



Growing Pains

from the Esri GeoInquiries™ collection for World Geography

Target audience – World geography learners

Time required – 15 minutes

Activity

A comparison of the processes and implications of population growth in one of the world's fastest-growing regions, sub-Saharan Africa, and the slowest-growing region, Europe.

Social studies standards

C3:D2.Geo.8.6-8. Analyze how relationships between humans and environments extend or contract spatial patterns of settlement and movement.
C3:D2.Geo.3.6-8. Use paper-based & electronic mapping & graphing techniques to represent & analyze spatial patterns of different environmental & cultural characteristics.

Learning Outcomes

- Describe the fundamentals of population growth by explaining the relationship between birth rate, death rate, and natural increase.
- Identify the fastest- and slowest-growing regions in the world today.

Map URL: <http://esriurl.com/worldGeoInquiry6>

? Ask

How do birth rates compare globally?

- Click the link above to launch the map.
- With the Details button underlined, click the button, Show Contents.
- Click the PG-Birth Rate/Births Per 1000 layer name to see the layer's legend. (Note: PG is population growth.)
- ? Which world regions had the highest birth rates in 2014? [Africa and Afghanistan]
- ? Which world regions had the lowest birth rates? [North America, Europe, Russia, and Australia]

! Acquire

How do death rates compare globally?

- Check the box to the left of the layer name, PG-Death Rate/Deaths Per 1000. Click the layer's name.
- ? Which world regions had the highest death rates in 2014? [Africa and Afghanistan]
- ? Which world regions had the lowest death rates in 2014? [Mexico, Central America, western South America, Northern Africa, and Southwest Asia]

🔍 Explore

How do birth and death rates in European countries compare with African countries?

- Search for the European country Hungary and review its pop-up information. (See the Search By Location ToolTip on the next page for details.)
- ? What are the birth and death rates of Hungary? Spain? [Hungary: BR is 9.26%, DR is 12.72%; Spain: BR is 9.88%, DR is 9.00%]
- ? What are the birth and death rates for Ethiopia and Chad? [Ethiopia: BR is 37.66%, DR is 8.52; Chad: BR is 37.29%, DR is 14.56%]

Analyze

Are birth and death rates the best indicators of country growth?

- With both PG-Birth Rate and PG-Death Rate layers turned on, turn the PG-Death Rate layer off and on to compare birth and death rates.
- ? Which world regions do you think are growing the fastest? [Answers will vary.]
- ? Which world regions do you think are growing the slowest? [Answers will vary.]

Act

What is the overall country growth rate?

- The Natural Increase formula is $(\text{Birth Rate} - \text{Death Rate}) / 10 = \text{Natural Increase}$ and represents the number of people per 1,000. (For example: Darker-colored countries add between 22 and 34 people to their populations each year for every 1,000 people already there.)
- Turn off all active layers. Turn on the PG-Natural Increase layer.
- View the PG-Natural Increase layer legend.
- In the upper-left corner of the map, click the Default Extent (house) button.
- ? What is happening to the populations of countries that are beige? [Their death rates exceed their birth rates and they have a negative natural increase.]
- ? Which world regions are growing the fastest? [Sub-Saharan Africa, Afghanistan, and Yemen]
- ? Which world regions are losing people or not growing? [Eastern Europe, Russia, and Japan]
- ? What are some problems that you would expect in a rapidly growing country, in one that is shrinking or slow-growing? [Teacher-supported discussion on education, health care, social infrastructure, resources, and jobs; loss of industry, inability to fill industrial or technology jobs, pressure to increase immigration, and so on.]

SEARCH BY LOCATION

- In the Find Address Or Place (search) field, type a place name or keyword.
- Choose a search result that appears below the field or click the Search button.

IDENTIFY A MAP FEATURE

- Click a feature on the map, and a pop-up window will open with information.
- Links and images in the pop-up are often clickable.
- An arrow icon in the upper right of the window indicates that multiple features have been selected.
- Click the button to scroll through the features.

Next Steps

DID YOU KNOW? ArcGIS Online is a mapping platform freely available to public, private, and home schools. A school subscription provides additional security, privacy, and content features. Learn more about ArcGIS Online and how to get a school subscription at <http://www.esri.com/schools>. THEN TRY THIS...

- To see which countries have a greater-than-average natural increase, try the following:
 - Above the Contents pane, click Analysis.
 - Expand Find Locations, and then click Derive New Locations.
 - Click Add Expression, and then build the following expression: *Natural Increase Where Natural Increase Is Greater Than 1.07*.

TEXT REFERENCES

This GIS map has been cross-referenced to material in sections of chapters from these middle school texts.

- *World Cultures and Geography* by McDougal Littell
- *My World Geography* by Pearson