Instructor Notes: Human Demography
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Calculate population dynamics; Formulate hypotheses based on observations; design experiments and collect and analyze data; Summarize experimental results in written, oral, and graphical forms.

This activity spanned two class periods. Before the first class, students were required to watch a CrashCourse video about population dynamics and respond to questions related to birth rates, death rates, age structures and factors influencing these variables.

During class time, I first gave a short (15 minute) presentation summarizing key terminology, interpreting graphs such as age-structure pyramids, logistic and exponential growth rate equations, and life tables and survivorship curves. Next, students were required to develop a question and hypothesis and describe the data needed (and its availability) to address this question. I required students to obtain approval from me before continuing to data search and collection phase. Before the next class period students were then required to obtain the data and organize it into the data tables.

After the first class period, I assigned reading articles related to factors that have influenced local human demography in the past like NPR's coverage of Puerto Rico population decline; and UNEPs review of the human carrying capacity of earth.

Then, during the second class period, I walked everyone through the analysis phase and demonstrated how to create graphical output in Excel. Students used class time to create a short (5 slide) presentation summarizing the major research questions, hypotheses, data, results, and implications. Student groups then presented their research findings to the class and were evaluated using the rubric provided by the TIEE module.

I adapted this module by identifying available data from Puerto Rico.

Scaffolding (introducing/building on key concepts) is important for implementing this module. Previous activities involved making observations, formulating hypotheses, and interpreting basic graphical output (i.e. scatterplots, bar charts, etc).

In future implementations I will definitely emphasize more scaffolding activities like basic Excel skills very early in the semester and incorporate it into less challenging analyses. For example, I will likely implement data analyses that do not require cell-based formulas (which were a part of the demography module), and other straightforward analyses such as correlating two variables in two columns, calculating the mean and standard deviation and other statistical moments of these two variables etc.