ADEQUACY OF THE SPATIAL ORGANIZATION OF RESIDENTIAL NEIGHBORHOODS: THE RESIDENTS' POINT OF VIEW

Martin J. Redding, Environmental Studies Division,
Environmental Protection Agency; and
George L. Peterson, Northwestern University

ABRIDGMENT

•IN earlier papers (1, 2) a model of accessibility acceptance was developed. This model emerged as a by-product of an effort to describe people's preferences for accessibility to selected neighborhood services. Briefly, the basic concepts of the model are based on the notion that accessibility preference is a function of two competing preference processes: (a) desire for access and (b) aversion to proximity. This notion was used to develop disutility functions, including rejection thresholds that are hypothesized to be probabilistically distributed over a given population. The threshold distribution functions were used to develop joint distribution functions that were intended to describe the probability that a specified level of accessibility to a given neighborhood service would be acceptable to a member of the population. It is suggested that a model of this sort might be useful in the design and evaluation of residential environments as well as in evaluating the impacts of transportation facilities.

In a more recent study (3), preference data that generally supported the model's assumptions and hypotheses were collected. The following results are significant:

1. The concept of "rejection threshold" is psychologically meaningful. Reliable measurements of the distribution of perceived rejection thresholds can be obtained. Whether these distributions are behaviorally meaningful remains untested.
2. The perceived thresholds are log-normally distributed.
3. The "aversion-to-proximity" threshold is statistically independent of the "desire-for-access" threshold, which supports the hypothesis that these two preference processes are independent.
4. There is a weak tendency for the perceived thresholds for one facility to be sensitive to the position of other facilities. However, the magnitudes involved are not significant.
5. For a given person it is more important to avoid violating some thresholds than others.
6. Population groups with different requirements can be identified.
7. Based on the concepts developed in the model, a utility theory that allows the exploration of trade-offs among locations of various neighborhood services relative to the place of residence can be developed. This theory can be developed either in terms of individual (or aggregate average) dissatisfaction or in terms of the probability that a given combination of locations will be rejected by any member of a homogeneous population. For example, based on the data collected in this study, it can be shown that, for a unique population group (married couples with children in elementary school), the level of dissatisfaction is low when a park and playground is located three blocks and a shopping center six blocks from the residence. However, the dissatisfaction level rises significantly if the park and playground is moved out to six blocks and the shopping center is moved in to three blocks.

Sponsored by Committee on Social, Economic and Environmental Factors of Transportation.

We suggest that the approach is useful for application to various problems concerning the quality of the residential environment. One important application is in the evaluation of the effect of transportation routes, such as freeways, on adjacent neighborhoods. When properly calibrated, the model allows the adequacy of a neighborhood's spatial organization to be measured directly from the point of view of the residents. Thus, the impact of alternative route locations on the perceived adequacy of a neighborhood's spatial pattern can be compared in terms of the numbers of residents who find the resulting spatial patterns to be adequate. When developed further, the utility theory notions may allow comparisons to be made in terms of actual levels of satisfaction.

REFERENCES

1. Peterson, G. L., Worrall, R. D., and Redding, M. J. Toward a Theory of Accessibility Acceptance. Proc. First Annual EDRA Conf. (Sanoff, H., and Cohn, S., eds.), June 1969, pp. 198-210.
2. Peterson, G. L., and Worrall, R. D. An Analysis of Individual Preferences for Accessibility to Selected Neighborhood Services. Highway Research Record 305, 1970, pp. 99-111.
3. Redding, M. J. The Quality of Residential Environments. Northwestern Univ., Evanston, Ill., PhD dissertation, June 1970.