Aakriti Suresh

1. Create a Baltimore City census tract choropleth map of STI rates per 100,000 persons for the 15 to 39 age group, displaying 5 categories using natural break classification. Show the 2 clinics on this map.

A map of baltimore sti case map

Description automatically generated

1. A.

A map of baltimore sti case map

Description automatically generatedA map of a case map

Description automatically generated

STI rates are higher in males compared to females. The overall census tract distribution for both males and females across Baltimore County is almost similar. The STI rates in both maps have a butterfly distribution coinciding with the redlining areas. Overall, more than 50% of census tracts have rates less that 1126-1128 in both maps.

B. Create a third map of STI rates for males 15-39 and use Equal Interval, 5 classes, to create the breaks.

A map of baltimore sti case map

Description automatically generated

This method of classification helps to identify the highest rates in two census tracts and the tracts that have lowest STI rates. Since the range of STI cases is not uniformly distributes and the range is large (0-30833), using equal distribution leads to larger intervals with sparse STI cases. The third map can be used to compare STI rates across counties and the first two STI maps can be for a targeted approach to reduce the burden of STI caes.

1. A map of baltimore sti bus stop buffer

   Description automatically generated

A.

Selected Points = 4391/ 5810

Not Selected points = 1419 / 5810

B.

Selected = 4393 / 5810

Not selected = 1417 / 5810

C.

Selected = 4392 / 5810

Not Selected = 1418 / 5810

D.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Selected | Not selected |
| a. | Buffer layer | 4391 | 1419 |
| b. | Bus stop | 4393 | 1417 |
| c. | Geodesic | 4392 | 1418 |

Geodesic buffers account for the shape of the earth (an ellipsoid, or more properly, a geoid). Distances are calculated between two points on a curved surface (the geoid)

Therefore I think that (c.) is most accurate.

1. I would put the third clinic in census tract 2717 for the following reasons.
   * It has the third highest STI cases (99). The first two highest cases have clinics that are accessible by walking distance or by the bus. An important aspect to break the transmission chain is to concentrate efforts in hot spot zones.
   * The closest clinic is 3.22 miles from this tract. So having a clinic in this area would help in reducing the STI burden
   * This tract has good connectivity therefore accessible to more patients and individuals seeking care.

Part II

1. A.A map of the u. s. state

   Description automatically generated

B.A map of a city

Description automatically generated

1. A. Baltimore county has higher population rates in the age group 15-39 as compared to charlotte county. Charlotte county has more census tracts of lower population in the same age group.

B. Charlotte County – the census tract with the largest area has a higher concentration of people in the age group 15-39. The population rate is less near the coast and more inland.

Baltimore County – Most of the census tracts have population rates of 19.75 or higher implied a higher population overall in comparison.

1. Yes, I would not compare them based on STI rates. Using identical intervals as the method of classification allows for comparison between the two counties. But to make better comparison more information is needed regarding the land size, population density, Clinics and access to care available.

Describe data - Data on all reported gonorrhea cases from 1994 to 1999 (n = 41,465) in Baltimore City were extracted from Baltimore City Health Department STI program databases.

How cases were mapped

Using a spatial scan statistic, the authors analyzed reported cases of gonorrhea (n = 32,454) in Baltimore City, Maryland, from 1994 to 1999 geocoded to the primary address and aggregated to census block groups (n = 709). In this analysis, we utilize an advanced cluster detection approach using the SaTScan program (Statistical Research and Applications Branch, Surveillance Research Program, Division of Cancer Control and Population Sciences, National Cancer Institute, Bethesda, Maryland) (32). The SaTScan approach eliminates the subjectivity in defining high and low prevalence cutoff points while providing a statistically objective approach for identifying both the existence and location of significant geographic clusters. SaTScan also allows for the adjustment of population-based identifiers such as race/ ethnicity composition.

Rates calculated.

Gonorrhea rates per 100,000, using the population aged 15–39 years in each census block group, were computed and averaged over the 6 years.

Non-geocodes – met the exclusion criteria.

The cases that could not be geocoded included post office box addresses and addresses that were missing, incomplete, or otherwise unlocatable on the basis of the information provided. Proportions of nongeocoded cases versus those with a geocodable address were not significantly different across race/ethnicity and age groups, but nongeocoded cases were more likely to be male (p < 0.05). Additional exclusion criteria for this analysis were cases with a reported residential address outside the geographic boundary of Baltimore City, representing 8 percent (2,985 cases) of cases, and cases with missing demographic information, representing 2 percent (602 cases) of cases.