Title: *A New Approach to Measuring Socio-Spatial Economic Segregation*
Author(s): Sean F. Reardon, David O'Sullivan, Glenn Firebaugh and Stephen Matthews
Institution/Country: Stanford University; University of Auckland; Pennsylvania State University

In this paper, we describe a set of measures of residential and social segregation that address a number of known shortcomings of many existing measurement approaches. In particular, the approach described here incorporates information on spatial and/or social distance in computing segregation levels and allows for the computation of segregation along population dimensions defined by binary (e.g., sex), multi-category (e.g. race/ethnicity), ordinal (e.g., educational attainment), or continuous (e.g. income) variables. Both of these features make the new measures ideally suited for the study of a variety of forms of socioeconomic segregation.

The paper is based on recent work on multi-group and spatial segregation measures (Reardon and Firebaugh 2002; Reardon and O'Sullivan 2004). Here we extend this work, drawing in part on prior work on income segregation (Jargowsky 1996; Jargowsky and Kim 2004) to demonstrate how it can be adapted to ordinal and continuous dimensions that are necessary for the study of socioeconomic segregation patterns. In addition, we describe how this approach can be adapted to incorporate information on social distance (e.g., information on social network proximity) as well as on spatial distance. Finally, the paper illustrates the approach using census data to describe patterns of spatial income segregation in a set of U.S. metropolitan areas.

The approach described in this paper is based on the understanding that a segregation index is a measure of the extent to which the local environments of individuals differ in their socioeconomic composition (or, more generally, on any population trait). This approach is operationalized by assuming each individual inhabits a 'local environment' whose population is made up of the (spatial or social) distance-weighted average of the surrounding population. Segregation is measured by computing the distance-weighted socioeconomic composition of the local environment of each location (or person) in the study region and then examining the variation in these compositions across the population. This approach has a number of features that make it well-suited to measuring segregation. In particular, measures derived from this approach 1) are independent of choices of administrative boundaries (e.g., census tract boundaries in the U.S.); 2) are sensitive to segregation patterns at any spatial scale; 3) measure both spatial exposure and spatial evenness; 4) can be computed using any theory-based definition of spatial proximity and distance; and 5) are readily adaptable to the measurement of income segregation.