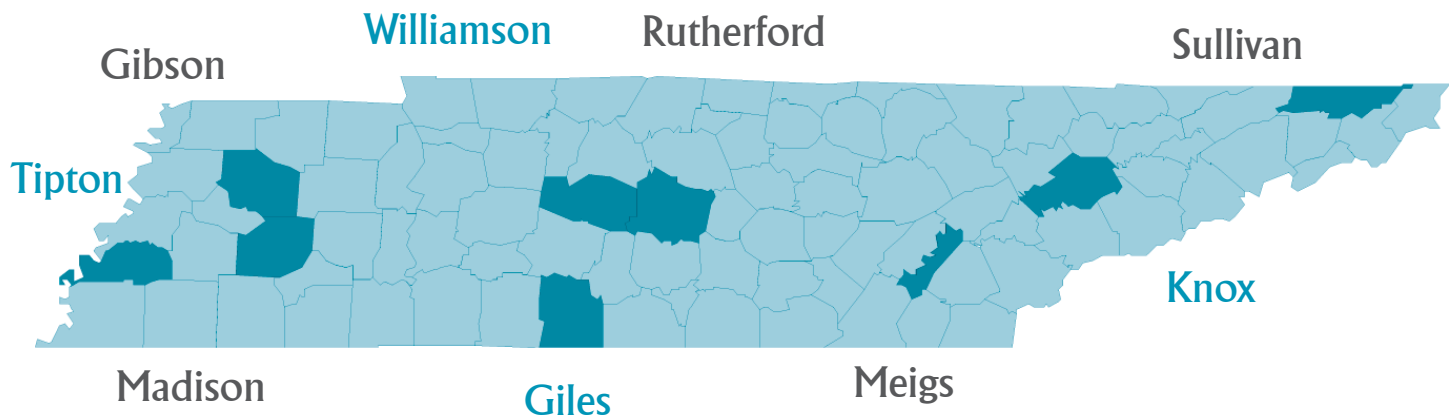


Growth Plans and Infrastructure Needs in Tennessee: A Nine-County Analysis



A Report for the Tennessee Advisory Commission on Intergovernmental Relations

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August 2006



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SUMMARY

Tennessee's Growth Policy Act (Public Chapter 1101, Acts of 1998) required that all of Tennessee's counties except those with metropolitan forms of government develop growth plans in concert with their municipalities by July 1, 2001. According to Public Chapter 1101, the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) has a mandate to monitor its implementation. In 2002, through Public Chapter 594, TACIR's monitoring responsibility was made permanent.

Beginning in 1996, TACIR was required to compile and maintain inventories of the infrastructure needs of Tennessee's counties (Public Chapter 817, Acts of 1996). The inventory obtains information on new and planned, as well as prospectively needed, public infrastructure, which is defined as "capital facilities and land assets under public ownership or operated or maintained for the public benefit." To be included in the inventory, projects must cost at least \$50,000 and must not be normal or routine maintenance. As of 2005, five inventories had been completed and compiled into databases—the most recent, based on infrastructure needs beginning in FY 2003.

As directed by Public Chapter 672, Acts of 2000, one of TACIR's mandates is to use infrastructure inventory information to monitor implementation of the counties' growth plans. This research project helps to fulfill that mandate. The project focuses on county-level growth plans, population and economic patterns, and infrastructure needs. By examining nine counties in depth, the project assesses the effects of growth plan boundaries and of population and economic patterns on infrastructure that is under construction, planned, or locally identified as needed. The project concentrates on the inventory of general public infrastructure needs for the period beginning with FY 2003.

Nine counties were chosen to obtain a range of types, using two variables based on US Census information: (1)

Tennessee's 1998 Growth Policy Act required counties to develop growth plans. It also required TACIR to monitor the growth plans' implementation. Using TACIR's infrastructure inventories, this report, which examines the link between growth plans and public infrastructure needs, helps to fulfill that mandate.

population density as of the 2000 Census and (2) population growth rate from 1990 to 2000. The nine counties are:

- Knox County: high density (751/sq. mi.); low growth rate (14%)
- Rutherford County: moderately high density (294/sq. mi.); high growth rate (54%)
- Sullivan County: moderately high density (370/sq. mi.); low growth rate (7%)
- Williamson County: moderately low density (217/sq. mi.); high growth rate (56%)
- Madison County: moderately low density (165/sq. mi.); low growth rate (18%)
- Tipton County: low density (112/sq. mi.); high growth rate (36%)
- Gibson County: low density (80/sq. mi.); low growth rate (4%)
- Meigs County: very low density (57/sq. mi.); high growth rate (38%)
- Giles County: very low density (48/sq. mi.); low growth rate (14%)

FINDINGS

1. Counties (together with their municipalities and the coordinating committees that recommended growth plans) have approached their growth plans very differently.
2. Counties with high growth rates (1990 to 2000 percent change in population) tend to have relatively young, mobile populations on average.
3. A county's per capita retail sales correlates weakly with measures of individual prosperity.
4. Within their municipalities, virtually all of the counties examined share certain population characteristics, such as smaller, older, poorer households on average than households located elsewhere in the county.
5. Infrastructure needs within the counties examined share certain characteristics.
6. Infrastructure needs within the counties examined tend to be compatible with the county's growth plan.
7. Counties that are experiencing rapid population growth rates show some tendency to have higher estimated costs per capita for their public infrastructure needs.
8. A county's total estimated costs for public infrastructure needs may be less informative than its infrastructure patterns within the county.

CONCLUSIONS

1. While the public infrastructure needs identified in the 2002 inventory* generally appear to be compatible with county growth plans, this does not necessarily mean that the growth plans are shaping the infrastructure needs.
2. To better determine whether growth plans are shaping infrastructure needs (not merely correlated with them), both the growth planning process and the infrastructure needs process should be examined over time, taking into account demographic and economic trends.

RECOMMENDATIONS

1. To tailor the inventory forms for future analysis of infrastructure and growth plans, we offer the following suggestions:
 - Where possible, exact street addresses should be entered into both the general needs inventory form and the existing school needs inventory form. In particular, the zip code area(s) in which the project is located should be given for all projects except those that are county-wide, in order to enable a correlation of reported infrastructure needs with business pattern data.
 - Under item 14a of the general needs inventory form, the respondent should be asked to rank-order the main reasons checked for the project.
 - A new item should be added following item 22 of the general needs inventory form, asking about the degree of influence of the county's growth plan on the infrastructure need identified (e.g., none, some, a great deal).
 - Item 23 of the general needs inventory form should be clarified to make sure that each growth plan area type is mutually exclusive: specifically, "Urban Growth Boundary of an incorporated area" should be revised to "outside city limits but within an Urban Growth Boundary of an incorporated area."
 - Item B2-a of the existing school inventory form should be revised to distinguish recent construction projects from recent renovation projects.
 - A new question should be added to Section B (Campus and Project Information) of the existing school inventory form, to determine the reason for the project as

*The inventory for the five-year period beginning July 1, 2002.

it relates to growth and other needs. This question could ask “What is the reason for the renovation/improvement? ... population growth ... outdated facility ... government mandate ... other. If more than one reason, please rank-order your responses, with 1 being the most important reason.” Similarly, a new item should be added, asking about the degree of influence of the county’s growth plan on the infrastructure need identified.

2. To improve the coordination of infrastructure planning with growth planning, we recommend that infrastructure planning, including annual reviews of the infrastructure inventory forms for the compatibility of infrastructure needs with growth plans, become an activity of the Joint Economic and Community Development Boards mandated under Public Chapter 1101.
3. Counties that historically have been sparsely populated but are growing rapidly may need special technical assistance to coordinate infrastructure planning and growth planning. This assistance might be provided by University of Tennessee’s Municipal Technical Advisory Service or County Technical Assistance Service in conjunction with the Tennessee Department of Economic and Community Development’s Local Planning Assistance Division.

INTRODUCTION

BACKGROUND

Tennessee's Growth Policy Act (Public Chapter 1101, Acts of 1998) required that all of Tennessee's counties except those with metropolitan forms of government develop growth plans in concert with their municipalities. According to the Act, the county growth plans were to designate urban growth boundaries (UGBs) around existing municipalities—boundaries delineating areas contiguous to municipalities where high-density commercial, industrial, and/or residential growth is expected over the next 20 years. The county growth plans also could identify planned growth areas (PGAs)—areas outside UGBs where high- or moderate-density growth is expected over the next 20 years; as well as rural areas—in effect, all other areas within the county. While the Act was motivated largely by a need to address municipal annexation issues, other motivating ideas included minimizing urban sprawl and matching the timing of development with the provision of public services (T.C.A. § 6-58-102).

County-level coordinating committees, whose composition was specified in Public Chapter 1101, were to recommend the growth plans. Local county and municipal governments were to ratify them. If an impasse was reached within the county, a dispute resolution process would be pursued, and if that failed, a growth plan would be recommended by a panel of administrative law judges. Plans were to be submitted to the state's Local Government Planning Advisory Committee (LGPAC) for approval by July 1, 2001. Plans that had been ratified at the local level were, according to the Act, automatically approved. (For a summary of the counties' progress toward meeting their mandates under Public Chapter 1101, see Tennessee Advisory Commission on Intergovernmental Relations, *Tennessee's Growth Policy in 2001: Promises and Progress*, June 2002.)

The Growth Policy Act was fuelled by municipal annexation issues, but it had other goals as well. The Act, known as Public Chapter 1101, aimed to minimize urban sprawl and match the timing of new development with the provision of public services.

According to Public Chapter 1101, the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) has a mandate to monitor its implementation. In 2002, TACIR's monitoring responsibility was made on-going (Public Chapter 594, Acts of 2002).

In 1996, TACIR was required to compile and maintain inventories of the infrastructure needs of Tennessee's counties (Public Chapter 817, Acts of 1996). The inventories were to obtain information on new and planned, as well as prospectively needed, "public infrastructure." Public infrastructure is defined as "capital facilities and land assets under public ownership or operated or maintained for the public benefit" (TACIR, *Building Tennessee's Tomorrow: Anticipating the State's Infrastructure Needs*. March 2004, p. 2): for example, transportation and utilities, schools, water and wastewater systems, parks and recreation facilities, industrial parks, government buildings, and so forth. The statute stipulates that to be included in the inventory, projects must cost at least \$50,000 and must not be normal or routine maintenance.

The 1996 Act specified that TACIR is to contract with the state's nine development districts for collection of the inventory information. The development districts, in turn, contact local officials—for example, county and city mayors; local planning commissions, public building authorities, and education agencies; utility districts; and county road superintendents. The participation of local officials in the inventory is voluntary. State officials also may be contacted, especially on transportation projects. A 2000 Act (Public Chapter 672, Acts of 2000), directed TACIR to gather and report on infrastructure needs reported in county growth plans.

After inventory information is collected by Tennessee's nine development districts, it is compiled and analyzed by TACIR staff. As of 2006, the following inventory reports had been prepared by TACIR:

- *Tennessee Public Infrastructure Needs Inventory Assessment of FY 1998-1999*. This report compiles the results of an inventory completed in FY 1998 of infrastructure needs over the next five years.
- *Building Tennessee's Tomorrow: A Survey of Infrastructure Needs*. February 2001. This report gives the results of an inventory of infrastructure needs for July 1999 through June 2004.
- *Building Tennessee's Tomorrow: Anticipating the State's Infrastructure Needs*. March 2002. This report gives the results of an inventory of infrastructure needs for July 2001 through June 2006.

- *Building Tennessee’s Tomorrow: Anticipating the State’s Infrastructure Needs.* March 2004. This report addresses infrastructure needs for July 2002 through June 2007.
- *Building Tennessee’s Tomorrow: Anticipating the State’s Infrastructure Needs.* October 2005. This report addresses infrastructure needs for July 2003 through June 2008.

The first inventory (completed in FY 1998) used forms from the US General Accounting Office. In the second and subsequent inventories, forms were customized to meet the needs of Tennessee, including the requirements of Public Chapter 1101, Acts of 1998, and Public Chapter 672, Acts of 2000. A database on reported infrastructure needs for the period July 2003 through June 2023 constitutes the most recent inventory to be completed and processed.

Data are compiled on a project-by-project basis using two different inventory forms: one applying to *general public infrastructure needs*; the other, to *existing K-12 school facility needs*. Projects are identified by—among other things—their current stage: i.e., whether they are in an early, conceptual stage, in planning and design, or under construction. If the project was reported in an earlier survey, it is noted as completed or canceled if it is no longer underway. Beginning with the third inventory, information was sought on projects planned over a 20-year time period (not simply a five-year time period), on whether sufficient funds were available to complete the project, and on the location of the project by type of growth plan area.

PROJECT PURPOSE

As directed by Public Chapter 672, Acts of 2000, one of TACIR’s mandates is to use information from the inventory to monitor implementation of the counties’ growth plans. The research project at hand helps to fulfill that mandate. The project focuses on county-level growth plans, population and economic patterns, and infrastructure. By examining nine counties in depth, the project assesses the effects of growth plan boundaries and of population and economic patterns on the types, scale, location, and timing of infrastructure that is under construction, planned, or locally identified as needed.

The project concentrates on the general public infrastructure needs inventory for the period beginning with FY 2003. During the project, comparable inventory information on existing school facility needs also was considered, as were past inventories. In the project, “infrastructure” is limited to the definition used by TACIR in its inventories.

This research project comes at a propitious time. TACIR's inventory methods have been refined over the past years, but they still are open to modification to more directly take into account growth plans and trends. The project provides guidance in this regard.

In addition, the project may help to guide counties as they consider possible amendments to their growth plans in the coming years. Most of the county growth plans were approved on or before July 1, 2001. They must remain unchanged for a minimum of three years (i.e., until 2004), at which point they may be amended. While local intergovernmental politics were generally of the highest importance in determining growth boundaries in the initial round of plans, one of Public Chapter 1101's stated goals is to "more closely match the timing of development and the provision of public services" (T.C.A. § 6-58-102).

If local governments and infrastructure providers are strapped for funds (and many are), coordinating the pace and pattern of development with the efficient provision of public services becomes all the more important. In addition, the provision of public infrastructure is one of the most powerful tools available to public officials to realize local growth plans, but only if that tool is used wisely.

METHODOLOGY

NINE COUNTIES WERE SELECTED FOR INVESTIGATION

Nine counties were chosen to obtain a range of types, using two variables: (1) population density and (2) population growth rate.

In work that the University of Tennessee's Energy, Environment and Resources Center did for TACIR under Contract ED-01-00261 (Mary R. English and Sean T. Huss, *County Growth Typology, 2000 Data*, August 2002), cluster analysis was used to group Tennessee's 95 counties into six categories, based on their population densities in 2000:

Very High Density (900 or more people/square mile): 2 counties (Shelby and Davidson)

High Density (500-899 people/square mile): 2 counties (Knox and Hamilton)

Moderately High Density (272-499 people/square mile): 4 counties

Moderately Low Density (120-271 people/square mile): 14 counties

Low Density (62-119 people/square mile): 26 counties

Very Low Density (fewer than 62 people/square mile): 47 counties

Cluster analysis was then used to label counties according to their 1990-2000 increase in density (i.e., their 10-year growth rate). A high growth rate was 36% or more; a moderate growth rate, 19 to 35%; a low growth rate, less than 19%.

All of the very high density and high density counties had low growth rates during the 1990s. Counties in the other four categories (moderately high density to very low density) varied from high to low in their growth rates.

For the project at hand, one county was drawn from Categories 1 and 2 combined (i.e., one of the “Big Four” counties), and one “high growth rate” and one “low growth rate” county from each of the remaining four categories. This resulted in nine counties with a good spread of county types from the standpoint of both population density and recent rate of growth.

The nine counties are:

- Knox County: high density (751/sq. mi.); low growth rate (14%)
- Rutherford County: moderately high density (294/sq. mi.); high growth rate (54%)
- Sullivan County: moderately high density (370/sq. mi.); low growth rate (7%)
- Williamson County: moderately low density (217/sq. mi.); high growth rate (56%)
- Madison County: moderately low density (165/sq. mi.); low growth rate (18%)
- Tipton County: low density (112/sq. mi.); high growth rate (36%)
- Gibson County: low density (80/sq. mi.); low growth rate (4%)
- Meigs County: very low density (57/sq. mi.); high growth rate (38%)
- Giles County: very low density (48/sq. mi.); low growth rate (14%)

These counties are scattered across the state. While development districts were not a criterion for selection, the counties selected are located in eight of the state’s nine development districts (all but the Upper Cumberland Development District).

TENNESSEE COUNTIES



GROWTH PLANS FOR EACH COUNTY WERE OBTAINED

Growth plan maps were obtained in electronic form from TACIR. Hard-copy plans were reviewed at the Tennessee Department of Economic and Community Development’s

Local Planning Assistance Division in Nashville, to determine whether the maps were accompanied by explanatory information and analysis. They were not. In particular, we were interested in written analyses of infrastructure accompanying the growth plans.

The county coordinating committees, which developed recommended growth plans, were required by Public Chapter 1101 to include—among others—representatives of the two utilities (one municipally-owned; the other not municipally-owned) serving the largest number of customers in the county and a representative of the local education agency with the largest student enrollment in the county. Thus, oral conversations concerning infrastructure may well have taken place while the growth plans were being developed, including whether the plan would address the need to “establish an acceptable and consistent level of public services and community facilities and ensure provision of those services and facilities” (T.C.A. § 6-58-107). However, any such conversations were not related in the plans we reviewed.

DEMOGRAPHIC AND ECONOMIC DATA FOR EACH COUNTY WERE ASSEMBLED AND ANALYZED

For each of the counties, we examined data from the 2000 US Census at the block group level for the following variables: total population, white/non-white population composition, percentage of population under age 18, age of householder, percentage of population classified as poor, number of housing units, size of households, median household income, median family income, median per capita income, median year housing structure was built, and median value of single-family, owner-occupied housing. In addition, we examined intra-county population trends at the census tract level, based on 1990 and 2000 US Census data.

We encountered several obstacles in this analysis, and also in the analysis of infrastructure information. For details, please see “Methodological Constraints” on page 12.

INFRASTRUCTURE INFORMATION FOR EACH COUNTY WAS ASSEMBLED AND ANALYZED

TACIR staff had coded and entered into a database the county-by-county, project-by-project information from the 2003 general public infrastructure needs inventory (i.e., the inventory for projects needed to be in some stage of development between July 1, 2003 and June 30, 2023). We received this database in electronic form for our nine counties and converted it to Excel spreadsheets, choosing the most relevant items for our research project purpose.

We were particularly interested in where the project would be located. Using information from item 23 of the inventory form (“Identify the Public Chapter 1101 Growth Boundary in which this project will be located”), we set up four growth plan area types—i.e., within

city limits, within a UGB, within a PGA, and within a rural area. The project might be located in one or more area types. In addition, the inventory form provides for “this entity does not have an official growth plan” and “site location has not been determined.” We then matrixed the projects by growth plan area type to the following descriptive information, derived from the inventory form and database:

- type of project (projects listed on the inventory form as *Type A*, including business district development, community development, fire protection, housing, industrial sites and parks, K-12 new school construction, law enforcement, local education agency (LEA) system-wide need, libraries and museums, navigation, non K-12 education, other facilities, public buildings, public health facilities, recreation, and solid waste; and projects listed on the inventory form as *Type B*, including other utilities, property acquisition, storm water, telecommunications, transportation, and water & wastewater)*
- project stage at the time of the inventory (completed, if the project was included in a prior inventory; under construction; in planning and design; or conceptual)
- whether the project is a regional project (i.e., serving more than one county)
- level of government that will own the project (city; county; state; other, such as a utility district; or joint—i.e., with more than one owner)
- whether the project is included in a capital improvement program (CIP)
- estimated cost of the project

In some cases, we presented information recorded on the inventory form and entered into the TACIR database into a few discrete ranges instead of using the actual number. For example, for estimated costs, we used six categories: \$50,000 to \$500,000; over \$500,000 to \$5 million; over \$5 million to \$20 million; over \$20 million to \$50 million; over \$50 million to \$100 million; and over \$100 million. Thus, if a project had an estimated cost of \$3 million recorded on the inventory form, we entered it into the second category (over \$500,000 to \$5 million) on our spreadsheet.

We considered but rejected using information from item 14a of the inventory form (“What is the primary reason for this project?”), because in so many cases multiple reasons were

* In its infrastructure inventory reports, TACIR groups project types into six broad categories: Transportation & Utilities; Education; Health, Safety, & Welfare; Recreation & Culture; Economic Development; and General Government. Transportation & Utilities are Type B projects; the other five categories are mainly Type A projects. (Storm water projects and water & wastewater projects are the exception: They are Type B projects that are categorized by TACIR as Health, Safety, & Welfare projects.)

listed—e.g., “population growth,” “public health or safety”—and because “public health and safety,” even if listed alone, could be driven by needs generated by growth. (For example, the need for sewer system upgrades could be considered a “public health and safety” need, but it could be driven by increased population.) We were interested primarily in how the stated infrastructure needs (types, level of investment, etc.) related to the growth plan area types.

INFORMATION FOR EACH COUNTY WAS SUMMARIZED AND ANALYZED

For each of the counties, we prepared a short “fact profile” of the county’s growth trends, growth plans, and infrastructure trends, as well as the county’s land area, taxable sales, taxable property value, and per capita income. We then qualitatively compared statistics that had been assembled on infrastructure needs and demographic and economic patterns with the county growth plans. Individual attention was paid to infrastructure projects that were estimated to cost more than \$20 million.

COMPARISONS ACROSS THE NINE COUNTIES WERE MADE

Building upon the cross-county analyses provided in the March 2004 TACIR report, *Building Tennessee’s Tomorrow: Anticipating the State’s Infrastructure Needs (July 2002 through June 2007)*, we qualitatively assessed the relative importance of growth plans in determining infrastructure needs.

METHODOLOGICAL CONSTRAINTS

Several major methodological problems were encountered. A number of these arose, directly or indirectly, because locations of infrastructure projects often were noted only generally on the infrastructure inventory forms. These problems included:

- **Currency of demographic data available.** The source of the most recent sub-county demographic information was the 2000 decennial census. In some counties, population counts have been done subsequently, but not on a detailed basis. For this reason, we had to rely on 2000 data to get a reasonably current intra-county picture, and on 1990-2000 comparisons to evaluate the strength and direction of growth trends within the county.
- **Currency of infrastructure inventory data available.** The most recent inventory available to us was conducted in 2003 and subsequently assembled into a database by TACIR staff. Thus, the inventory data used, while reasonably current, does not necessarily reflect the infrastructure needs anticipated today

(2005). In addition, the inventory data set had some errors that were caught by TACIR staff too late for us to incorporate the corrected data into our analysis.

- **Limitations of “existing K-12 school facility needs” data for our purpose.** These data are handled as a separate data set from the general public infrastructure needs inventory and are based on an inventory form tailored to obtaining information about physical conditions in existing schools as well as information relevant to Tennessee’s Education Improvement Act of 1992. The inventory form does not include sufficiently specific information on the school’s location or the reason(s) for recent construction or renovation to make it useful in an analysis of infrastructure and county growth plans. While locational information could have been obtained from TACIR, we still would not have known whether recent projects were construction or renovation and what motivated them. We thus decided to limit our inquiry to the general public infrastructure needs inventory, which includes K-12 new school construction and LEA system-wide needs.
- **Imprecise information on locations of infrastructure projects.** Item 22 of the general public infrastructure needs inventory form requests the location of the project. In many cases, however, only vague locations such as names of city areas were given, without other identifiers such as street names and numbers and zip codes. For this reason, to identify and group the infrastructure projects by location, we had to employ the broad “growth plan” area types used in item 23 of the inventory form: i.e., within city limits, within a UGB, within a PGA, within a rural area, or a combination. Even then, we have reason to doubt the accuracy of the information reported. For example, Gibson County, Giles County, and Rutherford County do not have PGAs in their growth plans, yet in all three counties, infrastructure projects were reported as needed in PGAs.
- **Double-counting of some infrastructure projects.** Four sources of double-counting were possible:
 - (1) If a project geographically spanned more than one “growth plan area type”—that is, within city limits, within a UGB, with a PGA, or within a rural area—it posed the problem of whether to count it only once or more than once in our analysis. We chose to do the latter, in order to reflect its spread across area types, rather than allocating it to only one area type. The unavoidable drawback was that the number of projects and their total costs were correspondingly inflated. In our discussion of each county, we note the number and types of projects that span more than one area type.

(2) In item 23 of the inventory form (“Identify the Public Chapter 1101 Growth Boundary in which this project will be located”), the first two categories—“existing city limits of an incorporated area” and “Urban Growth Boundary of an incorporated area”—are not mutually exclusive. We do not know whether all of the respondents inferred that the latter category referred only to areas outside the city but within its UGB.

(3) For eight of our nine counties (all but Gibson County), the infrastructure inventory database counts some projects as both Type B and Type A projects (e.g., if a new road supports a new industrial site, it also is recorded as an industrial site need). For this reason, in our infrastructure tables for all but Gibson County, the number of projects for Type A and Type B sum to more than the total number of projects for a particular area type. Following TACIR’s practice in its database, we use N/A in our infrastructure tables to indicate the number of projects not included under the relevant type.

(4) We noticed that a new \$38 million public health facility in Knox County appeared to be listed twice in the infrastructure inventory database as two separate projects. When we checked with TACIR, we learned that this was an error in the data set. In a data set this large—together, the nine counties had more than 1500 general public infrastructure needs projects—other errors easily could have crept into the database. (For example, some projects in Gibson County and Williamson County are recorded as being located in an entity lacking an official growth plan, yet both counties had growth plans in place at least two years before the inventory was conducted.)

- **Lack of reliable “pre” and “post” information to analyze the effects of growth plans on infrastructure needs.** One way to approach the question of whether growth plans are having effects on infrastructure is to compare infrastructure needs inventoried *before* the growth plans were adopted with infrastructure needs inventoried *after* the growth plans were adopted. We explored this possibility. However, we found that making “pre-growth-plan” and “post-growth-plan” comparisons of infrastructure inventories would be difficult, in part because of the lack of precise locational information for infrastructure projects. (In the post-growth-plan inventory, we could use item 23 of the inventory form as a crude substitute for locational information. This item would, of course, be lacking in a pre-growth-plan inventory.) We thus chose instead to focus on an in-depth analysis of the most recent inventory information, examining whether inventory needs correspond to growth plan area types and/or population and economic patterns.

- **Difficulty of fitting economic data geographically to other data sets used.** To analyze the relationship of a county's economic patterns to its growth plan and infrastructure, we ideally would have used business information provided annually by the US Census Bureau. The County Business Patterns data set has data by county on the number of business establishments (in total and by classification), their mid-March employment, and their first-quarter and annual payroll. Similarly, the ZIP Code Business Patterns has data by zip code on the number of business establishments, employment, and payroll. We also explored using data from the Economic Census conducted every five years (most recently in 2002). This information is available at the county and zip code levels (although 2002 data by zip code will not be released until 2006). Because we could not locate the infrastructure projects by zip code, we were unable to use these data sets for analysis of economic patterns. Instead, we used as surrogates information available from the decennial census on a block group basis for the following variables: median household income, median family income, per capita income, median year housing structures built, and median housing values.
- **Difficulty of “mapping” census data sets to growth plan areas.** The growth plan boundaries are determined by “real world” considerations, not by their fit with data sets. This presented a problem in analyzing the demographic and economic patterns within growth plan areas. While the growth plans have been converted to ArcView and census data are available on a GIS basis, the precise locations of the infrastructure projects were not known. Thus, we could not use ArcView as a tool for geographically mapping and analyzing the intra-county relationships between, on the one hand, infrastructure projects and, on the other hand, growth plans, demographic patterns, and economic patterns. We had to fall back on analyzing relationships by grouping relevant data according to the growth plan “area types” (municipality, UGB, PGA, rural).

At the sub-county level, decennial census data are aggregated by census blocks, block groups, and census tracts as well as by zip code areas. None of these fit neatly with the areas identified by county growth plans. The most disaggregated census units (i.e., blocks) would fit the best, but some information is not provided at the block level. At the other extreme, census tracts may include large parts of two or more growth plan areas, especially in sparsely populated counties where census tracts are geographically relatively larger.

For the 2000 data, we chose to take the middle path and use census block groups, but even then we had to make judgments about how to allocate the

data of block groups that have geographic boundaries straddling two or more growth plan area types. This problem was trivial in densely populated counties such as Knox County, but—while better than using census tracts—using block groups compromised the accuracy of our analysis, especially for sparsely populated counties such as Meigs and Giles, whose “very low density” type is shared by 45 other Tennessee counties. In particular, using geographic proportions to allocate block group data across its area types—the method we chose to use, for lack of a better one—had the effect of under-counting geographically small but more densely populated area types, such as municipalities.

Decennial demographic data by zip code area would have had the advantage of compatibility with economic census and business pattern data, but—as noted earlier—infrastructure information was not available by zip code. Even then, the lack of close fit of zip codes to growth plan areas would pose a problem. As with using census block group data, this problem would be much less troubling in densely populated counties than in sparsely populated counties. (For example, Knox County includes approximately 30 zip code areas, whereas Giles County, although larger in land area, includes eight zip code areas.) In addition, zip code areas, unlike census block groups and tracts, do not always nest wholly within counties. Despite these drawbacks, zip code information would have greatly facilitated analysis of the relationship between infrastructure projects, demographic and economic patterns, and growth plans.

- **Limitations in comparing 2000 data with 1990 data.** When assessing the intra-county direction and intensity of growth trends by comparing 1990 census data with 2000 census data, we encountered a further problem. The number of block groups within a tract may be adjusted decennially to accommodate changes in population density. Thus, in many cases there were more block groups within a given area type in 2000 than in 1990. This did not present a problem if the block groups were wholly within the area type, but those that straddled two or more area types could not be readily included in a 1990 to 2000 statistical comparison. For this reason, we were able to look only at the census tract level for intra-county trends occurring during the 1990s. Even at that larger scale, we encountered problems, because census tracts also may be altered from one decennial census to the next (although to a lesser extent than block groups). “Comparability” files between 1990 and 2000 census data are available only for population at the census tract level; thus, we looked only at population growth trends over the 1990s.

COUNTY-BY-COUNTY ANALYSIS

GIBSON COUNTY

LOW DENSITY, LOW GROWTH RATE

Gibson County, in northwest Tennessee, is predominantly rural, and its economy relies partly on agriculture. Its largest city, Milan, had a 2000 census population of slightly less than 8,000. The county experienced only a 4% population growth during the 1990s. As of 2000, it had a population of just over 48,000, with an average density of 80 people per square mile.

The county's average per capita income is lower than Tennessee's average, but its poverty rate also is lower, suggesting that Gibson is a county without pronounced extremes of wealth or poverty. Its 2000 per capita retail sales and property value and median value of owner-occupied houses were lower than Tennessee's, reinforcing the impression of a somewhat sluggish local economy. Its population is older on average than Tennessee's and is less likely to change residences. Over a third of its working residents commute to work outside the county.

The population of Gibson County grew 4% during the 1990s, mainly in its southeastern section. Its growth plan includes large rural areas interlaced with urban growth areas around its 10 municipalities. Its stated public infrastructure needs—especially water & wastewater projects—emphasize the existing municipalities.

KEY STATISTICS

	<i>Gibson County</i>	<i>Tennessee</i>
<i>2000 pop.</i>	48,152	5,689,283
<i>% chg in pop 1990-2000</i>	+04%	+17%
<i>Land area (sq. miles)</i>	603	41,217
<i>2000 density (pop./sq. mi)</i>	80	138
<i>2000 per cap income</i>	\$16,320	\$19,393
<i>2000 families below poverty level</i>	09.4%	10.3%
<i>2000 per cap retail sales</i>	\$7,212	\$11,203
<i>2000 per cap estimated property value</i>	\$37,957	\$51,084
<i>2000 median value, owner-occupied houses</i>	\$66,300	\$93,000
<i>% of pop. 5 years+ living in different house in 1995</i>	41%	46%
<i>% of workers 16 years+ commuting out of county</i>	34%	27%
<i>% of pop. under age 18</i>	24%	25%
<i>% of pop. age 45 years +</i>	41%	36%
<i>Largest municipality (2000 pop.) (% of county pop.)</i>	Milan (7,664) (16%)	
<i>Other municipalities</i>	Bradford Dyer Gibson Humboldt* Kenton* Medina Rutherford Trenton Yorkville	

Numbers are rounded.

* Municipalities located in more than one county.

Sources of information:

Tennessee Advisory Commission on Intergovernmental Relations, county profiles.

Tennessee Department of Economic and Community Development, county profiles.

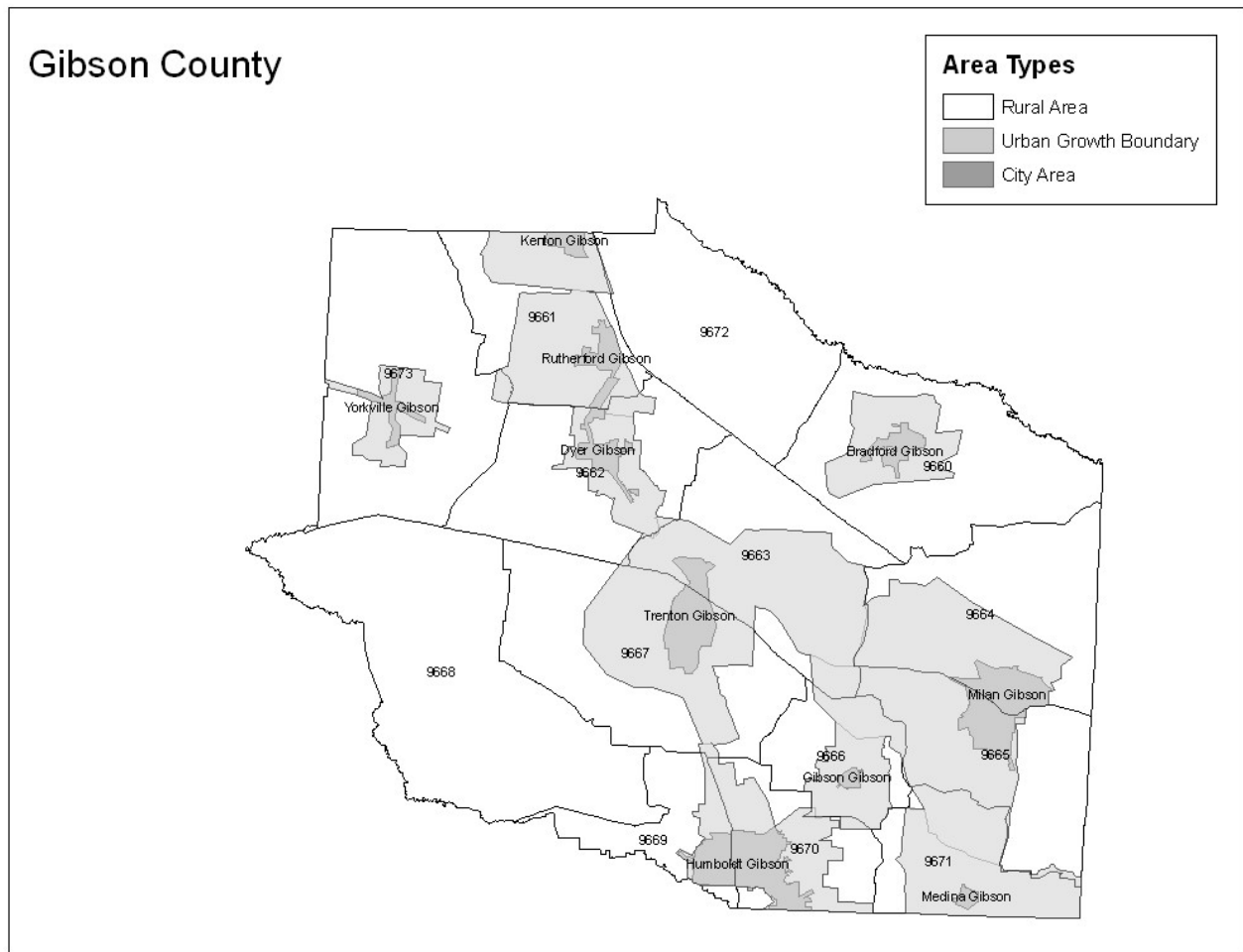
Tennessee State Board of Equalization, *2000 Tax Aggregate Report of Tennessee*.

United States Census Bureau.

University of Tennessee Municipal Technical Advisory Service, cities by county.

GROWTH PLAN

Gibson County's growth plan, shown below, was approved by LGPAC on January 26, 2000 (TACIR, June 2002). The numbered sections are census tracts for the 2000 decennial census.



This map is adapted from a map digitized by the Tennessee Department of Economic and Community Development and is for informational purposes only.

DEMOGRAPHIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated and its population distributed accordingly.

GIBSON COUNTY—DEMOGRAPHIC VARIABLES BY PERCENTAGE DISTRIBUTION BY AREA TYPE

Gibson County—2000	Total	City	UGB	PGA	Rural
Population	100	39	29	0	32
<i>White</i>	79	70	84	0	85
<i>Non-White</i>	21	30	16	0	15
<i>Under age 18</i>	24	24	24	0	24
<i>Age 18 and over</i>	76	76	76	0	76
Households	100	39	29	0	32
<i>Age of Householder 15-44</i>	39	37	40	0	40
<i>Age of Householder 45-64</i>	34	33	34	0	34
<i>Age of Householder 65+</i>	28	30	26	0	26
Of Those Classified as Poor	100	46	24	0	30
Overall Poverty Rate =	12.8				
Housing Units	100	39	29	0	32
<i>Occupied Units</i>	93	92	93	0	94
<i>Vacant Units</i>	7	8	7	0	6
Of Occupied Housing Units	100	39	29	0	32
<i>1 to 2 in Household</i>	62	65	60	0	60
<i>3 or More in Household</i>	38	35	40	0	40

As shown in this table, the population of Gibson County is estimated to be fairly evenly distributed across the three area types in its growth plan: within municipalities, within urban growth areas, and within rural areas. The population within municipalities tends to be somewhat older than within the other two area types, with smaller households. Gibson County's municipalities also have almost half of the households in the county that are classified as below poverty level, as well as the highest percentage of non-whites.

ECONOMIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated. Median values have then been calculated for (1) block groups that lie from 51 to 100% within the given area type and (2) block groups that lie 50% or less within the given area type.

GIBSON COUNTY—ECONOMIC VARIABLES BY MEDIAN VALUE BY AREA TYPE

Gibson County—2000	City	UGB	PGA	Rural
Median Household Income				
<i>% of Block Group <= 50% in Area Type</i>	31,902	29,688	----	30,306
<i>% of Block Group >=51% in Area Type</i>	29,245	34,107	----	28,711
Median Family Income				
<i>% of Block Group <= 50% in Area Type</i>	39,140	38,167	----	38,047
<i>% of Block Group >=51% in Area Type</i>	34,620	41,696	----	38,594
Per Capita Income				
<i>% of Block Group <= 50% in Area Type</i>	16,135	15,763	----	16,580
<i>% of Block Group >=51% in Area Type</i>	14,012	19,478	----	15,159
Median Year Structures Built				
<i>% of Block Group <= 50% in Area Type</i>	1967	1964	----	1965
<i>% of Block Group >=51% in Area Type</i>	1960	1973	----	1964
Median Housing Value				
<i>% of Block Group <= 50% in Area Type</i>	65,100	59,700	----	64,300
<i>% of Block Group >=51% in Area Type</i>	51,800	70,300	----	60,500

As shown in the above table, the three income variables reveal higher incomes in urban growth areas and in rural areas than within cities, especially when considering the predominant (>=51% in area type) subcategory of block groups. Similarly, the housing variables presented show that the houses in urban growth areas of the county tend to be newer and more expensive.

POPULATION TRENDS

Intra-county population changes from 1990 to 2000 are shown below, using the 1990 census tracts as the unit of analysis. If a tract was not wholly within a single growth plan area type, the percentage allocation across area types was estimated.

GIBSON COUNTY—1990 TO 2000 POPULATION CHANGES BY CENSUS TRACT AND AREA TYPE

1990 Tracts	1990 Population	2000 Population	1990 to 2000 Difference	Percent Change	Percent City in 2000	Percent UGB in 2000	Percent PGA in 2000	Percent Rural in 2000
9660	2,791	2,897	106	4	23	25	0	52
9661	2,761	2,754	-7	0	35	50	0	15
9662	3,626	3,704	78	2	10	25	0	65
9663	2,316	2,665	349	15	10	55	0	35
9664	4,819	5,151	332	7	45	28	0	27
9665	5,964	6,013	49	1	74	25	0	1
9666	1,464	1,674	210	14	8	60	0	33
9667	6,289	6,256	-33	-1	44	28	0	28
9668	1,445	1,413	-32	-2	0	0	0	100
9669	4,082	3,698	-384	-9	66	8	0	26
9670	6,907	7,212	305	4	76	10	0	14
9671	1,815	2,678	863	48	20	73	0	8
9672	788	784	-4	-1	0	0	0	100
9673	1,248	1,253	5	0	10	20	0	70
9674.98	0	0	0	0	0	0	0	0

As noted above, Gibson County’s population grew by only 4% during the 1990s. However, population growth was strong in the southeastern section of the county in Census Tract 9671, which is predominantly within an urban growth area between Milan and Medina. In contrast, population declined in Census Tract 9669, which includes western sections of Humboldt as well as a rural area in south central Gibson County.

INFRASTRUCTURE PROJECTS

The following table is based on data in the 2003 general public infrastructure needs inventory.

GIBSON COUNTY—NUMBER OF INFRASTRUCTURE PROJECTS BY AREA TYPE*

	Within city	Within UGB	Within PGA	Within rural	No growth plan
Total Projects	66	1	2	2	21
Type A Projects	35	1	0	1	0
Fire Protection	2	0	0	0	0
Housing	1	0	0	0	0
Industrial Sites and Parks	3	0	0	0	0
K-12 New School Construction	1	0	0	0	0
Law Enforcement	4	0	0	0	0
LEA System-wide Need	4	0	0	0	0
Public Buildings	7	0	0	0	0
Recreation	13	1	0	1	0
(N/A)**	31	0	2	1	21
Type B Projects	31	0	2	1	21
Telecommunications	1	0	0	0	0
Transportation	13	0	2	1	21
Water and Wastewater	17	0	0	0	0
(N/A)**	35	1	0	1	0
Stage					
Completed	12	0	0	0	0
Conceptual	31	0	0	1	4
Construction	12	1	0	1	0
Planning & Design	11	0	2	0	17
Regional Project					
Yes	0	0	0	0	0
No	66	1	2	2	21
Level of Government					
City	53	0	0	0	0
County	4	1	1	2	3
Other	3	0	0	0	0
State	6	0	1	0	18
In CIP					
Yes	13	1	0	1	0
No	53	0	2	1	21
Estimated Cost					
\$50,000 to \$500,000	41	0	2	1	16
\$500,001 to \$5,000,000	23	1	0	1	5
\$5,000,001 to \$20,000,000	1	0	0	0	0
\$20,000,001 to \$50,000,000	1	0	0	0	0

*Projects that are geographically located in more than one area are repeat-counted for each relevant area type.

** N/A indicates the number of projects in the dataset that are not included under the Type.

As this table shows, the 92 infrastructure projects identified in the 2003 general needs inventory for Gibson County are split about equally between Type A and Type B projects. None of the projects occurs in more than one area type. Sixty-six projects, or over two-thirds of the total projects, are identified as within either municipalities or their UGBs.

Of the remaining projects in the county, 21 are shown as “this entity does not have an official growth plan”—clearly, an error in the information reporting, recording, or database entry, since Gibson County has a growth plan dating to early 2000. All of these 21 projects are transportation projects, and most are fairly low-cost, state-owned projects in the planning and design stage. In addition, two transportation projects are shown as being within PGAs, but Gibson County’s growth plan does not include PGAs. While none of the 92 projects for Gibson County were reported to span more than one growth plan area type, it is possible that some of the transportation projects do. None of the projects were reported to be regional (i.e., involving more than Gibson County).

The 66 projects within municipalities or their UGBs emphasize education (one new school and four LEA system-wide needs), public buildings, recreation, transportation, and water & wastewater systems. Thirty-one projects—mainly transportation and water & wastewater—are in the conceptual stage, and 24 projects are either completed or under construction.

According to the general needs inventory, Gibson County has one infrastructure project estimated to cost more than \$20 million: a 7.3-mile bypass to the east of Milan. The project, estimated at \$22 million, is intended to relieve traffic flow through Milan. As of 2003, this project was in the planning and design stage, with a start date during FY 2004.

RELATIONSHIP OF INFRASTRUCTURE PROJECTS TO GROWTH PLAN, DEMOGRAPHIC PATTERNS, AND ECONOMIC PATTERNS

The infrastructure projects needed for Gibson County, as identified in the 2003 general needs inventory, show a strong emphasis on the needs of its existing municipalities. A number of these are water & wastewater projects—some in the early, conceptual stage.

Few projects at any stage, including the conceptual stage, were identified for the urban growth areas around the municipalities. This is somewhat surprising, given the surge in population between Milan and Medina and the fact that the urban growth areas contain larger, higher-income households on average than the municipalities, as well as nearly 30% of the county’s population as of 2000. Rural areas, which also have nearly a third of the county’s population, have little infrastructure identified as needed other than transportation.

GILES COUNTY

VERY LOW DENSITY, LOW GROWTH RATE

Giles County, in south central Tennessee on the Alabama border, is a county of high, winding ridges and deep valleys. As of 2000, its largest city, Pulaski, constituted more than a quarter of the county's population of approximately 29,000. The county had a 14% population growth in the 1990s—a bit less than Tennessee's 17% growth rate. As of 2000, Giles County remained predominately rural, with an average density of only 48 people per square mile. In several respects, its demographic and economic characteristics as of 2000 were similar to those of Gibson County.

Like Gibson County, its average per capita income, per capita retail sales, per capita property value, and median housing value were all lower than Tennessee's, but so was its poverty rate. Its people were, on average, older and less likely to change residences but more likely to commute outside the county than the Tennessee average.

The population of Giles County (2000 census: 29,447), in rural south-central Tennessee, grew 14% in the 1990s. In its growth plan, large swathes of the county are designated as rural, and these areas have a significant proportion of the county's population. In the infrastructure needs inventory, the county's five municipalities are emphasized.

KEY STATISTICS

	<i>Giles County</i>	<i>Tennessee</i>
<i>2000 pop.</i>	29,447	5,689,283
<i>% chg in pop 1990-2000</i>	+14%	+17%
<i>Land area (sq. miles)</i>	611	41,217
<i>2000 density (pop./sq. mi)</i>	48	138
<i>2000 per cap income</i>	\$17,543	\$19,393
<i>2000 families below poverty level</i>	09.0%	10.3%
<i>2000 per cap retail sales</i>	\$7,691	\$11,203
<i>2000 per cap estimated property value</i>	\$41,926	\$51,084
<i>2000 median value, owner-occupied houses</i>	\$72,900	\$93,000
<i>% of pop. 5 years+ living in different house in 1995</i>	37%	46%
<i>% of workers 16 years+ commuting out of county</i>	29%	27%
<i>% of pop. under age 18</i>	22%	25%
<i>% of pop. age 45 years +</i>	39%	36%
<i>Largest municipality (2000 pop.) (% of county pop.)</i>	Pulaski (7,871) (27%)	
<i>Other municipalities</i>	Ardmore* Elkton Lynnville Minor Hill	

Numbers are rounded.

* Municipality located in more than one county.

Sources of information:

Tennessee Advisory Commission on Intergovernmental Relations, county profiles.

Tennessee Department of Economic and Community Development, county profiles.

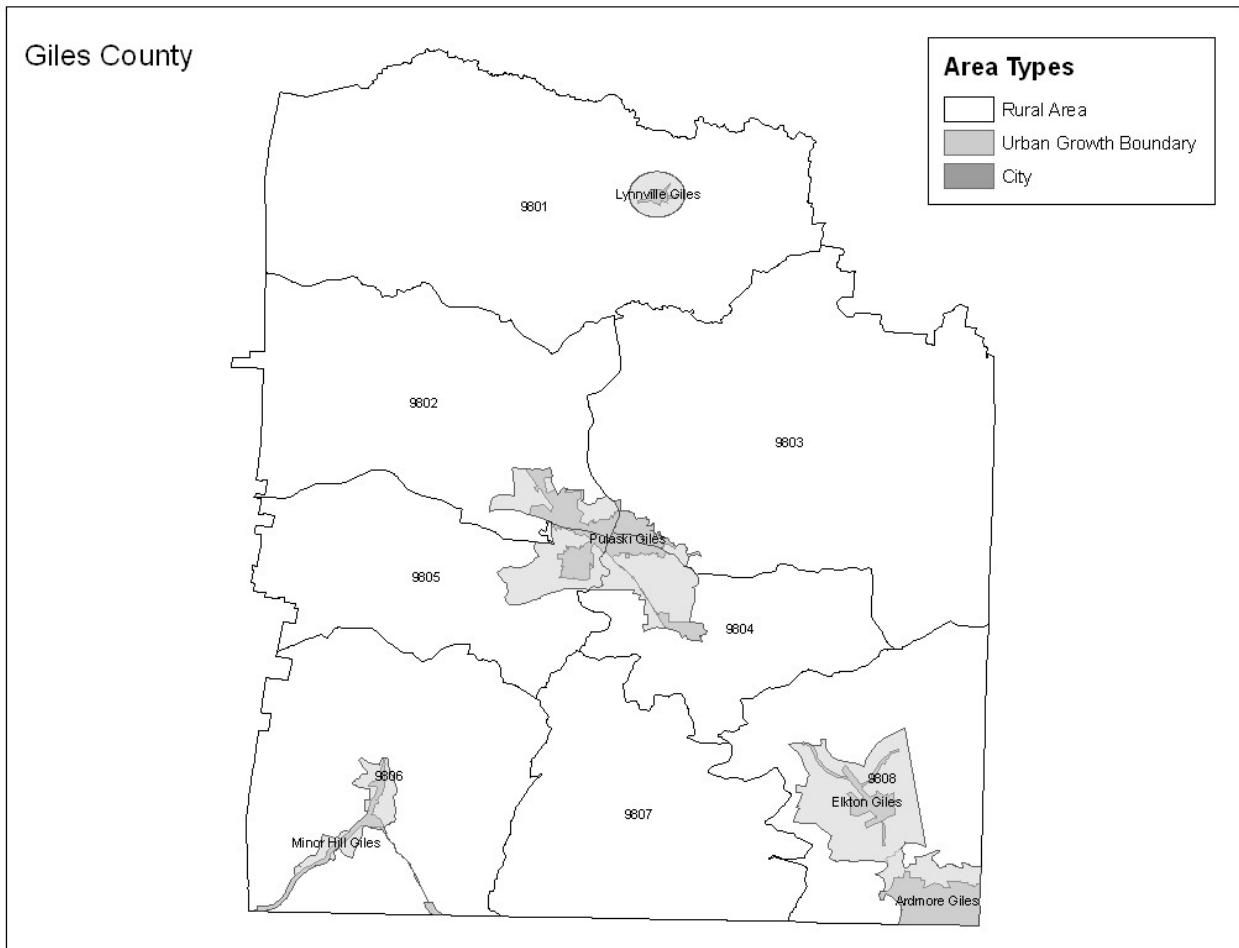
Tennessee State Board of Equalization, *2000 Tax Aggregate Report of Tennessee*.

United States Census Bureau.

University of Tennessee Municipal Technical Advisory Service, cities by county.

GROWTH PLAN

Giles County's growth plan, shown below, was approved by LGPAC on June 28, 2000 (TACIR, June 2002). The numbered sections are census tracts for the 2000 decennial census.



This map is adapted from a map digitized by the Tennessee Department of Economic and Community Development and is for informational purposes only.

DEMOGRAPHIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated and its population distributed accordingly.

GILES COUNTY—DEMOGRAPHIC VARIABLES BY PERCENTAGE DISTRIBUTION BY AREA TYPE*

Giles County—2000	Total	City	UGB	PGA	Rural
Population	100	19	12	0	69
<i>White</i>	87	71	86	0	91
<i>Non-White</i>	13	29	14	0	9
<i>Under age 18</i>	22	19	21	0	22
<i>Age 18 and over</i>	78	81	79	0	78
Households	100	21	12	0	67
<i>Age of Householder 15-44</i>	40	38	36	0	41
<i>Age of Householder 45-64</i>	36	31	37	0	37
<i>Age of Householder 65+</i>	24	31	26	0	22
Of Those Classified as Poor	100	27	12	0	61
Overall Poverty Rate =	11.7				
Housing Units	100	21	12	0	67
<i>Occupied Units</i>	89	88	91	0	89
<i>Vacant Units</i>	11	12	9	0	11
Of Occupied Housing Units	100	21	12	0	67
<i>1 to 2 in Household</i>	60	69	66	0	56
<i>3 or More in Household</i>	40	31	34	0	44

*In Giles County, using geographic proportionality as the basis for allocating population at the block group level across area types has resulted in an underestimate of the population within municipalities.

Based on the block group estimates across area types, it appears that a large proportion of the population in Giles County lives in areas designated as rural. Those who live in such areas tend to be younger and have larger families than those who live either within city limits or within urban growth areas. Areas within city limits have a somewhat higher proportion of people living in poverty than either urban growth areas or rural areas, and they also have a higher percentage of non-whites.

ECONOMIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated. Median values have then been calculated for (1) block groups that lie from 51 to 100% within the given area type and (2) block groups that lie 50% or less within the given area type.

GILES COUNTY—ECONOMIC VARIABLES BY MEDIAN VALUE BY AREA TYPE

Giles County—2000	City	UGB	PGA	Rural
Median Household Income				
<i>% of Block Group <= 50% in Area Type</i>	36,661	35,703	----	28,998
<i>% of Block Group >=51% in Area Type</i>	24,118	----	----	38,184
Median Family Income				
<i>% of Block Group <= 50% in Area Type</i>	42,021	41,226	----	41,019
<i>% of Block Group >=51% in Area Type</i>	35,481	----	----	42,728
Per Capita Income				
<i>% of Block Group <= 50% in Area Type</i>	17,775	17,105	----	16,369
<i>% of Block Group >=51% in Area Type</i>	12,412	----	----	17,330
Median Year Structures Built				
<i>% of Block Group <= 50% in Area Type</i>	1975	1973	----	1967
<i>% of Block Group >=51% in Area Type</i>	1965*	----	----	1976
Median Housing Values				
<i>% of Block Group <= 50% in Area Type</i>	72,550	71,600	----	60,900
<i>% of Block Group >=51% in Area Type</i>	56,650	----	----	72,550

*Rough estimate based on Pulaski.

The above table shows that those living within city limits, especially within the core of the cities, do not fare as well on any of the three income variables as those living in surrounding urban growth areas or in areas designated as rural. Similarly, housing tends to be older and less expensive within city limits.

POPULATION TRENDS

Intra-county population changes from 1990 to 2000 are shown below, using the 1990 census tracts as the unit of analysis. If a tract was not wholly within a single growth plan area type, the percentage allocation across area types was estimated.

GILES COUNTY—1990 TO 2000 POPULATION CHANGES BY CENSUS TRACT AND AREA TYPE

1990 Tracts	1990 Population	2000 Population	1990 to 2000 Difference	Percent Change	Percent City in 2000	Percent UGB in 2000	Percent PGA in 2000	Percent Rural in 2000
9801	2,676	3,373	697	26	3	5	0	93
9802	4,048	4,666	618	15	60	10	0	30
9803	5,251	6,293	1,042	20	35	2	0	63
9804	2,560	2,689	129	5	53	10	0	38
9805	4,555	4,828	273	6	23	45	0	32
9806	2,372	2,837	465	20	8	8	0	85
9807	1,574	1,846	272	17	0	0	0	100
9808	2,705	2,915	210	8	15	20	0	65

As noted above, from 1990 to 2000 the population of Giles County grew by 14%. In particular, when considering both the numerical and percent change, Census Tracts 9801 and 9803 showed strong growth. Tract 9801, in northern Giles County, is almost totally designated as rural in the county’s growth plan. Tract 9803 includes part of Pulaski.

INFRASTRUCTURE PROJECTS

The following table is based on data in the 2003 general public infrastructure needs inventory.

GILES COUNTY—NUMBER OF INFRASTRUCTURE PROJECTS BY AREA TYPE*

	Within City	Within UGB	Within PGA	Within Rural	Site Not Det.	No Area Info
Total Projects	39	4	4	21	1	1
Type A Projects	24	1	2	7	1	0
Business District Development	1	0	0	1	0	0
Community Development	5	1	2	4	1	0
Fire Protection	1	0	0	0	0	0
Industrial Sites and Parks	3	0	0	0	0	0
K-12 New School Construction	0	0	0	1	0	0
Law Enforcement	1	0	0	1	0	0
Public Buildings	4	0	0	0	0	0
Recreation	9	0	0	0	0	0
(N/A)**	15	3	2	14	0	1
Type B Projects	22	4	4	19	1	1
Property Acquisition	1	0	0	0	0	0
Transportation	7	0	1	7	0	0
Water and Wastewater	14	4	3	12	1	1
(N/A)**	17	0	0	2	0	0
Stage						
Completed	11	2	1	9	0	0
Conceptual	12	2	2	3	1	0
Construction	6	0	0	3	0	0
Planning & Design	10	0	1	6	0	1
Regional Project						
Yes	0	0	0	1	1	0
No	39	4	4	20	0	1
Level of Government						
City	32	2	0	0	0	0
County	4	1	3	7	0	0
Joint	2	1	0	2	1	0
Other	0	0	1	10	0	1
State	1	0	0	2	0	0
In CIP						
Yes	0	0	0	0	0	0
No	39	4	4	21	1	1
Estimated Cost						
\$50,000 to \$500,000	23	3	2	12	0	1
\$500,001 to \$5,000,000	14	0	1	5	0	0
\$5,000,001 to \$20,000,000	1	1	1	4	1	0
\$20,000,001 to \$50,000,000	1	0	0	0	0	0

*Projects that are geographically located in more than one area are repeat-counted for each relevant area type.

** N/A indicates the number of projects in the dataset that are not included under the Type.

There were 54 projects reported for Giles County. Of these, seven projects span two or more growth plan area types. (These include some community development, public buildings, recreation, and water & wastewater projects.) In addition, two projects were reported as regional. Of the total number of projects for the county when summed across area type categories—i.e., 70, including repeat-counting—the projects are split evenly between Type A and Type B.

The municipalities or the county will own most of the projects, and most have estimated costs of \$50,000 to \$5 million. Forty-three are within either municipalities or their UGBs. Nearly half (19) of these 43 projects are completed or under construction. Of the remainder, 10 are in planning and design, while 14 are in the conceptual stage. (Four projects were identified as being within PGAs, but Giles County's growth plan does not have PGAs.)

Twenty-one projects are within areas designated as rural, with 19 of the 21 either transportation or water & wastewater projects. Of the 21 projects, almost all have been completed or are in construction or planning and design.

According to the general needs inventory, Giles County has one infrastructure project that is estimated to cost more than \$20 million: a sewer system to be installed throughout Pulaski, estimated to cost \$25 million. As of 2003, the project was in the conceptual stage and was to start in FY 2007.

RELATIONSHIP OF INFRASTRUCTURE PROJECTS TO GROWTH PLAN, DEMOGRAPHIC PATTERNS, AND ECONOMIC PATTERNS

The infrastructure projects needed for Giles County, as identified in the 2003 general needs inventory, show an emphasis on the county's five municipalities. Of these, one is a sewer system to be installed throughout Pulaski, which has over one-quarter of the county's population. The other projects are a mixture of types that may be driven in part by the needs of municipalities with somewhat lower-income populations relative to their surrounding areas. Only four projects—all water & wastewater projects—were identified for the municipalities' urban growth areas.

Areas designated as rural in the county's growth plan contain much of the county's land area and appear to have a large proportion of the county's population. The rural areas have one new K-12 school and a number of transportation and water & wastewater projects identified as needed, but little else.

KNOX COUNTY

HIGH DENSITY, LOW GROWTH RATE

Knox County is located in east Tennessee's Great Valley at the head of the Tennessee River. Home to the "flagship" campus of the University of Tennessee, Knoxville constitutes nearly one-half of the county's population, which was just over 382,000 in 2000. The county's population grew 14% in the 1990s—under Tennessee's average growth rate, but large in numerical terms and typical of Tennessee's most densely populated counties. In 2000, Knox County's density was 751 people per square mile.

In 2000, Knox County's per capita income, per capita retail sales, per capita property value, and median housing value were all above Tennessee's average, and its percentage of families below the poverty level was nearly 2% lower than for Tennessee as a whole. As of 2000, the percentage of the county's population age 45 and older was the same as for Tennessee—36%. Its population was slightly more likely to change residences but considerably less likely to commute outside the county than for Tennessee as a whole.

The population of Knox County (2000 census: 382,032) grew 14% in the 1990s. Much of that growth was in its western and northern sections—largely within areas designated for planned growth in the county's growth plan, but partly within areas designated as rural. The county's stated infrastructure needs appear to be driven more by population surges than by the growth plan.

KEY STATISTICS

	<i>Knox County</i>	<i>Tennessee</i>
<i>2000 pop.</i>	382,032	5,689,283
<i>% chg in pop 1990-2000</i>	+14%	+17%
<i>Land area (sq. miles)</i>	508	41,217
<i>2000 density (pop./sq. mi)</i>	751	138
<i>2000 per cap income</i>	\$21,875	\$19,393
<i>2000 families below poverty level</i>	08.4%	10.3%
<i>2000 per cap retail sales</i>	\$15,654	\$11,203
<i>2000 per cap estimated property value</i>	\$51,228	\$51,084
<i>2000 median value, owner-occupied houses</i>	\$98,500	\$93,000
<i>% of pop. 5 years+ living in different house in 1995</i>	48%	46%
<i>% of workers 16 years+ commuting out of county</i>	14%	27%
<i>% of pop. under age 18</i>	22%	25%
<i>% of pop. age 45 years +</i>	36%	36%
<i>Largest municipality (2000 pop.) (% of county pop.)</i>	Knoxville (173,890) (46%)	
<i>Other municipalities</i>	Farragut*	

Numbers are rounded.

* Municipality located in more than one county.

Sources of information:

Tennessee Advisory Commission on Intergovernmental Relations, county profiles.

Tennessee Department of Economic and Community Development, county profiles.

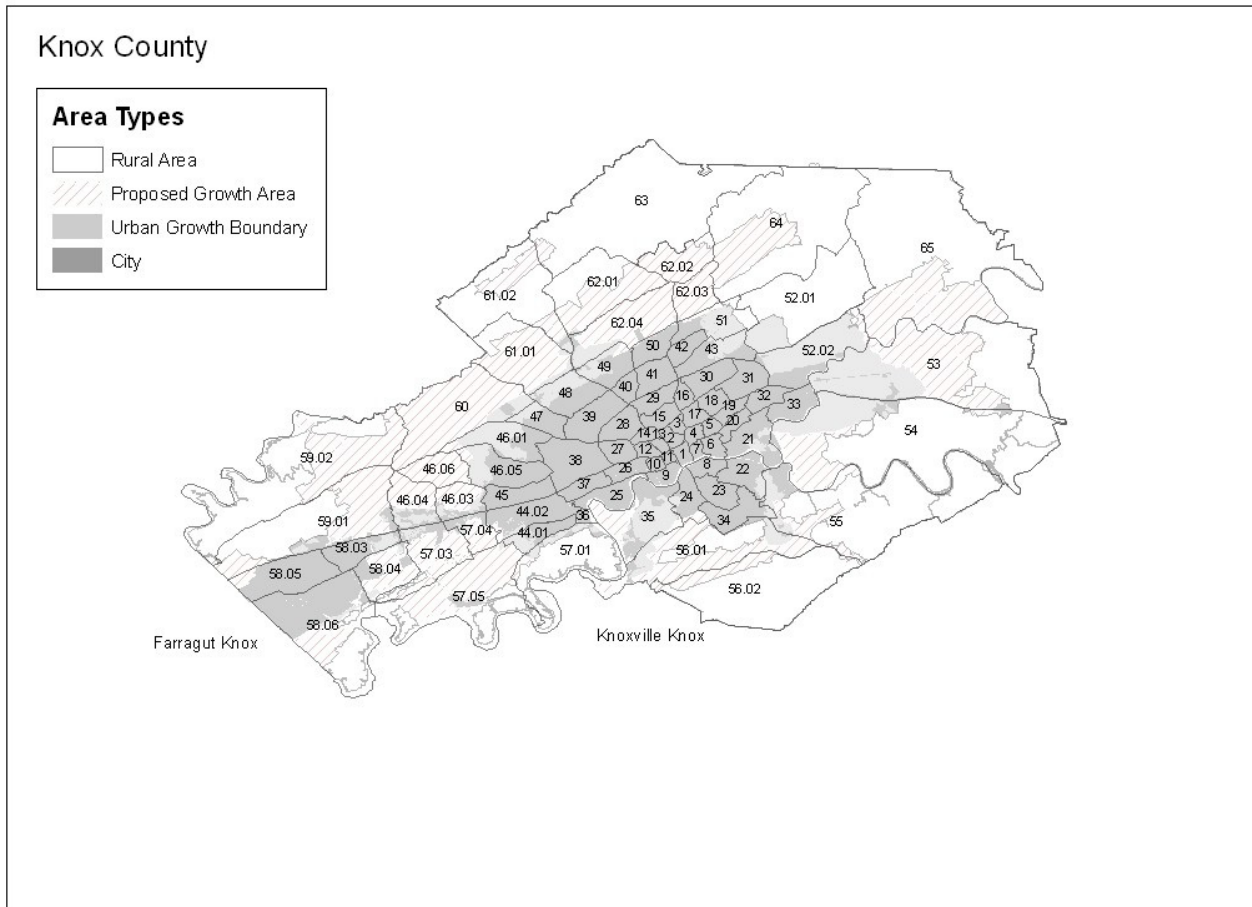
Tennessee State Board of Equalization, *2000 Tax Aggregate Report of Tennessee*.

United States Census Bureau.

University of Tennessee Municipal Technical Advisory Service, cities by county.

GROWTH PLAN

Knox County’s growth plan, shown below, was approved by LGPAC on April 25, 2001 (TACIR, June 2002). The numbered sections are census tracts for the 2000 decennial census.



This map is adapted from a map digitized by the Tennessee Department of Economic and Community Development and is for informational purposes only.

DEMOGRAPHIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated and its population distributed accordingly.

KNOX COUNTY—DEMOGRAPHIC VARIABLES BY PERCENTAGE DISTRIBUTION BY AREA TYPE

Knox County—2000	Total	City	UGB	PGA	Rural
Population	100	51	10	26	13
<i>White</i>	88	81	91	95	97
<i>Non-White</i>	12	19	9	5	3
<i>Under age 18</i>	22	20	23	25	24
<i>Age 18 and over</i>	78	80	77	75	76
Households	100	53	11	25	12
<i>Age of Householder 15-44</i>	47	49	49	45	41
<i>Age of Householder 45-64</i>	33	29	33	38	39
<i>Age of Householder 65+</i>	20	21	18	17	20
Of Those Classified as Poor	100	74	8	11	8
Overall Poverty Rate =	12.6				
Housing Units	100	54	11	24	11
<i>Occupied Units</i>	92	91	92	94	93
<i>Vacant Units</i>	8	9	8	6	7
Of Occupied Housing Units	100	53	11	25	12
<i>1 to 2 in Household</i>	64	69	64	58	57
<i>3 or More in Household</i>	36	31	36	42	43

The above table shows that just over half of Knox County’s population falls within city limits, with over a quarter in planned growth areas. The remainder is split fairly evenly between urban growth areas and areas designated as rural. Householders in their mid 40s or older with larger families tend to populate the PGAs or rural areas. Of those classified as poor in Knox County, nearly three-quarters live within city limits, and most of Knox County’s non-white population lives there also.

ECONOMIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated. Median values have then been calculated for (1) block groups that lie from 51 to 100% within the given area type and (2) block groups that lie 50% or less within the given area type.

KNOX COUNTY—ECONOMIC VARIABLES BY MEDIAN VALUE BY AREA TYPE

Knox County—2000	City	UGB	PGA	Rural
Median Household Income				
<i>% of Block Group <= 50% in Area Type</i>	43,229	34,366	31,085	33,165
<i>% of Block Group >=51% in Area Type</i>	26,468	40,479	51,178	41,083
Median Family Income				
<i>% of Block Group <= 50% in Area Type</i>	52,321	42,007	38,472	40,855
<i>% of Block Group >=51% in Area Type</i>	34,141	46,429	57,974	47,758
Per Capita Income				
<i>% of Block Group <= 50% in Area Type</i>	21,402	18,379	18,023	18,265
<i>% of Block Group >=51% in Area Type</i>	15,749	19,803	23,426	20,500
Median Year Structures Built				
<i>% of Block Group <= 50% in Area Type</i>	1978	1968	1966	1967
<i>% of Block Group >=51% in Area Type</i>	1960	1977	1982	1978
Median Housing Values				
<i>% of Block Group <= 50% in Area Type</i>	103,800	85,400	82,050	84,300
<i>% of Block Group >=51% in Area Type</i>	73,650	95,200	108,950	99,900

When considering the predominant block group subcategories (>=51% in area type), it is evident that the areas within city limits fare the least well on the three income variables presented, and the PGAs are the most prosperous. Not surprisingly, the PGAs are also where the newest, most expensive houses are located.

POPULATION TRENDS

Intra-county population changes from 1990 to 2000 are shown below, using the 1990 census tracts as the unit of analysis. If a tract was not wholly within a single growth plan area type, the percentage allocation across area types was estimated.

KNOX COUNTY—1990 TO 2000 POPULATION CHANGES BY CENSUS TRACT AND AREA TYPE

1990 Tracts	1990 Population	2000 Population	1990 to 2000 Difference	Percent Change	Percent City in 2000	Percent UGB in 2000	Percent PGA in 2000	Percent Rural in 2000
1	1,470	1,300	-170	-12	100	0	0	0
2	1,284	1,270	-14	-1	100	0	0	0
3	1,979	1,904	-75	-4	100	0	0	0
4	725	744	19	3	100	0	0	0
5	2,602	2,615	13	0	100	0	0	0
6	3,339	2,747	-592	-18	100	0	0	0
7	2,041	1,649	-392	-19	100	0	0	0
8	2,172	3,587	1415	65	100	0	0	0
9	6,613	7,628	1015	15	100	0	0	0
10	1,923	1,513	-410	-21	100	0	0	0
11	3,461	2,614	-847	-24	100	0	0	0
12	2,489	969	-1520	-61	100	0	0	0
13	1,479	1,382	-97	-7	100	0	0	0
14	3,838	3,301	-537	-14	100	0	0	0
15	3,767	3,538	-229	-6	100	0	0	0
16	3,118	2,935	-183	-6	100	0	0	0
17	2,960	2,764	-196	-7	100	0	0	0
18	2,453	2,317	-136	-6	100	0	0	0
19	2,045	1,856	-189	-9	100	0	0	0
20	3,560	3,389	-171	-5	100	0	0	0
21	2,550	2,561	11	0	75	25	0	0
22	4,172	4,070	-102	-2	93	8	0	0
23	3,297	3,232	-65	-2	95	5	0	0
24	3,793	3,758	-35	-1	75	10	15	0
25	3,640	3,649	9	0	100	0	0	0
26	2,260	2,309	49	2	100	0	0	0
27	2,919	2,585	-334	-11	100	0	0	0
28	4,362	3,863	-499	-11	100	0	0	0
29	3,370	3,467	97	3	100	0	0	0
30	3,924	4,326	402	10	100	0	0	0
31	2,669	2,880	211	8	100	0	0	0
32	3,410	3,024	-386	-11	100	0	0	0
33	2,149	2,190	41	2	100	0	0	0
34	4,245	3,869	-376	-9	100	0	0	0
35	3,674	3,905	231	6	25	43	33	0
36	463	227	-236	-51	100	0	0	0
37	4,025	3,833	-192	-5	100	0	0	0
38	5,979	6,834	855	14	100	0	0	0
39	6,385	6,964	579	9	100	0	0	0
40	3,335	3,504	169	5	100	0	0	0
41	4,259	3,969	-290	-7	100	0	0	0

1990 Tracts	1990 Population	2000 Population	1990 to 2000 Difference	Percent Change	Percent City in 2000	Percent UGB in 2000	Percent PGA in 2000	Percent Rural in 2000
42	3,443	3,422	-21	-1	100	0	0	0
43	1,873	2,028	155	8	45	55	0	0
44.01	4,509	4,665	156	3	55	45	0	0
44.02	7,171	7,980	809	11	96	4	0	0
45	5,266	5,696	430	8	100	0	0	0
46.01	5,646	6,926	1280	23	45	55	0	0
46.02	11,366	15,606	4240	37	-----	-----	-----	-----
46.03	8,963	9,376	413	5	18	39	44	0
46.04	4,592	6,264	1672	36	13	13	75	0
47	3,472	3,760	288	8	83	17	0	0
48	4,105	4,710	605	15	68	33	0	0
49	3,536	4,255	719	20	70	30	0	0
50	3,856	3,956	100	3	93	7	0	0
51	3,042	4,224	1182	39	70	23	7	0
52.01	4,002	4,468	466	12	0	17	0	83
52.02	2,797	2,690	-107	-4	23	70	3	3
53	6,224	6,816	592	10	5	47	30	18
54	6,133	6,497	364	6	3	20	17	60
55	5,823	6,089	266	5	17	23	18	42
56	40	45	5	13	-----	-----	-----	-----
56.01	5,140	5,510	370	7	8	18	55	20
56.02	3,108	3,665	557	18	0	0	30	70
57.01	3,578	4,438	860	24	10	7	0	83
57.02	13,950	21,521	7571	54	-----	-----	-----	-----
57.03	4,011	5,069	1058	26	17	10	67	7
58.01	8,457	9,812	1355	16	-----	-----	-----	-----
58.02	9,988	15,567	5579	56	-----	-----	-----	-----
59.01	6,184	7,823	1639	27	12	8	48	32
59.02	4,918	6,850	1932	39	0	0	40	60
60	7,753	10,029	2276	29	5	8	88	0
61.01	7,264	9,329	2065	28	0	7	72	22
61.02	2,487	4,271	1784	72	5	5	40	50
62.01	5,039	7,098	2059	41	1	1	73	25
62.02	2,604	3,701	1097	42	0	0	90	10
62.03	4,133	4,482	349	8	2	3	95	0
62.04	5,784	7,490	1706	29	8	13	80	0
63	5,080	6,170	1090	21	0	0	5	95
64	6,418	8,646	2228	35	0	0	33	68
65	5,776	6,013	237	4	0	0	47	53
5601	14	22	8	57	-----	-----	-----	-----
5702	6	12	6	100	-----	-----	-----	-----

Dashed lines indicate tracts that could not be allocated across area types.

During the 1990s, as noted above, Knox County had an overall population growth of 14%. The county experienced strong population growth in the western and northern parts of the county, notably in such census tracts as 46.01, 57.02, 57.03, 58.02, 59.01, 59.02, 60, 61.01, 61.02, 62.01, 62.02, 62.04, and 64. Most of these tracts are in PGAs but include some areas designated as rural as well.

INFRASTRUCTURE PROJECTS

The following table is based on data in the 2003 general public infrastructure needs inventory.

KNOX COUNTY—NUMBER OF INFRASTRUCTURE PROJECTS BY AREA TYPE

	Within City	Within UGB	Within PGA	Within Rural	Site Not Det.	No Area Info
Total Projects	118	36	68	28	2	75
Type A Projects	58	10	27	6	1	72
Business District Development	6	0	0	0	0	0
Community Development	3	1	1	1	0	0
Fire Protection	4	0	0	0	0	0
Industrial Sites and Parks	1	1	0	0	0	0
K-12 New School Construction	4	3	5	0	0	0
Law Enforcement	6	0	0	1	0	2
LEA System-wide Need	0	0	0	0	0	3
Libraries and Museums	5	1	4	1	0	1
Non K-12 Education	0	0	0	0	0	44
Other Facilities	0	1	0	0	0	0
Public Buildings	4	0	1	0	0	2
Public Health Facilities	1	0	0	0	0	15
Recreation	23	2	14	2	1	5
Solid Waste	1	1	2	1	0	0
(N/A)**	60	26	41	22	1	3
Type B Projects	68	28	46	25	1	3
Property Acquisition	3	0	4	2	0	0
Stormwater	5	1	1	1	0	0
Transportation	45	10	20	7	0	3
Water and Wastewater	15	17	21	15	1	0
(N/A)**	50	8	22	3	1	72
Stage						
Completed	43	19	24	7	0	0
Conceptual	23	3	13	2	2	45
Construction	29	9	17	11	0	3
Planning & Design	23	5	14	8	0	5
State Agency (Completed/Canceled)	0	0	0	0	0	22
Regional Project						
Yes	0	0	0	0	0	56
No	118	36	68	28	2	19
Level of Government						
City	87	0	1	3	0	0
County	17	19	44	12	1	0
Other	6	17	20	12	1	0
State	8	0	3	1	0	75
In CIP						
Yes	103	35	59	26	2	0
No	15	1	9	2	0	6
Unknown	0	0	0	0	0	69
Estimated Cost						
\$50,000 to \$500,000	29	10	26	9	0	25
\$500,001 to \$5,000,000	59	23	30	18	2	31
\$5,000,001 to \$20,000,000	26	3	11	1	0	15
\$20,000,001 to \$50,000,000	3	0	1	0	0	4
\$100,000,001 and Over	1	0	0	0	0	0

*Projects that are geographically located in more than one area are repeat-counted for each relevant area type.

** N/A indicates the number of projects in the dataset that are not included under the Type.

There were 283 projects reported for Knox County. Of these, 18 projects span two or more growth plan area types. (These include a number of higher education projects, as well as some transportation, storm water, and water & wastewater projects.) In addition, 56 projects—mainly higher education projects, as well as some public health projects and a couple of transportation projects—were identified as regional. Of the total number of projects for the county when summed across area type categories—i.e., 327, including repeat-counting—the projects are split fairly evenly between Type A and Type B.

Over one-quarter of the 327 projects were in the conceptual stage. These include some transportation projects and various Type A projects, especially those involving higher education institutions.

According to the general needs inventory, Knox County has several non-state projects that are estimated to cost more than \$20 million: a \$21 million project to construct a four-lane divided road in west Knox County on Ball Camp Pike; a large, on-going \$31 million project to improve the wastewater collection system; and two downtown projects—a \$24 million project for restoration of Market Square, and a \$160 million project to construct a convention center. As of 2003, the Ball Camp Pike project was in the planning and design stage and was to start in FY 2004. The convention center is now completed; the other projects, under construction.

RELATIONSHIP OF INFRASTRUCTURE PROJECTS TO GROWTH PLAN, DEMOGRAPHIC PATTERNS, AND ECONOMIC PATTERNS

Of the infrastructure projects needed for Knox County, as identified in the 2003 general needs inventory, many are planned for its municipalities. With nearly one-half of the county's population in Knoxville, this would follow. However, the urban growth areas and PGAs, with their larger, more prosperous households, also have a number of infrastructure projects identified as needed—especially new K-12 school construction, recreation facilities, transportation projects, and water/wastewater projects. Given the population growth during the 1990s in these areas—especially areas now designated as PGAs—these infrastructure needs are not surprising.

Significantly, however, areas designated as rural also have a number of infrastructure needs identified. These include seven transportation projects and 15 water & wastewater projects. Because most of these were in planning and design or a more advanced stage as of 2003, it is difficult to determine whether their initial, conceptual stage preceded the adoption of Knox County's growth plan in April 2001. In any event, they had not been cancelled because of the growth plan. Because population growth was strong during the 1990s in some areas of Knox County subsequently designated as rural, it

appears that infrastructure needs may be responding more to demographic trends than to the growth plan per se.

MADISON COUNTY

MODERATELY LOW DENSITY, LOW GROWTH RATE

Madison County, in central western Tennessee, is demographically dominated by its largest city. As of 2000, Jackson made up nearly two-thirds of Madison County's population of approximately 92,000. The county's population grew by 18% during the 1990s, with an average density of 165 people per square mile in 2000.

Many of Madison County's demographic and economic characteristics are similar to Tennessee's: specifically, its per capita income, percentage of families below the poverty level, per capita property value, median housing value, percentage of population age 45 years and older, and percentage who changed residences in the past five years. In sharp contrast, however, were, first, its per capita retail sales figure, which—at nearly \$16,000—was the highest of the nine counties examined; and second, its percentage of workers commuting outside the county, which—at just 11%—was the lowest of the nine counties. Madison County, which is bisected by I-40, clearly is a hub for the surrounding region.

Madison County's population (2000 census: 91,837) grew 18% in the 1990s. To the north of Jackson especially, growth was explosive. The county's growth plan features an expansive urban growth boundary around Jackson and a few miniscule planned growth areas. Nevertheless—due perhaps to confusion about terminology—many infrastructure needs were identified as located in the county's planned growth areas.

KEY STATISTICS

	<i>Madison County</i>	<i>Tennessee</i>
<i>2000 pop.</i>	91,837	5,689,283
<i>% chg in pop 1990-2000</i>	+18%	+17%
<i>Land area (sq. miles)</i>	557	41,217
<i>2000 density (pop./sq. mi)</i>	165	138
<i>2000 per cap income</i>	\$19,389	\$19,393
<i>2000 families below poverty level</i>	10.8%	10.3%
<i>2000 per cap retail sales</i>	\$15,939	\$11,203
<i>2000 per cap estimated property value</i>	\$49,003	\$51,084
<i>2000 median value, owner-occupied houses</i>	\$85,100	\$93,000
<i>% of pop. 5 years+ living in different house in 1995</i>	49%	46%
<i>% of workers 16 years+ commuting out of county</i>	11%	27%
<i>% of pop. under age 18</i>	26%	25%
<i>% of pop. age 45 years +</i>	34%	36%
<i>Largest municipality (2000 pop.) (% of county pop.)</i>	Jackson (59,643) (65%)	
<i>Other municipalities</i>	Humboldt* Medon ThreeWay	

Numbers are rounded.

* Municipality located in more than one county.

Sources of information:

Tennessee Advisory Commission on Intergovernmental Relations, county profiles.

Tennessee Department of Economic and Community Development, county profiles.

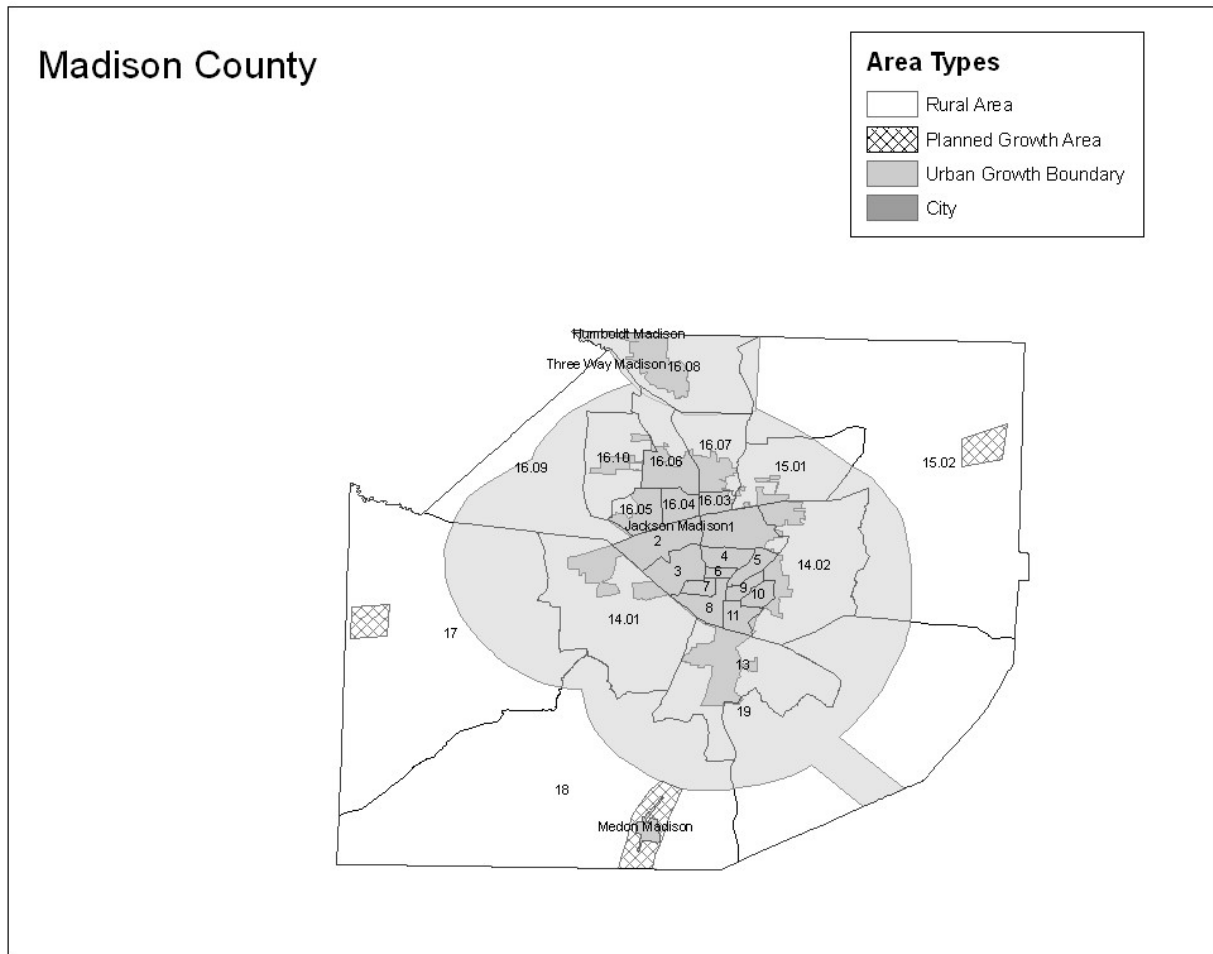
Tennessee State Board of Equalization, *2000 Tax Aggregate Report of Tennessee*.

United States Census Bureau.

University of Tennessee Municipal Technical Advisory Service, cities by county.

GROWTH PLAN

Madison County's growth plan, shown below, was approved by LGPAC on January 26, 2000 (TACIR, June 2002). The numbered sections are census tracts for the 2000 decennial census.



This map is adapted from a map digitized by the Tennessee Department of Economic and Community Development and is for informational purposes only.

DEMOGRAPHIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated and its population distributed accordingly.

MADISON COUNTY—DEMOGRAPHIC VARIABLES BY PERCENTAGE DISTRIBUTION BY AREA TYPE

Madison County—2000	Total	City	UGB	PGA	Rural
Population	100	63	26	1	11
<i>White</i>	65	54	85	76	79
<i>Non-White</i>	35	46	15	24	21
<i>Under age 18</i>	26	26	25	26	25
<i>Age 18 and over</i>	74	74	75	74	75
Households	100	63	25	1	11
<i>Age of Householder 15-44</i>	47	48	46	43	42
<i>Age of Householder 45-64</i>	33	31	36	36	38
<i>Age of Householder 65+</i>	20	21	18	20	20
Of Those Classified as Poor	100	76	15	1	9
Overall Poverty Rate =	14.0				
Housing Units	100	64	25	1	11
<i>Occupied Units</i>	93	92	95	95	94
<i>Vacant Units</i>	7	8	5	5	6
Of Occupied Housing Units	100	63	25	1	11
<i>1 to 2 in Household</i>	60	62	56	56	55
<i>3 or More in Household</i>	40	38	44	44	45

Based on our estimates using block group level information, much of Madison County’s population lives within city limits. Most of the remainder live within the county’s expansive UGBs and only 1% live in the county’s PGAs. The age composition of householders across the area types is quite similar, but households within city limits tend to be smaller, with a higher rate of poverty. The proportion of non-white population is much higher (nearly 50/50) within city limits than in the UGAs, PGAs, or rural areas.

ECONOMIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated. Median values have then been calculated for (1) block groups that lie from 51 to 100% within the given area type and (2) block groups that lie 50% or less within the given area type.

MADISON COUNTY—ECONOMIC VARIABLES BY MEDIAN VALUE BY AREA TYPE

Madison County—2000	City	UGB	PGA	Rural
Median Household Income				
% of Block Group <= 50% in Area Type	39,872	31,464	34,861	33,496
% of Block Group >=51% in Area Type	27,415	40,588	----	43,194
Median Family Income				
% of Block Group <= 50% in Area Type	45,864	35,978	41,369	40,492
% of Block Group >=51% in Area Type	32,917	46,528	----	46,167
Per Capita Income				
% of Block Group <= 50% in Area Type	18,122	16,073	17,206	16,628
% of Block Group >=51% in Area Type	15,892	18,552	----	17,718
Median Year Structures Built				
% of Block Group <= 50% in Area Type	1977	1971	1974	1971
% of Block Group >=51% in Area Type	1968	1975	----	1978
Median Housing Values				
% of Block Group <= 50% in Area Type	80,150	66,400	70,900	71,400
% of Block Group >=51% in Area Type	56,700	82,900	----	68,500

This table shows that people within city limits tend to fare less well on all of the income variables than those living in urban growth areas or areas designated as rural. Similarly, housing within city limits tends to be older and less expensive than in other area types.

POPULATION TRENDS

Intra-county population changes from 1990 to 2000 are shown below, using the 1990 census tracts as the unit of analysis. If a tract was not wholly within a single growth plan area type, the percentage allocation across area types was estimated.

MADISON COUNTY—1990 TO 2000 POPULATION CHANGES BY CENSUS TRACT AND AREA TYPE

1990 Tracts	1990 Population	2000 Population	1990 to 2000 Difference	Percent Change	Percent City in 2000	Percent UGB in 2000	Percent PGA in 2000	Percent Rural in 2000
1	2,685	3,162	477	18	97	3	0	0
2	6,017	6,274	257	4	100	0	0	0
3	4,669	4,910	241	5	100	0	0	0
4	3,290	3,270	-20	-1	100	0	0	0
5	3,949	4,175	226	6	100	0	0	0
6	2,323	2,387	64	3	100	0	0	0
7	2,878	3,343	465	16	100	0	0	0
8	1,192	1,051	-141	-12	100	0	0	0
9	2,995	2,669	-326	-11	100	0	0	0
10	3,633	3,165	-468	-13	100	0	0	0
11	1,664	1,254	-410	-25	100	0	0	0
12	1,041	1,241	200	19				
13	6,009	6,009	0	0	48	52	0	0
14.01	2,119	2,193	74	3	13	87	0	0
14.02	2,122	2,114	-8	0	20	80	0	0
15	6,543	8,628	2,085	32				
16.01	11,539	19,272	7,733	67				
16.02	4,387	6,981	2,594	59				
17	1,849	1,798	-51	-3	0	30	5	65
18	2,892	3,317	425	15	5	28	13	55
19	4,186	4,624	438	10	0	46	0	54

During the 1990s, as noted above, Madison County’s population grew by 18%. It had large population growth in Census Tracts 15, 16.01, 16.02. These tracts are all located to the north of central Jackson, within its urban growth area. In contrast, Census Tracts 8, 9, 10, and 11 in south Jackson within the city limits declined in population.

INFRASTRUCTURE PROJECTS

The following table is based on data in the 2003 general public infrastructure needs inventory.

MADISON COUNTY—NUMBER OF INFRASTRUCTURE PROJECTS BY AREA TYPE*

	Within City	Within UGB	Within PGA	Within Rural	No Area Info
Total Projects	124	6	16	41	1
Type A Projects	34	1	3	1	1
Business District Development	3	0	0	0	0
Community Development	1	0	0	0	0
Fire Protection	0	0	0	1	0
Industrial Sites and Parks	1	0	0	0	0
K-12 New School Construction	7	0	0	0	0
Law Enforcement	1	0	0	0	0
LEA System-wide Need	2	0	0	0	0
Libraries and Museums	1	0	0	0	0
Non K-12 Education	5	0	0	0	1
Public Buildings	2	0	3	0	0
Public Health Facilities	3	0	0	0	0
Recreation	7	1	0	0	0
Solid Waste	1	0	0	0	0
(N/A)**	90	5	13	40	0
Type B Projects	95	6	14	40	0
Property Acquisition	1	1	1	0	0
Stormwater	1	0	0	0	0
Telecommunications	1	0	0	0	0
Transportation	29	3	5	37	0
Water and Wastewater	63	2	8	3	0
(N/A)**	29	0	2	1	1
Stage					
Completed	56	3	0	6	0
Conceptual	45	2	9	10	1
Construction	7	0	1	1	0
Planning & Design	14	1	6	24	0
State Agency (Completed/Canceled)	2	0	0	0	0
Regional Project					
Yes	3	0	0	0	0
No	121	6	16	41	1
Level of Government					
City	23	0	3	0	0
County	9	1	1	14	0
Other	63	2	7	3	0
State	29	3	5	24	1
In CIP					
Yes	98	2	12	14	0
No	24	4	4	27	1
Unknown	2	0	0	0	0
Estimated Cost					
\$50,000 to \$500,000	64	6	6	29	1
\$500,001 to \$5,000,000	45	0	7	10	0
\$5,000,001 to \$20,000,000	14	0	3	1	0
\$20,000,001 to \$50,000,000	0	0	0	1	0
\$100,000,001 and Over	1	0	0	0	0

*Projects that are geographically located in more than one area are repeat-counted for each relevant area type.

** N/A indicates the number of projects in the dataset that are not included under the Type.

There were 186 projects reported for Madison County. Of these, only one project spans more than one growth plan area type. Of the total for the county when summed across area type categories—i.e., 188 projects, with repeat-counting—more than three-quarters are transportation projects or water & wastewater projects. Some of these projects were in the conceptual stage, as were some of the Type A projects, especially those involving higher education.

Most of the infrastructure projects identified as needed in Madison County are within the cities or their urban growth areas. Surprisingly few are located in the urban growth areas, however, while a number of projects—especially transportation and water & wastewater projects—were identified as needed in the rather minuscule PGAs. (This raises questions about the accuracy of the reporting: in particular, whether the distinction between UGB and PGA was universally understood.) Of the projects to be located in rural areas, most are transportation projects.

According to the general needs inventory, Madison County has two infrastructure projects estimated to cost more than \$20 million. These include a project estimated to cost \$22 million that would involve four-laning State Route 18 south of Jackson, and a proposed 15-mile bypass to the east of Jackson estimated to cost \$180 million. As of 2003, the State Route 18 project was in a conceptual stage with a start date of 2001; the eastern bypass also was in a conceptual stage with a 2007 start date.

RELATIONSHIP OF INFRASTRUCTURE PROJECTS TO GROWTH PLAN, DEMOGRAPHIC PATTERNS, AND ECONOMIC PATTERNS

The infrastructure projects needed for Madison County, as identified in the 2003 general needs inventory, are heavy on infrastructure basics for a growing county: new K-12 school construction, water & wastewater projects, and transportation projects. A number of projects are in the conceptual or planning and design stage, which also indicates trying to anticipate new growth.

The relationship between needed infrastructure projects and growth plan area types is difficult to analyze for Madison County. Many of the projects are identified as being located in municipalities. (Jackson, with two-thirds of the county's population, is the giant among its four municipalities.) However, as noted above, a number of projects—especially transportation and water & wastewater projects—were reported as needed for the county's PGAs, while only six projects were reported as needed for its urban growth areas. In contrast, we estimate that approximately one-quarter of the county's population lives in the urban growth areas, while only a tiny fraction lives in its PGAs. This raises questions about whether Item 23 of the inventory form was answered accurately.

MEIGS COUNTY

VERY LOW DENSITY, HIGH GROWTH RATE

Meigs County, in southeastern Tennessee, is the smallest of the counties examined in both population (just over 11,000 in 2000) and area (195 square miles). Located north of Hamilton County, Meigs County is striated by north-south ridges and is bounded on the west by the Tennessee River. In the northwestern section of the county, Watts Bar Lake (created by Watts Bar Dam on the Tennessee River) affords recreational opportunities. The population of Meigs County grew by 38% in the 1990s—in numerical terms, about 3,000—attaining an average density of 57 people per square mile in 2000. Decatur, its only city, makes up 13% of its population.

Based on a number of measures, the county is relatively poor: As of 2000, its per capita income was about \$14,500; nearly 16% of its families were below poverty level; its per capita retail sales were barely over \$3,000; its per capita property value was under \$40,000; and its median housing value, at about \$87,000, was \$5,000 less than the Tennessee average. Its population is less likely to change residences than the Tennessee average, and its percentage of people 45 years and older is somewhat higher. Two-thirds of its workers commute outside the county to go to work.

The population of Meigs County (2000 census: 11,086) grew 38%, or about 3,000, during the 1990s. Much of this growth was in its northern and southern sections, not in the center where its sole city, Decatur, is located. Because most of the county is designated for planned growth, it is difficult to determine whether its growth plan is shaping its infrastructure needs.

KEY STATISTICS

	<i>Meigs County</i>	<i>Tennessee</i>
<i>2000 pop.</i>	11,086	5,689,283
<i>% chg in pop 1990-2000</i>	+38%	+17%
<i>Land area (sq. miles)</i>	195	41,217
<i>2000 density (pop./sq. mi)</i>	57	138
<i>2000 per cap income</i>	\$14,551	\$19,393
<i>2000 families below poverty level</i>	15.8%	10.3%
<i>2000 per cap retail sales</i>	\$3,107	\$11,203
<i>2000 per cap estimated property value</i>	\$39,529	\$51,084
<i>2000 median value, owner-occupied houses</i>	\$87,200	\$93,000
<i>% of pop. 5 years+ living in different house in 1995</i>	41%	46%
<i>% of workers 16 years+ commuting out of county</i>	67%	27%
<i>% of pop. under age 18</i>	25%	25%
<i>% of pop. age 45 years +</i>	38%	36%
<i>Largest municipality (2000 pop.) (% of county pop.)</i>	Decatur (1,395) (13%)	
<i>Other municipalities</i>	—	

Numbers are rounded.

Sources of information:

Tennessee Advisory Commission on Intergovernmental Relations, county profiles.

Tennessee Department of Economic and Community Development, county profiles.

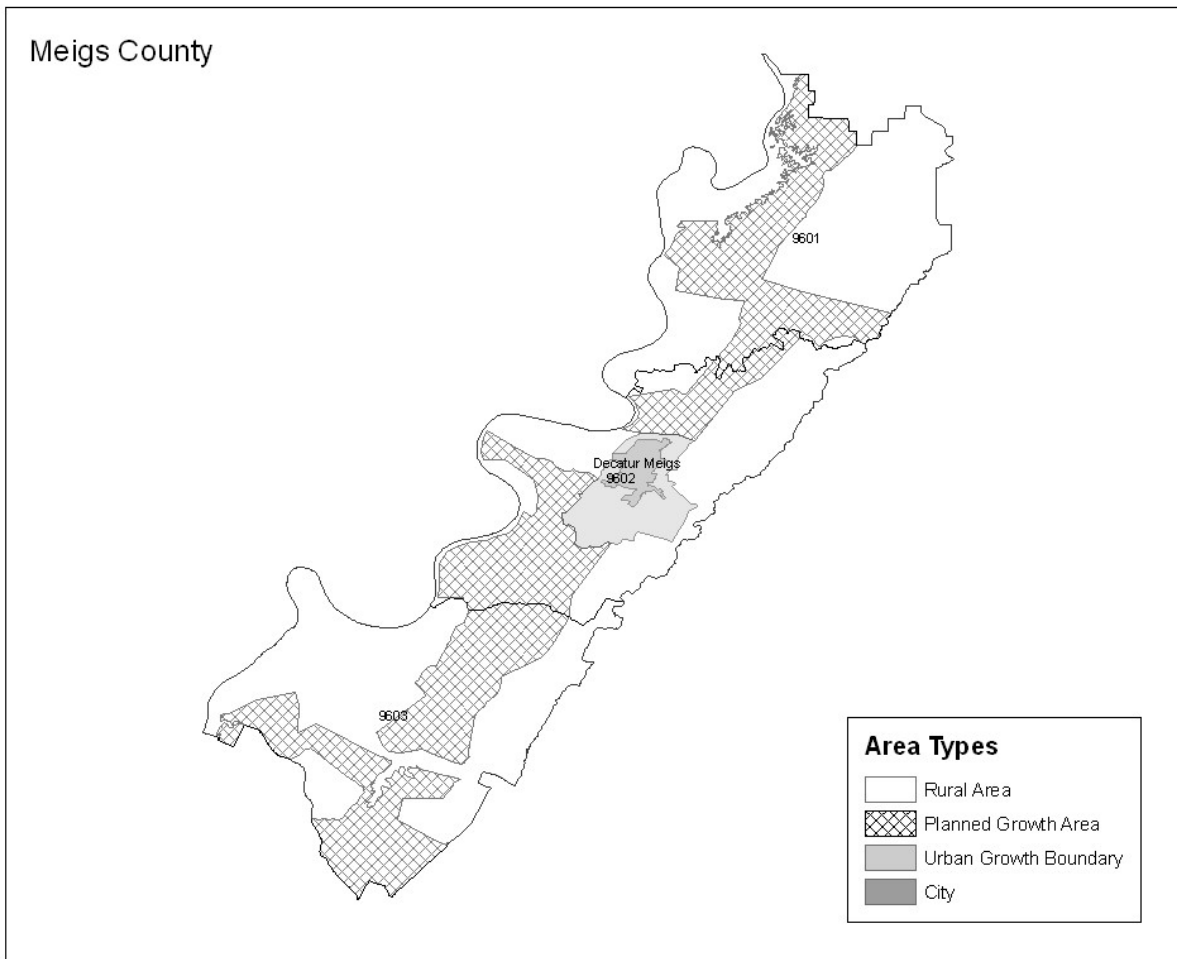
Tennessee State Board of Equalization, *2000 Tax Aggregate Report of Tennessee*.

United States Census Bureau.

University of Tennessee Municipal Technical Advisory Service, cities by county.

GROWTH PLAN

Meigs County's growth plan, shown below, was approved by LGPAC on January 26, 2000 (TACIR, June 2002). The numbered sections are census tracts for the 2000 decennial census.



This map is adapted from a map digitized by the Tennessee Department of Economic and Community Development and is for informational purposes only.

DEMOGRAPHIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated and its population distributed accordingly.

MEIGS COUNTY—DEMOGRAPHIC VARIABLES BY PERCENTAGE DISTRIBUTION BY AREA TYPE

Meigs County—2000	Total	City*	UGB	PGA	Rural
Population	100	4	6	42	48
<i>White</i>	98	99	99	98	98
<i>Non-White</i>	2	1	1	2	2
<i>Under age 18</i>	25	25	25	25	25
<i>Age 18 and over</i>	75	75	75	75	75
Households	100	4	6	42	48
<i>Age of Householder 15-44</i>	42	43	42	42	42
<i>Age of Householder 45-64</i>	38	37	38	39	38
<i>Age of Householder 65+</i>	20	20	20	19	20
Of Those Classified as Poor	100	3.96	6.27	42.75	47.02
Overall Poverty Rate =	18.3				
Housing Units	100	4	6	42	49
<i>Occupied Units</i>	83	90	89	83	82
<i>Vacant Units</i>	17	10	11	17	18
Of Occupied Housing Units	100	4	6	42	48
<i>1 to 2 in Household</i>	58	58	59	59	58
<i>3 or More in Household</i>	42	42	41	41	42

*In Meigs County, using geographic proportionality as the basis for allocating population at the block group level across area types has resulted in an underestimate of the population within Decatur.

Based on our block group estimates, approximately 10% of Meigs County’s population lives within its one city, Decatur, or that city’s UGB, and only 2% of the county’s population is non-white. The remainder is distributed fairly equally between PGAs and areas designated as rural. The age composition of householders, the size of households, and the rate of poverty is quite similar across all four area types.

ECONOMIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated. Median values have then been calculated for (1) block groups that lie from 51 to 100% within the given area type and (2) block groups that lie 50% or less within the given area type.

MEIGS COUNTY—ECONOMIC VARIABLES BY MEDIAN VALUE BY AREA TYPE

Meigs County—2000	City	UGB	PGA	Rural
Median Household Income				
% of Block Group <= 50% in Area Type	28,933	28,933	28,933	28,138
% of Block Group >=51% in Area Type	----	----	----	----
Median Family Income				
% of Block Group <= 50% in Area Type	33,202	33,201	33,201	34,226
% of Block Group >=51% in Area Type	----	----	----	----
Per Capita Income				
% of Block Group <= 50% in Area Type	15,190	15,190	15,190	15,707
% of Block Group >=51% in Area Type	----	----	----	----
Median Year Structures Built				
% of Block Group <= 50% in Area Type	1982	1982	1982	1982
% of Block Group >=51% in Area Type	----	----	----	----
Median Housing Values				
% of Block Group <= 50% in Area Type	86,050	86,050	86,050	86,300
% of Block Group >=51% in Area Type	----	----	----	----

The small population size in Meigs County and the fact that all of its block groups straddle at least two area types makes it difficult to statistically reveal its intra-county economic patterns based on 2000 census data. Distinctions among the variables do not show up. Intuitively, however, it can be said that areas adjacent or near to Watts Bar Lake along the county's northwestern side are likely to increase in prosperity, especially if land designation changes contemplated by the Tennessee Valley Authority are actualized. These changes could make large tracts of shoreline acreage on Watts Bar Lake available for residential and commercial development (Rebecca Ferrar, "Land of Promise," *Knoxville News-Sentinel*, June 8, 2005).

POPULATION TRENDS

Intra-county population changes from 1990 to 2000 are shown below, using the 1990 census tracts as the unit of analysis. If a tract was not wholly within a single growth plan area type, the percentage allocation across area types was estimated.

MEIGS COUNTY—1990 TO 2000 POPULATION CHANGES BY CENSUS TRACT AND AREA TYPE

1990 Tracts	1990 Population	2000 Population	1990 to 2000 Difference	Percent Change	Percent City in 2000	Percent UGB in 2000	Percent PGA in 2000	Percent Rural in 2000
9601	2,170	3,108	938	43	0	0	40	60
9602	3,365	4,313	948	28	10	15	35	40
9603	2,498	3,665	1,167	47	0	0	50	50

As noted above, Meigs County had a 38% population growth during the 1990s. While all three of its census tracts experienced relatively large numerical growths, the percentage change was especially great in Census Tract 9601 in the northern part of the county and Census Tract 9603 in the southern part. Both of these tracts encompass PGAs and rural areas, as designated in the county’s growth plan.

INFRASTRUCTURE PROJECTS

The following table is based on data in the 2003 general public infrastructure needs inventory.

MEIGS COUNTY—NUMBER OF INFRASTRUCTURE PROJECTS BY AREA TYPE*

	Within City	Within UGB	Within PGA	Within Rural
Total Projects	11	8	8	6
Type A Projects	4	3	2	1
Community Development	1	0	0	0
Industrial Sites and Parks	0	1	1	0
LEA System-wide Need	1	0	0	0
Libraries and Museums	0	0	0	1
Recreation	1	1	0	0
Solid Waste	1	1	1	0
(N/A)**	7	5	6	5
Type B Projects	8	6	7	5
Other Utilities	1	1	1	0
Property Acquisition	0	1	1	0
Transportation	5	2	3	5
Water and Wastewater	2	2	2	0
(N/A)**	3	2	1	1
Stage				
Completed	0	0	1	0
Conceptual	5	4	2	0
Construction	1	2	3	0
Planning & Design	5	2	2	6
Regional Project				
Yes	0	0	0	0
No	11	8	8	6
Level of Government				
City	4	2	0	0
County	2	2	3	3
Joint	2	2	1	1
Other	1	1	3	0
State	2	1	1	2
In CIP				
Yes	1	1	1	0
No	10	7	7	6
Estimated Cost				
\$50,000 to \$500,000	8	3	5	2
\$500,001 to \$5,000,000	1	3	1	2
\$5,000,001 to \$20,000,000	1	1	1	2
\$20,000,001 to \$50,000,000	1	1	1	0

*Projects that are geographically located in more than one area are repeat-counted for each relevant area type.

** N/A indicates the number of projects in the dataset that are not included under the Type.

There were 17 projects reported for Meigs County. Of these, six projects span two or more growth plan area types. These include one industrial site project and two solid waste projects as well as transportation and “other utilities” projects. None of the projects for Meigs County were identified as regional. Of the total for the county when summed across area type categories—i.e., 33, with repeat-counting—about two-thirds are Type B projects.

Most of the 11 projects in a conceptual stage are within Decatur or its UGB. These conceptual projects tend to be Type B projects such as transportation, water & wastewater, and other utilities.

According to the general needs inventory, Meigs County has one infrastructure project estimated to cost \$20 million or more: a road project (estimated to cost \$40 million) to four-lane State Route 30, which bisects the county from east to west. State Route 30 has become a major connector between Rhea County to the west and Meigs County, now that a ferry crossing the Tennessee River has been replaced by a bridge. As of 2003, the project, which started in 2001, was under construction.

RELATIONSHIP OF INFRASTRUCTURE PROJECTS TO GROWTH PLAN, DEMOGRAPHIC PATTERNS, AND ECONOMIC PATTERNS

The infrastructure projects needed for Meigs County, as identified in the 2003 general needs inventory, are mainly located within Decatur, its UGB, or PGA in the county. Only six projects—including five transportation projects—were identified as needed in rural areas.

Despite the strong correlation between infrastructure identified as needed and areas designated for growth, it is difficult to determine whether the county’s growth plan is, in fact, playing a large role in shaping the county’s infrastructure needs. If the changes now contemplated for the Watts Bar Lake shoreline are approved by TVA, this shoreline area—now designated as rural in the Meigs County growth plan—is likely to become a target for development. It will be interesting to see how this affects the county’s growth plan and/or determination of public infrastructure needs.

RUTHERFORD COUNTY

MODERATELY HIGH DENSITY, HIGH GROWTH RATE

Rutherford County, in middle Tennessee to the southeast of Davidson County, is on the move in many ways. With a 2000 population of just over 182,000, it grew by 54% in the 1990s. Murfreesboro, its largest city, is home to Middle Tennessee State University and makes up nearly 40% of the county's population. With an average population density of nearly 300 people per square mile, Rutherford County is more than twice as dense as Tennessee as a whole.

Rutherford County's 2000 per capita income, at just under \$20,000, is similar to Tennessee's, but fewer than 6% of its families are below the poverty level. As of 2000, its per capita retail sales were similar to Tennessee's, as was its per capita property value. In 2000, its median housing value was more than 20% higher, however, and over half its population lived in a different house five years before. Its population is young—in 2000, just over a quarter of its people were 45 years or older—and nearly 40% of its workers commute outside the county.

The population of Rutherford County (2000 census: 182,023) grew a whopping 63,453 (54%) in the 1990s, mainly in and around the four cities in its northwestern and central sections. These areas have been designated for urban growth in the county's growth plan; the remainder to the south and east is designated as rural. Six new water & wastewater projects are planned for its rural areas, raising the question: Is the growth plan making a difference?

KEY STATISTICS

	Rutherford County	Tennessee
2000 pop.	182,023	5,689,283
% chg in pop 1990-2000	+54%	+17%
Land area (sq. miles)	619	41,217
2000 density (pop./sq. mi)	294	138
2000 per cap income	\$19,938	\$19,393
2000 families below poverty level	05.8%	10.3%
2000 per cap retail sales	\$10,361	\$11,203
2000 per cap estimated property value	\$52,555	\$51,084
2000 median value, owner-occupied houses	\$113,500	\$93,000
% of pop. 5 years+ living in different house in 1995	56%	46%
% of workers 16 years+ commuting out of county	38%	27%
% of pop. under age 18	26%	25%
% of pop. age 45 years +	27%	36%
Largest municipality (2000 pop.) (% of county pop.)	Murfreesboro (68,816) (38%)	
Other municipalities	Eagleville LaVergne Smyrna	

Numbers are rounded.

Sources of information:

Tennessee Advisory Commission on Intergovernmental Relations, county profiles.

Tennessee Department of Economic and Community Development, county profiles.

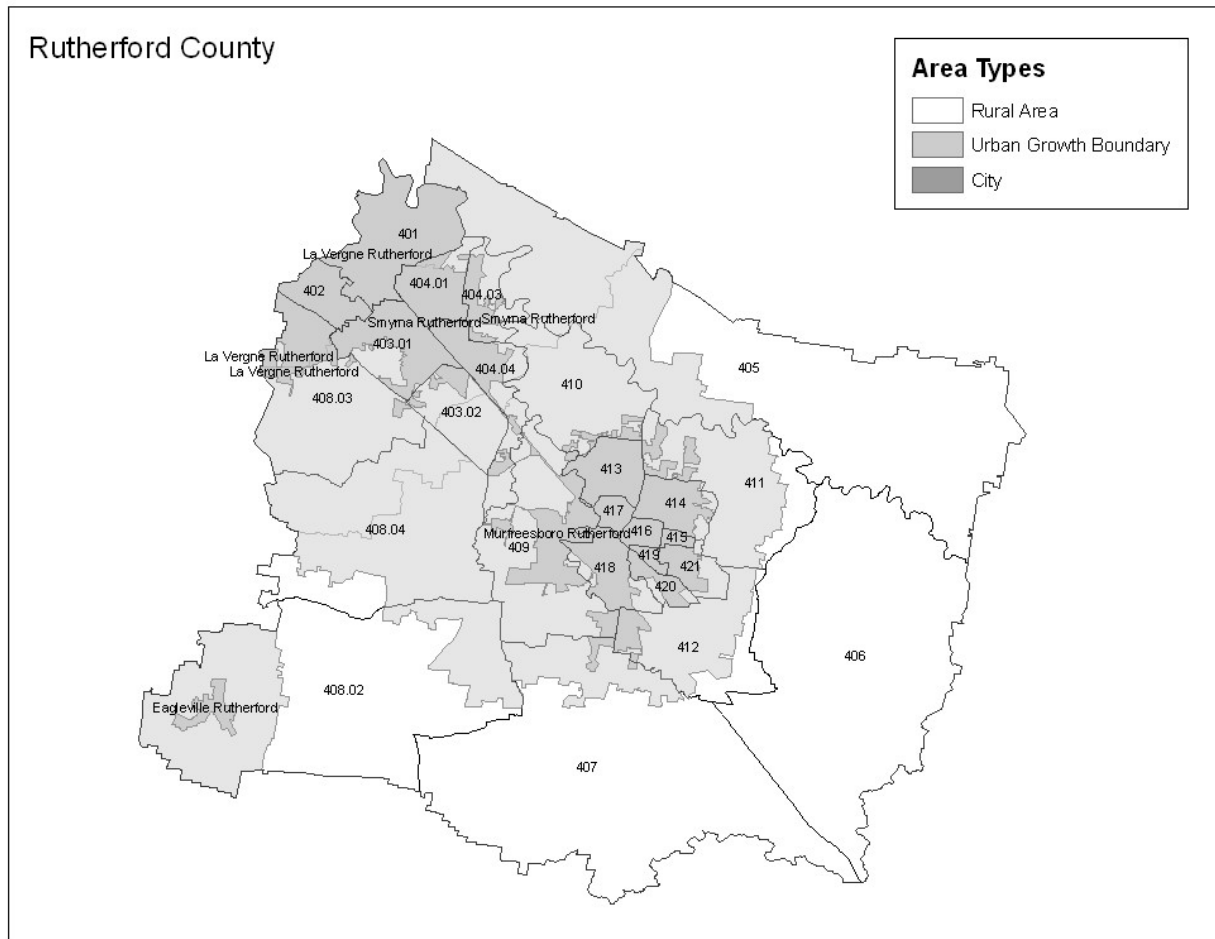
Tennessee State Board of Equalization, *2000 Tax Aggregate Report of Tennessee*.

United States Census Bureau.

University of Tennessee Municipal Technical Advisory Service, cities by county.

GROWTH PLAN

Rutherford County's growth plan, shown below, was approved by LGPAC on April 26, 2000 (TACIR, June 2002). The numbered sections are census tracts for the 2000 decennial census.



This map is adapted from a map digitized by the Tennessee Department of Economic and Community Development and is for informational purposes only.

DEMOGRAPHIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated and its population distributed accordingly.

RUTHERFORD COUNTY—DEMOGRAPHIC VARIABLES BY PERCENTAGE DISTRIBUTION BY AREA TYPE

Rutherford County—2000	Total	City	UGB	PGA	Rural
Population	100	53	36	0	10
<i>White</i>	86	83	100	0	100
<i>Non-White</i>	14	17	12	0	7
<i>Under age 18</i>	26	25	29	0	27
<i>Age 18 and over</i>	74	75	71	0	73
Households	100	55	35	0	10
<i>Age of Householder 15-44</i>	57	58	58	0	50
<i>Age of Householder 45-64</i>	30	29	31	0	34
<i>Age of Householder 65+</i>	13	14	10	0	16
Of Those Classified as Poor	100	65	27	0	8
Overall Poverty Rate =	9.0				
Housing Units	100	55	35	0	10
<i>Occupied Units</i>	94	94	94	0	95
<i>Vacant Units</i>	6	6	6	0	5
Of Occupied Housing Units	100	55	35	0	10
<i>1 to 2 in Household</i>	54	58	49	0	49
<i>3 or More in Household</i>	46	42	51	0	51

An estimated 90% of Rutherford County’s population lives within either its municipalities or their urban growth areas. Since Rutherford County has no PGAs, the remainder lives in areas designated as rural. The age composition of householders in the urban growth areas tends to be younger than in the other areas, and the urban growth areas have proportionally more children under age 18. The areas within city limits tend to have smaller households than the other areas, and the city areas also have somewhat higher rates of poverty and non-white populations.

ECONOMIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated. Median values have then been calculated for (1) block groups that lie from 51 to 100% within the given area type and (2) block groups that lie 50% or less within the given area type.

RUTHERFORD COUNTY—ECONOMIC VARIABLES BY MEDIAN VALUE BY AREA TYPE

Rutherford County—2000	City	UGB	PGA	Rural
Median Household Income				
% of Block Group <= 50% in Area Type	49,819	43,546	----	44,631
% of Block Group >=51% in Area Type	36,697	50,728	----	47,004
Median Family Income				
% of Block Group <= 50% in Area Type	54,222	50,203	----	51,365
% of Block Group >=51% in Area Type	47,422	55,556	----	51,250
Per Capita Income				
% of Block Group <= 50% in Area Type	19,865	19,086	----	19,377
% of Block Group >=51% in Area Type	18,805	19,831	----	19,086
Median Year Structures Built				
% of Block Group <= 50% in Area Type	1985	1977	----	1982
% of Block Group >=51% in Area Type	1975	1986	----	1979
Median Housing Values				
% of Block Group <= 50% in Area Type	109,900	101,800	----	107,250
% of Block Group >=51% in Area Type	100,000	121,100	----	102,600

When the area types are examined by their predominant block group subcategories (>=51% in area type), it is evident that people in the cities tend to fare the worst on all three income variables, while those in urban growth areas fare the best. Similarly, housing in urban growth areas tends to be newer and much more expensive than in cities or in areas designated as rural.

POPULATION TRENDS

Intra-county population changes from 1990 to 2000 are shown below, using the 1990 census tracts as the unit of analysis. If a tract was not wholly within a single growth plan area type, the percentage allocation across area types was estimated.

RUTHERFORD COUNTY—1990 TO 2000 POPULATION CHANGES BY CENSUS TRACT AND AREA TYPE

1990 Tracts	1990 Population	2000 Population	1990 to 2000 Difference	Percent Change	Percent City in 2000	Percent UGB in 2000	Percent PGA in 2000	Percent Rural in 2000
401	4,595	13,199	8,604	187	100	0	0	0
402	1,474	2,277	803	54	100	0	0	0
403.01	7,472	14,511	7,039	94	80	20	0	0
403.02	6,084	6,832	748	12	31	69	0	0
404.01	1,194	1,389	195	16	90	10	0	0
404.02	8,500	11,094	2,594	31				
405	5,188	8,968	3,780	73	0	40	0	60
406	3,568	4,181	613	17	0	0	0	100
407	4,634	7,454	2,820	61	3	13	0	83
408.01	10,738	15,878	5,140	48				
408.02	3,087	5,106	2,019	65	5	43	0	53
409	7,995	16,117	8,122	102	27	73	0	0
410	3,701	4,946	1,245	34	10	90	0	0
411	4,501	8,503	4,002	89	10	80	0	10
412	2,245	6,187	3,942	176	10	65	0	25
413	7,310	10,271	2,961	41	100	0	0	0
414	7,660	11,465	3,805	50	72	28	0	0
415	3,493	3,154	-339	-10	100	0	0	0
416	5,438	5,456	18	0	100	0	0	0
417	4,625	5,060	435	9	100	0	0	0
418	2,963	4,256	1,293	44	90	10	0	0
419	3,573	4,285	712	20	100	0	0	0
420	3,369	5,159	1,790	53	75	25	0	0
421	5,163	6,275	1,112	22	77	23	0	0

During the 1990s, as noted above, Rutherford County had a 54% population growth rate. Growth occurred in many parts of the county, especially in the following census tracts: Tracts 401 and 403.1, in the LaVergne and Smyrna areas in the northwestern section of the county; Tracts 409, 411, 412, 413, and 414, in a ring around Murfreesboro; Tract 405 in the northeastern section of the county; and Tract 407 in the county's south central area. Tracts 405 and 407 are predominantly designated as rural; the other tracts with large population growth are wholly or largely within city limits or urban growth areas.

INFRASTRUCTURE PROJECTS

The following table is based on data in the 2003 general public infrastructure needs inventory.

RUTHERFORD COUNTY—NUMBER OF INFRASTRUCTURE PROJECTS BY AREA TYPE*

	Within City	Within UGB	Within PGA	Within Rural	Site Not Det.	No Area Info
Total Projects	189	59	5	15	2	13
Type A Projects	73	10	2	7	2	13
Business District Development	2	0	0	0	0	0
Community Development	8	1	0	0	0	0
Fire Protection	5	1	0	0	0	0
Industrial Sites and Parks	2	1	0	0	0	0
K-12 New School Construction	11	1	1	4	1	0
Law Enforcement	8	0	0	0	0	2
LEA System-wide Need	3	2	1	3	0	0
Libraries and Museums	1	0	0	0	0	0
Non K-12 Education	8	0	0	0	0	9
Other Facilities	0	1	0	0	0	0
Public Buildings	2	0	0	0	0	0
Public Health Facilities	4	1	0	0	0	2
Recreation	19	2	0	0	1	0
(N/A)**	116	49	3	8	0	0
Type B Projects	123	51	3	8	0	0
Other Utilities	4	1	0	0	0	0
Property Acquisition	3	1	0	0	0	0
Stormwater	1	0	0	0	0	0
Transportation	65	13	2	2	0	0
Water and Wastewater	50	36	1	6	0	0
(N/A)**	66	8	2	7	2	13
Stage						
Completed	45	11	0	1	0	0
Conceptual	52	17	0	6	2	13
Construction	33	15	2	5	0	0
Planning & Design	45	15	3	3	0	0
State Agency (Completed/Canceled)	14	1	0	0	0	0
Regional Project						
Yes	20	1	0	0	0	0
No	169	58	5	15	2	13
Level of Government						
City	134	35	0	6	1	0
County	13	5	2	8	1	0
Joint	4	0	1	0	0	0
Other	3	9	1	1	0	0
State	35	10	1	0	0	13
In CIP						
Yes	129	39	2	11	2	0
No	40	19	3	4	0	11
Unknown	20	1	0	0	0	2
Estimated Cost						
\$50,000 to \$500,000	59	11	1	3	0	3
\$500,001 to \$5,000,000	90	40	1	9	0	7
\$5,000,001 to \$20,000,000	34	8	2	3	1	2
\$20,000,001 to \$50,000,000	5	0	1	0	1	0
\$50,000,001 to \$100,000,000	1	0	0	0	0	0
\$100,000,001 and Over	0	0	0	0	0	1

*Projects that are geographically located in more than one area are repeat-counted for each relevant area type.

** N/A indicates the number of projects in the dataset that are not included under the Type.

There were 189 projects reported for Rutherford County. Of these, 43 projects span two or more growth plan area types. These include LEA system-wide needs and recreation projects as well as eight transportation projects and 32 water & wastewater projects. In addition, 21 regional projects were reported for Rutherford County, including higher education, law enforcement, and public health projects as well as one property acquisition project. Of the total for the county when summed across area type categories—i.e., 283, including repeat-counting—nearly two-thirds of the projects are Type B projects.

Most of the projects are within the cities or their UGBs, and most of them serve transportation, water & wastewater, or new school construction needs. Five projects were identified in error as being located within PGAs. (Rutherford County has no PGAs.)

Of projects that are in the conceptual stage, 25 are water & wastewater projects, while 15 are transportation projects. In addition, some higher education projects and LEA system-wide projects were identified as conceptual.

According to the general needs inventory, Rutherford County has several non-state infrastructure projects estimated to cost more than \$20 million: an expansion of the Sinking Creek Wastewater Treatment Plant in Murfreesboro, estimated to cost \$33 million; two new high schools, one in Murfreesboro (estimated to cost about \$28 million) and one in an undetermined location (estimated to cost \$38 million); and a project, estimated to cost about \$24 million, to five-lane State Route 96 from west of Murfreesboro to State Route 840. As of 2003, the Murfreesboro high school was under construction whereas the other high school was in the conceptual stage. In 2003, the widening of State Route 96 was in the planning and design stage.

RELATIONSHIP OF INFRASTRUCTURE PROJECTS TO GROWTH PLAN, DEMOGRAPHIC PATTERNS, AND ECONOMIC PATTERNS

The infrastructure projects needed for Rutherford County, as identified in the 2003 general needs inventory, show a strong emphasis on the needs of its existing municipalities and their urban growth areas, which contain an estimated 90% of the county's population. The types of projects are those that would be expected in a fast-growing county: new K-12 schools, transportation, and water & wastewater. Projects within municipalities also include four economic development (business district and industrial site) projects, as well as eight community development projects and eight law enforcement projects. These appear to fit the needs of the demographic and economic patterns of the municipalities.

In addition, however, four K-12 new school construction projects were identified as needed in rural areas, as were six water & wastewater projects. Six of the rural areas' total of 15 needed infrastructure projects were in the conceptual stage as of 2003, and 11 were in a capital improvement program. This suggests that the county growth plan may be having little effect on infrastructure projects identified as needed within the county.

SULLIVAN COUNTY

MODERATELY HIGH DENSITY, LOW GROWTH RATE

Sullivan County, in upper east Tennessee, has three major cities—Johnson City, Kingsport, and Bristol—but none of them is wholly within the county. (Strictly speaking, Bristol is, but Bristol, Virginia, lies right across the state border.) Johnson City, the largest among the Tri-Cities, is located mainly in Washington County and accounts for a tiny fraction of Sullivan County’s population, which was slightly over 150,000 in 2000. Sullivan County grew by a sluggish 7% in the 1990s, reaching a population density of 371 people per square mile in 2000.

Many of Sullivan County’s demographic and economic indicators resemble the average for Tennessee: its per capita income, percentage of families below the poverty level, per capita retail sales, per capita property value, and median housing value. Its percentage of workers commuting outside the county is similar to Tennessee’s, and its percentage of people who have recently changed homes is slightly lower. Notably, as of 2000, 42% of its population was 45 years or older—the oldest demographic profile of the nine counties examined.

Sullivan County’s population (2000 census: 153,048) grew 7% in the 1990s. Growth was especially strong in areas designated for planned growth (mainly the “infill” between the “Tri-Cities”), but population growth also was strong in some areas designated as rural. With 10 water or wastewater projects identified for rural areas, growth trends rather than growth plans may be driving public infrastructure.

KEY STATISTICS

	<i>Sullivan County</i>	<i>Tennessee</i>
<i>2000 pop.</i>	153,048	5,689,283
<i>% chg in pop 1990-2000</i>	+07%	+17%
<i>Land area (sq. miles)</i>	413	41,217
<i>2000 density (pop./sq. mi)</i>	371	138
<i>2000 per cap income</i>	\$19,202	\$19,393
<i>2000 families below poverty level</i>	09.7%	10.3%
<i>2000 per cap retail sales</i>	\$12,157	\$11,203
<i>2000 per cap estimated property value</i>	\$51,966	\$51,084
<i>2000 median value, owner-occupied houses</i>	\$88,000	\$93,000
<i>% of pop. 5 years+ living in different house in 1995</i>	40%	46%
<i>% of workers 16 years+ commuting out of county</i>	28%	27%
<i>% of pop. under age 18</i>	22%	25%
<i>% of pop. age 45 years +</i>	42%	36%
<i>Largest municipality (2000 pop.) (% of county pop.)</i>	JohnsonCity* (55,469) (0.16%**)	
<i>Other municipalities</i>	BluffCity Bristol Kingsport*	

Numbers are rounded.

* Municipalities located in more than one county.

**As of the 2000 census, Johnson City, which is located mainly in Washington County, accounted for only 240 of Sullivan County's population. Kingsport, with a 2000 census population of 44,905, accounted for 41,998 of Sullivan County's population, or 27%.

Sources of information:

Tennessee Advisory Commission on Intergovernmental Relations, county profiles.

Tennessee Department of Economic and Community Development, county profiles.

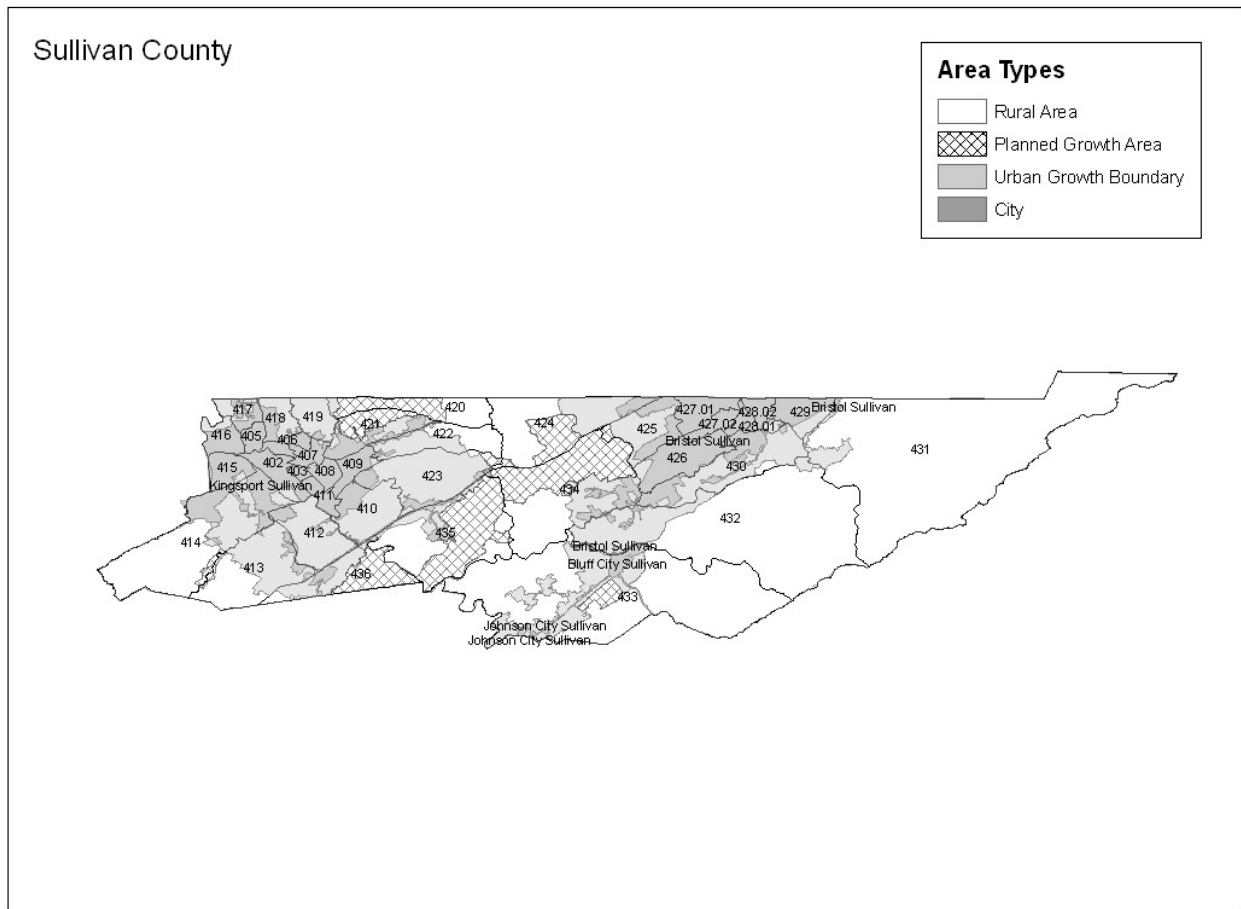
Tennessee State Board of Equalization, *2000 Tax Aggregate Report of Tennessee*.

United States Census Bureau.

University of Tennessee Municipal Technical Advisory Service, cities by county.

GROWTH PLAN

Sullivan County's growth plan, shown below, was approved by LGPAC on June 28, 2000 (TACIR, June 2002). The numbered sections are census tracts for the 2000 decennial census.



This map is adapted from a map digitized by the Tennessee Department of Economic and Community Development and is for informational purposes only.

DEMOGRAPHIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated and its population distributed accordingly.

SULLIVAN COUNTY—DEMOGRAPHIC VARIABLES BY PERCENTAGE DISTRIBUTION BY AREA TYPE

Sullivan County—2000	Total	City	UGB	PGA	Rural
Population	100	44	28	11	16
<i>White</i>	97	95	98	98	98
<i>Non-White</i>	3	5	2	2	2
<i>Under age 18</i>	22	21	22	21	23
<i>Age 18 and over</i>	78	79	78	79	77
Households	100	46	28	11	15
<i>Age of Householder 15-44</i>	38	37	40	38	40
<i>Age of Householder 45-64</i>	36	34	38	38	39
<i>Age of Householder 65+</i>	25	29	22	24	21
Of Those Classified as Poor	100	56	21	8	15
Overall Poverty Rate =	12.9				
Housing Units	100	47	27	11	15
<i>Occupied Units</i>	92	91	93	93	91
<i>Vacant Units</i>	8	9	7	7	9
Of Occupied Housing Units	100	46	28	11	15
<i>1 to 2 in Household</i>	63	67	61	61	58
<i>3 or More in Household</i>	37	33	39	39	42

Sullivan County's population is spread across all four area types. Areas within city limits tend to have smaller, older households and a higher rate of poverty. In contrast, populations within urban growth areas or PGAs—an estimated 39% of the county's total population—have proportionally lower rates of poverty.

ECONOMIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated. Median values have then been calculated for (1) block groups that lie from 51 to 100% within the given area type and (2) block groups that lie 50% or less within the given area type.

SULLIVAN COUNTY—ECONOMIC VARIABLES BY MEDIAN VALUE BY AREA TYPE

Sullivan County--2000	City	UGB	PGA	Rural
Median Household Income				
% of Block Group <= 50% in Area Type	36,298	30,710	31,563	31,881
% of Block Group >=51% in Area Type	26,806	39,972	35,292	31,982
Median Family Income				
% of Block Group <= 50% in Area Type	42,513	36,974	36,983	38,119
% of Block Group >=51% in Area Type	34,797	45,875	42,277	39,107
Per Capita Income				
% of Block Group <= 50% in Area Type	17,516	17,340	17,369	17,820
% of Block Group >=51% in Area Type	16,942	20,745	18,358	15,914
Median Year Structures Built				
% of Block Group <= 50% in Area Type	1977	1968	1969	1967
% of Block Group >=51% in Area Type	1957	1975	1972	1978
Median Housing Values				
% of Block Group <= 50% in Area Type	88,000	80,550	81,100	82,350
% of Block Group >=51% in Area Type	71,100	98,100	87,350	82,300

Within Sullivan County, urban growth areas are the most prosperous, followed by PGAs. Cities fare the worst on all three income variables except per capita income. On that variable, areas designated as rural have the lowest average per capita income when only the predominant block group subcategory (>=51% in area type) is considered. Housing in city areas tends to be much older and less expensive than in the other area types, especially the urban growth areas.

POPULATION TRENDS

Intra-county population changes from 1990 to 2000 are shown below, using the 1990 census tracts as the unit of analysis. If a tract was not wholly within a single growth plan area type, the percentage allocation across area types was estimated.

SULLIVAN COUNTY—1990 TO 2000 POPULATION CHANGES BY CENSUS TRACT AND AREA TYPE

1990 Tracts	1990 Population	2000 Population	1990 to 2000 Difference	Percent Change	Percent City in 2000	Percent UGB in 2000	Percent PGA in 2000	Percent Rural in 2000
401	62	69	7	11				
402	2,548	2,513	-35	-1	96	4	0	0
403	2,798	2,668	-130	-5	100	0	0	0
404	314	134	-180	-57				
405	4,227	4,237	10	0	100	0	0	0
406	3,829	3,339	-490	-13	100	0	0	0
407	2,361	2,523	162	7	95	5	0	0
408	3,843	3,615	-228	-6	100	0	0	0
409	2,746	2,987	241	9	95	5	0	0
410	2,941	3,560	619	21	30	70	0	0
411	2,505	2,421	-84	-3	100	0	0	0
412	5,820	6,531	711	12	13	88	0	0
413	3,243	4,304	1,061	33	17	40	3	40
414	5,103	5,413	310	6	30	33	5	33
415	2,319	2,668	349	15	93	8	0	0
416	2,324	2,311	-13	-1	85	15	0	0
417	3,616	3,393	-223	-6	65	35	0	0
418	4,489	4,541	52	1	43	57	0	0
419	3,426	3,245	-181	-5	10	90	0	0
420	3,628	3,632	4	0	0	10	73	17
421	4,971	5,555	584	12	30	25	45	0
422	2,813	3,031	218	8	5	50	0	45
423	5,848	6,499	651	11	15	75	5	5
424	2,877	3,297	420	15	7	22	33	38
425	3,328	3,234	-94	-3	30	60	10	0
426	4,272	4,273	1	0	93	7	0	0
427.01	4,930	5,059	129	3	100	0	0	0
427.02	2,169	2,043	-126	-6	100	0	0	0
428.01	2,617	2,646	29	1	100	0	0	0
428.02	5,138	5,017	-121	-2	88	13	0	0
429	3,188	3,409	221	7	80	20	0	0
430	4,507	4,601	94	2	45	50	0	5
431	2,955	3,147	192	6	3	8	0	90
432	7,907	8,558	651	8	2	33	0	65
433	8,587	10,600	2,013	23	11	21	4	63
434	8,339	9,820	1,481	18	7	17	58	18
435	3,115	3,480	365	12	5	10	55	30
436	3,893	4,674	781	20	7	20	67	7

Dashed lines indicate tracts that could not be allocated across area types.

As noted above, Sullivan County as a whole experienced only a modest growth rate of 7% during the 1990s. Growth was strong in four census tracts, however: Tract 413, to the south of Kingsport; Tract 436, between Kingsport and Johnson City, Tract 434, between Kingsport and Bristol; and Tract 433, between Bristol and Johnson City. Tracts 434 and 436 are predominantly within PGAs or urban growth areas. Tracts 413 and 433, however, include large portions of areas designated as rural.

INFRASTRUCTURE PROJECTS

The following table is based on data in the 2003 general public infrastructure needs inventory.

SULLIVAN COUNTY—NUMBER OF INFRASTRUCTURE PROJECTS BY AREA TYPE*

	Within City	Within UGB	Within PGA	Within Rural	Site Not Det.	No Area Info
Total Projects	178	37	18	18	3	16
Type A Projects	48	3	6	5	2	7
Business District Development	2	0	0	0	0	0
Community Development	3	0	1	0	0	0
Fire Protection	1	0	0	0	0	0
Industrial Sites and Parks	4	2	2	0	1	0
K-12 New School Construction	1	0	0	0	0	0
Law Enforcement	0	0	1	1	0	0
LEA System-wide Need	3	0	0	1	0	0
Libraries and Museums	2	0	0	1	0	0
Non K-12 Education	2	0	0	0	0	3
Other Facilities	1	0	0	0	0	0
Public Buildings	7	0	0	0	0	0
Public Health Facilities	0	0	0	0	0	2
Recreation	21	1	1	2	1	2
Solid Waste	1	0	1	0	0	0
(N/A)**	130	34	12	13	1	9
Type B Projects	135	36	13	13	1	0
Property Acquisition	2	2	0	0	0	0
Stormwater	3	0	0	0	0	0
Telecommunications	4	1	1	1	0	0
Transportation	60	3	5	2	0	0
Water and Wastewater	66	30	7	10	1	0
(N/A)**	43	1	5	5	2	16
Stage						
Completed	53	9	3	5	0	1
Conceptual	58	11	5	8	3	5
Construction	25	6	4	2	0	0
Planning & Design	42	11	6	3	0	0
State Agency (Completed/Canceled)	0	0	0	0	0	1
Unknown	0	0	0	0	0	9
Regional Project						
Yes	0	0	1	0	0	7
No	178	37	17	18	3	9
Level of Government						
City	165	23	6	2	2	0
County	2	2	7	6	1	0
Joint	5	5	3	1	0	0
Other	2	7	0	8	0	0
State	4	0	2	1	0	7
Unknown	0	0	0	0	0	9
In CIP						
Yes	155	21	6	0	1	0
No	23	16	12	18	2	14
Unknown	0	0	0	0	0	2
Estimated Cost						
\$50,000 to \$500,000	108	17	9	11	1	4
\$500,001 to \$5,000,000	59	16	8	4	2	1
\$5,000,001 to \$20,000,000	9	4	1	2	0	1
\$20,000,001 to \$50,000,000	2	0	0	1	0	1

*Projects that are geographically located in more than one area are repeat-counted for each relevant area type.

** N/A indicates the number of projects in the dataset that are not included under the Type.

There were 228 projects reported for Sullivan County. Of these, 20 projects span two or more growth plan area types. These include a number of water & wastewater projects, as well as a few projects serving transportation, telecommunications, recreation, and LEA system-wide needs. Several projects were identified as regional, including a water & wastewater project, a couple of recreation projects and public health projects, and three higher education projects. Of the total number of projects for the county when summed across area type categories—i.e., 270, including repeat-counting—nearly three-quarters are Type B projects. Over three-quarters of these are within cities or their UGBs.

Most of the projects in the conceptual stage were located within cities, their UGBs, or PGAs, and most were transportation or water & wastewater.

According to the general needs inventory, Sullivan County has two non-state projects estimated to cost more than \$20 million: a project, estimated to cost \$25 million, to prevent storm water from entering the sanitary sewer system in Kingsport; and a project, estimated to cost \$24 million, to make energy-saving upgrades throughout the school system. As of 2003, both projects were under construction. The wastewater project had begun in 1996; the school system energy-savings project, in 2001.

RELATIONSHIP OF INFRASTRUCTURE PROJECTS TO GROWTH PLAN, DEMOGRAPHIC PATTERNS, AND ECONOMIC PATTERNS

The infrastructure projects needed for Sullivan County, as identified in the 2003 general needs inventory, include a number of Type A projects for the municipalities—e.g., six economic development projects, three community development projects, and 21 recreation projects. These may be motivated in part by Sullivan County's slow population growth, its high proportion of householders age 45 or over, and its poorer income conditions in the cities compared with much of the rest of the county. In addition, a number of water & wastewater projects are identified in both the municipalities and their UGBs, as well as a number of transportation projects. All of these appear to dovetail, at least in general, with Sullivan County's growth plan, as do the projects identified as needed in the county's PGAs.

Notably, however, 10 water & wastewater projects have been identified as needed in areas designated as rural in Sullivan County's growth plan. Of the total of 18 projects identified as needed in rural areas, none was in a capital improvement program and approximately half were in the conceptual stage as of 2003.

Given the surge in population in the 1990s in some parts of Sullivan County designated as rural in the growth plan adopted in June 2000, it appears that growth trends rather than growth plans may be driving some of Sullivan County's stated infrastructure needs.

TIPTON COUNTY

LOW DENSITY, HIGH GROWTH RATE

Located north of Shelby County on the Mississippi River, Tipton County is growing and changing. The county has eight small municipalities. In 2000, Covington, its largest city, had approximately 17% of the county's total population of about 51,000. The county grew by 36% in the 1990s, to a 2000 population density of 112 people per square mile, due partly to its proximity to Memphis. Nearly 60% of its workers commuted outside the county in 2000.

Tipton County's 2000 per capita income and percentage of families below the poverty level were similar to Tennessee's as a whole. Per capita retail sales and property values were low as of 2000—just over \$5,000 and \$35,000 respectively—but the median value of housing in 2000, at more than \$91,000, was close to the state average. The county's population is relatively young—only 32% were 45 or older—and mobile—47% lived in a different house five years earlier.

The population of Tipton County (2000 census: 51,271) grew 36% in the 1990s, mainly in the south-central areas adjoining Shelby County. The county's eight small municipalities make up the core of its growth plan, which includes urban growth areas and planned growth areas as well as large rural areas to the north. Infrastructure needs are targeted almost exclusively to the cities and the surrounding growth areas. Whether the location of planned infrastructure is due to the county's growth plan or to its partial transition from sleepy to suburban is uncertain.

KEY STATISTICS

	<i>Tipton County</i>	<i>Tennessee</i>
<i>2000 pop.</i>	51,271	5,689,283
<i>% chg in pop 1990-2000</i>	+36%	+17%
<i>Land area (sq. miles)</i>	459	41,217
<i>2000 density (pop./sq. mi)</i>	112	138
<i>2000 per cap income</i>	\$17,952	\$19,393
<i>2000 families below poverty level</i>	10.3%	10.3%
<i>2000 per cap retail sales</i>	\$5,306	\$11,203
<i>2000 per cap estimated property value</i>	\$35,337	\$51,084
<i>2000 median value, owner-occupied houses</i>	\$91,500	\$93,000
<i>% of pop. 5 years+ living in different house in 1995</i>	47%	46%
<i>% of workers 16 years+ commuting out of county</i>	59%	27%
<i>% of pop. under age 18</i>	29%	25%
<i>% of pop. age 45 years +</i>	32%	36%
<i>Largest municipality (2000 pop.) (% of county pop.)</i>	Covington (8,463) (17%)	
<i>Other municipalities</i>	Atoka Brighton Burlison Garland GiltEdge Mason Munford	

Numbers are rounded.

Sources of information:

Tennessee Advisory Commission on Intergovernmental Relations, county profiles.

Tennessee Department of Economic and Community Development, county profiles.

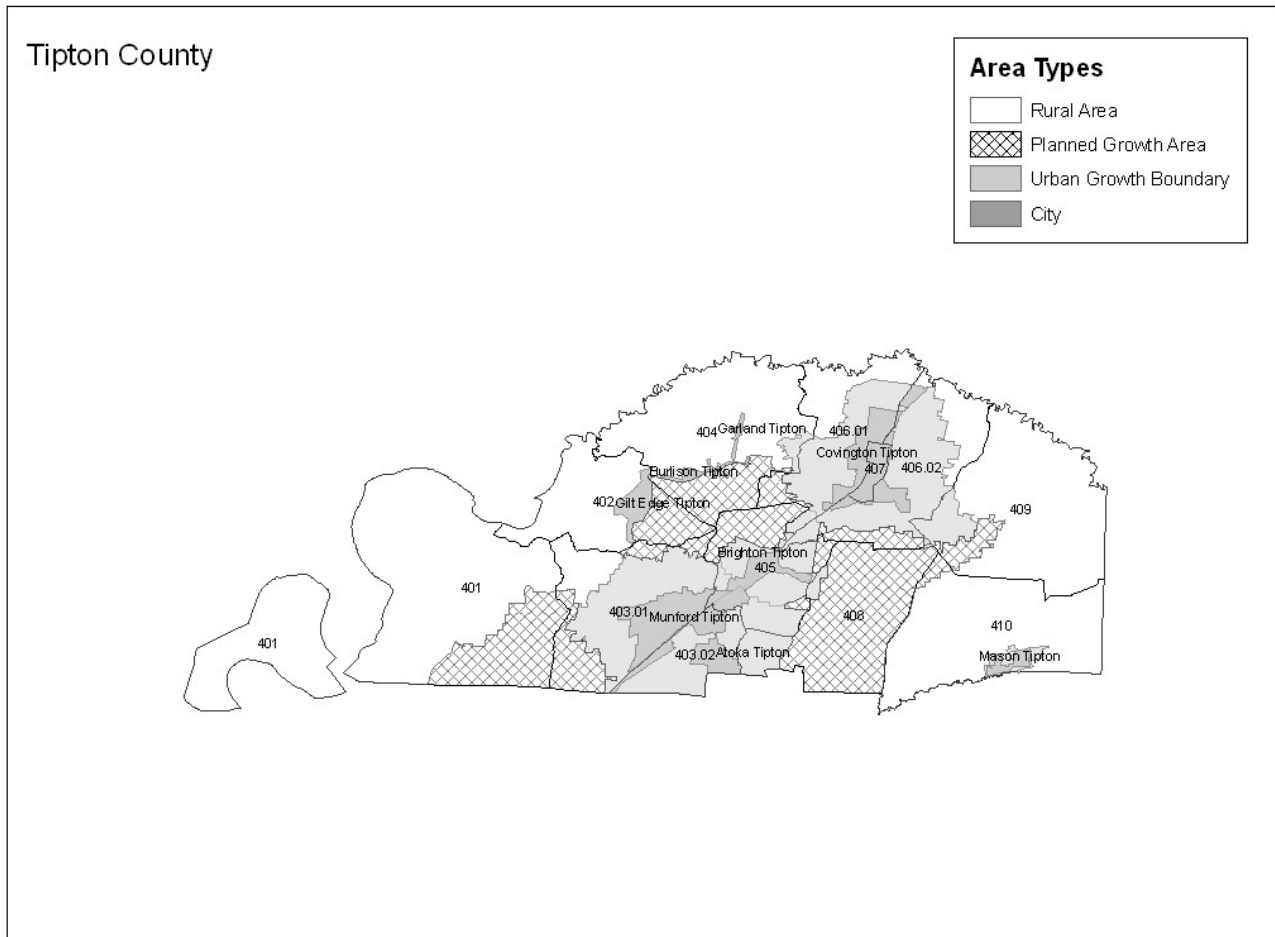
Tennessee State Board of Equalization, *2000 Tax Aggregate Report of Tennessee*.

United States Census Bureau.

University of Tennessee Municipal Technical Advisory Service, cities by county.

GROWTH PLAN

Tipton County's growth plan, shown below, was approved by LGPAC on April 26, 2000 (TACIR, June 2002). The numbered sections are census tracts for the 2000 decennial census.



Part of Tipton County is located on the western shore of the Mississippi River: notably, a fairly large area in the southwestern part of the county included in Census Tract 401 and designated in the county's growth plan as a rural area.

DEMOGRAPHIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated and its population distributed accordingly.

TIPTON COUNTY—DEMOGRAPHIC VARIABLES BY PERCENTAGE DISTRIBUTION BY AREA TYPE

Tipton County—2000	Total	City	UGB	PGA	Rural
Population	100	24	31	22	22
<i>White</i>	78	70	83	85	72
<i>Non-White</i>	22	30	17	15	28
<i>Under age 18</i>	29	30	30	29	28
<i>Age 18 and over</i>	71	70	70	71	72
Households	100	26	31	22	22
<i>Age of Householder 15-44</i>	47	45	50	47	44
<i>Age of Householder 45-64</i>	35	33	35	37	37
<i>Age of Householder 65+</i>	18	22	15	16	20
Of Those Classified as Poor	100	38	25	15	22
Overall Poverty Rate =	12.1				
Housing Units	100	25	31	22	22
<i>Occupied Units</i>	95	95	95	96	94
<i>Vacant Units</i>	5	5	5	4	6
	Total	City	UGB	PGA	Rural
Of Occupied Housing Units	100	25	31	22	22
<i>1 to 2 in Household</i>	51	54	48	49	53
<i>3 or More in Household</i>	49	46	52	51	47

Based on our block group estimates, Tipton County's population is fairly evenly distributed across the four area types in its growth plan: municipalities, urban growth areas, PGAs, and rural areas. Areas within cities tend to have somewhat older, smaller households with a higher rate of poverty and a higher percentage of non-white population. In contrast, especially in urban growth areas and PGAs, households tend to be younger and larger, with a lower poverty rate.

ECONOMIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated. Median values have then been calculated for (1) block groups that lie from 51 to 100% within the given area type and (2) block groups that lie 50% or less within the given area type.

TIPTON COUNTY—ECONOMIC VARIABLES BY MEDIAN VALUE BY AREA TYPE

Tipton County—2000	City	UGB	PGA	Rural
Median Household Income				
% of Block Group <= 50% in Area Type	41,343	40,255	39,375	40,217
% of Block Group >=51% in Area Type	29,479	40,217	50,208	39,662
Median Family Income				
% of Block Group <= 50% in Area Type	46,500	46,018	45,507	46,250
% of Block Group >=51% in Area Type	37,244	46,875	53,910	43,918
Per Capita Income				
% of Block Group <= 50% in Area Type	17,755	17,846	17,365	17,593
% of Block Group >=51% in Area Type	15,501	16,685	19,224	17,893
Median Year Structures Built				
% of Block Group <= 50% in Area Type	1983	1978	1979	1983
% of Block Group >=51% in Area Type	1969	1987	1985	1978
Median Housing Values				
% of Block Group <= 50% in Area Type	86,100	83,050	82,400	86,100
% of Block Group >=51% in Area Type	81,750	90,700	114,000	77,600

Especially when considering the predominant block group subcategories (>=51% in area type), the PGAs stand out as faring best on all three income variables, while the areas within city limits fare worst. Similarly, housing tends to be newest and most expensive in PGAs, while within the cities, it tends to be older and less expensive.

POPULATION TRENDS

Intra-county population changes from 1990 to 2000 are shown below, using the 1990 census tracts as the unit of analysis. If a tract was not wholly within a single growth plan area type, the percentage allocation across area types was estimated.

TIPTON COUNTY—1990 TO 2000 POPULATION CHANGES BY CENSUS TRACT AND AREA TYPE

1990 Tracts	1990 Population	2000 Population	1990 to 2000 Difference	Percent Change	Percent City in 2000	Percent UGB in 2000	Percent PGA in 2000	Percent Rural in 2000
401	4,066	5,094	1,028	25	0	0	35	65
402	1,617	2,022	405	25	13	0	25	63
403.98	8,997	15,191	6,194	69				
404	2,515	3,124	609	24	5	28	3	65
405	2,999	4,967	1,968	66	15	55	30	0
406	6,565	7,752	1,187	18	20	47	10	23
407	4,920	4,969	49	1	100	0	0	0
408.98	2,075	3,646	1,571	76				
409	1,744	1,628	-116	-7	0	10	15	75
410	2,070	2,878	808	39	8	8	5	80

As noted above, Tipton County's population grew by 36% during the 1990s. Growth was especially strong in Tracts 403.98, 405, and 408.98. These tracts are in the southeast part of the county, in areas that are largely within municipal limits, UGBs, or PGAs. In contrast, Tract 409 in the northern part of the county, which was predominantly designated as rural in the county's growth plan, experienced a slight population decline during the 1990s.

INFRASTRUCTURE PROJECTS

The following table is based on data in the 2003 general public infrastructure needs inventory.

TIPTON COUNTY—NUMBER OF INFRASTRUCTURE PROJECTS BY AREA TYPE*

	Within City	Within UGB	Within PGA	Within Rural	Site Not Det.	No Area Info
Total Projects	27	23	8	4	1	1
Type A Projects	5	4	4	1	0	1
Community Development	3	0	0	0	0	0
Fire Protection	0	0	1	0	0	0
K-12 New School Construction	0	4	1	1	0	0
Non K-12 Education	0	0	0	0	0	1
Public Buildings	1	0	0	0	0	0
Public Health Facilities	0	0	1	0	0	0
Recreation	1	0	0	0	0	0
Solid Waste	0	0	1	0	0	0
(N/A)**	22	19	4	3	1	0
Type B Projects	25	19	4	3	1	0
Other Utilities	1	0	0	0	0	0
Stormwater	2	0	0	0	0	0
Transportation	9	18	2	3	0	0
Water and Wastewater	13	1	2	0	1	0
(N/A)**	2	4	4	1	0	1
Stage						
Completed	2	1	0	0	0	0
Conceptual	19	20	6	4	1	1
Construction	2	0	0	0	0	0
Planning & Design	4	2	2	0	0	0
Regional Project						
Yes	0	1	1	0	0	0
No	27	22	7	4	1	1
Level of Government						
City	21	1	0	0	0	0
County	2	15	2	2	0	0
Other	0	0	4	0	1	0
State	4	7	2	2	0	1
In CIP						
Yes	13	2	0	0	0	0
No	14	21	8	4	1	0
Unknown	0	0	0	0	0	1
Estimated Cost						
\$50,000 to \$500,000	17	17	3	3	0	0
\$500,001 to \$5,000,000	8	1	1	0	1	0
\$5,000,001 to \$20,000,000	2	5	4	1	0	1

*Projects that are geographically located in more than one area are repeat-counted for each relevant area type.

** N/A indicates the number of projects in the dataset that are not included under the Type.

There were 52 projects reported for Tipton County. Of these, six projects span two or more growth plan area types. These include five transportation projects and one water & wastewater project. In addition, two transportation projects were identified as regional. Of the total for the county when summed across area type categories—i.e., 64, including repeat-counting—over 50 are Type B projects. Most of the projects are within cities, their UGBs, or PGAs. Of the four within rural areas, three are transportation projects.

Five of the six K-12 new school construction projects are in a conceptual stage. In addition, 29 transportation projects and 11 water & wastewater projects were identified as conceptual.

According to the general needs inventory, Tipton County had no projects estimated to cost more than \$20 million.

RELATIONSHIP OF INFRASTRUCTURE PROJECTS TO GROWTH PLAN, DEMOGRAPHIC PATTERNS, AND ECONOMIC PATTERNS

The infrastructure projects needed for Tipton County, as identified in the 2003 general needs inventory, reflect the basic infrastructure needs of a county that has begun to grow rapidly: new K-12 schools, transportation projects, and water & wastewater projects. These and other projects are, for the most part, located within the county's municipalities (especially the water & wastewater projects) or within the municipalities' fairly ample UGBs (especially the transportation and new school projects). A few are located in its PGAs. Only four—of which three are transportation projects—are located in areas designated as rural in the county's growth plan.

Only 13 of the infrastructure projects identified as needed in Tipton County are in a capital improvement program, and many are in the conceptual stage. Again, this suggests a county grappling with the early stages of growth.

There is a strong correlation between areas identified for growth in the county's growth plan and where infrastructure projects are identified as needed. But it is uncertain whether, at this point, both the plan and the infrastructure needs are being driven by emerging demographic and economic patterns.

WILLIAMSON COUNTY

MODERATELY LOW DENSITY, HIGH GROWTH RATE

Williamson County, located in middle Tennessee immediately south of Davidson County, is in a class by itself. Its population—nearly 127,000 in 2000—grew by 56% during the 1990s. Franklin, the largest city, comprises one-third of its population. With a 2000 density of 217 people per square mile, it preserves a pastoral character, but at a cost.

In 2000, the median housing value of Williamson County was over \$200,000, and its estimated per capita property value was nearly \$100,000. The county had a per capita income of more than \$32,000, and fewer than 4% of its families were below the poverty level. Per capita retail sales in Williamson County, at a 2000 level of more than \$15,500, were among the highest of the nine counties examined. With only 33% of its people aged 45 years or older as of 2000, the county's population is relatively young. As of 2000, more than 50% of the county's population lived in different homes five years earlier, and nearly 50% of its workers commuted outside the county.

The population of Williamson County (2000 census: 126,638) grew by 56% in the 1990s—the highest growth rate in Tennessee. Much of this growth occurred in the central section of the county where most of its six municipalities are located. The county's growth plan designates urban growth areas around these municipalities as well as two modestly-sized planned growth areas. The remainder of the county is designated as rural. Will it be? With nearly one-quarter of the county's stated infrastructure needs targeted to its rural areas, the growth plan appears to be doing little to constrain plans for infrastructure.

KEY STATISTICS

	<i>Williamson County</i>	<i>Tennessee</i>
<i>2000 pop.</i>	126,638	5,689,283
<i>% chg in pop 1990-2000</i>	+56%	+17%
<i>Land area (sq. miles)</i>	583	41,217
<i>2000 density (pop./sq. mi)</i>	217	138
<i>2000 per cap income</i>	\$32,496	\$19,393
<i>2000 families below poverty level</i>	03.5%	10.3%
<i>2000 per cap retail sales</i>	\$15,563	\$11,203
<i>2000 per cap estimated property value</i>	\$97,222	\$51,084
<i>2000 median value, owner-occupied houses</i>	\$208,400	\$93,000
<i>% of pop. 5 years+ living in different house in 1995</i>	52%	46%
<i>% of workers 16 years+ commuting out of county</i>	49%	27%
<i>% of pop. under age 18</i>	29%	25%
<i>% of pop. age 45 years +</i>	33%	36%
<i>Largest municipality (2000 pop.) (% of county pop.)</i>	Franklin (41,842) (33%)	
<i>Other municipalities</i>	Brentwood Fairview Nolensville Spring Hill* Thompson's Station	

Numbers are rounded.

* Municipality located in more than one county.

Sources of information:

Tennessee Advisory Commission on Intergovernmental Relations, county profiles.

Tennessee Department of Economic and Community Development, county profiles.

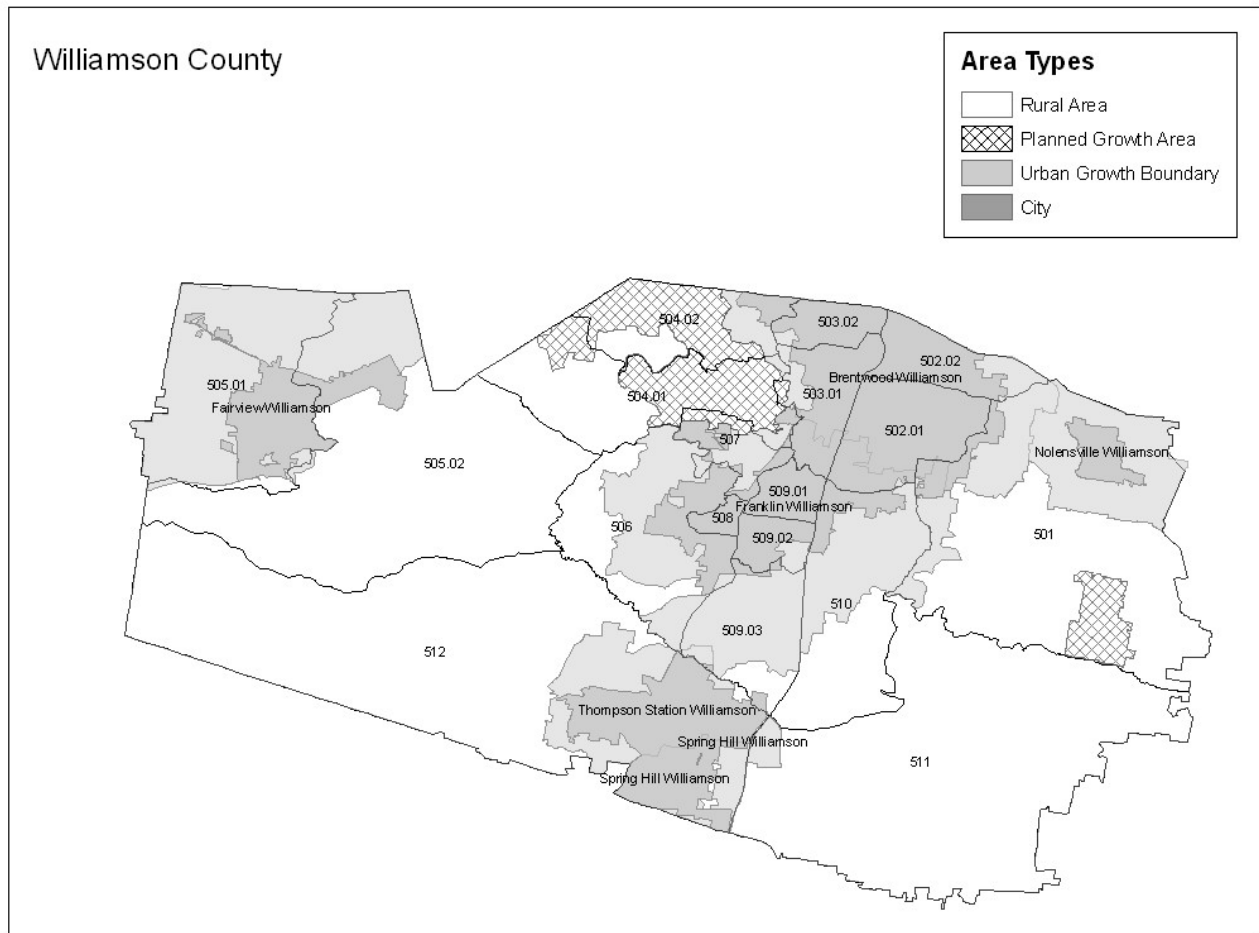
Tennessee State Board of Equalization, *2000 Tax Aggregate Report of Tennessee*.

United States Census Bureau.

University of Tennessee Municipal Technical Advisory Service, cities by county.

GROWTH PLAN

Williamson County's growth plan, shown below, was approved by LGPAC on June 27, 2001 (TACIR, June 2002). The numbered sections are census tracts for the 2000 decennial census.



This map is adapted from a map digitized by the Tennessee Department of Economic and Community Development and is for informational purposes only.

DEMOGRAPHIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated and its population distributed accordingly.

WILLIAMSON COUNTY—DEMOGRAPHIC VARIABLES BY PERCENTAGE DISTRIBUTION BY AREA TYPE

Williamson County—2000	Total	City	UGB	PGA	Rural
Population	100	52	22	9	17
<i>White</i>	91	89	93	96	93
<i>Non-White</i>	9	11	7	4	7
<i>Under age 18</i>	29	29	31	34	27
<i>Age 18 and over</i>	71	71	69	66	73
Households	100	53	22	8	18
<i>Age of Householder 15-44</i>	47	49	48	38	42
<i>Age of Householder 45-64</i>	40	38	40	49	40
<i>Age of Householder 65+</i>	14	13	12	13	17
Of Those Classified as Poor	100	58	15	4	23
Overall Poverty Rate =	4.7				
Housing Units	100	53	22	8	18
<i>Occupied Units</i>	95	95	96	97	95
<i>Vacant Units</i>	5	5	4	3	5
Of Occupied Housing Units	100	53	22	8	18
<i>1 to 2 in Household</i>	49	52	46	40	50
<i>3 or More in Household</i>	51	48	54	60	50

According to our estimates, nearly three-quarters of Williamson County’s population are located within either its cities or their urban growth areas, while the majority of the remaining population lives in areas designated as rural. The age composition of householders in rural areas is somewhat older than in the other areas, and the households are more likely to be small. In contrast, households within urban growth areas and PGAs, especially, are younger and larger, with proportionally more children under age 18. Williamson County’s cities and areas designated as rural are disproportionately likely (compared with its urban growth areas and planned growth areas) to have people classified as poor, but the county’s overall poverty rate is very low.

ECONOMIC PATTERNS

The following information is derived from 2000 US Census data at the block group level. Where a block group straddles more than one area type, its area in each type has been estimated. Median values have then been calculated for (1) block groups that lie from 51 to 100% within the given area type and (2) block groups that lie 50% or less within the given area type.

WILLIAMSON COUNTY—ECONOMIC VARIABLES BY MEDIAN VALUE BY AREA TYPE

Williamson County—2000	City	UGB	PGA	Rural
Median Household Income				
% of Block Group <= 50% in Area Type	59,470	59,470	63,432	75,343
% of Block Group >=51% in Area Type	75,923	82,595	----	53,750
Median Family Income				
% of Block Group <= 50% in Area Type	69,559	72,001	72,809	82,295
% of Block Group >=51% in Area Type	77,565	83,987	----	56,328
Per Capita Income				
% of Block Group <= 50% in Area Type	27,895	28,530	28,530	32,893
% of Block Group >=51% in Area Type	33,521	33,471	----	25,750
Median Year Structures Built				
% of Block Group <= 50% in Area Type	1983	1981	1983	1984
% of Block Group >=51% in Area Type	1983	1984	----	1979
Median Housing Values				
% of Block Group <= 50% in Area Type	179,550	182,450	182,450	198,600
% of Block Group >=51% in Area Type	211,900	223,800	----	153,800

The three income variables in the table above reveal that, while people in Williamson County tend to have very high incomes, people in its areas designated as rural tend to be comparatively worse off. Similarly, their houses are likely to be older, and the houses are valued lower, but only when compared with the extraordinary median housing values in the rest of county.

POPULATION TRENDS

Intra-county population changes from 1990 to 2000 are shown below, using the 1990 census tracts as the unit of analysis. If a tract was not wholly within a single growth plan area type, the percentage allocation across area types was estimated.

WILLIAMSON COUNTY—1990 TO 2000 POPULATION CHANGES BY CENSUS TRACT AND AREA TYPE

1990 Tracts	1990 Population	2000 Population	1990 to 2000 Difference	Percent Change	Percent City in 2000	Percent UGB in 2000	Percent PGA in 2000	Percent Rural in 2000
501	6,021	7,692	1,671	28	5	26	10	59
502	9,840	17,314	7,474	76	91	9	0	0
503	8,236	10,518	2,282	28	85	13	3	0
504	10,723	13,658	2,935	27	4	8	54	35
505	8,634	10,816	2,182	25	40	19	0	41
506	5,493	7,265	1,772	32	28	38	0	35
507	2,187	7,934	5,747	263	30	50	20	0
508	6,151	6,400	249	4	100	0	0	0
509	12,889	24,248	11,359	88	63	34	0	3
510	2,650	6,139	3,489	132	25	45	0	30
511	4,252	4,894	642	15	0	3	0	97
512	3,945	9,760	5,815	147	27	10	0	63

Williamson County, which grew by 56% during the 1990s, experienced its strongest population growth in the following census tracts: Tract 502 in the eastern Brentwood area; Tracts 507, 509, and 510 in the area within and around Franklin; and Tract 512, in the southwestern part of the county. All but the last are predominantly within city limits, urban growth areas, or PGAs. Tract 512 is predominantly designated as rural in the county’s growth plan.

INFRASTRUCTURE PROJECTS

The following table is based on data in the 2003 general public infrastructure needs inventory.

WILLIAMSON COUNTY—NUMBER OF INFRASTRUCTURE PROJECTS BY AREA TYPE*

	Within City	Within UGB	Within PGA	Within Rural	No Growth Plan	Site Not Det.	No Area Info
Total Projects	215	49	27	51	40	6	1
Type A Projects	75	4	5	10	14	5	1
Community Development	2	0	0	0	0	0	0
Fire Protection	9	0	2	1	0	1	0
K-12 New School Construction	8	0	1	2	8	3	1
Law Enforcement	6	1	1	1	0	0	0
Libraries and Museums	2	0	0	0	0	0	0
Non K-12 Education	1	0	0	0	0	0	0
Other Facilities	1	0	0	0	0	0	0
Public Buildings	9	0	0	0	0	0	0
Recreation	33	2	1	1	3	1	0
Solid Waste	4	1	0	5	3	0	0
(N/A)**	140	45	22	41	26	1	0
Type B Projects	144	45	22	41	27	2	0
Property Acquisition	5	0	0	0	1	1	0
Stormwater	9	2	1	1	0	0	0
Transportation	59	17	12	14	5	0	0
Water and Wastewater	71	26	9	26	21	1	0
(N/A)**	71	4	5	10	13	4	1
Stage							
Completed	51	4	4	9	25	0	0
Conceptual	89	23	13	22	6	6	0
Construction	32	12	6	8	5	0	1
Planning & Design	42	10	4	12	4	0	0
State Agency (Completed/Canceled)	1	0	0	0	0	0	0
Regional Project							
Yes	2	0	0	0	0	0	0
No	213	49	27	51	40	6	1
Level of Government							
City	175	4	0	0	4	0	0
County	17	13	14	18	16	5	1
Joint	2	3	1	2	0	0	0
Other	15	22	9	26	20	1	0
State	6	7	3	5	0	0	0
In CIP							
Yes	185	26	7	21	30	0	1
No	28	23	20	30	10	6	0
Unknown	2	0	0	0	0	0	0
Estimated Cost							
\$50,000 to \$500,000	86	16	10	16	15	2	0
\$500,001 to \$5,000,000	102	20	11	23	19	0	0
\$5,000,001 to \$20,000,000	23	8	4	6	6	4	0
\$20,000,001 to \$50,000,000	3	4	2	5	0	0	1
\$100,000,001 and Over	1	1	0	1	0	0	0

*Projects that are geographically located in more than one area are repeat-counted for each relevant area type.

** N/A indicates the number of projects in the dataset that are not included under the Type.

There were 249 projects reported for Williamson County. Of these, 35 projects span two or more growth plan area types. These include a number of transportation, water & wastewater, recreation, solid waste, and new K-12 school construction projects as well as some law enforcement projects and public building projects. None of Williamson County's projects were identified as regional. Of the total number of projects for the county when summed across all area type categories—i.e., 389, including repeat-counting—the projects are split evenly between Type A and Type B projects.

Most of the projects are within cities, their UGBs, or PGAs. However, 51 projects were identified as needed in parts of the county designated as rural in the county growth plan. Of these projects, most are water & wastewater, transportation, and solid waste. Forty projects are recorded in the database as “this entity does not have an official growth plan,” even though Williamson County has had a growth plan since June 2001. More than three-quarters of the transportation, water & wastewater, and K-12 new school construction projects were identified as in the conceptual stage.

According to the general needs inventory, Williamson County had several infrastructure projects estimated to cost more than \$20 million. These include three new schools—a high school in the northeast costing about \$25 million (under construction as of 2003), a high school in the south costing an estimated \$27 million (under construction as of 2003), and an elementary/middle school in Franklin costing an estimated \$23 million (completed in 2001).

Also included in the “over \$20 million” category are two road widenings—of State Route 96 east to Rutherford County (in planning and design as of 2003, estimated to cost about \$28 million), and of State Route 6 from Franklin south to Maury County (in the conceptual stage as of 2003, estimated to cost \$24 million)—as well as a new road in the northeast section of the county. The new road—State Route 266, from I-65 east to Smyrna—was in the conceptual stage as of 2003 and was estimated to cost \$128 million, with a start date of FY 2008. The county also has a five-year program to repair and repave roads, under construction as of 2003 and estimated at \$21 million.

The construction of four new community centers (three in the southern section of the county and one in the northeast) was in the conceptual stage as of 2003, with an estimated total cost of \$25 million. A \$21 million renovation of a wastewater treatment plant in Franklin was in planning and design as of 2003.

RELATIONSHIP OF INFRASTRUCTURE PROJECTS TO GROWTH PLAN, DEMOGRAPHIC PATTERNS, AND ECONOMIC PATTERNS

The 56% population growth rate that Williamson County experienced in the 1990s is reflected in its infrastructure needs, especially for new K-12 schools, water & wastewater projects, and transportation projects. Most of these are located within the county's six municipalities, their urban growth areas, or PGAs.

However, there also were 51 infrastructure projects identified as needed in areas designated as rural, including 26 water & wastewater projects and 14 transportation projects. Of the 51 projects, 30 were not in a capital improvement program, and 34 were in the conceptual or planning and design stage as of 2003. This suggests that the growth plan adopted for Williamson County in June 2001 may be doing relatively little to constrain plans for infrastructure within the county.

COMPARISONS OF THE NINE COUNTIES

County-level information for the nine counties is shown in the table on page 96, accompanied with a separate table on page 97 summarizing infrastructure costs based on the four most recent general public infrastructure needs inventories. (We do not have data from the first inventory.)

From this summarized information, as well as the in-depth consideration of each county in the preceding section, the following observations can be made:

- 1. Counties (together with their municipalities and the coordinating committees that recommended growth plans) have approached their growth plans very differently.**

For example, Giles County has no PGAs and designated most of its land as rural; in contrast, Meigs County designated large sections of the county as PGAs. Gibson County designated expansive UGBs, but no PGAs; in contrast, Tipton County designated large PGAs but somewhat more modest UGBs. Madison County has a huge UGB around Jackson with relatively little land designated as rural or PGA; in contrast, relatively large sections of Williamson County are designated as rural, with two PGAs and fairly modest UGBs around existing cities. Rutherford County, adjacent to Williamson and with a similarly high growth rate, has large UGBs around its cities but no designation of PGAs. Sullivan County's growth plan, in contrast, creates a mosaic of all four types, as does Knox County's.

- 2. Counties with high growth rates (1990 to 2000 percent change in population) tend to have relatively young, mobile populations on average.**

The populations of fast-growing counties tend to be younger, with proportionally more children under age 18; more mobile (in both their commuting patterns and their rate of change in housing); have higher incomes; and are less likely to live in poverty than populations in counties with low growth rates. (The exception is Meigs County, a very-low-density county that has a high growth rate and a high percentage of workers commuting out of the county but lacks the indicators of prosperity shared by other fast-growing counties.)

3. A county's per capita retail sales correlates weakly with measures of individual prosperity.

For example, Knox County, Madison County and Williamson County have virtually the same per capita retail sales, but the per capita income level in Knox and Madison counties is approximately two-thirds of Williamson County's per capita income. It appears that retail sales are driven more by whether the county is a regional (multi-county) market center than by incomes within the county, taken individually.

4. Within their municipalities, virtually all of the counties examined share certain population characteristics, such as smaller, older, poorer households on average than households located elsewhere in the county.

Areas within municipalities generally have a higher percentage of old people and a lower percentage of large households. Municipalities also have a relatively higher percentage of the county's non-white population, as well as a higher percentage of the county's population living in poverty. In contrast, areas identified as urban growth areas or PGAs in the counties' growth plans tend to be comparatively younger, with more income, larger households, more school-age children, and newer, more expensive housing. (Again, the possible exception is Meigs County, which has only one municipality, Decatur, containing a small fraction of the county's population.)

5. Infrastructure needs within the counties examined share certain characteristics.

In areas that are rapidly growing—especially urban growth areas and to a lesser extent PGAs—infrastructure projects tend to be such basics as transportation projects, water & wastewater projects, and new K-12 school construction. While these types of projects are found within municipalities as well, municipalities—especially those with populations of about 5,000 or more—generally have a broader range of projects, especially Type A projects involving economic development, community development, public health facilities, law enforcement, etc. Areas designated in county growth plans as rural tend to have few infrastructure projects with the exception of transportation projects. However, where population growth is occurring in rural areas, water & wastewater projects also may be identified as needed. Given that our population growth trend analysis was based on a comparison of 1990 census tract data with 2000 census tract

data, whereas the our analysis of infrastructure needs was based on 2003 inventory data, it appears that public infrastructure projects may, to some extent, be following rather than driving population growth trends.

6. Infrastructure needs within the counties examined tend to be compatible with the county’s growth plan.

Public infrastructure needs in the nine counties examined are greater in areas that are designated in county growth plans for high-density or medium-density growth than they are within areas designated for low density development. In other words, there are both more projects and more expensive projects identified as needed in areas that are within city limits, within UGBs, or within PGAs than in areas designated as rural.

7. Counties that are experiencing rapid population growth rates show some tendency to have higher estimated costs per capita for their public infrastructure needs.

Williamson, Rutherford, and Meigs counties (with population growth rates in the 1990s of 56%, 54%, and 38% respectively) all had relatively high per capita estimates—especially in the 2003 inventory, but also in prior inventories. In contrast, Gibson, Sullivan, and Giles counties (with population growth rates in the 1990s of 4%, 7%, and 14% respectively) all had relatively low per capita estimates. Notably, however, the remaining three counties in this study—Knox, Madison, and Tipton, with population growth rates in the 1990s of 14%, 18%, and 36% respectively—do not follow these patterns. Knox and Madison counties’ estimated costs per capita are relatively high for their growth rates while Tipton County’s are extraordinarily low. Possible explanations are as follows: Knox County has more elaborate infrastructure needs because of its relatively dense population; in addition, its infrastructure totals are skewed by the inclusion of 44 higher education projects. Madison County’s major city, Jackson, is a hub for the surrounding region, which pumps money into its economy but also increases its perceived need for such public infrastructure projects as transportation, water & wastewater, and economic development. Tipton County’s infrastructure needs appear to have been significantly underreported. More on this point on the next page.

8. By-county totals of estimated costs for public infrastructure needs may be less informative than infrastructure patterns at the intra-county level.

Tipton County's infrastructure needs were estimated at only \$128 per capita as of July 1999; four years later, they were estimated to be nearly 20-fold higher, but they still may have been underreported. Because the infrastructure inventories depend on the voluntary cooperation of local (municipal and county) officials, state officials, utility district representatives, etc., it cannot be assumed that response rates and the accuracy of reporting are comparable across counties.

In addition, especially in a small-population county such as Meigs, but even in a large-population county such as Knox, totals of estimated costs for public infrastructure needs may be skewed by either a single project or a cluster of atypical projects. Some of these "outlier" projects are regional; others are not. In the 2003 inventory for Knox County, as mentioned above, 44 public infrastructure projects—nearly one-sixth of the county's total number of projects—were for higher education purposes. In Meigs County, a single \$40 million highway project (not classified as regional) contributed over half of that county's total estimated cost of public infrastructure needs. Similarly, in Williamson County, a \$128 million highway project in the conceptual stage—also not classified as regional—constituted nearly 15% of its total estimated cost of public infrastructure needs.

THE NINE COUNTIES—SUMMARY INFORMATION

County	Gibson	Giles	Knox	Madison	Meigs	Rutherford	Sullivan	Tipton	Williamson	Tennessee
2000 pop.	48,152	29,447	382,032	91,837	11,086	182,023	153,048	51,271	126,638	5,689,283
% chg in pop 1990-2000	4%	14%	14%	18%	38%	54%	7%	36%	56%	17%
Land area (sq. miles)	603	611	508	557	195	619	413	459	583	41,217
2000 density (pop./sq. mi)	80	48	751	165	57	294	371	112	217	138
2000 per cap income	\$16,320	\$17,543	\$21,875	\$19,389	\$14,551	\$19,938	\$19,202	\$17,952	\$32,496	\$19,393
2000 families below poverty level	9.40%	9.00%	8.40%	10.80%	15.80%	5.80%	9.70%	10.30%	3.50%	10.30%
2000 per cap retail sales	\$7,212	\$7,691	\$15,654	\$15,939	\$3,107	\$10,361	\$12,157	\$5,306	\$15,563	\$11,203
2000 per cap estimated property value	\$37,957	\$41,926	\$51,228	\$49,003	\$39,529	\$52,555	\$51,966	\$35,337	\$97,222	\$51,084
2000 median value, owner-occupied houses	\$66,300	\$72,900	\$98,500	\$85,100	\$87,200	\$113,500	\$88,000	\$91,500	\$208,400	\$93,000
% of pop. 5 years+ living in different house in 1995	41%	37%	48%	49%	41%	56%	40%	47%	52%	46%
% of workers 16 years+ commuting out of county	34%	29%	14%	11%	67%	38%	28%	59%	49%	27%
% of pop. under age 18	24%	22%	22%	26%	25%	26%	22%	29%	29%	25%
% of pop. age 45 years +	41%	39%	36%	34%	38%	27%	42%	32%	33%	36%
Largest municipality	Milan	Pulaski	Knoxville	Jackson	Decatur	Murfreesboro	Johnson City*	Covington	Franklin	
2000 pop.	7,664	7,871	173,890	59,643	1,395	68,816	55,469	8,463	41,842	
% of county pop.	16%	27%	46%	65%	13%	38%	0.16%**	17%	33%	
Other municipalities	Bradford Dyer Gibson Humboldt* Kenton* Medina Rutherford Trenton Yorkville	Ardmore* Elkton Lynnville Minor Hill	Farragut*	Humboldt* Medon Three Way	—	Eagleville LaVergne Smyrna	Bluff City Bristol Kingsport*	Atoka Brighton Burlison Garland GiltEdge Mason Munford	Brentwood Fairview Nolensville Spring Hill* Thompson's Station	

Numbers are rounded.

* Municipalities located in more than one county.

**As of the 2000 census, Johnson City, which is located mainly in Washington County, accounted for only 240 of Sullivan County's population. Kingsport, with a 2000 census population of 44,905, accounted for 41,998 of Sullivan County's population, or 27%.

Sources of information:

Tennessee Department of Economic and Community Development, county profiles.

Tennessee State Board of Equalization, *2000 Tax Aggregate Report of Tennessee*.

United States Census Bureau.

University of Tennessee Municipal Technical Advisory Service, cities by county.

THE NINE COUNTIES—ESTIMATED GENERAL PUBLIC INFRASTRUCTURE NEEDS FROM THE 1999, 2001, 2002, AND 2003 INVENTORIES

As of:	July 1999	July 2001	July 2002	July 2003						
County	# of Proj.	# of Proj.	# of Proj.	# of Proj.	Total est. cost	Cost/ Capita*	Total est. cost	Cost/ Capita*	Total est. cost	Cost/ Capita*
Gibson	68	38	63	92	\$117,424,350	\$2,445	\$108,261,000	\$2,248	\$88,147,054	\$1,839
Giles	39	35	43	54	\$49,336,995	\$1,699	\$70,486,830	\$2,394	\$108,561,157	\$3,700
Knox	268	235	293	283	\$1,256,809,470	\$3,342	\$1,649,673,782	\$4,318	\$1,326,595,944	\$3,376
Madison	93	125	153	186	\$101,129,250	\$1,166	\$241,443,488	\$2,629	\$479,307,555	\$5,106
Meigs	18	16	22	17	\$70,386,000	\$6,946	\$68,575,000	\$6,186	\$73,300,359	\$6,413
Rutherford	163	163	195	189	\$673,993,192	\$3,932	\$953,076,332	\$5,236	\$1,133,614,492	\$5,603
Sullivan	250	173	232	228	\$311,026,315	\$2,070	\$366,153,462	\$2,392	\$360,346,823	\$2,354
Tipton	19	12	20	52	\$6,191,416	\$128	\$25,523,973	\$498	\$129,636,480	\$2,393
Williamson	208	173	245	249	\$366,797,957	\$2,963	\$611,162,057	\$4,826	\$913,736,290	\$6,467

*Based on population estimates from the US Census Bureau.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

While the public infrastructure needs identified in the 2002* inventory generally appear to be compatible with county growth plans, this does not necessarily mean that the growth plans are shaping the infrastructure needs.

Public infrastructure needs in the nine counties examined tend to be greater in areas that are within city limits, within UGBs, or within PGAs than they are within areas designated as rural.

Three possible (not mutually exclusive) explanations for the generally positive correlation between areas designated for high- to medium-density population in the county growth plans and public infrastructure needs identified in the 2002* inventory are as follows. First, areas where public infrastructure projects were already planned or under construction may have been targeted for growth in the growth plans. Second, recent population growth and related economic growth in an area may have prompted both designation of the area as a growth area and identification of infrastructure needs in the area. And third, the UGBs and/or PGAs of some counties are so expansive that little territory is left to be designated as rural, with the result that, de facto, most of the public infrastructure falls in a growth area.

Based on this study, we cannot conclude that the growth plans are shaping infrastructure needs. They may be, but some evidence suggests otherwise. In some areas designated as rural—especially where population has grown fairly rapidly in the recent past—public infrastructure projects such as water & wastewater systems, new K-12 school construction, and transportation projects have been identified as needed.

To better determine whether growth plans are shaping infrastructure needs (not merely correlated with them), both the growth planning process and the infrastructure needs process should be examined over time, taking into account demographic and economic trends.

The growth plans had been adopted only two to three years before the 2002* infrastructure needs inventory was conducted. The “fit” of growth plans and reported infrastructure needs thus could be expected to be fairly good, with

*The inventory for the five-year period beginning July 1, 2002.

infrastructure generally going into areas specified for growth in the growth plans. As population and economic growth occurs in the future within counties, however, that growth may be directed by the growth plans; it may occur willy-nilly, ignoring the growth plans; or the plans may be amended to accommodate growth trends. In the latter two events, it will be clear that the growth plans—while they may reduce some conflicts over annexation—are doing little to guide the direction of growth. Similarly, as population and economic growth occur within counties, that growth may be directed by plans for public infrastructure; it may occur without adequate public infrastructure; or public infrastructure needs may be identified in response to the growth trends, whether or not they are compatible with the county’s growth plan.

Only under one of the two following conditions can it be said that a county’s growth plan is shaping its public infrastructure needs as identified in the annual inventories:

- a. population and economic growth are directed by the county’s growth plan, and stated infrastructure needs also adhere to the growth plan, or
- b. population and economic growth ignore the growth plan, but stated infrastructure needs do not.

Under the third possible condition—the condition in which the growth plan is altered to track growth, not vice versa—the infrastructure needs identification process gets little guidance from the growth plan, so it too may be altered to track growth.

RECOMMENDATIONS

1. To tailor the inventory forms for future analysis of infrastructure and growth plans, we offer the following suggestions:
 - Where possible, exact street addresses should be entered into both the general needs inventory form and the existing school needs inventory form. In particular, the zip code area(s) in which the project is located should be given for all projects except those that are county-wide, in order to enable a correlation of reported infrastructure needs with business pattern data.
 - Under item 14a of the general needs inventory form, the respondent should be asked to rank-order the main reasons checked for the project.

- A new item should be added following item 22 of the general needs inventory form, asking about the degree of influence of the county’s growth plan on the infrastructure need identified (e.g., none, some, a great deal).
 - Item 23 of the general needs inventory form should be clarified to make sure that each growth plan area type is mutually exclusive: specifically, “Urban Growth Boundary of an incorporated area” should be revised to “outside city limits but within an Urban Growth Boundary of an incorporated area.”
 - Item B2-a of the existing school inventory form should be revised to distinguish recent construction projects from recent renovation projects.
 - A new question should be added to Section B (Campus and Project Information) of the existing school inventory form, to determine the reason for the project as it relates to growth and other needs. This question could ask “What is the reason for the renovation/improvement? ... population growth ... outdated facility ... government mandate ... other. If more than one reason, please rank-order your responses, with 1 as the most important reason.” Similarly, a new item should be added, asking about the degree of influence of the county’s growth plan on the infrastructure need identified.
2. To improve the coordination of infrastructure planning with growth planning, we recommend that infrastructure planning, including annual reviews of the infrastructure inventory forms for the compatibility of infrastructure needs with growth plans, become an activity of the Joint Economic and Community Development Boards mandated under Public Chapter 1101.
 3. Counties that historically have been sparsely populated but are growing rapidly may need special technical assistance to coordinate infrastructure planning and growth planning. This assistance might be provided by University of Tennessee’s Municipal Technical Assistance Service or County Technical Assistance Service in conjunction with the Tennessee Department of Economic and Community Development’s Local Planning Assistance Office.



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Tennessee Advisory Commission on Intergovernmental Relations,
Authorization No. 316366 ; 150 copies, August 2006. This document
was promulgated at a cost of \$5.24 per copy.