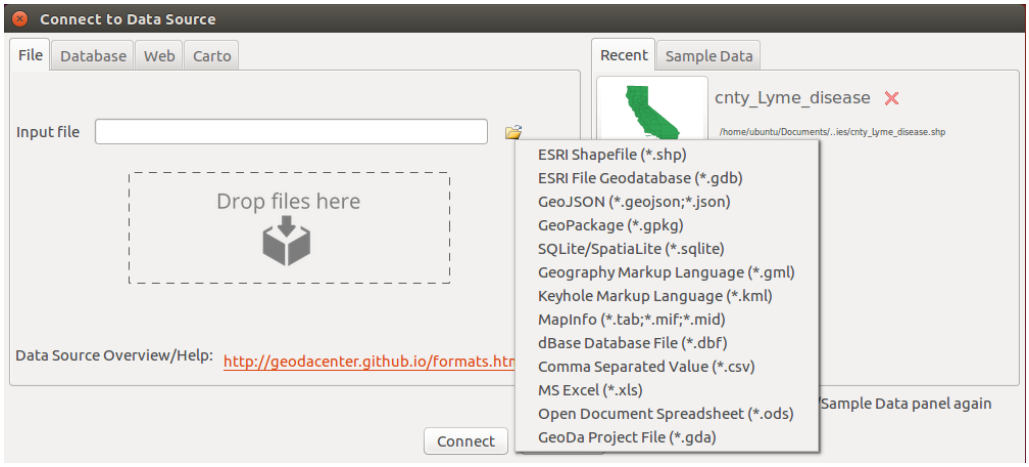
GeoDa: a graphical user interface (GUI) for PySAL

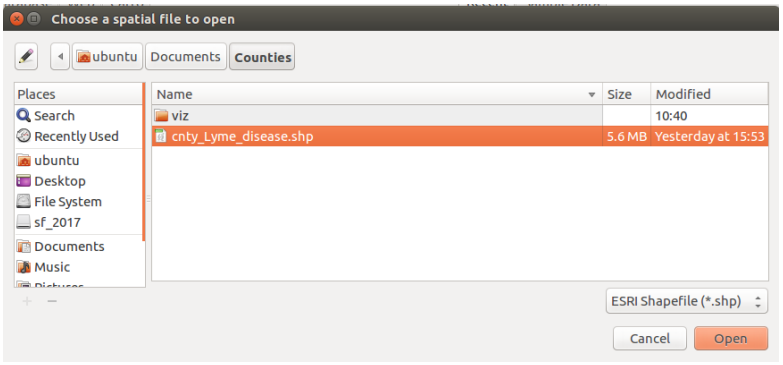
The instructions below will guide you to explore the data, create a spatial weights file (.gal) and run both Global and Local Moran's I analyses for one year of data at a time.

Section 1: Explore Data

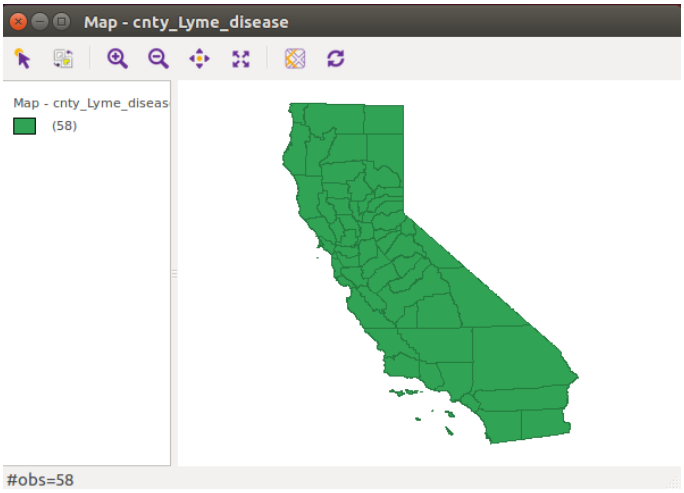
1. Open GeoDa by clicking on the icon in the vertical menu on desktop. 

2. Click on the folder icon next to Input File and select *ESRI Shapefile*. Navigate to the Counties folder in Documents and highlight cnty_Lyme_disease.shp.





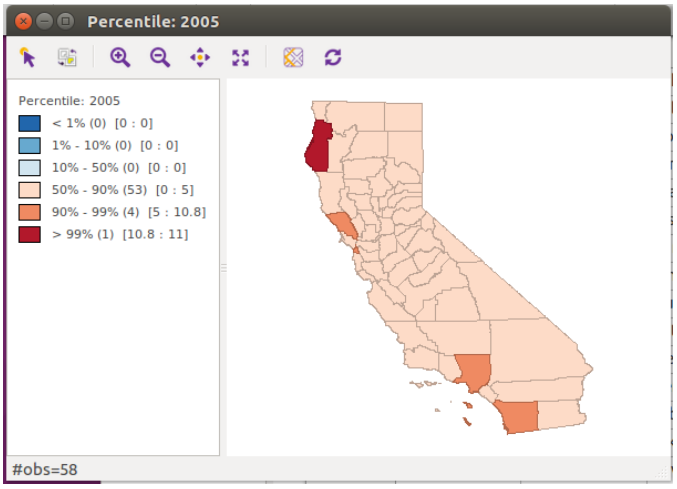
3. Click Open.



4. On the GeoDa menu, click on the icon for *Open Table*  and explore the attribute table. You will see a count of Lyme disease cases by year for 2005-2014 for all California counties.

5. On the GeoDa menu, click on the icon for Maps and Rates  and select Percentile map choose 2005 as your *First Variable (X)*.

   This gives you a percentile map of the distribution of lyme disease cases for the year 2005. Visually, does there appear to be clustering?

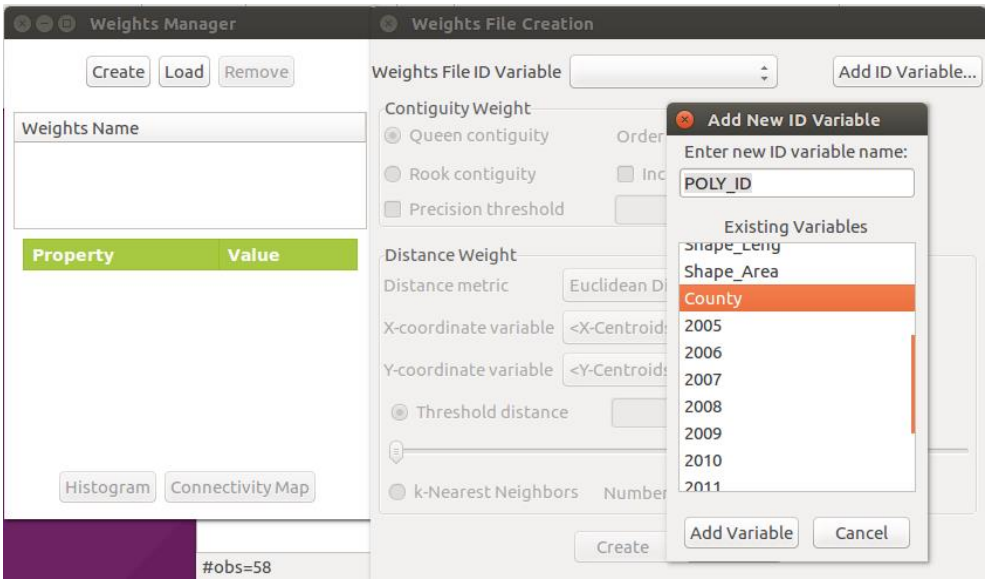


6. Explore the other options under *Map* such as Quantile.

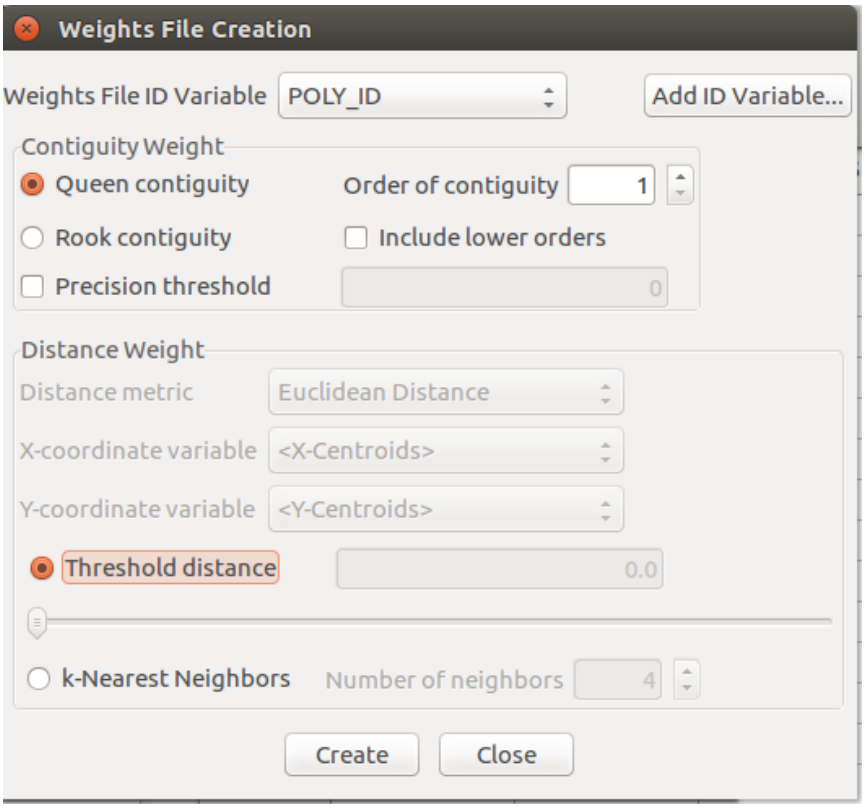
Section 2: Create Spatial Weights File

1. On the GeoDa menu, click on the Create Weights File icon  .

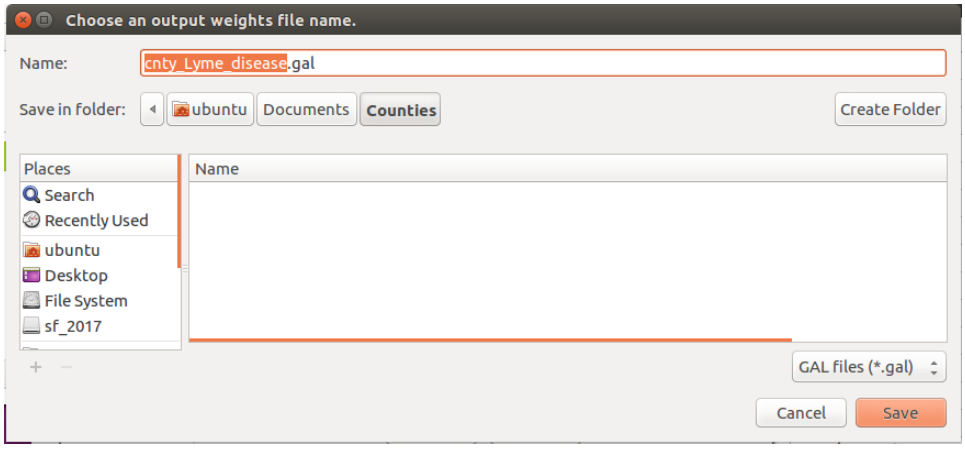
Click Create. Click Add ID Variable, select County as the ID, and click Add Variable.

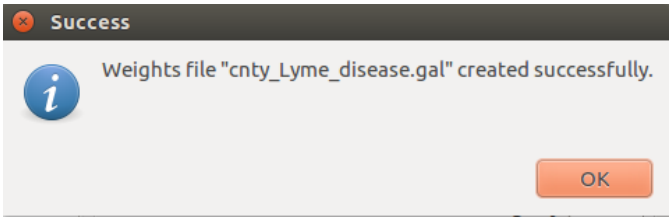


2. Select Queen Contiguity and click Create.

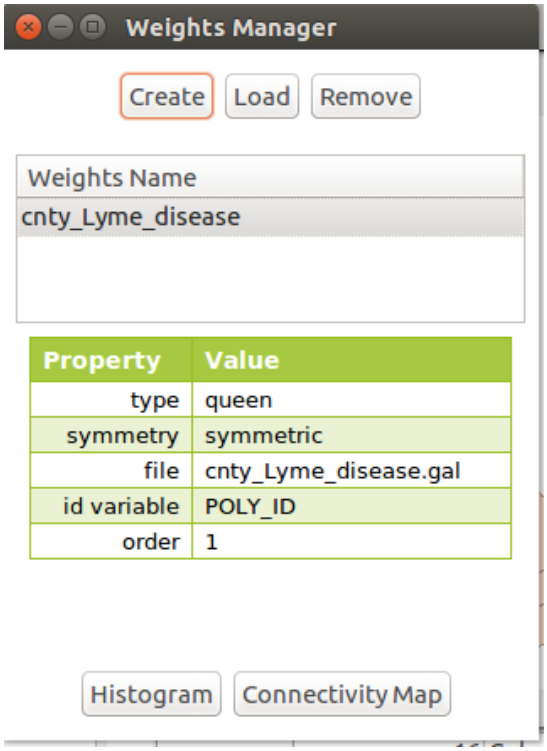


3. Save the new file as cnty_Lyme_disease.gal in the same Counties folder as the data.





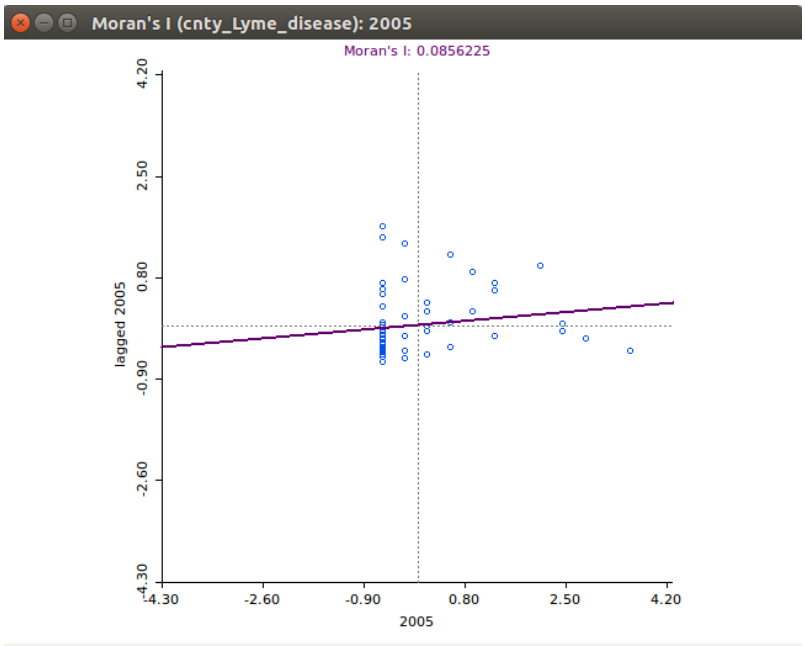
4. Click Close on the spatial weights window. In the Weights Manager window, click on Histogram, and then the Connectivity Map to see neighbor relationships.



5. After are done exploring this window, close the window by clicking on. 

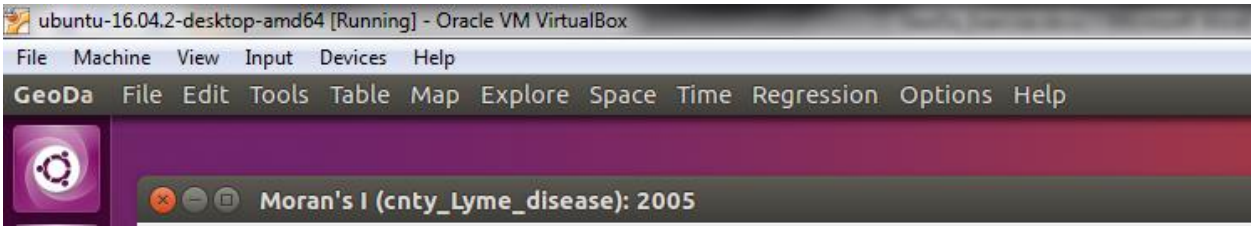
Section 3: Run Global Moran's I to measure overall level of Spatial Autocorrelation

1. On the GeoDa menu, click on the icon for the Moran's Scatter Plot  and select *Univariate Moran's I.* Choose 2005 as your *First Variable*. If prompted, select cnty_Lyme_disease.gal as your Weight File.



Based on the Moran's I value, would you say that this data for 2005 exhibits global spatial autocorrelation? (Note: reviewing presentation slides can help!)

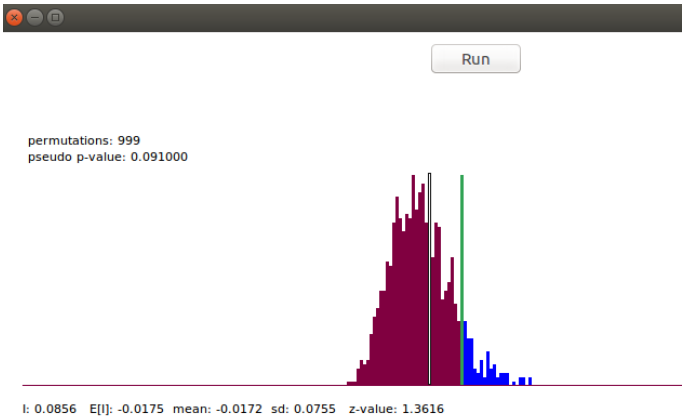
2. Hold your cursor over the word GeoDa in the top left corner of the Desktop.



On the new menu that appears, select *Options > Randomization > 999 Permutations.* Click Run three times and notice which/how values change for each run.

The histogram represents the distribution of the calculated Moran's I for all of the random runs that are completed each time you hit Run (so 999 randomized versions of the data each time). The green line is the actual Moran's I of the 2005 data.

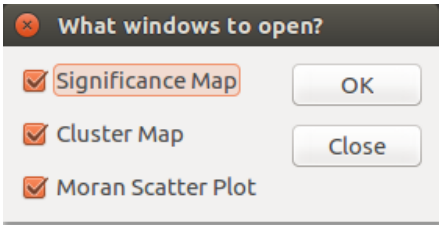
Based on the z-value, would you say that 2005 exhibits statistically significant global spatial autocorrelation?



Section 4: Run Local Moran's I to identify Local Indicators of Spatial Autocorrelation

1. On the GeoDa menu, click on the icon for Cluster Maps  and select *Univariate Local Moran's I* and choose 2005 as your *First Variable*. Again, if prompted, navigate to and select cnty_Lyme_disease.gal as your Weight File.

2. Select to open all window options, and click OK.



Review the LISA Cluster Map to identify local hot/cold spots and the LISA Significance Map to see where p values are significant. You can click on the counties to highlight them in the attribute table.