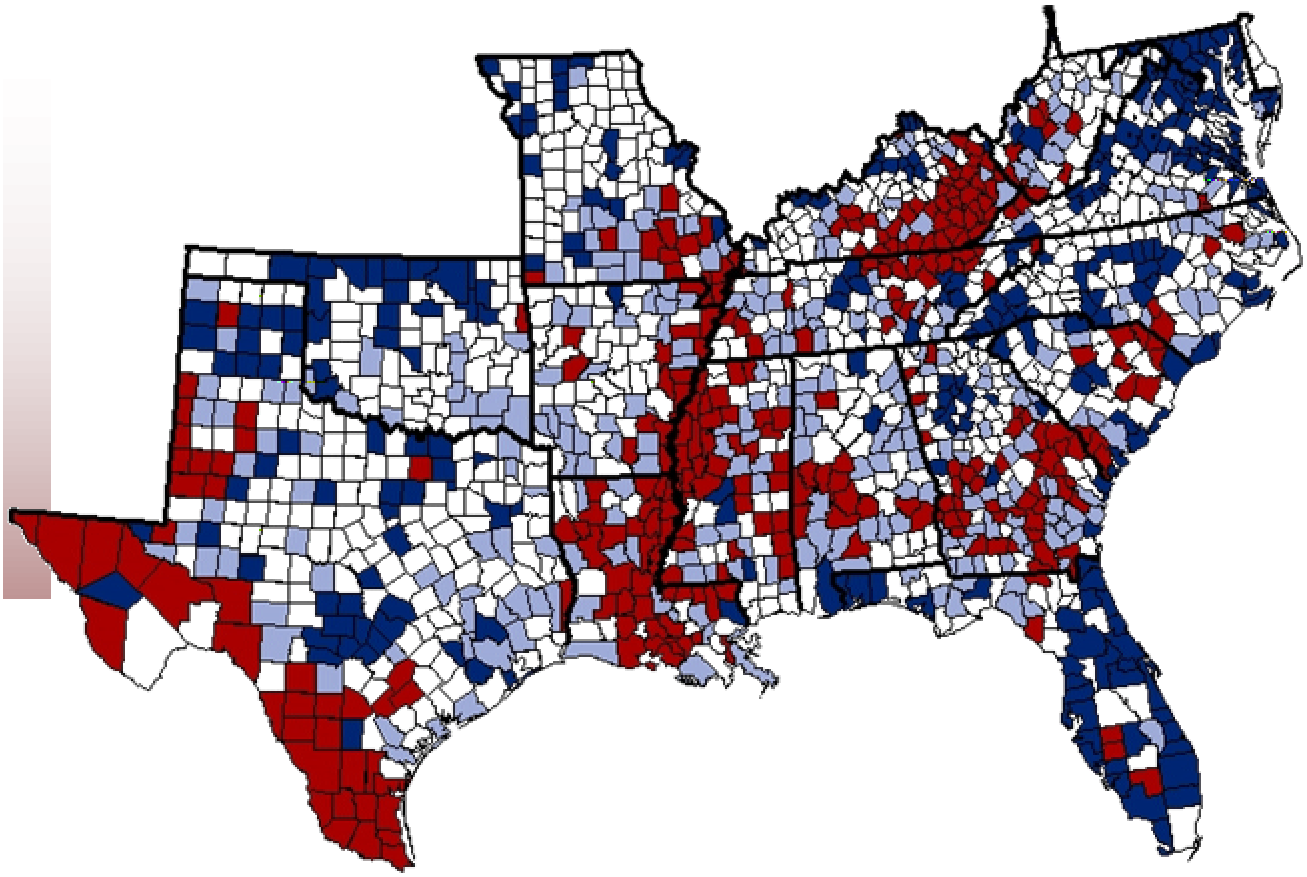
## Aligning Resources to Meet State Needs:

# Educational Needs Index

**Houston P. Davis, Ph.D.**
**Assistant V.P. for Academic Affairs & Assistant to the President**
**Austin Peay State University**

**Brian E. Noland, Ph.D.**
**Associate Executive Director**
**Tennessee Higher Education Commission**



# Aligning Resources to Meet State Needs: The Educational Needs Index

**Houston P. Davis, Ph.D.**
**Assistant V.P. for Academic Affairs & Assistant to the President**
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**AND**

**Brian E. Noland, Ph.D.**
**Associate Executive Director**
**Tennessee Higher Education Commission**

# Executive Summary

As states transition into an economic era in which their fortunes will be determined by the education and skill levels of their citizens, policymakers must remain diligent in their commitment to creating policies that promote the expansion of human capital. Given the strong correlation between educational attainment and the transmission of social and economic status, education is increasingly cited as a prime determinant of economic well-being. In order for states to compete in the human capital economy, they must raise both the knowledge and skill levels of their citizenry.

Through a focus on the benefits of education, this study demonstrates the causal link between educational attainment and social welfare at the county level in each of the sixteen member states of the Southern Governors' Association. The Educational Needs Index includes sixteen county-level variables that directly impact participation rates in postsecondary education, educational attainment levels, employment patterns, and socioeconomic status. The Index combines various statewide educational, demographic, and economic characteristics and allows for comparisons across all of the respective counties in the region.

To raise participation rates and educational attainment, policy makers need to have a broader understanding of the aspirations of potential students and the market forces influencing these citizens. The Educational Needs Index provides critical data that informs the educational planning process. The Index provides great insights for a variety of audiences, including elected officials, institutional presidents, K-12 leaders, educational researchers, planners, legislative staff, and policymakers.

## INTRODUCTION

The coming decade for higher education in the southern region is one of unprecedented opportunity coupled with significant leadership, policy, and fiscal challenges. With fiscal constraints and heightened demands for access to higher education displaying a near universal force, many states are working to rise to the challenge of creating a public agenda for higher education that balances state and campus priorities. In the coming decades, this public agenda must place a greater emphasis on the role of higher education in improving the quality of life for all citizens. Elected officials must challenge educational leaders to broaden their traditional missions and focus on both state-wide and institutional priorities.

American higher education has historically prided itself on the mission of providing universal access to all students. While this goal remains of paramount importance, states must begin to strategically re-examine their systems of higher education if they are to sustain the broader goals of the public agenda in the coming decades. With little prospect of future revenue growth from traditional sources, states must re-examine the panoply of programs, services, and operations offered by their systems of higher education. The ultimate outcome of this examination will shape the future ability of states to meet the demands presented by changing economic and social structures.

As states transition into an economic era in which their fortunes will be determined more by the human capital potential of their citizens than by physical capital and natural resources, policymakers will be forced to increasingly rely on their state systems of higher education. Given the strong correlation between educational attainment and the transmission of social and economic status, education is increasingly cited as a prime determinant of economic well-being. In order for states to compete in this Knowledge Economy, they must raise both the knowledge and skill levels of their citizenry. The growing awareness of the demands for an educated citizenry in a highly competitive, knowledge-based economy will put further pressure on state systems of secondary and post-secondary education.

The coming decades promise significant and profound changes for the southern states. Researchers (Conway, 2001; Callan, 2002) note that states must strategically re-examine their stock of educational and human capital if they are to remain competitive in the Knowledge Economy. Approximately 43 million baby-boomers with at least some college education will be over the age of 55 and retired or approaching retirement by 2020. At this time, according to the Bureau of Labor Statistics, the nation will face a prospective deficit of about 12 million workers with at least some college education. Over the past twenty years, the southern states have successfully relied upon a strategy of importing skilled workers to fill voids in the marketplace. While this policy has been somewhat successful, it is increasingly risky in a marketplace that is dependent upon highly trained, knowledge workers. The South must realize that its educational deficit leaves the region increasingly vulnerable to economic change (Conway, 2001). In order to remain competitive, the region must remain diligent in efforts to raise the educational attainment of its current residents.

## The Public Agenda

For the southern region to meet the challenges of the coming decades, elected officials should be encouraged to continue to make direct investments in their human capital infrastructure. States must work to frame a public agenda for education that brings together diverse constituencies to create a broad vision for state efforts to nurture their human capital potential. States must look to raise educational attainment levels, promote life-long learning, improve adult literacy rates, recruit and retain highly skilled knowledge workers, and enhance the research and development capacities of their colleges and universities.

States must also begin to strategically examine the means through which public funds are expended to address the goals of the public agenda. For example, states should make investments that enhance and promote access to higher education through expanded distance learning and site based instructional mediums. Rather than continuing to rely upon traditional main campus activities, states should empower the development of regional educational policies that promote the needs of local communities. Such policies should not only promote access, but foster institutional and local government cooperation and the enhancement of research and development projects that meet local needs.

As noted by the Southern Governors Association in a recent publication, *Seeds for the New Economy*, we live in an ever-changing, technology-based economy where human capital, not physical capital, drives economic activity. In order to remain competitive in this marketplace, states must remain diligent in their efforts to fund higher education. While the need for vibrant systems of higher education has never been more pronounced, state governments are increasingly limited in their ability to wholly fund campus operating requirements. The recession of the early 2000s presents a series of challenges for state systems of higher education. Because of declining state appropriations the immediate benefactors of academia, students and parents have become increasingly responsible for underwriting the recent growth in American higher education. While the pressure for access is boundless, state revenues have not been able to keep pace with access demands (Gumport et al, 1997; Hovey, 1999; Boyd, 2002; Boyd, 2003). As a result, access has increasingly come with a significant and ever rising sticker price.

During periods of economic downturn, higher education is one of the primary targets of state legislatures as a result of its perceived budgetary flexibility (Callan 2002; Conklin 2002). Because higher education is blessed and/or cursed by a variety of inequalities relative to other state entities, it has historically absorbed a disproportionate share of budget cuts as state economic conditions fluctuate. According to Callan (2002),

> "Relative to other state services and agencies, colleges and universities are seen as having fiscal and programmatic flexibility. Unlike other state agencies, many higher education institutions have separate budgets and reserves of their own. Campuses are also assumed to be able to absorb temporary fiscal adversity by translating budget cuts into payroll cuts, since many campuses are not bound by collective barraging agreements. Unlike state agencies whose programs have relative fixed spending levels (some set in statute, others mandated by court decisions and federal requirements) colleges and universities can save money by

> increasing class size and changing course offerings, and even by reducing enrollments" (pg. 4-5).

As a result of budget uncertainty and the propensity of higher education to translate funding shortcomings to students through consistently increasing tuition and fees, higher education may now be at the tipping point (Concklin, 2002).

Unstable state budgets have precipitated a reduction in fiscal and political support for higher education. When examining the nexus between the state house and the campus, one must remain cognizant that higher education is merely one of many sectors of state government that compete for expendable state tax revenues. Increases in demand for public services, demographic changes, growing populations, income growth, income redistribution, and risk aversion have fueled the growth in state expenditures over the last thirty years (Bonser, McGregor, & Oster, 1996). The challenge for policymakers is to create an environment that maximizes resources for higher education, while remaining publicly and politically responsible to increased fiscal pressures. States that fail to create this environment will be limited in their ability to compete in the Knowledge Economy.

**The Knowledge Economy and Higher Education**

For the majority of the past century, the South experienced significant and pronounced expansions in jobs and industries based in the region. From the coal mines of West Virginia to the textile plants of North Carolina, the region was at the heart of American productivity and economic expansion. However, as the region transitioned from the industrial economy of the 20th century to the Knowledge Economy of the 21st century, its historical success in the industrial economy has encouraged an over-reliance on heavy manufacturing, mining, and textile industries, as well as on industrial recruitment strategies centered upon manufacturing related industries. As a result, the region is vulnerable to technological change and global competition.

As recently noted in *The Mercedes and the Magnolia: Preparing the Southern Workforce for the Next Economy*:

> "The region has almost 400,000 fewer manufacturing jobs now than we did a decade ago. The remainder of the nation also lost manufacturing jobs during the period, but at less than half the South's rate of loss. Moreover, Southern jobs lost in manufacturing were not replaced one-for-one with jobs in the high-paying, technology-intensive sectors. The new jobs grown in the South tended to be in the lower-paying retail and service sectors. While the demands of the knowledge economy for educated, skilled, flexible workers have grown exponentially, the South has made only incremental progress in improving its workforce" (Clinton and Conway, 2002; pg. 6).

While the region has historically benefited from a favorable business climate, a diligent and inexpensive workforce, and strategic geography, significant weaknesses persist in the ability to meet the needs of the Knowledge Economy. Examples of these weaknesses include, a large percentage of the existing workforce is not oriented towards the Knowledge Economy; the region is relatively undereducated; and, there are severe cracks in the P-16 educational pipeline.

In the Knowledge Economy, education, technology, and learning are the keys to sustainable economic growth. More specifically, higher education provides the foundation for the Knowledge Economy. Higher education provides not only skills for employees, but a medium for advanced research and development activities on campuses across the region. In the old economy, fixed assets, financing, and labor were principal sources of competitive advantage for firms. But now, as markets fragment, technology accelerates, and competition comes from unexpected places, learning, creativity, and adaptation are becoming the principal sources of competitive advantage in many industries (Progressive Policy Institute, 1999). Enabling constant innovation has become the goal of states committed to prospering and should also become the goal of public policy in the Knowledge Economy. To fuel innovation, compete internationally, and continually improve the quality of life for the region, elected officials must make enduring investments in their educational infrastructure, thereby planting the seeds of the Knowledge Economy (Southern Governors' Association, 2001). In order to remain competitive, states must work to develop policies that incorporate human, intellectual, and financial capital.

As the South transitions into the Knowledge Economy, it is faced

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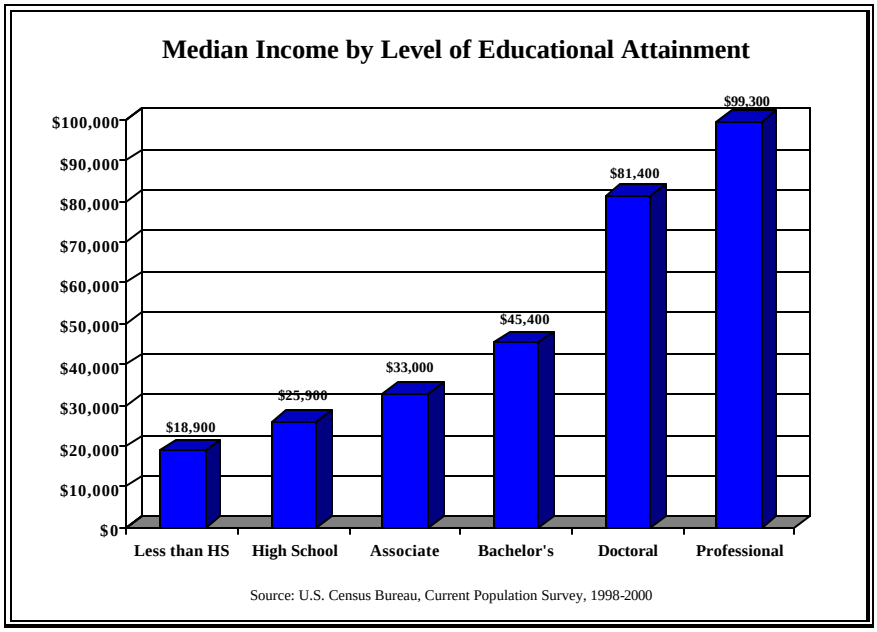
Further compounding the policy environment for poor performing states is the uneven distribution of educational capital. Educational capital varies widely across the southern region. In areas such as Northern Virginia, Atlanta, Nashville, and Austin, states have developed an intellectual and business nexus that is rivaled by few. However, much of the southern region looks nothing like these metropolitan areas. In over one-third of the counties in the region, less than 15 percent of the overall population aged 25 or older holds a bachelor's degree. Given that many of these counties are rural, they are presented with a variety of policy hurdles not faced by their urban neighbors. Given that many rural counties lack a diversified economy and are therefore dependent upon single industries, they are especially vulnerable to the forces of global competition in the Knowledge Economy. As a result, many rural counties are plagued by chronic unemployment and economic vulnerability.

This combination of political, economic, and demographic challenges only magnifies the importance of prudent policy analysis for elected officials and decision-makers as they attempt to address many of the problems facing the region. The South is in a national and global race to develop a knowledge-based economy that facilitates competition in the information marketplace. Given the critical role that higher education plays in human capital development, policymakers must remain responsive to the multiplicity of factors that impact the state's human capital potential. Governmental policies play a significant role in influencing the growth rate of economies across nations, states, and localities. Those communities that make prudent investments in education will have a healthier and wealthier citizenry than those that do not. Additionally, communities who invest in education will attract industry which relies upon a skilled labor force, further perpetuating development. Clearly, "the region's performance in the knowledge economy can rise no higher than the sum of the knowledge of its people. The level of educational achievement that we settle for establishes an absolute upper limit on our economic prosperity" (Clinton and Conway, 2002; p. 5).

**Human Capital Theory**

At the core of the Knowledge Economy is the realization that individuals and society derive economic benefits from human capital investments in their citizens. This investment feature differentiates human capital expenditures from consumptive expenditures, which provides few benefits beyond immediate gratification (Vaizey, 1962). Human capital theory is based on the notion that education increases the human capital stock of individuals, improves their productivity, leads to increases in economic productivity, and contributes to the general betterment of society (Denison, 1983; Walberg and Zhang, 1998). As Becker (1964) demonstrated, education is a powerful individual and social lever that government can manipulate to improve overall societal conditions. As nations and states evolve, the advancement of educational attainment has become an indispensable variable in policy efforts to make improvements in society as a whole. The availability of a quality education provides individuals with the cognitive skills and knowledge that can be transformed into improved social and economic conditions. Additionally, as the percentage of individuals with an advanced education increases, societies are provided with a greater degree of economic flexibility. This condition eventually becomes a self-fulfilling prophecy. Ultimately, the cycle of rising literacy rates increases educational opportunities, with a better prepared workforce demanding additional skills and training, which translates into the perpetual growth of the Knowledge Economy.

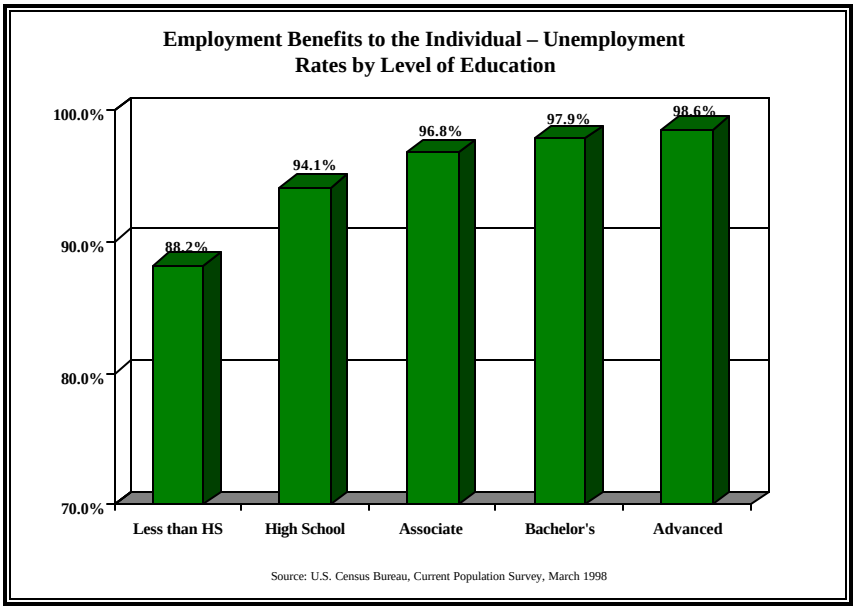
Applying human capital theory to micro-level variables, increased rates of educational attainment are closely correlated with increased earnings capacity. As evidenced by data obtained from the U.S Census Bureau, individual earnings capacity increases exponentially as educational attainment levels increase. Individuals with a bachelor's degree on average earn twice the salary of individuals who did not complete high school. This disparity is even more pronounced for those holding doctoral and professional degrees. As a result of the relationship between earnings potential and education, scholars (Curtin and Nelson, 1999) have found that increases in educational attainment levels result in increased income attainment capabilities for all social strata.




Several auxiliary benefits also accrue from raising educational attainment levels. Society as a whole benefits from a more educated populace in ways other than simple fiscal returns. Crime rates have been shown to decrease as the rate of education increases (Institute for Higher Education Policy, 1998). Education is also the driving force in preparing citizens for participation in political, economic, and social aspects of their communities (Putnam, 2000). Bachelor's degree holders are 40% more likely than high school graduates to be a member of a community organization, 28% more likely to vote in national or state elections, and 90% more likely to contribute money to a candidate or political cause associated with education attainment.

Human capital theorists have demonstrated that there is a direct inverse relationship between education and poverty. In their study of societal health and welfare conditions, Curtin and Nelson (1999) found that primary schooling is shown to reduce the incidence of poverty by 10% as compared to households whose heads have little or no formal education. Furthermore, one extra year of schooling decreases the probability of poverty by 1.6%. Educational attainment has also been shown to have a positive impact on the health and social well being of communities. For example, neonatal mortality rates decrease as educational attainment increases. States that invest in education will also realize decreased participation rates in social welfare programs (IHEP, 1998). Participation in programs such as welfare, unemployment benefits, food stamps, medical assistance, and housing assistance decreases as the level of education attended increases. In 1996, 25 to 34-year olds who completed 9-11 years of high school were three times more likely than high school graduates to receive income from public assistance programs (National Center for Educational Statistics, 1997). States that are able to increase educational attainment

levels will ultimately promote the health and welfare of their citizenry, thereby reducing societal mortality rates. (Gibson, 1996; Harrison, 1997).




Human capital investments have also been shown to have measurable micro-level effects. Goldsmith et al (1997) demonstrated that human capital positively impacts psychological capital and impacts individual productivity levels. Psychological capital includes factors such as perceptions of self, attitudes toward work, ethical orientations, and outlook on life. Psychological capital is also positively correlated with increased worker productivity and economic production capacity. Thus, not only does education produce skills, it produces well-being among the citizenry.

In sum, human capital theory clearly demonstrates that individuals and society derive direct benefits from educational investments. From increased earnings capacity to worker productivity and flexibility, education is the one variable that drives micro and macro level prosperity. States would be wise to develop initiatives that evaluate the human capital potential of their citizenry, thereby allowing them to target resources to maximize this critical resource.

## THE EDUCATIONAL NEEDS INDEX

The South is blessed with a rich mix of urban and rural areas that enhance the quality of life for the citizens of the region. However, the geographic and demographic diversity of the Southern region provides challenges to those planning for the delivery of private or public goods and services. As recently noted in *The State of the South 2002 – Shadows of the Sunbelt Revisited*, the "South is a region of complex diversity, with fast-growth and slow-growth communities, with high-tech metro areas and backwater rural counties, and with coastal towns having emerged as vacation havens and older cities searching for a place in the new economy" (MDC Inc., 2002; p. 4). While rural communities offer a variety of amenities to the social capital mix of states, they lack the resources and presence of a human capital base to attract Knowledge Economy industries. This deficiency is significant because the presence of a critical mass of highly educated and versatile workers is the engine that drives expansion in Knowledge Economy industries.

The recent emergence of a multifaceted and multidimensional South presents challenges for policymakers as they work to direct state resources toward future policy needs. Given the diversity of the region, policymakers must avoid "one size fits all" solutions to statewide policy

challenges. However, the ability of such individuals to make well informed policy decisions is limited by the lack of clear and consistent economic and education data at the local level.

To address this deficiency, the Southern Growth Policies Board has called for states to build and maintain a more complete demographic profile of their potential workforce. This profile should take into account educational, economic, and population growth factors to provide a clear picture of workforce opportunities and challenges. While elected officials often have a qualitative feel for the issues, they lack the quantitative data needed to educate and inform their decision-making process. The creation of a generalizable evaluative measure that informs the policymaking process would provide a powerful tool for the policy toolbox. This study attempts to answer the call of the Southern Growth Policies Board and presents a set of consistent data elements that allow policymakers to examine how their states, and the counties that comprise them, compare regionally.

The purpose of this research is to develop an econometric model that provides direct evidence of the link between education and social welfare in the southern region. Through a focus on the external benefits of education, it also demonstrates the direct returns states can expect from investments in higher education. This research is critical for southern states that historically trail the nation in their human capital capacities. Underdeveloped states must rely upon education to provide the cornerstone for all economic development activities. Only through increasing the educational attainment of its citizens can the region reach its full economic, social, and cultural potential.

Education and training are not just consumer goods that benefit those citizens who seek them out, but also represent wise investments by states in the human infrastructure that makes up their economies. It would be beneficial for policymakers to better understand those areas where a wise investment of time and fiscal resources could be made. Through the creation of the "Educational Needs Index," the citizens of counties whose economic and demographic characteristics indicate great need or demand for educational "investment" are identified to enable informed decisions about the resources required of the postsecondary enterprise.

Several core principles have guided the development of the Educational Needs Index. These foundational constructs are as follows:

- The realization that state budgets are increasingly challenged by poor revenue growth; therefore, scarce resources and increasing demands for accountability requires informed decisions in the allocation of those resources.
- The awareness that education and the economy are increasingly intertwined, as human capital becomes a centerpiece of the Knowledge Economy. Private sector success hinges as much upon "what you know" as much as it does upon "what you do."
- Educational planning indicators need to be linked with economic and demographic variables to provide a legitimate representation of the region's citizens. Education - whether elementary, secondary, or higher - does not function in a vacuum; therefore, decisions should not be made as if population patterns, labor dynamics, or income disparities do not exist.

- The demographic characteristics of the South are not uniform from region to region. The social and economic conditions of those citizens who live in Nashville or Atlanta are very different from the opportunities and challenges found in many of the rural areas of the region. Postsecondary education planning should not continue to act as if all regions will react in a similar manner to policy initiatives. The current use of only state-level indicators in the planning process limits the ability of policymakers to differentiate between the various regions of the South.

Through the creation of the Educational Needs Index, policymakers are presented with a clear and consistent reference tool that allows them to identify areas in need of educational investments, thereby providing for a more informed decision-making process regarding the distribution of scarce resources to support educational and economic policy initiatives.

## METHODOLOGY

The Education Needs Index includes county-level variables that directly impact participation rates in postsecondary education, educational attainment levels, employment patterns, and socioeconomic status. The indicators have been carefully chosen to allow for the inclusiveness of relevant economic and social indicators, to provide a manageable data pool, and to control for variable redundancy (Walberg and Zhang, 1998). The goal of this research is to combine various statewide educational, demographic, and economic characteristics and to provide comparisons of the region's 1538 counties. The index approach to determining the educational needs and demands of the diverse counties of the region allows for a variety of economic, educational, demographic, and social variables to be included in the analysis. The model employs sixteen unique indicators that are folded into five factor categories:

1. **Educational Factors** – Indicators assess the educational capacity of a county's adult population. Indicators measure the percent of the population with a high school degree, associate's degree, and bachelor's degree.
2. **Economic Factors** - Indicators assess the degree of economic challenges and opportunities facing counties. Indicators measure the percent of population in poverty, unemployment rates, and the existing earnings capacity of residents.
3. **Growth Factors** – Indicators assess the potential opportunities for population growth within a county. Indicators measure projected population growth, rate of historical population growth, ratio of births to deaths, and population aged 19 and younger as a percent of the total population.
4. **Market Factors** - Indicators assess the potential need for increased emphasis on a human capital approach to address changes in the educational and labor pools. Indicators measure the population aged 20-44, relative size of a county's minority population, and percent of jobs in the manufacturing sector.
5. **Population Factors** – Indicators serve as corrective variables to control for the population size of each respective county.

In all cases, the report relies on the most recently published statistics available, but because of the delays in publishing federal statistics, the data in some cases may be several years old.

Using the data selected, the authors form a generalized Educational Needs Index as follows:

$$I = f_1w_1 + f_2w_2 + f_3w_3 + f_4w_4 + f_5w_5$$

where,

I = a weighted index of the educational needs of a county relative to the other 1538 counties in the region as measured in z-score statistics;

$f_i^{\,i=1,2,\ldots,n}$ = the average z-scores of the individual indicators within each of five factors impacting measures of educational need;

$w_i^{\,i=1,2,\ldots,n}$ = the weight assigned to each factor. The sum of all $w_i$'s must equal one.

Each of the five factors ($f_i^{\,i=1,2,\ldots,n}$) representing data elements that gauge the educational needs of a county are constructed as follows:

$$f_i = (z_1 + z_2 + \ldots z_n) / n$$

where,

$f_i^{\,i=1,2,\ldots,n}$ = an average of the z-scores of those indicators within each factor category;

$z_i^{\,i=1,2,\ldots,n}$ = the county's z-score for each indicator of educational need.

For a detailed overview of the methodological and foundational components of the Educational Needs Index, see Davis and Noland (2003).

In short, averaging the z-scores of the factors' core indicators generates each factor (or category) score. These normalized values for each factor are then used in the overall "educational needs index" formula (summarized below) to determine a county's overall educational needs when relevant educational, economic, and demographic data are considered together. Data weights are assigned to each category according to the relative importance of each factor in gauging need, as well as demand, for post-secondary education and training.

**OVERALL EDUCATIONAL NEEDS INDEX =**

**(EDUC)(0.4) + (ECON)(0.25) + (GROWTH)(0.2) + (MARKET)(0.1) + (POP. ADJ.)(0.05)**

Collapsing sixteen indicators of educational need and demand into five factor categories (education, economic, growth, market, and population) allows each county to be profiled and an

overall index score to be calculated. Rankings in each of the five categories are possible as well as the rankings of the counties' overall index scores. This process provides the rankings of all counties relative to one another and further informs the debate of where scarce educational resources could be best applied.

## EDUCATION FACTORS

***Importance*** - Given the demands of the Knowledge Economy for a technical and educated workforce, economic performance will rise no higher than the educational and technical capacity of the region's citizenry. According to the U.S. Census Bureau, 77.7% of the persons 25 years old and older in the southern region hold a high school diploma or higher. This figure is almost three percentage points below the national average of 80.5%. The region lags even further behind the national average for bachelor's degree attainment, with only 22.4% of the population holding a bachelor's degree, compared to 24.4% of the U.S. population. Clearly, the South has significant progress to make if it is to remain competitive in the Knowledge Economy. The significance of this challenge cannot be overstated, because the level of educational achievement that the region settles for establishes an absolute upper limit for economic prosperity (Clinton and Conway, 2002).

***Data*** - This indicator assesses current educational conditions and degree attainment levels across the region at the county level. The educational indicators chosen for each county serve as the cornerstone of the Index; therefore, this category was assigned a weighting factor approximate to 40 percent of the overall index score. The specific indicators are as follows:

1. Percent of population aged 25 and older with a high school degree
2. Percent of population aged 25 and older with a bachelor's degree
3. Percent of population aged 25 to 64 with an associate's degree

***Rankings*** – The following chart provides an overview of those counties that comprise the upper and lower bounds of the 1538 counties in the region. The factor score assimilates each of the respective variables into one generalizable indicator of educational performance.

**Education Factors - Least Critical 20**

| County | State | Factor Score |
|---|---|---|
| Falls Church City | VA | -2.97 |
| Alachua | FL | -2.75 |
| Howard | MD | -2.70 |
| Loudoun | VA | -2.62 |
| Leon | FL | -2.58 |
| Fairfax | VA | -2.58 |
| Wake | NC | -2.54 |
| Collin | TX | -2.50 |
| Montgomery | MD | -2.48 |
| Orange | NC | -2.41 |
| Arlington | VA | -2.37 |
| York | VA | -2.36 |
| Seminole | FL | -2.30 |
| Fayette | GA | -2.28 |
| Fairfax City | VA | -2.26 |
| Alexandria City | VA | -2.25 |
| King | TX | -2.22 |
| Albemarle | VA | -2.21 |
| James City | VA | -2.14 |
| Williamsburg City | VA | -2.11 |

**Education Factors - Most Critical 20**

| County | State | Factor Score |
|---|---|---|
| Starr | TX | 2.51 |
| McDowell | WV | 1.96 |
| Reeves | TX | 1.94 |
| Clay | KY | 1.91 |
| Willacy | TX | 1.87 |
| Brooks | TX | 1.86 |
| Magoffin | KY | 1.82 |
| La Salle | TX | 1.79 |
| West Feliciana | LA | 1.75 |
| Jackson | KY | 1.73 |
| Maverick | TX | 1.72 |
| Hudspeth | TX | 1.71 |
| Zapata | TX | 1.71 |
| Lake | TN | 1.67 |
| Knox | KY | 1.65 |
| Zavala | TX | 1.63 |
| Lee | KY | 1.62 |
| Grundy | TN | 1.61 |
| Clay | TN | 1.60 |
| Menifee | KY | 1.60 |

## ECONOMIC FACTORS

***Importance*** – While the Southern region experienced pronounced growth during the later half of the twentieth century, the region continues to trail the rest of the nation on critical measures of individual wealth and poverty. In 2000, per capita income in the South was ten percent below the national average. For several states in the region, this gap was as large as thirty percent. Additionally, systemic poverty continues to exist across the region. Of the 1538 counties in the South, 28% have witnessed poverty rates in excess twenty percent in every decennial census since 1960. If the region is to ever realize its potential in the Knowledge Economy, great strides must be made to ensure that all citizens have the opportunity to realize improved standards of living.

***Data*** **-** This factor category includes indicators of labor and income levels in each of the 1538 counties. Within this category, the data attempts to gauge economic variables and compare conditions relative to the rest of the state. When averaged together, the economic indicators represent 30 percent of the overall Index. The specific factor categories include:

1. Average unemployment over a 24 month time period (Jan. 2000 – Dec. 2001)
2. Percent of population in poverty
3. Median household income
4. Per capita income

***Rankings*** **-** The following chart provides an overview of those counties that comprise the upper and lower bounds of the 1538 counties in the region. The factor score assimilates each of the respective variables into one generalizable indicator of economic performance.

| Economic Factors - Least Critical 20 | | | Economic Factors - Most Critical 20 | | |
|---|---|---|---|---|---|
| **County** | **State** | **Factor Score** | **County** | **State** | **Factor Score** |
| Fairfax | VA | -3.72 | Starr | TX | 3.99 |
| Falls Church City | VA | -3.71 | Maverick | TX | 3.13 |
| Loudoun | VA | -3.45 | Holmes | MS | 3.01 |
| Montgomery | MD | -3.20 | Zavala | TX | 2.94 |
| Howard | MD | -3.14 | Presidio | TX | 2.92 |
| Arlington | VA | -3.02 | East Carroll | LA | 2.74 |
| Williamson | TN | -2.97 | Wilcox | AL | 2.61 |
| Collin | TX | -2.95 | Jefferson | MS | 2.60 |
| Fayette | GA | -2.93 | Willacy | TX | 2.36 |
| Fairfax City | VA | -2.80 | Sharkey | MS | 2.33 |
| Forsyth | GA | -2.73 | Issaquena | MS | 2.32 |
| Alexandria City | VA | -2.72 | Perry | AL | 2.31 |
| Rockwall | TX | -2.56 | Magoffin | KY | 2.28 |
| Fauquier | VA | -2.52 | Humphreys | MS | 2.23 |
| Stafford | VA | -2.43 | McDowell | WV | 2.21 |
| Prince William | VA | -2.40 | Sumter | AL | 2.13 |
| Calvert | MD | -2.37 | Hidalgo | TX | 2.13 |
| Goochland | VA | -2.35 | Owsley | KY | 2.13 |
| Oldham | KY | -2.34 | Madison | LA | 2.10 |
| Anne Arundel | MD | -2.33 | Dimmit | TX | 2.06 |

1. Projected population growth from 2000-2010
2. Rate of population growth from 1990-2000
3. Ratio of births to deaths from 1990-1999
4. Population aged 0-19 as a percent of overall population

***Rankings -*** The following chart provides an overview of those counties that comprise the upper and lower bounds of the 1538 counties in the region. The factor score assimilates each of the respective variables into one generalizable indicator of growth at the county level.

| Growth Factors - Least Critical 20 | | |
|---|---|---|
| **County** | **State** | **Factor Score** |
| Loving | TX | -1.97 |
| Kent | TX | -1.19 |
| Alfalfa | OK | -1.18 |
| Highland | VA | -1.18 |
| Greer | OK | -1.12 |
| Clifton Forge City | VA | -1.11 |
| Covington City | VA | -1.07 |
| Dickens | TX | -1.07 |
| Sarasota | FL | -1.06 |
| Summers | WV | -1.06 |
| Lancaster | VA | -1.05 |
| Cottle | TX | -1.03 |
| Bristol City | VA | -1.02 |
| McDowell | WV | -1.00 |
| Stonewall | TX | -1.00 |
| Monroe | FL | -1.00 |
| Lyon | KY | -0.97 |
| Charlotte | FL | -0.96 |
| Hancock | WV | -0.96 |
| Hickman | KY | -0.95 |

| Growth Factors - Most Critical 20 | | |
|---|---|---|
| **County** | **State** | **Factor Score** |
| Denton | TX | 7.58 |
| Jefferson | LA | 4.24 |
| Starr | TX | 3.36 |
| Webb | TX | 3.25 |
| Hidalgo | TX | 2.96 |
| Loudoun | VA | 2.76 |
| Forsyth | GA | 2.69 |
| Liberty | GA | 2.64 |
| Collin | TX | 2.62 |
| Maverick | TX | 2.59 |
| Paulding | GA | 2.54 |
| Chattahoochee | GA | 2.52 |
| Manassas Park City | VA | 2.39 |
| Henry | GA | 2.38 |
| Rapides | LA | 2.31 |
| Camden | GA | 2.26 |
| Long | GA | 2.22 |
| Fort Bend | TX | 2.22 |
| Gwinnett | GA | 2.20 |
| Williamson | TX | 2.16 |

## MARKET FACTORS

***Importance*** – This category focuses on the short-term needs of the counties and measures current market conditions for postsecondary intervention. Many counties are currently experiencing significant population and economic changes and expect these changes to continue over the next decade. Particularly, the South's reliance on manufacturing-based industries has made the region vulnerable to changes brought on by increasing global competition in the information age. The region has almost 400,000 fewer manufacturing jobs than it did over decade ago (Clinton and Conway, 2002). Further compounding the situation is the fact that a majority of the new jobs that replace these were in low-paying retailer service sectors. This explains why many states such as Tennessee experienced increases in new job starts but actual decreases in per capita income during a later half of the 1990s.

In addition to changing economic conditions, the region is undergoing significant demographic changes. First, the face of the South is older. The number of adults aged 20 to 44 is expected to decline by half a million by 2010 (MDC Inc., 2002). Second, the face of the South is increasingly multicultural. Over the past decade, a surging Southern economy has resulted in the rapid integration of over one million individuals from other parts the United States, many of them Hispanic or Latino/Latina. The future competitiveness of the region will be influenced by the ability of states to assimilate these citizens into the educational marketplace. Given the historically low levels of educational attainment for Hispanic and Latino/Latina adults, this assimilation will become an increasingly important policy priority for many states in the region.

***Data –*** This indicator assesses the relative strength of the immediate market for higher education. Within this category, the data examines current population conditions for higher education's target demographic, citizens aged 20-44. The data also control for the growing educational needs of a diverse population. Finally, the data realize that the region's heavy reliance upon manufacturing leaves it vulnerable to economic change, and displaced workers will present an immediate market for re-training. When taken as a whole, these market indicators represent 10 percent of a county's overall educational needs index score. The data for this factor are as follows:

1. Population age 20-44 as percent of overall population
2. Minorities as a percent of population (includes African American and Hispanic)
3. Manufacturing employment as a percent of industry

***Rankings -*** The following chart provides an overview of those counties that comprise the upper and lower bounds of the 1538 counties in the region. The factor score assimilates each of the respective variables into one generalizable indicator of markets for education at the county level.

**Market Factors - Least Critical 20**

| County | State | Factor Score |
|---|---|---|
| Charlotte | FL | -1.76 |
| Llano | TX | -1.73 |
| Citrus | FL | -1.71 |
| Ellis | OK | -1.58 |
| Kent | TX | -1.54 |
| Hernando | FL | -1.48 |
| Baylor | TX | -1.46 |
| Hickory | MO | -1.45 |
| Towns | GA | -1.42 |
| Mills | TX | -1.42 |
| Dewey | OK | -1.40 |
| Stonewall | TX | -1.39 |
| Donley | TX | -1.39 |
| Roberts | TX | -1.39 |
| Sarasota | FL | -1.38 |
| Harper | OK | -1.38 |
| Highlands | FL | -1.36 |
| Coke | TX | -1.35 |
| Mason | TX | -1.33 |
| Roger Mills | OK | -1.32 |

**Market Factors - Most Critical 20**

| County | State | Factor Score |
|---|---|---|
| Chattahoochee | GA | 1.93 |
| Hancock | GA | 1.62 |
| Greensville | VA | 1.57 |
| Chickasaw | MS | 1.48 |
| West Feliciana | LA | 1.44 |
| Marlboro | SC | 1.42 |
| Claiborne | MS | 1.42 |
| Calhoun | GA | 1.42 |
| Noxubee | MS | 1.39 |
| Sunflower | MS | 1.39 |
| Jefferson | MS | 1.36 |
| Sussex | VA | 1.35 |
| Hoke | NC | 1.35 |
| Whitfield | GA | 1.35 |
| Bullock | AL | 1.32 |
| Lauderdale | TN | 1.31 |
| Clarke | GA | 1.30 |
| Liberty | GA | 1.30 |
| Allendale | SC | 1.30 |
| Lee | SC | 1.29 |

## POPULATION ADJUSTMENT FACTORS

This factor adjusts each county overall index ranking based upon relative population. Two measures – the percent of the region's 0-17 population and the percent of the region's 18-44 population – increase the scores of those counties with a "critical mass" of citizens at the age most likely to participate in postsecondary training. If two counties reflect rather high overall Index scores but there is a 10,000-citizen difference between them, then the larger county shows not only a need for educational intervention but also a larger base of citizens to offer new initiatives.

# RESULTS

The Educational Needs Index (ENI) presents the opportunity for county-level comparisons for each of the variables and provides insight to the relative strengths and weaknesses of the counties in the southern region. By isolating the current and future pressures on educational, economic, and social services, elected officials and policymakers aiming to position their state or region as a central player in the Knowledge Economy can utilize the Index analysis as a reliable and standardized measure of their position relative to competitors. The Index presents an opportunity for policymakers to examine the performance of counties and regions based upon their overall Index score, or upon the various scores of the factors that comprise the Index. For example, one can compare the relative market needs of their county to counties of similar size to quickly assess future needs for educational investments. This flexibility presents policymakers with a powerful yet simple tool to assess the strengths and weaknesses of states, counties, and regions.

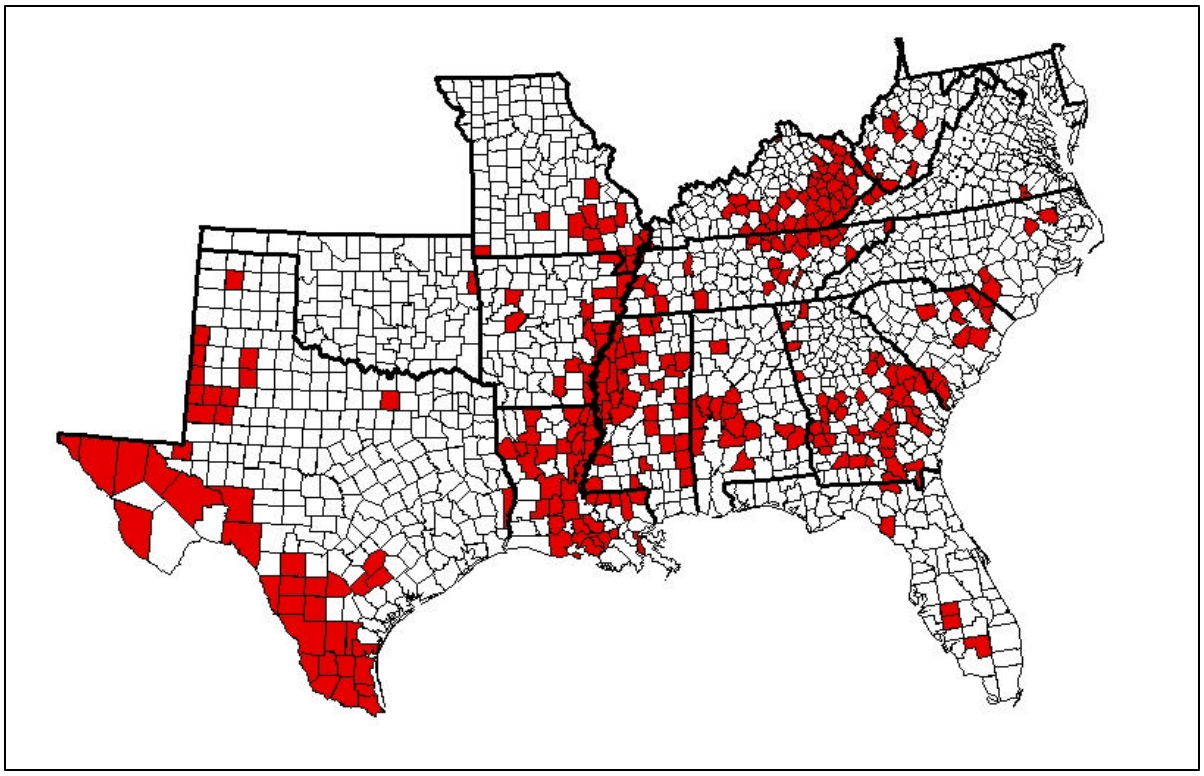
For instance, it is often difficult to make county-to-county comparisons with respect to both "median income data" and the "percent of population with a high school diploma," but one can easily discern from the Index which indicator or factor reveals the greatest degree of variance from the mean. When variables are measured in different units, a z-score conversion places the variables on a common scale, thereby allowing this comparison of individual indicators or factor categories. When interpreting the Index results, the reader should note that those counties which rank as "most critical" counties have positive Index scores and those ranking as "least critical" have negative Index scores. Additionally, the average score is always 0 and the standard deviation is 1. In the final Index calculations, Falls Church City, Virginia had an overall Index score of -2.28 and Star County, Texas had an overall score of 2.73. These two counties form the "bookends" of the ENI, with the other 1,536 counties having Index scores between these two figures.

When examining the region as a whole, several states are disproportionately represented in the 300 most critical counties in the South. Georgia (28%), Kentucky (37%), Louisiana (55%), Mississippi (43%), South Carolina (24%), and Tennessee (27%) all have a higher than expected number of counties included in the most critical 300. Conversely, Florida (51%), Maryland (75%), North Carolina (30%), Oklahoma (26%) and Virginia (47%) have a larger than expected number of counties in the upper strata of the Index. While this distribution is not an indictment of low performing states or regions, it does imply that some are better prepared for the challenges of the Knowledge Economy than others. Those states with a disproportionate share

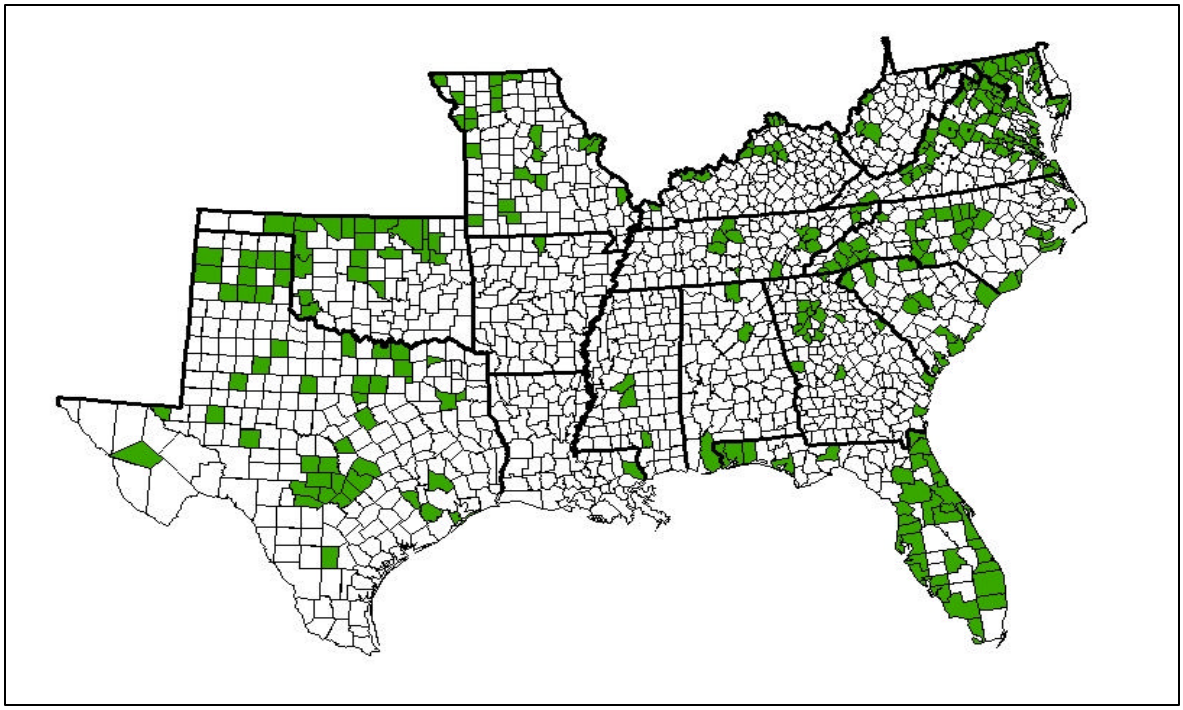
of counties in the upper strata of the Index tend to have higher levels of educational attainment and income, a lower percentage of manufacturing related business and industry, and a lower number of families in poverty. The following chart provides a general overview of state conditions.

| Analysis of 1,538 Counties in the South - Most/Least Critical (Quintiles) | | | | | |
|---|---|---|---|---|---|
| | # of Counties in State | # in 300 Most Critical | % in 300 Most Critical | # in 300 Least Critical | % in 300 Least Critical |
| **Alabama** | 67 | 13 | 19% | 3 | 4% |
| **Arkansas** | 75 | 14 | 19% | 1 | 1% |
| **Delaware** | 3 | 0 | 0% | 0 | 0% |
| **Florida** | 67 | 5 | 7% | 34 | **51%** |
| **Georgia** | 159 | 44 | **28%** | 17 | 11% |
| **Kentucky** | 120 | 44 | **37%** | 14 | 12% |
| **Louisiana** | 64 | 35 | **55%** | 1 | 2% |
| **Maryland** | 24 | 0 | 0% | 18 | **75%** |
| **Missouri** | 115 | 13 | 11% | 20 | 17% |
| **Mississippi** | 82 | 35 | **43%** | 3 | 4% |
| **North Carolina** | 100 | 4 | 4% | 30 | **30%** |
| **Oklahoma** | 77 | 1 | 1% | 20 | **26%** |
| **South Carolina** | 46 | 11 | **24%** | 9 | 20% |
| **Tennessee** | 95 | 26 | **27%** | 12 | 13% |
| **Texas** | 254 | 44 | 17% | 47 | 19% |
| **Virginia** | 135 | 3 | 2% | 64 | **47%** |
| **West Virginia** | 55 | 8 | 15% | 7 | 13% |

In the map of the Southeast that follows on page 18, those counties comprising the 300 most critical as measured by the ENI develop a cluster pattern across several regions of the South. Using a very broad level of analysis, these counties reflect low educational attainment levels and poor economic conditions relative to their peers. However unlike many of their peers, most of the counties identified as the 300 most critical by the ENI exhibit conditions that not only place pressures on the educational infrastructure, but potentially challenge state and civic leaders for the foreseeable future in a variety of government program and service areas. As a group, these 300 counties are locations whose educational and economic conditions are exacerbated by the fact that they have relatively strong population growth, tend to be younger when compared to their county peers, have a high reliance upon manufacturing jobs for employment options, and have a significant portion of their population between the ages of 18 and 44. Analysis of most of the 300 counties deemed to have critical levels of educational needs leads to policy opportunities for workforce training, early childhood intervention programs, initiatives to promote postsecondary attendance, adult literacy efforts, partnerships between higher education and local K-12 systems, and an emphasis on vocational education, rather than a dire need for an immediate influx of baccalaureate or graduate degrees.



On the other end of the Index rankings are those counties whose demographics and ENI scores reflect less critical needs for education and human development relative to their peers in the southern states. Perhaps most telling about this group is that they are not just dominated by urban population centers. Of these 300 counties, 89 are below 30,000 in total population, with many in the population range of 8,000-15,000 residents. This demonstrates one of the powerful characteristics of the Index – an ability to highlight those counties whose growth patterns, aging characteristics, and relatively sound economic basis does not signal an immediate cause for concern for state policymakers. Although all counties have room for improvement, if faced with scarce resources, these communities showing less pressure for educational and human development perhaps do not take on the significance of other counties displaying pronounced immediate and future needs for educational investments.



Those counties that score highly on the Educational Needs Index tend to be counties that are highly involved in the Knowledge Economy. A significant portion of high performing counties are concentrated in the Washington, D.C. metropolitan area. This region boasts a concentration of information technology and high paying service sector industries supported by world-class universities such as Georgetown, the University of Virginia, the University of Maryland, and Johns Hopkins University. Additionally, the region derives significant strength from the concentration of government services and beltway related industries. Other high performing counties include those in the Atlanta, Austin, Charlotte, Nashville, Orlando, and Tampa metropolitan areas. These counties have more in common than just being urban areas. They tend to have a high concentration of managers, professionals, and college-educated residents working in knowledge jobs. With one or two exceptions, their manufacturers also tend to be more geared toward knowledge development and transmission. Additionally, most have a solid "innovation infrastructure" that fosters and supports technological innovation. Many also have high levels of domestic immigration of highly mobile, highly skilled knowledge workers seeking good employment opportunities coupled with a good quality of life.

Conversely, those counties that perform poorly on the Educational Needs Index tend to be most firmly rooted in the old economy, are growing rapidly, and suffer from chronic levels of under-education. These counties are also historically dependent upon natural resources or manufacturing sector industries. While lower-ranking counties face challenges, they can also take advantage of new opportunities. The information revolution provides both companies and individuals with a large degree of geographical freedom and mobility, thereby making it possible for industries to form in rural counties. By relying upon their strengths (less traffic, inexpensive land, high quality of living) rural communities can attract highly mobile knowledge jobs.

## CONCLUSIONS

Education and training are accepted as the primary paths for investing in human capital, also referred to as "people potential." Growth economists have stated that human capital presently contributes more than physical capital (technology, infrastructure, etc.) to economic development and expansion. Business and industry primarily rely upon two sources to boost the state economy – new entrants to the workforce and improvements in the current workforce. As the South begins to examine its place in the Knowledge Economy, policymakers must remain diligent in their commitment to creating policies that promote the facilitation of expanding the human capital quotient of all citizens. States must avoid quick fix opportunities and the continued reliance upon manufacturing industries. Policymakers must remember that manufacturing requires more than hard work. In order for manufacturing jobs to have an opportunity to grow and prosper in the information age, workers must be provided with increased access to information technology rather than continuing to rely upon an undereducated and inexpensive workforce in the South. Southern states must implement policies to rectify the human capital challenges confronting them in the coming decades. These include keeping more college graduated children in state, identifying sectors were potential workers are being lost and/or displaced, examining the workforce needs of the business for sector, tailoring academic programs to industry requirements, increasing adult literacy and lifelong learning, and developing strategies to attract college graduates into the region.

States must work diligently to bring together political, educational, and civic constituencies to develop and frame consensus around many of the issues detailed above. These issues of regional and statewide importance should eventually frame the policy focus and public agenda for higher education. Researchers (Rowley and Freshwater, 1999; MDC Inc. 2002; Progressive Policy Institute, 2002; Bailey and Preston, 2003; Davis and Noland, 2003) have demonstrated that higher education must play a larger role in state and regional policy initiatives if the South is to move forward in the coming decades. For far too long, higher education has existed in a vacuum, concerned more with institutional goals than serving the broader needs of their regions. This situation must be reversed if states are to remain competitive in the Knowledge Economy.

Just as higher education needs to re-examine its role in the Knowledge Economy, states must strive to continually strengthen their educational infrastructure. States should re-examine their mix of state funding priorities and work to increase higher education funding, remaining ever mindful that higher education is the engine that drives the Knowledge Economy. In return, higher education must be held accountable to ensure that the public agenda is nurtured and promoted. If additional funds are allocated to higher education to help it achieve the goals of the public agenda, these funds could be tied to specific goals such as:

- Creating regional clusters of higher education institutions, business, and industry that meet the regional needs of local communities
- Increasing research related to key industrial clusters identified in the public agenda
- Meeting the workforce training needs of their regional clusters
- Providing technical assistance to companies in their regional clusters

- Obtaining increased levels of federal and industry based funding for research and development
- Increasing the transfer of technologies to companies across both states and regions
- Increasing the overall educational attainment levels of counties in their region
- Improving P-16 outreach to ensure that all students are prepared for post-secondary education
- Improving both the quality of teacher education programs and the quantity of graduates produced by these programs
- Increasing the number of graduates produced in high demand areas such as engineering, sciences and technology, allied health, and nursing

The support and maintenance of such goals inherent to the public agenda will require a clear and consistent commitment from all constituencies. The mission reclassification for many institutions of higher education will not be a simple task, and will not be without critics. While higher education has successfully nurtured goals such as universal student access and institutional improvement, it has not historically been active in economic and community development. If states, regions, and counties are to prosper in the Knowledge Economy, higher education must strive to make the goals of the public agenda part of its central mission.

States who successfully position themselves through the public agenda to modernize the competitive capacity of their state infrastructures will also re-examine auxiliary issues such as:

- Redefining their state policy priorities to ensure that state revenues are directed toward policies and programs that promote growth in the Knowledge Economy
- Facilitating the development of regional cooperatives between business and industry, educational institutions, and civic groups to promote the goals of the public agenda
- Creating regional development funds that nurture the growth of locally developed and owned small businesses
- Creating economic and community development programs that attract Knowledge Economy business and industry, rather than continuing to focus such efforts on large scale manufacturing industries
- Increasing the use of off-campus sites and satellite centers that will enable post-secondary educational products to be "taken to the people"
- Increasing funds to critical workforce shortage areas such as science/engineering and allied health/nursing, and developing and promoting programs that encourage more students to major in these fields and stay in-state after graduation
- Examining their state merit aid programs and targeting funds to ensure that more of the best and brightest students remain in-state to pursue post-secondary education
- Increasing funds for need-based aid programs to ensure that more students have the opportunity to attend post-secondary education

In order to ensure that all citizens are able to benefit from investments in the Knowledge Economy, states must examine their panoply of public policies and develop strategies that encourage regional partnerships that maximize cooperation among business and industry, educational institutions, and civic organizations. States must also move away from their traditional focus on luring large scale manufacturing industries to the region (MDC Inc., 2002). While the Southern region has done an excellent job of recruiting assembly operations, unfortunately the headquarters and research and development operations remain outside of the region. For the South to prosper in the Knowledge Economy, all three elements must become the centerpiece of economic and community development strategies. For the South to flourish in the Knowledge Economy, it must foster the creation of new knowledge in an entrepreneurial culture through public-private partnerships that are linked with higher education.

This research answers the call of the Southern Growth Policies Board to provide a nexus between the scholarly and policy worlds. This model incorporates educational, economic, growth, and market variables in each of the 1538 counties of the South. The research provides practical, concise, and generalizable results that can be used to better inform planning for delivery of all levels of education to the citizens of the region and will provide great insights for a variety of audiences, including institutional presidents, governors, legislators, educators, planners, and policymakers. Finally, by employing a broad set of economic and demographic indicators, the Educational Needs Index answers the call to bring the best of what is known about human capital from a variety of disciplines and focuses policy debate on their combined relevance to crucial educational and economic decisions. It is the sincere hope of the authors of this study that the results will be used to better inform the policy development process and to clearly articulate the importance of higher education for the future of the region.

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