Compact Development and Good Outcomes—Environmental Determinism, Self-Selection, or Some of Both?

I have wrestled with analytical methods in two previous columns. The old mainstay of our profession, ordinary least squares regression, is often inappropriate for analyzing a particular planning problem. In my May column on safe streets, I lauded the use of negative binomial regression as the right approach to analyzing traffic crashes. My reasoning was simple. The dependent variable—number of crashes—has no negative values, many zero values, and few large values. In a case like that, ordinary least squares regression would not give a reliable estimate of regression coefficients.

In my column last June on metropolitan economic performance, I criticized the use of least squares regression as being ineffective for analyzing the interrelated effects of an educated workforce and a creative workforce. In that case, I wrote, the preferred method of analysis was structural equation modeling.

So what are the options available to planners in this complex world of advanced statistics? Recent articles on residential self-selection by two of the most able econometricians among our planning brethren, Patricia Mokhtarian at the University of California, Davis, and Xinyu Cao at the University of Minnesota, suggest some answers. One article, which appeared in the March 2008 issue of *Transportation Research Part B*, focuses on methodologies. The second, in the most recent issue of *Transport Review*, focuses on results.

The question is: Does residential choice come first, and travel choice and other outcomes follow (environmental determinism)? Or does a propensity for travel and physical activity determine the choice of residential environment (self-selection)? Or does environment or attitude drive behavior more?

In fact, statistical bias related to self-selection casts serious doubts on the residential self-selection that used nine different research approaches. Nearly all of them, they report, found “resounding evidence of statistically significant associations between the built environment and travel behavior after accounting for self-selection.”

The fact that people to some extent “self-select” into neighborhoods matching their attitudes is itself a demonstration of the importance of the built environment on travel behavior.

They conclude that “self-selection in this case would be a real effect, but it would hardly negate the impact of urban form on travel behavior. This is because in the absence of such development, those households would be unlikely to reside in a pedestrian neighborhood and would have little choice but to adopt auto-oriented travel patterns.”

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