



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	<ul style="list-style-type: none">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/worldGeoInquiry9>

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.]*

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...

- 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