Building Tennessee’s Tomorrow:  
Anticipating the State’s Infrastructure Needs 
July 2002 through June 2007

Reported Infrastructure Needs By County

The Largest Infrastructure Needs Are in Counties with the Largest Populations and the Largest Population Gains

With regional projects factored out (see note at right), eight of the ten counties reporting the largest infrastructure needs in dollar terms were also among the top for total population and for population gains from 1990 to 2001. Those two population factors play a somewhat smaller role in relation to the bottom ten counties. Six of the bottom ten for total report needs were among the bottom ten for population, and four were among the bottom ten for population gain. Growth rates played a much smaller role for both groups.

Statistical analysis supports the inference that population factors are closely related to total infrastructure needs. TACIR staff analyzed the relationship between reported needs and possible explanatory factors including demographic and geographic factors, as well as fiscal factors. The factors are listed at right. Fiscal capacity was measured in terms of tax base and income, the same data used in TACIR’s computation of education fiscal capacity. Tax base measures included total sales and taxable property value. Income was included as a measure of the ability of county residents to afford higher or lower tax rates. Based on three separate but similar statistical analyses, population and population gain play the most significant role of all of these factors across all 95 counties (see Table 10).

Factors That May Explain Differences in Reported Infrastructure Needs

- Population
- Population Gain
- Population Density
- Land Area
- Fiscal Capacity or Wealth—i.e., can we afford it?

NOTE: Infrastructure needs that serve substantial numbers of people who lie outside the county in which the infrastructure is located are identified in the inventory as regional to facilitate fairer comparisons across counties. This distinction facilitates comparisons across counties by excluding from county totals infrastructure needs that serve substantial numbers of non-residents.

Examples of regional infrastructure include major transportation corridors designed to route traffic through the county to other destinations; colleges and universities; solid waste facilities that receive refuse from outside the county; and water treatment plants that serve multiple jurisdictions.

Because these types of projects are excluded from the county-level analysis, the totals here will not match the totals elsewhere in this report.

Table 10. Significance of Factors Affecting Reported Infrastructure Needs

<table>
<thead>
<tr>
<th>Explanatory Factor</th>
<th>Number of Models in Which Factor Was Significant*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highly Significant</td>
</tr>
<tr>
<td>2001 Population</td>
<td>2</td>
</tr>
<tr>
<td>Population Gain</td>
<td>1</td>
</tr>
<tr>
<td>Population Density*</td>
<td>n/a</td>
</tr>
<tr>
<td>Income</td>
<td>0</td>
</tr>
<tr>
<td>Taxable Sales</td>
<td>0</td>
</tr>
<tr>
<td>Taxable Property Value</td>
<td>1</td>
</tr>
<tr>
<td>Land Area*</td>
<td>n/a</td>
</tr>
</tbody>
</table>

* Total number of models was three. Density and land area were used to make counties more comparable, rather than as separate factors, in two of the three models.

28 For information on each county, see Appendix D.
Top Ten, Bottom Ten Patterns Indicate That Population and Population Gain Play a Major Role in Total Reported Infrastructure Needs in Dollar Terms

Eight of the ten counties reporting the greatest need for infrastructure improvements were among the top ten for population. Eight were also among the top ten for population gain—seven counties appeared in the top ten for all three (greatest need, largest population and largest population gains). Five of those seven are located in the northern half of Middle Tennessee: Davidson, Montgomery, Rutherford, Sumner and Wilson. Of those five, only Montgomery is not contiguous with the others. (See Tables 9, 11 and 12.)

### Table 11. Infrastructure Improvement Needs Reported for the Ten Most & Least Populous Counties

<table>
<thead>
<tr>
<th>Rank</th>
<th>County</th>
<th>2001 Population</th>
<th>Percent of Total</th>
<th>Total Estimated Cost</th>
<th>Percent of Total</th>
<th>Cost Per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shelby</td>
<td>896,013</td>
<td>15.60%</td>
<td>$3,636,291,463</td>
<td>20.60%</td>
<td>$4,058</td>
</tr>
<tr>
<td>2</td>
<td>Davidson</td>
<td>565,352</td>
<td>9.80%</td>
<td>$2,989,633,250</td>
<td>17.00%</td>
<td>$5,288</td>
</tr>
<tr>
<td>3</td>
<td>Knox</td>
<td>385,572</td>
<td>6.70%</td>
<td>$842,662,485</td>
<td>4.80%</td>
<td>$2,185</td>
</tr>
<tr>
<td>4</td>
<td>Hamilton</td>
<td>307,377</td>
<td>5.40%</td>
<td>$561,708,355</td>
<td>3.20%</td>
<td>$1,827</td>
</tr>
<tr>
<td>5</td>
<td>Rutherford</td>
<td>190,143</td>
<td>3.30%</td>
<td>$753,667,886</td>
<td>4.30%</td>
<td>$3,964</td>
</tr>
<tr>
<td>6</td>
<td>Sullivan</td>
<td>152,787</td>
<td>2.70%</td>
<td>$264,723,897</td>
<td>1.50%</td>
<td>$1,733</td>
</tr>
<tr>
<td>7</td>
<td>Montgomery</td>
<td>135,023</td>
<td>2.40%</td>
<td>$456,246,802</td>
<td>2.60%</td>
<td>$3,379</td>
</tr>
<tr>
<td>8</td>
<td>Sumner</td>
<td>134,336</td>
<td>2.30%</td>
<td>$353,948,513</td>
<td>2.00%</td>
<td>$2,635</td>
</tr>
<tr>
<td>9</td>
<td>Williamson</td>
<td>133,825</td>
<td>2.30%</td>
<td>$575,752,999</td>
<td>3.30%</td>
<td>$4,302</td>
</tr>
<tr>
<td>10</td>
<td>Washington</td>
<td>108,380</td>
<td>1.90%</td>
<td>$252,587,385</td>
<td>1.40%</td>
<td>$2,331</td>
</tr>
</tbody>
</table>

**Top Ten Subtotal:** 3,008,808 52.40% $10,687,223,035 60.70% $3,552

*All Others*²⁹

<table>
<thead>
<tr>
<th>Rank</th>
<th>County</th>
<th>2001 Population</th>
<th>Percent of Total</th>
<th>Total Estimated Cost</th>
<th>Percent of Total</th>
<th>Cost Per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>86</td>
<td>Jackson</td>
<td>11,162</td>
<td>0.20%</td>
<td>$14,711,400</td>
<td>0.10%</td>
<td>$1,318</td>
</tr>
<tr>
<td>87</td>
<td>Clay</td>
<td>7,918</td>
<td>0.10%</td>
<td>$45,430,000</td>
<td>0.30%</td>
<td>$5,738</td>
</tr>
<tr>
<td>88</td>
<td>Houston</td>
<td>7,916</td>
<td>0.10%</td>
<td>$12,447,000</td>
<td>0.10%</td>
<td>$1,572</td>
</tr>
<tr>
<td>89</td>
<td>Lake</td>
<td>7,764</td>
<td>0.10%</td>
<td>$3,236,000</td>
<td>0.00%</td>
<td>$417</td>
</tr>
<tr>
<td>90</td>
<td>Perry</td>
<td>7,504</td>
<td>0.10%</td>
<td>$18,882,000</td>
<td>0.10%</td>
<td>$2,516</td>
</tr>
<tr>
<td>91</td>
<td>Trousdale</td>
<td>7,345</td>
<td>0.10%</td>
<td>$36,495,000</td>
<td>0.20%</td>
<td>$4,969</td>
</tr>
<tr>
<td>92</td>
<td>Hancock</td>
<td>6,768</td>
<td>0.10%</td>
<td>$12,040,888</td>
<td>0.10%</td>
<td>$1,779</td>
</tr>
<tr>
<td>93</td>
<td>Moore</td>
<td>5,887</td>
<td>0.10%</td>
<td>$6,866,000</td>
<td>0.00%</td>
<td>$1,166</td>
</tr>
<tr>
<td>94</td>
<td>Van Buren</td>
<td>5,477</td>
<td>0.10%</td>
<td>$30,085,000</td>
<td>0.20%</td>
<td>$5,493</td>
</tr>
<tr>
<td>95</td>
<td>Pickett</td>
<td>5,048</td>
<td>0.10%</td>
<td>$14,978,000</td>
<td>0.00%</td>
<td>$2,967</td>
</tr>
</tbody>
</table>

**Bottom Ten Subtotal:** 72,789 1.30% $195,171,288 1.10% $2,681

**Grand Total:** 5,740,021 100.00% $17,614,450,893 100.00% $3,069

²⁹ For information about the middle 75 counties, see Appendix D.
Growth Rates Receive Considerable Attention, But Seem to Have Little to Do With Infrastructure Needs

The total infrastructure needs reported for each county seems to be much more closely related to population, sheer numbers of new residents (gain) and population density. Population gain—total number of new residents—should not be confused with growth rate—percentage change in population. Only three of the ten counties with the highest population growth rates (Rutherford, Williamson and Wilson, all adjacent to Davidson County) were among the ten reporting the greatest infrastructure needs. All three were among the ten with the greatest population gains. Only one of the slowest growing counties in terms of growth rates (Hancock) was among the ten reporting the least need for new or improved infrastructure. It was also among the ten with the smallest populations and the ten with the smallest population gains. (See Tables 9 and 11 through 13).

30 For information about the middle 75 counties see Appendix D.

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Table 12. Infrastructure Improvement Needs Reported for the Ten Counties with the Largest and Smallest Population Gains
—Excluding Projects Identified as Regional—
Five-year Period July 2002 Through June 2007

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rutherford</td>
<td>118,570</td>
<td>190,143</td>
<td>71,573</td>
<td>$753,667,886</td>
<td>$3,964</td>
</tr>
<tr>
<td>2</td>
<td>Shelby</td>
<td>826,330</td>
<td>896,013</td>
<td>69,683</td>
<td>$3,636,291,463</td>
<td>$4,058</td>
</tr>
<tr>
<td>3</td>
<td>Davidson</td>
<td>510,786</td>
<td>565,352</td>
<td>54,566</td>
<td>$2,989,633,250</td>
<td>$5,288</td>
</tr>
<tr>
<td>4</td>
<td>Williamson</td>
<td>81,021</td>
<td>133,825</td>
<td>52,804</td>
<td>$575,752,999</td>
<td>$4,302</td>
</tr>
<tr>
<td>5</td>
<td>Knox</td>
<td>335,749</td>
<td>385,572</td>
<td>49,823</td>
<td>$842,662,485</td>
<td>$2,185</td>
</tr>
<tr>
<td>6</td>
<td>Montgomery</td>
<td>100,498</td>
<td>135,023</td>
<td>34,525</td>
<td>$456,246,802</td>
<td>$3,379</td>
</tr>
<tr>
<td>7</td>
<td>Sumner</td>
<td>103,281</td>
<td>134,336</td>
<td>31,055</td>
<td>$353,948,513</td>
<td>$2,635</td>
</tr>
<tr>
<td>8</td>
<td>Wilson</td>
<td>67,675</td>
<td>91,696</td>
<td>24,021</td>
<td>$328,544,625</td>
<td>$3,583</td>
</tr>
<tr>
<td>9</td>
<td>Sevier</td>
<td>51,050</td>
<td>73,703</td>
<td>22,653</td>
<td>$301,727,049</td>
<td>$4,094</td>
</tr>
<tr>
<td>10</td>
<td>Blount</td>
<td>85,962</td>
<td>108,270</td>
<td>22,308</td>
<td>$259,789,338</td>
<td>$2,399</td>
</tr>
</tbody>
</table>

Top Ten Subtotal 2,280,922 2,713,933 433,011 $10,498,264,410 $3,868

All Others30 2,487,635 2,911,298 423,663 $6,859,922,195 $2,356

86 Grundy 13,362 14,288 926 28,880,400 $2,021
87 Houston 7,018 7,916 898 12,447,000 $1,572
88 Perry 6,612 7,504 892 18,882,000 $2,516
89 Clay 7,238 7,918 680 45,430,000 $5,738
90 Lake 7,129 7,764 635 3,236,000 $417
91 VanBuren 4,846 5,477 631 30,085,000 $5,493
92 Obion 31,717 32,346 629 34,439,000 $1,065
93 Pickett 4,548 5,048 500 14,978,000 $2,967
94 Haywood 19,437 19,761 324 55,846,000 $2,826
95 Hancock 6,739 6,768 29 12,040,888 $1,779

Bottom Ten Subtotal 108,646 114,790 6,144 $256,264,288 $2,232

Grand Total 4,877,203 5,740,021 862,818 $17,614,450,893 $3,069
Tipton County, which is immediately north of Shelby County (Memphis) on the Tennessee River, continues to stand out among the high growth counties based on growth rates, as the one reporting the lowest needs per capita. In fact, its cost per capita is only about 20 percent of the cost per capita for that group as a whole, and only six counties reported lower needs per capita (see Table 14). It is not clear why infrastructure needs reported for Tipton County remain low. It may simply serve to illustrate the point that population growth rates, while they are given much attention, are a poor predictor of infrastructure needs.

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Table 13. Cost of Needed Infrastructure Improvements Reported for the Ten Counties with the Highest and Lowest Population Growth Rates—Excluding Projects Identified as Regional—Five-year Period July 2002 Through June 2007

<table>
<thead>
<tr>
<th>Rank</th>
<th>County</th>
<th>1990 Population</th>
<th>2001 Population</th>
<th>Population Growth Rate</th>
<th>Total Estimated Cost</th>
<th>Cost Per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Williamson</td>
<td>81,021</td>
<td>133,825</td>
<td>65.20%</td>
<td>$575,752,999</td>
<td>$4,302</td>
</tr>
<tr>
<td>2</td>
<td>Rutherford</td>
<td>118,570</td>
<td>190,143</td>
<td>60.40%</td>
<td>$753,667,886</td>
<td>$3,964</td>
</tr>
<tr>
<td>3</td>
<td>Sevier</td>
<td>51,050</td>
<td>73,703</td>
<td>44.40%</td>
<td>$301,727,049</td>
<td>$4,094</td>
</tr>
<tr>
<td>4</td>
<td>Tipton</td>
<td>37,568</td>
<td>52,956</td>
<td>41.00%</td>
<td>$40,027,112</td>
<td>$756</td>
</tr>
<tr>
<td>5</td>
<td>Meigs</td>
<td>8,033</td>
<td>11,194</td>
<td>39.40%</td>
<td>$65,822,375</td>
<td>$5,880</td>
</tr>
<tr>
<td>6</td>
<td>Cumberland</td>
<td>34,736</td>
<td>48,058</td>
<td>38.40%</td>
<td>$198,774,000</td>
<td>$4,136</td>
</tr>
<tr>
<td>7</td>
<td>Jefferson</td>
<td>33,016</td>
<td>45,070</td>
<td>36.50%</td>
<td>$53,809,441</td>
<td>$1,194</td>
</tr>
<tr>
<td>8</td>
<td>Hickman</td>
<td>16,754</td>
<td>22,740</td>
<td>35.70%</td>
<td>$187,444,000</td>
<td>$8,243</td>
</tr>
<tr>
<td>9</td>
<td>Wilson</td>
<td>67,675</td>
<td>91,696</td>
<td>35.50%</td>
<td>$328,544,625</td>
<td>$3,583</td>
</tr>
<tr>
<td>10</td>
<td>Robertson</td>
<td>41,492</td>
<td>56,083</td>
<td>35.20%</td>
<td>$157,333,900</td>
<td>$2,805</td>
</tr>
</tbody>
</table>

**Top Ten Subtotal:** 489,915 725,468 48.10% $2,662,903,387 $3,671

**All Others**

<table>
<thead>
<tr>
<th>Rank</th>
<th>County</th>
<th>1990 Population</th>
<th>2001 Population</th>
<th>Population Growth Rate</th>
<th>Total Estimated Cost</th>
<th>Cost Per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>86</td>
<td>Carroll</td>
<td>27,514</td>
<td>29,538</td>
<td>7.40%</td>
<td>19,868,388</td>
<td>$673</td>
</tr>
<tr>
<td>87</td>
<td>Unicoi</td>
<td>16,549</td>
<td>17,713</td>
<td>7.00%</td>
<td>61,477,025</td>
<td>$3,471</td>
</tr>
<tr>
<td>88</td>
<td>Grundy</td>
<td>13,362</td>
<td>14,288</td>
<td>6.90%</td>
<td>28,880,400</td>
<td>$2,021</td>
</tr>
<tr>
<td>89</td>
<td>Dyer</td>
<td>34,854</td>
<td>37,121</td>
<td>6.50%</td>
<td>26,704,981</td>
<td>$719</td>
</tr>
<tr>
<td>90</td>
<td>Sullivan</td>
<td>143,596</td>
<td>152,787</td>
<td>6.40%</td>
<td>264,723,897</td>
<td>$1,733</td>
</tr>
<tr>
<td>91</td>
<td>Anderson</td>
<td>68,250</td>
<td>71,457</td>
<td>6.00%</td>
<td>87,829,063</td>
<td>$1,229</td>
</tr>
<tr>
<td>92</td>
<td>Gibson</td>
<td>46,315</td>
<td>48,031</td>
<td>3.70%</td>
<td>101,275,756</td>
<td>$2,109</td>
</tr>
<tr>
<td>93</td>
<td>Obion</td>
<td>31,717</td>
<td>32,346</td>
<td>2.00%</td>
<td>34,439,000</td>
<td>$1,065</td>
</tr>
<tr>
<td>94</td>
<td>Haywood</td>
<td>19,437</td>
<td>19,761</td>
<td>1.70%</td>
<td>55,846,000</td>
<td>$2,826</td>
</tr>
<tr>
<td>95</td>
<td>Hancock</td>
<td>6,739</td>
<td>6,768</td>
<td>0.40%</td>
<td>12,040,888</td>
<td>$1,779</td>
</tr>
</tbody>
</table>

**Bottom Ten Subtotal:** 408,333 429,810 5.30% $693,085,398 $1,613

**Grand Total:** 4,877,203 5,704,021 17.70% $17,614,450,893 $3,069

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31 For information about the middle 75 counties, see Appendix D.
Population Density Does Not Mean Lower Infrastructure Needs Per Capita Based on the Current Inventory of Needs

Five of the ten counties reporting the greatest need for infrastructure improvements are among the ten most densely populated. As a group, the ten most densely populated counties reported greater needs per capita than the other eighty-five counties. But the ten most sparsely populated counties also reported greater needs per capita as a group than the seventy-five in the middle and were close to the average for all counties. It should be noted that there is considerable variation in reported costs per capita among both the top and the bottom ten for population density that would be obscured if attention were given only to the group averages. (See Table 14.)

32 For information about the middle 75 counties, see Appendix D.
### Table 15. Population Factors for the Ten Counties Reporting Highest and Lowest Infrastructure Needs per Capita

*Excluding Projects Identified as Regional*

**Five-year Period July 2002 Through June 2007**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hickman</td>
<td>16,754</td>
<td>22,740</td>
<td>5,986</td>
<td>35.7%</td>
<td>613</td>
<td>37</td>
<td>$187,444,000</td>
<td>$8,243</td>
</tr>
<tr>
<td>2</td>
<td>Meigs</td>
<td>8,033</td>
<td>11,194</td>
<td>3,161</td>
<td>39.4%</td>
<td>195</td>
<td>57</td>
<td>65,822,375</td>
<td>5,880</td>
</tr>
<tr>
<td>3</td>
<td>Clay</td>
<td>7,238</td>
<td>7,918</td>
<td>680</td>
<td>9.4%</td>
<td>236</td>
<td>34</td>
<td>45,430,000</td>
<td>5,738</td>
</tr>
<tr>
<td>4</td>
<td>McNairy</td>
<td>22,422</td>
<td>24,644</td>
<td>2,222</td>
<td>9.9%</td>
<td>560</td>
<td>44</td>
<td>140,798,062</td>
<td>5,713</td>
</tr>
<tr>
<td>5</td>
<td>Van Buren</td>
<td>4,846</td>
<td>5,477</td>
<td>631</td>
<td>13.0%</td>
<td>273</td>
<td>20</td>
<td>30,085,000</td>
<td>5,493</td>
</tr>
<tr>
<td>6</td>
<td>DeKalb</td>
<td>14,360</td>
<td>17,552</td>
<td>3,192</td>
<td>22.2%</td>
<td>305</td>
<td>58</td>
<td>95,727,782</td>
<td>5,454</td>
</tr>
<tr>
<td>7</td>
<td>Davidson</td>
<td>510,786</td>
<td>565,352</td>
<td>54,566</td>
<td>10.7%</td>
<td>502</td>
<td>1,126</td>
<td>2,989,633,250</td>
<td>5,288</td>
</tr>
<tr>
<td>8</td>
<td>Trousdale</td>
<td>5,920</td>
<td>7,345</td>
<td>1,425</td>
<td>24.1%</td>
<td>114</td>
<td>64</td>
<td>36,495,000</td>
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<td>9</td>
<td>Bedford</td>
<td>30,411</td>
<td>38,327</td>
<td>7,916</td>
<td>26.0%</td>
<td>474</td>
<td>81</td>
<td>187,825,000</td>
<td>4,901</td>
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<td>10</td>
<td>Smith</td>
<td>14,143</td>
<td>17,988</td>
<td>3,845</td>
<td>27.2%</td>
<td>314</td>
<td>57</td>
<td>86,157,500</td>
<td>4,790</td>
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Top Ten Subtotal: 634,913, 718,537, 83,624, 3,586, 200 $3,865,417,969 $5,380

All Others33

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<th></th>
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<td>86</td>
<td>Crockett</td>
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<td>88</td>
<td>Lauderdale</td>
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<td>3,530</td>
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<td>470</td>
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<td>White</td>
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<td>23,364</td>
<td>3,274</td>
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<td>377</td>
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<td>Dyer</td>
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<td>37,121</td>
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<td>73</td>
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<td>Weakley</td>
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<td>34,644</td>
<td>2,672</td>
<td>8.4%</td>
<td>580</td>
<td>60</td>
<td>23,650,952</td>
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<tr>
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<td>Carroll</td>
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<td>29,538</td>
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Bottom Ten Subtotal: 241,061, 283,417, 42,356, 4,455, 64 $203,870,140 $719

Grand Total: 4,877,203, 5,740,021, 862,818, 41,220, 139 $17,614,450,893 $3,069

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33 For information about the middle 75 counties, see Appendix D.
The Relationship Between Population Data and Total Reported Needs Is Stronger This Year, But Still Cannot Explain All Differences

With seven counties dominating the top ten lists for total reported infrastructure needs, total population and total population gain, it might seem that population data is sufficient to explain differences across the state in infrastructure needs reported for the ninety-five counties. The relationship for the ten counties reporting the least need is stronger in the current inventory than in the past. Four counties appear among the bottom ten on all three lists. (See Tables 9, 11 and 12.) However, population data alone still cannot explain all of the variation across the state in the needs reported for each county.

Moreover, costs per capita, which are generally expected to be lower in more densely populated areas because of efficiencies and economies of scale, are actually higher in the more heavily populated counties based on top ten, bottom ten comparisons. But as Table 15 illustrates, that pattern does not hold when the counties are ranked in order of reported needs per capita. The ten counties with the highest and the ten with the lowest reported costs per capita both include fast and slow growing counties, and both groups are dominated by counties with population densities well below the state average.

When Population Factors Do Not Explain the Relatively Low Infrastructure Needs Reported for Some Counties, Local Tax Base Factors May

As with previous inventories, comparisons of the top ten and bottom ten counties in the current inventory don’t shed much light on what’s happening in the counties that don’t show up in the top and bottom ten, yet the seventy-five counties in the middle based on population represent about thirty-eight percent of the total infrastructure needs reported. In fact, correlation analysis indicates, contrary to the top ten, bottom ten comparisons, that population gain is not particularly strongly related to the total needs reported for the ninety-five counties. In a surprising result, population growth rates bear no relationship at all to reported needs. Other factors, including tax base and wealth measures are far more strongly correlated with needs.

Both the total number and the total cost of infrastructure needs reported for the ninety-five counties are highly correlated (> 0.90) with

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34 This percentage is much less than in the previous inventory, primarily because regional projects have been excluded from the current county-level analysis.

35 The highest possible correlation is 1.00.
population and the population living in urban areas. However, total costs are even more highly correlated (>0.95) with local tax base variables and income. High correlations mean that patterns of differences (e.g., across counties) for one variable are very similar to patterns of differences for another variable. Multiple linear regression analysis makes it possible to determine which of those variables, when analyzed in combination, are more strongly related to the infrastructure needs reported across the state. This statistical process produces measures of both the strength and the size of the relationships between a single item of interest and a set of items thought to influence that single item. The process in this case was used to compare reported infrastructure needs by county to each county’s 2001 population, its population growth between 1990 and 2001, the proportion of its population considered urban, its property tax base, its sales tax base and its personal income.36

For the first time in three years, the three regression models used by TACIR staff did not produce consistent results.37 No single variable was statistically significant in all three models when used to estimate the expected infrastructure needs reported in terms of total cost.38 As shown in Table 10, the best predictors for this inventory were population, population gain and income.

Another function of multiple linear regression analysis is to make estimates of what a variable might be expected to be based on a set of other variables. This is possible because the analysis produces factors, called coefficients, that can be multiplied by the variables to calculate an expected value for the variable being predicted. Estimates derived by applying the coefficients produced by the cost analysis based on the current inventory and factoring out the influence of development districts, indicate that the current inventory captured around 90 percent of the infrastructure needs in the state, which is consistent with the previous inventory. If the total cost by county is based on the greater of the reported cost or the cost produced by the regression analysis, the statewide total could be anywhere between $24.0 and $24.2 billion rather than the $21.6 billion actually reported. Further analysis is beyond the scope of this report, but this information will assist staff in improving the inventory and may serve as the basis of future staff reports.

36 The tax base and per capita income variables are an average of the data available for the most recent three years.

37 Density and land area were used to make counties more comparable, rather than as separate factors, in two of the three models.

38 That is, no variable had a probability value greater than 0.90 in all three models.