Spring 2015
Industry Study

Final Report
Education

The Dwight D. Eisenhower School for National Security and Resource Strategy
National Defense University
Fort McNair, Washington, D.C. 20319-5062

EDUCATION 2015

ABSTRACT: The United States must maintain an affordable and accessible higher education system if it aims to successfully pursue long-term national security goals. The growing U.S. income and wealth gap – the highest of any industrialized nation – is feeding into social ills that plague education from cradle to career: a growing achievement gap between the haves and have nots. Add the equity in education issue to the exploding costs of higher education, and there is the crucible of crisis for our human capital needs for the new global knowledge economy. By 2020, 65 percent of all jobs in the economy will require postsecondary education and training beyond high school. We will fall short of this mark by five million workers. And the trend of falling short continues. The United States has sunk to twelfth place in global rankings for higher education degree attainment per capita, down from first place in 1990. U.S. elementary and high school students are consistently outperformed by counterparts on international academic assessments, with minority student scores well below those in developing nations.

We are at an inflection point in our nation, with a significant demographic shift and a massive upheaval in the economic paradigm our education system was designed to serve. To be competitive in the future, it is imperative that the United States forges an educated and highly skilled workforce. Our leaders must pass smart higher-education policies that focus on access and affordability -- to continue forging the human capital upon which our nation's economic lifeblood depends and to shape the lives of the future custodians of our democracy. We can start by making community college free and focusing on robust programs to prepare high school students for successful and timely attainment of a higher degree.

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PLACES VISITED

Domestic:
U.S. Department of Education, Washington, DC
U.S. Senate, Committee on Education and the Workforce, Washington, DC
American Federation of Teachers, Washington, DC
American Council on Education, Washington, DC
Council of Great City Schools, Washington, DC
Department of Defense Education Activity (DODEA), Washington, DC
Early Education Initiative, New America Foundation, Washington, DC
Education Trust, Washington, DC
National Governors Association, Washington, DC
Phoenix University, Washington, DC
Education Testing Service, Washington, DC
American Public University, Washington, DC
Council of Chief State School Officers, Washington, DC
Teacher Panel, Einstein Fellows, Washington, DC
White House Education Policy, Washington, DC
Amidon Elementary, Washington, DC
Potomac Job Corps Center, Washington, DC
DC KIPP: Key Academy, Washington, DC
London King's College, Washington, DC
Maryland Department of Elementary and Secondary Education, Baltimore, MD
Maryland Department of Higher Education Baltimore, MD
Montgomery County Public Schools, MD
Montgomery County Community College, MD
Sylvan Learning Center Headquarters, MD
University of Maryland, College Park, MD
Mountain View Alternative High School, Centreville, VA
Thomas Jefferson HS for Science and Technology, Alexandria, VA
Fairfax County Public School, VA
George Mason University, Fairfax, VA
North Virginia Community College, VA
Boston City Public Schools, Boston, MA
Massachusetts Department of Higher Education, Boston, MA
Massachusetts Department of Elementary and Secondary Education, Boston, MA
Massachusetts Institute of Technology, Boston, MA
University of Massachusetts, Boston, MA
Virtual High School Collaborative, Boston, MA
HarvardX, Boston, MA
Boston Latin School, Boston, MA
Chelsea City Public Schools, Boston, MA
Minuteman Regional High School, Boston, MA

International:

U.S. Embassy, Tokyo, Japan
Tokyo Metropolitan Board of Education, Tokyo, Japan
Professional School of Education, Tokyo, Japan
American Center Japan, Tokyo, Japan
Nishimachi International School, Tokyo, Japan

U.S. Embassy, Singapore
National Institute of Education, Singapore
Nanyang Technological University, Singapore
Department for Institute of Technical Education, Singapore
Singapore American School, Singapore
Hwa Chong Institution, Singapore

INTRODUCTION

Higher Education in the United States: Tackling the Challenges of Affordability, Access, and College Readiness

> *"[t]here's nothing more important in a democracy than education. . . .Education is what feeds the hot fusion of innovation, of trust, commerce and what makes our nation great. It illuminates the path to our greatness."*[1]
>
> -- General Martin Dempsey

In his preface to the February 2015 National Security Strategy, President Barack Obama writes, "America's growing economic strength is the foundation of our national security and a critical source of our influence abroad."[1] National power and security are built upon a country's technological and productive strength, and the American model of global stewardship draws this strength both from its economic and technological superiority. Unquestionably, what helps underpin these two essential pillars of national security is a robust higher education system that keeps pace with the demands of a new and dynamic global knowledge economy.

Considering the increases in tuition and the reduction in state funds for higher education, community colleges currently provide an avenue to make the path to a bachelor's degree more affordable. The average annual tuition at a community college is almost $6,000 less than a four-year institution and could provide savings of approximately $12,000 in tuition alone if a student attended a community college for his/her first two years of college.

Community colleges are also net money-makers for the American economy. Based on 2012 numbers, community colleges contributed to the $806.4 billion generated in student productivity, which, combined with the $2.6 billion effect of international student spending (paying full tuition and adding living expenses), translates into a total $809 billion in net positive effect on the national economy.[2] This additional income was equal to 5.4 percent of our GDP.[3]

This paper will focus on three major challenges facing higher education in the United States: affordability, access, and college readiness. It will also offer recommendations to jumpstart a meaningful dialogue about how we can maintain the United States' status as the most advanced and developed nation in the world.

THE INDUSTRY DEFINED

The Education Industry is extensive and multi-faceted. It includes early childhood, public/charter, and private schools from K-12, non-traditional career/vocational training programs, post-secondary institutions (including two-year, four-year and graduate level for-profit and not-for-profit institutions), as well as support agencies such as curriculum developers, tutors, and book publishers. As defined by IBIS*WORLD*, this study crosses two industries: public and private K-12 education (NAICS 61111a and 61111b, respectively).

The K-12 portion of the industry includes both public and private elementary (grades K-8) and secondary (grades 9-12) schools, which provide education for a community's children and are supported by government and private funds. The primary education activities within the public and private K-12 industry consist of teaching and the administration of basic literacy and numeracy; establishing foundations in science, mathematics, geography, history and social

sciences; completing standardized testing to meet regulatory and funding requirements; and providing access to extracurricular activities.

According to the Center for Education Reform, there are 98,817 public elementary and secondary schools; 6,187 charter schools; and 33,370 private schools. Total K-12 enrollment is 54.8 million students. That number is expected to increase by 0.7 percent to over 63.2 million by 2020. Taken together, the U.S. K-12 education system is a broad enterprise that encompasses public and private agencies that are guided by federal law and administered and governed at the state level. It is a system that supports the United States as a global leader on many fronts. It must overcome challenges that if left unchecked by federal leadership and its policies, will ultimately impact the U.S. national security and its ability remain a global superpower.

With a cradle-to-career policy approach, the United States must have an adaptive education pipeline in place to continue moving our nation's greatest asset – our citizens – to greater opportunities. As other nations continue to grow in technological ability, our system of higher education must be capable of producing competent leaders in the areas of innovation, science and technology, entrepreneurship, and energy security. The United States must also possess an organic workforce with the technological sophistication to ensure national safety from both cyber and space attacks.[4] It is only from a position of technological and economic strength that we will be able to secure our nation's interests and continue our role as a global leader.

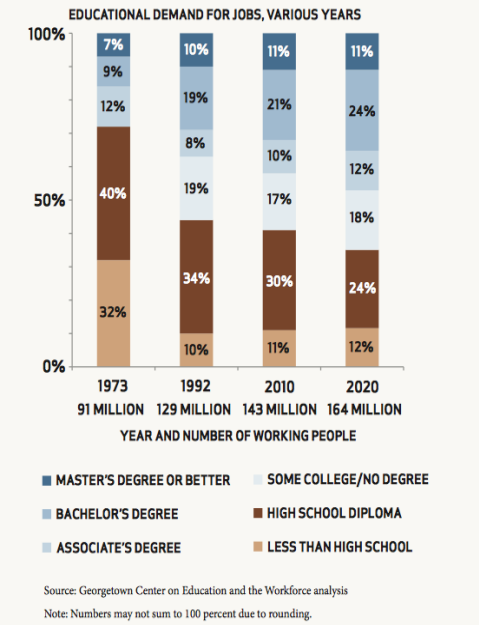

Figure 1: Educational Demand

We must also continue producing the human capital necessary to innovatively develop tomorrow's solutions—today. By 2020, 65 percent of all jobs in the economy will require postsecondary education and training beyond high school.[5] At the current rate of higher-education attainment statistics, the United States will fall short of this 2020 requirement by 5 million workers.[6] See *Figure 1*.[7] *The Bottom Line:* the United States must maintain an affordable and accessible higher education system if it aims to successfully pursue the national security goals outlined in the 2015 National Security Strategy.[8]

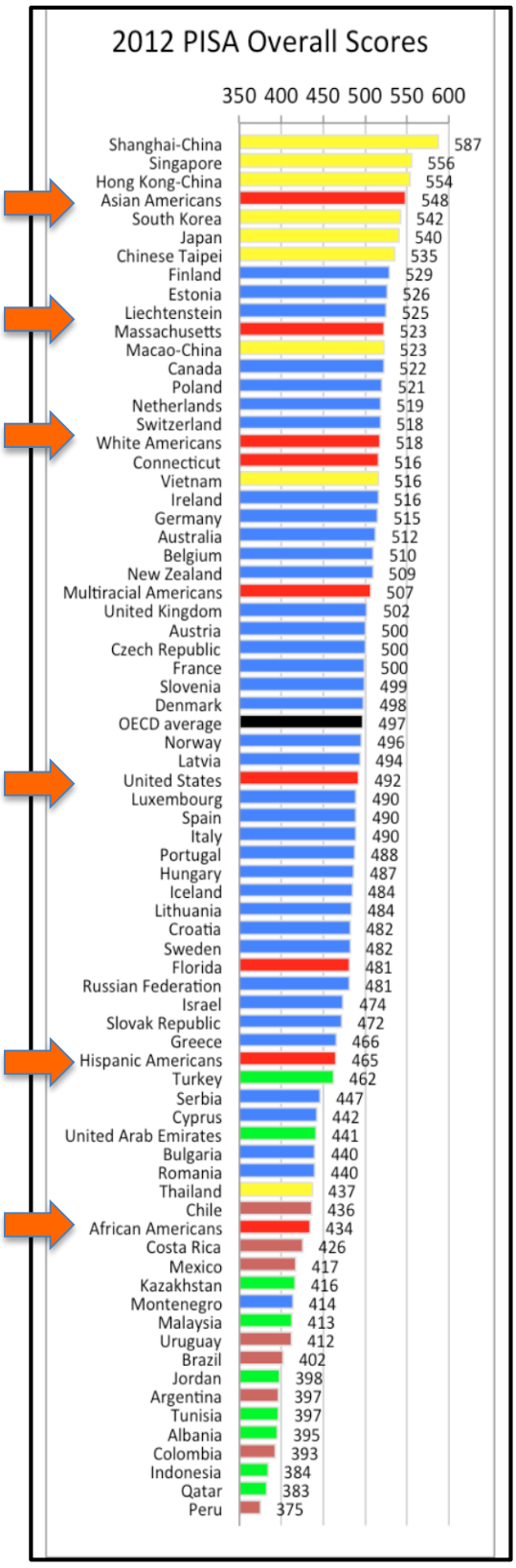

Figure 2: 2012 PISA Scores

The Changing Anatomy of Global Competition – Grey Matters

The rapid evolution of the global knowledge economy translates into a different type and pace of competition between nations -- where sheer might is no longer the sole determinant of power. While the United States is undeniably the world's only conventional and strategic superpower, it is being increasingly challenged by rising nations punching far above their weight in the academic arena. One indicator of this slippage is U.S. student performance on international academic assessments.

On the 2011 *Trends in International Mathematics and Science Study* (TIMSS) exam, U.S. fourth-grade students ranked ninth in math and seventh in science out of 57 countries; and eighth-grade students ranked twelfth in math and thirteenth in science out of 56 countries. [9] On another internationally acclaimed assessment, the *Programme for International Student Assessment* (PISA), U.S. scores were also comparatively weak. Our nation's 15-year-olds ranked well below students in 24 other Organisation for Economic Co-operation and Development (OECD) countries in math and 16 other OECD countries in science.[10] The PISA scores generate an additional concern as the exam is designed to reflect critical thinking skills and "emphasize students' abilities to apply skills and information learned in school (or from life experiences) to solve problems or make decisions."[11] As Secretary of Education Arne Duncan said, "The big picture of U.S. performance on the 2012 PISA is straightforward and stark. It is the picture of educational stagnation. The brutal truth, that urgent reality, must serve as a wake-up call against educational complacency and low expectations."

PISA score rankings (see *Figure 2*) reflect another challenge with which the United States continues to struggle – the achievement gap in education revealed by relatively poorer performance numbers by minority group.[12] We will address this in another section of this paper.

Turning to a different international assessment, the 2012 *National Assessment of Educational Progress* (NAEP) examinations found that 60 percent of fourth graders and 66 percent of eighth graders were not proficient

in math, while in science 28 percent of fourth graders, 37 percent of eighth graders, and 40 percent of twelfth graders did not meet basic standards of science knowledge.[13] [14] NAEP is the largest nationally administered test in the United States, providing benchmarked results across a variety of demographics and geographic elements.

This trend of relatively weak assessment performance by American students compared to international counterparts points to a troubling momentum in which the United States is persistently lagging behind other nations. The factors undermining education excellence and subsequent career readiness must be put under the microscope. Scholars widely agree that the underlying problems are manifold, take root in the earliest phases of our education system, and are reflective of economic and social conditions. Growing U.S. income inequality, the steep and mounting costs of education, barriers to entry/access for higher education, and significant achievement gaps between minority groups and whites all play a role in the individual education trajectories of our students and, by extension, our collective performance.

The astonishingly high cost of tuition for higher education, the steep increase of which has outpaced inflation and taken on staggering dimensions, is having a significant deterrent effect on prospective students, particularly for low-income students.[15] According to the College Board statistics, between 1984 and 2015, the "average published tuition and fees at private four-year institutions rose by 146 percent, from $12,716 (in 2014 dollars) to $31,231. The average published price at public two-year colleges rose by 150 percent, from $1,337 to $3,347, and the increase for in-state students at public four-year institutions was 225 percent, from $2,810 to $9,139."[16] These figures do not reflect the cost of living expenses and incidentals, such as books, supplies and technology required to support education in the digital age. It is important, then, to also distinguish the difference between "tuition," and the "cost of higher education."

Lack of college readiness feeds into the vicious loop of affordability and access. Nearly 60 percent of students entering college require remediation, which is additional education in reading and math to elevate knowledge and performance to college standards. Graduation statistics are not favorable to these students: only 10 percent of students in remediation will actually graduate.[17] Additionally, there is a good chance students are not earning any credits towards any degree while in remediation, which is costing them valuable time and money.

Education is inherently a function of the economy, the vital driver of the engine that keeps the United States competitive and strong. It also presents the nexus between equity and opportunity in our diverse democracy. As such, now more than ever, we must pay attention to the crossroads of a burgeoning crisis.

The remainder of this study will delve further into three key challenges facing higher education in the Unites States followed by a discussion of specific recommendations.

Key Challenges Facing Higher Education in the United States

KEY CHALLENGE #1: INCREASINGLY UNAFFORDABLE AND UNDERFUNDED

As stated above, the steep increase in higher education costs has outpaced inflation and is a major obstacle to education attainment, particularly for lower-income students. *Figure 3* below underscores the unaffordability of college for the underprivileged, a significant problem given the expanding income gap.[18]

Low-income students must devote an amount equivalent to 76% of their family income towards college costs

Family Income Percentile	Average Income	Average Cost of Attendance	Average Expected Family Contribution (EFC)	Average Grant Aid	Average Unmet Need After EFC and Grant Aid	Average % of Income Required to Pay Out-of-Pocket Expenses
0 – 20%	$12,783	$27,428	$276	$13,565	$13,591	76%
21 – 40%	$36,205	$29,345	$2,138	$12,246	$15,006	46%
41 – 60%	$65,204	$29,804	$8,059	$8,465	$13,689	33%
61 – 80%	$97,733	$30,719	$16,259	$6,842	$9,465	25%
81 – 100%	$185,819	$34,370	$35,925	$6,041	$5,281	17%

Education Trust analysis of NPSAS:12 using PowerStats, http://nces.ed.gov/datalab/. Results based on full-time, full-year, one-institution dependent undergraduates at public and private nonprofit four-year colleges

Figure 3: Family Income Towards College

The United States currently has the most unequal distribution of wealth of any industrialized nation and the median household income remains stagnant and pegged to the same level as 25 years ago.[19] The official poverty rate of the United States is currently at a troubling 14.5 percent.[20] But it's not just wages that are stagnating – it is also our minds. According to the U.S. Census Bureau, college enrollment dropped two years in a row between 2011-2013, with a cumulative plunge of 930,000, larger than any college enrollment reduction since before the Great Recession.[21] A significant portion of this decline struck the two-year community college level, with those institutions experiencing a 10 percent decline in enrollment numbers from 2012 to 2013.[22] With the staggering price tag of higher education, prospective students at the lower end of the income-distribution fulcrum increasingly feel that a degree is beyond reach.

From August 2003 to August 2013, the price index of college tuition increased by almost 80 percent. That increase was nearly double the increase of medical care, which has historically been one of the highest priced areas for consumers.[23] One of the reasons for the increase in tuition has been the deep reduction of state funds being invested in higher education. With the exception of Wyoming and North Dakota, every other state has reduced its fiscal support of higher education anywhere from 14-69 percent between fiscal years 1980 and 2011. Virginia reduced higher education funding by 56 percent during this time period and, by current projections, will be at zero by 2038.[24] With colleges starved of public funding, the burden falls to students to make up the shortfall through higher tuition costs.

While seeds of the trend existed before, the Great Recession beginning in December 2007 dramatically reduced state revenue, and hit higher education funding with particular force. Although the U.S. economy has recovered significantly, state spending on higher education

nationwide is still, on average, 28 percent below pre-recession levels.[25] But state funding remains critical to supporting educational services at public universities.

The effect of state cutbacks has been that steep tuition hikes must make up for the public funding shortfalls. In 2012, tuition cost per student exceeded the state contribution. With state appropriations for public universities on the decline, tuition costs at four-year public colleges and universities rose by 28 percent between 2007 and 2013, double the rate of inflation.[26] These funding cuts have been cited as the primary driver for tuition increases at public universities in recent years. Inflation-adjusted tuition and fee charges have increased by 247 percent at state flagship universities, by 230 percent at state universities and colleges, and by 164 percent at community colleges since 1980.[27] See *Figure 4*.[28]

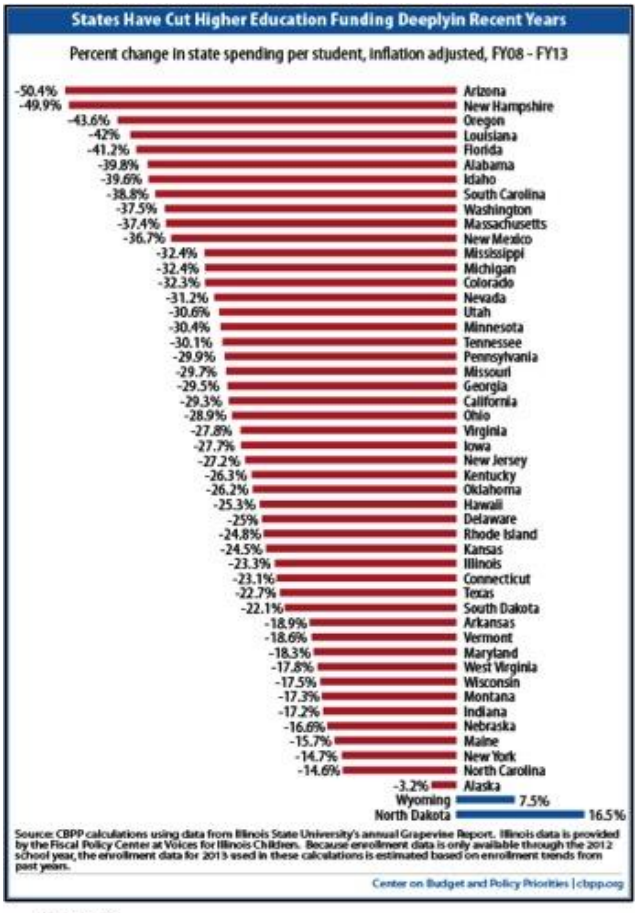

Figure 4: State Spending Per Student

In the past 20 years, 31 million students attended college but failed to earn a degree.

The reasons behind this statistic are manifold, including cost, lack of a clear and defined career pathway, heavy remediation requirements, and the loss of credits when transferring from one institution to another.[29] Median family income has been significantly outpaced by the rising costs of higher education. Tuition and fees at a two-year public institution average more than $3,000 per year and almost $9,000 per year at four-year public institutions.[30]

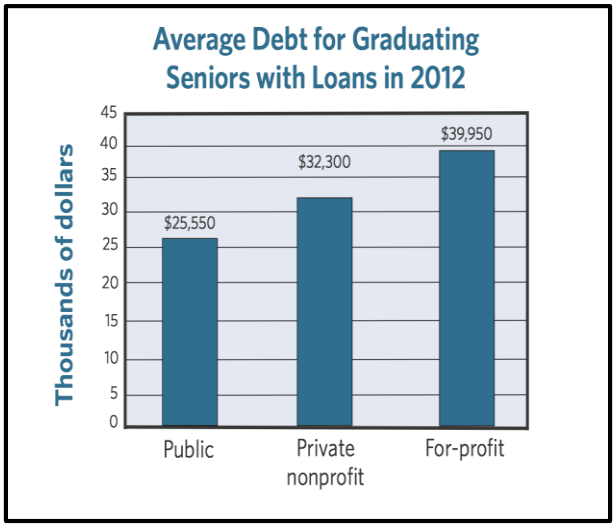

Figure 5: Average Debt for Graduating

When other fees, such as room and board, transportation, and books and supplies are factored in, the cost average is $15,933 per year for two-year institutions and $22,826 per year for four-year institutions.[31] As tuition continues to rise each year and the amount of financial assistance remains relatively flat, students and parents are forced to borrow the difference.[32]

According to the Institute for College Access and Success, in 2012, 71 percent of all students graduating from four-year colleges had student loan debt. Breaking down that figure, that is 66 percent for public colleges, 75 percent

from private, nonprofit colleges, and 88 percent from for-profit colleges. That represents 1.3 million students graduating with debt, up from 1.1 million in 2008 and 0.9 million in 2004.

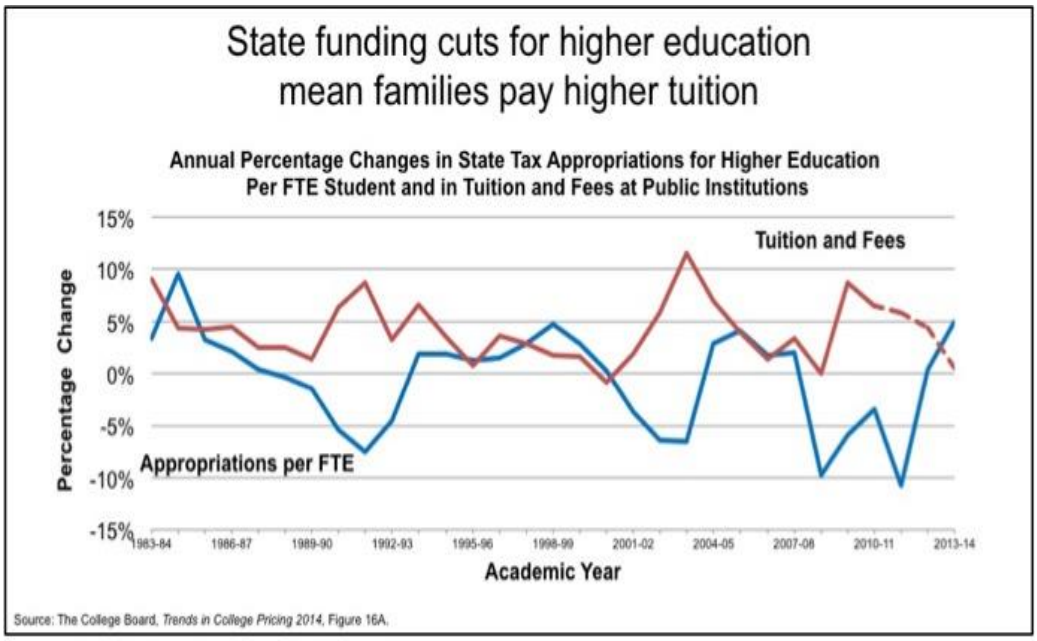

Figure 6: State Funding Reductions

This debt is reaching staggering levels, cumulatively topping $1.2 trillion dollars -- an 84 percent increase since the Great Recession of 2008.[33] See *Figures 5 and 6*.[34] [35] The Institute for College Access and Success published the following figures reflective of 2012 levels:

- At *public* colleges, average debt was $25,550 — 25 percent higher than in 2008, when the average was $20,450.
- At *private nonprofit* colleges, average debt was $32,300 — 15 percent higher than in 2008, when the average was $28,200.
- At *for-profit colleges*, average debt was $39,950 – 26 percent higher than in 2008, when the average was $31,800.

Compounding the issue of cost is the patchwork nature of coursework that does not always readily constitute a career pathway. This creates cost inefficiencies and draws out degree completion times. Without a clear path to graduation, the costs of education are driven upwards by students who take superfluous courses with unaligned curriculum. Students who obtain an associate's degree average 81 hours, instead of the normal 60 hours, and those graduating with a bachelor's degree average 134 hours, when 120 hours is usually sufficient.[36] Not only will it take longer to graduate, but students are de facto increasing the cost of college by paying for credit hours they do not need.

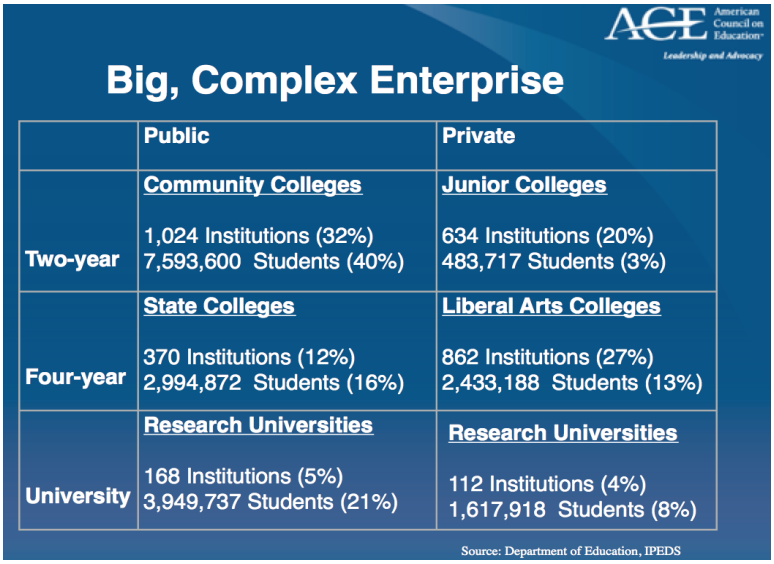

Figure 7: Higher-Education Enterprise

Higher education is a complex enterprise of first, second and third chances – with varying price tags. The landscape can be visualized in this graph from the American Council on Education (see *Figure 7*).[37]

Federal support for this sector comes in various financial packages, including Pell Grants, loans, tax breaks and subsidized jobs. A Pell Grant is financial assistance the U.S. federal government gives college-bound students who meet specific criteria based on need and enrollment eligibility. Nearly nine million Americans rely on Pell Grants to attend and complete college. As recent as the 1980's, Pell Grants covered more than half of the cost of a four-year public college.[38] However, even with the increases in federal funding, Pell Grants today cover significantly less than one-third of the cost of college.[39] This is an alarming trend when one considers that 9 out of 10 students who go to college using the Pell Grant also require student loans to bridge the gap—not surprisingly, *more than 60%* of African-American undergraduates and *half* of Hispanic undergraduates rely on Pell Grants to attend college.[40] Pell Grants are an essential ingredient to access and affordability for millions of low-income Americans and is a key pillar in the Obama Administration's goal for America to regain its role as the world leader in college attainment.

Affordability of higher education is an essential public policy focus for all stakeholders, in particular tax payers, as shrinking cost structures feeding public institutions of education are, as we have demonstrated herein, expanding the tuition burden on individual students. To meet our labor force requirements of the future, the United States must get the exploding costs of higher education under control.

KEY CHALLENGE #2: PROMOTING ACCESS AND EQUITY IN EDUCATION

President Franklin D. Roosevelt said, "Democracy cannot succeed unless those who express their choice are prepared to choose wisely. The real safeguard of democracy, therefore, is education." Ours citizens must have an equal opportunity to receive an education that postures them for personal success and provides a meaningful public good to better society. The strategic dimension is clear: access to higher education feeds into the human capital component of economic strength. The changes and trends of the past four decades make clear that, if the United States is to remain competitive and succeed as a leader in the global marketplace, it must realize the potential of its full labor force.

One element of the access issue has its roots in the minority achievement gap. Graduation rates consistently vary from state to state but, for the past two decades, most states report a disconcerting achievement gap between white, Asian, black and Latino students, with black male students in last place. A generation ago, the United States led the world in college graduation

rates. Today, 11 countries boast higher rates than the United States. Last year, Education Secretary Arne Duncan announced that in 2012, the United States had achieved an 80 percent high school graduation rate, the highest in U.S. history.[41] However, the National Center for Education Statistics lends texture to this statistic: black students had a 69 percent graduation rate compared with 86 percent of white students and 88 percent of Asian students.[42]

The danger of not addressing the achievement gap early is that it perpetuates a lag in overall educational attainment. Minorities who do not complete high school are unlikely to continue with educational development. According to data from the Current Population Survey, in 2013, about 40 percent of whites between the ages of 25 and 29 had a bachelor's degree or more, compared to about 20 percent of blacks, 15 percent of Latinos and 58 percent of Asians.[43] Statistics show that this gap has not narrowed significantly in recent years. *Figure 8* reflects six-year completion rates for first-time, full-time freshmen at four-year institutions:[44]

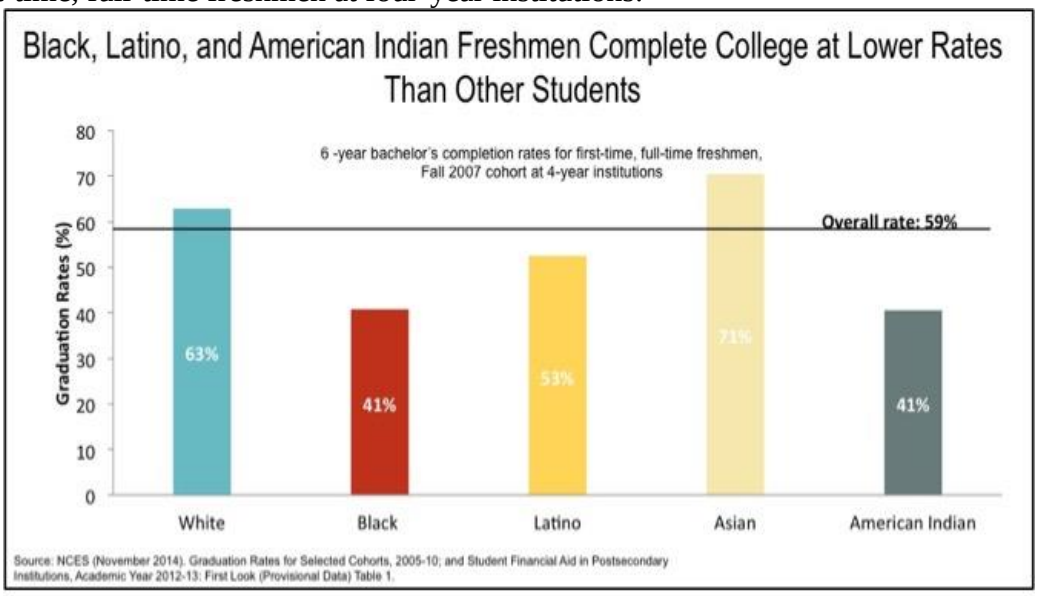

Figure 8: Minority College Completion

There are several factors underpinning the achievement gap, and all are complex and interrelated. In the search for a single explanation for this gap, scholarly research results have been inconclusive. However, the following causes have been put forward:

- Increasing economic inequality in America
- Demographic changes in the structure of the family, such as the increasing number of households led by single mothers and the absences of fathers
- Differences in school quality
- Differences in school resources
- Differences in families' social and cultural capital
- Varying educational attainment of parents
- Teacher expectations and treatment of minorities
- Varying academic standards in schools
- Variation in levels of community infrastructure[45]

Figure 9: College Completion Rates

Geography matters when it comes to education. With more than 16,000 school districts in the United States, with disparate sizes, structures, and resources, the education playing field is not level. Many American children face that uneven playing field from the day they enter kindergarten because they live in an area with under-resourced schools, a problem that is exacerbated by the selective redrawing of school district lines. As schools are built and funded by local taxes, they are often a reflection of the collective resources of the community. The districting of school zone boundaries can present an opportunity for diversification of the study body, or it can result in ethnic and racial segregation. As a result, educational gerrymandering can produce uneven student performance across schools that are in close proximity to one another.

Federal law codifies equity in education: the 1974 Educational Equality Act states, "[t]he Congress declares it to be the policy of the United States that, (1) all children enrolled in public schools are entitled to equal educational opportunity without regard to race, color, sex, or national origin; and (2) the neighborhood is the appropriate basis for determining public school assignments." As total federal funding for K-12 education is about 9.8 percent, the ability for the Department of Education to address zoning inequities is limited. What is thus visible in practice are local zoning decisions that adversely affect equal education opportunities by disenfranchising families, often lower-income and minorities, and eliminating choices.

A key initiative promulgated by First Lady Michelle Obama is the Reach Higher program, designed to "inspire every student in America to take charge of their future by completing their education past high school, whether at a professional training program, a community college, or a four-year college or university."[46] See *Figure 9*.[47] Our nation must address the achievement gap – which leads to the attainment gap – with a cradle-to-career spectrum so that the United States can once again be the country with the greatest portion of folks with college degrees. A generation ago we were number one and now we have slipped to twelfth in world rankings. Other countries are out-educating us. To compete globally, we must have all our citizens educated – not just the privileged few.

The introduction of the Common Core, a standardized curriculum focusing on elevating performance standards in literacy and numeracy as well as establishing concrete learning goals for college preparation, career, and life, holds hope for restoring equity in quality education. Currently 43 states have adopted the Common Core, setting expectations high for results. Education reform stewards are closely watching performance tests and other indicators to see what the long-term effects of leveling the attainment playing field will be.

In sum, there are a variety of factors undergirding the issue of equity in education, all of which, in the whole or partial aggregate of their parts, lead to a linked chain of achievement gaps and attainment gaps for minority and underprivileged students. The prism of sociological and economic indicators is complex, and the debate continues as to whether education is the cure or the disease. There is widespread agreement, however, that a more equitable education system that fosters the steady rise of all students who have the will to learn is the ultimate level for the playing field of success.

KEY CHALLENGE #3: ASSURING COLLEGE READINESS

Educational remediation refers to the supplementary instruction that must be provided to students with established deficiencies in reading and math. The rate of remediation required by first-year college students continues to be an issue of growing concern and a barrier to the successful completion of a degree. More than 50 percent of students entering community college will require some level of remedial classes. These are the same students whose academic competencies were regularly assessed throughout their primary and secondary school years. Frustrated from the beginning, thousands will never show up for their first class and 4 out of 10 will never complete the remediation, much less a degree.[48] Only 22 percent of community college students complete their remedial courses and college level courses in two years.[49] See *Figure 10*.[50]

Postsecondary remedial education is expensive, wasteful, and creates adverse momentum for degree completion. By one estimate, the cumulative national cost ranges from $1 billion and $2 billion per year, and incurs a financial impact of approximately $700 million to students and their families.[51] Publicly funded institutions of higher education, which must invest in courses and materials that students should have mastered in high school wastes valuable taxpayer resources. And, according to College for America, 25 percent of students who take remedial courses are more likely to drop out without earning a degree. Hence, in economic terms, taxpayers must make up for the lost wages and income these students will not receive. Additionally, as remedial coursework does not count toward graduation, it extends the length of the scholastic career, which in turn compounds expenses.

One issue surrounding remediation lies with the placement tests, which are demonstrably failing to adequately identify and correct deficiencies in literacy and numeracy as students progress toward higher education. Math and English tend to be the courses most students are least prepared for at the college level, with math being the worst. The two most common tests are ACCUPLACER and COMPASS. According to research conducted by the Community College Research Center at Teachers College, Columbia University, 33 percent of students are misplaced by ACCUPLACER and 27 percent are severely misplaced by COMPASS. The students are placed into courses that are either beneath or beyond their competencies.[52] Additionally, there is also research that has shown grade point average can be a more accurate assessment tool than the placement tests.[53]

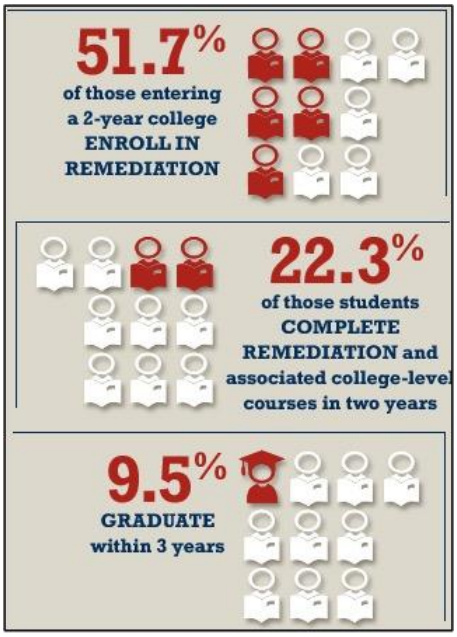

Figure 10: Remediation Success

Regardless, there will inevitably be some students who require some level of remediation. Currently, many community colleges conduct remediation as a prerequisite to any courses that award the student credit hours. For many students, there appears to be no end in sight and they simply give up. But many community colleges have recognized the problems with traditional remediation and have taken steps to help these students.[54]

It will not be possible to totally eliminate the need for remediation for all postsecondary students. There will always be a number of students that will require some additional work to prepare them for that next phase of their education. The current numbers, though, are driving significant frustration, particularly in the political realm – there is the impression that remediation is essentially "paying twice" for education. Ohio has already begun to phase out support for remediation in its four-year institutions.[55] Thus, in addition to measuring progress against the applicable standards, assessments must be focused on early identification of which students will require remediation.

The complexity and interlaced nature of the three key challenges outlined in this paper -- affordability, access, and college readiness – permeate public policy discussions on appropriate higher education solutions. The wicked problem of higher education defies a one-size-fits-all answer. There is no panacea. As such, the recommendations provided forthwith represent solutions that may tackle one or all of the challenges outlined in this study. There is no one-for-one correlation between challenges and recommendations but rather general policy recommendations providing a road map to deeper dialogue.

Recommendations for Promoting Higher Education Attainment

RECOMMENDATION #1: MAKE COMMUNITY COLLEGES MORE AFFORDABLE AND ACCESSIBLE

With 1,167 regionally accredited community colleges in the 50 states and the District of Columbia, community colleges are uniquely poised to address the skills shortage and the need for general higher education.[56] Forty-four percent of all undergraduate students attend community college, whose student body is approximately 12 million students.[57]

This recommendation focuses on community colleges. Six specific recommendations are proffered to make colleges more affordable and accessible.

1. TREATING GENERAL EDUCATION AS "K-14:" The theme of higher education has taken on a more urgent tone over the past few years, with key mention in the 2014 and 2015 State of the Union addresses as well as reference in the 2015 National Security Strategy.[58] President Obama has specifically pointed to community colleges as the crucible of higher education, tackling the

affordability and access pieces of the three-legged stool of challenges.[59] President Obama's recent proposal – "America's College Promise" -- to make community college free should be implemented.

In the President's FY2016 budget request to Congress, the "America's College Promise" program is prefaced with this exhortation:

> *Nearly a century ago, a movement made high school widely available which helped lead to rapid growth in the education and skills training of Americans, driving decades of economic growth and prosperity. America thrived in the 20th century, in large part, because we had the most educated workforce in the world. But other nations have matched or exceeded our success. Today, more than ever, Americans need more knowledge and skills to meet the demands of a growing global economy without having to take on decades of debt before they even embark on a career. By 2020, an estimated 65 percent of job openings will require postsecondary education or training. At the same time, approximately 100 million adults in America today have no college experience.*[60]

The Promise plan would apply to "responsible" students attending community college at least half-time, earning a minimum 2.5 grade-point average, and adhering to a timely completion of a two-year degree. States would be expected to contribute 25 percent of the total costs, which is pegged at $60.3 billion over the next decade in the federal FY 2016 budget proposal submission. Funds under this mandatory funding would be used to cover all tuition fees for first-time students, regardless of age or when they completed high school.[61] The Obama administration posits that, with full 50-state participation, up to nine million eligible students could save up to $3,800 per year.[62]

Beyond free tuition, the Promise proposal also establishes qualitative expectations of community colleges, for exceptional educational programs that align curriculum with seamless transfer options to four-year universities as well as workforce development goals. The President's Promise plan is an excellent proposal designed to provide citizens a ticket to upward mobility as well as a path to the securing the nation's future economic prosperity. It sets a different standard for what it means to be an educated American in the global knowledge economy.

Appealing to a bipartisan spirit, President Obama said in his January 2015 State of the Union address that his Promise proposal was inspired by existing programs in red Tennessee and blue Chicago. In the former case, in May 2014, Tennessee Republican Governor Bill Haslam signed into law a bill making Tennessee's 13 community and technical colleges free to state residents. Four months earlier, in his own 2014 State of the Union address, Governor Haslam also made a personal appeal: "In the year 2025, 55 percent of Tennesseans will need a certificate or degree beyond high school to get a job. Today, only 32 percent of Tennesseans qualify. To truly be America at its best, that's not good enough."[63] Extend this sentiment nationally, and we can see America really is not at its best: college dropout rates lead to a paltry 36.5% graduation rate (2007 figures), the cumulative value of all student debts exceeds a trillion U.S. dollars, declining public support for education has led to inflationary spikes in tuition costs, and there is a leadership crisis in the inability to connect the dots to align industry needs, workplace skills and college curriculum.[64]

The Tennessee Promise' funding approach is to use a "last dollar in" calculation, meaning the program covers whatever portion of the students' tuition is not already covered by existing

state or federal tuition assistance, using $300 million gathered from the state lottery proceeds.[65] In contrast to the Tennessee Promise's funding scheme, the President's Promise proposal is a "first dollar in" plan. The proposed funding language states the following:

> *Funds provided under this program would be used to eliminate community college tuition and fees for eligible first-time students, regardless of age or whether they are recent high school graduates. Unlike "last-dollar" scholarship programs, America's College Promise would be a tuition waiver program funded by new Federal and State resources. Therefore, low- and moderate-income students would continue to be eligible for Federal student aid (including Pell Grants) that they can use to cover other costs of attendance, such as books, supplies, housing, and transportation costs.*[66]

This distinction between "first-dollar in" and "last-dollar in" is vitally important. From an impact-on-student perspective, the "last-dollar in" approach has been criticized as offering no real promise at all. In a last-dollar in structure, low-income students who are already receiving the maximum amount of Pell Grant financial aid, or $5,775 for academic year 2015-2016, would not be able to receive additional funds under the Tennessee Promise program as their costs are considered "covered."[67] As previously noted, however, the net cost of a college education includes living expenses, tuition fees, books and other sundries that add up to thousands of additional dollars. Hence, when the numbers are crunched, it would appear that the intent of the Tennessee program, which is to promote access and timely degree completion for Tennesseans, is defeated by the very construct of the last-dollar in requirement.

The White House's proposal of "first-dollar in," in contrast, would nullify tuition costs and then allow students to use federal grants to help cover living expenses. In particular, this would allow low-income and high-need students to have some "skin in the game," as stakeholders in their own futures. In this way, the proposal not only responds to conservative arguments that taxpayers facilitate "free riders" by providing cost-free community college, but goes beyond to improve prospects for degree completion -- only 7.8% of students actually complete a two-years associate degree within four years if they have to work full time to support part-time studies.[68]

2. TRANSITIONING TO FOUR-YEAR UNIVERSITIES: All of the savings realized by attending community college for two years on the way to a bachelor's degree will disappear if the earned credits do not transfer to a four-year institution. Many community colleges and four-year institutions have developed partnerships to provide students with a smooth transition process. Whether the partnership is in the form of a Memorandum of Understanding, Memorandum of Agreement, or an Articulation Agreement, the agreement clearly defines which courses the four-year institution will accept from the community college.[69] Currently, there are four-year institutions in 28 states that have some level of partnerships with community colleges.[70] In the state of Virginia, students who graduate from one of Virginia's community colleges with an associate's degree can obtain guaranteed admission into one of the state's four-year institutions as long as they meet the minimum grade point requirement.[71] George Mason University is one of those institutions and as long as students have an associate's degree and 60 credit hours, they are considered to be a junior when they transfer to George Mason.[72] Despite having attended one to two years of community college, when these students graduate, their degree is awarded by the four-year institution.

3. DEVELOPING A PATHWAY TO DEGREE ATTAINMENT: Through community networks with high schools, articulation agreements with four-year institutions, and dynamic mentoring programs, community colleges can play a unique role in launching a student onto a successful and cost-efficient career path. For example, Northern Virginia Community College (NVCC)'s *Pathway to Baccalaureate* program provides this guidance, even before students graduate from high school. Students at participating high schools have the opportunity to meet with a counselor from NVCC to discuss items such as a personalized college plan, financial aid and scholarship opportunities, college placement testing, and summer orientation programs. Once enrolled at NVCC, the student is assigned a counselor to guide them through their academic experience and attain their goals.[73]

4. ANCHORING A PATHWAY TO STEM: Community colleges are important providers of STEM (science, technology, engineering, and mathematics) education, which has been cited as an area where critical skills shortages are developing. The National Science Foundation (NSF), for example, already devotes more than $60 million in grant money to its Advanced Technological Education program, designed to develop career pathways from community colleges to four-year institutions. In addition, recognizing that "groups underrepresented in STEM as well as first-generation college students make up a significant portion of students on community-college campuses," NSF offers a competitive monetary award in its Community College Innovation Challenge for students who develop STEM-based solutions to global problems.[74]

Complete College America (CCA) also has a unique approach to set students out on the right path from the outset of their higher education experience. CCA calls this idea the Guided Pathways to Success (GPS). Under GPS, students begin by choosing from a broad cluster of majors such as science, technology, engineering and math (STEM), liberal arts, or business. As students successfully progress in their academic careers, the scope of their major narrows more strategically into more specific areas for the particular field of study.[75] Along these same lines, students are provided with an academic map providing a clear path versus choosing from a menu of disconnected individual courses. Students are expected to take the requisite number of credits within an appropriate time frame to track with a reasonable timeframe for degree completion. While providing students with a clear path towards their ultimate goal is obviously a good start, colleges continue to be challenged with the issue of students requiring remediation.

5. BRIDGING THE ACHIEVEMENT AND ATTAINMENT GAP: Another compelling argument is one that focuses on bridging the opportunity gap. Community colleges offer an important gateway of access to lower income students, in particular underserved minority students with few opportunities to enroll in four-year institutions. According to the "action tank" Education Trust, only seven percent of low-income and minority community college students attain a bachelor's degree within ten years, and the two-year college completion rate for African-American, Latino, and Native American students is only 24 percent.[76] These numbers could be elevated and improved significantly if tuition were zeroed out and Pell Grants could be used to support living expenses, as the President's Promise plan envisions. The changing demographics in our country flag the importance of this dimension of opportunity.

6. ENHANCING AFFORDABILITY THROUGH INNOVATIVE PUBLIC POLICY

Profits from student loans: The Congressional Budget Office has projected that the federal government will collect approximately $127 billion over the next ten years from interest on existing student loans.[77] Between thirteen and 20 billion dollars per year could be used to offset the federal government's projected $6 billion annual expenditure on subsidizing community college – and have plenty left over for additional grant programs. These additional grant programs should focus on four specific areas.

First, grants should be awarded to community or technical colleges (CTCs) based on the percentage of students graduating in two years or less with an associate's degree. Recognizing the current number of students who enter higher education with the need for remediation, there should also be a stipulation allowing for CTCs to receive grants for the percentage of students who require remedial courses, but still finish their associate's degree in three years or less.

Second, grants should be awarded to CTCs that have developed specific programs to provide guidance, mentoring, and tutoring for students to help them reach their degree goals. NVCC's Pathway to Baccalaureate and Complete College America's Guided Pathways to Success are both good examples of programs designed to help the students graduate on time, eliminate unnecessary courses, and ultimately make college more affordable.

The third stipulation should focus on remediation grants. Grants should be awarded to CTCs that have implemented programs allowing students to take credit-bearing courses in parallel with their remedial courses. States can also look to Maryland's College Readiness and Completion Act of 2013, which provides specific guidance on the requirements public institutions in Maryland must accomplish with regards to remediation and student progression.[78] Congress should also look to possibly include grants for institutions that have instituted reviews and/or studies of the current remedial placement system.

To encourage CTCs and other institutions of higher education (IHEs) to continue to promote partnerships and articulation agreements, grants should be awarded to both institutions when 100% of a student's credits transfer from a two-year institution to a four-year institution and at least 75% of those credits are applicable to the student's major. Depending on a student's desired major at the four-year institution, it is not realistic to expect that 100 percent of the credits will always transfer to the student's major of choice.

Considering each institution may have a different approach to higher education, the grants should not be an all-or-nothing endeavor. CTCs and IHEs should be eligible to receive grants even if they only addressed a portion of the aforementioned stipulations. Furthermore, considering these institutions would have obviously already taken the steps necessary to improve higher education for students, they should be free to spend the funds as they see fit. The institution is either eligible or it is not. Congress must also ensure the grants are significant enough to encourage institutions to either continue developing and improving their current programs or incentivize other institutions to begin programs of their own.

The shuffle game: Consider that in 2012, total tuition at public colleges summed up at $62.6 billion.[79] The federal government is already dispensing $30.2 billion in grant aid, $36.5 billion in tax benefits, and $9.8 billion in work-study programs, amounting to $76.5 billion.[80] Money could be taken directly out of these existing programs, reshuffled, and applied towards the grants for CTCs and IHEs. Whatever existing shortfall could be made up through STEM-related taxes on high-tech corporations through a corporate "human capital" tax. If corporations need

human capital, how is this different from transportation companies needing paved roads? Human capital infrastructure is clearly a public good and should be treated as such.

RECOMMENDATION #2: ENHANCING COLLEGE READINESS

To improve college readiness, the education industry in the United States needs to adopt the approach that is becoming more prevalent in the U.S. healthcare industry: prevention instead of treatment – or, in this case, remediation. It seems eminently logical: rather than graduating underprepared students, high schools should be focused on adequately preparing and launching students into the higher tier of education. But schools are falling short of that mark – treating the illness instead of preventing the disease. Several approaches to enhancing college readiness are being explored by states today. Examples of these approaches are presented in the following section.

State Best Practices: With our fractured education system, the key is to examine best practices being carried out on the state level. Some states have already begun to implement programs focused on identifying students that may require remediation prior to their graduation from high school. A good model is the California Early Assessment Program, a collaborative initiative among the California Department of Education, the State Board of Education, and California State University. If the student opts in for this program, it involves an additional test during the required 11th grade examinations. The benefit is that a strong score eliminates the requirement for placement testing for the California State University system – and a student with poor scores is notified in advance so that he or she may take steps to improve his/her math and/or English proficiency prior to graduation.[81]

Another approach is to push for a greater focus on mathematics curricula as implemented in our secondary schools. Studies have shown that greater rigor at the high-school level, particularly in mathematics, significantly increases the probability for success in college; these probabilities are particularly dramatic for low-income, first-generation college students.[82] In Maryland, beginning with the class of 2018, it is now a requirement for students to take at least one mathematics class in each of their four years in high school.[83] Taking things in another direction, Massachusetts is conducting a pilot to investigate whether the use of high-school Grade Point Average – instead of the more-traditional placement examinations – might be a better indicator of a student's readiness for college-level work.[84]

The current approach to remediation is clearly not producing satisfactory results. There must be alternative – and more effective – approaches that achieve the objective of producing mathematics-savvy college graduates. This is another area where Massachusetts is leading the way. In addition to re-evaluating the use of traditional placement examinations to assess remediation requirements, the Massachusetts Board of Higher Education is piloting alternate pathways to satisfy mathematics requirements. In this framework, an engineering or mathematics student would follow the traditional algebra-trigonometry-calculus pathway, while a psychology or sociology student would concentrate on rigorous courses in statistics. In other words, the mathematics requirement would be tailored to meet the needs of the student's course of study, instead of simply applying a "one-size-fits-all" approach.[85]

Massachusetts is also experimenting with other alternative approaches to remediation. At Quinsigamond Community College, math topics are taught in the context of real-world scenarios a student might face. This helps to make the concepts more concrete and easier to understand.

Middlesex Community College is breaking semester-long classes into several shorter modules. The student must still complete all the modules with a "C" or better – but instead of having to re-take an entire course, the student need only re-take the failed modules. The student can also take these modules at his/her own pace, thus enabling the more motivated students to complete the work faster.[86]

Other states are conducting similar pilots and experiments. California is piloting the "Pre-Statistics Alternative," which is similar to the Massachusetts alternate pathway program. Tennessee has a "Do the Math" program that replaces traditional lecture instruction with a combination of online, instruction, and one-on-one assistance. Florida is testing an approach where a student takes modules focused on resolving specific knowledge deficits. "The days of the one-size-fits-all approach to developmental education courses are disappearing as colleges pursue instructional models tailored to students' strengths and deficits. The results, even if preliminary, show great potential to help underprepared students overcome the hurdles of remedial coursework and maintain momentum toward a credential or degree."[87]

Teacher Excellence: Next, college readiness is not limited to the challenges presented by remediation. If there was any consistent theme in our interactions with members of the education industry, it was this: the single most important factor in how well a student learns is the classroom teacher. "Research shows that a teacher's contribution matters more than anything else within a school. More than class size. More than school funding. More than technology."[88] Thus, an enhanced Teacher Corps will ensure a decrease in numbers of students requiring remediation. Most of the teachers in our schools are devoted and dedicated to doing the best that they can within the constraints they must observe. In moving forward, it is critically important that teacher evaluation and professional development continues to receive significant attention.

Specifically, there are school systems in which teachers are evaluated primarily on the basis of the performance of their students on standardized tests is inappropriate and must be revisited. This approach is demoralizing and counterproductive; not only does it demotivate a teacher from actively seeking challenging assignments, empirical evidence indicates that it is driving good teachers from the profession.[89] "Estimates of teachers' effectiveness are more stable from year to year when they combine classroom observations, student surveys, and measures of student achievement gains than when they are based solely on the latter."[90]

The average U.S. citizen does not understand the contributions provided by the U.S. Department of Education, or the limitations that it operates under. The programs, positions, and public stance of the department, however, have put it in the position where it is perceived by some as "the national school board."[91] This perception is not reflective of its actual authority and damages the department's effectiveness as it increases resistance to the value-added programs the department supports.

The Common Core is a prime example of an area where the average citizen does not understand the role taken by the department. It is often misrepresented in the media as a product of the federal government, which contributes significantly to the resistance that many citizens exhibit toward these standards. "During one public appearance to support the standards in March, Gov. Markell [D-DE] said he and others would continue to push back against what he said was a false 'mythology' about the standards: 'It's not about some malicious thing coming from Washington, D.C.' "[92] It has been noted that the proposals under consideration by the new Senate Health, Education, Labor, and Pensions Committee may actually benefit the progress of the Common Core by offering the perception of reining in the Department of Education.[93]

Conclusion

With spiking tuition costs and long-term student-loan burdens, many Americans question whether a higher education degree is worth the steep price tag. Financial and employment statistics make the case: for personal reasons, a higher degree is more vital now than ever as a means to reach enhanced earning power and a ticket to the middle class. But beyond this dimension of personal enrichment are the vast implications for U.S. national security.

Our policymakers should realize that United States is at a historical crossroads. We are shifting from analog to high-tech, from paper to digital, from manual to automated, from menial to information. It is a global knowledge economy that envelops the world and we must adapt to the new era to maintain our superpower status. To be competitive in the future, it is imperative that we create an educated and highly skilled workforce. It is imperative that our elected leaders pass smart higher-education policies that focus on access and affordability -- to continue forging the human capital upon which our nation's economic lifeblood depends and to shape the lives of the future custodians of our democracy. We can start by making community college more affordable and accessible, and preparing our students adequately to launch successfully on the path to degree attainment.

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