understand the terminology surrounding land planning and transportation, the following definitions are provided:

Land use: typically refers to the distribution of activities across space, including the location and density of different activities, where activities are grouped into relatively coarse categories, such as residential, commercial, office, industrial, and other activities.¹¹

Transportation system: includes the infrastructure of roads, sidewalks, bike paths, railroad tracks, bridges, and so on, as well as the level of service provided as determined by traffic levels, bus frequencies, and the like.¹¹

Community design: design of communities through key planning sectors and issues include transportation, environmental protection, architecture, public health, land use development, and city planning.⁸

Urban design: usually refers to the design of the city and the physical elements within it, including both their arrangement and their appearance, and is concerned with the function and appeal of public spaces.¹¹

Built environment: comprises urban design, land use, and the transportation system, and encompasses patterns of human activity within the physical environment.¹¹

Land use mix: the relative proximity of different land uses within a given area. A mixed-use neighborhood would include not just homes but also stores, offices, parks, and perhaps other land uses.¹¹

Smart growth: community development pattern that is economically sound, environmentally friendly and supportive of community livability.¹⁴

Land Planning and Transportation Affect on Physical Activity and Health

The environment plays a prominent role in determining exposure to health hazards. It can also be structured to be proactive in promoting healthful activities, including physical activity, through its effects on opportunities to engage in healthful activities, educational exposures, and community organization.¹⁶

People are taking far fewer trips by foot, because walking has become unsafe and inconvenient in so many places. This means a growing number of people are facing another type of danger: the health conditions and diseases associated with a sedentary lifestyle.¹⁷

Creating an active community environment means taking a look at the broader scope of where there are and aren't opportunities to safely walk and bicycle. It involves land use design, retrofitting the transportation infrastructure, funding and much more.¹⁴

Active community environments encourage and accommodate walking and bicycling through their approach to transportation facilities and services, land-use planning and development, schools, recreation, parks, and trails; safety, security, and crime prevention.¹⁴

The built environment presents both opportunities and barriers to participation in physical activity, thereby influencing whether or not we exercise.¹⁵

What works?

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Strategies in Land Planning and Transportation to Promote Physical Activity and Health

Recent research efforts in urban planning have focused on the idea that land use and design policies can be used to increase transit use as well as walking and bicycling.¹¹

The available evidence lends itself to the argument that a combination of urban design, land use patterns, and transportation systems that promotes walking and bicycling will help create active, healthier, and more livable communities.¹¹

We believe that applying public health criteria to land-use and urban design decisions could substantially improve the health and quality of life of the American people.¹⁵ Additionally the building of trails can also contribute to stimulating economic development by attracting new financial resources. The presence of a coordinated system of trails helps to enhance a tourist destination by developing more adventure and eco-tourism businesses as well as boosting the existing businesses in the area. Trails provide fitness and recreational opportunities for people living in the communities and for the people visiting the communities.¹²

Public health strategies to promote physical activity are now strongly emphasizing the role of environmental influences to create opportunities and remove barriers to people being more active in their daily lives.¹⁵

What are the lessons learned?

Challenges to Successful Interventions

The link between the built environment and human behavior has long been of interest to the field of urban planning, but direct assessments of the links between the built environment and physical activity as it influences personal health are still rare in the field.¹¹

The potential of pedestrian and bike travel to provide mobility, reduce congestion, improve environmental quality, and promote public health has received increasing attention in recent years. Research, planning, and policymaking efforts to improve conditions for pedestrian and bicycle travel require data such as travel and facility characteristics, crash safety information, and user preferences. However, deficiencies and limitation in existing sources for these data often hamper these efforts.¹

Direct assessments of the links between the built environment and physical activity as it influences personal health are still rare in urban planning.¹¹

The association of environmental attributes with physical activity has thus far been examined in a relatively limited set of studies.¹³

Lack of conceptual models and inherent difficulties in evaluation have hampered research on environmental and policy interventions. Further research is needed and practitioners and researchers should work together to evaluate programs.²¹

Where are the gaps in the literature?

Several gaps have been found inherent in the literature. They include:

- Lack of conceptual models and inherent difficulties in evaluation have hampered research on environmental and policy interventions. Further research is needed and practitioners and researchers should work together to evaluate programs.²¹
- There are few published studies of environmental and policy interventions to promote physical activity.²¹
- Interventions aimed at environmental, institutional, and social levels remain largely unexplored and there is a need for more research of specific strategies.²

What has been done in Minnesota?

The literature review found no specific research articles related to a relationship between land planning and transportation and cardiovascular health. However, it is known that in 2004, a Robert Wood Johnson grant was awarded to Isanti County to address land planning and transportation issues. This project, entitled Isanti County Active Living, involves county and local community groups and city and county engineers and boards working together to develop

an environment that is more conducive to physical activity. Their current work focus is with walking and biking routes and trails.

The Minnesota Department of Health has also assisted in co-sponsoring workshops in Minnesota to raise the awareness, knowledge, and interest in how land planning and transportation issues contribute to the health and welfare of citizens. These activities related to land planning and transportation in Minnesota are in the very formative stages.

Summary

In order to address these critical health problems, opportunities must be seized to form coalitions between doctors, nurses, and public health professionals and others such as architects, builders, planners, and transportation officials, so that all are “at the table” when environmental decisions are made.¹⁵

Concepts of public health issues must be integrated with urban planning issues. Urban planners, engineers, and architects must begin to see that they have a critical role in the public health. Similarly, public health professionals need to appreciate that the built environment influences public health as much as vaccines or water quality.¹⁵

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