

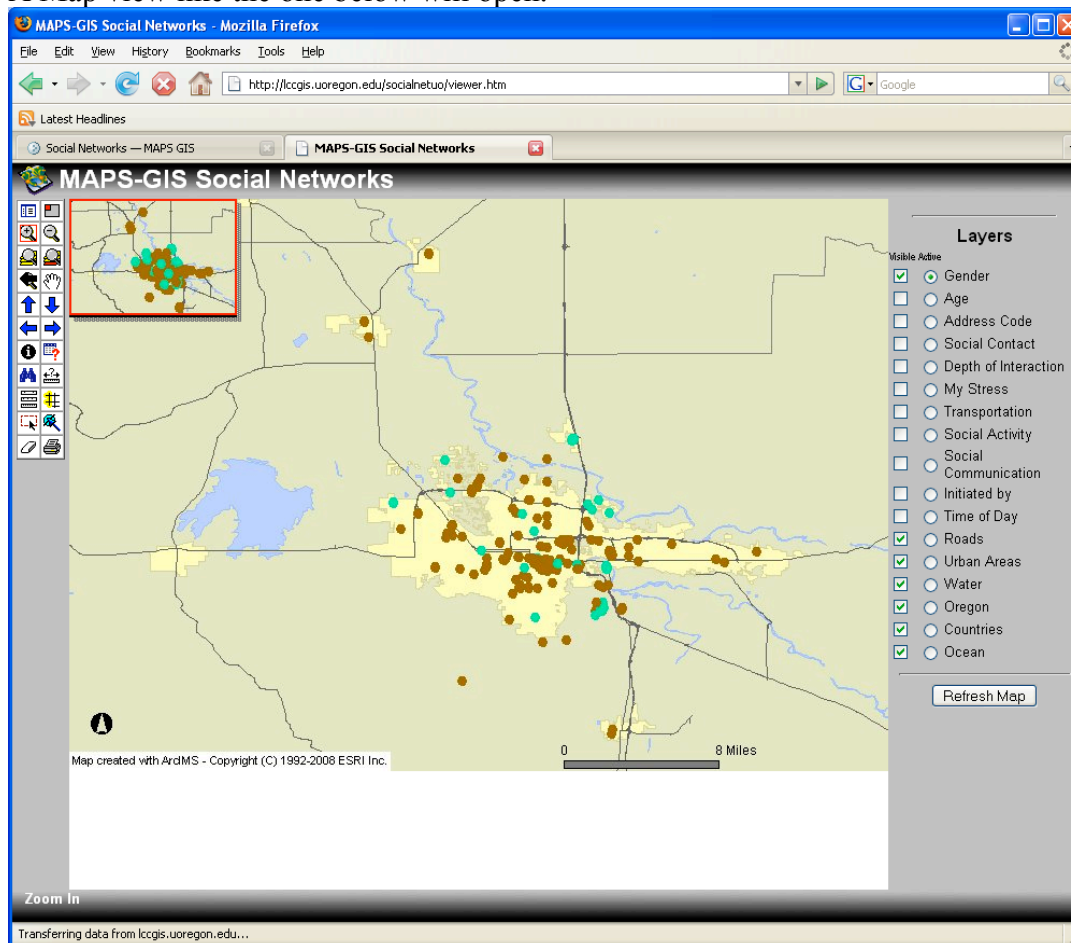
Exploring Spatial Patterns of Social Networks

Before you begin using this module, you will need to know about using a Web-based GIS viewer. You can do this by watching the tutorial video or working through the tutorial. The tutorial video, student activity, and Web-based GIS Tutorial Viewer can be found at <http://gis.lanec.edu> → “Modules” tab → “Tutorial” link. The activity works best with a high speed Internet connection.

Prior Skills: You will need to know how to turn layers on and off, use the ID tool and, zoom in and out of the map, toggle from layers to the legend, and perform a search (Boolean) query.

- Open the Social Networks Module at the location you were given. Later, when you work on this activity from home, you can access it from the <http://gis.lanec.edu> page → Modules → Social Networks → Choose one of the Links to Web-based Maps.

A Map view like the one below will open.




A Web-based GIS application gives you the ability to turn on and off “layers” of data.

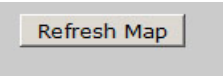
The layers of data for this application are listed along the right side of the viewer window. Currently the only layers you can see are the one that have a check in the **Visible** box.

The layer “Gender” is both **Visible** and **Active**. (The “**Visible**” box is checked and the “**Active**” radio button, circle, is filled).


To see what the dots symbolize you need to switch from **Layer** to **Legend** by clicking the Legend button on the tool bar to the left of the viewer.

- Click the Layer/Legend button 

Q1. Which gender has more data entries? Are male data points dispersed (spread out) or clumped?



- Switch back to the Layer menu
- Uncheck **Visible** “Gender” and check **Visible** “Age”.
- Check the “Age” **Radio** button. You can have many layers visible but only one layer active at a time.
- Click **Refresh the Map** → Turn on the Legend 

Q2. Which age group has the most number of entries? Which age the smallest number of entries?


- Make “Road” **Active** and **Refresh the map** (check the box and make the radio button dark)
- Use the ID tool  and click on the road which is near the most clustered group of dots.

Q3. What is the name of the road? Why do you think there is a large cluster of dots here?

You can change map scale to get a better look.

- Click on the zoom tool  → hold your left mouse button near the section of dots you want to view → “draw” a square around the cluster of dots → Let’s go.
- To see if these are mostly home or away dots, make “Address Code” **Visible** and turn on the legend. 

Q4. Are most of the clusters home or away addresses? **Bonus** - Why are some of these data points in a straight line?

- To view the whole map, choose the **Zoom to Full Extent** button. It is the magnifying glass with the red files below it. This is a good button to use if you don’t know where you are on the map. 
- Zoom back into Eugene/Springfield.

Setting up Queries to look for Correlations



- Make “Address Code” **Active** and **Visible** → **Refresh the Map** → Click on the **Query** tool.
- For Field choose “add_code”. For Operator choose “=” → Click Add to Query String.
- Type “H” after the = symbol. → **Execute** A lists of the points that meet your query are shown below the map.

- Scroll to the bottom of the viewer. The view will only display 25 items at a time. You need to choose **More Records** until there are no more records listed to see how many entries meet your criteria.

Q 5. The number of home entries = _____

22	261	kmarkley	2	f	h	1	2	1	1	1	1	1	3	40.01139344	-1
23	262	kmarkley	2	f	h	1	2	1	1	1	1	1	3	40.01144809	-1
24	263	kmarkley	2	f	h	3	2	2	1	4	4	1	5	43.95512568	-1
25	264	ash	2	f	h	5	2	1	1	1	1	2	1	43.91603279	-1

[More Records](#) [Zoom to these records](#)

Query Start a new query. Change the **Value** to “A” (away)
Keep Field “ADD_Code”; Operator “=”; Value “A”

Q 6. Number of away entries = _____

Q 7. Every entry in the data is either home or away. What is the total number of data points? What is the percent of Home entries? What is the percent of Away entries?

(% of H = number of H divided by total points times 100) or (%H = ((H/T)*100)

Now Look for Correlations Between Two Variables.

- Make “Address Code” both **Active** and **Visible** then **Refresh the Map**.

Query: Field “add_code”; Operator “=”; Value “H” **AND** Field “stress”; Operator “=”; Value “1”

Q8. What is the number of home interactions which resulted in a stress level of 1 _____

Query: Field "add_code"; Operator "="; Value "h" AND Field "stress"; Operator "="; Value "2"

Q9. What is the number of home interactions which resulted in a stress level of 2 _____

Query: Field "add_code"; Operator "="; Value "h" AND Field "stress"; Operator "="; Value "3"

Q10. What is the number of home interactions which resulted in a stress level of 3 _____

Q 11. Normalize these data using percent for each value (1,2,3)

% of H and stress = 1 _____ ((number of value 1 / total number of H points) times 100)

% of H and stress = 2 _____ ((number of value 2 / total number of Hpoints) times 100)

% of H and stress = 3 _____ ((number of value 3 / total number of H points) times 100)

Duplicate this Query Process using the Away value "A" and the Stress Data

Query: Field "add_code"; Operator "="; Value "a" AND Field "stress"; Operator "="; Value "1"

Q12. Number of away interactions which resulted in a stress level of 1 _____

Query: Field "add_code"; Operator "="; Value "a" AND Field "stress"; Operator "="; Value "2"

Q13. Number of away interactions which resulted in a stress level of 2 _____

Query: Field "add_code"; Operator "="; Value "a" AND Field "stress"; Operator "="; Value "3"

Q14. Number of away interactions which resulted in a stress level of 3 _____

Q 15. Normalize the Data

% of A and stress = 1 _____

% of A and stress = 2 _____

% of A and stress = 3 _____

Use this as a Background to Explore other Variables and Test other Hypothesizes.

- Set up a query to explore the correlation between home interactions, increased stress, and time of day. This could examine the hypothesis that home stress might be related to interaction when getting ready to go to work or school. The query setup could begin:

Query: Field "add_code"; Operator "=" Value "h" AND Field "stress"; Operator "1" AND Field "time"; Operator "="; Value "1"

Q17. How many entries fit this query? _____ What is the % _____

Research Ideas: (It is a good idea to write out your query plan before you begin)

1. Is face to face more or less stressful than cell phone or online communication?
2. Are there gender differences in the number and intensity of social interactions?