RESEARCH

Using Safe Streets as a Research Priority

I recently had occasion to count the number of planning research articles on the relationship between the built environment and household travel. The number depends on how you define the subject, but it easily exceeds 150. By contrast, the number of articles on the relationship between the built environment and traffic safety is in the single digits.

This is not for lack of interest among planning practitioners, who are desperate for street design guidance. Witness the recent proliferation of street design manuals, including worthy efforts by the Institute of Transportation Engineers, the Delaware Valley Regional Planning Commission, and the city of Charlotte, North Carolina. Nor can we attribute the disinterest to the greater significance of other topics—household travel, for instance.

These subjects have a tangible connection to public health and welfare, but none more than traffic safety. Despite billions of dollars in highway safety improvements in the U.S., traffic fatalities continue to hover around 40,000 per year, making accidents the nation's sixth leading preventable cause of death. The U.S. once had the second safest transportation system in the developed world, but today its traffic safety record has fallen behind that of every other developed country, including England, Australia, and all of continental Europe.

Eric Dumbaugh, AICP, describes our skewed research focus this way: "Planners and urban designers typically relegate traffic safety concerns to other transportation-related professions, entering the safety discussion, if they do so at all, principally to advocate for the specific safety needs of pedestrians and bicyclists." Dumbaugh, an assistant professor at Texas A&M, is trying his best to elevate street design and traffic safety research to academic respectability.

In summer 2005, Dumbaugh published "Safe Streets, Livable Streets" in the *Journal of the American Planning Association*. In this piece, he introduced a new theoretical construct: the active safety paradigm. He persuasively argued that the old passive safety paradigm, premised on drivers' need to recover from their errors, failed to consider the greater care exercised by drivers in urban conditions with narrow lanes, on-street parking, street trees, and other "fixed objects" near the curb. He further demonstrated that an urban street section that fit this description—his example was Colonial Drive in Orlando, Florida—was safer than the same street where it changed to a conventional suburban design.

Dumbaugh takes the argument to the next level in "Safe Urban Form: Revisiting the Relationship between Community Design and Traffic Safety," coauthored with his former student Robert Rae and scheduled to appear in the Summer 2009 issue of the *Journal of the American Planning Association*. The new article once again bucks the conventional traffic engineering wisdom, but it is more sophisticated methodologically than its predecessor.

From 2004 to 2006, San Antonio's historic King William District consisted of three intersecting arterials. There were six injurious crashes and no traffic fatalities.

In it, Dumbaugh models crashes for almost 750 block groups in San Antonio. Using negative binomial regression analysis, he shows that neighborhoods with traditional features—higher densities, pedestrian-oriented retail uses, interconnected streets—suffer fewer serious crashes than suburban neighborhoods. This is true even after accounting for differences in vehicle miles traveled within the neighborhoods. T-intersections (as opposed to four ways at cross streets) emerge as the real stars from a safety standpoint. Arterials and big box stores are the bad guys.

A brief word on Dumbaugh's use of negative binomial regression analysis: Every job is easier (and more likely to be error-free) with the right tool. There are many instances in the planning literature where researchers have used the wrong analytical tools, resulting in inefficient or biased estimates of regression coefficients. An occasional mistake is to use least squares regression analysis to model count data. When this mistake is made, the results cannot be trusted. If the dependent variable is a count, with many zero values, there are two basic options: Poisson regression and negative binomial regression. The latter is the more robust of the two and thus the right choice when the variance of a dependent variable is greater than its mean value (as it usually is). So in addition to breaking new theoretical ground, Dumbaugh steers us toward an analytical option that should find greater application in planning.

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