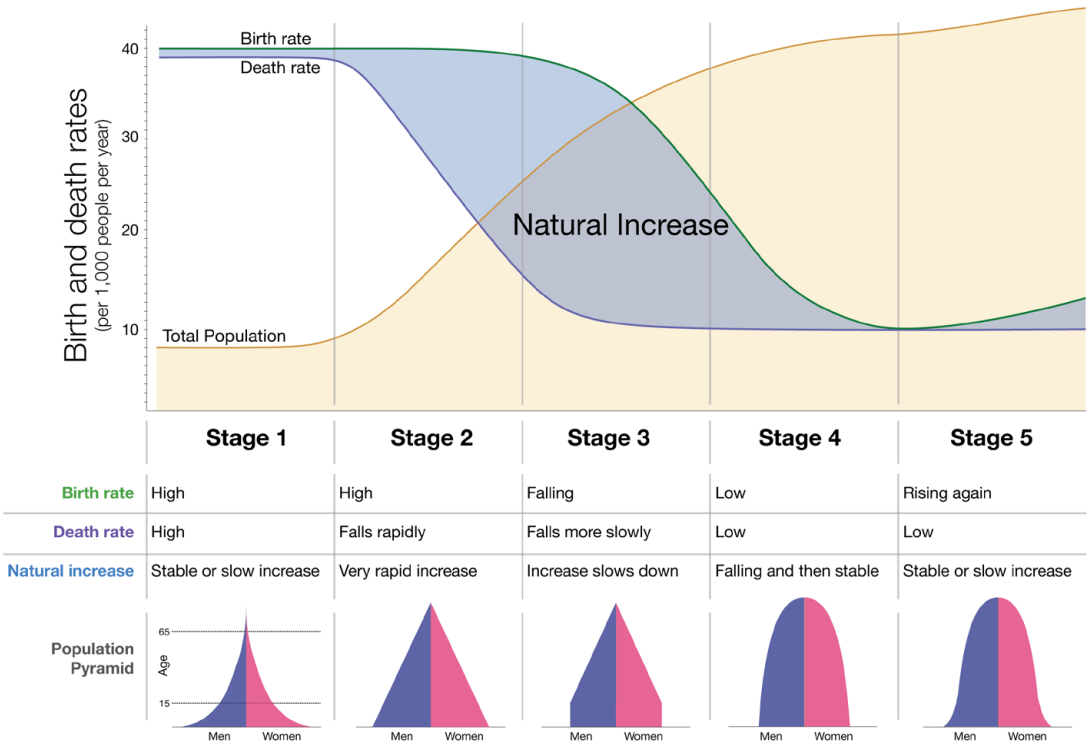
Demographic transition

Focus questions	What demographics change as economies develop? How does demographic transition affect the kinds of foods and resources demanded?
Vocabulary	Demographic transition, urbanization, birth rate, death rate, growth rate, infant mortality, average income

Once a country begins to industrialize or as its economy develops, there are changes that occur in the demographics or statistics of the country. These statistics include **birth rate, death rate, infant mortality,** and **average income.**

The Demographic Transition (DT) model is pictured below. Take a few moments to make observations about what is happening during each phase of the model.



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Procedure

1. Evaluate each country below. Determine the birth rate, death rate and growth rate. Estimate what stage of transition the country is in on the Demographic Transition model. Use evidence when explaining the position on the model.

		USA	Bangladesh	UK	Germany	Somalia	Colombia	Bolivia
Birth rate	**1990**							
	2018							
Death rate	**1990**							
	2018							
Growth rate*	**1990**							
	2018							
Stage on demo transition								

* Growth rate = $\frac{BR - DR}{1000}$ * 100 (expressed as a percent)

2. Develop a computational model using a spreadsheet or chart to compare data points listed below in 3. (i.e. compare the data from each country to other countries to determine if relationships exist between countries; and compare the effects of certain pieces of data on others). Include data that you researched as well as those that were supplied. Include other factors that you think may have an effect. For example: If the growth rate of a population changes, what effect might that have on the number of calories consumed? How about on the use of freshwater per person per year?
3. What is the status of freshwater and land use in the countries above?
   a. Use **cia.gov/the-world-factbook** to find land use for agriculture data and amount of irrigated land. (Geography)
   b. What is the percent of the population working in agriculture? (Economy)
   c. Research other sites to find the amount of freshwater resources and compare to the population. (**fao.org/nr/water/aquastat/data/query/index.html?lang=en**)
   d. Research how much water is used per capita for domestic use (**chartsbin.com/view/44463**).

e. Use **nationalgeographic.com/what-the-world-eats/** to determine caloric consumption of food for each country.
f. Consider measures of biodiversity in each country. See: **nationmaster.com/country-info/stats/Environment/Biodiversity-richness** and **lepanoptique.net/sections/environnement/is-there-a-link-between-biodiversity-loss-and-economic-inequality/**

Reflection

1. As a country develops, according to this model, what trends do you see in population statistics?

2. As a country develops, what happens to the kinds of foods people eat—how do eating habits change?

3. What negative effects might those eating habits have on the environment, the economy, and food production?

4. How might humans increase crop production without increasing water or land use?

5. What technologies have contributed to the demographic transition modeled in this diagram?

6. In what other ways have science, engineering, and technology impacted the development of countries to move them into a different stage of the model?

Rubric for self-assessment

Skill	Yes	No	Unsure
I can create a spreadsheet and enter data in the proper format.			
I can use a spreadsheet to calculate mathematical relationships between the same types of data to compare countries.			
I can use mathematical functions to determine relationships between and among pieces of data.			