Mental Health Access in Suffolk County

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Tufts

Introduction

Mental illness currently affects slightly more than one-in-four people in the United States, which has led to a dramatic upsurge in related research. Access to mental health care has increasingly becoming a challenge due to rising levels of mental illness and not enough health care providers (Whitaker 2004). Access to healthcare varies upon social determinants of health such as neighborhood, social economic status, public transportation, and racial disparities. In particular, mental health lags behind treatment of physical health care in most of the United States. Boston, Massachusetts is America's principle hub of medical care, and yet there are still disparities in access to care within the city. This geographical study investigates the vulnerability to lack of access to mental healthcare among people in the greater Boston area (Suffolk County). Due to HIPPA privacy protections, data is unavailable about the amount of people with mental illness per capita, so this analysis does not include that data point. However, hospitals, community care centers, psychiatric facilities will all be mapped to determine access to care (Luo 2003). Social economic status, transportation disparities, and population density will also be examined for the purpose of making generalizations about the population's requirements for access to mental health services (Rosero-Bixby 2004).
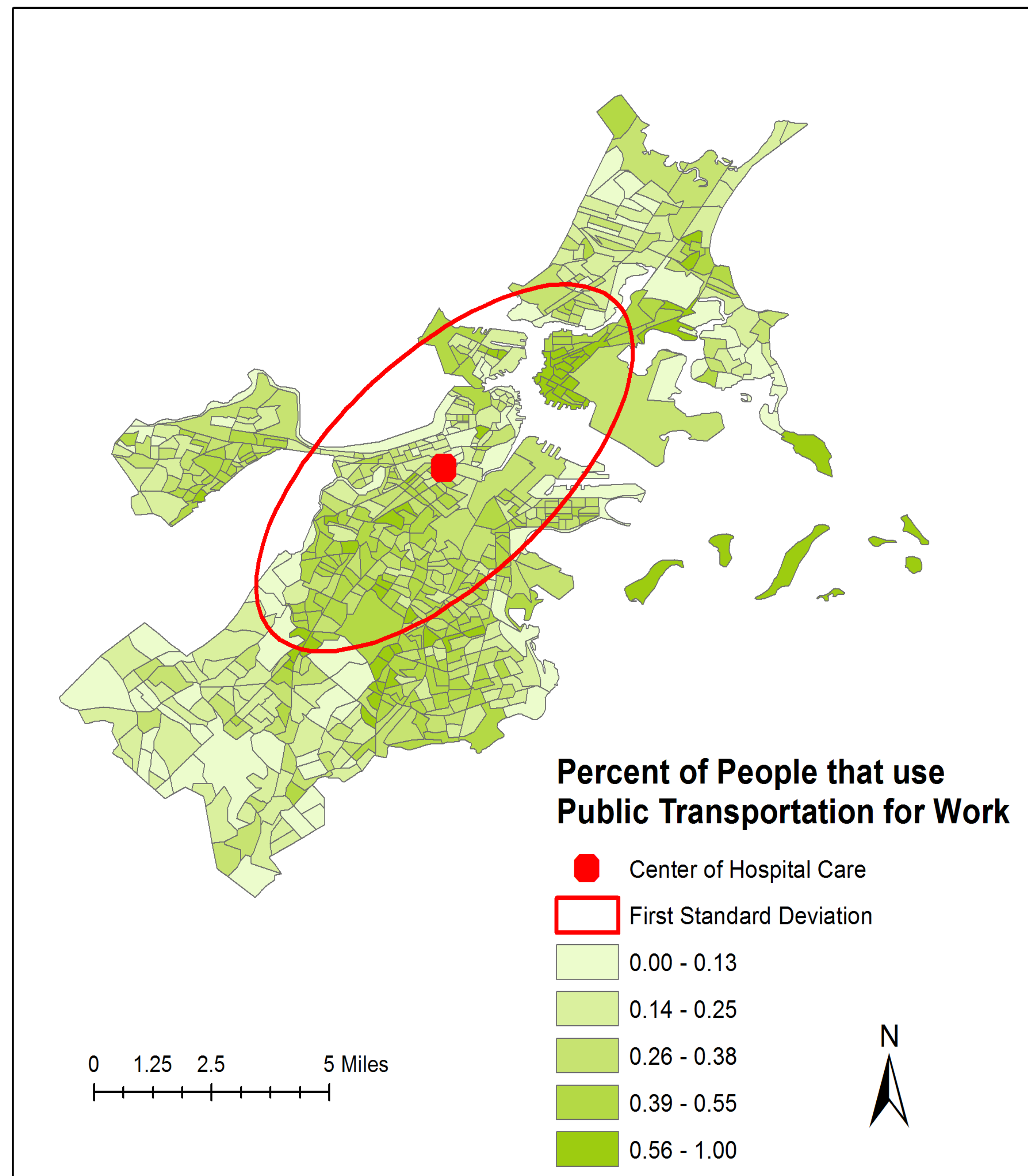
Methods

The main map looking at public transportation was created overlaying the spatial statistics from psychiatric hospital data over a map of percentage of people that use public transportation for work. The goal of this map is to identify people who use public transport and thus would be more affected by spatial disparities in the area.

Therapist, psychiatric hospitals, and outpatient psychiatric care were geocoded from tables and clipped to the Suffolk area. The Advanced Care map was created through a geo-processing intersection of psychiatric hospitals and outpatient care. Then both therapist and advanced care maps were spatially joined to block groups to make their respective maps. The population and household income maps were attained through attribute joins of information from tables downloaded from American Fact Finder. All maps then used graduated colors to display data.

The driving coverage map was created using Network Analyst on road maps with a service area of psychiatric hospitals. The parameters were set for a five-mile driving range to psychiatric hospitals. Some edges of Suffolk county are shown not being within the service area but these areas do not have roads.

Public Transportation Use & 1st Standard Deviation of Hospital Density

Percent of People that use Public Transportation for Work

- 🔴 Center of Hospital Care
- ⬜ First Standard Deviation
- 0.00 - 0.13
- 0.14 - 0.25
- 0.26 - 0.38
- 0.39 - 0.55
- 0.56 - 1.00

0   1.25   2.5   5 Miles

N

Results

The results of this analysis show there may be people who have transportation problems on the southeast end of Boston. This is indicated by the dark green block groups outside of the red oval. Public transportation is particularly important to consider since many people who have severe mental illness and who most need care are at the low end of the socioeconomic spectrum. Comparing low household income and high public transportation usage, many of the block groups overlap. The driving coverage map showed that the entirety of Boston is accessible to mental health services if a person possesses a car. Though the therapy and advanced care maps show the coverage in different areas of Boston they do not show important factors such as whether these facilities accept Medicaid or Medicare insurance, if these facilities are accepting new patients, or the amount of people with mental illness problems live per block group. Error in these maps can thus be partially attributed to specification error since a narrower grouping of providers would have shown a more accurate portrayal of access to care. Threshold error could occur with therapists and advanced care facilities in close proximity outside of Suffolk county where residents can receive care. Thus the household income and population maps were used to determine where the most at risk people would be. The results indicate that further study into non-spatial attributes combined with public transportation factors could enrich the knowledge of mental health access in Suffolk county.

Sources

Data Sources: Suffolk County Street Plan-> Tufts Data M Drive, Boston Network 2001; NAICS location information on mental health hospitals, psychiatrist locations and therapist care sites -> American Fact Finder, Census Data, 2015; Census block groups Suffolk county-> reference maps census, Census Data, 2015; Residential Income data/ population density/ Public Transportation Data-> American Fact Finder, Census Data, 2015; Shape file of Massachusetts-> MassGIS, Tufts S drive, 1991

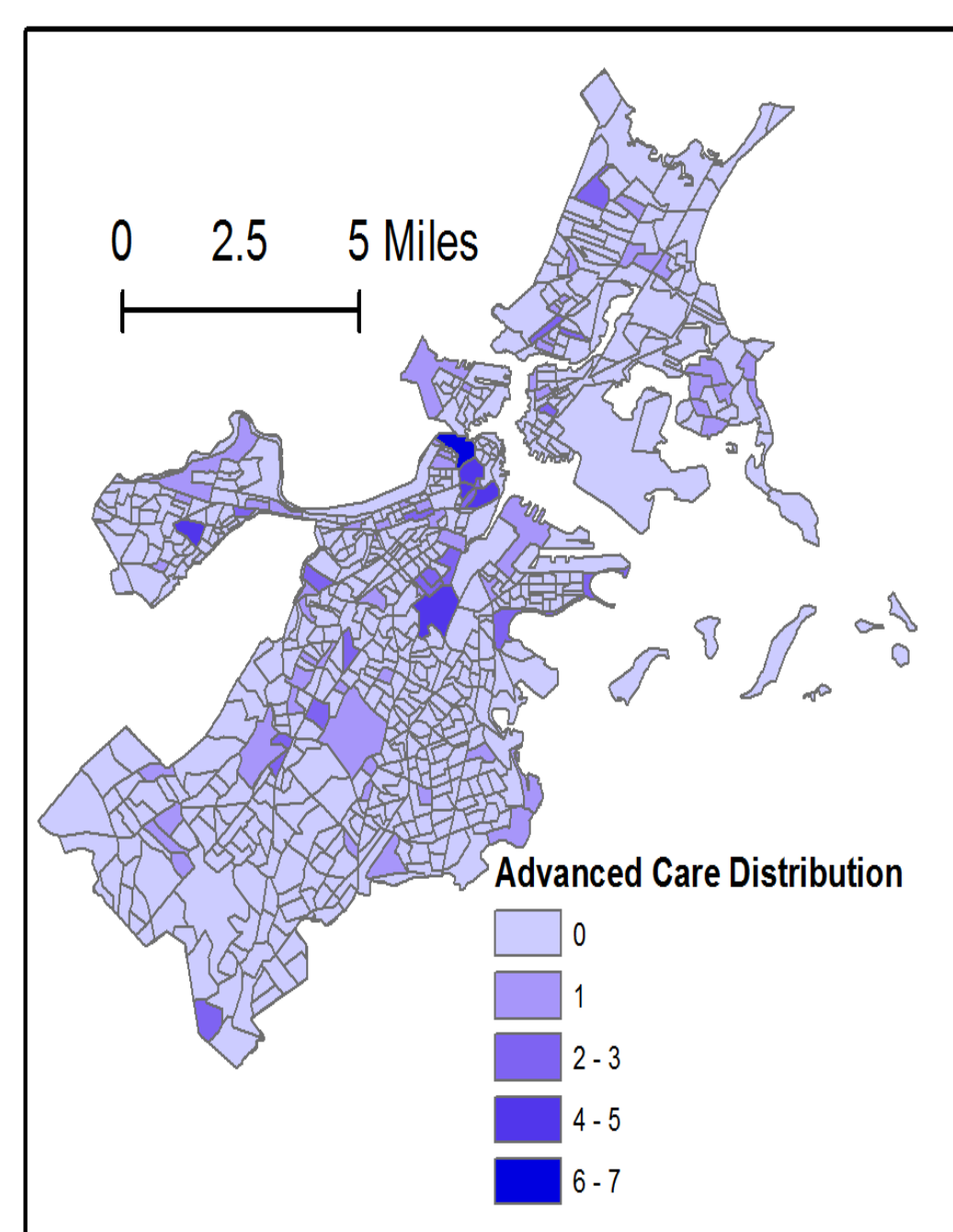**Projected System**: State Plane, Lambert Conforming Conical, Mainland Massachusetts

Citations:

Luo, W. and Wang, F. (2003). Measures of Spatial Accessibility to Health Care in a GIS Environment: Synthesis and a Case Study in the Chicago Region. *Sage Journals.* 30 (6) 865-884.
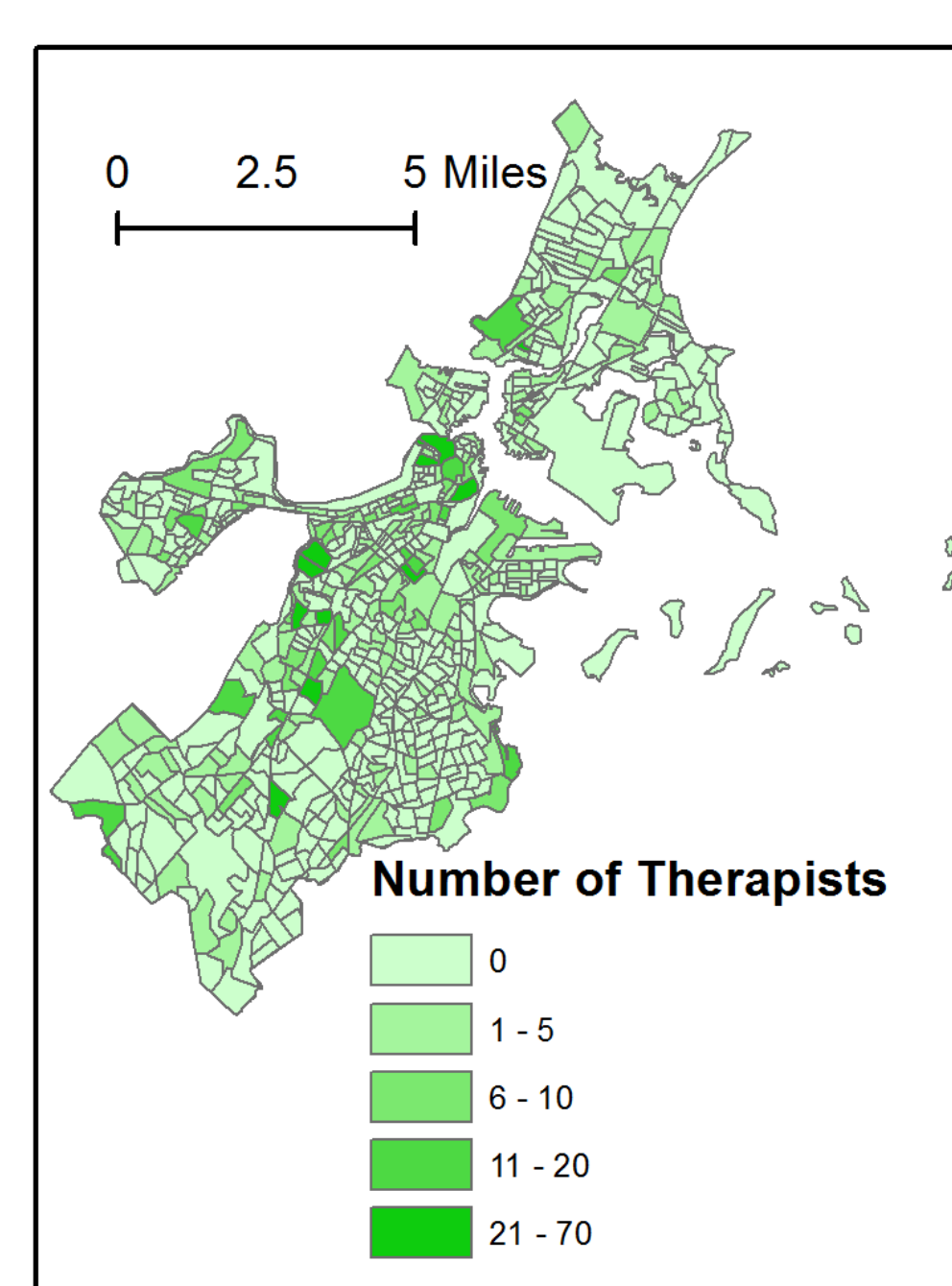
Rosero-Bixby, L. (2004). Spatial access to health care in Costa Rica and its equity: a GIS-based study. *Social Science and Medicine* 7, 1271-1284.

Whitaker, R. (2004) Anatomy of an Epidemic: Psychiatric Drugs and the Astonishing Rise of Mental Illness in America. Ethical Human Psychology and Psychiatry 7(1), 23-36.
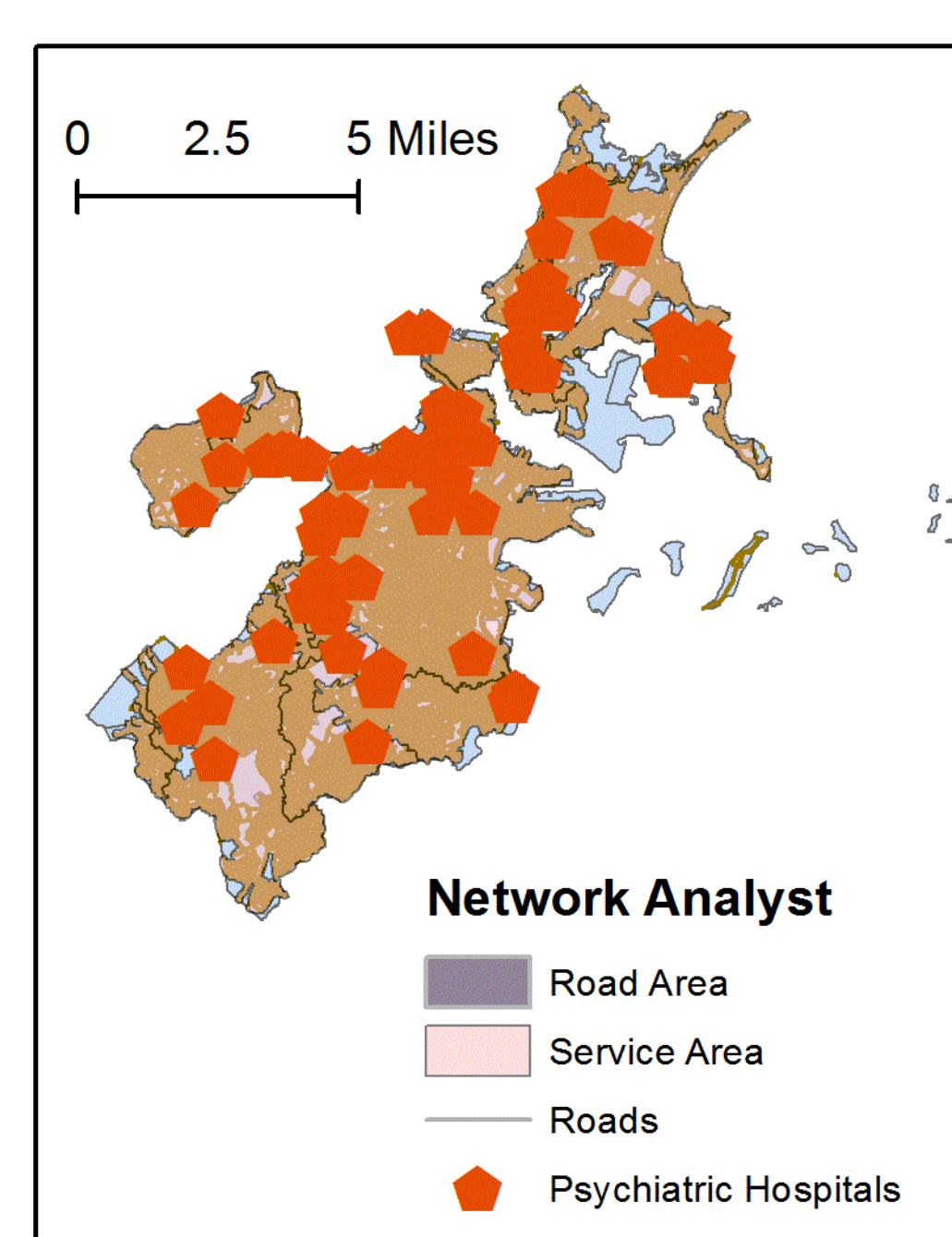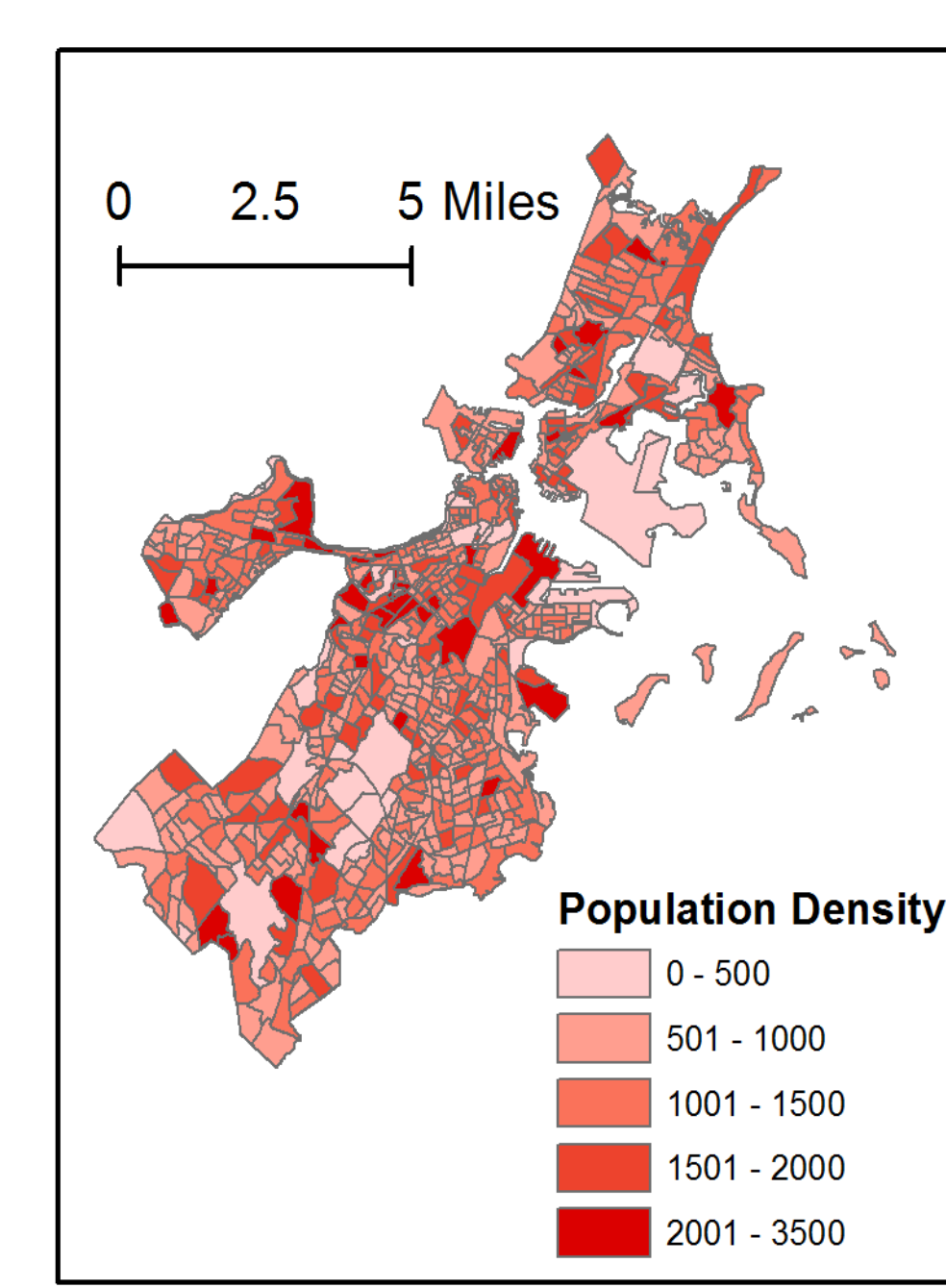
Advanced Care

0   2.5   5 Miles

Advanced Care Distribution
- 0
- 1
- 2 - 3
- 4 - 5
- 6 - 7

Therapists

0   2.5   5 Miles

Number of Therapists
- 0
- 1 - 5
- 6 - 10
- 11 - 20
- 21 - 70

Driving Coverage

0   2.5   5 Miles

Network Analyst
- Road Area
- Service Area
- Roads
- Psychiatric Hospitals

Population

0   2.5   5 Miles

Population Density
- 0 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 2000
- 2001 - 3500

Household Income

0   2.5   5 Miles

Average Residential Household Data
- 0 - 24000
- 23819 - 48000
- 48383 - 75000
- 75126 - 100000
- 108572 - 170000
- No Data