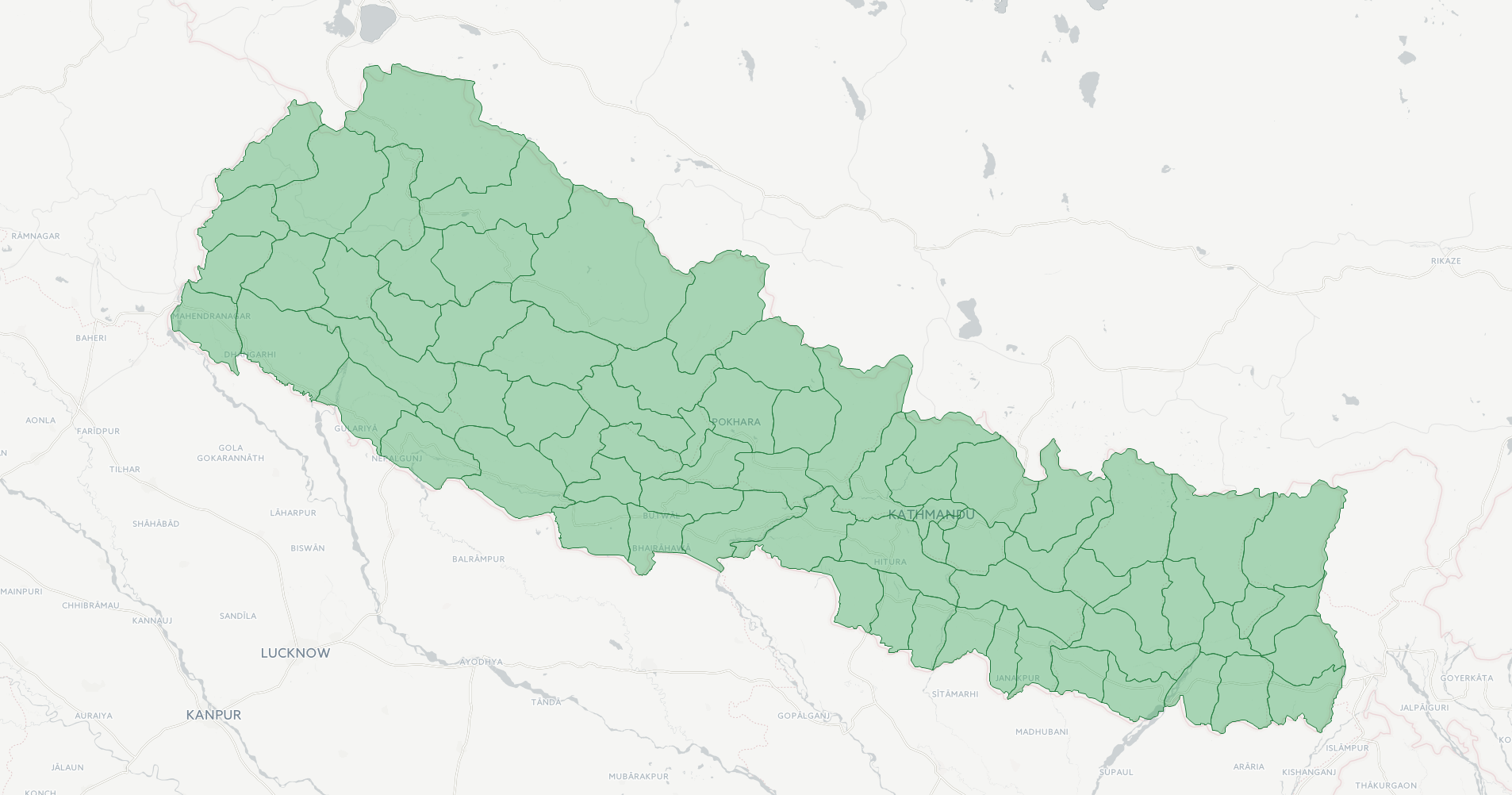
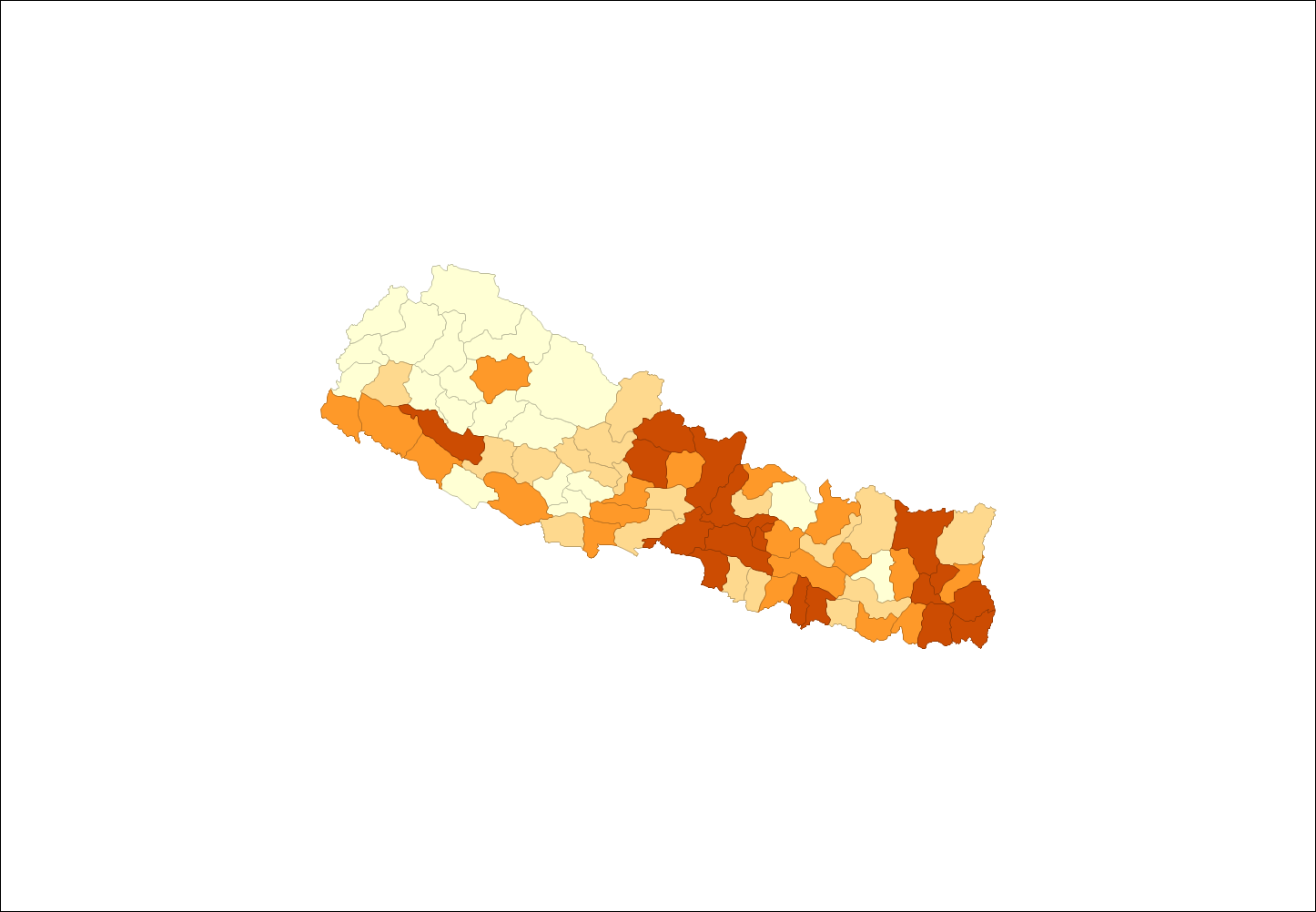
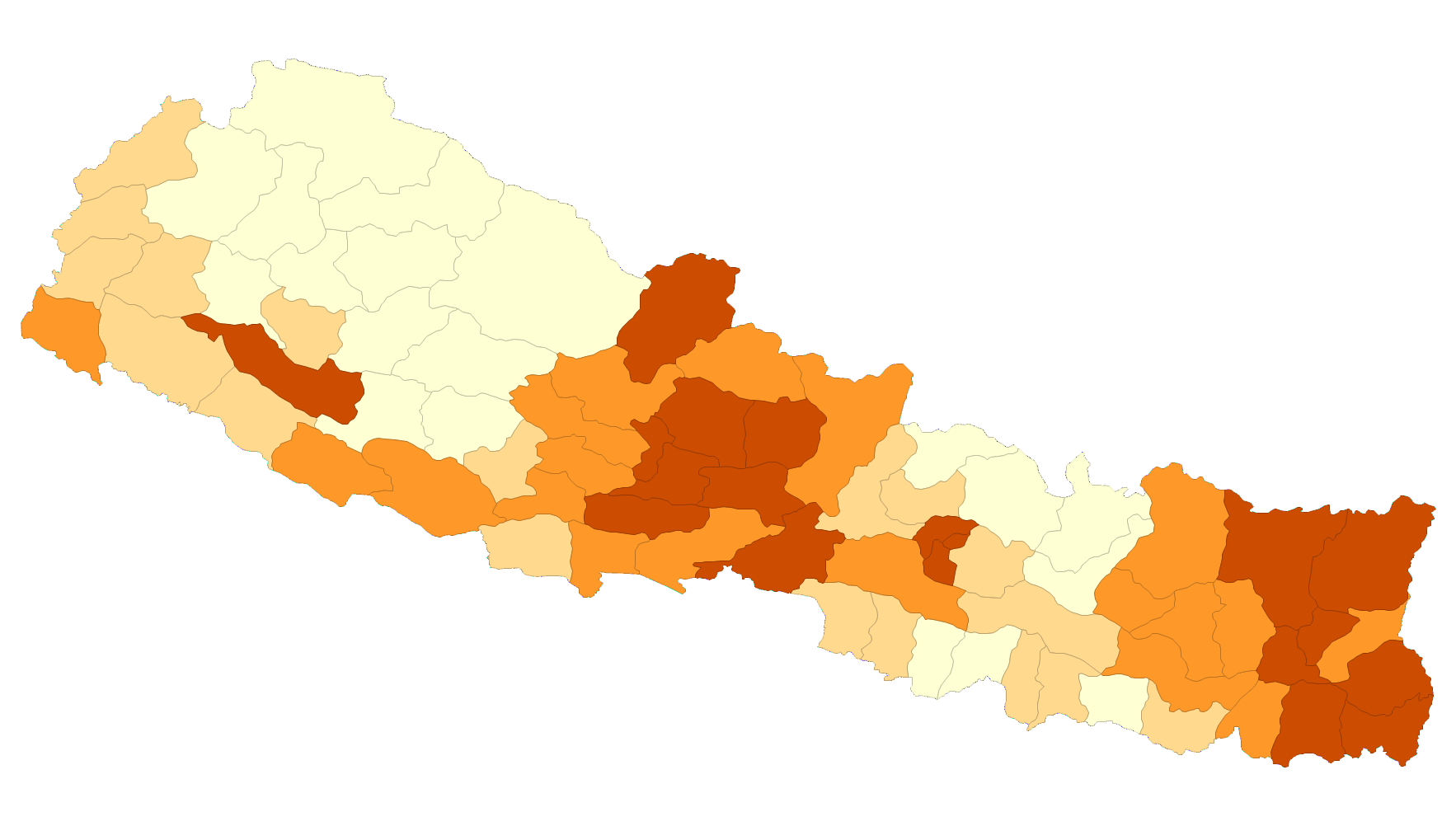
Dustin Betuzzi

1)



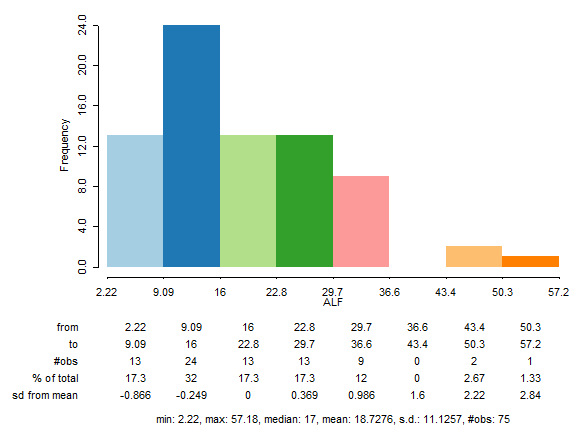
2)CPR



ALF

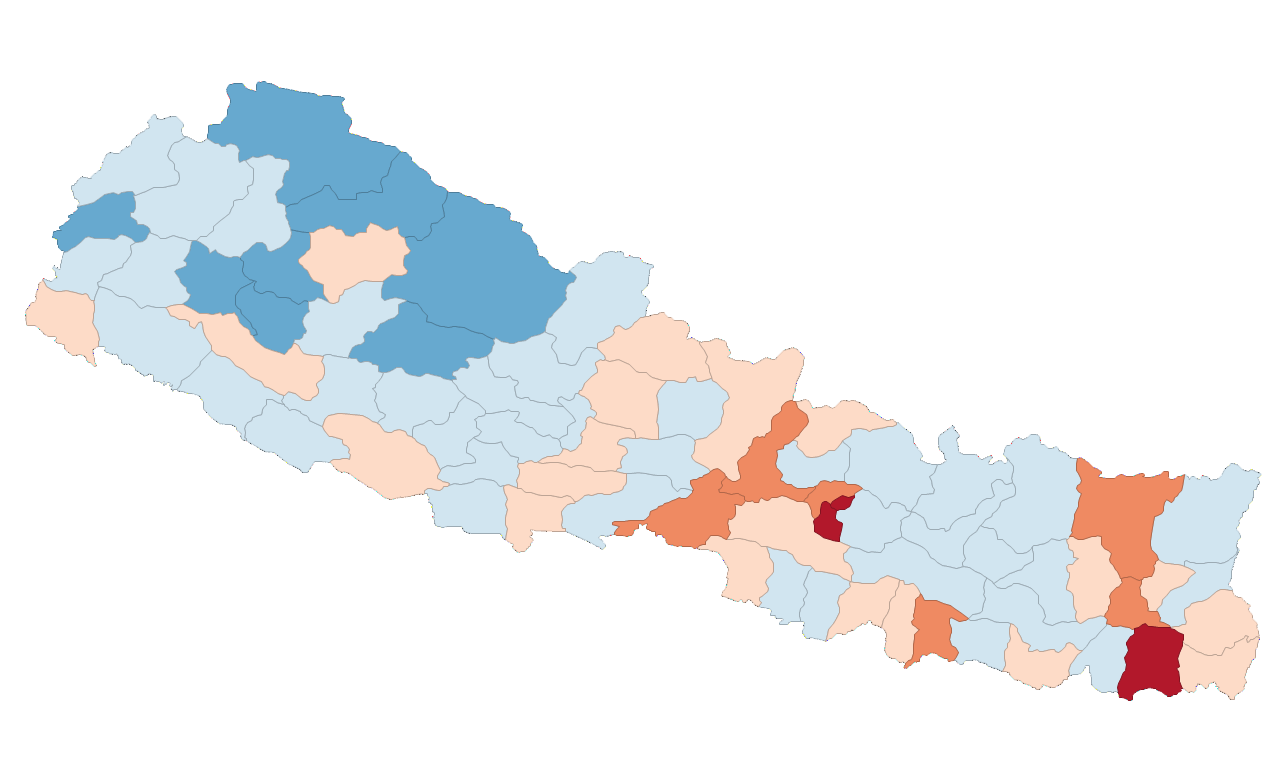
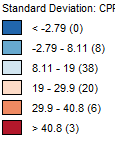
The darker the shade, the higher the rate of ALF and CPR. The spatial distribution in the maps seem quite similar with a few exceptions. The factors causes higher ALF could also be causing CPR within general areas. Also, ALF and CPR could be caused by each other.

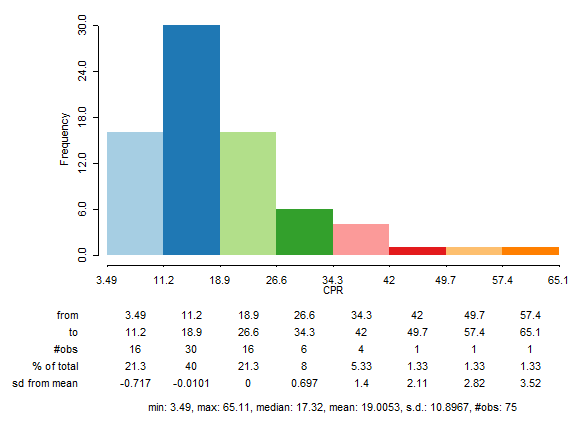
3)



**The histogram looks like it has a non-parametric distribution. It looks like the histogram has positive skew. The mean rate of female literacy in Nepal is 18.73.**

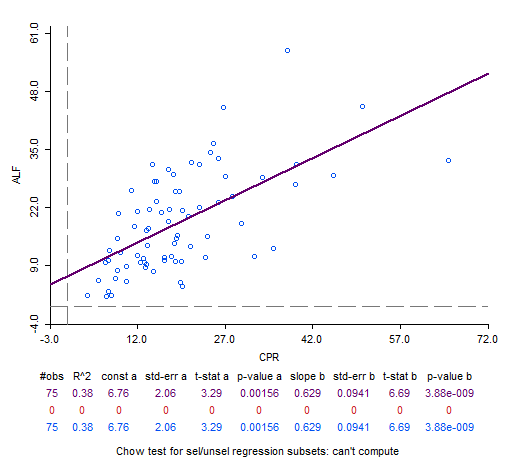
4)





The mean contraceptive rate for Nepal is 19.0053. The dark blue represents the SD less than -2.79. The dark red represents SD greater than 40.8.

5)



Since one variable represents the X-axis (CPR) and other represents the Y-axis (ALF), the scatterplot represents the spatial distribution of the data. The relation between CPR and ALF do not follow the suspected line of the scatter point, resulted in a scattered relationship.

6.

a) A weight matric is used to create a “neighborhood structure” on the data to find and access the similarities between values and locations.

b) Queens Weights Matrix and Rook Weights Matrix.

c) Both Queen and Rock are contiguity based.

d) Spatial autocorrelation **is the degree to which one object is similar to other nearby objects.** Moran’s I (Index) is used to measure spatial autocorrelation.

e) Global spatial autocorrelation is the overall clustering in a dataset. Local spatial autocorrelation is used for local clusters and spatial outliers.

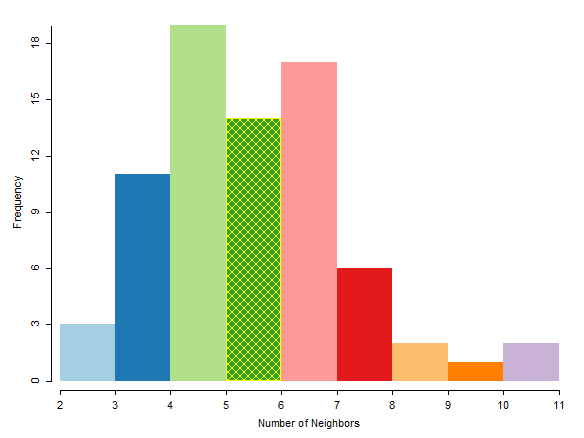
f) Moran’s I and GeoDa's permutation tests.

g) Local Moran’s I and GeoDa’s permutation test

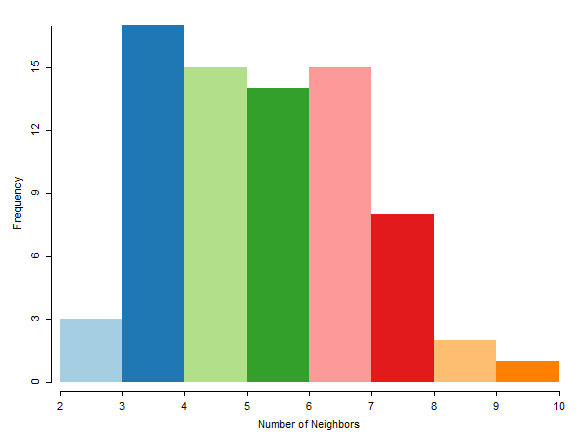
7. Weight file is created for the availability for any spatial analysis.

8.

Queen’s



Rooks

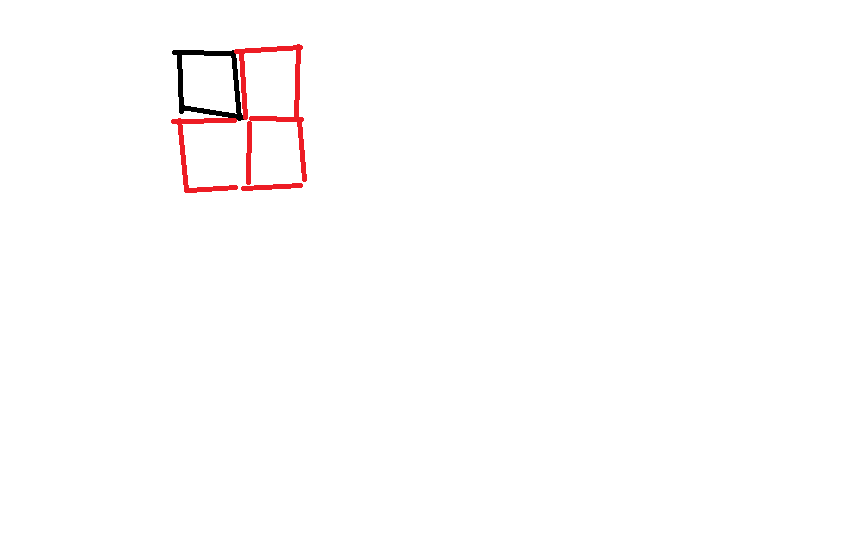


Queen’s has 5 districts with 8 or more neighbours. The names of districts with 8 neighbours for Queen’s is Kavrepalancho and Dhankuta. Rook’s has 3 districts with 8 or more leaders. The names of districts with 8 neighbours for Rook’s is Sindhuli and Udayapur.

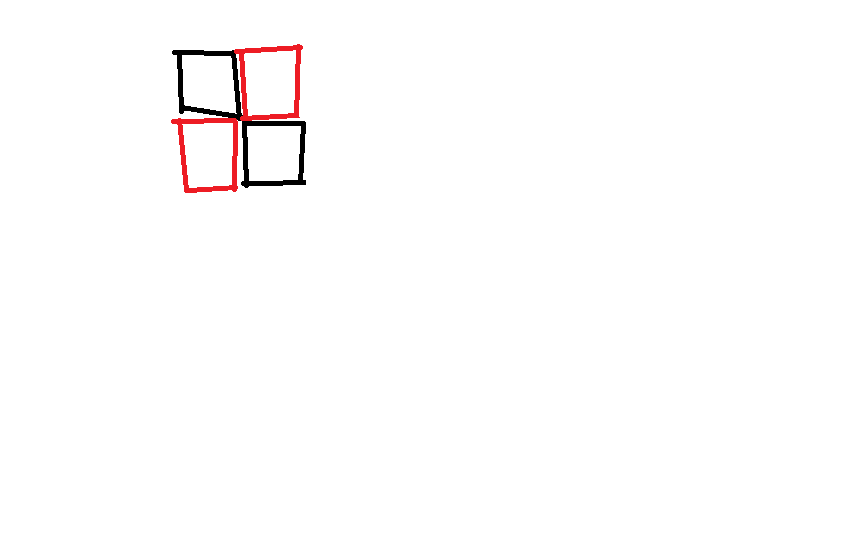
9. Queen Weight Matrix- defines a location's neighbours with either a shared border or vertex

Rook’s Weight Matrix- defines a location's neighbours as those areas with shared borders

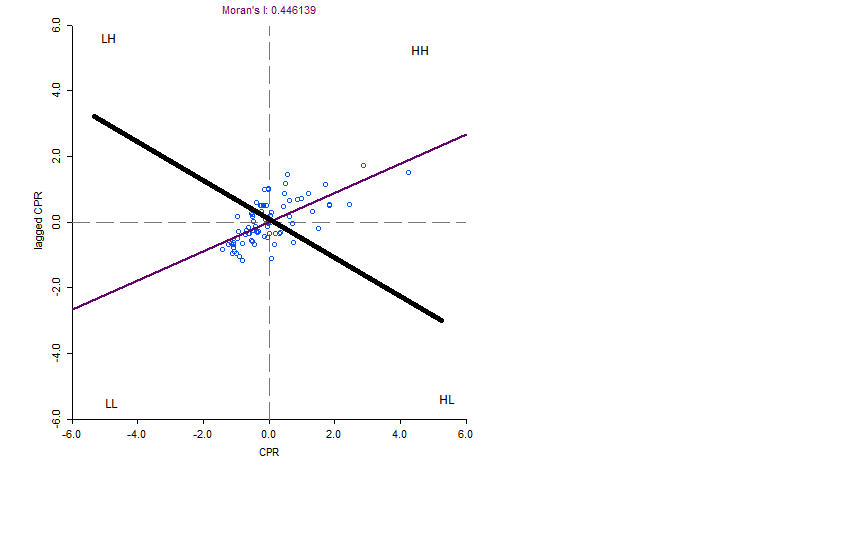
Queen’s= red squares considered neighbours to the top left square



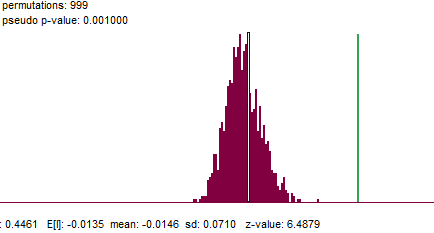
Rook’s= red squares considered neighbours to the top left square (Bottom right black square is not considered a neighbour).



10.



11.



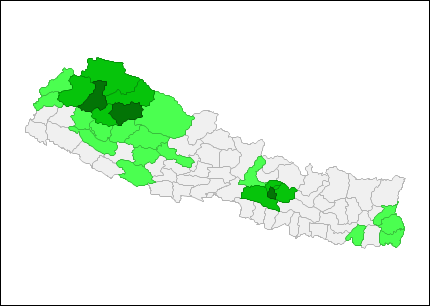
a)Alternative hypothesis: There is significant negative or positive clustering

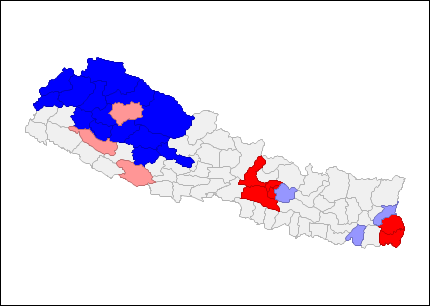
Null hypothesis: There is no significant negative or positive clustering

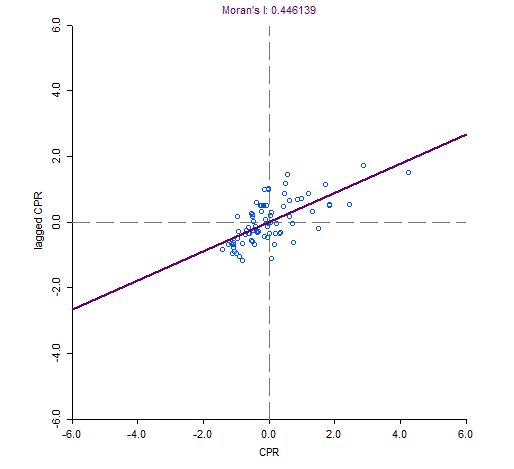
b) Yes the contraceptive use in Nepal is spatially clustered. Moran’s I: 0.446139, Pseudo p-value: 0.001000

c) There is areas in Nepal where there is contraceptive use is area within and areas where there is low use of contraceptive use

12.



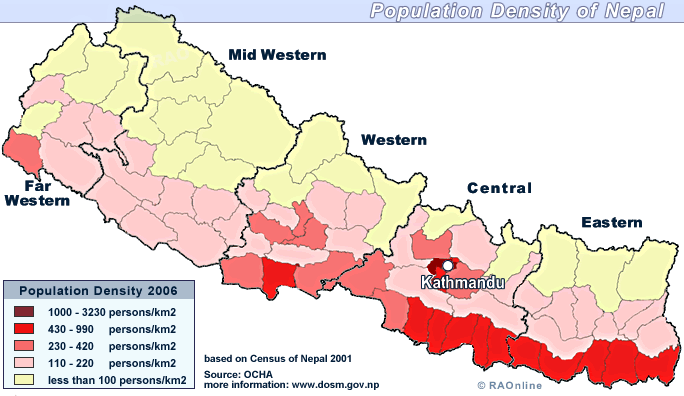




In terms of high contraception use, the central and east development regions are were many of the districts are found to have that characteristic.

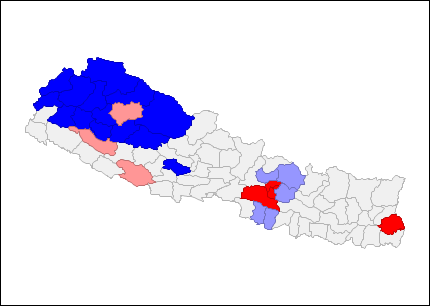
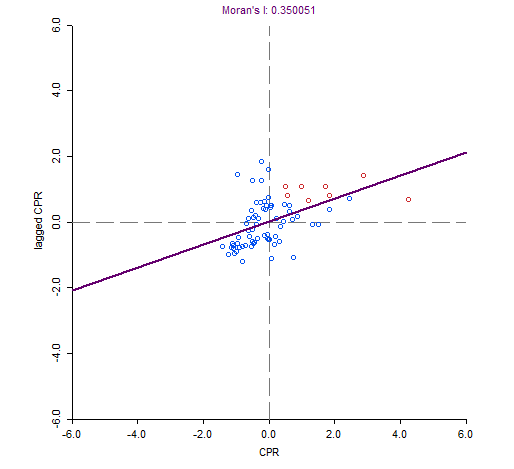
13. In terms of low clustering of contraception use, development regions in the far-west and mid-west is where many of the districts were found to have that characteristic.

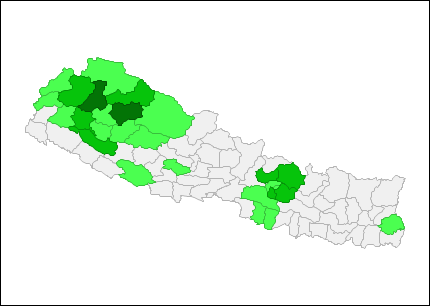
14.



Within the Mid-west and far-west the population density is less which correlates to the low clusters of contraception use. The Central and Eastern Regions shows a higher population density where there were higher clusters of contraception use. The population density and clusters of contraception use do not directly relate to each other in every area on the map due to many other political, social and environmental factors.

15.



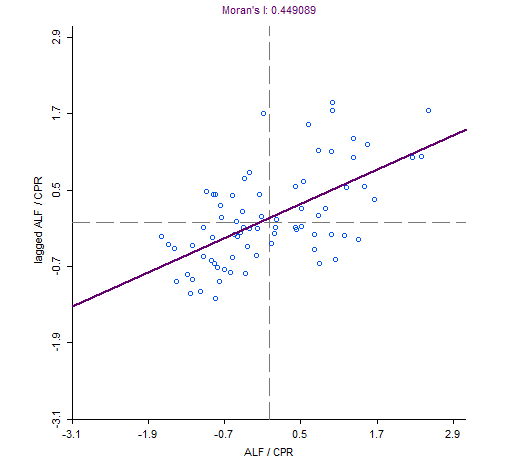


K-Nearest Neighbour Moran’s I- 0.350051

Moran’s I- 0.446139.

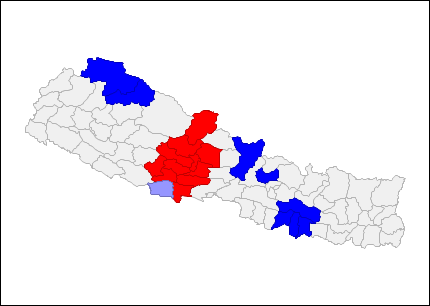
The LISA Cluster and Significant map from this test both show less areas showing amounts of clustering compared to the first maps made. Queen’s is based on a contiguity. K-Nearest Neighbour “compares the mean of the distance observed between each point and its nearest neighbour with the expected mean distance if the distribution was random”.

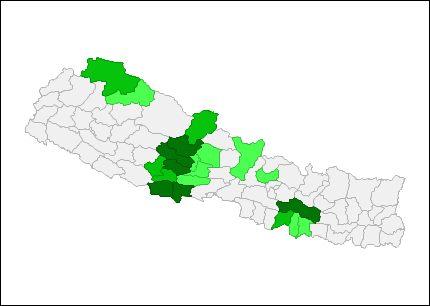
16.



This analysis has a pseudo p-value of 0.001000, which rejects the null hypothesis and states that there is significant negative or positive clustering.

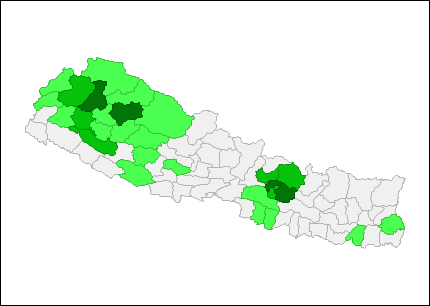
17.

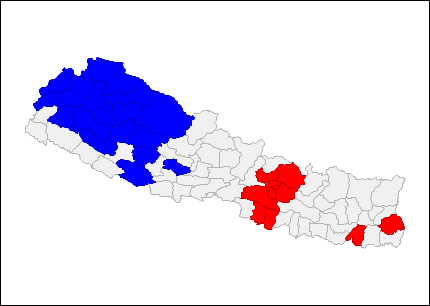




Both maps have the same districts highlighted. The p-value represented in the significances map however does not directly correlate with the four Quadrants representing in the Cluster map. Example: The low low coordinate of the cluster map shows districts within p-values of 0.05 and 0.01 creating different colours throughout the same highlighted districts within the two maps.

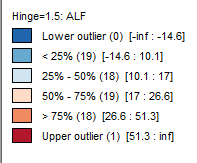
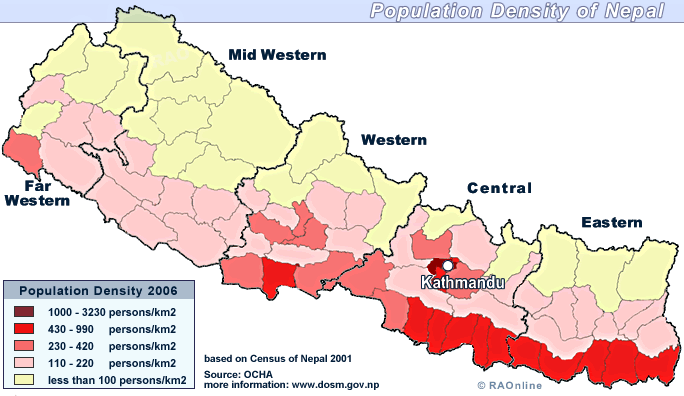
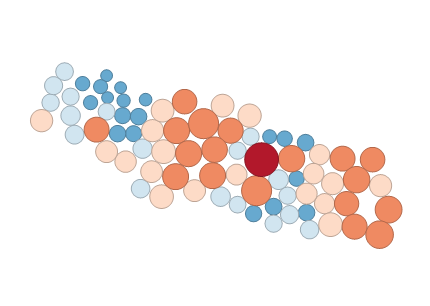
18.





In the Significance map, the lighter the tone of green is, the closer the p-value is to 1. On the Cluster map blue is represented as low cluster and red is represented as high cluster.

19.



The red circle represents the capital of Nepal which has the highest population. Higher population correlates with higher clusters of literacy in the capital. However, when compared to a population map you can notice higher population districts with lower literacy which again can be due to many other direct or indirect political, environmental and cultural influences. This cartogram is a good way to compare the literacy among the population within main areas of clusters.

20. Shapefiles are no topological format for storing the geometric location and feature information of geographic features. The shapefile format defines the geometry and attributes of geographically referenced features in three or more files with specific file extensions that should be stored in the same project workspace (arcgis.com)

The PRJ file contains the coordinate system information for the data. In a more general sense, PRJ can refer to the coordinate system of data even if the information is not stored in a prj.adf file (support.esri.com)