



BRENAU ENVIRONMENTAL SCANNING REPORT

An essential aspect of strategic planning is the analysis of the social, technological, economic, environmental and political conditions surrounding an institution. By taking stock of emerging threats and opportunities, decision makers can better position an organization to achieve its academic, civic and societal objectives.

PURPOSE AND PROCESS

Definition

The purpose of an environmental scan is to support and inform decision making – both tactical and strategic. “Fahey and Narayanan 1(1986) suggest that an effective environmental scanning program should enable decision makers to understand current and potential changes taking place in their institutions' external environments. Scanning provides strategic intelligence useful in determining organizational strategies. The consequences of this activity include fostering: an understanding of the effects of change on organizations, better forecasting skills, and enhanced expectations of change to bear on decision-making. A number of writers on educational planning encourage college and university decision makers to use environmental scanning as part of their strategic planning models.” <http://horizon.unc.edu/courses/papers/enviroscan/>

Most environmental scans review things like political climate (e.g., as it impacts research funding); demographics; faculty and other human resources [especially as related to motivations]; and even things like “mission creep.” Good environmental scanning goes beyond even this, and

- includes those factors which are conventional to most environmental scanning efforts.
- looks beyond more reflexive/reactive factors and considers also those factors more related to the best interests of society, current students, the economy, nature, etc.
- digs deep to consider the motivations of human resources and incentives such as scholarship opportunities, prestige, etc. While topics like “intrinsic motivation” of workforce may seem inappropriate, Higher Education is a labor-intensive industry. Consideration of what motivates current and potential faculty and staff may be essential to ensuring the institution stays strong.

Environmental scanning has become a common practice in higher education, especially among larger institutions. (For a sample list, please see endnote i).

It is helpful to understand the context of environmental scanning in an institution’s strategic planning process. Institutions are chartered to carry out social missions and are not simply reactive enterprises focused on economic survival. Indeed, environmental

¹ Fahey, L, & Narayanan, V.K (1986). *Macroenvironmental analysis for strategic management*. St. Paul, MN: West

scanning is not an end-all for Strategic Planning. Its role may best be thought of in combination with Internal Analysis and University Mission. For example, this image portrays one way of understanding Environmental Scanning in context:

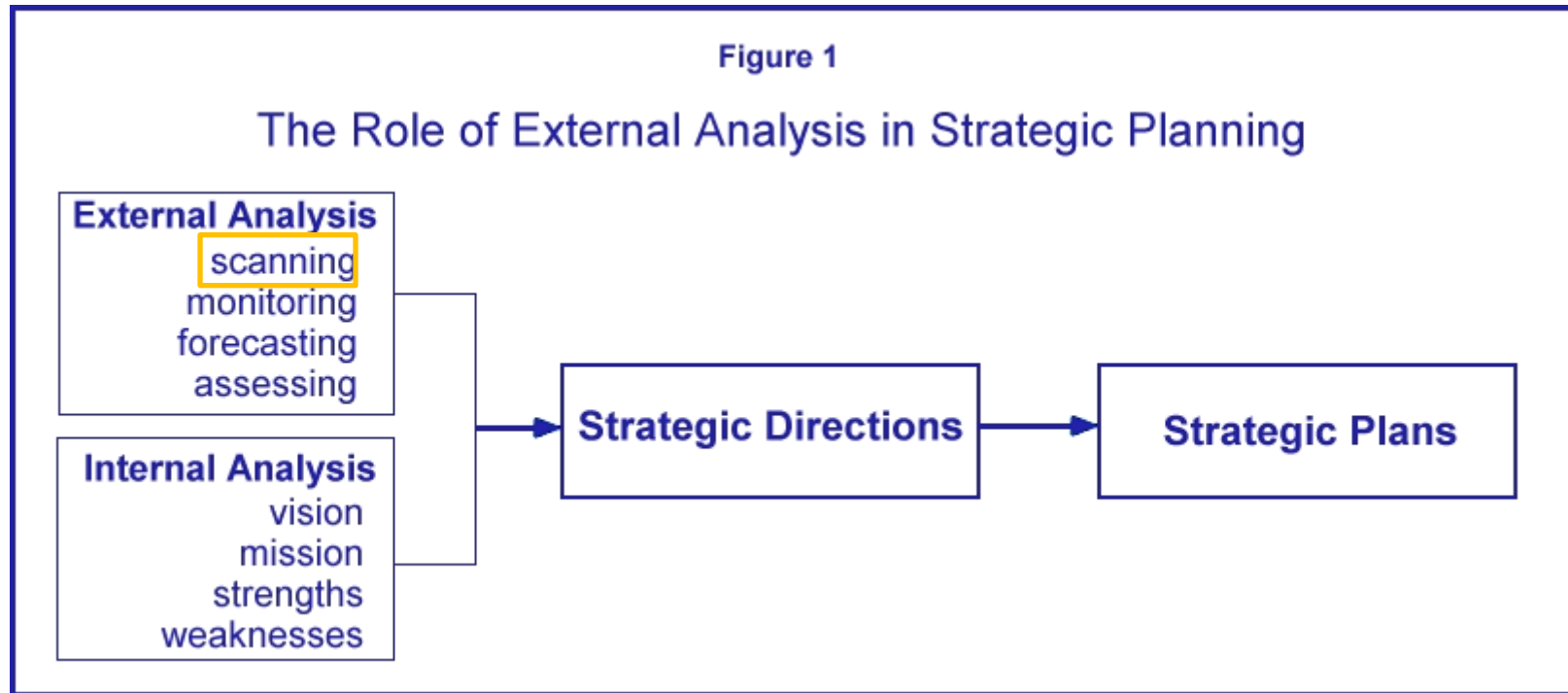


Image taken from <http://horizon.unc.edu/courses/papers/enviroscan/> Environmental Scanning, By James L. Morrison

Environmental scanning is said to “promote a future orientation in the thinking of management and staff.” An Environmental Scanning “science” has developed with a common language and several canons of categorization for purposes of collecting and organizing a thorough range of data that is pertinent to tactical and strategic decision making. Such categories make sure that scanning is systematic, lessens the randomness, and provides data most germane to decisions. The schema used here follows a popular convention: **Society, Technology, Economy, (Natural) Environment, and Politics** (STEEP.)

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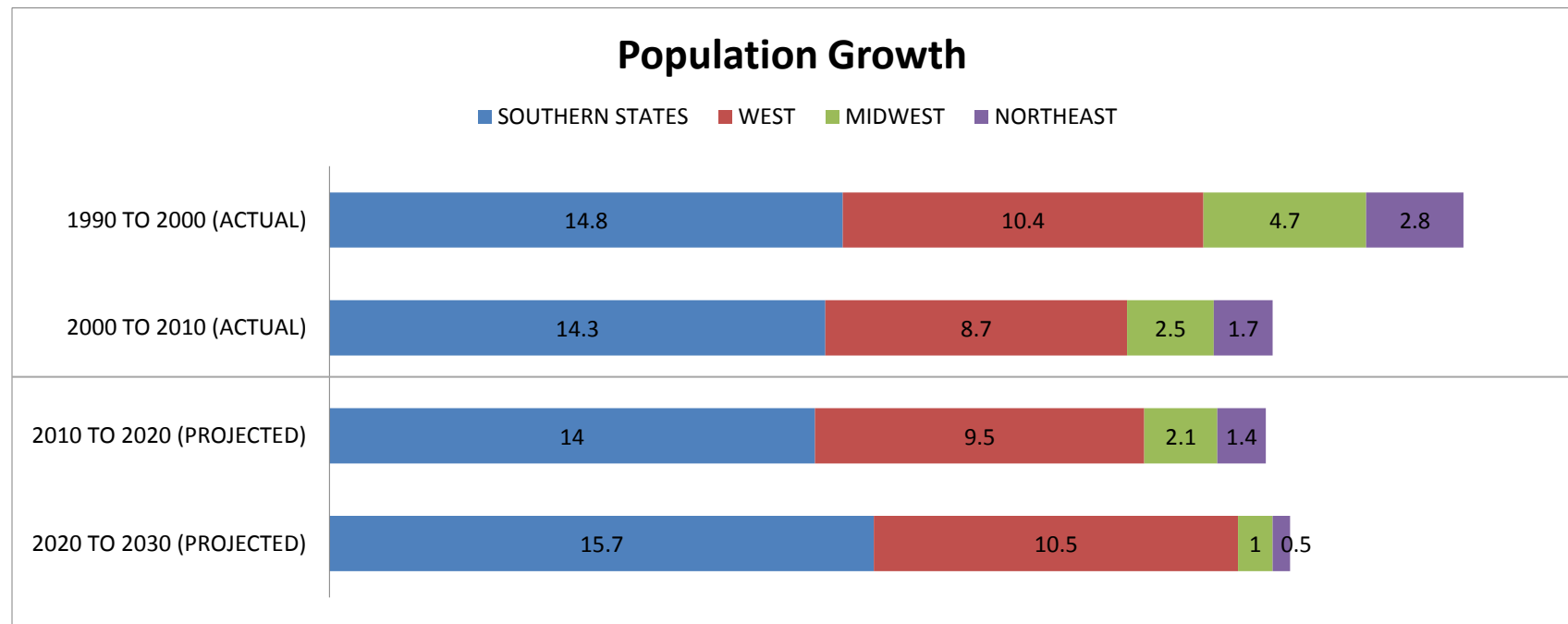
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SOCIAL

Population

Southern statesⁱⁱ

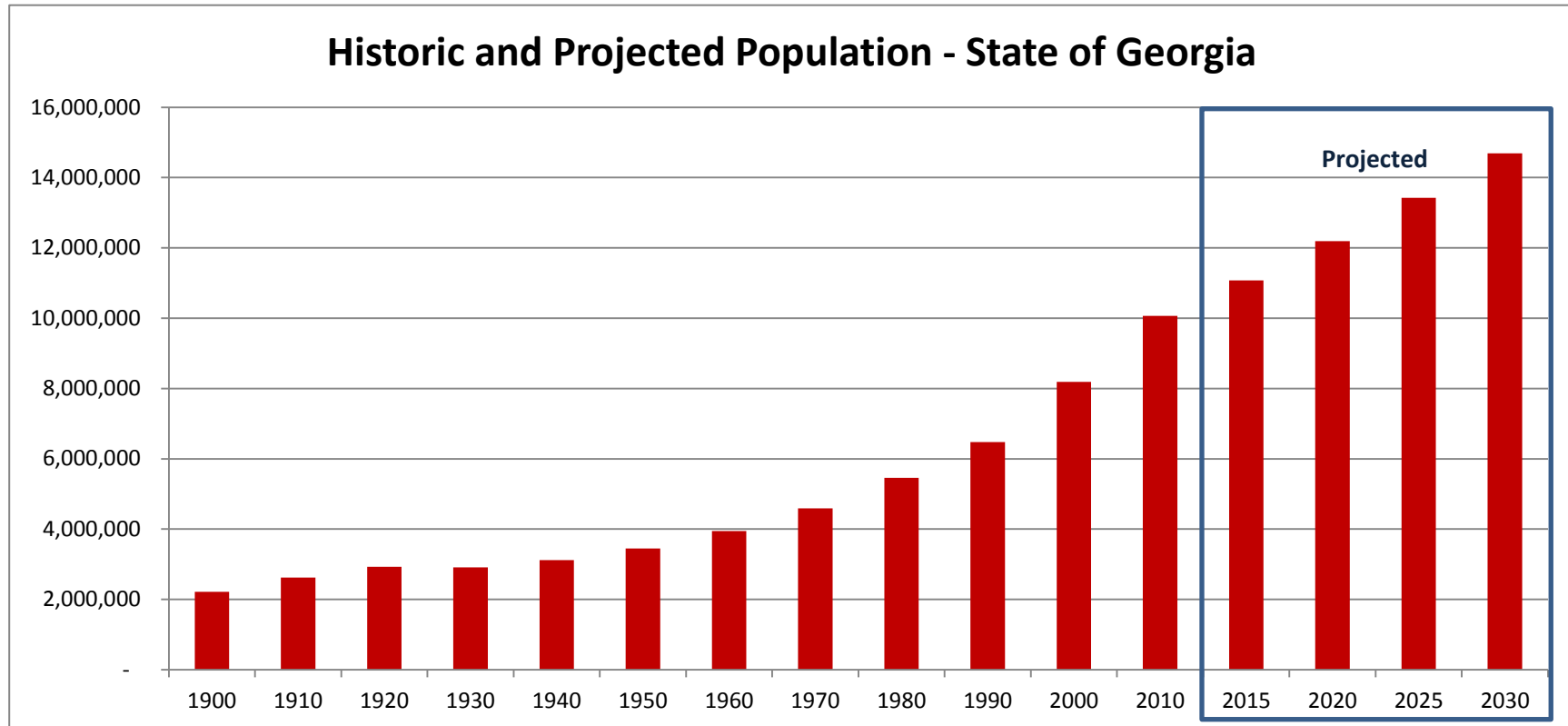
“...by 2030, Southern states are projected to account for more than 39 percent of the US population – up from 37 percent of the national total in 2010.” (From SREB Fact Book 2011, page 1.)



Note: US totals may not equal the sum of the parts due to rounding.
Source: SREB Factbook 2011, pg. 1.

Georgia Population Growth

For Georgia, in particular, the effect is even more pronounced



Source: Georgia 2030 - Population Projections, pg. 1, Georgia Office of Planning and Budget

Total Population and Changes

	Number (in thousands) 2010	National Rank					Percent Change			
		Actual			Projected		Actual		Projected	
		1990	2000	2010	2020	2030	1990 to 2000	2000 to 2010	2010 to 2020	2020 to 2030
Southern States	113,954		---			---	17.5	14.3	12.4	12.4
Georgia	9,688	11	10	9	8	8	26.4	18.3	13.1	10.8

Source: SREB Factbook 2011, pg. 9.

Of course, many things can mitigate a population increase's impact on higher education enrollments. One of these is age. Georgia will continue to be a retirement destination for many from the North and the West, and much of the increases in population will continue to be explained by increases in the ranks of seniors.

Indeed, age is one often-overlooked aspect of demographics which has consequences for higher education, but mostly indirect:

Not counting immigration, the ratio of working-age people to retirees needing their support will drop dramatically in the United States. This represents a burden on national economies that will be difficult to sustain under current medical and social-security systems.

In the next two to three decades, barring dramatic advances in geriatric medicine, shortages of health workers will loom large in "aging vulnerable" countries. The US in particular will need at least twice as many physicians specializing in geriatrics as its current 9,000, as well as half a million more nurses by 2020.

Suburban communities are likely to face a growing demand for social services such as senior day care, public transportation, and other programs for the elderly. This will place a growing strain on local government budgets. (Moraine Park Technical College – original source: Trends Shaping Tomorrow's World, M. Cetron, O Davies, The Futurist, May-June, 2010)

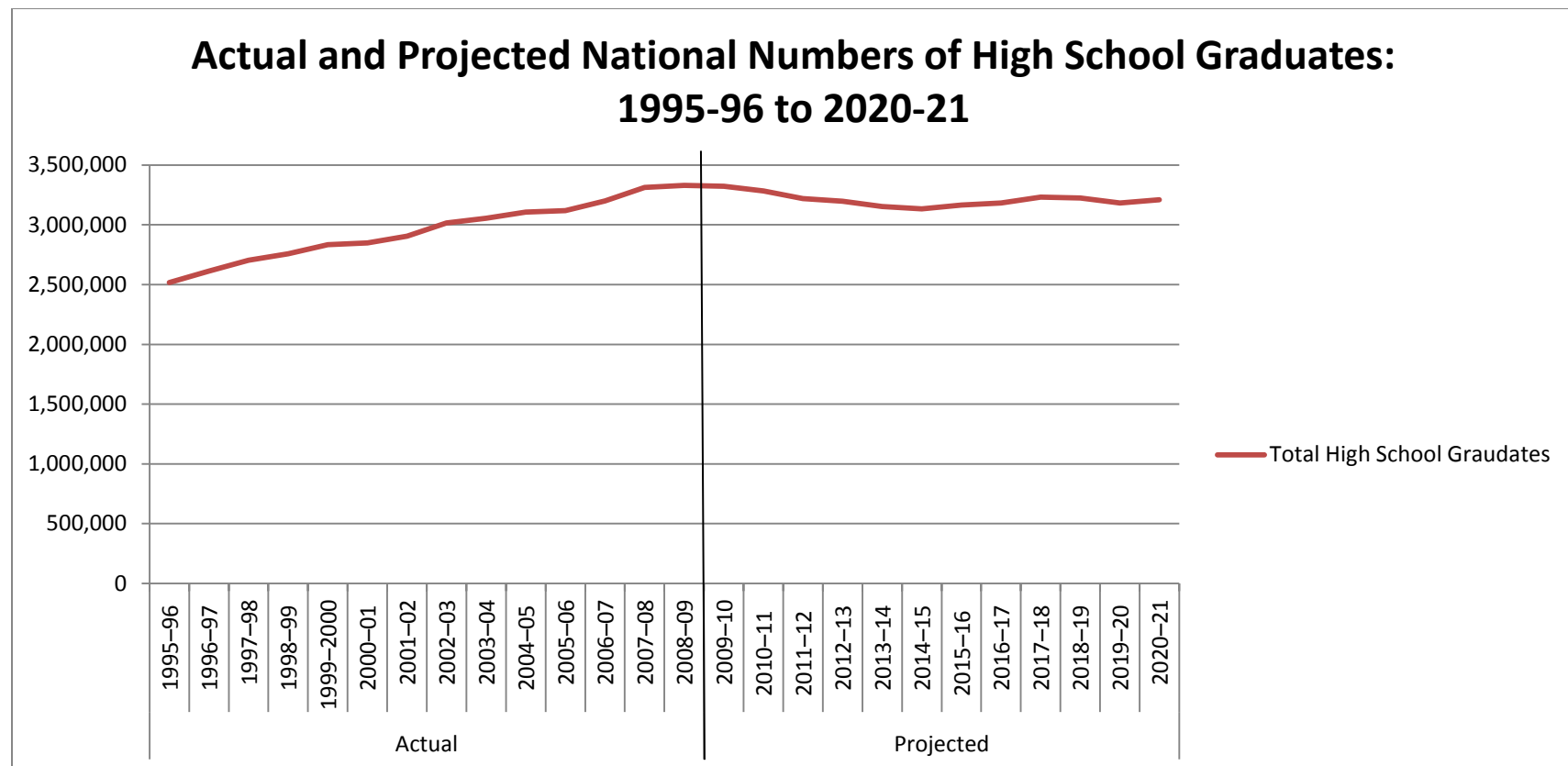
Adult Learners

Colleges with programs for adult learners usually focus on the population within the ages of 25-44. Within this demographic, they focus particularly on those without "Associate's or Higher Degree" – which, in Georgia, is 63.8 percent of that working age (25-44)

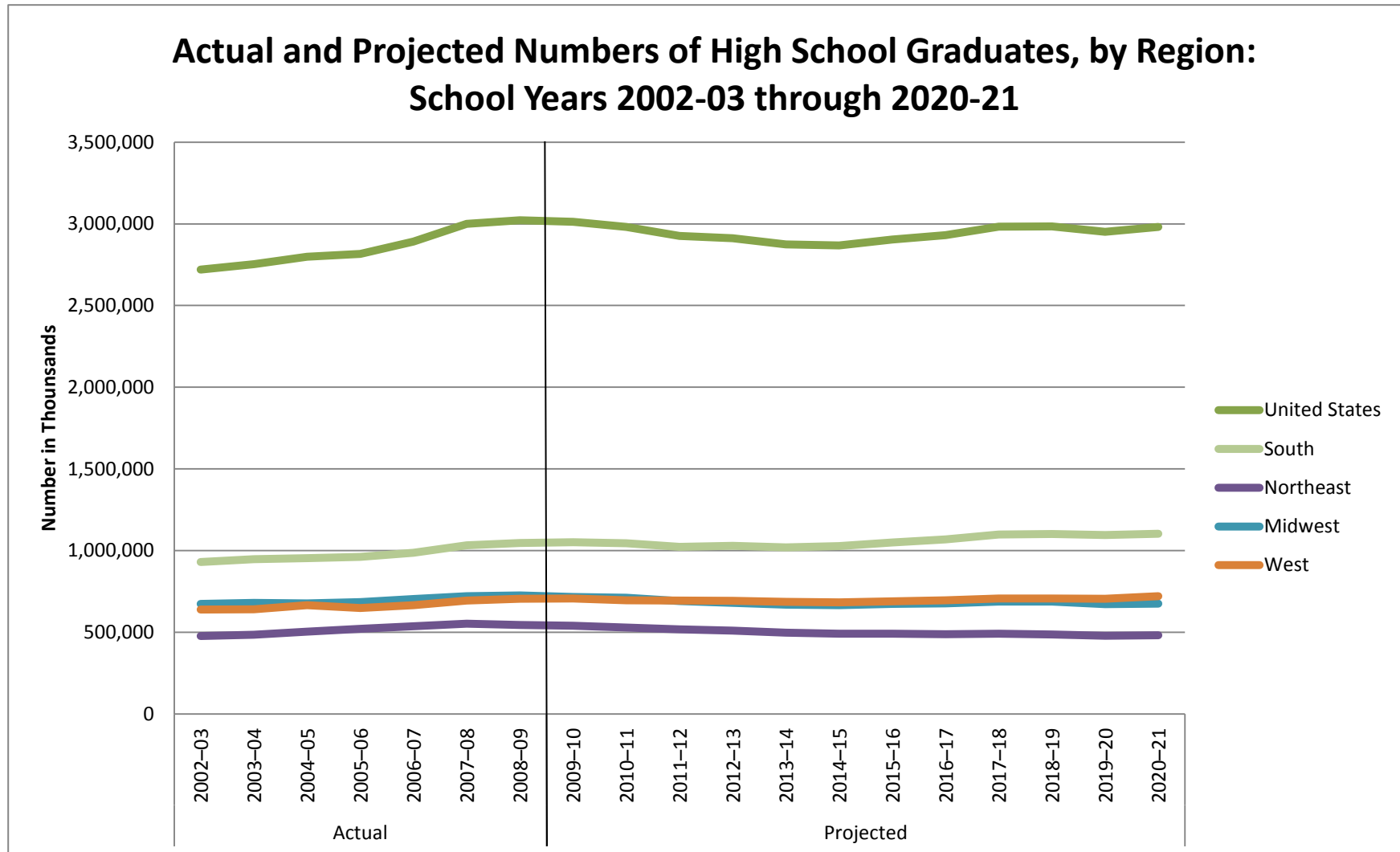
population: (within the adults aged 25 to 44 in Georgia) those without High School Diplomas or GED credentials were 390,000; without Associate's Degree 1,769,000; and without Bachelor's Degrees 1,964,000. (From SREB)

High School Graduates

Of course, the demographic of particular interest to higher educators is the trend in high school graduates. Below are National, Regional and State trends for this population segment:

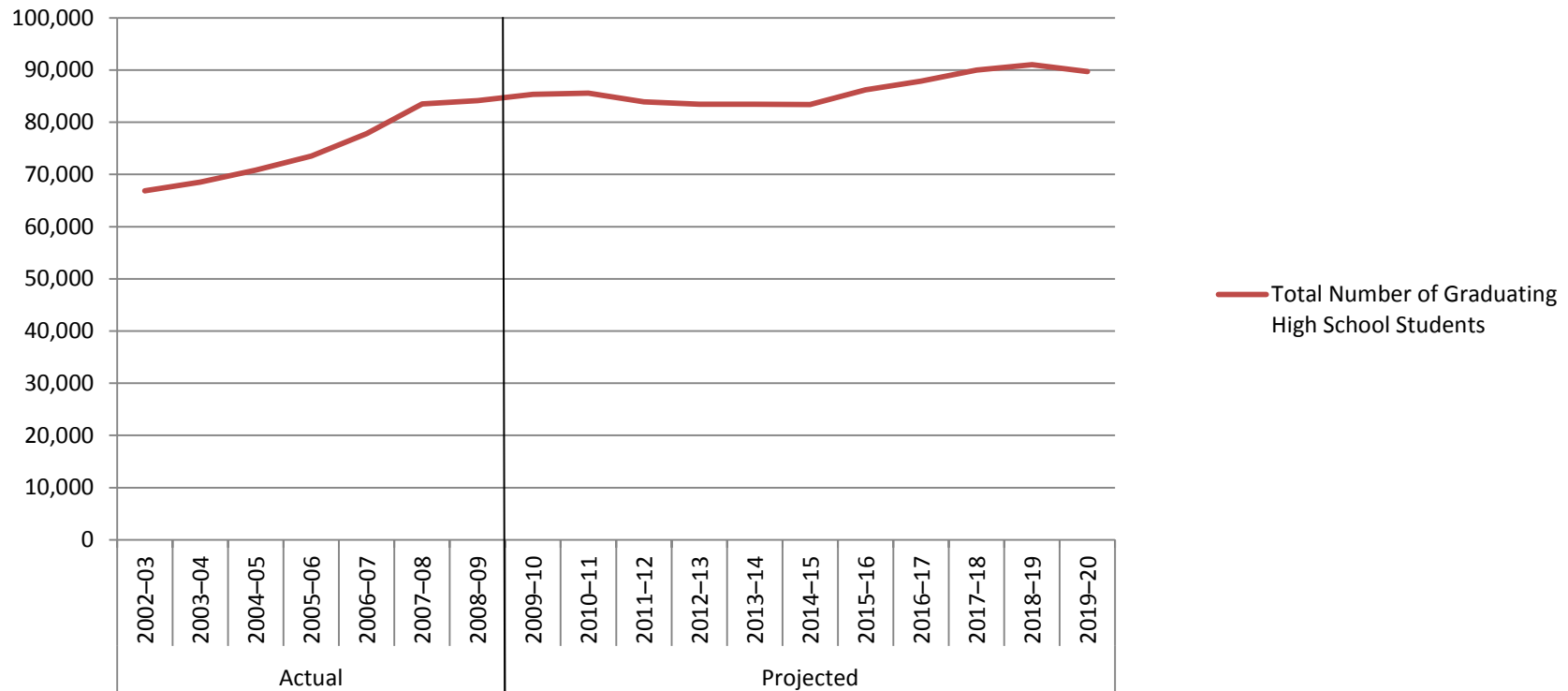


Source: National Center for Education Statistics, Projections of Education Statistics to 2020.

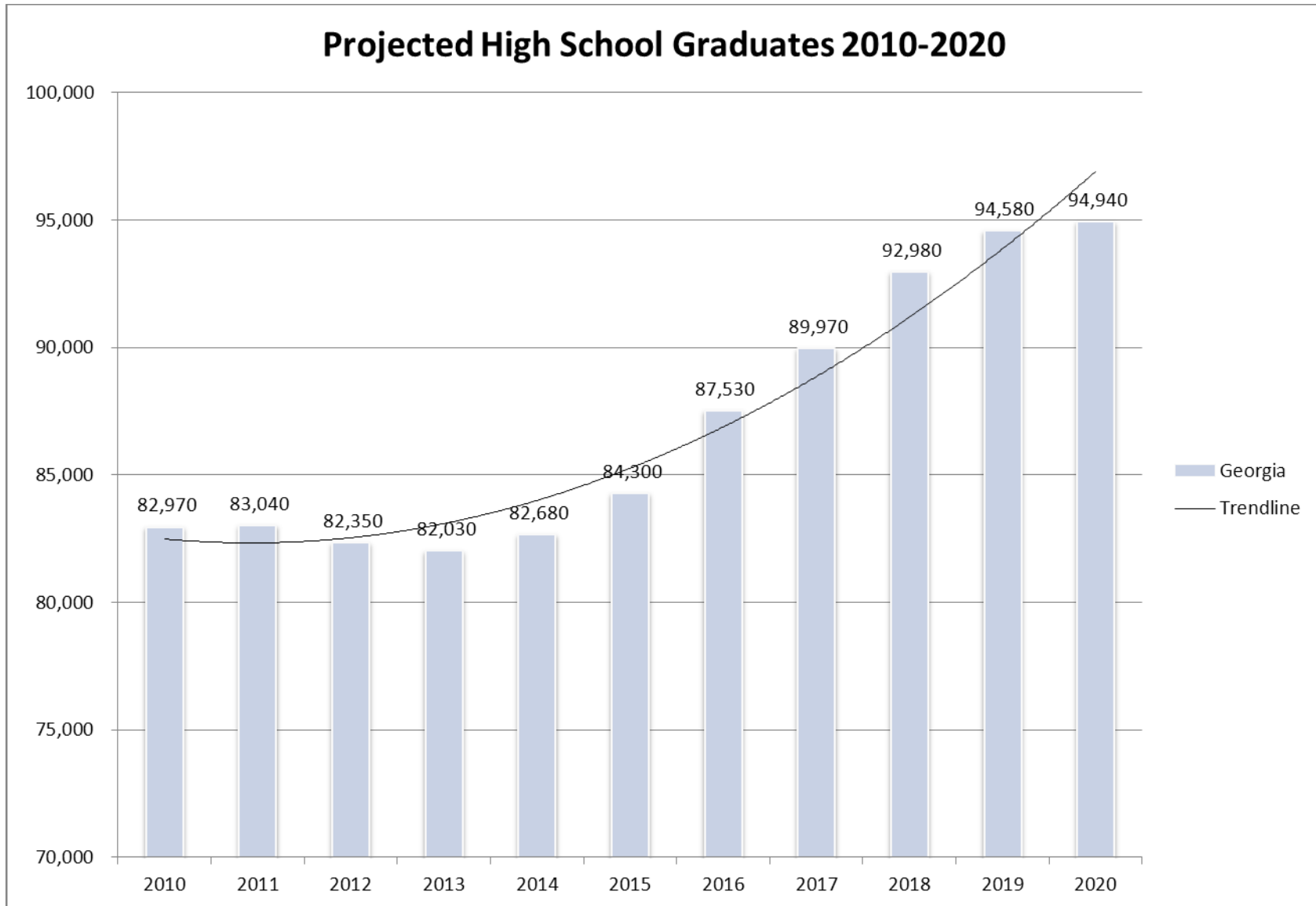


Source: National Center for Education Statistics, Projections of Education Statistics to 2020.

Actual and Projected Numbers of High School Graduates, Georgia: School Years 2002-03 through 2020-21



Source: National Center for Education Statistics, Projections of Education Statistics to 2020.



College Retention Rates

Approximately three-quarters of colleges and universities nationwide have seen stable or slightly increasing cohort graduation rates over the past three years. (Source: 2011 Student Retention Practices Report) <http://blog.noellevitz.com/2011/06/20/college-completion-rates-remain-stable-slightly-increase/> Other national research studies which, overall, have shown stable completion rates nationally over the past several years, despite the widespread interest among many to significantly increase college degree attainment rates. “ When asked to identify their single-biggest retention challenge, respondents in the study identified: 1) underprepared or unmotivated students; and 2) a desire for greater collaboration and agreement among faculty, staff, and senior administration regarding retention concerns. A third area of challenge that was evident was the relatively low percentage of respondents (10 to 20 percent) who indicated they had a retention plan that they considered to be of “excellent” quality.”

College Participation Rates

More students are pursuing higher education in the US than ever before. Total enrollment in degree-granting institutions topped 20.6 million in fall 2009, and these students are increasingly diverse, are still predominantly young adults and are taking more classes online – some while still in high school. Another 385,300 students attended non-degree-granting postsecondary institutions, taking total participation in post-secondary education to nearly 21 million. (From SREB Fact Book 2011, page 33)

Education Attainment

In 2000, 78 percent of adults 25 and older in the Southern states had high school diplomas or had completed their GED. By 2009, 83 percent of the region’s adults had these credentials. (SREB Fact Book 2011, Page 2)

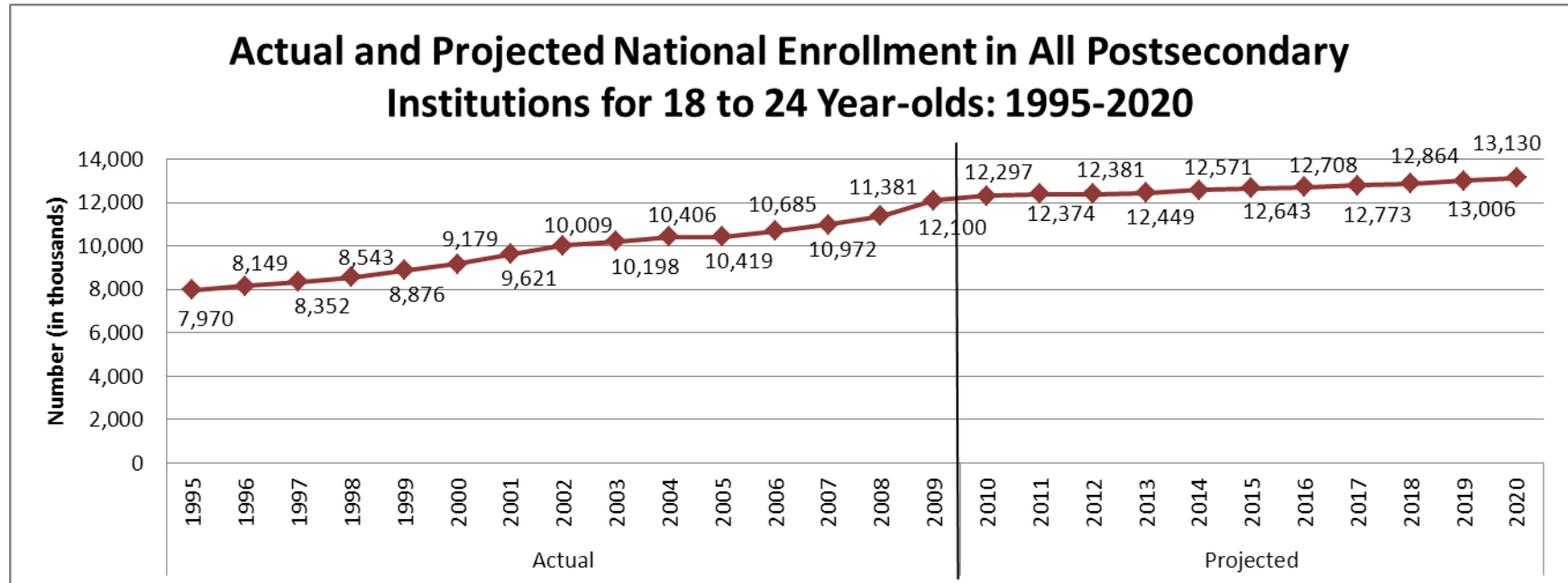
Enrollment in Southern States grows faster than in nation

From 1999 to 2009, Southern states increased total college enrollment 45 percent and exceed the 39 percent U.S. average. America’s total college enrollment reached nearly 21 million in 2009. Thirty-three percent of these attended in Southern states. From 2004-2009, eight Southern states had college enrollment growth rates higher than the national average: Alabama, Arkansas, Florida, Georgia, North Carolina, Tennessee, Virginia and West Virginia.

Preference for Privates vs. Publics: [Please see “Preference for Public vs. Private” in Economics section]

Summary of Population Section:

In sum, postsecondary institutions can expect continuing increases in enrollment. And this is particularly true in Georgia



Student Characteristics

Diversity

From 2000 to 2010, the black and Hispanic populations grew faster than the white population nationwide. In the South, the black population grew 15 percent, the Hispanic population grew 56 percent, and the white population grew 4 percent. Consequently, the proportion of the white population dropped from 66 percent of the total to 60 percent. Black representation remained about 19 percent. Hispanic residents rose from 12 percent to 16 percent of the regional population. In total numbers in Southern states, these changes amounted to 6.6 million more Hispanic persons, 2.7 million more black persons and 2.5 million more white persons. (From SREB Fact Book 2011, page 4.)

Enrollment of Black Students

	Enrollment Fall 2009	Percent Change from 2004 to 2009	Percent of Total Enrollment in Higher Education		Percent of Two- Year Colleges		Percent of Undergraduate Enrollment		Percent of Graduate and Professional Enrollment	
			2004	2009	2004	2009	2004	2009	2004	2009
Southern States	2,657,782	27.4	20.5	21.9	42.9	45.2	21.0	22.4	16.4	17.7
Georgia	168,979	38.6	31.1	34.9	46.0	43.3	32.2	36.0	23.2	25.7

Source: SREB Factbook 2011, pg. 55.

Enrollment of Hispanic Students

	Enrollment Fall 2009	Percent Change from 2004 to 2009	Percent of Total Enrollment in Higher Education		Percent of Two- Year Colleges		Percent of Undergraduate Enrollment		Percent of Graduate and Professional Enrollment	
			2004	2009	2004	2009	2004	2009	2004	2009
Southern States	770,540	43.7	10.2	12.3	53.4	54.4	10.7	12.9	5.7	7.7
Georgia	17,372	92.7	2.3	3.6	39.9	31.0	2.3	3.7	1.7	3.0

Source: SREB Factbook 2011, pg. 56.

Enrollment of White Students

	Enrollment Fall 2009	Percent Change from 2004 to 2009	Percent of Total Enrollment in Higher Education		Percent of Two- Year Colleges		Percent of Undergraduate Enrollment		Percent of Graduate and Professional Enrollment	
			2004	2009	2004	2009	2004	2009	2004	2009
Southern States	3,791,342	11.1	64.9	60.6	38.9	40.5	64.0	59.6	71.8	68.1
Georgia	270,837	10.5	62.6	55.9	35.1	31.0	61.5	54.7	70.2	64.9

Source: SREB Factbook 2011, pg. 57.

Bad Habits

Web surfing and “Googling” are having neurological impacts that are observable and measureable, according to critic Nicholas Carr. While we may be more adept at finding what we’re looking for, we are less able to reflect, synthesize and analyze the content and its deeper meaning. (Moraine Park Technical College – original source: Nicholas Carr, *The Shallows*, Reviewed by Patrick Tucker, July-Aug. 2010, p.61)

TECHNOLOGY

The next generation of college students expect coursework wherever and whenever they want. (John Dew, "Global, Mobile, Virtual, and Social: The College Campus of Tomorrow, Mar-Apr 2010, p. 50)

Trends

Each year the "Horizon Report" <http://horizonwatching.typepad.com/horizonwatching/2011/04/2011-horizon-report-emerging-trends-in-higher-education-technology.html> identifies six emerging technologies likely to have a significant impact on higher education in the next one to five years: Summaries of this year's emerging technologies are below...

Timeframe: The Next 12 months...

- **Electronic books:** The Horizon Report mentions that e-books have taken hold strongly in the consumer sector and the time for mass adoption across campuses is now. This trend has been strongly enabled by the explosion of tablet computing, which can augment text with interactive experiences, support classroom note-taking and research activities, and allow readers to interact socially. This trend will totally change our perception of what it means to read.

- **Mobiles (i.e., mobile devices).** Mobiles enable ubiquitous access to information, social networks, tools for learning and productivity, and much more. 2011 will bring new interfaces and new apps that leverage location-awareness. The mobile device is a versatile tool that can be easily adapted to a host of tasks for learning, productivity, and social networking. [Colleges fail to keep up: half of all college students used mobile gear to get to the Internet every day last year, compared to 10% of students in 2008, according to Educause (2010). Many colleges still treat their mobile Web as low-stakes experiments. (Chronicle of Higher Education, January, 23, 2011)]

Timeframe: Next 1-3 years....

- **Augmented reality** enables content providers the ability to provide additional information to whatever users are viewing on a screen device. This information is 'layered' over whatever the user is viewing at the time (e.g. whether in the real world, or on a screen). While most applications have been in the consumer sector (tourism is one application example), we can expect new applications to become available over the next 1-3 years that will enhance learning. Augmented reality brings a significant potential to supplement information delivered via computers, mobile devices, video, and even the printed book.

• **Game-based learning** continues to grow as an application area that can enhance learning for students of all ages. We should expect to see a whole new suite of emerging game and simulation-based applications that are developed expressly to enhance the learning process. The report says that perhaps the greatest potential of games for learning lies in their ability to foster collaboration, problem-solving, and procedural thinking. [Editor's note: The report points to multiplayer role-playing games as offering particular promise for higher education. Also, recent research reports that a variety of skills are enhanced by playing action video games including better visual selective attention and better focus. (School News, December, 9, 2009)]

Timeframe: 4-5 years...

• **Gesture-based computing technologies** continue to evolve. Gone is the day of interacting with the computer via just a keyboard or a mouse. Gestures allow the motions of the body to control computing devices. The next generation of students entering higher education will have grown accustomed to interacting with computers and gaming systems via touching, tapping, swiping, jumping, and moving. The Horizon Report specifically mentions new interface technologies such as Kinect, SixthSense, and Tamper, which make interactions with computational devices far more intuitive and embodied. [Editor's note: "gesture-based computing, which incorporates human movement, is already useful in training simulations, the report notes, and could allow students to virtually practice surgery or flip through a centuries-old text. See " <http://chronicle.com/blogs/wiredcampus/6-top-tech-trends-on-the-horizon-for-education/29581>]

• **Learning analytics** employs a combination of data-gathering tools and analytic techniques to study student engagement, performance, and progress in practice. The goal is not just to understand the past, but to help predict the future. This technology trend area will help administrators and teachers revise curricula, teaching, and assessment in real time. Learning analytics will allow educational institutions to tailor education to individual students more effectively. [Editor's note: I found this explanation, provided in footnote², helped further my understanding of this point. I also found this paragraph helpful. ³] For more information, see [the 2011 Web version](#).

² Today, one of the primary drivers of student computer usage is a college's Learning Management System (LMS) combined with high-speed wireless Internet access. For most students, the LMS is the online gateway to each semester's set of courses.

For each course, an online environment within the LMS is typically used by students to obtain and turn in assignments, perform online exercises, participate in class discussion boards, access required readings beyond the textbook, and check grades. At a growing number of schools, students will also find the instructor's notes and slides used during each class session and supplementary materials not covered in class sessions, as well as audio and video records of each class session.

Cloud

Cloud services are hot, but “the cloud is still on the horizon, at least in higher education. Low clouds (e-mail) have arrived; high clouds (ERP, storage, and high-performance computing) remain distant. Trust is the coin of the realm here, and many campus IT leaders are not ready to seed the cloud with mission-critical campus data and IT functions.” 2012: What’s Hot, What’s Not, in Campus Technology by David Rathes quoting Kenneth C. Green, 12/29/11)

Use of Social Media

“Facebook and Twitter have long been popular with college students for social and networking purposes, but expect these online giants to have a bigger presence in classrooms as well.

The primary driver of education computer usage is the preparation and distribution of assignments and lecture materials using word processing, spreadsheet, and presentation applications such as those found in Microsoft Office. Other drivers are student online applications such as email, text messaging, and World Wide Web (Web) browsing both for assignment, research, and entertainment purposes, and for interacting with friends within social networks such as Facebook and MySpace.

Over the past few years, higher educators have pondered whether the tremendous wealth of student-behavior information, that can be collected during routine LMS usage and analyzed to identify trends, can be combined with the vast amount of data found in traditional institutional Student Information Systems (SIS) and campus Enterprise Resource Planning (ERP) systems. Not only can more robust data provide richer analyses of student performance, it also can help in predicting potential student success and failure, identifying at-risk students, and recommending appropriate corrective remedies for faltering students.

3 Learning analytics, the other new trend, is further down the line, with the report’s panel of 43 experts pegging its adoption as four to five years away. Using the growing amount of data available about students, learning analytics would allow instructors to tailor education more specifically to each student’s needs and make curricular changes on the fly. It also could help instructors gauge how well students are learning. Beyond traditional measures of assessment, such as assignments and tests, educators could look at online social interactions, discussion posts, and how students access information on Web sites to develop a more detailed, and timely picture of a student’s understanding of course material. Challenges to adoption include incorporating information coming from a variety of sources and in different formats and concerns about privacy and profiling. 6 Top Tech Trends on the Horizon for Higher Education, The Chronicle of Higher Education, February 8, 2011, By Ben Wieder.

Dr. Paul Leblanc, president of Southern New Hampshire University, expects faculty to use social networking to engage with students, for example, a professor might post a question to students on Twitter, making a connection outside the classroom.

“I think we will continue to reach out to students in all those ways and I think that it's going to permeate into the classroom more and more,” he says.

Dr. Kathleen King, professor of Higher Education at the University of South Florida, says that although many professors are still figuring out the best way to use social media to their advantage, the increased interaction with students will be a very useful innovation to help create strong communication between students and teachers.

While changes won't happen overnight, more technology in college lecture halls is inevitable. LeBlanc says the key to success for both students and faculty is figuring out how technology best suits their learning and teaching needs and run with it. Top Education Trends for 2011 by Emily Driscoll (February 3, 2011) “

<http://www.foxbusiness.com/personal-finance/2011/02/03/education-trends/#ixzz1fxJpuX7s>

Use of technology to lower operating costs

This excerpt is from “The College Bubble: Can Technology Fix the College Debt Crisis?” by Glenn Reynolds, Popular Mechanics (January 2012 – also available at <http://www.popularmechanics.com/technology/can-technology-fix-the-college-debt-crisis-6547416>)

No one disputes that college and graduate-school costs have skyrocketed. In recent decades, college tuition has increased at more than four times the rate of inflation, outpacing even medical--care costs and amounting to a 439 percent increase between 1982 and 2007. As Forbes recently noted, just a decade ago a year of college cost 18 percent of a typical family's annual income—now it has hit 25 percent and prices are continuing to rise. At public four-year schools, for instance, total costs rose 6 percent in 2011, to \$17,131—far outstripping inflation.

The causes are debated. Some blame palatial facilities and reduced teaching loads for professors, while one recent study fingered bloat in the ranks of administrators...

Economist Herbert Stein famously wrote that if something can't go on forever, it won't. So college costs can't rise forever. The question is, what will happen next? It seems unlikely that college will return to its pre-World War II role as a finishing school for the wealthy. When education boosters tout college as essential to competitiveness in the global economy, they're mostly right (even though some workers can earn

more and achieve higher job satisfaction in a skilled trade). The key to bringing college costs under control will be getting more bang for less buck. That's a challenge where technology might lend a hand, but only after some basic questions are addressed.

The first step is to ensure that students are actually learning useful things. This isn't much of a problem in engineering schools and the like, but in many other areas **"core subjects" have been shortchanged. A recent survey of more than 700 schools by the American Council of Trustees and Alumni found that many have virtually no requirements.** Perhaps that's why students are studying 50 percent less than they were a couple of decades ago.

Once this issue is addressed, there's plenty of room for improvement on the technological front. In the old days, professors were few, and it made sense for students to travel hundreds of miles to study with them. But today, once you move onto a campus, much of your learning, especially in the first couple of years, takes place in huge lecture halls where one professor addresses hundreds of students—or gets a teaching assistants to do it.... (Some students are saving money by doing their first two years at community college. The quality of instruction is often better, and the classes smaller, than in four-year institutions where professors focus more on research than on teaching.)

That's a worthwhile strategy, but **innovation at four-year institutions could help, too.** Now that webcasts are a routine feature of corporate training, perhaps it's time to make better use of the Web for education. **Take the top teachers in a field and let students at multiple colleges access their lectures online. (Sure, there's not a lot of interaction that way—but how much is there in a 200-student lecture class anyway?)** Once the basic information is covered, students can apply it in smaller advanced classes, in person. Would this save money? Possibly—and it would almost certainly produce better results.

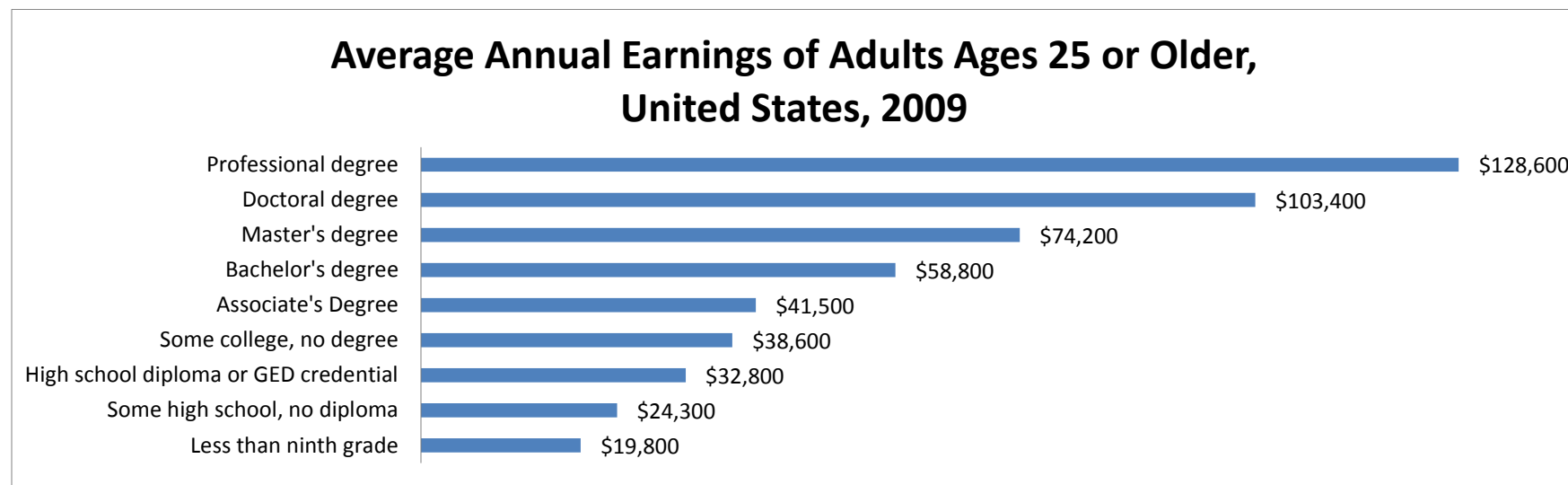
The online approach is used by the popular Khan Academy, where lectures are viewed by students at their convenience and skills are perfected via video-game-like software, and **the follow-up is done in a classroom, with a teacher's oversight. The idea is to take advantage of mass delivery where it works best, and to allow individualized attention where it helps most. The Khan Academy has gotten a lot of attention, but it's not the last word in technological progress in education. What's striking is that it has come from outside the educational establishment. Then again, breakthroughs often come from people working outside the old industries. Anya Kamenetz's book DIY U talks about "edupunks" who are exploring unconventional thinking about teaching and learning. In fact, the best way to master many subjects may be for students to find their own path, with the role of the education establishment being more to certify competence than to actually teach. In one way, that's how it works already.**

ECONOMY

Our students are graduating without jobs and with debt. They enrolled in colleges and universities in record numbers with the promise that college degree would bring better employment. (Moraine Park Technical College – original source: New York Times, 7/6/2010).

Higher Education means higher pay

If we equate the value of higher education in economic terms, we can put some numbers on the “value” of a college degree. “U.S. adults with bachelor’s degrees—but no higher degree—earned \$26,000 more (79%) on average than adults with only high school diplomas or GED credentials in 2009.” (SREB Fact Book 2011)



From SREB Fact Book. Source: U.S. Census Bureau

Also, as poor as the job market was in 2010, employment chances were still enhanced by a college degree. Unemployment for those 25 and over with less than high school was 14.9; for high school diploma only was 10.3; for some college but no degree it was 9.2; for those with Associate degree it was 7.0; and for those with a bachelor’s degree it was 5.4. Post baccalaureate degree holders fared better than bachelor degree holders. (Bureau of the Census; Bureau of Labor Statistics)

Fastest-growing jobs require college degrees

Nationwide:

According to the Southern Regional Educational Board (SREB), “jobs that require college degrees will grow at a faster rate over time than those that do not.”

“Projections issued after the economic downturn estimated that total job openings nationwide would grow by 10 percent (15.3 million more jobs) from 2008 to 2018. When total opening are calculated (taking into account both growth and replacements), a total of 51 million openings are forecast. Holders of associate’s degrees were projected to be qualified for 2.4 million of these openings...People with bachelor’s degrees without work experience were projected to be qualified for 3.1 million more jobs (up 17 percent). Unlike previous projections, jobs requiring bachelor’s degrees plus work experience were expected to increase at a lower rate than the overall rate of increase (8 percent or 550,000 more jobs.)”

“New jobs requiring only on-the-job training or work experience (no postsecondary education) also were forecast to grow 8 percent. But even with this low growth rate, these openings were projected to account for the 8.1 million of the 15.3 million additional jobs expected in the US by 2018. (Source: SREB Fact Book 2011, page 68)

For further breakdown on where new jobs will be, see endnotes. iii

Georgia:

Georgia’s rank in jobs forecasted for 2018		
Education Level	2018 Jobs	Rank
High school dropouts	590,000	11
High school graduates	1,463,000	27
Some college, no degree	1,042,000	35
Associate’s degree	381,000	45
Bachelor’s degree	946,000	23
Graduate degree	460,000	18

- Between 2008 and 2018, new jobs in Georgia requiring postsecondary education and training will grow by 306,000, while jobs for high school graduates and dropouts will grow by 160,000.
- Between 2008 and 2018, Georgia will create 1.4 million job vacancies both from new jobs and from job openings due to retirement.
- 820,000 of these job vacancies will be for those with postsecondary credentials, 424,000 for high school graduates and 171,000 for high school dropouts.
- Georgia ranks 23rd in terms of the proportion of its 2018 jobs that will require a Bachelor’s degree, and is 11th in jobs for high school dropouts.
- 58% of all jobs in Georgia (2.8 million jobs) will require some postsecondary training beyond high school in 2018.

Source: <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/georgia.pdf> (Please note also: [HTTP://cew.georgetown.edu/jobs2018](http://cew.georgetown.edu/jobs2018))

Where Georgia jobs will be in 2018 (<http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/georgia.pdf> also: <HTTP://cew.georgetown.edu/jobs2018>)

FOR GEORGIA: WHERE THE JOBS WILL BE IN 2018, by OCCUPATION and EDUCATIONAL LEVEL (In 1000s)

Occupations		High School Dropouts	High school graduates	Some college	Associate's Degree	Bachelor's degree	Graduate Degree	Total
Managerial and Professional Office	Management	12	54	58	22	108	48	302
	Business operations specialty	2	21	28	10	52	20	133
	Financial specialists	0	7	12	8	44	15	87
	Legal	0	3	4	2	5	20	33
STEM	Computer and mathematical science	1	8	18	11	56	23	118
	Architects and technicians	1	2	3	2	5	3	16
	Engineers and technicians	1	5	8	4	22	9	48
	Life and physical scientists	0	1	2	1	4	6	15
	Social scientists	-	1	1	0	5	8	14
Community Services and Arts	Community and social services	1	5	8	3	22	22	61
	Arts, design, entertainment, sports, and media	2	10	14	6	32	8	71
Education	Education	5	28	37	18	118	133	339
Healthcare	Healthcare practitioners	4	22	38	60	64	67	254
	Healthcare support	12	42	36	10	8	2	109
Food and Personal Services	Food preparation and serving	110	178	86	25	28	4	431
	Building and grounds cleaning and maintenance	57	76	22	7	9	1	173
	Personal care	15	47	32	11	16	4	125
	Protective services	4	38	37	12	17	3	112
Sales and Office Support	Sales	45	157	132	40	152	29	555
	Office and administrative support	44	269	266	72	125	24	799
Blue Collar	Farming, fishing and forestry	11	8	2	1	1	0	24
	Construction and extraction	74	84	29	6	8	2	202
	Installation, maintenance, and equipment repair	33	89	52	20	12	2	208
	Production	78	147	54	14	14	3	311
	Transportation and material moving	77	162	66	13	19	4	341
Total**		590	1463	1042	381	946	460	4882

** Total jobs shows where jobs are located by education type. Includes filled and vacant jobs.

Employment losses in the South lowest among U.S. Regions

The nation's unemployment rates rose dramatically from 2005 to 2010. The unemployment rate went up from 5 percent to 9 percent in the South. (From SREB Fact Book 2011, page 8) In Georgia, it went from 5.2 percent to 10.2 in the same time period. (Source: US Bureau of labor Statistics: online database 2011 – note page 23 of SREB Fact Book 2011.)

Per Capita Income

	Per Capita Income 2010	Change				Percent of US Average			National Rank		
		Actual		Adjusted for Inflation							
		2005 to 2009	2009 to 2010	2005 to 2009	2009 to 2010	2005	2009	2010	2005	2009	2010
Southern States	\$38,061	\$4,962	\$779	\$1,098	\$153	93.4	94.1	93.8	---	---	---
Georgia	35,490	3,326	1,704	-429	1,137	90.8	85.2	87.4	33	40	38

Source: SREB Factbook 2011, pg. 20

Median Annual Income and Poverty Rate

	Median Annual Income 2009	Percent Change		Percent of US Average			National Rank			Overall Poverty Rate			
		1999 to 2004	2004 to 2009							2009	National Rank		Percent Change 2004 to 2009
				2009	2004	2009							
Southern States	\$42,664	6.7	10.3	89.1	85.1	85.7	---	---	---	15.4	---	---	0.5
Georgia	43,340	4.0	5.7	96.9	99.1	87.1	27	37	42	15.8	23	9	3.8

Sources: SREB Factbook 2011, pg. 21

Poverty Rate Data - SREB Factbook 2011, pg. 22.

Employment and Unemployment Rate

	Civilian Labor Force		Employment			Unemployment Rate			
	2010 (in thousands)	Percent Change 2005 to 2010	2010 (in thousands)	Change 2005 to 2009					
				Number (in thousands)	Percent	2005	2010	National Rank	
			2005					2010	
Southern States	153,889	4.7	49,760	-69	-0.1	5.0	9.3	---	---
Georgia	4,694	1.7	4,214	-161	-3.7	5.2	10.2	18	12

Source: SREB Factbook 2011, pg. 23.

SECTORS (Nonagricultural Employment)

	Total	Mining, Logging, & Construction	Manufacturing	Trade, Transportation, & Utilities	Information	Financial, Professional, & Business Services	Education & Health Services	Leisure, Hospitality, & Other Services	Government
Southern States 2010 Employment	46,224	2,244	3,821	8,995	837	8,501	6,357	6,605	8,446
Georgia 2010 Employment	3,826	149	344	808	101	723	486	527	678
Southern States % Change 2005-10	-1.5	-21.5	-19.8	-3.9	-12.8	-0.7	13.2	1.5	6.3
Georgia % Change 2005-10	-4.4	-28.8	-23.4	-5.2	-9.7	-5.1	13.8	-0.6	4.9

Source: SREB Factbook 2011, pgs. 24 - 25.

Impediments to Job Creation

Trends such in areas such as health care costs, economic sluggishness, factors deeply baked into the structure of the economy help explain tepid entrepreneurialism. Environments which have more technology, science, and professional service sectors are known to spawn a larger share of new employment. (Moraine Park Technical College – original source: Wall Street Journal, Sunday, Oct. 31, 2010).

Skills Needed

Economy Calls for Focus on Job Training, Not Just College

According to a report by the Harvard Graduate School of Education, Americans “place far too much emphasis on a single pathway to success; attending and graduating from a four-year college,” even though only 30% of young adults attain that goal. The report also notes that of the 47 million jobs expected to be created in the United States by 2018, only 1/3 will require a bachelor’s degree. (Moraine Park Technical College – original source: The Chronicle of Higher Education, www.chronicle.com, February, 2, 2011).

Skills Mismatch

“Unemployment levels, remain high in the United States, yet employers continue to have difficulty filling selected positions.” (Moraine Park Technical College – original source: Journal Interactive, May 2010.)

Other Economic Trends Impacting Higher Education

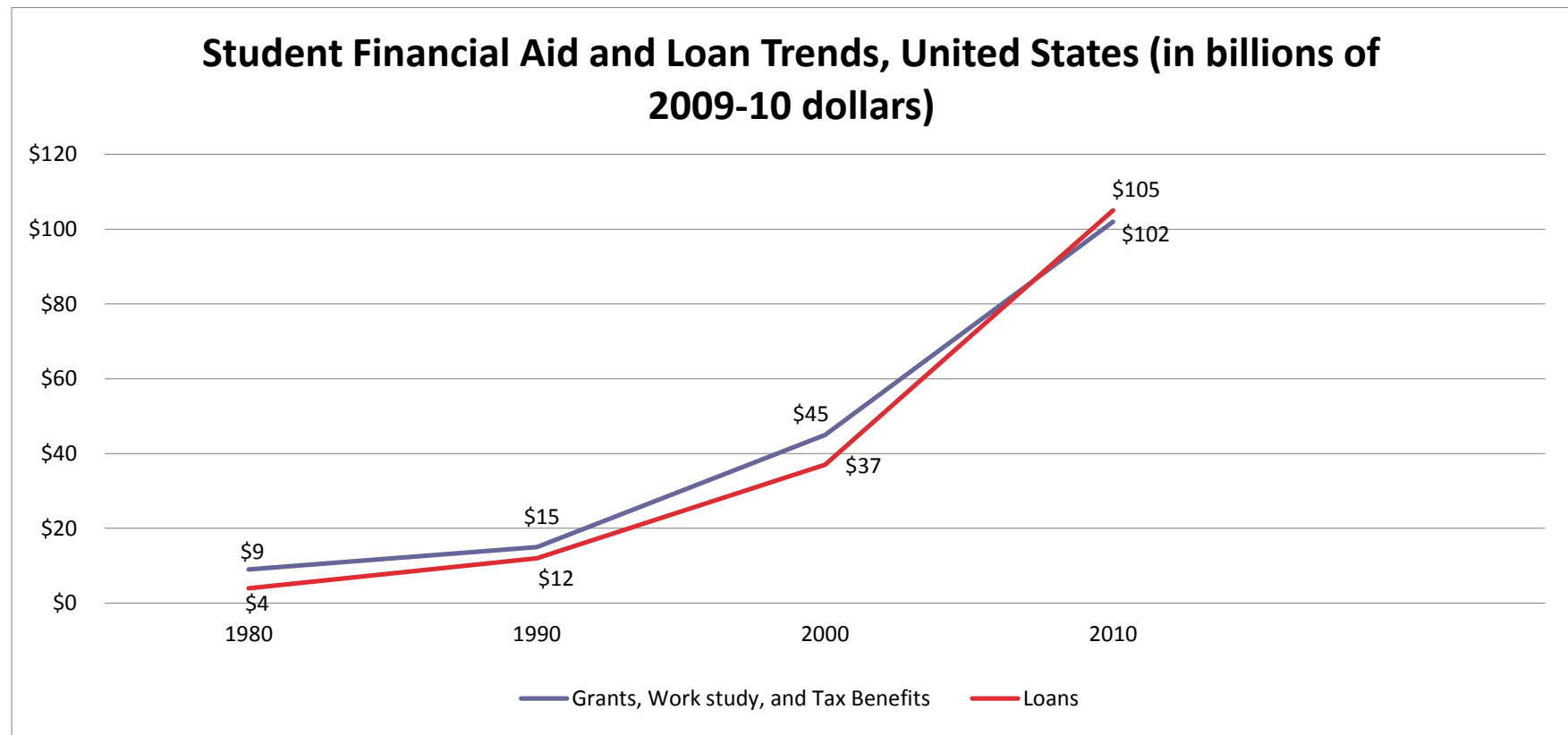
Percent Distribution of State and Local Government General Expenditures

	Education			Social Welfare	Transportation, Public Safety, Environment, and Housing	Administration	Other
	Higher Education	Elementary and Secondary Education	Total Education				
2007-2008 Southern states	10.2	24.2	34.8	25.7	24.6	4.9	7.7
2007-2008 Georgia	8.4	28.5	39.6	25.9	23.9	5.2	5.4
Percentage Point Change 02-03 to 07-08: Southern states	0.2	-0.2	0.0	0.1	0.3	0.0	-0.4
Percentage Point Change 02-03 to 07-08: Georgia	-0.4	1.4	0.9	-0.5	0.5	0.0	-0.8

Source: SREB Factbook 2011, pgs. 26 – 27.

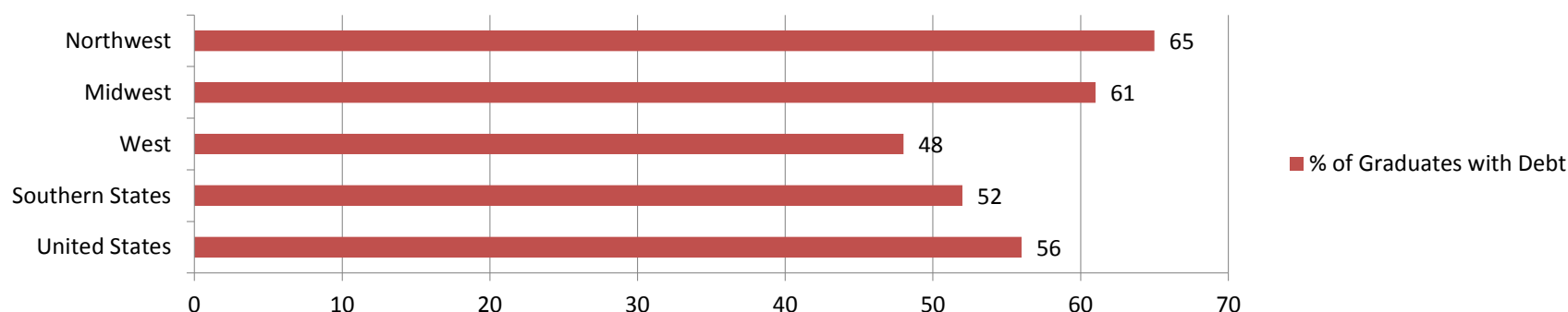
Debt

In 2009, 56 percent of the nation's undergraduates receiving bachelor's degrees at public four-year colleges graduated in debt for their college education – on average owing \$20,500. In the South, 52 percent of these graduates owed for college loans, averaging \$18,700 of debt. Among US regions, the West had the lowest percent of graduates with loans and the lowest loan amounts, followed closely by the South. (SREB FACT book 103 "Most college graduates owe for college expenses")



Source: SREB Factbook 2011, pg. 103

Percent of Bachelor's Graduates with Debt, Public Four-year Colleges, 2009



Source: SREB Factbook 2011, pg. 103

"Is a college education in the US affordable? The answer depends on the costs of attendance (tuition and fees, room and board, books and supplies), the ability of students and their families to pay, and the financial aid and scholarships that are available. As part of the federal financial aid process, students and their families are expected to contribute toward college costs based in income and family circumstances, including student earnings. But even with grants and scholarships, shortfalls often remain. And loans only help students and their families stretch out the payments, actually raising college costs by adding interest.

"New nationwide data reveal that the average one-year cost of full-time, first-time degree- or certificate- seeking undergraduates paying in-state or in-district tuition at a public four-year institution were \$17,100 in 2009. Among US regions, the costs of attendance from \$15,900 in the Southern states to \$18,200 in the Midwest. Average scholarship and grant aid for these students ranged from \$5,500 in the Midwest to \$6,800 in the West. The resulting "net price" (what's left for students and their families to pay) ranged from \$9,800 in Southern states to \$12,700 in the Midwest. Among Southern states, it ranged from \$7,500 in Louisiana to \$13,400 in South Carolina. To fill the gap, students and their families had to turn to private grant aid, take out loans, increase the amount they earned and contributed, or find ways to cut expenses." (SREB Factbook pg. 104 "New net price data help evaluate college affordability")

Pricing Environment

In an environment of increasing debt-financing and decreasing job prospects, students become even more cost conscious. Actual and published tuition rates are thus a key element of any environmental scan... Total Published Cost of Attendance: Georgia Privates”:

Institution Name	Academic Year									% Change from 2010-2012
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	
Agnes Scott College	\$ 29,670	\$ 31,850	\$ 33,670	\$ 36,275	\$ 38,737	\$ 40,910	\$ 41,955	\$ 43,133	\$ 44,345	3%
Andrew College	\$ 16,280	\$ 16,936	\$ 17,982	\$ 18,980	\$ 19,980	\$ 23,170	\$ 23,866	\$ 24,822	\$ 25,398	2%
Berry College	\$ 24,500	\$ 25,800	\$ 27,562	\$ 29,384	\$ 30,496	\$ 33,198	\$ 36,080	\$ 37,764	\$ 39,668	5%
Brenau University	\$ 24,500	\$ 25,430	\$ 26,650	\$ 28,115	\$ 29,750	\$ 31,537	\$ 32,428	\$ 33,545	\$ 34,940	4%
Brewton-Parker College	\$ 19,128	\$ 21,578	\$ 23,152	\$ 24,622	\$ 24,380	\$ 26,585	\$ 25,613	\$ 28,770	\$ 25,860	-10%
Clarke Atlanta University	\$ 22,674	\$ 23,126	\$ 24,162	\$ 26,526	\$ 27,560	\$ 29,382	\$ 29,382	\$ 31,950	\$ 33,862	6%
Emmanuel College	\$ 15,170	\$ 15,900	\$ 16,800	\$ 17,560	\$ 19,034	\$ 20,344	\$ 20,700	\$ 21,540	\$ 22,950	7%
LaGrange College	\$ 23,225	\$ 24,249	\$ 26,350	\$ 27,159	\$ 29,073	\$ 31,168	\$ 32,770	\$ 34,938	\$ 36,464	4%
Mercer University	\$ 29,531	\$ 31,125	\$ 33,173	\$ 35,066	\$ 37,476	\$ 40,351	\$ 41,529	\$ 43,849	\$ 45,807	4%
Morehouse College	\$ 27,328	\$ 29,138	\$ 29,732	\$ 31,640	\$ 33,956	\$ 36,582	\$ 39,122	\$ 41,188	\$ 43,601	6%
Oglethorpe University	\$ 29,770	\$ 31,400	\$ 33,500	\$ 35,580	\$ 37,267	\$ 38,680	\$ 40,290	\$ 41,590	\$ 43,440	4%
Paine College	\$ 18,004	\$ 18,850	\$ 19,200	\$ 20,032	\$ 19,530	\$ 20,520	\$ 21,362	\$ 21,362	\$ 22,620	6%
Piedmont College	\$ 22,000	\$ 23,450	\$ 25,700	\$ 25,700	\$ 30,000	\$ 29,500	\$ 29,500	\$ 29,955	\$ 30,874	3%
Point University	\$ 20,250	\$ 21,610	\$ 22,660	\$ 24,615	\$ 24,880	\$ 28,330	\$ 28,730	\$ 27,060	\$ 29,606	9%
Reinhardt University	\$ 20,916	\$ 22,700	\$ 24,120	\$ 24,196	\$ 25,188	\$ 26,926	\$ 27,242	\$ 27,852	\$ 33,230	19%
Savannah College of Art/Design	\$ 29,760	\$ 31,480	\$ 33,375	\$ 35,830	\$ 38,310	\$ 40,957	\$ 43,005	\$ 45,521	\$ 47,465	4%
Shorter University	\$ 21,569	\$ 22,955	\$ 25,950	\$ 26,900	\$ 28,660	\$ 27,000	\$ 28,000	\$ 29,400	\$ 30,540	4%
Spelman College	\$ 26,788	\$ 28,238	\$ 29,508	\$ 30,955	\$ 33,115	\$ 35,665	\$ 36,488	\$ 37,974	\$ 40,540	7%
Thomas University	\$ 17,035	\$ 19,600	\$ 20,470	\$ 20,470	\$ 20,470	\$ 22,130	\$ 22,992	\$ 17,110	\$ 18,805	10%
Toccoa Falls College	\$ 20,650	\$ 21,075	\$ 22,025	\$ 23,240	\$ 24,475	\$ 25,715	\$ 27,305	\$ 27,847	\$ 29,222	5%
Truett-McConnell College	\$ 16,628	\$ 18,256	\$ 19,281	\$ 20,678	\$ 23,243	\$ 23,740	\$ 24,400	\$ 25,300	\$ 26,090	3%
Wesleyan College	\$ 19,970	\$ 20,650	\$ 21,860	\$ 24,300	\$ 26,500	\$ 27,300	\$ 28,200	\$ 29,100	\$ 30,000	3%
Young Harris College	\$ 19,018	\$ 19,994	\$ 20,772	\$ 21,910	\$ 23,050	\$ 25,058	\$ 28,683	\$ 30,474	\$ 32,165	6%
Average Sector Price	\$ 20,027	\$ 21,067	\$ 22,338	\$ 23,694	\$ 24,906	\$ 26,326	\$ 27,795	\$ 28,637	\$ 30,926	8%

[Note: Chart omits Georgia Military Campuses as well as Shorter Adult Programs]

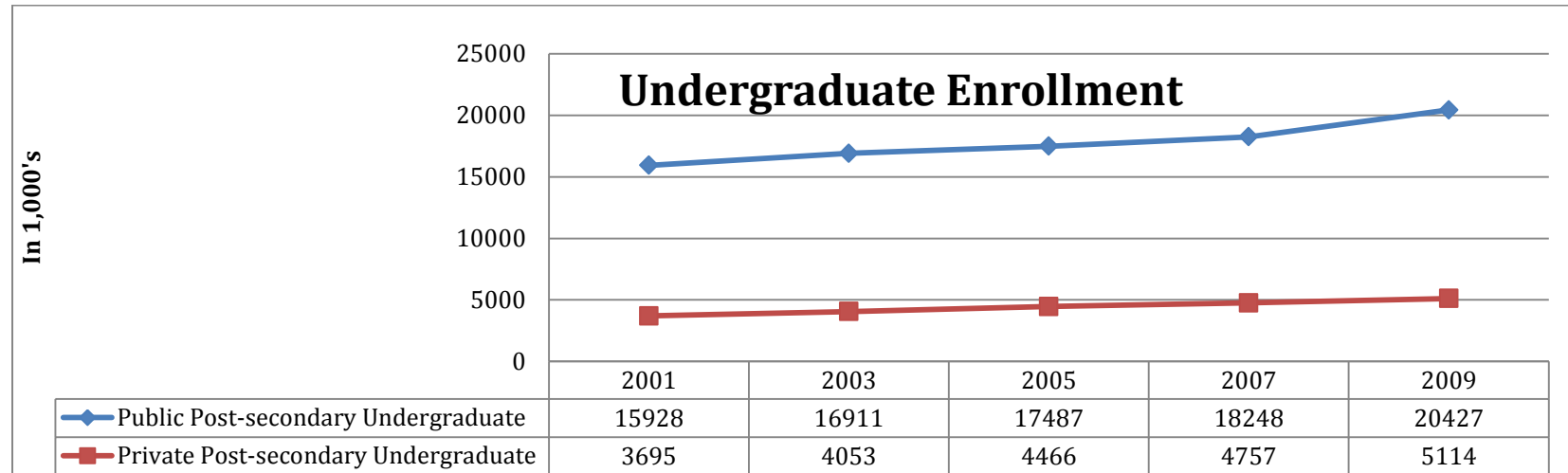
Average Net Price for Students Receiving Grant or Scholarship Aid

Institution Name	2008-09	2009-10	% Change
Agnes Scott College	\$18,501	\$19,085	3%
Andrew College	\$15,147	\$15,537	3%
Berry College	\$18,179	\$19,200	6%
Brenau University	\$13,219	\$14,600	10%
Brewton-Parker College	\$16,372	\$14,638	-11%
Clarke Atlanta University	\$22,731	\$21,727	-4%
Emmanuel College	\$11,583	\$11,311	-2%
Georgia Military College	\$9,225	\$9,212	0%
LaGrange College	\$17,395	\$17,048	-2%
Mercer University	\$18,050	\$18,461	2%
Morehouse College	\$26,619	\$23,884	-10%
Oglethorpe University	\$17,653	\$20,289	15%
Paine College	\$13,757	\$14,038	2%
Piedmont College	\$18,657	\$15,337	-18%
Point University	\$21,293	\$17,578	-17%
Reinhardt University	\$17,713	\$18,884	7%
Savannah College of Art and Design	\$30,092	\$33,016	10%
Shorter University	\$12,336	\$13,456	9%
Spelman College	\$29,112	\$26,404	-9%
Thomas University	\$15,963	\$15,035	-6%
Toccoa Falls College	\$17,022	\$16,380	-4%
Truett-McConnell College	\$15,140	\$15,822	5%
Wesleyan College	\$13,089	\$12,177	-7%
Young Harris College	\$12,289	\$13,351	9%

[Note: Chart omits Georgia Military Campuses as well as Shorter Adult Programs]

Preference for Public vs. Private

The downturn in the economy could explain a seeming sudden preference for public vs. private schools, which had previously been outpacing growth in the public schools.



Higher Education's Role in Economic Development

In closing the Economic section, we might change our focus away from the individual's need for higher education, and consider the role of higher education in the context of society, which may pressure institutions to engage in research. "It has become almost a matter of faith in economic and innovation policy circles to point to U.S. research universities as the secret weapon in the U.S. economic competitiveness arsenal." Some claim that research may well be the most effective public service role colleges play. In any case, the role of the Academy in innovation, in particular -- and in economic health, in general -- is well described in "University Research Funding: the United States is Behind and Falling," by Robert D. Atkinson and Luke A. Stewart, May 2011, published by the Information Technology and Innovation Foundation (ITIF). <http://www.itif.org/files/2011-university-research-funding.pdf> An expansive excerpt is found in the appendix.iv

ENVIRONMENT

Sustainability Qualifies as an Emerging Megatrend

Consumers in many countries are seeking out sustainable products and services. Further fueling this megatrend, thousands of companies are placing strategic bets on innovation in energy efficiency, renewable power, resource productivity, and pollution control. What this all adds up to is that managers can no longer afford to ignore sustainability as a central factor in their companies' long-term competitiveness. In addition, governments are setting higher levels of pollution regulation. Developing new technologies related to energy efficiency and conservation is an important challenge for both research and development in both public and private sectors.

Sustainable technologies have opened up new market sectors which include thin-film solar, biofuels, bio-plastics, carbon trading, wetlands banking, and water quality trading. (Moraine Park Technical College – original source: The Harvard Business Review – The Sustainability Imperative by David A. Lubin and Daniel C. Esty, May, 2010).

Green Expectations: Academics

More than 100 new programs in “green studies” were added by colleges and universities in the US in 2009 compared with the three programs begun in 2005, and students are filling them as fast as they are created (Moraine Park Technical College – original source: USA Today, December 27, 2009). While campuses will be adding major programs in environmental fields, the academic impact also reaches into Liberal Arts (General Education) requirements.

Green Expectations: Beyond the classroom

Green experiences on campus range from funded research -- to creative (if immodest) public protests. (For example, students at Missouri University of Science & Technology and also at Purdue convinced the administration to decommission their coal- and wood- fired boilers; Clad only in their undies, students protested coal during a series of “flesh mobs” at the University of North Texas and Miami University of Ohio.) Students from the nation’s best colleges tend organic gardens, tour rain forests, build carbon-neutral houses off the grid, breed endangered species, etc.

Green Expectations: Administrations

Campuses are big polluters – some say that higher education is the institution with the biggest carbon footprint. Administrations will begin proactive measures to reduce impact – motivated both from internal motivation to clean things up as well as from the public – whose interest will be increased by accountability organizations (e.g. Sierra Club.) These groups produce various reporting services.

Some guidance may be derived from ranking agencies: While the effort to produce rankings, ratings and other accountability reporting on footprint has previously been uncoordinated among environmental groups, recently The Princeton Review, Sierra magazine, and the Sustainable Endowments Institute have worked with AASHE to establish the Sustainability Tracking, Assessment & Rating System (STARS) as the source for information needed to complete their publications (The Princeton Review Green Rating, Sierra magazine's American's Coolest Schools, and the Sustainable Endowment Institute's College Sustainability Report Card, respectively).

In addition, there are some data points, not included in STARS, which other organizations are also interested in, that AASHE has identified as supplemental data in the reporting process. This will allow institutions that want to participate in the various programs to complete the information needed by each organization and enable the organizations to collect this information without having to send out individual surveys to institutions.

Campus Sustainability Data Collector

Thus, the former STARS collection system will become a one-stop-shop for campuses to report and chart environmental gains. Membership in the STARS program will allow access to the survey, and thus to the specific indexes, percentages, etc. requested. The general list below gives some sense of the areas of campus life from which the specific information will be requested:

- **Co-Curricular Education:** Student Sustainability Educators Program; Student Sustainability Outreach Campaign; Sustainability in New Student Orientation; Sustainability Materials and Publications; Student Group; Organic Garden; Model Room in Residence Hall; Themed Housing; Sustainable Enterprise; Sustainability Events; Outdoors Program; Themed Semester or Year
- **Curriculum:** Sustainability Course Identification; Sustainability-Focused Courses; Sustainability-Related Courses; Sustainability Courses by Department; Sustainability Learning Outcomes; Undergraduate Program in Sustainability; Graduate Program in Sustainability; Sustainability Immersive Experience; Sustainability Literacy Assessment; Incentives for Developing Sustainability Courses

- **Research:** Sustainability Research Identification; Faculty Engaged in Sustainability Research; Departments Engaged in Sustainability Research; Sustainability Research Incentives; Interdisciplinary Research in Tenure and Promotion
- **Buildings:** Building Operations and Maintenance; Building Design and Construction; Indoor Air Quality
- **Climate:** Greenhouse Gas Emissions Inventory; Greenhouse Gas Emissions Reduction; Air Travel Emissions; Local Offsets Program
- **Dining Services:** Food and Beverage Purchasing; Trayless Dining; Vegan Dining ; Trans-Fats; Guidelines for Franchisees; Pre-Consumer Food Waste Composting; Post-Consumer Food Waste Composting; Food Donation; Recycled Content Napkins; Reusable Container Discounts; Reusable To-Go Containers
- **Energy:** Building Energy Consumption; Clean and Renewable Energy; Timers for Temperature Control; Lighting Sensors; LED Lighting; Vending Machine Sensors; Energy Management System; Energy Metering
- **Grounds:** Integrated Pest Management; Native Plants; Wildlife Habitat; Tree Campus USA; Snow and Ice Removal; Landscape Waste Composting;
- **Purchasing:** Computer Purchasing; Cleaning Products Purchasing; Office Paper Purchasing; Vendor Code of Conduct; Historically Underutilized Businesses; Local Businesses
- **Transportation:** Campus Fleet (e.g. which use alternative fuels); Student Commute Modal Split; Employee Commute Modal Split; Bicycle Sharing; Facilities for Bicyclists; Bicycle and Pedestrian Plan; Mass Transit Programs; Condensed Work Week; Telecommuting; Carpool/Vanpool Matching; Cash-out of Parking (if you don't take up parking space, campus pays you); Carpool Discount; Local Housing; Prohibiting Idling; Car Sharing
- **Waste:** Waste Reduction; Waste Diversion; Construction and Demolition Waste Diversion; Electronic Waste Recycling Program; Hazardous Waste Management; Materials Exchange; Limiting Printing; Materials Online; Chemical Reuse Inventory; Move-In Waste Reduction; Move-Out Waste Reduction
- **Water:** Water Consumption; Stormwater Management; Waterless Urinals; Building Water Metering; Non-Potable Water Usage; Xeriscaping; Weather-Informed Irrigation
- **Coordination and Planning:** Sustainability Coordination; Strategic Plan; Physical Campus Plan; Sustainability Plan; Climate Action Plan
- **Diversity, Access, and Affordability:** Diversity and Equity Coordination; Measuring Campus Diversity Culture; Support Programs for Under-Represented Groups; Support Programs for Future Faculty; Affordability and Access Programs; Gender Neutral Housing; Employee Training Opportunities; Student Training Opportunities
- **Human Resources:** Sustainable Compensation; Employee Satisfaction Evaluation; Staff Professional Development in Sustainability; Sustainability in New Employee Orientation; Employee Sustainability Educators Program; Childcare; Employee Wellness Program; Socially Responsible Retirement Plan

- **Investment:** Committee on Investor Responsibility; Shareholder Advocacy; Positive Sustainability Investments; Student-Managed SRI Fund; Socially Responsible Investment Policy; Investment Disclosure;
- **Public Engagement:** Community Sustainability Partnerships; Inter-Campus Collaboration on Sustainability; Sustainability in Continuing Education; Community Service Participation; Community Service Hours; Sustainability Policy Advocacy; Trademark Licensing; Graduation Pledge; Community Service on Transcripts; Farmers' Market

The consolidation of surveys /reporting requirements could lead to greater participation by colleges and universities (just as with guidebook/rating services such as US News, Petersons, etc.) That means that data routines and certain practices will probably become institutionalized in these outlined areas as colleges find the reporting more streamlined (easier) and also more helpful and instructional in directing campuses toward “green” efforts which provide “bang for the buck.”

POLITICS

The American Association of State Colleges and Universities identified the 10 most important education policy issues for 2011. With some editorial license, we will use that as a starting source...

State Operating Support for Higher Education

The consequences for declines in state spending for higher education certainly has a significant impact on private education. Apart from the negative consequences (e.g. of threat to **TEG** and **HOPE** tuition assistance – see below), the decline in spending on the states' public institutions, and the resulting increase in fees and tuition charged, will have a disruptive impact on the higher education market and may motivate private colleges to tout competitive price packages.

Accountability

As public belt-tightening occurs during down times, policy makers look more closely at recipients' missions, in particular, the connection of the goals of the institution to economic development and job growth. Higher education will experience pressure to sing for their supper. (In other words, "must dance with them what brung 'em") While state accountability pressures will be felt most by state institutions, the privates may still feel effect reporting pressure from Uncle Sam. Indeed, the "academic freedom" which private colleges claim as a shield is increasingly defied. In any case, privates are not at all exempt from federal policy and politics and these connections should be of keen concern to higher education administrators.

Generous funding

In 2008, nearly \$27.6 Billion came to higher education in federal student aid programs. Of this, \$5.5 billion went for direct student loans made by the government, \$4.9 billion for federally guaranteed loans made by private lenders, \$15.7 billion for grants, and the rest for federal administration. Note that the figures for loans are the net amount of federal support, based on assumptions about loan repayments. The gross amount of loans is much larger—in fiscal 2008, the gross amount of loans was \$110 billion. (And this does not include funds more than \$30 billion of research at the nation's universities through various government departments.) It is

quite possible that the role of the federal government in funding higher education will keep expanding.⁴

http://www.downsizinggovernment.org/education/higher-ed-subsidies#_edn1

The effect of this increased role of the federal government are many. For example, some argue that this has had an inflationary impact on the cost of college. “Consider four-year private colleges and universities. The average real cost (in 2006 dollars) per student rose from \$18,122 in 1986 to \$30,497 in 2006, a 68 percent increase. But students didn’t bear that large increase because of grants, loans, and tax benefits. After these benefits, the cost grew from \$10,943 to \$14,158, a much more modest 29 percent increase. A similar pattern holds for price increases and public institutions.” http://www.downsizinggovernment.org/education/higher-ed-subsidies#_edn1

Irrespective of its impact on prices, perhaps the main impact of concern for higher education is the leverage this investment gives to the government for information and influence in those areas usually considered “off limits” out of respect for academic freedom.

Dumbing Down

Thus, perhaps the biggest impact we need to watch is governments’ response to evidence of lapses in rigor and effectiveness. Indeed, as we have seen in such initiatives from the Department of Education as the SPREE act (during the administration of

⁴ For example, President Obama proposed to increase Pell grants and to budget them as an “entitlement” program, thus putting spending on automatic pilot and not needing annual budgeting action from Congress. Congress, too, has been generous. In recent years, Congress has expanded subsidies for higher education. The College Cost Reduction and Access Act of 2007 cut interest rates on federally subsidized loans in half, thus encouraging more student borrowing. The Ensuring Continued Access to Student Loans Act of 2008 increased the borrowing limits on certain student loans and gave the Department of Education new authority to fund student lending. http://www.downsizinggovernment.org/education/higher-ed-subsidies#_edn1

Secretary Richard Riley) and subsequent efforts, such as the K-16 initiative (during the administration of Secretary Spaldings), the US government is going finding it hard to resist acting on new findings.

Richard Arum and Josipa Roksa recently co-authored updated findings from the Social Science Research Council's "Collegiate Learning Assessment Longitudinal Project." The project follows several thousand students at 30 US institutions over time to examine the factors which influence student gains on skills such as critical thinking. (As measured by the Collegiate Learning Assessment, or CLA.) The original purpose was to examine inequalities among and within colleges. The new data expands on Academically Adrift, as it follows students post-graduation, during the recent US economic crisis. Their extensive research draws on survey responses, transcript data, and, for the first time, the state-of-the-art Collegiate Learning Assessment. This measures a range of skills—including critical thinking, complex reasoning, and writing. According to their analysis, colleges are failing at their most basic mission

- 45 percent of these students demonstrate no significant improvement during their first two years of college.
- Over 50% of students said they did not take a course requiring more than 20 pages of writing. 32% of students said courses required no more than 40 pages of reading per week. 36% study five or more hours per week. Simply put, they are not asked to read much and not asked to write much.
- Overall, there is rampant grade inflation. Other conclusions: College is easier than high school and students will only rise to expectations.
- Also, disciplines matter. It seems that Liberal Arts majors are the only ones making gains in key skills: intra-campus differences among departments (liberal arts majors such as natural sciences, social sciences, math/computer science and humanities) have positive impact on critical thinking impact; Professional majors (education; business; communication; health sciences, etc.) showed stagnation or even decline in critical thinking scores over 4 years. The extent to which academic rigor still exists – it exists in the liberal arts.
- One finding was that college does matter: some colleges seem to impact critical thinking more effectively than others – it's as simple as a correlation on academic rigor.
- Interesting related statistics: 30% of recent grads read print or online news "monthly or never", 34% weekly, 36% daily. This is closely related to the reading and writing demands. (Arum emphasizes that this is what the "educated class" does!)

Other reports strike similarly ominous tones: One writer notes the following: “Faculty giving exam questions and answers prior to examination”; “faculty noticing declining grades on same material” (given over time); “[watered down standards from] pressures to retain students”; “publishers having to respond to courses being dumbed down”; “employers becoming suspicious of value of college diploma”; and some “students even finding that their diploma is more of a handicap than a help.” (Taken from “Declining Standards in Higher Education,” CyberCollege, <http://www.cybercollege.com/plume8.htm>)

Whether or not criticism is fair and problems are wide spread, the doubt generated by these and other reports may serve to heighten the demand for accountability, especially in light of the high cost of education and the high degree of public investment. We do not know what form this accountability effort will take, but academics should be part of the process of measurement.

Reductionism

Many academicians (e.g. see “Assessment and General Education” by Stanley N. Katz, Plenary Address, AAC&U, Boston MA, 23 February 2008) raise concern about the reductionism that results from external pressures for accountability. The feeling on the part of college academic leaders is that the whole (of the process and the product) of higher education is bigger than the “sum of the parts”. “Our unwillingness to accept these fairly objective proxies is derived from our commitment to the notion that liberal learning has more to do with the cultivation of qualities of mind, the capacity to recognize and analyze significance, than with the mastery of any quantum of information. [For example,] what the liberal educator seeks is the ability to recognize meaningful problems, to identify the information and modes of analysis necessary to address the problems, and the instinct to bring these to bear in problem-solving. “ The concern is that pressure for measurement will result in teaching to measures too literal and limited to discern accomplishment of these abilities.

(Postmodern) Disassembling

Many higher educators hail the arrival of a more componentized approach to higher education. “We have to question the tyranny of the degree,” says David Wiley, an associate professor of instructional psychology and technology at Brigham Young University. Mr. Wiley is an outspoken advocate of so-called open education, and he imagines a future where screenfuls of badges from free or low-cost institutions, perhaps mixed with a course or two from a traditional college, replace the need for setting foot on a campus. “As soon as big employers everywhere start accepting these new credentials, either singly or in bundles, the gig is up completely.” (Quote taken from *‘Badges’ Earned Online Pose Challenge to Traditional College Diplomas*, Chronicle of Higher Education, January 8,

2012, <http://chronicle.com/article/Badges-Earned-Online-Pose/130241/> in which Jeffrey Young notes the popularity of a “Boy Scout” approach, “a playful alternative to diplomas” for certifying skills.) The badge and other certification approaches may be part of a greater movement toward deconstruction of the process into smaller, stand along components. Apart from concern that students actually earn (learn the skills claimed by) the badges, the single-skill approach concerns those who see higher education as an accomplishment whose whole is greater than the sum of the parts. . And the emphasis seems to be only on those facets with utilitarian application. Belle S. Wheelan, president of the Commission on Colleges of the Southern Association of Colleges and Schools says, “The whole idea of learning beyond high school has changed...College used to indicate that not only did you have a skill set in a particular area, but that you gained a body of knowledge that made you a well-rounded person.”

College Readiness

“College readiness is a perennial issue, and one that will garner much attention in 2011....A significant breakthrough occurred in 2009 when the National Governors Association (NGA) and the Council of Chief State School Officers (CCSSO) coordinated the Common Core State Standards Initiative. This effort brought states together to develop national (not federal) standards for K-12 education that are aligned with college and work expectations. It is encouraging that more than 40 states have adopted the English Language Arts and Mathematics standards released in 2010. The hard work lies ahead (e.g. with development of curriculum, etc.) As 2010 came to an end, AASCU, CCSSO and others announced a partnership through which k-12 and higher education will work together to implement the new standards.” (The higher education involvement will go farther than things like college placement assessments, as it may imply data systems spanning P-20)

Tuition Policy and Prices at Publics

As mentioned, as states fight with budget crises, the cost of public education will increase. But the recession also brings new dynamics as to just how this college price increase affects access to higher education for not only the neediest students, but also middle-class students and families battered by the recession.

State Student Aid Programs

“The only sure observation is that there is currently no sign of decreased demand for state student financial aid, whether need- or merit-based.” State legislators may have to make difficult decisions in upcoming years on how to fund these programs.

- TEG: The Tuition Equalization Grant (TEG) was cut by \$50 from last year (\$750 down to \$700 per student), and that grant amount has seen several adjustments over recent years. It was as high as \$1200 per year at one point. It has been a goal of the Georgia Independent College Association to see the TEG level out at \$1000 per year.
- HOPE: The Georgia Student Finance Commission, which administers the popular HOPE Scholarship, recently announced that only students with a 3.7 GPA and a 1200 SAT will get full funding (labeled “Zell Miller” Scholars). Other students, previously eligible for a fully-funded HOPE award can now only receive 90% of the prior year's funding. In practical terms, for Brenau students, this could mean a decrease of \$400 per year for full-time students previously enjoying full funding. For students at state colleges, the impact could be up to \$3000 per year. Since the HOPE program spent more last year than the lottery received in revenue, it is widely anticipated that legislators will make further cuts, which could include excluding private colleges from funding.

And we might look for income caps: “State Democratic Leaders want to re-instate an income cap on Georgia’s HOPE college scholarship program. ... Officials overseeing the HOPE scholarship say by 2016, the scholarship will cover less than half of the University of Georgia’s tuition and fees.” But the cap would still be set as high as possible “to maximize the number of students who get the full HOPE scholarship.” (“State Democrats Want HOPE Income Cap”, by Jeanne Bonner, <http://www.gpb.org/news/2012/01/23/senate-democrats-want-hope-income-cap> GPB News)

- REACH: (Realizing Educational Achievement Can Happen) is a needs-based scholarship. Scholars will be selected in middle school and will sign a contract to maintain a certain grade point average, remain free of crime, drugs and behavior issues and meet with a volunteer mentor until they graduate from high school. Their parents or guardians will sign a contract to support their student through their education. Students meeting the requirements will receive a renewable yearly tuition scholarship of \$2,500 to be used at any HOPE-eligible institution.
http://gov.georgia.gov/00/press/detail/0,2668,165937316_165937374_181353530,00.html

Veterans Education (Implementation of the Post-9/11 GI Bill and State Issues)

As the Post-9/11 GI Bill (formally known as the [Post-9/11 Veterans Educational Assistance Act of 2008](#)) enters its first full year of implementation in 2010, states are evaluating how this federal program meshes with state-level assistance programs for veteran students. Although full implementation has taken place, the full impact is yet to be realized as veterans as well as active duty students return from tours (and end service careers) in the Middle East.

State Student Data Systems

“Attention to the development and use of statewide data systems will continue. Though statewide postsecondary data systems have historically been built chiefly to meet accountability requirements, recent years have seen a shift in focus to the use of data to promote student success from preschool through college and the workplace. This shift has coincided with the recent and rapid development of K-12 statewide student databases and the growing recognition that better data on student progression through the educational pipeline are needed to help the nation meet its educational attainment goals. According to SHEEO, 44 states and the District of Columbia have at least one state postsecondary student unit record system. Twenty-three states link, share and/or exchange data with their k-12 state education agency and 23 do so with a labor/workforce agency in their state.” (Page 4/January 2011, AASCU Policy Matters)

In partial fulfillment of Race to the Top funding agreement, the Georgia Governor’s Office of Student Achievement (GOSA) is marshaling efforts of higher education agencies (representing individual campuses), such as Georgia Independent Colleges Association, University of Georgia System, etc., to develop a statewide data system which will track students from kindergarten into the world place (with a working title at this writing of “SLDS”).

As comprehensive statewide longitudinal data systems become more widespread and reach greater maturity, key stakeholders believe they will have the ability to **better understand which factors correlate with college success and completion and which policies and practices promote student success.**

Federal Student Data Systems

Concurrent with state-level efforts, it is possible that we will see (e.g. IPEDS) federal data collection developed to collect longitudinal national data on students – following them across platforms to determine efficacy of certain institutions, programs, etc. to student outcomes. (Coincidentally, a bi-partisan bill – The American Dream Accounts Act -- has been introduced in the US Senate (at this writing on March 16, 2012) to “create Web-based accounts to track students’ progress from elementary school through college, establish college-savings plans for low-income students....” <http://chronicle.com/article/Senate-Bill-Would-Create/131222/?key=TWN0KQZuNnBMYS4xYjxEZD1UaXM5NUx3ZXJeb3onblITFw%3D%3D>)

Economic and Workforce Development

With the economy and labor data in mind, state lawmakers will be calling for colleges and universities in particular to be more responsive to regional workforce needs. A common argument is that institutions should focus on job needs in their local communities and target their educational offerings to those needs. Discussion will continue throughout 2011 about the appropriate balance needed between short-term, workforce-oriented credentials and more traditional baccalaureate programs, influenced by national debates on educational productivity and measuring how degrees correlate to workforce needs.

In addition, the federal Workforce Investment Act (WIA) may come up for renewal in 2011. The Act has not been reauthorized since 1998 and expired in 2003, but the post-election changes in Congress and a focus on job creation may bring more attention to WIA. If this happens, it will encourage higher education and business leaders to continue to work together to craft workforce-related partnerships. (January 2011, AASCU Policy Matters)

Teacher Preparation

Issues of teacher quality and effectiveness will continue to be front and center as the federal government and states work to improve student readiness and success. Recognizing the well-documented assertion that teacher quality is the most important school-based factor affecting student learning, Education Secretary Arne Duncan's ["Race to the Top"](#) requires states applying for funds to develop longitudinal data systems that link K-12 student achievement with teacher data. Data on teacher effectiveness are to be used to identify and reward effective teachers as well as to inform professional development. States are also being challenged to use teacher effectiveness data to rate the quality of their teacher education programs so that such programs can be improved.

Race

We might also guess that discussions of race, and especially discussion about student achievement gaps, may directly or indirectly ascend to higher education. The gaps are real. "The National Assessment of Educational Progress (NAEP), a test administered every two years to representative samples of students in the US, is one standardized measure of achievement. The most recent NAEP results for the state of Georgia show that there is a sizable gap between the performance levels of racial subgroups. While overall achievement inches slowly higher with each test administration, white and Asian American students consistently score at much higher rates in reading than Hispanic and black students. Similar results are found in the 8th grade. Gaps in achievement exist not only among racial groups, but among students with variations in ability, English proficiency, and income levels.

Closing achievement gaps requires more than just higher standards and more money. When we consider that white students, who attend well-resourced schools at disproportionately higher rates than ethnic minorities, still make incremental gains in achievement, we should realize the resources alone cannot solve all of our problems. (“Top Ten Issues to Watch in 2011”, Georgia Partnership for Excellence in Education, p.19-20)

“Active intervention is needed to support the needs of students who have less support or fewer resources at home, and leadership at multiple levels is required to ensure that excellence in teaching and rigorous curriculum are available for the lowest-achieving students, too. Without such interventions, the achievement gap will never close...and students will be denied the education they deserve.” (Noguera, P., and J.Y. Wing, eds. *Unfinished Business: Closing the Racial Achievement Gap in Our Schools*. Jossey-Bass: March 2006.)

“The future economic vitality and productivity of Georgia and of the nation will depend on the academic preparation and support all students receive today.” (“Top Ten Issues to Watch in 2011”, Georgia Partnership for Excellence in Education, p.22)

CULTURE AND COMMODIFICATION

There are lots of forces at play in the environment, both observable and intangible. An environmental scan would do well to at least acknowledge cultural currents and the accumulation of values which can have a big impact on the higher education “enterprise.”

Cultural factors might not seem conventional to environmental scans because of their intangibility. But they may also feel out of kilter because they imply not reaction (in light of opportunities, threats, etc) but also lead to proactivity in countering the trends themselves. For example, we might consider the trend, that increasingly, higher education is seen as a consumer good.

We as higher educators know that “Higher education confers benefits above and beyond enhancing the incomes of those who receive it. And many of these benefits take the form of public goods (such as the contribution of higher education to social enterprise, innovation, governance, culture, and participatory democracy), as well as its potential for lifting the disadvantaged out of poverty. These are all vital building blocks for stronger economies and societies and all routes by which the benefit of investment in higher education multiplies throughout society.” Higher education used to be a public service.

But higher education is becoming, if not directly privatized, at least monetized. Even in schools which been not been handed over to corporations, all campuses feel pressure to be run as a business.

We might ponder what is behind pressure colleges feel to run themselves according to “business models” -- with more of a focus on return on investment. But the fact is, the emphasis is on profits – and profits often boil down to enrolling more students. Thus, there is pressure to market higher education, and that marketing, in turn, often emphasizes personal benefits.

“Unthinking adoption of the private sector model prevents the development of a meaningful approach to [goals of]... traditional institutions of learning.” (<http://www.satishtandon.com/globaledu.html>, “Globalization: Impact on Education”, Satish Tandon, September 2005) In the case of higher education, it means de-emphasizing inquiry, openness, research, free thinking, etc.

But running colleges like business has another consequence: inflation. College is put out of reach when all colleges learn to charge what they can. Access, a social goal, is threatened.

Thus, in response to this inflation, governments keen on protecting public access and also protecting taxpayer investment (in the form of tuition grants, etc.) become involved and demand accountability. This reaction has serious consequences of its own, in terms of cultural currents. In addition to threat to independence of higher education generally and to individual colleges with distinctive missions, this increased involvement of accountability agencies comes at a time when the state, itself, seems less and less concerned about the public service goals of higher education – e.g. to produce innovative, free thinking, principled, high-minded citizens and public servants. Former emphases on “core” curricula have waned in deference to coursework seen as having greater utility. The certification of institutions has the effect of validating those institutions with minimal missions and standards.

All of these things make up the climate of higher education. Colleges must be aware of cultural “problems” (e.g. such as the commodification of higher education). But this awareness is for purposes beyond simple survival. An environmental scan should also make us aware of threats to the mission and, in fact, focus us on actions which transcend considerations of survival. Rather than a situational reflexive response we might also assess threats to fundamental missions of independent institutions – e.g. to engage and in public education –whether or not it returns profit or in threatens survival.

Indeed, we cannot ignore the public service mission. Independent colleges must appreciate their unique position and obligation and then -- proactively rather than reactively -- chart strategies in light of social needs. Organizations should guard against threats to the mission of independent colleges and (rather than more passive reaction to social, technological, economic and cultural conditions) purposefully guard against pressures toward homogenization – and even take stands against some currents of culture.

OTHER MISCELLANEOUS TRENDS

Badges

“Educational upstarts across the Web are adopting systems of “badges” [kind of like Boy Scout achievement patches] to certify skills and abilities. If scouting focuses on outdoorsy skills like tying knots, these badges denote areas employers might look for, like mentorship or digital video editing. Many of the new digital badges are easy to attain—intentionally so—to keep students motivated, while others signal mastery of fine-grained skills that are not formally recognized in a traditional classroom. ...At the free online-education provider Khan Academy, for instance, students get a “Great Listener” badge for watching 30 minutes of videos from its collection of thousands of short educational clips.” (Chronicle of Higher Education: January 8, 2012, ‘Badges’ Earned Online Pose Challenge to Traditional College Diplomas, by Jeffrey R. Young)

Disruptive Technologies

While it is not the purpose of this report to predict new models of instructional delivery and any new form higher education might take, we might still stop to consider the trend of many institutions and instructors to offer their courseware online for free (e.g. through YouTube.) As the delivery of content (from some of the best talent in the world) becomes readily available, just as the academy is considering new pedagogical approaches (such as using class time to complete assignments and leaving content for homework), it is important for educators and administrators to continue to watch the development of new sources of content. (e.g. see <http://www.marketplace.org/topics/economy/education/how-cost-college-could-be-loweredasd>)

Challenge to the 8-hour day

“The notion of an eight-hour day is rapidly disappearing, simply because we work so virtually and globally” There is increasing evidence that Gen-Y’ers value flexible work arrangements as highly as they do salary. (“The Beginning of the End of the 9-to-5 Workday?” by Dan Schawbel <http://moneyland.time.com/2011/12/21/the-beginning-of-the-end-of-the-9-to-5-workday/#ixzz1kVHJfV690>.)

Rethinking Admission Standards

In public higher education and in institutions run for profit, increasingly students will have options which do not require traditional qualifications for entrance and even for scholarships. For example, in the state of Georgia, Democratic Leaders “want to remove a grade point average requirement for scholarship recipients to state technical colleges.” (State Democrats Want HOPE Income Cap”, by Jeanne Bonner, <http://www.gpb.org/news/2012/01/23/senate-democrats-want-hope-income-cap>)

Stratification and Inequality: The Rich Get Richer

<http://www.changemag.org/Archives/Back%20Issues/November-December%202008/full-funding-disconnect.html> Nationwide, only 7 percent of students are enrolled in institutions that spend \$25,000 or more on them per year—in contrast to the over 45 percent where spending is below \$10,000 per year.

i Examples of Environmental Scans

- University of New Mexico - <http://www.unm.edu/~unmstrat/envscan.html>
- Eastern Michigan U. - http://www.emich.edu/cas/faculty/pdf/planning/emu_info/environmental_scan08.pdf
- Tulane U. - http://tulane.edu/strategicplanning/scan_summary.cfm
- Texas State U. - <http://www.txstate.edu/effective/paenviro.pdf>
- University of Montana - <http://www.umt.edu/planningassessmentcontinuum/assess/assessdocs/EnvironmentalScan.pdf>
- University of Illinois - www.uillinois.edu/strategicplan/ppt/Environmental-Scan-FY-2008.ppt
- Iowa State - <http://www.public.iastate.edu/~accreditation/3-future/212.htm>
- Miami-Dade College http://www.mdc.edu/main/images/Environmental%20Scan%20Full%20Report_tcm6-28116.pdf
- Spelman College - <http://www.spelman.edu/administration/office/pdf/plan.pdf>

ii “Southern States”, as referred to in this Environmental Scan, include: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

iii National Employment Opportunities

Table 1. Occupations with the fastest growth

<u>Occupations</u>	<u>Percent change</u>	<u>#new jobs (in thousands)</u>	<u>Wages (May 2008 median)</u>	<u>Education/training category</u>
Biomedical engineers	72	11.6	\$ 77,400	Bachelor's degree
Network systems and data communications analysts	53	155.8	71,100	Bachelor's degree
Home health aides	50	460.9	20,460	Short-term on-the-job training
Personal and home care aides	46	375.8	19,180	Short-term on-the-job training
Financial examiners	41	11.1	70,930	Bachelor's degree
Medical scientists, except epidemiologists	40	44.2	72,590	Doctoral degree
Physician assistants	39	29.2	81,230	Master's degree
Skin care specialists	38	14.7	28,730	Postsecondary vocational award
Biochemists and biophysicists	37	8.7	82,840	Doctoral degree
Athletic trainers	37	6.0	39,640	Bachelor's degree
Physical therapist aides	36	16.7	23,760	Short-term on-the-job training
Dental hygienists	36	62.9	66,570	Associate degree
Veterinary technologists and technicians	36	28.5	28,900	Associate degree
Dental assistants	36	105.6	32,380	Moderate-term on-the-job training
Computer software engineers, applications	34	175.1	85,430	Bachelor's degree
Medical assistants	34	163.9	28,300	Moderate-term on-the-job training
Physical therapist assistants	33	21.2	46,140	Associate degree
Veterinarians	33	19.7	79,050	First professional degree
Self-enrichment education teachers	32	81.3	35,720	Work experience in a related occupation
Compliance officers, except agriculture, construction, health and safety, and transportation	31	80.8	48,890	Long-term on-the-job training
SOURCE: BLS Occupational Employment Statistics and Division of Occupational Outlook				

Table 2. Occupations with the largest numerical growth

<u>Occupations</u>	<u>#of new jobs (in 1000s)</u>	<u>Percent change</u>	<u>Wages (May 2008 median)</u>	<u>Education/training category</u>
Registered nurses	581.5	22	\$ 62,450	Associate degree
Home health aides	460.9	50	20,460	Short-term on-the-job training
Customer service representatives	399.5	18	29,860	Moderate-term on-the-job training
Combined food preparation and serving workers, including fast food	394.3	15	16,430	Short-term on-the-job training
Personal and home care aides	375.8	46	19,180	Short-term on-the-job training
Retail salespersons	374.7	8	20,510	Short-term on-the-job training
Office clerks, general	358.7	12	25,320	Short-term on-the-job training
Accountants and auditors	279.4	22	59,430	Bachelor's degree
Nursing aides, orderlies, and attendants	276.0	19	23,850	Postsecondary vocational award
Postsecondary teachers	256.9	15	58,830	Doctoral degree
Construction laborers	255.9	20	28,520	Moderate-term on-the-job training
Elementary school teachers, except special education	244.2	16	49,330	Bachelor's degree
Truck drivers, heavy and tractor-trailer	232.9	13	37,270	Short-term on-the-job training
Landscaping and groundskeeping workers	217.1	18	23,150	Short-term on-the-job training
Bookkeeping, accounting, and auditing clerks	212.4	10	32,510	Moderate-term on-the-job training
Executive secretaries and administrative assistants	204.4	13	40,030	Work experience in a related occupation
Management analysts	178.3	24	73,570	Bachelor's or higher degree, plus work experience
Computer software engineers, applications	175.1	34	85,430	Bachelor's degree
Receptionists and information clerks	172.9	15	24,550	Short-term on-the-job training
Carpenters	165.4	13	38,940	Long-term on-the-job training
SOURCE: BLS Occupational Employment Statistics and Division of Occupational Outlook				

Table 3. Occupations with the fastest decline

<u>Occupation</u>	<u>Percent change</u>	<u>#f jobs lost (in thousands)</u>	<u>Wages (May 08 median)</u>	<u>Education/training category</u>
Textile bleaching and dyeing machine operators and tenders	-45	-7.2	\$ 23,680	Moderate-term on-the-job training
Textile winding, twisting, and drawing out machine setters, operators, and tenders	-41	-14.2	23,970	Moderate-term on-the-job training
Textile knitting and weaving machine setters, operators, and tenders	-39	-11.5	25,400	Long-term on-the-job training
Shoe machine operators and tenders	-35	-1.7	25,090	Moderate-term on-the-job training
Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers	-34	-4.8	31,160	Moderate-term on-the-job training
Sewing machine operators	-34	-71.5	19,870	Moderate-term on-the-job training
Semiconductor processors	-32	-10.0	32,230	Postsecondary vocational award
Textile cutting machine setters, operators, and tenders	-31	-6.0	22,620	Moderate-term on-the-job training
Postal Service mail sorters, processors, and processing machine operators	-30	-54.5	50,020	Short-term on-the-job training
Fabric menders, except garment	-30	-0.3	28,470	Moderate-term on-the-job training
Wellhead pumpers	-28	-5.3	37,860	Moderate-term on-the-job training
Fabric and apparel patternmakers	-27	-2.2	37,760	Long-term on-the-job training
Drilling and boring machine tool setters, operators, and tenders, metal and plastic	-27	-8.9	30,850	Moderate-term on-the-job training
Lathe and turning machine tool setters, operators, and tenders, metal and plastic	-27	-14.9	32,940	Moderate-term on-the-job training
Order clerks	-26	-64.2	27,990	Short-term on-the-job training
Coil winders, tapers, and finishers	-25	-5.6	27,730	Short-term on-the-job training
Photographic processing machine operators	-24	-12.5	20,360	Short-term on-the-job training
File clerks	-23	-49.6	23,800	Short-term on-the-job training
Derrick operators, oil and gas	-23	-5.8	41,920	Moderate-term on-the-job training
Desktop publishers	-23	-5.9	36,600	Postsecondary vocational award

SOURCE: BLS Occupational Employment Statistics and Division of Occupational Outlook

iv

The excerpt documents that publicly-funded research leads to positive economic activity and virtuous job cycles. In any case, considering the impact on the economy and on other areas of the greater good, the case can certainly be made the universities ought to be engaged in research:

In developed, knowledge-based economies, innovation powers long-run economic growth. For example, two-thirds of UK private-sector productivity growth between 2000 and 2007 was a result of innovation.⁵ Klenow and Rodríguez-Clare decomposed the cross-country differences in income per-worker into shares that could be attributed to physical capital, human capital, and total factor productivity, and they found that more than 90 percent of the variation in the growth of income per worker was a result of how effectively capital is used (that is, innovation), with differences in the actual amount of human and physical capital accounting for just 9 percent.⁶

Innovation is also positively correlated to job growth in the mid- to long-term. ⁷ Innovation leads to job growth in three fundamental ways. First, innovation gives a nation's firms a first-mover advantage in new products and services, expanding exports and creating expansionary employment effects in the short term. In fact, in the United States, growth in exports leads to twice as many jobs as an equivalent expansion of sales domestically.⁸ Second, innovation's expansionary effects lead to a virtuous cycle of expanding employment. For example, in the early- to mid-1990s, the emergence of information technology as a general purpose technology drove broad-based economic growth, creating hundreds of thousands of new jobs, which, in turn, led to additional job growth in supporting industries. Finally, when innovation leads to higher productivity, it also leads to increased wages and lower prices, both of which expand domestic economic activity and create jobs.⁹

Research performed outside the private sector is essential to the U.S. innovation system. Even with robust corporate R&D investment, the private sector alone does not provide the level of innovative activity that society needs, because firms do not capture all of the benefits of innovation. A plethora of studies have found that the rate of return to society from corporate R&D and innovation activities is at least twice the estimated returns that a company itself receives.¹⁰

For example, Tewksbury, Crandall and Crane examine the rate of return from twenty prominent innovations and find a median private rate of return of 27 percent but a median social rate of return of a whopping 99 percent, almost four times higher.¹¹ Nordhaus estimates that inventors capture just 4 percent of the total social gains from their innovations; the rest spill over to other companies and to society as a whole.¹² In other words, the private sector under-invests in innovation and thus, without public investment, the rates of economic growth, job creation and living standard improvement are all lower than their potential. The university system, therefore, plays a key role in filling in this gap in order to provide innovation at the social optimum.

Recently, universities have taken on an even greater role in the American innovation system. Over the last three decades, many large corporations have shut down or repurposed central research laboratories that used to conduct R&D. For example, since its founding in 1925, Bell Labs (until 1995, a subsidiary of AT&T) made seminal scientific discoveries, created powerful new technologies, and built the world's most advanced and reliable telecommunications networks. Because so much of these results spilled over to other firms (not just AT&T) and industries, the incentive to perform this kind of foundational, generic research was based on the fact that AT&T had significant market power and was a regulated monopoly. But with the introduction of competition to the telecommunications industry in the 1980s and 1990s, Bell Labs was restructured to focus more on incremental technology improvements with shorter-term payoffs. This is reflective of an overall shift in corporate R&D, with companies in the United States expanding their investments in later-stage applied research and development much more quickly than their investments in basic, early-stage research¹³...

This shift to shorter-term, less fundamental R&D risks a shrinking of the knowledge pool from which firms draw the ideas and information necessary to conduct later-stage R&D and to bring innovations to the market. As U.S. companies have shifted their R&D activities upstream, universities have taken on a larger role in the innovation system. Today, universities perform 56 percent of all basic research, compared to 38 percent in 1960. ¹⁵ Moreover, universities are increasingly passing on these results to the private sector: Between 1991 and 2009, the number of patent applications filed by universities increased from 14 per institution to 68 per institution; licensing income increased from \$1.9 million per institution to \$13 million per institution; and new start-ups formed as a result of university research increased from 212 in 1994 to 685 in 2009.¹⁶

Overall, university research has large impacts on U.S. economic growth. In terms of its impact on product and process development in U.S. firms, Mansfield finds the social rate of return from investment in academic research to be at least 40 percent. ¹⁷ And a study by the Science Coalition found that "companies spun out of research universities have a far greater success rate than other companies."¹⁸

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