BHEF BUSINESS-HIGHER EDUCATION FORUM®

Creating Solutions. Inspiring Action.®

Winter Member Meeting

February 4- 5, 2010

Ritz-Carlton
Marina del Rey, CA

AGENDA:
Thursday, February 4

2:30 - 5:00 p.m.	**Executive Committee Meeting** *The Pavilion*
6:00 - 7:00 p.m.	**Opening Reception** *Garden Veranda (if inclement weather, will move to Marina Vista)*
7:00 p.m.	**Opening Dinner** *Marina Vista*

AGENDA:
Friday, February 5

7:00 - 7:45 A.M.	**Breakfast** *Marina Vista*
7:45 A.M.	*Shuttles depart hotel for Raytheon facility*
8:30 - 9:00 A.M.	**Welcome** **William H. Swanson**, Chairman & CEO, Raytheon Company **Introduction** **David J. Skorton,** President, Cornell University **Keynote Speaker** **The Honorable Martha J. Kanter**, Under Secretary of Education, U.S. Department of Education
9:00 - 10:45 A.M.	**Plenary Session I** **Can the Reauthorization of the Elementary and Secondary Education Act (ESEA) Ensure College Readiness for All?** Moderators: • **Edward B. Rust, Jr.**, Chairman & CEO, State Farm Insurance Companies • **Renu Khator**, President, University of Houston Chancellor, University of Houston System Respondent: • **Michael Cohen**, President, Achieve, Inc.
10:45 - 11:15 A.M.	**Break**
11:15 - 12:30 A.M.	**Plenary Session II** **Improving the STEM Pipeline: Insights and Findings from the U.S. STEM Education Model** Moderators: • **William H. Swanson**, Chairman & CEO, Raytheon Company • **Warren J. Baker**, President, California Polytechnic State University Presenters: • **Brian K. Fitzgerald**, Executive Director, Business-Higher Education Forum • **Christopher Roe**, Deputy Director, Business-Higher Education Forum
12:30 - 2:00 P.M.	**Lunch**

AGENDA:
Friday, February 5 (cont.)

2:00 - 3:30 P.M.

Plenary Session III
Are U.S. Baccalaureate Attainment Rates Poised to Fall? The Impact of the Economy, Policy Priorities, and Changing Demographics
Moderators:
- **William E. Kirwan II**, Chancellor, University System of Maryland
- **Michael D. King**, Vice President, IBM Global Education Industry

Presenter:
- **Michael S. McPherson**, President, Spencer Foundation

3:30 - 3:45 P.M.

Break

3:45 - 5:00 P.M.

Plenary Session IV
Renewing Graduate Education: Recommendations from the Commission on the Future of Graduate Education
Moderators:
- **Molly Corbett Broad**, President, American Council on Education
- **Richard Stephens**, Senior Vice President, The Boeing Company

Presenters:
- **Roger W. Ferguson Jr.**, President & CEO, TIAA-CREF
- **Debra Stewart**, President, Council on Graduate Schools

Respondent:
- **Charles M. Vest**, President, National Academy of Engineering

5:00 - 5:30 P.M.

Closing Remarks

5:30 P.M.

Shuttles return to Ritz-Carlton

6:00 - 7:00 P.M.

Closing Reception
Ballroom Terrace Promenade

7:00 P.M.

Closing Dinner
Ballroom Terrace

OVERVIEW

Welcome to the Business-Higher Education Forum's (BHEF) Winter 2010 Member Meeting, which will focus on emerging federal legislation and national priorities in education. BHEF has been working to help shape and support President Obama's unprecedented education priorities, including the Race to the Top, the Innovation Fund, and the Access and Completion Fund.

In addition, BHEF has been working to:

- Advance the movement toward common state college-and work-ready standards
- Emphasize the importance of math and science standards
- Increase coordination and increase funding of STEM education
- Advocate for increased funding of R&D by supporting President Obama's goal to invest more than 3% of the nation's economic output in scientific innovation and advocating for full funding of the America COMPETES Act

The following provides a brief overview of the four plenary sessions, which are designed to raise the most important issues in these areas and to garner meaningful discussions. At the conclusion of the meeting, we hope to have a set of recommendations that will allow us to successfully continue to move forward on our priorities—increasing college readiness, access, and success, as well as increasing the number of STEM graduates prepared to enter the workforce.

Plenary Session I

Can the Reauthorization of the Elementary and Secondary Education Act (ESEA) Ensure College Readiness for All?

With increased funding for education across the board, and a much greater focus on common college-and career-ready standards across the nation, the upcoming reauthorization of ESEA provides a clear opportunity to truly ensure all of America's students graduate from high school ready for college or a career. This session will involve members in a discussion of BHEF recommendations for ESEA Reauthorization in order to change the face of K-12 education in the United States.

Plenary Session II

Improving the STEM Pipeline: Insights and Findings from the U.S. STEM Education Modeling Project

President Obama has made STEM a key education priority, introducing several efforts that align well with BHEF's STEM Initiative. A key component of that initiative, BHEF's U.S. STEM Education Model, has yielded important insights that can support both federal and state efforts to improve STEM education and increase the number of students who ultimately earn STEM degrees. This session will highlight some of the lessons learned in the development of this ground breaking tool and will involve members in a discussion of recommendations for policy makers and of next steps in advancing the model's use.

Plenary Session III

Are U.S. Baccalaureate Attainment Rates Poised to Fall? The Impact of the Economy, Policy Priorities, and Changing Demographics

President Obama's initiative to restore U.S. leadership in degree attainment relies heavily on strengthening community colleges. While community colleges are vitally important to the postsecondary education landscape, this session will address whether such focus is sufficient in light of trends signaling future declines in baccalaureate degree attainment. Members will consider policies around college transfer, four-year college completion, and business and education partnerships to reverse these trends, taking into consideration the recession and dramatic state deficits.

Plenary Session IV

Renewing Graduate Education: Report from the Commission on the Future of Graduate Education

The future of graduate education, which plays a crucial role as a supplier of the innovation workforce, is tenuous due to a projected trend of declining baccalaureate degree attainment. This session will cap the day's discussion of the P-20 education pipeline with a presentation of results and recommendations from a Commission on the Future of Graduate Education report and will involve members in a discussion regarding how, and to what extent, BHEF should support the Commission's recommendations.

PLENARY I

How Can the Reauthorization of the Elementary and Secondary Education Act (ESEA) Ensure College Readiness for All?

Overview: The 2001 reauthorization of the 1965 Elementary and Secondary Act (ESEA), known as the No Child Left Behind Act, represented an historic break with past reauthorizations by focusing on accountability for student learning. Plenary Session I will explore how the current policy context, including efforts such as the Race to the Top, the Innovation Fund, and the Common Core Standards initiative, will affect the law's next reauthorization, and focus on ensuring that students graduate from high school ready to succeed in college and work. Members will discuss what priorities BHEF should recommend to President Obama and Congress in reauthorizing ESEA to ensure continuing education reform.

During Plenary Session I, members will examine how the current policy context, including the stimulus funds and the Common Core Standards movement, will affect ESEA reauthorization and its potential impacts for states. Session moderators and BHEF members Ed Rust, chairman & CEO, State Farm Insurance Companies, and Renu Khator, president of the University of Houston and chancellor of the University of Houston System, will lead members in a discussion of how ESEA reauthorization can leverage the American Recovery and Reinvestment Act (ARRA) funds and programs, as well as the Common Core Standards effort to ensure the following outcomes:

- Ensure ESEA reauthorization advances education reform
- Develop common college-and career-readiness standards for all states
- Assess students and schools against these college ready standards
- Increase emphasis on science education, and particularly on the need for inquiry based learning
- Improve high school outcomes, including incentives and resources to ensure increased graduation rates and postsecondary enrollment
- Increase focus on teacher performance and providing the appropriate supports and opportunities for growth, as well as the equitable distribution of teachers across schools

ESEA Background

Initially conceived as part of President Johnson's War on Poverty, the original ESEA statute was designed to level the educational playing field for poor and minority children. ESEA brought an entirely new direction for federal involvement in schooling— federal spending more than doubled in two years, and ESEA represented the first direct support from the federal government to school districts in the United States. Over the years, presidents and federal lawmakers have dramatically changed the face of ESEA. In more recent years, reauthorizations under Presidents Reagan and Clinton began to focus for the first time on educational outcomes, including a spotlight on testing and accountability.

The 2001 reauthorization of the ESEA, known as the No Child Left Behind Act (NCLB), placed increased emphasis on testing students and holding schools accountable for students' academic progress in return for federal resources. Some aspects of NCLB represent dramatic improvements over previous iterations of ESEA. As a nation, we now have better information on where we are successful in supporting our students and where we are failing them. We are able to pinpoint high need schools and classrooms and identify persistent achievement gaps. Holding schools more accountable allows us to more effectively target our efforts to improve education and close achievement gaps based on race and socioeconomic status.

However, since NCLB's passage, a variety of criticisms have arisen.

1. **NCLB allows every state to set its own learning standards for students, and targets "proficiency" rather than "college and career readiness."** By associating funding, and in some cases autonomy, with states' ability to meet learning standards, NCLB created the unintended consequence of incentivising states to set low standards for student learning. In some cases, states rose to the challenge and set ambitious learning standards. However, many others did not create expectations that will prepare students for college and/or a career. Additionally, the overall goal of the law, to move all students to "proficiency" by 2014, has been criticized as being overly ambitious, as it would be difficult to truly move every student to grade level, and as too low, given that proficiency may not necessarily be aligned with college and workforce expectations.

2. **NCLB does not measure growth in student learning over time.** Tests developed by states to measure student performance against state standards often do not highlight student growth over time. Instead, they may measure students' performance against a single standard of proficency. For example, a dramatically underperforming student whose performance increases multiple grade levels is not recognized as an improvement in student achievement if that student does not achieve proficiency. Also, the increased focus on test scores creates a high-stakes testing environment that does not always take into account students' many learning and testing styles, and tends to increase teaching time spent on testing. This creates incentives for teachers and schools to teach to a narrow band of students who are "near proficient," at the expense of both advanced and basic learners.

3. **NCLB only holds schools accountable for learning in math and language arts.** Under the current NCLB, schools and students are not held accountable for other essential subjects, including science. Because funding is not attached to performance in these areas, science and other subjects

often fall to the wayside as schedules are crafted and teachers are hired. While language arts and mathematics are essential for student success, in today's knowledge economy, innovation is crucial. Science, the arts, civics, and other subjects are important in ensuring that students possess not only the skills and knowledge to be college and work ready, but to be productive, engaged citizens.

4. **NCLB does not address learning or outcomes at the high school level.** A recent survey by Deloitte found a large mismatch between teachers and students about the most important purpose of high schools. For example, only 9% of teachers felt that preparing students for college was the most important purpose of high school, in contrast to almost half of low-income students and their parents. This discrepancy may be due in part to the fact that NCLB does not hold schools accountable for graduation rates or student outcomes beyond high school, such as enrollment in postsecondary education. Furthermore, those high schools serving high-need students have few incentives and limited resources to ensure at-risk students complete school and continue their education.

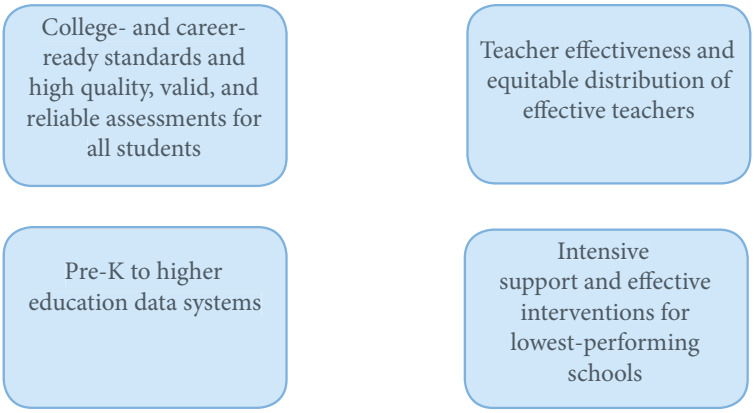
5. **NCLB focuses on ensuring schools have highly qualified teachers rather than effective teachers.** The current law focuses largely on teacher qualifications and credentials, rather than teacher effectiveness in considering teachers to be "highly qualified." The law mandates that states deem what qualifications teachers need to enter the classroom, but says little about evaluating their performance once they are in the classroom, and providing the appropriate supports and opportunities for growth.

ESEA Reauthorization Recommendations

As the education community looks toward the possibility of a 2010 or 2011 reauthorization of ESEA, a new policy context has emerged. The stimulus act (ARRA) represents the largest one–time investment in education in our nation's history. In addition to State Fiscal Stabilization Funds, the ARRA includes new competitive grant programs such as the $4.35 billion Race to the Top fund and the $650 million Investing in What Works and Innovation Fund (known as the "I3") that are already changing the face of the education funding landscape. These competitive grant programs place a central focus on college and career ready standards, the importance of equitable distribution of effective teachers, the use of data to drive decisions, and turning around the lowest performing schools. In anticipation of applying for these new federal funds, a number of states have already adjusted laws around charter schools, teacher incentives and pay for performance, and other areas. At the same time, thousands of school districts in several states have declined to participate, citing intrusion on state's rights and fears regarding resource distribution. Visit http://www.nytimes.com/2010/01/19/education/19educ.html?scp=1&sq=education%20grant&st=cse for a New York Times article on the issue.

Secretary Arne Duncan has identified "four assurances" as central components to the envisioned reauthorization of ESEA, which the administration would like to occur this year.

ARAA Race to the Top Assurances



Additionally, through the Common Core State Standards Initiative (led by the National Governors Association Center for Best Practices, the Council of Chief State School Officers, and Achieve Inc.), 48 states have convened to develop and discuss the adoption of state-led common standards, which are aligned to the needs of college and the workplace. The goal of this effort has been described as creating "fewer, clearer, and higher" standards for all students. ED has highlighted states' participation in this effort as key criteria for receiving funds through programs like Race to the Top. Additionally, Secretary Duncan has noted that he expects this also will be an important aspect of the ESEA reauthorization.

With increased funding for education, and a much a greater focus on common college and career ready standards across the nation, the upcoming reauthorization of ESEA provides a clear opportunity to truly ensure all of America's students graduate from high school ready for college or a career. Given this policy context, BHEF has developed the following broad recommendations related to the reauthorization of the ESEA.

ESEA reauthorization should advance education reform by:

- Encouraging all states to adopt and implement common, higher standards that are aligned to college and work readiness
- Measuring student growth over time, using multiple measures to assess performance
- Increasing focus on science education, holding schools accountable for student performance in this area
- Ensuring a balanced set of accountability and incentives/resources for high schools that target improved graduation rates and postsecondary outcomes
- Building on the focus on teacher effectiveness in the ARRA programs and ensuring the equitable distribution of effective teachers for all students

BHEF will communicate with the administration and Congress regarding these opportunities for ESEA to change the face of K-12 education in the United States. In addition, BHEF will seek partners in each area to collaborate on advancing these opportunities. The following table provides illustrative examples of each opportunity and potential partners.

Recommendation	Example	Potential Partners
Incorporate common, higher standards that are aligned to college and work readiness	Massachusetts is widely recognized as having among the highest standards of any state. Recent studies have linked the standards to its consistently high rankings on NAEP. In 2008, Massachusetts' students' performance on TIMSS was among the highest in the world, scoring second to Singapore in 4th grade Science. http://www.doe.mass.edu/frameworks/current.html	• Achieve • Council of Chief State School Officers • National Governor's Association • ACT and College Board
Measure student growth over time and use multiple measures to assess performance	12 states, including Tennessee, have been approved by the Department of Education to use "growth models" to measure student learning under a current NCLB pilot program. http://www.ed.gov/admins/lead/account/growthmodel/tn/tngmp.doc	• Battelle for Kids • American Federation of Teachers (AFT)
Increase focus on science education and hold schools accountable for students' performance in this area	Rep. Ehlers (MI) introduced the Science Accountability Act of 2009 (H.R.2511), which would hold states and schools accountable for ensuring K-12 students learn science by requiring science assessments as part of the accountability requirements of No Child Left Behind. http://www.govtrack.us/congress/bill.xpd?bill=h111-2511	• AAAS • National Science Teachers Association (NTSA)
Ensure accountability and incentives for high schools, including graduation rates and postsecondary outcomes	Kentucky has developed a sophisticated high school feedback report that provides detailed information to high schools and the public regarding high school students' postsecondary enrollment outcomes, persistence, and degree attainment rates. http://apps.cpe.ky.gov/hsfr/2004/Public/Jefferson_Atherton.pdf	• Alliance for Excellent Education • Data Quality Campaign
Build focus on teacher effectiveness in the ARRA programs and ensure the equitable distribution of effective teachers for all students	Louisiana is among the leading states in linking growth of student learning to teacher preparation programs. The Value Added Teacher Preparation Assessment examines the degree to which the educational attainment of students taught by recent graduates of specific teacher preparation programs either met, failed to meet, or exceeded expectations based on prior achievement and demographic factors as compared to experienced teachers. http://regents.louisiana.gov/Academic/TE/2009/2008-09VA(8.27.09).pdf	• EdTrust • National Council on Teacher Quality

PLENARY II

Improving the STEM Pipeline: Insights and Findings from the U.S. STEM Education Model

Overview: Recognizing the critical role that science, technology, engineering, and mathematics (STEM) play in innovation and economic growth in the United States, President Obama has made investments in science and technology a budget priority and STEM a key education priority. From the recently announced "Educate to Innovate" campaign that BHEF has joined to encourage students—especially in middle and high school—to pursue STEM fields, to the emphasis on STEM education in states' Race to the Top applications, to the movement toward higher, clearer common standards in mathematics, the Obama administration is sending clear signals that all students need high quality STEM education. Implicitly, the administration also is acknowledging the critical and complementary roles the federal government, states, and business and industry play in strengthening STEM education.

BHEF's Securing America's Leadership in Science, Technology, Engineering, and Mathematics (STEM) Initiative, which was launched in 2005 to help ensure that America remains a global leader, aligns well with the administration's recent efforts to improve STEM education. A key component of the STEM Initiative—which seeks to double the number of STEM graduates by 2015—is the U.S. STEM Education Model, a simulation model of the U.S. STEM education system developed by Raytheon and donated to BHEF in July 2009. The Bill & Melinda Gates Foundation recently awarded BHEF a $417,517 grant to allow BHEF, along with The Ohio State University, to advance modeling and simulation efforts in general, and the U.S. STEM Education model in particular.

Using recent federal and state policy developments as a backdrop, Plenary Session II will highlight the utility of the U.S. STEM Education Model as a tool to improve policy making and funding decisions at the federal and state levels. The session will feature:

- A demonstration of the U.S. STEM Education Model that highlights key insights gleaned during the development and vetting of this revolutionary tool
- Discussion of how the U.S. STEM Education Model can help to enhance and advance federal STEM policy

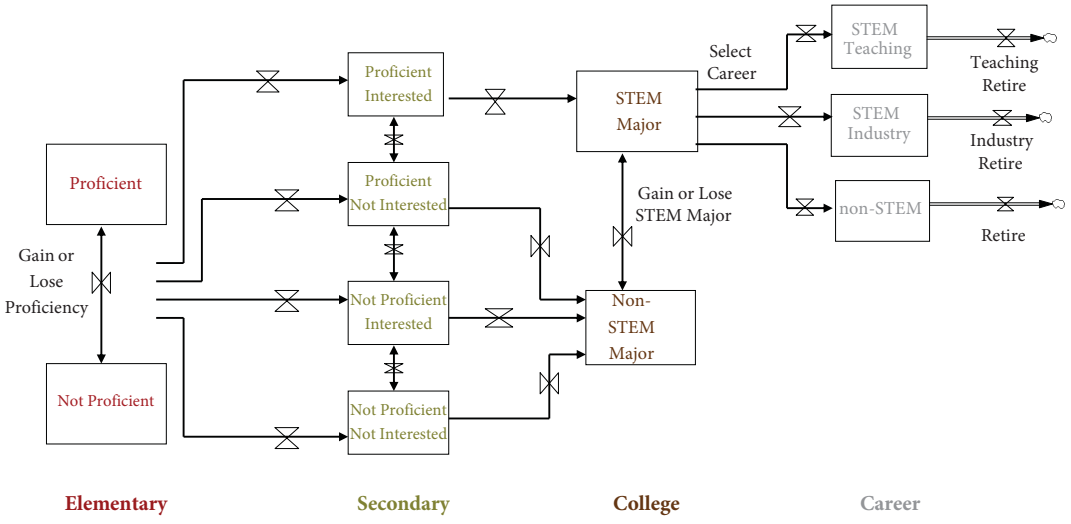
- A report on plans to launch a replicable state-wide STEM project that includes adapting the model to shape state policy, beginning with Ohio
- Discussion of how corporations and universities can advance the use of simulation modeling as a policy making tool in education

A Unique Tool

When BHEF launched its STEM Initiative, Vice Chair Bill Swanson, Chairman and CEO of Raytheon Company, recognized a need for a more systematic understanding of the STEM education. He tasked a team of engineers to develop a tool with the potential to illuminate the highest-leverage investments and policy changes to double the number of STEM graduates by 2015. The result of those efforts is the U.S. STEM Education Model—the first simulation model to examine the U.S. education system using system dynamics principles and tools. Specifically, the model allows users to simulate various scenarios to determine whether they have the potential to increase the number of students choosing to major and graduate in STEM disciplines.

The model uses census data and standardized test scores to track the flow of students through the K-16 education system and into careers in STEM teaching or STEM industries. At the K-12 level, the model keys on two of the most basic determinants of pursuing and persisting in a STEM major: interest in STEM and proficiency in mathematics. To capture some of the nuances of persistence in STEM, the model sorts K-12 students by gender into high and low levels of STEM interest and math proficiency. Only those students who are interested in STEM and proficient in mathematics are sorted into the "STEM major" stock in college. After college, the model sorts STEM graduates into careers in STEM industry, STEM teaching, or non-STEM fields.

Simplified Representation of U.S. STEM Education Model



Many factors affect the number of students who pursue and persist in STEM majors and become STEM teachers or move into STEM fields in industry. The model uses a series of dynamic hypotheses and feedback loops to capture these influences and determine the behavior of the STEM education system. These feedback loops are based on research about K-12 STEM proficiency and persistence in STEM majors.

Insights for Action

The development and vetting of the U.S. STEM Education Model have yielded several insights into the value of modeling as a policy making tool. For example, the use of system dynamics modeling in policy can:

- Depoliticize discussions of education improvement by using systemic outcomes (i.e., increasing the number of STEM graduates in the United States) as a starting point, rather than individual programs or policies
- Demonstrate the capacity of the system to support the desired outcomes, often revealing unintended consequences in the process
- Display the time lag between the implementation of a program or policy and the desired outcomes.
- Allow for examination of cost associated with different policies

Although further refinements are needed, the current version of the model illuminates some strategies that have the potential to increase the number of students choosing STEM majors, and ultimately teaching and industry careers. Specifically, the modeling effort provided insights that show:

- Neither K-12 strategies nor postsecondary strategies alone are sufficient to double the number of STEM graduates by 2015
- Focusing on undergraduate education—particularly on policies and programs designed to increase enrollment of STEM-proficient students and freshman year persistence—yields an early and significant return on investment
- STEM-capable teachers are vital to increasing STEM interest and mathematics proficiency, particularly in the middle grades, when major and career interests take shape

These insights are particularly timely and relevant because recent federal and state efforts driven by the White House are largely focused on K-12 education. They do not go far enough in addressing the significant challenges of enrolling STEM proficient students in college and increasing student interest and success in STEM at the postsecondary level and beyond, including into the workforce. Plenary Session II will focus on how these observations can help shape federal policy.

Recommendations

The coming year marks a major milestone in the nation's focus on STEM education policy—the five-year anniversary of the release of the "Rising Above the Gathering Storm" findings and recommendations and the anticipated reauthorization of the America COMPETES Act. As such, it provides an opportunity to re-evaluate existing policies and recommend a comprehensive set of priorities and actions that will strengthen P-20 STEM education at both the national and state levels. In light of current and anticipated needs of employers and the nation, we would recommend that BHEF and its members:

- Advance President Obama's STEM agenda, including his focus on increasing the production of high quality STEM teachers and efforts to increase business participation in fostering students' interest in STEM subjects, majors, and careers
- Urge President Obama, Congress, the Department of Education, and states to complement their current focus on K-12 STEM education by placing increased emphasis on improving postsecondary STEM education, recognizing the unique and complementary roles of sub-baccalaureate, baccalaureate, and graduate education
- Encourage Congress and the Department of Education to emphasize STEM education in its College Access and Completion Innovation Fund, similar to Race to the Top
- Urge federal and state policy makers, government agencies including the Department of Education and those with STEM-focused missions, and funders to use modeling/simulation and similar analytic approaches to advance STEM education specifically, and education efforts more generally

PLENARY III

Are U.S. Baccalaureate Attainment Rates Poised to Fall? The Impact of the Economy, Policy Priorities, and Changing Demographics

Overview: President Obama's initiative to restore U.S. leadership in degree attainment represents a significant commitment to higher education. In the face of troubling projections for baccalaureate degree attainment over the next decade, Plenary III will explore whether such initiatives, including an intense focus on community colleges, are sufficient to enable the United States to once again have the most well-educated and productive workforce in the world. Specifically, this session explores the trends that threaten baccalaureate degree attainment and, ultimately, U.S. competitiveness, in light of solutions that have been proposed by the federal government.

Brit Kirwin will introduce this session while Michael McPherson, president of the Spencer Foundation, will share the findings of his new book on college success, co-authored with William Bowen and Matthew Chingos. Michael King will then lead members and guests in a discussion of how the recession and state deficits likely will affect the nation's ability to reverse these trends and what federal policies can help states and institutions increase the number of students attaining associates and bachelors degrees. Discussion will focus on the following:

- Trends that may decrease stagnant baccalaureate degree attainment
- Goals and structure of the College Access and Completion Innovation Fund and the American Graduation Initiative
- Business and higher education roles to improve national education efforts
- BHEF's federal advocacy agenda to improve baccalaureate attainment

President Obama's Ambitious Education Goals

While significant resources already have begun to flow to K-12 education through the American Recovery and Reinvestment Act, President Obama also has articulated a vision for restoring U.S. leadership in postsecondary degree attainment by 2020. To achieve this goal, he proposed that every American should have at least one year of higher education or career training. In September 2009, the House passed the landmark Student Aid and Financial Responsibility Act (HR 3221), which includes a number of provisions to help achieve the goal, including the College Access and Completion Innovation Fund (CACIF) and the American Graduation Initiative (AGI) (see sidebar for further details). The Senate has yet to act on the bill but may do so this year.

The Baccalaureate Attainment Challenge

While academic preparation for college has steadily increased, baccalaureate attainment has not seen similar growth. Rather, increasing proportions of college ready high school graduates are choosing pathways that lead to lower baccalaureate attainment rates.

Although college enrollments are straining institutional capacity, this country stands poised to see a decline in its overall baccalaureate attainment rate. This is especially problematic as a projected 40 million baby boomers will begin to age out of the workforce[1] in the coming decades. On the current trajectory, higher education will not produce enough college graduates to replace them. Furthermore, workforce projections indicate that by 2018, 30 million new jobs will require some college or a college degree[2], requiring substantial increases in both associate degree and baccalaureate degree attainment rates.

The stagnant baccalaureate degree attainment rate is alarming, especially in light of the economic pressures facing states, postsecondary education institutions, and students and their families. Specifically, budget constraints and capacity challenges at higher education institutions, increases in the net price of college for families, and shifting patterns of postsecondary enrollment are contributing to shortfalls in baccalaureate degree attainment.

College Access and Completion Innovation Fund (CACIF)

- Goal is to improve college access, retention and completion, and post-completion employment, with a focus on students from underrepresented groups
- Invests $600 million annually for five years, with 50% of the funds allocated for states and the balance split among national activities and programs
- Uses of funds:
  - Programs to enhance or reform remedial education
  - Dual enrollment, early college, and bridge programs
  - Student support activities, especially cohort programs and early warning systems
  - Incentives for faculty and institutions to increase student persistence and the use of full-time faculty
- Assists states in developing longitudinal data systems

American Graduation Initiative (AGI)

- Goal is five million additional community college graduates by 2020, including students who earn certificates, associates degrees, or continue on to four-year degree programs
- Invests $630 million annually for ten years in matching state grants
- Uses of funds:
  - Opportunities for students to earn bachelor's degrees
  - Joint academic or training programs with business and workforce to create career pathways, internships, and job placements
  - Student support services
  - Workforce programs that lead to industry-recognized credentials
  - Enhanced dual enrollment programs and early college high schools
  - Student preparation for energy-related fields
  - Programs that create jobs designed to serve veterans

Focus on California

California's 110 community colleges, 23 California State University (CSU) campuses, and 10 University of California (UC) institutions represent the largest public higher education system in the country and, for many years, were the envy of the world. A troubled economy, however, has led to $2.25 billion in higher education budget cuts: From 2007-08 to 2009-10, the UC budget has been cut $813 million, the CSU budget $625 million, and the Community College System budget $812 million.[10] This is not the first time California colleges have seen their budgets reduced. Since the 1980s, the share of the state budget awarded to higher education in California has been cut in half. In turn, the state allocation (in inflation-adjusted dollars) per university student has declined from $15,860 in 1990 to $7,730 today.

As public education in California is increasingly treated as a private good to be financed independently, marked increases in tuition and fees are the result. Tuition and fees have increased 127% since 2001 at the University of California and 161% since 2001 at CSU. Even with those adjustments and the stimulus funding dollars, the campuses project a $1.1 billion dollar shortfall in the coming year[11]. In response, California's public colleges and universities have taken drastic measures, including 6-10% enrollment reductions, employee furloughs and pay cuts representing as much as 10%, and course reductions of up to 20%. These cuts coincide with vastly increased numbers of applications for admittance, as well as the necessity of substantial fee increases. In a state facing a projected shortfall of one million college graduates, the workforce stakes of these declining state allocations are very high.

Budget constraints and capacity challenges

Achieving President Obama's postsecondary education goals will require new approaches that dramatically increase college access and success, particularly due to the current and expected future fiscal realities. His goal of 5 million additional community college graduates by 2020 will require an annual 280,000 increase in associate degrees and certificates awarded, an increase of 33% per year. Moreover, while not articulated in the president's goals, increasing the baccalaureate attainment rate will require significant increases in transfer rates to four-year institutions, creating additional capacity challenges for institutions, some of which have capped enrollment due to economic constraints.

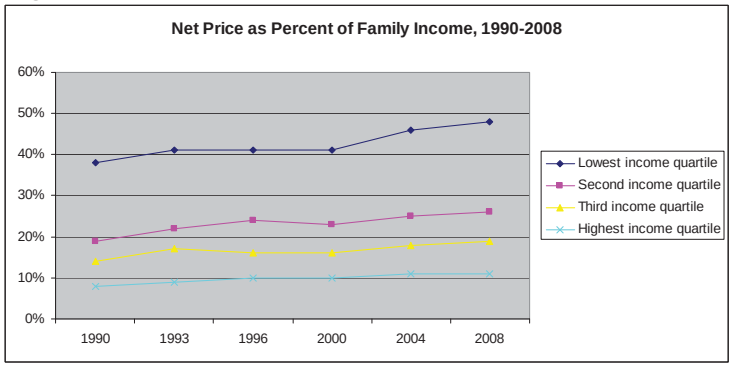
In the face of decreasing funding sources across higher education—from state appropriations to endowment revenue—finding the resources and capacity to achieve such marked improvement will be challenging. For example, the current economic downturn is leading to substantial cuts in state higher education budgets. In the past decade (1998-2008), state tax appropriations in constant 2008 dollars per student have decreased 12%, from $9,041 to $7,953[3]. The recent economic downturn has led to massive additional state budget cuts for higher education: As of fall 2009, 36 states have seen decreases in their state budgets between FY08-FY10. Though the average decrease was 6%, some states saw much more significant cuts, including Florida (22%), Alabama (21%), South Carolina (20%), Nevada (20%), Arizona (19%), and California (19%)[4].

As appropriations have declined, public institutions have raised tuition and fees to cover operating costs—50% in constant 2008 dollars over the past decade at public four-year institutions, from $4,376 to $6,585[5]. The recent economic downturn has exacerbated the problem. For example, the University of Arizona has been forced to raise its FY09-10 tuition and fees 23.9%, while Florida's public four-year institutions all have raised their FY09-10 tuition at least 11%[6]. California's challenges—perhaps the most extreme in the U.S.—are discussed in the sidebar. Though these tuition increases in many cases are unprecedented, they still do not cover the funding gap created by declining state appropriations. While federal stimulus funds have been distributed to states, the amount targeted to public institutions of higher education covers only a portion of the shortfall.

Changes in net price

Over the past two decades, net price—the amount a student pays after all grants and scholarships have been awarded—has increased for student and families in all income quartiles, as state funding for higher education has fallen and Pell and other grant funding has failed to keep up with tuition increases. This is particularly apparent, however, for students in the lowest income quartile, where today families can expect to pay nearly 50% of their income toward public four-year college tuition and fees after accounting for all grant aid (see figure 1). This represents a 24% increase in net price from 1990. In contrast, the net price for a public four-year institution represents only 11% of family income for the highest income quartile. A recent Public Agenda report confirms that the number one reason college students drop out is because they had to work and go to school at the same time and that, "despite their best efforts, the stress of trying to do both eventually took its toll."[7] Current fiscal realities will have an even greater impact on college persistence and baccalaureate degree attainment going forward.

Figure 1



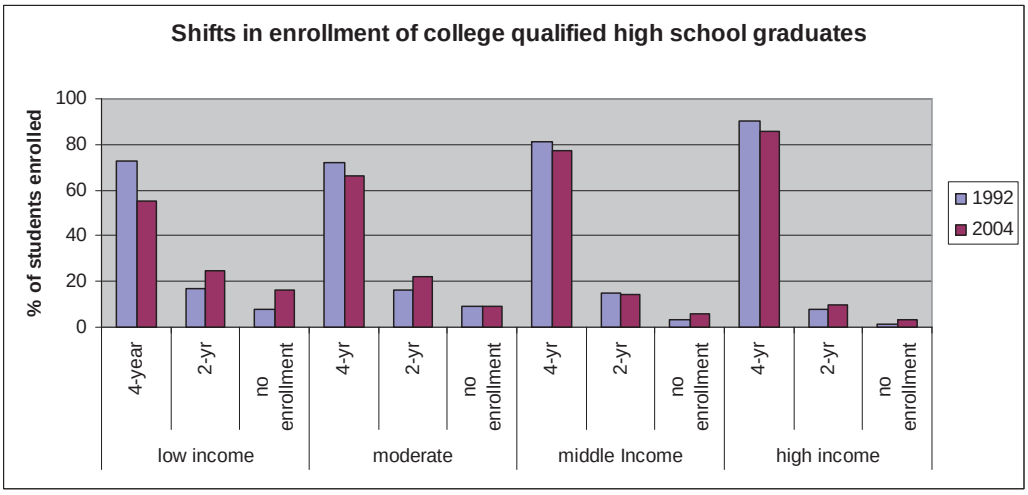
SOURCE: Advisory Committee on Student Financial Assistance presentation for the Student Financial Aid Research Network, June 11, 2009, table 3-C.

Changing patterns of postsecondary participation

Though college preparation and enrollment are up, students are increasingly choosing to either not enroll in college at all or enroll in two-year colleges rather than four-year institutions. While the number of students taking advanced level mathematics in high school has increased, indicating improved college readiness, since 1992 there has been a shift in enrollment from four-year colleges to two-year colleges or no postsecondary enrollment at all. This is present across all income levels, though most pronounced with low and middle income students.[8] This pattern is especially pronounced among low-income college qualified students (see figure 2).

In 1992, 73% of low-income students who had completed trigonometry in high school enrolled in a four-year college. By 2004, this percentage had dropped to an alarming 55%. In contrast, enrollment in two-year colleges for the same student cohort spiked, from 17% in 1992 to 25% in 2004. Perhaps even more troubling, the percentage of college qualified low-income students who did not enroll in any postsecondary institutions doubled from 8% to 16%. Similar but less pronounced shifts occurred in other income categories.

Figure 2



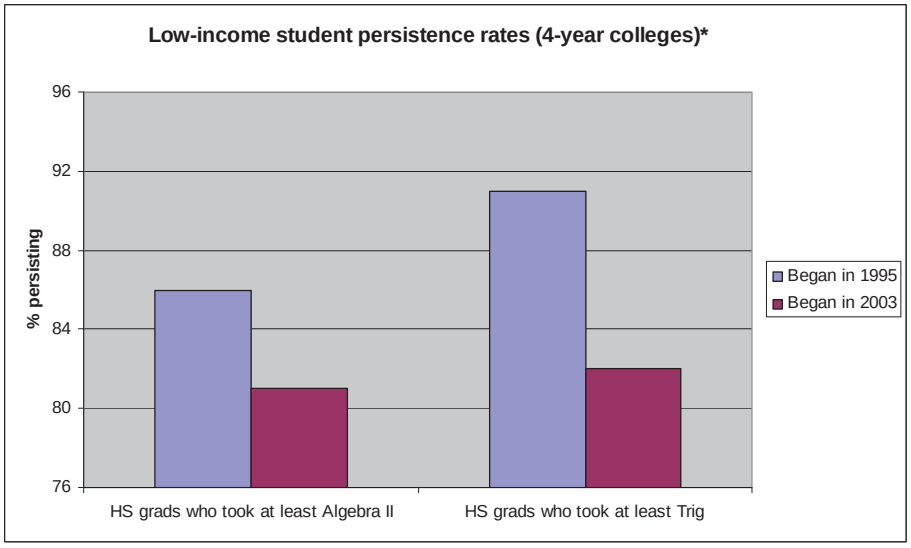
SOURCE: Advisory Committee on Student Financial Assistance presentation for the Student Financial Aid Research Network, June 11, 2009, table 4-C

Students are increasingly choosing enrollment paths that decrease their chances of obtaining a bachelor's degree. William Bowen, Matthew Chingos, and Michael McPherson call the phenomenon where otherwise qualified students choose to attend less selective schools "undermatching." Using data on North Carolina State applicants, they found that more than 40% of students in their sample undermatched by enrolling in less selective schools than their academic characteristics would indicate. Bowen et al. probed this finding and found a strong correlation between family income and where students choose to enroll in postsecondary education.

The patterns tied to undermatching become vitally important when considering postsecondary persistence and completion. Historically, students who have enrolled in community colleges or less selective four-year institutions are much less likely to attain a baccalaureate degree. In their study, Bowen et al.[9] found that the six-year graduation rate for students who undermatched to less selective four-year institutions was 15 percentage points lower than their counterparts enrolling in the most selective schools (66% vs 81%).

Nationally, declining postsecondary persistence rates for highly qualified low-income students support this finding. Figure 3 indicates that the persistence rate for low-income high school graduates in 2003 who had completed advanced math courses and enrolled in four-year colleges declined 9 percentage points, double the rate of similar students in 1995.

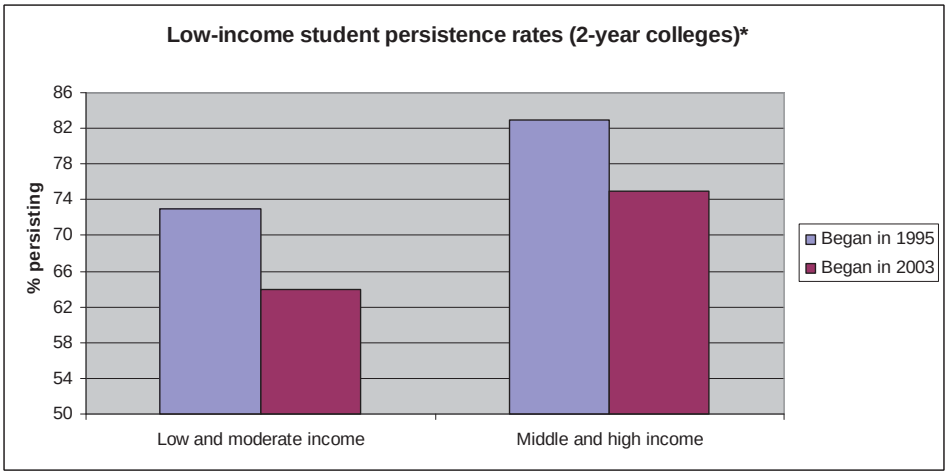
Figure 3



SOURCE: Advisory Committee on Student Financial Assistance presentation for the Student Financial Aid Research Network, June 11, 2009, table 5-A
* Three-year persistence rate

The trends are similar for college-qualified high school graduates who enroll in two-year colleges. Those who began in 1995 who had taken at least Algebra II saw declines in persistence. Notably, at two-year colleges these patterns were true for both low-income students and middle-to-high income students (see figure 4). Over the past decade, students who enrolled in a two-year college were markedly less likely to persist than their counterparts who enrolled in four-year institutions.

Figure 4

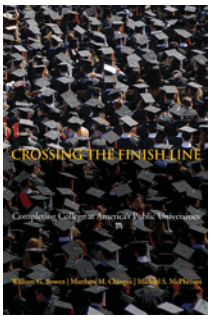


SOURCE: Advisory Committee on Student Financial Assistance presentation for the Student Financial Aid Research Network, June 11, 2009, Table 5-B
*Three-year persistence rate of high school graduates who had taken Algebra II.

These shifts in enrollment and persistence over the past decade are dramatic and stand in stark opposition to the numerous projections of increased demand for employees with college degrees.

Recommendations

1. Encourage President Obama and Secretary Duncan to articulate a baccalaureate degree attainment goal in tandem with the AGI, which focuses on community colleges
2. Encourage Congress and the Department of Education to bolster features of the AGI and College Access and Completion Innovation Fund that will:
    a. Encourage highly qualified college-ready students to enroll in two-year and four-year institutions
    b. Reward states and institutions that streamline and increase transfer between two-year and four-year institutions of higher education
    c. Increase support for neediest students through mandatory funding increases for Pell grants and broadening access to Perkins Loans
    d. Require states that receive grants to maintain or increase existing levels of support for public higher education in order to make attendance more affordable for the neediest students and not supplant state funds with federal funds
    e. Fund innovative programs and partnerships to improve baccalaureate degree attainment
3. Encourage businesses to partner with both two-year and four-year colleges to support student persistence and engagement through real world learning and professional development opportunities



Crossing the Finish Line: Completing College at America's Public Universities

William G. Bowen, Matthew M. Chingos & Michael S. McPherson

Cloth | 2009 | **$27.95** / £19.95
392 pp. | 6 x 9 | 97 line illus. 9 tables.

e-Book | 2009 | **$27.95** | ISBN: 978-1-4008-3146-3

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Appendix Material to Accompany "*Crossing the Finish Line*"

Watch video interview with William G. Bowen

Long revered for their dedication to equal opportunity and affordability, public universities play a crucial role in building our country's human capital. And yet--a sobering fact--less than 60 percent of the students entering four-year colleges in America today are graduating. Why is this happening and what can be done? *Crossing the Finish Line*, the most important book on higher education to appear since *The Shape of the River*, provides the most detailed exploration ever of the crisis of college completion at America's public universities. This groundbreaking book sheds light on such serious issues as dropout rates linked to race, gender, and socioeconomic status.

Probing graduation rates at twenty-one flagship public universities and four statewide systems of public higher education, the authors focus on the progress of students in the entering class of 1999--from entry to graduation, transfer, or withdrawal. They examine the effects of parental education, family income, race and gender, high school grades, test scores, financial aid, and characteristics of universities attended (especially their selectivity). The conclusions are compelling: minority students and students from poor families have markedly lower graduation rates--and take longer to earn degrees--even when other variables are taken into account. Noting the strong performance of transfer students and the effects of financial constraints on student retention, the authors call for improved transfer and financial aid policies, and suggest ways of improving the sorting processes that match students to institutions.

An outstanding combination of evidence and analysis, *Crossing the Finish Line* should be read by everyone who cares about the nation's higher education system.

William G. Bowen is president emeritus of the Andrew W. Mellon Foundation and Princeton University. **Matthew M. Chingos** is a PhD student in the Department of Government at Harvard University and research associate at the Andrew W. Mellon Foundation. **Michael S. McPherson** is president of the Spencer Foundation and former president of Macalester College.

Reviews:

"Identifying the causes of the college dropout crisis matters enormously, and [*Crossing the Finish Line*] tries to do precisely that. . . . For all the book's alarming statistics, its message is ultimately uplifting--or at least invigorating. . . . *Crossing the Finish Line* makes it clear that we can do better."--David Leonhardt, *New York Times*

"The most comprehensive look yet possible at the determinants of graduation rates--and what might be done to improve them. Bowen and McPherson are economists and bring economists' sensibilities and methods to their subject. Much of the book uses regression analysis to assess the impact of various factors on college completion (e.g., socioeconomic status, financial aid, and institutional selectivity) after adjusting for other factors such as students' high-school grades and test scores. Individual chapters deftly summarize what is known about each topic and then often extend that knowledge substantially. . . . The book provides new and often surprising insights on other major determinants of college completion. The chapters on financial aid, in particular, are masterful. . . . *Crossing the Finish Line* exemplifies the best that social science research has to offer: rigorous empirical analysis brought to bear on a major public policy issue. Bowen, Chingos, and McPherson have provided an essential resource that both researchers and policymakers will consult for years to come."--Richard C. Atkinson and Saul Geiser, *Science Magazine*

"The authors are emphatic that the United States cannot improve overall educational attainment unless there are significant changes in public higher education. . . . One of the major themes of the book is of the importance of disparities--and the need to be precise about them."--Scott Jaschik, *Inside Higher Ed.com*

END NOTES

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PLENARY IV

BHEF BUSINESS-HIGHER EDUCATION FORUM®

Renewing Graduate Education: Recommendations from the Commission on the Future of Graduate Education

Overview: Graduate education trains the United States innovation workforce. While the U.S. leads the world in the production of advanced degrees, it relies on a supply of highly trained undergraduate students and large numbers of foreign students. However, emerging data suggests stagnant or declining baccalaureate attainment rates and increased global competition for top students, leaving the future of graduate education in the U.S. open to question.

This session will cap the day's discussion of the P-20 education pipeline with a presentation of results and recommendations from a report on the status of graduate education in the U.S., scheduled for release in April 2010 by the Commission on the Future of Graduate Education. BHEF members will discuss how, and to what extent, BHEF should support the Commission's recommendations.

Molly Broad, president, American Council on Education, will moderate this session, while Roger Ferguson, president and CEO, TIAA-CREF, and Debra Stewart, president, Council on Graduate Schools (CGS), will provide the Commission's findings. Charles Vest, president, National Academies of Engineering, will serve as a respondent.

Discussion will focus on the following issues:

- What are the projected trends in production of graduate degree holders in relation to workforce demands?
- How close is the U.S. to producing an adequate number of people with graduate degrees to meet current and future workforce needs?
- What are the areas of vulnerability in terms of aligning graduate education programs and future workforce needs?
- How is the rest of the world responding to develop the highly trained human capital necessary to remain competitive in the global economy?
- What actions are needed and what are the opportunities to improve?

Commission on the Future of Graduate Education in the United States

Graduate education in the United States has been an enormously successful enterprise, serving the vital scientific, cultural, and economic needs of the national and global community. American graduate schools are epicenters of discovery, innovation, and application, leading to advancements that affect every citizen.

The Commission on the Future of Graduate Education in the United States was formed by CGS and the Educational Testing Service (ETS). Comprised of industry and higher education leaders, it studies how the graduate education community will meet the challenges of the 21st century (See Appendix A for a list of members) and is focused on maintaining the preeminence of U.S. graduate schools in the face of rising global competitiveness.

A report on the status of graduate education in the U.S. will be released at CGS's annual legislative conference in April 2010.

The President's Education Priorities

President Obama has made addressing education challenges and remaining globally competitive a priority for his administration and has asked Americans to become involved. The Commission contends that this responsibility lies in large part with the nation's graduate schools. The Commission's report aims to assess the present condition of graduate education, chart a course for the future, and create a national conversation on the benefits of increasing the pursuit and completion of graduate degrees by all segments of the U.S. population.

The assumption underlying this study is that U.S. competitiveness in the global economy hinges fundamentally on our capacity to produce appropriate numbers of graduate degree holders at the master's and doctoral levels. The Commission has been examining projections for degree recipients from both the domestic and international talent pools to address U.S. competitiveness.

Selected Preliminary Findings

Preliminary findings from the Commission's examination of trends in future workforce needs, preparation for jobs of the future, and education and career pathways needed suggest that the country will need more people educated at the graduate level. Jobs and careers of the future require people with the ability to acquire new skills and new knowledge of an increasingly interdisciplinary nature. Hybrid training, such as that offered in the Professional Science Masters degree, that combines discipline-specific education with skills in management, communication, and other areas are the wave of the future, according to the Commission. Initial findings suggest:

- Drop-outs in high school and college limit the growth potential for graduate education
- About 58% of high school graduates go on to college, but enrollment rates vary by race/ethnicity
- Aspirations for graduate education differ by race/ethnicity. At the high school level, underrepresented students have lower aspirations for graduate school than whites or Asians, but the opposite is true at the undergraduate level, with underrepresented students having higher

aspirations for a graduate education

- Students from low socioeconomic status (SES) families are less likely to earn a graduate degree
- Increasing numbers of underrepresented students are in K-12 and undergraduate education, but African Americans, Hispanics, and Native Americans remain under-represented in graduate education
- Only about 26% of bachelor's degree recipients earn a master's, doctorate, or first professional degree within 10 years
- U.S. citizens earned 82% of all doctoral degrees awarded in the U.S. in 1977, but just 57% in 2007
- Graduate enrollment has increased 2% annually on average over the past decade
- Future international participation in U.S. graduate education and the workforce is unlikely to be maintained at present levels

These findings, along with others to be discussed during the plenary session, pose important challenges to both business and higher education. During the plenary session, we will consider the implications of the preliminary findings from the report as well as the challenges and opportunities the findings and trends present to both sectors and the nation.

Commission on the Future of Graduate Education in the United States Members

Corporate Leaders:

Thomas Connelly, Jr., Executive Vice President and CIO, E.I. DuPont and Co.

Roger Ferguson, President and CEO, TIAA-CREF

Stanley S. Litow, Vice President, Corporate Citizenship & Corporate Affairs, IBM

Richard J. Parsons, Executive Vice President, Global Staffing Executive, Bank of America

Ronald Townsend, Executive Vice President of Global Laboratory Operations, Battelle Memorial Institute

John Seely Brown, former Chief Scientist, Xerox Corporation

University Leaders:

Gene D. Block, Chancellor, UCLA

Ronald Mason, President, Jackson State University

John Wiley, former Chancellor, University of Wisconsin-Madison

Scott Bass, Provost, American University

Suzanne Ortega, Provost and Executive Vice President for Academic Affairs, University of New Mexico [Vice Chair]

Karen DePauw, Vice President, Graduate Studies and Dean, Graduate School, Virginia Tech

Jeffrey Gibeling, Dean, Graduate Studies, University of California, Davis

Patrick Osmer, Vice Provost/Dean, Graduate School, The Ohio State University

Eva Pell, VP, Research/Dean, Graduate School, Penn State University

William Russel, Dean, Graduate School, Princeton University [Chair]

Liora Schmelkin, Senior Vice Provost for Academic Affairs and Dean of Graduate Studies, Hofstra University

Susan Stites-Doe, Dean of Graduate Studies, The College at Brockport, SUNY

James Wimbush, Dean, University Graduate School, Indiana University

Ex Officio Members

Kurt Landgraf, President, ETS

Debra W. Stewart, President, Council of Graduate Schools

Michael Cohen

President
Achieve, INC.

Michael Cohen has been the president of Achieve since 2003 and is a nationally recognized leader in education policy and standards-based reform. In 2006, Education Week ranked Achieve as the 7th most influential education policy organization in the nation, and ranked Achieve's landmark report, *Ready or Not: Creating a High School Diploma That Counts*, as among the most influential research studies in the past decade.

Under Cohen's leadership Achieve formed the American Diploma Project Network, a growing network of states committed to improving preparation for postsecondary education and 21st century careers. Governors, chiefs, state school officers, and state higher education and business leaders in these states have committed to align high school standards, curriculum, assessments and accountability with the knowledge and skills high school graduates need for success in postsecondary education and careers.

Cohen has held several senior education positions in the Clinton administration, including assistant secretary for elementary and secondary education at the U.S. Department of Education, special assistant to the president for education policy at the White House, and senior advisor to U.S. Secretary of Education Richard Riley. He led the administration's effort to design, enact and implement Goals 2000, the first substantial federal initiative to support state-led standards-based education reform. He also played an instrumental role in the development of all of the administration's K-12 education initiatives.

Earlier in his career, Cohen held key positions in several national organizations that work with state education policy makers, including as director of education policy for the National Governors Association, and director of policy development and planning for the National Association of State Boards of Education. He began his career at the National Institute of Education, where he led the Effective Schools research.

Martha J. Kanter

Under Secretary
U.S. Department of Education

Martha J. Kanter was nominated by President Barack Obama on April 29, 2009, to be the under secretary of education and was confirmed by the Senate on June 19, 2009. In this position, she reports to Secretary of Education Arne Duncan and oversees policies, programs, and activities related to postsecondary education, vocational and adult education, and federal student aid.

From 2003 to 2009, Kanter served as chancellor of the Foothill-De Anza Community College District, one of the largest community college districts in the nation, serving more than 45,000 students with a total budget of approximately $400 million. She is the first community college leader to serve in the under secretary position. In 1977, after serving as an alternative high school teacher at Lexington High School in Massachusetts, the Public Schools of the Tarrytowns (N.Y.) and later at the Searing School in New York City, she established the first program for students with learning disabilities at San Jose City College (Calif.). She then served as a director, dean and subsequently as vice chancellor for policy and research for the California Community Colleges Chancellor's Office in Sacramento, returning to San Jose City College as vice president of instruction and student services in 1990. In 1993, she was named president of De Anza College and served in this position until becoming chancellor.

Kanter has served as a board member or officer in a wide variety of national, state, and local organizations, including the League for Innovation in the Community College, the Community College League of California, Joint Venture: Silicon Valley Network, Inc., Peninsula Open Space Trust, the Hispanic Foundation of Silicon Valley, the Mexican Heritage Corporation, the Rotary Club of Palo Alto, and the California Association of Postsecondary Educators of the Disabled.

Kanter holds a doctorate in organization and leadership from the University of San Francisco. She received her master's degree in education with a concentration in clinical psychology and public practice from Harvard University, and a bachelor's degree in sociology from Brandeis University.

Michael S. McPherson

President
Spencer Foundation

Michael S. McPherson is the fifth president of the Spencer Foundation. Prior to joining the Foundation in 2003, he served as president of Macalester College in St. Paul, Minnesota, for seven years.

A nationally known economist whose expertise focuses on the interplay between education and economics, McPherson spent the 22 years prior to his Macalester presidency as professor of economics, chairman of the Economics Department, and dean of faculty at Williams College in Williamstown, Massachusetts.

McPherson, who is co-author and editor of several books, including College Access: Opportunity or Privilege, Keeping College Affordable and Economic Analysis and Moral Philosophy, was founding co-editor of the journal Economics and Philosophy. Most recently he co-authored Crossing the Finish Line: Completing College at America's Public Universities.

He has served as a trustee of the College Board, the American Council on Education, and the Minneapolis Institute of Arts. McPherson has been a Fellow of the Institute for Advanced Study and a Senior Fellow at the Brookings Institution.

McPherson holds a bachelor's degree in mathematics, a master's degree in economics, and a doctorate degree in economics, all from the University of Chicago.

Debra W. Stewart

President
Council of graduate Schools

Debra Stewart became the fifth president of the Council of Graduate Schools in July 2000. Before coming to the Council, Stewart was vice chancellor and dean of the Graduate School at North Carolina State University. Prior to that, she held a variety of leadership positions in North Carolina, including interim chancellor at UNC-Greensboro (1994), and graduate dean (1988-1995), and then vice provost and dean (1995-1998) at N.C. State.

The Council of Graduate Schools is the leading U.S. organization dedicated to the improvement and advancement of graduate education. Its more than 500 members award 94 percent of all U.S. doctorates and approximately 75 percent of all U.S. master's degrees. CGS currently has 26 international universities among its membership.

As a national spokesperson for graduate education, Stewart's service to the community includes chairing the Graduate Record Examination Board, the Council on Research Policy and Graduate Education, the Board of Directors of Oak Ridge Associated Universities, and the Board of Directors of Council of Graduate Schools. She also served as vice chair of the ETS Board of Trustees, as Trustee of the Triangle Center for Advanced Studies, as a member the American Council on Education Board and several National Research Council committees and boards, as well as on advisory boards for the Carnegie Initiative on the Doctorate, the Responsive Ph.D. Project, and the Task Force on Immigration and America's Future.

In November 2007, her leadership in graduate education was recognized by the Universite Pierre et Marie Curie with an honorary doctorate. Her alma mater, the University of North Carolina Chapel Hill, honored her in October 2008 with the Distinguished Alumna Award. She is the author or coauthor of books and numerous scholarly articles on administrative theory and public policy. Her disciplinary research focuses on ethics and managerial decision making.

Stewart received her bachelor's degree from Marquette University, where she majored in philosophy. She received her master's degree in government from the University of Maryland, and her doctorate degree in political science from the University of North Carolina at Chapel Hill.

Charles Vest

President
National Academy of Engineering

Charles Vest in July 2007 was elected to serve as president of the U.S. National Academy of Engineering (NAE) for six years.

Previously, he served as president of the Massachusetts Institute of Technology (MIT) until December 2004. He then became professor and president emeritus. As president of MIT, he was active in science, technology, and innovation policy; building partnerships among academia, government and industry; and championing the importance of open, global scientific communication, travel, and sharing of intellectual resources.

Early in his career he was a member of the University of Michigan faculty as an assistant professor. He and his graduate students developed techniques for making quantitative measurements of various properties and motions from holographic interferograms, especially the measurement of three-dimensional temperature and density fields using computer tomography. He became an associate professor in 1972 and a full professor in 1977. In 1981, Vest served as associate dean of engineering from 1981-86, and dean of engineering from 1986-1989, when he became provost and vice president for academic affairs

Vest was a director of DuPont for 14 years and of IBM for 13 years; was vice chair of the U.S. Council on Competitiveness for eight years; and served on various federal committees and commissions.

Vest earned a bachelor's of science degree in mechanical engineering from West Virginia University in 1963, and a master's of engineering and doctorate degrees in mechanical engineering from the University of Michigan in 1964 and 1967, respectively. He has authored a book on holographic interferometry, and two books on higher education. He has received honorary doctoral degrees from ten universities, and was awarded the 2006 National Medal of Technology by President Bush.

Rear Admiral Nevin P. Carr, Jr.

Chief of Naval Research; Director, Test and Evaluation and Technology Requirements
Office of Naval Research

Rear Admiral Nevin Carr became the 22nd chief of Naval Research at the Office of Naval Research in December 2008, with additional duties as director, test and evaluation, and technology requirements.

He has served in the office of the secretary of defense, where he worked on the Arleigh Burke, Ticonderoga and Seawolf programs and several Ballistic Missile Defense programs. He later served in the office of the Chief of Naval Operations as requirements officer for the Aegis Cruiser and Destroyer programs, and was executive assistant to the Commander, U.S. Fleet Forces Command. Following promotion to flag rank in 2006, he was assigned as deputy director of Surface Warfare for Combat Systems and Weapons, and later as deputy assistant Secretary of the Navy (International Programs) and director, Navy International Programs Office.

Carr spent his Navy career at sea in cruisers and destroyers, deploying to the Mediterranean Sea, Black Sea, Indian Ocean, Persian Gulf, North and South Atlantic, South Pacific, Baltic, Caribbean and Red Seas. Shipboard tours included USS King (DDG 41); USS McCandless (FF 1084); USS Thomas S. Gates (CG 51); USS Vella Gulf (CG 72); Cruiser/Destroyer Group 8 staff embarked in USS Dwight D. Eisenhower (CVN 69); and the 2nd Fleet staff embarked in USS Mt. Whitney (LCC 20).

He commanded USS Arleigh Burke (DDG 51) and USS Cape St. George (CG 71), winning Battle E's and Golden Anchors in both tours. While in command of Cape St. George, the ship participated in combat operations in support of Operation Iraqi Freedom in both the European and Central Command theaters.

Carr graduated in 1979 from the U.S. Naval Academy with a bachelor's of science degree in Naval Architecture. He received his master's of science degree in Operations Research from the Naval Postgraduate School and completed the advanced management program at Harvard Business School.

William Green

Chairman & Chief Executive Officer
Accenture

William D. Green is chairman & CEO of Accenture, a $21.6 billion global management consulting, technology services and outsourcing company.

In addition to chairing the board of directors, Green is responsible for managing the company; formulating and executing long-term strategies; and for all interactions with clients, employees, investors and other stakeholders. He is Accenture's primary decision maker and policy maker, setting the tone for the company's values, ethics and culture. He has served on Accenture's board of directors since its inception in 2001.

Prior to becoming CEO in 2004, Green was Accenture's chief operating officer—Client Services with overall management responsibility for all of the company's operating groups. In addition, he served as group chief executive of the Communications & High Tech operating group from 1999 to 2003. He also was group chief executive of the Resources operating group for two years. Earlier in his career, Green led the Manufacturing industry group and was managing director for Accenture's business in the United States.

Green represents Accenture in a number of external venues. He is a member of Business Roundtable and chairman of its Education, Innovation and Workforce Initiative. He also is a member of the G100 and the International Advisory Panel of the Infocomm Development Authority of Singapore. Green has been a featured speaker at business and technology conferences around the world.

Mr. Green joined Accenture in 1977 and became a partner in 1986. He attended Dean College and is a member of its board of trustees. He received a bachelor's of science degree in economics and a master's of business administration degree from Babson College, as well as an honorary doctorate of law.

Lewis Hay, III

Chairman & Chief Executive Officer
FPL Group, Inc.

Lewis "Lew" Hay, III is chairman and chief executive officer of FPL Group, Inc. (NYSE: FPL), one of the nation's leading electricity-related services companies. He was elected CEO in June 2001 and elected chairman of the board in January 2002. Hay also is chairman of FPL Group's two primary subsidiaries, Florida Power & Light Company and NextEra Energy Resources, LLC (formerly FPL Energy, LLC). Hay joined FPL Group as chief financial officer in August 1999. In March 2000 he was appointed president of NextEra Energy Resources.

FPL Group, Inc. (NYSE: FPL) is a leading clean energy company with 2008 revenues of more than $16 billion, approximately 39,000 megawatts of generating capacity, and more than 15,000 employees in 27 states and Canada. Headquartered in Juno Beach, Fla., FPL Group's principal subsidiaries are NextEra Energy Resources, LLC, the largest generator in North America of renewable energy from the wind and sun, and Florida Power & Light Company, which serves 4.5 million customer accounts in Florida and is one of the largest rate-regulated electric utilities in the country. Through its subsidiaries, FPL Group collectively operates the third largest U.S. nuclear power generation fleet.

Hay serves on the board of directors of both Capital One and Harris Corporation, and is a vice chairman of Edison Electric Institute (EEI) , the association of U.S. shareholder-owned electric companies. He also serves as a director of the Institute of Nuclear Power Operations (INPO), which encompasses all U.S. commercial nuclear operating organizations, and the Nuclear Energy Institute (NEI). Hay is a member of the Dean's Advisory Council at Carnegie Mellon University's Tepper School of Business and the Business Roundtable, and is a director of the Florida Council of 100.

Hay received a bachelor's of science degree in electrical engineering from Lehigh University in 1977, and a master's of science degree in industrial administration from Carnegie Mellon University in 1982

Ron Lang

Chief Executive Officer
SunGard Higher Education

Ron Lang is chief executive officer, SunGard Higher Education, a division of SunGard Data Systems. SunGard is a $5 billion privately held Fortune 500 company. Lang is responsible for all aspects of SunGard's higher education business, including developing, implementing, and executing the strategies and partnerships that drive SunGard Higher Education to deliver value to customers.

Prior to his appointment, Lang served as chief executive officer for SunGard's Enterprise Solutions Group, within SunGard Financial Systems. In this role, Lang united product management, global account management, offshore services, consulting services, and managed services to develop enterprise software and processing solutions for SunGard's global accounts.

Lang originally joined SunGard in 1998 with the acquisition of Infinity Financial Technology, where he was vice president of marketing. From 2000 to 2005, he was group chief executive officer of SunGard Trading Systems and also was responsible for SunGard Brokerage Systems and SunGard Financial Networks from 2003 to January 2005.

Lang holds a bachelor's of science degree from the University of California-Berkeley's School of Natural Resources.

Tara O'Toole

Under Secretary for Science & Technology
U.S. Department of Homeland Security

Tara O'Toole was confirmed November 4, 2009, as the under secretary for science and technology at the U.S. Department of Homeland Security.

From 2003 to 2009, O'Toole was the chief executive officer and director of the Center for Biosecurity at the University of Pittsburgh Medical Center (UPMC), and professor of medicine and of public health at the University of Pittsburgh. The Center for Biosecurity of UPMC is an independent organization dedicated to improving the country's resilience to major biological threats.

She has served on numerous government and expert advisory committees dealing with biodefense, including panels of the Defense Science Board; the National Academy of Engineering Committee on Combating Terrorism; and the National Academy of Sciences Working Group on Biological Weapons. She served as chair of the Board of the Federation of American Scientists from 2006-07, and in 2006 she was appointed to the board of the Google Foundation's International Networked System for Total Early Disease Detection (INSTEDD).

From 1993 to 1997, O'Toole served as assistant secretary of Energy for Environment Safety and Health. In this position, she was principal advisor to the secretary of energy on environmental protection and on the health and safety of the approximately 100,000 workers in the U.S. nuclear weapons complex and Department of Energy (DOE) laboratories.

Prior to her work at DOE, O'Toole was a senior analyst at the Congressional Office of Technology Assessment (OTA), where she directed studies of the health impact of pollution resulting from nuclear weapons production, among other projects. O'Toole practiced general internal medicine in community health centers in Baltimore from 1984 to 1988. She is board certified in internal medicine and in occupational and environmental health.

She has a bachelor's degree from Vassar College, a master's degree from the George Washington University, and a master's of public health degree from Johns Hopkins University. She completed internal medicine residency training at Yale and a fellowship in occupational and environmental medicine at Johns Hopkins University.

John Veihmeyer

Chief Executive Officer
KPMG LLP

John Veihmeyer is chief executive officer of KPMG LLP, a big four public accounting firm that provides audit, tax and advisory services, and the U.S. member firm of KPMG International. He also serves as the chairman of the Americas Region, which includes the United States, Canada, Central and South America, and Israel, for KPMG International. KPMG International's member firms have approximately 137,000 professionals, including more than 7,600 partners, in 144 countries.

Veihmeyer has held key leadership positions during his 32-year career with KPMG, which began in 1977. He was elected to the partnership in 1987. In 2005, he became, and continues to serve as, U.S. deputy chairman, with responsibility for enterprise-risk management and professional practice matters for the firm.

Previously, he was Global Head of Risk Management & Regulatory and a member of KPMG's International Executive Team. Earlier, he was KPMG's managing partner for the Mid-Atlantic area, and managing partner in Washington, DC. He also served as partner-in-charge of KPMG's Audit practice in Washington and Baltimore and was the lead SEC partner and professional practice partner for the Mid-Atlantic Area

Veihmeyer is a member of the Governing Board for the Center for Audit Quality (CAQ) and previously served as a member of Chairman Christopher Cox's SEC Advisory Committee on Smaller Public Companies. In the community, he is a member of the Partnership for New York City (PFNYC), Board of Trustees of Saint Mary's College, Notre Dame Mendoza College of Business Advisory Council, 2009-2010 Kennedy Center Corporate Fund Board, and a Co-Chair of CEOs Against Cancer. He previously served as the board chairman of the Cultural Alliance of Washington, DC, and as a member of the executive committee of the boards of the Federal City Council and the Greater Washington Board of Trade.

Veihmeyer was named one of the 2009 Top 100 Most Influential People in Accounting by Accounting Today magazine. He also has spoken on the critical role of ethics and integrity in leadership, as well as the importance of diversity, at colleges and universities, including the University of Notre Dame, Brigham Young University, the University of Illinois and Howard University.

Nancy Zimpher

Chancellor
State University of New York

Nancy Zimpher became the 12th chancellor of the State University of New York by unanimous vote of the SUNY Board of Trustees on June 1, 2009. With more than 440,000 students, SUNY is the nation's largest comprehensive public university system. As the first academic in recent memory to be appointed chancellor, she also is the first woman to serve in this capacity in the system's 60-year history.

A dynamic and nationally-recognized leader, Zimpher is known as an effective agent of change in higher education. She began her career as a teacher in a one-room schoolhouse in the Ozarks and never has lost her passion for providing accessible, quality education for every student.

Previously, as president of the University of Cincinnati, Zimpher led a bold, aggressive strategic planning process, UC|21: Defining the New Urban Research University, which transformed the campus into a national powerhouse and a model for urban universities in the 21st Century. Under her leadership, UC's retention and graduation rates, student satisfaction ratings and national rankings all improved.

Prior to her tenure at UC, Zimpher served as chancellor of the University of Wisconsin-Milwaukee, and as executive dean of the Professional Colleges and dean of the College of Education at The Ohio State University. She chairs the Coalition of Urban Serving Universities Board; is a past chair of the National Association of State University and Land-Grant Colleges Board of Directors; and is a member of the National Board for the Fund for the Improvement of Postsecondary Education.

Zimpher has authored or co-authored numerous books, monographs and academic journal articles on teacher education, urban education, academic leadership, and school/university partnerships.

She holds a bachelor's degree in English education and speech, a master's degree in English literature, and a doctorate in teacher education and higher education administration, all from The Ohio State University