Population Growth In the United States

Ever since Malthus, the United States has been an interesting example for the study of population growth. Malthus remarks:

“Throughout all the northern colonies, the population was found to double itself in twenty-five years. The original number of persons who had settled in the four provinces of new England in 1643 was 21,200. Afterwards, it is supposed that more left them than went to them. 1 In the year 1760, they were increased to half a million. They had therefore all along doubled their own number in twenty-five years. In New Jersey the period of doubling appeared to be twenty-two years; and in Rhode island still less. In the back settlements, where the inhabitants applied themselves solely to agriculture, and luxury was not known, they were found to double their own number in fifteen years, a most extraordinary instance of increase. 2 Along the sea coast, which would naturally be first inhabited, the period of doubling was about thirty-five years; and in some of the maritime towns, the population was absolutely at a stand.”

Malthus used the United States because the Constitution required a census every ten years; thus, he had good data on which to base his theories.

You can get a sense of what kind of information was in the early census in this census form from 1850:

The census notices free vs. slave; country or state of origin, occupation, and more. This makes it an excellent tool for analyzing population trends of all kinds.

In this project, you’ll be exploring basic questions about how the United States population grew. The basic two questions are this:

a) Did different groups of peoples in the country have different reproductive rates?

b) Did historical events affect population growth rates?
The first thing you need is access to census data. There are two places online to get it. The first is http://fisher.lib.virginia.edu/collections/stats/histcensus/php/newlong.php?subject=1

Here’s what you’ll see:

Basic options for viewing census data

And selecting for info about slave populations. You can also find out about ethnicity: saw, German immigrants.

Here’s what you get. Nice, but if you want to get it into a spreadsheet for analysis, you’ll have to cut & paste. So -- is there a better way?
Yup: you can try:
http://www.lib.utexas.edu/subject/ss/socio/icpsr.html
UT Austin has a licence to get raw census data for students & faculty. The downside?
a) You’ll have to download what you want
b) You’ll have to import the data into SAS or SPSS. It won’t go into Excel.

CENSUS 2000 AT ICPSR

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This site contains data files designed for social science researchers to use in conjunction with statistical software. If you are looking for answers to basic demographic questions or access to population tables, see the American FactFinder.

1) What is your family ethnicity? If you are multi-ethnic, pick the one you primarily identify as (for example, Tiger Woods identifies as Thai). Alternatively, choose one of: Dutch, German and French.

2) Download census data for the growth in population of:
i) Your ethnicity
ii) Slaves
iii) English
You want results for the country as a whole, not just one state. This could get tedious. Select a couple of (adjacent!) decades, and find population totals for those years.
3) Compute growth rate for each population. Are they the same?

4) The graph below is growth of the entire US population, compared with the “best-fit” exponential growth curve.

You’ll notice in the first few years, the population growth was almost exponential. After about 1850, it was faster than expected, but starting at 1920, it slowed down.

How does the growth of your ethnicity over time compare?

If you want to use Excel, here’s how the above chart was produced. First, I downloaded and copied the data into a spreadsheet.
Next, I selected the columns I wanted to graph, and asked for ‘Insert Chart’. It’s very important what kind of chart you select, because only scatter graphs can be fit with curves.

Finish the rest of the steps in the Chart Wizard, and you get a fine looking graph. Next, go to the Chart menu, and select “Add Trendline”

Many options; we want ‘exponential’ for exponential growth. (I knew that...)

If you want to see the equation as well as the best fit, select options & show equation.

5) How did the civil war affect population growth?

Pick two Northern states (eg, NY and NJ) and two Southern states (eg ALA and MISS). Find the population of each of the states for 1850, 1860 and 1870. For the Southern states, also find the population of slaves.

How did the war affect the rate of population increase for these different groups?