Application of ArcGIS: Web Mapping Using USA Demographics for Schools

Overview: Students will learn how to navigate USA Demographics for Schools. Students will apply their learning to develop a demographic profile of their community. The city of Hibbing is the example used in this lesson, but any city may be used. The tool can be applied to the investigation of a variety of topics and areas of the world.

Minnesota Social Studies Standards:

(8th Grade)
Standard 1. People use geographic representations and geospatial technologies to acquire, process and report information within a spatial context.
8.3.1.1.1 Obtain and analyze geographic information from a variety of print and electronic sources to investigate places or answer specific geographic questions; provide rationale for its use.
8.**3.1.1.2** Create and use various kinds of maps, including overlaying thematic maps, of places in the world; incorporate the "TODALSS" map basics, as well as points, lines and colored areas to display spatial information.

(9th Grade)
Standard 1. People use geographic representations and geospatial technologies to acquire, process and report information within a spatial context.
9.3.1.1.1 Create tables, graphs, charts, diagrams and various kinds of maps including symbol, dot and choropleth maps to depict the geographic implications of current world events or to solve geographic problems.

Objectives: Students will be able to:
- Navigate ArcGIS as a geospatial technology tool including: zooming in/out, finding places, changing basemaps, and exploring layers
- Investigate demographic data
- Compare demographic data for two communities
- Develop a demographic profile of your community

Required Materials:
Computer Internet access with projector
Computer Internet access for students
Handouts: "Lesson 2 – Analyzing Census Data Using USA Demographics for Schools" (The handout may be projected); "Community Profile"
Power Point: "ArcGIS Online - Web Mapping" (also used with "An Introduction to ArcGIS" lesson)

Time: 2 classes

Grade: 8th and 9th

Suggested Procedure:
Opening:
The teacher may present the section of the power point, "Exercise 4: Web Mapping Application: U.S. Demographics for Schools" (slides #8-#12), as an overview to the lesson.

Development:
The teacher will model the first day's activities by demonstrating "Lesson 2 – Analyzing Census Data Using USA Demographics for Schools". The teacher may continue to model the lesson based on students' level of technology and geospatial understanding. This lesson will require monitoring of students' progress due to their individual levels of understanding and skill. Students familiar with other geospatial technologies, such as Google Earth, will have greater success with this lesson and progress more quickly through the lesson.

The teacher will highlight "Compare Geographic Data" and discuss with students the demographic data around Hibbing and Hibbing itself. Ask questions about the community including: What are its salient characteristics? What groups are under-represented? What groups are over-represented? What is the population density? What amenities for the people would be important? What additional demographic information might be valuable to determine the characteristics of the community?

Students work independently or with a partner to complete the handout, "Community Profile". Students begin by completing a chart to record demographic data. Next, students map the data for their community. Last, students write a profile of their community in a brief paragraph.

Closure:
Students present their results by projecting the map image and explaining their community's profile using the paragraph profiling their community.

Extension
Students may use the Website Resources to investigate their community in depth in order to produce a comprehensive community profile.

Assessment
"Analyzing Census Data Using USA Demographics" Handout
Class Discussion
"Community Profile" Handout

Website Resources
USA Demographics for Schools
http://esriurl.com/usademographicsforschools
Access demographics on the U.S. and communities

Mapping the USA's Diversity 1960-2060
http://www.usatoday.com/story/news/nation/2014/10/21/diversity-map/17657485/

American Fact Finder
http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml
Gather numerous data on your community including population, education, income.

Minnesota State Demographic Center
http://mn.gov/admin/demography
Demographic data on Minnesota communities including current and historical information

ESRI Demographic Atlas
http://atlas.esri.com/Atlas
Choropleth maps of U.S. population change, aging, diversity, and housing

Saving an Image of Your Ratings

USA Demographics for Schools cannot print the image that is on your screen, so you need to capture it and paste it into a Microsoft Word document to save it and/or print it.

If you are using a Macintosh computer:
a. Center your image and hold down the **Shift – Crtl** and **4** keys simultaneously. Beginning in the upper left hand corner of the map window and including the entire map, drag a box around your map.

b. Minimize your document in the Classroom window. Open a blank Microsoft Word document. Type your name(s) in the upper left hand corner of the document. Insert two blank lines and then paste your map image into your document by pulling down the Edit menu and selecting **Paste** or by clicking **Ctrl-V**.

c. Save your file using the file name protocol and location indicated by your teacher and/or print, as your teacher directs.

If you are using a PC computer:
a. Center your image and hold down the **Alt** and **Prt Scr** keys simultaneously.

b. Minimize your document in the Classroom window. Open a blank Microsoft Paint document. Make sure the scroll bars are pushed to the left and top of the window.

c. Paste your map image into your document by pulling down the **Edit** menu and selecting paste or by clicking **Ctrl-V**.

d. Click and drag the lower right hand corner of the white background box to trim the image if necessary.

e. Select **File, Save As** and type your file name using the file name protocol indicated by your teacher into the File box. Change **Save As** type to **JPEG**. Select the location indicated by your teacher in the **Save In** box. Click **Save**.

f. Open a blank Microsoft Word document. Type your name(s) and PLSS Section number in the upper left hand corner of the document. Insert two blank lines, then pull down the Insert menu and select **Picture, From** file. Navigate to the location where you saved your JPEG, select it and click **Insert**.

Save your file using the file name protocol and location indicated by your teacher and/or print, as your teacher directs.

Community Profile

<u>Directions</u>: Develop a profile of your community and another community by completing the chart, making a map, and writing a paragraph summarizing your community.

1. Chart of Community's Demographic Data

Community	Population Density	Median Age	Population Aged 0-18 Years	Population Aged 65+ Years	Diversity Index

2. Create a map that highlights the data for your community. To do this, capture an image of a map showing your community with charts of data that makes your community unique.

3. Description of my community: