

# REGIONAL LABOR FORCE QUALITY COMPARISON: HOW TENNESSEE RANKS

**The biggest challenge Tennessee faces in courting industry is raising the education and skill levels of its labor force.**

by Murat Arik

**Firms are most likely to choose those regions that have skilled labor and a suitable market.**

A competitive economic environment conditions and is conditioned by the quality and size of its labor force. Unless production processes are completely automated, this will continue to be a fact of economic life. Characteristics of the labor force are intrinsically linked to quality of life in a region. A good quality of life and highly skilled labor force, in turn, increase a region's economic competitiveness in the "new economy." The presence of a skilled labor force also helps diversify a region's economic base: a less educated labor force is more likely to be employed in retail trade, agriculture, and service sectors or to be unemployed.

It is no surprise that skilled labor and the presence of a local university are cited as top factors for high tech firms.<sup>1</sup> A high-quality workforce is major capital that a region can leverage to recruit new businesses and expand existing ones. All else being equal, firms are most likely to choose those regions that have skilled labor and a suitable market.

**Skill and Personal Benefits.** Not only regional but also personal benefits are substantial: members of a skilled labor force have higher lifetime earnings than those with low skill or educational attainment level.<sup>2</sup> A look at the characteristics of low-wage workers in the United States reveals the magnitude of the financial benefits a high level of educational attainment would contribute to an individual's well-being: less-educated workers are more likely to earn low wages and experience longer spells of unemployment.<sup>3</sup>

**Skill Demand Outlook.** As the outlook for the U.S. economy shows signs of cautious optimism, a flurry of company expansions and relo-

cation activities is more likely to put the spotlight on the quality of the labor force. It does not matter whether we have an "old economy" or a "new economy:" many employers are looking for at least a high school education with good communication and math skills. For example, in apparel and other textile products manufacturing, 70 percent of employees are production workers. According to the Bureau of Labor Statistics (BLS), employers anxious to increase productivity want to hire people who can be cross-trained to perform several functions.<sup>4</sup> This obviously requires individuals who have at least a high school education with good communication skills.

Another example is from transportation and equipment manufacturing, representing 16 percent of Tennessee's manufacturing employment. Employers in this sector require at least a high school education and trainability.

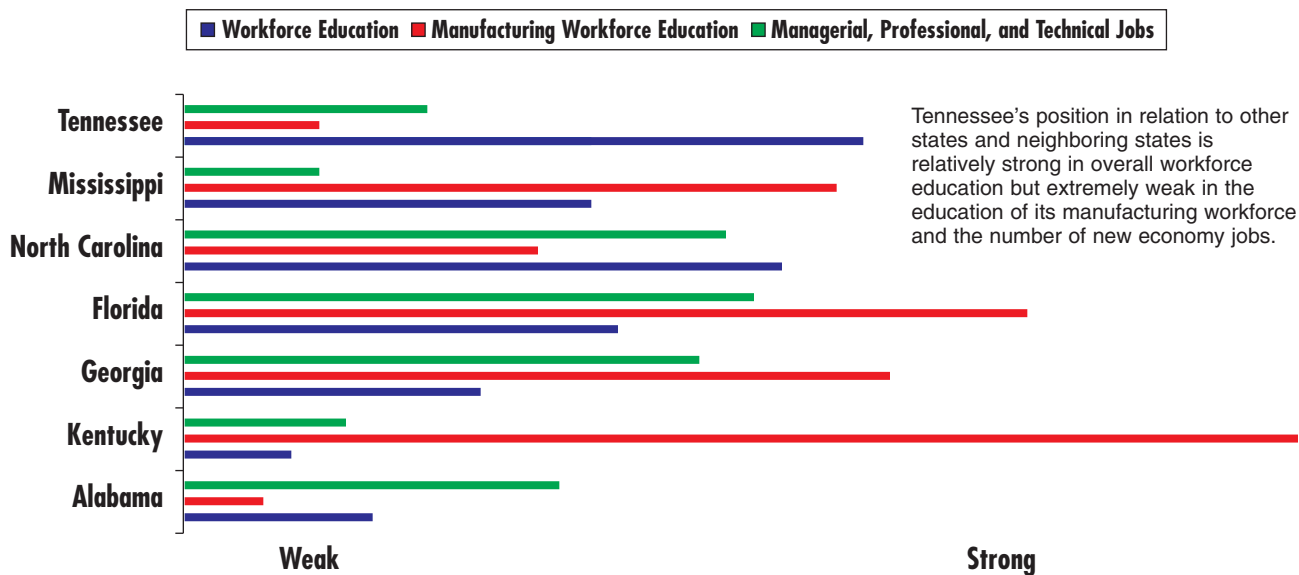
**Local Educational Institution/Business Cooperation.** Lack of a competitive labor force in a region does not mean, however, that business attraction is impossible. In a world of business incentives, a region can successfully design an incentive package that emphasizes labor force training in a given sector. This is an extremely important business incentive strategy that benefits firms, the area labor force, and the overall region. An interesting and unusual example is from Mississippi. When a flurry of casino activities started in this state, casino operators had a hard time finding a skilled and motivated workforce. In 1997, casinos developed an innovative way (Adopt a Town) to address the barriers to employment in the

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**Figure 1. Tennessee's Workforce and the New Economy**



Source: Progressive Policy Institute's New Economy Index 2002, www.neweconomyindex.org

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region. Casinos identify an area with a high unemployment rate and “adopt” it by partnering with local educational institutions to prepare a workforce.<sup>5</sup>

### Tennessee's Workforce Education

*How Competitive is Tennessee's Labor Force?* Given the importance of labor force quality, we need to understand how competitive Tennessee's labor force is relative to its neighboring states. We will then discuss specific characteristics of Tennessee's labor force and the issues Tennessee is likely to confront in order to produce a competitive labor force.

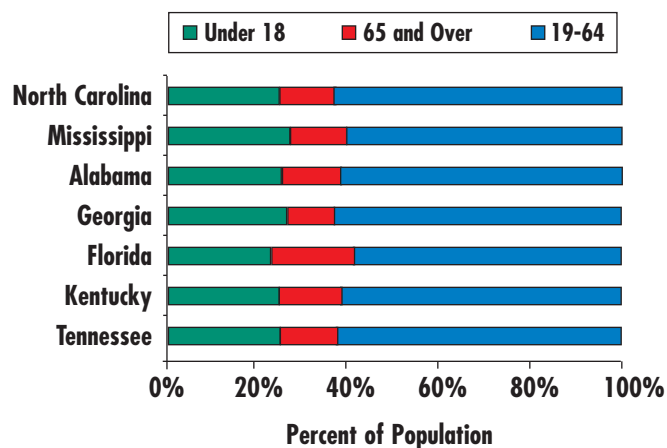
Let's look at some national figures. The

Progressive Policy Institute issued a report called “New Economy Index 2002” ranking states in various categories, including workforce education.<sup>6</sup>

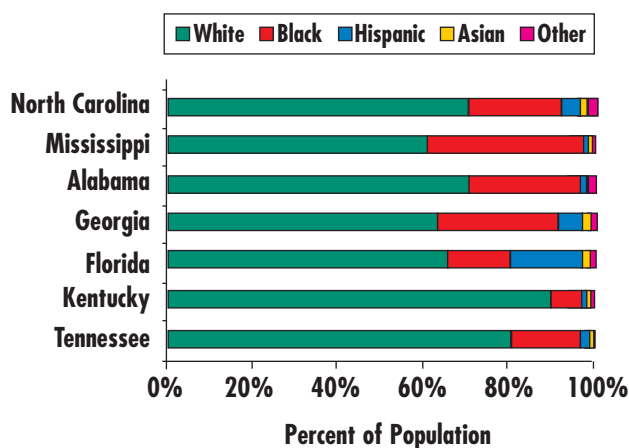
Tennessee is strong relative to other states and our reference states in overall workforce education. However, it is extremely weak in the education of its manufacturing workforce and the number of managerial, professional, and technical jobs. All of our reference states except Alabama are stronger than Tennessee in the education of their manufacturing workforce.

What is even more interesting is that four of these states are top-10 manufacturing states by percent of their private sector labor force in manufacturing. Tennessee ranks ninth (16.9 percent) nationally, and three of its neighboring states rank even higher: Mississippi is fifth (18.3 per-

**Figure 2. Age Composition of States**



**Figure 3. Race Composition**



cent), North Carolina is seventh (17.9 percent), and Alabama is eighth (17.3 percent). Based on the indicators in the chart (Figure 1), Tennessee's manufacturing workforce is less competitive than North Carolina's and Mississippi's.

**Population and Civilian Labor Force**

*Tennessee's Population.* To understand labor force, we need to look at population dynamics because tight linkages exist between the two in a region. Tennessee's population compared to the reference states is in the middle: Florida, Georgia, and North Carolina have higher populations than Tennessee and Alabama, Kentucky, and Mississippi have lower populations. The population growth rate between 1990 and 2000 followed a similar pattern; Florida, Georgia, and North Carolina had higher growth than Tennessee, Alabama, Mississippi, and Kentucky.

*Age.* Tennessee ranks fourth in percentage of under-18 population (Figure 2), fourth in percent of retirement-age population, and third in working-age population (19-64).

*Race.* Tennessee ranks sixth in terms of racial diversity measured by percentage of each racial group in the total population (Figure 3). Kentucky is the only state among the reference group that has a less racially diverse population than Tennessee. Florida, Georgia, Mississippi, and North Carolina have a more diverse population.

*Source of Population Growth.* Sources of population growth might have important implications for workforce policies in a state. If more and more of a state's population growth is due to immigration, a strategy should be developed to address emerging language problems for the immigrant labor force.

More than 45 percent of Tennessee's population growth was natural (births-deaths) in

2002.<sup>7</sup> Tennessee's population source mix looks very healthy, especially relative to Mississippi and Alabama, where out-migration is higher than in-migration. Florida is extremely dependent on both in-migration (migration from other states) and immigration (migration from other countries). The immigrant population share in North Carolina is second to Florida's (Figure 4).

*Immigrant Population and Workforce Policy.* A labor force with an English language problem is more likely to be unemployed. A workforce language training program should be in place in states where large numbers of immigrants choose to reside. According to census data, 4.8 percent of Tennessee's population over the age of five speak a language other than English at home. Only two percent of the population over five cannot speak English very well. Tennessee's situation is somewhat similar to that of Kentucky, Alabama, and Mississippi. The largest foreign-born population among the reference states is in Florida (23.1 percent), where 10.3 percent of the population age five and older cannot speak English very well (Table 1). Probably none of the reference states except Florida are under strong pressure to implement workforce language development policies to address language-related barriers to employment.

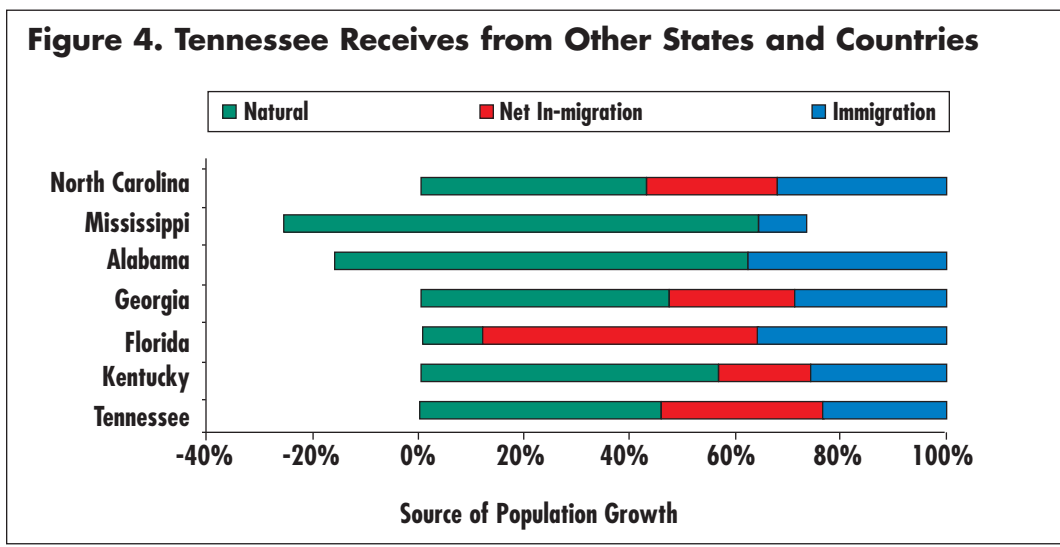
*Tennessee's Civilian Labor Force.* Tennessee's labor force in 2002 is close to three million, ranking it fourth among the seven states. Its unemployment rate is the lowest. Mississippi and Alabama have high unemployment rates with 6.8 percent and 5.9 percent, respectively.

*Percent of Working Population.* About 62.4 percent of Tennessee's population was employed in 2002. Compared to the reference states, this ranks Tennessee second after Georgia. The lowest ratio is 56.6 percent in Mississippi.

*Unemployment Rate.* A high employment

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**Table 1. Labor Force Language Barriers (2000)**

State	Language Other Than English	Speak English Less Than Very Well (%)
Tennessee	4.8	2.0
Kentucky	3.9	1.6
Florida	23.1	10.3
Georgia	9.9	4.9
Alabama	3.9	1.5
Mississippi	3.6	1.4
North Carolina	8.0	4.0

Source: Census Bureau

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ratio naturally results in low unemployment rates, as is the case for Tennessee, which has the lowest unemployment rate (5.1 percent, tied with Georgia) relative to the reference states.

**Female Workforce.** The role of women in an economy is extremely important as they represent nearly half of the working-age population in many states. Tennessee ranks third after Georgia and North Carolina in terms of its female labor force participation rate. The lowest participation is 52.6 percent in Florida, which partially reflects that state's increasing retirement-age female population.

**Where Do They Work?** The manufacturing sector is the largest private employment sector in Tennessee, representing 18.3 percent of total employment. Professional and business services, educational and health services, and retail trade sectors each included more than 13 percent of working adults in 2003. These four "super-sectors" have about 59 percent of total private sector employment. Government is one of the largest sectors, employing 418,200 people in Tennessee.

North Carolina strongly resembles Tennessee in terms of employment by industry and Alabama, Kentucky, and Mississippi show a

somewhat similar structure.

**What Do They Do?** Primary occupations in Tennessee are management, professional, and related occupations; sales occupations; and production, transportation, and material moving occupations. Other reference states have a similar occupational mix by aggregate occupational categories.<sup>8</sup>

**How Much Do They Earn?** On average, a Tennessee worker earned \$624 a week in 2002. Average annual pay was \$32,471. Tennessee's average weekly wage was the third highest among the reference states after Georgia (\$692) and North Carolina (\$625). The lowest weekly wages were in Mississippi (\$506) and Alabama (\$587).

### Challenges to a Competitive Labor Force

Some challenges to a competitive labor force are educational levels, skill levels, literacy levels, future language problems, and an aging population.

At the beginning of this discussion, we cited the low quality of Tennessee's workforce education relative to other states. We will revisit that issue and explore further the educational attainment level of Tennessee's labor force. We will also present the issue from a comparative perspective to get more insight into the competitive workforce dynamics in the region.

**Educational Attainment-Skill Level.** Less than 20 percent of Tennessee's labor force was highly skilled based on educational attainment level in 2000, and around 25 percent was semi-skilled (Figure 5). A combined 44.3 percent of the population has a skill level that is compatible with the labor demand of many national level industries. Compared to other states in the region, Tennessee's workforce educational attainment level is a little higher than that of Kentucky and Mississippi. Even Mississippi was well ahead of Tennessee in the share of semi-skilled labor.<sup>9</sup>

The real concern, however, is the percent of

**Table 2. Labor Force, Employment, and Unemployment (2002)Female Labor Force (2000)**

State	Civilian Labor Force ('000)	Employment/Population Ratio	Employed ('000)	Unemployment Rate (%)	Female Labor Force ('000)	Female LF Participation Rate (%)
Tennessee	2,926	62.4	2,776	5.1	1,307	56.4
Kentucky	1,966	58.3	1,857	5.6	890	54.3
Florida	8,084	59.1	7,642	5.5	3,482	52.6
Georgia	4,292	64.3	4,071	5.1	1,904	59.2
Alabama	2,103	57.6	1,978	5.9	957	52.8
Mississippi	1,298	56.6	1,210	6.8	605	53.3
North Carolina	4,171	62.1	3,890	5.3	1,911	58.8

Source: BLS, Census Bureau

the labor force with “no skill” and “low skill” (Table 3). In Tennessee, 24.1 percent of the labor force does not have a high school education, and 31.6 percent has only a high school education. A combined percent of population with low and no skill is 55.7 percent, the third highest after Kentucky and Mississippi among the reference states.

A key implication of these low levels of educational attainment is that labor supply in the state is not as competitive as that in the surrounding states. Moreover, it would be hard for the state to attract industries whose skill demand does not match the skill level of labor supply in the state. Which industries, then, could be attracted to the state based on skill match?

**Skill-Mismatch Index.** We calculated a skill-mismatch index using national industry skill demand and state skill supply.<sup>10</sup> Local skill supply is calculated by collapsing the Census Bureau educational attainment data into four categories: less than high school (no skill), high school (low skill), associate’s degree and some college (semi-skilled), and college and higher (high skill). This calculation does not take into account special workforce training programs and on-the-job training.

Based on the skill-mismatch index, the only industries with which Tennessee has a compatible skill level are retail trade and personal services.<sup>11</sup> A skill-mismatch index of less than or equal to 100 for a sector is a “good match,” between 101 and 300 is a “poor match,” and 301 and over is the “worst match.” The good news for Tennessee is that in many sectors vigorous workforce training would

**Table 3. Labor Force Skill Level**

State	No Skill	Low Skill
Tennessee	24.1	31.6
Kentucky	25.9	33.6
Florida	20.1	28.7
Georgia	21.4	28.7
Alabama	24.7	30.4
Mississippi	27.1	29.4
North Carolina	21.8	28.4

Source: Census Bureau, BERC

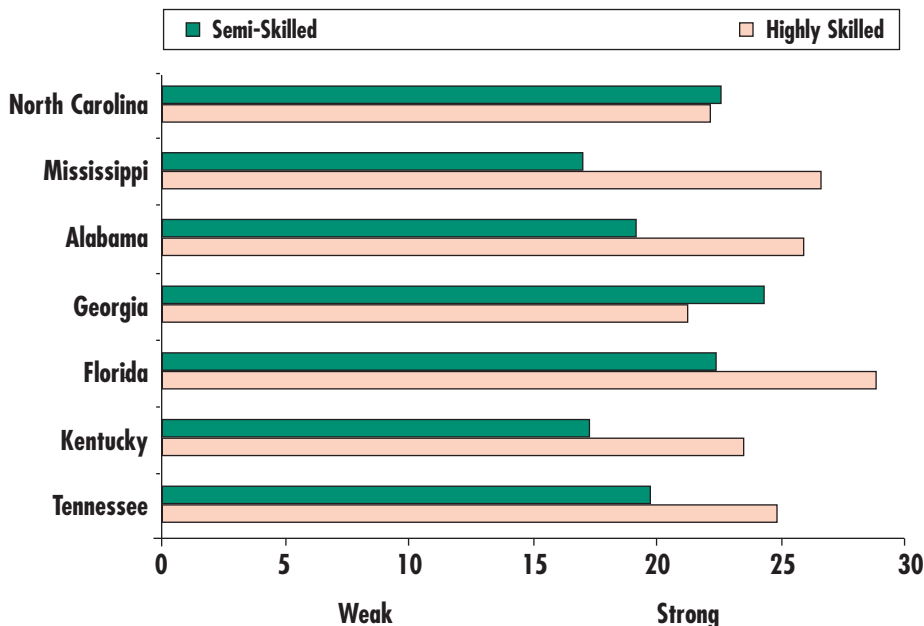
improve the workforce skill to the level of national industry skill demand. In many sectors, skill-mismatch scores indicate that Tennessee and Alabama are in competition for similar kinds of industries. Kentucky and Mississippi are in a position to lure similar industries. Although Florida presents a unique overall structure, in some sectors it is in direct sectoral competition with Georgia. North Carolina and Georgia have similar skill-mismatch scores across the sectors.

**Skill Surplus or Deficit.** It is interesting to note that Tennessee’s labor force skill supply is a poor match for manufacturing skill demand (Table 4). Similarly, national skill demand in entertainment and recreation matches local skill supply poorly. What this implies is that firms in these sectors need to think seriously about considering Tennessee as their new destination. To see in which skill areas a poor match occurs, we need to further break down the skill-mismatch

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**Figure 5. Percent of Semi-Skilled and Highly Skilled Workers**



**Table 4. National Industry Skill Demand versus State Labor Force Skill Supply**

Industry	Tennessee	Kentucky	Florida	Georgia	Alabama	Mississippi	North Carolina
Construction	256	187	403	453	282	301	409
Manufacturing	141	169	142	181	172	256	176
TCPU *	396	481	256	450	409	510	433
Wholesale Trade	246	341	123	233	261	365	233
Retail Trade	88	84	126	237	88	101	193
FIRE **	819	1,038	504	617	828	998	657
Business and Repair	260	385	109	171	271	380	186
Personal Services	100	73	179	261	107	117	217
Entertainment and Recreation	121	215	18	98	117	181	92
Professional and Related	1,311	1,583	962	940	1,333	1,544	1,027
Government	885	1,111	543	708	888	1,053	740

Notes: \* transportation, communications, and public utilities; \*\*finance, insurance, and real estate  
 Source: BERC, Census Bureau, BLS

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index. Knowing skill deficits and surpluses by skill categories might help in designing appropriate workforce policies.<sup>12</sup> Positive figures mean the state has more people in that skill category than a national industry needs. Negative figures imply a national industry’s skill demand in that category is higher than the state can offer.

Findings in these two industries indicate that Tennessee has a 9.1 percent higher share of the labor force with less than a high school education than a national manufacturing firm’s skill demand requires. In other skill categories, Tennessee has skill deficits—not enough labor force in those categories to match the skill requirement of a national manufacturing firm. In entertainment, a key issue is to find a highly skilled and semi-skilled labor force that meets a national industry’s skill criteria. A caution is in order in interpreting these results: these are aggregate figures that may or may not reflect a specific firm’s skill demand. A more detailed (at least three-digit NAICS level) study should be conducted to develop a comprehensive workforce skill development policy to make sure the state has the necessary skill composition to target specific companies.

**Task-Oriented Adult Literacy.** The second crucial challenge to creating a competitive labor force is the task-oriented adult literacy level of the labor force.<sup>13</sup> There are five task-oriented adult literacy levels: Level 1 is the lowest and

Level 5 is the highest. Tennessee’s task-oriented Level 1 literacy rate is 21 percent, the lowest after Kentucky (19 percent). Compared to the reference states, at this level Tennessee is in an extremely competitive position. By contrast, Mississippi has a 30 percent Level 1 adult literacy rate. Tennessee’s position, however, is not so enviable compared to Colorado, where Level 1 adult literacy is 13 percent. By Level 1 or 2 adult literacy, Tennessee’s position slides down to third after Florida and North Carolina.

What is the implication of a high percent of Level 1 or 2 adult literacy? Experts argue that at these adult literacy levels individuals are unable to perform certain task-oriented jobs that a competitive economic environment requires. Adults at these levels are more likely to earn lower wages, go to prison, be on welfare, or be unemployed.<sup>14</sup>

**Outlook: Future Challenges**

**Language.** One of the challenges is the language skill of new immigrants to the state. Census Bureau data indicate that Tennessee’s foreign-born population is 2.8 percent, of which 39.5 percent is from Latin America and 31.8 percent from Asia. Between 1990 and 2000, foreign-born population increased by 58 percent. Long-term population projections indicate that in 2025 the share of these two groups will be 2.9 percent. It is unlikely that this will create strong pressure on statewide policies that aim at workforce language training. However, certain met-

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**Table 5. Skill Deficit and Surplus by Skill Category in Manufacturing and Entertainment**

	High Skill	Semi-Skilled	Low Skill	No Skill
Manufacturing	-1.4	-1.3	-7.4	9.1
Entertainment and Recreation	-5.4	-5.3	3.6	7.1

Source: BERC

ropolitan counties will find themselves unprepared if they do not address this issue because the migration patterns of these two groups indicate that they prefer metropolitan, highly urbanized areas.<sup>15</sup>

Three states that will experience a change in population dynamics are Florida, Georgia, and North Carolina. By 2025, the share of Hispanic population in Florida is expected to rise 23.9 percent, in Georgia 3.5 percent, and in North Carolina 2.2 percent.

**Aging.** The aging population will likely be a concern across the United States over the next 20 years because the baby boomers will reach retirement age. Managing an economy with a high percentage of retirees will be a real challenge in the long run. Currently, 12.4 percent of Tennessee’s population is retirement-age (65 and over), and this will increase dramatically. In 2025, this age group will represent 20.3 percent of the population. As the share of working-age population shrinks, states must develop new policies to encourage retirees to re-enter the workforce.

Compared to other states in the region, Tennessee will have the third smallest percentage of retirement-age population after Georgia (16.9 percent) and Mississippi (19.6 percent). Florida’s retirement-age population is expected to increase to 26.3 percent by 2025.

**Conclusion.** Tennessee’s labor force is not very competitive compared to other states in the region. Tennessee’s labor force quality, now average, might be stretched in positive directions with proactive workforce development programs. These programs should definitely address the skill-development issue from both educational and task-oriented skill perspectives.

Challenges to Tennessee’s labor force, besides skill and education, are not as big as those other reference states are likely to confront. Language ability is at a manageable level compared to Florida and Georgia. The aging population issue should be on the policy agenda but should not be a big concern as some localities in the United States have already initiated programs that encourage the retirement-age population to re-enter the workforce. ■

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## Notes

<sup>1</sup> David Salvesen and Henry Renski, “Importance of Quality of Life in the Location Decisions of New Economy Firms,” *U.S. Economic Development Administration Review of Economic Development Literature and Practice: No. 15*

<sup>2</sup> See Census Bureau, [www.census.gov/apsd/www/statbrief/sb94\\_17.pdf](http://www.census.gov/apsd/www/statbrief/sb94_17.pdf).

**Table 6. Task-Oriented Adult Literacy (%)**

State	Level 1	Level 1 or 2
Tennessee	21	53
Kentucky	19	54
Florida	25	51
Georgia	23	54
Alabama	25	57
Mississippi	30	64
North Carolina	22	52
Colorado	13	32

Source: [www.casas.org](http://www.casas.org)

<sup>3</sup> See Census Bureau, [www.census.gov/prod/2003pubs/p70-93.pdf](http://www.census.gov/prod/2003pubs/p70-93.pdf).

<sup>4</sup> Bureau of Labor Statistics, “Career Guide to Industries,” [www.bls.gov/oco/home.htm](http://www.bls.gov/oco/home.htm)

<sup>5</sup> Denise von Herman, Robert Ingram, and William C. Smith, “Gaming in the Mississippi Economy: A Marketing, Tourism, and Economic Perspective,” [www.ccmississippi.us/Gamingstudy.pdf](http://www.ccmississippi.us/Gamingstudy.pdf)

<sup>6</sup> Progressive Policy Institute, “New Economy Index 2002,” [www.neweconomyindex.org](http://www.neweconomyindex.org).

<sup>7</sup> For Census Bureau population estimates for states, see [www.census.gov](http://www.census.gov). For a detailed pattern of immigrant population by state and country of origin, see Center for Immigration Studies, <http://www.cis.org>.

<sup>8</sup> For occupational and employment by industry information, see BLS at [www.bls.gov](http://www.bls.gov).

<sup>9</sup> Guide to skill level/educational attainment relationship: universe = population 25 years old and older; No Skill = less than high school; Low Skill = high school level; Semi-Skilled = associate’s degree or some college; High Skill = college and over.

<sup>10</sup> For national industry skill demand, see Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov).

<sup>11</sup> To compute Skill-Mismatch Index (SMI), we use the following formula:

$$SMI_{sector} = \sum (S_j - M_{ij})^2,$$

where  $j$  = skill level (1 = high, 2 = semi, 3 = low, 4 = none),  $S_j$  = percent of county population with skill level  $j$ ,  $M_{ij}$  = percent of workers in industry  $i$  with skill level  $j$ , an SMI score < 100 is a “good match,”  $100 < SMI < 300$  is a “poor match,” and  $SMI > 300$  is the “worst match.” For an application of this concept to detailed manufacturing sectors, see David J. Peters, “Manufacturing in Missouri: Skills-Mismatch,” [www.ded.mo.gov](http://www.ded.mo.gov).

<sup>12</sup> Local skill deficit or surplus for a given national industry is calculated by decomposing the skill-mismatch index,  $SDS_{ij} = S_j - M_{ij}$ , where  $SDS$  = skill deficit or surplus,  $i$  = national industry,  $j$  = skill level,  $S_j$  = percent of a state’s population with skill level  $j$ ,  $M_{ij}$  = percent of workers in industry  $i$  with skill level  $j$ .

<sup>13</sup> For adult literacy estimates, see [www.casas.org/lit/litcode/search.cfm](http://www.casas.org/lit/litcode/search.cfm). Adult literacy skill levels are between Levels 1 and 5. Adults at Level 1 or 2 do not have the necessary task-oriented skill level to function properly in a competitive economic environment. Estimates are based on the 1990 Census educational attainment data and 1992 NAL (National Adult Literacy) Survey. For a discussion of adult literacy issues and survey updates, see [www.nifl.gov](http://www.nifl.gov).

<sup>14</sup> For a discussion on these issues, see the National Institute for Literacy website at [www.nifl.gov](http://www.nifl.gov).

<sup>15</sup> For population projections by race and age, see [www.census.gov](http://www.census.gov). For detailed immigrant destination state pattern, see Center for Immigration Studies, [www.cis.org](http://www.cis.org).

**Managing an economy with a high percent of retired population will be a real challenge in the long run.**