

RESEARCH YOU CAN USE

CONTRIBUTION OF URBAN DESIGN QUALITIES TO PEDESTRIAN ACTIVITY

THE PLANNING LITERATURE INCLUDES NUMEROUS STUDIES that investigate the effect of D variables (development density, land-use diversity, street design, destination accessibility, and distance to transit) on travel choices. There are over 200 studies in which the association of the built environment with travel behavior is measured with respect to one or more of the D variables.

It may be the most heavily researched subject in urban planning. Very few studies, however, look closely at the D variable street design and the effect it can have on walkability and pedestrian activity.

Back in 2006, Susan Handy of UC Davis, colleagues from public health, and I developed protocols for measuring eight urban design qualities deemed important in the classic urban design literature. They are imageability, enclosure, human scale, transparency, complexity, coherence, legibility, and linkage. It was a long and complicated study, and I don't have room in this short column to fully describe it. Let it suffice to say that we used expert ratings of video clips, plus a content analysis of the clips themselves, to relate urban design qualities to measurable street variables. Only the first five urban design qualities were successfully operationalized. An article coauthored with Handy, containing details, was published in the *Journal of Urban Design* in 2009.

The first validation of urban design measures relative to pedestrian activity came in the book *Measuring Urban Design* (2013), which I coauthored with Otto Clemente. In chapter 5, "Validation of Measures," it was determined which of the five urban design measures—imageability, enclosure, human scale, transparency, and complexity—influenced the amount of



The transparency of ground-floor building facades along streets in downtown Salt Lake City has been found to significantly impact levels of pedestrian activity.

pedestrian activity on 588 street segments in New York City.

Using a statistical method called negative binomial regression, we found that buffer population density (using a quarter-mile buffer distance), buffer FAR (floor area ratio), block proportion retail, and block FAR were all directly and significantly related to the number of pedestrians counted on a street segment. Further, the proportion of four-way intersections near a street segment was significant and related to higher pedestrian counts. Surprisingly, Walk Score and intersection density were not significant in the fully specified model.

The most interesting finding was that transparency was highly significant (in fact, it was the most significant variable) after accounting for other D variables. Transparency is often measured in terms of the percentage of windows in a ground floor facade; however, in our model, there were three operational variables contributing to transparency: the proportion of first-floor facade with windows; the proportion of active uses at street level; and the proportion of continuous build-

ing frontage. Human scale was barely significant in this study. It was measured in terms of sight lines, building height, street furniture, and other variables.

New York City is one of the most urban, dense, and walkable cities in the U.S., making it unique and difficult to generalize these findings. A subsequent study published last year in the *Journal of Urban Design*, with my coauthors Hassan Ameli, Shima Hamidi, and Andrea Garfinkel-Castro, measures urban design qualities and the effect on walkability in Salt Lake City, a more typical, auto-dependent city than New York.

Similarly to the New York City study, pedestrian counts were performed in a pilot study, along 32 block faces on weekdays during two two-hour periods. Many segments had low pedestrian counts, except in areas of downtown Salt Lake City. Thus, the downtown "Fare Free Zone," where transit ridership is free within one square mile, was used as the study area, and urban design measures were recorded through field observation and GIS. This gave us a sample of 179 block faces.

Half-hour pedestrian counts ranged

from 0 to 780, all within this fairly small area. Negative binomial models revealed that FAR, population density, and land-use diversity were significantly related to pedestrian counts. More interestingly, transparency was again highly significant, and imageability was highly significant for the first time. Imageability was measured in terms of proportion of historic buildings; number of courtyards, plazas, or parks; presence of outdoor dining; and several other variables.

There are several lessons for planners that arise from these studies. One is that given the impact of transparency on pedestrian counts, codes should be updated to provide for windows, continuous building frontage, and active uses in order to attain higher levels of pedestrian activity. This can be achieved through the use of form-based codes, which encourage the development of coherent and consistent public spaces. In *Measuring Urban Design*, we cite the example of the Columbia Pike Form-Based Code in Arlington, Virginia.

Second, the urban design qualities of transparency, human scale, imageability, complexity, and enclosure do not alone contribute to placemaking. Rather, they should be seen as a suite of tools that can be utilized to create walkable environments for pedestrians.

Finally, these studies of urban design impacts on walkability and pedestrian activity are new to the planning literature and limited in their scope. New York City is a unique U.S. city, and the sample size in Salt Lake City was only 179 blocks, which is relatively small. Additional studies should be conducted in different cities of varying urban design qualities, with longer pedestrian counts and larger sample sizes.

—Reid Ewing

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LETTERS



Traffic modeling, EIS analysis

Rarely do I find something worth responding to in a copy of *Planning* magazine, which I have received for over 50 years, but finally, “The Nerve of Traffic Modeling” Viewpoint by David Fields (November) has prompted me to write.

If the traffic engineers had their way, the world would look a lot like an overgrown and overblown intersection, with concrete as far as the eye can see. I think that David Fields at Nelson\Nygaard Associates is correct. The 2004 EIS analysis was required to receive federal funds for the project. Therefore “that’s one of the reasons planners continue to perform such analyses.” It is high time to pay attention to the prophetic words of George Box, who said, “Essentially all models are wrong, but some are useful.” Fields goes on to state that “modeling should be used as a tool to compare different approaches against each other, as with scenario planning.” This would make it easier to compare decisions, transportation demand management, and financial incentives.

Bravo to you for letting planning consultants enter this field of consultation, and boo to those who believe that the law can require an EIS analysis just as a boilerplate requirement.

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Distinguishing Fact from Opinion

I am a subscriber to *Planning* via the law library at my school. I appreciate your publication’s commitment to providing planners and other interested groups with information about legal decisions relating to planning issues. I assume that you want the Legal Lessons column to provide

your readers both the facts about legal developments and an informed point of view about them. Unfortunately, the most recent Legal Lessons in the December 2015 issue mixes facts and opinions in a manner that is likely to confuse rather than enlighten readers, especially non-lawyers.

Professor David Callies doesn’t distinguish between what the California Supreme Court actually said in its decision and his (completely valid) opinion about this decision. And the tenor of his argument makes it appear that the court was careless and/or incompetent. In this case the primary issue is whether the inclusionary zoning ordinance is an “exaction” (subject to the *Nollan/Dolan/Koontz* line of cases), or if it is a land-use regulation (subject only to a much more deferential rational basis review). The 64-page opinion is complex and rigorously argued. After a careful consideration of each of the arguments raised by the plaintiffs, the court held that it is a land-use regulation. Full disclosure: I organized and coauthored an amicus brief in support of the City of San Jose. Professor Callies strongly disagrees with the court and feels confident that the ordinance is an “exaction.” That’s fine, but I think it would be a greater service to the readers for him to give a fair account of the court’s actual arguments.

—Tim Iglesias
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(Letter Needs Title)

Harold Henderson’s review of my book *From a Nickel to a Token* (February 2015) made two claims I wish to rebut. First, “the book does not discuss planning success or failure.” Planning wasn’t a key motivation behind New York transit consolidation, and is thus unmentioned. The book is a micro-history of 20 specific events in the 1940–1968 period, not a comprehensive history or planning treatise. Key rationales for consolidating transit into public ownership in 1940 were (1) achieving economies of scale from