Extrapolation of Counties by Zip Code to Illustrate Rurality and Other Characteristics

U. Manocha, M. O'Dwyer

UNC Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill

1. Background
Public data are available for researchers aiming to enhance clinical outcomes and address the needs of specific catchment areas. Demographic and socioeconomic factors (such as poverty, lack of access to transportation, and crowded housing) that adversely affect communities that encounter hazards and other community-level stressors are reported by the U.S. Centers for Disease Control and Prevention (CDC) and other federal agencies. Geographic information in health and social public data is often reported through Census Tracts and county/state specific Federal Information Processing System (FIPS) codes.

2. Goals
Our goal is to equip University of North Carolina (UNC) Lineberger Comprehensive Cancer Center (LCCC) researchers with geographical context to improve clinical and public health outcomes, ensuring the needs of the catchment area are met. This will be accomplished by a dashboard that can plot accrual demographic data on a map. We wish to provide public health metrics such as CDC's Social Vulnerability Index and United States Housing and Urban Development's Rural-Urban Continuum Codes.

3. Solutions and Methods
We employ data analysis techniques and visualization tools to integrate public health data along with organizational accrual data. We use data transformation packages in Python to aggregate postal zip codes from accrual and public health data by County FIPS code. We use Tableau data visualization tool to illustrate accrual through a map.

4. Outcomes
To meet the needs of North Carolina's growing population, UNC Lineberger Comprehensive Cancer Center and UNC Health are leveraging a visual map-based approach with public health context to optimize trial design and accrual strategies. The Accrual Demographics map dashboard allows for decision makers to tailor accrual strategies.

5. Lessons Learned and Future Directions
This approach is applicable to clinical research outreach efforts for Cancer Prevention and Control, as well as Interventional Treatment research.