

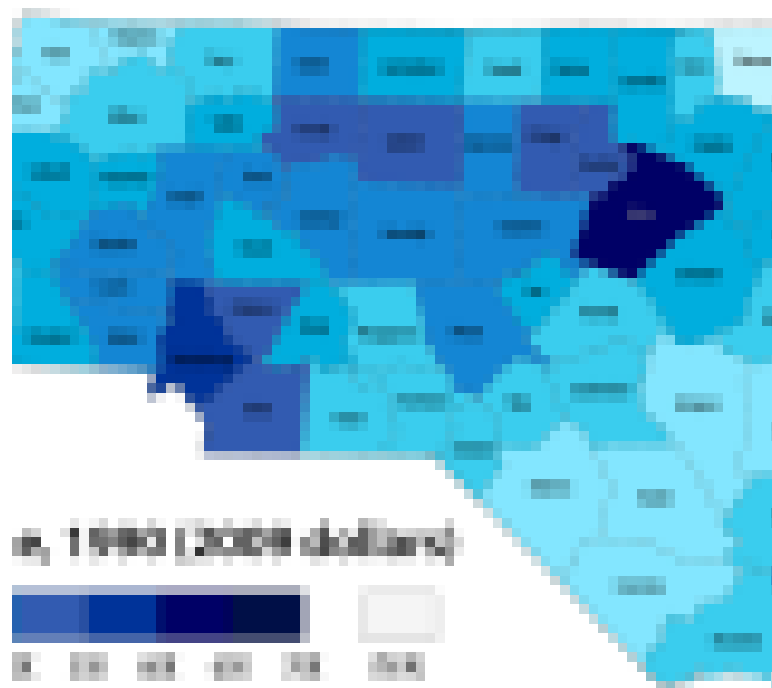
Mapping a changing North Carolina

BY DAVID WALBERT

The slideshow linked here provides a series of maps that show various data for each county in North Carolina. They're drawn from data from the U.S. Census for 1970, 1980, 1990, and 2000. The maps show population density, how much of the population was urban, income and poverty levels, levels of education, and percentages of new residents and Latino immigrants.

Below, you'll find explanations of what the maps mean and how the data was obtained. You'll also find questions to guide your analysis of them.

Mapping a changing North Carolina¹



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The maps in this slideshow, drawn from U.S. Census data, show how various aspects of North Carolina's population have changed over time and vary from place to place.

This activity has two main purposes. The first is simply to give you a broad sense of how certain facts about North Carolina's population have changed over time and how they vary geographically.

The second purpose is to get you thinking about census data and what we can learn from it — what kinds of data are available, what we can learn from them, what questions they raise, and how we might go about answering them.

For the teacher: Your class can probably answer all of these "why" questions for your own county, or for yours and neighboring counties.

Some of the questions on this page you'll be able to answer just by looking at the maps. Some will take a good deal of thought and discussion. And some you won't be able to answer at all — at least not without going to the library or the Internet for more research. Seeing that a county is different from its neighbors or that something has changed over time is fairly easy; figuring out *why* can be much harder. Economists, historians, sociologists, and politicians struggle to answer some of these questions — and they often disagree on the answers.

Population density

The *population density* of a location is the number of people in that location divided by its area. In these maps, population density is measured in persons per square mile. Population density gives a sense of how crowded, developed, or urban a place is.

QUESTIONS TO CONSIDER

1. Find your county on the map. Is it more or less densely populated than neighboring counties? Why do you think that is? How has its population density changed over time — has it grown a great deal, or stayed about the same? In your experience, are people more likely to move into or out of your county? Can you see that trend reflected on the maps?
2. Of the counties with the highest population densities in 2000 — or densities much higher than surrounding counties — which had major cities? Are there counties with high population densities that do *not* have a major city? Why would there be so many people in those locations?
3. As North Carolina's population has grown, so (obviously) has its population density. These maps show that the state's population hasn't grown evenly — for the most part, it has grown faster in places that were already population centers. In 1970, Mecklenburg County had the state's highest population density, at 671 persons per square mile. Hyde County, in the northeast, had only 8.9 persons per square mile. Those counties also had the highest and lowest population densities in the state in 2000 (1317 and 9.3 persons per square mile, respectively). So Mecklenburg's population grew by 96 percent in 30 years, while Hyde's grew by only 4.5 percent.

Why does population usually grow faster in places that already have high population densities? Would you guess from these numbers that the increase in

Mecklenburg is due to natural growth (people having babies) or to in-migration (people moving into the county)? Why? Would you guess that more people have moved into or out of Hyde County? Why?

4. Which counties have grown especially fast that did *not* have dense populations in 1970? Why might those counties have grown so quickly?

Percent urban population

Urban means “of or in a city,” but how do you define what is a city? Is someone who lives in a town of 5,000 urban? What about someone in a suburban area that isn’t part of any town or city, but is densely populated?

The Census Bureau defines “urban” areas in two ways. The first is *urbanized areas*. These are the areas of high population density around large cities. Charlotte’s urbanized area, for example, includes parts of neighboring counties (Cabarrus and Union).

The second kind of urban area is any “place” with more than 2,500 residents. A “place” is usually an incorporated town or city — one that has its own government. But sometimes the Census Bureau defines unincorporated places as “places” for the purpose of counting population, such as a fast-growing but unincorporated community near a major city.

The *urban population*, then, is the population of urban places and urbanized areas combined. Everyone else is considered “rural.” And the percent of a county’s population that is *urban* is the percent of its population living in those two kinds of urban areas.

Confused yet? Basically, “urban” means what you think it means, but one of the great challenges of social science is coming up with rigorous definitions for things you thought were obvious!

Ok, now let’s look at the maps. These maps show the percent of each county’s population that was urban at the time of the census.

QUESTIONS TO CONSIDER

1. Compare the maps of population density with those of urban population. What similarities do you see? Why do you suppose that is?
2. Are there counties with high population densities that do not have high urban populations? Where are they located? Why might this be — how might people be spread out or distributed in the county? What do you imagine those counties would look like?
3. Find counties with low percentages of urban population. Where are they located? Why might those counties have developed that way?
4. Are there counties with low population densities but with a high percentage of that population concentrated in urban areas? Where are they located? Why might those counties have developed that way?
5. Are there counties that were far more urban in 2000 than they were in 1970? Where are they located? Can you guess (or determine from research) why they grew so quickly?

Median household income

Median household income gives you a snapshot of what the average or typical family and home might look like in a given area. These maps show each county's median household income in 2009 dollars. To interpret them, you'll need a few definitions.

MEDIAN INCOME

The median income is the income of the “average” person or household. If you made a list of every household in the United States and ordered it from highest income to lowest income, the income of the household in the exact middle of the list would be the median. Half of the incomes are above the median, and half are below it.

Median income is not the same as *per capita income*, which is the *mean* personal income — the total income of the country divided by the number of people in it. Inequality means that per capita income is typically much higher than median income.

HOUSEHOLD

A household consists of all the people who occupy a housing unit. A house, an apartment or other group of rooms, or a single room, is regarded as a housing unit when it is occupied or intended for occupancy as separate living quarters; that is, when the occupants do not live and eat with any other persons in the structure and there is direct access from the outside or through a common hall. People who share a household may or may not be members of the same family (see above).

A *householder*, in case you run across that term, is the person (or one of the people) in whose name the housing unit is owned or rented.

2009 DOLLARS

Over time, the amount of money — the total number of dollars — in the economy goes up, and a dollar gradually buys less. You may hear your parents talk about a time when a candy bar or a soda from a vending machine cost only a quarter (mine talked about when those things cost a nickel). Now they cost about a dollar. That's *inflation*.

The federal government tracks inflation each year by averaging the prices of various goods and services and calculating how much they've risen. That average price rise is the *inflation rate*. Some prices rise faster than the overall inflation rate, some rise more slowly, and some fall over time. But the overall inflation rate gives an idea of what a dollar will buy, compared with what it bought a year ago or ten years ago.

Inflation means that over time, incomes rise, just as prices do. Practically everybody makes more money than they used to; sometimes these raises in income are called “cost of living increases” — they cover the rising cost of living. If we simply mapped median household income, you'd see a steady rise — gradually darkening blues, on these maps — but all you'd really see was inflation.

To make the maps easier to interpret, we've adjusted the figures for inflation, so that all dollar amounts are given in “2009 dollars.” That means we've multiplied figures from (for example) 1970 by total amount of inflation between 1970 and 2009. The result is that

you're seeing what people would have been paid in 1970 if they'd been paid in dollars that were worth what dollars are worth in 2009.

QUESTIONS TO CONSIDER

1. What are we measuring when we say “median household income, in 2009 dollars”? Why did we adjust these historical figures for inflation? What does adjusting figures for inflation reveal that we couldn't see from raw data? Is there anything that these adjustments would hide or make confusing?
2. Which counties had the highest median incomes in 2000? Where are they located? Where do residents of those counties work? What kinds of jobs are available?
3. Some coastal counties had high median incomes in 2000 (but did not in prior decades). How can you explain that? Who has moved into those counties, and where does their income come from?
4. In 1980, median incomes fell almost everywhere compared with 1970. What happened in the 1970s that cause that? (Remember these are *inflation-adjusted* incomes.)
5. Compare the patterns of these maps with the patterns of population density and urban population. How are they similar? Different? How can you explain those similarities and differences?

Percent of families in poverty

This, like some of the other maps, has an intuitive meaning — one that you can probably guess — but is nevertheless hard to nail down. Some people think of starving children in rags from Dickens novels, and others complain that they're poor because they can't afford that new game for their PlayStation. What, exactly, is poverty?

MEASURING POVERTY

The Census Bureau determines a family to be living in poverty if its income is below a *poverty threshold* that varies by the size and composition (makeup) of the family. The poverty threshold is adjusted each year for inflation (see above). According to this definition, a family (and everyone in it) is living in poverty if the family cannot afford goods and services that Americans typically expect to buy. It does not necessarily mean that the family lacks necessities such as food or clothing, though this may be the case. Poverty is also determined based on income before any government assistance, such as food stamps, is received.

You can see the Census Bureau's website for more information about poverty in the U.S.³, how poverty is measured⁴, and historic poverty thresholds⁵.

FAMILIES AND HOUSEHOLDS

Also note that a *family* is different from a household, which we defined above. A family is a group of two people or more related by birth, marriage, or adoption and residing together.

So a family shares a household, but not all households are families. (What sort of household wouldn't qualify as a family?)

Sometimes the Census Bureau measures things in terms of households, and sometimes in terms of families. People who share a household share expenses, so it makes sense to look at the median income of a household. But unrelated people who share a household can easily split up, whereas people in families are, for the most part, stuck with one another. So it makes more sense to look at families in poverty rather than at households.

QUESTIONS TO CONSIDER

1. Has the overall percentage of North Carolinians living in poverty increased or decreased over time? What factors might have caused that change?
2. Do these overall poverty levels surprise you? Why or why not?
3. In what regions of the state were poverty levels highest in 2000? Where are they lowest? What does that pattern suggest about the economy in those parts of the state?
4. How do the patterns on these maps compare with those for population density, urban population, and median income? What conclusions might we draw from those similarities and differences?
5. Are there counties that have more people living in poverty than they did in 1970? Where are they? Why might poverty have increased in those counties?
6. Are poverty levels high or low, compared with the state average, in counties with large urban populations? Does that surprise you? (Remember that there may be a large number of poor people in a city with a large overall population even though they make up a relatively small percent of the total.)

Levels of education

We'll look at the next two sets of maps together. The first shows the percentage of people in each county over the age of 25 who had graduated from high school. The second shows the percentage of people in each county over the age of 25 who had graduated from college.

Remember, when you look at these maps, that you're looking at the total population over age 25 — not at current dropout rates or at numbers of kids going to college. People who graduated from high school (or left school early) in 1950 are still represented on the map for 2000, alongside people in their late twenties who made their decisions much more recently. (The map for 1970 still includes people born in 1900.) If high school graduation rates rise rapidly, then, you'll see a much slower rise on maps like these.

(A note: In 1970, the Census Bureau actually reported the number of people who had attended 4 or more years of college, not the number who had graduated. That's a small difference, and we've ignored it on these maps.)

QUESTIONS TO CONSIDER

1. Statewide, has risen faster since 1970 — the percentage of people who had graduated from high school or the percentage of people who had graduated from college?

2. Why has the percentage of people graduating from high school risen so fast? What opportunities did people without a high school diploma have in the 1930s — what kinds of jobs could they get? In the 1960s? What kinds of jobs can they get today?
3. How do the patterns on these maps compare with those on the maps of poverty level and median income? What conclusions can you draw from these similarities or differences?
4. Look for counties that have larger percentages of high school graduates than their neighbors. Where are they located? What in those counties has encouraged people to finish high school — or has attracted people with high school diplomas to move there?
5. Look for counties that have larger percentages of college graduates than their neighbors. Where are they located? What in those counties has encouraged people to attend and finish college — or has attracted people with college degrees to move there?
6. Do you think that particular counties have high percentages of high school graduates because people who grow up there tend to finish high school, or because people with high school diplomas tend to move there? Does this vary from county to county?
7. Do you think that particular counties have high percentages of college graduates because people who grow up there tend to attend and finish college, or because people with college degrees tend to move there? Does this vary from county to county?

New residents

In the last 20 years, North Carolina has increasingly become home to people from elsewhere in the United States and the world. At the same time, North Carolinians have become more mobile. Education and jobs increasingly take people away from the towns and counties where they grew up.

These maps show the percentage of each county's residents over the age of 5 who had lived outside the county 5 years earlier — that is, residents who have lived in the county less than 5 years. This data is available only for 1990 and 2000.

QUESTIONS TO CONSIDER

1. What trend to the maps show — more or less migration over time?
2. Which counties had the most new residents in 1990? in 2000?
3. What cities, industries, institutions, or facilities do those counties have that would attract new residents?
4. What cities, industries, institutions, or facilities do those counties have that would attract *temporary* residents?
5. What similarities can you find between the pattern of these maps and the pattern of previous maps? What conclusions can you draw from those similarities?

Latino population

North Carolina has seen a rapid increase in immigration since 1970, especially from Latin America. The simplest and most powerful way to show the impact of immigration is to show the percentage of each county's population that is of Latino ancestry, as these maps do.

The Census Bureau asks people to report their race or ethnic background. Latinos, as shown on these maps, are people who reported themselves as being of Latino ancestry. Not all, however, are immigrants.

Note: In these maps, because the numbers represented are so much smaller than in the other maps, we've changed the scale. The scale we've used here clearly shows both geographic differences and change over time, but be aware that if you compare these maps directly to others, it will look as though Latino population is higher than it really is.

QUESTIONS TO CONSIDER

1. In 1970, the Latino population was small enough that the Census Bureau provided data only for places with 500 or more people of Latino ancestry (or "of Spanish language," as it said at the time). Why do you suppose these counties had significant Latino populations? Which two counties had the highest percentage of Latinos in 1970? What do those two counties have in common — what do they have that other North Carolina counties do not — that would have attracted people of diverse ethnic backgrounds?
2. During what decade did Latino population rise most rapidly in North Carolina?
3. Where did Latino population rise most rapidly in the 1980s? Why would immigrants have been attracted to that part of the state? What opportunities did they have there?
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On the web

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Notes

1. See <http://www.learnnc.org/lp/mapliner.php?id=nc-recent-census-maps>.
2. See <http://www.learnnc.org/lp/mapliner.php?id=nc-recent-census-maps>.
3. See <http://www.census.gov/hhes/www/poverty/poverty.html>.
4. See <http://www.census.gov/hhes/www/poverty/about/overview/measure.html>.
5. See <http://www.census.gov/hhes/www/poverty/data/threshld/index.html>.

About the author

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