THE CHANGING ECONOMIC ENVIRONMENT

“Right now our nation is perched at the precipice of change. … We have learned from studying our global environment that what happens in any one place on the planet influences the rest of the ecosystem and that is true of education, too.” (The National Children’s Book and Literacy Alliance)

Education and quality of life

The forces of change —
1-shifting fortunes: the decline of manufacturing
2-the urban-rural divide
3-we compete against the world
4-perceptions help drive economic development
5-where will the skilled workers be found?
6-labor force of the future
7-persistent income disparities
8-more from less: the promise of productivity growth

Then, where do we go from here?
future
Most of today’s baby boomers had a father who held just one job over his entire lifetime. The story line might go something like this: the father dropped out of high school, enlisted, and came off the farm to serve in World War II. Upon returning to the states, he took a job in a factory. The factory environment wasn’t ideal, nothing like the freedom offered by the farm; but after the war, it was a small price to pay for a good-paying job and some security. Besides, the factory gave generous health insurance packages to the worker and his family. There were layoffs over the ups and downs of the business cycle, but all in all, it was a good job. By putting some money away from each paycheck, the family sent a child to college, the first child in the family tree to earn a college degree. This college-educated daughter then took a job, received a nice fringe benefit package, earned a good salary, and supported her family. Upon retirement, her parents, the retired factory worker and his wife, enjoyed a modest pension that, together with Social Security provided good economic security. She, however, continues to struggle with the demands and changes of today’s economy.

Was this the American dream or a myth? Perhaps it is a little bit of both. Many families did, in fact, enjoy prosperity while having little formal education in their backgrounds. In years past, there were good job and career opportunities for those with little education. And workers could expect to hold only a couple of jobs over their working lives. Prosperity and security often went hand in hand.

Whether we like it or not, the economic environment today is markedly different than it was 50 years ago. Good jobs for those with only a high school degree have become scarce. You can find a job; but the pay is low, and there is no health insurance or long-term security. Better jobs go to those with a better education.
Also, states now fight aggressively for jobs with economic development incentives that can tally over $100,000 per worker, shifting jobs across the country. Globalization has translated into intense competition for domestic businesses, in turn squeezing worker earnings and putting jobs at risk. High-paying manufacturing jobs are increasingly hard to find. Rural communities fight to maintain an economic foundation and tax base in the face of declining agriculture and the loss of industrial jobs. The rich are getting richer while lower income workers see stagnant earnings. Investments in equipment and computer technology allow firms to produce more with less, but in many instances, this means fewer workers and thus layoffs.

Is the glass half full or half empty? The answer is yes. As with most things, how you look at it depends on your perspective. In many respects, times are more difficult today than they were 50 years ago. But there is also greater opportunity today for those who have the chance and motivation to pursue it. As we sit here in Tennessee, we should recognize that the forces of change cannot be stopped. However, if we choose wisely, the forces of change can be harnessed to our advantage.

How do we do this? One means is by investing in people—from young children to adults—through education and training. Education offers the promise of improved quality of life for the family, greater competitiveness for business, and a more vital economic base for local communities. We cannot affect our external environment—things like interest rates or the rise of the global economy—in any meaningful way. But we can choose how much we invest in education and training.
A better educated workforce means greater regional prosperity

Education certainly enhances well-being by improving earnings potential and diminishing the likelihood of unemployment; the worker benefits from education as does his or her family. By the same token, regions with a better educated population tend to have higher levels of per capita income, lower unemployment rates, a larger labor force and a lower incidence of poverty. Education matters to both workers and communities.

But these economic and monetary benefits are just a few examples of how education affects us in positive ways. People with more education tend to live better lifestyles. For example, they smoke less, exercise more often, have a lower incidence of diabetes, and live longer. More education also translates into greater economic security for the family, including higher homeownership and personal savings rates and a higher likelihood of having private health insurance.

The story doesn’t end there. Children who live in households with better educated parents enjoy better quality lifestyles. These children have lower infant mortality rates and are more likely to be immunized for communicable diseases. And they are more likely to finish high school and attend college. And so the cycle continues.

Let’s travel a bit further down this path. Society at large also benefits from an educated population. Less smoking means fewer deaths and lower health care delivery costs for everyone. Higher immunization rates benefit the immunized child but also reduce the chance that another child contracts disease. Educated people are less likely to be in prison and less likely to be on welfare, reducing the costs borne by government. They are also more likely to vote and participate in the affairs of their community.

Changes in U.S. educational attainment over the past century

- In 1900, less than 14% of all Americans graduated from high school. By 2005, that number increased to over 85% for those 25 and older (U.S. Department of Labor, 2001 & U.S. Census Bureau).
- In 1910, the first year for which estimates are available, less than 3% of the population had graduated from a school of higher learning. By 2005, the figure was 36% for adults aged 25 and over (U.S. Department of Labor, 2001 & U.S. Census Bureau).
A bachelor’s degree means higher earnings and lower likelihood of unemployment

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Bachelor’s degree</td>
<td>$51,554</td>
<td>2.6%</td>
</tr>
<tr>
<td>H.S. diploma</td>
<td>$28,645</td>
<td>4.7%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau.

A better educated workforce means greater regional prosperity, as shown here by job growth

<table>
<thead>
<tr>
<th>County Rank</th>
<th>% of Population with at least a H.S. diploma</th>
<th>Employment Growth Rate, 2000-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 counties with most job growth</td>
<td>76%</td>
<td>8.8%</td>
</tr>
<tr>
<td>10 counties with least job growth</td>
<td>66%</td>
<td>-14.2</td>
</tr>
</tbody>
</table>

and vice versa; a higher-educated population means positive job growth and vice versa; a higher-educated population means positive job growth

Source: CBER-UT; TN Department of Labor and Workforce Development.

A variety of forces are at play, each altering the economic environment —
A variety of forces are at play, each altering the economic environment that surrounds us, each with implications for the economic security of workers, families and communities in Tennessee. These forces of change are complicated and often interwoven with one another. They can be viewed as a glass half empty or a glass half full—there are threats and risks certainly, but there are also exciting and potentially rewarding opportunities. The key to taking advantage of these emerging opportunities is education.

### 1-shifting fortunes: the decline of manufacturing

Tennessee has long relied on manufacturing as its primary engine of economic development. Manufacturing jobs generally pay well and often provide workers and their families with important benefits like health insurance. But Tennessee, like the rest of the country, is seeing its manufacturing employment base decline. Manufacturing jobs in the state and nation have declined each year since 1999. At the same time, job growth has been strong in various service sectors of the state economy. Education and health services, along with professional and business services, have seen especially strong growth. These trends are projected to continue into the foreseeable future.

Some industrial sectors have been hit particularly hard, notably apparel manufacturers. In 1990 there were 62,049 jobs in the state’s apparel industry; by 2006 employment stood at only 7,482, a loss of 54,567 positions. Some manufacturers have fought the trend and have been able to engineer job gains, including those in the transportation equipment sector where 18,217 jobs were added between 1990 and 2006. But the overall trend for manufacturing has been fewer and fewer jobs.

Many of the jobs being lost are relatively low-skilled, low-wage jobs that can be easily shifted offshore or displaced through investments in equipment and computer technology. As these jobs erode, workers struggle to find new positions that provide comparable earnings, communities see upward pressure on unemployment rates, and the state sees more people applying for unemployment insurance and welfare benefits. Unfortunately many of the new jobs being created don’t go to the workers who just lost their jobs. Retraining and retooling of worker skills is one remedy, but this can be a challenge for people with little savings who have spent much of their working lives on an apparel assembly line.

The new jobs being created in manufacturing, as well as in many of the service sectors, require greater skills on the part of the worker and greater investments in equipment and computer technology on the part of the employer. The new jobs often pay very well, though that is not always the case. Leisure and hospitality services—a foundation of the state’s tourism trade—has seen healthy job growth, but the positions paid only 47.4% of the statewide average in 2006. Many of these jobs require little education and training and, in turn, offer little long-term economic security for workers and their families.

Remember these old pencil sharpeners? Bet not many of you are using them anymore. Bet you have upgraded once, maybe twice. You’ve probably even upgraded your pencils. Economic transition is not a new phenomenon, but that doesn’t make it any easier to deal with on a day-to-day basis. Change is not easy; and while education and training cannot stop the forces of change, investments in people can help them adapt and find greater economic security in the face of a changing economic environment.
The plight of displaced workers

In just a 2-year period, 3.8 million workers across the U.S. lost or left jobs they had worked in for 3 years or more because their employer closed or moved, because their position or shift was abolished, or because there was insufficient work for them to do (BLS, 2006).

Over 1 million of these displaced workers were from manufacturing firms, most often producing durable goods like computers and electronic products, primary metals and fabricated metal products, and transportation equipment.

People working in managerial, professional, and related occupations—regardless of their industry—account for 34% of these displaced workers, but people with experience in these occupations find replacement jobs faster than occupations like production, transportation, and moving occupations, occupations often associated with the manufacturing industry.

In January 2006, 30% of all displaced workers were still not employed.

Even when these workers were able to replace their jobs, they often replaced them with lower paying positions. In fact, 29% lost 20% or more of their income in their new jobs.

Older displaced workers had a harder time becoming reemployed, as did women and Hispanics.

Another 4.3 million workers who worked in a company for less than 3 years also lost or left their jobs for the same reasons.
The state is no longer as dependent on agriculture as it once was. While Tennessee ranks 4th among the states in the number of farms, it ranks 44th in the size of the average farm. Between 1995 and 2005 the state saw the number of farms fall by 8,000, and further losses can be expected in the years ahead. Today most Tennessee farmers today supplement their income with off-farm employment. For many farm profitability is weak. As an illustration, in 2005, 57% of net farm income came from government payments (CBER-UT, 2007). As farming declines in relative importance, the situation for rural Tennessee is aggravated by declines in manufacturing employment. In the post-World War II period, manufacturing helped absorb workers from farm communities across the state. In fact, manufacturing became a larger share of the economic pie in most rural economies than in metropolitan economies in Tennessee.

Education has become more important to farmers as technologies like computers and global positioning satellite systems have become commonplace on the farm, but this is just one piece of the education puzzle. Today’s farmers need to have some understanding of things like global agricultural markets and possible interactions between pesticides, herbicides and fertilizers and the environment. There is evidence for both the U.S. and for developing countries that better educated farmers are more likely to adopt new technologies that can enhance agricultural productivity.

Education is important to both farm and non-farm workers in rural communities in Tennessee.

Rural places in Tennessee are being squeezed by the decline of traditional farming opportunities as well as by weaknesses in the industrial base. It is striking that 22 Tennessee counties still relied on the industrial sector for more 40% or more of their non-farm job base in 2005. In contrast (in 2006), 14.5% of all jobs in the state were in manufacturing, although about 1 in 10 jobs for the nation were in manufacturing. Topping the list in Tennessee is Perry County, where nearly two-thirds (64.3%) of all jobs are in manufacturing. McNairy County closes out the top 10 list with 45.1% of its job base in manufacturing. This sustained reliance on industrial activity places a large number of rural communities in Tennessee at great risk as manufacturing declines further in the years ahead.

Metropolitan Tennessee has been the prime beneficiary of service sector growth as manufacturing has languished. Urban counties in the state generally enjoy higher wages, stronger rates of job growth, and lower unemployment rates than their rural counterparts. For example, in 2005 the average wage in urban counties in Tennessee was $37,056 whereas the average in rural counties was $27,856.

Urban counties tend to have a better educated workforce and spend more on elementary and secondary education, which helps support the economic development process. Of course there are many people in urban places who have not benefited from this growth, and many people in rural communities who have thrived. There are significant pockets of poverty in all of our metropolitan areas where many workers do not earn a living wage.

The challenges confronting rural Tennessee are numerous. Isolation, limited transportation access, small labor pools, and poorly funded schools are among the constraints. But rural places in the state also have advantages like the natural environment, which can be utilized as people increasingly look at quality of life considerations when making job and residency choices.

Urban communities confront their own challenges in raising living standards for lower income households. But like their rural counterparts, urban areas also have important strengths to build upon.

For both rural and urban communities in Tennessee, education, labor force training and carefully-crafted job recruitment and retention strategies that recognize and embrace the changing economic environment may be the best development strategies for promoting new economic opportunity.

(Continued on page 12)
**FUTURE**

**the forces of change**

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### Rural counties in Tennessee are overly reliant on manufacturing

<table>
<thead>
<tr>
<th>County</th>
<th>Total private employment, 2005</th>
<th>Manufacturing employment, 2005</th>
<th>Manufacturing as a % of total private</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perry</td>
<td>2,151</td>
<td>1,384</td>
<td>64.3</td>
<td>1</td>
</tr>
<tr>
<td>Rhea</td>
<td>8,576</td>
<td>4,593</td>
<td>53.6</td>
<td>2</td>
</tr>
<tr>
<td>Grainger</td>
<td>2,549</td>
<td>1,326</td>
<td>52.0</td>
<td>3</td>
</tr>
<tr>
<td>Meigs</td>
<td>1,229</td>
<td>623</td>
<td>50.7</td>
<td>4</td>
</tr>
<tr>
<td>Marshall</td>
<td>8,283</td>
<td>4,195</td>
<td>50.6</td>
<td>5</td>
</tr>
<tr>
<td>Unicoi</td>
<td>3,756</td>
<td>1,824</td>
<td>48.6</td>
<td>6</td>
</tr>
<tr>
<td>Warren</td>
<td>12,892</td>
<td>6,106</td>
<td>47.4</td>
<td>7</td>
</tr>
<tr>
<td>Monroe</td>
<td>12,176</td>
<td>5,676</td>
<td>46.6</td>
<td>8</td>
</tr>
<tr>
<td>Cheatham</td>
<td>6,330</td>
<td>2,945</td>
<td>46.5</td>
<td>9</td>
</tr>
<tr>
<td>McNairy</td>
<td>6,579</td>
<td>2,969</td>
<td>45.1</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: BLS, Quarterly Census of Employment and Wages.

### Urban counties in Tennessee enjoy higher average earnings

- **Urban counties** $37,056
- **Rural counties** $27,856


### Urban counties in Tennessee have a better educated workforce and higher spending on K-12 education

- **Rural**
  - 67.7% of our rural residents have at least a high-school diploma.
  - Annual per pupil K-12 spending is $6,880
- **Urban**
  - 79.7% of our urban residents have at least a high-school diploma.
  - Annual per pupil K-12 spending is $7,733


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**2-the urban-rural divide**

www.EducationCrossroads.com
“Rural policymakers in particular are concerned about the loss of well-educated workers from their local communities. Known as a 'brain drain,' this phenomenon not only deprives local employers of an educated workforce, but it also represents a drain on local resources because the communities that invested in the education of these workers do not reap any returns on that investment” (Goetz & Rupasingha, 2005, p. 6).

Recent research sheds light on the link between a community’s educational attainment and the county’s per capita income. The numbers speak for themselves. If a rural community improves the level of achievement of its adult workforce, the returns to the community at large are substantially lower than if the same achievement gain were engineered in an urban community. There are many explanations for this finding. Some basic problems in many rural communities include the small number of well-paid jobs and the lack of economic diversity that causes jobs to shift to other places.

Another recent study focused on job and income growth. The findings are important:

“Specifically, a 5 percentage point increase in adults attending college resulted, on average, in a 3.5% increase in the growth rate of per capita income in nonmetro areas and a 9.0% increase in the growth rate in the metro counties. For employment change, the 5 percentage point increase in college attendees contributed to a 5.5% increase in the nonmetro employment growth rate and a 6.8% increase in the metro employment growth rate” (Barkley, Henry & Li, 2005, p. 12).

Together the results show that education matters to economic development generally, though the returns to education investments are not as pronounced in rural communities as they are in urban places. Unfortunately, the lower rates of return in rural places may discourage educational investments on the part of individuals and weaken support for public schools because of the brain drain to metropolitan places. But such reactions would be unfortunate and simply reinforce the divide between urban and rural Tennessee.
Cleveland, Tennessee, is set to lose 370 jobs from the Whirlpool Corporation cooking products plant this year (2007). The production jobs will be shifted to another facility in Tulsa, Oklahoma, and a yet-to-be determined location in Mexico in an effort to improve productivity and efficiency in their global manufacturing and distribution networks (Manufacturing.net, 2007; Reuters, 2007).

Whirlpool makes this change because of declining demand for its appliance shipments in North America and its quest to cut production costs. The plant will retain approximately 2,000 employees in the area, but the loss reflects a 15.6% reduction in Whirlpool’s jobs in the local community.
FUTURE
the forces of change

3-we compete against the world, continued

Many workers in Tennessee today compete directly or indirectly against workers in other countries. Not that long ago we worried about losing jobs to another state or community. As in football and basketball, Alabama and Kentucky were our competitors. Today the jobs are going offshore and outsourcing has become a buzzword in the media. Look at the label on a piece of clothing or on a home appliance. Where were they made? Some blame the current state of affairs on free trade agreements that have helped open up borders to international commerce, but these free trade agreements have simply sped up the unstoppable process of globalization.

Over time both the nation and state have become increasingly integrated with the international economy. In 1970, total U.S. imports plus exports—one measure of the extent of global integration—were just over 10% of gross domestic product. But by 2006, this figure had climbed to over 27% of gross domestic product, an increase of about 270%.

Tennessee has become a major player in the international arena with international exports accounting for more than 15% of state gross domestic product in 2006. The state’s leading export product was transportation equipment with exports valued at $4.8 billion in 2006. Computers and electronic products came in second at $3.3 billion.

We export products to countries throughout the world. Canada is the leading buyer of products from Tennessee with purchases totaling $6.9 billion in 2006, or nearly 1/3 of all Tennessee exports. But the Netherlands, Germany, the United Kingdom, Japan, China and Mexico also purchase a large share of total Tennessee exports.

The scope of globalization has gone beyond where many might have imagined decades ago. We knew that manufactured products like apparel would be at risk. But did we anticipate the mass movement of call centers to Bangalore, India? More striking still, who would have imagined that significant numbers of Americans would seek medical care in other countries, including care in developing countries? The growth in the service sector suggests that a much broader array of jobs are at risk from globalization than previously envisioned.

International borders can be expected to become more open, increasing the flow of goods and people. Internet access will expand broadly in the years ahead, increasing the flow of ideas and consumer and business services. We hear people in Tennessee saying the world is getting flatter, playing off a popular best-selling book. Tennessee does not have the capacity to stop these trends, even if it wanted to.

So what can we do to protect our economic security? Invest in people to make workers and their employers more competitive in the international marketplace. Jobs will still be lost, and the economy will continue to transition; but workers may find they are more adept at dealing with change through increased human capital investments. Moreover new jobs offering good opportunities to workers in Tennessee will be created. The transportation equipment sector in Tennessee—which we often associate with the cars we drive—is also a leading export sector. We can compete if we make the right choices.
What is a “medical tourist”? It’s not someone who visits hospitals for fun. Instead it is someone who chooses to go abroad for health care, often because the cost is lower. Most so-called medical tourists finance their own health services when they travel abroad, but Asian hospital operators are now courting American health insurers and continued on next page.
Whether we like it or not, perceptions can affect the state's path of economic development. Businesses want to locate where there is a trained and productive workforce that can support interstate and international competitiveness. And people want to live in communities where there are good employment opportunities and good schools for their children.

Unfortunately Tennessee receives poor marks when it comes to evaluations of its workforce, system of public education and preparedness for economic development. Consider some candidate rankings:

- **Camelot Index, Educated Population, 2006**: 40th
- **Smartest State Award, 2006–2007**: 41st
- **Beacon Hill Institute Competitiveness Report, Human Resources, 2006**: 42nd

Each of the indexes is based on a unique methodology and array of data. But in most instances the indexes are simple if not transparent and rely on public data. For example, the Camelot Index is based on 5 factors specific to each state: the rank on the Armed Services Qualification Test, pupil-teacher ratios in public schools, high school dropout rates, average in-state college tuition and fees, and college entrance examination scores. Most people will not take the time to probe beneath the surface of the rankings to find out what they really mean.

Employers who are trying to rein in costs. BlueCross BlueShield of South Carolina now allows policy holders to acquire services from a low-cost hospital in Thailand. So then people receive the treatment they desire and health insurers can help rein in costs. “But the hospital operators are bracing for a backlash from the rich countries’ medical vested interests whose jobs are, in effect, being outsourced” (The Economist, 2007, p. 62).
There are other rankings that focus on livability, but education remains an important element of these indexes. For example, Forbes provides rankings of best cities and best states to locate a business. Educational attainment of the adult population is one of a small number of components used in the Forbes index. *Money* magazine ranks cities in their Best Place to Live index. Mathematics and English test scores are used in the Best Places index. So the rankings important not only in terms of assessments of the workforce, but also in terms of quality of life. And quality of life affects where people choose to live and work.

The news certainly isn’t all bad. For example, *Expansion Management*—an online publication that helps businesses find attractive places for doing business—included Chattanooga, Knoxville, Memphis and Nashville in their 50 Hottest Cities index for 2007. A beauty contest of sorts, the list is based on a survey of site consultants.

How does someone reconcile the rankings of education and workforce with rankings of hottest cities? The punchline is that the state does have a good general business climate due to a variety of factors including locational advantages, climate, low taxes and limited regulation. But we have a sore spot as well: a relatively poorly educated adult population and low levels of investment in education.

Perceptions are not reality. We know Tennessee can be a great place to live, work and raise a family. But perceptions can shape our prospects for economic development. We should not be driven by rankings per se, but they should serve as a wake-up call and press us to consider the important role education can play in our future.

Perception is a critical factor in attracting expanding companies. (Krizner, *Expansion Management*, 2007)

*A business perspective: Would you take this grade home to your parents?*

Tennessee earns a *D* in academic achievement, according to the U.S. Chamber of Commerce’s Education Report Card (2007)

4-perceptions help drive economic development

www.EducationCrossroads.com
The labor market is changing rapidly as the population ages and as the influx of immigrants continues. Now add the higher skill requirements for occupations expected to grow rapidly in the years ahead and the decline in jobs where low skills have in the past been adequate. Will there be enough workers to meet the needs of Tennessee employers in the years ahead? Will workers from Tennessee have the skills needed to allow them to compete in the marketplace? What will happen to workers who do not have the appropriate education and training?

**Demographic changes in the labor market**

**Aging.** Tennessee's population is expected to see strong growth in the next 2 decades. But the underlying demographics will change markedly. Our working lives are growing longer. But nonetheless, older people, both men and women, are less likely to work than their younger counterparts. Older workers can be a good deal for their employers. They have a good work ethic and have much experience to bring to the job. But older workers also bring unique needs and potential problems that employers must recognize as well.

The labor force participation rate—the share of adults who hold a job or who are seeking employment—is expected to fall in the years ahead due to the aging of the population. The aging of the population together with relatively modest fertility rates means a shrinking pool of potential workers for American employers.

- The national labor force participation rate—the share of the adult working-age population that is either employed or seeking employment—will peak in 2008 and then drift downward for the foreseeable future (Global Insight, 2006).
- The overall labor force is expected to grow 5.4% between 2005 and 2010. But growth from 2010 to 2015 will total only 3.0% (Global Insight, 2006).
- The labor force under age 65 will grow 5.2% between 2005 and 2010. However, this same group will grow only 2.0% in the 2010 to 2015 window, a compound annual rate of less than half of 1% (Global Insight, 2006).

**Foreign-born workers.** As the population ages you can expect minorities and immigrants to become a larger share of the population and workforce. As a result, the workforce itself will see significant change. Historically, immigrants tended to be more educated than native-born Americans. According to the 2000 Census, foreign-born Tennesseans are more likely to have a post-high-school degree than U.S.-born Tennesseans. But the numbers depend greatly on the country of origin. For example, immigrants from Asian countries have significantly higher levels of educational attainment than do immigrants from Latin American countries.
On average, the current population of immigrants is well educated. According to the 2000 U.S. Census, American Community Survey:

- 17.0% of all immigrants have less than a high school education versus 19.6% for U.S. residents and 24.1% for Tennesseans.
- Nearly 25% of all immigrants have a bachelor’s or graduate degree while 24% of all U.S. residents and 19.6% of Tennessee residents attained a bachelor’s degree or higher.

But the situation is changing. The U.S. Census Bureau’s 2005 American Community Survey (as cited by the Migration Policy Institute, n.d.) showed that in 2005, 3.8% of Tennessee’s population was foreign born:

- Of the total foreign-born population in Tennessee in 2005, 28.9% were born in Mexico, 6.5% in India, and 3.6% in China.
- The Hispanic population is growing rapidly, in fact faster than any other immigrant group. In 2005, only 3.0% of the state population was Hispanic. Unfortunately Hispanics are poorly educated when compared to the state population and to other immigrant groups.

### On average, the current stock of immigrants is well educated

- 80% of immigrants from India hold a bachelor’s degree or higher, compared to only 7% of those from Mexico

Source: U.S. Census Bureau, Census 2000, Public Use Microdata 5% Sample.
Many of the occupations expected to see strong growth in the years ahead require more education and training than was required in the past. At the same time, jobs requiring little education are vanishing rapidly, at least in the U.S. We will need to change our expectations and see stronger investments in education if we expect to attract and retain quality jobs in Tennessee.

The shortage of skilled workers is real and will continue to grow:

- By 2014, the workforce will have openings for 9 million more degree holders than will be available. There will be 3 million surplus openings for 2-year degree holders, 4 million for 4-year degree holders, and 2 million for advanced degree holders (Hecker, 2005).

- A survey by the National Association of Manufacturers (NAM, 2005) found that 90% of businesses said they had a “moderate to serious” shortage of qualified skilled production employees—up from 80% in 2001.

- Business leaders in Tennessee recognize that “other countries are graduating more engineers and technical people than we are” and that Tennessee will have trouble competing in the global market if that trend continues (CBER-UT, 2007).

If you look at the occupations expected to have strong growth, you will note that the jobs generally require more education:

### U.S. employment projections by education cluster, 2004-2014 (in thousands)

<table>
<thead>
<tr>
<th>Education Cluster</th>
<th>2004-2014 Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>HS graduate or less</td>
<td>6,923</td>
</tr>
<tr>
<td>Some college</td>
<td>5,246</td>
</tr>
<tr>
<td>Bachelor’s degree or higher</td>
<td>6,759</td>
</tr>
<tr>
<td>Total</td>
<td>18,928</td>
</tr>
</tbody>
</table>

Source: BLS.

According to the U.S. Bureau of Labor Statistics, a bachelor’s degree is the most common post-secondary education level of workers in 3 of the 5 future fastest-growing occupations. For example, there are projected to be 682,000 computer software applications engineers in the U.S. in 2014, up from 460,000 in 2004—a difference of 222,000 reflecting growth of 48.4%. Of those workers in 2004, over 83% held a bachelor’s degree or higher, and the median annual income was $74,980. The 5 fastest-growing occupations had an average of about 46% of the workers with college degrees, while only 23% had a high school diploma or less. Not only do these growing occupations require educated workers, but they also pay well. The 5 fastest-growing occupations had an average median annual income of $49,586. Other median annual incomes are shown on page 21 in the tables.

In contrast, all 5 occupations expected to decline the fastest are typically held by those with a high school education or less. Textile knitting and weaving machine setters, operators, and tenders are expected to lose 26,000 jobs from 2004 to 2014, a 56.2% setback. It is no surprise that 90% of such
jobs are held by those who have only a high school education or less. In 4 out of those 5 occupations, workers with a high school education or less made up 3/4 of the total workers or more. These disappearing occupations do not pay well either. The average median annual income of workers in the 5 fastest declining occupations was $27,102.

In summary, employment projections for the U.S. show that the fastest growing occupations are ones that require more education and thus pay well, while the occupations with the largest job losses are the ones in which workers are generally not educated past high school. Conversely, these jobs generally do not pay well. Workers must be well educated and equipped with skills in order to take on the jobs of the future.

U.S. highlights

• In 2004, 24% of the 145.6 million jobs in the U.S. were in occupations that generally required a bachelor’s degree or higher. However, between 2004 and 2014, almost 36% of the 18.9 million new jobs are projected to be filled by those with a bachelor’s degree or higher (Hecker, 2005).

• Similarly, in 2004, about 47% of jobs were in occupations that generally required a high school degree or less. However, only 37% of new jobs over the 2004–14 period are projected to be filled by those with a high school education or less (Hecker, 2005).

• 24 of the 30 (80%) projected fastest growing occupations in the U.S. for 2004–14 require some form of postsecondary education (associate’s degree, vocational certificate, bachelor’s degree (Hecker, 2005).

• NONE of the 30 largest declining occupations require postsecondary education (Hecker, 2005).
## Tennessee occupations with the fastest projected growth, 2004-2014

<table>
<thead>
<tr>
<th>Occupation</th>
<th>2004 Employment</th>
<th>2014 Employment</th>
<th>2004-2014 Change (number)</th>
<th>Average Hourly Earnings</th>
<th>Post-secondary education or training category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Entry-level</td>
<td>Mean (All)</td>
</tr>
<tr>
<td>Network systems &amp; data communications analysts</td>
<td>2,680</td>
<td>4,410</td>
<td>1,730 64.6%</td>
<td>$16.75</td>
<td>$27.52</td>
</tr>
<tr>
<td>Court reporters</td>
<td>70</td>
<td>110</td>
<td>40 57.1%</td>
<td>$9.88</td>
<td>$31.61</td>
</tr>
<tr>
<td>Computer software engineers, systems software</td>
<td>2,740</td>
<td>4,270</td>
<td>1,530 55.8%</td>
<td>$23.10</td>
<td>$32.43</td>
</tr>
<tr>
<td>Database administrators</td>
<td>1,450</td>
<td>2,180</td>
<td>730 50.5%</td>
<td>$17.08</td>
<td>$28.55</td>
</tr>
<tr>
<td>Computer software engineers, applications</td>
<td>3,090</td>
<td>4,640</td>
<td>1,550 50.2%</td>
<td>$20.53</td>
<td>$32.45</td>
</tr>
<tr>
<td>Conveyors operators &amp; tenders</td>
<td>2,570</td>
<td>3,800</td>
<td>1,230 47.9%</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Medical assistants</td>
<td>8,290</td>
<td>12,170</td>
<td>3,880 46.8%</td>
<td>$9.07</td>
<td>$11.38</td>
</tr>
<tr>
<td>Network &amp; computer systems administrators</td>
<td>3,870</td>
<td>5,650</td>
<td>1,780 46.0%</td>
<td>$18.03</td>
<td>$27.62</td>
</tr>
<tr>
<td>Desktop publishers</td>
<td>800</td>
<td>1,160</td>
<td>360 45.0%</td>
<td>$9.41</td>
<td>$13.78</td>
</tr>
<tr>
<td>Desktop publishers</td>
<td>800</td>
<td>1,160</td>
<td>360 45.0%</td>
<td>$9.41</td>
<td>$13.78</td>
</tr>
<tr>
<td>Physician assistants</td>
<td>600</td>
<td>870</td>
<td>270 45.0%</td>
<td>$20.56</td>
<td>$31.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Average</td>
<td>$16.05</td>
</tr>
</tbody>
</table>

## Tennessee occupations with the fastest projected losses, 2004-2014

<table>
<thead>
<tr>
<th>Occupation</th>
<th>2004 Employment</th>
<th>2014 Employment</th>
<th>2004-2014 Change (number)</th>
<th>Average Hourly Earnings</th>
<th>Post-secondary education or training category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Entry-level</td>
<td>Mean (All)</td>
</tr>
<tr>
<td>Railroad brake, signal, &amp; switch operators</td>
<td>590</td>
<td>340</td>
<td>-250 -42.4%</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Textile knitting &amp; weaving machine setters, &amp; tenders</td>
<td>650</td>
<td>380</td>
<td>-270 -41.5%</td>
<td>$7.70</td>
<td>$10.54</td>
</tr>
<tr>
<td>Meter readers, utilities</td>
<td>1,480</td>
<td>930</td>
<td>-550 -37.2%</td>
<td>$9.17</td>
<td>$14.29</td>
</tr>
<tr>
<td>Textile bleaching &amp; dyeing machine operators &amp; tenders</td>
<td>270</td>
<td>170</td>
<td>-100 -37.0%</td>
<td>$10.20</td>
<td>$13.33</td>
</tr>
<tr>
<td>Mail clerks &amp; mail machine operators, except postal service</td>
<td>1,790</td>
<td>1,130</td>
<td>-660 -36.9%</td>
<td>$8.51</td>
<td>$11.82</td>
</tr>
<tr>
<td>Credit authorizers, checkers, &amp; clerks</td>
<td>1,080</td>
<td>700</td>
<td>-380 -35.2%</td>
<td>$10.08</td>
<td>$16.31</td>
</tr>
<tr>
<td>File clerks</td>
<td>3,700</td>
<td>2,430</td>
<td>-1,270 -34.3%</td>
<td>$7.43</td>
<td>$10.44</td>
</tr>
<tr>
<td>Furniture finishers</td>
<td>810</td>
<td>550</td>
<td>-260 -32.1%</td>
<td>$8.86</td>
<td>$12.08</td>
</tr>
<tr>
<td>Telephone operators</td>
<td>220</td>
<td>150</td>
<td>-70 -31.8%</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Textile winding, twisting, &amp; drawing out machine setters, operators, &amp; tenders</td>
<td>1,890</td>
<td>1,330</td>
<td>-560 -29.6%</td>
<td>$8.60</td>
<td>$12.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Average</td>
<td>$8.82</td>
</tr>
</tbody>
</table>

*** means information is not available

Now consider the situation in Tennessee where the trend is even more striking. Occupational projections for the state indicate that the jobs of the future in our state require more education while the disappearing jobs required very little education. In fact, NONE of the 10 fastest declining jobs in Tennessee require any postsecondary education, only varying degrees of on-the-job training. On the other hand, the 5 fastest growing (and 8 of the top 10) jobs require a bachelor’s degree or some postsecondary vocational award.

The 10 occupations in Tennessee that are projected to see the strongest growth provide average earnings of $26.32 per hour while the 10 fastest declining occupations earn an average of only $12.62 per hour. Assuming a 40 hour workweek this is a difference of $28,496 per year. Young workers just starting out in their professional lives also benefit greatly from investing in education. The fast-growing occupations pay an average entry-level wage of $16.05 per hour compared to $8.82 for the fast-declining occupations.

### Tennessee highlights

- None of the 10 fastest declining jobs in Tennessee require postsecondary education.
- The fastest declining jobs pay an average of only $12.62 an hour.
- The 5 fastest expanding occupations in Tennessee require a college degree or postsecondary vocational award (including 8 of the top 10).
- The fastest growing jobs pay an average $26.32 per hour, more than double the average hourly rate of workers in the declining occupations.
- The 8 top growing occupations that require a college degree or postsecondary vocational award pay an average of $28.19 per hour.

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**Growing Tennessee occupations forecasted pay more than twice that of declining occupations**

- Fastest declining occupations earn $12.62 per hour on average in Tennessee.
- Fastest growing occupations earn $26.32 per hour on average in Tennessee.


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“They fact is that income inequality is real—it’s been rising for more than 25 years.

**The reason is clear:**
We have an economy that increasingly rewards education and skills because of that education...

The key to rising in this economy is skills—and the government’s job is to make sure we have an education system that delivers them.”

—President George W. Bush, January 31, 2007 on Wall Street
The forces of change
7-persistent income disparities

*Although we Americans strive to provide equality of economic opportunity, we do not guarantee equality of economic outcomes, nor should we. That said, we also believe that no one should be allowed to slip too far down the economic ladder.*

Catching up: Tennessee’s income trails the nation (from CBER-UT, 2007 unless otherwise noted)

Workers and households in Tennessee earn less than their national counterparts. Per capita personal income—the sum of all income that individuals in Tennessee earn—trails the national average. In 2006, Tennessee per capita income was $32,304 versus $36,276 for the average person in the U.S. Substantial per capita income growth took place in the 1980s and 1990s allowing the state to gain some ground against the U.S. However, the state has seen no net improvement in its standing relative to the nation since 1999.

Wage and income levels for a state or community are influenced by many factors. One important factor is the mix of occupations and industries. Statewide, the annual average wage for a non-farm worker was $38,551 in 2006. Workers in the financial activities sector earned $55,025 while workers in the information services sector earned $47,459.

Education levels are also a prime determinant of earnings and income levels. Better educated people earn more, communities with a better educated workforce have higher income levels, and countries with a better educated population enjoy higher income levels. This is a theme you will hear and see in pictures again and again throughout this book.

There are also substantial income disparities between rich and poor U.S. citizens. The disparities appear to have become more pronounced since the late 1970s due to a higher concentration of income at the top of the distribution. This cluster at the high end of the income distribution has given rise to a new class of American society often tagged as the ultra rich, a group of well-educated individuals who have seen...
their earnings rise faster than their less-educated counterparts. Although several factors have affected this widening gap in income, less-educated and thus low-skilled workers have not been able to take advantage of improvements in technology in the same way that relatively skilled workers have (Gramlich & Long, 1996).

**Trends in U.S. income inequality**

- The top 20% of earners received 42% of all after-tax income in 1979, a figure that soared to 50% by 2004.
- The bottom 20% of earners received 7% of all after-tax income in 1979, a figure that dropped to 5% by 2004.
- From 1967 to 2001, the top 5% of U.S. earners have received a 28% increase in the share of household income.
- The share of income held by the top 1% of all taxpayers reached its highest level since 1928 in 2005.

Tennessee has witnessed similar disparities in income to that of the U.S. In fact, Tennessee’s distribution of income for high versus low income is skewed more than the average state.

**Trends in Tennessee’s income inequality**

- Of the 12 southeastern states, Tennessee had the third-worst disparity between incomes in the poorest versus richest county in 2004.
- In 2004, the county with the highest per capita income was Williamson County ($44,298), while Hancock County’s per capita income was only $14,885. Per capita income in Hancock County is only about 1/3 of income in Williamson County.

Some will push for taxes on higher income households, while others may push for a higher minimum wage to reduce the growing income disparities. But these policies deal with income distribution after the fact, after the income has accrued to people in society. A better remedy is to address the issue at an earlier stage in the pipeline. Improvements in access to education and training that expand economic opportunity will likely establish the best chance of supporting workers at the bottom of the income distribution.

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“the challenge for policy is not to eliminate inequality per se but rather to spread economic opportunity as widely as possible. Policies that focus on education, job training, and skills and that facilitate job search and job mobility seem to me to be a promising means for moving toward that goal.”

—Ben Bernanke, Federal Reserve Chairman
The bad news: manufacturing jobs are in decline. **The good news:** manufacturing production continues to expand. How can businesses produce more at the same time that they employ fewer workers? Well it’s not alchemy. The answer lies in productivity gains, or improvements in the amount of output a worker can produce on the job. Productivity gains are important because they translate into more goods and services for consumers, higher earnings for workers, and improved competitiveness for businesses.

The state’s manufacturing sector has seen strong growth in productivity in recent years. To put the situation in perspective, consider 2004. Adjusting for inflation, manufacturing production was up 12.6% at the same time that manufacturing employment slipped nearly 0.4% (CBER-UT, 2007). That is an incredible pace of productivity advance, though it will not likely be replicated.

Productivity gains are important for all sectors of the economy, not just manufacturing. And the issue is of national as well as state importance. The nation’s rate of productivity growth slowed in the 1970s raising concerns about a stagnating national economy and loss of clout in the international arena. The slowdown was attributed to many factors, including lower investments in education and training. Productivity rebounded in the 1990s and contributed to a decade of strong economic growth that benefited both Tennessee and the nation. Much of the growth of the current decade—including the post-2001 recession period called the “jobless expansion”—has been attributed to investments in equipment, especially computer technology.

Productivity advances arise primarily from 4 broad sources. The first is through business investments in new equipment and computer technology. As Tennessee recruits new businesses to the state and nurtures those already here, it is important to focus on firms and
sectors that offer the promise of increased investment and business competitiveness in the years ahead and facilitate these investments.

Second is the development of technologies through research and development. This research takes place in many companies as well as in universities. The state as a whole needs to take greater advantage of its institutions of higher education and key assets like Oak Ridge National Laboratory where important research is undertaken that may benefit society and the economy.

The third source of productivity gain is infrastructure like highways and broadband Internet technology that encourages commerce and economic activity. These types of investments must be carefully evaluated to ensure they provide a sound return on any public sector investment.

The final source of productivity advance is investments in people—human capital. These investments include early childhood education, elementary and secondary education, post-secondary education, adult training and retraining, and formal and informal on-the-job training. Both hard skills (like reading, writing, mathematics and computer literacy) and soft skills (like leadership, motivation and initiative) are important to a worker’s productivity.

Who is responsible for making these investments? We all are. Families need to nurture their children to ensure they do well in school and value education. Taxpayers need to demand the very best from their public schools. Workers need to press their employers for training opportunities. Employers must in turn demand hard skills and soft skills alike from those they hire. Those who find themselves displaced from their job must reinvest in themselves to enable new economic opportunities.

Is this the future of fast food?

Saving 10 seconds in a fast food drive-thru may not sound like a lot, but many companies see this small efficiency improvement as the next big step forward in the food service industry. Wendy’s and McDonald’s have both implemented pilot programs to determine if outsourcing their drive-thru window services can improve wait time. Results have been surprisingly positive. Dennis Lombardi, Executive Vice President of Food-Services Strategies for WD Partners (Wendy’s) says, “You can move orders faster, increase the average check by selling them extras … and improve order accuracy” (Abelson, 2006). These improvements have already been seen. One test market consisting of six Wendy’s stores from California, Florida, and Washington D.C. using a call center in New Hampshire has reported a 12% increase in sales.

The call center, using technology patented by the Massachusetts company Exit 41, handles drive-thru orders, allowing in-store associates to focus on order accuracy, making quality food, and assisting customers in the store. Call center associates, then, focus on the customer’s order, making sure to offer premiums such as upsizing the drink or fries and offering dessert. The system purports to cut down on errors caused by drive-thru workers multitasking with a headset on, taking orders while filling drinks or putting orders together. As more and more services are moved to outsourced call centers, many industries are becoming much more streamlined.

The minimum wage fast food job of the future may just be sitting in front of a computer screen taking orders over the phone. Of course, these jobs could be filled from virtually anywhere in the world.

www.EducationCrossroads.com
ho we become tomorrow depends on the choices we make today. This fact is true for each of us as individuals, but it is equally true as we make choices for our families and our communities. If we value education and invest in learning, we increase the chance of a better quality of life tomorrow. It’s not just about higher earnings, it’s about better lifestyles and quality of life as well.

But we start from a deficit. There is a substantial education investment gap in Tennessee, something we elaborate on in the chapter that follows.

Here is a preview.

Tennessee’s workforce does not stack up well against the workforces in other states; by most measures, we have relatively low levels of academic achievement compared to the nation. And our spending is low by national standards as well. These gaps mean we are not realizing our full potential.

Let’s look at one canary in the coal mine. Where we stand today can be captured by the Quality Counts project published by Education Week (2007) which focuses on elementary and secondary education. The Quality Counts’ measures are based on hard data. The goal of Quality Counts is “… to connect educational outcomes during school-aged years to both early-childhood and post-education benchmarks” (FFIS, 2007, p. 2).

There are 3 separate components to Quality Counts; here is where Tennessee stands:

<table>
<thead>
<tr>
<th>Component</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chance for success index</td>
<td>44th</td>
</tr>
<tr>
<td>School-age years index</td>
<td>40th</td>
</tr>
<tr>
<td>Achievement index</td>
<td>40th</td>
</tr>
</tbody>
</table>

The chance for success index focuses on the early years of a child’s life and accounts for family circumstances (e.g. poverty) and pre-school enrollments. The school-age index includes National Assessment of Education Progress test scores (discussed in the chapter that follows) and high school graduation rates. Finally, the achievement component accounts for test scores, changes in test score performance, and changes in graduation rates. This canary says we have a problem as we rank in the bottom 10 on all 3 categories.
Here are some other facts and figures to help put this all in perspective. Please continue to the Foundation section of this report for more details.

- Tennessee ranked 43rd out of 51 states and the District of Columbia with 2005 per pupil expenditures of $6,855.
- We spend about 75 cents per student on education for every dollar the average state spends. At the same time, our per capita personal income is about 89% of the national average.
- Spending varies widely across the state: per pupil spending in 2006 ranged from $5,415.55 in the Gibson County Special School District to $9,824.61 in the Franklin City School District, a difference of over $4,409.
- Students in Tennessee are less likely than their national counterparts to take advanced courses in mathematics and the sciences or advanced placement examinations.
- Only 17% of Tennessee students taking the ACT met the ACT benchmark score in all 4 subjects in 2006—compared to a national average of 21%.
- Between 1990 and 2003, Tennessee typically ranked in the bottom 20% of states on both 4th and 8th grade reading and math scores of the National Assessment of Education Progress.
- We are losing the college education footrace. Only 16.0% of Tennesseans held at least a bachelor’s degree in 1990 versus over 20.0% for the nation, a difference of 4.0 percentage points. By 2000, Tennessee’s average rose to 19.6% while the national average climbed to 24.4%, a difference of 4.8 percentage points.
- In 2000, 40% of the adult population in 9 Tennessee counties had less than a high school education; the same year the U.S. average was only 19.6%.
- Our freshman high school graduation rate has improved, but it still trails the nation.

Education matters. It affects our economic well-being; it affects our economic development outlook. As we will explore throughout this book, there are also important consequences for families, society at large, and state and local government.

What does it mean to the family? It means a lot. When parents are well educated, families have a higher quality of life as shown in measures like a greater likelihood of homeownership, a lower likelihood of smoking, a lower incidence of diabetes, and a better chance of having private health insurance. The list goes on. See Family at pages 104-135.

Parental choices have important implications for children. For example, children with better educated parents are more likely to graduate from high school and attend college. Children who have been raised by parents who are on welfare are themselves more likely than the average person to be on welfare when they grow up.

What does it mean for society? As educational attainment rises, so does time devoted to charitable activities. Parents are also more likely to vaccinate their children against communicable diseases to the benefit of all. Society as a whole benefits from improved lifestyle choices, e.g., a lower incidence of lung cancer and thus lower health care costs. If the overall community is well educated, we find stronger participation in local schools and a greater likelihood of participating in the democratic process. See Citizenship at pages 136-149.

What does it mean for state and local governments in Tennessee? Local communities with a well educated population enjoy larger sales and property tax bases to fund services, including education. Better educated people are less likely to draw on expensive government programs like Families First and TennCare, and they are less likely to be incarcerated. See Public Sector at pages 151-179.

We are at a crossroads and the future is in our hands. Join us as we explore the implications of education on our lives throughout this book. We have 6,038,803 reasons to care.
Introduction


The changing economic environment


1. Shifting fortunes: The decline of manufacturing


2. The urban-rural divide


3. We compete against the world


4. Perceptions help drive economic development


5. Where will the skilled workers be found?


U.S. Census Bureau, *Census 2000, Public Use Microdata 5% Sample.*


6. Labor force of the future


7. Persistent income disparities


8. More from less: The promise of productivity growth


Where do we go from here?