Environment

Building environment to promote health

Reid Ewing

The challenge is for the fields of planning and public health to learn from each other and combine the best practices of each to foster fruitful collaboration in the future.

I was asked to give an urban planner's perspective on the article in this issue of the journal by Li *et al*.[1] What is most striking about this article is the fact it was written at all. It represents the engagement of two fields (heading toward marriage) that were hardly aware of each other 10 years ago, and barely speaking five years ago.

For about 20 years, the urban and transportation planning fields have been researching the relation between the built environment and travel choices, including the choice to walk or cycle.[2–4] The built environment has been measured in objective terms, using gross measures such as population density, land use mix, and street connectivity. In recent years, measurements have relied heavily on geographical information system (GIS) technology. The behaviour of interest to planners has been that of trip making, purposeful travel from one place to another to engage in out of home activities. Travel has been measured subjectively, mostly based on self reported travel diaries. Travel frequency, distance, and mode have been related to environmental variables by means of multiple regression or logistic regression analysis. The use of multilevel modelling to properly account for individual and neighbourhood effects on individual behaviour has been unknown within the planning field.[5]

Meanwhile, the public health field has mainly focused its research efforts on physical activity for leisure or exercise.[6 7] Utilitarian travel has been largely neglected, even when it entailed walking or bicycling to a destination. In physical activity research, there has been a concerted move toward objective measurement of physical activity via motion sensors (for example, accelerometers). The built environment has been treated as secondary to the social and cultural environments, and measured mostly in terms of access to and quality of recreational facilities. It has been measured subjectively in most cases, based on self reports of facilities within respondents' neighbourhoods. Multilevel modelling has long been used in public health research to account for the dependence among respondents residing in a given place.

''Multilevel modelling…'' is one of several examples of a new generation of studies that involve joint authorship across the fields of planning and public health.[8–12] The content of this study reflects a blending of the two fields. Their measure of walking includes both walking for transportation and strolling for recreation. The neighbourhood environment is measured both objectively with GIS and through self reported measures from the resident survey. The objective measures include the amount of green and open spaces for recreation, as well as the more conventional planning measures of household, employment, and street intersection density. The authors cleverly test to see if objective and subjective neighbourhood variables interact to jointly influence walking activity. They use multilevel modelling to avoid the pitfalls of multiple regression when a data structure is nested as theirs is.

The authors are well aware of the study's limitations, limitations that we planners have been wrestling with for ages in our travel behaviour research. The first is the inability to infer causality from a cross sectional study design like theirs. We are seeing some planning studies now that use longitudinal data or quasi-experiment designs to get at the issue of causality. A related limitation is the likelihood of self selection on the part of some respondents—that is, respondents who would be active anyway choosing to live in neighbourhoods that facilitate physical activity, as compared with the neighbourhood environment itself causing them to be more active. Planners are including attitudinal questions in our travel surveys to begin to control for these innate preferences. We are also estimating joint residential location-travel models to unravel the effects of residential choices from travel choices. A third limitation is the possibility of activity substitution. Planners have long studied the degree to which walk and bicycle trips substitute for car trips, and are beginning to explore two other types of substitution: the substitution of utilitarian walk trips for leisure time strolling trips, and the substitution of walking for other forms of physical activity. There is some evidence of substitution of both types. A fourth limitation is the lack of standardisation of built environmental variables used in this kind of research. This is an area where the public health community, with its emphasis on consistent and reliable measurement methods, has much to offer planning researchers.

The challenge for both fields, planning and public health, will be to learn from each other and combine the best practices of each to foster even more fruitful collaborations in the future.

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