

## Wrap-up of the People Count Stories

### Projects or Investigations

Consider completing one or more of the following projects to wrap-up your work with this module. Access to the spreadsheet files identified in the description of each project is needed to complete the projects. For each project, you will change the factors of the designated spreadsheet file to answer the questions or problems. A written summary of what you changed and why you made those changes is also expected.

#### Project 1: Estimating the Least Count of Immigration

**Spreadsheet file needed to complete this project: USA Recursive Model**

How many people during each of the 5-year periods from 2020 to 2050 are counted as immigrants if the recursive model is used to project future counts? Use the recursive model as designed in the spreadsheet **USA Recursive Model** to derive estimates of the least count of immigrants for each of the 5-years from 2020 to 2050. For example, what is an estimate of the least number of immigrants at the start of 2020 for the past 5 years if the recursive model is used to estimate future counts? In the same way, what is an estimate of the least number of immigrants at the start of 2025? 2030? ... 2050?

Write a summary of how you revised the model and what were the estimates you obtained. Consider developing graphs to display the values over the 5-year intervals.

#### Project 2: Another Evaluation of the Recursive Model

**Handout needed to complete this project: Handout 12: Looking Back to Evaluate the Recursive Model (United States)**

**Spreadsheet file needed to complete this project: Wrap-up Model.xlsx**

Lesson 16 evaluated the recursive model by comparing (and revising) its estimates to the projections of the Census Bureau. The evaluation of which model is more accurate, however, requires waiting until 2050 at which point a census will be conducted.

Is there another way to evaluate the recursive model that would not require waiting until 2050? What if we used past counts provided by the Census Bureau (1980 and 1985), enter these counts in the recursive model, and then compare the projected results from the recursive model to the actual census counts reported in the census of 2010 and 2015?

The above plan provides an evaluation of the recursive model by looking back. Handout 12 provides the US Census counts (with estimates rounded off as indicated) for 1980 and 1985. The Excel spreadsheet **Wrap-up Model.xlsx** provides you the recursive model with columns set-up for the past. Each of these files are tools to assist you with the goals of this project. Enter the data from Handout 12 into the spreadsheet file to derive estimates for the US in 2010 and 2015. Are the estimates a good match to what was reported by the Census Bureau that summarized the census in 2010?

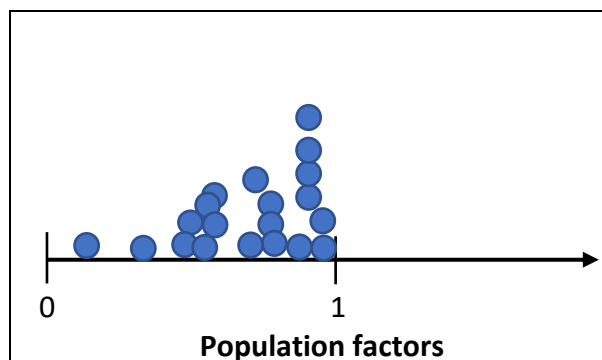
Write a summary that compares the estimates from the recursive model estimates to the reported Census counts. Indicate in your summary what you think happened in the country during those years that required changing the recursive model to match its outcomes to the reported census of 2010 and 2015. (For example, did more people die or leave the country during this time than the model projected? Were there more immigrants than anticipated by the model?)

### Project 3: Population Factors are not the Whole Story of a Country

Spreadsheet file needed to complete this project: **USA Recursive Model.xlsx**

Two problems were presented in Lesson 10 that can be investigated further with the recursive model and the spreadsheet files. The first problem was the following:

1. Consider the following dot plot of the population factors of a fictitious country:



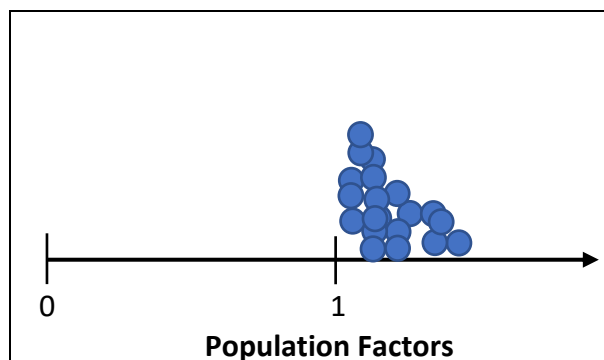
- a. What is the dominant explanation of change in the connecting age groups for a country represented by the above dot plot?
- b. Do you think it is possible for a country with the above population factors to have an increase in its total population during a 5-year period? Explain.

The dot plot indicates that all of the population factors derived in the recursive model were less than 1. Could the total population of country with the above population factors still grow over

time? Design a fictitious country or obtain data for a real country to answer that question using the spreadsheet file.

The second problem in that lesson was the following:

2. Consider the following dot plot of the population factors for another fictitious country:



- a. What is the dominant explanation of change in the connecting age groups for the above dot plot?
- b. Do you think it is possible for a country with the above population factors to have a decrease in its total population during a 5-year period? Explain.

The dot plot for the second country indicates that all of the population factors derived were greater than 1. Could the total population of a country with the above population factors decline over time? Design a fictitious country or obtain data for a real country to answer that question using the spreadsheet file.

Write a report that indicates if you think countries could exist for each problem, and if yes, what were the counts and factors you used in setting up the population in these countries.