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MAPS ☆ GIS

Lane Community College™   NSF #0603492

Geodemographics

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.lanecc.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.

Objectives: You will be able to identify spatial patters of demographic variables on a global scale. You will be able to look for correlations and test hypothesizes.

Remember, computer steps are indicated by a ▶ symbol and questions you need to answer are numbered.

Connect to the Web-based GIS map at: http://arcgis.lanecc.edu/website/geodemographics

You will open to a page like the one below

Population density (the number of people per square kilometer) is the visible data Layer.
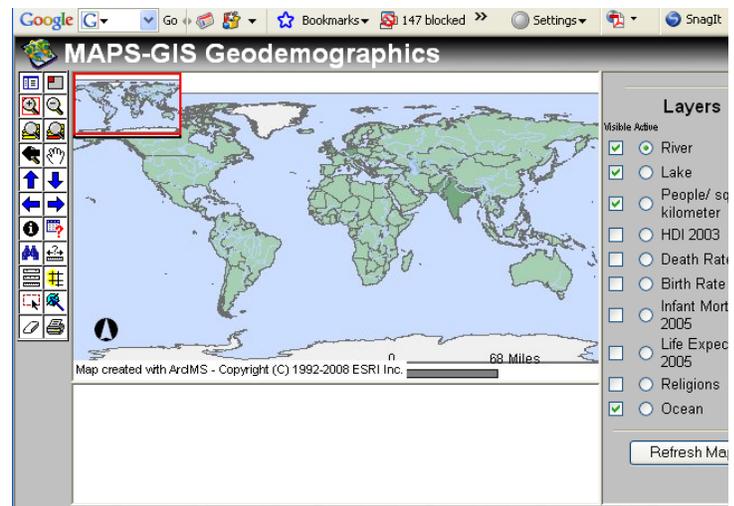
To understand what these values mean you need to switch to the ledged by clicking on the legend box in the tools menu.

1. What is the lowest density range? What is the highest?

▶ Toggle back to the layers menu by clicking the menu box.

▶ Make People/ square kilometer "Active" by clicking the circle button and "**Refresh**" the Map"

► Click on the Find tool and type in Belgium→ click Find String (text is called a "string"). You should see a window like the one below.

► Click on the number "1" to zoom to the country of Belgium.

Rec	FID	NAME	COLONIZER
1	15	Belgium	NA
2	49	Democratic Republic of the Congo	Belgium

► Click on the Identify tool and click on the country of Belgium. The geodemographic data related to Belgium appears in a data table.

► Locate the field called "pop_den_07." This is the population density for 2007.

2. What was the population density in Belgium in 2007?

► Find the field for percent urban population in 2005 an d 2008 (per_urb_05 and per_urb_85).

3. How much has the urban population change from 1985 to 2005

► Now find the same information for India (use the find to locate India, use the ID to get the data table to display?

4. What was India's population density in 2007? How much as the urban population changed between 2005 and 2008?

► Zoom to the full extent of the map.

► Make HDI the visible and active layer and turn off the density layer and refresh the map.

The HDI (human development Index) is a composite statistic that includes is developed by combining normalized measures of life expectancy, literacy, educational attainment, and GDP per capita for countries worldwide. .

4. Describe the spatial pattern of the HDI for areas that are above average and areas that are well below average HDI. Is it clustered or dispersed? Is it in one particular area over another?

5. Describe the pattern of crude death rate. Where is it the highest and the lowest?

► Use the Id tool to get specific information about counties.

► Click on Mexico. A data table will appear below the map.

► Scroll across the table until you get to the column D_rate05.

We often think that countries with a high population density have a low standard of living. India and Belgium had a similar population density.

6. Is the HDI for Belgium and India similar? Why or why not? Discuss the other demographic factors that differ between India and Belgium?

▶ Locate the country of Mexico's

7. Record Mexico's Death Rate, Birth Rate and Infant Mortality Rate?

8. Record the same information for the US.

9. Record the same information for Canada.

10. Record the same information for Haiti.

11. What are some reasons the US has a higher death rate than Mexico? Remember, the death rate is per 1000 people, so this is "normalized" to adjust for different sizes of population. The reason is not because we have a higher population.

▶ Turn off Death Rate and make Infant Mortality Rate **Visible** and **Active,** then **Refresh** the map.

12. Describe the spatial pattern for infant mortality.

You can use the query tool [icon] to locate information based on specific criteria. For example:
You might want to know where countries are that have high infant materiality rates and low GDP rates. The GDP is a measure of the size of a country's economy.

▶ Click the query tool and set the table to match the one below. Choose Execute.
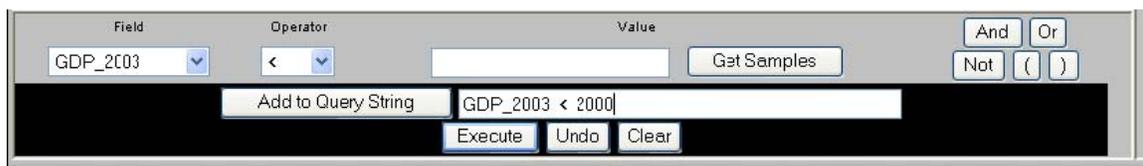
The counties that meet your query will be highlighted.

13. Does infant mortality **correlate** with the GDP?

A **correlation** is the relationship between two variables. Correlations can be positive or negative. For example, there is a positive correlation between crime and a cities population. In general, the larger the population, the higher the crime rate. There is a negative correlation between education and obesity– the higher the education the fewer incidents of obesity.

In general, more education people have the less obese. However, it is important to remember that a correlation does not necessarily indicate cause; it is a co-occurrence. Lack of education does not cause obesity, yet these two variables co-occur.

You can use the query tool to test the hypothesis that birthrate is related to the HDI even though birth rate is not part of the HDI calculation.

Look for countries with a HDI less than 50.
- Make Birth Rate **Active** and **Visible** and **Refresh** the map. → Select the Query Tool → In field choose HDI → Choose the < symbol →Add to query string and type in 50.
  (This is less than 50%)

14. What is the spatial relationship between birth rate and HDI?