Populations and phone lines
from the Esri GeoInquiries™ collection for World Geography

Target audience – World geography learners
Time required – 15 minutes

### Activity
Explore world population through the lens of communication (phone lines) availability.

### Social studies standards
- C3:D2.Geo.5.6-8. Analyze the combinations of cultural and environmental characteristics that make places both similar to and different from other places.
- C3:D2.Geo.7.6-8. Explain how changes in transportation and communication technology influence the spatial connections among human settlements and affect the diffusion of ideas and cultural practices.

### Learning Outcomes
- Evaluate the number of phone lines relative to the number of people among the world’s most populous countries.
- Compare spatial patterns of countries with land phone lines to mobile phones.

### Map URL: http://esriurl.com/worldGeolnquiry9

### Ask

What did the number of phone lines look like across the globe?

- Click the link above to launch the map.
- With the Details button underlined, click the button, Show Contents.
- Check the box to the left of the layer name, World Phone Land Lines.
- Click the layer name to see the available options, and then click the button, Show Legend.
- Which countries have the highest number of phone land lines? [United States and China]
- On which continent are most the countries with the fewest phone lines? [Africa]

### Acquire

What did global population patterns look like in 2015?

- Turn on the layer, World Countries Population. View its legend.
- Which two countries have the largest population? [China and India]
- Which five countries are in the same population class (color) as the United States? [Brazil, Indonesia, Nigeria, Pakistan, and Bangladesh]
- Turn off the World Countries Population layer.
- Which of the five countries, if any, are in the same phone line class (color) as the United States? [None of the countries]

### Explore

What is the relationship between the population of China and number of phone lines?

- In the map, click China to answer the following questions, using the arrow in the top-right corner of the pop-up to view information.
- What was the population of China in 2015? [1,393,417,233]
- How many phone lines did China have in 2015? [350,433,000]
- Divide the population of China by the number of phone lines. (This number is the number of people per phone lines in China in 2015.)
- What was the number of people per phone line in China (rounded to two decimal places)? [3.98]
Analyze

What is the relationship between other high-population countries and number of phone lines?

- Click India, the United States, and Bangladesh to answer the following questions.

? What was the population, number of phone lines, and number of people per phone line for these countries? [India: 1,273,629,594; 49,750,000; 25.60] [United States: 322,592,787; 268,000,000; 1.20] [Bangladesh: 175,082,263; 1,070,000; 163.63]

? How do the number of phone lines compare to the number of people in the above populous countries? [The number of phone lines does not vary proportionately with population.]

Act

Is there more access to mobile phones than landline phones?

- Turn off the World Phone Land Lines layer, and then turn on the World Mobile Phones layer and view its legend.

? Click each of the four previously identified countries and compute the number of mobile phones per number of persons. [United States, 1.47; India, 1.84; China, 3.18; Bangladesh, 19.45]

? How does the number of people per mobile phone compare to number of people per landline phone? [China and the United States had approximately the same proportion of mobile phones to landline phones per person, but people in India and Bangladesh are much more likely to have a mobile phone than a landline.]

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...

• Click Analysis, and in the Perform Analysis pane, expand Enrich Data and choose the Mobile Phones layer and then a country in the top right.
• Click Key Facts, and then click the Key Facts button and choose 2018 Purchasing Power and Apply.
• Narrow your enrichment to just Purchasing Power per capita.

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