

## Growth rates and population pyramids

Lesson Map: <http://esriaustralia.com.au/education/SpatialActivity4>

### Engage

*What is growth rate?*

- Click on the map URL above to open the lesson map
- Click each country to determine average centennial growth rates. Hover over the population growth to calculate the total percentage (%) of growth that each country is estimated to experience from 1950-2050
- To do this, divide the 1950 population by the 2050 population, and multiply by 100.
- Suggested countries - Australia [~35%]; U.S.A[~36%]; United Kingdom[~78%]; China [~395%]; India [~204%]
- ? Optional: Which global region is due to experience the most significant centennial growth? *[Less developed regions, most commonly in Asia]*

### Explore

*What is the relationship between total growth and annual growth?*

- Compare China and India. Both countries are expected to double, if not triple, their population from 1950-2050.
- However in 2015, China's decadal average growth rate (GR) was 0.47%, whereas India's was 1.59% (over 3 times higher)
- ? Why will China experience a greater total population growth from 1950-2050, even though it has a lower annual growth rate in 2015?
- Hint: Ask students to click on both China and India and investigate their population curve
- Answer: [China's population curve shows it increased rapidly from 1950, but

Download student worksheet [here](#).

Time  
30 minutes

### Activity

Compare population pyramids against demographic data, to understand the influence growth and data have on populations.

### Learning Outcome

Students will be able to:

- Interpret the relationship between quantitative demographic statistics
- Identify spatial variations in population characteristics, and the reason for these differences
- Interpret population pyramids, and understand factors which affect pyramid shape

### ACARA Curriculum Link

Year 10 Geography - Unit 2:  
Geographies of human wellbeing

[ACHKJ076](#) | [ACHGK078](#) | [ACHGK079](#)  
| [ACHGS074](#) | [ACHGS075](#) |  
[ACHGS076](#) [ACHGS079](#) |

Senior Secondary Curriculum –  
Geography – Unit 2: Sustainable  
places

[ACHGE031](#) | [ACHGE034](#) | [ACHGE037](#)  
| [ACHGE039](#) |

after 2030 it is predicted to drop. On the other hand, India's population shows a more linear population increase, which will continue until 2050]

## Explain

*What do population pyramids show us about population growth?*

- ➔ Search for Niger using the search bar in the top right hand corner. Click on Niger, and select the current population pyramid.
- ? What is the typical population pyramid shape of a high-growth country like Niger? [Wide base and very narrow tip]
- ➔ Repeat this process for Brazil, to investigate a low-growth country.
- ? What is the typical population pyramid shape of a low-growth country? [Wide in the middle, with a narrowing base and more gradual tip]
- Optional: Students can continue to search a variety of population pyramids.

## Extend

*How does Total Fertility Rate (TFR) influence population pyramid shape?*

- ➔ Click on 'details' on the left tab of the map. Then select 'content.'
- ➔ Select 'change style' on the Annual % Growth Rate 2015 layer of the map.
- ➔ Select TFR 2015 from the dropdown box in Part 1, beneath the heading 'choose an attribute to show'. Press 'done' at the bottom of the window to action this change.
- ➔ Niger has a high TFR. Investigate the population pyramid for Niger in 2015.
- ? How does the pyramid suggest a high TFR? [Wide and expanding base suggests more births each year]
- ➔ Japan has a low TFR. Investigate the population pyramid for Japan in 2015.
- ? How does the pyramid suggest a low TFR? [Narrowing pyramid base suggests less births each year]
- Optional: Repeat the steps above to view impact of death rate (expressed as DeathRt2015). Change the style of the map (outlined above) and investigate features of the pyramid that represent the death rate.

## Acknowledgements:

This lesson map uses data sourced from an Esri GeoInquiry.

Accompanying lesson material has been amended to align with the Australian National Curriculum.

## Teacher Feedback:

To share your feedback on this, or any Spatial Activity, please contact [education@esriaustralia.com.au](mailto:education@esriaustralia.com.au)

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## Next Steps:

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