Using Powerful Photographs to Examine Public Policy Issues in Geography

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The Bridging Divides Project: Population Unit

Persistent Issue: What actions are justified in the interest of the welfare or security of the community?
Central Question: What strategies best address the problems created by population change?

Lesson 3: Problems presented by Population Change

Lesson Focus Question:

- What problems are related to population change?

Purpose(s):

Students will be able to:

- Describe the components of a population pyramid
- Interpret a population pyramid to identify the demographic characteristics and trends of a particular country
- Explain how a population pyramid can be used to predict future problems (or opportunities) a country might experience
- Connect a nation's population structure with its likely point on the demographic transition model
- Identify and discuss problems facing countries experiencing rapid population growth and decline
- Empathize with those impacted by rapid population growth or decline in a negative way

Summary: In this lesson, students learn how to interpret population pyramids and make connections between their shapes and locations on the demographic transition model. The second day of the lesson is an investigation of problems associated with rapid population growth and decline. The lesson concludes with an assessment that requires students to demonstrate their ability to interpret a population pyramid and reason about potential problems facing the country based on its demographic profile.

Teacher Preparation: The teacher should review the teacher's guide for the interactive lecture portion of the lecture and make copies of the handouts associated with this lesson (Population Structures handout, ISL graphic organizer, and assessment).

Lesson Narrative:

Introduction. The teacher will introduce the lesson by reminding students of the Central Question (What strategies best address the problems created by population change?). The teacher will review the previous lesson on the Demographic Transition Model by quickly showing the DTM on the board and discussing the 5 stages of the model.

To transition to today's lesson, the teacher will show a video from Population

Education that shows population growth over time. At the conclusion of the video, the teacher will ask, "What is happening to world population?" and "What does the video predict will happen beyond 2015?" Lastly, the teacher will ask students, "What does the video say humans have to do in order to fix the problem of population growth?"

The teacher will transition to the lesson focus question by telling students that today's lesson will focus on the problems related to population change. The teacher will caution students that problems can result from population growth like the video shows, but that problems can also result from population decline which the video does not show. The teacher introduces students to the lesson focus question for the day, "What problems are related to population change?", and explain to students that they should be able to answer that question by the end of the lesson tomorrow. The teacher should provide the following goals for today:

I can explain what a population pyramid shows about a country.
I can connect a population pyramid to its appropriate place on the demographic transition model.

Pyramids/Population Structures

The teacher will next explain that geographers use population pyramids to think about populations in various areas. Pyramids can be made for cities, for counties, for regions, for countries, or for even whole continents. Population pyramids can have different shapes. Their shape tells us something about the age of the population, the age of males and females, and the number of males and females.

Next the teacher will show the population pyramid for Some County, AL and walk students through how to read the pyramid. The teacher will point out that the right side of the pyramid shows females, the left shows males, the middle numbers show age ranges, and the bottom shows the percentage of the population for each group. The teacher should note that sometimes on the bottom, pyramids will show the actual number of people in 1000s or even 1,000,000s. In other words, you have to pay attention to the information provided by the pyramid to interpret it correctly. [If the teacher needs a refresher on how to read a population pyramid, they can consult this link.]

After teaching students how to read a population pyramid, the teacher will show the class another example pyramid from Burkina Faso. This example will show Stage 1 of the Demographic Transition Model, which really doesn't exist in the world today. In this stage, the pyramid shows a high birth rate but also a very high death rate, so the population stays stable. Finally, the teacher will briefly guide students to consider what the shapes of pyramids might indicate using a slide that shows shaded pyramids without numerical values.

The teacher will now pass out a two-page handout containing population pyramids for Stages 2-4 of the Demographic Transition Model. Students will complete the following steps:

1. The students will try to interpret and analyze the pyramids using the questions provided on the handout. This can be completed in pairs. Allow students to finish the handout before moving to #2.
2. Individual students will be selected to come to the front of the room and put one of the pyramids from the handout on an image of the DTM where they think it should go and defend their decision. The teacher will note students' reasoning and address misconceptions during the subsequent debriefing.
3. The teacher will review each pyramid with the class to ensure they have interpreted each one accurately (PowerPoint debriefing)

Lastly, the teacher will show an image of the proposed Stage 5 of the DTM for Japan and help students to speculate on what might happen to a country like Japan whose population will likely be in Stage 5 by 2015. Students should conclude that the long term effect of Stage 5 could be the death of the entire country.

The teacher should conclude the lesson by reviewing the "I can" statements, revisiting areas that seemed to confuse students during the lesson, and previewing the lesson for tomorrow.

DAY 2 - Interactive Lecture: Story Map Presentation

The teacher should provide a brief review of the previous lesson and emphasize the lesson focus question – What problems are related to population change? This question can easily be rephrased at this point as an "I can" statement.

In this part of the lesson, the teacher will use a StoryMap presentation to examine 5 images of population change. A teacher's guide for the presentation is provided below.

ISL Guide [Note to Teachers: The purpose of the presentation is to lead students to interpret images that reveal possible problems resulting from population growth and decline. The final image depicts an interactive graphic examining the flow of migrants around the world. Students should complete the graphic organizer following discussion of each picture.

Geographic Thinking Assessment
The teacher will distribute a task that will require the students to demonstrate their understanding of population pyramids and the DTM. This may be completed in pairs.

Conclude the lesson by reviewing the task and allowing students to share their responses. Preview the next lesson on strategies for dealing with problems associated with population change.

Standards Alignment:

Alabama Standards

AL COS Standard #1: Describe the world in spatial terms using maps and other geographic representations, tools, and technologies.

AL COS Standard #4: Evaluate spatial patterns and the demographic structure of population on Earth's surface in terms of density, dispersion, growth and mortality rates, natural increase, and doubling time.

- Examples: population structure - age and sex distribution using population pyramids; special patterns - major population clusters

Geography for Life: National Standards

Geographic Content Knowledge Standards

Standard #9 – The characteristics, distribution, and migration of human populations on Earth's surface

- 8th Grade: Demographic concepts help explain the structures of populations

B. Compare the structures of populations in different place through the use of key demographic concepts, as exemplified by being able to:

"Explain and compare the issues a country with a very young population and a country with a very old population might need to address"

Standard #18: How to apply geography to interpret the present and plan for the future

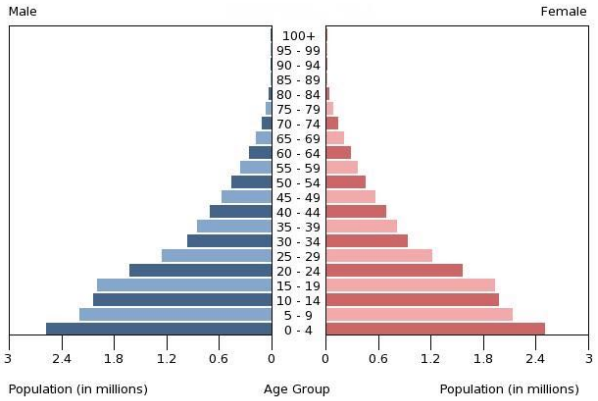
Asking and Answering Questions about the World: Geographic Skills

Standard #4 Analyzing Geographic Information

- 8th grade (1) – The process of analyzing data to describe geographic relationships, patterns, and trends.

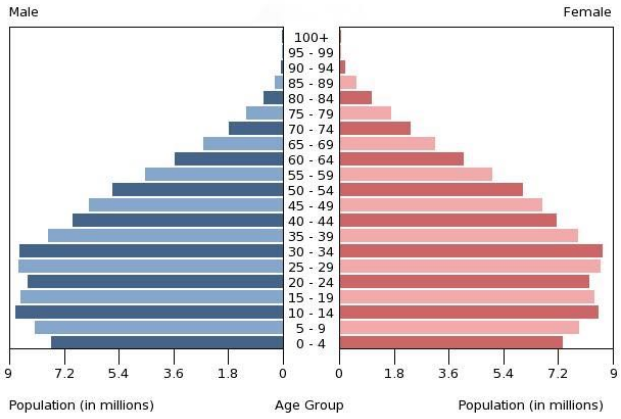
Understanding Population Structures

Directions: Read and interpret each of the population structures below. Take notes based on the prompts provided to the right.



Notes:

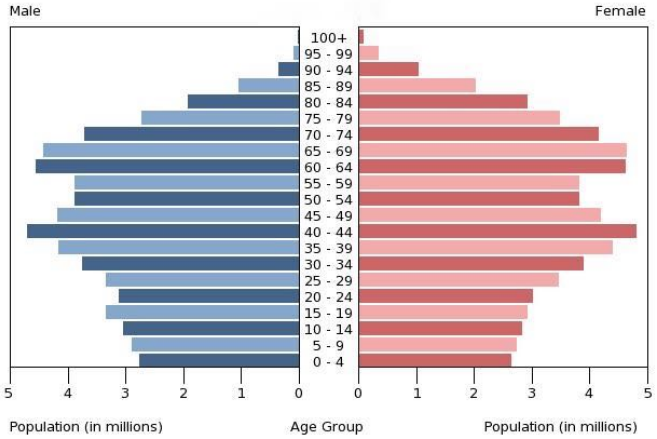
1. Does the birth rate appear to be relatively low, medium, or high for this country?
2. To what extent do people live long lives? Explain your answer.
3. Male/Female comparison:
4. Which age group is dominant? (young, middle, old?)
5. DTM Stage?
6. What might cause a country to have a pyramid of this shape?



Notes:

1. Does the birth rate appear to be relatively low, medium, or high for this country?
2. To what extent do people live long lives? Explain your answer.
3. Male/Female comparison:
4. Which age group is dominant? (young, middle, old?)
5. DTM Stage?
6. Why do you think this country has a different population pyramid than the country above?

Population Structures (cont.)



Notes:

1. Does the birth rate appear to be relatively low, medium, or high for this country?

2. To what extent do people live long lives? Explain your answer.

3. Male/Female comparison:

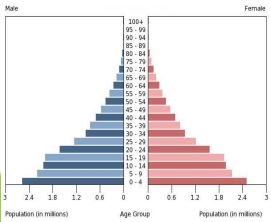
4. Which age group is dominant? (young, middle, old?)

5. DTM Stage?

6. What else can you say about this country based on the shape of its pyramid and DTM stage?

Population Pyramids

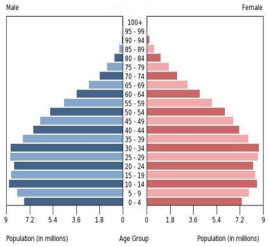
Afghanistan 2015
Stage 2



Reasons for Stage 2
Early Expanding

- Improvements in medical care
- Improvements in sanitation and water supply
- Quality and quantity of food produced improves
- Transport and communications improve movements of food and medical supplies
- Decrease in infant mortality

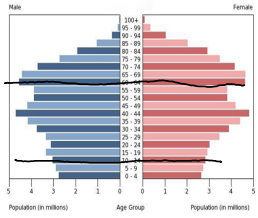
Brazil 2014
Stage 3



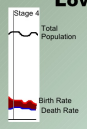
Reasons for Stage 3
Late Expanding

- Increased access to contraception
- Lower infant mortality rates so less need for bigger families
- Industrialisation and mechanisation means fewer labourers required
- As wealth increases, desire for material possessions takes over the desire for large families
- Equality of women means they can follow a career rather than just staying at home

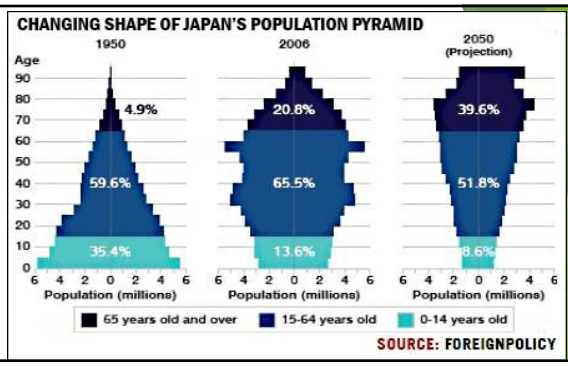
Japan 2015
Stage 4



Stage 4
Low Fluctuating



- High population, almost stable
- Low birth rate
- Low death rate
- UK,
- UK: post-1940



Replacement Level (2 children)

- 2-> population in climbing
- <- 2 population is declining

Unit CQ: What strategies best address the problems created by population change?

Lesson 3: What problems are related to population change?

Interactive Slide Lecture Graphic Organizer

Unit Question: What strategies best address the problems presented by population change?
Lesson Focus Question for today**:** What problems are related to population change?

	Picture	Rapid Growth or Decline?	Problems associated with rapid growth or population decline
Slide 1			
Slide 2			
Slide 3			
Slide 4			

Migration Patterns (Slide 5) – What did you learn while interacting with the global migration flows graph?:

Interactive Slide Lecture: Teacher Guide

LFQ: What problems are presented by population change?

To the Instructor: Have students analyze this picture by initially describing what they see. Then, use the underlined questions to stimulate discussion. Conclude by helping students to summarize the problems associated with population change in this example and how they might apply elsewhere.

What challenges do learners likely face in this classroom? The student doesn't appear to have any books, writing utencils, paper, or access to technology. She might be hot since the room appears to have little ventilation or AC (note the windows & gap between the top of the wall and roof; the roof could be metal). It could be loud at times due to overcrowding inside and the possibility of outside noise, based on the construction of the building. The student would likely have to compete for attention from the teacher and her unique learning needs might be overlooked. The students in this room seem to represent a variety of socio-economic backgrounds (based on their dress). This underscores the need for a responsive teacher, which is difficult given the overcrowding. Was this building intended to be a school or was it rushed into service based on immediate need? It doesn't seem very inviting or likely to inspire learners (i.e. mostly bare walls with handwritten posters that are falling apart). Speculate about the future of these students.

This picture is from a 1st grade classroom in Uganda. The country is experiencing explosive population growth at the same time it is implementing free universal secondary education (since 2007)

Why do you think students might be going to school under these conditions? The youth population grew more rapidly than expected outpacing the school infrastructure. Universal schooling is relatively new in this country. The society might be experiencing a rural to urban shift and formal education might be increasingly necessary (similar to change in U.S.)

Why might leaders in this country (local, national) be concerned about overcrowded conditions in schools? They might consider: Is there a large enough population of working adults to support these kids?; What is the burden on households trying to support these kids (economic stress)? Will all of these kids be able to find jobs as they move to the city for work (the labor market isn't keeping up with pop. growth)?; Will youth be taken advantage of if they are desperate for work? Will youth frustration lead to violence?; Will social services (i.e. healthcare) be able to keep up with population growth?

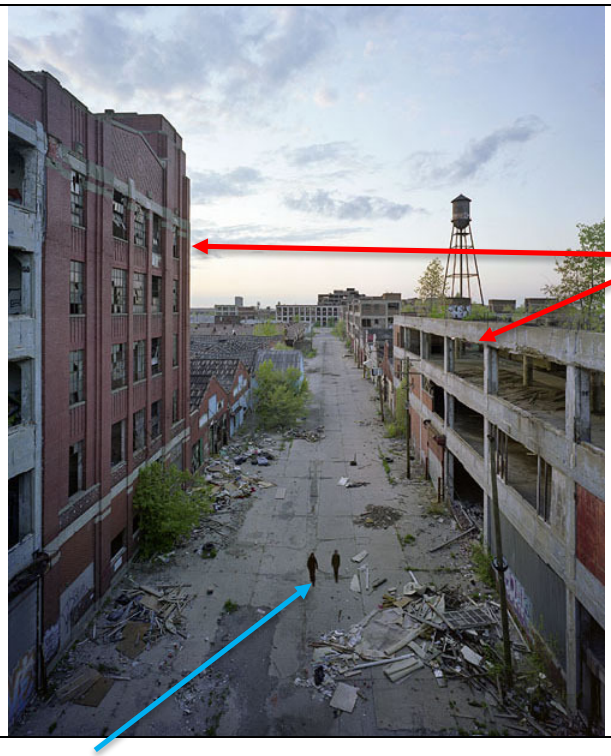
Further information: World Bank Research Proposal; News Report on Uganda's Growth

LFQ: What problems are presented by population change?

To the Instructor: Have students analyze this picture by working through the discussion questions. Then, provide students with additional details about the image, filling in gaps in their understanding. Finally, conclude by havingtwo students "jump into" the slide to role play the two people pictured in the image.

<u>What do you see in this picture? Where was it taken?</u>
The buildings look like a factory or a factory complex because they share a similar brick pattern and there is a road connecting the buildings. There seems to be a parking deck in the image but it has trees growing through it so it has probably been abandoned for a while. The image suggests it was taken in a very poor country but was in fact taken in Detroit, Michigan in 2011. There are two people walking down the center of street who seem to be wearing all black. It could be that these people are criminals who might not want to be seen or that they are a part of a group that likes to wear black.

This image was taken in Detroit, Michigan in 2011 at Packard Motors Plant. When the auto industry collapsed, people left Detroit in huge numbers. Without people to pay taxes, the city could not maintain its roads, bridges, buildings, and industrial parks, which made even more people want to leave.



<u>Role Play: What are you two people doing here?:</u>
To help students hear the arguments again and to assess student understanding, bring a pair of outgoing students to the front of the room. Ask the students to "step into" the picture as the two people walking down the street. Acting as a reporter on the scene holding a microphone, ask the students questions like these below:

1. What's your name?
2. Why are you here? What are you doing?
3. Where is everyone else?
4. Who caused all this damage? What happened here?

<u>What do you think happened at this auto plant?</u>
Detroit used to be the home of America's car manufacturing industry. In 1950, Detroit was the 4th largest city in the USA. The auto industry, however, began moving to the suburbs. The result was that many people left the city. Within 50 years, Detroit lost ½ of its population. This picture specifically shows Packard Motors Plant. It was once considered the most modern industrial plant in the country. The plant was responsible for making luxury cars.

LFQ: What problems are presented by population change?

To the Instructor: Have students analyze this picture by staring at it silently for a few minutes. Then, have two to three students identify someone in the picture they would like to question. Have the students individually come to the image on the screen, point to the person, and state their question. Link their questions to the questions below.

<u>What are these men doing?</u> India has the 2nd largest population in the world and the second largest rail network in the world. Estimates vary, but some 6-9 million people ride trains like this one from the suburbs of New Delhi and Mumbai into the city (7.5 million daily in Mumbai). This particular image was taken in New Delhi, India. These men are day laborers going into the city to work all week on a local train. The image shows what is called a "super-dense, crush load," meaning there are 14-16 people per square meter of floor space.

The image was taken in New Delhi, India but similar images can be found for Mumbai. These men are day laborers going into the city to work all week.

<u>What problems might result from situations like the one pictured (think locally, nationally, and even globally)?</u> The suburban transportation systems that feed into India's main urban metros and rail lines are overwhelmed in India. Commuter and freight trains share the same lines. The suburban rail systems date to the colonial era. Some investments to the suburban lines have been made in recent decades often take years (20-30) to complete.

India has invested billions in newer high speed rail lines and urban metros to try to alleviate the problem. Billions more in investment is needed and until the problems are fixed, India's economic growth is negatively impacted. The number of accidents each day puts stress on India's medical systems. Indians who die after a rail accident often die simply from blood loss that could have been prevented. India faces a daunting challenge in trying to secure the lines from internal and external threats. There have been instances, for example, when trains have been bombed. As those who can turn away from mass transit, India's suburban roads become impassible and equally overburdened.

<u>Why would men take this risk?</u> Travel in first class cabins is expensive. Second class is cheap and no reservations are required. Suburban trains remain an important public transport method for Indian workers, even though they do not run on time and are obviously dangerous (in Mumbai, 2,000 die annually). Statistically, rail travel is still more safe than other means of travel. More people die on India's roads than on rails even though 10+ people die every day on trains.

LFQ: What problems are presented by population change?

To the Instructor: After an initial question about the content of the image, provide students with additional details about the image and its context. Once the background information is provided, have students hypothesize in response to the remaining discussion questions.

<u>What is pictured? Where was this image taken?</u>
This image shows elderly people in Kochi, Japan doing exercise. These people live in the city of Kochi, Kochi – their city and state have the same name. The population in the state of Kochi is getting older and smaller. Middle-aged and young people, people we would call "working age," are actually decreasing in number. The state of Kochi has 120 million people living in it right now but is expected to decrease to 40 million people within 100 years – so population is really going down. In that same time period, Kochi will have many more elderly people than they do working age people.

<u>Imagine a city like Kochi where the population was very old. What would that mean for middle aged and younger people?</u>

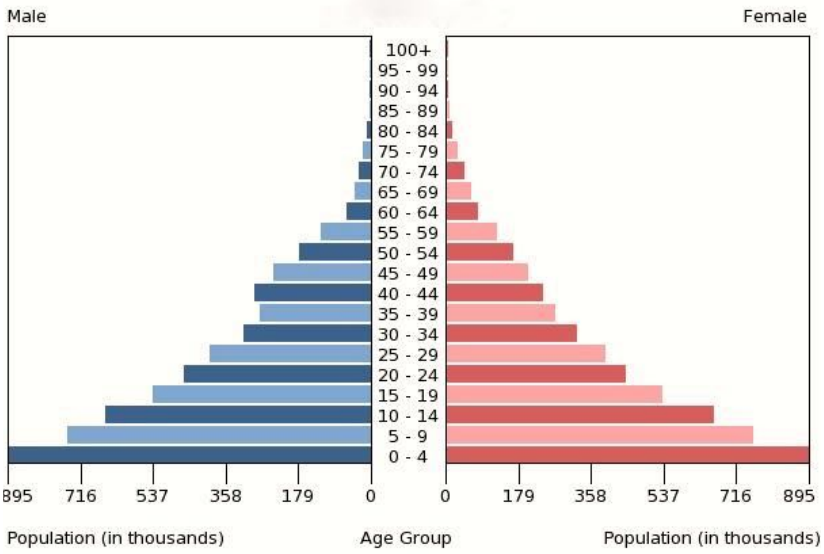
Possible consequences include: having to care for old people, needing many more health care facilities to take care of the old people, and not having enough jobs for young people (except maybe healthcare jobs).

The problems of Detroit, Michigan discussed with a previous slide could be repeated in Japan. If there are not enough young people in the country to support the elderly, Japan might not have enough tax money to maintain its cities and government.

<u>Imagine the problems of Kochi, Japan happening all over Japan. What will happen to Japan if the population continues to grow older and there aren't enough children being born?</u>
By 2017, Japan expects 1.5 jobs to be available for every 1 Japanese citizen. That means they will have more jobs available than they do people. Japan is faced with a tough choice. They could let in more immigrants from other countries to grow the population or they could try to encourage their own people to have more children so the population will grow. Right now, Japan does not let in a lot of immigrants from other countries but they may be forced to let in more because their aging population and overall population decline.

Understanding Population Structures

Directions: Use the population pyramid and associated pictures to answer the questions below.



#1

#2

#3

Questions:

1. Look closely at the population pyramid. What does it reveal about this country's population?

2. What problems (now and in the immediate future) might this country experience based on the population trends you identified in question #1? *Provide a list*.

3. For question #3, do the following
    a. Select the picture (#1, #2, or #3) to the right of the population pyramid that best represents a possible problem this country is experiencing.
    b. Identify the problem you think the picture symbolizes (in 1-2 complete sentences)
    c. *Discuss* why this problem might occur in this particular country based on the population pyramid and your understanding of the Demographic Transition Model.

Credits:

http://footage.framepool.com/en/shot/792320408-peach-produce-grocer-annecy-bag-shopping-bag

http://globedia.com/unicef-preocupado-ninos-filas-grupos-armados-congo

http://family.lovetoknow.com/about-family-values/definition-extended-families