

Henry's Quilt Case Study Projects

Highlighting the population data of the United States, Kenya, and Japan in the opening lessons of this module were intentional. Each country provided a summary of a different shape as defined in the first 3 lessons of the module. Follow-up lessons were designed to provide a timeline of each country by tracing past shapes as well as possible future projections.

Students may express an interest in learning the data stories of other countries based on a similar study of their shapes and data. The cover of this module displays the 2015 population pyramid graphs of 16 other countries. In addition, a handout has been prepared for each of these countries that provides data to begin understanding the stories of these countries. The countries selected for this quilt have varying shapes, population factors, and foundation factors that provide connections to the past, present, and future population distributions.

After completing Lessons 1 to 3, students understand the connection of a population pyramid graph to the description of a country's shape. Lesson 4 uses this data to calculate numerical summaries (specifically the mean and median centers and a general description of spread) of the population distribution of a country. These opening lessons can be similarly used to organize the data for the other countries displayed on the quilt. Directions that connect these opening lessons to the countries displayed on the quilt are explained in the case study projects.

Students may also be interested in using the 2010 and 2015 population data for each country to apply in one of the projection models (the linear model, the exponential model, and the recursive model). The 2010 and 2015 data for each country are also included in the handouts that can be used to develop projection models using Lessons 8, 9, and 10 as a guide.

Consider the following Case Study Projects in expanding the connection of what was learned about the United States, Kenya, and Japan to the other countries displayed on the quilt.

Case Study Project: *Developing a Country Poster*

Direct students to individually or in small groups select one of the countries from Henry's Quilt. Provide the accompanying handouts for the countries they selected and included in this section of the module. The handouts include the classification of the countries based on the descriptions outlined in Lessons 1 to 3. If students select a bottom layered country, direct them to reuse Lesson 2. If students select a lower-middle layered country, direct them to reuse Lesson 1, and if they select an upper-middle layered country, direct them to reuse Lesson 3. Students develop answers to the same questions for the lesson using the data on the handout of their selected country. Consider highlighting selected questions from the lessons for students to summarize on a country poster. In addition, provide time for students to research

outside of class other summaries about the country they selected beyond the population data and to include some of these additional summaries on their poster.

Case Study Project: *Deriving a Country's Centers and Spread*

Provide students a blank copy of the templates in Lesson 4 that were used to estimate the mean and median ages, along with an estimate of the spread of the ages. Direct students to calculate the mean age, the median age, and the spread as outlined in Lesson 4 of their selected country, and to mark off these summaries using the histogram included on the handout for their country. Consider assigning students to write a summary of the description of a typical person in their country and other summaries that indicate the special features of their country's population distribution. (For example, the age group that has the most, or least, count of people, and what percent of the population is counted in the identified age groups.) Again, provide an opportunity for students to share with other students the visual they prepared from the histogram and the written summaries.

Case Study Project: *Interpreting Population and Foundation Layer Factors*

Provide students a handout of their selected country. The second page of the handout indicates the Population Factors derived in the same way the population factors were derived in Lesson 10 using the 2010 and 2015 age group counts. Direct students to summarize the factors based on the criteria of immigration, emigration, births, and deaths. Challenge students to write a summary of their country that indicates if they think their selected country has a noticeable immigrant population, if their country has a major count of births, and if there is an indication of an unusual loss of the population due to death. Also ask students to speculate that if their country is growing, do they think this country will continue to grow if these factors remained the same, or if their country is losing population, do they think their country will continue to lose population if these factors remained the same. Selected questions from Lessons 10, 11, and 12 would provide direction for students to summarize these questions.

Case Study Project: *Developing Projection Models*

Direct students to create a projection model for their selected country based on Lessons 8 (the linear model), Lesson 9 (the exponential model), or Lessons 10 to 12 (the recursive model). If students select the recursive model, provide them one of the spreadsheet files that they redesign to reflect the data of their selected country. Selected questions from the identified lessons could be used to provide direction for students in completing this case study.

Case Study Project: *Writing Kristin's Story*

Based on the population pyramid graphs or the histograms of their selected country, direct students to rewrite one of the Kristin stories (for example, *Kristin's Story – Chapter 1* in Lesson 1) assuming Kristin was the same age and lived in their selected country. Would Kristin's age group be a major age group in that country? Is there a significant count of people older than Kristin in this selected country, or younger than Kristin, or both? What do you think is the

decision with people approximately her age regarding whether or not to have children? Will people approximately her age be able to support the people in their parent's age group?

Case Study Project: A Country Quilt Scavenger Hunt

Place a copy of each of the 16 country handouts at various stations in a classroom. Arrange the stations so that small groups of students will be able to quickly scan the data on the handouts. Label each station as a Bottom Layered Country station, a Lower Middle-Layered Country station, or an Upper Middle-Layered Country station. Set a time limit (consider approximately 15 minutes) for students to answer the following questions individually or in small groups. (This is only a sampling of questions. Add other questions based on what students learned from the lessons completed in your class.)

Question 1: How many countries have more females than males?

Countries with more females than males: Chile, France, Germany, Greece, Italy, Jamaica, Mexico, South Africa. Countries with more males than females: China, Egypt, Greenland, India, Iran, Saudi Arabia

Question 2: Identify the countries in which the most count of people is in the 0 – 4 years old age group?

India, Egypt, and Mexico

Question 3: Identify the countries in which the most count of people is in the 50 – 54 years old age group?

Germany, Greenland

Question 4: Identify the countries that have no indication of immigration?

Chile (although there are a few population factors that are 1.00), China, Greenland, India, Iran, Jamaica, Mexico, Morocco

Question 5: Identify the countries that have at least 10% of their population younger than 5 years old?

Egypt

Question 6: Identify the countries in which the most count of people is in the 25 – 29 years old age group?

Morocco, China, Iran, Russia, South Africa

Question 7: Identify the countries in which more than 50% of the population older than 50 years old?

None of the countries have more than 50% of their population older than 50. (Germany comes closest.)

Question 8: Identify the country which has the lowest percent of the population in the 0 – 4 years old age group.

Germany with 4.2% of the population 0 – 4 years old

Question 9: Identify a country that less than 100 people who are 100 years old or older?

Greenland, Jamaica

Question 10: How many countries have more males than females in the 0 – 4 years old age group?

All countries displayed on the quilt have more males than females in the 0 – 4 years old age group.

Handouts prepared for the following countries:

Greenland	Saudi Arabia	Italy	Germany
Mexico	China	Iran	India
Jamaica	Egypt	Morocco	Chile
Russia	Greece	France	South Africa