



Middle States Commission on Higher Education

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University of Pennsylvania

(Name of Institution)

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- ☐ Initial Accreditation
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This signed certification statement must be attached to the executive summary of the institution's self-study or periodic review report.

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1/30/14
(Date)

2/3/14
(Date)

Assessing Undergraduate Education at Penn: A Selected Topics Self-Study Report

Prepared for the Middle States Commission on Higher Education

February 7, 2014

Table of Contents

Table of Figures	iii
Executive Summary	vi
Chapter 1: Introduction	1
Chapter 2: Access and Equity	7
Chapter 3: Local Engagement	28
Chapter 4: Global Engagement	42
Chapter 5: Integrating Knowledge	58
Chapter 6: Undergraduate Research	70
Chapter 7: Assessment of Student Learning	85
Chapter 8: Finance and Administration	106
Chapter 9: Conclusion	121

Table of Figures

Figure 1.1 Traditional Undergraduate Enrollment by School.....	2
Figure 2.1 Traditional Undergraduate Enrollment by Race/Ethnicity Group.....	8
Figure 2.3 Number of Applications by Race/Ethnicity Group.....	10
Figure 2.4 Number of Applicants Identifying with Underrepresented Groups.....	11
Figure 2.5 Yield Rate by Race/Ethnicity Group.....	12
Figure 2.6 Overall Yield Rate vs. Regular Decision Yield Rate for Students Identifying with Underrepresented Groups.....	13
Figure 2.7 Yield by Financial Aid Need Level and Race/Ethnicity Group.....	14
Figure 2.8 Percentage of Matriculants by Self-Identified Race/Ethnicity Group.....	15
Figure 2.9 Trend in Undergraduate Cost of Attendance.....	17
Figure 2.10 6-Year and 4-Year Graduation Rates - Penn and National Average.....	19
Figure 2.11 Retention Rates - Penn and National Average.....	19
Figure 2.12 First Year Retention by Race/Ethnicity Group.....	20
Figure 2.13 First Year Retention by Need Level.....	20
Figure 2.15 Four Year Graduation Rate by Race/Ethnicity Group.....	21
Figure 2.16 Six Year Graduation Rate by Need Level.....	23
Figure 2.17 Four Year Graduation Rate by Need Level.....	23
Figure 2.18 Overall Satisfaction with Undergraduate Education.....	25
Figure 2.19 Satisfaction with Quality of Advising.....	26
Figure 2.20 Satisfaction with Availability of Tutoring and Other Help.....	26
Figure 3.1 Percent and Number of Traditional Undergraduate Entering Cohort Taking ABCS Courses..	31
Figure 3.2 Engagement During Time At Penn.....	38
Figure 3.3 Percentage Distribution of Total Extra- & Co-Curricular Activities.....	39
Figure 4.1 Percent of Traditional Undergraduate Entering Cohort Studying Abroad by Graduation Discipline.....	44

Table of Figures, cont.

Figure 4.2 Percentages of Traditional Undergraduate Entering Cohort Studying Abroad – by Race/Ethnicity.....	45
Figure 4.3 Percent of Traditional Undergraduate Entering Cohort Studying Abroad by Graduation Discipline, WITHOUT Financial Need.....	46
Figure 4.4 Percent of Traditional Undergraduate Entering Cohort Studying Abroad by Graduation Discipline, WITH Financial Need.....	46
Figure 4.5 Percentage of Undergraduate Students on Need-Based Financial Aid.....	47
Figure 4.6 International Internship Program (IIP) Participation at Penn, by Country.....	48
Figure 4.7 LPS Summer Abroad Participation Headcount by School/Discipline.....	49
Figure 4.8 Undergraduate Participation in Open Doors, by Academic Year.....	50
Figure 4.9 International Enrollment by Country of Origin.....	54
Figure 5.1 Penn Undergraduate and Graduate Schools.....	59
Figure 5.2 Interdisciplinary Vs. Integrative.....	60
Figure 5.3 Timeline: Integrating Knowledge at Penn.....	61
Figure 5.4 Distribution of Cross-School Dual Degrees by Primary Degree School.....	64
Figure 5.5 Traditional First-Time, Full-Time Undergraduates.....	65
Figure 5.6 2013 Penn PIK Professors Distribution of Appointments.....	67
Figure 6.1 Selected 2012 Senior Survey Responses by Undergraduate School/Discipline.....	73
Figure 6.2 Research Expenditures and Students Supported by Penn Principal Investigators and CURF.....	75
Figure 6.3 Research Applications Coordinated by CURF.....	75
Figure 6.4 Research Expenditures and Students Supported by Penn Principal Investigators.....	77
Figure 6.5 Percentage of Traditional Undergraduate Cohorts Paid by Research Funding and/or Completing a Research Course.....	79
Figure 6.6 Percentage of Traditional Undergraduate Cohorts Paid by Research Funding and/or Completing a Research Course.....	80
Figure 6.7 Responses by School to the Fall 2011 Faculty Survey Question.....	83

Table of Figures, cont.

Figure 7.1 Relationship between Penn Alumni's Undergraduate Disciplines and 10-12 years after graduation.....	87
Figure 7.2 Mean Perceived Gains in Knowledge, Skills, and Personal Development due to the Penn Experience.....	88
Figure 8.1 Satisfaction with Advising: Percentage of Students Responding Generally or Greatly Satisfied.....	112
Figure 8.2 Trend in Tuition Increase - Penn Vs. Other Private Institutions Vs. Public Institutions.....	116
Figure 8.3 Undergraduate School Tuition Distribution.....	117

Executive Summary

This Self-Study Report describes how the mission and goals articulated in the *Penn Compact: From Excellence to Eminence* guide undergraduate education at the University of Pennsylvania. It also describes the processes by which Penn assesses undergraduate education, especially student learning, in its four undergraduate schools and in the other educational programs offered to undergraduates. Taken as a whole, the Self-Study Report demonstrates that Penn meets the Middle States Commission on Higher Education's *Standards of Excellence* as they pertain to undergraduate education.

The Self-Study found that Penn's structure of four undergraduate schools, each with its own curriculum and faculty, provides a rich environment for the undergraduate study of the arts and sciences and professional fields. A combination of school-based advising programs and centrally run support programs enables the creation of both small, targeted programs and larger systems for supporting Penn's undergraduate students. This structure is an effective means of delivering educational experiences to undergraduates. The coordination, planning, and assessment of undergraduate education ensure excellence in programs while encouraging innovation within and across schools and programs. The findings and recommendations of the Self-Study both recognize the strengths of Penn's structure and address the challenges that this decentralized structure may sometimes create.

Because the Self-Study focused on assessing undergraduate education, all of its chapters cover *Standard 7: Institutional Assessment* and *Standard 14: Assessment of Student Learning* as they pertain to undergraduate education. In particular, *Chapter 7: Assessment of Student Learning* focuses on *Standard 14*. Other chapters address standards as they relate to undergraduate education as follows:

- *Chapter 2: Access and Equity* covers *Standard 8: Student Admissions and Retention* and *Standard 9: Student Support Services*;
- Chapters 3, 4, 5, and 6 cover *Standard 11: Educational Offerings*;
- *Chapter 8: Finance and Administration* covers *Standard 2: Planning, Resource Allocation, and Institutional Renewal*.

MSCHE standards that are not addressed in the Self-Study or that pertain to graduate and professional study were covered by a separate document review.

Key Findings

- The structures and programs for undergraduate education at Penn provide students a rich environment for the study of the arts and sciences and professional fields.
 - The planning and assessment of undergraduate education, both at the level of institutional leadership and among the schools and offices that deliver instruction and programs, encourage excellence and innovation.

- In 2008, Penn became the largest university in the United States to institute an all-grant, no-loan financial aid policy. This policy—combined with Penn’s need-blind admissions and need-based financial aid—has had a major impact on the ability of students and families with financial need to benefit from a Penn education without incurring substantial debt.
 - Since 2004, Penn’s financial aid budget has grown by 141 percent, an average of 9.2 percent per year, more than twice the average annual growth in total student charges (Page 16).
 - Tuition increases since 2003 have been lower, on average, than those at other private and public institutions (Figure 8.2).
 - The average net charge for aided first-year undergraduate students in constant (2005) dollars has declined \$1,900, to \$17,539 in FY2014 from \$19,439 in FY2005 (Figure 2.9).
- Supported by its strong financial aid policy and extensive new outreach efforts, Penn has increased the diversity and excellence of its undergraduate student body, while making educational opportunities more accessible to all students regardless of financial need.
 - Penn has made it clear that it holds affordability as an unshakable commitment to support both the excellence and the diversity of its student body (Chapter 2).
 - From 2003 to 2012, enrollment of underrepresented minority students increased to 18 percent from 12 percent, and enrollment of international students increased to 11 percent from 8 percent (Figure 2.1).
 - From 2004 to 2012, the number of Pell Grant recipients increased to 15 percent from 8.7 percent, and the pool of admitted students with high financial need increased significantly (Figure 2.2).
 - Applications from URM students have risen significantly over the past decade, increasing 64.3 percent from 2008 to 2012 (Figure 2.3).
 - Four- and six- year graduation rates and the first-year retention rate are very high for all students, including underrepresented minority students and students with high financial need (Figures 2.12 to 2.17).
- Penn undergraduates are deeply engaged both locally and globally, pursuing opportunities to connect with communities in Philadelphia and around the world.
 - The number of Academically Based Community Service courses has grown dramatically over the past decade, and nearly 18 percent of undergraduates now take at least one ABCS course (Figure 3.1).
 - Almost 95 percent of seniors report participating in at least one organized co-curricular activity, and 43 percent report being engaged in community volunteer activities (Chapter 3).
 - Nearly 25 percent of undergraduates study abroad for a semester or a full year (Figure 4.1).

- Penn's International Internship Program has been very effective at providing students who have need-based financial aid with opportunities to work abroad in the summer, mostly in the developing world (Figures 4.5 and 4.6).
 - Penn's founding partnership with the Coursera online learning platform has provided more than 1.5 million people around the world with the opportunity to access Penn's educational resources (Page 56).
- Integrating knowledge and undergraduate research are hallmarks of the undergraduate experience at Penn.
 - Nearly 63 percent of undergraduates complete a minor, dual major, or multiple majors that involve integrating knowledge across schools and disciplines (Figure 5.5).
 - Approximately 70 percent of seniors report engaging in one or more research activities during their undergraduate experience (Figure 6.1).
 - Penn's faculty, including those in the graduate and professional schools, report significant involvement in undergraduate research (Figure 6.7).
- Penn's ongoing institutional assessment and school-based assessments of student learning demonstrate that the University provides exemplary learning experiences for undergraduates.
 - The School of Arts and Sciences has implemented assessments of student learning that conform to the expectations articulated in MSCHE's Standard 14 and offer a model for comparable schools and colleges (Appendix 7.1).
 - The School of Engineering and Applied Science, the School of Nursing, and the Wharton School have implemented assessments of student learning that conform to the expectations articulated in MSCHE's Standard 14 and are reviewed by each school's external accrediting body (Appendices 7.2, 7.3, and 7.4).
- Penn has become a leader in such areas as increasing access to higher education, developing programs that integrate knowledge across disciplines, and advancing new uses of technology to teach and support students.
 - The Penn Integrates Knowledge Professorship Program, launched in 2005 to recruit exceptional faculty members whose research and teaching exemplify the integration of knowledge across disciplines, has added 15 renowned faculty members who hold endowed chairs and are jointly appointed between two schools (Figure 5.6).
 - Penn's leadership in open learning and its commitment to active learning methods have invigorated efforts to enhance teaching and learning across campus, as indicated by the recent award from the Association of American Universities to develop new methods of teaching introductory science and math courses (Chapter 8).
 - Student satisfaction with advising and other services has increased dramatically in the past ten years (Figure 8.1).

Major Recommendations

The Self-Study, which draws on the excellent contributions of the seven working groups, supports a set of strategic considerations and six major recommendations, which are elaborated in each chapter and summarized here.

- 1) Penn's successful outreach in admissions should continue in ways that further increase the diversity and excellence of its applicants, with a particular focus on applications from underrepresented minority students, including LGBT students, and students eligible for Pell grants. In light of Penn's all-grant, no-loan policy, all students who know early in their senior year that they want to enroll at Penn can and should be encouraged to apply for early decision.
- 2) In light of the fact that Penn's endowment can pay for only about 20 percent of its undergraduate financial aid expenses (the rest of which must be paid from Penn's operating budget) and given Penn's on-going commitment to funding the full financial need of all its undergraduates, development initiatives ought to continue to increase the endowment income available to fund financial aid. In addition, efforts should continue to raise endowment targeted to international applicants from low- and middle-income families.
- 3) Penn should strengthen the coordination of its local and national engagement initiatives for undergraduates.
- 4) Penn should continue its emphasis on integrating knowledge and encouraging cross-school study for undergraduates.
- 5) Penn should strengthen the coordination of research opportunities for undergraduates.
- 6) Penn should continue to lead instructional innovation, including developing new methods of active classroom learning and using open learning initiatives to stimulate new forms of teaching and learning on campus.

Chapter 1: Introduction

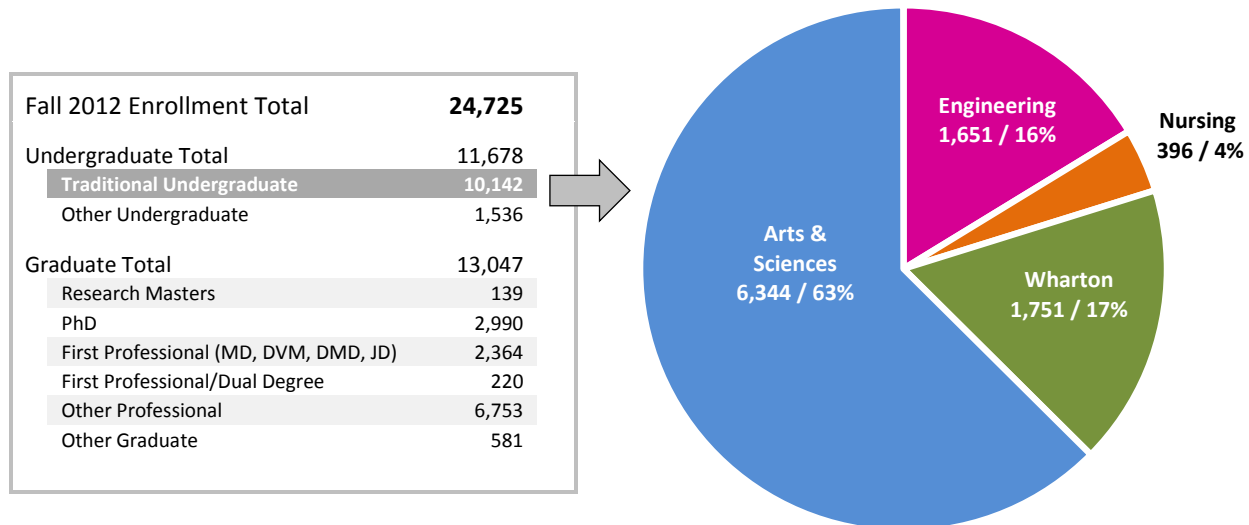
Undergraduate Education at Penn

The University of Pennsylvania is a private, research-intensive university located in West Philadelphia. Penn traces its origin to 1740 and continues to pursue the principles of its founder, Benjamin Franklin: invention, outreach, entrepreneurship, innovation, and the pragmatic unity of theory and practice. Penn's educational offerings balance the arts and sciences with the professions. Undergraduate degree programs for traditional students are offered through four schools: the [School of Arts and Sciences](#), the [School of Engineering and Applied Science](#), the [School of Nursing](#), and the [Wharton School](#). Graduate and professional programs are offered in these four schools, as well as in the Annenberg School for Communication, the School of Dental Medicine, the School of Design, the Graduate School of Education, the Law School, the Perelman School of Medicine, the School of Social Policy & Practice, and the School of Veterinary Medicine. Undergraduate programs for non-traditional students are offered through the School of Nursing and through the College of Liberal and Professional Studies, a division of the School of Arts and Sciences. All of Penn's undergraduate programs and most of its graduate and professional programs use course units (CUs), not semester hours, as a general measure of academic work and progress toward a degree.

There are several [coordinated dual-degree programs](#) that give students opportunities to pursue curricula offered jointly by two Penn schools and receive degrees from both schools. The undergraduate offerings include a number of health-related programs that benefit from close ties to the University of Pennsylvania Health System, which includes the Hospital of the University of Pennsylvania, Pennsylvania Hospital, the Penn Presbyterian Medical Center, Penn Medicine Rittenhouse, the Perelman Center for Advanced Medicine, and a network of hospitals and outpatient centers throughout the region. The School of Veterinary Medicine has two hospitals—the Ryan Veterinary Hospital in Philadelphia and the New Bolton Center in Chester County—and the Schools of Dental and Veterinary Medicine have clinical practices in Philadelphia and in the surrounding region.

In fall 2012, 24,725 students attended Penn, including 10,142 traditional undergraduates and 1,535 other undergraduates (Figure 1.1). There were 11,092 full-time graduate/professional students. In Academic Year 2011-2012, 7,847 degrees were conferred, with 2,987 going to traditional undergraduates. The Self-Study focused on the experience and education of traditional undergraduates.

Figure 1.1
Traditional Undergraduate Enrollment by School



Undergraduate applicants identify on their applications which school or coordinated dual-degree program they wish to attend. Students may apply to only one school or dual-degree program, although students applying to one of Penn's highly competitive dual-degree programs may elect to indicate a single-degree program for which they would like to be considered if they are not selected for the dual-degree program. Penn received 31,218 applications for admission to its traditional undergraduate programs for the Class of 2016. Of those applicants, 3,935 (12.43 percent) were offered admission. Approximately 12 percent of the first-year undergraduate class are international students, and approximately 40 percent are domestic students who are African American/Black, Hispanic/Latino/a, Asian/Pacific Islander, or Native American/Alaska Native.

Each of the four undergraduate schools has a specific mission, offers its own curriculum, and has a distinctive structure of administration and oversight of undergraduate education.

The [College of Arts and Sciences](#) is the division of the School of Arts and Sciences that serves traditional undergraduate students. The College is committed to providing a broad education that lays a durable foundation for critical and creative thinking. Its curriculum emphasizes the liberal arts through general education requirements: seven sectors designed to provide breadth and foundational approaches (writing, language, analysis, and culture). Each sector and foundational approach offers specifically designated courses from which students can fulfill their requirements. Each sector and approach is overseen by a faculty committee; general oversight of the curriculum and relevant policies is the purview of the Committee

on Undergraduate Education and the Curriculum Committee. Each College student is also required to complete a major (ranging from 12-19 CUs), overseen by individual departments and programs.

The mission of the School of Engineering and Applied Science is to prepare its graduates for technological leadership in engineering and applied science, as well as in such other fields as medicine, business, and law in which creativity, critical quantitative thinking, effective communication skills, and a strong commitment to humane values are essential. Its undergraduate curriculum has distribution-style liberal arts requirements, engineering core math and science requirements (which vary somewhat according to the student's major), and majors overseen by departments. Course Planning Guides exist for each program to guide faculty and students through the curricula.

The School of Nursing is committed to teaching the art and science of nursing, as well as creating opportunities for service, practice, leadership, and research. Its undergraduate curriculum has a liberal arts distribution-type requirement comprising five sectors, writing, and foreign language. In keeping with current and anticipated changes in health care delivery, the undergraduate program emphasizes preparation for nursing practice across health care settings—ranging from acute care, ambulatory, and long-term care—and across population groups. Clinical sites enable students to practice health promotion and disease prevention strategies in community settings with diverse populations. A formal Plan of Study guides students' timing of courses and clinical experiences.

The Wharton School seeks to cultivate a community of scholars who will transform the world as citizens and leaders of the global marketplace. Wharton offers a broad set of academic options that allow students to combine studies in business with a minor or dual degree in subject areas offered by the other undergraduate schools. Its undergraduate curriculum has distribution-style liberal arts requirements, common business fundamentals and breadth requirements overseen by the Wharton Undergraduate Division, and a set of concentrations (typically 4 CUs) overseen by individual departments. Wharton's integrated business and liberal arts curriculum, beginning in the freshman year, provides a solid foundation in business fundamentals. The program also gives students a strong global perspective and insights into other forces that shape the context of business. Finally, the program develops the teamwork and communication skills necessary for effective leadership. After completing the core, students select a concentration: a cluster of four courses in a particular discipline.

While the four undergraduate schools provide the basic structure for the undergraduate experience at Penn, there are a number of central units and programs that organize academic and student services. The [Division of the Vice Provost for University Life](#) oversees student affairs, including [Career Services](#), [Counseling and Psychological Services](#), the [Greenfield Intercultural Center](#), [Student Health Service](#), the [Weingarten Learning Resources Center](#), and a number of other activities and community programs. The Division includes [Student Intervention Services](#), which handles student emergencies and critical incidents and works closely with other student service offices, school administrators, instructors, and the Division of Public Safety. The [Vice Provost for Education](#) oversees academic programs that serve undergraduates, including [College Houses and Academic Services](#), the [Center for Undergraduate Research and Fellowships](#), and the [Weiss Tech House](#). The [Office of Student Conduct](#), which responds

to reports of academic dishonesty and other student misconduct on behalf of the University, reports to the Vice Provost for Education.

The responsibility for the coordination, planning, and institutional assessment of undergraduate education resides with the Council of Undergraduate Deans. The Council is chaired by the Vice Provost for Education and consists of the four undergraduate deans (the Dean of the College of Arts and Sciences, the Associate Dean for Undergraduate Education of the School of Engineering and Applied Science, the Associate Dean for Academic Programs of the School of Nursing, and the Vice Dean of the Wharton School for the Undergraduate Division), the Vice Provost for University Life, the Dean of Admissions, the Faculty Director of College Houses and Academic Services, the Assistant Vice President for Institutional Research and Analysis, and the Chair of the Student Committee on Undergraduate Education (SCUE).

The Council coordinates the activities of the undergraduate schools and other units responsible for undergraduate education at Penn and advises the Provost on critical and emerging issues related to undergraduates. It is supported by the Undergraduate Working Group, consisting of representatives of the offices on the Council of Undergraduate Deans, which investigates issues or concerns at the direction of the Council and facilitates communication and coordination among the undergraduate schools and other units responsible for undergraduate education at Penn.

Self-Study Process and Report

In presenting this Self-Study Report, Penn followed the direction of the Middle States Commission on Higher Education to rely on existing resources and identify the topics most useful to the institution. Penn followed the selected topics model, choosing undergraduate education as its focus; this selection complements the focus on graduate education in Penn's most recent Self-Study in 2004. The topic of undergraduate education also addresses MSCHE's request, in accepting our Periodic Review Report in 2009, that Penn document in its next decennial self-study "that in the School of Arts and Sciences 1) assessment of student learning has been implemented in all departments and programs and 2) assessment results are used to improve teaching and learning." The University's administration, both centrally and in each school, engages continuously in strategic planning, institutional research, and assessment activities regarding the educational experiences of Penn's undergraduates. The Self-Study extends and intensifies these ongoing assessment and planning efforts.

This Self-Study Report is the outcome of a process that began in 2009 with the Periodic Review Report and continued through fall 2013, when a draft of the Self-Study Report was widely disseminated across the Penn community. Two decisions made early in the planning process gave focus and structure to the Self-Study: first, to follow the selected topics model with undergraduate education as the topic; second, to have an early document review that allowed the Self-Study to focus entirely on undergraduate education as it relates to MSCHE's *Characteristics of Excellence in Higher Education*.

Because the Self-Study focused on assessing undergraduate education, all of its chapters cover *Standard 7: Institutional Assessment* and *Standard 14: Assessment of Student Learning* as they pertain to undergraduate

education. In particular, *Chapter 7: Assessment of Student Learning* focuses on *Standard 14*. Other chapters address standards as they relate to undergraduate education as follows:

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MSCHE standards that are not addressed in the Self-Study or that pertain to graduate and professional study will be covered by a separate document review.

Penn has taken the Self-Study as an opportunity to articulate key priorities related to undergraduate education, examine complex questions about how those priorities are understood and evaluated, and offer future plans and aspirations related to those priorities. The key questions articulated at the beginning of the Study were:

- What are the goals of a Penn undergraduate education?
- How do the programmatic activities central to Penn's mission impact student learning?
- How should the assessment of undergraduate education at the school and program levels, especially the assessment of student learning, inform a larger vision for assessment of undergraduate education at Penn?
- What data and information are important in assessing Penn's undergraduate education?
- What analyses of data and information about Penn's undergraduate education should be performed on an ongoing basis and how should such analyses be shared with the University community?

Given that MSCHE expects broad engagement with the campus community, it was critical to engage faculty and students in the Self-Study. Penn therefore structured the Self-Study process to maximize the involvement of faculty and students, while defining a clear role for administrators who are central to each area of study. In this endeavor, Penn met with great success. Over eighty-five faculty members participated in working groups, sixteen students served on a Student Steering Committee, and more than fifty administrators provided information, supplied reports, or held discussions with one or more working group.

Seven working groups organized the involvement of faculty and students: Access and Equity, Assessment of Student Learning, Finance and Administration, Local Engagement, Global Engagement, Integrating Knowledge, and Undergraduate Research. The typical working group included eight to twelve faculty members, one student from the Student Steering Committee, one or two administrators, a staff director, and a staff assistant. Each working group was asked to assess a key priority or area of undergraduate education in relation to MSCHE standards and a preliminary set of research questions. Each group drafted a report, which formed the basis of the corresponding chapter of the final Self-Study Report.

The Steering Committee for the Self-Study was composed of the Chair of the Self-Study, the chairs of each of the working groups, the Vice President for Budget and Management Analysis, the Vice President for Institutional Affairs, and the Assistant Vice President for Institutional Research and Analysis. The committee was staffed by the Executive Director for Education and Academic Planning in the Office of the Provost, who also served as the Staff Director for the Self-Study. The Student Steering Committee consisted of representatives appointed by two branches of undergraduate student government, the Undergraduate Assembly and the Student Committee on Undergraduate Education. The Student Steering Committee organized and coordinated the work of the student representatives to the working groups. The Committee organized a series of events during the Self-Study process that provided an opportunity for undergraduates from around campus to participate in discussions with each working group.

In answering the key questions of the Self-Study, we began with a consideration of what is important to Penn. All research universities assess their programs with the purpose of excelling in their core work of teaching, research, and service. Penn's priorities are guided by a clearly articulated vision, expressed in the *Penn Compact: From Excellence to Eminence*. First presented by President Amy Gutmann in her 2004 inaugural address, the Penn Compact has three principles: increasing access, integrating knowledge, and engaging locally (nationally) and globally. Immediately following her election as Penn's eighth president in February 2004, Dr. Gutmann devoted four months to consultations with trustees, faculty, students and staff about Penn's great past and bright future. During the course of those conversations and briefings, she conceptualized the Penn Compact to reflect the University's historic strengths, build on the aims of Penn's strategic plan from 2002, the Agenda for Excellence, and express her aspirations for propelling Penn forward. The Compact was deeply resonant within the Penn community and was quickly and widely embraced as the strategic vision for setting departmental and institutional priorities. As the Compact approaches its tenth anniversary, again following conversations and consultation with faculty and staff, President Gutmann has announced the [Penn Compact 2020](#), which outlines evergreen and new priorities to advance its three core principles.

These principles of the Penn Compact, along with the MSCHE Standards of Excellence, informed the structure of this Self-Study Report. The first section assesses undergraduate education in relation to each of the Compact's three principles. The second section assesses three key areas of undergraduate education: undergraduate research, student learning, and finance and administration. The conclusion summarizes the report's key recommendations and suggests a path forward for assessing undergraduate education at Penn over the next decade.

The excellent education we offer must be more accessible. We must make a Penn education available to all outstanding students of talent and high potential. In a democracy and at great universities, diversity and excellence go together. Keeping them together requires access based on talent, not income or race.

—President Amy Gutmann, inaugural address, 2004

Chapter 2: Access and Equity

Introduction

Increasing access to a Penn education for all students around the world, regardless of financial need, has been one of the core priorities of the Penn Compact since the 2004 inauguration of President Gutmann. To implement this goal at the undergraduate level, the University introduced an “all-grant, no-loan” aid package in 2007 for financially eligible students. As a result, Penn’s traditional undergraduate student body has become increasingly diverse across all measures, including students from all 50 US states and more than 100 countries around the world. We believe that an ethnically, racially, and socioeconomically diverse community enriches the educational experience for all. This commitment to inclusion is a defining element of the Penn community that we will continue to strengthen in the years ahead.

Since 2004, Penn has increased its undergraduate financial aid budget from \$84.5 million to \$181 million in FY2013. Among traditional undergraduate students entering Penn in the fall of 2012, 50 percent received need-based institutional financial aid. Over the years spanning 2004 to 2012, the percentage of Pell Grant recipients in the first-year class increased from 8.7 percent to 15 percent (Figure 2.2). In 2008, Penn shifted to an all-grant, no-loan policy for all aided students with the goal of drastically reducing the debt burden for such students and their families.

The diversity of Penn’s traditional undergraduate student body has increased dramatically over the past decade (Figure 2.1). Approximately 11 percent of undergraduate students are international. Among domestic students, just over 9 percent identify as Hispanic/Latino/a. Nearly 19 percent of Penn undergraduates identify as Asian American or Pacific Islander, 7.1 percent as African American or Black, and 3 percent as being of two or more races. Recent survey data reveal that approximately 6 percent of Penn’s undergraduates identify as gay, lesbian, bisexual, or queer. Penn students identify with a wide variety of religious and spiritual traditions, and students arrive at Penn with a wide range of academic interests and talents.

In developing its Action Plan for Faculty Diversity and Excellence in 2011, the University noted that “A great university – true to its name – must encompass a universe of backgrounds and experiences, ideas and ideologies, theories and perspectives.” The Penn community “draws its strength from a multitude of races, ethnicities, genders, sexual orientations, historical traditions, ages, religions, disabilities, veteran status, interests, perspectives, and socioeconomic backgrounds.” Recognizing this foundational strength, the University works to ensure that its student body, as well as its faculty and staff, reflect “the diversity of the world around it—and the diversity of the world we want our students to lead.” Penn’s

need-blind admissions and need-based financial aid policies have enabled talented students who are admitted to attend Penn regardless of their families' financial circumstances. We are therefore committed to increasing the awareness among prospective applicants and their families of Penn's financial aid policies. The Offices of Admissions and Student Financial Services work assiduously to develop methods of outreach that increase awareness of Penn's affordability.

Figure 2.1
Traditional Undergraduate Enrollment by Race/Ethnicity Group
Fall Semesters 2003 to 2012

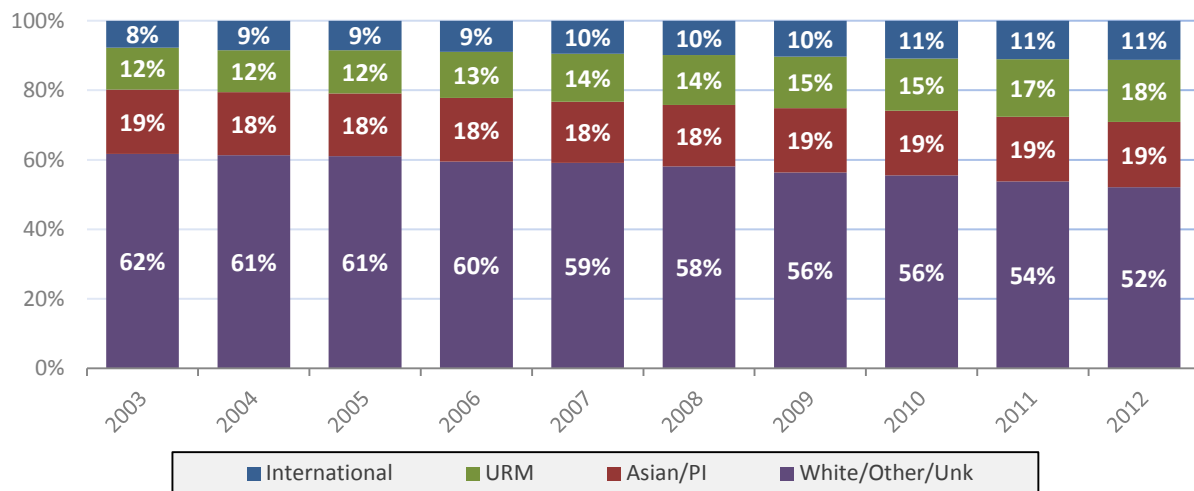
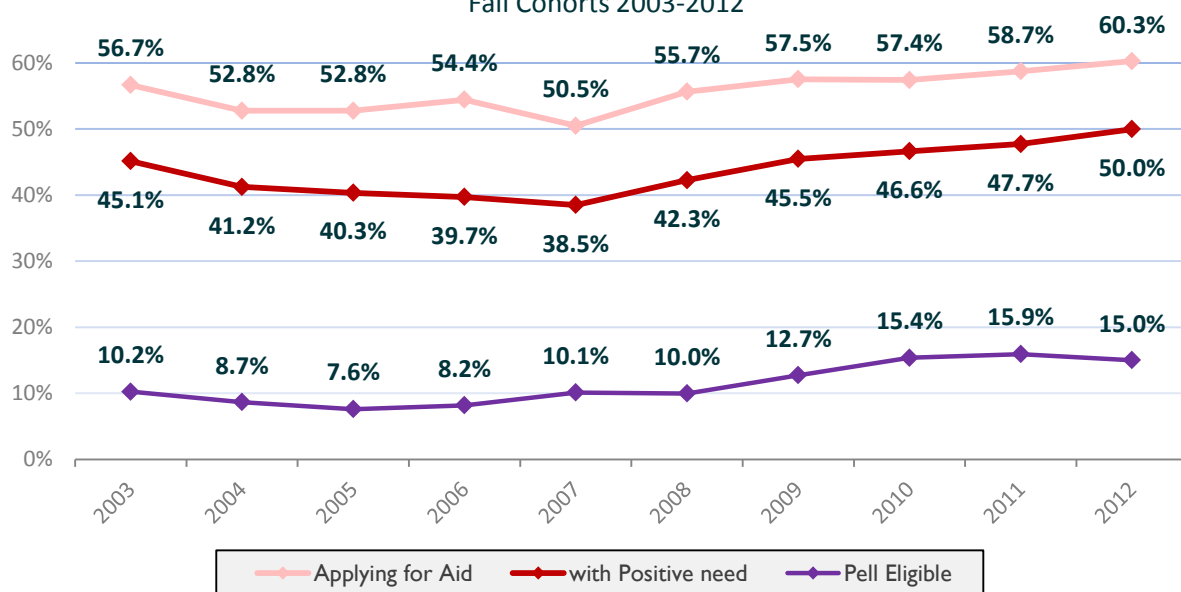


Figure 2.2
Financial Aid - Applications and Need Trends
Fall Cohorts 2003-2012



The University works to ensure that all enrolled students gain equitable access to the full range of opportunities that are available to help ensure their success at Penn and beyond. While we are deeply committed to and concerned about all Penn students, the working group paid particular attention to students who have been historically underrepresented within the Ivy League. Not unexpectedly, these students—including first generation and low income students, as well as underrepresented minority (URM) students identifying as Hispanic/Latino/a, African American/Black and/or Native American/Alaska Native—report some life experiences that are different from those of their peers. To understand this broad range of issues related to access and equity, the working group divided Penn’s work in this area into three interrelated yet distinct categories: admissions, financial aid, and efforts to support and retain students.

Working Group Charge and Process

The charge to the Access and Equity Working Group was to evaluate Penn’s efforts to improve access to and ensure equity in our undergraduate educational programs. The group was asked to articulate what is important about Penn’s current efforts at increasing access and how those efforts could be improved in the future. In addition, they were asked to consider the related issue of ensuring equity in the educational opportunities and support services offered to students in the context of MSCHE Standards 7, 8, and 9. These Standards address the need to assess the University’s work in the context of its mission and goals. The centrality of increasing access to the Penn Compact is underscored by its prominent placement at the first of the Compact’s three principles. MSCHE Standard 7’s emphasis is on *effectiveness*. How do we know that efforts to increase access are effective? How effective are student support services in retaining and supporting Penn’s diverse student body? How can we strengthen the processes for assessing those efforts? Standards 8 and 9 relate directly to issues of access and equity. Do we admit, retain, and support students in ways that allow the most talented students to enroll and succeed at Penn, regardless of their economic circumstances and backgrounds? Do our support services effectively meet the needs of all students?

Among the questions addressed by the Working Group were:

- What has been the impact of the decision to eliminate loans in Penn’s financial aid packages for undergraduates?
- What data and information are important to understand access and equity in relation to undergraduate education?
- What benchmarks, data, or information are the most useful for assessing access and equity issues as they relate to undergraduate education?

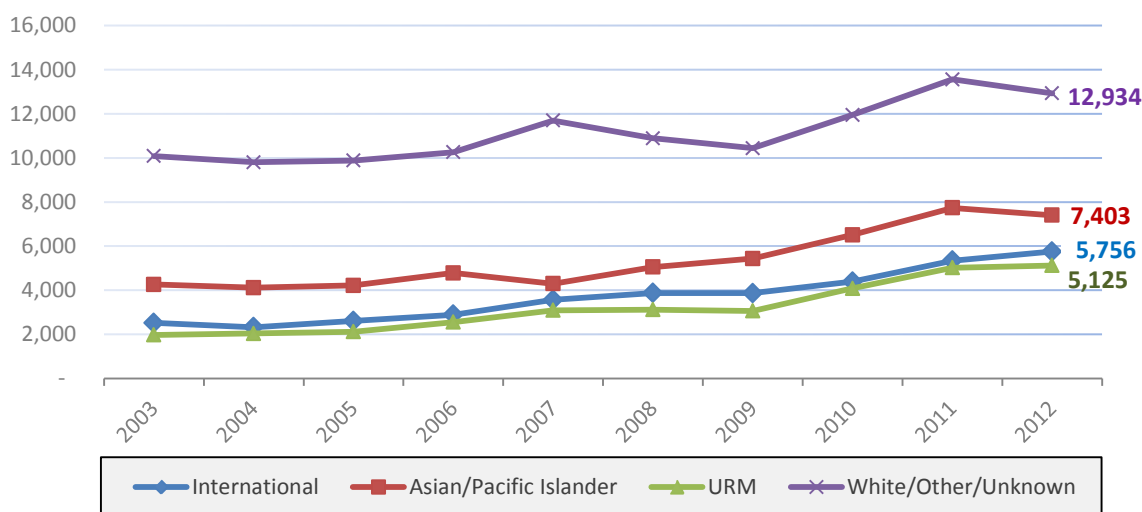
Members of the Working Group interviewed key University leaders in such areas as admissions, financial aid, student support, and retention programs, including the Dean of Admissions, the Associate Vice President for Student Financial Services and University Registrar, the Vice Provost for University Life, the Associate Vice Provost for Equity and Access, the directors of several cultural centers and student support programs, and additional faculty and administrators who oversee other access, equity, and diversity initiatives. In addition, the Working Group gathered information from University publications and websites and from the Offices of Admissions, Institutional Research and Analysis, and Student Financial Services.

Admissions

Penn Admissions receives more than 30,000 applications annually for its traditional undergraduate programs. The majority of these applications are reviewed by at least one admissions officer and discussed by the admissions staff. This labor-intensive review reflects the University's commitment to creating a class that is both outstanding and diverse. The Office of Admissions organizes its recruitment efforts by geographic region, further supported by staff members who are charged with developing and implementing programs to increase the diversity of the applicant pool.

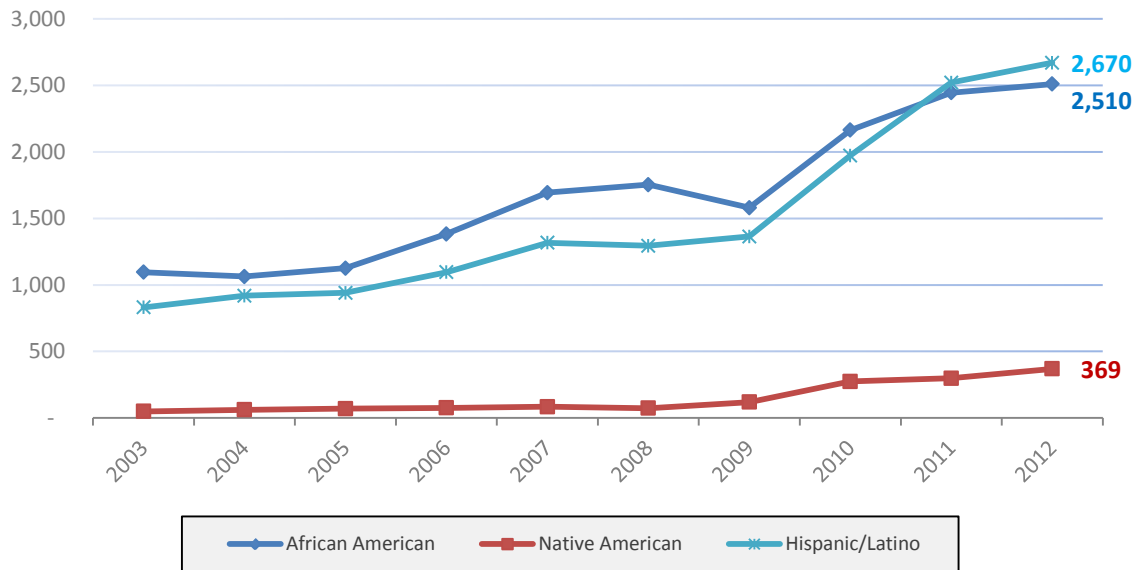
Penn's outreach includes identifying regions in which we can become more visible to underrepresented groups by creating relationships that allow us to introduce talented prospective applicants to the University. Penn's partnerships with local and national programs include the Posse Foundation, A Better Chance, Questbridge, College Horizons Program, Say Yes to Education, Prep for Prep, and the Knowledge is Power Program (KIPP), as well as a number of targeted outreach programs that identify potential students in Philadelphia and encourage them to apply to college.

Figure 2.3
Number of Applications by Race/Ethnicity Group
Entry Semesters Fall 2003 to Fall 2012



One way to gauge Penn's success in creating an outstanding and diverse student body is to analyze the number of applications, admit rate, and yield of students from underrepresented groups. Between the fall of 2008 and the fall of 2012, applications to Penn's traditional undergraduate programs increased by 36.1 percent to 31,218 students. As Figure 2.3 shows, over this same period, applications from URM students increased by 64.3 percent. The majority of the growth in applications to Penn occurred between 2009 and 2011. While there was a slight decline (1.4%) in the overall number of applications for the fall of 2012, the number of applications from URM students modestly increased (2.1%).

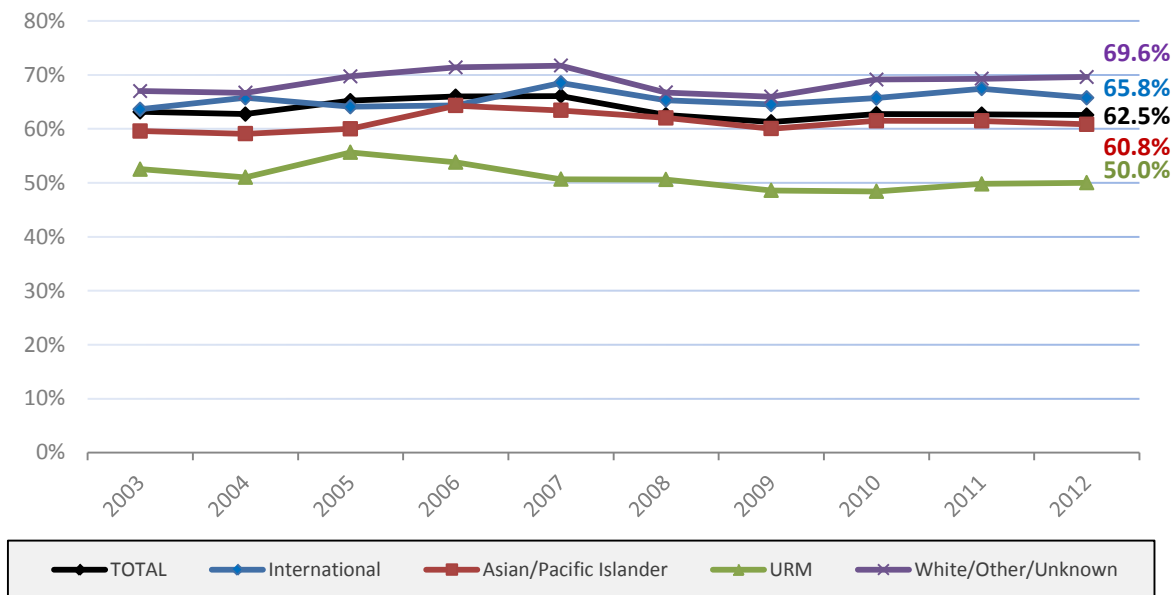
Figure 2.4
Number of Applicants Identifying with Underrepresented Groups
Entry Semesters Fall 2003 to Fall 2012



Note: Beginning in 2010, students could self-identify as more than one race/ethnicity

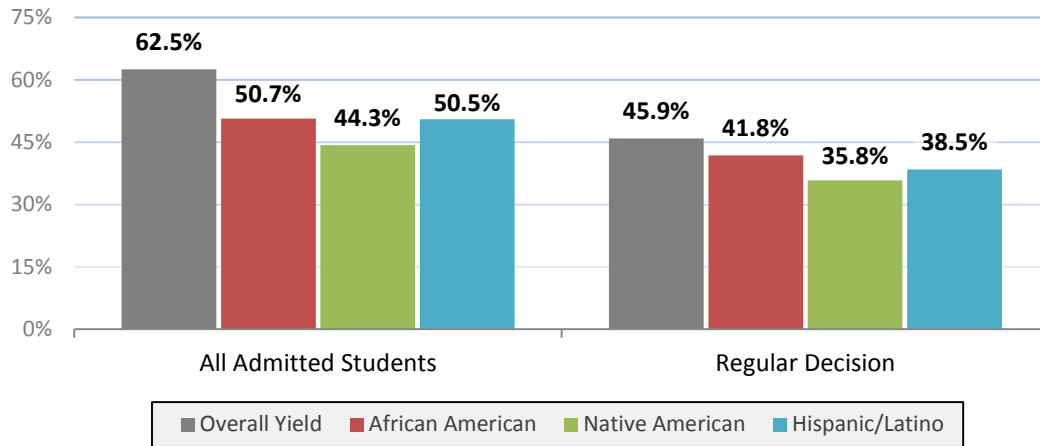
Tracking increases in applications by race/ethnicity has become more complicated as a result of recent changes in the regulations governing federal data collection. Beginning in 2010, applicants were asked to provide information on both Hispanic/Latino/a ethnicity and race. Additionally, applicants were given the opportunity to identify with one or more races (African American/Black; Asian; Native American/Alaska Native; Native Hawaiian/Pacific Islander; White). For this reason, the Working Group focused on changes between 2011 and 2012. Over this period, the number of applicants who identify as Hispanic/Latino/a (of any race) increased by 5.9 percent; the number of applications from students who identify as African American/Black (or African American/Black and another race) increased by 2.7 percent; and the number of applications from students who identify as Native American/Alaska Native (or Native American/Alaska Native and another race) increased by 23.8 percent (Figure 2.4).

Figure 2.5
Yield Rate by Race/Ethnicity Group
Entry Semesters Fall 2003 to Fall 2012



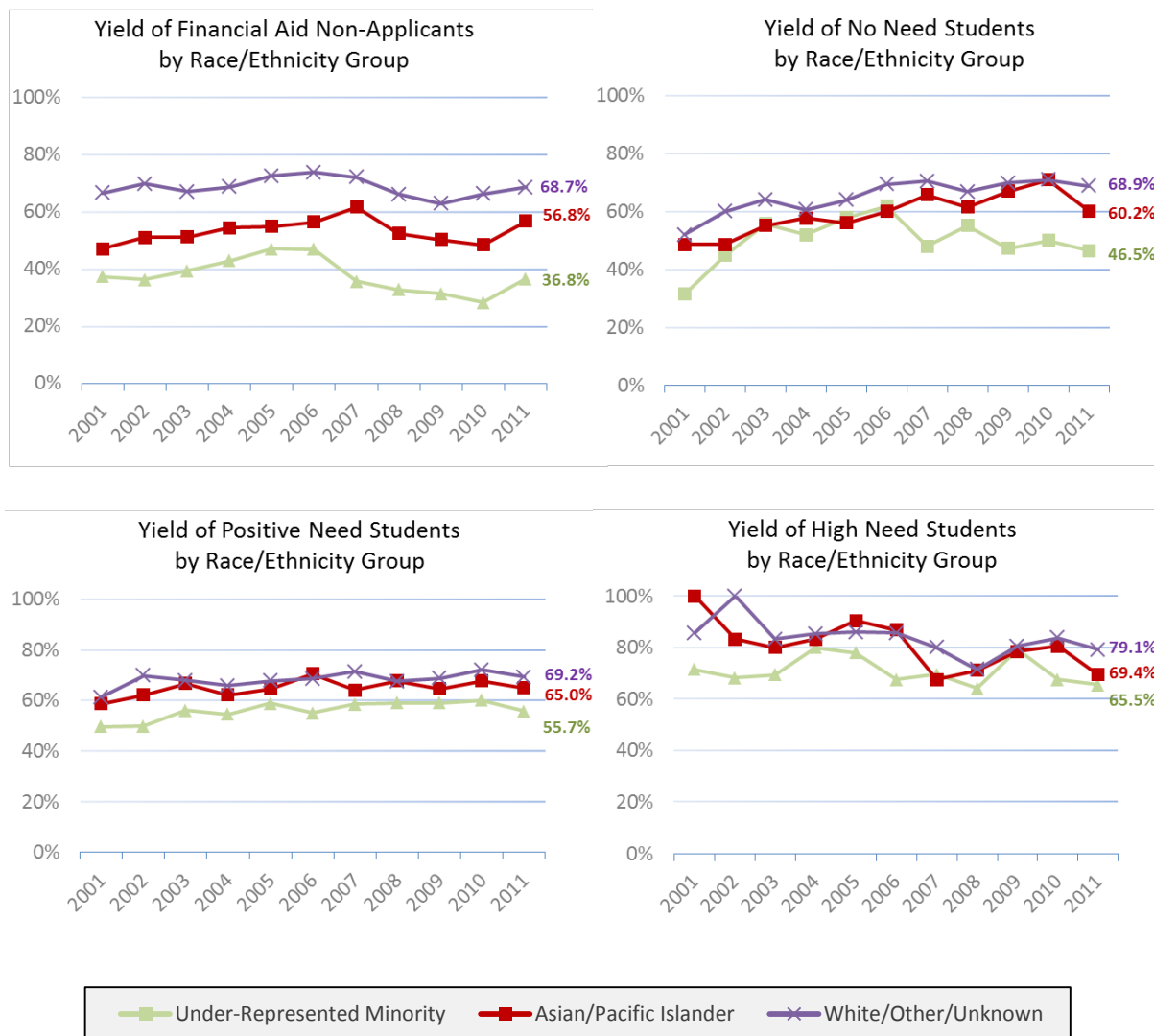
Yield rates demonstrate the challenges of recruiting URM students to Penn. Overall, Penn has a very high rate of admitted undergraduates who choose to attend the University. In 2012, the overall yield was 62.7 percent. However, yield rates for URM students were significantly lower at 50 percent (Figure 2.5). This difference in yield can be attributed in part to a less diverse pool of students among Early Decision applicants who yield at 100 percent when admitted. Yield rates for students admitted through regular decision do not vary as dramatically by race/ethnicity (Figure 2.6). Less than 10 percent of URM students apply Early Decision; working to increase the diversity of the Early Decision pool could have a positive impact on yield rates for URM students in the future.

Figure 2.6
Overall Yield Rate vs. Regular Decision Yield Rate for Students
Identifying with Underrepresented Groups
Fall 2012



Admission to Penn has been need-blind for almost five decades, and Penn is the largest university in the nation to offer a need-based, no-loan financial aid program. Need-blind admission is limited to citizens of Canada, Mexico, and the United States. During the application process, no information is collected about a student's ability to pay for higher education; as a result, we do not know how much more socioeconomically diverse our *applicant* pool has become over time. However, based on the distribution of students who apply for aid, Penn's *admitted* pool has become more socioeconomically diverse, and the number of high-need students has increased significantly over the past decade. A recent study of the impact of financial aid on yield rates suggests that Penn's generous financial aid packages have a positive influence on the yield of the neediest students in the applicant pool. Students with very high levels of need, regardless of race/ethnicity, have higher yield rates than their peers, and this difference is most pronounced for URM students (Figure 2.7). Among those in the fall 2011 entering cohort, the yield of URM students who did not apply for aid was 36.8 percent, while the yield for URM students with significant need was 65.5 percent.

Figure 2.7
Yield by Financial Aid Need Level and Race/Ethnicity Group

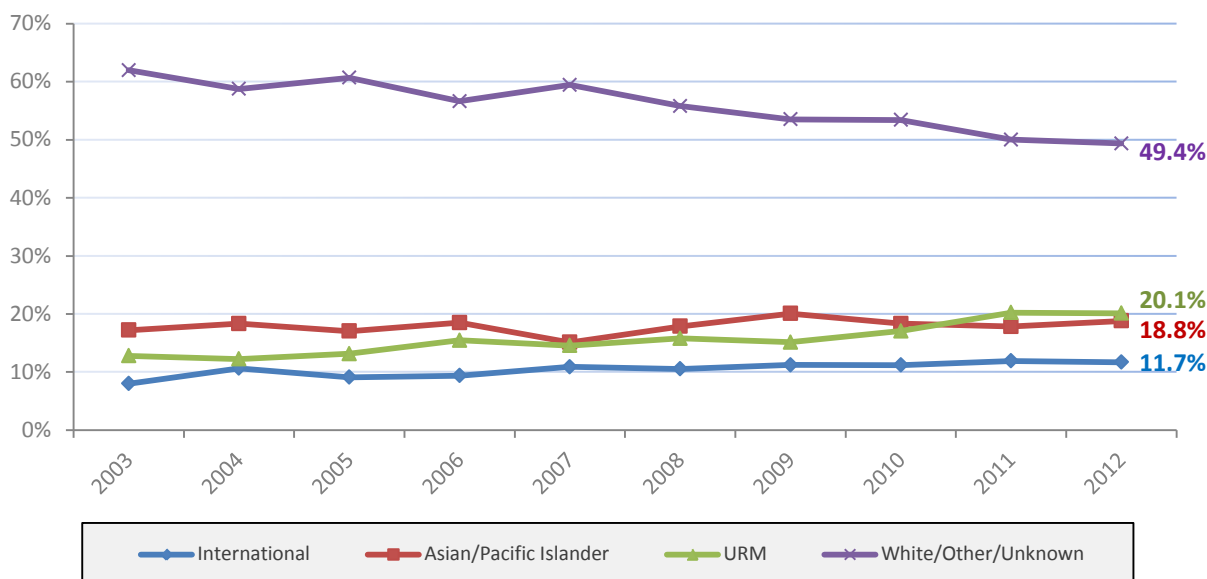


Given the goals of the Penn Compact and the intense competition for talented students, particularly those from underrepresented groups, it is essential that Penn continue to be proactive, innovative, and strategic in its efforts to recruit undergraduates. This is especially necessary given the changing demographics of college admissions. Projections of the Western Interstate Commission indicate that, over the next decade, the pool of high school graduates will become increasingly diverse. The Office of Admissions recently hired a Vice Dean of Admissions and Director of Strategic Planning to lead the development of a five-year strategic plan for undergraduate student recruitment. The aim of the strategic plan is to continue Penn's leadership in recruiting the most diverse students in a highly competitive and ever-changing landscape.

Influential studies such as *Black-White Test Score Gap* (1998), *The Shape of the River* (1998), *The Source of the River* (2003), and *Taming the River* (2009) have shown that students from underrepresented groups

underperform on standardized admission tests. All colleges and universities face internal and external pressures to increase the median SAT score of admitted students. While our admissions process takes a variety of metrics into account (e.g., high school GPA, essays, recommendations), we must seriously consider the impact of an instrument that may underreport the abilities of students from underrepresented groups as we seek to increase the diversity of the undergraduate student body. We must continue to be vigilant in ensuring admissions practices that make careful and appropriate use of admissions testing. Similarly, debates over possible alternatives to standardized testing may be most effective and best informed if conducted through such organizations as the National Association for College Admission Counseling (NACAC), the National Association of Independent Colleges and Universities (NAICU), and the Association of American Universities (AAU). Despite the challenges articulated above, Penn has succeeded in diversifying the first year class over the past decade. In 2012, URM students comprised nearly 20 percent of the entering matriculants and, as of fall 2011, White students no longer comprised the majority of matriculated students (Figure 2.8). Socioeconomic diversity has improved as well, with the percentage of Pell-eligible students increasing by nearly 76 percent since 2004.

Figure 2.8
Percentage of Matriculants by Self-Identified Race/Ethnicity Group
Entry Semesters Fall 2003 to Fall 2012



Financial Aid

In 2007, the University Trustees approved an all-grant, no-loan policy for students with demonstrated financial need, making Penn the largest university in the nation to have instituted such a generous financial aid policy. This policy was implemented beginning in September 2008 for all students, including new admits, with family incomes of less than \$100,000 and then extended to families regardless of income in fall 2009. Penn meets the full need of all financial aid-eligible domestic students for eight semesters (during the regular academic year) through grants and work-study without loans. Among traditional undergraduates

enrolled full-time in the fall of 2012, 46 percent received institutional financial aid with an average award of \$41,513, an increase of 5.83 percent over the prior year. Results from the 2012 Senior Survey and the 2012 Parent Survey indicate high levels of satisfaction with both financial aid and Student Financial Services (SFS). This is especially true for low-socioeconomic status students—100 percent reported being either generally or very satisfied with both financial aid and SFS.

Raising funds for the student financial aid endowment continues to be a critical strategic objective for Penn, and President Gutmann has placed it among University's highest fundraising priorities. Reflecting Penn's commitment to undergraduate financial aid, the value of the undergraduate financial aid endowment has tripled over the past ten years. Penn's recently completed *Making History* capital campaign raised a total of \$366 million in new gifts for undergraduate financial aid, exceeding the \$350 million goal.

Implementation of Penn's all-grant, no-loan policy has had a significant impact on students and families with financial need by continuing to reduce the amount of debt incurred by these students and their families. The number of students who choose to borrow money has decreased from 38 percent of the entering cohort of 2007 to 19 percent of the entering cohort of 2011. Total loans to students have decreased from over \$5 million for the entering cohort of 2007 to approximately \$2.6 million for the entering cohort of 2011. Despite a challenging general economic climate, the average loan debt at graduation for students who have loans has remained steady at approximately \$19,000, which is significantly less than the national average of \$26,000.

For FY2014, Penn's total undergraduate financial aid grant budget is \$190 million, of which \$179 million is funded internally by unrestricted funds, income from financial aid endowments, and term gifts; \$11 million is supported by Pell grants and other federal and state grants. In addition, needy students will receive almost \$4 million in external grants not reflected in Penn's budget and about \$4 million from academic year work-study opportunities included in the compensation portion of the University's budget. Since President Gutmann took office in 2004, Penn's financial aid budget has grown by 141 percent, an average of 9.2 percent per year, more than twice the average annual growth in total student charges.

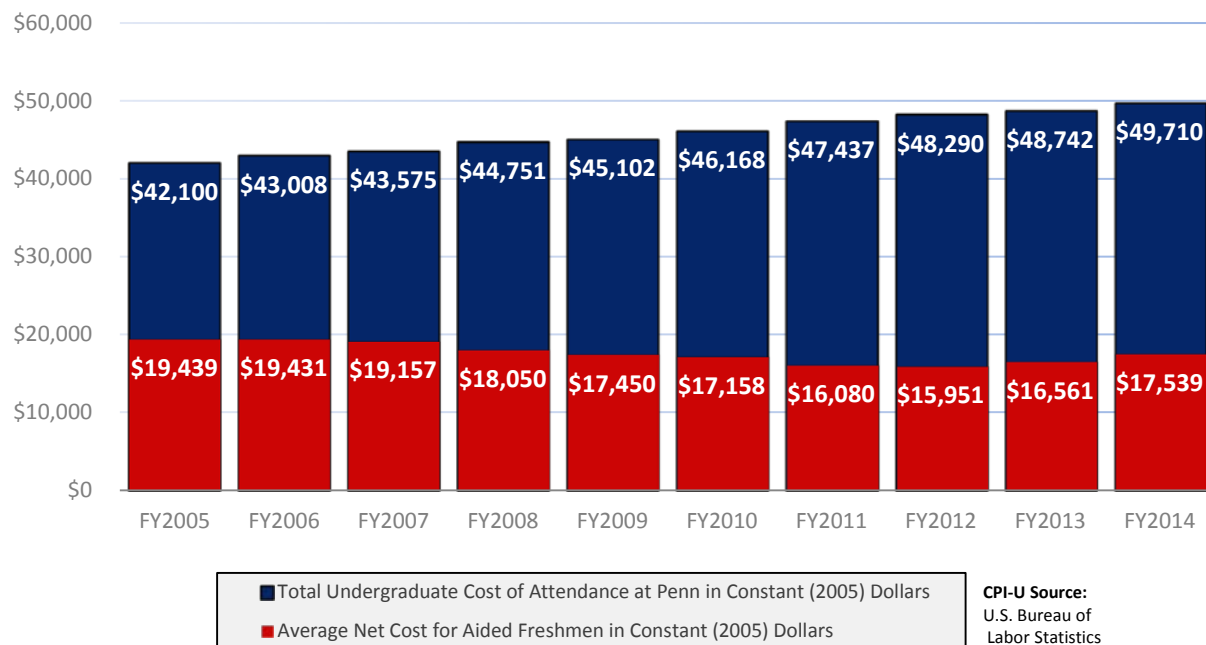
Despite the substantial growth in endowment for undergraduate aid over the past several years, the University's financial aid endowment remains relatively small compared to its Ivy League peers. In FY2014, endowment income will fund about \$40 million of undergraduate financial aid whereas unrestricted resources account for about \$137 million, or about 77 percent of the University-funded undergraduate aid. An additional \$2 million will come from term gifts. The unrestricted component is generated by assessing a charge, known as the financial aid factor, against undergraduate tuition raised by each of the four undergraduate schools. The financial aid factor will increase to 36 percent in FY2014 from 35 percent in FY2013.

At Penn, the amount of financial aid paid from unrestricted funds is greater than at nearly all of its Ivy League peers. This pressure on each school's budget comes from the University's commitment to need-blind admissions and need-based aid and was significantly increased by the economic downturn that began in 2008 and resulted in a large increase in student need. When several peer institutions were unable to continue their financial aid policies for meeting the full need of aided students, Penn never wavered in

its commitment to its all-grant, no-loan policy. Over the last several years, Penn’s financial aid factor has increased from below 31.5 percent in 2006 to 36 percent for FY14. This rise has been alleviated somewhat by the emphasis on undergraduate financial aid in the Making History campaign and by the Trustees’ extraordinary step in providing a temporary adjustment to the University’s spending rule, which allowed for higher endowment payouts toward financial aid. This adjustment was scheduled to begin phasing out in the 2013-14 academic year, but that action has been postponed to the 2015-16 academic year to decrease the impact of the economic downturn on school and University financial aid budgets. Penn has consistently improved the average grant-aided freshman package each year, increasing the total package while reducing and finally eliminating the loan component. The net cost of attendance in constant dollars for FY2013 for aided freshmen was nearly 15 percent below the level of FY2005 (Figure 2.9). In FY2014, the net cost of attendance is projected to be \$1,900 less than it was in FY2005, again in constant 2005 dollars. In addition, Penn has seen a marked increase in financial need, with the number of grant-aided undergraduates growing by 28 percent since FY2008, due in part to the slow economic recovery and, in particular, the continued high unemployment rate.

The key continuing institutional challenges related to financial aid are: 1) increasing financial aid endowment; 2) ensuring that families understand the family contribution component of aid packages; and 3) continuing to offer all-grant, no-loan packages to eligible students. Taken together, these actions should continue to help Penn diversify its student body and ensure the financial stability of its undergraduates and their families.

Figure 2.9
Trend in Undergraduate Cost of Attendance



Measuring Success

Admitting and financially supporting a talented and diverse student body are crucial elements of Penn's efforts to create a diverse and inclusive community. However, the arrival and continuing presence of so many talented students is only a first step. They must succeed at Penn. Four- and six- year graduation rates and the first-year retention rate are critical measures of whether students are achieving their goals. Penn is proud that these rates are very high for all students, including underrepresented minority students and those with high financial need.

The President, Provost, and other senior leaders regularly review reports on retention and graduation organized by gender, race/ethnicity, financial need level, and school and department. These reports, developed by the Office of Institutional Research and Analysis, are also shared with the Faculty Council on Access and Academic Support (FCAA). Chaired by the Vice Provost for Education and encompassing faculty and senior staff from all four undergraduate schools, the FCAA is tasked "to advise and assist the Provost on a range of activities, including programs designed to 1) support Penn's efforts in developing access to higher education by underrepresented groups, particularly in STEM (science, technology, engineering and math) fields, 2) increase the diversity of our student body, and 3) facilitate the success of all of our students." The FCAA was launched in the fall of 2008 and has since developed and examined a variety of data, discussed the issues raised by such data, proposed actions based on their analysis, met with key constituents (particularly advising and student support staffs), and communicated its conclusions to the Provost and directly to schools and departments.

Penn has historically had excellent first-year retention and graduation rates. Since the early 1990s, at least 95 percent of first-year students have returned for their sophomore year. For the 2012 cohort of first-time full-time students, 98.1 percent returned for their second year. Penn's 4- and 6-year graduation rates have steadily improved over time. At present, 86.7 percent of first-year students can expect to graduate in 4 years, and Penn's most recent 6-year graduation rate is 95.8 percent. These rates are over 30 and 40 percentage points higher, respectively, than national averages (Figures 2.10 and 2.11).

Overall, retention rates vary little by student's intended division, gender, race/ethnicity, or financial need. Figures 2.12 and 2.13 demonstrate the consistency in this metric and the small variability by both race/ethnicity and need level.

Figure 2.10
6-Year and 4-Year Graduation Rates - Penn and National Average
Fall 1991 - Fall 2008 Cohort Entry Years

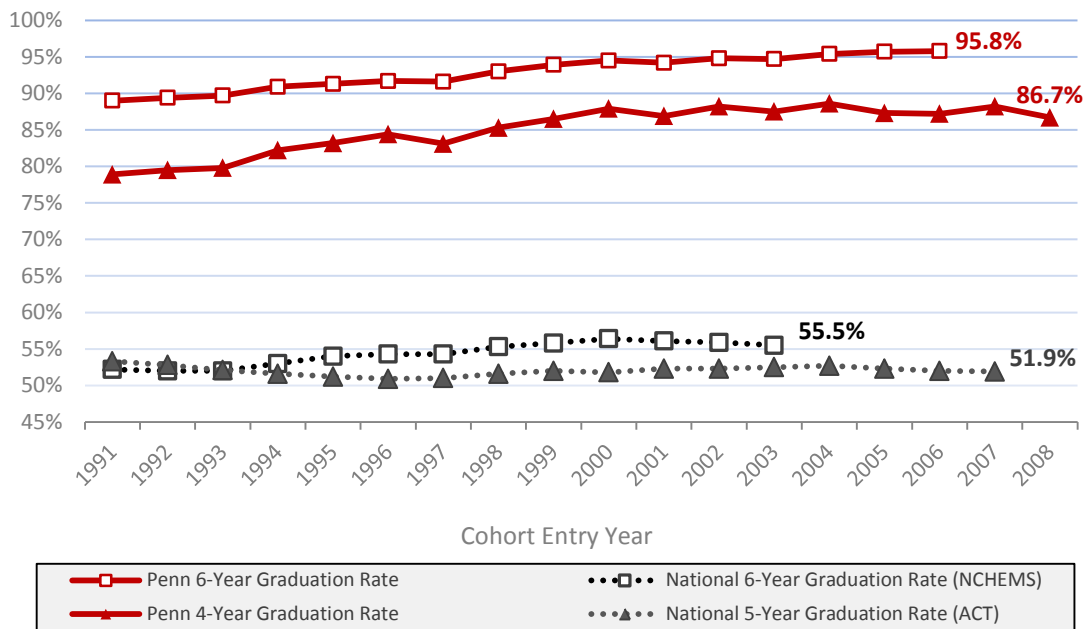


Figure 2.11
Retention Rates - Penn and National Average
Fall 1991 - Fall 2011 Cohort Entry Years



Figure 2.12
First Year Retention by Race/Ethnicity Group
Fall 2002 - Fall 2011 Cohorts

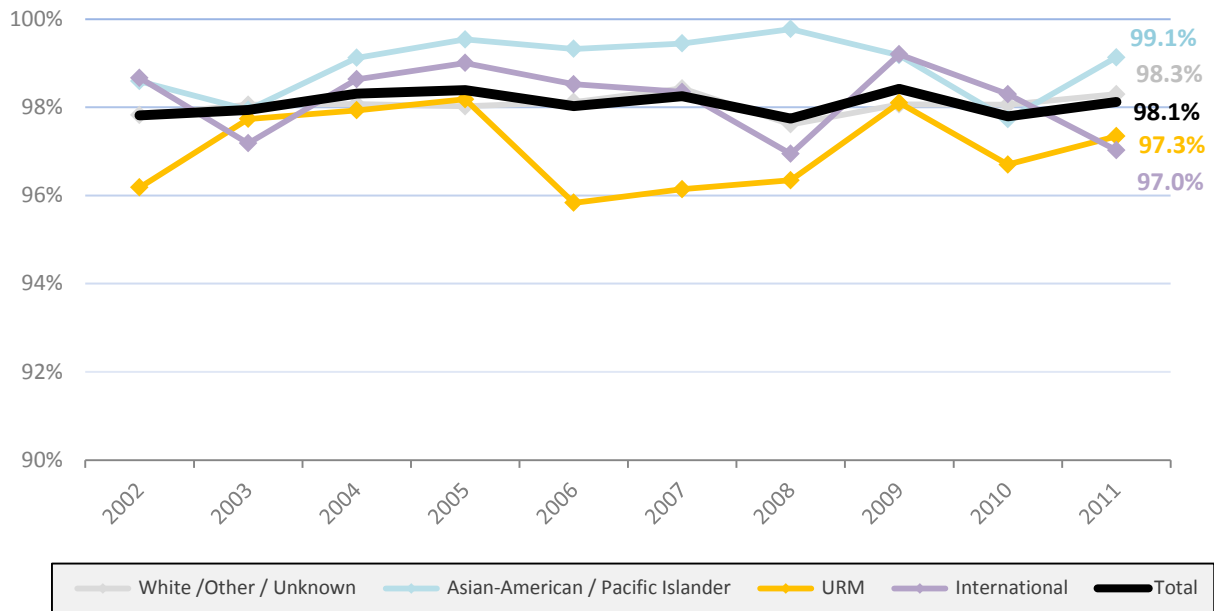
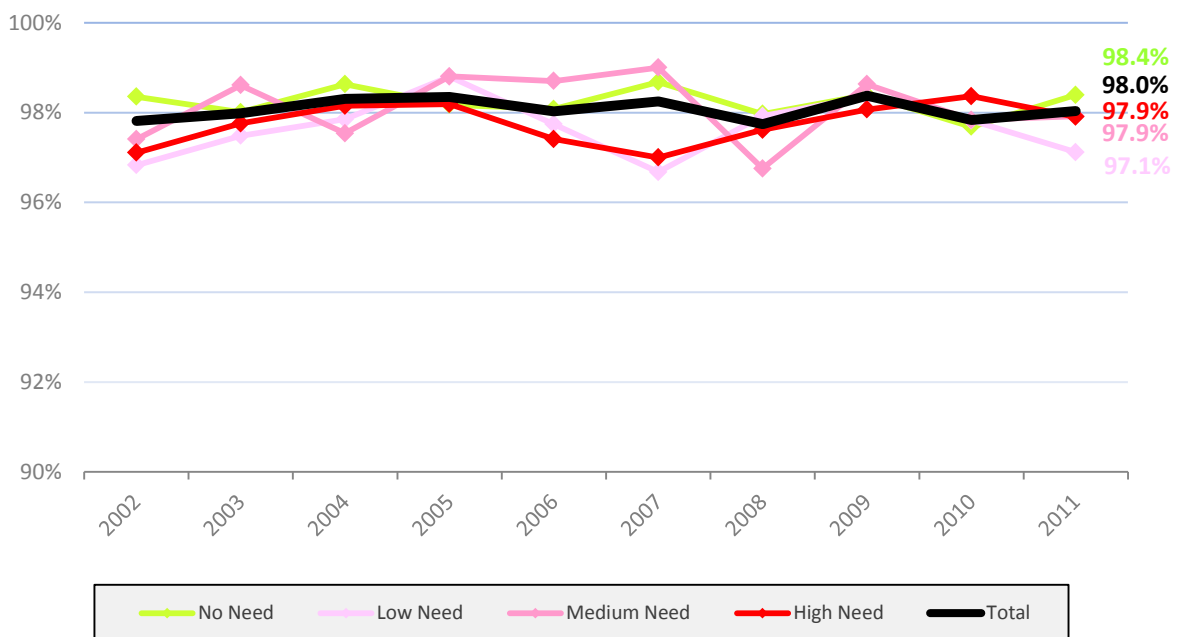
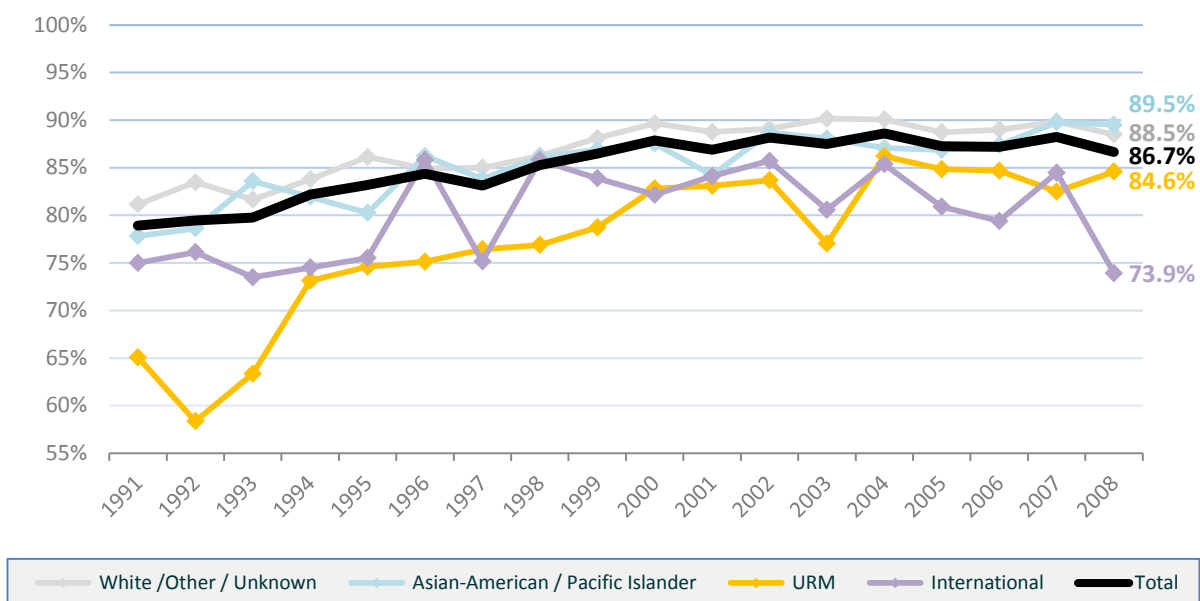


Figure 2.13
First Year Retention by Need Level
Fall 2002 - Fall 2011 Cohorts



Students admitted to Penn have a very high probability of completing a degree program regardless of gender, race/ethnicity, and/or financial need. Graduation rates for Penn undergraduates are among the highest in the nation. The University's six-year graduation rate (Figures 2.14 and 2.16) has shown significant improvement over time, increasing from 89 percent for the 1991 cohort to 95.8 percent for the 2006 cohort. In particular, there have been dramatic gains for URM students, whose graduation rates are now close to the average for the University (96%). We are proud of these improvements and vigilant in our efforts to improve. For example, the drop in the number of URM students from 95 percent in the 2005 cohort to 93 percent for the 2006 cohort could reflect a statistical fluctuation for the smaller URM group or it could represent an area for concern, such as economic stress or student support issues. The rapid dissemination of these data to schools, departments, faculty, advisors and student support centers allows the University to address potential problems and concerns more quickly than had previously been the case. This notion is further supported by examination of the 4-year graduation rate (Figures 2.15 and 2.17). These data show that the gap between URM and majority student graduation rates is clearly decreasing but not yet completely closed. The 4-year graduation rates of international students, meanwhile, have varied over time and in general been slightly lower than those of domestic undergraduate students (Figure 2.15). Whether the most recent rate reflects this variability or signals a trend calls for additional examination, particularly in light of the fact that these students' 6-year graduation rate remains high (Fig 2.14).

Figure 2.15
Four Year Graduation Rate by Race/Ethnicity Group
Fall 1991 - Fall 2008 Cohorts



Examination of graduation rates by financial need provides another perspective. First-year retention rates do not vary by need level (Figure 2.13) and, over time, the six-year graduation rate (Figure 2.16) has improved dramatically. With the exception of the 1998 and 2006 cohorts, the most significant improvements have been observed among students with the highest levels of financial need. There are by comparison considerable differences in four-year graduation rates by need level (Figure 2.17), and while there has again been some decrease in the gaps across need levels since the 1990s, they have remained largely stable throughout the past decade. For the 2008 entering cohort, the four-year graduation rate for students without financial need was 89.3 percent compared to 80.1 percent for high need students—an 9.2 percent difference. The difference between high-need and medium-need students is 4.0 percent. The implications for aided students—including increased time to degree, increased risk of not completing their degrees in 4 (or 6) years, and potential income disparities—merit additional study.

Despite Penn's strong financial aid packages, many students must also find employment on or off campus, often in addition to any work-study job they hold. This factor could contribute to the somewhat lower 4-year graduation rates of high need students. While there is no way of tracking precisely the numbers of students who work off-campus or the reasons students do so, survey data and anecdotal information suggest that students seek work to subsidize expenses or lifestyle choices. In the 2012 Senior Survey, students who self-identified as growing up in a poor or working class household were much more likely than their peers to report working all four years of college (52.1% as compared to 24.6%). This group also identified spending nearly twice as many hours on average as their peers working for pay (10.85 hours/week as compared to 5.45 hours/week).

Reports from academic advisors suggest that, in some cases, this kind of employment has interfered with academic success and students' ability to participate fully in the intellectual life of the University. Also, some students report feeling compelled to help with the family contribution component of their financial aid awards. Other reports suggest that a number of highly aided students from very low socioeconomic backgrounds work to send money home to provide additional support for their families. Penn should continue its efforts to identify these students and provide appropriate mentoring and support to help ensure that work does not significantly interfere with their academic progress.

Figure 2.16
Six Year Graduation Rate by Need Level
Fall 1991 - Fall 2006 Cohorts

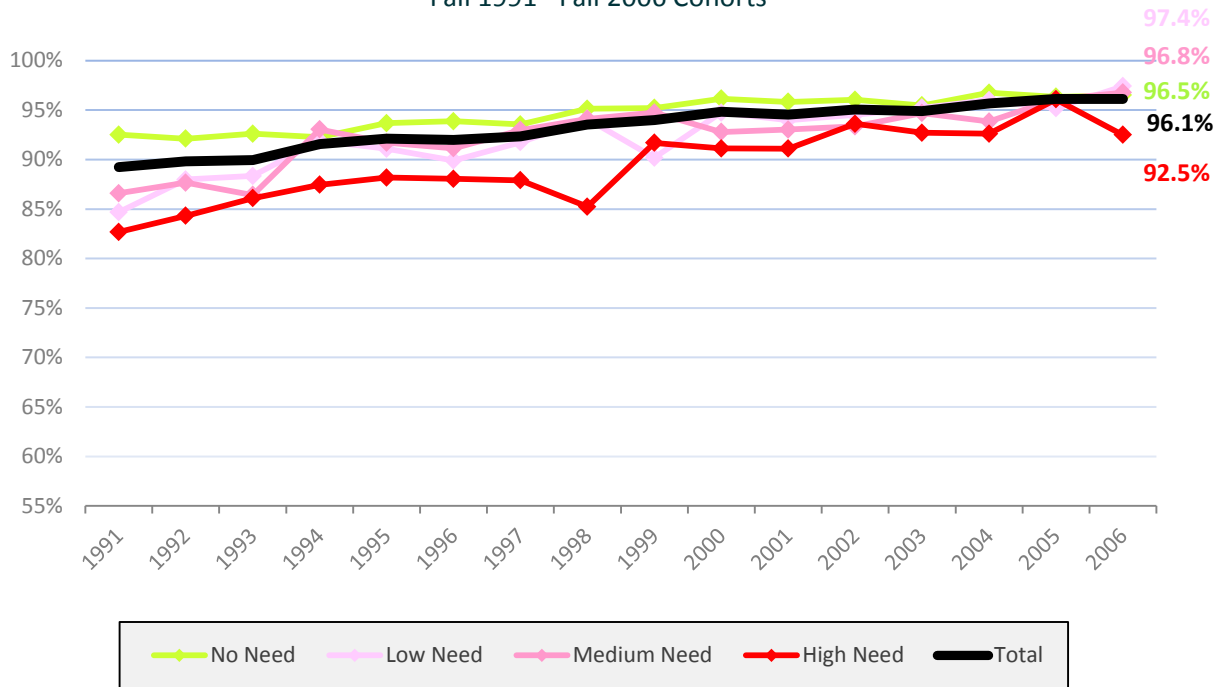
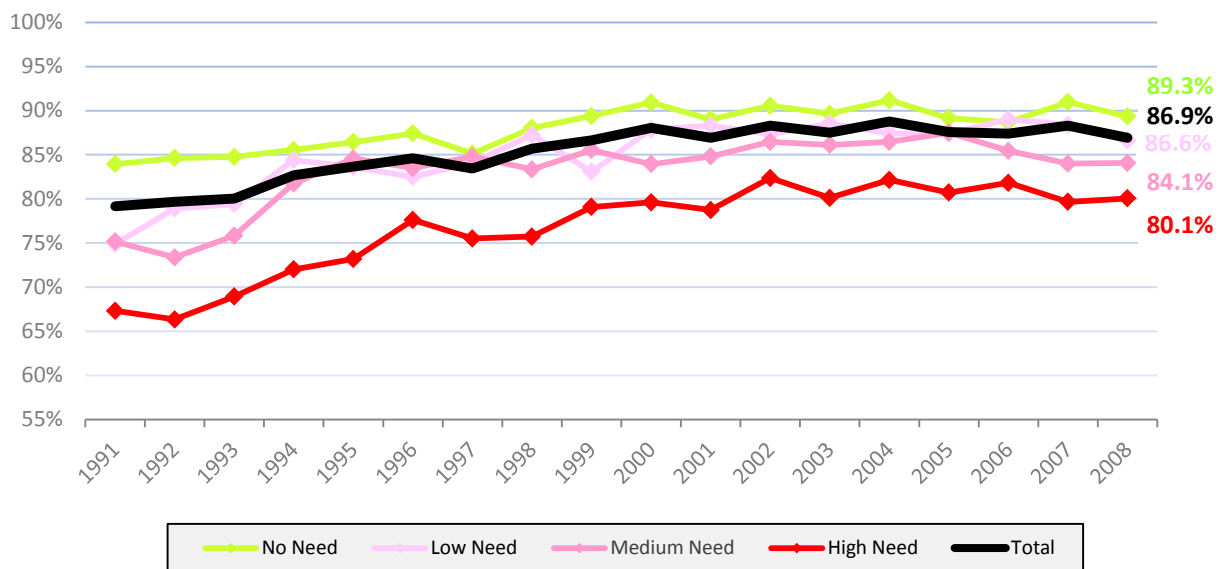


Figure 2.17
Four Year Graduation Rate by Need Level
Fall 1991 - Fall 2008 Cohorts



The FCAA has spent considerable time exploring the possible basis for the differences in 4-year graduation rates for URM students and students with the highest levels of financial need. Two important factors emerged from this review. First, even though these groups of students are graduating at outstanding rates, they are more likely to struggle in their first year when compared with other students (based on such criteria as GPA and credit units earned). Second, while the GPA and credit unit gap narrows considerably in the third and fourth years, URM and/or high-need students who required more than four years to complete their degree were less likely to accumulate additional credentials such as a dual degree, double major, or submatriculation master's degree.

The FCAA examined gateway courses, particularly in STEM fields, and recommended that evidence-based pedagogical reforms in these courses be considered. This recommendation, combined with on-going faculty discussion about STEM teaching coordinated by the Center for Teaching and Learning, led to proposals from the faculty to revise introductory STEM teaching by adopting a “structured, active, in-class learning” model of teaching. In the summer of 2013, Penn was one of eight highly selective research institutions named as an American Association of Universities Project Site for the Undergraduate STEM Education Initiative—a multimillion dollar project that aims to improve the quality of teaching in STEM fields (Appendix 2.1). Approximately 40 percent of Penn's faculty who teach introductory STEM courses have already agreed to test and adopt these methods. Over the next 5-10 years, Penn will engage in ongoing assessment of the results, which it hopes will show significant benefit to all students, and will specifically study URM students and high-need students to determine if changes in teaching are having the intended positive impact on the academic progress of these groups.

Efforts to Sustain Success

To help ensure the success of first-generation, high-need, and URM students, Penn devotes considerable attention to equity. The University gathers data to determine if these students are accomplishing their stated academic goals, and it tailors programs to address their needs. The Penn Pathways Team is a key partner in these efforts, representing administrators from the advising offices in the four undergraduate schools and their colleagues in the Division of the Vice Provost for University Life. This group has broad expertise in supporting multicultural programming and working with socioeconomically disadvantaged and URM students. It is charged with reviewing existing advising practices and exploring new ways to best serve the student population.

Many of the programs that directly support and sustain the success of undergraduates are housed in the Office of Equity and Access Programs in the Division of the Vice Provost for University Life. This office includes the Pre-Freshman/PennCap Program (PFP). The PFP is a four-week, residential, academically rigorous program for 100 admitted first-year students. Students from small towns, public urban high schools, athletes, first-generation college students, and students with high financial need are some of the diverse students who participate in the PFP. The Program offers a comprehensive set of services to support approximately 500 Penn undergraduates, most of whom are first-generation, high-need, and/or URM students. Other campus resources at Penn include the Pan-Asian Community House, the Makuu Black

Cultural Center, the La Casa Latina Center for Hispanic Excellence, and the Greenfield Intercultural Center. These cultural centers play a key role in fostering a sense of community and providing networks and support for students from diverse racial and ethnic groups. For example, the Working Group found that URM students report the cultural centers to be safe havens for discussing financial concerns.

The re-opening of the University's Arts, Research and Culture House (ARCH) in January 2014, following a \$20 million renovation, is another example of Penn's commitment to diversity. The ARCH, located at the heart of the campus, will be home to three of the cultural resource centers—Makuu Black Student Cultural Center; La Casa Latina Center for Hispanic Excellence; and the Pan-Asian American Community House — as well as the Center for Undergraduate Research and Fellowships. Thus, the ARCH will provide a physical space for the intersection of diverse student and faculty interests and activities, including a flexible, state-of-the-art auditorium/classroom and significant lounge and café space. The importance of these cultural organizations for URM students at Penn is highlighted by data from the 2012 Senior Survey. Sixty percent of URM students report participating in cultural/ethnic organizations for one or more years during their undergraduate education, twice the rate of participation by non-URM peers.

The 2012 Senior Survey provides solid evidence that Penn students are highly satisfied with the Penn undergraduate experience (Figure 2.18). Overall, the majority of Penn students are satisfied with the availability of tutorial help and other academic assistance and advising. Given slightly less satisfaction with these services among URM and Low SES Students (Figure 2.19 and 2.20), these figures suggest that there may still be some room for improvement in the academic support services for URM and high-need students. Additional research (perhaps through more detailed interviews) might assess the reasons for any student dissatisfaction and suggest appropriate means of better addressing identified needs.

Figure 2.18
Overall Satisfaction with Undergraduate Education
2012 Senior Survey

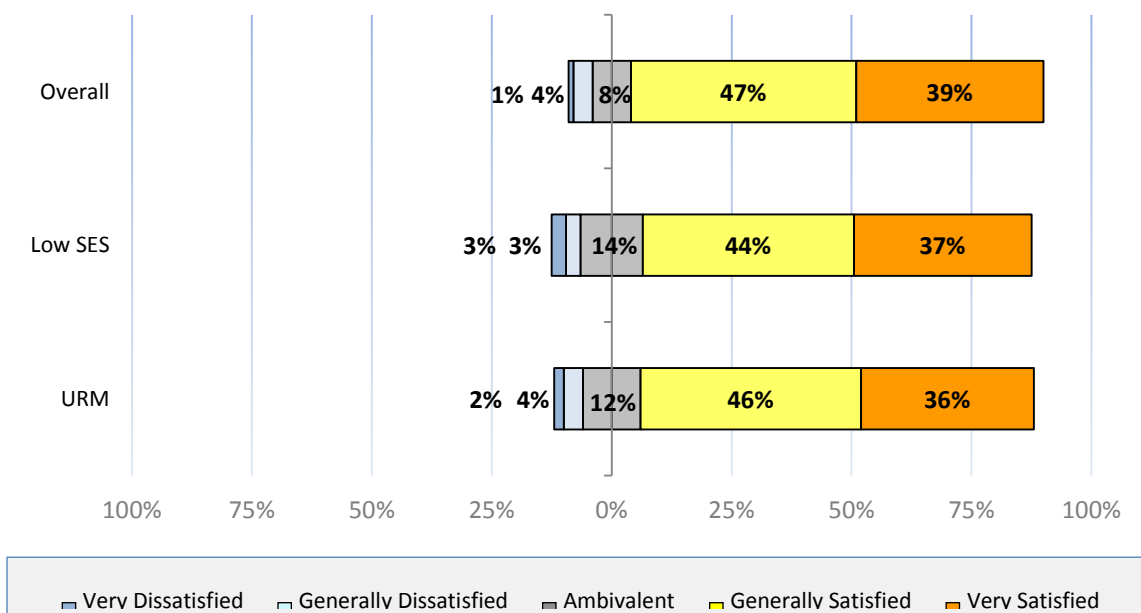


Figure 2.19
Satisfaction with Quality of Advising
2012 Senior Survey

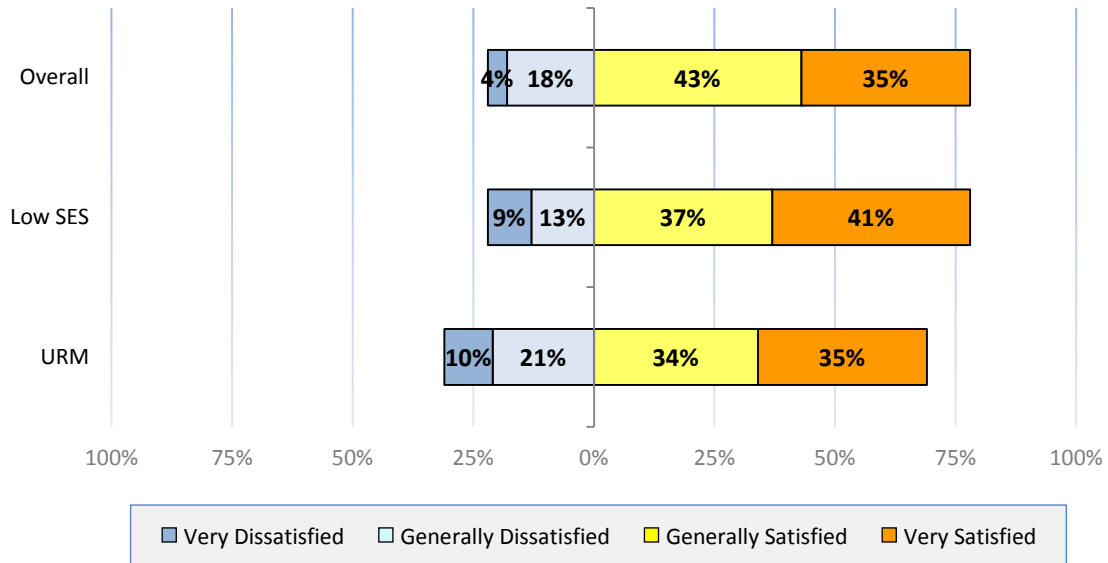
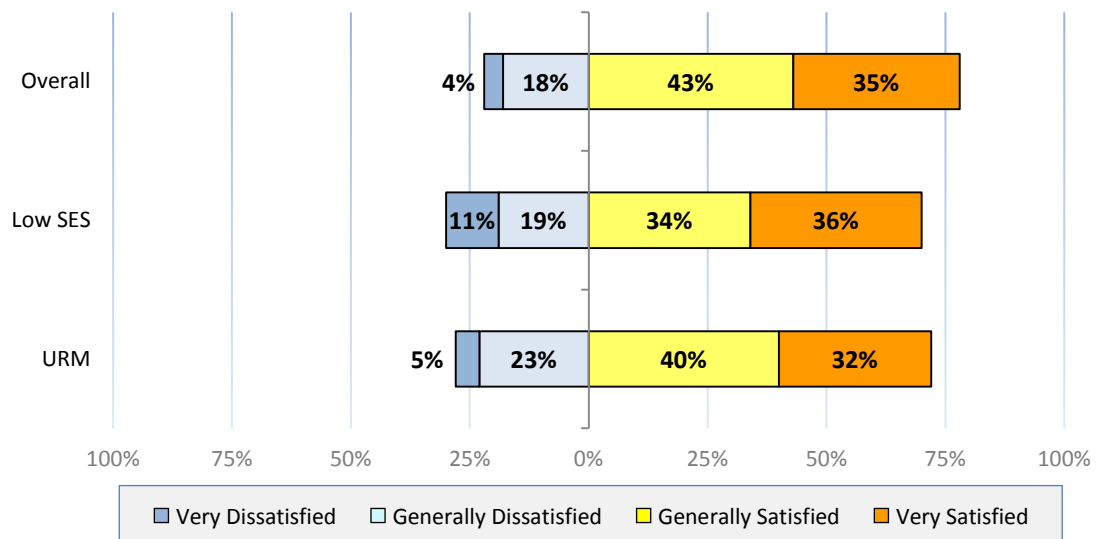


Figure 2.20
Satisfaction with Availability of Tutoring and Other Help
2012 Senior Survey



Recommendations

To build on Penn's demonstrated success, outreach in admissions should continue in ways that further increase the diversity and excellence of its applicants, with a particular focus on applications from underrepresented minority students, including LGBT students, and students eligible for Pell grants. In light of Penn's all-grant, no-loan policy, all students who know early in their senior year that they want to enroll at Penn can and should be encouraged to apply for early decision.

Need-blind admissions, need-based financial aid, and the all grant, no loan policy are important contributions to the quality of undergraduate education at Penn, creating a diverse student body of academically talented men and women. Undergraduate financial aid ought to remain one of Penn's highest institutional and fundraising priorities. Even with Penn's all-grant, no-loan policy, some undergraduates still choose to take out loans, and further study of those students is important.

Beyond providing direct financial support to students, Penn should continue to encourage collaboration among schools and central units that offer advising and student support, particularly for those in underrepresented populations. For example, the Division of the Vice Provost for University Life should continue to play a strong role in supporting URM and other specific populations, in both academic and co-curricular contexts.

Penn undergraduates have a very high probability of completing a degree program. This is true regardless of a student's gender, race/ethnicity, and/or financial need. It is important that Penn continue to monitor its four-year and six-year graduation rates—especially those for high-need, underrepresented minority, and international students—and develop appropriate strategies to address any issues identified.

We cherish our relationships with our neighbors, relationships that have strengthened Penn academically while increasing the vitality of West Philadelphia.

—President Amy Gutmann, inaugural address, 2004

Chapter 3: Local Engagement

Introduction

Penn aspires to be a leading citizen of our city and our neighborhood. Over the past decade, we have increasingly placed local engagement and community service at the heart of undergraduate life, expanding three major centers of civic engagement and also a wide scope of activities that involve students across curricular and extracurricular activities. While these activities are not a required component of a Penn undergraduate education, they can add immeasurably to the student experience and reflect the University's abiding interest in developing strong citizens as well as outstanding scholars.

The civic roots of the University of Pennsylvania are deep. Benjamin Franklin's founding vision for the University was to establish an institution that would instill in students a deep civic commitment or, as he put it, "an inclination joined with an ability to serve mankind, one's Country, Friends and Family." Franklin envisioned an educational institution dedicated to equipping future civic and business leaders with practical knowledge for the betterment of the local community.

As Thomas Ehrlich, former Penn Provost and former Penn Term Trustee, put it, "civic engagement means working to make a difference in the civic life of our communities and developing the combination of knowledge, skills, values and motivations to make that difference" (*Civic Responsibility and Higher Education* (American Council on Education/ Oryx Press, 2000), vi.). There are three, interrelated ways to think of civic engagement:

1. It includes activities that have no obvious "public good" intent, but nonetheless represent a kind of community-building, such as socializing with people of other races/ethnicities, discussing religion, playing a musical instrument, or attending a religious service.
2. It includes activities that serve some larger public good but are done outside of the realm of traditional politics/government institutions and processes: for example, volunteering, tutoring a student, or participating in course-based community service.
3. In the political domain, it includes activities designed to influence or work through "government" and its representatives: for example, discussing politics, voting in a student election, or participating in a demonstration.

This report focuses on the second and third ways of understanding engagement. The first is important in the development of a well-rounded citizen, and it pervades student life at Penn in ways that make it all

but indistinguishable from the overall undergraduate experience. Indeed, almost 95% of seniors report participating in at least one formally organized co-curricular activity during their undergraduate experience, and there is no doubt that informal activities are even more ubiquitous. Community and political engagement are also pervasive. More than 43 percent of seniors report being engaged in community volunteer activities during their undergraduate experience, and nearly 18 percent of each entering cohort take at least one academically based community service course. Although political engagement is broader than participating in a political group, 11 percent of seniors report doing so.

In 2006, Penn was selected as one of the initial institutions for the *Community Engagement Classification* of the Carnegie Foundation for the Advancement of Teaching. The heart of this civic work is members of a community (inside and outside the University) working together to solve pressing problems in order to create a healthier, safer, and more just world. Local engagement activities not only help the community but also are a powerful means to fulfill Penn's mission as a research university, through engaged teaching, learning, and research that aims to produce positive change in society.

There are two ways that Penn organizes its efforts in local and national engagement for undergraduates. The first is through the activities of three University-wide centers focused on developing these opportunities: the Barbara and Edward Netter Center for Community Partnerships, the Civic House, and the Fox Leadership Program. The second is through the curricular and co-curricular programs of the four undergraduate schools, as well as activities organized through the graduate and professional schools.

Working Group Charge and Process

The charge to the Local Engagement Working Group was to evaluate Penn's efforts at local engagement as those efforts relate to undergraduate education. The group was asked to articulate what is important about Penn's current local engagement efforts and how those efforts could be improved in the future, within the framework of the MSCHE Standards of Excellence, especially Standards 7, 11, and 14.

The Working Group gathered data on activities involving Penn faculty and students that contribute to the civic and democratic development of Penn undergraduates, conducted a direct survey of faculty, incorporated data and analysis from two pilot projects that developed from an institutional planning meeting convened by the Vice Provost for Education, and drew upon the ongoing assessment work of the Netter Center for Community Partnerships. Some of the specific research questions that framed the group's work were:

- What local engagement activities are occurring at Penn, and to what extent are faculty and students involved in this work?
- How are local engagement efforts being characterized across the University?
- How might Penn deepen its commitment to local engagement by integrating it into other aspects of the University's work, especially the undergraduate experience?

University Centers for Local Engagement

Netter Center

Penn's Center for Community Partnerships was founded in 1992. Renamed the Barbara and Edward Netter Center for Community Partnerships in 2007, it helps connect Penn faculty and students with community partners in order to promote community-based teaching, learning, and research. The work of the Netter Center is based on three core propositions:

- Penn's future and the future of West Philadelphia/Philadelphia are intertwined.
- Penn can make a significant contribution to improving the quality of life in West Philadelphia/Philadelphia.
- Penn can enhance its overall mission of advancing and transmitting knowledge by helping to improve the quality of life in West Philadelphia/Philadelphia.

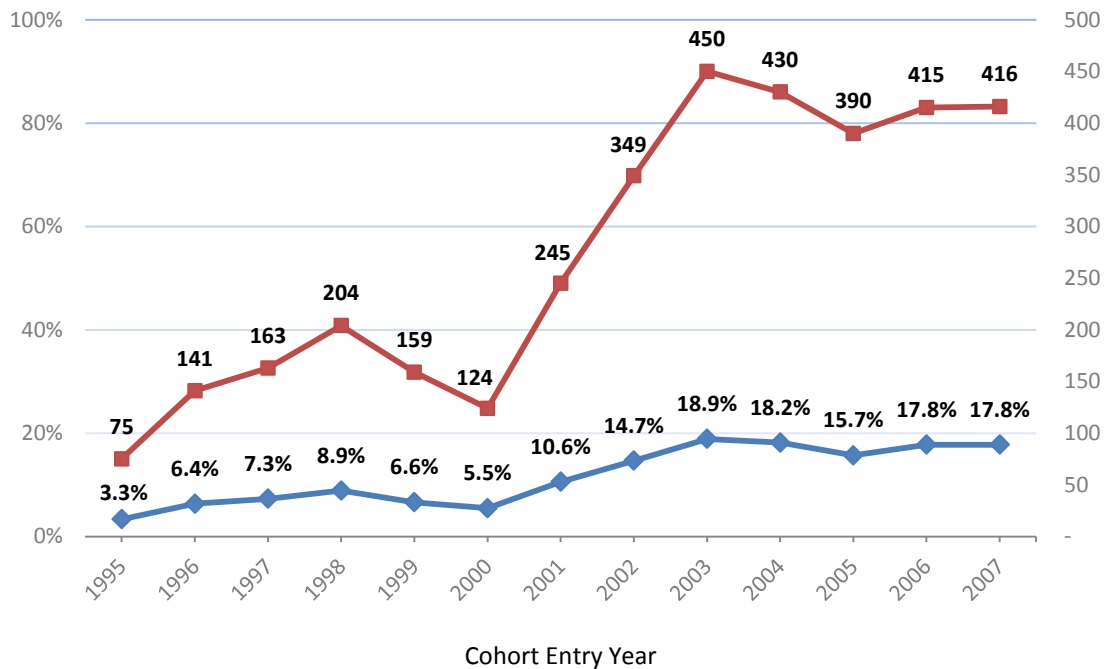
The Center, housed in the Office of Government and Community Affairs, works to achieve the following objectives:

- Improve the internal coordination and collaboration of all University-wide community service programs.
- Develop democratic, mutually beneficial, mutually respectful partnerships between the University and the community.
- Create and strengthen local, national, and international networks of institutions of higher education committed to engagement with their local communities.

Through the Netter Center, the University currently engages in three types of activities: academically based community service (ABCS), direct traditional service (volunteer work), and community development. The Center currently has approximately 50 staff members and a budget of around \$5,750,000. Approximately half of the Center's funding comes from external grants, while the rest comes from the Office of the President, the School of Arts and Sciences, and a combination of term gifts and endowment revenues.

Service learning is at the core of the Center's work. The Netter Center runs a competitive process each year and provides some course development grants to Penn faculty interested in developing ABCS courses. ABCS courses focus on problem-solving research and teaching, promote learning through service, emphasize student and faculty reflection on the service experience, and foster structural community improvements, including supporting public schools, neighborhood development, and community organizations. The Center's work aspires to reaffirm Ben Franklin's belief that: "The great Aim and End of all Learning... is service [to society]."

Figure 3.1
Percent and Number of Traditional Undergraduate Entering Cohort
Taking ABCS Courses



Enrollment records demonstrate a substantial growth in the number of ABCS courses (currently about 60 courses offered in 23 departments in six schools) and the number of students taking these courses (Figure 3.1). Approximately 17-19 percent of each entering cohort takes advantage of this opportunity. More detailed analysis of the data reflects some trends that are seen nationwide. Students majoring in engineering and business are less likely to participate than are those majoring in the arts and sciences. Women are also more likely to participate in ABCS courses than men. This may in part be explained by discipline. For example, students in the School of Nursing are predominantly women, and all take some coursework with a community-based component. However, unlike at many institutions at which students with greater financial need find it difficult to participate in community-based work because of the time commitment, students at Penn with such needs are slightly more likely to participate in these courses. This may be because of Penn's generous financial aid policies, which mean that these students are not required to work extensively while in school. In addition to students enrolled in ABCS courses, the Netter Center provides opportunities to over 300 students each year through community service federal work-study positions, to approximately 100 students through non-work-study internships, and to approximately 200 students through volunteer positions.

Civic House

Civic House is the University's hub for student-led community service and social advocacy work, helping student leaders develop mutually beneficial collaborations with partners in West Philadelphia and beyond. Through education, community connections, and other resources, Civic House prepares

students for responsible and effective civic engagement and leadership. It aims to support Penn students in responsible community engagement and inspire them to serve as lifelong, thoughtful citizens and advocates for social change. Founded in 1998, Civic House has five staff members and is part of the Division of the Vice Provost for University Life.

Civic House promotes and supports student engagement through such activities as advising student organizations, conducting skill-based workshops to train students working in the local community, and administering civic engagement programs. Organizations affiliated with Civic House engage some 2,200 students locally, nationally, and globally; the great majority of those students (more than 1,900) are involved in local community initiatives. Civic House Associates Coalition (CHAC) is an umbrella organization for student-led service and advocacy organizations whose efforts range from tutoring and mentoring in local schools to projects addressing the arts, health, and housing/homelessness. CHAC's "Think About It" series brings together experts to discuss issues such as AIDS, affirmative action, full-service schools, and other topics of interest to constituent organizations.

Civic House programs include PennCORP, Franklin Community, and Careers in the Public Interest. PennCORP is a pre-orientation program that introduces new students to Philadelphia through community service projects, interactive workshops, and social activities. Developed in collaboration with College Houses and Academic Services, the Netter Center, and the Greenfield Intercultural Center, Franklin Community is a learning and living community in Harnwell College House, open to sophomores through seniors dedicated to issues of social justice, civic engagement, social entrepreneurship, and intercultural understanding. In partnership with Career Services, Civic House assists students interested in working in the public and non-profit sectors through educational programming and a variety of internships and post-graduate service and volunteer opportunities.

Civic Scholars was founded in 2006 by Walter H. Annenberg Professor of History Walter Licht, in consultation with civically engaged faculty and senior administrators. While many Penn students participate in curricular and co-curricular civic engagement, Civic Scholars provides some of the most deeply involved students with a sustained and sequential four-year experience that includes close faculty mentorship. Each cohort of up to fifteen students begins with a pre-orientation program, then completes proseminars during their freshman and sophomore years, engages in community service or social advocacy initiatives, enrolls in selected courses, participates in summer internships in the public interest, and conducts capstone research projects aimed at public policy recommendations.

Fox Leadership

The Fox Leadership Program defines its work along three main dimensions: leadership-for-service initiatives, leadership-focused courses, and leadership-building experiences. The most visible leadership-for-service initiative is Penn Leads the Vote, which promotes student participation in federal elections. Other programs include partnerships with national service organizations such as Big Brothers/Big Sisters and Girl Scouts USA, student-led campus initiatives such as PennMERT (Medical Emergency Response Team), and student trips to New Orleans to assist with post-Katrina rebuilding.

Fox Leadership promotes ABCS courses including *Leadership and Democracy*, *Ending Hunger in Philadelphia*, *Politics of Food and Agriculture*, and *Engagement and Elections*. Among the leadership programs offered are Fox Fellowships for Undergraduates and Alumni, which provide one- or two-year fellowships at leading non-profit and government agencies in New Orleans and Philadelphia; and “Fox Leadership Events,” informal mealtime gatherings that offer opportunities to meet with leaders from a range of fields to exchange ideas, build relationships, and learn about the personal and professional paths guests have taken to success.

Other Central Support for Local Engagement

Other central offices that support local engagement include athletics teams, fraternities and sororities, many offices in the Division of the Vice Provost of University Life, and College House and Academic Services. Athletic teams are involved in a number of service and philanthropic efforts, including one-time service events connected to national or local charities—some involving athletic activity, and others not—as well as ongoing service projects directly connected to a sport. These involvements are generally initiated at the team level, by coaches and/or athletes, and are as varied as the teams themselves.

Like athletic teams, fraternities and sororities participate in a range of service and philanthropic activities. According to the Office of Fraternity and Sorority Life, the Greek system as a whole performed an annual average of 21,805 hours of community service over a recent five-year period and raised more than \$500,000 for local and national philanthropies. Many of the hours represent one-time service efforts performed locally by chapters; the fundraising is done for both local and national philanthropies with which the Greek chapters are involved. Notably, the member organizations of the Multicultural Greek Council—the umbrella organization for the historically African-American, Latino/a, and Asian Greek letter organizations at Penn—are predominantly focused on community service and conduct many of their efforts in Philadelphia and the surrounding community.

Most offices in the Division of the Vice Provost for University Life provide civic engagement opportunities for their students. Students involved in the Community Outreach Program of La Casa Latina tutor and mentor in North Philadelphia schools and teach ESL to recent immigrants in South Philadelphia. The Greenfield Intercultural Center supports Focus First Philly, a student-run vision screening initiative for pre-school-age children in West Philadelphia. The Office of Equity and Access Programs also offers opportunities for Penn students to become involved with local learners through several educational programs.

The College Houses, where approximately 60 percent of Penn’s undergraduates live, offer a variety of programs for local engagement. These programs typically focus on an academic theme (e.g. education/mentoring, social justice, women in science) on which residents collaborate with the community. Du Bois College House hosts the ASE Academy, an African-centered enrichment program in Philadelphia, which works with sixth and seventh grade students on Saturdays during the academic year.

Finally, there are several student-led organizations involved in local efforts ranging from educational support to health care. Several are affiliated with a University office or faculty/staff member, while others operate more or less independently, often in partnership with a local nonprofit organization.

The Office of Student Affairs works with these organizations to help ensure the most productive integration with local initiatives.

Undergraduate Schools and Local Engagement

The academic component of local engagement is provided by the undergraduate schools and academic departments. One important way that undergraduates engage the local community is through research activity. The Working Group produced a list of recent undergraduate research projects involving the local community (Appendix 3.1). While the ABCS program helps fund courses and coordinate with the community, the courses are taught and evaluated by the faculty of the schools. Below are some of the key activities in each of the undergraduate schools.

College of Arts & Sciences

The College of Arts and Sciences is deeply involved in civic engagement, with many of these efforts built directly into the curriculum through academically based community service (ABCS) courses. Faculty members collaborate with the Netter Center to engage with local public schools in the Philadelphia School District, as well as other nonprofit community-based organizations, including the city's Mural Arts Program and Prometheus Radio Project.

Social sciences. Participating departments in the social sciences include Africana Studies, Anthropology, Psychology, Sociology, Urban Studies, and interdisciplinary programs in the Center for Africana Studies and the Asian American Studies Program. Many of the College's social science courses involve civic engagement, problem-based learning, and field research in the surrounding Philadelphia community. In several departments, faculty supervise students conducting fieldwork and other research on local communities and organizations, government-run institutions such as the criminal courts, and public urban spaces. For example, the Urban Studies major requires that all juniors conduct fieldwork in the city through an unpaid internship, which provides students the opportunity to work closely with a community group, public agency, nonprofit or private organization. The Sociology Department invites undergraduates to participate in the Penn Urban Ethnography Workshop, which promotes and supports social science research on urban cultural affairs, including ethnographic fieldwork conducted in urban spaces throughout the surrounding Philadelphia region.

Math and science. The two largest programs in math and science are Moelis Access Science and Penn Science Across the Ages. The Moelis Access Science Program, now in its twelfth year, grew out of a course offered by the Biology Department entitled "Learning Biology by Teaching Biology in a Local High School," and was initially supported by an NSF grant administered by the Mathematics Department. The program is now run by the Netter Center for Community Partnerships. Moelis Access Science annually supports students enrolled in approximately a dozen STEM ABCS courses, as well as 25 undergraduates, who work with teachers and students in the public school system to provide teacher-training and intensive learning experiences for students from kindergarten through high school. Penn Science Across the Ages (PSAA) is a student-run organization founded in 2008, dedicated to enhancing science and math education in the public school system. The 79 undergraduates currently involved in

PSAA work with small groups of children to implement lesson plans that are part of the students' regular curriculum, as well as to run an Environmental Science Fair. They are trained in inquiry-based teaching methods, which they use in the classroom and in after-school programs. They most recently worked with the Alexander Wilson Elementary School and the Science Leadership Academy in Philadelphia.

Arts and humanities. There are three large streams of civic engagement activity in the arts and the humanities at Penn: student-initiated work, sometimes led by an affiliated or full-time faculty member; academically based community service courses, usually but not exclusively led by faculty; and a new Art and Culture initiative to make the arts more central to student experience on campus through civic engagement. In addition, the Kelly Writers House sponsors a children's literacy program that serves local elementary schools in the West Philadelphia area and collaborates with Philadelphia organizations on programs that bring together new audiences and communities of writers from beyond the Penn campus.

School of Engineering and Applied Science

Civic engagement is a defining feature of Penn Engineering's commitment to prepare its students to become global leaders in technology-based fields. Many of its research centers host educational activities and organize outreach programs and activities for the local community. Some of the centers have dedicated full-time outreach coordinators as part of their funding structure. Examples of programs and activities hosted at Penn include summer training programs for high school teachers, summer research internships for high school students, and "Open House" days and lab tours where visitors learn about current research. Outreach programs include participating in the annual Philadelphia Science Festival; offering presentations by individual faculty members/researchers at nearby high schools; and hosting the Philly Materials Science and Engineering Day, an annual event co-sponsored by Penn and Drexel University to educate children and the general public about materials science and engineering.

Other initiatives include Communitex, a "digital inclusion" student club, which partners with a West Philadelphia nonprofit, Turning the Tide, to provide computer instruction to adult community learners. Penn's student chapter of Engineers Without Borders runs several sustainable development projects on two high school campuses, mentoring local students in the process. These students staff weekly classes at Saul Agricultural High School and Girard College to teach students about water resource issues. Penn Engineering's Summer Academy in Applied Science and Technology is an intensive three-week summer residential academy for high school students in which participants take courses in biotechnology, computer graphics, computer programming, nanotechnology, robotics, or networked systems. It offers generous need-based financial aid to encourage broad and diverse participation.

Many of Penn Engineering's efforts encourage young women to pursue careers in science and engineering. The Society of Women Engineers (SWE) organizes a Girls in Engineering and Related Sciences (GEARS) Day in which female high school students participate in a day of hands-on engineering lab activities, gaining exposure to the different engineering disciplines. The Women in Computer Science Club also runs a Shadow Day to introduce female high school students from the Philadelphia area to engineering and computer science. The Advancing Women in Engineering (AWE) program offers high school junior girls the opportunity to come to campus for a weekend to learn about engineering. Each fall, students

are paired with undergraduate women engineers who live on campus, and they have the opportunity to visit classes, eat in the dining hall, hear from current students, and meet with faculty and staff in Engineering. AWE also hosts an annual week-long program in the summer—Girls in Engineering, Math, and Science (GEMS)—which offers middle school girls opportunities to participate in hands-on science, math, and engineering labs. Content areas include bioengineering, nanotechnology, materials science, mechanical engineering, robotics, graphics, and computing.

School of Nursing

Community partnerships are central to the mission of the School of Nursing. Undergraduates are engaged with Philadelphia and the surrounding community through coursework, including ABCS courses, research projects, and clinical practice. The School's Healthy in Philadelphia (HIP) initiative is a health community partnership with members of the West Philadelphia community. HIP capitalizes on the School's existing activities and strengths to improve health, address health care disparities, and improve the quality of care for residents of West Philadelphia. The Netter Center for Community Partnerships, the Office of Government and Community Affairs, and other partners across campus support HIP. Several of its focus areas build on the School's existing strengths and initiatives, including: 1) health promotion and care for vulnerable populations; 2) healthy nutrition and obesity prevention; 3) healthy interpersonal and sexual relations; 4) violence and injury prevention; and 5) prevention of tobacco and other substance use.

The undergraduate curriculum of the School of Nursing is deeply engaged in community health. Three required undergraduate courses focus on engagement with the community: Women's Health Clinical (NURS 215), Psychological Clinical (NURS 235), and Community Clinical (NURS 380). In addition, students choose from among 10 case studies that offer them opportunities to study a specialty area of practice with an expert in a small group environment. Community engagement is incorporated into the experience to facilitate the understanding and application of the case study content. In addition, Nursing faculty offer a number of ABCS courses in which students and faculty collaborate with West Philadelphia public schools, local communities of faith, and other community organizations to address critical community healthcare issues, including a Community Based Participatory Research program. Each year, Nursing students and high school students present data from the ABCS project at national meetings and conferences.

Wharton School

The Wharton School is committed to training students to be leaders in both business and the community. The Wharton Social Impact Initiative harnesses the knowledge, creativity, and resources of the Wharton community to investigate, develop, and implement solutions to enduring social problems. Wharton Social Impact efforts include undergraduates in academic and co-curricular experiences. There are over 25 Wharton Social Impact Interns who work on community-based projects for a year, and two key Wharton classes offer students opportunities to engage with the local community. Management 100 is a required class, usually taken during a student's first or second year, in which student teams participate in over 70 community service projects. Each team spends an average of 300 hours working with local organizations and, at the end of the semester, delivers an oral presentation to members of the organization and instructors. The Wharton Field Challenge (MGMT 353) is a project-based class for juniors and seniors.

Wharton has also recently instituted a secondary concentration in Social Impact, which includes a required experiential learning component.

There are several examples of faculty-student partnerships or student-led initiatives at Wharton that engage the local community. One such partnership is the Financial Literacy Community Project, which provides financial literacy programs in West Philadelphia schools. The Social Impact Consulting Club also provides consulting services to local nonprofit organizations. Members of this club organize their own working teams and work closely with the managers of the nonprofit. Student groups also sponsor special events to engage with the community. For example, Wharton Women in Business organizes a one-day conference for local high school girls that focuses on financial literacy and its importance in life choices.

Evaluation of efforts across units and schools

Penn expends enormous energy and resources to build and deepen partnerships and to improve community life in Philadelphia and the surrounding areas. Efforts to evaluate these programs have grown over the past few years and show high levels of civic engagement by our undergraduates and meaningful outcomes for those who participate in community service activities. Student academic work involving local engagement is evaluated primarily through coursework: a student works in a community setting, produces written work, and is graded by a faculty member. This is the most direct and important way that a university can and should measure student learning, but there are other ways to evaluate these efforts as well.

In 2009, the Vice Provost for Education convened a group of faculty and staff from across campus to discuss how the University might better understand the impact of a Penn education on the civic development of its students. Those meetings led to two promising pilot projects. Matt Hartley, Associate Professor in the Graduate School of Education, led a series of moderated focus groups of Penn undergraduates to learn more about their experiences at Penn, including their civic involvement. A first set of focus groups drew together first-year students from each of Penn's undergraduate schools, exploring their experiences in high school, their decision to attend Penn, and the process by which they selected extra-curricular activities, especially those with a civic or community emphasis. A subsequent set of focus groups of upperclassmen from each of the undergraduate schools sought to understand how student involvement in activities changed over their four years and the degree to which civic engagement was important in their curricular and co-curricular experiences.

The study revealed several important themes. First, the first year is often decisive in determining the activities in which students will participate at Penn. Students who became involved in local engagement were far more likely to continue to do so. By sophomore year, co-curricular activities were established, and by junior year students began to focus on activities that would help them with their post-graduation goals. Second, there is an "embarrassment of riches" for co-curricular activities at Penn. Students initially felt overwhelmed by opportunities to become involved and have so many choices that it can be difficult to develop a useful strategy of engagement. Third, first-year students reported feeling reticent about becoming involved in activities that took them away from campus. Fourth, a number of students reported stumbling upon ABCS courses and wishing they had known about them earlier. Further, students who took ABCS courses felt it would be helpful to have guidance about courses they might take that would

build on their previous experience. The findings from this exploratory study point to a number of areas in which Penn might make inroads in encouraging more involvement in local engagement.

A second pilot study was undertaken by Michael X. Delli Carpini, Professor of Communication and the Dean of the Annenberg School for Communication. With support from the Office of Institutional Research and Analysis, Dean Delli Carpini developed and analyzed a data set from one cohort of students who enrolled at Penn in 2006 and graduated in 2010. The data provide a portrait of Penn students' involvement in local (i.e., campus and community) engagement activities. For example, the Senior Survey asked about students' involvement in 14 co-curricular activities (Figure 3.2). While many of these activities might better be seen as "pre-cursors" to the more explicitly civic and political engagement of central interest, they are nonetheless illuminating. Of particular note, 43 percent of seniors report having engaged in community volunteer activities. Combining all 14 of the activities listed in Figure 3.2 into a single measure of engagement (Figure 3.3) reveals that almost all (95%) of Penn seniors report participating in at least one of these activities while at Penn, and over half (53%) in four or more such activities.

Figure 3.2
Engagement During Time At Penn
Senior Survey 2010

ACTIVITY	YES	NO
Non-Sports Clubs	47%	53%
Volunteer Activities	43%	57%
Fraternities	27%	73%
Cultural Awareness Groups	24%	76%
Intramural Athletics	24%	76%
Cultural Groups	22%	78%
ABCS Courses	21%	79%
Religious Groups	19%	81%
Music/Theatre	17%	83%
Sports Clubs	16%	84%
Student Publications	15%	85%
Intercollegiate Sports	11%	89%
Political Group	11%	89%
Student Government	7%	93%

Figure 3.3
Percentage Distribution of Total Extra- & Co-Curricular Activities

# of Activities	None	1-3	4-6	7-9	10-12	13-15
Percentage of Students	5%	42%	45%	7%	1%	<1%

The study also provided some preliminary but suggestive indications of what determines the likelihood that a student will become engaged during their time at Penn. The consistently strongest predictor of engagement while at Penn (among the variables we could measure) is prior engagement in high school. This is most clearly seen by looking at the correlation between students' overall engagement at Penn and in high school ($r=.24$). Participating in an internship within the US while at Penn is also modestly though significantly correlated with increased engagement ($r=.15$), as are certain attitudes developed at Penn, such as questioning beliefs about one's own or others' religion ($r=.14$), different sexual orientations ($r=.15$), and/or different ethnicities and races ($r=.21$). Satisfaction with various aspects of campus life (e.g., events, social activities, and intramural sports) all correlated modestly but significantly with greater local engagement. Students who believed they were able to achieve a good balance between academics and extracurricular activities were also more likely to be engaged ($r=.16$), and students enrolled in the School of Nursing were more likely than those enrolled in one of the other three undergraduate schools to participate in volunteer activities ($r=.29$).

The report also suggests factors that do *not* appear to consistently influence engagement: whether a student went to a private, public or parochial high school; academic performance while in high school or at Penn; parental education or income; race and ethnicity; and major while at Penn (with the exception of Nursing). Further analysis may enable us to understand more fully how particular kinds of experiences or sequences of experiences tend to produce greater civic and political awareness and agency among Penn undergraduates. Because a number of Penn's peer institutions also participate in the freshman and senior survey, it may be possible to work collaboratively with them to engage in more nuanced survey questions and comparative benchmarking.

The work currently undertaken by the Netter Center for Community Partnerships also enriches our understanding of the effects on students of participating in ABCS courses. Studies of the Netter Center's work by its Director of Evaluation, as well as others, have found positive outcomes of ABCS courses on student learning. For example, a recent study by Professor Emeritus of Anthropology Francis Johnston who serves as Co-Chair of both the Netter Center's Faculty Advisory Board and its Evaluation Oversight Committee, compared the experiences of Penn undergraduates taking ABCS courses with students in similar courses without a community engagement component. Of the students who had taken ABCS courses, 47 percent reported an increase in research skills, as compared to 36 percent of non-ABCS students. Additionally, students in ABCS courses more often reported an increase in their desire to act

morally and ethically, to become an effective community leader, to develop a meaningful philosophy of life, to be concerned about urban communities, and to become a volunteer in the community.

Strategic Considerations

The large number and vibrancy of civic engagement programs and courses—and their ability to cultivate the widest range of student leadership—may be attributed to the absence of a single structure or uniform requirements. However, our service learning activities might be better communicated if they were somewhat more coordinated. For example, it is not always clear to new students how they should become affiliated with one of the three University centers for local engagement. Focus groups suggest that, even when a student is involved in one center, he or she has little understanding of the others. A stronger orientation and training program could help students gain a better overall understanding of the opportunities available to them, as well as helping to introduce them to the educational opportunities available in Philadelphia and the surrounding community.

More generally, we may want to help students think about their local engagement developmentally. While students have many opportunities to be involved in the community, they are offered little guidance about how they might “scaffold” these experiences. What courses might be most useful to a student interested in becoming involved in the community for the first time? If a student has already taken a course that spurred interest in local engagement, what other courses or opportunities would best build on that experience? How might a student link involvement with a particular community partner across several courses to create a deeper form of engagement? Exploring these and other questions could help students develop a set of paths and experiences through which they can maximize the educational and other benefits of local engagement.

We could assist students in this regard by mapping key University partnerships with local groups and institutions. So many local engagement activities are occurring that students may well be collaborating with the same institution without realizing that others at Penn are involved. A system that maps local engagement partnerships, much along the lines recently undertaken to better depict Penn’s global engagement footprint, would be an effective tool in orienting both students and faculty to Penn’s efforts.

We might also do well to encourage faculty involved in community-based teaching and research to come together and discuss their work, exploring avenues of collaboration. The Netter Center’s Moorman-Simon Program for Education and Schooling for Democracy and Citizenship has launched a series of faculty seminars in areas such as the environment, health and nutrition, culture and the arts, college access and democracy, and community-based teaching and learning. These groups have drawn together faculty members across Penn’s schools to discuss their work and support local engagement activities. Civic House is currently developing a faculty group to support the efforts of student leaders. These initiatives and others like them could be effective means to advance Penn’s work with the local community.

Recommendations

The array of co-curricular or extra-curricular activities examined here are by definition voluntary and thus not a required part of a Penn undergraduate education. At the same time, the impressive range of civic engagement activities undertaken by Penn students adds to the educational experience in extraordinarily valuable ways, reflecting and affirming the University's deep institutional commitment to community and public service.

To further extend and focus Penn's important role in civic life, the University should strengthen the coordination of its local and national engagement initiatives for undergraduates. The Office of the Provost, the Council of Deans, the Council of Undergraduate Deans, and the Undergraduate Working Group should work with the leaders of Penn's three major centers of community engagement (Civic House, Fox Leadership Program, and Netter Center) on methods for improving communication to first-year students and coordinating efforts to collect and analyze information about the local and national engagement activities of Penn undergraduates. It would be particularly useful for Penn's three major centers of community engagement to work together to map key local engagement partnerships, including student and faculty collaborations. This engagement map would help current and future participants understand the larger picture of Penn's local engagement, identify ongoing projects and partnerships to join, and suggest where new efforts might be directed.

Through our collaborative engagement with communities all over the world, Penn is poised to advance the central values of democracy: life, liberty, opportunity, and mutual respect.

—President Amy Gutmann, inaugural address, 2004

Chapter 4: Global Engagement

Introduction

Penn is an American university with a global perspective that prepares its students to be the leaders of an increasingly global society. To implement this mission of global engagement, we have provided students with increasingly robust opportunities for study and internships abroad—in both longer-term and shorter-term formats—and also forged a campus community that is vibrantly global in both character and scope. Moreover, we have significantly increased our initiatives designed to make an impact in the global arena, especially improving global health and increasing access to education around the world through open learning.

In 2011, Penn strengthened its longstanding commitment to global engagement by appointing its first Vice Provost for Global Initiatives, charged with providing strategic direction for Penn’s global endeavors; collaborating with schools and centers across Penn; and overseeing the central offices that support global engagement: [Penn Abroad](#), [International Student and Scholar Services](#), and [Global Support Services](#).

In 2012, the University adopted a *Strategic Framework for Penn’s Global Initiatives* designed to chart the University’s global engagement over the next five years (Appendix 4.1). The Framework has three pillars: preparing Penn students for an increasingly globalized society; strengthening Penn as a global agenda-setter; and promoting healthy, inspiring, and productive lives around the world. The University also launched a comprehensive Penn Global website to provide a far-reaching overview of all of Penn’s global activities and initiated efforts to strengthen the evaluation and coordination of those activities. And in 2013, the University announced the establishment of the Perry World House, to serve as a focal point and gathering place for global engagement at the heart of campus.

In addition to this activity on campus, the University’s global engagement is defined by programs around the world, which are included in detail on our [Global Activity Map](#). For example, the new Penn-Wharton China Center in Beijing will provide a major intellectual presence in this critical region, bringing together faculty engaged in research in China and hosting conferences, workshops, and other major educational programs.

Undergraduate education is central to Penn’s global engagement. Undergraduate students take part in diverse study abroad and international internship opportunities that significantly enhance their Penn experience. Our wide range of international students creates a truly global campus. The curricula of the four undergraduate schools bring knowledge of the world into our classrooms and enrich the learning experiences of all Penn students. And after graduation, Penn undergraduates remain deeply connected to the institution in ways that expand and sustain Penn’s global reach.

Working Group Charge and Process

The charge to the Global Engagement Working Group was to evaluate Penn's efforts at global engagement, especially as those efforts relate to undergraduate education. The group was asked to articulate what is important about Penn's current global engagement efforts and how those efforts could be improved, within the framework of the MSCHE Standards of Excellence, especially Standards 7, 11, and 14.

The group gathered a variety of data on the global activities of both faculty and students. In addition to collecting information about the extent of student engagement, the group also considered the processes in place to make students aware of the international activities and opportunities available to them. Specific questions that framed the group's work included:

- What are the goals of global engagement for Penn's undergraduate students?
- How do members of the Penn community understand global engagement as it relates to undergraduate education?
- What are some of the ways in which Penn currently encourages global engagement in its undergraduate educational programs?
- What is the role of international undergraduates in our global engagement initiatives, and what are the best strategies to continue to recruit and support the most outstanding international undergraduates to Penn?
- What are key metrics that might guide future planning for undergraduate education in relation to global engagement?

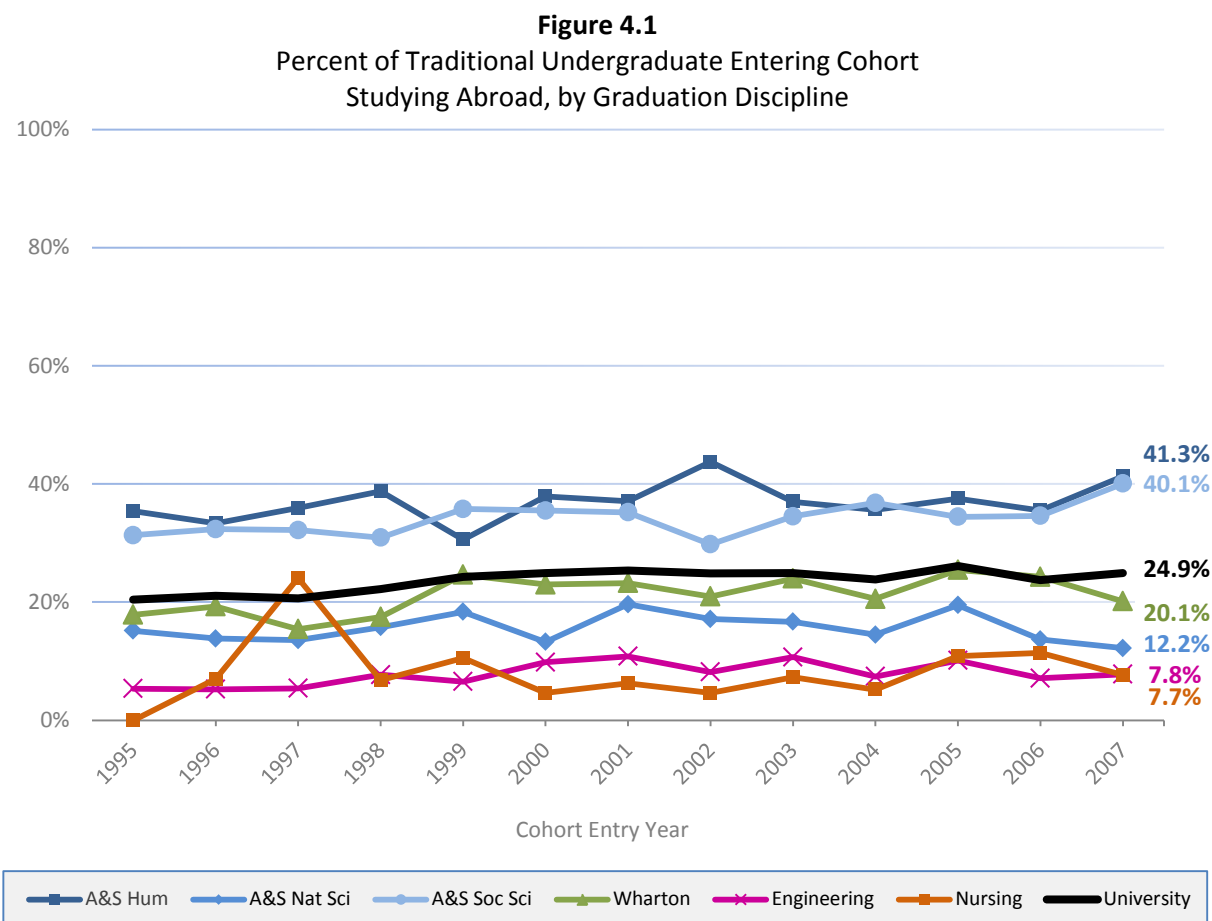
International Opportunities for Undergraduates

Undergraduate study abroad programs at Penn are administered by two offices: Penn Abroad, managed centrally by the Office of the Vice Provost for Global Initiatives, and Penn Summer Abroad, part of the College of Liberal and Professional Studies (LPS) in the School of Arts and Sciences. Penn Abroad offers semester- and year-long study abroad experiences, as well as international summer internships. Penn Summer Abroad offers a variety of short-term, for-credit international experiences. In addition to these two offices, there are program- and school-specific programs in the four undergraduate schools. The Working Group focused on two basic questions about Penn Abroad and Penn Summer Abroad: 1) What are the characteristics of those who study abroad? 2) Where do these students study?

Who participates in Penn Abroad?

Each year, approximately 600 undergraduate students take part in a semester or academic year study abroad opportunity through Penn Abroad. Analysis of first-time full-time cohorts of entering students reveals that approximately a quarter of Penn's traditional undergraduate students have a semester- or year-long study abroad experience prior to completing a bachelor's degree. Most students who participate in a study abroad program elect a semester-long (rather than year-long) program and, of those who select a semester-long program, more than three-quarters select the fall semester. Participation rates in study abroad differ significantly by program of study. Students in the natural sciences, engineering, and nursing

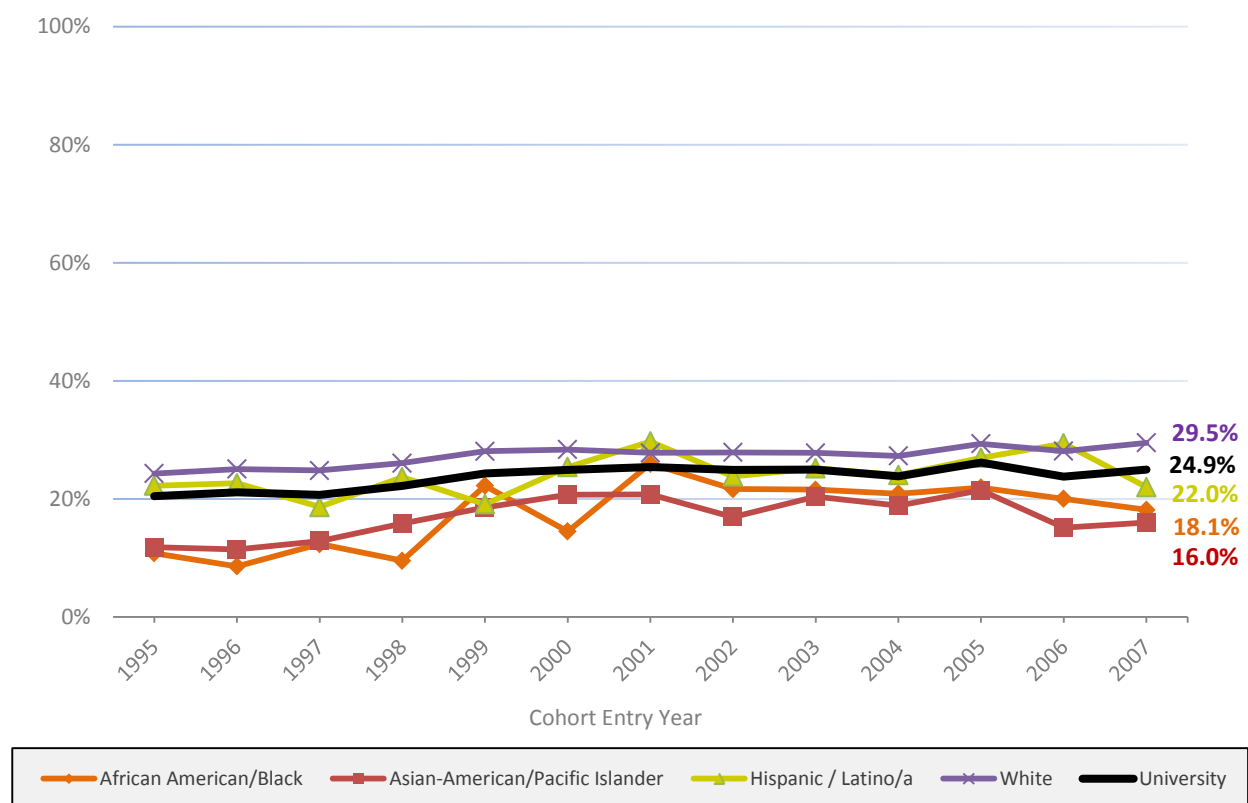
participate at much lower rates than their counterparts in the humanities and social sciences (Figure 4.1). These differences are explained in part by the fact that STEM fields and nursing do not allow as much flexibility in course sequencing. Additionally, many fields in the humanities and social sciences include cultural or international elements that are directly related to study abroad.



Following national trends, undergraduate women at Penn are more likely than their male peers to participate in study abroad. Among those in the 2007 entering cohort, 29 percent of women took part in study abroad while only 21 percent of men did so. This gender difference can be explained in part by differences in academic programs. Women are overrepresented in the humanities and social sciences and underrepresented in engineering, in which relatively few students study abroad. However, the data for cohorts between 2003 and 2007 indicate that women are more likely to study abroad regardless of discipline. Differences in participation rates are greatest in the College, with 9-14 percent more women participating in study abroad, and lower in the professional schools, with 3-7 percent more women taking part in study abroad.

Mirroring national participation rates in study abroad, there are differences in participation based on race/ethnicity, with White students being significantly more likely to participate in study abroad. In the 2007 entering cohort, 30 percent of those students identifying as White studied abroad at some point during their undergraduate careers, compared to 22 percent of Hispanic/Latino/a students, 18 percent of African American/Black students, and 16 percent of Asian American/Pacific Islander students (Figure 4.2).

Figure 4.2
Percentages of Traditional Undergraduate Entering Cohort
Studying Abroad - by Race/Ethnicity



Unlike students at many universities and colleges, Penn students receive Penn credit, not transfer credit, for courses completed on Penn Abroad programs. This means that in most cases, a student's financial aid can be applied toward a Penn approved study abroad program. This practice makes it easier for students with financial need to pursue opportunities abroad. Nevertheless, students with financial need participate in study abroad at lower rates than those with no need. In the 2007 entering cohort, 27.5 percent of students without financial need participated in study abroad (Figure 4.3), while 20 percent of those with financial need did so (Figure 4.4). For complete information about student participation in Penn Abroad programs, see Appendix 4.2: Penn Abroad Data 2008 to 2012.

Figure 4.3
Percent of Traditional Undergraduate Entering Cohort
Studying Abroad by Graduation Discipline, WITHOUT Financial Need

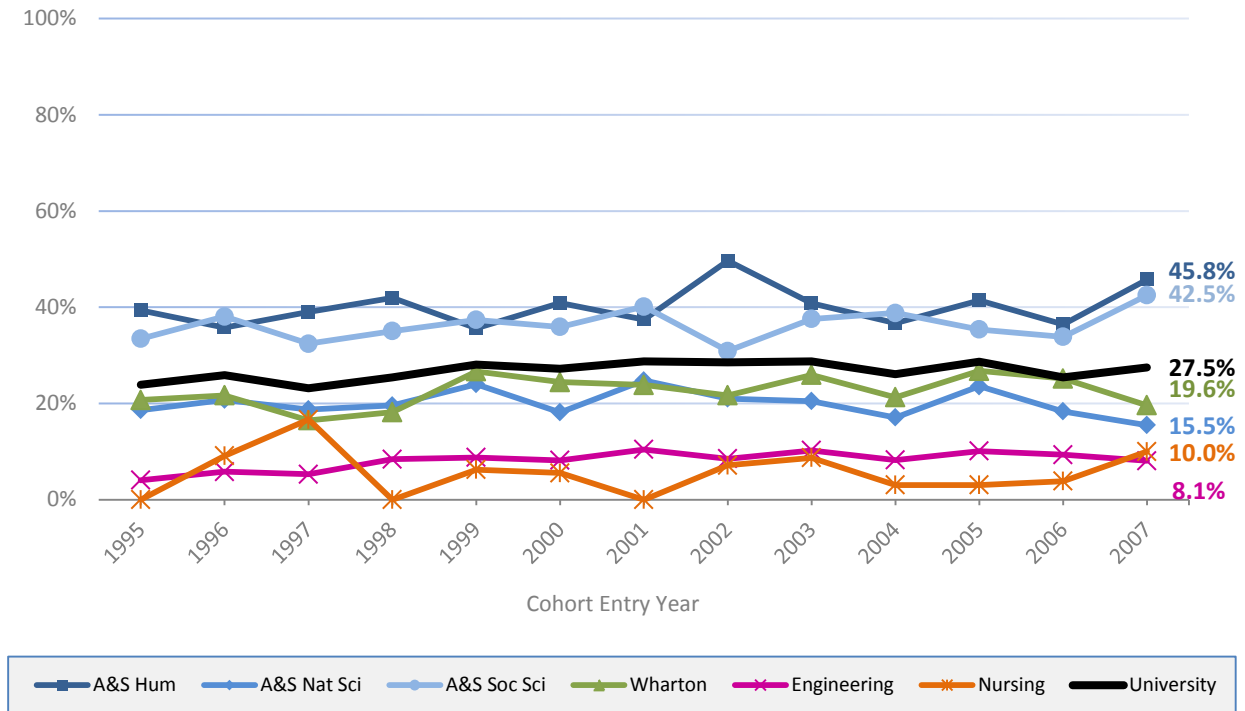
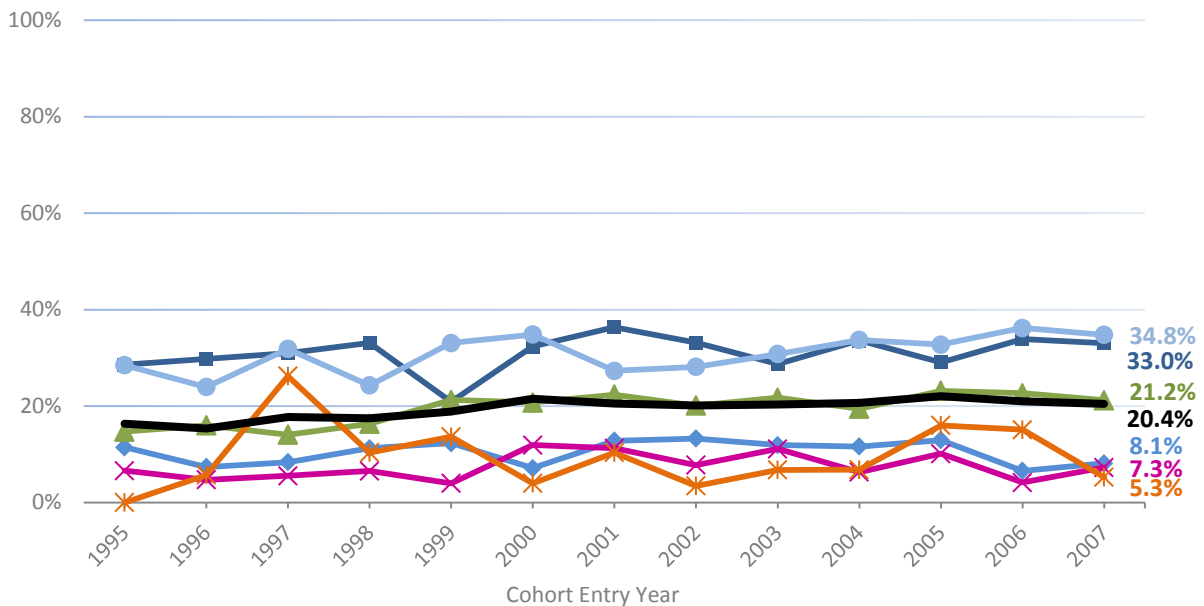


Figure 4.4
Percent of Traditional Undergraduate Entering Cohort
Studying Abroad by Graduation Discipline, WITH Financial Need



Where do study abroad participants choose to study?

The majority of students who study through Penn Abroad choose programs taught in English and/or programs located in Europe. There are many possible reasons for these preferences, such as language similarities, choice of academic programs, student family origin, and travel costs. As Penn's global initiatives move forward, stronger promotion of Africa, Latin America, and the Pacific Rim would encourage a more diverse distribution of experiences and better prepare students to engage with some of the world's most important developing economies.

Penn Abroad also manages Penn's International Internship Program. In summer 2013, 65 students participated in 8-to-12-week non-credit internships with non-profit organizations in developing countries, up almost 30 percent from 51 students in summer 2012. Data show that these internships draw high participation from students receiving financial aid (Figure 4.5) with a large number of those students traveling to Africa and Asia (Figure 4.6).

Figure 4.5
Percentage of Undergraduate Students on Need-Based Financial Aid, Summer 2013

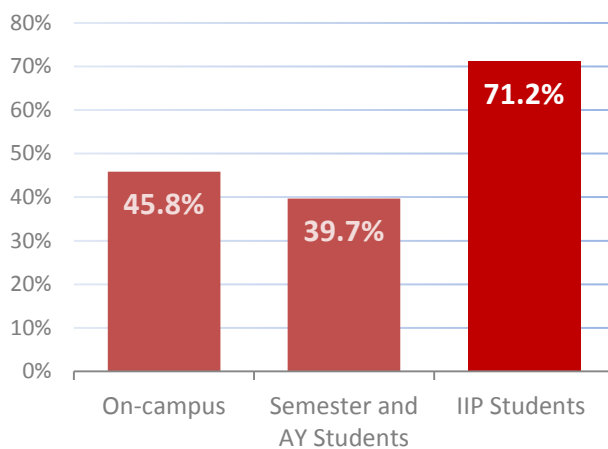


Figure 4.6
International Internship Program (IIP) Participation at Penn, by Country
Summer 2013

TOTAL	64
Botswana	14
India	12
Ghana	7
China	6
Guatemala	6
Singapore	6
Argentina	5
Benin	3
Gambia	2
Brazil	1
Germany	1
Hong Kong	1

Penn Abroad Program Review Process and Outcomes

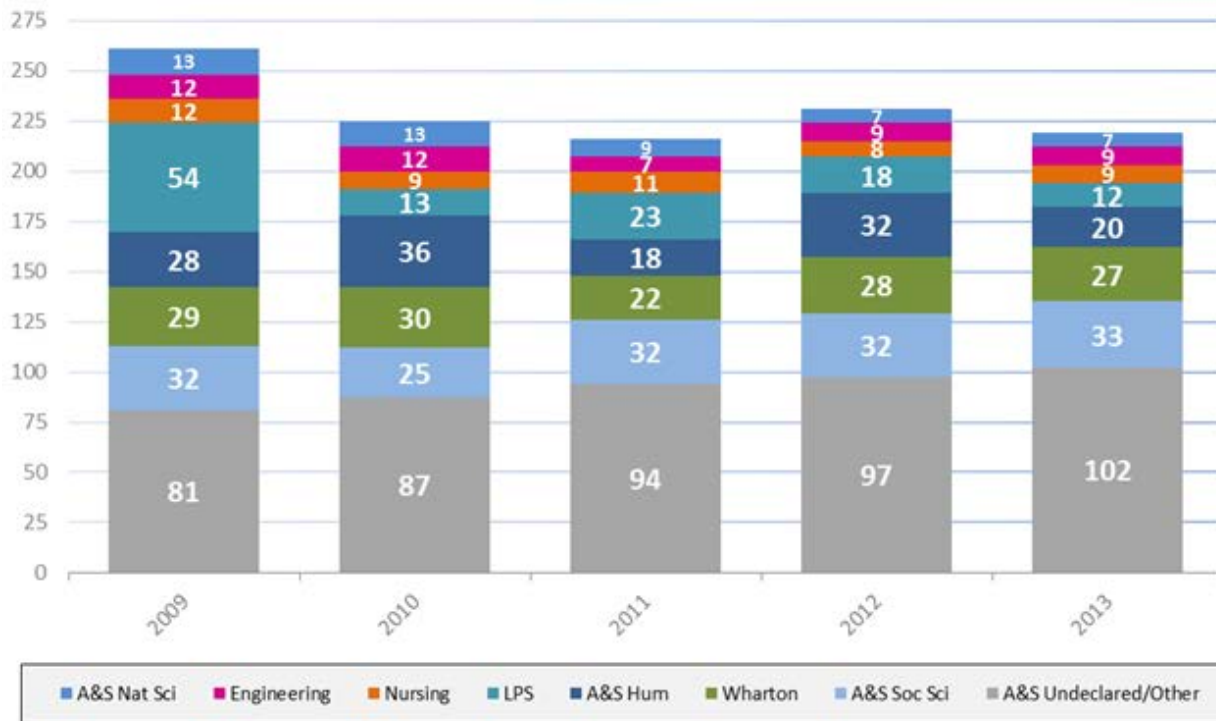
Penn Abroad programs are reviewed based on six core standards: 1) academic quality, 2) cultural and linguistic integration, 3) student enrollment and exchange balance, 4) partner responsiveness and communication, 5) diversity of destinations and disciplines, and 6) financial feasibility. No single factor determines the approval or elimination of a program. However, weak or questionable academic quality, along with minimal opportunities for cultural or linguistic integration, will lead to heightened scrutiny.

In 2011-2012, Penn Abroad reviewed all of its 165 then-approved programs, based on the criteria above. This process confirmed the strength and quality of most programs, while identifying some programs that needed further review or no longer met our students' academic interests and needs. The review resulted in the modification of 16 programs and the removal of 33 programs. We now have 132 approved programs, offered by 108 partner universities (Appendix 4.3). Penn Abroad and the Undergraduate Study Abroad Working Group (USAWG) have developed a four-year cycle for ongoing review of programs. In 2012-2013, Penn Abroad continued to work closely with the undergraduate schools on the programs that needed further review. In 2013-2014, the focus of the review is on programs in Asia.

LPS Summer Programs

The College of Liberal and Professional Studies currently runs 8 summer programs (in Alicante, Spain; Buenos Aires, Argentina; Cannes, France; Grahamstown, South Africa; London, England; Seoul, South Korea; Tours, France; and Venice, Italy). Approximately 220 students enrolled in the summer of 2012 (Figure 4.7), 90 percent of whom were Penn undergraduates. Penn Abroad and LPS coordinate their study abroad programs to help ensure consistency in opportunities for students.

Figure 4.7
LPS Summer Abroad Participation Headcount by School/Discipline
(All Enrollment Levels)

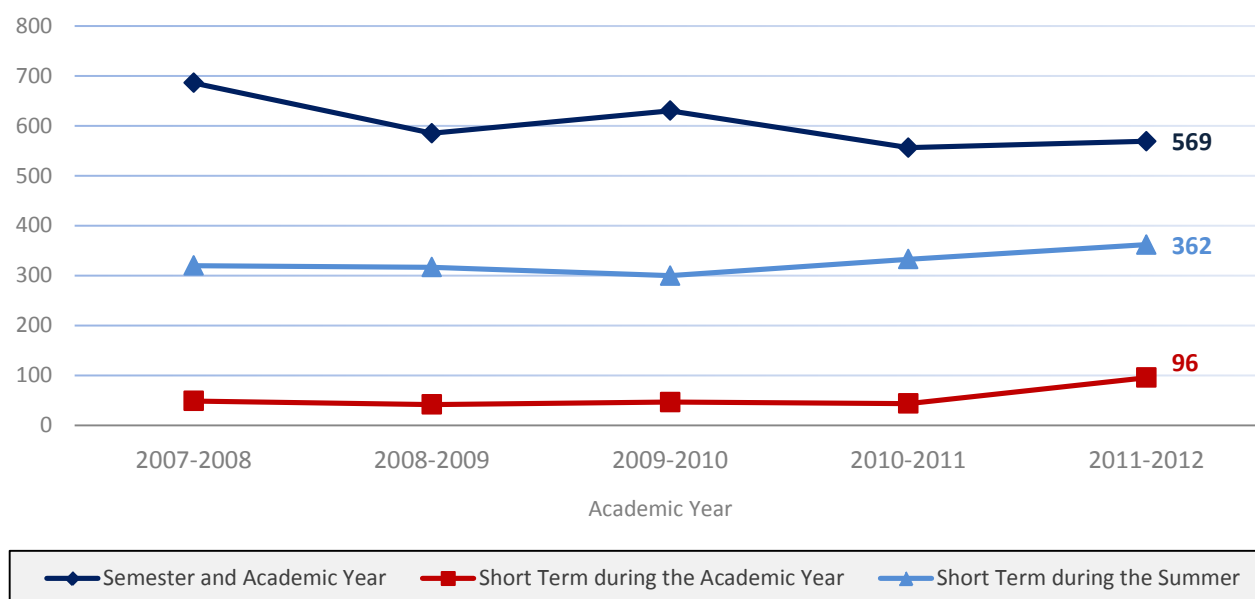


The LPS Summer Abroad Programs are evaluated every summer in two ways: standard online course evaluations and an additional online program evaluation developed by LPS, designed to assess all aspects of students' experiences, including program administration pre-departure and onsite, intended academic outcomes in relation to learning outcomes achieved at the end of the programs, housing, cultural excursions, and other onsite immersion experiences. Results are shared with faculty program directors for their Final Program Reports and also inform annual planning for program changes.

Data Overview of Study Abroad at Penn

Figure 4.8 provides an overview of undergraduate for-credit and not-for-credit activities abroad as reported in the Institute for International Education's Open Doors report for 2012. Figure 4.8 indicates that participation in traditional study abroad programs over the past five years has decreased, while participation in short-term study abroad for credit, in both the academic year and the summer, has increased. Penn uses its Global Activities Registry—a travel registry for students, staff and faculty travelling overseas—to aid in the collection of information about not-for-credit international activities. For additional data, see Appendix 4.2.

Figure 4.8
Undergraduate Participation in Open Doors, by Academic Year
(Includes International Students)



Global Activity on Campus

All of Penn's schools, as well as the [interdisciplinary centers and institutes](#), involve scholars and experts from around the world in their work. Creation of the new Perry World House will galvanize interest in global engagement on campus. A state-of-the-art center for global research, it will serve as a vibrant gathering place for students, faculty, and distinguished visitors. Through its Global Innovations Program, the House will welcome international fellows and professors from institutions around the world, provide opportunities for undergraduate fellows to engage in global research, and host international conferences on critical global issues, enhancing the flow of ideas between Penn research and global policymakers.

The curricula of all four undergraduate schools address global issues in specific ways discussed below. The College, Nursing, and Wharton also require students to complete the equivalent of four semesters of foreign language study. This requirement can be satisfied through coursework, Advanced Placement credit (prior to matriculation), or passing a proficiency exam (on campus). While there is no foreign language requirement in Engineering, roughly half of the school's students take at least one semester of a foreign language.

College of Arts and Sciences

The College curriculum includes specific requirements that promote cultural competency and the ability to think about issues, people, and theories that may be foreign to one's experience. The curriculum's emphasis on broadly useful intellectual capabilities in the Foundational Requirements (including the four-semester

Language Requirement, Cross-Cultural Analysis requirement, and Cultural Diversity in the U.S. requirement) fosters students' abilities to engage globally. The College's Sector requirements are intended to ensure breadth of education across fields of knowledge, along with interdisciplinary explorations that link fields of knowledge, including global topics and research. Many of the courses that fulfill Sector requirements focus on global cultures or topics outside North America.

The Cross-Cultural Analysis requirement ensures the importance of global engagement in the College curriculum, as it requires students to develop their abilities to understand and interpret the cultures of peoples with histories different from their own and to increase their knowledge and understanding of socio-cultural systems outside the United States. This exposure to the internal dynamic of another society should lead students to recognize the values and practices that define their own cultural framework. Additionally, students are required to complete a Cultural Diversity in the United States requirement, which aims to develop their knowledge of the history, dynamic cultural systems, and heterogeneous populations that make up the national culture of the United States, itself composed of global citizens in movement and interaction with one another.

In addition to College-wide requirements, many majors in the College educate their students on global topics and build skills, from those that are explicitly international, such as International Relations, to those focused on specific regions or countries, such as Africana Studies and the five areas within Romance Languages (Catalan, French, Italian, Portuguese, and Spanish). Philosophy, Politics, and Economics offers a globalization theme; Political Science offers an international relations track; and English and History offer such international concentrations as colonial and postcolonial literature and world history. The Assessment of Undergraduate Educational Programs in the School of Arts and Sciences report (Appendix 7.1) includes assessment of the Cross-Cultural Analysis Requirement, Cultural Diversity in the U.S. Requirement, and other majors offered in the College.

The study of languages offers students the opportunity to learn about the world's cultures. The School of Arts and Sciences teaches more than 50 languages, and the [Penn Language Center](#) offers a variety of less commonly taught languages, as well as additional language courses and innovative online instruction. (See Appendix 4.5 for a list of all languages offered at Penn.) Students are especially encouraged to go beyond the Foreign Language Requirement and seek out ways to make further language study part of their curriculum. The College's Language Advisory Board is preparing a report, which should be completed in 2014, assessing the levels of proficiency achieved by students in each language sequence and setting future goals for the language curriculum.

School of Engineering and Applied Science

Penn Engineering strongly encourages students to make international experiences part of their undergraduate education, through both study abroad and service learning projects. In 2012-13, 51 Engineering students studied through Penn Abroad programs, and 62 Engineering students participated in a for-credit summer program. Penn Engineering organizes specialized summer programs abroad in partnership with such international universities as the Engineering Summer Program at University of Cantabria in Spain, the Université de Technologie de Compiègne in France, and the University of Duisburg-

Essen in Germany. There are also a number of opportunities for eight-to-twelve-week summer research internships at one of Penn Engineering's partner institutions abroad, including Ulsan National Institute of Science and Technology in Korea, Ruhr-Universität Bochum and RWTH Aachen University in Germany, and MINATEC in France.

Many Engineering students engage the world outside the US through service learning. Approximately 800 Engineering undergraduates have been involved in global services activities since such programs began in 1999. Three of the most prominent international service learning organizations at SEAS are: [Penn Engineers Without Borders](#), the [Global BioMedical Service Program](#) (GBS), and the [International Development Summer Institute](#) (IDSI).

Penn Engineers Without Borders, a student-run non-profit, helps developing communities worldwide with their engineering needs through hands-on engineering projects, while educating students and the Philadelphia community about sustainable development and engineering.

The GBS and IDSI Programs both entail travel to specific locations, involving approximately 30 Engineering students each year. The GBS Program centers on a 16-day trip to China. First, students' coursework at Penn familiarizes them with building prosthetics, cultural differences, and clinical skills. Then, in China, teams of Penn and Hong Kong Polytechnic University students work with amputees at a local clinic, a six-day process that involves getting to know a patient; measuring, designing and building a prosthesis; and then returning to the clinic to ensure proper fit. The IDSI Program consists of five weeks at Penn followed by four weeks of training at the Kwame Nkrumah University of Science and Technology in Kumasi, Ghana, giving students the opportunity to apply classroom learning in the field, especially in international development.

In January 2014, SEAS will partner with the School of Design to offer a two-semester course focused on point-of-care diagnostics in Sub-Saharan Africa. In January, partners from Ghana and Kenya will visit Penn for two weeks. Over Spring Break, the students will travel to Africa to obtain first-hand knowledge of local needs, constraints, and opportunities for their design project. On returning to Penn, students will design and develop prototypes, which will then be presented to the project's local partners at the end of the fall semester.

School of Nursing

Nursing offers a [Multicultural/Global Health Care Minor](#) for undergraduates, and the student-run [Nursing Students for Global Health](#) organization presents a range of co-curricular and social programs that raise awareness of global health concerns and the School's global initiatives. There are several semester-long, summer, and independent study/internship abroad opportunities for Nursing undergraduates. Semester programs are offered at universities abroad including the University of Queensland in Australia; Oxford Brookes University and King's College London in England; and Hebrew University in Israel. Summer programs include a community health program in Botswana, a summer course in Hong Kong, a course in Thailand that focuses on comparative health systems, a summer course in India that studies Community Health

and Psychiatric-Mental Health Nursing, and a course on maternal and infant care in the Americas that includes classroom, clinical experience, and fieldwork in Latin America and the Caribbean.

Nursing students have opportunities to do independent study or an internship between spring and summer terms (3-4 weeks) or during the summer. Students must design their study abroad experience with a faculty sponsor, develop assignments to complete during or after the trip, and present their study to the school community. In the past, students have done independent studies and internships in such countries as Armenia, Botswana, Cuba, Guatemala, Kenya, and Mexico.

Wharton School

All Wharton undergraduates are required to take 3 credit units (CUs) with substantial international content. Two of these courses must be liberal arts courses that may double-count with the courses that fulfill the General Education requirement.

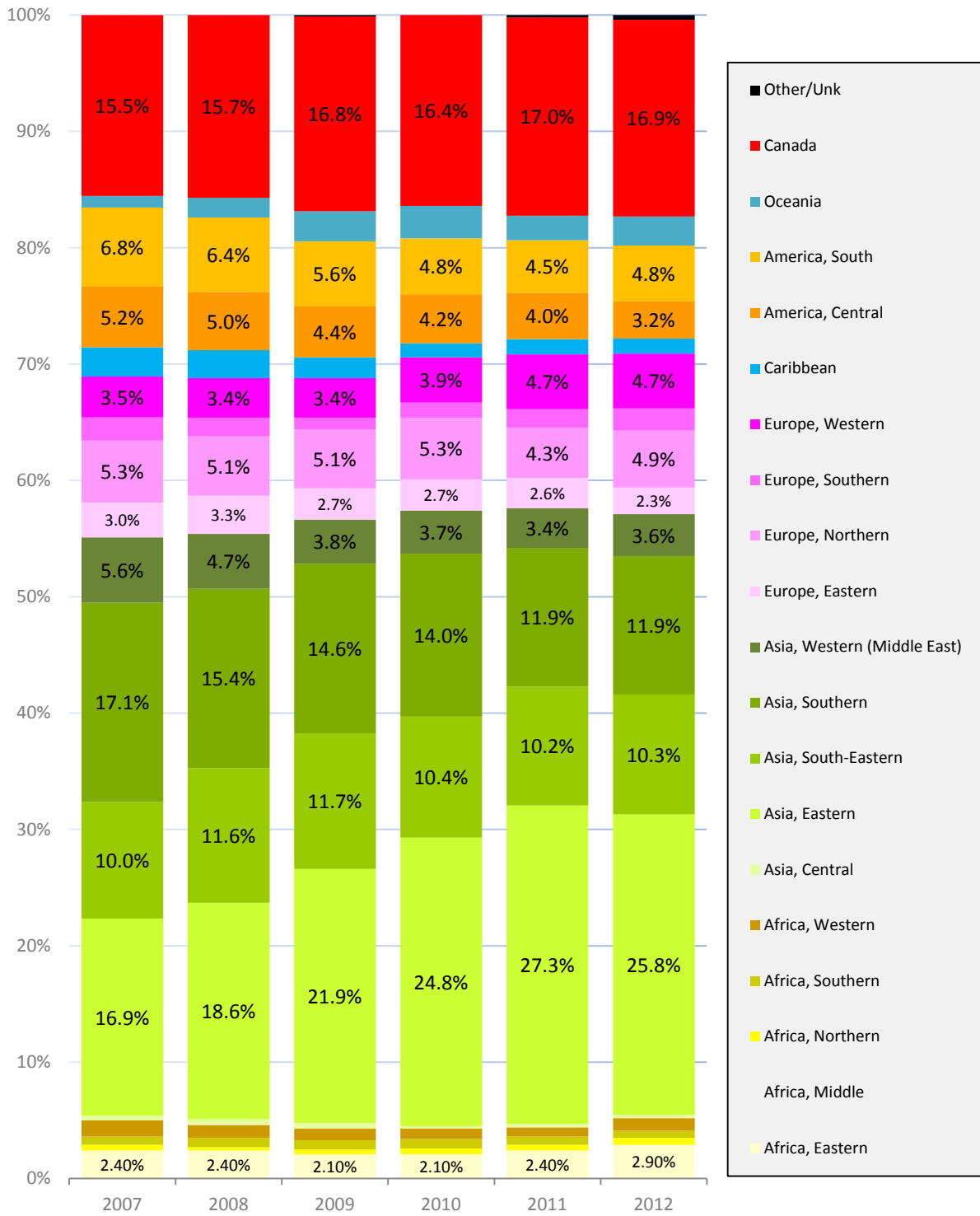
Wharton offers more than 20 undergraduate study abroad programs with business schools around the world, all designed to enhance the Wharton undergraduate curriculum. Undergraduates can also participate in the [Wharton International Program](#) (WIP), a short-term international business course that features business site visits, lectures at our partner schools, cultural excursions, and networking opportunities with undergraduate students and business contacts from the destination countries. Three WIP courses are offered each year, and students earn 0.5 CUs for completing one.

[Wharton Undergraduate Leadership Ventures](#) are outdoor experiential leadership development opportunities that have taken students to such destinations as Iceland, Mexico, Patagonia, and Peru. The Ventures provide opportunities for hands-on experiences in exploring and mastering effective individual and team leadership in business and beyond. Teams of student participants are supported by outfitters, professional guides, and undergraduate division staff. More than 30 undergraduate students participate in expeditionary ventures each year.

International Students at Penn

International students, both undergraduates and those studying in graduate and professional programs, are a crucial element of the vibrant cultural and intellectual environment that is Penn's campus. In fall 2012, international students represented 11.2 percent of Penn's traditional undergraduate population, with more than 1,100 students from 101 countries (Figure 4.9). Among traditional undergraduates, the largest numbers of international students are from Canada (192). More than half of Penn's international students are from Asia, with the largest representations from South Korea (167), India (118), and China (104). Wharton has the largest percentage of traditional undergraduate students who are international (16.2%), followed by Engineering (14.8%). Just over nine percent of the College's students and nearly three percent of Nursing students are international.

Figure 4.9
International Enrollment by Country of Origin – Traditional Undergraduates



Penn has among the highest proportions of international undergraduate students among Ivy League universities. Nonetheless, encouraging more international applicants from low- or middle-income families would further increase the diversity of Penn's campus. Need-blind admission to Penn is limited to citizens of Canada, Mexico, and the United States. With that commitment comes a significant financial obligation, one that is not easily increased. Currently, Penn's endowment can pay for only about 20 percent of its total undergraduate financial aid expenses. The rest must be paid from Penn's operating budget, which also must fund undergraduate schools for key research and educational activities. Increasing the financial aid available to international students and families would require increasing the endowment income dedicated to this purpose.

International students report high levels of satisfaction with the Penn undergraduate experience. Survey results indicate that they are also highly engaged. On the 2012 Senior Survey, they reported greater activity in cultural/ethnic organizations: nearly 60 percent participated in such organizations for at least one year of their undergraduate experiences.

[International Student and Scholar Services](#) (ISSS) supports and guides Penn students from abroad, including assistance with immigration, employment, and overseas travel. In particular, it helps international students adjust to their new home, with an introduction to Penn and Philadelphia during New Student Orientation tailored for students arriving from abroad. The student-run [Assembly of International Students](#) also plays a large role in helping students meet each other and learn more about the resources available to them at Penn and in Philadelphia. Penn programs for international students include: *Academics Plus: A Workshop Series for International Students* offered by the Weingarten Learning Resources Center; the *International Student Discussion Series: Enhancing Well-Being and Success in the US* sponsored by Counseling and Psychological Services and ISSS; and extensive programming for international students by the cultural resource centers in the Division of the Vice Provost for University Life.

Global Alumni

One of the most important ways in which Penn enhances the quality, reach, and diversity of its undergraduate educational programs is by engaging its community of alumni living abroad. Approximately 10,000 Penn alumni from the four undergraduate schools live abroad, one of the most visible manifestations of the University's global presence. The top ten countries are the UK, Canada, Hong Kong, Singapore, South Korea, India, France, China, Australia, and Japan. This total includes some 1,800 alumni who are US citizens living abroad.

Penn engages alumni living abroad in several overlapping ways. The Admissions Office encourages the participation of alumni around the world in interviewing prospective Penn students. Alumni in the UK, Hong Kong, India, Singapore, Canada, South Korea, and China are especially active in helping Penn select its new undergraduate class each year. The Penn Alumni Career Network, launched in 2007, organizes alumni to mentor and provide career advice to undergraduates. As of the end of 2012, it had registered 2,667 alumni mentors, of whom 10 percent live abroad. These efforts could lead to even greater

engagement of alumni living abroad, including enlisting these alumni in helping with overseas internships and encouraging them to participate in campus events through teleconferencing or web services.

Open Learning as Global Engagement

Penn is a founding partner and board member in Coursera, the online platform for open-access, non-credit classes, available at no cost to audiences around the world. We are strongly committed to open learning—a vital part of our mission to increase access, around the world, to the educational resources that can change people's lives.

The platform presents a number of key opportunities for Penn. One is flexibility: our partnership is non-exclusive, faculty participation is voluntary (subject to internal approvals), and the University and instructor retain all rights to our course content. A second is public value: increasing access is at the heart of Penn's mission, and Coursera provides an exciting opportunity to increase access, around the world, to Penn's extraordinary educational resources. A third is pedagogical exploration and value to Penn's students: we expect that the initiative will help develop new forms of teaching and technology—such as out-of class instruction (which may free up valuable in-class time for more hands-on learning), autograded assignments, and other innovations—that may help shape teaching and learning across our own campus. Finally, the structure of the partnership could help to underwrite some of the costs of producing online courses: Coursera anticipates generating revenues, a portion of which would be shared with the University. While we do not expect the project to generate significant income, our investments in these new forms of teaching might be at least partially supported by such revenues.

As of October 2013, Penn has more than 1.5 million enrollments in its Coursera offerings. A survey of 800,000 Penn Coursera students in July 2013 indicated that a large number of them live outside the US: more than 31 percent in Europe, Australia, or Canada, and just over 14 percent in Brazil, Russia, India, and China, who also accounted for nearly 65 percent of the students aged 30 and younger and more than 40 percent of the students with advanced degrees. These figures suggest that open learning has tremendous potential to supplement formal educational programs in these countries—and in others around the world—in the years ahead.

Recommendations

Guided by its *Strategic Framework for Penn's Global Initiatives*, the University should continue its implementation of programs to support international students in adjusting to life on campus, strengthen the evaluation and coordination of global activities, and engage undergraduates with alumni abroad, including increased use of web technologies and social media.

In presenting the Strategic Framework, the University has committed to rigorous analysis and monitoring of progress in these efforts. An important part of these analytic efforts will be examination of the financial implications of shorter- versus longer-term global engagement opportunities for undergraduates and of participation rates in study abroad and international internship programs, so that Penn can optimize the mix of international opportunities made available to students.

In light of the fact that Penn's endowment can pay for only about 20 percent of its undergraduate financial aid expenses and given Penn's on-going commitment to funding the full financial need of all its undergraduates, development initiatives will continue to seek increased endowment for financial aid. These efforts should continue to raise endowment targeted to international applicants from low- and middle-income families, increasing the number of international applicants that Penn can afford to support and thereby allowing more students from around the world greater access to a Penn education.

Universities have a natural tendency to relegate each problem to the province of one or another academic discipline or profession. But the most challenging problems cannot be addressed by one discipline or profession. We cannot understand the AIDS epidemic, for example, without joining the perspectives of medicine, nursing, and finance with those of biochemistry, psychology, sociology, politics, history, and literature.

—President Amy Gutmann, inaugural address, 2004

Chapter 5: Integrating Knowledge

Introduction

With twelve diverse and outstanding schools on one contiguous campus, Penn is uniquely positioned to be a global leader in integrating knowledge across disciplines. Since the Penn Compact formalized this priority in 2004, it has become an increasingly defining element of teaching and learning at Penn. Our undergraduates take advantage of a wide range of minors, dual majors, and interdisciplinary programs. Our faculty and research have been enriched by an increased focus on interdisciplinary hiring exemplified by the Penn Integrates Knowledge Professors program, which brings highly distinguished senior professors to campus with appointments across two different schools.

This spirit of cooperation, collaboration, and community reflects Benjamin Franklin’s view of the revolution, “We must all hang together, or assuredly we shall all hang separately.” Bringing ideas, minds, and passion into the same arena is how Penn integrates knowledge. From interschool efforts in neuroscience, behavior, ethics, materials, and communication to cross-cutting combined majors, from broadly constructed graduate groups to a diverse student body and faculty, this emphasis has made Penn a preeminent locus for integrating knowledge, which we view as the essential spark to ignite intellectual and creative innovation.

Much of the obvious benefit of integrating knowledge occurs in research, as disciplines combine to solve problems or ask new questions, and graduate students are trained in methods and areas of knowledge that cross disciplinary boundaries. Undergraduates benefit from this research activity indirectly when their teachers bring new ideas and methods to the classroom, and yet the benefits for undergraduate education extend beyond research and instruction. Encounters across disciplinary lines help students and faculty alike become aware of the boundaries that separate bodies of disciplinary knowledge and identify which additional bodies of knowledge scholars need to acquire to transcend those boundaries and produce strong, rigorous innovation. In short, integrating knowledge is at the core of Penn’s identity as a research university and as a site of undergraduate education.

Working Group Charge and Process

The charge to the Integrating Knowledge Working Group was to evaluate Penn’s efforts at integrating knowledge, especially as those efforts relate to undergraduate education. The group was asked to articulate what is important about Penn’s current efforts at integrating knowledge and how those

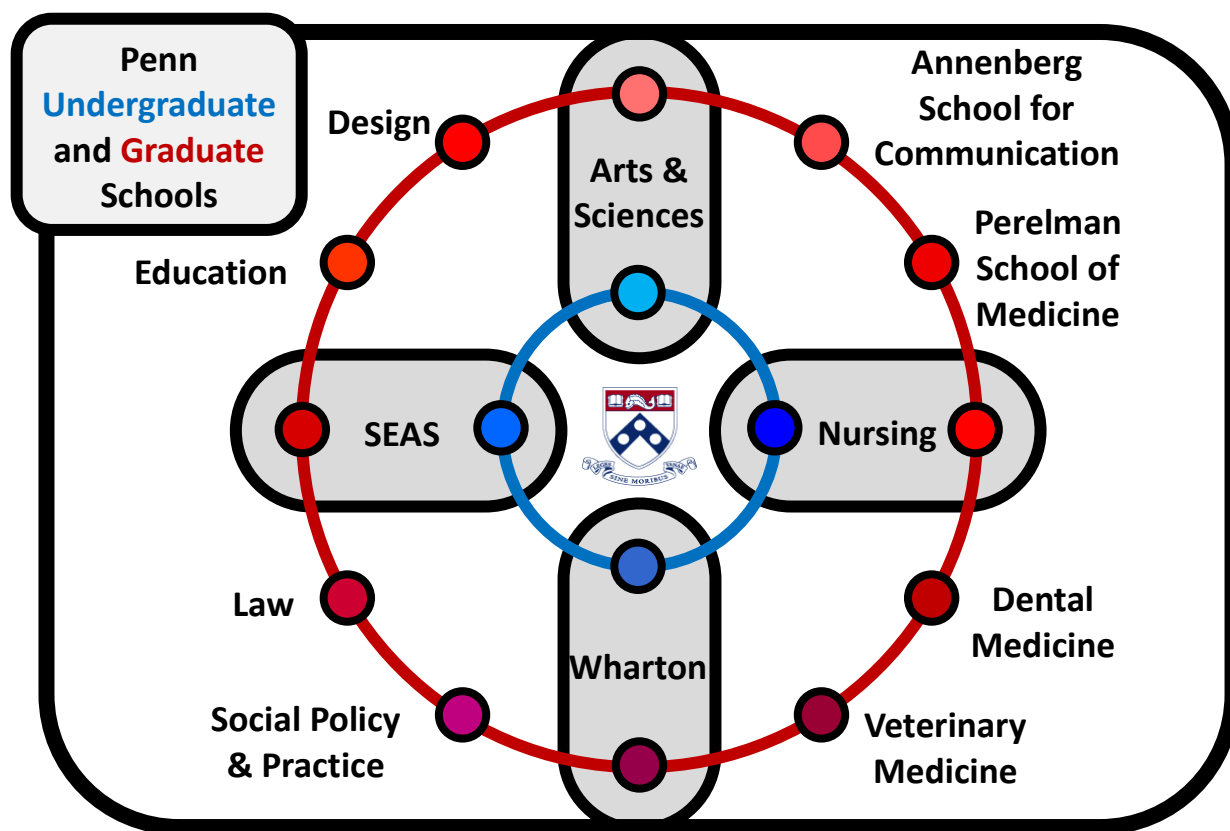
efforts could be improved, within the framework of the MSCHE Standards of Excellence, especially Standards 7, 11, and 14. Specific tasks included:

- Provide a cohesive definition of Penn's conception of integrating knowledge;
- Collate prior and current activities that exemplify Penn's implementation of the ideals of integrating knowledge in the context of undergraduate education;
- Consider the extent to which integrating knowledge is occurring and contemplate how Penn's efforts in this area may be effectively assessed;
- Ascertain how strategic considerations—from planned investments to the role of technology — will impact Penn's implementation of integrating knowledge in the undergraduate curriculum;
- Provide recommendations regarding the strategic direction for Penn's efforts at integrating knowledge over the next decade.

Overview and definition

Penn consists of a dozen schools (Figure 5.1). While only four of them are undergraduate schools, all of them work together to advance Penn's missions of teaching, research, engagement, and integration. The geometry of Penn—a compact, urban campus, keeping all schools proximate—not only admits but also prescribes discourse and cooperation among the disciplines.

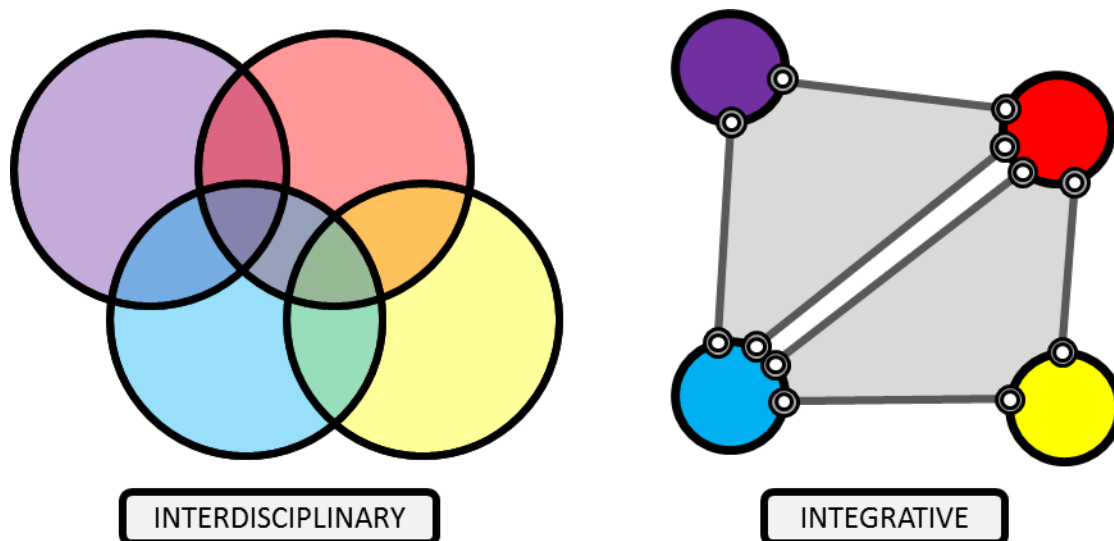
Figure 5.1
Penn Undergraduate and Graduate Schools



The idea that we should integrate knowledge is one of those obviously good things, like *critical thinking* or *abstract reasoning*. It is hard to find any discontent with the goal, but it is equally difficult to find a robust definition. For the last half-century, the idea of *interdisciplinarity* has been the most typical mode by which integrative thinking has been articulated. The idea was that by knocking down walls we would allow knowledge to cross-fertilize and flourish. But in recent years, the value of the disciplines has also re-emerged. The disciplines are useful because they discipline us. They demand that claims to knowledge submit to rigorous scrutiny and, in so doing, make more valuable the proposals that succeed.

The substance of Penn's notion of integrating knowledge is less one of *interdisciplinarity* than of *multidisciplinarity*, in which students and faculty from distinct disciplines communicate and progress not by flattening of walls, but by becoming more nimble at scaling them and so developing their familiarity with other territories (Figure 5.2). Interdisciplinarity suggests intersection or overlap. Multidisciplinarity carries the connotation of link and connection.

Figure 5.2
Interdisciplinary Vs. Integrative



Penn embodies the notion of the university as a network of distinct disciplines, connected via discourse, research, and engagement. Good fences make good neighbors; cell walls permit multicellular complexity; integrating distinct disciplines yields a comprehensive corpus of engagement with the world, sparking synthesis and innovation.

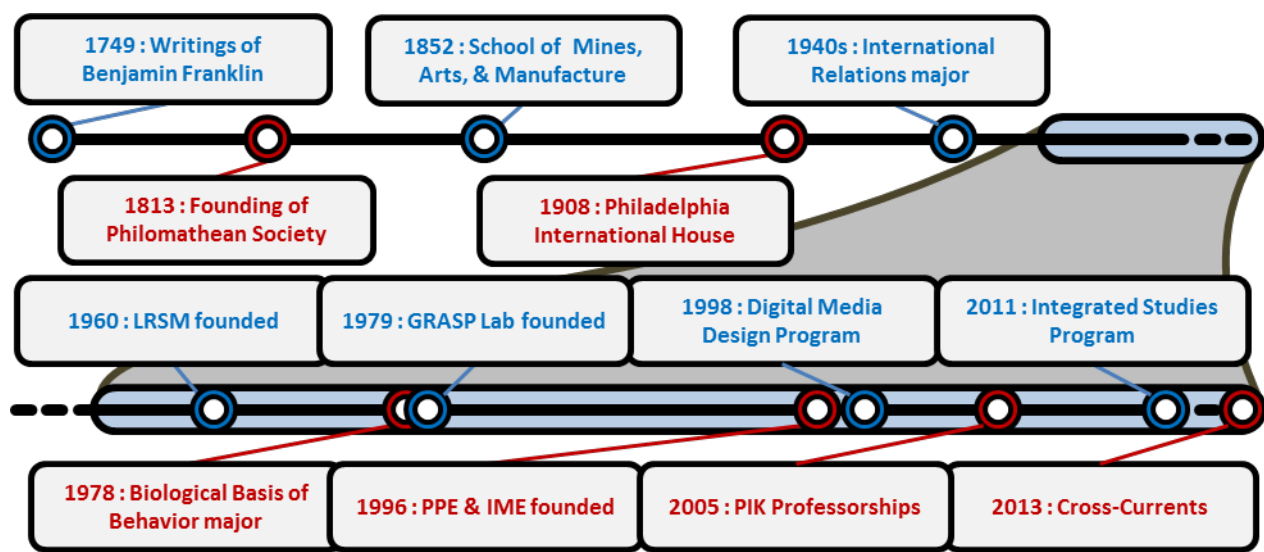
The locus of integrating knowledge is not limited to interdisciplinary centers, multidisciplinary courses, and cross-school initiatives. Though these are all important coincident markers of integration, Penn's

definition of integrating knowledge—the process of actively connecting and fusing distinct disciplinary ideas—encompasses these and more, and it occurs whenever diverse ideas are engaged through teaching, learning, and research.

Timeline and History

Throughout Penn’s long history, the proximity and collaboration of different schools have been the basis of the integration of knowledge (Figure 5.3). Perhaps the first major offered at Penn that embodied the integration of knowledge was International Relations in the 1940s. The Biological

Figure 5.3
Timeline: Integrating Knowledge at Penn



Basis of Behavior (BBB) major, introduced in 1978, combined studies in neuroscience, psychology, and biology. The Philosophy, Politics, and Economics (PPE) major was developed in 1996 as it became clear to students and faculty that these three branches of knowledge can and should be integrated in order to address the needs of the world's societies, infrastructure, and cultures. The Digital Media Design program was created in 1998 as a full-fledged Bachelors in Engineering and Science (BSE) degree that combines major coursework in computer graphics in the Computer and Information Science Department, communication courses in the Annenberg School, and fine arts courses in the School of Design. In 2012, the Office of the Provost and the Council of Undergraduate Deans created Cross Currents, a program designed to promote interschool teaching. Cross Currents courses will be designed and taught by faculty members from at least two undergraduate schools, although participation by faculty in graduate and professional schools will be encouraged under the sponsorship of an undergraduate school. These courses will spotlight diverse intellectual perspectives across the University and their applications to vital social and cultural issues.

The past decade has also seen two important new interdisciplinary programs in the College of Arts and Sciences. The Visual Studies major was created in 2003 to allow students to engage a multidisciplinary course of study connecting the theory, practice, and culture of seeing across such diverse disciplines as art history, cinema studies, cognitive science, communication, neuroscience, philosophy, and psychology. In 2011, the Interdisciplinary Studies Program was created to allow students to consider the deepest and oldest of questions from an intrinsically broad perspective with the help of faculty from the humanities, social sciences, and natural sciences. More examples of integrative curricular programs are detailed in Appendix 5.1: Chart of Programs.

Benefits

The clear benefits of discipline-based learning are access to deep and specialized knowledge, as well as systematic ways of learning about a given field—methods that have been identified by recognized specialists as optimal for pursuing questions within a distinct realm. The disadvantage is the danger of stagnation, parochialism, over-specialization, and insularity. By actively pursuing conversations across disciplines, Penn works against these tendencies in undergraduate teaching, and, as a result, faculty become more aware of problematic tendencies in their own areas, such as foreclosed questions or methodological decisions that are made out of habit, rather than being intellectually motivated.

Encounters across disciplinary lines help students and faculty alike to become aware of the boundaries that separate bodies of disciplinary knowledge and to identify what specific additional bodies of knowledge scholars in all relevant disciplines need to acquire in order to be able to leap across those boundaries in a way that produces strong, innovative and rigorous research rather than a weak *interdisciplinarity*. The identification of these interstitial knowledge bases may require the development of new research methods, questions, and practices, thereby fostering innovative and creative undergraduate and faculty research projects. This kind of intellectual flexibility models for students a willingness to develop research methods in response to unknown and under-explored areas of knowledge and encourages critical reflection on our existing structures for the transmission and expansion of knowledge.

Many integrated knowledge courses at Penn have roots in faculty research projects in which faculty members collaborated with scholars beyond their disciplinary base. Consequently, integrated knowledge courses can offer a model of Humboldt's ideal vision of the research university, in which teaching and research feed each other and cross-generational exchange keeps knowledge a dynamic rather than a leaden thing.

Co-teaching can be an especially useful mode of integrating knowledge in the classroom. Collaborative teaching practices tend to lead to greater conversation and self-reflexivity about pedagogical methods, course structures, and teaching styles. Furthermore, a professor can become aware of pedagogical tools and classroom exercises common to another discipline but foreign to one's own, thus increasing the range of tools available to individual disciplines. Because co-teaching creates a regular forum for peer review and critical feedback about teaching, it is healthy for the standards of undergraduate and graduate education alike.

Assessing Student Participation

In Penn's vision of integrating knowledge, integration does not occur *within the degree program*, but rather *within the student*. Nevertheless, the degree to which integration of knowledge does occur in Penn's undergraduate experience is correlative with the number and types of explicitly integrative programs offered (and sought). The opportunities for integrating knowledge abound; one marker for the extent to which integrating knowledge occurs is the participation in specialized multidisciplinary and dual-degree programs.

Enrollment in specialized multidisciplinary and dual-degree programs at Penn is relatively small in relation to the entire undergraduate population; collectively, it accounts for a steady 10 percent of students in the past five years. Beyond these formal integrated majors, however, Penn students pursue multiple bachelor's degrees at a significant rate. Students who earn two or more bachelor's degrees (that is, a degree from two or more schools) comprise over 8.3 percent of the undergraduate body. Roughly one Penn undergraduate student in 10 is enrolled in an integrated, cross-school program of study. An additional one student in 11 is taking a self-constructed multiple-degree major. See Appendix 5.1: Chart of Integrating Knowledge Programs, for a complete overview of multiple degrees and cross-school programs.

Figure 5.4
Distribution of Cross-School Dual Degrees by Primary Degree School 1998-2008

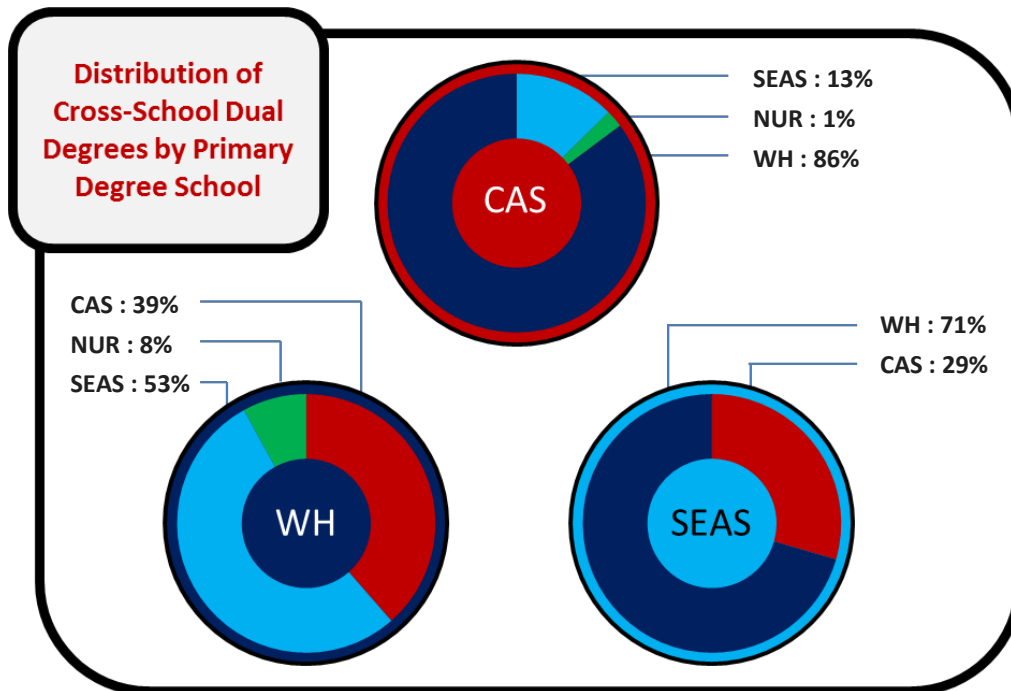
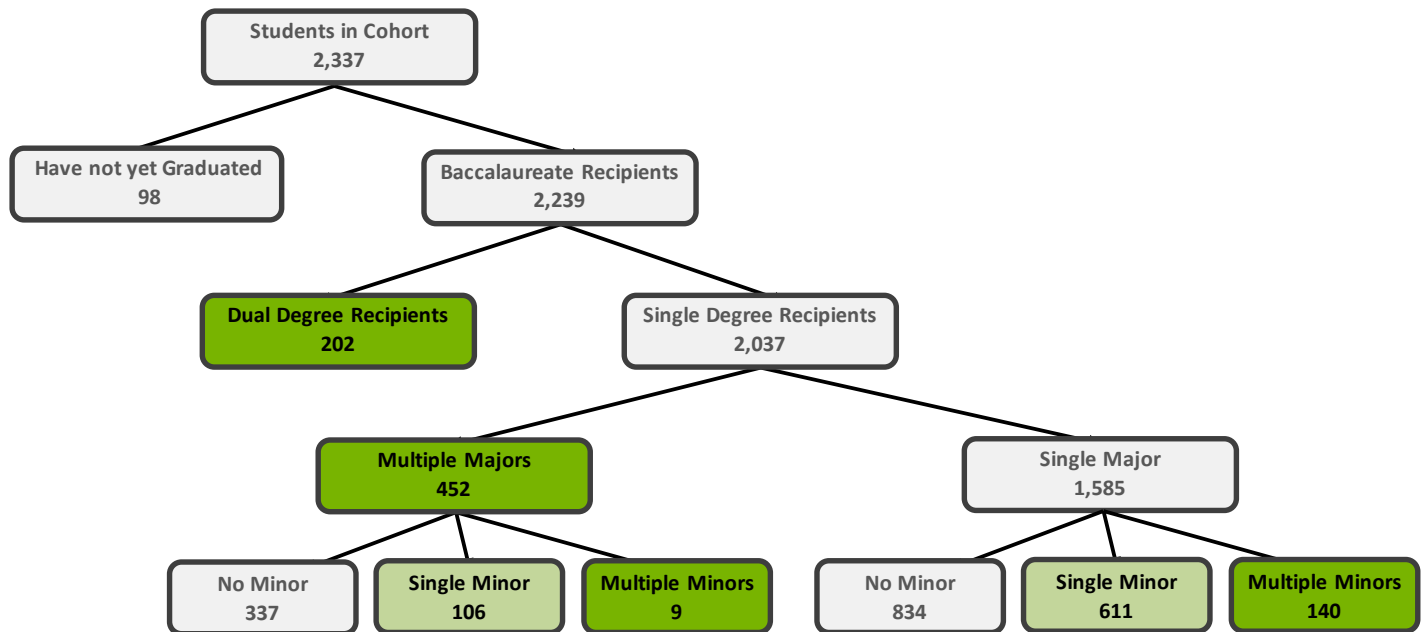


Figure 5.4 presents the distribution of dual-bachelor degrees across schools for 1998-2008 in graphical form, with percentage distributions of cross-school degree students as a function of primary school (large, central disks) and second degree (pie divisions). For absolute numbers, see Appendix 5.2—Charts and Tables for Integrating Knowledge. From the chart, we can conclude that the Wharton School is an especially attractive option among Penn students seeking a second degree. In addition, we can conclude that students in the School of Nursing are less likely than others to pursue a second degree. However, Nursing students have been completing minors in greater numbers since 2001, usually in the College.

Minors represent an important means by which Penn students formally integrate knowledge. They enable students to pursue secondary areas of interest, develop knowledge and skills that complement their majors, express themselves in a creative area that could become an avocation, and learn more about themselves and their culture. When pursued as a minor, such areas as foreign languages, mathematics, and computer science, among other fields, can also offer skills useful to students as they seek employment. A minor generally requires approximately half the number of courses as are required for a major in the same field. As shown in Figure 5.5, nearly 50 percent of undergraduates that declare only a single major finish at least one minor.

Figure 5.5
Traditional First-Time, Full-Time Undergraduates Entering Fall 2006



Taken together, minors, dual majors, and multiple majors ensured that nearly 63 percent of the 2006 Cohort who completed bachelor's degrees integrated knowledge via one or more of these means. Given that majors at Penn are constructed to engage outside disciplines through cognate requirements, as well as the fact that all four undergraduate schools ensure interdisciplinary breadth through various distributional requirements (as detailed in Chapter 7: Assessment of Student Learning), the fact that a majority of undergraduates take the further step of completing a minor or multiple majors underscores the extent to which available means of integrating knowledge are regularly accessed.

Strategic Considerations for Undergraduates

Strengthen awareness of double majors and minors in other schools. Notwithstanding the fact that most students at Penn already complete minors or multiple majors—and recognizing that dual major and minors have important trade-offs in necessarily reducing the proportion of course work available for free electives—the University could do more to increase awareness of opportunities to pursue double majors, especially across schools. The School of Engineering and Applied Science and the College of Arts and Sciences have recently permitted a second major in the other school. The Wharton School and the School of Nursing do not have majors and so do not have such arrangements with other schools. Nursing offers minors to undergraduates in all four schools and Wharton offers statistics as a minor to all undergraduates and participates in several of the [University minors](#). The opportunities available to undergraduates for cross-school study should be better promoted through each school's academic advising programs.

Strengthen opportunities to integrate knowledge through a minor. All schools and departments will do well to carefully consider their offerings for minors in terms of student demand and the quality of educational experience. Careful attention should be paid to the potential addition of minors that are not currently part of the curriculum. Consideration should be given to how students with different backgrounds, training, and skills could handle the course work required for a minor.

Create easy-to-find information about curricular and co-curricular opportunities for integrating knowledge. One important way to advance the integration of knowledge without the restrictions and limitations imposed by formal dual-major and minor programs is to promote inter-school and co-taught courses along with various co-curricular opportunities. Undergraduates, advisors, and program directors could be marshaled as valuable informational resources, and websites devoted to integrating knowledge could provide examples of novel combinations for emulation, along with career paths opened up by these combinations.

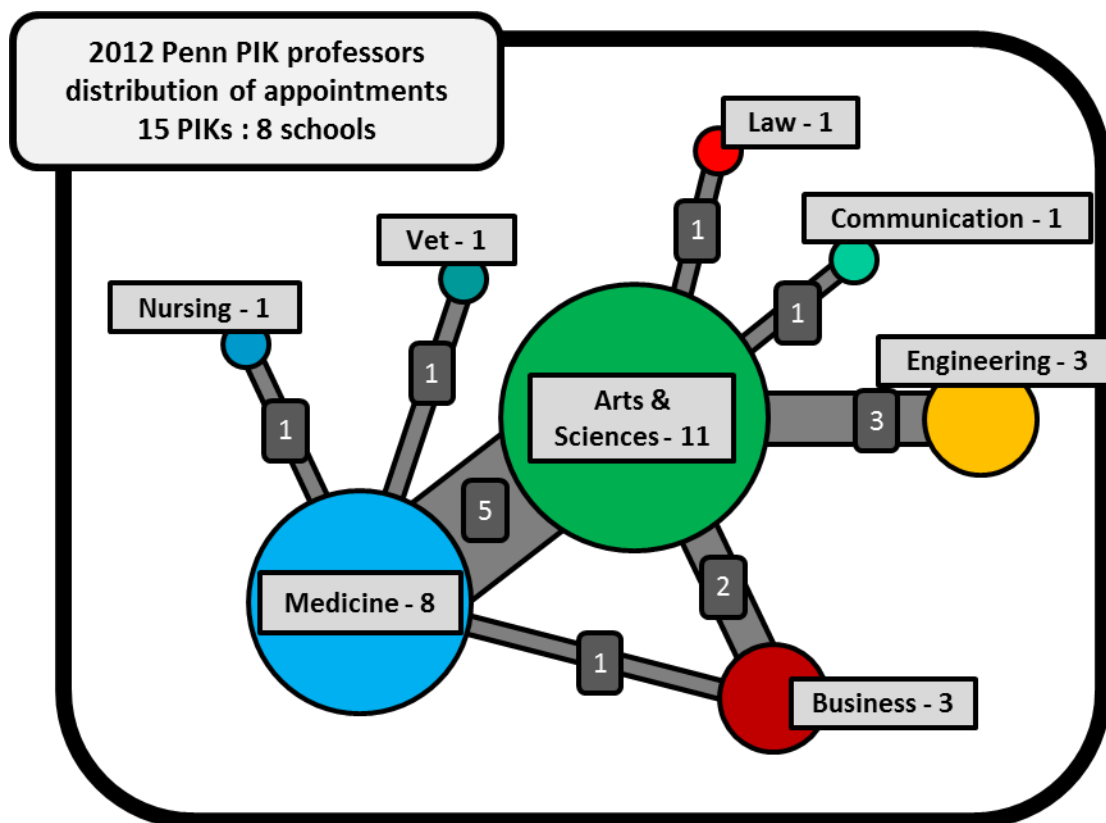
Increase funding for honors theses. A small amount of funds might be made available to students who wish to write a thesis that integrates knowledge. Such theses should satisfy certain criteria, such as involving at least one faculty member from each discipline.

Prize for best thesis. Funds should be raised for an award for graduating seniors to recognize the best thesis that exemplifies integrating knowledge.

Faculty

The [Penn Integrates Knowledge \(PIK\)](#) program was conceived by President Gutmann in 2005 to recruit teacher-scholars whose transformative work crosses traditional boundaries. These PIK Professors, each funded by an endowed University chair, are exemplars and ambassadors of integrating knowledge within the Penn faculty. They are appointed jointly between two of the twelve schools at Penn and recruited with the mission to exemplify integrating knowledge in the classroom, laboratory, or public sphere and with explicit descriptions of their expected role in integrative educational activities. To date, 15 PIK professors have been appointed, setting up a web of interactions among Penn's schools (Figure 5.6).

Figure 5.6
2013 Penn PIK Professors Distribution of Appointments



The PIK Professors program is one of several key initiatives to integrate knowledge through targeted faculty recruitment. When Penn created the PIK program, the Provost's Office also facilitated joint appointments of faculty across the schools, which have responded by making additional cross-school appointments to advance interdisciplinary research and teaching. For example, the School of Arts and

Sciences has approved a small number of multi-year “cluster” searches centered on a single academic theme (such as evolution, energy, and Asian religions) that enhance research and teaching across multiple departments. In so doing, the School seeks to:

- Identify key subfields or themes that will add depth and breadth to the overall academic profile of the school and its departments;
- Promote sustained interdisciplinary activity by adding faculty who will support long-term engagement in a given area through involvement with programs, centers, or faculty working groups;
- Maximize resources by investing in areas important to multiple departments and programs.

These activities explicitly support the definition of integrating knowledge described earlier: utilizing connections between disciplinary strengths to tackle wide-ranging intellectual and social issues through teaching and research.

Many Penn faculty engage in the work of integrating knowledge beyond these formal programs. Much of this work reaches undergraduates through the integrated courses of study detailed in the Appendix: Chart of Programs. There are often only one or two core faculty members associated with a given program, and these faculty members usually, and appropriately, have a reduced teaching load if they are directing such a program. Ideally, departments with a stake in a program would work with other departments under the leadership of the program director to staff a stable and well-conceived curriculum for the multidisciplinary program.

Open Learning and Modular Courses to Integrate Knowledge

[Penn's founding partnership with Coursera](#) to offer MOOCs (massive open online courses) to the public for free, and the University's broader effort to advance open learning, have played an important role in instructional innovation and integrating knowledge at the undergraduate level. Half of the Penn courses that have been or will soon be offered on Coursera are strongly interdisciplinary or taught by professors with multiple department/school affiliations. The use of modular, online materials simplifies the integration of knowledge, since the modules are short and can be viewed by students outside class time, giving professors greater freedom to reference material outside the strict boundaries of a discipline. For example, a mathematics course could more easily include applications in economics or biology by linking to a video module that applies the concept in another modular course.

Such modular online materials can be used to develop new methods of active classroom learning, in which some or all lecturing can occur outside class time, allowing class time to be spent in more interactive problem-solving and dialogue. Such methods permit more attention to integrative aspects of a course, which could otherwise be less of a priority given time constraints. Modular content may also encourage teaching collaborative or cross-disciplinary courses, as it permits importation of relevant lecture materials. Penn's selection as an AAU Project Site for the Undergraduate STEM Education Initiative will involve a great deal of activity and assessment related to the active classroom (Appendix 2.1).

Recommendations

Penn has made significant strides in advancing the integration of knowledge and will continue to invest in and prepare for a future in which the active connecting and fusing of distinct disciplinary ideas becomes all the more critical. Such investment has taken the form of new infrastructure, such as the new Singh Center for Nanotechnology and the soon-to-be-constructed Neural and Behavioral Sciences Building; faculty hiring practices that prioritize interdisciplinary opportunities and strengths; and undergraduate programs that provide the structures for students and faculty to integrate knowledge.

To capitalize on these advances, the Office of the Provost, the Council of Deans, the Council of Undergraduate Deans, and the Undergraduate Working Group are developing means to strengthen the review of cross-school and interdisciplinary programs, plan for new programs, and improve efforts to collect and analyze information about the ways in which Penn undergraduates integrate knowledge across campus. These coordinated efforts should continue to guide strategic decision-making and to ensure efficient use of collective resources.

Within the schools and departments, it will be important to identify the most promising areas for impactful, integrative scholarship and teaching and to prioritize these areas in faculty development (e.g., as the School of Arts and Sciences has attempted through cluster hiring). To this end, schools might profit by obtaining from their faculty members, on a regular basis, information about any activities (research, teaching, or service) that are multidisciplinary in nature and with which other schools or departments such activity is conducted.

Penn should continue to lead instructional innovation, including developing new methods of active classroom learning and using open learning initiatives to stimulate new forms of teaching and learning on campus. Critical to this effort will be continued collaboration among the Center for Teaching and Learning, the Penn Libraries, and the Penn Open Learning Initiative, carefully coordinated by the Office of the Provost and in regular communication with the Council of Deans and the Council of Undergraduate Deans.

The feature of university life which most inspired me in my first year as an undergraduate was the realization that the people who were now teaching me were active scientists who had directly contributed to the subject they were teaching through their research and that their research was stuff from which they still got a kick.

—Philip Rea, Professor of Biology, from “Talk About Teaching and Learning,” *Almanac*, March 24, 2009, Volume 55, No. 26

Chapter 6: Undergraduate Research

Introduction

A great research university ought to engage undergraduate students in the excitement and possibilities of original research, teaching intellectual habits and practical skills that will last throughout their lives. Research in this way exemplifies Penn’s defining emphasis on combining the theoretical with the practical, as first defined by our founder Benjamin Franklin. Research is the ultimate step in a learning process that helps students become proficient in fundamental skills. By allowing students to move beyond the traditional classroom experience—in which they may often encounter pre-packaged problems and scenarios with known solutions and outcomes—research forces them to carefully consider how to identify an important or relevant problem, formulate a question or hypothesis, gather evidence, develop a paradigm for evaluating and understanding a major problem within that discipline, and work toward a potential solution.

Undergraduate research is in these ways integral to the principles of the Penn Compact. Undergraduates participating in research learn how knowledge is integrated across disciplines while engaging with both local partners and a world-wide community of scholars. Providing research opportunities to undergraduates from all backgrounds epitomizes the Compact’s emphasis on increasing access to education to all members of our community. Undergraduate research serves as a valuable experience for all students, regardless of their career goals, and is part of Penn’s core mission.

Our commitment to infusing research into undergraduate education has been markedly strengthened in recent years, so that about 70 percent of Penn seniors now report having engaged in at least one significant research activity during their undergraduate experience. In particular, we have expanded the Center for Undergraduate Research and Fellowships (CURF), including its signature Penn Undergraduate Research Mentoring Program, which gives rising sophomores and juniors life-changing opportunities to work directly with faculty members on hands-on research projects.

Working Group Charge and Process

The charge to the Undergraduate Research Working Group was to evaluate the undergraduate research experiences provided by departments and programs, as well as the programs offered through CURF. The group was asked to articulate what is important about Penn’s current undergraduate research efforts and how those efforts could be improved, within the framework of the MSCHE Standards of Excellence, especially Standards 7, 11, and 14.

The Undergraduate Research Working Group gathered institutional data, information from department and school leaders, and survey and anecdotal data from faculty. Institutional data were obtained from

the Office of Institutional Research and Analysis, drawing on curricular, grant funding, and survey data of both faculty and undergraduates. These data were examined with an eye toward determining the extent of undergraduate research at Penn, as well as whether students from different schools, disciplines, and socioeconomic, racial, ethnic, and gender backgrounds participate equally.

Some of the key questions that guided this inquiry were:

- What is the role of undergraduate research at a research university like Penn?
- How does the Penn community understand the relation of undergraduate research to teaching and learning?
- How does undergraduate research help students in their career pursuits? Are we making our students more competitive job candidates by fostering undergraduate research?
- What data and information about undergraduate research at Penn will help us determine whether our initiatives are effective?
- Beyond specific benchmarks and data, what are some of the most valuable qualitative judgments, strategic thoughts, and recommendations about the future of undergraduate research at Penn?

Definitions

The Working Group held extensive discussions about whether a uniform definition of “research” could or should be articulated, particularly given the variations among the disciplines at Penn. In seeking a shared definition, the group focused on the approaches, expertise, skills, and process-related activities in which undergraduate researchers were found to engage. Broadly defined, research runs the gamut from scientific experiments to creative works of art. Through their engagement in research, students learn how to gather evidence, formulate a question or hypothesis, answer that question or test that hypothesis, and interpret and communicate the findings or culmination of that work. Such a process is as intrinsic to a creative work as it is to a scientific experiment. Given the breadth of disciplines featured at a research university like Penn, we define research to entail one or more of the following:

- Employing the methodology of a discipline
- Learning from a mentor in the context of the mentor’s research project
- Confronting a problem or question of interest to practitioners in the field
- Thinking beyond the questions and problems explored in the classroom
- Documenting the process and results of one’s work

In considering this definition, it is important to keep in mind the distinction between *activities* that provide students the tools necessary to conduct advanced research (such as research methods courses) and the *active work* that embodies advanced research and leads to the production of scholarly knowledge. Due to Penn’s diversity and the wide range of faculty involvement in undergraduate life, it is difficult to characterize a “typical” undergraduate’s access to and involvement in undergraduate research. This list attempts to capture the breadth of undergraduate engagement in research:

- Archival research
- Conduct experiments
- Data analysis
- Data management
- Literature review
- Oral presentation of research results and progress
- Research design
- Synthesis of literature
- Attend lab meetings
- Create and/or document a work of art
- Data gathering
- Hypothesis formulation
- Manuscript preparation
- Prove a theorem
- Seminar attendance

Undergraduate Research at Penn: An Extension of Learning

Undergraduate research contributes to Penn's mission as a premier research institution by promoting and supporting undergraduates who are pushing the boundaries of knowledge under the guidance of Penn faculty. To a great extent, undergraduates are taking advantage of opportunities for research. Penn undergraduates should have the opportunity to engage in academic research in a meaningful way at some point in their academic careers. Although requiring each student to complete a senior thesis is unworkable given Penn's range of disciplines and programs, we believe undergraduates should be strongly encouraged to participate at each of three increasingly complex levels of engagement.

At the most basic level, each undergraduate should be encouraged to assist with a faculty member's research project. As a leading research university and in keeping with the goal of the Penn Compact to increase access to education, the University should pay particular attention to supporting and engaging students who are underrepresented in their fields or may not have previously had access to research opportunities. Similarly, students who have shown clear interest or promise as potential contributors to their disciplines should be enthusiastically encouraged and supported.

Students who advance to a deeper level of research engagement should be encouraged and supported by a standing faculty member in their chosen field to launch an independent research project under the faculty member's guidance. Those students who are underrepresented in academic research—students from underrepresented minority groups or low socioeconomic backgrounds, and women in the sciences—should be particularly encouraged and supported in this endeavor.

At the most advanced level, Penn undergraduates who are doing well in their chosen fields should be encouraged and provided the opportunity to delve deeply into a topic in their discipline, through a senior thesis, independent study, or some form of hands-on, semi-autonomous project guided by a member of Penn's standing faculty. Each Penn undergraduate who has successfully committed her/himself to ongoing research should have the opportunity to perform advanced work enhanced with central support (which could mean receiving research funding, academic credit, engagement in a research seminar, presentation of their work, or other forms) under the close supervision of a Penn faculty member.

Penn offers many informal and formal opportunities for research, including research assistantships and lab positions, informal faculty mentorships and research colloquia, senior theses and capstone courses and experiences, funded summer programs, competitive fellowship programs, and long-term scholars

programs. For a complete list of these substantial resources, see Appendix 6.1: Research Programs and Internships. The “Roadmap to Research” for incoming undergraduates drafted by the Student Committee on Undergraduate Education (Appendix 6.2) is a thoughtful effort to help students navigate Penn’s varied resources and illustrates how an engaged group of undergraduates perceives student opportunities to become engaged in research.

Survey Findings

Student surveys indicate that large numbers of Penn undergraduates participate in research activities. Analysis of these responses plays a key role in assessing student engagement in and satisfaction with research, although the responses do not address the academic quality of student experiences. When interpreting student responses, it is important to distinguish between formalized research participation and the acquisition of research-related skills/activities, as well as student opportunities, participation, and satisfaction. It is furthermore difficult to determine from student survey comments which activities are being referenced in comments regarding skills related to research, as well as whether those activities occurred in or out of the classroom. With such caveats in mind, if the goal is to have Penn students engage in research activities and to use that experience to position themselves for success after graduation, then Penn is very successful.

Based on 2012 Senior Survey data, we estimate that approximately 70 percent of Penn seniors engage in one or more research activities during their undergraduate years at Penn. In addition, we can say that these students are overwhelmingly satisfied with their research experiences (Figure 6.1). Research with a faculty member was the only question asked specifically in previous senior surveys, and Penn students’ 87 percent satisfaction rate in 2012 rose substantially from 76 percent in both the 2006 and 2010 Senior Surveys.

Figure 6.1
Selected 2012 Senior Survey Responses by Undergraduate School/Discipline

	Research with a Faculty Member		Other Research Experiences		Independent Study		Published or Presented Paper Off-Campus	
	Participation	Very or Generally Satisfied	Participation	Very or Generally Satisfied	Participation	Very or Generally Satisfied	Participation	Very or Generally Satisfied
Comparison SPIs	53%	N/A*	41%	N/A*	36%	N/A*	15%	N/A*
ALL Penn	46%	87%	41%	90%	34%	89%	14%	97%
SAS-Natural Sciences	77%	90%	58%	92%	53%	92%	29%	97%
SAS-Social Sciences	41%	82%	40%	95%	39%	85%	5%	75%
SAS-Humanities	36%	91%	53%	86%	38%	89%	11%	100%
Nursing	38%	84%	38%	84%	3%	100%	15%	100%
SEAS	58%	84%	38%	90%	32%	88%	21%	94%
Wharton	27%	92%	22%	88%	21%	92%	7%	100%

* Comparison SPI percentages not provided; overall Penn student population reports satisfaction rates similar to Comparison SPIs

Overall 2012 Senior Survey Penn Response rate: 39.1%

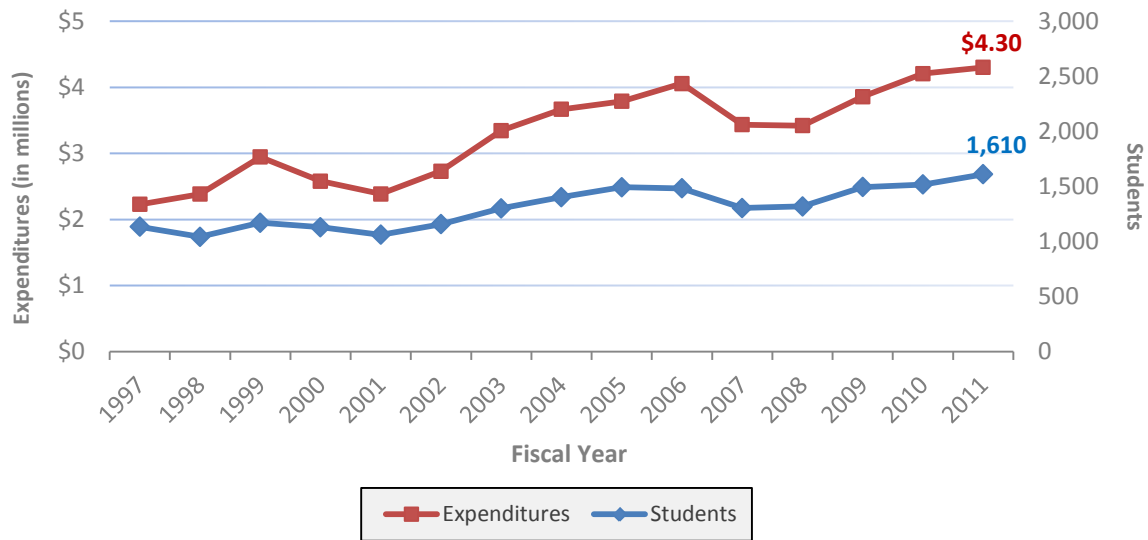
Student participation in these activities clearly varies across schools and disciplines. Fifty-eight percent of Engineering students report participating in research with a faculty member, while only 38 percent of Nursing students report having done so. The Nursing student responses are surprising, since the School's Senior Inquiry requirement should have generated a 100 percent response. Wharton students reported the lowest involvement in research activities other than independent study. In the School of Arts and Sciences, disciplinary background (as determined by the student's primary major) also appears strongly related to engagement in research. Twenty-nine percent of students majoring in the natural sciences report publishing or presenting their work off-campus, compared with 14 percent of the overall student population.

A wide range of ancillary data has been collected and examined to understand how initial involvement in undergraduate research might influence students' ongoing commitments to research. Continuing to monitor the number of Penn undergraduates who earn PhDs or are awarded NSF graduate fellowships may indicate the role undergraduate research involvement can and does play in meeting Penn's goal of integrating knowledge. However, it should be noted that two of Penn's schools, Nursing and Wharton, have not typically expected large numbers of their students to pursue the PhD. Given the large number of professional programs at Penn, enrollment in and completion of a graduate degree are not necessarily useful markers of the influence of research on undergraduates.

Research Programs and Internships

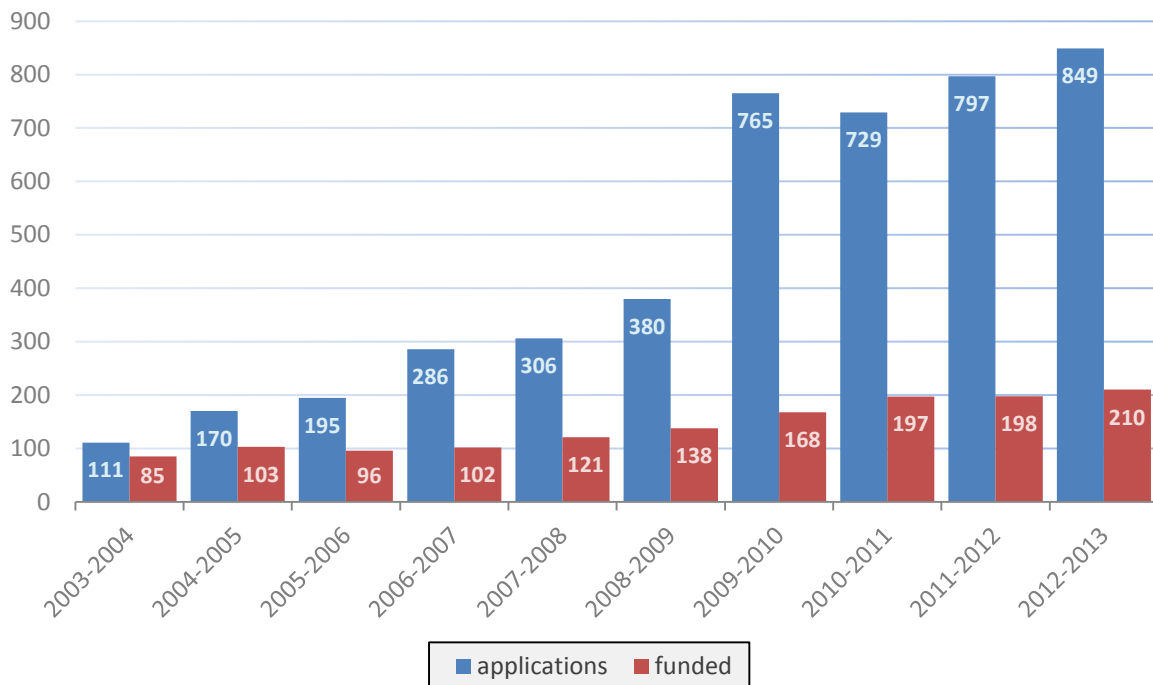
The [Center for Undergraduate Research and Fellowships](#) (CURF) is the central resource to help students find opportunities at Penn, as well as a key resource in connecting faculty with students seeking opportunities. Founded in 2001, primarily as a launching pad for students applying for international fellowships, CURF has played an increasingly important role in advancing undergraduate research among students, faculty, and staff, enhancing its outreach efforts to connect students with faculty researchers. CURF's comprehensive, up-to-date, and user-friendly website also provides students an access point to grants, fellowships, and internships at the University and elsewhere. CURF distributed \$468,000 in grant funding in 2012-2013, up from \$193,000 in 2003-2004. When combined with funding distributed to undergraduates from the research accounts of principal investigators at Penn who support undergraduates, this increase demonstrates that Penn's investment in research funding directed to undergraduates over the past decade and a half continues to rise (Figure 6.2).

Figure 6.2
Research Expenditures and Students Supported by Penn Principal Investigators and CURF
FY 1997 through FY 2011



During this same period, student interest in research as measured by applications to research programs coordinated by CURF has grown considerably (Figure 6.3).

Figure 6.3
Research Applications Coordinated by CURF
2003-2013



CURF's flagship outreach program is the [Penn Undergraduate Research Mentoring](#) (PURM) program. PURM provides rising sophomores and a few rising juniors with opportunities to work directly on a Penn faculty member's research project, as a paid summer assistant. It originally offered a \$4,000 student stipend and \$3,500 faculty research fund; to broaden participation, it now offers a \$3,000 student stipend and \$2,500 faculty research fund. PURM has proven extremely popular among both faculty and students and attracts far more faculty and student applicants than can be supported with current funding. As of summer 2013, more than 200 faculty members have mentored more than 300 students through PURM, growing from 18 faculty-student pairs in 2007 to 63 pairs in 2013. The program has benefited each year from increased support from the President, the Provost, and donors.

Since 2007, CURF's outreach efforts have increased substantially, showcasing Penn's vibrant research culture in such accessible formats and venues as Penn Previews and New Student Orientation, College House programs, targeted outreach to research courses, programs such as PennCAP and the Mellon Mays Undergraduate Fellowship Program, and twice-annual campus-wide research poster expos. CURF has incorporated undergraduates into its efforts by forming an Undergraduate Advisory Board and engaging juniors and seniors conducting advanced research as research peer advisors. While CURF is an important resource, research advising must emanate most fundamentally from the faculty. CURF plays an integrative role in connecting students with potential mentors and educating faculty and students about central resources. Actively engaging and empowering faculty in this process—including soliciting faculty input on research needs and resource allocation and providing willing faculty with necessary resources—is crucial to making undergraduate research an even more central activity for as many undergraduates as are capable and eager to engage in it.

The Role of the Faculty

Many faculty members see undergraduate research as a natural extension of their own teaching and research. They see undergraduate research as a combination of teaching particular skills; providing students with guidance as they design their research programs; mentoring them about educational, professional and career opportunities; and pushing them to understand the differences between completing tasks in a classroom and producing original knowledge. However, research opportunities differ across disciplines. Mentorship in a science lab may mean integrating undergraduates into an existing team of researchers, with daily supervision provided by a post-doctoral fellow, graduate student, or lab manager. Similarly, social science research may engage students in extensive data gathering and analysis, field work, and literature reviews overseen by a research project manager, post-doctoral fellow, or graduate student. In both cases, direct student contact may vary by the size of the lab and the principal investigator's time, funding constraints, and openness to student engagement. External research funding may result in a reduced course load for these faculty members, thus freeing time for research activity including working with undergraduates (while lessening the faculty member's presence in the classroom).

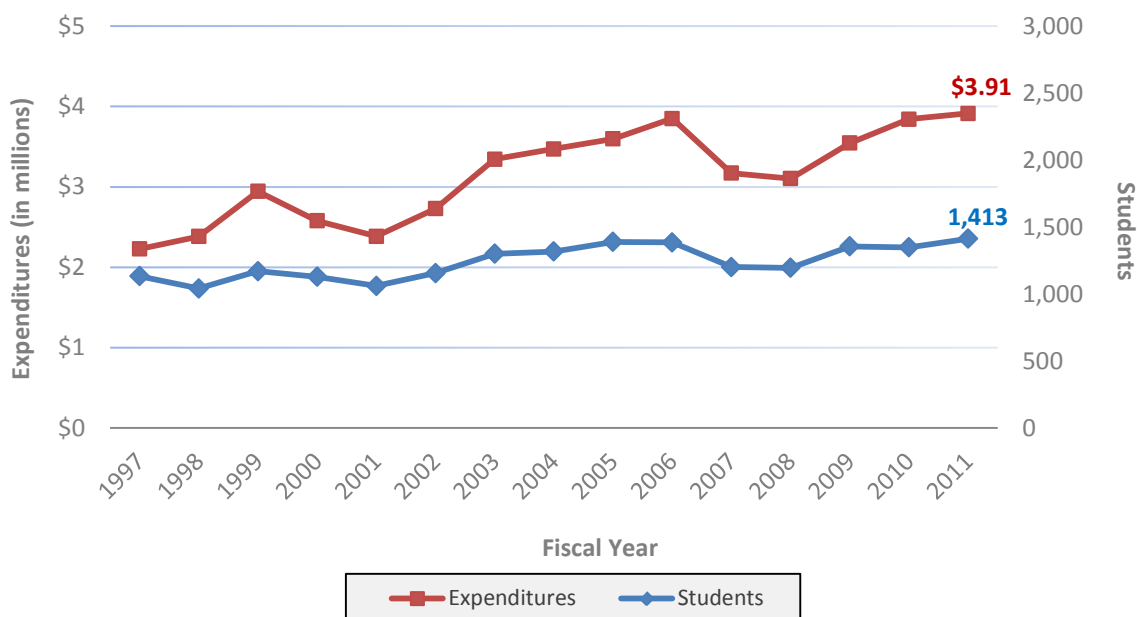
Penn undergraduates are often paid on faculty research grants. Student salaries paid in FY 2011 from research grants reached nearly \$4 million in Penn funds, an amount that significantly understates total

payments to students since it excludes the matching share of salaries for students paid through the Federal Work-Study Program. From 1997 to 2007 participation in research activities was stable.

- those paid by research funding in a single fiscal year ranged from 12 percent to 15 percent;
- those who completed a research course in a single academic year ranged from 16 percent to 21 percent; and
- those who participated in both of these research activities during a single year ranged from 3 percent to 4 percent.

While the trend in student payments via research grants has been generally upward, the declines in FY2007 and FY2008 reflect the leveling of federal funding awards that began in 2005, as the impact of such declines is generally felt one to two years after they are announced. Stimulus funding likely accounts for the increases in paid research participation from FY2009 through FY2011 (Figure 6.4). Looking forward, the downward trend in federal research funding to universities may result in a decrease in paid undergraduate research at Penn.

Figure 6.4
Research Expenditures and Students Supported by Penn Principal Investigators
FY1997 through FY2011

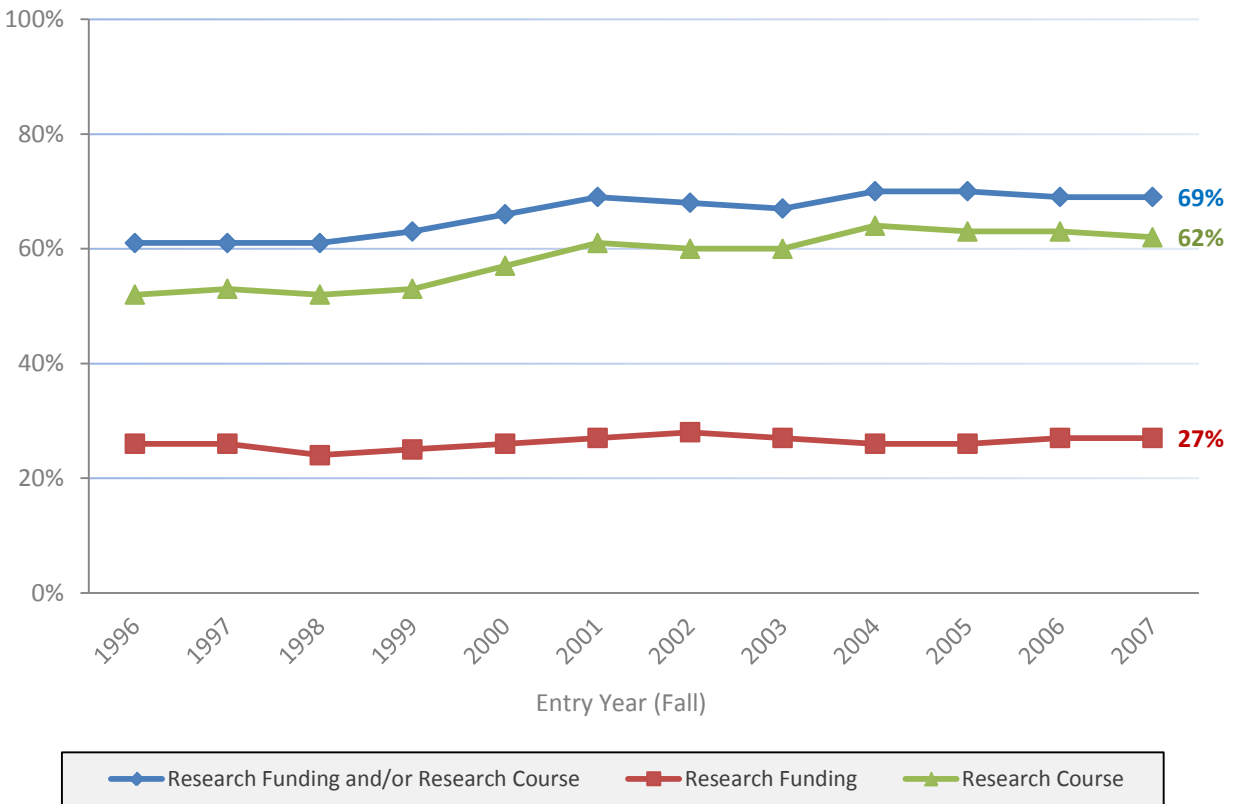


Grant funding is usually not as accessible to humanities faculty, thus eliminating or greatly reducing the likelihood that faculty members will hire undergraduates as paid research assistants. However, students in the humanities, like those in other fields, participate in research through independent study and other coursework. Thus, a combination of paid opportunities and course enrollments represents perhaps the best way to account for the participation of undergraduates in research.

Participation Data and Differences Among Schools

Data in the following figures reflect research grant payments and course enrollments for traditional undergraduate cohorts entering Penn as first-year students from fall of 1996 through fall of 2007, the last cohort for whom comprehensive four-year data are available. Like the data describing participation in research activities in a single year, the data for entering cohorts' participation in research during their undergraduate experience suggest a gradual upward trend in research engagement as measured by both research funding paid directly to undergraduates and enrollment in research courses. It is impossible to determine the exact number of students who engage in paid research during their undergraduate years. For the purposes of this review, "research funding" refers to the amount of funding paid to students from research grant accounts. While the extent of grant payments via research funding was determined using a precise—though incomplete—objective standard, research courses were identified by each school. In this context, a "research course" is defined as a course in which a student actually conducts research rather than simply learns research methods. Therefore, findings that rely on "research courses" should be considered preliminary. Since the early 2000s, the percentage of students who received research funding or enrolled in at least one research course (or both) has risen from 61 percent for the fall of 1996 entering cohort to 69 percent for the fall of 2007 entering cohort (Figure 6.5).

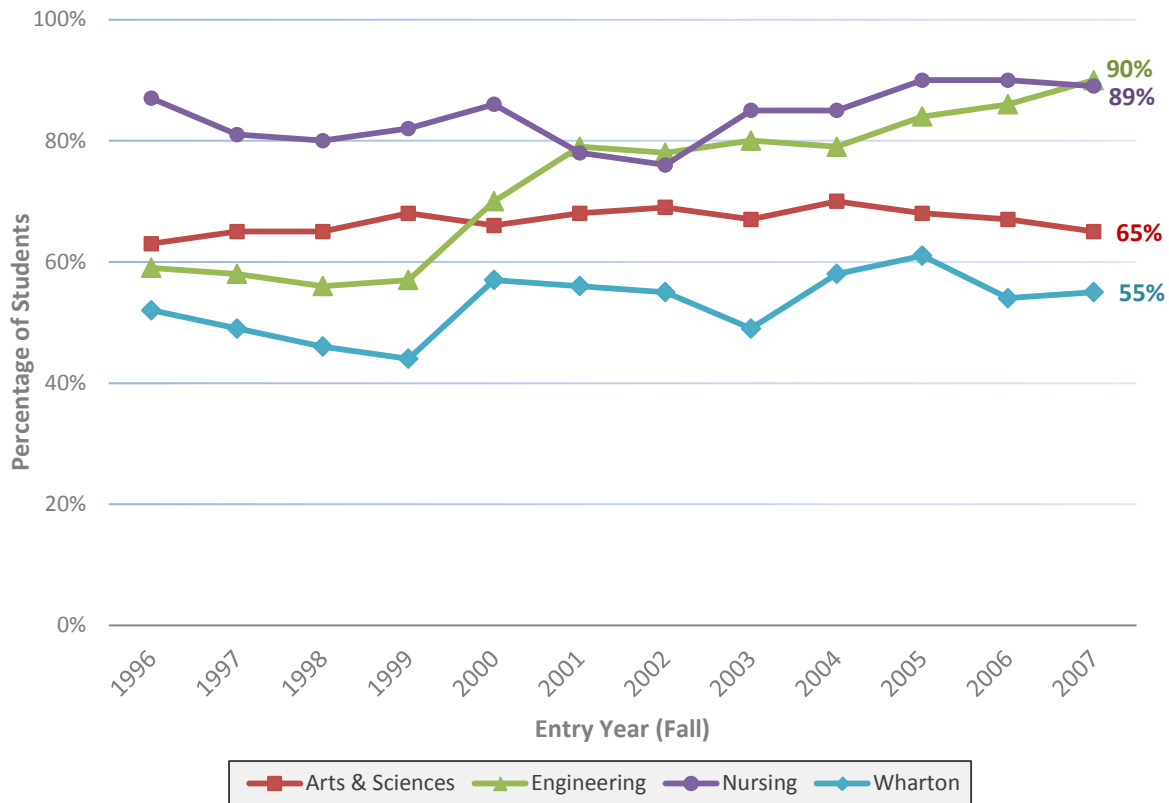
Figure 6.5
Percentage of Traditional Undergraduate Cohorts Paid by Research Funding
and/or Completing a Research Course during Undergraduate Years



The full implementation of a Senior Design requirement in all accredited Engineering programs during this period, which incorporated research activities, resulted in a dramatic increase in the percentage of traditional undergraduate Engineering students completing courses each year that could be classified as “research.” The School of Nursing has also required a Senior Inquiry course for all cohorts since 1987. While Nursing faculty see the work they expect of graduating seniors as research (suggesting that 100 percent of Nursing seniors should indicate that they have completed research with a faculty member), only 38 percent of graduating Nursing seniors responding to the 2012 Senior Survey indicated that they had indeed engaged in “research with a faculty member.” Nursing is currently revising its curriculum, including changing its Senior Inquiry requirement to “Senior Research” to promote more universal student engagement in faculty research and better align faculty and student perceptions. These examples underscore the challenges, even within specific schools and disciplines, of developing a definition of “undergraduate research” that is comprehensible and accessible to undergraduates, as well as rigorous enough to meet faculty expectations and disciplinary standards. These definitional challenges do not obscure the important fact that by multiple measures—survey results, paid research work, and registration in research courses—it is clear that approximately 70 percent of Penn undergraduates have a research experience.

Figure 6.6

Percentage of Traditional Undergraduate Cohorts Paid by Research Funding and/or Completing a Research Course during Undergraduate Years



Analysis of the 2007 cohort's research activities by school (Figure 6.6) suggests several notable trends:

- The highest level of research engagement is demonstrated by Engineering and Nursing seniors. As previously noted, this is likely due to the research requirements in the curricula of those schools.
- Students in Engineering and Nursing are the most likely to receive research funding at some time during their undergraduate career.
- Research funding by class year peaks during junior year in all schools except Wharton, which peaks during sophomore year.
- Wharton students exhibit the lowest level of research course completion during their senior years. However, Wharton students exhibit the highest level of research course completion during their junior years (21% vs. 18% for all Penn students).

Equity in Undergraduate Research Opportunities

Among the most important issues the Self-Study explored was whether access to undergraduate research opportunities is shared equitably across student demographic groups. According to course and grant funding data and the 2012 Student Survey, women appear more likely to participate in research than men. Female students report “participating in research activities” more or equally as frequently as males; “research with a faculty member” is equal at 46 percent; “other research experiences” is higher for females (47%) than for males (33%); more females complete independent studies than males (36% vs. 31%); and slightly more publish their work (15% vs. 13%). Females are more likely than males to report more than one acceptance to graduate school, and more females than males (65% vs. 50%) report that they will be attending their first choice institution. Despite these differences, self-reported skill acquisition does not appear to differ by gender.

Students from underrepresented minority groups seem somewhat less likely to participate in research, perhaps driven by lower enrollment in courses identified as “research” in our analysis (53% for the FY 2007 cohort vs. 62% for all Penn students). Although very small numbers of underrepresented minority students responded to the 2012 Senior Survey, these students reported less engagement in “research with a faculty member” (33% vs. 46% for majority students), particularly among African American students (16% vs. 48% for non-African American students). Encouragingly, underrepresented minority students (particularly African Americans) reported consistently high levels of satisfaction with their faculty research experiences (88% of underrepresented students and 100% of African American students).

Students having high need for financial aid are roughly twice as likely to be paid by research funding (39%) as students with no financial need (21%), perhaps reflecting the important influence of the Federal Work-Study Program on research engagement. The data from the Senior Survey for high need students are mixed when compared to other students. Fewer of these students reported participating in research with a faculty member (37% vs. 47%), but more participated in “other research experiences” (45% vs. 41%) and independent study (40% vs. 33%) and most report high levels of satisfaction with their faculty research experiences (96%). These differences may reflect the fact that more high need students are engaged in research experiences as part of work study activities, but that would not explain lower participation in independent study.

High need students report no differences from other students in most specific skill and knowledge areas. However, their responses to a question about the contribution of their education to the acquisition of analytical and logical thinking skills suggest less of a contribution than responses from students with no financial need. The data on graduate/professional school plans are mixed—fewer high need students have more than one acceptance, but more will attend their first choice school—though these are very small response groups (17 and 11 students, respectively), which may suggest that we need to provide more high need students with the skills and experiences necessary to apply to graduate school.

Finally, international students report significantly more engagement in “research with a faculty member” (63% as compared to 44% for non-international students) and “independent study” (48% as compared to 32%) than non-international students.

In sum, student demographic groups showed slightly different patterns of engagement with undergraduate research. All groups showed consistently high levels of satisfaction with their research experiences. Survey results are of limited utility because it is impossible to determine exactly why students respond to specific Senior Survey questions as they do. Given the challenges of understanding the role of these factors in influencing undergraduate engagement in research at Penn, it could prove useful to track data on both undergraduate research experiences and post-graduate plans. Ongoing data collection could shed light on whether Penn's increased emphasis on undergraduate research affects the number of alumni pursuing graduate and professional degrees and applying for and receiving national fellowships.

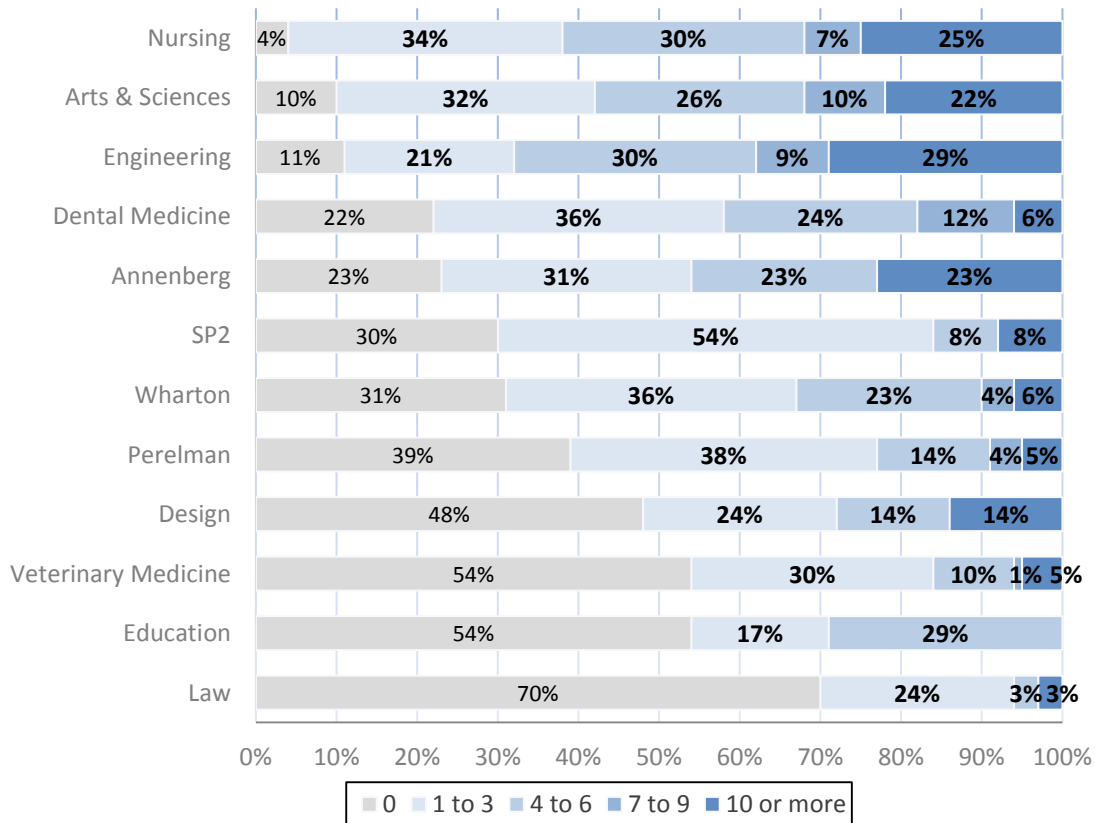
Faculty Survey Findings

A comprehensive Faculty Survey conducted in the fall of 2011 with a 74 percent response rate among standing faculty (1,854 standing faculty respondents) demonstrated the broad engagement of Penn faculty in undergraduate research (Figure 6.7).

Approximately nine out of 10 standing faculty members in Arts and Sciences, Engineering, and Nursing report regularly mentoring undergraduates in research, as do more than three-quarters of the faculty in Dental Medicine and the Annenberg School for Communication, more than two-thirds in Wharton and Social Policy and Practice, more than 60 percent in Medicine, nearly half in Education and Veterinary Medicine, and nearly one-third in Law. Faculty involvement in research mentoring appears to include significant involvement among a core of faculty in all graduate and professional schools. Across the schools, there are a large number of faculty deeply engaged in mentoring undergraduates, and a larger number who take on a smaller number of undergraduates. In each graduate-only Penn school, a small number of faculty appears to rarely engage undergraduates in research, whether by virtue of the nature of their research, lack of information about support for engaging undergraduates, their institutional role, or limited interest. The broad involvement in undergraduate research of faculty from a wide range of research fields is a testament to importance of undergraduate education to the entire University.

Figure 6.7

Responses by School to the Fall 2011 Faculty Survey Question: “Over the past three years, how many undergraduates have had significant research experience* under your direction or oversight?”



Faculty members responding to a spring 2013 survey on practices in undergraduate research were asked to identify the types of research activities in which undergraduates engaged. Among the 264 faculty respondents drawn from all faculty ranks at Penn, data gathering and literature reviews were the most common areas of undergraduate involvement. Tasks requiring relatively sophisticated thinking—such as research design, hypothesis formulation, data management, synthesis of literature, and synthesis of data—were also commonly associated with undergraduate research. Significant numbers of faculty reported student engagement in manuscript preparation, archival research, and seminar attendance, while science faculty emphasized undergraduates’ role in conducting experiments and attending lab meetings.

Identifying the contours of faculty involvement in undergraduate research highlights several trends:

- Broad involvement in undergraduate research mentorship among a significant segment of Penn’s faculty;
- Sharp school-based and disciplinary differences in faculty involvement;

- Different levels of undergraduate mentorship among faculty, even within schools and departments;
- A wide range of influences on faculty willingness to engage undergraduate researchers;
- General agreement on the kinds of research activities in which undergraduates are most commonly engaged;
- Consensus among a significant segment of faculty engaged in undergraduate research that enhanced funding for students and/or faculty, such as that institutionalized in the PURM model, would likely increase engagement in undergraduate research.

Strategic Considerations

All undergraduates interested in a research experience outside the context of a course ought to have the opportunity to work with faculty or post-doctoral supervision. Deeply engaged students should be provided the support and faculty mentoring necessary to excel in their disciplines, positioning them to compete successfully in their academic pursuits (e.g., entry to top-tier PhD and other graduate degree programs); to earn external recognition (e.g., NSF Graduate Awards and other competitive graduate research fellowships); or to pursue careers in which they are opinion leaders. With these goals in mind, Penn might explore creating a summer research program for incoming underrepresented students, expanding PURM to fund more projects, and increasing funding for undergraduates to present their research at off-campus academic conferences.

To advance our understanding of student and faculty research engagement, CURF could develop a research project registration system for undergraduate researchers, with faculty verification of student research activities. More generally, Penn could enhance institutional data by monitoring the distribution of opportunities across and within departments for independent research projects—for example, a measure of total undergraduate research funding across the University that includes funds disbursed by programs, individual faculty, and research grants. Finally, the number of Penn undergraduates who earn PhDs and NSF graduate fellowships upon and after graduation could be tracked and reported. Since the dividends of engaging in research may not be fully realized until years after graduation—in such forms as publications, pursuit of graduate education, and career choices—the impact of undergraduate research involvement could be tracked beyond graduation through alumni surveys. Faculty research engagement with undergraduates should also be regularly reexamined, through periodic reviews of departmental and school data and faculty surveys.

Recommendation

Penn students are regularly and quite successfully accessing a wide range of research opportunities at Penn. To maximize the scope, reach, and educational value of undergraduate research, the University could further strengthen the coordination of these opportunities. To this end, the Provost should create a faculty working group, convened jointly by the Vice Provost for Education and the Vice Provost for Research, which would extend our methods of collecting and analyzing information about undergraduate research and coordinate cross-school efforts to promote undergraduate research to students and faculty, especially in the graduate and professional schools.

The demonstration of quality is a fundamental responsibility of all colleges and universities, but both the kinds of quality and the methods used to measure it will differ depending on the mission of the institution.

—"Principles for Effective Assessment of Student Achievement,"
a joint statement issued July 19, 2013

Chapter 7: Assessment of Student Learning

Introduction

Penn believes strongly in assessing student learning and achievement. The School of Arts and Sciences, whose College of Arts and Sciences is central to undergraduate education at Penn, has pioneered assessments of student learning that can serve as a model for other undergraduate colleges. Our other three undergraduate schools also continue to lead the assessment of student learning in alignment with the expectations of their fields of study and the relevant external accrediting bodies.

In general, Penn locates the responsibility for the assessment of student learning with the faculty of the individual schools. This approach mirrors Penn's academic organization into twelve distinct schools, each with a specific educational mission and portfolio of degree programs, and reflects the strong belief that assessment practices are most meaningful when they are led by faculty with the requisite expertise, within the context of a school or discipline. Particularly useful are periodic assessments engaging peer review by distinguished faculty from schools and programs from other institutions. External peer review allows for deeper understanding of the problems and practices in a specific educational environment and encourages the sharing of new ideas across institutions.

Because Penn places academic authority in the faculty of each school, rather than any central office or single assessment process for the entire institution, the Assessment of Student Learning Working Group approached the issue of assessment of student learning by: 1) characterizing achievement of our students from a broad perspective; 2) studying the stated missions and assessment activities of each undergraduate school; and 3) identifying common educational activities across the schools and examining the means by which these are assessed. Taken together, these approaches provide an examination of assessment consistent with the "Principles for Effective Assessment of Student Achievement," which has been endorsed by the MSCHE, the six other regional accreditors, and major higher education associations including the American Association of Universities.

Working Group Charge and Process

The charge to the Assessment of Student Learning Working Group was to evaluate the overall assessment activities in our undergraduate education programs. The Group's work focused on the relationship between teaching and learning in each undergraduate school and the overall educational goals of the University, including the goal of having effective assessment processes for its core educational programs. The group was asked to use the framework of the MSCHE Standards of Excellence, especially Standards 7 and 14. This chapter provides an overview of how Penn meets Standard 14 and includes individual reports from each of the four undergraduate schools.

Student Achievement and Career-Related Outcomes

Penn prepares students for a broad and diverse array of careers and life plans. The University's size and range allow undergraduates to explore a wide variety of academic offerings and encourage our graduates to become well-rounded professionals, scholars, and intellectuals. We are proud of a strong record of post-graduate student placement: our most recent survey of undergraduate alumni in 2012 indicated that, five years after graduation, only two percent of respondents (n=1,465) were seeking employment at that time, with about one-fifth (22%) attending graduate school and virtually all of the remainder employed or self-employed.

This 2012 Alumni Survey (distributed to individuals who completed their bachelor's degree at Penn between 2001 and 2003) explored the relationship between students' primary educational discipline and the industry in which they work. Figure 7.1 shows the trajectory of discipline to job sector for Penn's graduates. Many of the trajectories are unsurprising: for example, Wharton graduates working in finance and biological science graduates working as physicians. Nursing graduates account for the large numbers of respondents in the "other" category entering the health care field. Humanities graduates are working in a broad array of professions, suggesting that their educations have prepared them to succeed in a variety of capacities.

In the 2012 Alumni Survey, alumni were asked how well they thought their undergraduate experiences prepared them to succeed in these same areas. In the 2012 Senior Survey, students were asked how much they believed their Penn undergraduate experience contributed to their knowledge, skills, and personal development in variety of areas. Although the responses are summarized for two distinct populations of graduates, the extent of agreement in mean response between the two groups is notable (Figure 7.2).

The top ranked items on both groups' lists include: ability to learn on your own, functioning independently without supervision, thinking analytically and logically, and thinking critically. Responses from both groups were overwhelmingly positive; both seniors and alumni credited Penn with contributing a great deal to their development. Alumni responded even more positively than seniors, a finding that may be interpreted in multiple ways. Alumni still engaged with the University are perhaps more likely to have a particularly positive view of the institution. The difference might also reflect heightened expectations of recent seniors, particularly as the University becomes more selective. Alternatively, it could also be that it takes several years for individuals to fully appreciate the skills and abilities gained in college. Planned consistency in survey instruments over time will allow us to use the data collected in these two surveys to conduct longitudinal analysis in future years.

Figure 7.1

Relationship between Penn Alumni's Undergraduate Disciplines (in colors, left side) and Job Sector (in grey, right side) 10-12 years after graduation

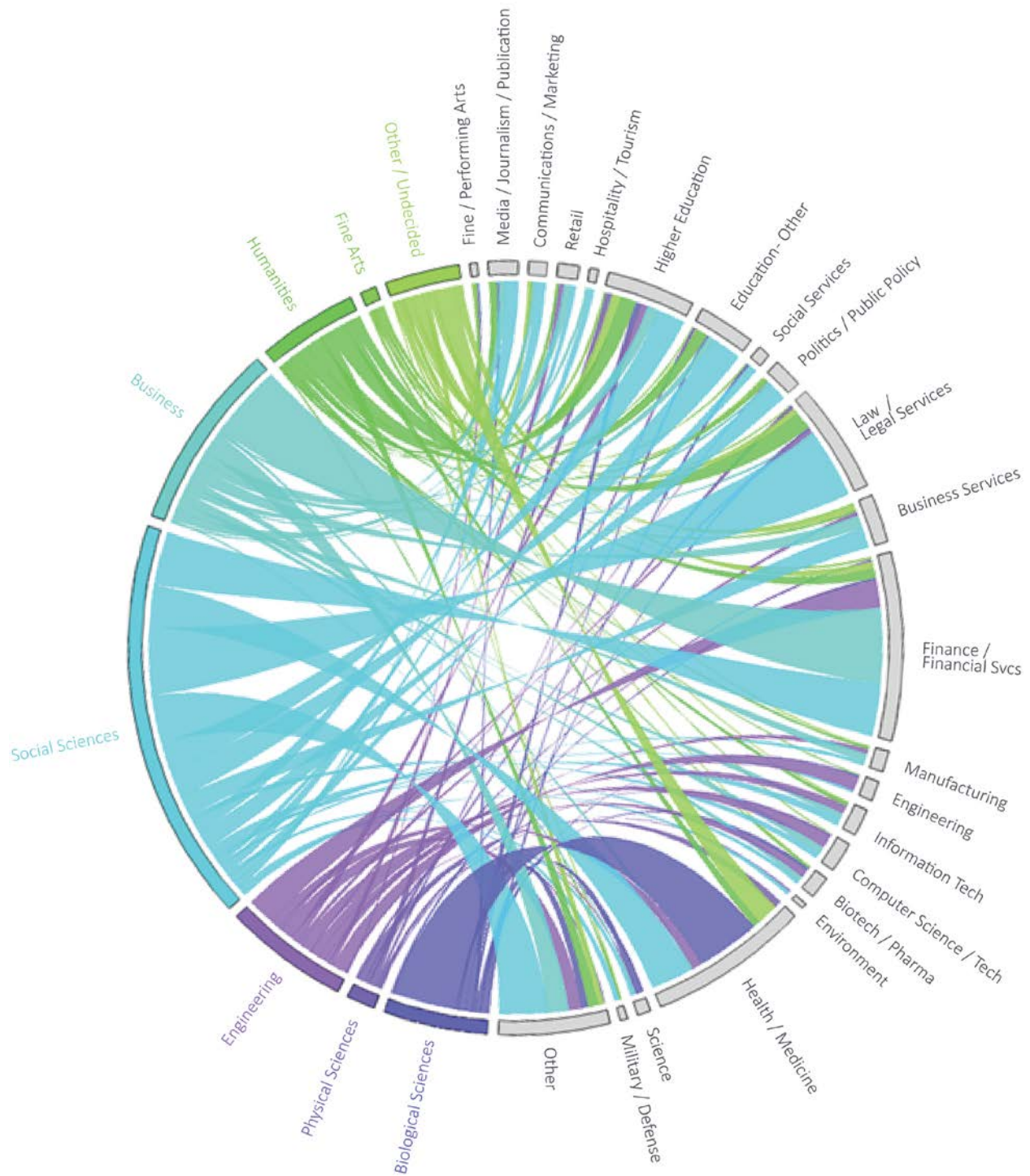
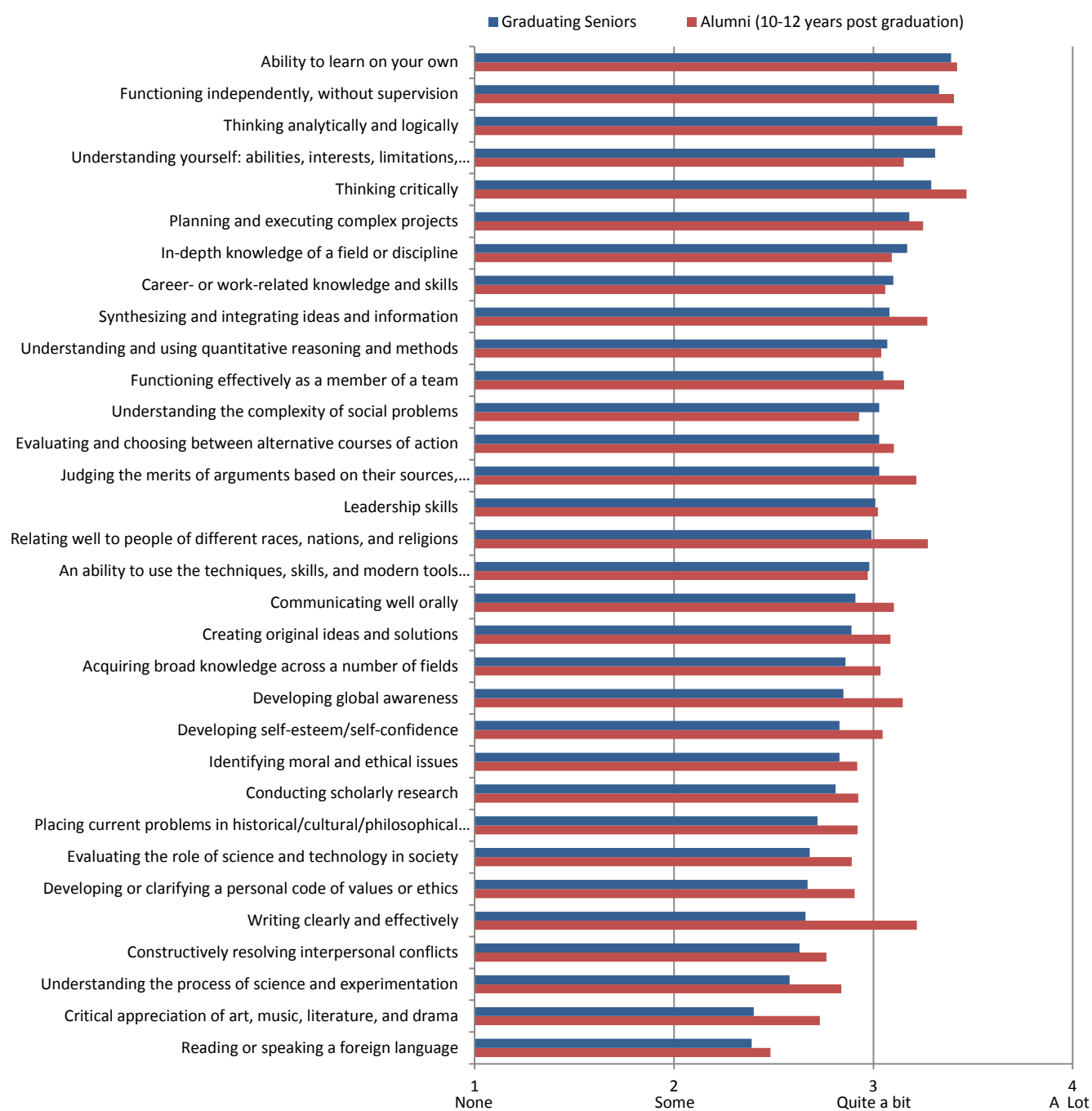


Figure 7.2
Mean Perceived Gains in Knowledge, Skills, and Personal Development
due to the Penn Experience, 2012 Senior Survey and 2012 Alumni Survey



Educational Mission and Assessment Activities

Penn aspires to expose undergraduates to a rich variety of academic offerings, enhance and deepen their understanding of the world and their place in society, and endow them with the gift of lifelong learning. While all four undergraduate schools are closely connected through the coordinating activities of the Council of Undergraduate Deans and other bodies, they retain specific missions and distinct approaches to education. This “flexible connectivity” is woven through the educational enterprise of the University and extends to areas noted in other chapters.

College of Arts and Sciences

The College of Arts and Sciences is committed to offering a broad education that will lay a durable foundation for critical and creative thinking. The College aims to help students become knowledgeable about the world and the complexities of today’s society; be sensitive to moral, ethical and social issues; prepared to exercise intellectual leadership; and enlivened by the use of their minds. Study of the arts and sciences provides a solid basis for advanced scientific and scholarly research, subsequent training in the professions, and the informed exercise of the rights and responsibilities of citizenship. In the tradition of its eighteenth-century founders, the College regards the enduring purpose of education as the liberation of the mind from ignorance, superstition and prejudice.

Assessment of educational programs and student learning outcomes in the College comes in two forms: regular departmental reviews and College-wide assessment activities emanating from the Office of the Dean of the College. The Working Group notes that, in response to Penn’s 2009 Periodic Review Report, the MSCHE requested “that the self-study conducted in preparation for the evaluation visit in 2013-2014 document that in the School of Arts and Sciences (1) assessment of student learning has been implemented in all departments and programs and (2) assessment results are used to improve teaching and learning (Standard 14).” The Assessment of Undergraduate Educational Programs in the School of Arts and Sciences is Appendix 7.1.

School of Engineering and Applied Science

The mission of Penn Engineering is to prepare its graduates for technological leadership roles in engineering and applied science, as well as in such other fields as medicine, business, and law in which creativity, critical quantitative thinking, effective communication skills, and a strong commitment to humane values are essential. Because the pace of technological development is so rapid, Penn Engineering emphasizes fundamentals and gives students extensive opportunities for hands-on engineering design experience addressing real-world problems coupled with hands-on research that delves deeply into their chosen field to generate new knowledge. Assessment of education programs in Penn Engineering is carried out through departmental reviews and the accreditation activities of the Accreditation Board of Science and Technology (ABET). The SEAS Learning Outcomes Summary of ABET Report is Appendix 7.2.

School of Nursing

Penn Nursing is committed to teaching the art and science of nursing, as well as creating opportunities for service, practice, leadership, and research. These goals are achieved through talented faculty,

internationally recognized scholarship, respect for the diversity of the Nursing community (of faculty, staff, and students), and a commitment to individualizing the pedagogical and material resources necessary for success. Assessment of education programs at Penn Nursing is coordinated by the accreditation activities of the Commission on Collegiate Nursing Education (CCNE). The 2013 CCNE Self-Study Report by Penn Nursing is Appendix 7.3.

Wharton School

The Wharton School seeks to cultivate a community of scholars who will transform the world as citizens and leaders of the global marketplace. It prepares leaders for business and public service, advances knowledge across disciplines and industries, and promotes economic progress throughout the world. Assessment of educational programs at Wharton occurs during quinquennial reviews and during the reaccreditation reviews by the Association to Advance Collegiate Schools of Business (AACSB). The most recent Self-Evaluation Report from the 2009 AACSB International Accreditation Maintenance Review is Appendix 7.4.

Definition and Assignment of Academic Credit

All of Penn's undergraduate programs use course units (CUs) as a general measure of academic work and progress toward a degree. The Assessment of Student Learning Working Group and the Finance and Administration Working Group examined how academic credit is assigned and how to define a CU. The descriptions below are endorsed by both Working Groups and the Steering Committee of the Self-Study.

Definition of a Credit Unit (CU)

A course unit (CU) is a general measure of academic work over a period of time, typically a term (semester or summer). A CU (or a fraction of a CU) represents different types of academic work across different types of academic programs and is the basic unit of progress toward a degree. One CU is usually converted to a four-semester-hour course. A degree from one of Penn's undergraduate programs requires the completion of 32 to 40 (or more) course units. Graduate and professional degrees vary in the number of years of study and the number of CUs required.

Assignment of Academic Credit

The CU value of a course determined by the faculty reflects their judgment regarding the expected work of a student completing that course. Factors that may be considered when assigning academic credit for a course include scheduled class time, expected time outside of class, the difficulty and range of materials covered, and the mastery of specific knowledge through written reports, exams, and other evaluations.

The assignment of academic credit for an undergraduate course is formally approved by the curriculum committee (or similar body) of the school when a course is first proposed. It is reviewed formally by the faculty of a program, department, or school through periodic program reviews or curriculum revisions. Additionally, it is reviewed by the faculty of a program, department, or school informally as part of ongoing assessments of curriculum and teaching effectiveness.

Curriculum Review and Course Approval

The faculty of each undergraduate school administers the school's degree programs, setting the degree requirements and the curriculum. Each faculty has its own process for approving its curriculum, including the assignment of credit values for courses.

College of Arts and Sciences

In the College, the Curriculum Committee reviews every new course to be added permanently to the curriculum. New courses are first approved by the department offering the course. Courses that are experimental in nature, topics courses, and graduate courses are reviewed only at the departmental level and are exempt from Curriculum Committee review. If the Committee approves a course, it recommends it for approval by the full faculty of the School of Arts and Sciences, which has developed an online tool, called [Curriculum Manager](#), to help manage the approval process for requirements, courses, and programs of study.

Most courses in the School of Arts and Sciences earn one CU per semester, even if they meet for more than three hours per week. Exceptions are made, however, for courses with significant laboratory components when those components are under the direct supervision of a faculty member, a member of the teaching staff, or a graduate teaching assistant. In these instances, students earn 1.5 CUs per semester. The Curriculum Committee has also approved a limited number of stand-alone 0.5 CU courses. These include courses such as certain honors seminars that extend across two semesters, where much of the work by students is done independently, and musical performance classes and language practice classes that span curricular and co-curricular endeavors. All courses in Arts and Sciences earning one course unit per semester meet for at least three hours per week over the course of the entire semester.

School of Engineering and Applied Science

Formal approval of engineering courses begins with a departmental faculty vote. If a new course is approved by the department, it is proposed to the Undergraduate Affairs Committee, which votes to approve a course. Courses in Penn Engineering are usually assigned 1 CU. Some courses are assigned 0.5 CU, as determined by the faculty member proposing the course in consultation with the department chair and, where appropriate, the school's central administration.

School of Nursing

The School of Nursing recently completed a major revision of its undergraduate curriculum designed to provide students with greater opportunities to develop the essential competencies required for professional nursing practice. This process was led by an Undergraduate Curriculum Committee, and the final curriculum was approved by the Nursing faculty as a whole. Key stakeholders approve new courses and minors through a new tracking process. The credit value of the courses in the new curriculum maintains the 40.5 CU total of the previous curriculum and meets all regulatory and professional standards.

Wharton School

The course approval process at Wharton begins with a proposal from a department to the Curriculum Committee. If the course is approved, it is then proposed to the school's faculty. All new courses are first approved as experimental. Once approved, an experimental course may be offered for no more than two consecutive years, beginning with the semester in which it is first offered. Departments may then propose that the course be made permanent if they wish to continue to offer it. Significant changes to existing courses and proposals to reinstate discontinued courses follow a similar process of approval by the Curriculum Committee and then the school's faculty (Appendix 7.5). Most courses are assigned 1 CU; however, Wharton has developed several 0.5 CU courses. The 0.5 CU classes allow the flexibility of "matching" two disparate classes in one semester and recognize the variance of depths of different topics.

Departmental Reviews in Penn's Undergraduate Schools

Consistent with Penn's academic organization, each undergraduate school follows its own process for regular reviews of its departments and programs. Most schools have regular departmental reviews that include self-study and external reviews, culminating in reports that are shared with the department, the school, and the Provost. Additionally, exit interviews with external review teams include school deans and the Office of the Provost, typically the Vice Provost for Education.

College of Arts and Sciences

The review protocol of the School of Arts and Sciences requires each department to be reviewed every five to seven years (Appendix 7.6). These reviews include a departmental self-study focused on the educational experiences of undergraduates, including teaching effectiveness, advising, and the scope and curriculum of the undergraduate program, including general education and the major. The Dean also appoints an external review committee, composed of three scholars from the discipline under review, which is responsible for producing a single report.

School of Engineering and Applied Science

The School of Engineering and Applied Science carries out comprehensive peer reviews of its academic departments and reports these as part of its reaccreditation process by the Accreditation Board of Science and Technology (Appendix 7.7).

School of Nursing

The regular reaccreditation review by the Commission on Collegiate Nursing Education (CCNE) functions as a peer review for School of Nursing programs (Appendix 7.3).

Wharton School

The Wharton School has a system of quinquennial departmental reviews that includes the collection of information about each department's undergraduate curriculum, as well as the MBA and PhD curricula (Appendix 7.8). The information collected includes courses offered, trends in enrollment per course, duration of each course, recent curricular changes, and students' evaluations of courses. Review committees, which are appointed by the Dean, are composed of four to five faculty members and three students (one undergraduate, one graduate, and one doctoral). Each review also includes three external consultants, who serve as an advisory group.

Common educational objectives

The Assessment of Student Learning Working Group, composed of faculty members from the four undergraduate schools (and supported by consultation with the broader faculty) examined the curricula from the four undergraduate schools and focused on the following questions: Are there common educational objectives that span the schools and, if so, how are they assessed? This inquiry revealed agreement about what can be considered the meta-goal of a Penn education: to enable our graduates make a difference in the world. The group then considered how the curricular offerings in the four undergraduate schools prepare our graduates to achieve this goal.

For our alumni to make a difference in the world, they should be problem-solvers, each in his or her own way. To become problem-solvers, students need to know how to work with problem-solvers in different fields. And finally, to have an impact on the world, they need to be good communicators. These objectives are common to all four of the undergraduate programs at Penn. Thus, the Working Group created four categories to describe a thought experiment in which institutional learning goals drawn from the curricular goals of the four undergraduate schools were explored, first by describing elements of each school's curriculum related to the goals, and then by describing the assessment of those elements. The result is a rough sketch of how Penn graduates could demonstrate proficiency across these four broad educational goals of a Penn education:

- 1) Problem-Solving
- 2) Understanding and Application of Connectivity
- 3) Global and Civic Literacy
- 4) Communication Skills

Problem-Solving

The ability of students to analyze and solve complex problems fundamentally shapes a Penn undergraduate education. Students need proficiency in the analytical tools employed in problem-solving, including quantitative/logical analysis, critical reasoning, research methods, ethical reasoning, and lifelong learning. This training helps Penn graduates approach problems that span disciplines and then successfully apply analyses and reasoning to solve those problems.

Every undergraduate school at Penn has a quantitative or formal reasoning requirement. Beyond that, the methods employed by each school to provide instruction that will lead to greater problem-solving ability vary according to each school's curriculum.

College of Arts and Sciences

Curricular design. Students in the College are exposed to various modes of problem-solving in several of the General Education Requirements, which all students must satisfy prior to graduation. Quantitative and logical problem-solving are fundamental components of two of the Requirements: *Foundational Approaches: Quantitative Data Analysis* (QDA) and *Formal Reasoning Analysis* (FRA). Courses satisfying the QDA requirement use mathematical or statistical analysis of quantitative data as an important method of understanding a subject. More specifically, students are required to analyze actual data sets with the goal of evaluating hypotheses or interpreting results. Courses satisfying the QDA include such areas as science labs (e.g., Chemistry 053, Biology 121), economics (e.g., Economics 104), and sociology (e.g., Sociology 120), among others. Courses in the FRA requirement focus on deductive reasoning and the formal structure of human thought, including its linguistic, logical, and mathematical constituents. Illustrative courses include Mathematics 104, Philosophy 005, and Linguistics 105. Further emphasis is placed on problem-solving through the General Education sector requirements in the sciences, which require all students to take at least one approved course in each of these groups: *Living World*, *Physical World*, and *Natural Sciences and Mathematics*.

Assessment. There is no one-size-fits-all method of assessing student learning given these requirements. The process focuses on periodic assessments of the individual courses to ensure that they continue to include classwork, homework exercises, and exam questions that meet the minimum standards for a QDA or FRA course.

School of Engineering and Applied Science

Curricular design. Quantitative/logical analysis is essential to engineers and includes the ability to identify, formulate, and solve engineering problems. The solving of engineering problems includes the ability to design a system, component, or process to meet desired needs within economic, environmental, social, political, and ethical health and safety constraints, while also taking into account manufacturability and sustainability. Critical reasoning is also essential to engineering students. This includes an ability to design and conduct experiments, to analyze and interpret data, and to apply knowledge of mathematics, science, and engineering. As a baseline, all Engineering students are required to take Mathematics 104, 114, and 240, which take them through differential and integral calculus and differential equations with some exposure to linear algebra. Additionally, each engineering discipline requires discipline-specific math courses. Within each major, several courses include experimental design, analysis, and interpretation, with a large portion associated with hands-on lab courses.

Assessment. All courses in the Engineering BSE major are designed to meet ABET (Accreditation Board for Engineering and Technology) standards. As a result, courses are designed for and assessed by ABET-specified learning outcomes. Five of the ABET learning outcomes speak directly to the University's expected proficiency in problem-solving:

- (a) an ability to apply knowledge of mathematics, science, and engineering;
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data;
- (e) an ability to identify, formulate, and solve engineering problems;
- (f) an understanding of professional and ethical responsibility;
- (i) a recognition of the need for, and an ability to engage in, lifelong learning.

Each of the majors has different requirements and courses, but all are designed to guarantee coverage of these topics. The Learning Outcomes Summary of ABET Report (Appendix 7.2) demonstrates how Engineering meets these outcomes.

School of Nursing

Curricular design. To ensure that Nursing students graduate with strong problem-solving skills, each student is required to take a Reasoning Sector course. Courses in this sector must provide breadth in an area of study that addresses logical, mathematical, and quantifiable relationships among such entities as ideas, people, groups, systems, and other social or technological structures. Specialized research approaches—including field work, advanced statistics, and other methods—also fulfill this aim. Illustrative courses include Mathematics 101 (Algebra and Trigonometry) and 123 (Community Math Teaching Project) or courses in computer methodologies. Every student is also required to take Nursing 230: Statistics for Research and Measurement. In this course, students become literate in statistical terminology and symbols and knowledgeable about assumptions for statistical tests.

Problem-solving also demands clinical reasoning skills, which are developed through clinical experiences in courses such as Nursing of Women and Infants (Nursing 215); Mental Health (Nursing 235); Pediatrics (Nursing 225); Nursing Care of the Young and Middle Aged Adult (Nursing 245); Nursing Care of the Older Adult (Nursing 255); and Community Nursing (Nursing 380). These experiences present crucial opportunities for students to apply classroom learning and develop proficiency in caring for patients. Each student completes a total of 864 hours in the clinical setting. These clinical experiences are central to developing knowledge and skill. Clinical placements are varied, taking place in hospitals and in community settings. Clinical hours are obtained by working in some of the best hospitals in the country and by studying overseas, through experiences such as supporting safe births in a Honduran village or soothing sick children in an Israeli kibbutz.

All undergraduate students are required to take classes in research and ethical reasoning. In addition to taking Nursing 330 (Health Care Ethics), students take Nursing 547: Scientific Inquiry for Evidence-based Practice (beginning in 2014), which is designed to advance students' understanding of the research process, methods of scientific inquiry, and analytical techniques. They also take Nursing 389: Research/Inquiry-Based Service Residency. This course is designed to facilitate students' intellectual curiosity and independence through a structured and individualized faculty-mentored research experience based on specific learning objectives. All students rely on the Office of Nursing Research to help discover grant opportunities, find research partners, hone grant-writing skills, and connect with faculty mentors.

Assessment. For learning outcomes in quantitative/logical analysis, assessment measures include the evaluation of students' examinations of the statistical and clinical significance of research findings. Students in a variety of courses also evaluate tables and graphs to summarize research findings. Other outcomes are measured through objective tests, written papers, and oral presentations (position papers, clinical care plans), reflective journaling, group presentation of exemplar cases, and recordings of verbal and nonverbal interactions with patients. A significant assessment of learning for problem-solving comes with research projects, research papers, and posters presented in class and at national research conferences.

During clinical experiences, each student is evaluated based on written patient care plans, simulated laboratory experiences, and clinical practice tools. Clinical practice tools measure behavioral outcomes that students must obtain before progressing to other courses. Students also demonstrate knowledge in the clinical learning environment by performing safe calculations on dosages and solutions and teaching patients and families about safe dosages and calculations. The clinical evaluation tools have clear descriptions of competencies that students must meet in order to progress to the next course. Clinical reasoning that involves the acquisition of core knowledge and skills is also assessed through lab demonstrations and simulations. All students use low fidelity (standardized actors) and high fidelity (technological guided mannequins, etc.) simulations in the clinical nursing laboratory. They are measured by scores for crisis management skills (e.g., managing airway, breathing, circulation, and neurological problems), communication skills, and survival rates based on simulated (SIM) models, decision-making, and drawing conclusions. Students are also measured by live observation, performance checklists, video recordings, critical debriefing periods, and SIM device logs. The Commission on Collegiate Nursing Education (CCNE) Self-Study Report provides detailed outcomes assessment of these clinical experiences, including NCLEX-RN pass rates, certification examination pass rates, and employment rates (see pages 54-71 in Appendix 7.3).

Wharton School

Curricular design. Students in the Wharton School are expected to develop the capabilities required to solve business-related problems. Fundamental quantitative and logical analysis capabilities necessary to address a wide variety of business problems include the capability to: (1) frame problems in a manner that can be resolved mathematically; (2) develop, analyze and interpret business statistics; and (3) employ standard quantitative approaches used in business practice. These capabilities are introduced in required courses in micro- and macroeconomics, mathematics (College-level calculus, Mathematics 104), and business fundamentals (including two semesters of accounting and two semesters of statistics) and are further enhanced in subsequent elective courses requiring students to craft solutions to cases and hypotheticals linked to actual business experience. Problem-solving in the business environment demands critical reasoning skills, which are developed in many courses through class discussions of cases and problems, feedback on written projects, and project presentations followed by question and answer periods. Problem-solving in business often requires research involving multiple resources, such as library collections, regulatory filings, internet search engines, databases, archival empirical analysis, and surveys. Students are provided with opportunities to explore different research sources and methods through research papers required in some courses and independent study projects supervised by faculty.

Assessment. Students in the Wharton School receive a common foundation in problem-solving skills through selected required courses in business fundamentals that develop the students' capabilities to: (1) frame problems in a manner that can be resolved mathematically; (2) develop, analyze, and interpret business statistics; or (3) apply standard quantitative approaches employed in business practice. The required courses include: (1) Accounting 101 and 102: Financial and Managerial Accounting; (2) Business Economics and Public Policy 250: Managerial Economics; (3) Finance 100: Corporate Finance; (4) Operations and Information Management 101: Introduction to Operations and Information Management; and (5) Statistics 101 and 102: Introduction to Business Statistics. These courses focus on sources of data, solution techniques, and problem frameworks that are common to many business-related problem-solving exercises, and they are required of all students. Assessment is performed by the departments and instructors responsible for the courses, who rely on objective examinations to assess learning outcomes.

While the material conveyed in each of these courses is common across sections, the examinations used for assessment may or may not be the same. In some departments, instructors employ common examinations each semester and, in other departments, instructors prepare examinations unique to their course sections. The relevant department chair provides oversight for each course section, ensuring that each course and its assessment is rigorous. Finally, because the business curriculum is progressive, subsequent courses in the curriculum rely on students having learned material that gives them a common foundation. For example, Finance 203: Advanced Corporate Finance relies on students' understanding material covered in fundamental courses in financial accounting, finance, and statistics. If students are assessed to be deficient in their understanding of problem-solving material covered in the business fundamentals courses, the instructors in the higher-level courses provide informal feedback to the instructors of the fundamental courses. In fact, even courses that comprise the common foundation rely on material covered in other foundational courses. For example, Finance 100 assumes that students are familiar with and can effectively use the basic concepts taught in statistics, accounting, and economics.

Understanding & Application of Connectivity

The University places a strong emphasis on traversing disciplinary barriers and encourages students to work across academic disciplines and to work effectively in groups. As described and documented in Chapter 5, the University actively pursues multi-disciplinary dialogue through such avenues as dual degrees and multiple majors and minors (Appendix 5.2). As explored in Chapter 5: Integrating Knowledge, approximately 10 percent of Penn undergraduate students are enrolled in a formal integrated program of study and an additional nine percent are taking a self-constructed multiple major. The coordinated dual degree programs are monitored by the constituent schools. As further evidence of students' multidisciplinary education, there is a high level of cross-school student enrollment (Appendix 5.2). By building these bridges, Penn encourages students to venture out and discover points of connectivity, with the goal of applying those connections to create a richer intellectual experience. This journey in turn fosters collaborative learning, as students encounter classmates from across the Penn community, while also viewing their own educations through the lens of a distinct approach. The

sections below examine how each undergraduate school builds this kind of connectivity into its curriculum and assesses the success of those activities.

College of Arts and Sciences

Curricular design. Students in the College are required to complete seven sectors that cross disciplines. Courses in the five of the sectors—Society, History and Tradition, Arts and Letters, Living World, and Physical World—are generally grounded in the perspective of a specific discipline. The other two sectors engage students in interdisciplinary modes of inquiry. Sector IV: Humanities and Social Sciences (HSS) comprise courses that combine methods and approaches from at least two of the first three sectors. In Sector IV, students engage diverse approaches to society, history, tradition, and the arts more deeply than a single course from each domain can allow. Greater depth of experience is gained by bringing to bear several humanistic and social scientific perspectives on a single issue or topic or by engaging in academically based service or performance informed by these perspectives. In Sector IV courses, students broaden their perspectives by taking a course in the humanities or social sciences that has been approved as a General Education course but cuts across two or more of sectors I, II, and III. Some courses approved for this sector seek a more integrative approach by addressing a problem or topic from a variety of disciplinary perspectives. Others combine disciplinary study with community service or activism. Finally, some courses in the arts combine creative or performance experiences with reflection on and grounding in a specific discipline.

Another cross-disciplinary requirement is Sector VII: Natural Sciences and Mathematics (NSM). In fulfilling this requirement, students must engage with diverse approaches to the natural sciences and mathematics more deeply than a single course from the physical and life sciences would allow. Greater depth of experience can be accomplished by greater focus on one area; by study in a related area, bringing various scientific perspectives to bear on a single issue or topic; or by engaging directly in academically based activities informed by these perspectives. In this sector, students broaden their perspectives by taking a course in the natural sciences or mathematics that has been approved as a General Education course.

Assessment. Assessment of the Sector Requirement is carried out by two faculty panels: the HSS Panel (for Sectors I – IV) and the NSM Panel (for Sectors V – VII). The panels spent several semesters, following the inception of the current curriculum in 2006, discussing how best to define expected outcomes. They sharpened the definitions of the sectors for purposes of approving new courses and translated the general definition of each sector into statements of the expectations for student learning in that sector's courses. The results of this exercise can be seen in the [enumerated questions after each sector definition](#). The panels then reframed these definitions as learning goals for the sectors, which help determine how best to evaluate the success of the sector curriculum in ensuring that students have met those goals.

This past year, the HSS Panel undertook several initiatives to learn more about what College students may gain from the sector requirements. It aimed not only to develop a set of findings on how this component of the curriculum was functioning but also to demonstrate the value of this approach to assessing General Education that, if successful, could be used for assessment of the other sectors. The

panel composed and employed a set of supplemental questions appended to end-of-the-semester course evaluations that ask students to evaluate their learning in relation to the goals of the sector. These questions are listed in the appendix of the College Assessment Report. The panel pilot-tested the questions in the summer of 2012 and then added them to the standard questionnaire for all sector courses evaluated during academic year 2012-2013. Although students' own evaluations of what they learned are considered an indirect method of assessment, the panel thought that students' opinions provided important information about their views of their own learning. For more detail, see Assessment of Undergraduate Educational Programs in the School of Arts and Sciences (Appendix 7.1).

School of Engineering and Applied Science

Curricular design. Two of the School's ABET-specified outcomes align with the understanding and application of connectivity:

- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- an ability to function on multidisciplinary teams.

These outcomes are an integral part of each Engineering major, including the capstone Senior Design Project, a team project that integrates knowledge from all four years of study. Several courses in each major also include teamwork. Beyond ABET, all Engineering students are required to take seven social science and humanities courses outside the School. In addition to providing these students with a broad liberal arts education, this requirement guarantees a rich interaction with students and viewpoints outside the School. Between basic math and sciences and social science and humanities requirements, engineering students are required to take 17 of their 40 credit units in another school. Typically, students take more than half of their units outside Engineering. Finally, a number of Engineering students pursue dual degrees or minors in other schools. See Appendix 5.2 for details on cross-school programs.

Assessment. Assessment of learning outside the school is performed by the school that offers the courses. Within the school, outcomes are assessed by homework, exams, and projects in courses in each major. Most courses include a specific measurement for teamwork. The demonstrated attainment of ABET standards across the majors is provided in Appendix 7.2. As with other ABET outcomes, the goal is to exceed 85 percent achievement of the outcome, and this goal has been achieved.

School of Nursing

Curricular design. One of the School of Nursing's goals is to help students articulate a role that encompasses knowledge of systems thinking, inter-professional communication, organizational structure, and their influence on health care delivery. Students combine nursing studies with courses at other Penn undergraduate schools and may pursue minor, dual degree, and sub-matriculation options. Cross-disciplinary sectors are required of all nursing students: 1 CU each (outside the School of Nursing) in Societies and Social Structures, History and Traditions, Arts and Letters, and Global and Cultural Studies. All courses have

been approved by the School of Nursing. Nursing students take courses in the three other undergraduate programs, and students in other undergraduate schools take classes at the School of Nursing.

The knowledge that students gain from courses outside the School of Nursing enables them to have a strong voice at the bedside, in leadership and policy, in multidisciplinary research teams, and in the economic arena. Students are better prepared to care for individuals in groups, organizations, and a variety of institutions and, through courses in cultural studies and history, they have a greater understanding of historical traditions in cultures and societies as they care for diverse patient populations. Multidisciplinary work is also included in required courses for all students in the sciences, nutrition, and ethics.

Assessment. Understanding and application of connectivity involves teamwork. Special rubrics in clinical courses are designed to assess students' ability to work effectively as teams through high-fidelity scenario-based simulations. During these simulations, students are evaluated in decision-making as well as communication with physicians, respiratory therapists, and other health care workers. They may also be evaluated on working with engineers to design a more effective clinical workplace. One of the questions in the survey of all Nursing graduates measures the extent to which students feel prepared to work together as a team. An End-of-Course evaluation tool also assesses students' understanding of their roles in working with others as a team member. In the science and ethics courses, written examinations and papers are used to measure learning outcomes. Ethical reasoning is measured in competencies for clinical learning through clinical valuation tools and assignments in Nursing 330.

Wharton School

Curricular design. To ensure breadth of knowledge, Wharton students gain exposure to the arts and sciences through a General Education distribution requirement, which requires students to complete at least two CUs in social structures; at least two CUs in language, arts, and culture; and at least two CUs in science and technology. Wharton students are also required to take two additional non-business electives and a required course in mathematics. These broad educational requirements ensure that students receive sufficient intellectual breadth, which can be applied to their study of and careers in business. In addition to gaining the broader perspective offered by exposure to courses in other academic units, Wharton students are also required to develop breadth in the business domain through required courses in business fundamentals, societal environment, organizational environment, business breadth, and global environment. These course requirements ensure that students are exposed to the multiple perspectives of various business disciplines that can be applied as they pursue their specific business interests.

The ability to engage with a team is vital to the achievement of business objectives. Accordingly, Wharton offers many opportunities for students to engage with and lead groups of fellow students. All Wharton students must complete Management 100: Leadership and Communication in Groups, in which students study leadership and communication in teams. A critical teaching and assessment tool in that course is a required team field project in which a student team engages with a community service or small business organization. Many Wharton courses also require that students prepare cases and projects in teams. Some examples of courses requiring teamwork include: Accounting 297 and 242,

Finance 207, Legal Studies 210, Marketing 211 and 224, Management 230 and 291, and Operations and Information Management 290 and 314.

Wharton encourages and offers many avenues for students to pursue cross-disciplinary studies. Coordinated dual degree programs include the Huntsman Program in International Studies and Business, Vagelos Program in Life Sciences and Management, Fisher Program in Management & Technology, and Nursing and Health Care Management Program. Students are also encouraged to pursue dual degrees and minors outside of coordinated programs.

Assessment. Assessment of student learning in understanding and applying connectivity relies on several different metrics. Interdisciplinary learning achieved through breadth requirements—the general education distribution requirement, non-business elective requirement, and mathematics requirement—is assessed by the relevant school and department outside Wharton. Responsibility for ensuring that students successfully complete the requirements rests with Wharton. Interdisciplinary learning achieved through cross-disciplinary breadth requirements within Wharton—business fundamentals, societal environment, organizational environment, business breadth, and global environment—is assessed at the course level, with oversight provided by the relevant department chair.

Assessment of interdisciplinary learning in courses with cross-disciplinary content occurs indirectly through the assessment tools employed in those courses, which are typically examinations, projects, and cases. These assessments are indirect because they are specific to the material covered in those courses. The cross-disciplinary nature of that material, however, implies that the assessment must also reflect a student’s understanding of the links among disciplines. With regard to teamwork, all Wharton students complete project and teamwork assessments in Management 100: Leadership and Communication in Groups. Assessment of teamwork is accomplished indirectly in other courses through assessments of required group projects and presentations.

Global & Civic Literacy

To prepare for the increasingly international experiences today’s graduates encounter, Penn students ought to be able to cross cultural boundaries. While at Penn, students engaging in local and global civic dialogue and interactions increase their awareness and understanding of cultural contexts and experiences that are different from their own.

These activities include academic components grounded in the humanities and social sciences and various curricular requirements—for example, required course work in cross-cultural analysis in the College of Arts and Sciences or required courses in the global environment in the Wharton School. Yet they quite often extend beyond curricular requirements—and beyond the classroom itself—to engage with Philadelphia, the nation, and the world. Chapter 3: Local Engagement and Chapter 4: Global Engagement provide accounts of these activities across the schools and how they are assessed.

Communication Skills

The ability to convey knowledge, as well as receive it, is a fundamental part of the curriculum across Penn's undergraduate programs. Each school strengthens a student's ability to communicate in both oral and written modes. School communication requirements may also include such areas as foreign language proficiency and technological communication.

College of Arts and Sciences

Curricular design. The ability to communicate knowledge is emphasized in the College's General Education Requirements. The writing requirement recognizes that the ability to express oneself clearly and persuasively in writing is fundamental for success across all academic disciplines and throughout one's personal and professional life. All students must take a critical writing seminar and are advised to take this course during their first year of study. Students are also encouraged to develop their writing skills by participating in Penn's writing programs. The study of a foreign language is a second aspect of communication codified in the College's General Requirements. All College students must complete four semesters of study of a foreign language, or the equivalent based on departmental or standardized exams.

Although not a formal requirement, the development of public speaking and oral communication skills is strongly encouraged in many courses, and resources are available for students and instructors who wish to integrate an oral component into their courses. [Communication Within the Curriculum](#)-affiliated courses offer students the opportunity to improve their speaking abilities by meeting with a speaking advisor to rehearse at least one graded speaking assignment. They also include [critical speaking seminars](#), which are oral presentation-intensive courses.

Assessment. The [Critical Writing Program](#) engages in a range of assessments of learning outcomes, including diagnostic timed essays to assess students' command of basic writing skills, detailed rubrics for each writing assignment, and portfolio assessments scored by the instructor and at least one other member of the writing faculty. The same methods and criteria of assessment are used in all of the seminars, and all students must pass the coursework and final portfolio assessment to fulfill the writing requirement. The final portfolio assessment is performed by the student's writing instructor and one or more outside readers drawn from the writing faculty and administration. The coursework grade is based on a student's demonstrated knowledge of the fundamentals of writing and participation in a discourse community: knowledge of topic, rhetoric, genres, and writing process. The portfolio grade, in turn, depends on a student's demonstrated competence in cognition, invention, reasoning, and presentation, including grammar, mechanics, style, and adherence to genre and discourse conventions.

Instruction in foreign languages is another important way in which communication is taught in the College. For a description of the assessment of foreign language instruction, see Chapter 4: Global Engagement, and Appendix 7.1.

School of Engineering and Applied Science

Curricular design. Writing skills are developed through the fulfillment of the Writing Requirement; writing assignments in Engineering courses, particularly labs and the Engineering Senior Design Project required of all BSE students; writing in social science and humanities courses outside the School, seven of which are required of all engineering students; and elective courses in writing. The basic Engineering Writing Requirement is to take one of the College-administered Writing Seminars, typically during the freshman year.

Beginning in 2011, and intensively during the 2012-2013 academic year, Penn Engineering reviewed its writing program, the Technical Communications Program (TCP), which was created, in part, because high-quality writing assessment required expertise more readily available outside the school. The review included outcomes and assessments of students and employers of Engineering graduates that were part of ABET evaluations. After the review was complete, the program was eliminated for undergraduates, and writing programs for Engineering students are now provided in coordination with the Weingarten Learning Resource Center, including three courses in the fall of 2013 (Bioengineering 100, Engineering 299, and Electrical Systems Engineering Senior Design).

Oral presentation skills are required and assessed in various assignments in Engineering courses—particularly courses that involve projects, including the Engineering Senior Design Project course. In this year-long, required capstone course, students make multiple project presentations and progress reports, as well as a final presentation of the finished project. Opportunities for developing oral presentation skills also exist in courses taken outside the School.

Assessment. ABET explicitly includes “an ability to communicate effectively” as one of its required learning outcomes. Consequently, each required course includes communication elements and assesses student achievement in this area through assignments. The assessed communication assignments encompass both written and oral presentations, including project presentations and reports for the capstone Engineering Senior Design Project. As with other ABET outcomes, the goal is to exceed 85 percent achievement of the outcome, and this goal has been met. Penn Engineering relies on the College to assess and maintain achievement in its writing, social science, and humanities courses.

School of Nursing

Curricular design. The Nursing baccalaureate curriculum concentrates on four intersecting core themes that characterize the complex and contextual nature of nursing practice: engagement, inquiry, judgment, and voice. Each of these themes requires that students communicate in both written and oral formats. All Nursing students are required to pass four CUs of a foreign language and take a writing course. All Nursing students use technology such as iPads and advanced video technology in simulated situations, to enable them to make real-time decisions. Advanced video technology allows students to see a recording of their interaction with a simulated patient, which helps them to develop professional self-awareness and clinical reasoning. Students also manage patient information in the electronic medical record, which is becoming increasingly popular in health care organizations, and learn therapeutic communication in Nursing 103: Psychological and Cultural Diversity.

Assessment. A primary source of information is direct measures of success at achieving the desired goals of each course. All students are required to make oral presentations in different courses and make group presentations of exemplar cases. During class time, students are graded on oral participation as members of small groups. Students also advocate for scientific, social, and political action that advances quality nursing care for patients, families, and communities. For example, students observe and analyze advocacy in the hospital and an example of a nurse finding his/her voice and are graded on their analysis according to specific criteria. They also are graded on their participation in group work. All students also write papers (position papers and research studies) and clinical management plans and engage in reflective journaling. Finally, clinical evaluation tools evaluate students' abilities to talk with patients, families, and other health care workers.

Wharton School

Curricular design. Effective communication is essential to successfully contribute to business and public policy. Effective communication in these environments requires familiarity with the languages employed and the ability to present ideas and information in oral and written form. All Wharton students are required to develop their ability to communicate in writing, with a common foundation of instruction provided in the Writing Requirement, which can be satisfied in a number of courses in the College, and the writing requirements in the business fundamentals course Management 100: Leadership and Communication in Groups. Many subsequent courses taken in the business curriculum require case write-ups and other projects that further develop students' written communication skills.

The foundation for oral communication skills employed in business is established in Management 100: Leadership and Communication in Groups, which requires students to make a presentation as part of their field project. Many subsequent courses in the business curriculum require oral presentations in the form of project presentations (e.g., Management 104: Industrial Relations and Human Resource Management) or debates (e.g., Legal Studies 210: Corporate Responsibility and Ethics) that further develop oral communication skills.

In an increasingly global marketplace, facility with other languages is a valued skill. To ensure that Wharton students attain a minimal degree of competence in a language other than English, students are required to satisfy a foreign language competency requirement.

Assessment. Assessment of students' ability to communicate in writing is provided through the Critical Writing Program and the writing requirements in the business fundamentals course Management 100: Leadership and Communication in Groups. Many subsequent courses taken in the business curriculum require case write-ups and other projects that enhance and develop students' written communication skills. Assessment of foreign language proficiency occurs during language courses and through proficiency exams.

Strategic Considerations

The Assessment of Student Learning Working Group explored higher-level learning goals abstracted from the curricular goals of the four schools. It found some common ground in articulating the aspiration

that students demonstrate certain proficiencies. However, because these proficiencies cannot be directly connected to all fields of study in ways that would elicit meaningful learning outcomes across all programs, the University should avoid seeking to develop a general or overarching program of learning assessment spanning the four schools. For instance, although the group agreed that all Penn students ought to be proficient in problem-solving and communication, it found that these proficiencies were either too general to be meaningful (e.g., a basic math requirement satisfied by many students prior to matriculating says little about what is important about a program of study) or too specific (e.g., the expectation that students communicate effectively is deeply embedded in all fields of study but becomes meaningless when abstracted across many fields).

Shared values and goals, particularly those articulated by the Penn Compact, will continue to inform the careful work of teaching and learning across the University, and Penn will continue its established processes for institutional data gathering and analysis (as reflected throughout the other chapters of this Self-Study Report). At the same time, these shared aspirations should not be expected to lead to uniform, observable learning outcomes that credibly represent what Penn scholars believe is important about learning in a field of study. This lack of uniformity in learning outcomes is to be both desired and celebrated, as it reflects the rich diversity of educational opportunities at Penn. In the terms articulated in “Principles for Effective Assessment of Student Achievement,” Penn should expect schools and programs to provide evidence of successful student learning experiences that align with their particular curricular goals.

Recommendations

The descriptions above and the assessment reports of the four schools (Appendices 7.1, 7.2, 7.3, and 7.4) document Penn’s compliance with Standard 14. The University should remain committed to its durable and robust processes of curriculum review, course approval, and regular departmental review. At the same time, it should continue its work to improve coordination of these activities, including sharing best practices across schools and departments, through the Office of the Vice Provost for Education and the Council of Undergraduate Deans.

Assessment of student learning in three of Penn’s four undergraduate schools is guided by established professional school accrediting requirements, while the College of Arts and Sciences has been deeply engaged over the past several years in constructing and implementing its own program of learning assessment. The College’s thoughtful and systematic work in this area ought to continue, particularly aimed at sharpening evaluations of sector requirements and their effectiveness, informed by additional pilot-testing.

Penn's campus has been a laboratory of the experiments of architects working to express the value of an institution that has itself been transformed while remaining true to its founder's ideals.

—George Thomas, Lecturer in Urban Studies, and David Brownlee, Shapiro-Weitzenhoffer Professor of the History of Art, *Building America's First University* (University of Pennsylvania Press, 2000)

Chapter 8: Finance and Administration

Introduction

An outstanding undergraduate education requires outstanding services, resources, and facilities to support it. Over the past decade, Penn has worked hard to enhance coordination and integration across schools and programs as the most effective means of improving undergraduate academic experiences. This work has included expanding opportunities for dual degrees, inter-school minors, and other cross-school and cross-disciplinary programs; advancing innovative technologies for teaching and learning; enhancing state-of-the-art student support services; and sustaining the critical housing and other infrastructure that supports student learning both in and out of the classroom.

Penn's leadership in open learning and its commitment to active learning methods have invigorated efforts to enhance teaching and learning across campus, as indicated by the recent award from the Association of American Universities to develop new methods of teaching introductory science and math courses. Our efforts to provide the support necessary for student success have shown significant improvement. As measured by survey results, student satisfaction with advising and other services has increased dramatically in the past ten years.

One way to gauge the effectiveness of the administration of undergraduate education at Penn is to explore to what extent the University and its schools have achieved their goals. Although Penn's last decennial MSCHE review focused on graduate education, there have been a number of planning exercises within and across schools that address the undergraduate experience. Most of these initiatives involved the Council of Undergraduate Deans, which engages in a continuous strategic review of undergraduate education. The overall goal of providing an excellent education for undergraduates can be distilled into specific goals. This chapter addresses Penn's progress on specific goals related to undergraduate education articulated in the recent past and reviews important recent developments in the finance and administration of undergraduate education.

Working Group Charge and Process

The charge to the Finance and Administration Working Group was to evaluate the financial and administrative structures of undergraduate education at Penn, especially to assess the budgetary and financial structures that organize undergraduate education and to consider potential changes. The

Working Group was asked to address undergraduate education in the context of MSCHE Standards 2 and 7. Some of the group's work has been incorporated into Chapter 2: Access and Equity and Chapter 4: Global Engagement. It met regularly during the 2012-2013 academic year, examining the University's budget documents, reviewing reports and other information about recent developments in the financial and administrative structures of the University, and meeting with key administrators responsible for financial aid, budgeting, and undergraduate education.

Questions considered by the Finance and Administration Working Group included:

- What are some specific challenges or problems related to the financial and administrative structures of undergraduate education at Penn?
- What are some alternative models for financial and administrative structures?
- What specific changes, if any, should be made to the current financial and administrative structures that organize undergraduate education at Penn?
- What are some qualitative judgments, strategic thoughts, and recommendations about the financial and administrative structures that organize undergraduate education at Penn?

Assessing Undergraduate Education through Earlier Strategic Planning

This section describes the structures in place at Penn for the administration of undergraduate education in the context of seven specific goals. It includes a number of initiatives (access, local and global engagement, integration of knowledge, and undergraduate research) that are discussed in additional detail in the previous chapters.

Goals for Improving Undergraduate Education at Penn¹

1. Improve the integration of undergraduate educational programs across the schools.
2. Expand cross-school and cross-disciplinary programs, focusing on differentiating strengths and developing new signature interdisciplinary programs and tracks.
3. Encourage excellence in the innovative use of technology to enhance teaching and learning.
4. Encourage, emphasize, and reward excellence in every aspect of the teaching mission.
5. Provide every undergraduate with superb academic and career advising – essential components of an excellent undergraduate education.
6. Attract and retain students of different origins and cultures.
7. Make substantial investments in the University's residential, classroom, and extracurricular facilities.

¹ This list is from "Building on Excellence: The Next Agenda," published in *Almanac* in April 2002 (<http://www.upenn.edu/almanac/FC-Agenda.html>), which is representative of other reports over the past several years, including the 1994 Self-Study Report, the 21st Century Project for the Undergraduate Experience, and the white papers published periodically by the Student Committee on Undergraduate Education.

Improve the integration of undergraduate educational programs across the schools.

As noted in the Introduction to this report, each of the four undergraduate schools maintains its own curriculum and has a distinctive structure and mechanisms for oversight. To provide coordination among the undergraduate schools and various University-wide offices, the Office of the Associate Provost for Education was established in 2006 to oversee graduate and undergraduate education. This position was later reconfigured as the Vice Provost for Education, who convenes and chairs the Council of Undergraduate Deans and has responsibility for the College House system, the Benjamin Franklin and University Scholars programs, the Center for Undergraduate Research and Fellowships, and other offices related to undergraduate education.

In this context of the independence of the four undergraduate schools, the University and the schools have moved to coordinate or integrate aspects of students' academic experience. Many of these efforts are detailed in Chapter 5. Two new programs that resulted directly from the leadership of the Vice Provost for Education are [the expansion of the Penn Reading Project into a campus-wide theme year](#) and [the new inter-school courses of the Cross Currents initiative](#).

There is good coordination among schools for the provision of foundational and sometimes specialized courses that take advantage of faculty expertise in other schools. For instance, most basic science for Engineering students is taught in the College, basic calculus and other mathematics instruction occurs in the College for Wharton and Engineering students, and many College students learn statistics from that department in Wharton. The Annenberg School for Communication oversees the Communication major in the College, and the Fine Arts and Architecture majors in the College are overseen by the School of Design.

Expand cross-school and cross-disciplinary programs, focusing on differentiating strengths and developing of new signature interdisciplinary programs and tracks.

The dual degree is a distinctive element of undergraduate education at Penn, allowing a student to follow the full degree programs of two undergraduate schools and graduate with a degree from each of them. There are several highly selective coordinated dual degree programs to which prospective students may apply, which provide specialized advising and co-curricular opportunities. Three of these programs are more than ten years old: the [Huntsman Program in International Studies and Business](#) (between the College and Wharton), the [Jerome Fisher Program in Management and Technology](#) (between Wharton and Engineering), and the [Nursing and Health Care Management Program](#) (between Wharton and Nursing). Since then, the [Vagelos Life Sciences and Management Program](#) (between the College and Wharton) and the [Vagelos Integrated Program in Energy Research](#) (between the College and Engineering) have also been established.

There is a robust collection of inter-school minors, which the College has developed in collaboration with other schools, including Actuarial Mathematics, American Public Policy, Biological Basis of Behavior and Health Services Management, Consumer Psychology, Legal Studies and History, Sustainability and Environmental Management, and Urban Real Estate Development (all with Wharton), Urban Education and Urban Studies (with Education), Cognitive Science (with Engineering), Nutrition (with Nursing), and Landscape Studies (with Design). A new minor in Bioethics (with the Perelman School of Medicine) was

recently approved by the School of Arts and Sciences and will admit students beginning in the fall of 2013. For a discussion of inter-school minors, see Chapter 5.

In 2012, the College and Penn Engineering developed a structure to allow students in each school to pursue a second major in the other school rather than a dual degree, so that the student would not have to fulfill all the general education requirements of the second school. As of December 2012, more than 100 students have taken advantage of this opportunity. For a discussion of second majors across schools, see Chapter 5.

Besides adding majors and minors, the schools have revised their General Education curricula based on their assessments of student learning and the alignment of the curricula with the schools' and the University's educational goals. A new version of the Nursing School's curriculum that "bridges the gap between class and clinical" took effect in 2011. Wharton's innovative Management 100 course provides a common first-year experience for its students and provides a foundation for the study and practice of business. A new version of the College's General Education curriculum went into effect in 2006. It explicitly emphasizes integration of knowledge in two of its sectors, as well as cultural awareness within and beyond the United States. In 2011, the College launched its [Integrated Studies Program](#), a year-long residential program for about 80 first-year students that comprises team-taught double-credit courses each semester, designed to introduce students to the power of ideas and the integration of disciplines.

Encourage excellence in the innovative use of technology to enhance teaching and learning.

Most of the University's classrooms (except those in the Wharton School) are part of a [central pool](#), overseen by the University Registrar. There are approximately 200 classrooms in the central pool, ranging in size from small seminar rooms to 400-seat lecture halls. The Provost's Classroom Committee and the Classroom Technology Services Group facilitate upkeep of the classrooms, as well as major renovations and technological enhancements, although each school is responsible for maintaining and upgrading its teaching laboratories and specialized classrooms. The University provides \$2 million per year for these purposes (increased from \$1 million in 2005), and over the years every central pool classroom (as well as others under school control) has been renovated to include computing, networking, projection, upgraded lighting and seating, and other enhancements. The Classroom Technology Services Group works with schools' information technology offices to facilitate pedagogical experiments such as the use of lecture capture, audience response systems (clickers), and, most recently, active classroom environments. Wharton's information technology office has provided similar enhancements to the School's classrooms.

Beyond the classroom, there have been numerous efforts to support faculty and student use of technology in teaching and learning. The Penn Libraries provide classroom management software, recently transitioning from Blackboard to Canvas. The Libraries and the School of Arts and Sciences created the [Weigle Information Commons](#), which provides a technology-rich study space for students in the main library, as well as a laboratory for technological experimentation (the Vitale Digital Media Lab) in which faculty and students can try new software and hardware and receive tech support from experts. The Library recently added a "branch" of the Information Commons on the east end of campus, called the [Education Commons at Franklin Field](#).

Penn has experimented for many years with the online delivery of courses. The [College of Liberal and Professional Studies](#) (LPS) within the School of Arts and Sciences has developed an online platform (the LPS Learning Commons) for the development and delivery of online material in what are now viewed as “traditional” online courses. Recently, the University has been a leader in the massive open online course (MOOC) movement through [its participation in Coursera](#), and participating departments are adapting materials developed for the Coursera platform to enhance teaching and learning in Penn classrooms.

A great deal of technological innovation in undergraduate education has been localized in schools and departments. Science and technology laboratories in the College, Engineering, and Nursing have been transformed to use computing, communication, and specialized tools that support innovative active-learning approaches in STEM and health-related fields. Students in classes across all four schools perform and analyze sophisticated simulations of financial, scientific and medical phenomena, while students in arts and humanities classes take advantage of digital humanities projects to study and analyze primary source material from Penn’s library and museum collections, as well as those offsite.

The [recently announced implementation of Canvas as the University-wide learning management system \(LMS\)](#) is an example of collaboration across the schools. Up to now, different schools at Penn have used different systems, including Blackboard or school-developed systems. A single LMS will allow faculty and students across Penn to use one integrated set of tools to manage all their courses. The Graduate School of Education, the Law School, and the Wharton School have already made the transition to Canvas. Canvas will be available to instructors for courses offered in the fall of 2013 and spring of 2014 and, by the summer of 2014, will be fully implemented across the University.

Encourage, emphasize, and reward excellence in every aspect of the teaching mission.

Penn takes pride in the high level of involvement of its standing faculty in teaching undergraduates at every level. For many years, there has been a robust program of Freshman Seminars, organized by the College, that includes faculty from across the University, including from some of the professional schools. Faculty members take seriously their dual responsibilities to oversee and deliver curricula within their majors and to support the general education of all Penn students.

The [Center for Teaching and Learning](#) (CTL) was created in the College in 1999 to advance innovations in pedagogy and support faculty members who want to improve their teaching. Since its creation, its role expanded to include mentoring new faculty, training teaching assistants, facilitating classroom observations, and providing online resources for instructors. In the mid-2000s, CTL began providing its services and support to Penn’s other schools. In 2008, when it moved its operations to the Office of the Provost, its resources and services were fully expanded to other schools. Most recently, CTL has begun providing pedagogical support for faculty teaching open online courses.

Penn has long used end-of-semester course evaluations. Before 2009, schools and departments used different paper-based forms, and there was no systematic way to archive the results. In 2009, course evaluations were standardized and [moved to an online system](#). This move has increased student participation, provided more detailed and thoughtful feedback, and allowed for increased flexibility and customization. For example, in academic year 2012-2013, the College’s Committee on Undergraduate

Education recommended changes in the evaluation to focus more on learning goals and outcomes, particularly for courses satisfying its General Education sector requirements.

Provide every undergraduate with superb academic and career advising – essential components of an excellent undergraduate education.

The past ten years have seen dramatic improvement in student satisfaction with academic and career advising, as well as other support services. Academic advising of undergraduates is school-based, and each undergraduate school has its own style of advising. For example, Wharton relies primarily on professional advising staff in its Undergraduate Division. Academic advising in Engineering is carried out largely by faculty members, while its Advising Office primarily handles special situations and students in difficulty. Nursing and the College follow a blended approach, in which faculty and professional advising staff share academic advising responsibilities. In the College, each incoming student is assigned a pre-major advisor who helps the student navigate the General Education part of the College curriculum and aids in the exploration and selection of a major. Pre-major advisors are often members of the faculty. Senior administrators, College House Deans, and professional advisors in the College Office also provide pre-major advising. Once the student declares a major, an advisor from the major department is assigned. All four schools have some form of peer advising, which matches first- and second-year students with more senior students.

The University and the schools have developed a suite of technological tools to aid with academic advising, most notably the Penn In Touch system and its mirror Advisor In Touch system. Penn InTouch provides curriculum worksheets that students use to plan their course schedules and school offices use to audit progress-to-degree, record advisor notes, and post Course Problem Notices. Course Problem Notices are used by instructors to inform students when their coursework is deficient, and that notification is shared with the student's advisors. An example of a school-developed tool now being used University-wide is XCAT (External Credit Advising Tool), which was developed by the College for students to submit electronically the materials required by departmental faculty to determine transfer credit, credit away (when an enrolled Penn student takes a course at another institution during the summer), and study abroad credit. These tools have greatly enhanced the ability of advisors and students to organize the information needed to make decisions about their academic plans.

Student life advising and some other forms of academic support are centralized through the Office of Student Intervention Services and other offices in the Division of the Vice Provost for University Life, Penn Athletics, and other departments. Over the past several years, centralized advising has become much better coordinated, both internally and in relation to school-based advising. In particular, case conferences about students with academic or other difficulties can now be initiated by any participant, so that different units, under the guidance of Student Intervention Services, can coordinate more effectively to provide a comprehensive approach to student problems.

Career advising is provided primarily by Career Services, which oversees On-Campus Recruiting, provides career counseling and advice, and offers a wide range of web-based information to undergraduates planning for life after graduation. Career Services works with the schools to produce career-related

events for students exploring majors with an eye toward potential careers (for example, a College Alumni Mentoring Series).

The results of student survey questions on advising have been quite encouraging. According to the 2012 Senior Survey, 65 percent of students reported being generally or greatly satisfied with academic advising before declaring a major, 73 percent of students reported being generally or very satisfied with advising in their first major and 78 percent for their second major. Eighty-one percent of students reported being generally or greatly satisfied with Career Services, 79 percent with Counseling and Psychological Services, 77 percent with Student Health Services, 75 percent with student housing, 71 percent with the administration's responsiveness to student concerns, and 88 percent with availability of academic support and assistance. These figures show a robust pattern of quite considerable improvement over the corresponding results from the Senior Surveys of 2002 and 2007, as shown in Figure 8.1.

Figure 8.1
Satisfaction with Advising: Percentage of Students Responding Generally or Greatly Satisfied
Senior Surveys, 2002, 2007, 2012

	2002	2007	2012
Academic advising before declaring major	45	58	65
Advising in first major	60	65	73
Advising in second major			78
Career Services	67	80	81
Counseling and Psychological Services	74	75	79
Student Health	55	66	77
Student Housing	62	73	75
Administration responsiveness	61	75	71
Availability of academic support	77	87	88

Note: In the 2002 and 2007 surveys, there was a single question on "Quality of advising in your major" rather than separate questions for first and second majors. For each aspect of advising, the number reported is the percentage of students responding generally or greatly satisfied.

Attract and retain students of different origins and cultures.

See Chapter 2: Access and Equity for details about Penn's efforts in this regard.

Make substantial investments in the University's residential, classroom, and extracurricular facilities.

We noted above the University's investment in classroom facilities through the Provost's Classroom Committee and Central Technology Services, particularly the increased commitment of \$2 million per year for classroom renovation and upgrades.

There are currently eleven [College Houses](#), which house about two-thirds of Penn undergraduates, including nearly all first-year students. Academic activities in the houses are organized by the Office of College Houses and Academic Services. Each house has a Faculty Master and two Faculty Fellows (usually members of the standing faculty, but some senior administrators serve in this capacity) who, along with the House Dean (who is a staff member), oversee activities in their respective houses. These activities include community-building, promotion of undergraduate research, tutoring in basic courses, and residential programs organized around intellectual or academic themes. Several houses cooperate with schools to host academic programs: for example, first-year students in the Huntsman Program in International Studies and Business live together in Kings Court/English House; most first-year Management and Technology Students live in Ware College House; and first-year College students who are Benjamin Franklin Scholars pursue the Integrated Studies Program and live together in Riepe College House. There are credit-bearing, language-specific communities in Gregory College House, and the College House Music Program provides lessons for credit to qualified students through the Music Department.

The College Houses have seen major improvements over the past decade. Each of the three high-rise buildings (Harnwell, Harrison, and Rodin) has undergone major renovation, as have Du Bois College House and the Quadrangle (primarily first-year housing comprising Fisher-Hassenfeld, Riepe, and Ware College Houses, including the McClelland dining facility). The Class of 1920 Dining Commons has been re-imagined and renovated to include retail eateries along with a traditional dining hall. In the coming years, the University anticipates the construction of a new College House on Hill Field and renovations to Gregory and Hill College Houses.

Each of the four undergraduate schools has constructed new academic buildings or substantially renovated old (in some cases, historic) ones. Wharton completed Huntsman Hall in 2002 and is expanding Steinberg/Dietrich Hall. Nursing completed a major renovation of Claire Fagin Hall in several phases between 2004 and 2011. Engineering constructed Levine and Skirkanich Halls and the Singh Center for Nanotechnology. The School of Arts and Sciences constructed the Lynch Laboratories; made substantial renovations to Fisher-Bennett Hall, the Music Building, the Solomon Laboratory, Claudia Cohen Hall, and College Hall; designed and built new undergraduate biology "superlabs" and undergraduate chemistry laboratories; and is just starting construction of a Neural and Behavioral Sciences building that will bring together the Biology and Psychology departments with the Biological Basis of Behavior Program.

In addition to the construction of the Weigle Information Commons and the Education Commons at Franklin Field, during this decade the University completed the Platt Student Performing Arts House, began renovations of the ARCH building (which houses three of Penn's cultural centers and CURF), opened the Weingarten Learning Resources Center, and provided new quarters for Student Health Services and Counseling and Psychological Services.

The University's athletic and recreational facilities have also been transformed over the last decade. The most auspicious addition has been the 24-acre [Penn Park](#) at the east end of campus, which combines spaces for organized athletic and recreational activities with places for relaxation and informal play. Athletic venues in Penn Park include sprint turf fields, a softball stadium, a tennis center, and an enclosed seasonal air structure. Penn has also constructed the Pottruck Fitness Center, the Weiss Pavilion, and the Fox Fitness Center at Franklin Field and begun the renovation of Hutchinson Gymnasium.

A commitment to climate action has guided Penn's facilities planning. In 2007, President Gutmann was the first Ivy League president to sign the [American College and University Presidents' Climate Commitment](#). This pledge committed Penn to developing plans for significant reduction of its emissions of climate-altering greenhouse gases. Penn's [Climate Action Plan](#) lays out the plans to achieve these goals, as well as the means to track and communicate progress to the Penn community and external audiences. For example, using the proceeds from the recent sale of 100-year bonds, the University has made a [commitment to replace HVAC systems and lighting with more energy-efficient technology](#), improving facilities and reducing energy consumption. An important component of the Plan is also academic, with a wide range of courses and programs about sustainability.

Further Assessment of Undergraduate Education

The Working Group examined a number of ongoing administrative projects and initiatives, including plans for a new student records system, the role of Responsibility Center Management in administering undergraduate education, a review of recent developments in undergraduate tuition, and a description of recent innovations in teaching and learning.

Next Generation Student Systems

The web-based advising services and applications discussed above have been very effective at providing information to students, instructors, and academic advisors. However, the underlying information structures are 20 to 30 years old. In 2008, the Offices of Student Registration and Financial Services and of Information Systems and Computing began planning for the next generation of student services and systems. Known as NGSS (Next Generation Student Systems), the project focuses on three core areas: student records and registration, financial aid, and billing and receivables. Representatives from schools, academic centers, and departments, along with undergraduate and graduate student organizations, are involved in the planning process. In 2011, the NGSS team completed a roadmap for replacing the core system. In 2012, it issued a request for proposals to the two leading student systems producers, Oracle (producer of the Campus Solutions package) and Ellucian (producer of the Banner system). Earlier this year, the team recommended implementing Ellucian's Banner at Penn.

Responsibility Center Management

Penn has been a pioneer in the use of Responsibility Center Management (RCM), which provides the managerial framework for budgeting and financial reporting at the University (and in some cases in the schools). While RCM was initially implemented at Penn to control expenses during a challenging financial

period in the early 1970s, it has since proven to be a strong driver of innovation and excellence. Indeed, the stated purposes of RCM are to promote broad and careful stewardship of Penn’s financial resources, enhance the University’s capacity to generate revenue, and encourage and reward innovation and efficiency. The schools and other responsibility centers benefit from entrepreneurial activity, and the University aligns incentives to promote stewardship and revenue generation while maintaining and reinforcing core academic values.

Within RCM, the University is divided into “responsibility centers” of two basic types: schools, resource centers and business services are *revenue-generating* centers; and libraries and certain administrative service centers are *non-revenue generating* centers. The revenue-generating centers are expected to fund the direct costs of their operations, balance their internal budgets, and cover their share of the non-revenue generating centers via Allocated Costs.

In general, RCM promotes disciplined financial decision-making, since the schools are responsible for maintaining balanced budgets. It promotes entrepreneurial activity, since the schools retain most of the revenue they generate and can invest it in their highest priorities. It also facilitates shared programming and fundraising—for example, the Schools of Arts and Sciences and Engineering recently collaborated to construct the Singh Center for Nanotechnology. Finally, RCM promotes a culture of accountability, since tuition revenue is distributed transparently, space charges are directly tied to occupancy and costs, most administrative units are funded via transparent algorithms, and each school ultimately recognizes the full costs of its programs.

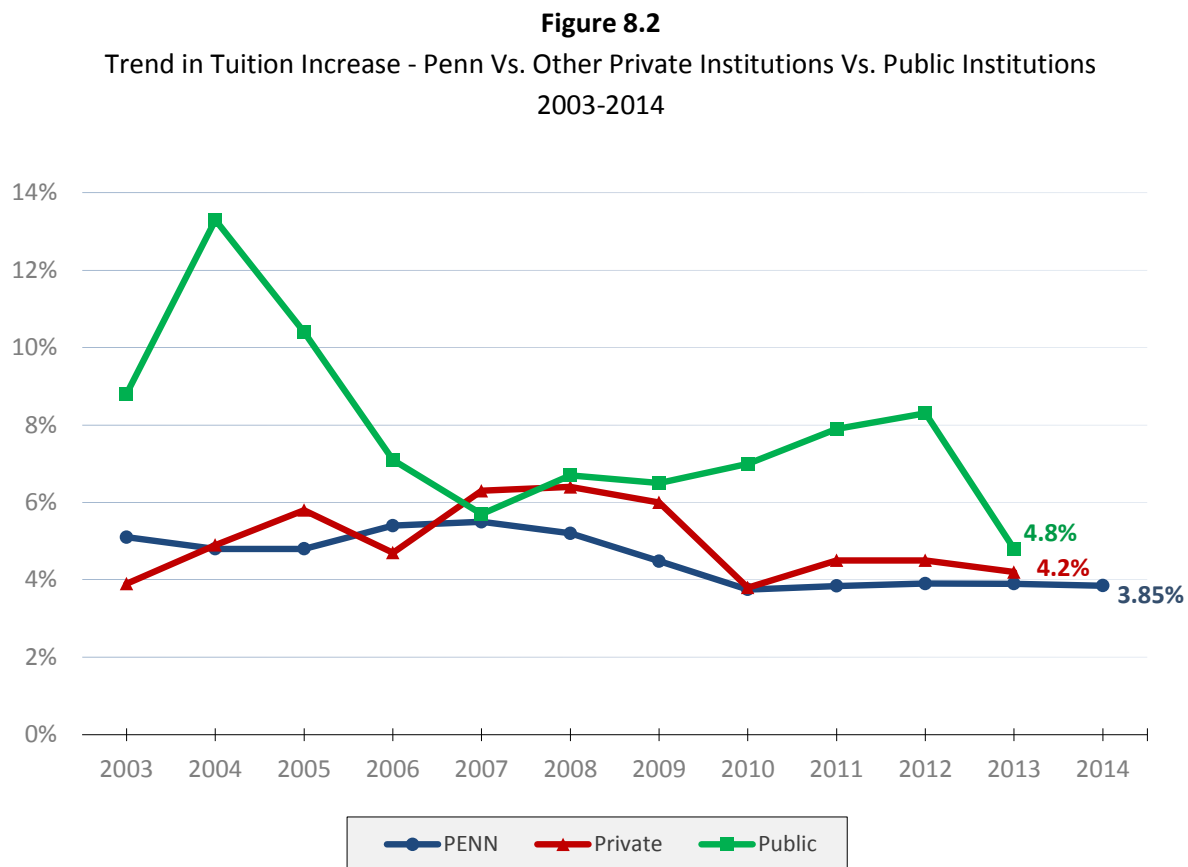
In an RCM system, it is possible that the financial interests of different centers (e.g., different schools competing for undergraduate tuition dollars), or the interests of a school in relation to the wider University, can at times become misaligned. Such cases require intervention from the central administration, in consultation with the schools, to maintain the integrity of academic programs and adherence to the University’s mission. We give three examples to illustrate potential challenges:

- *Tuition distribution.* The explicit nature of tuition distribution implied by RCM could encourage unnecessary duplication of courses (more on this below).
- *Real estate resources.* Several buildings and facilities on the campus are managed by centers, which charge the schools and academic centers for their use. While this is consistent with the RCM philosophy, it could create unintended consequences.
- *Study abroad.* The schools encourage students to spend a summer or a semester abroad for legitimate academic reasons. However, when a student spends a semester abroad, Penn Abroad becomes the “teaching school” for the purposes of tuition allocation, creating the possibility that this loss of tuition revenue to the school might compete with the academic benefit of study abroad.

Tuition

The undergraduate schools at Penn are highly tuition-dependent. An analysis by Penn's Office of Budget and Management Analysis indicated that tuition has consistently covered approximately 70 percent (± 2 percent) of the cost of undergraduate education over the last decade, where the cost of undergraduate education comprises instruction (about 73 percent), financial aid (about 17 percent), student services (about 5 percent), and academic support (about 5 percent). This reality puts a spotlight on the setting of tuition rates (done annually by the Trustees) and the distribution of tuition among the schools.

Penn's undergraduate tuition and fee charges increased by 3.9 percent in fiscal year 2012-13 to \$43,738, the second lowest percentage increase in 44 years. For fiscal year 2013-2014, the Board of Trustees authorized a \$188 million financial aid budget and the rate of tuition increase will again be 3.9 percent (total tuition and fees will be \$45,890, marking the fifth consecutive year the increase has been under 4 percent). Peer institutions have reported tuition and fee increases ranging from 3.1 percent to 4.9 percent. Historically, Penn's increases have closely matched the average for its peer group, been generally lower than the average for all private institutions, and been significantly below those of public institutions in recent years (Figure 8.2).



Source: Annual Survey of Colleges, the College Board

Tuition is allocated by course units (CUs) taken by undergraduate student. Twenty percent of collected tuition goes to the Provost’s subvention pool (at least 74 percent of which is then distributed directly to the twelve schools, with the balance going to centrally provided services and resource centers such as the Penn Libraries, the Penn Museum, the Annenberg Center for the Performing Arts, the Institute of Contemporary Art, Penn Athletics, and other important initiatives); 20 percent goes to the “home school” of the student taking the course; and 60 percent goes to the “teaching school” (which is usually one of the four undergraduate schools but may be a graduate or professional school). A financial aid factor (35 percent in fiscal year 2012-13) is subtracted from the home school and teaching school portions of the distributed tuition to fund financial aid.

This formula has been relatively stable over many years. Until fiscal year 2012-13, a smoothing function known as the “tuition guarantee” was applied to mitigate sudden fluctuations in tuition for individual schools. An analysis demonstrated that this policy had essentially no effect and so, beginning in fiscal year 2013-14, schools will receive their “actual” tuition revenue each year.

Figure 8.3 summarizes the outcome of the distribution of tuition for the schools, showing the distribution of the portion of tuition remaining after deducting 20 percent for the Provost’s subvention pool and the financial aid factor.

Figure 8.3
Undergraduate School Tuition Distribution

Tuition Distribution AY2007-2012	Home School Portion	Teaching School Portion	Total Portion
SAS	58%	64%	63%
Wharton	21%	19%	19%
SEAS	16%	8%	10%
Nursing	5%	5%	5%
All Others		4%	3%

As illustrated in the table, students in the College (of the School of Arts and Sciences, or SAS) accounted for 58 percent of all course units taken during this five-year period; however, 64 percent of all course units taken by students in all four schools were for courses in SAS. Therefore SAS received 63 percent (58 percent of the 20 percent home-school portion plus 64 percent of the 80 percent teaching school portion) of all distributed tuition.

These data reflect the fact that all undergraduate students take courses in the School of Arts and Sciences. For example, in the fall of 2011, SAS taught 86 percent of the CUs taken by College students, 40 percent of the CUs taken by Engineering students, 35 percent of the CUs taken by Wharton students, and 16 percent of the CUs taken by Nursing students.

A small but significant percentage of the teaching portion of undergraduate tuition (4 percent) is being earned by non-undergraduate teaching schools. Most of this teaching is related to the fine arts, architecture, and communication majors in SAS; almost half is by the School of Design; and a quarter is by Annenberg. Just over one percent of undergraduate teaching overall is to undergraduates taking graduate-level courses in the Graduate School of Education, Law School, Perelman School of Medicine, and School of Social Policy and Practice. Generally, this figure represents students who take graduate-level courses related to their majors. Given that some of the tuition retained by the undergraduate schools is from courses taught by special arrangement with professional school faculty, it is estimated that roughly five percent of all CUs are taught by faculty outside the four undergraduate schools.

Transparency and accountability are significant advantages of the tuition distribution system. Thus, the system encourages innovation and entrepreneurship among the undergraduate schools (for example, the new Cross Currents courses, the Management 100 course in Wharton, the Integrated Studies Program in the College, and the coordinated dual degree programs) and provides a mechanism for substantive participation by the graduate and professional schools in undergraduate education. Examples of this participation include the College major in Communication offered by the Annenberg School; the Fine Arts and Architecture majors provided by the School of Design; and teaching provided by Medical and Law faculty in the Biology; Biological Basis of Behavior; Philosophy; Philosophy, Politics and Economics; Political Science; and Urban Studies majors, as well as the Freshman Seminars.

On the other hand, the explicit nature of tuition distribution in what often appears to be an unregulated environment could encourage unnecessary duplication of courses: for example, basic economics and statistics is taught in three schools and physics in two schools. In addition, graduate and professional schools can see undergraduate tuition as a potential source of enrollment-driven revenue. While there is no evidence of systematic problems of this kind, it would be useful to consider alternative methods of tuition distribution (e.g., by student headcount or some other metric developed for this purpose, rather by CUs) that might further minimize any such potential adverse outcomes while still maintaining the clarity and the positive influences of the current system.

Innovations in Teaching and Learning

Penn has been a national leader in pioneering new methods of online learning and leveraging success in this arena to improve classroom instruction. In recent years, there have been dramatic changes in the perception of the most effective means to deliver education. In 2012, more than 2 million people registered for free college-level online courses. Worldwide enrollments for these massive open online courses (MOOCs) in 2013 will almost certainly rise considerably higher, with several hundred classes being offered on a variety of online platforms.

Partly because of the demonstrated interest in freely accessible online education across many academic fields, highly selective institutions across the nation are reconsidering the most effective means to deliver education, whether virtual or face-to-face. In consideration of the unknown impact on higher education of free college-level courses, Penn ought to develop administrative and financial plans that ensure the strongest possible positive impact of innovations in undergraduate education through the adoption of new evidence-based techniques for improved learning.

For certain areas, particularly the science, technology, engineering, and mathematics (STEM) fields, substantial evidence has shown that “active learning” practices improve learning outcomes for a diverse student population, when compared to standard teaching methods in traditional courses. Several elements of MOOCs appear to be equally useful for implementing “active learning,” either online or in face-to-face classrooms, where students spend significantly less time receiving information “live” from an instructor and considerably more time in peer-to-peer learning, frequent evaluation of their comprehension of the material, and forming and engaging in learning communities.

In particular, there is a strong need for immediate planning and construction of classroom spaces appropriate in size, number, and technological capability to implement active learning strategies. Second, there is a need to create incentives for departments to shift to active learning strategies, particularly for introductory courses in STEM fields in which shortcomings in traditional teaching methods (and potential solutions) have long been identified and studied. In June 2013, the Association of American Universities awarded \$500,000 to the College and Penn Engineering for their proposal to improve teaching of STEM gateway courses along these lines. Third, ongoing discussions with deans and faculty members about online learning should be increasingly directed toward focused planning activities, engaging a broad array of faculty, to formulate the expected outcomes of experimentation with Coursera, pilots in changing introductory STEM teaching, and online learning through Penn LPS. Necessary decisions about how and how much to invest in such initiatives will benefit from thoughtful faculty input and especially additional research, in order to ensure quality active learning experiences appropriate for a Penn education, whether online, in-class, or a blend of both.

Strategic Considerations

Penn’s structure of four undergraduate schools, each with its own curriculum and faculty, provides a rich environment for the study of the arts and sciences and professional fields. A combination of school-based advising programs and centrally run support programs enables the creation of both small, targeted programs and large systems for supporting Penn’s undergraduate students. This structure has proven a very effective means of delivering educational experiences to undergraduates. The coordination, planning, and assessment of undergraduate education, both at the level of institutional leadership and among the various offices and units who deliver instruction and programs, encourages innovation at the unit-level and mitigates the difficulties students sometimes find in navigating a complex structure. With those observations in mind, some considerations for continuing the effective finance and administration of undergraduate education at Penn include the following:

- Maintain Penn’s four-school structure for organizing undergraduate education, with students admitted into specific schools.
- Increase opportunities for cross-school study (whether among or beyond the four undergraduate schools) when intellectually sound, retaining control within the undergraduate schools.
- Encourage continued collaborations among schools and University resources on advising and student support.
- Encourage free or reduced-rate use of performance/meeting space for school-sponsored student activities, recognizing that this will require the replacement of lost income for the units charged with managing these resources.
- Maintain the tuition distribution mechanism in principle. However, explore alternative methods of tuition distribution, keeping in mind the desirable properties of the current system (transparency and encouragement of innovation and collaboration).
- Encourage development of a centrally convened process to determine unnecessary duplication of course offerings.
- Provide greater transparency in financial arrangements for semester study abroad programs (in particular, provide regular reports to schools and departments about the costs of study abroad programs), so that schools can weigh financial cost against educational value.
- Encourage systemic shifts to evidence-based models for improved teaching and learning in undergraduate education, particularly in introductory courses.

Recommendations

Given the role that finance and administration play in supporting all of Penn’s priorities, this chapter echoes the recommendations of earlier chapters. Bearing in mind the strategic considerations noted above, the Office of the Provost, supported by the Office of Budget and Management Analysis, will continue—through established means of regular consultation, analysis and strategic academic planning—to further advance coordination across the undergraduate schools.

Given the technological ferment now reshaping higher education, among the most critical arenas for such coordination and strategic planning will be instructional innovation. Penn should work assiduously to extend its leading role in open learning, capitalizing on its early investments to chart best practices in the deployment of new technologies in undergraduate teaching and learning, including developing new methods of active classroom learning and using open learning initiatives to stimulate new forms of instruction on campus. To this end, the Office of the Provost, the Council of Deans, and the Council of Undergraduate Deans should work with the Center for Teaching and Learning, the Penn Libraries, and the Penn Open Learning Initiative to advance structured, active, in-class learning, new technologies of online open learning, and various hybrid instructional models blending the highest quality online and in-class instruction.

Chapter 9: Conclusion

The Penn Compact and the Self-Study Final Report

The purpose of this Self-Study was to explore and evaluate undergraduate education through the prism of the Penn Compact and propose directions that could improve the educational experiences of Penn undergraduates. The Compact provides a vision for the University, a foundation for looking beyond the daily activities of teaching, research and service to examine longer term goals and aspirations. The Self-Study examined Penn's priorities and asked: are our aspirations being met?

The answer to that question is unequivocally "yes." Penn has set ambitious goals for undergraduate education over the past decade, and this Self-Study is an impressive record of Penn's achievement of those goals. Each chapter has detailed the ways in which the University currently provides students an uncommonly rich environment for the study of the arts and sciences and professional fields.

In keeping with its highest institutional priorities, Penn has significantly increased the diversity and excellence of its undergraduate student body, while making educational opportunities more accessible to all students regardless of financial need. Having more than doubled its financial aid budget in recent years, it is today the largest university in the nation to offer a need-based, no-loan financial aid program, while consistently achieving four- and six- year graduation rates that are among the very highest anywhere. Tuition increases over the past decade have been lower, on average, than those at other private and public institutions; and in constant dollars, the net charge for aided first-year undergraduate students has actually declined over this period.

Penn undergraduates are deeply engaged both locally and globally, pursuing opportunities to connect with communities in Philadelphia and around the world, and they are routinely crossing disciplinary boundaries to integrate knowledge. Academically Based Community Service courses have grown dramatically over the past decade. Virtually all graduating seniors report having participated in co-curricular activities, with two of every five reporting engagement in community volunteer work. The large majority of undergraduates engage in significant research activities, and about two thirds complete a minor, dual major, or multiple majors that involve integrating knowledge across schools and disciplines. Penn considers these opportunities—local and global engagement, integrating knowledge, and undergraduate research—hallmarks of a Penn undergraduate education. We hope students will pursue these opportunities as part of their education, not as a requirement to earn a degree (as these are not required or expected outcomes) but as part of their immersive experience of Penn. Because the University values these activities, we want Penn students to value and undertake them as well.

Such opportunities are clearly distinct from the assessment of the student learning required to earn a degree. Penn's institutional practice of ongoing assessment at multiple levels, in particular school-based evaluation programs and assessments of student learning, demonstrates that the University provides exemplary learning experiences for undergraduates. This systematic attention to the student academic experience, both inside and outside the classroom, has paid dividends over the past decade. Student satisfaction with advising and other services has increased dramatically in the past ten years. Each of

Penn's three undergraduate professional schools maintains a national reputation for excellence and continues to meet or exceed external accrediting standards, while the School of Arts and Sciences has implemented thoughtful new assessments of student learning that conform to the expectations articulated in MSCHE's Standard 14 and offer a model for comparable schools and colleges. Most recently, Penn's global leadership in open learning, and its commitment to active-learning methods, have invigorated teaching and learning across campus, as reflected in an innovative, cross-school program exploring new and more effective means of teaching in introductory STEM courses.

In addition to these positive findings, the Self-Study offers a thoughtful account of how we might approach the specific priorities and values that will define the institution's future. Each working group confronted the challenge of examining a specific topic in a wide-ranging, complex environment in which central processes and units work with, and perhaps on occasion compete with, the educational missions and goals of schools and programs. Some of the most useful work was definitional. The working groups for Undergraduate Research and Integrating Knowledge produced thoughtful, clear working definitions for their topics. The working groups for Global Engagement, Local Engagement, and Access and Equity explored key terms of their topic to illuminate Penn's progress in these areas and create foundations for further analysis. All the working groups confronted the distinction between gathering information about a topic and thinking through that information in ways that produce useful analysis and ideas for improvement.

As a plan of action, the Self-Study Final Report provides a set of recommendations, many of which encourage the University to continue to advance its most critical initiatives or to strengthen the coordination of specific priorities. Given that assessment is defined in Standard 7 as a step in an ongoing process, the sense of work yet to be done is appropriate and a strength of the Report. Indeed, the recent introduction of the Penn Compact 2020, the University's renewed vision for the years ahead, affirms this link between ongoing assessment and Penn's vision for the future.

A Vision for Assessing Undergraduate Education

The concept of assessing undergraduate education that informs this Self-Study is that the responsibility for assessing the overall effectiveness of undergraduate education is shared by the administration of the four schools and the central administration of the University, while the assessment of student learning rests with the faculty of individual schools and programs. This approach follows Penn's academic organization into twelve distinct schools, each with a specific educational mission and collection of degree programs. Although Penn is often described as decentralized, a more accurate description in the context of undergraduate education is that Penn is served by a decentralized organization combined with strong central processes that address the specific needs of four undergraduate schools and their students.

This kind of structure demands transparent decision-making processes that represent the interests of both the individual schools and the institution as a whole. It also requires that assessment of student learning be led by the faculty and occur in the context of a school or discipline. Such assessment will be most effective when it is connected to peer review by faculty from other institutions. External peer review allows for deeper understanding of the problems and practices in a specific field of study and encourages the sharing of new ideas across institutions.

Assessment of student learning is necessarily focused on the goals of a field of study and embedded in a program of study leading to a degree. Course goals, learning outcomes, and the like are grounded in the norms and expectations of a field of study as constituted by scholars in the field and expressed in a course or collection of courses. As demonstrated in assessment reports from each of the four undergraduate schools, Penn excels in assessing student learning. The Self-Study Steering Committee carefully reviewed the College of Arts and Sciences Assessment Report (Appendix 7.1), written to address MSCHE's request (in accepting our Periodic Review Report in 2009) that Penn document in its next decennial self-study "that in the School of Arts and Sciences 1) assessment of student learning has been implemented in all departments and programs and 2) assessment results are used to improve teaching and learning." We believe that this report documents a sustained and ongoing assessment process in the School of Arts and Sciences that demonstrates compliance with MSCHE Standard 14 and can serve as a model for other universities in assessing student learning in the arts and sciences.

Assessment of learning, the type of assessment described in Standard 14, is distinct from the kind of institutional assessment described in Standard 7. Yet, as *Standards of Excellence* states, "the assessment of student learning is an essential component of the assessment of institutional effectiveness" (63). In one way, the relationship between the two kinds of assessment is straightforward. The institution ensures the quality of its programs by organizing a system of school-based reviews (including external peer reviews) and uses that system to support improvements in teaching and learning. Such a system is in place at Penn as described in Chapter 7: Assessment of Student Learning and documented in the appendices and document repository for the Self-Study.

But this description does not fully account for the interplay between the two forms of assessment. How do institutional values and goals relate to the learning experiences of students? Or, to put the question in Penn's institutional vocabulary, what does the Penn Compact mean for the assessment of student learning? The challenge to answering such questions begins with the breadth and complexity of our educational offerings. Penn's diversity of educational opportunities includes the professional focus of three of its undergraduate schools and, in the College, a commitment to broad, socially relevant inquiry in the arts and sciences. This wide range of offerings makes the articulation of institution-wide learning goals an exercise in abstraction rather than a ground for meaningful assessment.

For example, as indicated in Chapter 4: Global Engagement, global engagement can mean different things depending on the educational context and field of study. The natural, physical, and social sciences, as well as engineering, are fields of study which define themselves as global, even universal, in their fundamental questions and practices. The humanities, however, might define global engagement as the intensive study of an archive located on campus but originally from a region outside North America. Nursing or business might require hands-on study of the profession in a location outside the United States. Expecting each of these disciplines to identify a learning goal that reflects global engagement would be a bureaucratic exercise in abstraction, rather than an assessment of learning grounded in the goals and practices of a field of study.

The Self-Study included a thought experiment, described in Chapter 7: Assessment of Student Learning, in which the Assessment of Student Learning Working Group imagined a set of institutional learning goals that would be drawn from the curricular goals of the four schools and the University's overall institutional goals. As the group's conclusions suggest, the wide range of programs at Penn requires a different approach to assessment than one might find at a smaller liberal arts college or professional school. Institutional flexibility in determining methods of institutional assessment is important to effectively meet regulatory and accreditation requirements. This is particularly true of the assessment of student learning, which, at Penn, requires giving schools and program the flexibility to assess learning in the ways that best account for their specific goals and the norms of their fields of study.

If the practices of a specific field of study are the primary basis for assessing student learning, then what role do institutional values and goals play in student learning? We believe the answer to this question speaks to the great strength of research universities and, indeed, to Penn's great strength as a research university. Penn is more than a collection of fields of study and much more than the sum of its parts. Rather, Penn is a place where knowledge is created and taught, a place where fields of study collide and combine, a place where intellectual diversity flourishes, and a place where students become experts and learn how to wield that expertise to shape the world.

As Chapter 5: Integrating Knowledge suggests, these collisions and combinations can be realized most productively by forging connections across disciplines, rather than by breaking down the walls separating all disciplines. If Penn embodies the notion of the university as a network of distinct disciplines connected via discourse, research, and engagement, then the connections themselves necessarily take different forms. Some of them may be broadly conceived, yet all are realized in specific courses and educational opportunities. Many connections may be realized not in the curriculum or co-curriculum at all, but in the individual experiences of students. For one student, this experience may take the form of a senior thesis that draws on two or more fields of study. A Penn professional school student may take a course in the arts and sciences and discover connections that enable a new and unique angle of vision. A humanities or science major may enroll in a course in one of Penn's professional schools that brings together ideas in a way that puts that student on a new path toward a career.

No matter how comprehensive, assessment at the institutional level cannot fully account for the range and specificity of the educational experiences of students. Certainly, data and information about institutional priorities can be gathered and analyzed. However, assessment of undergraduate education is not simply a matter of gathering data and analyzing it. Properly understood, assessment involves connecting institutional priorities to useful data and effective analysis. Effective assessment will result in improvements, general and specific, that align the institution with its priorities and respond to changes external to the institution. At the same time, the institution does have a responsibility and duty—which Penn accepts and discharges—to ensure that each of its constituent schools and programs aligns with the institutional mission, articulates specific ways in which the school and program goals reflect that mission, and routinely and rigorously assesses its performance.

Major Recommendations

The Self-Study, which draws on the excellent contributions of the seven working groups, supports a set of strategic considerations and six major recommendations, which are elaborated in each chapter and summarized here.

- 1) Penn's successful outreach in admissions should continue in ways that further increase the diversity and excellence of its applicants, with a particular focus on applications from underrepresented minority students, including LGBT students, and students eligible for Pell grants. In light of Penn's all-grant, no-loan policy, all students who know early in their senior year that they want to enroll at Penn can and should be encouraged to apply for early decision.
- 2) In light of the fact that Penn's endowment can pay for only about 20 percent of the University's undergraduate financial aid expense (the rest of which must be paid from Penn's operating budget), and given Penn's on-going commitment to funding the full financial need of all its undergraduates, development initiatives should continue to increase the endowment income available to fund financial aid. In addition, efforts should continue to raise endowment targeted to international applicants from low- and middle-income families. This would increase the number of international applicants that Penn can afford to support, allowing more students from around the world greater access to a Penn education. Increasing endowment income for financial aid would also free up resources available to our undergraduate schools for key research and educational activities.
- 3) Penn ought to strengthen the coordination of its local and national engagement initiatives for undergraduates. The Office of the Provost, the Council of Deans, the Council of Undergraduate Deans, and the Undergraduate Working Group should work with the leaders of Penn's three major centers of community engagement (Civic House, Fox Leadership Program, and Netter Center) on methods for improving communication to first-year students and coordinating efforts to collect and analyze information about the local and national engagement activities of Penn undergraduates.
- 4) Penn should continue its emphasis on integrating knowledge and encouraging cross-school study for undergraduates. With this aim in mind, the Office of the Provost, the Council of Deans, the Council of Undergraduate Deans, and the Undergraduate Working Group can work to develop means to strengthen the review of cross-school and interdisciplinary programs, plan for new programs, and improve efforts to collect and analyze information about the ways in which Penn undergraduates integrate knowledge across campus.
- 5) To strengthen the coordination of research opportunities for undergraduates, the Provost should create a faculty working group, convened jointly by the Vice Provost for Education and the Vice Provost for Research. This group would seek to extend and improve methods of collecting and analyzing information about undergraduate research and help coordinate cross-school efforts to promote undergraduate research to students and faculty, especially in the graduate and professional schools.

- 6) Penn should continue to lead instructional innovation, including developing new methods of active classroom learning and using open learning initiatives to stimulate new forms of teaching and learning on campus. Central to this effort will be continued collaboration among the Center for Teaching and Learning, the Penn Libraries, and the Penn Open Learning Initiative, carefully coordinated by the Office of the Provost and in regular communication with the Council of Deans and the Council of Undergraduate Deans.

These recommendations align with the values articulated in the Penn Compact 2020—inclusion, innovation, and impact. The first two recommendations focus on inclusion by following through on the promise of the all-grant, no-loan policy to help all students benefit from access to a Penn education. All the recommendations—especially the third, fourth, and fifth ones—focus on the impact of Penn’s undergraduate education. Strengthening the evaluation and coordination of initiatives in local engagement, integrating knowledge, and undergraduate research will help Penn understand and increase the impact of our most critical efforts. The sixth recommendation focuses on innovation, particularly in the University’s core work of teaching and learning, so that Penn continues to lead in developing active, in-class learning methods and new technologies of online open learning. Taken together, the six recommendations articulate Penn’s key priorities for undergraduate education and suggest a path forward for the planning and assessment of undergraduate education at Penn over the next decade.