

*Symposium: Understanding exurban landscape change processes: Human preferences, agent behaviors and ecological effects*

Paper 1

**An expert typology of residential sprawl: validation against landcover change and market valuation.**

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As a basis for developing agent-based models of land-use dynamics at the urban-rural fringe, we developed a conceptual model of agent decisions about exurban residential development based on our expert typology of residential sprawl in southeastern Michigan, the Detroit/Flint/Ann Arbor metropolitan area. This paper reports on two empirical tests of the residential sprawl typology: landcover change and market valuation. Our typology of residential sprawl describes four types of exurban lots or subdivisions, each of which are characterized by different landcover proportions and patterns, street patterns, lot sizes, and price ranges. Our conceptual model describes the land development choices of different types of farmers and different types of developers, who subdivide farmland to create the four types of residential development. It then describes how different types of new homebuyers will differentially prefer the different residential development types. In the empirical test of landcover change, we used georeferenced air photos to identify subdivisions that met landcover and street type criteria for each of the four development types at five times between 1960 and 2000, and we classified landcover for the subdivided land at each time. For a stratified random sample (n=427) of subdivisions within our study area, we found significant differences among development types in the proportionate change in forest or other natural cover. In the empirical test of market valuation, we examined a subsample of these subdivisions, and looked at the assessed market valuation of individual properties within the subdivisions (n=826). We found that development type was a significant predictor of home market valuation. These complementary empirical tests supported the validity of our expert typology of residential sprawl.