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%]
The Natural Increase formula is \( \text{Birth Rate} - \text{Death Rate} \) / 10 = 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.]

**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.]