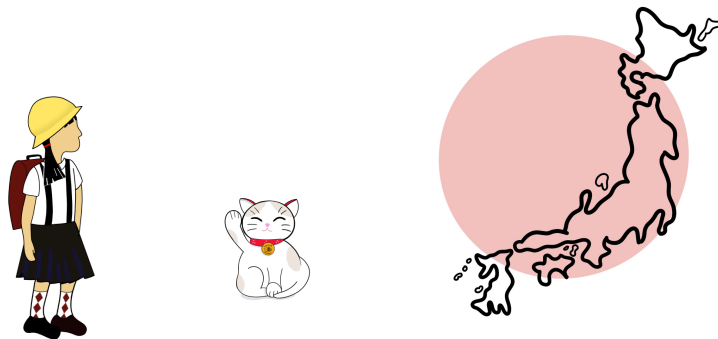


Lesson 3

Japan

An Upper Middle-Layered Country

At the beginning of 2015, Japan was the 11th largest country in population. Just like the previous lessons that highlighted the unique geographical shapes of the United States and Kenya, Japan has an unique geographical shape outlined by its formation of several islands. Japan's population pyramid graph and population histogram also have a distinctive shape. The population graphs tell us a lot about the people who live in Japan. (if you research more about Japan, you will discover that the people of Japan have a special affection of cats. Several of Japan's past and present stories involve their admiration of cats.)



Scientists are particularly interested in Japan's population because some of the oldest people in the world live in Japan. People over 110 years old are part of its population. A research study entitled **Blue Zones** (<https://www.bluezonesproject.com>) highlights areas of the world where a large count of people live to be 100 years old or older. Japan is a country included in this research.

Kristin and Hana's Story – Chapter 3

Hana lives in Tokyo, Japan. She celebrated her 36th birthday in 2015 with her parents and grandmother at a popular restaurant in Tokyo. She especially enjoys these celebrations with her grandmother who is in her late 90's. Sara, Hana's best friend, was also there. What was particularly memorable for Hana was that her grandmother gave her a picture album that had several photos of her mother and her grandmother when they were young girls. Hana has no aunts, uncles, or cousins,. She also has no brothers or sisters, so this birthday celebration was small, but memorable.

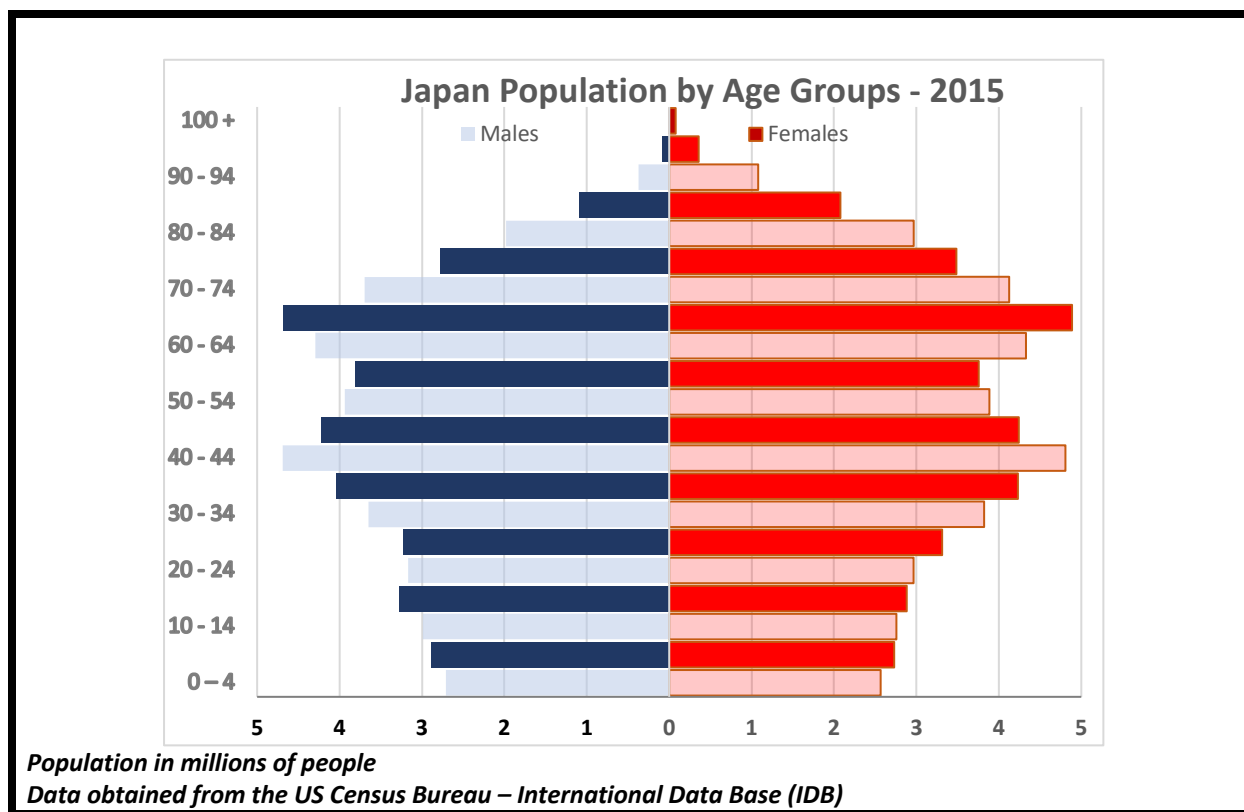
Hana is a graphic artist and works for a company that develops online advertising for companies that sell motorcycles. Her job involves traveling to other countries. She especially enjoyed her trips to Norway, Australia, and the United States. Her trip to the United States included a tour of a manufacturing plant of motorcycles in Milwaukee, Wisconsin. Sara was able to go along on this trip. Sara is a nurse, and persuaded Hana to attend a conference in Milwaukee that was particularly interesting to Sara. It was at this conference that Hana met Kristin. Kristin was distributing information about setting up health care facilities that would provide care for older people. Although not involved in the health care profession, Hana was interested in some of the information presented at this meeting as she is concerned about her parents and grandmother as they get older. Hana is especially concerned that there may be a time that they will not be able to live independently.

Hana and Kristin continue to exchange e-mails. Kristin particularly enjoyed Hana's pictures of her cat. Both Kristin and Hana identify themselves as "cat people". Hana is hoping that she can arrange for Kristin to visit Japan in the near future. Kristin is also hoping that this will be possible.

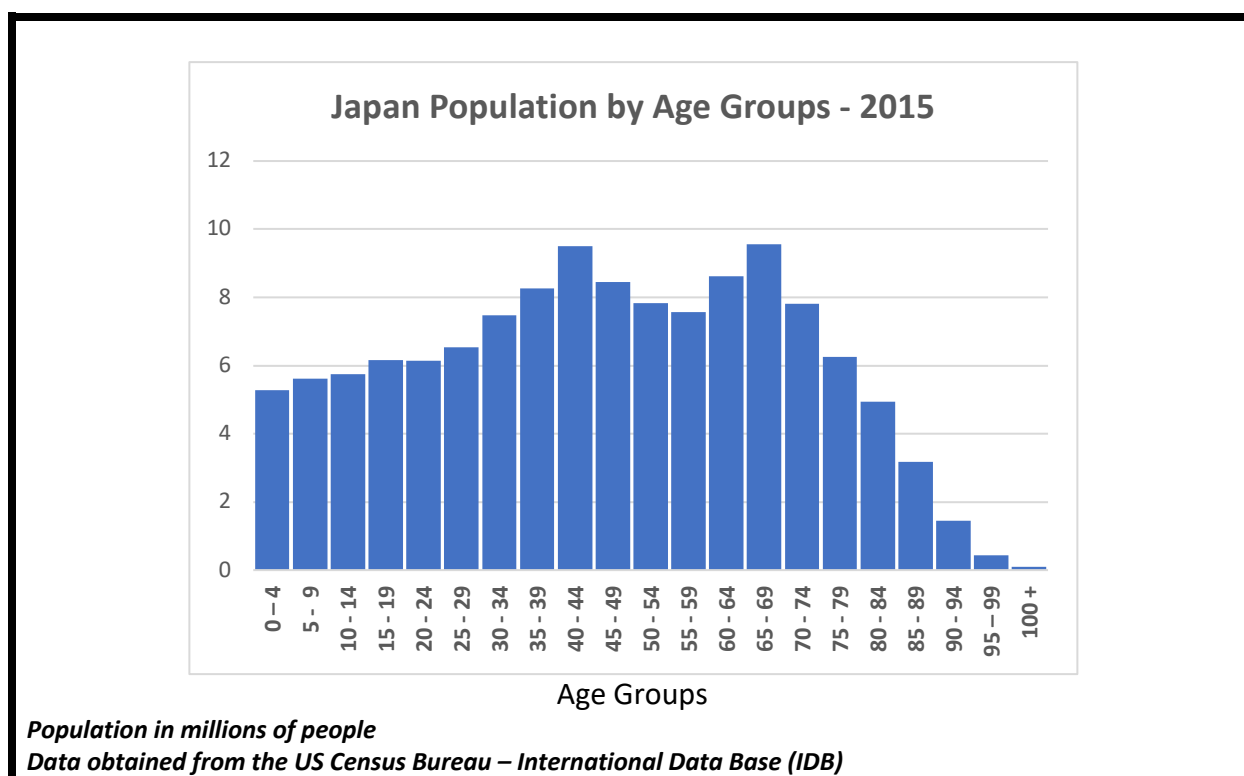
Lesson 3 – Problems

Handout needed to complete the following problems: Handout 3: *Japan – 2015*

The US Census Bureau provides special graphs of the age distribution of other countries. The following graph and data were obtained from the United States Census Bureau's International Data Base (IDB) at <https://www.census.gov/programs-surveys/international-programs/about/idb.html>. The population pyramid of Japan represents the population distribution of Japan at the beginning of 2015.



The following **histogram** combines the female and male counts of people in Japan:



The population pyramid graph and histogram convey information about the count of people in Japan in the same way the graphs conveyed information about the United States in Lesson 1 and Kenya in Lesson 2. They provide visual representations of the estimates for the count of people in the designated age groups. The different shapes mapped out by these graphs indicate different challenges for each country. Japan has a distinctive shape when compared to most of the countries of the world. The following problems provide a summary of the counts of people living in Japan.

Use **Handout 3: Japan – 2015** to answer the following problems. Your answers can be obtained from the population pyramid graph, the population histogram, or the table that are provided on **Handout 3**.

1. What 5-year age group records the greatest count of people?
2. Identify the age group that has the second greatest count of people.
3. Identify the age group of people younger than 80 years old with the least count of people.
4. The story indicated that Hana celebrated her 36th birthday in 2015. Identify on the population graph or the population histogram Hana's age group in 2015.
 - a. What is the age group adjacent to Hana's age group that is younger? Is that age group "less than" or "greater than" that the count in Hana's age group?
 - b. What is the age group adjacent to Hana's age group that is older? Is that age group "less than" or "greater than" that the count in Hana's age group?
 - c. Is the above summary of the age groups younger and older than Hana different than the summary of these same age groups in the United States? If yes, describe the difference. (See **Handout 1** to review the count of people in these age groups in the United States.)

Review again the definitions from Lesson 1:

A population distribution is defined by the following *layers*:

- The **bottom-layer** refers to the counts of people in the 0 to 24 years old age groups.
- The **lower middle-layer** refers to the counts of people in the 25 to 49 years old age groups.

- The **upper middle-layer** refers to the count of people in the 50 to 74 years old age groups.
- The **top layer** refers to the count of people in the 75 to 100+ years old age groups.

Based on the summary of layers, a country's shape is defined by the following terms:

- A country that has most of its people in the bottom-layer is identified as **Bottom-Layered Country**.
- A country that has most of its people in the lower middle-layer is identified as a **Lower Middle-Layered Country**.
- A country that has most of its people in the upper middle-layer is identified as an **Upper Middle-Layered Country**.
- A country that has most of its people counted in the top layer is identified as a **Top-Layered Country**.

5. Estimate what layer (bottom, lower middle, upper middle, top) you think will have the least count of people in Japan? Explain how you made your estimate.
6. Estimate what layer you think will have the greatest count of people? Explain how you made your estimate.

Identify on the **population pyramid graph** and the **histogram** where the layers begin and end.

7. Use **Handout 3** to derive an estimate of the percent of the count of people who are 0 to 24 years old in Japan. (Round your answer to the nearest 10th of a percent.)
8. In a similar way, what is the percent of the count of people 25 to 49 years old?
9. What is the percent of the count of people 50 to 74 years old?
10. What is the percent of the count of people 75 to 100+ years old?
11. Based on the above definitions of a country's shape, what is the description of the shape of Japan's population graphs?

12. Identify two age groups in which the count of people in one age group is approximately double the count in the other age group. Is the larger age group younger or older than the other age group?
13. Hana's data story indicates that she was concerned about her parent's future. In what way do the graphs indicate why she might be concerned about their future?
14. Identify at least one age group that has approximately 1 million more females than males.
15. Estimate the count of teenagers (13 to 19 years old). Explain how you derived your estimate. (Estimates will vary.)
16. What is the count of people who are under 10 years old?
17. What is the percent of the count of people who are under 10 years old?
18. What is the count of people who are 65 years old or older?
19. What is the percent of the count of people who are 65 years old or older?
20. Why is it important that the count and percent of people under 10 years old and 65 years old or older are given special attention?

21. “Old” and “young” are subjective descriptions that in many cases are defined by several factors other than age (for example, health status, or income status). For this unit, however, consider the definition of “young” as people less than 10 years old, and the definition of “old” as people who are 65 years old or older. What is the ratio of “old” to “young” using the above definitions of young and old? Derive a decimal from this ratio and interpret it by describing the approximate count of “old people” to the count of one “young person.” Express your answer to the nearest whole number.
22. If there are approximately 500 people in a typical special care facility designed for people 90 years old or older, how many facilities were possibly needed in 2015?