

TRB SPECIAL REPORT 282

## Does the Built Environment Influence Physical Activity?

### *Examining the Evidence*

**P**hysical inactivity is a major, largely preventable threat to health. The scientific evidence is compelling 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, 55 percent of the U.S. adult population fall short of recommended 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.

#### STUDY CHARGE

Concerned about the adverse health effects, The Robert Wood Johnson Foundation and the Centers for Disease Control and Prevention requested this study to examine the role of the built environment as an important potential contributor to reduced levels of physical activity in the U.S. population. The built environment is broadly defined to include land use patterns, the transportation system, and design features that together generate needs and provide opportunities for travel and physical activity. The charge was to review the 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. The study was conducted by the Transportation Research Board and the Institute of Medicine.

#### ROLE OF THE BUILT ENVIRONMENT

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 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 means of transport. Lifestyle and cultural changes, such as increases in television watching and other sedentary activities, have also played a role in reducing physical activity.

In contrast to the well-documented causal connection between physical activity and health, the role of the built environment in physical activity levels is a relatively new area of inquiry. The literature in this area is at an early stage of development, although it is growing rapidly.

#### FINDINGS

The built environment in place today has been shaped by long-standing policies and the practices of many decision makers (e.g., policy makers, elected officials, planners, developers, traffic engineers). It can facilitate or constrain physical activity. The relationship between the two is complex and operates through many mediating factors, such as sociodemographic characteristics, personal and cultural variables, safety and security, and time allocation. The available empirical evidence shows a linkage between the built environment and physical activity. Few studies capable of demonstrating a causal relationship have been conducted, however, and evidence supporting a causal relationship is currently sparse. Weaknesses of the current literature include lack of a sound theoretical framework, inadequate research designs, and incomplete data. Longitudinal study designs to investigate causal relationships between the built environment and physical



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activity are needed, as are studies that carefully distinguish between personal attitudes, residential location preferences, and characteristics of the built environment as determinants of physical activity. Appropriate measures of the built environment are still being developed, and efforts to link such measures to travel and health databases are at an early stage.

## CONCLUSIONS

Built environments that facilitate more active lifestyles and reduce barriers to physical activity are desirable because of the positive relationship between physical activity and health. Achieving this goal is challenging in a highly technological society with an extensive built environment that is already in place and often expensive to change. Nevertheless, the built environment is constantly being renovated and rebuilt and new developments constructed, which provides opportunities, over time, to institute policies and practices that support the provision of more activity-conducive environments.

Opportunities to increase physical activity levels exist in many settings—at home, at work, at school, in travel, and in leisure. The built environment could influence physical activity in each of these settings. The available evidence, however, is not sufficient to identify which specific changes would have the most impact on physical activity levels and health outcomes. Nor has research yet identified causal relationships to the point that would enable the committee to provide guidance about cost-beneficial investments or state unequivocally that such changes to the built environment will lead to more physical activity or be the most efficient ways of increasing such activity.

## RECOMMENDATIONS

The committee's recommendations are only briefly summarized here; the reader is encouraged to consult the report for more details (see information below to order the report or view it online). Given the current state of knowledge and the importance of physical activity for health, the committee urges a continuing and well-supported research effort. Priorities for research include interdisciplinary approaches and international collaboration, more complete conceptual models, better research designs, and more detailed examination and matching of specific characteristics of the built environment with different types of physical activity. All types of physical activity should be included because there may be substitution among different types. The goal from a public health perspective is an increase in total physical activity levels.

Other recommendations include expansion of national public health and travel surveys to provide more detailed information about the location of physical activity and travel, more evaluation of changes to the built environment as natural experiments to be studied for their impacts on physical activity, and greater emphasis on interdisciplinary education programs at universities to train professionals to conduct research and prepare practitioners with appropriate skills at the intersection of physical activity, public health, transportation, and urban planning.

Federal funding is needed to support high-payoff but difficult-to-finance multiyear longitudinal studies, rapid response capability

to evaluate natural experiments as they arise, and recommended additions to national databases if important causal connections are to be researched. To meet these targeted needs, the committee recommends that the leadership of the Department of Health and Human Services and the Department of Transportation work collaboratively through an interagency working group to shape an appropriate research agenda and develop a specific recommendation to Congress for a program of research with a defined mission and recommended budget.

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