Geographic Mapping to Target Adult Burn Prevention for an Urban Burn Center

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Introduction

Burn prevention is one of the core missions of burn centers. Geomapping has been instrumental for police departments to target resources for crime prevention. Similarly, geomapping could assist burn specialists in identifying “hotspots” of injury. The purpose of this study is to visually identify the incidence and location of adult burn injury within the catchment area of a single tertiary urban regional burn center. Data mapping can thus then be used to target burn outreach and prevention efforts.

Aim

This study was intended to determine and analyze origin of burn injuries within our population subsect to maximize outreach utility.

Methods

Demographic and deidentified clinical data was collected from a single institution over a 3 year period. 1986 burn patients were admitted between 1/2016 and 12/2018. 1360 patients were 16 years of age or greater. Geriatric patients were defined as age 60 or greater to facilitate comparison with National Burn Repository data which breaks down age by decades. The patients were mapped by their home zip code.

Results

1360 burn patients 16 years or older were admitted to this single tertiary burn center between 1/2016 and 12/2018 with an age range from 16-101.
393 patients were 60 years or older (28.9% of the adult population compared to 19.8% of the NBR population) 6 zip codes within the catchment area were identified as “hotspots” as having more than 30 inpatients listing that zip code as their home address (Figure 3). The results show an unequal distribution of patients over the burn center's catchment area with hotspots (defined by > 30 burn admissions during the study period) in 6 zip codes.

Conclusion

The local demographics of this inpatient adult burn population follow national trends in etiology but differ with regards to age and race. The geomapping tool visualizes burn incidence by geography. Based on this analysis, outreach and prevention efforts should target elderly populations especially in the "hotspots.“ This research will inform targeted efforts towards burn prevention and education outreach.

References, Funding and Disclosure

Goltsman D, Li Z, Bruce E, Maitz PK. Geospatial and epidemiological analysis of severe burns in New South Wales by residential postcodes. Burns. 2014;40(4):670-682.
Goltsman D, Li Z, Bruce E, et al. Spatial analysis of pediatric burns shows geographical clustering of burns and 'hotspots' of risk factors in New South Wales, Australia. Burns. 2016;42(4):754-762.

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Figure 1. Distribution of Outpatient Catchment Area Per Borough

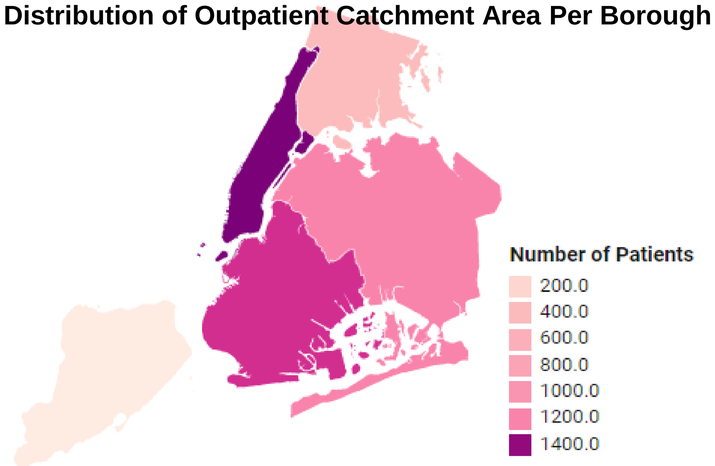

Figure 2. Distribution of Outpatient Catchment Area Per Zip Code

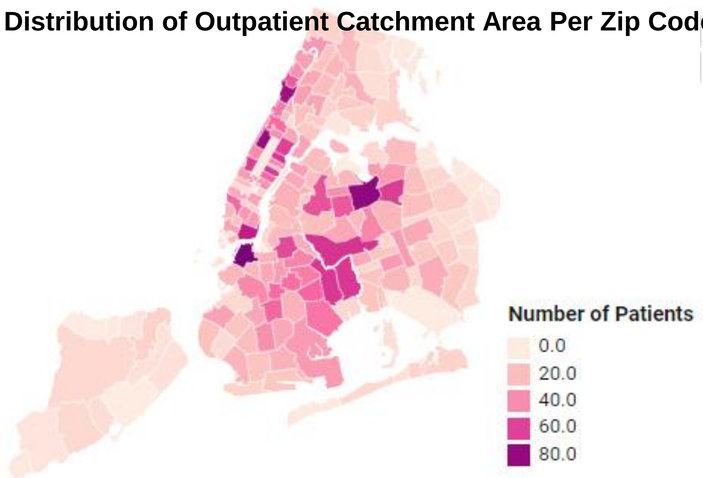

Figure 3. Distribution of Inpatient Catchment Area Per Borough

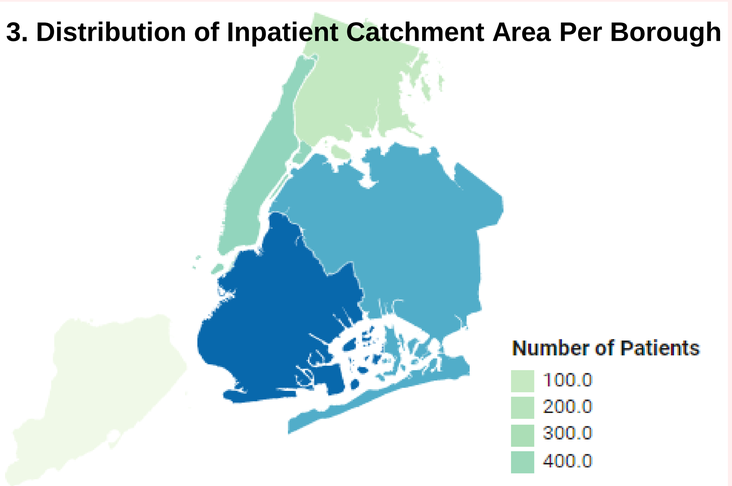

Figure 4. Distribution of Inpatient Catchment Area Per Zip Code