Spatial Access to HIV Care Across South Carolina

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PURPOSE

Disparities in access to HIV medical care facilities may affect rates of early diagnosis and adherence to HIV care across South Carolina

- As of 2016, South Carolina had not met the National HIV testing and HIV status awareness goals set by the CDC [1]

Poor access to healthcare, both primary and specialty care, is an overriding issue in rural .

- Late diagnosis and care of HIV (both physically and mentally) was found to be associated with rurality [2]

***Overall Goal*:** To examine the associations between access to Ryan White HIV facilities, population affected, and socioeconomic area deprivation in South Carolina

METHODS

DATA SOURCES

Ecological study done using data from the following sources:

- Latitude/longitude coordinates for HIV testing (n=110) and Ryan White treatment (n=18) facilities in SC were extracted from the U.S. Department of Health & Human Services website
- Socioeconomic Area Deprivation measured using the Area Deprivation Index (ADI), designed by Health Innovation Program at the University of Wisconsin-Madison School of Medicine & Public Health
  - ADI Score takes into account 17 different markers of socioeconomic status[3]: the higher the score, the more deprived the area
  - Original data from 1990 census and updated using data from 2000 census
  - Data available at the following U.S. Census data levels:9-digit ZIP code and U.S. Census Block Group

  For this study, we compiled the data at the county level
- Population affected (prevalence rates from 2015) came from the South Carolina Department of Health and Environmental Control (DHEC) [4]

DATA EXPLORATION

The exploration done on the data compiled ranged from:

- Descriptive statistics
- Choropleth and density maps along with road network distances were calculated to spatially evaluate access to care across South Carolina
- Buffers included 10 mile Euclidean and 30 minute road network distance
- Bivariate choropleth maps done to examine the similarity between measures (ADI and facility density) among different counties

Table 1. Descriptive Statistics

Variable	Statistic
Facilities located within county, n (%)	
0-1	23 (50%)
2+	23 (50%)
Block Groups outside of designated 30-minute coverage zones, n (%)	180 (6%)
ADI Score	
Mean	
Overall	108.85
Rural	111.74
Urban	106.81
Maximum	116.46

Figure 2. South Carolina Area Deprivation Scores

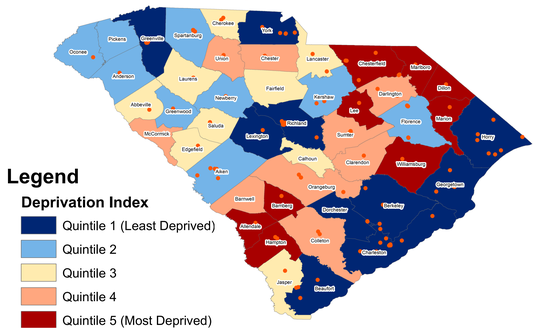


Figure 3. Road Distance Map of HIV Care Facilities Across South Carolina

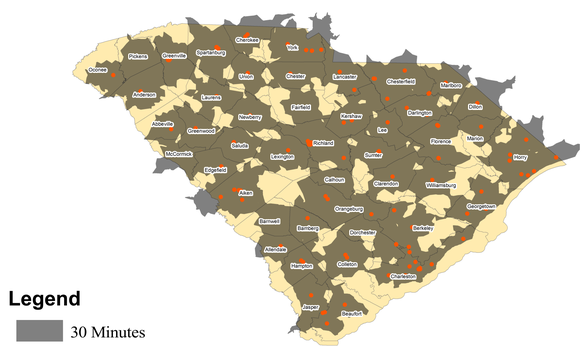


Figure 1. Kernel Density Map Across South Carolina

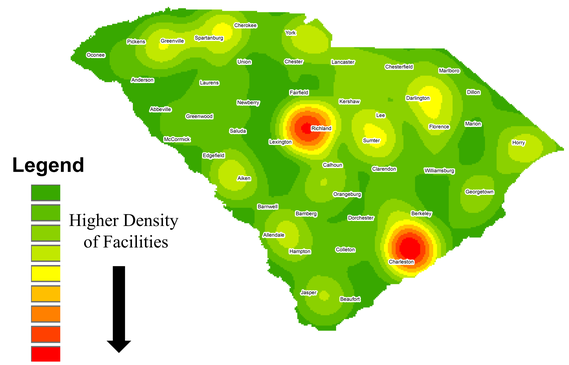


Figure 4. Facility Density per Population Affected Across South Carolina

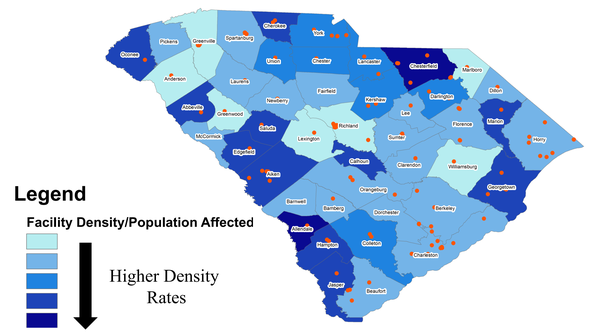
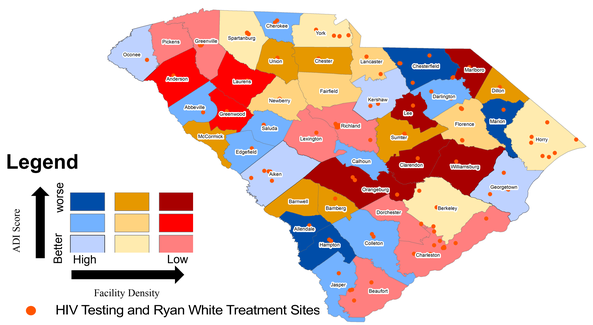


Figure 5. Bivariate map of ADI scores with Facility Density per Population Affected



RESULTS

The highest number of HIV testing/Ryan White HIV facilities per county in South Carolina tended to be clustered together in metropolitan areas (Figure 1)

When considering population affected, Chesterfield and Allendale County had the highest rates of facilities per population affected (Figure 4)

Half the counties (23/46) had only 1 facility located within their boundaries

- Approximately 48% of these counties (11/23) scored in the 4th and 5th ADI quintiles (most deprived) while the areas with more accessible facilities scored in the 1st quintile (least deprived)

Six percent of SC block groups were out of the designated 30-minute coverage range for any facility.

The average ADI score was higher for rural counties compared to urban counties (111.74 vs 106.81).

The poorer ADI scores were mostly concentrated in the Pee Dee region (NE corner of the state) and along the I-95 corridor, while the coastal counties were least deprived (Figure 2).

The best combinations of ADI scores and facility density per population affected were spread throughout the state while the poorer combinations were mostly found on the border of the Pee Dee and Low Country Regions (Figure 5)

CONCLUSIONS & FUTURE CONSIDERATIONS

HIV testing and Ryan White treatment facilities in South Carolina are generally in less socioeconomically deprived settings such as metropolitan areas

- However when considering population affected, however, access to HIV testing and treatment in the these areas was suboptimal

Further assessment is required to determine distance to Ryan White HIV facilities for persons infected with HIV, and examine the impact on treatment adherence rates.

These results can be of value to public health professionals and policy makers planning HIV interventions and policies targeting barriers to HIV testing and treatment quality/adherence.

REFERENCES

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