

The Growth of Cities in the Fourth District

by Tim Dunne

When the boundaries of the Fourth District were drawn in 1914, three district cities—Cleveland, Pittsburgh, and Cincinnati—ranked among the top 20 most populous cities in the United States. Today, none of these cities ranks in the top 35, and the only district city in the top 20 is Columbus. Including the surrounding suburban areas along with these cities (the so-called metropolitan statistical area, or MSA), doesn't change the picture much: Population growth in these areas has also lagged, with Pittsburgh, Cleveland, and Cincinnati all dropping out of the top 20 largest MSAs over the last half century.

A number of factors are behind the decline. For starters, cities in the Fourth District have been affected by the same broad trends that have influenced the population growth of other large, older cities across the United States. Recent research also suggests that population growth is linked to the educational attainment of residents, and this link is especially strong for cities located in the Northeast and Midwest.

■ Trends in Population Growth

The decline in the population of many Fourth District cities is part of a broader national trend that represents a shift in the population from the Northeast and Midwest to the West and the South. Figure 1 illustrates this point. The figure plots city population growth from 1950 to 2005 for the 100 largest cities in 1950 against the average January temperature of the city. One can think of the January temperature as a proxy for the location of the city within the United States. The colder cities are in the Northeast and upper Midwest. The pattern is unmistakable—colder cities grew, on average, much more slowly than their warmer counterparts

over the period. Even cities such as Minneapolis and Boston experienced population declines of almost 30 percent over this period. This pattern is true for colder metropolitan areas and colder suburban areas, as well.

The different patterns of population growth for warm and cold regions reflect a long-term trend in the movement of the population away from the original core population centers in the Northeast to the West (see Edward Glaeser and Jesse Shapiro, 2003, for a description of the basic developments that have influenced population growth in U.S. cities across regions). When the country was expanding into the Midwest, this aided Fourth District cities. But as the population moved further west, growth in Midwest cities slowed. More recently, southern cities have experienced higher growth, and it is argued that technological changes, such as the invention of air-conditioning and the eradication of malaria, allowed for the successful expansion of these locales.

An alternative view is that the economic advantages that fostered the growth of the older Northern cities have waned. In particular, low transportation costs and access to raw materials offered by proximity to the Great Lakes or navigable rivers such as the Ohio became less important as trucking became the dominant shipping mode. New transportation technologies allowed manufacturing and distribution firms to consider sites away from traditional water and rail transportation hubs as feasible locations. This is not to say that transportation costs have become unimportant in determining firm location. There are still benefits to being near customers, suppliers, and other firms in an industry. It is just that

Many Fourth District cities have experienced relatively weak population growth over the past half century. One possible reason some cities have recently grown more is because they have better educated workforces. Recent research suggests that the educational attainment of residents is critical to population growth, particularly for cities in the Northwest and Midwest.

the particular transportation advantages offered in the Great Lakes region have become less important as transportation technology and networks have evolved and the economy has shifted away from manufactured goods that are natural-resource intensive. The decline in manufacturing-intensive cities is shown in figure 2. Cities that had a high share of manufacturing employment in 1970 have experienced low subsequent population growth. Except for Columbus, the other large Fourth District cities are found toward the lower middle and right-hand corner of the chart, with Cleveland, Dayton, and Youngstown having very high manufacturing shares in 1970.

Clearly, all these stories play some part in explaining the recent population growth histories of Fourth District cities, but there is more to the story than location or industrial specialization. Another broad trend influencing the growth of older cities is a general fall in population densities. In 1950, the population density of 13 out of the top 20 most populous cities exceeded 10,000 persons per square mile; this list included Cleveland and Pittsburgh. Only 5 cities in the top 20 today are this dense, and fast growing, large cit-

FIGURE 1 CITY POPULATION GROWTH AND TEMPERATURE, 1950–2005

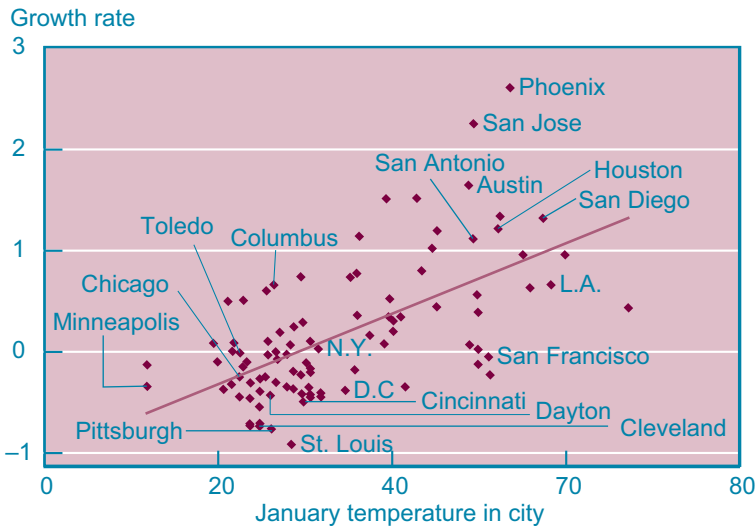


FIGURE 2 CITY GROWTH AND MANUFACTURING, 1970–2005

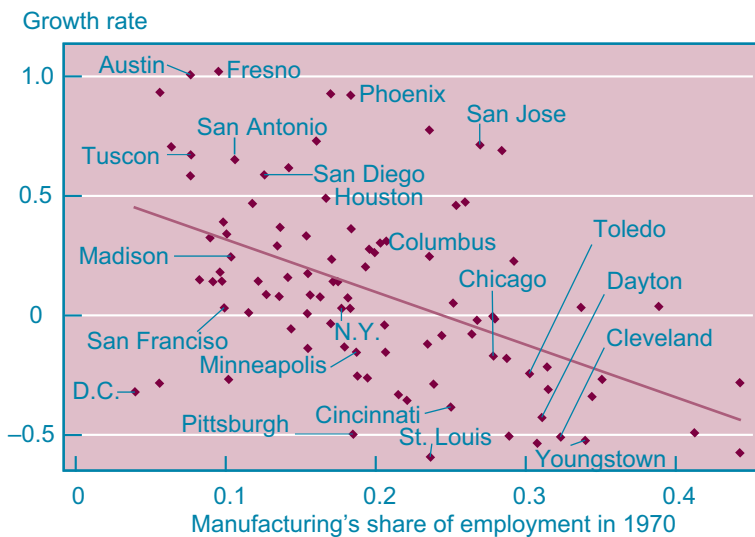
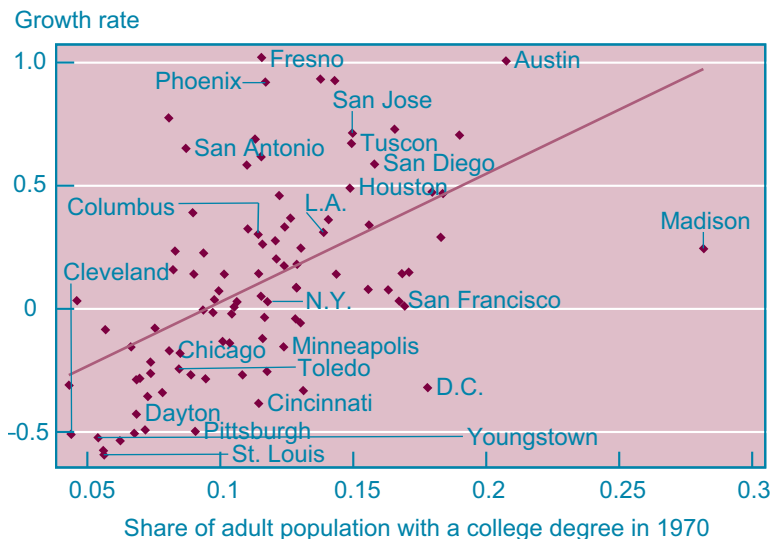


FIGURE 3 CITY POPULATION GROWTH AND EDUCATION, 1970–2005



ies such as San Antonio and Phoenix have densities of about 3,000 persons per square mile. The drop in density is due to a number of factors. Household size has fallen: In 1950 households used to average 3.4 persons; now they average 2.6. Access to cars has allowed workers and firms to move outside the central city. As transportation networks evolved, especially ring roads and highway systems, the cost of moving people within and around most cities fell.

Moreover, cities experiencing population inflows in the South and West often expanded their borders, lessening density. This was not the case for many of the large Fourth District cities, where city boundaries have remained relatively fixed over the last half century. One exception is Columbus, a city that has grown from 39.4 square miles in 1950 to 210.3 square miles in 2000. Although cities such as Cleveland and Pittsburgh had relatively fixed boundaries, this did not result in above-average population growth in the surrounding suburbs over the period. Cleveland's suburbs grew weakly compared to other major cities, and Pittsburgh's suburbs actually contracted from 1970 to 2000. In fact, cities that had relatively high population growth rates from 1970 to 2000 tended to have relatively high suburban population growth rates, as well, and cities with low growth rates tended to have low suburban growth rates.

■ Education and City Growth

Many analysts identify the education level of the populace as a key factor in city and metropolitan growth. Figure 3 depicts the relationship between city population growth and the share of a city's adult population that had four or more years of college education in 1970. Two striking patterns emerge. Population growth is generally higher in cities with a greater initial share of college-educated residents, and the college shares of some Fourth District cities are extremely low. This is especially true for Cleveland and Youngstown. College shares in these two cities were less than 50 percent of the average in 1970. In contrast, Columbus, with its more highly educated workforce, experienced solid population growth over the last 30 years. The patterns observed in figures 2 and 3 are related—cities that had high manufacturing shares in 1970 tended to have low college shares, as well.

FIGURE 4 METROPOLITAN POPULATION GROWTH, 1970–2005

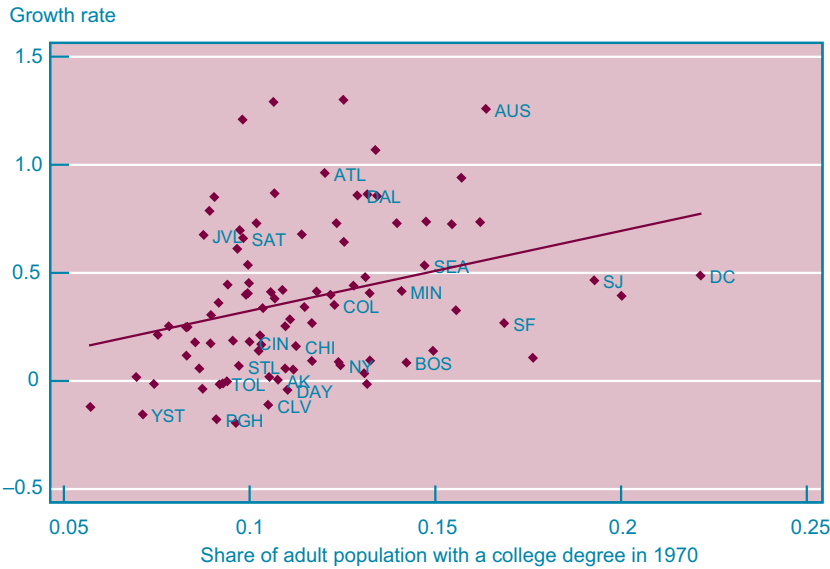
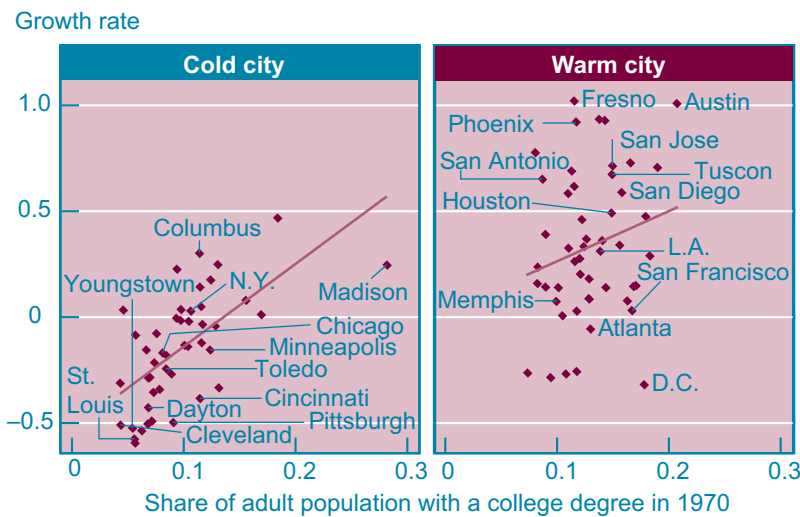


FIGURE 5 CITY GROWTH, 1970–2005



Sources (figures 1–5): U.S. Census Bureau; and State of the Cities (HUD).
 Note (figures 1–5): All population growth rates are calculated as log differences.

However, not all Fourth District cities fit the standard story. In 1970, Pittsburgh’s share of college graduates was roughly twice that of Cleveland’s, and over the last 30 years, it has risen markedly. In 2005, Pittsburgh had the highest share of college graduates of any large Fourth District city with the exception of Lexington, Kentucky. Nonetheless, Pittsburgh has had roughly the same relative decline in population as Cleveland over the past 50 years. One possible reason for the difference in growth patterns between the two cities may have to do with the geographical distribution of educated people within the respective metropolitan areas. In the

Pittsburgh area, the city has a slightly greater college share than the suburbs. In the Cleveland metropolitan area, the opposite is true—the suburbs have a much larger college share than the city. In fact, the share of college graduates in Cleveland’s suburbs exceeded the city’s share by 2.4 times in 2000—one of the largest differences in the nation, and this gap has existed for decades. These differences in suburb-city shares balance out at the metropolitan level, and the Pittsburgh and Cleveland metropolitan areas each had college shares of about 27 percent in 2005, which is slightly under the national average for large metropolitan areas.

While the overall share of college graduates rises when one incorporates the suburbs into the calculations, the same general story regarding education and growth occurs when the unit of analysis is the metropolitan area. Populations grew faster, on average, in more educated metropolitan areas (see figure 4).

There are a number of theories as to why a city with a more skilled populace may grow faster than a less skilled locale. Robert Lucas argued in 1988 that cities with high human capital generate significant knowledge spillovers. In this theory, cities facilitate the interaction of skilled workers, and such interactions foster new ideas and new innovations, which lead to higher growth. The physical proximity of skilled individuals to other skilled individuals is central to this story. Recent empirical work by Enrico Moretti supports this view. He shows that firms located in cities with skilled workforces have higher productivity, even after controlling for the skill level of their own workforces, suggesting such spillovers exist. However, the overall importance of such human capital spillovers is still an open question.

Edward Glaeser and Albert Saiz also consider the possibility that cities with more skilled inhabitants are more flexible and, in their terms, can “reinvent” themselves in response to negative shocks. They argue that older northern-city growth is more closely linked to education because of a greater need to reinvent in these cities. In particular, these cities and metropolitan areas experienced particularly severe shocks to their manufacturing sectors beginning in the 1970s. Cities with relatively skilled workforces adapted better than those with unskilled workforces. This point is illustrated in figure 5, which plots population growth and education separately for warm and cold cities (here a cold city is one where the average January temperature is below freezing). In the case of cold cities, the share of college-educated adults is positively correlated with growth, and initial education explains a significant share of the variation in cold-city growth rates. For warm cities, the correlation between education and growth is much weaker, and education explains little of the difference in growth rates in the warm-city sample. Glaeser and Saiz report that the same patterns apply for metropoli-

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tan areas, as well. The implication for Fourth District cities is clear. Fourth District cities had few of the growth advantages offered by the warmer locales but, at the same time, many were poorly positioned in terms of workforce skills to take advantage of the technological shifts that occurred in the last two decades of the twentieth century.

Although many analysts believe that a highly skilled workforce is an important factor in the city-growth equation, it may also be the case that cities and metropolitan areas on a high growth trajectory or poised to grow simply attract more educated workers. That is, the causality could be reversed. It is reasonable to think that the relationship between city growth and education runs both ways. Educated workforces lead to higher growth, but high-growth cities also attract educated workers.

Research that attempts to sort out these confounding effects finds support for the idea that an educated workforce leads to higher city growth. It is probably safe to conclude that cities and metropolitan areas looking to foster long-term growth should consider policies that increase educational attainment and attract and retain educated workers as important tools for local economic development.

■ **Recommended Reading**

Edward Glaeser and Jesse Shapiro. 2003. "City Growth: Which Places Grew and Why?" in B. Katz and R. Lang, eds. *Redefining Urban and Suburban America*, vol 1. Washington, D.C.: Brookings Institution.

Edward Glaeser and Albert Saiz. 2004. "The Rise of the Skilled City," *Brookings-Wharton Papers on Urban Affairs*, 5:47–94.

Enrico Moretti. 2004. "Workers' Education, Spillovers, and Productivity: Evidence from Plant-level Production Functions," *American Economic Review*, 94(3): 656–90.

Robert Lucas. 1988. "On the Mechanics of Economic Development," *Journal of Monetary Economics*, 22:3–42.

Curtis Simon and Clark Nardinelli. 2002. "Human Capital and the Rise of American Cities, 1900–1990." *Regional Science and Urban Economics*, 32:59–96.

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