

## *Urban Geospatial Digital Neighborhood Areas: Urban Geodna*

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**Abstract:** This dissertation examines the dynamics of Urban Geospatial Digital Neighborhood Areas (Urban GeoDNA) and their impacts on local information discovery. It analyzes the demand and supply sides of information from a community perspective to understand how variations in local boundary definitions condition the quantity and quality of informational resources users can discover through digital libraries to plan urban neighborhood environments. Primary data obtained through interviews with bottom-up participants from local Community Based Organizations (CBOs) and libraries are combined with secondary data gathered from a variety of top-down sources including federal, state and city agencies. These datasets are analyzed using a series of Geographic Information System (GIS) processes and results are loaded into a final GeoDNA database developed according to current Geospatial Information and Mapping Policies (GIPMs). Using a selected set of seven neighborhoods in Bronx County, NY, the study integrates top-down and bottom-up boundary definitions to test the role urban GeoDNA plays for discovering local information by online users to conduct community development and environmental planning activities. Specifically, the research compares three different neighborhood boundary versions to assess their effects on the quality and quantity of local information users can discover through digital libraries geospatially. In addition, a group of socio-demographic variables at the census tract level are examined to determine if such boundary variations are related not only to information discoverability but also to the characteristics found within different types of neighborhoods. Finally, the study evaluates the use of combining top-down with bottom-up geospatial information by appending the different neighborhood boundary files gathered for the research and testing their aggregate usability to discover relevant resources with which to conduct planning activities at the local level. Results from the study suggest that, by combining geospatial definitions from top-down and bottom-up sources, new and extended neighborhood boundaries can be created and used to georeference local resources without altering the ranking of materials found through geospatial searches. Therefore, an aggregate boundary approach can be used to enrich the fundamental essence of urban GeoDNA materials to allow users to discover information that carries both geographical and ontological knowledge about local neighborhoods simultaneously. The study also provides insights for community users to become more proactively involved in the dissemination of local knowledge because, by publishing metadata about their studies, reports and other resources with aggregate geospatial definitions, the chances for their discovery are increased. Moreover, the study contributes to the growing body of literature on Public Participatory GIS (PPGIS) by expanding the opportunities community participants have to send local information from the ground up to make them discoverable in a geolibrary environment.