

# Growing Pains





# A Tale of Two Cities and a Farm in Between

*Richard Whisnant*

**I**magine a town—call it Millville—where the only large employer recently closed its plant and laid off the workers. The effects of the layoffs are rippling throughout the community in the form of lowered income, increased stress, and reduced property values. Everyone fears the future. Job prospects are limited. The town faces stagnation. Its leaders and its citizens crave growth, which they see as necessary for a return to economic vitality and as motivation for the town's youth to stay and work where they were born.

Imagine a second city—call it Mallville—just an hour's drive away. At the edge of Mallville, an interstate interchange has attracted a sprawling host of retailers. Property values in the area are rising rapidly. Houses and condominiums are springing up around the retail strip. Jobs are available in new office buildings rising amid the retail stores. But traffic, noise, polluted stormwater runoff, and air pollution all seem to be rising along with the office towers. Residents of Mallville miss the forests and the farmland that used to lie at their city's edge. The influx of people is creating new demands for expenditures on education and public safety. Rapid changes are dooming businesses elsewhere in the city, especially in the old urban core. Many people in Mallville believe that

the growth on the edge of town has outpaced the city's ability to maintain its quality of life, and they demand smarter growth management.

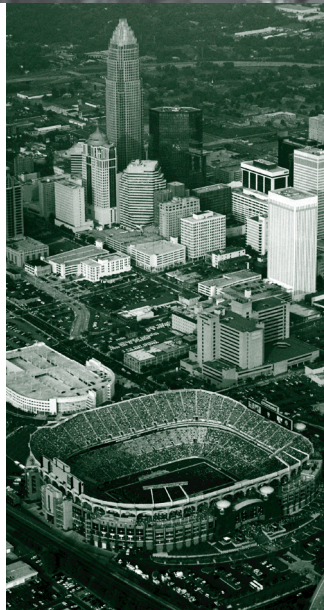
Meanwhile, on a farm between Millville and Mallville, the owners see profits shrinking and land prices rising. If they subdivide and sell, they can afford many things they want—good schools for their children, perhaps a second home at the coast. If they continue to farm as they always have, they see only harder times ahead. As much as they love the land in its present state, development and the money that it will bring look like the easiest route to a better life for themselves and their children.

Millville, Mallville, and the farm in between represent three of the most common viewpoints on growth in North Carolina (and elsewhere in the United States) at the turn of the century. The differences in these viewpoints raise difficult challenges for policy makers in a state that has long sought an elusive geographic balance in growth and development. The historical approach to growth in North Carolina has had two disconnected facets. Uniform statewide policies were mostly concerned with geographic dispersion of public investments and mitigation of environmental impacts. Most local decision makers tried to achieve whatever growth they could. Are these approaches useful in solving the current problems of Millville, Mallville, and the farm in between? This article examines growth policies and trends in the state and discusses some impacts that growth is having on communities in North Carolina. The purpose of the article is to provide a context for the growth management debate now under way in the political realm and in the pages of this issue of *Popular Government*.

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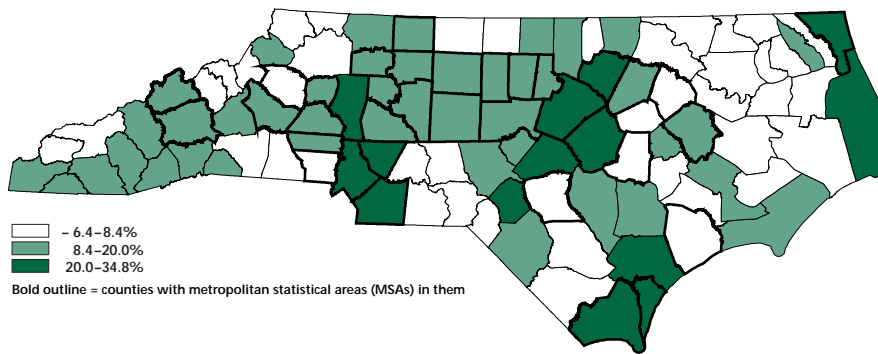


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GARY O'BERRY / THE CHARLOTTE OBSERVER

**Figure 1. Population Growth, North Carolina Counties, 1990–98**



Source: North Carolina Dep't of Env't and Natural Resources, Div. of Env'tl. Ed., Geographic Information System (GIS) database summarizing U.S. Census Bureau data from various data sets (database in author's possession) (1998).

## How North Carolina Has Grown

### Population

Thomas Wolfe was not the only one who felt about North Carolina that “you can’t go home again.” For most of the twentieth century, up until the 1970s, North Carolina experienced net out-migration.<sup>1</sup> The state’s citizens left its farms and small towns for the manufacturing centers of the Northeast and the Midwest, where the assembly lines of the new industrial order brought relatively high wages. As out-migration slowed with the

rise of North Carolina’s own mills and factories, the population began to grow faster but also to spread just outside city limits. There was a shift from “a rural farm to a rural non-farm way of life, and on to an urban non-city way of life.”<sup>2</sup> After midcentury, the population of the state was moving, not to the city-level densities typical of large metropolises elsewhere but to a suburban-level density that sprawled across the landscape. The dispersion of textile mills throughout the small towns of the Piedmont and the decentralized production of the state’s

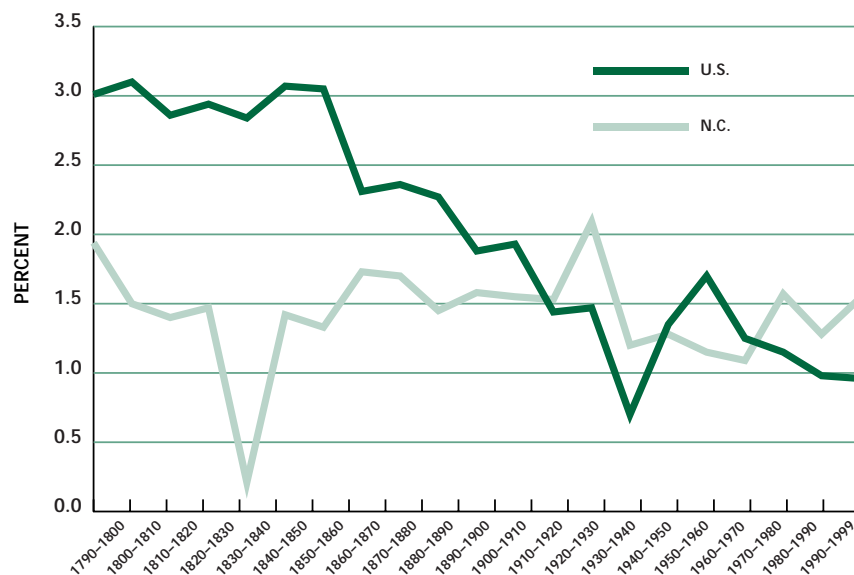
defining cash crop, tobacco, both encouraged this semiurban, semirural form of development.<sup>3</sup>

Beginning in the 1970s, the state formally attempted to encourage this trend through a policy of “dispersed urbanization.”<sup>4</sup> The state policy goals were aligned with the direction that demographics supposedly indicated was most people’s desire: urban living in a rural setting.<sup>5</sup>

Whatever differences this state policy of “balanced growth” made, it did not change the fundamental trend of faster population growth in and around larger urban areas.<sup>6</sup> As early as the 1830 census, it was apparent that the state’s cities were growing at a faster rate than its rural areas. By the 1930 census, although the state remained only 25 percent urban, its cities showed a larger gain in absolute numbers of people than its rural areas did. By 1950 the proportion of the state’s population that was urban had increased to 34 percent; by 1980, to 48 percent; and by 1990, to 50 percent.<sup>7</sup> Projections for the 2000 census and beyond show this trend continuing. The Mallvilles are picking up steam; the Millvilles are lagging in growth.<sup>8</sup> As for the farms, North Carolina has been at or near the top of the nation in the decrease in farm employment for the last twenty years.<sup>9</sup> (For a graphic representation of the rate of population growth from 1990 to 1998, see Figure 1.)<sup>10</sup>

The state as a whole now is growing at a historically fast pace. North Carolina’s population growth from 1990 to 1999, an increase of 1.02 million people, ranked sixth nationally. Its 15 percent annual growth rate during the same period ranked eleventh nationally.<sup>11</sup> The state is one of fifteen projected to have population increases of more than one million people from 1998 to 2025. Of these fifteen, only five (Florida, Georgia, New York, Texas, and Washington) are projected to have higher growth rates than North Carolina.<sup>12</sup> Sometime in the 1970s, North Carolina’s annual growth rate surpassed the nation’s average annual growth rate, and it has stayed ahead of the national average since then (see Figure 2). North Carolina’s net domestic in-migration was estimated to rank fourth highest in the United States between 1998 and 1999.<sup>13</sup>

**Figure 2. Average Annual Population Growth, United States and North Carolina, 1790–1999**



Source: Rates to 1970 from C. HORACE HAMILTON, 1 NORTH CAROLINA POPULATION TRENDS: A DEMOGRAPHIC SOURCEBOOK (Chapel Hill, N.C.: Carolina Population Center, 1975). Rates from 1970 to 1999 calculated from U.S. CENSUS BUREAU, STATE POPULATION ESTIMATES AND DEMOGRAPHIC COMPONENTS OF POPULATION CHANGE: APRIL 1, 1990, TO JULY 1, 1999, available at <http://www.census.gov/population/estimates/state/st-99-2.txt> (as of July 13, 2000); and from historical census figures for 1970, 1980, and 1990.





JOHN COLE / THE HERALD-SUN, DURHAM, NC

## Economy

Despite a favorable climate, good water supplies, a strategic position between major markets, and generally abundant natural resources, North Carolina was among the poorest states through the middle of the twentieth century. As late as 1959, the per capita income of North Carolinians ranked in the bottom five among the fifty states.<sup>14</sup> Political rhetoric has been shaped through the years to explain, if not to address, this problem of relative poverty.<sup>15</sup> A typical form of labor emerged, in which families operated small farms that provided some income and some food, and also worked in nearby mills for low wages. This second income let families purchase goods and boosted the state's percentage of workers drawing a check from the manufacturing sector, but it also kept wages low.<sup>16</sup> Such a system of labor fit the development pattern of dispersed urbanization by allowing factory workers to have small plots of land for farming (unlike their counterparts in larger cities).

North Carolina has rarely touted—indeed, it has officially sought to avoid—the concentration of economic resources represented by the major metropolis and the large, industrialized

farm. Only recently, with the rise of Charlotte as a banking center, the rise of the Research Triangle as a center for research and development, and the rise of intensive livestock operations in the east, has the state seen the concentrated forms of production that elsewhere have been major engines for economic growth. The state has some prominent assets in its higher education institutions, highway system, and metropolitan areas that might have been central to an economic development policy, but state leaders in the twentieth century have tried to focus state resources on areas that lacked these assets. The policy has been to leave the metropolitan areas and established institutions to use their own relatively ample means to market themselves and grow.

Just as North Carolina has reversed its population loss, leaving the twentieth century on a strong upturn in growth, it also has moved onto a faster track in economic growth. Per capita annual income from 1970 to 1997 almost tripled in real terms, with an average annual real increase of 11 percent.<sup>17</sup> This economic growth is another new feature of a state with a long history of low wages and poverty. But the engines for this growth

statewide are more the metropolises and the private decisions to locate in and around them, than the successes of dispersed urbanization. Growth is following the course predicted by some urban economists, who saw in the Piedmont Crescent the intermediate-sized cities, linked by transportation corridors, that could give all the advantages of urban business concentration (“agglomeration”) while avoiding the problems of cities larger than a million people.<sup>18</sup> North Carolina is projected to have none of the nation's top thirty metropolitan economies in 2025, as measured by employment numbers, but Raleigh-Durham and Charlotte are projected to make the top thirty metropolitan areas in employment increases. The Piedmont Triad is projected to rank 45th of the 315 areas studied nationally.<sup>19</sup>

There are other important ways to look at growth. Like the rest of the United States, North Carolina has seen strong economic growth as its baby boomers have worked through their prime productive years. The graying of this population will be a huge challenge for policy makers, including those concerned with growth management.<sup>20</sup> This age shift is somewhat softened by another

important current in growth, the rise in immigration of Latino, African-American, and other populations that are younger than the majority white population.<sup>21</sup> On the economic front, although income has grown, the nonmanufacturing sectors, not the sought-after manufacturing jobs, have driven growth.<sup>22</sup> The income of farmers, however, has not kept pace with the overall rising income of North Carolinians,<sup>23</sup> except for some who have opted for industrialized forms of agriculture.

### Growth Strategies

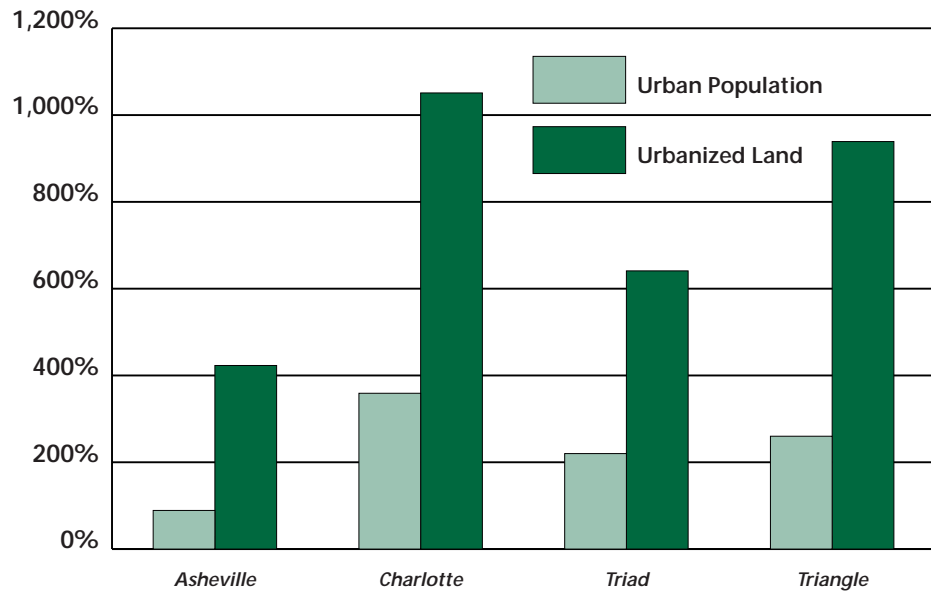
At the start of a new century, and given the manner and the pace of growth in North Carolina today, it seems particularly timely to ask whether the state's historical growth strategies adequately address the problems faced by Millville, Mallville, and the farm in between.<sup>24</sup> The policy of dispersed urbanization was explicitly touted in the 1970s as "a way to prevent the urban sprawl that has attended rapid economic expansion elsewhere in the country. North Carolina's larger cities, which are attractive, prosperous and safe by national standards, remain manageable in size and in touch with their citizenry."<sup>25</sup>

But as the data in this article show, urban sprawl has become a normal feature of growth and development in the state. In some ways the dispersed urbanization makes the sprawl worse. In much of the state, finding where city and suburb end and country begins is hard: development and population have spread for half a century in semiurban, semirural forms.<sup>26</sup> For some people concerned about sprawl, it is exactly this lack of defined urban edges that is most disturbing. Beyond the aesthetic issue—the desire of city residents to be within a five-minute drive of bucolic vistas—there is doubt about the ability of semiurban, semirural dispersed development to create distinctive and livable places.<sup>27</sup>

### Recent Patterns of Growth

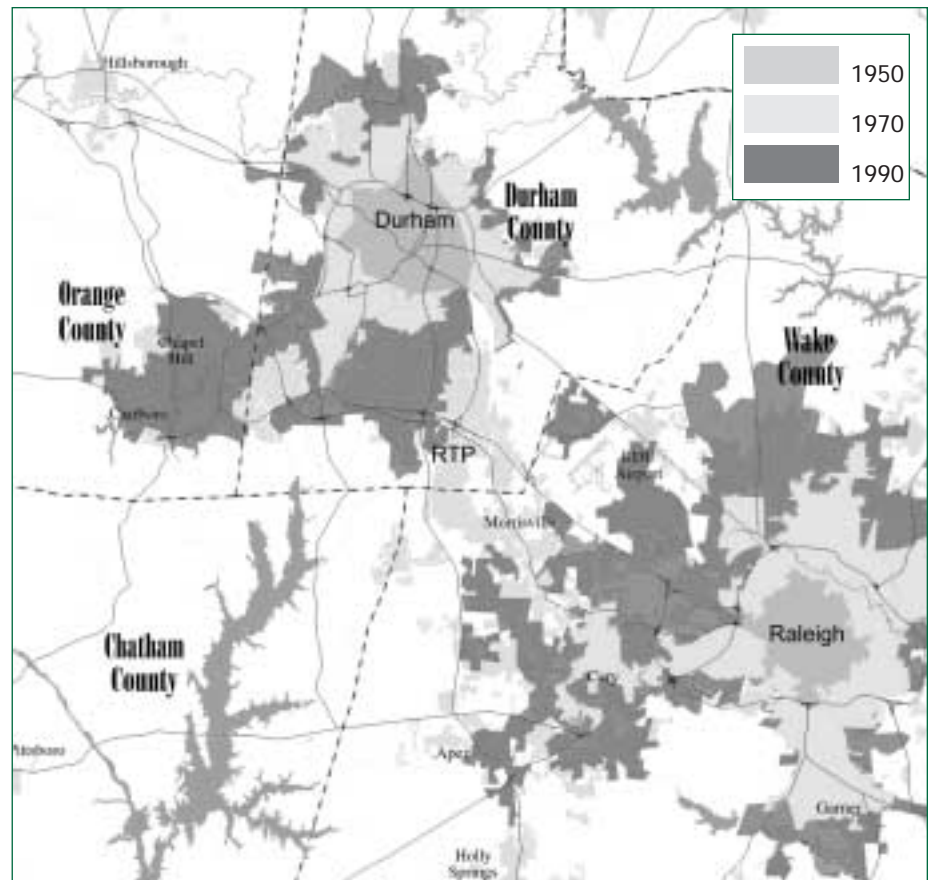
North Carolina has long been a state of small cities and towns separated from one another by unincorporated rural land. However, in the years following World War II, urban regions across the

**Figure 3. Growth of Urban Population and Urbanized Land in Four North Carolina Regions, 1950–90**



Source: UNITED STATES CENSUS BUREAU, 1990 CENSUS OF POPULATION AND HOUSING: GUIDE PART B, glossary 17 (Washington, D.C.: Census Bureau, 1996).

**Figure 4. The Urbanized Area in the Research Triangle, 1950, 1970, and 1990**



Source: Triangle J Council of Governments, Geographic Information System database (in council's possession) (printed Mar. 2000).



*In the western part of Wake County, new houses are springing up—some, like these, next to a farm.*

GARY ALLEN / THE NEWS AND OBSERVER

state have been spreading faster than they have been growing in population, bringing municipalities closer to one another. As Mallville sprawls out to Millville, it is consuming the farm in between.

Statistics on urbanized areas kept by the U.S. Census Bureau since 1950 provide one means of tracking these changes. An “urbanized area” is defined as a central place and its adjacent densely settled area with a population of 50,000 or more. In general, land is included as adjacent settled area if it has a density of 1,000 people or more per square mile. From 1950 to 1990, urban-

ized land in the Asheville, Charlotte, Triad, and Triangle regions combined grew more than three times faster than the urban population in those regions (see Figure 3).<sup>28</sup> More recent data available for the Fayetteville and Wilmington regions show similar trends.<sup>29</sup> This dispersed pattern of development has caused the density of the state’s urban areas to drop significantly. For example, in 1950 the urbanized area in the Triangle had a density of more than 5,000 people per square mile. By 1990 the density had dropped to less than 2,000 people per square mile. In 1950 the

urbanized area in the Triangle included 27 square miles of land. By 1970 it had grown to 114 square miles, and by 1990, to 282 square miles of land (see Figure 4). The result is a continuation of the state’s historical pattern of creating places that are neither city nor country but something between that often is too dense to farm but too dispersed to serve efficiently with public transportation and other urban amenities.

Data from the National Resources Inventory document the conversion of rural land to developed uses statewide. From 1982 to 1997 in North Carolina, 1.72 million acres of rural land were developed, an increase of 70 percent in developed land. The rate of conversion increased over this period from 10.1 acres per hour from 1982 to 1987, to 17.8 acres per hour from 1992 to 1997.<sup>30</sup> During the latter period, North Carolina ranked fifth nationally in the number of acres developed.

As more land is urbanized, the total farmland statewide is declining. In the twenty years from 1978 to 1997, it dropped by 17 percent.<sup>31</sup> Over the same period, the number of farms dropped by 40 percent. Suburbanization is adding to the pressures that changing global economics are exerting on North Carolina farmers. Rising land values make the prospect of working the farm less attractive. Global competition and marketing make the business of working the farm more complex.

As communities across the state spread out, people also are driving more. From 1951 to 1990, North Carolina’s population increased by 63 percent while the number of vehicle miles traveled increased by 430 percent, a rate almost seven times faster.<sup>32</sup> From 1995 to 2007, the population is projected to grow by 17 percent, while the number of vehicle miles traveled will increase by 43 percent, a rate about two and a half times as fast.<sup>33</sup>

These are just a few examples of some of the impacts of the state’s low-density pattern of development. As North Carolina communities begin to grow into one another, Millville may be increasingly hard to distinguish from Mallville, and many of the farms in between will begin sprouting houses and shopping centers instead of crops.



## Growth and Quality of Life in North Carolina

Another way of looking at growth in the state focuses on how population and growth in North Carolina counties over various periods of the twentieth century are “associated” (statistically linked in some way) with important quality-of-life indicators—fiscal and economic status, education, environment, health, and crime.<sup>34</sup> The inquiry reveals several interesting “correlations,” or relationships. A correlation does not prove a causal relationship—in this case, between growth or size and any of the quality-of-life variables. It merely suggests that one variable relates in some way to certain other variables (but not to all). So this is a screening analysis that begs for further research to determine whether population growth, size, or other variables are causal factors for quality of life in North Carolina and, if so, how strong the relationships are.<sup>35</sup>

### Population Growth and Density

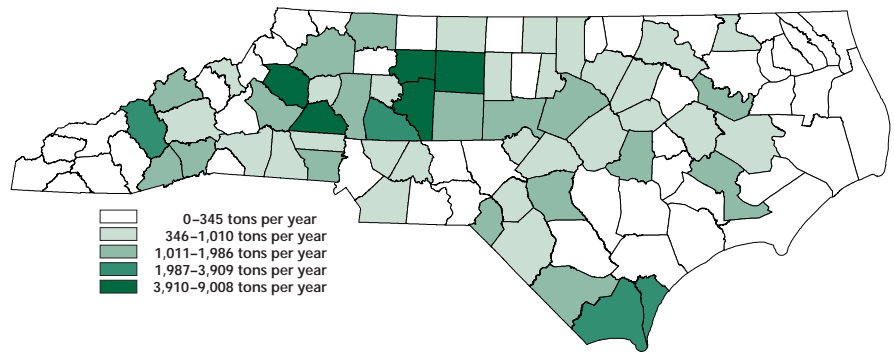
In the recent past, growth led to more growth. The counties with the highest growth from 1950 to 1990 largely continued to grow fastest from 1990 to 1998. Interestingly, however, the counties that grew the fastest from 1900 to 1950 were not as likely to be the fastest-growing counties from 1950 to 1990 and were even less likely to be growth leaders from 1990 to 1998.

Also in the recent past, big counties did not grow faster than small ones. From 1990 to 1998, the bigger counties had only a weak likelihood of being the faster-growing counties. From 1950 to 1990, there was a stronger likelihood of the bigger counties growing faster. The counties with metropolitan statistical areas (MSAs)<sup>36</sup> in them have grown more quickly in all the periods studied.

### Fiscal and Economic Status

In general, bigger, more urban, and faster-growing counties have higher per capita income, higher wages, and lower unemployment. An important goal of state policy, expressed in the 1997 report of the North Carolina Progress Board,<sup>37</sup> is to raise per capita income beyond the national average by 2010. The county data show a strong association between

**Figure 5. Volatile Organic Emissions from Point Sources, North Carolina Counties, 1995**



Source: North Carolina Dep't of Env't and Natural Resources, Div. of Env'tl. Ed., Geographic Information System (GIS) database summarizing U.S. Census Bureau data from various data sets (database in author's possession) (1998).

growth and per capita income, and between MSA status and per capita income. They show an even stronger association between population and per capita income. Interestingly this relationship with per capita income did not hold for the top ten fastest-growing counties in the last decade.<sup>38</sup> The very fastest-growing counties (in percentage terms) do not necessarily have the highest per capita incomes. The same patterns hold for average working wages. Similarly, higher-growth counties had lower average unemployment rates in the 1990s, but this association nearly disappeared for the ten fastest-growing counties.

Some evidence indicates that growth also brings higher costs of living, so increased income may not equate to higher purchasing power. For example, from 1990 to 1998, median income in Wake County increased by 34 percent, while housing prices increased by 52 percent and apartment rents by 57 percent.<sup>39</sup>

Growth's association with overall county tax rates, spending, and debt is ambiguous. For certain periods, growth counties are weakly associated with lower effective tax rates. But there is no association between the change in tax rates from 1990 to 2000 and the growth rates of counties. There are weak associations between county growth and total county government expenditures per capita, as well as between county growth and debt service per capita (debt service being the amount of money spent to repay past borrowing). These correlations are strongest for the counties that grew the fastest between 1950 and 1998.

### Education

More growth is associated with better educational outcomes. Average scores on the SAT (Scholastic Aptitude Test—a standardized test widely required for admission to college) are positively associated with county growth, size, and MSA status for all the periods studied. So are total public school resources spent per capita. As with income per capita, however, this relationship does not hold as strongly for the ten fastest-growing counties of the last decade.

### Environment

Of interest in environmental terms is the association between county growth and three outcomes: water quality, in the form of benthic testing of surface water;<sup>40</sup> air quality, in the form of air emissions; and solid waste generation. The data show no association between growth counties and water quality, as measured by benthic testing results. However, there is a weak association between counties with higher wages and counties with poorer water quality.

The state's air quality problems have been much in the news with press reports that North Carolina ranked as the third smoggiest state in the United States in 1999. Air experts attribute the smog to a combination of “point sources,” which are fixed locations such as industrial smokestacks, and mobile sources, such as cars. For most of the air pollutant types of point source emissions examined (particulates, sulfur dioxide, oxides of nitrogen, and carbon monoxide), there are no associations with



ROBERT MILLER / THE NEWS AND OBSERVER

*At times, subdivisions have replaced much or all of a family farm. Above, only the farmhouse and a shed remain.*

growth. However, the point source emissions of volatile organic compounds, such as gasoline, paints, and solvents, do show a substantial correlation with growth counties in the 1900–1998 period, much of the correlation apparently occurring in the counties that grew fastest from 1900 to 1950. This may reflect the manufacturing that grew in the western Piedmont (the furniture belt) in the first half of the twentieth century, particularly when one examines the counties with the highest level of volatile organic emissions (see Figure 5).

In 1991 the state set a statutory goal of reducing disposal of municipal solid waste by 40 percent on a per capita basis by June 2001.<sup>41</sup> The state will not meet this goal. In fact, it is disposing of at least 6 percent *more* waste per capita as the deadline approaches.<sup>42</sup> As counties grow faster, they generate more solid waste per capita. This association is weak when one looks at all the counties for the 1990–98 period but is stronger for the ten fastest-growing counties and very strong for the longer periods. For more

discussion of the environmental consequences of growth, see the article on page 46.

### Health

Mortality and childhood poverty are lower in faster-growing counties than in their slower-growing counterparts. Other public health indicators are ambiguous with respect to growth. Growth is associated with lower overall mortality. However, this association, like those with per capita income and SAT scores, is barely discernible for the ten fastest-growing counties of the 1990s. Faster growth is strongly associated with lower childhood poverty. There is some evidence that higher-growth counties have lower pregnancy rates for women less than nineteen years old, and lower infant mortality. Counties that grew faster in the first half of the twentieth century had higher incidences of total cancer as of the mid-1990s. In general, more populous counties reported higher total cancer rates. This effect could be the result of better cancer screening in the larger metropolitan areas. There is a slight negative correlation between total cancer incidence and growth for all the counties in the 1990–98 period.

### Crime

Crime rises with faster growth and larger populations. Faster-growing counties for the 1950–98 period saw growth (in both absolute numbers and the crime rate) in “index crimes” (the most serious crimes, including arson) along with growth in population. There is a high correlation between 1997 index crime rates and population, and a moderate correlation between high-growth counties and 1997 index crime rates, especially for the longer periods, 1950–98 and 1900–1998. There also is a high correlation between 1997 index crime rates and measures of economic well-being: counties with higher income per capita and higher average wages also had higher crime rates.

### Summary

As North Carolina awakened from slumber and grew in the last half of the twentieth century, the “Rip Van Winkle state” spread its large population around in numerous small towns and semirural areas. State government explicitly tried to maintain the state’s characteristically decentralized agriculture and dispersed



urban areas by attempting to funnel jobs and public investment to poorer areas.

At the beginning of the twenty-first century, however, farms have grown increasingly concentrated, and the state's more densely populated urban areas—its Mallvilles—have continued to be the major engines for economic growth. The small towns—Millvilles—and the rural areas still suffer from poor economic conditions and the attendant problems for quality of life. The problems of the major urban areas look very different from the problems of the lagging semi-urban and rural areas. It is increasingly difficult to imagine a development-and-growth policy that could treat Millville, Mallville, and the farm in between the same way, or that could treat them differently just as a function of their geographic location.

In North Carolina of the twentieth century, growth, size, and urbanization (as reflected in MSA status) were positively associated with higher personal income, better educational outcomes, and lower mortality. These are important facts for a state that until recently was near the bottom nationally in per capita income, educational attainment, and many public health measures. The data suggest that growth has significant benefits, although the extent to which it causes the improvement in quality-of-life indicators reported in this article is not clear and requires further study.

At the same time, growth in the metropolitan areas of the state has taken on a character that may deserve special policy treatment. The growth policies of the past, that largely left the metropolitan areas to fend for themselves, were not made with a view to solving urban problems. As North Carolina continues its position among the nation's leaders in urban growth, policy makers and public administrators face difficult management challenges, with little history of concerted statewide efforts to solve them.

## Notes

1. C. HORACE HAMILTON, 2 NORTH CAROLINA POPULATION TRENDS: A DEMOGRAPHIC SOURCEBOOK 166 (Chapel Hill, N.C.: Carolina Population Center, 1975).

2. GOVERNOR ROBERT W. SCOTT, THE STATEWIDE DEVELOPMENT POLICY 22 (Raleigh: N.C. Dep't of Admin., Mar. 1972).

3. See BRAD STUART, MAKING NORTH CAROLINA PROSPER: A CRITIQUE OF BALANCED GROWTH AND REGIONAL PLANNING 14 (Raleigh: N.C. Center for Public Policy Research, 1979).

4. SCOTT, STATEWIDE DEVELOPMENT POLICY 90 ("The primary thrust of development policy, therefore, must be to reinforce the growth of smaller and medium sized centers, outside of the Piedmont, in the 5,500 to 50,000 range. This is the only practical way to achieve a jobs-people balance through population dispersal in North Carolina").

5. In the development policy of the Scott administration (in the early 1970s), limiting the rate of growth was off limits: "A State-wide Development Policy . . . is not a policy to set direct limits on growth in any region. This probably is impossible, and no proven techniques are available anyway. Rather, development policy is drawn in a positive sense, supporting the expansion of clusters outside of the Piedmont Crescent as a counter-balance to increased urban concentration." SCOTT, STATEWIDE DEVELOPMENT POLICY 90.

6. See THE BROOKINGS INSTITUTION, CENTER ON URBAN & METROPOLITAN POLICY, ADDING IT UP: GROWTH TRENDS AND POLICIES IN NORTH CAROLINA 4 (Washington, D.C.: Brookings Institution, July 2000).

7. Data up to 1980 are from CATHERINE W. BISHIR, CHARLOTTE V. BROWN, CARL LOUNSBURY, & ERNEST H. WARD III, ARCHITECTS AND BUILDERS IN NORTH CAROLINA: A HISTORY OF THE PRACTICE OF BUILDING 354 (Chapel Hill, N.C.: UNC Press, 1990). Data for 1990 are from U.S. CENSUS BUREAU, PRESS RELEASE CB 91-334 (Washington, D.C.: Census Bureau, Dec. 18, 1991). Still, as of 1990, the state ranked forty-fifth in percentage of its population in urban areas; the national proportion in urban areas in 1990 was 75.2 percent.

8. The correlations reported in this article's quality-of-life section confirm this fact: counties that are part of metropolitan statistical areas in North Carolina tended to grow faster than other counties for each period examined. See text at page 8.

9. North Carolina farm employment dropped from 106,319 in 1970 to 87,827 in 1996, a 55 percent decrease. Regional Economic Information System (REIS) database, available at <http://fisher.lib.Virginia.edu>. Of course, farmers very likely made up a significant component of that decrease by using immigrant farm workers, who may not be reflected in the official surveys.

10. One important exception to the story of North Carolina's urban growth is the dramatic rates of population growth on the coast in the past ten and twenty years. The Coastal Area Management Act (CAMA) of 1974 introduced a regulatory regime and mandatory land-use planning in the state's twenty coastal counties. N.C. GEN. STAT. (hereinafter G.S.) § 113A-100 through -134.3. For a detailed

description of CAMA, see the article on page 21. Opponents of CAMA feared that it would slow development on the coast, but there is no evidence that this has happened. On the contrary, viewed in light of the powerful push to the sea that is occurring all around the southeastern United States, including North Carolina, CAMA was a prescient attempt to cope with one of the major trends in the state's population growth.

11. UNITED STATES CENSUS BUREAU, STATE POPULATION ESTIMATES AND DEMOGRAPHIC COMPONENTS OF POPULATION CHANGE, ST-99-2 (Washington, D.C.: Census Bureau, Dec. 29, 1999).

12. NESTER E. TERLECKYJ & CHARLES D. COLEMAN, REGIONAL ECONOMIC GROWTH IN THE UNITED STATES: PROJECTIONS FOR 1999-2025, at 5 (Washington, D.C.: NPA Data Services, 1998). The other states are Arizona, California, Colorado, Florida, Georgia, Maryland, Michigan, Minnesota, Nevada, Oregon, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, and Wisconsin.

13. UNITED STATES CENSUS BUREAU, POPULATION ESTIMATES PROGRAM, POPULATION DIVISION, STATE POPULATION ESTIMATES AND DEMOGRAPHIC COMPONENTS OF POPULATION CHANGE: JULY 1, 1998 TO JULY 1, 1999 (Washington, D.C.: Dec. 29, 1999) available at <http://www.census.gov/population/estimates/state/st-99-1.txt> (as of July 13, 2000).

14. United States Census Bureau, Table S3, Per Capita Income by State: 1959, 1969, 1979, and 1989, available at <http://www.census.gov/hhes/income/histinc/state/state3.html> (as of July 13, 2000).

15. See, e.g., S. H. HOBBS, NORTH CAROLINA: ECONOMIC AND SOCIAL 148 (Chapel Hill: UNC Press, 1930) ("Wages will rise, and should rise, and working hours and conditions will improve, but it remains a fact that cheap labor of the past and present has had much to do with our industrial growth").

16. Critics of North Carolina's dispersed-growth policies have pointed to dispersion as one of the main factors in the state's low income. See, e.g., Barry Moriarty, *Manufacturing Wage Rates, Plant Location, and Plant Location Policies*, POPULAR GOVERNMENT, Spring 1977, at 48.

17. Calculated from data presented in UNITED STATES DEP'T OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS, COMPREHENSIVE REVISION TO STATE PERSONAL INCOME ESTIMATES 1969-98, available at <http://www.bea.doc.gov/bea/regional/articles/0600spi/maintext.htm> (June 2000).

18. E.g., WILBUR THOMPSON, PREFACE TO URBAN ECONOMICS 35 (Baltimore: Johns Hopkins Press for Resources for the Future, 1965) (citing the Research Triangle as a "federated local economy"); NILES M. HANSEN, INTERMEDIATE-SIZED CITIES AS GROWTH CENTERS: APPLICATIONS FOR KENTUCKY, THE PIEDMONT CRESCENT, THE OZARKS AND TEXAS 109 (New York: Praeger, 1971) (extending

Thompson's argument to the entire Piedmont Crescent).

19. TERLECKYJ & COLEMAN, REGIONAL ECONOMIC GROWTH 15.

20. See MDC, INC., STATE OF THE SOUTH 1998 ch. 2, available at <http://www.mdcinc.org/SOS98text.html#chap2> (Mar. 28, 2000).

21. See James H. Johnson, Karen D. Johnson-Webb, & Walter C. Farrell, Jr., *A Profile of Hispanic Newcomers to North Carolina*, POPULAR GOVERNMENT, Fall 1999, at 2.

22. E.g., OFFICE OF STATE BUDGET AND MANAGEMENT, NORTH CAROLINA LONG-TERM ECONOMIC-DEMOGRAPHIC PROJECTIONS 21 (Raleigh, N.C.: OSBM, 1989).

23. Real farm income for the state actually decreased 45 percent between 1970 and 1990. It rose between 1990 and 1997, making an overall increase for 1970 to 1997 of 11 percent, or just 0.44 percent on an annualized basis. However, the figures for farm income do not look quite as bad on a per capita basis because of the rapid decrease for the period in the number of farms and farmers. United States Dep't of Commerce, Bureau of Economic Analysis, Regional Economic Information System data set, available at <http://fisher.lib.Virginia.EDU/reis/> (as of Feb. 28, 2000).

24. As this article was being written, a state legislative study commission was conducting such a review (see the article on page 21).

25. Commerce Secretary D. M. Faircloth, quoted in a WINSTON-SALEM JOURNAL editorial, cited in *Stuart, Making North Carolina Prosper* 39. In particular, the "growth center" concept of the state's balanced growth policy was supposed to prevent sprawl by concentrating water and sewer investments within growth centers, rather than continuing the practice of funding countywide utility systems.

26. In North Carolina the push to the edge and beyond, to the "twilight zone [between urban and rural]," was observed and documented as early as the 1930s by Hobbs, who attributed it "to the fact that much of our industrial development is on the outskirts of incorporated places, a considerable part of it in unincorporated open country mill villages." HOBBS, NORTH CAROLINA 210.

27. See, e.g., JAMES H. KUNSTLER, *THE GEOGRAPHY OF NOWHERE* (New York: Simon & Schuster, 1993).

28. UNITED STATES CENSUS BUREAU, 1990 CENSUS OF POPULATION AND HOUSING: GUIDE PART B, glossary 17 (Washington, D.C.: Census Bureau, 1996). New regions are included in these listings only when they pass the 50,000-person threshold. The only North Carolina regions that met this criterion in 1950 were Asheville, Charlotte, the Triad, and the Triangle.

29. From 1970 to 1990, the population of the urbanized area in the Fayetteville region grew by 50 percent while the land area increased by 87 percent. In Wilmington over

this period, the population grew by 76 percent while the land area grew by 186 percent. For some of the smaller regions, data are available only from 1980 and 1990, and the results vary. In Hickory the population of the urbanized area grew by 12 percent while the size of the area grew by 23 percent, matching the other patterns. In contrast, the population of Goldsboro grew by 4 percent while the urbanized area grew by 2 percent, and the population of Jacksonville grew by 39 percent while the urbanized area grew by only 14 percent.

30. UNITED STATES DEP'T OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERV. AND IOWA STATE UNIV. STATISTICAL LABORATORY, SUMMARY REPORT: 1997 NATIONAL RESOURCES INVENTORY (Washington, D.C.: USDA, Dec. 1999).

31. UNITED STATES DEP'T OF AGRICULTURE, U.S. CENSUS OF AGRICULTURE (1997), available at <http://www.nass.usda.gov/census/>.

32. MUNICIPAL GOVERNMENT IN NORTH CAROLINA (David M. Lawrence & Warren Jake Wicker eds., 2d ed., Chapel Hill, N.C.: Institute of Government, The University of North Carolina at Chapel Hill, 1995).

33. North Carolina Dep't of Env't and Natural Resources, Div. of Air Quality, Presentation to the N.C. Env'tl. Management Comm'n (Feb. 9, 2000). See also Figure 1, page 54.

34. The "correlation coefficients," or  $r$  values, for all variables that showed significant relationships to growth, in all the time periods and categories of high-growth counties studied, are available from the author on request at [richard\\_whisnant@unc.edu](mailto:richard_whisnant@unc.edu). The  $r$  values indicate the magnitude of the correlation, in a range from  $-1$  to  $+1$ .

35. In this quality-of-life analysis, there are other limitations than lack of causal relationships:

(1) Scale: The article looks at counties as the primary units of measurement for growth because most of the easily accessible quality-of-life data are kept by county. Averaging rates of growth over an entire county undoubtedly misses more localized growth patterns that are having positive or negative effects on the quality of life in a smaller area.

(2) Time frame: Growth rates may differ depending on the time frame chosen. To minimize this possibility, the analysis examines growth rates over several time frames: 1900-1950, 1950-90, 1990-98, and, for some purposes, 1900-1998.

(3) Localized versus external effects: Certain quality-of-life measures, such as environmental data, do not necessarily reflect localized causes. In other words, pollution travels, sometimes great distances. This article focuses on data that seem likely to be related to local growth and local conditions, rather than to external factors.

(4) Definition of high-growth counties: The populations of 57 of North Carolina's 100 counties grew faster than the U.S. average

from 1990 to 1998. Should they all be considered high-growth counties? This article handles the issue in two ways: first, by looking at three categories of high-growth counties (those with the top 50, top 25, and top 10 percent growth rates in each of the time periods studied); and second, by also examining correlations between growth rates without grouping the counties at all.

(5) Sources: There are long-standing debates on the proper quality-of-life data to use, and the data easily available to researchers have serious limitations. This article borrows several quality-of-life indicators suggested by the recent report of the North Carolina Progress Board (see note 37) and adds indicators not mentioned by the Progress Board when available data seem interesting to participants in the debate about growth management.

36. Currently an MSA is an area containing at least one city with 50,000 or more inhabitants, or a Census Bureau-defined urbanized area (of at least 50,000 inhabitants) and a total metropolitan population of at least 100,000 (75,000 in New England). For an explanation of metropolitan area definitions, see <http://www.census.gov/population/www/estimates/aboutmetro.html>.

37. The N.C. General Assembly created the Progress Board in 1995 and charged it, among other things, to set priority goals and measures for the state. See NORTH CAROLINA PROGRESS BOARD, MEASURING OUR PROGRESS: TARGETS FOR THE YEAR 2010 (Dec. 1997), available at <http://www.ncpb.state.nc.us>.

38. One possible explanation for this is that these counties are largely on the coast, and the income figures for the coastal counties do not capture the wealth of the seasonal visitors and second-home buyers who have contributed so much to the growth rates.

39. Wake County Dep't of Social Services, telephone conversation with Ben Hitchings, senior planner, Triangle J Council of Gov'ts (Feb. 1999).

40. Benthic testing examines the health of surface water bodies (waters on the earth's surface, as opposed to groundwater) by counting the numbers and the types of organisms found in the water and giving the water a rating of excellent, good, good-fair, fair, or poor. Benthic methods allow one to observe longer-term pollution issues in streams than does ambient water column testing, which is greatly affected by events around the particular time the samples are taken. For this article I examined the state's 4,242 benthic test results reported as of July 9, 1999, categorized them by county, assigned numbers (5, 4, 3, 2, 1) to represent the benthic ratings, and performed the correlation analysis.

41. G.S. 130A-309.4(c), originally passed in 1989 and amended in 1991.

42. See N.C. DEPT. OF ENV'T AND NATURAL RESOURCES, SOLID WASTE MANAGEMENT ANNUAL REPORT 1997-1998 (Raleigh, N.C.: NCDENR, Mar. 1999).