Increasing African American, Latino, and Native American Representation among High Achieving Undergraduates at Selective Colleges and Universities

by

L. Scott Miller

with

Mehmet Dali Ozturk

and

Lisa Chavez

Consortium for High Academic Performance
Institute for the Study of Social Change
University of California, Berkeley

2005

Acknowledgements

Many people have been of help to us as we have prepared this report. Our deep thanks and appreciation go to Gene Cota-Robles, Gene Garcia, and Rachel Moran, who as principal investigators have provided extensive ongoing advice, encouragement, and support for our work.

We also would like to thank Bill Armstrong, Laura Paluki Blake, Denise Campbell, Nancy Cox-Konopelski, Miriam Feldblum, Julian Fernald, Sabine French, Brandi Jones, Gene Lowe, Anny Morobel-Sosa, Mark Pavelchak, Patricia Ponce, Ann Quinley, Sharon Salinger, Marshall Sauceda, Susan Sparling, Mike Tamada, Torrey Sun, Gregg Thomson, Ted Tsukahara, Caroline Turner, and Karen Yoshino for their many very substantive and diverse contributions.

We also would like to extend our thanks to Earnestine Baker, Phil Bean, Mike Freeman, Gina Holland, Freeman Hrabowski, Ken Maton, Sue Layden, George McNally, Monica Minor, Lewis Rosengarten, Sheldon Solomon, Rolf Unterleitner, and Merna Villarejo for the extensive information and insights that they provided on their programs.

We are particularly appreciative of the administrative help provided by Janice Tanigawa, Alicia Arney, and Fennie Wang.

Finally, we would like to acknowledge the James Irvine Foundation and the David and Lucile Packard Foundation. Their generous grants supported both the preparation of this report and the research on which the report is based.

Table of Contents

	Page
Executive Summary	iii
Introduction	1
The Underrepresentation of African Americans, Latinos, and Native Americans among High Achieving Undergraduates at Selective Colleges and Universities	2
The Shortage of Top High School Graduates among African Americans, Latinos, and Native Americans and the Overprediction Phenomenon in Higher Education	5
The Shortage of Proven Programs and Strategies for Addressing The High Achievement and Overprediction Challenges on the Undergraduate Level at Selective Institutions	11
Characteristics of a Few Promising Programs and Strategies	14
The Need to Identify and to Develop More Proven Programs and Strategies for Increasing the Number of High Achieving Underrepresented Minority Undergraduates at Selective Institutions	30
Some Findings from the Survey of High Academic Performance	33
Constraints on High Achievement Efforts at Selective Institutions	35
Recommendations for Action	38
Final Thoughts	48

Executive Summary

African Americans, Latinos, and Native Americans are severely underrepresented among high academic achieving undergraduates—and bachelor's degree recipients—at selective colleges and universities by virtually all traditional measures of achievement, including grade point average, class rank, and academic honors. The shortage of top bachelor's degree recipients from these groups is a very serious matter, as it contributes to their underrepresentation in professional and executive leadership positions in "high human capital" sectors across our society.

A primary reason for this situation is that there also continues to be a severe shortage of high achieving students from these groups at the elementary and secondary levels. Another contributing factor is that the academic achievement of underrepresented minority students at selective institutions is often lower than would have been predicted by their prior academic performance in high school and by their college admissions test scores.

Selective institutions currently have few programs and strategies with strong empirical evidence that they help increase the number of high achieving undergraduates from underrepresented groups. This situation is partly a function of the fact that more attention has been given over the years to increasing the retention and graduation rates of these students than to helping more graduate with a high GPA; consequently, few programs have been designed with a high achievement focus. It also is partly a function of the fact that little money has been available to conduct rigorous evaluations of programs designed to improve academic outcomes of underrepresented undergraduates at selective institutions.

Nonetheless, there are some promising approaches to addressing the high achievement issue. Thus, it is reasonable to believe that a set of proven strategies could be developed, which, if widely used as designed, would help produce meaningful progress on this issue. However, identifying, developing, testing, and evaluating a large number of promising approaches would be expensive. It also would be expensive to operate proven programs widely on a high quality basis. In addition, training a large cadre of professionals to lead such programs would be a major challenge.

Currently, the financial resources to do these things are not readily available. Importantly, few, if any, foundations are investing heavily and systematically in the identification, design, testing, and evaluation of such strategies. Few selective colleges and universities have readily available sources of funds (such as specialized endowments) to operate proven programs with fidelity as they become available. There also are no mechanisms for training the professionals needed to operate the programs.

If progress is to be made, these underlying obstacles to working on the high achievement issue will have to be addressed effectively. This will require leadership by those in a position to make a difference on these matters—and by those with a large stake in expanding the number of African Americans, Latinos and Native Americans who excel academically at selective institutions. These circumstances suggest that leadership will need to come from at least three sources: 1) senior officials—especially presidents—of some of the nation's leading colleges and universities; 2) leaders of some major foundations that could invest heavily in this area; and 3) leaders of some influential organizations serving underrepresented minorities.

Introduction

From the start of kindergarten on through graduate school, African Americans, Latinos, and Native Americans have much less academic success than Whites and Asian Americans. This report focuses on one aspect of this situation: the continuing severe underrepresentation of these groups among undergraduates who excel academically by traditional measures at the nation's selective colleges and universities. For example, available evidence indicates that Black, Hispanic, and Native American undergraduates at selective institutions are much less likely than Whites and Asian Americans to graduate from college with a high grade point average (GPA) or with a high class ranking.[1]

The shortage of top bachelor's degree recipients from these groups is a very serious matter, as it contributes to the underrepresentation of African Americans, Latinos, and Native Americans in professional and executive leadership positions in high human capital sectors across our society.[2] For instance, there are relatively few top bachelor's degree recipients in engineering from these groups available each year to compete for entry-level engineering positions at leading technology-based corporations. There also are relatively few African American, Latino, and Native American bachelor's degree recipients who are fully competitive for admissions to top professional schools and graduate programs in a wide range of fields, e.g., in medicine, law, economics, biology, and computer science.[3] This, in turn, is limiting their presence among professional and doctoral degree recipients, including among those most sought after by highly competitive employers in the public, private, and independent sectors.[4]

The purpose of this report is to make recommendations for what can be done to increase the number of high achieving undergraduates from underrepresented groups at selective colleges and universities. We hope that our recommendations will be of interest to senior officials of selective institutions—especially presidents, as well as to faculty members and directors of undergraduate programs that serve underrepresented minority and disadvantaged students. We also hope they will be of interest to foundation heads, leaders of organizations serving underrepresented minorities, policymakers, and others in a position to help address this issue.

This report is divided into eight main sections. The first section describes the extent of the underrepresentation of Blacks, Hispanics, and Native Americans among high academic achieving undergraduates at selective institutions. The second section discusses two important dimensions of this problem—the continuing shortage of top high school graduates from underrepresented groups and the tendency for students from these groups to have lower GPAs in college than comparably prepared White and Asian American students. The third section discusses the severe shortage of proven strategies for addressing the high achievement issue at the undergraduate level. The fourth section describes a few promising programs that are available to address this issue to some extent. The fifth section discusses the need for a major effort to develop a large set of empirically demonstrated strategies for doing so. The sixth section summarizes some findings from the initial use of the Survey of High Academic Performance (SHAPER) that may help inform efforts to develop strategies that are more effective. The seventh section discusses some constraints on efforts to increase the number of high achieving undergraduates from underrepresented groups. And, the eighth section presents recommendations for action.

The Underrepresentation of African Americans, Latinos, and Native Americans among High Achieving Undergraduates at Selective Colleges and Universities

There are no national trend data on the academic achievement patterns of undergraduates at selective colleges and universities. Nonetheless, available evidence suggests that African American, Latino, and Native American undergraduates at selective institutions have historically been, and continue to be, much less likely than Whites and Asians to graduate with a high GPA, e.g., with a cumulative GPA of 3.5 or higher on a 4-point scale. Indeed, this is part of an overall pattern of lower GPAs for these groups in higher education, regardless of the selectivity of the college or university. This larger pattern is illustrated in the federal government's 1999-2000 National Postsecondary Student Aid Study (NPSAS), which provides GPA data on a national sample of students enrolled in higher education. The NPSAS found that about 17% of the Whites and 14% of the Asians earned mostly A's, but only 7% of the African Americans, 10% of the Hispanics, and 8% of the Native Americans did so (Horn, Peter, and Rooney, 2002).[5]

William Bowen and Derek Bok present some of the most compelling recently published evidence of GPA differences among racial/ethnic groups at selective institutions in their 1998 book, *The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions*.[6] *The Shape of the River* reported findings from a study of 28 selective public and private colleges and universities. For example, Bowen and Bok reported that, among students who enrolled as freshmen at these institutions in 1989, White bachelor's degree recipients had an average GPA of 3.15 on a four-point scale, while African Americans had an average GPA of 2.61. Although Bowen and Bok did not directly describe the relative representation of White and Black graduates among high GPA graduates, the over half-point difference in average GPAs between the groups (3.15 versus 2.61) suggests that African Americans were much less likely than Whites to graduate with a high GPA (and much more likely to graduate with a low GPA). Class rank data presented in *The Shape of the River* support this inference. The average White in the study graduated at the 53rd percentile in their class, while the average African American graduated at only the 23rd percentile.

Relatively little information was provided in *The Shape of the River* about the academic performance of Hispanics at the 28 institutions in the study. However, Bowen and Bok did report that the average Latino in the study graduated at the 36th percentile. This suggests that Hispanics were less likely than Whites to graduate with a high GPA, but more likely than African Americans to do so.

Another valuable source of information on the high (and low) achievement situations for Whites, Blacks, and Latinos at selective colleges and universities is a 1991 report by Thomas Phillips (then) of the Accreditation Board for Engineering and Technology (ABET).[7] His report was based on data collected from 89 schools of engineering, most of which were moderately selective to highly selective. Phillips had five years of transcript data for a sample of undergraduates who entered college as freshmen in 1985. Regarding high academic performance, Phillips found that about 29% of the Whites had a 3.5+ GPA, compared to 10% of the Latinos and 2% of the African Americans.

The GPA data from the studies by Bowen and Bok and by Phillips are for students who were undergraduates at selective institutions from the middle 1980s through the early-to-mid-1990s. This raises the question of whether these patterns persist at selective institutions. Over the past several years, we have had the opportunity to see unpublished undergraduate GPA data for many selective colleges and universities that bear on this question. Those data indicate that high achievement gaps at selective institutions continue to be quite large. Specifically, these data suggest that the percentages of White and Asian American undergraduates with a GPA of 3.5+ on a four-point scale at selective institutions are often three or more times as large as the percentages of African Americans, Latinos, and Native Americans with a 3.5+ GPA. For instance, if the percentage of White students graduating with a 3.5+ GPA at a particular institution is in the 20-25% range, the percentages for the underrepresented groups may be in the 5-10% range (with the percentage for Blacks usually somewhat lower than that of Hispanics). Moreover, these gaps typically appear to be even larger at higher GPA thresholds, such as 3.75+. They also seem to be somewhat larger in majors in the physical and biological sciences, mathematics, engineering, and technology than in majors in the humanities and social sciences.

Of course, these GPA data may not be representative of the selective sector of higher education as a whole. However, the institutions for which we have seen data are quite diverse, ranging from small private liberal arts colleges to large public research universities. These institutions also have ranged from those that are moderately selective to those that are among the nation's most selective.

Ideally, selective colleges and universities would issue public reports at regular intervals, say, every three or four years, that describe how students from the various major racial/ethnic categories are faring academically by several important measures, including retention rates, graduation rates, and GPA distributions of graduates. Unfortunately, the sensitivity of academic achievement differences makes it difficult for institutions to release GPA information. We will return to this topic later in this report.

It is important to recognize that existing GPA differences are magnified by the fact that African Americans, Latinos, and Native Americans continue to be markedly underrepresented among undergraduates at selective colleges and universities. The severity of this situation is illustrated by enrollment data for the institutions that ranked among the top 25 national universities in the 2005 edition of *America's Best Colleges.* (Since there was a tie for number 25 on this list, this group actually includes 26 universities.) During the 2003-2004 academic year, on average, Blacks constituted about 6%, Hispanics about 7%, and Native Americans less than 1% of the undergraduate enrollments at these leading universities, while Asians averaged about 17%, Whites about 63%, and international students about 6%.[8] This means that, collectively, Blacks, Latinos, and Native Americans averaged only about 14% of the undergraduate enrollments at these institutions, even though these groups have constituted over one-third of the student-age population in the United States and about one-quarter of high school graduates in recent years.[9]

An example can illustrate how serious this underrepresentation at the top undoubtedly is at many selective institutions. Assume that University X had 2,000 students who earned bachelor's degrees in the spring of 2004, of which 14%—or 280—were, collectively, African American, Hispanic, and Native American and 80%—or 1,600—were White and Asian American. Also assume that 8% of the underrepresented minority bachelor's

degree recipients at this institution had a GPA of 3.5+, while this was the case for 23% of the Whites and Asians. This would translate into about 22 underrepresented minority bachelor's degree recipients and 368 White and Asian graduates with a 3.5+ GPA. Thus, under this set of assumptions, among the 390 U.S. bachelor's degree recipients at University X with a 3.5+ GPA, less than 6% would have been from underrepresented groups.

A pattern such as this, assuming that it is relatively common among selective institutions, helps explain why the applicant pools of underrepresented students to leading graduate and professional schools continue to be small, and less well prepared academically by traditional measures than Whites and Asians. Data from the Association of American Medical Colleges (AAMC) on the academic preparation of students who applied to medical school in 2001, those who matriculated, and those who were rejected are telling. In that year, 21,412 Whites and 6,768 Asians applied to medical school, while 2,887 Blacks, 2,180 Latinos, and 253 Native Americans did so.[10] (Of the Latinos, 754 were Mexican Americans, 197 were mainland Puerto Ricans, 435 were Commonwealth Puerto Ricans, and 794 were other Hispanics.) Thus, there were over five times as many White and Asian applicants as underrepresented minority applicants (28,180 versus 5,320).

Moreover, the undergraduate GPAs and MCAT scores of the White and Asian applicants were much higher, on average, than those of the underrepresented minority applicants. For instance, the average undergraduate GPAs in science and math courses were 3.42 for the Whites and 3.38 for the Asians compared to 2.95 for the African Americans, 3.12 for the Native Americans, 3.03 for the Mexican Americans, 3.05 for the mainland Puerto Ricans, 3.13 for the Commonwealth Puerto Ricans, and 3.19 for the other Hispanics.[11]

These differences meant that, not only were African Americans, Latinos, and Native Americans underrepresented among those who were admitted to, and enrolled in medical school, they also had weaker undergraduate academic preparation (as measured by GPAs and MCAT scores) than their White and Asian counterparts. Specifically, among those accepted in 2001 to medical school, 11,062 were White and 3,461 were Asian, but only 1,230 were Black, 129 were Native American, 403 were Mexican American, 119 were mainland Puerto Rican, 216 were Commonwealth Puerto Rican, and 338 were other Hispanic. This meant that nearly six times more Whites and Asians were accepted to medical school than underrepresented minorities (14,523 versus 2,219). Among those who were accepted, the average undergraduate science and math GPAs were 3.59 for the Whites and 3.57 for the Asians, while they were 3.21 for the Blacks, 3.31 for the Native Americans, 3.24 for the Mexican Americans, 3.21 for the mainland Puerto Ricans, 3.41 for the Commonwealth Puerto Ricans, and 3.45 for the other Hispanics.[12]

Possibly more significant were the group differences in academic preparation among the students *not* accepted to medical school. In this segment, the average undergraduate science and math GPAs were 3.25 for Whites and 3.18 for Asians, but were only 2.75 for Blacks, 2.90 for Native Americans, 2.77 for Mexican Americans, 2.82 for mainland Puerto Ricans, 2.87 for Commonwealth Puerto Ricans, and 3.02 for other Hispanics.[13] These data suggest that very few underrepresented minorities who did not gain admission to medical school had strong undergraduate academic records, particularly in the key areas of science and math.

Available evidence indicates that large differences in academic preparation such as these are often associated with substantial academic achievement differences in graduate and professional school. A new study by Professor Richard Sander of the University of California, Los Angeles, which focuses on African American and White law school students, illustrates this point. In his analysis of data from a large national sample of law students, Sander found that Blacks were very heavily overrepresented among low GPA students in the first year of law school and severely underrepresented among the top students. This was true at the nation's top law schools as well for law schools overall. For example, about 52% of the Blacks who attended the nation's top ranked law schools had GPAs in their first year that placed them in the bottom tenth of the class, while only 2% were in the top tenth. In contrast, the comparable percentages for Whites at the top law schools during the first year were 6% and 12%, respectively. More importantly, the very low overall academic achievement among the African American students in the sample persisted over all three years of law school. Thus, among all the Blacks in the sample who graduated from law school, about 43% had cumulative GPAs that placed them in the bottom 10% of all graduates, while only 2% had GPAs that put them in the top 10%. (This was slightly better than the relative freshman GPA pattern for all African American students in the sample; but that was a function of large numbers of very low performing Black students dropping out rather than to improved performance by those who eventually graduated from law school.)[14]

The Shortage of Top High School Graduates among African Americans, Latinos, and Native Americans and the Overprediction Phenomenon in Higher Education

In general, the best predictor of students' academic performance at the next level of the education system is their performance at the current level. Since, each year, African Americans, Latinos, and Native Americans are extremely underrepresented among top high school graduates, the base case is that they will continue to be underrepresented among top students in college, especially in the highly competitive environments of selective institutions. To make this point a little differently, until such time as these groups have much higher percentages of high achievers on the secondary level (by traditional measures), the only way they can become well represented among top students on the undergraduate level is for a great many Blacks, Hispanics, and Native Americans to "ratchet up" their academic performance substantially when they enter college.

Unfortunately, the data on undergraduate academic performance presented in the previous section indicate that this is not taking place. In fact, there is a great deal of evidence that the opposite is occurring. Many studies have found that, on average, students from these groups have lower GPAs in college than would be predicted by their high school grades and college admission test scores, if they were White. For example, when African Americans and Whites with similar high school GPAs and SAT scores move on to higher education, the Black students have somewhat lower undergraduate GPAs than the Whites students. This pattern is often referred to as the "overprediction" phenomenon, because measures of past performance predict higher future performance by the Black students than is actually achieved. (This pattern also is called "academic underperformance." However, the latter phrase can be interpreted as suggesting that students have somehow not worked hard enough or otherwise done what they should to

be academically successful. In contrast, while the term "overprediction" is awkward, it has the advantage of being clearly neutral regarding the reasons for the lower than expected achievement.)

The High Achievement Issue at the Secondary Level

The federal government's National Assessment of Education Progress (NAEP) exam program provides some of the most valuable nationally representative data available on student academic achievement at the elementary and secondary levels. NAEP exams are given in several subject areas to national (and state) samples of fourth-, eighth-, and twelfth-graders. Student performance is assessed at three achievement levels—the Basic level, the Proficient level, and the Advanced level. Although NAEP exams given to twelfth-graders are not designed specifically to assess academic readiness for college, it is reasonable to assume that most students who score at the Proficient level are generally prepared for college and that most that score at the Advanced level are among the academically strongest high school seniors. With this in mind, Table 1 presents the percentages of White, Asian, Hispanic, Black and Native American twelfth-graders that scored at or above the Proficient level and at the Advanced level on seven subject area exams in recent years: reading, writing, math, science, U.S. history, geography, and civics.

Table 1

Percentages of Twelfth-Grade Students, by Race/Ethnicity, Who Scored within Proficient and Advanced Ranges on the NAEP 2002 Reading, 2002 Writing, 2000 Math, 2000 Science, 2001 U.S. History, 2001 Geography, and 1998 Civics Tests

	% at or Above Proficient							% at Advanced						
	Reading	Writing	Math	Science	U.S. Hist.	Geog.	Civics	Reading	Writing	Math	Science	U.S. Hist.	Geog.	Civics
White	42	28	20	23	13	31	33	6	2	3	3	1	2	5
Black	16	9	3	3	3	4	9	1	0	0	0	0	0	1
Hispanic	22	13	4	7	5	10	11	1	1	0	0	0	0	1
Asian	34	25	34	26	21	26	28	4	3	7	4	5	1	5
Nat. Amer.	NA	NA	10	9	1	32	9	NA	NA	0	1	0	1	1

Source: W.S. Grigg, M.C. Daane, and J. R. Campbell (2002). *The Nation's Report Card: Reading 2002* (Washington, DC: U.S. Department of Education, National Center for Education Statistics); H.R. Persky, M.C. Daane, and Y. Yin (2003). *The Nation's Report Card: Writing 2002* (Washington, DC: U.S. Department of Education, National Center for Education Statistics); J.S. Braswell et al (2001). *The Nation's Report Card: Mathematics 2000* (Washington, DC: U.S. Department of Education, National Center for Education Statistics); C.Y. O'Sullivan et al (2003). *The Nation's Report Card: Science 2000* (Washington, DC: U.S. Department of Education, National Center for Education Statistics); M.S. Lapp, W.S. Grigg, B.S.-H. Tay-Lin (2001). *The Nation's Report Card: U.S. History 2001* (Washington, DC: U.S. Department of Education, National Center for Education Statistics); A.R. Weiss et al (2001). *The Nation's Report Card: Geography 2001* (Washington, DC: U.S. Department of Education, National Center for Education Statistics); A.D. Lutkus, A.R. Weiss, J.R. Campbell, J. Mazzeo, S. Lazer (1999). *The NAEP 1998 Civics Report Card for the Nation* (Washington, DC: U.S. Department of Education, National Center for Education Statistics).

The data in Table 1 show that much smaller percentages of African American, Latino, and Native American twelfth-graders than Whites and Asians scored at the Proficient and Advanced levels in all seven areas. In fact, their underrepresentation is severe at both performance levels on each of the exams. Moreover, these patterns are generally consistent with data presented earlier on the underrepresentation of these groups among high GPA undergraduates at selective colleges and universities. They also are similar to the patterns found in students' scores on the two main college admission tests, the SAT and ACT.

Importantly, the NAEP score patterns in Table 1 are much like those found in scores on the College Board's Advanced Placement (AP) Program examinations. AP exam score data are valuable, because they provide information on secondary student performance on subject area tests benchmarked to entry-level college courses. The College Board offers 34 AP courses and exams. The exams for each course are scored on a five-point scale, with 1 the lowest score and 5 the highest. Over the years, a score of 3 has been viewed by many colleges and universities as evidence that students have performed well enough to earn college credit for a course or to be given advanced standing. At many highly selective colleges and universities, students must score at least 4 on an AP exam to earn course credit or advanced placement; some institutions require a score of 5.

On most AP exams, Asian Americans and Whites have average scores that are about a point higher than those of Blacks and Mexican Americans and a half point or more above those of Puerto Ricans, other Latinos, and Native Americans. Consistent with this pattern, on most exams Whites and Asians have much higher percentages earning scores of 4 and 5 and much lower percentages earning scores of 1 and 2 than is the case for underrepresented minorities.

Because GPA data on medical school applicants were presented earlier, it is instructive to illustrate these patterns with recent scores on the AP biology and chemistry exams. On the AP biology exam in 2003, the average scores were 3.07 for Whites, 3.19 for Asians, 2.04 for Blacks, 1.99 for Mexican Americans, 2.48 for Puerto Ricans, 2.38 for other Latinos, and 2.46 for Native Americans. On the AP chemistry exam in 2003, the average scores were 2.86 for Whites, 3.00 for Asians, 1.83 for Blacks, 1.73 for Mexican Americans, 2.23 for Puerto Ricans, 2.17 for other Latinos, and 2.14 for Native Americans.[15]

Regarding the distribution of scores, while underrepresented students constituted 12.1% of the AP biology exam takers in 2003, they were only 4.1% of those who scored a 5, 6.3% of those with a 4, and about 8.8% of those with a 3. At the same time, they were about 13.7% of those with a 2, and 30.7% of those with a 1. In contrast, Whites and Asians accounted for 81.9% of those who took the AP biology exam, 89.9% of those with a 5, and 63.2% of those with a 1. Fully 44.4% of the Mexican Americans who took the AP biology exam in 2003 had only a 1.[16]

In terms of the actual numbers of high scorers on the AP biology exam, there were 12,057 Whites and 4,057 Asian Americans who received a 5 in 2003, but only 155 Mexican Americans, 50 Puerto Ricans, 284 other Latinos, 220 Blacks, and 35 Native Americans who did so. This meant that there were nearly 22 times more Whites and Asians with a score of 5 on the AP biology exam than underrepresented minorities—16,114 versus 744.[17]

It is noteworthy that the AP biology and chemistry test score patterns are generally consistent with the NAEP science exam data for 2000 presented in Table 1 above. About 23% of the White and 26% of the Asian twelfth-graders scored at the Proficient level or higher, while only 3% of the Blacks, 7% of the Hispanics, and 9% of the Native Americans did so. While 3% of the Whites and 4% of the Asians scored at the Advanced level, 0% of the Blacks and Hispanics and 1% of the Native Americans did so.

Because most students admitted to highly selective colleges and universities have excellent college admission test scores in addition to outstanding academic records in

high school, it also is illuminating to briefly summarize trends in high scorers on the SAT math and verbal sections. Before doing so, it is useful to review just how high the SAT scores are now for undergraduates at the nation's leading colleges and universities. Among the previously discussed 26 institutions that made the list of the top 25 national universities in the 2005 edition of *America's Best Colleges* (as noted earlier, there was a tie for 25th on the list), the top quarter of entering freshman in 2004 had a combined verbal and math score above 1400 at 25 of these institutions, above 1500 at 13 of them, and above 1550 at 6 of them. Furthermore, three-quarters of the entering freshman had a combined SAT score above 1300 at 15 of these universities and above 1200 at 24 of them. Also, the entering freshman at the top 25 national liberal arts colleges in the 2005 edition of *America's Best Colleges* had SAT scores that were very similar to their counterparts at the top national universities.[18]

It is instructive to review trends in SAT scores of 700+ on the verbal section and 700+ on the math section, because scores such as these are clearly commonplace at the nation's leading colleges and universities. On the verbal section of the SAT in 1988, 4% of the Whites and 5% of the Asians scored 700+, while only about 1% of the Blacks, Mexican Americans, Puerto Ricans, and Native Americans, and 2% of the other Latinos did so.[19] In 2004, the scoring patterns had changed very little: 5% of the Whites and 7% of the Asians scored 700+ compared to 1% of the Blacks, Mexican Americans, and Puerto Ricans, 2% of the other Latinos, and 3% of the Native Americans.[20]

On the SAT math section in 1988, 3% of the Whites and 8% of the Asians scored 700+, but less than a half percent of the Blacks and 1% of the Mexican Americans, Puerto Ricans, other Latinos, and Native Americans reached that level.[21] By 2004, 6% of the Whites and a remarkable 19% of the Asians scored 700+, while 1% of the Blacks, Mexican Americans, and Puerto Ricans, 2% of the other Latinos, and 3% of the Native Americans did so.[22]

These data suggest that high school graduates from underrepresented groups are having difficulty gaining ground on Whites and Asians at the highest scoring levels on the SAT. (In fact, among high scorers in math, Asians have opened up an extraordinary gap with all other groups, including Whites.) In that regard, although the specific number of students from each group that scored 700+ on the verbal section and/or 700+ on the math section in 2004 has not been published by the College Board, data for 2000 show that the differences are huge. That year, 23 times as many White and Asian high school seniors scored 700+ on the math section as underrepresented minority seniors (56,905 versus 2,454); and, 17 times more scored 700+ on the verbal section (43,917 versus 2,556).[23]

Furthermore, the competitive position of underrepresented minority students is not much better at the 600+ line on the SAT verbal and math sections, which is important, because a large majority of students have combined scores above 1200 at leading institutions. For example, among Blacks in 2004, only 6% scored 600+ on the verbal section and only 5% scored 600+ on the math section, while the percentages were 8% and 9%, respectively, for Mexican Americans. In contrast, among Whites, 25% scored 600+ on the SAT verbal section and 27% scored 600+ on the math section; and, among Asians, 24% scored 600+ on the verbal section and 47% scored 600+ on the math section.[24]

It also is very important to note that the achievement patterns described here at the secondary level are quite similar to those that currently exist at the elementary level,

including the primary grades.[25] Consequently, there is little reason to believe that the shortage of top high school graduates from underrepresented groups will ease a great deal over the next 5-10 years.

Of course, it is possible that within only a slightly longer period, say 15-20 years, we will begin to see rapid increases in the percentage of underrepresented minority high achievers in the primary grades, which would carry over to high school and college, as the students move through the system. However, that seems unlikely. Despite much effort over the past generation to expand high quality preschool and improve elementary education for underrepresented minorities and the disadvantaged, there is little evidence that that we are entering a period of rapid growth in the percentage of high achieving students from these groups in the early years. Secondary school reform efforts to raise achievement levels of these segments of the student population also have demonstrated little high achievement impact.[26] Thus, for those in higher education who are committed to finding ways to increase substantially the representation of African Americans, Latinos, and Native Americans among high GPA bachelor's degree recipients at selective institutions, a prudent assumption would that the K-12 sector will provide relatively little help for some time to come.

One final point: across the K-12 years, African American, Latino, and Native American students achieve at lower levels than Whites and Asians at each social class level. Indeed, some of the largest "within-class" gaps are among students who have parents with bachelor's or graduate and professional degrees. These within-class gaps also exist in higher education. Thus, there is a pressing need to find ways to raise the academic achievement of middle and high SES underrepresented minority students, not simply those from low SES circumstances, at all levels of the education system.[27]

Research Findings on the Overprediction Phenomenon

Many studies, going back three decades at the undergraduate, graduate, and professional school levels, have found that several minority groups experience the overprediction phenomenon described earlier in this report—the tendency to earn lower grades than Whites with similar academic preparation profiles, such as SAT scores and high school grades. This pattern has been found most often for African American students. In fact, the evidence of the overprediction phenomenon for African Americans was extensive enough by the mid-1980s that Robert Klitgaard discussed it at some length in a book on students at selective colleges and universities that was published in 1985.[28] Of relevance for this analysis, Klitgaard concluded that, among students with high SAT scores (scores that were a standard deviation above the mean), Black undergraduates at historically White institutions had grades equivalent to White undergraduates who had SAT scores over 200 points lower than the Black students (after controlling for their grades in high school). For instance, African American undergraduates with SAT scores above 1200 had undergraduate GPAs similar to Whites with SAT scores around 1000.

In the mid-1990s, Leonard Ramist and two colleagues completed a study of college freshmen at several institutions, which found strong evidence of an overprediction phenomenon for Hispanics and Native Americans as well as for African Americans. In addition, they found that the overprediction pattern was not just relative to the performance of White freshmen, but also relative to that of Asians.[29]

That study did not provide information on whether the overprediction phenomenon varied within the diverse Latino community. Rather, the finding pertained to Hispanics as a whole. However, because several institutions in the study were located in the southwestern and western part of the country, it is reasonable to believe that the finding applied to the largest Latino segment, Mexican Americans.

Significantly, Ramist and his colleagues found that the grades of African American freshmen were lower than would be predicted, even though, on average, they were taking courses that were easier than those taken by Whites. (In contrast, Asians tended to take more difficult courses than the other groups.) They also found that the overprediction pattern was most pronounced for Blacks in science and lab classes.[30]

By the mid-1990s, despite many studies over the previous two decades that had found evidence of the overprediction phenomenon, it was still garnering little attention within the higher education community. One of the main reasons evidently was that most of the people within colleges and universities who were working to expand higher education opportunities for underrepresented minorities were focusing their energies on increasing enrollment, retention and graduation rates. Also, there was not much external pressure on colleges and universities to raise the academic achievement levels of their African American, Latino, and Native American students, possibly for much the same reason.

This situation began to change somewhat with the publication in 1998 of *The Shape of the River* by Bowen and Bok. As discussed earlier, they reported that, among the Black students in their study of 28 selective colleges and universities, the average GPA at graduation was 2.61, while it was 3.15 for the White graduates. Disturbingly, Bowen and Bok also reported that this 0.54 GPA gap was twice as large as predicted by differences in the academic preparation for college between these two groups of students. This, of course, also meant that the large difference in average class rank at graduation between the Whites (53rd percentile) and African Americans (23rd percentile) was about twice as large as it should have been. Significantly, they also found that some of the largest differences in class rank were between African American and White students with high SAT scores. For example, they reported that Black students in their study with an SAT score of 1300 graduated, on average, at the 36th percentile, while their White counterparts graduated, on average, at the 60th percentile.[31]

Researchers have continued to find differences along these lines. Notably, in their 2003 book, *Increasing Faculty Diversity: The Occupational Choices of High Achieving Minority Students*, Stephen Cole and Elinor Barber reported finding a substantial overprediction pattern for African Americans and Latinos relative to Whites and Asians in their study of over 7,600 graduating seniors at 34 colleges and universities.[32] The institutions in their study included many of the most selective private universities and liberal arts colleges in the country, several large state universities that were moderately to highly selective, and several historically Black colleges and universities (HBCUs).

Apart from this general finding, Cole and Barber also found that the overprediction pattern was most pronounced among the African Americans and Latinos with the highest SAT scores. They also found that the overprediction pattern varied for Black students by the type of institution that they attended. It was largest at the most highly selective private colleges and universities, considerably smaller at the state universities, and did not exist at all at the HCBUs. This led them to suggest that differences in experiences

that African American students have at these different types of institutions were the sources of the variations.[33]

Over the years, it has been much easier for researchers to document the presence of the overprediction phenomenon than to explain why it exists. A number of theories have been put forward, but little hard evidence has been available to test them. However, Cole and Barber believe that their data provide some support for one of them—Claude Steele's theory of "stereotype threat." Steele has suggested that African American students who are strongly committed to doing well academically (and who have a history of doing well) are, nonetheless, vulnerable to a fear that, if they do not do well, they may confirm the (old) negative stereotype that Blacks are not as innately intelligent as Whites and some other racial/ethnic groups. Through a series of experiments with undergraduates, Steele and several colleagues have been able to suggest some of the mechanisms through which stereotype threat might operate. Specifically, they found that situations in which intellectual tasks are very difficult might trigger the fear of the stereotype in ways that erode the academic performance of some able African American students.[34] They also have developed some evidence that one of the reasons that the fear may be triggered in such circumstances is that the students might not trust the fairness of the environment in which they will perform academic tasks. For instance, the students may interpret negative feedback from a professor as reflecting doubts about their abilities instead of being a sincere effort to help them do better.[35]

Cole and Barber suggest that the some of the nation's most prestigious liberal arts colleges and universities may have conditions under which it is quite likely that stereotype threat will be triggered for some African Americans students.[36] Each year, these institutions admit freshmen classes that include large numbers of students who are among the most academically well prepared for college in the nation. Yet, a substantial percentage of the African American matriculants at these institutions (as well as many of the Latinos and Native Americans) are in the bottom quarter or lower in the freshmen class in terms of traditional measures of academic preparation. In these small, highly competitive academic settings, these circumstances could conceivably feed academic insecurities or concerns about trust among a considerable number of these students. Still, it is unclear to what extent this is the case at elite liberal arts colleges (and at other selective colleges and universities), or how much such conditions may vary between and within them.

The Shortage of Proven Programs and Strategies for Addressing the High Achievement and Overprediction Challenges on the Undergraduate Level at Selective Institutions

The limited annual pool of top African American, Latino, and Native American high school graduates and widespread nature of the overprediction phenomenon on the undergraduate level raise two central questions:

1. Is there a set of empirically demonstrated, widely usable, affordable strategies for eliminating or minimizing the overprediction phenomenon at selective colleges and universities?

2. Is there an equivalent set of strategies for helping a substantial percentage of underrepresented minority undergraduates at these institutions to perform markedly better than predicted by their high school records and college admission tests—including having many graduate with well above average to top academic records, as measured by GPA, class rank, and academic honors?

Searching for Proven or Promising Programs and Strategies

Over the past two years, we have undertaken an extensive review of documents and reports on existing programs and strategies designed to improve outcomes for underrepresented minority and/or disadvantaged students on the undergraduate level at selective institutions. Many of those that we have looked at were designed to address the needs of students majoring in the physical and biological sciences, engineering, and technology fields. This reflects the fact that a great deal of money has been invested in initiatives directed at these majors over the past 35 years by government agencies, foundations, and corporations. Much smaller investments appear to have been made in programs and strategies that serve students in the humanities and social sciences.

Ultimately, we reviewed written materials on well over 100 programs and strategies. We also examined a number of reports written by others on the characteristics of existing programs and strategies that were viewed by the authors as beneficial by various academic criteria. Through site visits, telephone conversations, and correspondence, we were in direct contact with leaders of several programs that seemed to be promising, based on our review of materials and/or based on the reports of others. We also had discussions with senior people at some organizations concerned with improving minority representation in science and technology fields.

In addition, the leaders of two programs conducted analyses of GPA data on students in their programs at our request, which shed light on the extent to which those programs may be helping more underrepresented minority students to perform at high levels academically. Also, we provided funding to an institutional researcher at a major university to conduct an analysis that looked for evidence of GPA benefits for participants in some programs that serve underrepresented minority and disadvantaged undergraduates at that institution.

We used several criteria in our search for proven or promising programs and strategies:

1. Whether increasing the number of high achieving underrepresented minority undergraduates and/or reducing the overprediction phenomenon are explicit objectives;

2. Whether there is strong empirical evidence that they increased the number of high-achieving (or above-average achieving) underrepresented minority undergraduates, as measured by GPA, class rank, and/or academic honors;

3. Whether there is strong empirical evidence that they produce a meaningful reduction in the overprediction phenomenon;

4. Whether the main factors responsible for their success have been identified;

5. Whether they have been replicated while maintaining the quality of their results;

6. Whether the success of the programs and strategies does not depend on conditions that probably would be difficult to establish at more than a few institutions;

7. Whether they are affordable approaches for serving large numbers of students at many institutions.

Collectively, these are a very demanding set of criteria. Nonetheless, we had hoped to find a number of programs and strategies that met at least several of them. Unfortunately, this proved not to be the case. A first-order problem is that we found only a few programs and strategies that have made increasing the number of high achieving underrepresented minority undergraduates and/or reducing the overprediction problem explicit objectives. As a result, the directors of most programs have had no reason to collect data pertaining to those issues—and most apparently have not (or, if they have collected such data, they have not included them in the documents that were available to us). This means that there typically was no information available on the percentages of African American, Latino, and Native American students in their programs who were graduating with above-average-to-high GPAs or on the percentages of nonparticipating underrepresented minority students or the percentages of Whites and Asian Americans who were doing so.

Furthermore, we found very few programs that had undergone rigorous evaluations to establish whether they were effective by the primary academic criteria that were being used to gauge their success, which frequently were whether they increased retention and graduation rates. In fact, we found none that have been tested and evaluated using randomized assignment of students to the program and to a control group, even though it is viewed as the superior (even essential) method of establishing causality in a number of fields, including medicine and agriculture.[37] In addition, it is an approach to evidence-based strategy development that has gained considerable support within the education sector in recent years, including for efforts to raise underrepresented minority achievement.[38]

We also found very few programs that had been evaluated using a quasi-experimental approach, i.e., the matching of program participants with students who appeared to be similar in key respects. This was the case, even though quasi-experiments have been used frequently and usefully over the years by education researchers to assess many kinds of education strategies.[39]

We also found no programs that had been evaluated in a fashion that could provide compelling evidence regarding which components were most responsible for whatever positive results seemed to be produced. We found none that had been meticulously replicated at other institutions and then evaluated to see if similar results were produced at the new sites. Finally, we found no approaches that had been tested in multiple versions in a systematic fashion (planned variation).

Under these circumstances, it is unsurprising that we found only one program—the Meyerhoff Scholars Program at the University of Maryland Baltimore County (UMBC)—that has been concerned with addressing the high achievement issue and the overprediction phenomenon for African American undergraduates at a selective institution, and which has fairly strong evaluation-based evidence that it has been

successful in both areas.[40] The evidence was produced by a well-designed quasi-experimental evaluation that compared participants to several other groups of students. (The Meyerhoff evaluation is discussed in more detail in the next section of this report.)

When our search began for proven strategies, we anticipated that Meyerhoff might prove to be among the programs with the strongest evidence of effectiveness. This was because we were already familiar with the results of Meyerhoff's evaluation; we had previously made site visits to the program; and, the program has been highly visible and well regarded nationally since the mid-to-late 1990s, as a result of being written about in several reports and books on strategies that may improve academic outcomes for underrepresented minorities.[41] Nevertheless, our hope had been that we would find several other programs with equally strong or stronger evidence of success. Thus, it is notable that another recent report has reached a finding similar to ours. In early 2004, a National Science Foundation funded initiative known as Building Engineering and Science Talent (BEST) issued a report on its efforts to identify programs at colleges and universities across the country for which there is evidence that they promote greater success of underrepresented minority students, women, and the disabled in science and engineering. Of the many programs reviewed by BEST, the Meyerhoff Scholars Program was the only one found to have extensive evidence that it helps raise GPAs of underrepresented minority undergraduates in these majors.[42]

Our desire to identify several other well-evaluated programs with strong evidence that they increase the number and percentage of high achieving underrepresented minority undergraduates at selective institutions was partly due to a concern that Meyerhoff has not been widely replicated—and that there are several reasons why it probably would be difficult to do so (which are discussed in the next section). On a more positive note, while we were not able to identify several other well-evaluated programs and strategies with strong evidence of addressing the high achievement and overprediction challenges effectively, we did find a few other programs that had sufficient data to suggest that they not only are probably making a meaningful difference in one or both areas, but also may be fairly widely replicable. The Opportunity Programs at Skidmore College and the Biology Undergraduate Scholars Program (BUSP) at the University of California at Davis are two that seem genuinely promising to us. In the next section of this report, the Meyerhoff Scholars Program, the Opportunity Programs, and BUSP are examined in some detail to inform our recommendations for action.

Characteristics of a Few Promising Programs and Strategies

Because it has the most extensive evaluation evidence of effectiveness of the three programs discussed in this section, we begin with the Meyerhoff Scholars Program.

The Meyerhoff Scholars Program at UMBC

In the late 1980s, Dr. Freeman Hrabowski, III (who was then executive vice president of the University of Maryland Baltimore County and would later become its president) concluded that it was imperative to find a way to address the chronically low academic performance of African American students at UMBC in science, engineering, and mathematics (SEM) courses and majors. He recognized that the problem was very serious and broad based: not only were African American students in general

encountering significant academic difficulties beginning in their initial SEM courses in their freshman year, but very well prepared Black students by traditional measures (e.g., high SAT scores) were often not doing well.[43] With funding from the philanthropists Robert and Jane Meyerhoff, Dr. Hrabowski planned and launched the Meyerhoff Scholars Program in 1988, with the objective of creating a cadre of African Americans who would be high academic achievers in SEM majors at UMBC, go on to excel in selective graduate and professional schools in these fields, and pursue successful careers in them as well. In the Meyerhoff Program's first year, all the students were Black males. Beginning in its second year, both African American males and females were admitted to the program. In the mid-1990s, Meyerhoff was opened to students from all racial/ethnic groups, but African Americans have remained a large majority of the participants in the program in the ensuing years.[44]

At the time of its launching in the late 1980s, Meyerhoff was very distinctive in several respects. Among the most important were:

1. A very senior official at the institution—Dr. Hrabowski—conceived the program and was actively involved in virtually every aspect of its development (and continues to be deeply involved in its operation and evolution).

2. Meyerhoff had an unrelenting focus on increasing the number of top Black graduates in SEM majors using traditional achievement measures, particularly GPA, even though most SEM programs serving underrepresented minority students at colleges and universities around the nation were focusing heavily on increasing retention and graduation rates (and many still are).[45]

3. The emphasis on high academic achievement has led Dr. Hrabowski to design Meyerhoff to serve an academically very well prepared group of African American students, even though the pool of such individuals graduating from high school nationally each year was (and continues to be) small. This has been in sharp contrast to many, if not most, minority-oriented SEM programs, which were serving substantial numbers of students who entered college significantly underprepared academically for those majors (which often is still the case).[46]

4. Dr. Hrabowski wanted Meyerhoff to be a large program, in order to create the opportunity for UMBC to graduate significant numbers of top Black graduates in SEM majors. This commitment to excellence and large size is illustrated by the fact that, while there were only 19 competitively selected individuals in the first group of Meyerhoff freshmen in 1989, there were 251 undergraduates in the Meyerhoff program in the fall of 2004; and, Meyerhoff students have usually earned A's in high school in math and science courses and have SAT math scores from the high 600s to the maximum score of 800.[47] (As will be discussed subsequently, there also were academic performance considerations associated with a decision to have a large program.)

5. Dr. Hrabowski conceived Meyerhoff as a truly comprehensive program designed to respond to a number of factors that research and common sense suggested should be addressed during the undergraduate years, if most of the students were to excel academically. Specifically, the program has paid particular attention not only to recruiting top students, but also to academic and social integration, knowledge and skill development, support and motivation, and

academic monitoring and advising.[48] Meyerhoff's capacity to address students' needs from the pre-freshman summer through the senior year was (and is) in sharp contrast to most SEM programs, which have tended to focus heavily on the freshman year (probably owing to resource constraints in most cases).

6. Since its inception, Meyerhoff has been highly empirical in its pursuit of high academic achievement. Dr. Hrabowski ensured that an information system was established that allowed close monitoring of students' academic performance in order to help guide and support them. He also ensured that the program was evaluated rigorously, both to document its successes and to identify areas in need of improvement.[49]

When describing the program, Dr. Hrabowski and his colleagues list twelve components: 1) recruitment of high achieving underrepresented minority students in math and science; 2) a summer bridge program that provides academically challenging courses, promotes group study, and offers social and cultural events; 3) a merit/performance-based financial aid system that is able to provide virtually full support for many students; 4) extensive faculty participation via student recruitment, teaching and mentoring; 5) sustained emphasis on strong "programmatic values," such as the importance of superior academic achievement by traditional measures, studying extensively in groups, collegiality among peers, and a focus on getting ready for graduate school; 6) student participation in research during the summer; 7) strong encouragement of students to use tutoring services to maximize academic performance; 8) support from UMBC's administration, both internally and externally (the latter by seeking outside funding and public recognition); 9) strong academic advising and personal counseling; 10) a mentoring system that draws on SEM academics and professionals; 11) promotion of a sense of community among the students; and 12) promotion of active involvement of parents and relatives.

What is impressive about this list is that it is real—Meyerhoff includes all of these elements on a substantive basis. A few of them deserve brief elaboration here. Regarding student recruitment, as Meyerhoff's national recognition has grown, so has the number of academically very well prepared students who seek admission to the program. In a recent year, the program received 1,500 nominations for 50 freshman openings, whereas only 40 nominations were received for the initial freshman class.[50] Thus, UMBC is currently able to be very selective about the students it admits into the Meyerhoff Scholars Program, and full advantage is being taken of that opportunity. (For instance, incoming Meyerhoff students now average about 1300 on the SAT and have superior overall high school GPAs, not just in math and science.)[51]

Regarding core program values (high achievement, group study, collegiality, and preparing for graduate school), they are not just important in their own right, but potentially synergistic, especially when combined with the large number of academically well prepared and highly motivated freshmen, sophomores, juniors, and seniors now in the Meyerhoff Program. To consider this possibility, recall that, earlier in this report, there was a discussion of the tendency for African American, Latino, and Native American undergraduates to have somewhat lower GPAs in college than White and Asian students with comparable high school grades and college admission test scores (the overprediction problem). There also was a discussion of stereotype threat as it pertains to African Americans, i.e., the possibility that some African American undergraduates at selective colleges and universities may do less well academically

than they could, owing in part to the negative intellectual stereotype of Blacks that has long existed in the United States. In addition, there was a discussion of that fact that, at many selective institutions, including some of the most selective and most prestigious, African Americans, Latinos, and Native Americans constitute small percentages of the overall undergraduate population and even smaller percentages of the high GPA undergraduates.

The shortage of underrepresented minority students, especially high achieving ones, at selective colleges and universities suggests that Blacks, Hispanics, and Native Americans may have less opportunity to study frequently with outstanding students than is the case for White and Asian students at these institutions. Moreover, the negative intellectual stereotype of Blacks would be experienced in a context in which few African Americans were breaking the stereotype by having high GPAs. (Some data relevant to these points are presented in a later section of this report.)

Fortunately, at UMBC, Meyerhoff students are taught and encouraged to study with others and have many well-prepared students with whom to study within the program. The Black students in Meyerhoff also see many able, high achieving students from their group in the program. Moreover, the president and faculty members recognize their academic achievements (often in a research context).[52] In other words, as a result of Meyerhoff, participating students are integrated, not isolated academically in very practical terms—they always have excellent students with whom to study, if they wish—and they see the negative intellectual stereotype bring contradicted regularly by a large number of visibly high achieving Meyerhoff Scholars in their classes and on campus.

A few other very practical points need to be made about the emphasis on group study. UMBC is a public research university. Thus, even though it is small by research university standards, students probably do not have as much access to faculty members, on average, as would be typical at small liberal arts colleges. One compensating source of human capital to support learning at selective research universities (public and private) is the large number of good students on campus. Meyerhoff ensures that its participants have extensive training for making effective use of this source of human capital and ready access to it. (Such training probably would benefit most undergraduates at UMBC and at other research universities.)

Some comments also need to be made about the monitoring and advising function of Meyerhoff. The information system is designed to provide a great deal of crucial academic data about the students to the staff in a timely manner, so that they can take pragmatic steps to help students do as well as possible. For example, they know when students are not achieving at high levels in a course and need tutoring assistance. They know whether students need to retake a course, and encourage them to do so in order to ensure that they have the mastery needed to do well at the next level. (Students are encouraged to retake courses in which they earn a C.) In addition, they monitor course-taking plans to ensure that students do not take a combination of courses during a particular semester that might make it difficult for them to excel in all of them.[53]

As noted earlier, Meyerhoff has been extensively evaluated over the years using a quasi-experimental approach in which Meyerhoff participants from the first three coeducational classes—which were exclusively African American males and females—have been compared to a number of constructed comparison groups. Two of the comparison groups are African American and two are White and Asian. One of the

African American control groups is a sample of Black students in SEM majors at UMBC prior to the creation of Meyerhoff that had academic preparation profiles comparable to the Meyerhoff participants. In addition to this historical control group, the Meyerhoff participants were compared to a second group made up of Black students who had been accepted into the Meyerhoff Program but decided to attend other institutions. One of the two White and Asian control groups is a historical sample of SEM majors with comparable preparation profiles. The second is a sample of White and Asian students with comparable profiles who pursued SEM majors at UMBC at the same time as the Meyerhoff students. The comparisons were made after five years of college.

In almost all respects, the Meyerhoff students were found to outperform the four constructed control groups. Notably, the Meyerhoff students had SEM and overall GPAs that were a half point higher than those of the historical African American control group. For example, their SEM GPAs were 3.16 and 2.64, respectively. The Meyerhoff students had higher SEM and overall GPAs than the historical White and Asian control groups as well as the current White and Asian controls. For instance, the SEM GPAs for the current White and Asian controls were 2.79 and 2.92, respectively, versus the 3.16 for the Meyerhoff Scholars. And, the SEM GPA of the Meyerhoffs also was higher than the 2.89 SEM GPA of the Blacks who declined to participate in Meyerhoff and attended other institutions.[54]

The Meyerhoff participants graduated in SEM majors at much higher rates than the control groups and had commensurately higher admissions rates to SEM graduate school programs as well. For example, 90% of the Meyerhoffs had graduated in a SEM major in the five-year period, compared to 42% of the matched current Asians and 29% of the matched current Whites.[55]

Although the results of the evaluation of Meyerhoff are generally very positive, it is always possible that the selection process produced a group of participants who were markedly different (in unidentified ways) from the controls that account for much of the differences in outcomes that were found. The only way to answer that question would be to mount a test of Meyerhoff that involved randomized assignment to the participant group and to a control group.

Some other reservations need to be noted here as well. One is that it is possible that the leadership of Dr. Hrabowski, who has been UMBC's president for over a decade, is contributing a great deal to the program's success and that the kind of leadership he is providing would be difficult to reproduce at most other selective institutions. In addition to being a tireless advocate for the program, he provides extensive and intensive personal leadership to the Meyerhoff students and staff. As one researcher has noted, Dr. Hrabowski is also a charismatic individual, which adds to his capacity to lead.[56] Furthermore, he is an African American—so he is a true model of what he is encouraging the Meyerhoff Scholars to become.

Another concern is that, owing to Meyerhoff's substantial financial aid packages and extensive support services, the program is very expensive, possibly too expensive, to be used at a large number of institutions. (Of course, it may be that the Meyerhoff Program would still be successful even if participating students received much less financial aid, on average.)

Also, because the pool of high achieving Black high school graduates that Meyerhoff taps is still small, it would be difficult to mount SEM (or other discipline-focused) programs with similarly large numbers of very well prepared African American students at a high percentage of selective institutions. For instance, as discussed earlier in this report, as recently as 2000 only 746 African Americans scored 700+ on the SAT math section (along with 555 Mexican Americans, 165 Puerto Ricans, 793 other Latinos, and 195 Native Americans), yet 41,449 Whites and 15,496 Asians did so. Assuming that about 25 African Americans with 700+ SAT math scores are being admitted to the Meyerhoff program each year, if only about 30 institutions decided to start programs similar in size to Meyerhoff, they would exhaust this pool of Black students.

A related point is that it is not clear that the pool of African American students participating in Meyerhoff would enjoy as much success in SEM majors at the nation's most selective institutions as they do at UMBC. Although UMBC is selective, its student population is considerably less well prepared, on average, by traditional measures than the students who attend the nation's leading colleges and universities. For example, as discussed earlier in this report, the 25th percentile combined SAT score of students admitted to 15 of the institutions currently listed among the top 25 national universities by *U.S. News & World Report* is 1300, which is about the average score of students admitted to Meyerhoff. Moreover, the 75th percentile combined SAT score was 1500 at 13 of the universities on the list. This means that it would be virtually impossible to run programs the size of Meyerhoff at those institutions on a basis in which most of the Black participants had SAT scores that placed them in the top quarter or even top half of the student bodies. It also would be difficult for such programs to have large numbers of other underrepresented minority students that ranked in the top quarter or top half.

The Opportunity Programs at Skidmore College

The previous comments about the shortage of African Americans, Latinos, and Native Americans who are very well prepared academically to attend selective colleges and universities provide an excellent lead-in to our discussion of Skidmore College's Opportunity Programs. This is because the Opportunity Programs serve an economically disadvantaged student clientele—mostly from underrepresented minority groups—that is quite underprepared for the academic demands of selective institutions by traditional measures. In fact, the students in these programs are so underprepared that they are regarded as inadmissible to Skidmore under the normal admissions decision process. Nonetheless, over the past decade, these programs have demonstrated a capacity to help almost all of their students to graduate, and to do so with an average graduating GPA close to that of the regular Skidmore student population. Moreover, many students in the Opportunity Programs have earned high GPAs and academic honors (including Phi Beta Kappa) and academic awards (such as Fulbright and National Institute of Health Scholarships).[57]

There are two Opportunity Programs: the Higher Education Opportunity Program (HEOP) and the Academic Opportunity Program (AOP). HEOP is the older of the two programs, dating from 1969; AOP was established in the late 1990s. Skidmore's HEOP is one of many programs with that name at colleges and universities in New York State. They have their origins in statutes passed by New York's legislature in the late 1960s, and New York State helps fund the operation of these programs. Because these programs are intended to serve only economically disadvantaged, academically underprepared students from New York State, Skidmore created AOP in order to admit

some comparable students from elsewhere in the country. The two programs have the same professional staff and the students receive the same services. Thus, while they are funded differently, in practice, they are essentially one enterprise—which is reflected in the fact that the program staff refers to them together either as the Opportunity Programs or as HEOP/AOP.[58]

One of the striking features of the Opportunity Programs is that they are similar to the Meyerhoff Program in many fundamental ways. Furthermore, the primary ways in which they differ from Meyerhoff seem to reflect mainly differences in circumstances.

Possibly the most fundamental similarity to Meyerhoff is that the Opportunity Programs, in their current form, are very much the product of a strong leader with a firm vision of academic excellence for the participating students. In the case of the HEOP/AOP, the leader is the program director, Susan Layden. Since becoming director a decade ago, Ms. Layden has shaped the program from top to bottom in a manner consistent with the view that, similar to Meyerhoff, all HEOP/AOP students are not simply expected to graduate, but to achieve at high levels academically, by traditional measures, including earning an outstanding GPA.

Ms. Layden also has focused heavily on many of the same factors as Dr. Hrabowski in order to shape the Opportunity Programs in ways intended to support high academic performance among participating students. For example, the Opportunity Programs place a great deal of attention on student recruitment, academic and social integration, knowledge and skill development, support and motivation, and academic monitoring and advising.[59]

Many of the specific elements and attributes of the Opportunity Programs also are generally consistent with those of Meyerhoff. The recruitment element is a good example. Because the students that they recruit for HEOP/AOP must be economically disadvantaged, most attend urban and rural high schools that do not offer strong academic programs. However, Ms. Layden and her colleagues have found that, if they focus on recruiting individuals who are among the top students in their high school as gauged by class rank and GPA, they will assemble a group that will be able to do well at Skidmore, even though most will have important preparation gaps that are evidenced by relatively low SAT scores, limited access to AP courses, low scores on AP exams, and moderate scores on New York State Regents subject area tests. In very practical terms, these students will usually have uneven writing skills, little experience analyzing challenging texts, and gaps in their mathematics and science preparation. Yet, they will be highly motivated to perform well academically at Skidmore and willing to work very hard to do so.[60] One way to summarize the difference between the Meyerhoff students and the HEOP/AOP students is that the former are academically very strong—and demonstrate it by virtually all traditional measures of achievement, while the latter show evidence that could become just as strong, but have not had the opportunity to do so.

The HEOP/AOP summer bridge program, which is called the Summer Academic Institute, also has much in common with Meyerhoff's bridge program. Both share a rigorous academic focus tied to the specific academic challenges that the students will encounter in the fall. For Meyerhoff, this means preparing the students for SEM coursework in an academically competitive research university environment. For the Opportunity Programs, this means preparing the students to do well at a very selective liberal arts college that stresses interdisciplinary coursework and writing across the

curriculum. Thus, at the Academic Summer Institute, students take writing and math courses designed to prepare them in those domains for the fall semester. They also take a pre-liberal studies course designed to prepare them for a key interdisciplinary course that all Skidmore students take in the fall of their freshman year, LS-I: Human Dilemmas. All the courses that the students take during the Academic Summer Institute are graded, using standards consistent with those that the students will encounter in the fall. (The writing and math courses are also credit-bearing or credit-advancing.)[61]

Because the students typically have gaps in both content knowledge and learning skills, the Academic Summer Institute is designed to address each of these areas. This means making maximum use of the time available during the four-and-one-half-week program. Students are in class virtually all day Monday through Friday. They also are required to meet with tutors each evening for assistance with their work.

The extensive amount of time that the Summer Academic Institute allocates to mandatory tutoring is very unusual. Even more distinctive is who does most of the tutoring: the Opportunity Programs' four-person professional staff. Each of the members has an academic background, which enables them to provide tutoring services in a wide range of courses. When one observes them doing so, however, one sees that they do not simply function as (very knowledgeable) tutors in the normal sense of the term. The also are modeling intellectual approaches needed to be successful students at Skidmore and well-educated individuals in general. For instance, when working with students in the evening on their pre-liberal studies assignments, the staff members (working one on one) demonstrate how to engage in close reading and analysis of demanding texts (such as those written by Plato or Darwin). In addition to commenting on drafts of written work that the students may have prepared, the staff members ask questions about the text that help the students learn to do so. They may offer alternative interpretations of the material as well. They also give high priority to helping the students learn how to take good notes, with a focus on offering examples of good note taking for the actual courses. For example, during tutoring sessions, they may review the students' notes and offer feedback. Moreover, Ms. Layden attends the pre-liberal studies course and takes notes, which she shares with the students. This allows them to see what good notes look like for one of their classes on an ongoing basis.[62]

The amount of this kind of one-on-one academic contact with students outside of class during the Academic Summer Institute is large—about 7 hours per student each week. Consequently, in addition to the regular staff, some other professional tutors are hired for the summer. No students are employed as tutors.[63]

By acting as the students' main tutors during the Summer Academic Institute, the Opportunity Programs' professional staff members are able to establish the relationships that they need to continue to play that role throughout the freshman year and into the sophomore year as well. Thus, during the academic year, they find themselves tutoring students in courses as diverse as those in religion, economics, and biology. By having these four professionals act as the students' primary tutors and academic advisors at the start of their college careers, the students have four well-educated adults guiding their development. These four professionals also establish personal relationships needed to help the students with non-academic matters throughout their four years at Skidmore.[64]

This, of course, is very time-consuming work during the academic year. Each of the four professionals averages about 25 hours of contact each week with students, the majority of which is spent with freshmen.[65]

The decision by Ms. Layden to have a four-person professional staff that has been recruited to play such an extensive and direct role in the students' academic development seems wise, given the academic underdevelopment of the students that they serve. This decision has given the Opportunity Programs the capacity to make an enormous human capital investment that the students need in a relatively short period of time—and with quality control.[66]

It also is worth noting that, similar to Meyerhoff, the Opportunity Programs give a great deal of emphasis to monitoring students' academic progress, so that early intervention can take place, when required. Students are also encouraged to study together. Social events are scheduled frequently that help the students become a more cohesive group and, in some cases, introduce them to faculty members in non-academic settings.[67] Beyond that, via their extensive time with the four HEOP/AOP professionals, the students become members of an intellectually very demanding adult and student community that also is good humored, civil, honest, helpful, and caring. In that regard, when first observing the Academic Summer Institute, one is initially inclined to think of it as an academic "boot camp." However, unlike a military boot camp, there is nothing personally punitive, interpersonally harsh, or rigidly hierarchical about the Academic Summer Institute. While the Academic Summer Institute is academically and socially intensive, pushes the students intellectually, and expects them to do well, the environment is always friendly and humane. During the academic year, the atmosphere in the HEOP/AOP office has a similar feel. It is the physical center of a welcoming community with a genuinely academic/intellectual center.

As currently designed, the Opportunity Programs are heavily weighted to the pre-freshman summer, the freshmen year, and, to a lesser extent, the sophomore year. Although Ms. Layden and her colleagues would like to have HEOP/AOP play a greater role in the students' academic lives during their upper division years, the money is not available to pay for the expansion of the program (including adding staff) that would be required to do so. Thus, currently, the Opportunity Programs appear to have less "reach" than Meyerhoff over the undergraduate years.

On average, the amount of (non-loan) financial aid provided to the students in the Opportunity Programs is undoubtedly smaller (especially relative to their college costs) than the amount received by the participants in Meyerhoff. Access to off-campus mentors also is probably less for HEOP/AOP students than for Meyerhoff students, reflecting the fact that the Meyerhoff Program has extensive relationships with many other universities, corporations, and government agencies.

The HEOP/AOP program also is more racially and ethnically diverse than Meyerhoff, as the former has substantial numbers of African Americans and Latinos as well as Asians and Whites, while the latter is still heavily African American (although about 30% of the Meyerhoff students are now from other groups).[68]

Another difference is that Meyerhoff has been subjected to an extensive formal evaluation, while the Opportunity Programs have not been rigorously evaluated. Nevertheless, Ms. Layden has gathered a considerable amount of data on the academic

preparation and the academic performance of both HEOP/AOP students and regularly admitted students at Skidmore. These data have been disaggregated by race/ethnicity. Since the HEOP/AOP students are much less well prepared than the regularly admitted students and have been doing well at Skidmore as measured by graduation rates and graduating GPAs relative to regularly admitted students, there is good reason to believe that the program is producing solid results. This conclusion is reinforced by the fact that all of the HEOP/AOP students are economically disadvantaged, while the regularly admitted Skidmore student population, as a whole, is a high SES group.[69]

Recent data on academic preparation, graduation rates, and GPAs show why the Opportunity Programs seem promising. At the same time, the GPA data also suggest that there are some challenges that the Opportunity Programs have not been able to meet fully.

Regarding academic preparation, the average combined math and verbal SAT score for all Skidmore freshmen in the fall of 2004 was 1310, while it was only 1010 for HEOP/AOP freshmen.[70] The 300-point difference was equivalent to almost one and one-third standard deviations on the SAT. Moreover, the score of 1010 was 16 points lower than the 1026 average score for all college-bound seniors nationally in 2004, while the average score of 1310 was typical of students admitted to very selective colleges and universities.[71]

Despite having relatively low average SAT scores over the years, the graduation rate for the HEOP/AOP students is very high. For example, the average six-year graduation rate for students in the Opportunity Programs has been 94% over the past five classes, with most of these students graduating within four years.[72] In contrast, the six-year graduation rate for Skidmore students as a whole is about 80%.[73]

Turning to GPAs, a study of Skidmore graduates over a four-year period produced GPA data disaggregated by race/ethnicity both for HEOP/AOP graduates and for graduates who were regularly admitted students. For Whites in the Opportunity Programs, the average graduating GPA was 3.26, while it was about 3.23 for the regularly admitted Whites. For Asians, the graduating GPAs were 3.42 and 3.04, respectively. For Hispanics, the GPAs were 3.03 and 2.96. And, for African Americans, the average graduating GPA for those in the Opportunity Programs was 2.93, while it was 2.86 for the regularly admitted Blacks.[74]

The positive news here, of course, is that, for all four groups, the average graduating GPA in the period was higher for the students in the Opportunity Programs than it was for the regularly admitted students. Although the GPA advantage for Whites, Latinos, and African Americans in HEOP/AOP was small, it was quite large for Asians—nearly four tenths of a GPA point. We will return to the Asian pattern in the discussion of BUSP.

The negative news in the GPA data is that the average GPAs of the Black and Latino graduates are lower than those of the White and Asian graduates, both for those in the Opportunity Programs and for those who were regularly admitted to Skidmore. These results are most troubling for the graduates who were in the Opportunity Programs. One would have hoped that, given the goals and attributes of the Opportunity Programs, the GPAs would have been about the same for each racial/ethnic segment.

Recent data show continuing GPA differences along racial/ethnic lines among students in the Opportunity Programs. This has suggested that there is a need to conduct research on why these differences exist and to experiment with modifications of HEOP/AOP that might produce better outcomes.[75] Ms. Layden and her colleagues have been addressing both of these needs. Analysis of their data has indicated that the lower average GPA for their African American students may be mainly associated with lower achievement by their Black males. As a result, in the fall of 2004, one of the professional staff assumed responsibility for advising all of the African American males and for coordinating services provided to them. This change made it possible to provide very intensive assistance to these students during the fall semester—even more than in the past. The early results look promising in terms of somewhat higher GPAs.[76] Time will tell if it is the beginning of a positive trend.

Such steps suggest that, in time, it may be possible to reduce significantly or even virtually eliminate the racial/ethnic GPA differences among students in the Opportunity Programs. For now, it is encouraging that, in addition to being a little higher than the GPAs of the regularly admitted Blacks and Hispanics at Skidmore, the average GPAs of the African American and the Latino HEOP/AOP students are about 3.0—a B average. This is the case, even though their academic preparation (by traditional measures) indicated that many might have experienced academic difficulties at Skidmore.

A few other points need to be made about the Opportunity Programs. When asked to explain their overall success, a Skidmore professor who is actively involved in HEOP/AOP said it was due to a "superb staff of extremely overqualified and underpaid long-standing employees" who "genuinely understand the academic material their students are expected to learn" and who also have the "interpersonal skills and awareness of minority students' concerns" that enable them to work effectively with the students on non-academic matters.[77]

There seems to be much truth in those observations. The four full-time professionals are clearly an extremely able, dedicated group. The fact that three of them have been together for about a decade suggests that their collective expertise also may be important. When asked to comment on the importance of the staff, Ms. Layden responded that, not only are the characteristics and qualifications of the staff crucial to the success of the program, it also is very difficult to find people with the skills and sensibilities of those she has hired.[78]

Her point is well taken. It does seem likely that, should several selective liberal arts colleges decide to establish programs similar to HEOP/AOP in the near future, it would be difficult to recruit staffs that could quickly operate them at the high level of quality that is currently found at Skidmore. A different way of making this point is that, even if very able, committed people were recruited, they probably would still need extensive training to be fully effective. Yet, there are no training programs for what Skidmore is doing.

It also is important to note that the Opportunity Programs have benefited from a great deal of support and involvement of senior people at Skidmore over the years, including several presidents. For example, several presidents have been strong supporters of expanding the program—and have helped secure funds to do so. The current president, Dr. Philip A. Glotzbach, has become very deeply involved with the Opportunity Programs. Not only has Dr. Glotzbach supported further growth of HEOP/AOP, he also

interacts personally with HEOP/AOP students—as does his wife. Ms. Layden reports that the students now regard the president and his wife as part of "the family."[79]

Finally, the approach to recruiting students for the Opportunity Programs at Skidmore raises an important unknown—the size of the pool of disadvantaged underrepresented minority students who would do well in programs with the characteristics of HEOP/AOP. It will be recalled that the population of students that Ms. Layden and her colleagues targets in their recruiting is the top 10% or so of the seniors in urban and rural high schools (mainly in New York State) serving heavily disadvantaged populations. Indeed, many of the students they have brought to Skidmore are among the top 5 or 10 students in their high school classes, and it is not uncommon for them to recruit a valedictorian or salutatorian from such high schools.[80] It may be that a large share of underrepresented minority students in the top 20%, not simply the top 10%, could be targeted effectively in many such high schools, if they could be served by excellent programs. It really is a question that can only be answered by testing and rigorously evaluating the effectiveness of programs with different mixes of students from a preparation standpoint.

Regardless of the actual size of the pool, Ms. Layden believes that there are many more qualified applicants each year than can currently be brought to Skidmore, owing to resource constraints. This is the case, even though many students accepted into the Opportunity Programs choose to attend other colleges and universities, including some of the most prestigious liberal arts colleges in the country.[81] This latter pattern suggests that there is not only keen competition among selective institutions for underrepresented minority students that are very well prepared academically for college by all measures (such as those recruited into the Meyerhoff Program), but also competition for promising, but clearly underprepared individuals (such as those who are in HEOP/AOP).

Ms. Layden also points out that the Opportunity Programs have another population available to target: regularly admitted Black and Hispanic students at Skidmore. She notes that many of these students are not too much different in terms of academic preparation than the group that they are currently serving. (Their high school GPAs and SAT scores tend to be considerably lower than those of regularly admitted Whites and Asians.) Whether these students would benefit academically, including in terms of having meaningfully higher GPAs at Skidmore, is a question that remains to be answered empirically. HEOP/AOP would need additional resources and an expanded staff to answer this question.

Even at their current size, the Opportunity Programs are serving a relatively large group of students in the Skidmore context. Of Skidmore's 2,300 undergraduates, 110 students, or about 5%, are in HEOP/AOP.[82]

The Biology Undergraduate Scholars Program at UC Davis

At about the same time that Dr. Freeman Hrabowski was launching the Meyerhoff Scholars Program at the University of Maryland-Baltimore County in the late 1980s, on the other side of the country Dr. Merna Villarejo was starting the Biology Undergraduate Scholars Program (BUSP) at the University of California, Davis. Moreover, Dr. Villarejo (who was a professor of biology and a dean at UC Davis) was responding to circumstances that were generally similar to those that had prompted action by Dr. Hrabowski. A study at UC Davis had found that underrepresented minorities were doing very poorly academically in biology at that institution. For example, while they

constituted about 11% of the freshmen majoring in biology at UC Davis, they accounted for only 7% of bachelor's degree recipients in biology. Furthermore, those who did earn a degree in biology were only about half as likely as their White counterparts to graduate with a GPA of 3.0 or higher.[83]

Dr. Villarejo responded to this situation with a program that focused on the pre-freshman summer through the sophomore year. It was designed to address several issues she had identified in the research on factors that influenced minority academic performance in SEM majors (and in college in general), including academic underpreparedness, limited financial resources, and social isolation on predominantly majority campuses.[84]

The program that Dr. Villarejo established in 1988 had an academically demanding pre-freshman summer program. During the freshman and sophomore years, it also had components designed to help students majoring in biology do well in key gateway courses for the major, including calculus, general chemistry, and introductory biology. The strategy for doing so involved a demanding set of supplementary courses linked to the gateway courses, which included a heavy emphasis on group study. Extensive emphasis also was placed on providing students with opportunities to work in faculty members' labs. These opportunities provided a means of introducing the students to research on the undergraduate level, while stimulating their interest in (and preparation for) graduate school and helping them earn much needed money through on-campus work related to their majors.[85]

The strategies that Dr. Villarejo and her associates developed to help BUSP students succeed in gateway courses drew heavily on the calculus workshop model developed by Uri Treisman and others at the University of California, Berkeley in the 1970s and 1980s. In response to the low academic performance of African American and other underrepresented minority students in introductory calculus courses at Berkeley, Treisman and his colleagues instituted calculus workshops in which graduate research assistants provided the students with very demanding calculus problem sets related to the introductory calculus curriculum in a context in which students were encouraged to work together. Students took the workshops while they took their introductory calculus courses.[86]

The decision by Treisman and his colleagues to pursue this approach was informed by research he had conducted on Chinese American and Black students who took the introductory calculus courses at Berkeley. He found that Chinese Americans were very successful in those courses, in part because they studied (and socialized) together in groups extensively and effectively, while African American students were having difficulty in large measure because they tended to study alone and often experienced social isolation on Berkeley's campus. (Their social lives were often separate from their academic lives.) The calculus workshops at Berkeley were designed to provide group study opportunities for underrepresented students that were consistent with those of the Chinese students. Since the workshops were integrated, they also created opportunities for students to learn to work together across racial/ethic lines—skills that could be useful in upper division courses in which there might be very few underrepresented minority students.[87] To the extent that underrepresented minority students did well in the calculus workshops, they might also be vehicles for helping to break the negative academic stereotype of African Americans that (as discussed earlier in this report) Claude Steele has subsequently found to be a source of stereotype threat for Blacks in academically challenging situations.[88]

One of the impressive things about BUSP is that it includes several required workshops and supplemental courses. In the freshman year, there is a pre-chemistry course, which is taken by students in the academic quarter prior to taking general chemistry. When students take general chemistry, they also take a workshop linked to it that meets two hours per week. When students take calculus, there is a workshop that meets two hours per week for it. Also during the freshman year, students take a course on the sociological consequences of AIDS, which is designed to strengthen their interest in biology. In the sophomore year, when students take introductory biology, they also take a workshop that is linked to it. In addition, there is a workshop on organic chemistry that students may attend on a voluntary basis.

The heavy emphasis on group study in the workshops makes a great deal of sense in light of the research of Treisman, Steele, and others. However, it also is a common sense response to a fundamental reality at large research universities: the faculty gives heavy emphasis to conducting their research and to educating graduate students. Thus, group study strategies should help many undergraduates from all groups make better use of one of their greatest resources at these institutions—each other.[89]

Regarding providing research opportunities to BUSP students, Dr. Villarejo recognized that she was seeking access to the primary area of interest and expertise of many if not most faculty members in the life and the physical sciences at UC Davis. Viewed from a slightly different perspective, she realized that, to secure substantial faculty assistance for BUSP, she would need to focus on what faculty members know how to do and what would clearly be in their interest. This led her to seek faculty assistance with research opportunities in a very pragmatic fashion. Since faculty members know how to train students to work productively on projects in their labs and need an inexpensive, reliable supply of motivated, competent students to take jobs in their labs, she asked her faculty colleagues to be what she calls “lab sponsors” of BUSP students. (She pointedly did not ask them to be mentors.) Thus, they were asked to hire students for introductory positions in their labs and to give them opportunities to move gradually from undertaking simple tasks to those that are more advanced. BUSP was able to subsidize the wages paid to the students.[90] This has proven to be a very successful approach. Since the program’s inception, over 300 biology faculty members from several schools and divisions of UC Davis have employed BUSP students in their labs.[91]

One of the characteristics of BUSP is that there has been an ongoing effort to improve the program. Several years ago, BUSP introduced a summer course between the freshman and sophomore year designed to help students prepare for more challenging tasks in faculty members’ labs. Additionally, in response to the need to provide more advanced opportunities for the highest achieving upper division BUSP students, BUSP has established a 10-week-long summer honors research program attended by 10 of their best students each year. BUSP also has an honors research program during the academic year for 20 outstanding juniors and seniors. Groups of four or five students collectively work on a topic of common interest. This approach not only helps hone group study skills for upper division courses, but also provides experience in the teamwork typical of contemporary research in the sciences. This component is supported by a seminar for the students.[92]

When Dr. Villarejo started BUSP, there was a very fundamental difference between it and the Meyerhoff Program. While Meyerhoff focused exclusively on recruiting students

who were academically very well prepared for SEM majors by virtually all traditional measures, BUSP admitted a group of students that was academically diverse in its preparation. In fact, it included many students who were not only quite underprepared to major in biology at UC Davis, but also for the academic demands at UC Davis in general. For example, in its first year of operation in 1988, 36% of its students were admitted under what was called "Special Action," i.e., they had been admitted without meeting the minimum academic admissions requirements established by the institution.[93]

Over the years, the academic preparation profile of BUSP has grown stronger, in part because the percentage of Special Action students has declined. Still, BUSP continues to serve a much more diverse group in terms of academic preparation than Meyerhoff.[94] BUSP also was and continues to be more racially and ethnically diverse than Meyerhoff. Consistent with its California location, Mexican Americans constitute the largest racial/ethnic group of BUSP students. BUSP is now open to disadvantaged students from all racial/ethnic groups. Nonetheless, a large majority of the students (about 90%) continues to be from underrepresented groups.[95]

Reflecting the fact that BUSP was originally designed to serve a student population that included many individuals who were very underprepared academically, Dr. Villarejo and her colleagues did not set out to produce a uniformly high achieving group of majors in biology. Rather, they aspired to have a large percentage graduate with solid GPAs and to help a substantial percentage graduate with a 3.0 or more. They used a threshold of 3.0, because most students who want to pursue a graduate degree in biology or a professional degree in one of the health fields need at least a 3.0 undergraduate GPA to gain admission.[96]

Over the years, BUSP has gradually given more attention to increasing the number of its students who graduate with a high GPA, out or recognition that this will increase their chances of pursuing advanced work, such as a Ph.D. at selective institutions. The high quality of its program and the stronger overall academic preparation of the students admitted to BUSP may have helped make this possible.[97]

Dr. Villarejo and her colleagues also wanted BUSP to be a large program, so that it could produce a meaningful number of bachelor's degree recipients in biology from underrepresented groups. Reflecting this objective, about 60 freshmen are currently admitted to BUSP each year.[98]

How successful is BUSP? To address that question, Dr. Villarejo and an associate conducted a quasi-scientific evaluation in which they compared the 397 BUSP students who entered UC Davis between 1988 and 1994 with 877 students in those years who, while eligible for BUSP, chose did not participate. (Ideally, BUSP would have been tested and evaluated via a randomized trial, but that was not feasible.) Typical of many studies that rely on a comparison group that is constructed after the fact to help assess program outcomes, there were some potentially important differences between the comparison group and the participants in BUSP. Possibly the most important is that the students in the comparison group did choose not to participate. The second is that the comparison group was somewhat better prepared academically than the BUSP participants. The third is that there were some differences in the racial/ethnic compositions of the two groups of students.[99]

Despite these limitations, the evaluation produced evidence that BUSP does provide a number of valuable academic benefits for many participants. Moreover, as will be briefly discussed, academic outcomes for recent BUSP graduates suggest that its current students are having greater success by some measures than students who entered BUSP in the period from 1988 through 1994.

Several findings of the evaluation are worth noting here. One is that the BUSP participants were found to be much more likely to complete the general chemistry, calculus, and introductory biology courses than the students in the comparison group, after adjusting for demographic and academic preparation differences. For example, BUSP participation provided about the same benefit as having a half-point higher high school GPA or the equivalent of a 100-point higher score on the SAT math section with regard to completing general chemistry. Similar, albeit somewhat smaller, benefits were found for completion of the calculus and introductory biology courses. These are meaningful compensations for academic preparation gaps.[100]

The BUSP students also had higher GPAs in the general chemistry and calculus gateway courses than the students in the comparison group. Importantly, these benefits were found to be associated with getting passing grades in the associated workshops that are part of BUSP. (The workshops are graded as a means of stimulating the students to take them seriously.) For example, passing the workshops in chemistry or math is associated with about .7-to-.8 increases in GPAs in those courses.[101]

Turning to degree completion in biology, a credible 34% of the BUSP students graduated with a degree in biology. (Overall, 69% earned a degree at UC Davis.) Relative to the comparison group, participation in BUSP was associated with a 50% increase in the odds of graduating with a degree in biology.[102] However, for academic achievement at graduation, the story is less positive. Although participating in BUSP was associated with an increase in students' cumulative GPA at graduation, the benefit was not enough to enable a substantial percentage of BUSP students to graduate in biology with a 3.0+ GPA. Only 12% were able to do so.[103]

Given the large number of academically underprepared students that entered BUSP from 1988 through 1994, this is not an unexpected finding. Thirty percent of the 377 BUSP students were in the Special Action admissions category. The average combined math and verbal SAT score for the 377 students was only 916 (on the old SAT norms); the average math score was just 498 and the average verbal score only 418.[104] In contrast, the Meyerhoff students who were included in the evaluation of the Meyerhoff Scholars Program, which was discussed earlier in this report, had an average combined math and verbal SAT of 1183—267 points higher than the average for the BUSP students. Consistent with that difference, the average math and verbal SAT scores for the Meyerhoff students were 634 and 549, respectively.[105]

As mentioned earlier, the academic preparation profile of the students participating in BUSP over the years has strengthened. (This may be partly due to its growing positive reputation—some students now report that they attend UC Davis to participate in BUSP.)[106] At the same time, the academic achievement of BUSP participants, as measured by GPA, has been improving as well. For example, among the BUSP students who graduated with a degree in biology during 2000-2002, the percentage graduating with a GPA of 3.0+ was over twice the 12% found for the BUSP graduates in biology in the study of students who were freshmen in 1988 through 1994. In addition, a

substantial number of the degree recipients in 2000-2002 had cumulative GPAs of 3.5 or higher.[107] Consistent with this pattern, BUSP students have been doing very well in the general chemistry, calculus, and introductory biology courses in recent years.[108]

These patterns are unsurprising, as the evaluation of BUSP found that high school GPA was the single most important predictor of graduating from UC Davis, graduating with a degree in biology, and graduating with a degree in biology with a 3.0+ GPA; and, SAT I scores also were found to be valuable predictors of academic performance.[109] In any case, the gradual reduction in the percentage of extremely underprepared students served by BUSP, combined with the stronger GPAs of recent graduates, suggests that a new evaluation of BUSP needs to be undertaken. It should focus on the extent to which BUSP confers meaningful academic performance and achievement benefits to well prepared underrepresented minority students, moderately prepared students, and underprepared students. The comparison groups should include both comparable underrepresented students who do not participate in BUSP and White and Asians who are regularly admitted and not eligible for the program. It also would be useful for the evaluation to track the students for several years beyond the time they complete their degrees (or leave college), so that potential benefits in graduate school and the labor market could be explored. Ideally, the evaluation would include a randomized component for the students eligible for BUSP. But, cost considerations probably would require that this evaluation be of the quasi-experimental variety.

There is another aspect of BUSP that needs to be addressed by the evaluation. Similar to the Opportunity Programs, Asian participants in BUSP achieve at higher levels than students from the other racial/ethnic groups.[110] Any future evaluation of BUSP should give high priority to learning more about why this is the case. It may be that Asian students are making more effective use of BUSP (and the Opportunity Programs) in ways that could be used by students from the underrepresented groups.

The Need to Identify and to Develop More Proven Programs and Strategies for Increasing the Number of High Achieving Underrepresented Minority Undergraduates at Selective Institutions

The three programs discussed in the previous section demonstrate that there are some things that can be done to raise academic achievement levels of underrepresented students at selective colleges and universities and, in the process, help increase at least somewhat, the number and percentage that achieve at high levels by traditional measures. Nevertheless, these or other programs that may provide similar benefits cannot be described as constituting a "solution" to the problem of the underrepresentation of African Americans, Latinos, and Native Americans among top undergraduates at these institutions. Many more proven strategies are needed to address the diverse circumstances of underrepresented students at selective institutions. Ideally, several would be capable of producing markedly better results than those documented to date for Meyerhoff, the Opportunity Programs, and BUSP.

Increasing the number of proven strategies has both identification and development dimensions. That is to say, more existing programs and strategies need to be subjected to high quality evaluations in order to maximize what can be learned from them; and,

some new and/or substantially modified initiatives need to be designed, tested, and evaluated. Such work will require a great deal of money and many years of effort. We believe that it also will require a new generation of leaders who will make the high achievement issue a genuinely high operational priority for many selective institutions.

Although some limitations of Meyerhoff, the Opportunity Programs, and BUSP have already been mentioned, in this section we will briefly discuss some additional ones that may help make it clearer why more proven strategies are needed. We also will discuss a relatively inexpensive way to begin to assess the effectiveness of more existing strategies, as a first step in determining what they have to offer for the high achievement agenda. We also discuss the leadership that will be required to take this step.

Some Limitations of Proven and Promising Programs and Strategies

One of the most important limitations of Meyerhoff, the Opportunity Programs, and BUSP is that they serve limited segments of the underrepresented students on their campuses. In the cases of Meyerhoff and BUSP, the programs are limited to students in certain majors. Furthermore, even within the majors that they address, both serve only some of the underrepresented students. Meyerhoff is limited to very well prepared students; BUSP serves mainly low SES students, of whom many are academically underprepared. In contrast, the Opportunity Programs are not limited to serving students in only some majors, but are restricted to low SES, underprepared individuals.

Two of the three—HEOP/AOP and BUSP—focus most of their resources on one or two of the undergraduate years. Without more resources, it would be very difficult for either of them to expand their upper division work to any significant extent.

The reality of financial constraints for these two programs leads to an even more important economic reality: all three programs rely heavily on outside funding to operate. Indeed, without their outside funding, none could continue in their current form. The Opportunity Programs offer an excellent example. The money that New York State provides each year pays for most of the salaries of the staff, i.e., Susan Layden's strategy of having four well-educated professionals provide extensive academic support for participating students is currently contingent on having substantial, ongoing New York State funding. It is not clear from what other source she could currently secure such a large, stable amount of annual funding to pay the salaries of the staff members.

Another limitation is that two of the three programs—Meyerhoff and BUSP—focus on SEM majors. Only the Opportunity Programs have experience working with students in the humanities and social sciences.

None of the three programs have truly large professional staffs. This means that, in addition to being stretched thinly, they also are vulnerable to losing crucial expertise when there is turnover among the professionals, which cannot be easily replaced. They also have little time to try to learn from other programs.

Two of the three programs, Meyerhoff and HEOP/AOP, operate with the active involvement of the presidents of their institutions. In the case of Meyerhoff, President Freeman Hrabowski was not only the creator of the program, but also has been personally involved in most of its facets over the years. Yet, maintaining such extensive involvement when there is a turnover of presidents is an uncertain process, at best.

Because two of the three, BUSP and the Opportunity Programs, serve large numbers of academically underprepared students, their staffs may need to spend a disproportionate amount of time helping students who are having academic difficulty to remain in good academic standing and to graduate. To the extent that this is true, it means that their staffs have less time than would be desirable to help above average and high achieving students maximize their academic development. Our sense is that, as a general rule, the more risk that any program takes in the admissions process (i.e., the more underprepared students that it decides to serve), the greater the time demands that students in academic difficulty will make on the staffs.

Identifying Additional Effective Programs

Several points need to be made about our finding that there are few programs and strategies with strong empirical evidence that they produce meaningful improvements in academic achievement, including helping more students become high achievers, among underrepresented minority undergraduates at selective colleges and universities. First, this is undoubtedly due in large measure to the lack of money over the years to pay for good evaluations. In fact, many program directors find it an ongoing challenge to secure the resources to continue providing their current services to students.

Second, and related to the first point, given the enormous number of programs and strategies that serve underrepresented minority students on the campuses of selective institutions across the country, it is reasonable to believe that many are producing valuable academic achievement benefits. Moreover, it might be possible to replicate some of them relatively widely and/or to use knowledge generated from them to develop strategies that are more effective. This means that there is a pressing need to have many of them evaluated, preferably by independent parties. At a minimum, most of these evaluations should use high quality quasi-experimental techniques. Ideally, evaluations that involve randomized trials would become common.

Third, despite the overall shortage of money to fund high quality program evaluations, the actual incremental funding required to undertake a large number of quasi-experimental evaluations might be modest, if many leaders of selective colleges and universities decided to use their existing institutional research staffs to do such work. An example of the kind of study that an in-house institutional researcher can conduct is one undertaken recently by Mark Pavelchak, Director of Student Outcomes Research at the University of Southern California (USC). With relatively modest financial support from our project, he was able to perform an evaluation that involved a careful process of matching participating students in the McNair Scholars Program at USC with other USC underrepresented minority undergraduates who were comparable in several important respects. The results of his study show that USC's McNair students graduated with a considerably higher average GPA than that of the constructed control group—3.3 versus 3.0.[111]

This finding is intriguing, because there are nearly 180 McNair Scholars Programs operating at colleges and universities across the county.[112] Each has funding from the federal government's Ronald E. McNair Postbaccalaureate Achievement Program, which is designed to help students from disadvantaged and underrepresented segments of the nation prepare to pursue a doctoral degree. Each institution's McNair operation also is required to provide several services, among which are undergraduate research

opportunities for participating students who have finished their sophomore year, summer internships, mentoring, tutoring, academic counseling, seminars on preparing to pursue doctoral studies, and assistance with securing financial aid for graduate school.[113]

Importantly, several of these programs are at very selective public and private universities, such as USC, while many others are at more moderately selective institutions. It should be possible to determine how representative USC's McNair GPA benefits are for McNair programs at leading universities and how they compare to the benefits of the programs at the more moderately selective ones. To do so without outside funding, the leaders of several institutions would need to have their institutional research staffs conduct evaluations using the same approaches, and share their results.

If considerable variation were found in the academic achievement benefits provided by the programs, subsequent studies would need to be mounted to identify the reasons for the differences. The findings could be used by institutions with weak programs to inform their efforts to strengthen them.

If it were to be determined that many McNair Programs do provide significant high academic achievement benefits, McNair would be one more arrow in the high achievement strategy quill. It would not, however, be a panacea. McNair serves undergraduates who have already established solid achievement records at their institutions. They also tend to serve relatively small numbers of students.

It would be very helpful if a few foundations decided in the near future to establish grant programs to fund evaluation work of the kind described here. Even without extensive foundation support in the near term, however, the presidents of as few as 10-20 universities might be able to start a trend toward more evaluations being conducted simply by using their institutional research staffs to conduct in-house assessments and sharing the results. At most of these institutions, this undoubtedly would initially mean changing the work priorities of their (often small) institutional research staffs with regard to student-focused research. But, many presidents should have a strong incentive to do so, since virtually all of their institutions have a need to raise achievement levels of their underrepresented students and have programs concerned at least in part with improving educational outcomes for these students. We will have more to say on this point in the recommendations for action presented at the end of this report.

Some Findings from the Survey of High Academic Performance

Parallel to conducting our search for proven and promising strategies, we also worked with a number of colleagues at several selective colleges and universities in the West to develop a questionnaire for students called the Survey of High Academic Performance (SHAPER). SHAPER was designed to gather information from students that may help senior officials, faculty members, and other administrators and professionals at selective colleges and universities develop more effective policies, strategies, programs, and practices for helping higher percentages of undergraduates do well academically. Although SHAPER was designed to gather information on students from all groups, its relevance here concerns its potential to provide information that may help guide the development of more effective strategies for increasing the number of high achieving undergraduates from underrepresented groups.[114]

In the spring and summer of 2004, SHAPER was used on a pilot basis with samples of undergraduates at several selective institutions in the West. Response patterns for two questions are worth discussing in this report. One question concerned racial/ethnic stereotypes and the other question concerned opportunities to study with students from other racial/ethnic groups.

Racial/Ethnic Stereotypes

One question on SHAPER asked students how often they have been concerned during their undergraduate years that they might be confirming a stereotype about their racial/ethnic group in one or more of several possible ways. One of the ways suggested the negative intellectual stereotype that often has been applied to African Americans in the United States over the years.[115] This was done by asking students whether, "by doing very badly on an exam," they might be confirming a stereotype about their racial/ethnic group.

Another of the ways suggested the negative work ethic stereotype that also has frequently been applied to African Americans.[116] Specifically, students were asked whether, "by appearing to take my studies too lightly," they might be confirming a stereotype about their racial/ethnic group.

At each of the participating institutions, most students from all groups reported that they never or rarely were concerned that, by doing badly on an exam, they would be confirming a stereotype of their group. However, although only a small fraction of African American students said that they were frequently concerned that doing so would confirm a stereotype about their group, there was a tendency for it to be a much larger share than was the case for students from any other racial/ethnic group. For example, at one large research university, about 9% of the Blacks reported that this was a frequent concern, while only 3% of Mexican Americans and 1% of the Whites and 1% of the Asians did so.

A similar pattern was found regarding appearing to take studies too lightly. At the same university, 7% of the African Americans said that they were frequently concerned about this, while only 2% of the Mexican Americans, 3% of the Asian Americans, and 1% of the Whites reported this concern.

It is unclear whether concerns such as these have any practical impact on the academic performance of the students in question or on their overall opportunities to learn in college. However, it is important to note that Claude Steele's research on stereotype threat ("the threat of being viewed through the lens of a negative stereotype, or the fear of doing something that would confirm the stereotype"), which we discussed earlier in this report, suggests that there might be an impact.[117] His research raises the possibility that some African Americans at selective colleges and universities may perform less well academically in circumstances in which they experience the threat of the negative intellectual stereotype of Blacks.

Opportunities to Study with Students from Other Racial/Ethnic Groups

In a separate question on SHAPER, students were asked how often they studied with students from other groups who could help them maximize their grades. At a diverse

research university in the West, while 36% of the African Americans said that they studied frequently with other Black students, only 20% reported that they studied frequently with Asians, 15% said that they studied frequently with Latinos, and 13% said that they studied frequently with Whites. Similarly, about 34% of the Mexican Americans said that they studied frequently with Latinos, while only 9% said that they studied frequently with Blacks, 18% said that they studied frequently with Asians, and 19% said that they studied frequently with Whites.

The fact that African American and Mexican American undergraduates at this research university reported that they are much less likely to study with Whites and Asians than with students from their own groups is not particularly surprising. However, it may mean that they have significantly less opportunity to study with high achieving students, because much higher percentages of Asians and Whites than Mexican Americans and Blacks have high GPAs. To the extent that having access to good students contributes, on average, to higher achievement, African American and Mexican American students may be at somewhat of a disadvantage relative to their White and Asian peers. If so, finding ways to expand their opportunities to study productively with their Asian and White counterparts may be an important matter for strategy development work. In that regard, one of the potential virtues of programs that serve low SES students is that they can be fairly diverse racially/ethnically. To the extent that some of these programs are able to help a fairly large percentage of their students achieve at high levels and to create circumstances in which students from different groups study together frequently, they may be one means of addressing this need.

Constraints on High Achievement Efforts at Selective Institutions

Selective public research universities, private research universities, and private liberal arts colleges have many constraints as they work to: 1) identify existing programs and strategies that can increase the number of high achieving undergraduates from underrepresented groups; 2) develop, test, and evaluate new approaches for addressing the high achievement issue; and 3) make use of proven programs and strategies on a widespread basis, while maintaining their quality. Most of the constraints are widely shared, although the mixes of constraints may vary somewhat among the three sectors and among individual institutions.

As suggested earlier, money is an important constraint for most public and private colleges and universities. Public institutions, of course, are heavily reliant on state funding. However, in the 1980s and 1990s, the share of revenues of public colleges and universities that was provided by state governments dropped from 44% to 33%.[118] Moreover, public institutions are vulnerable to variations in state support that are associated with the business cycle.[119] Cuts in state funding during a recession can hit discretionary programs particularly hard, including those that serve disadvantaged or underrepresented minority students, as has been demonstrated by the large cuts in the budget for outreach programs at the University of California in recent years.[120]

On the positive side, over the past quarter century, many colleges and universities have seen their endowments grow substantially.[121] Yet, only a few institutions have very large endowments that might provide considerable flexibility in the funding of programs for students from underrepresented groups. For example, among the 654 institutions that

responded to a recent survey on college and university endowments conducted by the National Association of College and University Business Officers, just 10 accounted for 30% of the total endowment assets. Furthermore, among the 39 institutions that reported having endowments with assets of more than $1 billion, 25 were private research universities and 4 were private liberal arts colleges, while only 10 were public research universities/university systems.[122] Thus, the potential to draw on endowment income to help fund underrepresented-minority-oriented initiatives may be somewhat greater among private institutions than among public ones.

Another important constraint concerns the responsibilities of tenured and tenure-track faculty members. Most of them at selective public and private research universities must put a great deal of time and energy into their research and into their work with graduate students, especially those in doctoral programs (as the training of the next generation of scholars and researchers is a high priority). This leaves many faculty members at research universities with relatively little time to teach undergraduate courses, much less to become heavily involved in programs for underrepresented undergraduates.

The situation is doubtlessly somewhat better at selective liberal arts colleges, as faculty members at those institutions are expected to give high priority to undergraduate teaching—and the general absence of graduate students makes this possible. Nonetheless, faculty members at selective liberal arts colleges also are expected to give considerable emphasis to research.

The heavy and numerous demands on leaders' time also are an important constraint. Presidents and chancellors of selective public and private colleges and universities have many major responsibilities, such as fundraising, maintaining the quality of faculty, raising the national academic ranking of their institutions, and so forth. Heads of public universities also need to spend time cultivating support among political leaders in their states. Other senior officials, including provosts and chief academic officers, are routinely engaged in a host of academic program matters. Consequently, a decision to become deeply and personally involved for many years in a major initiative for underrepresented students (such as the one made by Dr. Freeman Hrabowski, III at UMBC) cannot be made lightly by senior officials.

The sensitivity of academic achievement information is yet another significant constraint. For example, institutions need extensive GPA data to assess existing initiatives and to guide new high-achievement-oriented strategy development and program improvement efforts; but such information can be a source of controversy and conflict for selective colleges and universities, both internally and externally. Regarding external sensitivities, if such data were to become available publicly for several specific institutions, they might be used by a number of opponents of affirmative action to challenge the admissions policies of those institutions. At the same time, a number of proponents of affirmative action might respond in the opposite fashion: they might argue that the lower achievement levels were evidence of unequal educational opportunities on the campuses in question. For public institutions, especially, such data might lead to lawsuits from both sides. Such data also might be off-putting to some students, with negative consequences for recruiting. For instance, fewer top underrepresented minority students might decide to apply for admission to institutions that had made data public showing that few students from their groups were graduating with a high GPA.

Concerning internal sensitivities, if GPA data showed little progress on the high achievement issue over a period of years, some administrators and faculty members could become frustrated and impatient with the seeming inability to make rapid gains. This, in turn, could lead to a waning of support for some strategies before they were tested fully. If the GPA data had not been made public, a lack of rapid progress could lead to a concern that those data might produce negative external reactions, if they did become public. That is to say, internal and external sensitivities could interact.

The relatively small percentages that African Americans, Latinos, and Native Americans constitute of the undergraduates at most selective colleges and universities also are a major constraint on efforts to address the high achievement issue. One formidable problem is that these students tend to be spread across the majors at most institutions, with few typically in many of them. As a result, it is difficult to have programs that are designed specifically for many individual majors. This situation is made even more complex by the fact that, in the freshman class at most selective colleges and universities each year, few of the underrepresented minority students are among the best prepared entering freshmen, while many of these students are among the least well prepared. This pattern can make it especially hard to mount strategies that are responsive to the needs of the very well prepared underrepresented students, even though available evidence suggests that they tend to be vulnerable to the overprediction phenomenon at many selective institutions.[123]

The most effective evidence-based strategy that we have identified for targeting the best prepared underrepresented minority students—the Meyerhoff Scholars Program—has been able to "solve" the shortage of top entering freshmen by recruiting a disproportionately large share of them into a few majors. Unfortunately, as was noted earlier, the national shortage of these students means that it is not a strategy that can be widely used, at least on the scale employed by UMBC.

Similarly, Skidmore College's Opportunity Programs demonstrate that it is possible to mount initiatives that serve most of the underprepared students at a small selective private liberal arts college. But, it is unclear how something equivalent to the Opportunity Programs could be undertaken at a large university, because it would have many more such students spread across the institution.

Finally, a major constraint is the shortage of individuals who can demonstrate that they have directed initiatives that produce meaningful increases in the number of high achieving undergraduates from underrepresented groups. This is unsurprising, since, if there are few proven strategies, it follows that there also are few proven leaders of such strategies. One of the most important reasons to move quickly to undertake a substantial number of evaluations of existing programs (such as the one conducted recently by Mark Pavelchak of USC) is to identify individuals who are currently leading productive efforts. As many such people as possible are needed to help expand efforts to address the high achievement issue at a large number of institutions.

To recapitulate: the constraints include a severe shortage of money, the limited time and extensive responsibilities of faculty members and top officials of selective institutions, the sensitivity of data describing the high achievement problem, the small percentages of underrepresented students overall at selective institutions, the academic preparation composition of these students (very few among the best prepared and many among the least well prepared), and the very small number of proven leaders of proven

strategies. Collectively, they are a very challenging set of obstacles to mounting a robust, sustained set of empirically-grounded efforts to increase markedly the representation of African Americans, Latinos, and Native Americans among high achieving undergraduates at selective colleges and universities.

Recommendations for Action

Despite these constraints, this report has made it clear that there is a need for immediate action directed at creating conditions under which much more rapid progress can be made on the high achievement issue in the years and decades ahead. We now present a number of recommendations focused on six topics that are concerned with laying the groundwork necessary to do so. The six topics are: 1) increasing the amount of money available to address the high achievement issue; 2) testing promising strategies rigorously and extensively; 3) using college and university information systems to help guide efforts to address the high achievement challenges on individual campuses; 4) training a cadre of professionals to lead programs and initiatives designed to address the high achievement issue at selective institutions; 5) increasing college and university presidential leadership on the high achievement issue; and 6) increasing efforts by underrepresented minority organizations and leaders to promote greater action on the high achievement issue.

Increasing the Amount of Money Available

If a sizable, empirically-based high achievement agenda for underrepresented minority undergraduates is to be pursued successfully by selective institutions, it will be necessary to eliminate money as a major constraint. To do so will require having substantial financial resources that would be used for two very distinct purposes: 1) funding an extensive set of strategy identification, development, testing, and evaluation efforts in all three selective sectors—public research universities, private research universities, and private liberal arts colleges; and 2) funding the use of proven strategies and programs on a widespread basis in all three sectors in a manner that allows them to be operated at a high level of quality over many years.

If the necessary funds are to become available for both purposes, private grantmaking foundations will need to take the lead in underwriting work directed at increasing the number of proven or promising strategies and programs; and, selective institutions, themselves, will have to assume primary responsibility for funding the ongoing use of proven approaches. This division of the funding labor reflects the institutional characteristics of foundations and of colleges and universities. In the United States, private grantmaking foundations (in addition to some departments and agencies of the federal government) are primarily responsible for investing in the development and testing of innovative education strategies. However, foundations are not in a position to be major sources of ongoing support for the operation of colleges and universities.

The reverse is essentially true for colleges and universities. From the standpoint of formal education/schooling, they are “operating units”—entities that deliver education services to students. These services are paid for with revenue from several sources, including tuition, fees, student financial aid, core state funding, endowment income, and the like. Very little of the money from these sources is available to invest in the development of new education strategies.

Unfortunately, private foundations are currently not investing heavily and systematically in the necessary strategy development work. In addition, few selective colleges and universities have substantial, stable sources of funds earmarked to pay for the operation of proven (or unproven) approaches to the high achievement problem among African American, Latino, and Native American undergraduates. On a more positive note, it should be possible for both sectors to develop robust capacities to pursue their respective responsibilities. Moreover, each sector should be able to help the other develop their respective capacities. Indeed, deliberate mutual assistance efforts may offer the best prospects for success. We have five recommendations for financial resource development that reflect this perspective.

1. *Two or three private foundations should establish grant programs designed to fund extensive underrepresented minority high achievement strategy identification, development, testing, and evaluation work at selective colleges and universities over the next 20 years.* Having more than one foundation undertake such work is essential for several reasons. One is that it will offer more than one set of perspectives on such efforts. Another is that the financial resources of more than one foundation are likely to be needed. Yet another is that having two or three foundations with major programs in this area increases the odds that at least one foundation will stay at this work for at least a generation. (Foundation leadership changes can result in major changes in programs.)

2. *Two or three private foundations should provide the seed money to create a new foundation that would be chartered exclusively to underwrite strategy identification, development, testing, and evaluation work.* Most large foundations have multiple program interests. Thus, having a new foundation exclusively focused on this aspect of the high achievement agenda would provide the benefits of specialization. It also would increase the likelihood that there would be at least one grantmaker working in this area on a substantial basis for an extended period of time. Encouragingly, it might not take a large investment by the two or three "creator" foundations, if the new foundation is established using the community foundation model of amassing an endowment from multiple donors. With sufficient seed money to undertake some initial grantmaking and, more importantly, to mount a multiyear fundraising campaign, it should be possible to get the new entity on secure footing within five years.

3. *Several presidents of selective colleges and universities also should work together to raise funds from wealthy alumni and other wealthy individuals to provide the seed money to create a new foundation to fund strategy development work.* The model for creating the endowment also should be the community foundation. The point here is that presidents of selective institutions do not have to wait for the heads of a few foundations to start grant programs in this area or to fund an effort to create a new foundation. A group of presidents of colleges and universities could simply address these needs themselves. As an alternative, these presidents, of course, could reach out to a few foundation presidents to try to work jointly to create a new specialized foundation.

4. *Presidents of several selective colleges and universities should seek to raise small endowments that would be exclusively dedicated to paying the operating costs of programs on their campuses designed to increase the number of their*

underrepresented minority undergraduates who excel academically. If proven programs are to have stable funding, they need such endowments. If a dozen or so presidents succeeded in raising $5-10 million endowments for such programs on their campuses, it could stimulate other presidents to follow suit. If, over a period of years, a number of colleges and universities are able to document that they have programs that are increasing the number of high achieving undergraduates from underrepresented groups, it should become easier to secure initial endowment grants for those programs—and, subsequently, to increase the sizes of these endowments over time (in order to support expansion of the programs, where possible).

5. *Two or three private foundations should establish grant programs designed to help underwrite fundraising efforts by selective colleges and universities to establish endowments to pay the operating costs of high-achievement-oriented programs for underrepresented minority undergraduates.* By doing so, they would not need to wait for several college and university presidents to act on their own. Ideally, these endowment-raising grant programs would be paired with grant programs designed to increase the number of proven high-achievement strategies. Essentially, grant programs focused on creating these endowments would address one of the most fundamental challenges of effective dissemination—the money to pay for operation of the strategies over time.

These recommendations have been made out of a belief that strong leadership on the funding dimension of the high achievement issue by a relatively small number of foundation heads and/or college and university presidents could stimulate extensive empirically-grounded action over the next few decades. Nonetheless, even though it may not take many of these individuals to provide the necessary (catalytic) leadership on the high achievement issue, a decision to do so is unlikely to be made lightly by any of them. This is because, not only is it a very sensitive issue, it also would require a major, visible commitment of their time in a context in which there are many other important issues that could productively command their attention. Moreover, the high achievement issue is a long-term challenge; substantial progress in the form of large increases in the number of top bachelor's degree recipients from underrepresented groups is unlikely to occur on their watches, even if they make a maximum effort to lead in this area. Given these realities, it probably will be necessary for many foundation heads and college and university presidents to ask themselves explicitly whether providing leadership on the high achievement issue is something that they want to be a major part of their professional legacies. If many do ask that question, there may be a reasonable chance that several will answer in the affirmative. If only a few ask themselves that question, a critical mass of leadership seems unlikely to emerge.

Testing Promising Strategies Rigorously and Extensively

Having recommended that some foundations (preferably including a new one) should establish grant programs to identify, develop, test, and evaluate programs and strategies focused on the high achievement issue, we now make six recommendations regarding what some of the characteristics of those grant programs should be:

1. *These programs should give initial priority to identifying, testing, and evaluating strategies that already show considerable promise from various perspectives.* The three promising programs described in this report—the Meyerhoff Scholars

Program, the Opportunity Programs, and the Biology Undergraduate Scholars Program—are good examples of initiatives that should be early targets of these grant programs. The foundations should search for others.

2. *Evaluations of promising approaches should use either quasi-scientific or randomized trial methods.* In most cases, the initial evaluation of a promising approach should employ quasi-scientific techniques rather than a randomized trial. That is because randomized trials are more complicated and more expensive to undertake. Consequently, it is appropriate to reserve the use of randomized trials mainly for cases in which a quasi-scientific evaluation has found evidence of substantial benefits for programs that could plausibly be used to serve a large number of students across many institutions. In such cases, considerable effort should be made to undertake a randomized trial involving multiple sites, in order to gain the strongest possible understanding of the effectiveness of the strategies.

3. *The testing and evaluation effort should look at promising programs for use at public research universities, private research universities, and private liberal arts colleges.* High quality strategies are needed that could be used widely in each of these three sectors of selective institutions.

4. *The testing and evaluation effort should include promising approaches for a wide range of majors.* Because the underrepresentation of African Americans, Latinos, and Native Americans cuts across the majors, strategies should not be limited mainly to a subset of them, such as SEM majors. Certainly, attention finally needs to be given to addressing the shortage of high achieving undergraduates from these groups in the humanities and social sciences.

5. *Priority should be given to testing strategies that are affordable.* The precise meaning of "affordable" will vary among institutions. However, as a rule, it will mean that the costs of a program serving a number of underrepresented students at a particular college or university could be paid for largely with the income from a specialized endowment for the program that could reasonably be expected to be raised by the institution.

6. *In addition to mounting high quality evaluations of a number of promising approaches, high priority should be given to testing both variations of promising existing strategies and of some new approaches that may draw on valuable attributes of several existing strategies.* A combination of continual efforts to improve the best existing approaches and judicious efforts to develop new ones probably will be the most productive way for foundations to increase the number of effective practices over the next 20 years.

A brief discussion of the testing and evaluation needs and opportunities for the three promising programs discussed in this report can illuminate some of the work needed in this area. It will be recalled that the quasi-scientific evaluation of the Meyerhoff Scholars Program at the University of Maryland Baltimore County has found evidence that it is producing some very good academic results, including helping many of the participants earn high GPAs and go on to doctoral programs. However, Meyerhoff is expensive and has unusually strong presidential leadership and involvement. In addition, the Meyerhoff strategy is to recruit a relatively large number of top Black students concentrated in a

narrow range of (SEM) majors, even though there is a severe shortage of such students nationally. These distinctive factors raise doubts about whether Meyerhoff is an approach that could be widely used in its current form. At the same time, its apparently solid productivity makes it reasonable to explore whether it could be tested on a modified basis at several institutions. One possibility is that a number of public or private selective research universities could mount a variation of the Meyerhoff program that serve entering "classes" of 10-15 new underrepresented minority freshmen each year who would concentrate in a narrow range of majors. With foundation support, these institutions might focus on majors in which they are very highly rated nationally. That might allow them to recruit the 10-15 students annually, possibly with a somewhat lower per capita investment than is now the case for Meyerhoff. If one or more foundations funded a three or four campus test of a modified strategy along these lines, it would be possible to see if it produced results that approach those found in the quasi-scientific evaluation undertaken at UMBC. If so, a larger multisite test, preferably using a randomized trial, might be warranted. If the randomized trial produced solid results, several institutions would have reason to consider implementing such a version of Meyerhoff—and might find that there would be wealthy donors prepared to establish the endowments needed to pay the operating costs over time. There also would be reason to test further modifications of the approach. For instance, tests might be mounted with somewhat less well-prepared students.

Turning to the Opportunity Programs at Skidmore College, the positive data for it makes it an excellent candidate to test on a multisite basis at selective liberal arts colleges. As will be recalled, the Opportunity Programs serve low SES students who are quite underprepared academically for Skidmore. Moreover, these students pursue a wide range of majors. This means that they are a very different target population than has been served by the Meyerhoff Scholars Program at UMBC. Nonetheless, similar to the evaluation approach suggested for further testing of Meyerhoff, the first phase of an expanded testing and evaluation effort for the Opportunity Programs model might involve implementing it at three or four liberal arts colleges and evaluating with quasi-experimental techniques. If that proved successful, the next phase might involve a randomized trial at a larger group of liberal arts colleges. If that produced solid results, there might be sufficient evidence to push for its use by a relatively large number of institutions.

Simultaneously, it might be appropriate to test three modified versions (planned variations) of the Opportunity Programs model. One of these modified versions would test whether it could effectively serve somewhat better prepared underrepresented minority students at selective liberal arts colleges. This is because Susan Layden has found at Skidmore that many of the regularly admitted underrepresented minority students are not doing as well academically as the students in the Opportunity Programs; and, a number of the students not being served are only moderately better prepared academically for Skidmore than those in her program.

The second modified version would test whether the Opportunity Programs model would help even less well-prepared students than its current clientele do well academically at a number of selective liberal arts colleges. In essence, this modification would begin to explore how deeply into the pool of relatively underprepared students the Opportunity Programs approach would allow a number of selective liberal arts colleges to go, while still ensuring that almost all of the participating students graduate and a large majority enjoy considerable academic success.

The third modified version would test whether providing substantial academic support during the junior and senior year would produce meaningfully higher academic achievement across the four years of college. Currently, the (limited) resources of the Opportunity Programs are heavily focused on the summer prior to the start of college, the freshman year, and (to somewhat less extent) the sophomore year. The potential academic benefits of providing substantial support during the upper division years have yet to be explored.

Shifting to the Biology Undergraduate Scholars Program at the University of California, Davis, one initial evaluation challenge is to test the approach at a few other institutions, using a quasi-scientific evaluation, to determine whether it has the potential to provide meaningful high achievement benefits at a number of public research universities. If the results are positive, a larger multisite test might be appropriate, using a randomized trial. A possible planned variation would be to test the BUSP approach with different mixes of students in terms of academic preparation. (As discussed earlier, the changes that have taken place in the preparation profile of BUSP students at UC Davis over the past decade have already made it important to do another evaluation of the program.)

To sum up, there is a pressing need for some foundations to mount grant programs that can pay for thorough testing and rigorous evaluation of many promising strategies, because only some will be found to produce meaningful achievement benefits. Another reason that grant programs are needed to test a large number of strategies is that even effective ones are not likely to be equally useful for all segments of underrepresented minority students or to be of value for most selective public and private colleges and universities. Furthermore, foundation grant programs that would fund tests of modified versions of strategies are necessary, not only because students' needs vary, but also because there will typically be room for improvement even among strategies that produce substantial benefits.

Using College and University Information Systems

Earlier in this report, we discussed the valuable role that existing student institutional research offices at selective colleges and universities could play in identifying promising programs and strategies for promoting high academic achievement among underrepresented minority undergraduates. In the absence of substantial investments by foundations in the strategy identification, development, testing, and evaluation process, student institutional research offices might still be able to identify some potentially beneficial programs.

Student institutional research offices also could offer another important service. They could provide data to presidents and other senior officials on the extent to which there is a serious high achievement problem on their campuses and/or a serious overprediction problem. Unless such information is available to senior officials in a clear form on a regular basis, it may prove difficult for them to determine whether they should make the high achievement issue an operational priority.

Reflecting these possibilities, we have three recommendations in this area:

1. *Presidents and other senior officials at selective public and private colleges and universities should make the academic achievement of underrepresented*

minority students one of the top information monitoring responsibilities of their student institutional research offices. This will require discipline on the part of senior officials, as these typically small offices are often asked to field numerous and diverse requests for student information on an ongoing basis. An alternative approach, resources permitting, would be for senior officials to add a new institutional research professional to their staffs who would specialize in providing information directly to them on underrepresented minority achievement matters—including program effectiveness issues.

2. *Foundations should fund initiatives designed to train student institutional research professionals in techniques for undertaking exploratory quasi-experimental program evaluations and to design information systems that monitor underrepresented minority student achievement effectively.* To the extent that professionals from many selective colleges and universities receive similar training, it would help ensure that senior officials at a large number of selective institutions receive similar information. It also would help create a cadre of individuals who would be well prepared to help mount multiinstitution tests and evaluations of strategies.

3. *Foundations should make seed money (three-to-five-year) grants designed to enable senior college and university officials at a number of selective institutions to hire student institutional research professionals who would specialize in underrepresented minority achievement work.* This work would focus on high-achievement-oriented quasi-experimental program evaluations and monitoring student achievement patterns.

Training a Cadre of Professionals to Lead Programs

Even if several proven programs and strategies for promoting more high academic achievers from underrepresented groups at selective colleges and universities become available and the funds to operate them at a number of institutions are secured from endowments or other sources, there will be a formidable implementation challenge waiting to be addressed. More specifically, there will be a need to create a cadre of professionals who have the knowledge and skills to operate the programs as intended. This probably will require the creation of systems for documenting the growing knowledge base for proven programs in a manner that is accessible to professionals who will be leading local versions of them. It also is likely that training programs will need to be established, which would help professionals master the growing knowledge base. These information systems and training programs will need to be responsive to turnover, as programs tend to have small staffs and, consequently, the departure of even one professional might significantly reduce the local expertise on a particular proven strategy. Given these realities, we have two recommendations:

1. *One or more foundations should establish a center for best practices for promoting high achievement among underrepresented minority undergraduates at selective institutions, which would be housed at a leading college or university.* This center would be responsible for documenting emerging proven strategies and for providing (or arranging for) training and support for the leaders and other professionals who operate versions of proven programs at selective institutions.

2. *One or more foundations also should establish an internship program through which program directors and other professionals could spend time working with leaders of proven programs to get hands on experience with them.* The center for best practice could be given responsibility for operating the internship program.

Even these two steps probably would not be enough to ensure that large numbers of local versions of proven programs are operated with fidelity. For example, it may prove necessary for several institutions that operate similar programs to organize a quality control office, which would be led by a respected expert in the particular program. That individual would be charged with providing ongoing support and feedback regarding implementation at the various local sites.

Core points here are: 1) most proven strategies will be heavily dependent on what the small number of professionals who operate them at each site actually do; 2) without ongoing support, it will be easy for some knowledgeable practitioners to "drift' away from documented practices; and 3) without good training programs, it will be even easier for newly hired replacement professionals not to master the specific program's knowledge base. Thus, much effort will undoubtedly have to be made on an ongoing basis to ensure that programs function as intended. The specific support systems that will be needed to provide those services over time are difficult to anticipate fully in advance.

Increasing College and University Presidential Leadership

If many senior officials—especially presidents—of selective colleges and universities do not come to believe that they have a responsibility to provide substantial, sustained leadership on the high achievement issue, it will be difficult for this issue to become a genuine priority in the selective sector. Essentially, many presidents and other senior officials need to conclude that they must pay as much attention to the achievement of their Black, Hispanic, and Native American undergraduates as they do to their retention and graduation rates. At the same time, the shortage of proven, affordable strategies for producing meaningful increases in the number of high achieving underrepresented minority undergraduates at selective institutions may be an obstacle to some senior officials taking a leadership role on this issue, at least in a very public, highly visible way. After all, if there are not clear actions that presidents can take to produce substantial progress within a few years, some of these individuals might reasonably conclude that there will be little to gain from taking a highly visible approach to the issue. This may be especially true for some presidents of leading public research universities, because selective public institutions have been higher profile targets than private ones in the affirmative action debates. At the same time, the continuing shortage of high achieving underrepresented minority students on the undergraduate level (and on the graduate and professional school levels) at selective colleges and universities has the potential to intensify further the arguments over affirmative action with regard to both public and private institutions.

In these circumstances, providing leadership in the years ahead may often be most productive when it quietly, but unrelentingly focuses on supporting initiatives concerned with developing more empirically demonstrated strategies over the medium to long term. Consistent with this approach are the recommendations that we have made so far calling on presidents to use their student institutional research resources to address the high achievement issue; to work with colleagues to get some foundations to make

substantial, sustained investments in strategy development on the undergraduate level (and to create a new foundation for this purpose); and, to raise endowments for high-achievement-focused programs for underrepresented minority students on their campuses.

What else could presidents of selective institutions do? We have two additional recommendations:

1. *Presidents of selective institutions should encourage their provosts and deans to develop programs designed to address the underrepresented minority high achievement issue.* The presidents should make it clear that their interest is in developing strategies that have strong evidence that they help address this issue in a meaningful way. Thus, they should make it clear to their provosts and deans that they stand ready to help raise the money necessary to design, test, and rigorously evaluate strategies that might be proposed.

2. *Presidents of selective institutions should encourage foundations to support the design, testing, and rigorous evaluation of programs and strategies at the preschool and K-12 levels that would have an underrepresented minority high achievement focus.* As discussed earlier in this report, there continues to be an acute shortage of top African American, Latino, and Native American students graduating from the nation's high schools each year; and, this shortage has its beginnings in the K-3 years—and, even earlier. Moreover, similar to the situation in higher education, there are few K-12 (or preschool) strategies with evidence that they help ameliorate the high achievement problem at the elementary and secondary levels.[124] In addition to encouraging existing foundations to become active in this area, presidents also could encourage some of their wealthy donors to set up new foundations to focus on rigorous development of high achievement strategies on the K-12 and preschool levels (and in higher education). If some of the presidents of the nation's most prestigious colleges and universities quietly began to encourage such work, they might make an enormously important contribution over the (very) long term to the elimination of the high achievement issue at all levels of the education system.

Increasing Efforts of Underrepresented Minority Organizations and Leaders

Several underrepresented minority organizations and leaders with a history of addressing educational matters may have some of the greatest potential to stimulate much greater and more effective efforts to increase the number of high achieving African American, Latino, and Native American undergraduates at selective institutions. For example, if they were to begin to call on the presidents of selective colleges and universities and the heads of major foundations to pursue an extensive and intensive set of long-term efforts to develop, test, and evaluate strategies for promoting high achievement, they might get a serious hearing. If, as they encouraged higher education and foundation leaders to move aggressively in that direction, they also offered to raise money to help pay for the strategy development process and to create endowments to operate proven approaches as they emerge, these organizations and leaders might find that their influence would grow almost exponentially.

Of course, it is possible that their overtures would fall largely on deaf ears. In addition, because such actions would send a signal that they have concluded that the severe

underrepresentation of their young people among high achieving undergraduates by traditional measures is a very serious matter, some opponents of affirmative action might attempt to use this acknowledgement in their ongoing efforts to limit the use of affirmative action at selective colleges and universities. Nonetheless, we believe the absence of a major empirically-grounded set of efforts to address the high achievement issue is sufficiently costly to the long-term educational interests of underrepresented groups that minority organizations and leaders are almost compelled to help stimulate and organize substantive institutional efforts in this area. As long as there is a severe shortage of top Black, Hispanic, and Native American undergraduates at selective institutions (and an overall shortage of top students from these groups at all levels of the education system), it really will be virtually impossible to integrate the high human capital sectors of American society. Consistent with this assessment, we offer three recommendations to underrepresented minority organizations and leaders:

1. *The heads of a small number of influential underrepresented minority organizations should quietly develop a proposed agenda for action by leading selective colleges and universities and foundations.* This agenda would address such things as long-term grant programs to develop, test, and evaluate strategies, raising endowment funds to pay for strategy implementation, institutionalizing a high achievement commitment at leading colleges and universities, and so forth.

2. *Once they have agreed on the proposed agenda, the heads of these organizations should invite a small group of presidents of leading colleges and universities and major foundations to a private summit at which the agenda would be presented for discussion.* The objective would be for the attendees to establish a working group to hammer out a final agenda within six months that would be implemented by the participants. The agreement would commit the participating organizations and institutions to, say, a 20-year effort to develop and implement widely a set of proven strategies at the undergraduate level.

3. *Once the creation of a major high achievement agenda is in place for the selective sector of higher education, the group of underrepresented minority organization leaders should turn their attention to developing similar agendas for the preschool and K-12 levels.* Their objective should be to have major empirically-oriented agendas (and funding to back them) in place across the education system within 5 years.

If a group of leaders of underrepresented minority organizations were to act on these or similar recommendations, one of the most important things their actions might reveal is the extent to which leaders in higher education, foundations, and some other important sectors of society are prepared to undertake the difficult collaborative work required to establish the institutional capacities needed to produce more rapid, sustained progress toward eliminating the overall achievement gap and its high achievement component. We are inclined to be optimistic about the responses that they would receive, as many people these days seem genuinely to want to be part of the “solution,” even when they are uncertain about how to proceed.

We also believe that, if the leaders of underrepresented minority organizations did find considerable receptivity to their overtures, they might leave an invaluable legacy to the next several generations.

Final Thoughts

A major theme of this report is that there are few empirically demonstrated strategies available to increase quickly and substantially the number of African American, Latino, and Native American undergraduates at selective institutions who are high academic achievers—especially by traditional measures, such as GPA and class rank. Another major theme is that to develop a substantial set of proven strategies to address this increasingly pressing issue meaningfully will require an enormous, sustained effort, not simply by selective institutions, but by other sectors, particularly foundations. The latter are important, because they have the financial resources to fund the development, testing, and rigorous evaluation of promising strategies. A closely related theme is that this is truly a long-term agenda, as developing and making widespread use of a set of proven strategies for selective public universities, private universities, and private liberal arts colleges are inherently time-consuming. (Moreover, "solving" this problem undoubtedly requires developing more such strategies for the K-12 level and earlier.) Yet another theme is that it will be a challenge to reap anything close to the full benefits of proven strategies, because implementing them with fidelity at large numbers of institutions will be very difficult. At the same time, another important and more positive theme is that there are promising strategies on which to build; we are not starting from scratch. A final theme is that the extent to which a much larger, much more empirical effort is made in the years and decades ahead to develop more proven strategies and to ensure that they are used widely with fidelity depends on leadership. Moreover, this leadership will have to attend to the systems- and institution-building required to support a much larger, sustained empirical effort. (Many new specialized endowments at colleges and universities may be needed to fund proven programs and strategies, one or more new foundations may need to be created to produce more proven approaches, and so forth.)

At their best, reports describe reality in a manner that can help stimulate high quality action on very difficult problems by key people and institutions—and, in the process, contribute to genuine progress over time. Our hope is that this report goes at least part way toward meeting that high standard.

Endnotes

[1] Bowen, W. G. and D. Bok (1998). *The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions.* Princeton, NJ: Princeton University Press; Cole, S. and E. Barber (2003). *Increasing Faculty Diversity: The Occupational Choices of High-Achieving Minority Students*. Cambridge, MA: Harvard University Press.
[2] National Task Force on Minority High Achievement (1999). *Reaching the Top*. New York: College Board.
[3] See for example, Association of American Medical Colleges (2000). *Minority Students in Medical Education: Facts and Figures XII*. Washington, DC: Association of American Medical Colleges, Division of Community and Minority Programs.
[4] For a new study that provides evidence for the situation in law, see Sander, R. H. (2005). "A Systematic Evaluation of Affirmative Action in American Law Schools," *Stanford Law Review*, 57(3): 376-483.
[5] Horn, L., Peter, K., and Rooney, K. (2002). *Profile of Undergraduates in U.S. Postsecondary Educational Institutions: 1999-2000*. Washington, DC: U.S. Department of Education.
[6] Bowen and Bok. *The Shape of the River*.
[7] Phillips, T.R. (1991). *ABET/Exxon Minority Engineering Student Profile.* New York: Accreditation Board for Engineering and Technology.
[8] Editors of U.S. News & World Report (2005). *America's Best Colleges: 2005 Edition.* Washington, DC: *U.S. News & World Report*.
[9] National Center for Education Statistics (2003). *Digest of Education Statistics 2002*. Washington, DC: U.S. Department of Education.
[10] Association of American Medical Colleges. *Minority Students in Medical Education: Facts and Figures XII*.
[11] Ibid.
[12] Ibid.
[13] Ibid.
[14] Sander, "A Systematic Evaluation of Affirmative Action in American Law Schools."
[15] College Board (2003). *May 2003 Administrative Date for AP, Table for School AP Grade Distribution by National Total for All Students and Ethnic Group*. Retrieved from www.apcentral.collegeboard.com.
[16] Ibid.
[17] Ibid.
[18] Editors of U.S. News & World Report. *America's Best Colleges: 2005 Edition.*
[19] College Board (2000). *1988 College Bound Seniors (Recentered): Ethnic and Gender Profile of SAT and Achievement Test Takers for the Nation.* New York: College Board.
[20] College Board (2004). Table: Verbal and Math Percentile Ranks by Gender and Ethnic Groups. From *2004 College Board Senior Cohort*. Retreived from www.apcentral.collegeboard.com.
[21] College Board. *1988 College Bound Seniors (Recentered): Ethnic and Gender Profile of SAT and Achievement Test Takers for the Nation*.
[22] College Board. Table: Verbal and Math Percentile Ranks by Gender and Ethnic Groups. From *2004 College Board Senior Cohort*.
[23] College Board (2000). *2000 College Bound Seniors: Ethnic and Gender Profile of SAT and Achievement Test Takers for the Nation.* New York: College Board.
[24] Ibid.
[25] Miller, L. S. (2004). *Promoting Sustained Growth in the Representation of African Americans, Latinos and Native Americans Among Top Students in the United States at All Levels of the Education System.* Storrs, Connecticut: The National Research Center on the Gifted and Talented, University of Connecticut.
[26] Ibid.
[27] Ibid.
[28] Klitgaard, R. (1985). *Choosing Elites*. New York: Basic Books.
[29] Ramist, L., C. Lewis, and L. McCamley-Jenkins (1994). *Student Group Differences in Predicting College Grades: Sex, Language, and Ethnic Groups*. College Board Report Number 93-1. Princeton, NJ: College Board.
[30] Ibid.
[31] Bowen and Bok. *The Shape of the River*.
[32] Cole and Barber. *Increasing Faculty Diversity*.
[33] Ibid.
[34] Steele, C. M. (1997). "A Threat in the Air: How Stereotypes Shape Intellectual Identity and Performance." *American Psychologist,* 52: 613-629.
[35] Steele, C. (2003). "Stereotype Threat and African American Student Achievement," in *Young, Gifted, and Black*, by Perry, T., Steele, C., and Hillard, A. G., III. Boston, MA: Beacon Press, pp. 109-130.
[36] Cole and Barber. *Increasing Faculty Diversity*.
[37] Coalition of Evidence-Based Policy (2002). *Bringing Evidence-Driven Progress to Education.* Washington, DC: Author.
[38] Mosteller, F. & Boruch, R. (Eds.) (2002). *Randomized Trials in Education Research.* Washington, DC: Brookings Institution; Gandara, P. & Bial, D. (1999). *Paving the Way to Higher Education: K-12 Intervention Programs for Underrepresented Youth.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.
[39] Shavelson, R.J. & Towne, L. (Eds.) (2002). *Scientific Research in Education.* Washington, DC: National Academy Press.
[40] Maton, K. I., Hrabowski, F. A., III, and Schmitt, C. L. (2000). "African American College Students Excelling in the Sciences: College and Postcollege Outcomes in the Meyerhoff Scholars Program." *Journal of Research in Science Teaching*, 37(7): 629-654; Hrabowski, F. A., III, and Maton, K. I. (1995). "Enhancing the Success of African American Students in the Sciences: Freshman Year Outcomes," *School Science and Mathematics*, 95(1): 19-27.

[41] Hrabowski, F. A. III, Maton, K. I., and Greif, G. L. (1998). *Beating the Odds Raising Academically Successful African American* Males. New York/Oxford: Oxford University Press; National Task Force on Minority High Achievement, *Reaching the Top*; Gandara, P. and Maxwell-Jolly, J. (1999). *Priming the Pump: Strategies for Increasing the Achievement of Underrepresented Minority Students*. New York: College Board, National Task Force on Minority High Achievement.
[42] Building Engineering and Science Talent (2004). *A Bridge for All: Higher Education Design Principles to Broaden Participation in Science, Technology, Engineering and Mathematics*. San Diego, CA. Retreived from www.bestworkforce.org
[43] Hrabowski, F. A., III, and Maton, K. I., "Enhancing the Success of African American Students in the Sciences: Freshman Year Outcomes."
[44] Maton, Hrabowski, and Schmitt, "African American College Students Excelling in the Sciences: College and Postcollege Outcomes in the Meyerhoff Scholars Program;" Gandara, P. and Maxwell-Jolly, J., *Priming the Pump: Strategies for Increasing the Achievement of Underrepresented Minority Students*.
[45] In our recent examination of materials on a great many SEM programs that serve disadvantaged and/or underrepresented minority students, we found that most of the academic performance data presented in them focused on retention and graduation rates. That also is what one of the authors of this report (Miller) found in the 1980s, when he directed a grant program focused on minority engineering and science at foundation of a major corporation.
[46] Miller, L. S. (2004). *Promoting Sustained Growth in the Representation of African Americans, Latinos, and Native Americans Among Top Students in the United States at All Levels of the Education System*; Phillips, *ABET/Exxon Minority Engineering Student Profile.*
[47] Hrabowski, F. A., III (2001). "Meyerhoff Scholars Program: Producing High-Achieving Minority Students in Mathematics and Science," *Notices of the AMS*, 48(1): 26-28; National Academy of Sciences (2004). *The Meyerhoff Scholars Program*
[48] Maton, Hrabowski, and Schmitt, "African American College Students Excelling in the Sciences: College and Postcollege Outcomes in the Meyerhoff Scholars Program."
[49] Ibid., Maton, K. I. (undated). Written responses to questions about the evaluation of the Meyerhoff Scholars Program asked by Mehmet Dali Ozturk.
[50] Building Engineering and Science Talent, *A Bridge for All: Higher Education Design Principles to Broaden Participation in Science, Technology, Engineering and Mathematics*; Maton, Hrabowski, and Schmitt, "African American College Students Excelling in the Sciences: College and Postcollege Outcomes in the Meyerhoff Scholars Program."
[51] Ibid.; Meyerhoff "Succeed" page at http://umbc.edu/Programs/Meyerhoff/Undergrad/succeed.html.
[52] For a very extensive, rich, insightful description and discussion of Meyerhoff, see Gordon, E. W. and Bridglall, B. L. (2004). *Creating Excellence and Increasing Ethnic-Minority Leadership in Science, Engineering, Mathematics, and Technology: A Study of the Meyerhoff Scholars Program at the University of Maryland-Baltimore County*. Naperville, Illinois: Learning Point Associates.
[53] Ibid.; even the president of UMBC is quite well versed in the use of the information system and has discussed its capacities a some length with one of the authors (Miller) of this report.
[54] Maton, Hrabowski, and Schmitt, "African American College Students Excelling in the Sciences: College and Postcollege Outcomes in the Meyerhoff Scholars Program."
[55] Ibid.
[56] Gandara, P. and Maxwell-Jolly, J., *Priming the Pump: Strategies for Increasing the Achievement of Underrepresented Minority Students*.
[57] Layden, S. (undated). *The Opportunity Programs at Skidmore College*. Handout provided by Susan Layden for her presentation on the Opportunity Programs at the November 15, 2004 meeting of the Consortium for High Academic Achievement at UC Berkeley.
[58] Layden, S., Knickerbocker, A., and Minor, M. (June 2004). "Bridging the Gap between Achievement and Excellence: The Skidmore College Summer Academic Institute and Skidmore College Opportunity Programs," draft manuscript for book chapter.
[59] Ibid.
[60] This summary is based on conversations between Susan Layden and L. Scott Miller at Skidmore College in July 2004 and on a written (undated) communication from Ms. Layden to Mehmet Dali Ozturk.
[61] Layden, Knickerbocker, and Minor, "Bridging the Gap between Achievement and Excellence: The Skidmore College Summer Academic Institute and Skidmore College Opportunity Programs."
[62] Observations by L. Scott Miller of Dr. Lewis Rosengarten, Monica Minor, and Susan Layden conducting evening tutoring sessions during the Academic Summer Institute in July 2004. The sample course notes given to Mr. Miller by Ms. Layden are very clear and thorough.
[63] Layden, Knickerbocker, and Minor, "Bridging the Gap between Achievement and Excellence: The Skidmore College Summer Academic Institute and Skidmore College Opportunity Programs."
[64] Ibid.
[65] Ibid.
[66] This approach stands in sharp contrast to ones that rely heavily on upper division students to provide much of the tutoring—a group that turns over year to year and that varies in academic content knowledge and the interpersonal skills needed to work closely with students.
[67] Layden, S. (undated). Written communication from Ms Layden to Mehmet Dali Ozturk.
[68] Webster, L. (2003). "Aimed for Success: The Meyerhoff Scholars Program," *Diversity Digest*, 7(3). Retrieved from http://www.diversityweb.org/digest/vol7no3/webster2.cfm.
[69] Layden, Knickerbocker, and Minor, "Bridging the Gap between Achievement and Excellence: The Skidmore College Summer Academic Institute and Skidmore College Opportunity Programs."
[70] Layden, *The Opportunity Programs at Skidmore College*.

[71] College Board (2004). *Profile of 2004 College-Bound Seniors*. New York: College Board. Retrieved from www.collegeboard.com; Editors of U.S. News & World Report. *America's Best Colleges: 2005 Edition.*
[72] Layden, *The Opportunity Programs at Skidmore College*.
[73] Editors of U.S. News & World Report. *America's Best Colleges: 2005 Edition*.
[74] Unpublished data provided by Susan Layden to Mehmet Dali Ozturk.
[75] Unpublished data provided by Susan Layden to L. Scott Miller.
[76] Layden, S. (2005). Written communication to L. Scott Miller in May.
[77] Solomon, S. (undated). Written communication from Dr. Solomon to Mehmet Dali Ozturk.
[78] Layden, written communication from Ms Layden to Mehmet Dali Ozturk.
[79] Layden, S. (2005). Written communication to L. Scott Miller in February.
[80] Conversation between Susan Layden and L. Scott Miller at Skidmore College in July 2004.
[81] In a conversation between Susan Layden and L. Scott Miller at Skidmore College in July 2004, she reported that each year it is typical that a few of the students to whom they make offers of admission to the Opportunity Programs and Skidmore end up attending private liberal arts colleges or private research universities that rank in the top 10-20 in the nation. (Skidmore was ranked 45th among the nation's liberal arts colleges in *America's Best Colleges: 2005 Edition*.) Specific examples were provided. Those examples were consistent with information that Mr. Miller had received privately from a few top liberal arts colleges, i.e., that they are admitting underrepresented minority students with academic preparation profiles similar to those of the students in the Opportunity Programs. Similar to Skidmore, they also are working hard to ensure that the students graduate and are searching for ways to help more of these students graduate with solid GPAs. This report, of course, is concerned in no small measure with finding ways to address that agenda.
[82] Editors of U.S. News & World Report. *America's Best Colleges: 2005 Edition*; Layden, *The Opportunity Programs at Skidmore College*.
[83] Villarejo, M and Tafoya, S. (1995). *Enhanced Science Achievement by Underrepresented Minority Undergraduates: An Evaluation of the Biology Undergraduate Scholars Program*. Unpublished paper, University of California, Davis.
[84] Barlow, A. E. L. and Villarejo, M. (2004). "Making a Difference for Minorities: Evaluation of an Educational Enrichment Program," *Journal of Research in Science Teaching,* 41(9): 861-881.
[85] Ibid.
[86] Fullilove, R. E. and Treisman, P. U. (1990). Mathematics Achievement Among African American Undergraduats at the University of California, Berkeley." *Journal of Negro Education*, 5(1): 463-78; Treisman, U. (1992). "Studying Students Studying Calculus: A Look at the Lives of Minority Mathematics Students in College," *The College Mathematics Journal*, 23(5): 362-72.
[87] Asera, R. (2001). *Calculus and Community: A History of the Emerging Scholars Program*. New York: College Board.
[88] On several occasions over the years (at meetings and in private conversations), one of the authors (Miller) has heard Treisman refer to the workshops as providing opportunities for "stereotype busting."
[89] Light, R. J. (2001). *Making the Most of College: Students Speak Their Minds.* Cambridge, MA: Harvard University Press.
[90] Conversation between Merna Villarejo and L. Scott Miller and Mehmet Dali Ozturk at UC Davis, December 2002.
[91] Villarejo, M. and Holland, G. (undated). *Biology Undergraduate Scholars Program at UC Davis*.
[92] Barlow and Villarejo, "Making a Difference for Minorities: Evaluation of an Educational Enrichment Program;" Villarejo and Holland, *Biology Undergraduate Scholars Program at UC Davis*.
[93] Ibid.
[94] Ibid.
[95] Villarejo, M. and Holland, G., *Biology Undergraduate Scholars Program at UC Davis*.
[96] Barlow and Villarejo, "Making a Difference for Minorities: Evaluation of an Educational Enrichment Program."
[97] Conversation between Merna Villarejo and L. Scott Miller and Mehmet Dali Ozturk at UC Davis, December 2002.
[98] Villarejo, M. and Holland, G., *Biology Undergraduate Scholars Program at UC Davis*.
[99] Barlow and Villarejo, "Making a Difference for Minorities: Evaluation of an Educational Enrichment Program.
[100] Ibid.
[101] Ibid.
[102] Ibid.
[103] Ibid.
[104] Ibid.
[105] Maton, Hrabowski, and Schmitt, "African American College Students Excelling in the Sciences: College and Postcollege Outcomes in the Meyerhoff Scholars Program."
[106] Villarejo, M. and Holland, G., *Biology Undergraduate Scholars Program at UC Davis*.
[107] Unpublished data provided to L. Scott Miller by Merna Villarejo.
[108] Unterleitner, R. (undated). Written communication to Mehmet Dali Ozturk.
[109] Barlow and Villarejo, "Making a Difference for Minorities: Evaluation of an Educational Enrichment Program."
[110] Ibid.
[111] Pavelchak, M. (2004). *Finding what Works: An Examination of Program Participation and Personal Habits Associated with the Academic Success of Minority Students*. Subcontract for the "Establishing a Consortium of Selective California Colleges and Universities to Increase the Number of Academically Very Successful Underrepresented Minority Undergraduates Grant," July 1, 2003-November 30, 2004. Unpublished report.
[112] Information on McNair was downloaded from http://www.ed.gov/programs/triomcnair/awards.html.
[113] U.S. Department of Education, Office of Postsecondary Education (2002). *A Profile of the Ronald E. McNair Postbaccalaureate Achievement Program: 1999-2000.* Washington, D.C.
[114] A report describing SHAPER and its initial findings is currently being prepared by the principal author of this report (L. S. Miller).

[115] Miller, L. S. (1995). *An American Imperative: Accelerating Minority Educational Advancement*. New Haven, CT: Yale University Press.
[116] Ibid.
[117] Steele, "Stereotype Threat and African American Student Achievement."
[118] Heller, D. E. (2001). "Uncertain Times: State Funding for Higher Education Shrinks and Tuitions Rise," *National Crosstalk,* 9(4). Retrieved from www.highereducation.org/crosstalk. The downward trend in state funding is leading some public college and university presidents to consider whether the relationships between public higher education institutions and the states need to be reconceptualized. See, for example, American Council on Education/The Futures Project (2004). *Rewriting the Rules of the Game: State Funding, Accountability, and Autonomy in Public Higher Education*. Washington, DC: American Council on Education. Retrieved from www.acenet.edu.
[119] George, M. (2003). "Universities Face Funding Bind," *Detroit Free Press*, 13 November. Retrieved from www.freep.com.
[120] Scheivitz, T. (2004). "College Outreach Imperiled: Budget Ax May Hit Programs Helping Disadvantaged Students," *San Francisco Chronicle*, 27 January. Retrieved from www.sfgate.com.
[121] The Sutton Trust (2003). *University Endowments—A UK/US Comparison*, Discussion Paper, May. Retrieved from www.suttontrust.com.
[122] National Association of College and University Business Officers (2003). "College Endowment Earnings Decline Due to Volatile Stock Market and Weak Economy," Press Release, 21 January. Retrieved from www.nacubo.org.
[123] Bowen and Bok, *The Shape of the River*.
[124] National Task Force on Minority High Achievement, *Reaching the Top*; Miller, *Promoting Sustained Growth in the Representation of African Americans, Latinos, and Native Americans Among Top Students in the United States at All Levels of the Education System*.

Institute for the Study of Social Change
2420 Bowditch Street #5670
University of California, Berkeley
Berkeley, CA 94720-5670
Telephone: 510-642-0813
Fax: 510-642-8674
Email: ISSC@berkeley.edu.