

Lab 1 – Model Builder Exercise – write up

The map attached shows the hotspots and coldspots for heart disease in 16 Southeastern United States: Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, North Carolina, South Carolina, Tennessee, Kentucky, West Virginia, Virginia, Maryland and Delaware. The 2016 data shown in this map is from the Centres for Disease Control and Prevention which represents heart disease data by the counties within each state. The legend shows 7 categories which describes the spatial clustering for the heart disease rates within each county based on a nearest neighbours approach. As the z-scores and p-values measure statistical significance, both of these values were taken into consideration by categorizing the legend by the “Gi_Bin” field. The Gi_Bin field identifies hot and cold spots and therefore illustrates a spectrum for spatial clustering of heart disease that identifies areas where there is a likely cause for the increased heart disease rate in the county (i.e. red on the map represents hotspots with a 99% confidence level) and areas where is likely no cause for the heart disease rate in the county (i.e. blue on the map represents coldspots with a 99% confidence level). The map shows that for the majority of counties there does not appear to be statistical significance in the heart disease rate. For example, the counties in the states of North Carolina, South Carolina, Georgia and Texas are either coldspots or have no statistical significance. For this reason, living in these states would be recommended. On the other hand, there are some obvious hotspot clusters where there is a high likelihood that there is a specific factor/variable causing higher heart disease rates. For example, the counties in the Southeast of Oklahoma, the Southwest of Arkansas, the Southwest of Mississippi, etc. are areas of heart disease hotspots. In particular, the Southeast of Oklahoma is of particular concern as 25 counties are hotspots with a 99% confidence rate. Therefor, it is likely that there is a specific reason for the hotspot in this region that may be different than the reason for the hotspot in Florida, for example. It should also be noted that there are numerous counties where no heart disease rate data is present, especially in Texas.