

Measuring the Intensity of Local Units' Locational Concentration with Regard to the Neighborhood Externality with GIS

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The intensity of concentration of enterprises and establishments has been measured by the density which is defined by their number over a designated unit of area like population density. We will propose a new measure which can account also for the concentration status of neighboring areas.

We employed for this study the telephone directory database: "Yellow pages" provided by the NTT Business Information Service, Inc. We chose the Hachioji city (in Tokyo metropolitan area) as a survey field and January 2012 as reference date.

Firstly, we identified the establishments which are supposed to be in live status by carrying out some adjustments required for using this directory data and with due matching procedures. Secondly, we obtained longitudinal and latitudinal information for respective establishments by using geocoding procedures. Since several establishments often accommodate one and the same address in urban areas, these geographical points give manifold scores in terms of the number of establishments which share the same address. By using the buffering method, we then re-scored the spots which will multiply the intensity of the spots by taking into account the concentration status of neighboring areas that fall within the designated scale of buffer. Finally, we mapped the areas by descending manner according to the calculated scores which are expected to delineate zones in terms of establishments' concentration by also taking into account the intensity of concentration in the neighboring subareas.

Keywords: GIS, local unit, locational concentration, buffering, externality