Marquette University Strategic Planning
Environmental Scan

March 2013
Prepared by the Strategic Plan Coordinating Committee
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The trends and data reported here focus upon key external environmental factors that Marquette University needs to consider in developing and implementing a new strategic plan. This report was compiled by the Strategic Plan Coordinating Committee.

Related internal data is found at the Office of Institutional Research and Assessment website. The draft self-study for Marquette’s Reaffirmation of Accreditation also provides analysis of the University’s performance relative to the criteria established by the Higher Learning Commission.

1 Marquette University Office of Institutional Research and Assessment, [http://www.marquette.edu/oira/](http://www.marquette.edu/oira/).
Selected Key Findings

- **Economic pressures** present significant challenges for students seeking access to higher education, particularly in private universities. Loan burdens have increased, federal financial aid sources are decreasing support, and Marquette competes with peer institutions with significantly more endowment support for financial aid.
- Universities are increasingly looking for **new revenue streams** to address pressing issues in affordability and access, and to provide resources that will support excellence in all aspects of university mission.
- **Demographics** of future students continue to change, with declining numbers of high school students predicted in the Midwest and Northeast with predicted growth in the West coast. Non-traditional students will become a larger segment of the market. The potential pool of future students will also be **more diverse**. **Campus climate and inclusiveness** will continue to be important factors for the next generation of students.
- **College readiness** is an issue for some students, particularly in mathematics and science.
- **Faculty and staff demographics** are also important considerations, particularly in light of the fact that the number of faculty age 65 or older nationally has doubled between 2000 and 2011. Faculty diversity is less than that found among students at the national level and is an important issue for future recruiting. The Millennial Generation will be an increasing portion of the United States workforce (growing from a predicted 36 percent of the workforce in 2014 to nearly half by 2020).
- **Technology** use continues to grow, with increasing expectations among students, faculty, and staff for universities to provide sustainable access to a wide (and ever-changing) range of technologies. Technology is enabling **new modes of promoting student learning**. Simulation, modeling and visualization, high performance computing and use of sensor technologies are a few examples of technology use in state-of-the-art learning environments. Technology is also a critical component of **faculty and student research and scholarship infrastructure**.
- The **landscape of online course delivery** is rapidly changing in terms of traditional credit-bearing courses and programs as well as the growing number of massive open online courses.
- In addition to academic programs, the availability of a variety of **co-curricular and extracurricular activities and resources** influences students in their college selection. Community engagement opportunities (including service learning and other ways of contributing to the community), athletics, recreational activities, residential living options and the central resources provided via student unions have all been reported as important factors.
- Trends in education and research have an increasing focus on **interdisciplinary and global perspectives**. Collaborative and **multidisciplinary research teams** are increasingly needed to address significant research problems and attract external funding. External research funding continues to be increasingly competitive.
- **Catholic and Jesuit Universities** are called to “help shape a more humane, just, faith-filled, sustainable world.” The international network of Jesuit universities provides opportunities for collaboration and engagement on complex issues facing the world today.

National population projections\(^4\) predict a stable population of approximately 43.5 million people between the ages of 15 and 24 between 2010 and 2015, with a projected increase to 44.4 million in this age range in 2020. The largest predicted change among racial and ethnic groups in the 15 to 24 year old range is in the Hispanic (any race) population, which is projected to grow from 8.5 million in 2010 to 9.9 million in 2015 to 11.4 million in 2020. The projected Wisconsin population between the ages of 15 and 24 is predicted to decrease by nearly 62,000 between 2010 and 2020 (with a decrease of over 38,000 between 2010 and 2015).\(^5\)

The U.S. Department of Education reports that graduate rates in 2010 were at the highest they have been since 1974.\(^6\) However, the U.S. remains behind international peers in terms of high school graduation rates.\(^7\) Midwest and Northeast high school graduates predicted to continue to decline by 5 percent and 9.5 percent, respectively, through 2021. Western high school graduates predicted to increase by 5.5 percent. Meanwhile, 70 percent of college students attend college within 200 miles of their homes.\(^8\)

The National Center for Education Statistics\(^9\) has projected a 13 percent enrollment increase for degree-granting institutions in the United States between the years 2006 to 2017. These enrollment gains are predicted to be evenly distributed across male and female as well as for full-time and part-time students. Although a 10 percent enrollment increase is expected for traditionally aged college students (18-24 years of age), an increase of 27 percent is expected for students 25-34 years of age and an increase of 8 percent is expected for students over the age of 35. The undergraduate population is predicted to increase by 12 percent with greater gains anticipated for graduate student enrollments (18 percent) and first professional populations (22 percent). The enrollments projections are expected to be significantly higher for students of color with greater increases in Black (26 percent), Hispanic (39 percent), Asian/Pacific Islander (26 percent) and American Indian/Alaskan Native (38 percent) student enrollments. Smaller enrollment gains are expected for White (5 percent) and non-resident (1 percent) populations. These enrollment increases are expected to be equally distributed across both public and private institutions.

Although the NCES projections show overall post-secondary enrollment gains continuing over the next five years, increased student enrollments for some colleges and universities could be mitigated by several factors, including student preparedness and the rising costs of a college education. In addition, the significant increases in the diversity of the students anticipated to be enrolling in degree granting institutions will require colleges and universities to consider the factors that have been shown to play a role in the educational experiences and subsequent retention of these student populations. While

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\(^7\) [The Wall Street Journal](http://online.wsj.com/article/SB10001424127887323301104578256142504828724.html).

\(^8\) Royall & Company Report for Marquette University, Office of Admissions.


Public four-year institutions have experienced a higher percentage increase in tuition and fees over the past five years than have private four-year institutions, the tuition and fees associated with attending a four-year private institution remain roughly three times that of the tuition and fees associated with attending an in-state, public institution.

Finally, the significant increases in the diversity of high school graduates who are aspiring to enroll in degree granting institutions will pose new challenges for colleges and universities, especially those who have traditionally had lower percentages of underrepresented groups enrolled at their institutions. A growing body of literature indicates that the student experiences for underrepresented groups sharply differs from the experiences of majority students and these experiences often translate into reduced institutional commitment, educational achievement, or degree attainment.

**College Readiness**

**While educational aspirations continue to climb in our country, the lack of college preparedness continues to challenge student success.** ACT\(^1\) indicates that only about one-third of high school students are college ready while two-thirds are college bound every year. Specifically, more than a fourth (28 percent) of ACT tested graduates did not meet any of the four ACT College Readiness Benchmarks in English, mathematics, reading, and science. Only 25 percent of tested 2012 graduates met all four ACT benchmarks. While college readiness levels remain lower among African-American and Hispanic students, all student populations remain challenged in math and science readiness. Many states are now addressing the gaps in academic readiness by revising state standards for high school graduation and assessing multiple measures of readiness beginning in elementary grades. Meanwhile, these readiness gaps continue to constrain students from careers in STEM areas, careers that provide significantly higher earning potential for men, and especially women graduates.\(^{11}\)

ACT.org reports on college readiness of students taking the ACT exam.\(^{12}\) Readiness was determined via performance at or higher than the indicated benchmark.

<table>
<thead>
<tr>
<th>Subject (ACT Benchmark)</th>
<th>Percent</th>
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<tbody>
<tr>
<td>English (18)</td>
<td>67%</td>
</tr>
<tr>
<td>Reading (21)</td>
<td>52%</td>
</tr>
<tr>
<td>Mathematics (22)</td>
<td>46%</td>
</tr>
<tr>
<td>Science (24)</td>
<td>31%</td>
</tr>
<tr>
<td>All Four Subjects</td>
<td>25%</td>
</tr>
</tbody>
</table>

Additional benchmark data for student readiness is provided in the next section.

**Higher Education Expectations and Career Aspirations**

In 2012, 52 percent of graduating high school seniors took the ACT exam (including 60-79 percent of Wisconsin graduating high school seniors; 80-100 percent of Illinois students).\(^{13}\) Educational goals were surveyed among the students taking the ACT. Overall, 37 percent of these students aspire to a graduate or professional degree and 45 percent to a bachelor’s degree. There are some differences in reported educational aspirations among different racial/ethnic groups.

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ACT also utilized 2010–20 projected job openings data from the U.S. Department of Labor, Bureau of Labor Statistics to identify a selected group of fields that will account for over half of the anticipated demand for graduates with at least a two-year degree. ACT benchmark performance for students indicating an interest in one of these fields is also shown below. Math and science preparation is an issue for the majority of these students.

<table>
<thead>
<tr>
<th>Career Field</th>
<th>ACT-Defined Readiness of Students With Interest in Specified Career</th>
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<tbody>
<tr>
<td></td>
<td>English</td>
</tr>
<tr>
<td>Education</td>
<td>68%</td>
</tr>
<tr>
<td>(17% of openings; 7% interested)</td>
<td></td>
</tr>
<tr>
<td>Computer/Information Specialties</td>
<td>68%</td>
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<tr>
<td>(11% of openings; 2% interested)</td>
<td></td>
</tr>
<tr>
<td>Community Services</td>
<td>65%</td>
</tr>
<tr>
<td>(9% of openings; 7% interested)</td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>55%</td>
</tr>
<tr>
<td>(9% of openings; 6% interested)</td>
<td></td>
</tr>
<tr>
<td>Marketing/Sales</td>
<td>63%</td>
</tr>
<tr>
<td>(9% of openings; 2% interested)</td>
<td></td>
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</tbody>
</table>

Occupations that typically need some type of postsecondary education for entry are projected to grow the fastest during the 2010-20 decade. Increasing unemployment rates and competition for jobs the past few years have increased the need for a higher education degree. The Bureau of Labor Statistics notes in its most recent report that for “occupations in which a master’s degree is typically needed for entry, employment is expected to grow by 21.7 percent, faster than the growth rate for any other education category.”

Graduate and professional education aspirations (and enrollments) are impacted by the job market as well as financial issues (see following section).

**Household Income and Financial Aid Issues**

**Estimated costs for 2012-13 (tuition and fees plus room and board) vary significantly among different types of institutions:** with public two-year institutions being most affordable ($10,550 for tuition/fees/room/board costs), followed by in-state public four-year ($17,860 for these costs) and private four-year institutions are the most costly, averaging over twice as much as in-state four-year institutions ($38,911). A significant number of 2001-7 science, engineering, and health baccalaureate graduates (50 percent) and master’s graduates (~45 percent) attended a community college at some point in their academic careers. The reasons given for community college attendance were to earn credits toward a bachelor’s degree, followed by financial reasons, gaining skills or knowledge, and preparing for college.

**College costs are significant given that overall U.S. and Midwest median incomes are at lower levels than in 2007, pre-recession.** The U.S. median income in 2011 was $50,054 (after inflation) and the

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Midwest median income in 2011 was $48,722 (after inflation). The income gap has also risen, and 15 percent of the U.S. population now lives in poverty.\textsuperscript{18}

Meanwhile, 60 percent of college students nationally report worrying about having money for day-to-day expenses, and one-third of college students believe financial concerns interfere with their academic performance.\textsuperscript{19}

**First-time enrollments for graduate and professional programs have declined recently, which many sources attribute to changes in financial aid and employer reimbursement, as well as poor job prospects.** Applications to graduate-school programs in the U.S. increased by 4 percent from the fall of 2010 to the fall of 2011 but first-time enrollments fell by almost 2 percent during that time, according to the Council of Graduate Schools. From 2010 to 2011, there was a 2-percent drop in first-time enrollments in master’s and certificate-level programs, while Ph.D. programs enrolled 0.5 percent more new students.\textsuperscript{20}

<table>
<thead>
<tr>
<th>Changes in Federal Financial Aid</th>
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<tr>
<td>Sequestration could potentially lead to 8.2 percent cuts to student financial aid programs such as Federal Work Study, Supplemental Educational Opportunity Grants, and TRIO and GEAR UP and additional cuts to the National Science Foundation and National Institutes of Health which could impact funding of graduate students.\textsuperscript{21}</td>
</tr>
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In addition, changes to Perkins, Pell, and Stafford Loan programs will impact the ability of students to pay for their college education.

**Perkins Loans: revolving loan fund (through the institution)**
- No new appropriations since 2004-5
- 2008 Reauthorization of Higher Education Amendments put 2015 sunset in place
- Currently 17.5 percent of Marquette student receive this funding, which totals approximately $4 million annually

**Pell Grants**
- Limited to 12 semesters

**Direct-subsidized Stafford Loans**
- No longer interest deferral during six month grace period
- 3.4 percent interest rate on subsidized loans will expire on June 30, 2013, when rates will rise to 6.8 percent
- Graduate and professional students no longer eligible for subsidized loans

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<th>Student Experience</th>
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<tr>
<td>As high school seniors select a college or university to attend, a variety of nonacademic factors are reported to affect their decision to attend. In addition to extracurricular activities such as athletics,</td>
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\textsuperscript{18} U.S. Census 2012, \url{http://www.census.gov/prod/2012pubs/p60-243.pdf}.
\textsuperscript{19} \textit{Financial Stress: An Every Day Reality for College Students}, Inceptia White Paper, \url{https://www.inceptia.org/PDF/Inceptia_FinancialStress_whitepaper.pdf}.
\textsuperscript{20} \textit{Chronicle of Higher Education}, \url{http://chronicle.com/article/Applications-to-US-Graduate/134746/}.
\textsuperscript{21} National Association of Student Financial Aid Administrators, \url{http://www.nasfaa.org/advocacy/budget-2013/news/Sequestration_Could_Deal_Major_Blow_to_Federal_Student_Aid.aspx}.
recreational activities, and club/intramural sports, students also noted that student unions and residential living options are important in their college choice. Finally, student safety continues to be a concern to students and to their parents.

**More than 46 percent of first year students indicated that recreational facilities were very or moderately important in their college decision.** More than 40 percent of juniors and seniors indicated that recreational facilities were very or moderately important in their decision to stay enrolled at their colleges. 71 percent of students at larger universities (greater than 5,000 students) report that they participate in on-campus recreation with the highest percentages being in areas of cardiovascular training, weight training, intramural sports, open recreation, instructor led group fitness and club sports.22

**Student unions continue to play a central role on college campuses as a gathering place.** The most frequently reported reasons for visiting the union (three or more times per week) include eating, socializing with friends, studying independently, obtaining information about campus events, using a computer or visiting a retail shop. Sixty-seven percent of students nationwide reported that they attended programs, speakers, events or performances at a student union at least once a semester and 61 percent report spending one or more hours at student union during the week. When students were asked what features of a student union are most important to them, they indicated they a variety of food options, a welcoming and comfortable environment and an atmosphere conducive to studying were most important. Students attending union events also reported that they gained experience/skills relevant to their future careers and to their academic majors, were able to connect with other students, felt a part of the campus community and became more knowledgeable about the campus community. Finally, 53 percent of students who participated in student union activities reported their satisfaction with the collegiate experience had improved as a result of attending programs, with international students more likely than domestic students crediting student union activities with improving their integration into the campus community and providing them with academic and life skills.23

**Just as the student union appears to play a central role in student integration and socialization, participating in residence life programming events has also been shown to have a significant positive impact on students.** Specifically, over 80 percent of students reported that these types of events have allowed them to meet individuals with similar interests as well as to meet individuals with interests that differ from their own. Over 70 percent report that they felt part of the campus community as a result participating in residence life programming events and became more aware of a campus resource or service with which they were not already familiar. Students also report that participating in residence life programming and events improved their ability to articulate their values, attitudes, and beliefs; increased their critical thinking/problem solving skills; improved their study, time management and stress management skills; and enhanced their academic achievement and their grades. Finally, 59 percent of the students reported that their involvement in residence life programming and events provided them with skills and abilities they would use after college.24

When student residents were asked which issues they learned more about/became more aware of since living on campus/in the residence halls, students indicated a number of issues related to various types of diversity including life experiences (50 percent), race/ethnicity/culture (47 percent), geographic (45 percent), religion/spirituality (35 percent), sexual orientation (34 percent) and socioeconomic status/class

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Students also reported learning more about gender, political views, age, disability, social justice/oppression and privilege. Over 80 percent of the students who serve in the role of Resident Assistants reported more confidence in their ability to respond to crisis situations, enhanced skills/experiences that they will use after college, improved leadership skills, and personal conflict management abilities. They also reported their experience in a resident assistant role helped them to better articulate their career goals and that the RA experience had provided them with skills and experience that were relevant to their academic major.

While the economy is affecting students’ ability to afford college, the economy is also affecting college and university decisions regarding the types of student experiences that can continue to be offered. Drastically reduced state funding for public institutions, coupled with a need to keep tuition and fee increases at a minimum, particularly for private institutions, have prompted many higher education institutions to reconsider the amount of financial support they can provide for various student experiences. Particularly hard hit over the past few years has been collegiate varsity athletics. While some sports have gained considerable popularity over the past few years with entering first-year students, many athletic departments are not in a position to add any new varsity teams. In contrast, over the past five years, many colleges and universities have been slashing athletics budgets and eliminating teams, resulting in a decline of 205 varsity teams in NCAA Division I.

Intercollegiate athletics offers great opportunities for student athletes and for student and alumni engagement, provided that appropriate resources are available for academic success, health and safety, and compliance. Changing conference make-up is a current issue for Division I athletics; in addition to the expected economic impact, in some cases conference changes have been linked to increased student selectivity and admissions yield rates.

Although less than half of the newly enrolled students at larger colleges indicated that they strongly or somewhat agreed that campus activities offered by the college were important in their decision regarding which college to attend, student involvement with college activities has been shown to positively affect social integration. Eighty-three percent of students indicated that participating in college events helped them connect with other students. In addition, 73 percent of students reported that most types of involvement (from recreational athletics to participating in community service to being an orientation leader) led them to feel more integrated into and knowledgeable about their campus community. Finally, involvement in athletics, sports, and recreational activities was found to be positively related to students’ self-reported changes in overall health.

Community engagement is a growing area at many colleges and universities. A 2009 Association of American Colleges and Universities study of the climate for civic responsibility on campus revealed more than 90 percent of 33,000 faculty, students and campus professionals agreed that an essential goal of higher education is to prepare students to contribute to the community. Seventy eight percent of AAC&U member institutions have defined student learning outcomes related to civic and community engagement. Prospective students find this aspect of the student experience to be an attractive trait of Marquette.

SimpsonScarborough external perception study revealed 59 percent of undergraduate prospects find the university’s urban environment to be an extremely appealing and differentiating factor and 37 percent cite outreach efforts as an extremely appealing factor. A number of organizations, such as AshokaU\textsuperscript{31} with its 19 Changemaker campuses (including Marquette) and University-Community Partnerships for Social Action Research\textsuperscript{32} are supporting the work of students and faculty in community engagement and social entrepreneurship.

**Student health and wellness is also of primary concern and affects the student experience on many of our college campuses.** Stories about the health risks faced by today’s college students receive considerable attention in both academic and popular media. There has been increasing pressure for college administrators to address mental and physical health concerns as well as student alcohol and drug usage. In the past, the counseling center provided counseling for students with adjustment concerns, homesickness, relationship issues, depression, and initial incidences of mental illnesses. Today, an increasing number of college students have a history of emotional difficulties and have been on psychotropic medication prior to entering higher education. The complexities surrounding student health and wellness are prompting college administrators and professional staff to consider new strategies for ensuring the health and safety of their students.\textsuperscript{33}

In addition to health and wellness concerns, **campus safety continues to be a concern for students and their parents, most particularly for female college students.** A significantly smaller percentage of female students at larger universities reported that they felt very or somewhat safe walking on campus after dark (37 percent) compared with their male counterparts (74 percent). Many colleges and universities – including Marquette – have implemented safety escort and driver services for students as well as technologies (campus alerts, call stations) to provide timely response and notification in the event of an emergency.\textsuperscript{34}

A majority of the research trends on the student experience has focused on traditional-aged students, primarily undergraduates, who attend full-time and live in college residential facilities.\textsuperscript{35} And while many of the students who attend four-year public and private (not-for-profit) institutions fit this demographic, there are a considerable number of students, classified as “non-traditionals,” who do not fit these criteria either by age, by enrollment status (part-time versus full-time), or by residential status (i.e., commuters living with their parents or with families of their own).\textsuperscript{36} Nontraditional students are generally characterized as part time or older students. The data suggests that 20 percent of students at 4-year institutions nationwide are characterized as part time. This percentage rises when students attending two-year colleges are included and rises significantly when graduate students (more than 40 percent) are included in the demographic mix.

Some colleges and universities are directing resources towards supporting and improving the student experience for commuter students. New York University and Temple University are both examples of

\textsuperscript{31} http://ashokau.org/changemaker-campus/campuses-at-a-glance/.

\textsuperscript{32} http://ucpsarnet.iglooprojects.org/.

\textsuperscript{33} Student Affairs Administrators in Higher Education (NASPA) Leadership Exchange, Winter 2011.

\textsuperscript{34} Student Affairs Administrators in Higher Education (NASPA) Assessment & Knowledge Consortium, 2009 Executive Report.


universities that have directed significant attention towards meeting commuter students where they are, addressing their needs and providing them with the types of support that fit their needs.37

Forty-four percent of graduate students are part time (nontraditional), but the real drivers involve improving the quality of life and providing financial support for both full time and part time graduate students. The graduate student community has changed significantly in the past 40 years, not only because of a need for advanced specialization, but to include many more women and underrepresented minority students (according to NCES and CGS data), as well as an increase in students from other countries (especially East, Southeast, and South Asian countries). Women have moved into the majority, although still severely underrepresented in STEM and other selected disciplines (e.g., philosophy) and underrepresented minority students are far from achieving parity in graduate education with their respective populations in the broader society.38

The significant increases in the diversity of high school graduates who are aspiring to enroll in degree granting institutions will pose new challenges for colleges and universities, especially those who have traditionally had lower percentages of underrepresented groups enrolled at their institutions. A growing body of literature indicates that the student experiences for underrepresented groups sharply differs from the experiences of majority students and these experiences often translate into reduced institutional commitment, educational achievement, or degree attainment.39 Campus climate and inclusiveness will be important factors for the next generation of students. In addition, college-readiness will be an issue for some prospective students.

Camille Charles and her associates, in their landmark study of students attending selective colleges and universities have noted, “All students confront common academic, financial, and social challenges in adapting to college, of course, but the pressures are generally more intense for minority groups; and the greater severity of these ‘normal’ challenges partly explains the lower performance of African American and Latinos relative to whites and Asians.”40 The authors continue, “In addition to these universal sources of student angst, however, black and Latino students face other, unique pressures that rarely, if ever, come up for whites or Asians. Indeed, white students, faculty, and administrators may have a hard time even visualizing these minority-specific challenges. Most whites, for example, are probably blissfully unaware of the racial and ethnic undercurrents that bedevil minority students on campus, and few can likely relate to the onus of stereotype threat or appreciate the stigma of heightened performance burden from affirmative action programs.”

In other words, some of the problems we might see are due not only to the “severity” of challenges as they affect minority students, but are further exacerbated by unique environmental or societal problems that create “stereotype threat” and “performance burden”41 such as assumptions in and out of the classroom about how students gained admission and what other students think they are intellectually capable of, based largely on the lack of cross-cultural interaction.

41 Whistling Vivaldi and Other Clues to How Stereotypes Affect Us, Claude M. Steele, 2010, New York: W.W. Norton and Company.
Demographics, Retirement Trends and Recruitment Issues

National data indicate that the number of professors age 65 and older has doubled between 2000 and 2011 according to Bureau of Labor Statistics data reported by the Chronicle of Higher Education. This trend makes planning for future faculty hiring critical for the next ten years. Marquette will be competing with other institutions for the next generation of faculty.

Current faculty demographics can create challenges in terms of fear of reallocation or cutting of tenure track faculty lines; delays in hiring in emerging fields of study due to the need to wait for retirements; and costs of hiring new faculty (start-up, salary, and competitive teaching loads). Hiring for mission and providing sufficient orientation to the institutional mission are important as illustrated by Scranton’s well-publicized work when replacing one-third of its faculty.

The ability to effectively recruit is greatly facilitated by the infrastructure and environment at the institution and requires competitive salary as well as a protected research time in the form of teaching relief. In the case of the STEM and health sciences, the availability of quality research space and competitive research start-up packages are essential. Cornell University surveyed 220 research and doctoral universities in 2003 and reported that average start-up costs for selected STEM disciplines. At that time, the range of assistant professor start-up packages was $146,831 (engineering at non-R1 public universities) to $580,000 (chemistry at R1 private institutions). Senior faculty hires at R1 institutions required $700,000 to $1,800,000. Sources for start-up included general university/college budgets, keeping positions vacant, department budgets, endowments, and indirect costs recovery.

Current statistics show that at most universities, the staff population is more diverse than administrator or faculty positions and there are a higher proportion of black and Hispanic administrators than faculty. Climate and inclusiveness issues, as noted for students, are important for all employees. Faculty diversity is lower than student diversity, which could have a potential impact on student recruiting and retention.

Faculty Distribution (Tenure vs. Non-Tenure Lines)

As noted above, a large proportion of tenured faculty at U.S. universities will retire in the next few years, and this generational shift will make more urgent a discussion of the roles and numbers of non-traditional faculty in comparison to tenured and tenure-stream faculty. The Chronicle of Higher Education reported that “over just three decades, the proportion of college instructors who are tenured or on the tenure track plummeted: from 57 percent in 1975 to 31 percent in 2007. The new report is expected to show that that
proportion fell below 30 percent in 2009. If you add graduate teaching assistants to the mix, those with some kind of tenure status represent a mere quarter of all instructors.\(^{46}\)

A recent survey of part-time contingent faculty indicates that many of these positions become long-term employment, with low compensation on a per-course basis. Health benefits are most commonly accessed through a different source than the academic employer.\(^{47}\)

Even among faculty in tenure track lines, there are a range of models in terms of specialization between research and teaching. The share of full-time science and engineering faculty identifying research as their primary work activity climbed from 19 percent in 1973 to 36 percent in 2008, while the share identifying teaching as their primary activity fell from 68 percent to 47 percent.\(^{48}\)

### Generational Issues in the Workplace

**The Millennial Generation, commonly defined as those born between 1976 and 2001, makes up more than 80 million people in the U.S. according to the U.S. Bureau of Labor Statistics.** By 2014, 36 percent of the U.S. workforce will be comprised of Millennials. By 2020, Millennials are projected to make up nearly half of the U.S. workplace. With current staffing levels pared back as far as they can go, organizations will be challenged to transfer this experience and knowledge to the next generation of workers. This will bring intergenerational conflicts, as well as uncertainty about what the future of America’s workforce will be.

A *Harvard Business Review* article found that Millennials want very specific characteristics from both their bosses and their companies.\(^{49}\) Millennials are the most diverse generation, are motivated by meaningful work and a sense of accomplishment, and are digitally savvy and mobile.\(^{50}\) Their presence in the workplace has led to trends such as the growing use of mobile applications (smart phones and tablets) as a primary mode of business operations.\(^{51}\)

Other challenges faced by universities include the need to increasing demands by students, also members of the Millennial Generation, for access to technology and changes in the economic landscape with respect to online education. This creates challenges for faculty and administrators who value traditional methods.\(^{52}\)

### Teaching and Learning

**Measuring the Value of a College Education**

Increased external pressures from state and federal regulators to demonstrate the value of a college degree through outcome measures mean that assessment will remain a significant concern for universities for the

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\(^{52}\) *Chronicle of Higher Education*, [http://chronicle.com/article/Professors-Faculty-Try-to-Keep-Pace/133926](http://chronicle.com/article/Professors-Faculty-Try-to-Keep-Pace/133926).
Widespread perceptions in popular media that students are “academically adrift” and that institutions of higher education are not preparing students for the workplace further contribute to the pressure to create assessment tools that can demonstrate the economic value of a college degree. Thus, there is a continued tension between assessment for improvement and assessment for accountability.

Assessment

A wide variety of assessment instruments are employed by various disciplines. A 2011 National Institute for Learning Outcomes Assessment report surveyed institutions across the country, the results of which were circulated in a number of popular press formats. A key finding was that disciplines use different types and numbers of assessment instruments.

Of particular note is the continued skepticism of standardized national tests, perhaps the most well-known of which would be the Collegiate Learning Assessment. According to the NILO report, “Standardized generic knowledge and skills tests like the CLA are not widely used, as only one fifth (21 percent) of programs indicated that all or most of their students took them. In contrast, two thirds (68 percent) reported using capstone assessments or rubrics and more than half (58 percent) reported using performance assessments or final projects to measure learning.”

A second key finding of the NILO report is the continued “perception gap” between chief academic officers and program-level heads on what is needed to improve assessment. CAOs indicated that more faculty involvement was the most important element, while program heads cited faculty expertise and stipends as their top ranked elements. Program heads also ranked better assessment measures, information about methods, and information from others as more important than did the CAO group.

The percent of respondents who indicated a particular element was important for improving assessment:

<table>
<thead>
<tr>
<th></th>
<th>Chief academic officers</th>
<th>Program heads</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>More faculty involvement</strong></td>
<td>65%</td>
<td>45%</td>
</tr>
<tr>
<td><strong>Faculty expertise</strong></td>
<td>62%</td>
<td>55%</td>
</tr>
<tr>
<td><strong>Stipends</strong></td>
<td>50%</td>
<td>55%</td>
</tr>
<tr>
<td><strong>Better measures</strong></td>
<td>38%</td>
<td>51%</td>
</tr>
<tr>
<td><strong>Information about methods</strong></td>
<td>32%</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Information from others</strong></td>
<td>18%</td>
<td>45%</td>
</tr>
<tr>
<td><strong>Support from above</strong></td>
<td>10%</td>
<td>22%</td>
</tr>
</tbody>
</table>


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Curricular Trends

Changes in pedagogical practices and increased external attention has created further impetus for an ongoing shift toward interdisciplinarity in the classroom and in research. Such a shift creates unique opportunities for students and challenges for institutions of higher education, which tend to organize along traditional disciplinary “silos.” Interdisciplinary approaches can address concerns from industry that students have transferable knowledge that can be applied in a wide variety of fields.58

Changes in demographics and the shift toward online education mean that it is likely that institutions of higher learning will have more “nontraditional students” for the foreseeable future. Students from nontraditional backgrounds may require significant assistance in writing, advising, and quantitative reasoning.59 The current structures to provide assistance in these areas at institutions of higher learning across the country tend to be piecemeal, associated with particular colleges rather than the University as a whole, often resulting in a mismatch between resources and needs.

High-impact Practices

In light of external pressures, there is a significant, widespread movement to develop “high-impact practices” for the classroom. The American Association of Colleges and Universities identifies60 10 primary practices: first-year seminars and experiences, common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments and projects, undergraduate research, diversity/global learning, service learning, internships, and capstone courses and projects. Research demonstrates that high-impact practices are particularly effective for underserved and so-called "at risk" students, and the AACU recommends that all students participate in at least two such high-impact educational practices.

Use of Technology

The proliferation of media technologies has created a generation of “digital natives”61 who are accustomed to utilizing social media and an array of technologies, but who do not necessarily demonstrate a high degree of proficiency or literacy with such technologies. Research indicates increased demand in the twenty-first century for the ability to work with distant off-site teams, and to navigate a multimedia-rich environment.62 There are numerous popular press accounts of studies suggesting that "digital natives" do not necessarily possess literacy with the technologies they utilize or that the technologies themselves are diminishing the students' capacity to learn other skills.

Technology use in learning covers a broad range of topics including (but not limited to): online modes of course delivery (see following section); simulation laboratories in health care education63; and mobile circuit board technologies in engineering and physics education.64

Online Course Delivery – Challenges and Opportunities

The move toward online education continues to expand rapidly, with the development of Massive Open Online Courses dominating national discussions over the past 12 months. “Traditional” online courses can be used to extend offerings via consortia arrangements and are especially useful for students studying abroad. Hybrid courses, combining online and in-person learning, are also a growing trend. While there are many advantages to online education, concerns include quality control, the ability to develop close working relationships with peers and mentors, and how such courses integrate with the core identity and mission of institutions remain. Revenue models for online education and accreditation are also ongoing challenges for MOOCs.

Opportunities:
- The share of students who learn online has tripled in the past decade.
- There are a number of modes of online education ranging from hybrid courses and programs, online credit-bearing courses offered in the context of a traditional degree program.
- Online courses offer unprecedented level of access to educational offerings of top universities.
- Attract non-traditional students
- Summer school offerings
- Hybrid programs increasing in graduate education, including executive MBA programs

Challenges:
- Questions have been raised about the quality of online education by college/university presidents, faculty and the public at large. Some of the perceptions depend on the level of experience with this learning method.
- Several high profile conflicts over the past year have highlighted challenges facing universities in determining the best course for use of online education and participation in MOOCs. The most high profile incident concerned the University of Virginia, involving a conflict between the board of trustees and the university president.
- The economics of delivering online content continue to defy easy answers. Even at highly regarded institutions such as the University of California system, there has been no guarantee of economic success.
- Online courses are vulnerable to plagiarism concerns. Additional challenges include how courses will be credentialed and the increasingly crowded marketplace as for-profit institutions compete with nonprofit universities.

Challenges notwithstanding, online education remains a necessary and fruitful area for universities to reach new students and remain relevant in the 21st century. Sections devoted specifically to online education have now become ubiquitous to news publications on higher education (e.g., The Chronicle Of...)

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Higher Education, Inside Higher Ed), and figure heavily in discussions of national organization such as The American Association of Colleges and Universities (AACU).

See, for example:
- [http://nation.time.com/2012/11/19/mooc-brigade-can-online-courses-keep-students-from-cheating/?iid=tsmodule](http://nation.time.com/2012/11/19/mooc-brigade-can-online-courses-keep-students-from-cheating/?iid=tsmodule)

**Graduate and Professional Education Trends**

Many of the trends in graduate education are similar to those noted above. However, there are a few points of specific importance in graduate and professional education. While the overall labor market continues to be difficult, projections indicate that there will be increased demand for employees with graduate training. A report by the Council of Graduate Schools and the Educational Testing Service indicate that by 2020, 2.6 million new jobs will require an advanced degree. The report, "Pathways Through Graduate Schools and Into Careers," projects that the number of jobs requiring a master's degree or a doctor/professional degree will increase by 22 and 20 percent, respectively, over the next eight years.

**Challenges remain, however, for training graduate students to participate in a variety of careers and this will continue to be an important trend for developing graduate curricular and co-curricular programs.** Particularly in doctoral programs, it remains the case that significant elements of a student's education come through his or her advisor, which creates the conditions for highly uneven educational outcomes. This is exemplified in a recent study on research integrity, which explored how students were taught integrity – the majority receive training through their advisors, leading less consistency than in centralized programs. The National Institutes of Health is exploring how to best train biomedical scientists in order to prepare them for an evolving workforce and whether more centralized or student-focused support via training grants would be preferable to support via individual faculty grants.

While the specific issues of professional schools differ from graduate programs, there is a common theme of career preparation and economic issues. A few examples are provided here but a more detailed analysis for specific programs is encouraged for future college and department planning.

In many respects, law schools have become the bellwether for issues affecting professional schools more generally. In part, this is because law school tuition has risen so dramatically relative to inflation and tuition for undergraduate degrees, even as the economic downturn since 2007 has created challenges for graduates to find jobs.

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72 [Chronicle of Higher Education](http://chronicle.com/article/Graduate-Schools-Need-to/131595/).
74 [Inside Higher Education](http://www.insidehighered.com/news/2012/08/14/making-research-integrity-essential-part-graduate-education).
The economics of professional degrees have had significant impact on pedagogical practices, leading to questions about what professions a graduate program is preparing its students for and how might training be more effective.

Some examples include:

- The question of whether graduate courses could be taught online, given that some professional programs continue to use a lecture room pedagogical model.76
- A move away from a universal generalist curriculum by prominent programs such as New York University, where students move toward specialization during final year. Such moves have a number of potentially complex implications, not the least of which is the question of whether specialization will eventually lead to calls for shortening degree programs.77
- Pedagogy in professional programs is becoming part of national debates, as evidenced by discussion organized by the New York Times in 2011 on the Socratic method in law schools.78

## Research and Scholarship

Indicators for research and scholarship vary widely across disciplines, but a few of the key indicators are summarized below.

- **The Carnegie Classification**79 continues to serve as the primary framework for recognizing and describing institutional standing in higher education in the United States. A multi-variable research index which includes the following measures is used to classify doctorate-granting institutions: research & development (R&D) expenditures in science and engineering (S&E); R&D expenditures in non-S&E fields; S&E research staff (postdoctoral appointees and other non-faculty research staff with doctorates); doctoral conferrals in humanities fields, in social science fields, in STEM (science, technology, engineering, and mathematics) fields, and in other fields (e.g., business, education, public policy, social work). For doctorate-granting universities (includes institutions that awarded at least 20 research doctoral degrees during the update year, excluding doctoral-level degrees that qualify recipients for entry into professional practice, such as the JD, MD, PharmD, DPT, etc.) there are three categories:
  1. Research universities with very high research activity (institutions include Georgetown, Wisconsin, Notre Dame, Ohio State, Harvard, Northwestern and Stanford).
  2. Research universities with high research activity (institutions include SLU, UW Milwaukee, Loyola, Fordham, Duquesne, S. Illinois, and Boston College).
  3. Doctoral/research universities (lowest classification in this category; institutions include DePaul, Illinois St., Central Michigan, Cardinal Stritch, St. John’s and Marquette).

- **A key indicator of institutional research is the total R&D expenditure.** Global research and development expenditures over the past decade have grown faster than global GDP, an indication of widespread efforts to make economies more knowledge- and technology-intensive. Higher education’s share of total U.S. research expenditures (basic plus applied) has gradually increased, rising from 24 percent in 1982 to 36 percent in 200980. R&D expenditures are reported annually to the National Science Foundation. Very high research activity institutions typically have expenditures in excess of $100

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High research activity institutions typically have expenditures around $50 million. In 2009, Marquette’s expenditures were around $10 million (rank of 287 in the Carnegie Classification). Better reporting mechanisms and increased funding has led to Marquette reporting over $19.8 million in R&D expenditures in 2011. Despite overall stagnation of R&D expenditure in the private sector, university/college expenditures continue to increase (5 percent increase in 2009) and represent close to 14 percent of all R&D expenditures.

- A common strategy for strategic planning as it relates to enhancing institutional scholarship is the identification of “benchmark” institutions. Two institutions that are currently classified Carnegie “high research activity” are the Jesuit institutions, Fordham University and Boston College. Like Marquette, neither of these institutions has a medical school. Boston College has consistently remained in this category, while Fordham University recently moved up to this category from the lowest doctoral institution category. Examination of the institutional and research office strategic plans for these institutions revealed the following common element, as stated in Boston College’s Strategic Plan: “Identify and support selected research commitments that will achieve excellence and distinction in addressing urgent societal problems.” Neither Boston College nor Fordham are unique in this approach to building scholarship.

**Funding**

- **Federal funding is the largest source for academic research (~60 percent of all research funds in science and technology) but this has declined in recent years and funds are much more difficult to obtain than 10-20 years ago.** Although to varying degrees, scholarship in each discipline (STEM, health sciences, social sciences, and humanities) relies on federal funding. In all areas, the availability of federal funds is declining. For example, the status of NIH funding as summarized by the Federation of American Societies for Experimental Biology is as follows: “In constant dollars (adjusted for inflation), the FY 2012 budget and the President’s proposal for FY 2013 are $4 billion lower than the peak year (FY 2003) and at the lowest level since FY 2001. The number of research project grants funded by National Institute of Health has declined every year since 2004. This trend is projected to continue in FY 2012 and FY 2013, when NIH will fund 3,100 fewer grants than in FY 2004. Success rates have fallen more than 14 percentage points in the past decade and are projected to decline even further in FY 2012 and 2013.”

- **Six agencies provide almost all (97 percent in 2009) federal academic R&D support in the Science and Technology** — the National Institutes of Health, National Science Foundation, Department of Defense, National Aeronautics and Space Administration, Department of Energy and Department of Agriculture.

- **One of the largest source of federal funding for humanities research is provided by the National Endowment of the Humanities.** NEH supports research, education, preservation and public programs in the humanities. The research budget of the NEH today is less than 1 percent of the federal budget for scientific research and less than 0.1 percent of the federal R&D budget. Nonetheless, NEH-supported research has resulted in 18 Pulitzer Prizes, 20 Bancroft Prizes, and numerous awards for documentary films. In 2011 state- affiliated humanities councils put on over 55,000 programs and conferences in the U.S.

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81 Federation of American Societies for Experimental Biology, [http://www.faseb.org/LinkClick.aspx?fileticket=aDQlNW4adp0 percent3D&tabid=431](http://www.faseb.org/LinkClick.aspx?fileticket=aDQlNW4adp0 percent3D&tabid=431).
83 [http://www.humanitiesindicators.org/content/hrcoIVD.aspx#topIV12](http://www.humanitiesindicators.org/content/hrcoIVD.aspx#topIV12).
Measuring with precision the economic impact of NEH’s research and outreach programs is difficult and near impossible. Nonetheless, there is the assumption that never has the importance of history, literature, philosophy, and related disciplines (from linguistics to comparative religions) been greater or of more practical value.

It is recognized that the humanities do not need the same degree of funding as the STEM, however, when adjusted for inflation, the NEH budget today is roughly a third of what it was 30 years ago. There are other sources of funding for humanities and social science research including fellowships and private foundations. Library resources and academic publishing are also critical for support of humanities and social sciences scholarship.

- **Universities themselves are the second largest provider of funds for research in academic institutions (second to federal funds).** For example, the support provided by institutional funds increased steadily between 1972 (12 percent) and 1991 (19 percent) but since then has remained fairly stable at roughly one-fifth of total academic R&D funding.

- **Characteristics of successful grant applications:** A survey of funding mechanisms, particularly in the STEM and health sciences, indicates that when competing for grant applications, in addition to the proposed work itself, the following characteristics are considered: strength of the applicant, significance of the approach as it relates to addressing societal issues, innovation of the idea and technology, and the strength of the environment. Thus at the institutional level, funding success requires:
  - Recruitment and retention of quality researchers/scholars
  - The advancement of research goals with the potential for societal impact (translation)
  - Access to state-of-the-art technology
  - The presence of supportive institutional infrastructure and a strong intellectual environment in the research area

### Publication Measures

- **A key indicator of institutional scholarship across all disciplines is the number and impact of publications.** Different types of publications are valued differently across disciplines (e.g., journal articles vs. books vs. conference proceedings). For these reasons, scholarship goals and needs should be determined according to best practice in each discipline.
  - In science and technology, the number of research articles published in international peer-reviewed journals has grown from about 460,200 in 1988 to an estimated 788,300 in 2009. A large portion of U.S.-published articles focused on the biomedical and other life sciences.
  - Publications in the humanities and social sciences: the number of new academic humanities titles that were published between 2000 and 2005 doubled (Blackwell’s Book Services is used an indicator because it is a major supplier of books and bibliographic support products to colleges and universities, and collects extensive data on the content and price of titles the company recommends for acquisition by academic libraries). The

85 [http://old.library.jhu.edu/researchhelp/humanities/grants.html](http://old.library.jhu.edu/researchhelp/humanities/grants.html).
86 [http://www.humanitiesindicators.org/content/hrcoIV.aspx](http://www.humanitiesindicators.org/content/hrcoIV.aspx).
book remains the primary means by which humanities scholarship is disseminated. Moreover, while the natural and social scientific communities place considerable emphasis on journal publications, academic employers in the humanities continue to focus on book publications in gauging humanities scholars’ productivity.\(^8^9\)

- The changing face of publishing in a digital world: The availability of digital media and technology and the high cost of publishing with already established publishers have led to a rapid increase in the number of new online journals. In established journals, publishing time between submission and online access to the ahead of print publication has also decreased significantly in the last 10 years because of online submissions and review of articles. Because most publications are published in a peer-review system, there has been an increased burden on faculty/professors who are editors and reviewers as a part of their professional service.

- Providing researchers with access to scholarly sources as well as preserving access datasets is becoming increasingly important for research libraries.\(^9^0\)

| Interdisciplinary Trends and Research in the Fundamental Disciplines |

**Collaborative and multidisciplinary focused research groups based on existing research strengths and social needs have increased within universities.** A survey of universities/colleges with demonstrated research growth has revealed the application of evidence-based approaches for identifying and cultivating existing areas of research strength that meet societal demands, are sustainable and can be implemented using available institutional resources. Implicit in this approach is the recognition that most institutions cannot afford to heavily invest in research in all areas and that, in the current academic climate, research excellence in any given area requires critical mass in terms of the faculty, resources, and infrastructure investments by the institution. The value of this approach is perhaps best described by the University of Cambridge which states that it: 1) creates a destination for outstanding faculty members; 2) creates opportunity for collaborative partnerships both within and outside the university; 3) permits consolidation of resources within areas of focus thus creating greater return on research investment; 4) leverages complement expertise; and 5) increases the likelihood of extramural funding.\(^9^1\)

**As a result of rapid advances in technology as well as the recent emphasis on translational research there has been a recent trend for institutions to establish and foster collaborative and, in some cases multidisciplinary, research groups or clusters.** This practice is consistent with recent initiatives by funding agencies such as the NIH that provide opportunity for research centers and for multiple-investigator (multi-PI) projects.

At the institutional level, the establishment of strategically constructed thematic research groups/centers has a number of benefits including:

- Resource consolidation
- Leveraging complementary expertise and technical skills to create new opportunities
- Strengthening the intellectual research environment in a thematic area thus facilitating recruitment, retention and extramural funding
- Increasing the capacity to engage translational research with societal impact
- Providing opportunity to enhance institutional reputation through distinction in targeted areas.

Notably, the establishment of effective centers/research groups requires strong individual research programs. Thus, while targeting resources towards new collaborative research initiatives is important for

\(^8^9\) [http://www.humanitiesindicators.org/content/hrcoIVD.aspx#topIV12](http://www.humanitiesindicators.org/content/hrcoIVD.aspx#topIV12).

\(^9^0\) [http://www.oclc.org/research/activities/datacuration.html](http://www.oclc.org/research/activities/datacuration.html).

\(^9^1\) [http://www.cam.ac.uk/research/about/strategic-initiatives-networks/](http://www.cam.ac.uk/research/about/strategic-initiatives-networks/).
building centers, it is critical to continue to support successful individual research programs, since these programs will serve as the backbones for collaborative initiatives. For example, all federal center/program grant initiatives require the existence of established thriving Principal Investigator (PI)-based research programs. A recent NSF project reviewed the conditions necessary for facilitating collaborative, interdisciplinary research, arguing that systematic reform of practices, rather than piecemeal implementation, is necessary to fully realize the potential of interdisciplinary centers.  

**Establishment of centers and institutes within a university are increasing worldwide.** This is in line with the establishment of strategic areas of focus within a university. These centers and institutes also provide targeted causes for fund raising within a university. Many are named according to a specific cause or focus that can be funded (e.g. cancer center, or neurological disease or depression institutes).

**Major emerging areas of research include:**

- Digital humanities
- Some current themes for funding identified by the European Commission of Research and Innovation in the Socio-economic Sciences and Humanities include: growth, employment and competitiveness in a knowledge society; sustainability, environmental challenges, demographic change (gender, ageing), migration and integration, quality of life, and global interdependence; future implications of global knowledge, migration and ageing.
- Interdisciplinary research within and between both humanities and STEM is increasingly common as a strategy to address major societal problems.
- Translational and clinically significant research that has an impact on society/economy has become more important. This is evident in several ways: (1) the funding of Clinical Translational Research Institutes (CTSI) and other institutes and centers devoted to a focus area throughout the U.S., which bring together collaborators in research from difference institutions within a region and across disciplines to solve clinically relevant problems; (2) a change in the scoring system for NIH funding which is now heavily weighted to the potential impact of an application; (3) the increase in rejection rates of many top journals to increase the number of high impact publications and also increase the impact factor of the journal (e.g. many of the journals published by the American Physiological Society). A recent editorial emphasizes the trend and importance of translational research.
- The National Humanities Center has established an online forum, *On the Human*, for humanities and scholars to share their ideas and research.
- The increasing importance of research within universities is transitioning how universities function to allow greater international focus. Several characteristics of how universities are changing include: increased emphasis on a global mission, increased research intensity, new roles for professors, diversified funding, worldwide recruitment, increasing complexity, new relationships with government and industry, and global collaboration with similar institutions.

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<th>Student Involvement in Research</th>
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**Integration of Undergraduate Education with Research:** Many research active universities sponsor summer undergraduate research programs and school year research fellowships. Undergraduate research

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95 [http://jap.physiology.org/content/111/2/333.full.pdf+html?sid=dee27c1d-6a74-4e12-8174-e578fba99b85](http://jap.physiology.org/content/111/2/333.full.pdf+html?sid=dee27c1d-6a74-4e12-8174-e578fba99b85).
programs have increased significantly in both STEM and humanities areas in the last 20 years. Examples include: Boston University, University of Oregon, Medical College of Wisconsin, to just name a few. Resources to support summer research typically consist of combinations of internal and extramural funding. Extramural funding is available through a number of federal agencies (e.g., NSF, and NIH). Funding mechanisms commonly support summer research experiences. However, extramural support mechanisms for undergraduate education from many funding agencies such do not typically provide means for institutions to provide opportunities to their own students but rather distributes students to participating sites across the country.

While student research is identified as a high-impact practice for undergraduate education, it is not solely an undergraduate issue. For example, community-based participatory research has been utilized as a platform for engaging high school, undergraduate, graduate and professional students. Graduate student research is funded through a variety of mechanisms, including support via faculty grants in the STEM disciplines, training grant programs, small grants from professional societies targeted specifically for students and university funds.

### Research Costs

- **Univessities themselves are the second largest provider of funds for research in academic institutions (second to federal funds) and these are critical for sustaining research programs and retaining faculty.** In addition to start-up packages and other recruiting needs discussed previously in the faculty and staff section, universities are increasingly expected to provide seed money for investigators, and new initiatives before external funding is successful. Additionally, institutions are providing bridge funding mechanisms for researchers to ensure continuous support between grants and sustainable research programs due to the increasing challenges of maintaining external funding. Typical bridge funding amounts for the STEM sciences are in the range of $20,000 to $50,000. Administration of these funds is typically conducted through competitive processes managed internally via advisory boards at some institutions (see e.g., the Medical College of Wisconsin) or via the Office of the Vice Provost/President for Research. A number of universities centralize the application process but require college and/or departmental cost sharing and, in at least one case, repayment through future returned indirect costs. To the extent that sustainable programs are established, retention of faculty is often a concern, especially at smaller/mid-sized institutions with limited resources and infrastructure and high teaching demand. At many universities this has been address by salary increases, teaching reductions and endowed chair positions for successful scholars.

- **Balancing teaching-scholarship:** Demanding teaching loads (3/3 in some disciplines) and service can be prohibitive to productive research in humanities and the sciences. Institutions with the highest

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99 For example, Sigma Xi provides competitive grant funds for students, [http://www.sigmaxi.org/resources/student/index.shtml](http://www.sigmaxi.org/resources/student/index.shtml).

100 See, for example, [http://www.wmich.edu/grad/funding/gradstudent_research_fund.html](http://www.wmich.edu/grad/funding/gradstudent_research_fund.html).

101 [http://www.washington.edu/research/oa/seedfunding/Seed_Funding/seed_funding.html](http://www.washington.edu/research/oa/seedfunding/Seed_Funding/seed_funding.html) and [http://www.research.uci.edu/funding/bridgefunding.htm](http://www.research.uci.edu/funding/bridgefunding.htm) provide typical examples.

102 [http://www.mcw.edu/ia/aboutmcw/advisoryboards.htm](http://www.mcw.edu/ia/aboutmcw/advisoryboards.htm).

103 University of Illinois-Chicago policy, [http://tigger.uic.edu/depts/ovcr/research/funding/Seed_Funding/ovcr_bridge.html](http://tigger.uic.edu/depts/ovcr/research/funding/Seed_Funding/ovcr_bridge.html).

research activity usually have lighter teaching loads for faculty than low research activity universities, although work-load accountability has been under scrutiny in recent years.105

- **Research space at academic institutions has continued to grow annually over the last 20 years and at greater rates for the biological/biomedical sciences and agricultural sciences.** Total research space at research-performing universities and colleges was 3.5 percent greater at the end of 2011 than it was in 2009, continuing a two decade long period of expansion.106 The rate of annual increase for all S&E fields combined in the 2001–03 period was 11 percent, but it has gradually slowed since then. Unlike in other fields, in recent years research space for the biological/biomedical sciences and agricultural sciences has continued to expand at substantial rates.

- **Indirect costs of federally funded grants is reinvested into the researcher and the environment to promote research growth:** 75 percent of the federal funding in research covers direct research costs which include salary, equipment, supplies, and other materials directly related to research. The remaining investment reimburses for the indirect costs of research, including the construction, maintenance, and operation of research facilities and administrative expenses associated with financial management, review boards, and safety/compliance. These indirect costs are referred to as facility and administrative costs. F&A rates at are determined by dividing F&A costs by modified total direct costs. For academic institutions and depending on the funding agency and discipline, F&A rates are typically close to 50 percent.107 The 2000 analysis of the Office of Science and Technology policy indicates that indirect costs are real expenses, that university indirect cost rates are typically lower than for other research institutions, and that lowering the rate would negatively impact the abilities of universities to conduct research.107

- **Many research programs have the possibility of generating intellectual property that can be patented by the institution and licensed to companies for application.** In addition to providing potential revenue sources, many institutions see this process as a potential avenue for moving findings generated in academic research into societal application, a goal that is often mission-compatible. Institutional support for these efforts is important for attracting top faculty and students. Technology transfer infrastructure is typically distributed over many areas of the university and requires resources for faculty and students who are typically most heavily involved in early phases of technology commercialization.108 Licensing revenue in the top 20 ranked universities ranged from $180 million to $17 million in 2010.109 In 2011, U.S. universities were the source of 591 new commercial products and the formation of 670 new companies.110 The Bayh-Dole act encourages universities to commercialize innovations that arise from federally funded research.111 One of the major challenges today in evaluating university technology transfer efforts, including understanding cost and return on investment, is the lack of standardized data and complete reporting.112

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112 The Brookings Institute, http://www.brookings.edu/~media/Research/Files/Papers/2012/12/05_percent20techtransfer_percent20west/DarrellUniversity_percent20Tech_percent20Transfer.pdf.
Financial Issues and Budget Models

Diversifying Revenue Streams

A wide range of potential revenue streams for universities range from business ventures (custom publishing, licensing intellectual property, providing consulting services, parking and catering, etc.); continuing education and training services (including online offerings, adding high-demand majors, summer programs for children or for international students); implementation of cost savings and cost sharing options; facilities rental and other real estate ventures; and fundraising.  

Trends in Philanthropic Support of Universities

Charitable contributions to colleges and universities in the United States increased 8.2 percent in 2011, reaching $30.30 billion, according to results of the annual Voluntary Support of Education (VSE) survey.\(^{114}\) Adjusted for inflation, giving increased 4.8 percent over 2010.

- Giving to higher education institutions is just $1.3 billion from its historical high of $31.6 billion, reached in 2008.
- Corporate giving made up almost 17 percent of total contributions to higher education.
- Individuals – alumni and non-alumni individuals – gave 44 percent of total gifts to higher education institutions in 2011.
  - Alumni giving totaled $7.80 billion or slightly over 25 percent of total gifts to higher education.
  - Non-alumni individuals gave $5.65 billion or over 18 percent of gifts to colleges and universities.

Wealthier donors favor restricted gifts to universities, according to results of a study of more than 260 affluent donors with investable assets of more than $1 million, conducted by Forbes and Credit Suisse.\(^{115}\)

- Almost 70 percent of donors with $1 million to $5 million in investable assets said they would prefer to give unrestricted gifts compared with about 45 percent of donors with $50 million or more who said they would prefer to make unrestricted gifts.
- 23 percent of donors don't consult with anyone for advice on where to give, and 21 percent said they consult with fellow philanthropists.
- Return on investment is important: Forty-four percent of donors said they were willing to wait less than 10 years for a return on their philanthropic investment, 33 percent said they'd wait from 10 to 19 years, 9 percent said they'd wait 20 years and 15 percent said they'd wait “beyond a lifetime.”

At a 2011 Conference given by the Council for Advancement and Support for Education, speakers suggested that alumni giving rates are not going to rebound -- and that a big reason why can be found in young alumni, and in the strategies colleges use to woo them.\(^{116}\) The speakers analyzed data from Blackbaud, a software company that works with colleges on fund-raising, and that conducts annual


analyses of fund-raising trends in various groups of colleges, including those in the Big Ten and Big 12 athletic conferences (groups dominated by large public institutions) as well as a sampling of private colleges, mostly in New England.

- The data suggest that younger alumni are giving at lower rates, and are more difficult to retain as donors -- even when compared to those who graduated just a decade earlier.
- Among the Big Ten/Big 12 group, only 4.1 percent of alumni who graduated 2000-2009 gave in 2010, compared to 6.3 percent who graduated in 1990-99. Giving rates were higher among the private college group studied, but still showed a decline among recent alumni: 17 percent for the most recent decade and 18.8 percent for the 1990s graduates.
- The Blackbaud data suggests that most of those alumni who do give don’t do so the next year. Only 42 percent of those who graduated in the last decade in the Big Ten/Big 12 group did so, and only 48 percent in the private college group did so.\(^{117}\)
- A key reason that colleges focus on small gifts from young alumni is that one part (admittedly a small part at 5 percent) of the U.S. News & World Report methodology for ranking colleges is the alumni giving rate. That rate would credit a college more for getting a bunch of $10 donors than identifying and winning over those capable of giving more.

A report on student debt and alumni giving by the nonprofit American Student Assistance, found that approximately \(\frac{1}{4}\) of respondents contribute to their alma mater.\(^{118}\) Other findings included:

- Recent graduates are less likely to contribute to their alma maters than earlier graduates.
- Alumni giving tends to vary by major. Graduates who majored in business and engineering are more likely to contribute to their alma mater than alumni who majored in other disciplines.
- Graduates currently enrolled in a full-time graduate school program are less likely to contribute to their alma mater.
- Graduates in marriage/partnership relationships are more likely than single people who are more likely than divorced/separated alumni to contribute to their alma mater.
- Alumni giving tends to vary by race; non-Whites are more likely to contribute to their alma mater than Whites.
- The data suggest that working for pay during the academic school year tends to decrease alumni giving. The relationship between working for pay during the academic school year and decreased alumni giving is more pronounced among those who did not borrow money to fund their undergraduate education.
- Who assumes responsibility for the repayment of undergraduate loans may be more important in predicting giving behavior than whether debt was incurred; graduates responsible for their own loan repayment are less likely to contribute to their alma mater than graduates who either have no loans or are not responsible for their loan debt repayment.
- Respondents with higher loan amounts were less likely to contribute to their alma mater than those with lower loan amounts. The amount of monthly undergraduate loan debt repayment influenced alumni giving; alumni with higher monthly undergraduate loan debt repayments are less likely to contribute to their alma mater than those with lower monthly debt repayments.

A July 2012 article in the Chronicle of Higher Education discussed the trend of alumni who want to make a charitable gift now being more inclined to do so in their wills.\(^{119}\) Development officers

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contacted by *The Chronicle* say planned giving typically makes up 20 to 40 percent of philanthropic revenue on most campuses. Bequests traditionally account for 70 percent of planned gifts, but fund raisers say the figure has risen to 85 to 90 percent in the wake of the downturn.

- In the past two years, Georgetown University has twice reached new heights in the number of bequest intentions, or announcements by donors that they have included the institution in their estate plans. The University of Colorado Foundation has nearly doubled its pipeline of planned bequests over the past three years, from over $105-million to $191-million.

Marquette University competes with peer institutions in terms of annual tuition and fees and *U.S. News & World Report* rankings, despite having a smaller endowment.

<table>
<thead>
<tr>
<th>Institution</th>
<th>2011 Endowment</th>
<th>Annual Tuition &amp; Fees</th>
<th>US News Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notre Dame</td>
<td>$6.38 billion</td>
<td>$42,971</td>
<td>17</td>
</tr>
<tr>
<td>Boston College</td>
<td>$1.76 billion</td>
<td>$43,878</td>
<td>31</td>
</tr>
<tr>
<td>Georgetown</td>
<td>$1.16 billion</td>
<td>$42,870</td>
<td>21</td>
</tr>
<tr>
<td>Saint Louis U.</td>
<td>$880 million</td>
<td>$35,246</td>
<td>92</td>
</tr>
<tr>
<td>Holy Cross</td>
<td>$607 million</td>
<td>$43,400</td>
<td>29*</td>
</tr>
<tr>
<td>Fordham</td>
<td>$458 million</td>
<td>$41,732</td>
<td>58</td>
</tr>
<tr>
<td>Marquette</td>
<td>$401 million</td>
<td>$33,244</td>
<td>83</td>
</tr>
</tbody>
</table>

The following are various types of university budget models, summarized from Goldstein, Larry, (2005) *A Guide to College & University Budgeting Foundations for Institutional Effectiveness - 4th edition, NACUBO.*

- **Centralized Budgeting**
  Institutional budgets are increased and or decreased are prioritized by faculty members and top administrators within a committee that then recommends allocations of resources to units. This is a top-down method with a structure that facilitates broad strategic planning and avoids mission shift with the university.

- **Incremental Budgeting**
  The previous year’s budget is used as the base budget for the upcoming fiscal year. Changes to the base budget are allocated on percentage increments of available resources.

- **Zero Based Budgeting**
  The process involves examining all or some programs and activities during the budget development cycle to ensure all units contribute to the institution while expensing the appropriate

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amount of resources. All units must justify expenses in the budget building cycle. Support for strategic planning is limited.

- **Responsibility Center Budgeting**
  This process classifies programs and units as revenue or cost centers. Revenue centers are in control of the revenue they generate and are responsible for covering all indirect and indirect expenses, including the costs generated by cost centers. Strategic initiatives could be funded via a tax or fee on generated revenues.

- **Special Purpose Budgeting Methodologies:**
  - *Initiative-based budgeting*
    Initiative based budgeting focuses on the identification and funding of activates that support established priorities through a comprehensive process.
  - *Performance based budgeting*
    This budgeting process allocates resources based on a unit's or program's success in meeting established goals and or targets. Process may limit funding to units that need additional funding to get back on track / successful.

Although there are several budget modules to choose from a university should select a process that will allow for the following:

- Annual program review of various units focusing on: performance, profitability, outcomes, and future competitiveness
- Reallocation of resources
- Transparency
- Provides needed resources to develop and support strategic initiatives
- Competitiveness in a changing environment

### Regulatory and Governance

<table>
<thead>
<tr>
<th>Accreditation</th>
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Marquette’s institutional accreditation is through the North Central Association of Colleges and Schools, The Higher Learning Commission. A number of academic programs are accredited through specialized accrediting agencies.\(^{120}\) It should be noted that external listings may not be complete – the U.S. Department of Education recognizes only some of the accreditors that are recognized by the Council of Higher Education Accreditors. ABET and AACSB are two important CHEA-recognized accreditors not recognized by USDE.

<table>
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<tr>
<th>Compliance</th>
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Compliance is a growing area of attention on university campuses. The Higher Education Compliance Alliance draws upon 27 different higher education associations to provide centralized information and resources related to federal laws and regulations. Areas identified by the alliance (as entailing compliance efforts include: Accounting, Accreditation, Affirmative Action, Americans with Disabilities Act & Section 504, Athletics, Campus Safety/Clergy Act/Crime and Fire Reporting, Conflict of Interest Policies, Copyright & Fair Use, Donors and Gifts, Environmental Health and Safety, Export Controls, Federal Sentencing Guidelines, Financial Aid, Foundations and Affiliated Enterprises, Governance, Grants Management, Health Care & Insurance, HEOA Compliance Obligations, Human Resources,

\(^{120}\) [http://www.marquette.edu/about/accreditation.shtml](http://www.marquette.edu/about/accreditation.shtml)
Immigration/International Students and Employees, Information Technology, Social Media, and Web 2.0, Intellectual Property and Technology Transfer, International Activities and Programs, Lobbying and Political Activities, Privacy/Student Records, Program Integrity Rules, Research, Sexual Harassment, Tax Compliance, and Telecommunications.

### Institutional Governance

The American Association of University Professors (AAUP) has promoted shared governance, focused upon ensuring appropriate faculty participation in institutional decision making. Selected AAUP resources are listed below.

- Resources on governance: [http://www.aau.org/AAUP/issues/governance/gov-resources.htm](http://www.aau.org/AAUP/issues/governance/gov-resources.htm).

The AAUP also provides recognition for strong shared governance models; Santa Clara University earned this distinction in 1999.

### Mission – Catholic and Jesuit Higher Education

Catholic universities share challenges and opportunities with other private and public institutions. An important challenge for Catholic higher education today is hiring for mission, with fewer religious serving in faculty and administrative roles. The Association of Catholic Colleges and Universities (ACCU) emphasizes the need to infuse Catholic Social Teaching across the curriculum, support faculty research in CST areas, and create a supportive campus culture. Specific themes addressed in the ACCU vision statement include the economy and dignity of work; the environment; migration; gender, racial and ethnic discrimination; peace; and human rights.

The 28 U.S. Jesuit colleges and universities share a common understanding of their mission, as articulated by the presidents of these institutions. Rev. Peter-Hans Kolvenbach, S.J., has noted that “as Jesuit higher education, we embrace new ways of learning and being formed in the pursuit of adult solidarity; new methods of researching and teaching in an academic community of dialogue; and a new university

122 [http://www.aau.org/AAUP/about/awards/brown.htm](http://www.aau.org/AAUP/about/awards/brown.htm).
way of practicing faith-justice in society.”

127 Jesuit higher education has a commitment to internationalization; 128 the Jesuit distance education network (JesuitNet) is a collaboration designed to share online resources nationally and internationally. 129 Globalization offers opportunities as well as challenges for Jesuit universities today; Rev. Adolfo Nicolás, S.J., discusses some of these challenges in his 2010 address at Mexico Conference on Networking Jesuit Higher Education: Shaping the Future for a Humane, Just, Sustainable Globe, highlighting the need to explore three key areas: promoting depth of thought and imagination; rediscovering universality in Jesuit higher education; and renewing the Jesuit commitment to learned ministry. 130 The “frontier challenges” identified in the April 2010 report on the Mexico conference are theology, science, and culture; markets, inequality and poverty; ecology and sustainability; and human rights and civic responsibility. 131

AJCU data is published on an annual basis, and gives a snapshot of the Jesuit higher education landscape. 132

Opportunities and Challenges in Jesuit Higher Education

Creatively Catholic
The data from national and campus-specific studies of student religious experience, coupled with declines in church attendance and engagement, underscore the need for Marquette to claim its Catholic identity in ways responsible to but slightly different from dioceses, parishes, and other ecclesial entities. Student concerns regarding issues of social justice, sexuality and relationship, and community mark their responses and call for an increased attentiveness to sharing the Catholic tradition in ways that meet them in their areas of concerns. Presumably such re-engagement of students will also bear fruit for Catholic lay leadership in the future.

Environmental issues are of particular concern for students. Though statements and efforts by the Church and the Society of Jesus to address ecological issues are now gaining momentum and strength, they have heretofore lagged behind their secular counterparts in this regard. A concerted and increasing effort to communicate the Catholic tradition of inquiry and an experience of thoughtful Catholic community will be essential for Marquette’s distinctiveness and authenticity in the future.

Interfaith and Ecumenical
The world around Marquette has become increasingly interfaith and ecumenical, enriching students with a new awareness of the place of faith and spirituality in the human experience. Religion informs not only personal experience, but often political and social decision making as well – and many U.S. citizens have very little knowledge of the breadth of religions that populate the globe. At the same time, religious intolerance is a growing problem, locally and internationally, and the increase in conflicts among religious groups gives little credence to the peaceful purposes of faith. The ability to see ecumenical and interfaith competency as a constitutive element of Marquette’s Catholic identity will be an important focus area for the university.

129 http://www.ajcunet.edu/Jesuit-NET
132 http://www.ajcunet.edu/Fact-Files-2010-2011-Executive-Summary
Both the possibilities and the problems associated with religious expression compel us to form students who are literate and conversant in the traditions and underlying assumptions of the world’s faiths, skilled at the practice of interreligious dialogue and community building, and committed to the creation of a religiously diverse world that moves beyond tolerance to community. These abilities are essential for all students, whatever their religious traditions, to function effectively in a globalized world and to glean the best of their Jesuit education, which places a strong emphasis on intimate knowledge of and respect for cultures.

Engaged with Hispanic Communities
The demographics for college students in the United States, and in Marquette’s principal recruitment regions, are trending strongly in the direction of an increase in Hispanic/Latino students. Similarly, the statistics on Catholics in America and in Catholic elementary and high schools (feeder schools for Catholic Universities) reflect a growing Hispanic membership. Locally, the longtime existence of Nativity Jesuit Middle School, Casa Romero Renewal Center, and St. Patrick’s Parish represent important commitments of the Society of Jesus and its members, and there is currently underway a feasibility study to explore the possibility of a Cristo Rey Network school proximate to the Marquette campus. These indicators suggest the need for Marquette to invest more intentionally in its identity as a university dedicated to the needs of Hispanics and to address the recruitment, retention, and attainment of Hispanic undergraduate and graduate students.

Cultivating Leadership
A marked cultural decline in the trust placed in institutions – governmental, for-profit, and religious – is part of the landscape external to Marquette. Scandals in the banking industry, business, the Church, and other foundational institutions of American life have placed the importance ethical and courageous leadership at the forefront of the nation’s needs. Though they are under increasing pressure from parents and legislatures to account for accelerating tuition and curricular relevance to the marketplace, universities remain among the most trusted of America’s large institutions. Thus the responsibility upon them to produce competent and conscientious leaders for the future is great.

In the Marquette context this responsibility is magnified by national and international calls in Jesuit higher education to cultivate “woman and men for others” who exhibit a “well-educated solidarity with the poor” through a “depth of faith and imagination.” In one sense, the tradition of developing leaders is nothing new in the Jesuit educational tradition. What has grown, however, is the emphasis on leadership as an expression of faith in relationship with poor and excluded communities. This stress on the relationality of Ignatian leaders implies a different kind of leadership education than that which might be available in other institutions.

Global for a Purpose
Other subcommittees engaged in external scanning are addressing global needs in a more granular way. In addition to the very legitimate concern for education students who will function in a global and increasingly connected world, Marquette’s external mission partners stress the need to engage global issues in a deep manner that does not smack of colonialism or encourage students to engage merely as tourists on the global stage. The need for global sensitivity and a reflection on one’s place in a globalized world is indicated.

Committed to Service and Justice
Service has long been a hallmark of the Marquette undergraduate experience, and it is a tradition to be preserved and advanced. The aforementioned emphases on relationship to the Milwaukee community, global engagement, ecumenism and interfaith understanding, and leadership call for a review of Marquette’s service commitments in light of changing realities and an expanded notion of service.
Specifically, a university response to the external scan would indicate the need for more diverse service experiences, including global immersions with marginalized communities and immersion experiences in the city of Milwaukee. It also evidences a need to educate faculty more deeply on the needs of the local community and to link, in mutually enriching ways, Marquette’s efforts in applied research to the most pressing local and global needs. This research would presumably benefit from student participation and assistance, thereby offering students the opportunity to see the links between academic research and real-world effects.

### Infrastructure

**Infrastructure Decision-Making Trends**

A review of the trends indicated seven key themes that apply to infrastructure decisions for campuses who are considering new build or renovation.

1. **Flexibility:** Whether it be the collections or the student union, or the classroom, flexibility is key. There has been a shift from buying materials just-in-case to resource sharing and access just-in-time. Flexible buildings with more open spaces and minimal interior walls allow for various configurations of seating, tables, and technologies to provide a learning environment for students to consume and to create information. A key trend is that fewer spaces with be dedicated to specific functions. Blended learning environments are the norm and students say that these environments best support how they learn. The most competitive and attractive higher-education institutions will be “brick and click” allowing for the convenience, ease and freedom of online services, physical spaces where students can interact with others and obtain exert advice and assistance face-to-face is also valued. Wireless connectivity and readily available easy to use audio visual systems are becoming the standard for all buildings. Residential and recreation buildings and outdoor spaces are included in the trend toward flexible, multipurpose space. Flexibility is also important in research space. Multidisciplinary research will require space that can be configured for specific projects and then reconfigured as new efforts occupy the space.

2. **Variety:** While flexibility will allow campuses to utilize space in a number of ways, variety of seating, tables, technologies, living spaces, and even food are key trends. Classroom furnishings that allow for a variety of groupings is key as teaching and learning incorporates more experiential and hands-on learning opportunities. Students are looking for a broad variety of study spaces and configurations to meet their needs. While studying independently in quiet areas will be preferred for some subjects and examinations, areas that allow for quiet conversations or parallel study in the presence of others (study cafes) are very popular with college students. The “Learning Commons” model has become a popular concept with students not only in libraries but in all campus buildings. Students are charged with creating knowledge for presentation to their peers and student rooms equipped with white boards and smart boards allow smaller groups of students to collaborate without intruding on other students. Like their learning spaces, students want an array of choices in their living spaces, as well. Single rooms, suite style living and bathrooms shared with 2-4 peers have moved to the top of the construction lists for colleges and universities. Students like brand food vendors and like to view their food being prepared to ensure it is fresh. Variety extends to recreation as student rec centers typically include flexible multipurpose court space which can accommodate several different activities.

3. **Sustainability:** The green movement has taken hold across higher education. From lifestyle choices to transportation and energy consumption, students and faculty are demanding that universities look at sustainable solutions. Libraries are shifting from increasing collections to ensure availability (just-in-case) to sharing resources and access through consortia arrangements.
and electronic media (just-in-time). Concerned with waste and the cost of utilities and natural resources, colleges and universities are greening their buildings during new construction and renovation. Elimination of dining area trays, the promotion of refillable drink containers, single source recycling, and metering systems that charge students a utility fee for excessive consumption are trends to reduce costs and maintain natural resources.

4. **Portability/Mobility:** As students bring portable devices (cell phones, laptops, and tablets) to campuses, colleges and universities are working to maximize access while maintaining security. Although the usability afforded by larger screens and keyboards of laptops trumps the portability offered by tablets, the line between the two is beginning to blur. New approaches for serving this mobility range from distributed antenna systems to amplify wireless signals of all types to cloud computing and alternative sourcing arrangements that are earmarked by new and poorly understood security characteristics. While e-books and mobiles are on the near-term horizon, within the next few years, other technologies expected to gain widespread uses include augmented reality, game-based learning, gesture-based computing, and learning analytics. With the continued expansion of satellite campus locations and study abroad programs, universities are stretching to help students with technologies that can communicate back to the main campus.

5. **Accessibility:** Students expect their student unions, and their campuses, to be the “city that never sleeps,” expecting 24/7 access to copying, food, ATMs, recreation, study space, lab space, and other services. Students also report that their academic success is underpinned by email and face-to-face interactions and a course/learning management system. And, although some students would like to have text access with their faculty, students indicate they prefer social media to be used for connecting with friends and family.

6. **Customizable/Individualized:** Student populations are more diverse with individualized educational goals and learning styles. Just as these diverse students seek a variety of learning spaces that allow for individualized, collective, or collaborative study, they are also looking to new technological developments to aid in their learning. E-books that contain digitalized graphics, videos, and other source materials will allow for new ways of teaching and learning. Customized tutoring and counseling programs continue to expand as students with specialized needs seek accommodation.

7. **Health and Safety:** As the focus of higher education is shifting from teaching to learning, the change in emphasis from institutional process to educational outcomes could signify a shift from valuing a degree earned to the competencies achieved or the skills attained. There is a growing trend for students to blend coursework from other universities into their degree programs, and numerous colleges and universities have even capitalized on the proximity of other institutions and formed articulation agreements that allow students to seamlessly transfer academic coursework between institutions. For colleges, like Marquette, which are located in urban areas, student movement between colleges, even within an urban campus, poses safety (and hence transportation) challenges.

Interesting examples of these themes include the consolidation (or fusing) of several functions into a single building, such as recreation and student life, and reimagining academic libraries to support the increased and increasingly varied use of those facilities.

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This environmental scan was prepared by the Marquette University Strategic Plan Coordinating Committee.

Committee charge:
The strategic planning Coordinating Committee is a working committee convened to gather information, feedback and input from across the university to help inform the creation of a university-wide strategic plan, and to scan the external environment for information and trends that will affect strategic planning decisions. The Coordinating Committee will not be writing the plan or setting priorities; the President and Provost are responsible for the final plan. Individual committee members were chosen for their specific expertise and skills. Work groups representative of a broad range of campus stakeholders will be convened by the Coordinating Committee and other members of university leadership throughout the planning year to ensure full representation of the diverse range of university perspectives.

Co-chairs
- Dr. Jeanne Hossenlopp, Vice Provost for Research and Dean of the Graduate School
- Thomas Ganey, University Architect

Members
- Dr. Margaret Callahan, Dean of the College of Nursing
- Octavio “Cas” Castro, Vice President of Human Resources
- Mary Rose Gietl, Undergraduate Student Representative
- Dr. Sandra Hunter, Associate Professor, Exercise Science, Academic Senate Representative
- Jay Kutka, Budget Director, Budget Office
- Dr. Marya Leatherwood, Assistant Vice President for Student Affairs
- Dr. John Mantsch, Chair and Professor, Biomedical Sciences
- Michael McChrystal, Professor, Law School
- David Murphy, Interim Vice President, Office of Marketing and Communication
- Megan Petrik, Graduate Student Representative
- Timothy Rippinger, Senior Associate Vice President of Development, University Advancement
- Dr. Stephanie Russell, Vice President for Mission and Ministry
- Dr. Jeff Snell, Special Adviser to the President
- Dr. John Su, Professor of English and Director of the Core Curriculum, Office of the Provost
- Inda Ugrina, Database Management Technician, Raynor Memorial Libraries
- Dr. William Welburn, Associate Provost for Diversity and Inclusion