Active Living Research

Building Evidence to Prevent Childhood Obesity
and Support Active Communities

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Active Travel

The Role of Self-Selection in Explaining the Effect of Built Environment on Active Travel

In their search for effective ways to encourage physical activity, public health officials have turned their attention to the built environment, focusing in particular on how neighborhood design can support walking and biking.[1,2] Numerous studies have documented a connection between neighborhood design and active travel (i.e., walking and bicycling for transportation rather than for recreation) among both children and adults.[3] For example, residents walk more for transportation in traditionally designed neighborhoods—those with safe sidewalks and intersections, and a street network that provides direct access to nearby shops and other destinations—than they do in typical U.S. suburban neighborhoods, where homes are separated from destinations by major roads that hinder walking or biking.

While there clearly is a link between neighborhood design and active travel, there are still questions about the nature of the cause-and-effect relationship that exists between them. Do places designed for walking encourage people to walk more, or do people who like to walk prefer to live in places that are designed for walking? The latter, what researchers call "self-selection," is an important consideration when determining how best to increase opportunities for physical activity.[4] If differences in active travel exist because residents who already are active self-select into neighborhoods that support such travel, then improvements to the walking environment may not encourage residents to walk more. But infrastructure improvements could still lead to increases in active travel by making it possible for more people who prefer walking or biking to live in neighborhoods that support such activities.

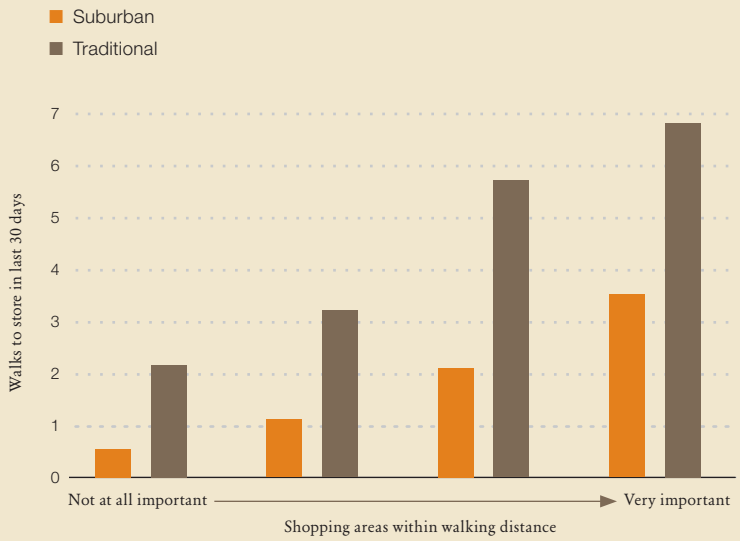
Researchers have employed different approaches to determine whether and to what degree self-selection occurs,[5] though many studies focus on travel by all modes rather than just on active travel. As demonstrated by the research presented in this brief, consistent evidence is beginning to emerge that shows both self-selection and the built environment have a role in active travel.[6]

Key Research Results

Self-selection is linked to higher levels of walking in traditionally designed neighborhoods

- People who preferred walking for transportation tended to: 1) live in more traditionally designed neighborhoods that are conducive to walking; and 2) walk more than neighbors who have less preference for walking.[7–9]
- According to a 2004 survey conducted in eight Northern California neighborhoods, 64 percent of people living in traditionally designed neighborhoods reported that having shopping areas within walking distance of their home was an important factor when deciding where to live, while only 53 percent of suburban-neighborhood residents reported the same.[10]
- As shown in Figure 1, residents of both traditional and suburban neighborhoods who reported that it was very important to have shopping areas within walking distance walked to the store three to five times more than those who said it was not important.[11]

FIGURE 1. **Residents who preferred to have nearby shopping areas walked to the store more often regardless of neighborhood design**[12]



Neighborhood design has an impact on walking regardless of self-selection

- People who lived in traditionally designed neighborhoods generally walked more for transportation than did those in suburban neighborhoods, regardless of their walking preferences.[13–15] As Figure 1 shows, among respondents who reported that having shopping areas within walking distance was very important, those in traditionally designed neighborhoods were much more likely to walk to the store than were residents of suburban neighborhoods.
- While it is not yet clear whether self-selection or the built environment has a greater influence on active travel,[16] eight of the 10 studies in Table 1 that quantify these effects show that the built environment has a stronger effect on active travel than does self-selection.

- Despite these insights, it is important to note that the existing body of research does not fully explain why some people engage more in active travel than others. For example, the survey of eight Northern California neighborhoods found that self-selection, built environment factors and socio-demographic characteristics together explained only about one-third of the variation in how often residents walked to the store.[17] This implies that the bulk of the variation is explained by factors such as prior experiences, which were not included in the study.

TABLE 1. **Findings on built environment and self-selection effects by number of studies**[18]

Effects Found*	Number of Studies
Built environment effect but no self-selection effect	1
Built environment effect and self-selection effect (but no conclusion about which effect is greater)	15
Built environment effect with self-selection accounted for but not measured	12
Built environment effect greater than self-selection effect	8
Built environment effect smaller than self-selection effect	2
Self-selection effect but no built environment effect	0

*Including studies of travel by all modes and studies of active travel.

The demand for traditionally designed neighborhoods appears to exceed the supply

- Both supply of[19] and demand for[20, 21] traditionally designed neighborhoods seem to be growing. National surveys showed that interest in living in a traditionally designed community grew from 44 percent in 2003 to 50 percent in 2005, and that interest increased among all respondents except for those who lived in rural areas.[22]
- Studies have shown that more people want to live in traditionally designed neighborhoods than are able to.[23–25] For example, a survey of more than 1,400 residents of the Atlanta region found that respondents who were more interested in compact, mixed-use, walking-oriented neighborhoods had a greater desire for a change from their current neighborhood than did those who did not indicate such interest.[26] The size of the gap between supply and demand is uncertain.
- While many people desire to live in traditionally designed neighborhoods, they often also value contradictory qualities. Using data from a 1994 survey of 611 residents in Portland, Oregon, researchers found that residents who preferred smaller lot sizes and shorter walking distances to stores also preferred single-family homes and off-street parking.[27]

Increases in active travel do not necessarily lead to increases in total physical activity

- According to a survey of 393 households in the Chapel Hill area of North Carolina, residents of traditionally designed "new urbanist" neighborhoods walked for transportation three to four times as often as residents of conventional suburban neighborhoods, but the average levels of overall physical activity were identical for the two groups.[28]

Conclusion

The results presented in this brief show that creating more traditionally designed communities may lead to at least a moderate increase in active travel. At the same time, important questions remain about the relative impact that individuals' attitudes, preferences and environments have on their choices about active travel.

Several important implications about strategies for increasing active travel emerge from this research:

- Ignoring the self-selection factor is likely to lead to overly optimistic forecasts of the potential effect of built environment strategies on active travel.
- Increasing the supply of walking-oriented communities is likely to increase active travel if it enables walking-oriented residents to move from driving-oriented to walking-oriented neighborhoods—in other words, if it allows them to self-select.
- Improvements to the built environment that facilitate walking have the potential to increase active travel for all residents, whether the neighborhood or its residents are walking-oriented or not.
- The potential to increase active travel through changes to the built environment likely is limited. Built environment strategies are important, but they are not likely to bring about substantial increases in active travel on their own.

Several types of studies would help answer the remaining questions about self-selection, although all are challenging and few have been conducted to date.[29, 30]

- Survey residents about their active travel before and after an improvement to the walking or bicycling environment in their existing neighborhood.[31, 32]
- Survey residents about their active travel before and after they move from a driving-oriented neighborhood to a walking-oriented neighborhood (or vice versa).[33, 34] Because these residents may be self-selecting into the walking-oriented neighborhood, the surveys also must include questions on attitudes and preferences.
- Track residents in long-term panel studies to show how their attitudes and preferences about active travel change over time, whether in response to the built environment or other factors.
- Examine how factors such as age, income, number of children and other factors affect people's ability to choose a walking-oriented neighborhood.

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Active Living Research, a national program of the Robert Wood Johnson Foundation, stimulates and supports research to identify environmental factors and policies that influence physical activity for children and families to inform effective childhood obesity prevention strategies, particularly in low-income and racial/ethnic communities at highest risk. Active Living Research wants solid research to be part of the public debate about active living.

This report was prepared by Susan Handy, Ph.D., University of California at Davis, Xinyu (Jason) Cao, Ph.D., University of Minnesota, and Patricia Mokhtarian, Ph.D., University of California at Davis, with support from the Active Living Research staff. Peer review was provided by Marlon Boarnet, Ph.D., University of California at Irvine; Christine Hoehner, Ph.D., Saint Louis University; and Kevin Krizek, Ph.D., University of Colorado, Denver.

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Active Living Research
San Diego State University
3900 Fifth Avenue, Suite 310
San Diego, CA 92103-3138

www.activelivingresearch.org