

Mapping the Story of Population

OVERVIEW & OBJECTIVES	GRADES
<p>This demographics lesson focuses on population pyramids with students completing a project using ArcGIS and the Story Maps program. Students will interpret map data and make summary statements to analyze population pyramids and their populations through guided instruction.</p> <p><i>Students will be able to...</i></p> <ul style="list-style-type: none"> • Use geographic representations and maps to draw conclusions about the human characteristics of a place. • Explain world population patterns. • Explain how a change in death rate and/or birth rate would impact the world. • Summarize population patterns as shown on population pyramids. • Effectively use geospatial technologies to make conclusions. 	9 th
	TIME
	2-3 class periods
	REQUIRED MATERIALS
MINNESOTA SOCIAL STUDIES STANDARDS & BENCHMARKS	
<p>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.</p> <p>Standard 3. Places have physical characteristics (such as climate, topography and vegetation) and human characteristics (such as culture, population, political and economic systems). 9.3.2.3.1 Make inferences and draw conclusions about the physical and human characteristics of places based on a comparison of maps and other geographic representations and geospatial technologies.</p> <p>Standard 5. The characteristics, distribution and migration of human populations on the earth’s surface influence human systems (cultural, economic and political systems). 9.3.3.5.3 Compare the population characteristics of places at a range of scales using population pyramids, birth and death rates, and other key demographic variables.</p>	

SUGGESTED PROCEDURE

Suggested Procedure

Note: It would be helpful if students investigated countries with populations that were not stable in order to examine population patterns and issues.

Students have been introduced to the Demographics Unit and the basic terms, but in this lesson they will focus on analyzing population pyramids. To begin the analysis students will complete a pre-assessment by examining the population of a U.S. city using the handout, “Population Pre-assessment”. The teacher may choose to analyze the population pyramids of other U.S. cities using the same questions as well.

Students will then begin investigating their country using the handout, “Mapping the Story of a Population” and completing Part I: Research. They will work progressively through the topics of Overview, Population Pyramids Analysis, Comparison to Neighboring Nations, and The People.

Next, students will begin the Story Map using data from their investigation. The rubric, “Mapping the Story of a Population Rubric” should be reviewed for requirements and expectations for the Story Map project. When completed, the teacher may select a method to share the Story Map with the class.

The “Population Qwest” is given as a post-assessment of students’ understanding of this lesson.

Extension

Students may add additional ArcGIS layers for a more detailed examination of a country’s population.

Assessment

Story Map

“Population Qwest” assessment

Website Resources

ArcGIS

<http://www.arcgis.com/home/index.html>

Population Pyramids of the World from 1950 to 2100

<http://populationpyramid.net>

“2015 World Population Data Sheet” at Population Reference Bureau

http://www.prb.org/Publications/Datasheets/2015/2015-world-population-data-sheet/world-map.aspx#map/northern_america/population/2015

CIA World Factbook

<https://www.cia.gov/library/publications/the-world-factbook/>

“Story Maps” at ArcGIS

<http://storymaps.arcgis.com/en/>

“Population Pyramids” at SlidePlayer

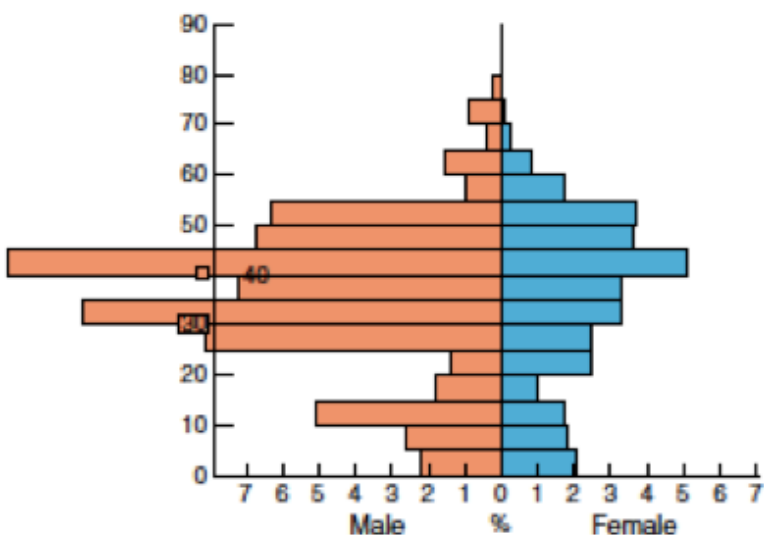
<http://slideplayer.com/slide/7732127/>

Population Pre-Assessment

Name: _____

DIRECTIONS: Below is a graph showing the population breakdown of a U.S. city. Using what you know currently, answer the questions below the graph. Note: You will be graded on participation and not necessarily correct interpretations of the graph.

CITY: Unalaska, Alaska



From: "Population Pyramids" at SlidePlayer <http://slideplayer.com/slide/7732127/>

1. What is the basic shape of the pyramid? How would you describe the pattern of the population? (Example: growing, decreasing, etc.)
2. What ages and/or genders make up the largest proportion of the population? (Example: males 10-14, females 20-24, etc.)
3. What factors give your population its distinct shape? (Google things like demographics, industries, businesses, etc.)
4. What are the implications or issues your city may face in the future given their current population?

Mapping the Story of a Population

Name:

Country:

Link to Project:

DIRECTIONS: Population is one of the surest signs of the health of a country. You will be studying the population of a specific country as well as others around the world. You will use a variety of resources for this project, so carefully follow the steps below.

Learning Targets:

1. I can use geographic representations and maps to draw conclusions about the human characteristics of a place.
2. I can explain world population patterns.
3. I can explain how a change in death rate and/or birth rate would impact the world.

PART 1: Research (This will act as your note sheet for PART 2, so be detailed!)

Topic 1: Overview

1. Google the population of your country: _____
2. Google the **FOUR** most populous cities and identify their populations. You will be creating a map with the largest cities indicated.
 - a. City: _____ Population: _____
 - b. City: _____ Population: _____
 - c. City: _____ Population: _____
 - d. City: _____ Population: _____

- Go to <http://www.arcgis.com/home/index.html> and login.
- Click “Map” and then zoom into your country.
- Search the first city you listed above in ArcGIS. Your map should then zoom to that city.
- Click onto “Add to Map Notes” and then “Edit.”
- Select “Change Symbol” and choose a star icon.
- Follow the same steps to add the next three cities you researched.
 - For added interest, change the size of the symbol to correspond to the size of the city!
- SAVE your Map and title it.
- Next, select “Add” and then “Search for Layers.”
- Search and Add: “World Bank – Age and Population,” then “Done Adding Layers”

- If nothing is appearing, make sure the box below the search has “ArcGIS Online” selected!
 - Click on “World Bank – Age and Population” and the various data within the layer should appear.
 - Click on “Details” and then the arrow next to “World Bank—Age and Population.
 - Notice that you can select and deselect various topics. Use those topics to answer the questions below.
 - Be sure to click “Legend” near the details tab to see what the colors mean!
 - Notice underneath the map is a timeline. You can move either end to focus on a specific time period.
 - If you click on your country, specific data will appear. In the top corner of the box is an arrow. Click the arrow to see what happens to the data as the years change!
3. What is the fertility rate? AKA: How many children does the average woman have in her lifetime? (Move the arrow on the timeline)
 - i. 1960:
 - ii. 2016 (or as close to present that has data):
 4. What is the birth rate?
 - i. 1960:
 - ii. 2016 (or as close to present that has data):
 5. Looking at your data from 3 and 4, was there a difference between 1960 and the 2000s? Why do you think it changed or did not change?
 - SAVE your Map (including the population layer)!

Topic 2: Population Pyramid Analysis

Go to <http://populationpyramid.net/>. Search for your country and answer the questions below.

6. What shape does its population pyramid have?
7. What age group(s) have the most?
8. Does the population pyramid have any abnormalities such as drastic shifts or sudden increases and decreases? If so, where?

9. What factors give your pyramid its shape? Use data to backup your answer. Check out: http://www.prb.org/Publications/Datasheets/2015/2015-world-population-data-sheet/world-map.aspx#map/northern_america/population/2015

Topic 3: Comparison to Neighboring Nations

Go back to your ArcGIS Map. Zoom out so you can see the surrounding countries. Answer the questions below.

10. What countries would you consider the 4 closest neighbors to your country?
- a. Country: _____
 - b. Country: _____
 - c. Country: _____
 - d. Country: _____
11. How does your country compare in birth rates and death rates with those surrounding it? Be sure to include the names of the neighboring nations.
12. Choose one other data topic to compare your country with its neighbors. What stands out to you? Why?
13. Based on the data you have seen, would you say your country is more ideal when it comes to population issues?

Topic 4: The People

Go to <https://www.cia.gov/library/publications/resources/the-world-factbook/>. Search for your country and answer the questions below.

14. What ethnic groups exist in your country? Italicize those you have heard of before.
15. What group is the majority?
16. Have there been any conflicts between ethnic groups? Why or Why not?

PART 2: Create a Story Map

Getting Started:

- Go to <http://storymaps.arcgis.com/en/> (login if needed).
- Select “My Story” at the top of the screen and then select “CREATE MY FIRST STORY.”
- You will then need to select a template; use “MAP JOURNAL.”
- Be sure the “Side Panel” option is selected (default).
- Give a title to your Story Map→ First and Last Name: Country (Alyssa Larsen: India).

Step 1:

- You will now create the Main Stage Content for your Story Map. Be sure the “MAP” option is selected in the CONTENT area.
 - In the drop down, choose “Select a map.” Choose the map you saved in “My Content” that includes your major cities and a population layer.
 - At the bottom of the box where it says “Extras,” select “Legend.” Then click “Next.”
 - You will now add text to go alongside your map. Use your information from questions 1-5 to introduce your country and explain the population. Be sure to use a minimum of 5 complete sentences.
 - When you have finished your text, click “ADD.”
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- Now that you have gotten a solid start on your project, click “SAVE” in the top right corner of the screen!

Step 2:

- Next, you will add a section to your Story Map. At the bottom of your Story Map, select “Add Section.” Instead of a map, add a “webpage.” Copy the link from the population pyramid webpage you used in Topic 2. Click “Next” once you have copied and pasted the URL and titled the Section “Population Pyramid of _____ (Country)”.
 - In the text box, be sure to describe what you concluded by analyzing the population pyramid. Use your answers from questions 6-9 to guide you. You should have at least 5 sentences.
 - When you have finished your text, be sure to click “ADD.”
-
- You have finished another section on your project. Click “SAVE” in the top right corner of the screen!

Step 3:

- You will add another section to your Story Map to discuss the information from Topic #3. Select “Add Section.” You may decide what you would like to feature on this Section. Ideas

could be a link to a “New Map” that shows a different layer of your ArcGIS Map, an image, or a website with helpful information.

- Once you have decided, title the Section, “Comparing _____’s (Country) Neighbors.”
- In the text box, be sure to describe what you discovered regarding the nations that neighbor your country. You should have at least 5 sentences.

- You have finished another section on your project. Click “SAVE” in the top right corner of the screen!

Step 4:

- It is time to add your final Section. As you did before you may decide what to feature (map, image, website, etc.). Once you have decided, title the Section, “Ethnicities of _____ (Country).”
- In the text box, be sure to describe what you discovered regarding the ethnicities that exist in your country. You should have at least 5 sentences.

- “SAVE” your project!

Step 5 (*Optional*):

- You have finished the requirements for this project! If you have finished early, you should consider adding a “Did You Know” Section that can feature interesting facts about your country.
- Possible topics could include:
 - Major historical events
 - Relationship with the U.S.
 - Major industries/trade goods

Population Qwest

Directions: Choose the best possible option that answers the question or completes the sentence.

- ___ 1. Infant mortality rate:
- is the number of children who live past their first year of life.
 - is the number of infants who do not live past their first year of life.
 - is rapidly increasing in the United States.
 - is relatively unknown.
- ___ 2. If the world had a fertility rate of approximately _____ the world's population would stay the same.
- 0
 - 1
 - 2
 - 3
- ___ 3. In terms of urban and rural population, what trend is occurring worldwide?
- Rural population is increasing twice as fast as urban population.
 - There has been little change within the last fifty years.
 - Urban population is increasing twice as fast as rural population.
 - Urban population is expected to decline within the next 15 years.
- ___ 4. If MANY people, per square mile, live in an area it has:
- a hinterland.
 - a dense population.
 - overpopulation.
 - none of the above.
- ___ 5. The average number of people living in a particular area is:
- rural.
 - urban.
 - urban sprawl.
 - population density.
- ___ 6. When a population pyramid has a narrow base it does not tend to have:
- a high fertility rate.
 - a low infant mortality rate.
 - an ageing population.
 - a high life expectancy.
- ___ 7. How do you calculate natural rate of increase of a population?
- Birth Rate + Death Rate
 - Death Rate x Birth Rate
 - Birth Rate - Death Rate
 - Death Rate divided by Birth Rate

- ___ 8. Which of these is the study of human population size and the factors that influence it?
- a. Meteorology
 - b. Demography
 - c. Ecology
 - d. Sociology
- ___ 9. Approximately when did the population of the world reach 1 billion for the first time?
- a. 1800
 - b. 1900
 - c. 2000
 - d. It hasn't reached 1 billion yet.
- ___ 10. China instituted the One Child Policy primarily to prevent what?
- a. Famine
 - b. Not having enough space
 - c. Pollution
 - d. Poverty
- ___ 11. What is currently happening to population in Japan?
- a. Growing birth rate
 - b. Staying the same
 - c. Decreasing
 - d. Increasing
- ___ 12. Which of the following would NOT cause a dent in a population pyramid?
- a. Famine
 - b. War
 - c. Natural resource abundance
 - d. Disease

True or False: *Circle whether the statement is true or false.*

13. Population is fairly distributed all over the earth.
True or False?
14. The location of natural resources has little influence on population.
True or False?
15. Males in China are increasingly being abandoned.
True or False?
16. Females in Japan are having fewer children.
True or False?
17. China is facing severe population proportion problems in the future.
True or False?
18. India's culture tends to favor women.
True or False?

Short Answer

DIRECTIONS: In at least THREE sentences answer the questions below. Be sure to answer each part of the question. 3 points each.

19. China’s One Child Policy has many positives and negatives. List a couple of each AND decide whether you support it or not AND EXPLAIN WHY!

20. What should be done to address population issues in India and China? Give examples of what actions would lower and even out population growth.

21. Draw and label the population pyramid for China considering the following factors:

- China’s population is growing.
- China has more males than females due to the One Child Policy.

Mapping the Story of a Population Rubric

Name: _____

Country: _____

Total Points: _____/20

CATEGORY	4	3	2	1
Content	All content is in the students' own words and is accurate.	Almost all content is in the students' own words and is accurate.	At least half of the content is in the students' own words and is accurate.	Less than half of the content is in the students' own words and/or is accurate.
Required Elements	Storyboard included all required elements as well as additional elements.	Storyboard included all required elements.	Storyboard is missing one of the required elements (ex. Ethnicity Section).	More than one of the required elements was missing from the storyboard.
Spelling & Grammar	No spelling or grammatical mistakes on a storyboard with lots of text.	No spelling or grammatical mistakes on a storyboard with little text.	One spelling or grammatical error on the storyboard.	Several spelling and/or grammatical errors on the storyboard.
Images/Maps	Storyboard includes at least 2 embedded ArcGIS maps, as well as 3 other images, maps, or websites.	Storyboard includes 2 embedded maps, as well as 2 other images, maps, or websites.	Storyboard is missing an embedded ArcGIS map or 1 other image, map, or website.	ArcGIS maps were not embedded or the Storyboard does not include additional images, maps, or websites.
Research	The research Google Document was completed with appropriate detail.	The research Google Document was completed.	The research Google Document was missing one or 2 pieces of information.	The research Google Document was missing half of the information. (Zero points for less than half completed)