

Helping Under-Resourced Students Succeed at the University of Notre Dame May 2023

CHARGE TO THE COMMITTEE

Higher education offers many students the opportunity to pursue their personal and professional goals in ways that prepare them to be successful in all aspects of their lives—intellectual, social, moral, and spiritual. They learn to wrestle with the pressing questions of life, to tolerate and function successfully with ambiguity, and to develop a moral compass that will guide them as they confront the challenges and opportunities that life inevitably brings.

Unfortunately, for a variety of reasons, all students do not have equal preparation for or access to a college education, especially at the most highly selective universities. For example, data indicate that under-resourced students¹ attend college in general, and highly selective colleges in particular, at much lower percentages than do students not falling into this designation. Disparities among students who major in disciplines in science, technology, engineering, and mathematics (STEM),² where women and racial and ethnic minorities are also under-represented, are especially high.

For many years, Notre Dame has attempted to reduce this unequal access by creating and implementing various programs that help under-resourced students. In general, these programs have been successful. For example, Pell grant students at Notre Dame graduate at one of the highest percentages among top 20 universities. However, Notre Dame lagged behind its peers in the percentage of undergraduate students who came from disadvantaged backgrounds. Recently, Notre Dame has made progress in this area. The first-year class of 2022-23 consists of 19% Pell eligible and/or first-generation students. The goal now is to maintain or increase this percentage while continuing to ensure that these students graduate and flourish at Notre Dame. In order to achieve this goal, Fr. Jenkins appointed a committee³ to “provide assistance in helping us think about further steps we at Notre Dame might take to enable our students from lower-resourced backgrounds to be as successful as they can be.” Specifically, he charged the committee “to assess current programs and resources at Notre Dame, review successful programs at other institutions, and submit a white paper with

¹ For the purposes of this paper, under-resourced students are those who are first-generation students and/or from lower socio-economic strata. First generation is defined as the first generation in a family to (potentially) graduate from a four-year U.S. college or university. Lower socio-economic strata is defined as having a family income that is less than the cost of attendance at Notre Dame. The committee recommends that this criterion be re-evaluated regularly.

² STEM is sometimes defined more broadly to include other mathematics-intensive disciplines, such as economics and finance, or even most or all social sciences. Notre Dame’s Office of Strategic Planning and Institutional Research has focused on science, engineering, and mathematics majors, and hence these are the areas for which we have data and which we have included in our definition of STEM. If additional analyses suggest that other disciplines should be included, the committee would support doing so.

³ The members of the committee are listed in [Appendix 1](#).

assessments and recommendations.” Though cognizant of the many areas of support that under-resourced students may need, Fr. Jenkins asked the committee to focus on helping these students to succeed academically. This white paper is submitted in response to Fr. Jenkins’ charge. The greatest academic challenge lies in the STEM disciplines and hence much of this report focuses on these disciplines, but attention is also given to increasing the recruitment and success of all under-resourced students regardless of their major or academic interests.

THE CHALLENGE

To better understand the academic challenge facing many under-resourced students, the committee asked the Office of Strategic Planning and Institutional Research (OSPIR) to share the data it has collected on the academic performance of under-resourced STEM students. OSPIR conducted their analyses on engineering students but plan to carry out analyses on science students in the near future. In terms of engineering students, the findings are as follows.

OSPIR analyzed, for the years 2015-2021, grade performance in representative entry-level engineering courses in the sophomore year as well as their first-year prerequisite courses in calculus, chemistry, and physics. Further, they compared the students’ actual grade performance to their expected grade performance given their academic preparation (math scores on SAT/ACT and the academic rating as assigned by the Office of Undergraduate Admissions). Under-resourced students performed lower than their peers in most first-year calculus and physics courses, which is largely accounted for by their level of academic preparation, with two exceptions: in Calculus III for Pell recipients and in Engineering Physics I for first generation students. In short, if two students were to enter Notre Dame with the same ACT/SAT score and academic rating, and one was an under-resourced student and one was not, the under-resourced student would have a lower grade more frequently than statistically expected but the other student would not. These lower grade performances in first-year courses are predictors for lower grade performance in sophomore year courses, where under-resourced students are more than twice as likely to receive a C+ or lower grade than other students.

These disparities, while present prior to the pandemic, have been exacerbated since the pandemic. There has been a significant increase in the withdrawals from first semester Calculus I/A courses, which, over the past two years, have risen from the mid-30s per year to more than 80 per year. Drop-out rates have increased in other areas as well. For example, the number of drops and failing grades among under-resourced students in Organic Chemistry II rose from 11 percent in the fall of 2019 to 34 percent in the fall of 2022, whereas the percentage for non-under-resourced students fell from 7 percent to 5 percent during that same period.

The data suggest that there are at least three major developments that may be contributing to the academic disparities in performance between those students who are under-resourced and those who are not. First, the level of preparation of students who are not under-resourced has continued to grow stronger and stronger, and hence the discrepancy between their academic preparation and that of under-resourced students has widened. For

example, approximately 80 percent of Notre Dame students in the general chemistry class now have Advanced Placement (AP) chemistry courses on their high school transcripts, and more than 50 percent of incoming engineering majors begin taking math at the Calculus II level or beyond. Not so with under-resourced students, some of whom have had access only to “integrated science” curricula or attended high schools that did not offer AP courses in STEM disciplines or had only pre-calculus as the terminal course in mathematics. In the past two years, under-resourced students were disproportionately affected when many high schools taught the most advanced course work online or had a significant number of substitute teachers in the classrooms.

A second challenge is that an increasing number of under-resourced students who had access to AP courses are being poorly advised in high school and as a result do not take the curriculum, including AP courses, that would best prepare them to meet the entry requirements for highly selective colleges and universities, and to succeed once they matriculate.

The third challenge is that the Office of Undergraduate Admissions (referred to as Admissions henceforth), in a post-pandemic environment, has less robust data about a student’s preparation for the academic challenges of college than was the case before the pandemic. This is due primarily to the fact that SAT and ACT tests are now “optional” and may remain so in the future. These tests, especially the quantitative tests, were very helpful in assessing a student’s preparation for STEM coursework.⁴

In short, the data suggest that due to multiple factors, many under-resourced students are struggling at Notre Dame, especially in STEM courses, as compared to other students, that this problem is getting worse over time, and that at least some of the factors contributing to it are not likely to change in the near future.

GETTING STARTED

As a first step in trying to identify how best to address the comparatively poor academic performance of under-resourced students, the committee created a comprehensive list of all the scholarship and academic support programs currently in place at Notre Dame. A listing and description of these programs is provided in [Appendix 2](#). While it is beyond the scope of our committee to evaluate each of these programs, we did review outcome data when they were available, as was the case, for example, for the Galvin Scholars Program and the Transformational Leaders Program.

As Appendix 2 indicates, Notre Dame has adopted or created a large number of programs to help address the academic challenges faced by under-resourced students. A

⁴ Analyses performed by the Office of Strategic Planning and Institutional Research, over multiple years, generated consistently strong correlations indicating that lower performance on SAT/ACT tests, and lower numbers of STEM Advanced Placement (AP) tests with scores of four or five, are predictive of attrition from the College of Science.

review of these programs has generated a number of major learnings; these are presented in the next section of this white paper.

In addition, the committee was able to review several excellent reports suggesting next steps the University might take to provide more and more effective support for under-resourced students. We draw the reader's attention especially to three: (1) "Transformational Leaders: Toward a New Framework for Student Support" by Rev. Hugh Page and Maria McKenna (2021); (2) a report from Huron Consulting benchmarking a number of institutions, including top private universities and HBCUs, regarding their approaches to supporting under-resourced students (2022); and (3) "Bolstering NextGen ND Scholar Programs at the University of Notre Dame: An Ethical Commitment to the Next Generation of Undergraduate Students" (in draft form, 2023) by Maria McKenna and Rev. Daniel Groody, CSC. A copy of each of these reports is [available here](#).

Clearly, our work should be seen as building upon the hard work and success of many others at Notre Dame.

MAJOR LEARNINGS FROM CURRENT NOTRE DAME PROGRAMS AND PRACTICES

To glean what major learnings⁵ were available from current academic support programs at Notre Dame, especially those aimed at supporting under-resourced students, committee members who led current Notre Dame programs gave us their assessment of what worked best in their programs, what was not working well, and what enhancements they would make to their programs if resources were not an issue. When outcome data were available, we gathered these data as well. If leaders of these programs were not on the committee, one or more members of the committee spoke with the program leaders to gather similar information. After discussing all of this information, the committee came to the following conclusions about what extant Notre Dame programs have taught us about our approach to evaluating and admitting under-resourced students as well as how best to support these students after they enroll.

- a. **Some under-resourced students flourish academically at Notre Dame without any special program needs.** These students may, for example, be first generation students or from lower SES strata but have had an excellent high school preparation and performed well in the classroom and, in some cases, on standardized tests. Others may have graduated from high schools that offer mathematics or science courses that are inadequate for college STEM majors but who excelled in non-STEM areas and are planning to pursue non-STEM majors at Notre Dame.
- b. **Students in STEM majors or other majors requiring significant quantitative skills are generally most in need of special academic programming or more flexibility in**

⁵ The Committee learned an enormous amount from studying Notre Dame programs and those at other universities. With some exceptions, we list those learnings that we consider the most thematic and strategic rather than those that were more minor or tactical in nature.

the University's core requirements if they are to remain in their major and succeed academically. The nature and timing of this special programming depends on the student and her or his major. Moreover, because of Notre Dame's educational philosophy as instantiated by its extensive core curriculum, STEM majors may also have special needs in non-STEM areas, especially writing. They may also need added flexibility in the core requirements, such as being able to take pre-calculus the first-year fall semester (rather than calculus) and then take Calculus I and II during the following spring and summer semesters. This is particularly important in some highly sequenced engineering majors for which successfully completing Calculus II by the start of the sophomore year is essential.

- c. **No one person or office has both a comprehensive knowledge of all of Notre Dame's current programs supporting under-resourced students and also the remit to coordinate the efforts of all relevant programs on campus.** As a result, the University is not as strategic, nimble, or effective as it might be in supporting under-resourced students. For example, some programs do not take advantage of the synergies they might have if they were combined with other programs, and some students are not receiving needed help that is available if only the student or the student's advisor knew how to access it.
- d. **Adequate financial aid is a sine qua non to enable a student to focus on academics and succeed.** For under-resourced students, "adequate" financial aid usually goes beyond the normal financial aid package and often includes financial aid for one or more of the following: internships, travel abroad, summer school courses, summer research, health insurance, and for students without a home to return to (e.g., homeless students, those raised in foster care, or international students who cannot afford, or politically are not able, to return home during semester breaks), funding to support themselves when the residence halls and student dining halls are closed.
- e. **Though the focus of many programs on campus is, appropriately, success in the classroom, it is clear that academic success depends on many nonacademic factors in addition to adequate financial aid.** These factors include a sense of belonging⁶; a belief that one can succeed; and more intense and broad guidance in preparing for job interviews and post-graduate employment or education. These factors have been built into many of our academic support programs, such as the Galvin Scholars, AnBryce Scholars, and Balfour Scholars programs; in fact, these factors are perhaps best achieved when they are part of academic support programs.

⁶ A "sense of belonging" is often facilitated when under-resourced students realize that there are other students like them at the university, and that they have the same ability to succeed as non-under-resourced students but might be struggling initially because of inadequate counseling and/or preparation in their high school experience. Ultimately, the best sign that under-resourced students feel that they belong at Notre Dame is when they are comfortable fully engaging with the campus at large.

- f. **A dedicated physical space where under-resourced students can meet, work together, drop in to see program advisors, and seek help when they do not know where to turn can be invaluable.** Notre Dame currently has a superb space dedicated to the Transformational Leaders Program and available to other students as well. Smaller spaces, such as those currently available to Galvin, Balfour, and AnBryce scholars, are also valuable, as are spaces for students who need writing support to work together, or students taking engineering courses to work together. Student feedback supports this assessment.
- g. **The outcomes of all Notre Dame programs are not formally evaluated and, when they are, the evaluations are often of uneven quality.** While Notre Dame has invested in many programs to help under-resourced students, the committee was disappointed to learn that many were not evaluated or, if they were, looked only at limited quantitative or qualitative outcomes. Whether programs are carefully evaluated or not appears to depend often on whether or not the Office of Strategic Planning and Institutional Research was invited to, and able to, work with the program on its evaluation scheme.
- h. **Until recently, the Enrollment Division has not been involved with or aware of the outcomes of programs aimed at helping under-resourced students.** As a result, it could not use the outcome data from these programs to evaluate past admissions decisions or help guide future decisions. While greater collaboration has begun, more can be done.

MAJOR LEARNINGS FROM PROGRAMS AT OTHER UNIVERSITIES

After examining the Notre Dame programs and activities designed to help students with under-resourced backgrounds, the committee examined programs that other universities have implemented to help these students. We were aided in this effort by benchmarking that had already been completed (e.g., by the Huron Consulting team and in the preparation of the ND NextGen paper). We supplemented past benchmarking by looking at additional universities or asking new questions of universities that had already been looked at in past benchmarking efforts. After identifying these programs, we usually contacted the program leaders through telephone or zoom calls to learn more about their programs. In several cases, we discovered that the other universities were still in the planning stage or had just implemented a new program but had no data on its effectiveness. Other universities had long-standing and carefully evaluated programs for under-resourced students. We gave the most attention to these programs. Because the programs at Princeton and Yale were so highly recommended to us—deservedly so, as we discovered—committee members conducted site visits to these universities. A listing and brief description of the programs we examined from other universities are provided in [Appendix 3](#).

The major learnings gleaned from our examination of programs at other universities, including our assessment of the programs' most noteworthy components, are summarized below.

Overarching Themes

- a. **An unavoidable conclusion from our discussions with other universities is that identifying, recruiting, and supporting under-resourced students is a priority at every university we contacted.** Even those universities with the most successful and comprehensive programs plan to do more in the years ahead, such as create programs to partner with local high schools and community colleges, and develop postgraduate programs to help under-resourced students better succeed in the workplace or in postgraduate education. It will not be easy or inexpensive for Notre Dame to successfully compete with other universities to attract these students, especially those under-resourced students with significant academic achievements and potential.
- b. **The approaches universities took to helping under-resourced students varied considerably both within a single university and among universities.** In short, no one "gold standard" emerged. It appears that there are multiple ways to help under-resourced students succeed and thrive. Moreover, because students themselves differ in temperament, background, and areas of strength and weakness, and because different majors require different skill sets, it is preferable for a university to have multiple programs, each designed to address specific challenges. Different students may need one or more of these programs at different points in their educational progression. Almost all universities indicated that under-resourced students need trusted mentors, advisors, or coaches to guide them in choosing the best support program to meet their specific needs.
- c. **Many nonacademic concerns could be singled out for their criticality in student success, but the one highlighted by virtually every university was the need for adequate financial aid.** This point was also learned from our review of Notre Dame's programs, as discussed earlier. It is repeated here because of the emphasis it received at virtually every university we contacted.
- d. **A critical learning from our examination of programs at other universities (and at Notre Dame) is that it is essential for a university to determine which students it can help and which it cannot, and to make admissions decisions, as difficult as this can be, accordingly.** For example, after examining all the information available to it, the committee concluded that it would be extremely unlikely that a student who did not have at least pre-calculus and physics in high school could currently succeed in engineering at Notre Dame, although this student might have the background that would allow her or him to succeed in a non-STEM major. The committee believed strongly that Notre Dame should admit only those students the University was

confident could, assuming they took advantage of support programs available to them and applied themselves fully, be successful.

Academic Support Programs

- e. All or most programs we examined reported up through the academic structure of the university, usually to the provost's office, but needed support from and collaboration with many non-academic units of the university to be successful.** Support from and collaboration with non-academic units was achieved in different ways. For example, at one university the head of the under-resourced student support programs reported directly to the provost's office and also had a dotted-line reporting structure to the Vice President for Student Affairs, and attended all the relevant Student Affairs meetings. At other universities, regular meetings, led by the provost's office, were held with representatives from all involved offices, academic and non-academic, in order to promote collaboration and cooperation. At one of these universities even representatives from areas not traditionally considered vital to these efforts, such as housekeeping and landscaping, were invited to attend these meetings to make clear that helping under-resourced students is a priority for everyone on campus.
- f. Students in STEM majors, or those requiring significant quantitative skills, are generally most in need of special programming if they are to remain in their major and succeed.** This point, already learned from Notre Dame programs, was also found at most if not all of the other university programs we examined. At some universities, however, special programs were offered in both STEM and non-STEM areas with students being encouraged to choose whichever programs they believed they needed. Even in universities that did not offer special programs in non-STEM areas, the intensity of the tutoring, advising, and summer enhancement programs was often increased for non-STEM under-resourced students.
- g. Peer mentoring was a key component of many of the most successful programs.** Peer mentors at these programs were juniors and seniors, most of whom were under-resourced students themselves and had participated in the same programs as the students they were mentoring. The juniors and seniors, in turn, had peer mentors who were graduate students. Peer mentors were carefully selected, trained, and evaluated, and they were compensated. The administration looked at peer mentoring as a leadership development program for the peer mentors and built into their preparation a leadership training component. Feedback from first-year students indicated that the students were more comfortable talking about some issues with other students rather than with administrators, and liked the fact that the peer mentors were available 24/7 to them. Some institutions seemed to fear that peer mentors would often give bad advice or advice inconsistent with what the faculty and administration was saying, and as a result had little or no peer mentoring as part of their programs.

- h. Academic success is much more likely if students have a sense of belonging at the university and adequate support in non-academic areas.** A theme that emerged repeatedly at other universities, as it did at Notre Dame, is that students who felt they belonged at the university—for example, developed strong friendships, did not feel alone in needing special help, and felt intellectually capable of succeeding if given the help they need to catch up to better-prepared students—were the most likely to be successful academically and graduate. A key way to achieve this sense of belonging is to make it part of the academic support programs, as was also found at Notre Dame. For example, under-resourced students might take classes together, study together, and receive intensive tutoring together. Spending time together in this fashion helps the students realize that they are not alone and that there are other students whose background is like theirs, which in turn helps them feel that they belong at the university. Spending a lot of time together and developing a sense of belonging, along with starting to address any academic needs and deficits, was a primary goal of the initial pre-college summer program offered by virtually every university.
- i. Universities were divided on whether to require under-resourced students to participate in special academic enhancement programs as a condition of admission to the university.** Those that require participation believe that the odds of failure are so high if students do not participate in supplementary academic programming that they should be required to participate as a condition of admission. Select programs at Cornell, Florida State, and the Naval Academy are examples. Other universities believe that while the student should be invited and strongly encouraged to participate in the special programs designed to ensure academic success, a student who is able to fashion his or her own academic support aids, or decide on the best timing to participate in university programs, is more likely to be successful.
- j. Many universities voiced the importance of, but struggled with, helping under-resourced students decide on their major.** For example, many but not all under-resourced students, especially first-generation students, arrive at college having only limited knowledge of what it means to be a STEM major but identify it as their preference based on what they (and sometimes their parents) perceive to be a good career choice. Other students truly understand and desire to major in a STEM discipline but do not have the high school preparation that would allow them to be successful in a STEM major at a given university, even with generous support programs, though they may be successful in a non-STEM major. A third group of students understand and desire to major in a STEM discipline and, with proper support, can be successful in it. Determining which description above applies is a challenge for both the students and their advisors. Admissions offices also struggle with this challenge, especially when they believe that a student is not prepared to successfully complete a STEM major, even with special support programs, but could be successful in a non-STEM major. In this case, how does the university help the

student discern the best career path? Several institutions encourage applicants to identify on their application multiple disciplines they would consider majoring in. The hope is that this would lead students to more thoughtful discernment on what majors might best suit them, and especially to help students under-prepared for STEM majors to consider other majors. In the event that a student indicated that he or she was willing to consider STEM and non-STEM majors, the Admissions office would be in a much better position to evaluate the ability of the student to be successful. Princeton went a step further. It offers a Freshman Scholars Institute (FSI) the summer before beginning the freshman year which includes a six-week set of two experiential courses. One on critical thinking is required of all students. Students also select a second course from a list of five options, all in STEM areas. These courses help students to explore what a career in a given field involves and, in STEM areas, better understand what math and science would be required for that career. If a student decides to major in a STEM discipline, placement into the first math course in the fall involves a self-sorting mechanism in which students play a role in deciding which math course would be best for them. Small groups of students are presented with sample problems from a range of math courses and are asked to work in groups to solve them. At the end of a relatively short session, they are asked what math course they believe is best for them, giving them agency in the decision. Programs with similar goals are supported at Rice, Washington University, and Yale. All of these programs offer students the opportunity to discern their major after they have been admitted to the university.

- k. The role that the coordinating office for student-support programs plays in the admissions process varies depending on several factors.** For example, at Princeton, where student participation in support programs is not a requirement for admission, the admission office makes the admission decisions and then sends the files of all admitted students whose family income is less than a certain amount, and/or are first generation students, to the Bloomberg Center (Princeton's program for under-resourced students) which decides who to invite to participate in various Bloomberg programs. In contrast, at Florida State, students with a certain academic profile who would normally not be admitted to the university, can be admitted if (1) the CARE program (Florida State's program for under-resourced students) invites them to participate in the CARE program and (2) they agree to do so. Using yet a third model, at Yale the admissions office determines the admissibility of students and, after admitted, all students with expected family contributions under a set amount are invited to participate in the First Year Scholars program (Yale's program for under-resourced students).
- i. It is important that dedicated and rigorous data-based diagnostic and evaluation processes are created and supported.** Carefully constructed data analytic procedures can help predict problems, assess progress, and evaluate the success of support programs both for academic and non-academic programs. One example of the value of creating rigorous data analytic processes can be seen at the University

of Florida. According to Provost Joseph Glover, their data analysts are able to predict, by week 5 of the semester, with approximately 70-75% accuracy, which students are on a path that will likely lead to academic success and which students are not. Those who are not are then contacted and offered a coach who will help them make use of the resources on campus best suited to their specific needs. The data analysts continue to follow the students to assess whether the interventions are effective.

Another example comes from Rice University. Rice has created a 13-question assessment tool that is given to all admitted students who plan to be STEM majors. The assessment test is given in May before summer classes begin and is used to place students in appropriate sections of STEM courses and to identify which students are likely to need special support programs. Rice has used this assessment instrument for over a decade and claims it is very accurate in identifying students who will need extra academic support, including participating in their pre-enrollment summer program.

- m. A few programs are beginning to focus on helping under-resourced students after they graduate.** There seemed to be a sense at some universities that this was their next big step—to collect data on how their under-resourced students were fairing after graduation, and to develop programs to address any special challenges the students were facing.

Faculty

- n. Faculty involvement in and support of academic enhancement programs for under-resourced students is vital to their success.** Many universities told us both that the faculty involvement was the key to academic success and that the faculty was the most difficult constituency with which to work. Although all faculty and advisors share responsibility for supporting under-resourced students, actual faculty involvement at other universities, as at Notre Dame, varied by department. In some departments, numerous tenure-line faculty were eager to work with under-resourced students whereas in other departments few if any of the tenure-line faculty were involved. In virtually all institutions much of the academic advising, mentoring, and course instruction for under-resourced students was performed by non-tenure-line faculty who were hired (or retained) entirely or largely based on their enthusiasm for, and success at, teaching, mentoring, and advising under-resourced students. Faculty were compensated for this work in different ways at various institutions.
- o. A challenge faced by many universities is how to present to faculty in a compelling fashion the pedagogical approaches that work best with under-resourced students.** According to the program leaders at some institutions, active learning is much more effective than passive learning for under-resourced students. For example, one

mathematics faculty member said that having under-resourced students work in groups to solve homework problems, with the instructor and teaching assistants available to provide help when needed, is much more effective than simply teaching through lectures. Sometimes the tenure-line faculty are more than willing to change their pedagogical approach. In other cases, they are willing to do so but request a one-time course release to provide the time needed to revise the way they teach a course. In still other cases the tenure-line faculty are unwilling to change, requiring that non-tenure-line faculty be hired to use active-learning techniques in courses specifically designed for under-resourced students.

Implementation Advice

- p. When we asked universities for their advice on implementing new programs, three answers were given the most frequently.** Each was consistent with what we learned from Notre Dame programs.

The first was to start with a pilot program and then build it to scale if it proves successful. At some institutions, for example, it took a few years to work out the unanticipated challenges that emerged with new programs, including greater-than-anticipated financial costs, less-than-expected endorsement by faculty or students, and difficulties coordinating the program across multiple offices on campus. Additionally, some noted that it is important to determine the optimal size of a program, in terms of the number of students, so that it can both operate efficiently and also effectively support all its participants.

The second was to spend time with the target student population asking them about what they needed. For example, administrators at one university said that they learned from students that what they most needed was much more basic than what the administration had anticipated. They had little idea what college was like, what resources were available to help them, or where to go if they had a question or a need. Florida State University had a special program for students who come from foster homes or were homeless and had no place to live, and no money to buy food, when school was not in session. As we discussed previously as a learning from Notre Dame's programs, many of the students' questions and needs are not academic in nature but need to be addressed so that students can focus on their academic work. Notre Dame's AnBryce Scholars and QuestBridge Scholars have provided extensive feedback (which informed the recommendations made later in this white paper) as to what they need to be academically successful and thrive personally.

The third was that there is an inevitable tension between central programming and local control by individual departments or colleges. In the end, programs were less likely to be successful if there were not adequate resources available to all units involved and trusting relationships among their leaders. If the coordinating office for under-resourced students, for example, asked another office or department to

provide a given service but gave them no funding to achieve it, not only was the service not provided but bad will also sometimes resulted. In the end, a given program needed to be seen as valuable to all units involved, a “win-win” if you will. Sometimes it took several iterations of a given program to finally fashion it in a way that every participating unit did, in fact, believe it was valuable.

RECOMMENDATIONS

The committee’s recommendations follow closely from what it regards as the best practices at Notre Dame and at other universities, and tries, where it seems advantageous and appropriate, to build on programs and initiatives already in place at the University. We begin with a statement of the overall goal of these recommendations and then proceed from broad overarching recommendations to recommendations for specific programs.

Overall Goal

Develop academic support programs and a culture of student success to ensure that lower-resourced students achieve their academic and intellectual goals in an environment that supports their holistic development.

Overarching Recommendations

Create a new oversight office. The committee recommends creating an umbrella unit that would support all, and be the home of many, of the campus-wide initiatives related to under-resourced students. At this time, no such unit is currently charged with this responsibility though a proposal for a NextGen ND Initiative has been developed in parallel to this committee’s work and could potentially fill such a role. The umbrella organization should reside within the provost’s office and have a comprehensive knowledge of all the support programs available to under-resourced students across the university including those currently housed in departments or units not reporting through the provost’s office, such as the Enrollment Division and the Division of Student Affairs. For academic based programs, the selection and invitation of students would be done by the program with representation from the umbrella unit. The umbrella unit would also oversee the various pre-matriculation summer, fellowship, and transfer programs, coordinating all of the necessary internal processes associated with early arrival, additional summer sessions, and internal fellowship or research programs aimed at under-resourced students. The unit would also oversee the coordination of programmatic spaces and cooperative staffing where applicable. This administrative structure is not meant to suggest that all programs supporting under-resourced students should report to the new umbrella unit but that with the leadership of the umbrella unit, they would take advantage of synergies that might be possible with additional coordination and cooperation. The umbrella unit office would also be charged with monitoring developments at other universities that might help Notre Dame, ensuring the proper collection and use of data to improve the impact and efficiency of Notre Dame’s programs, and work with Notre Dame Learning and the schools

and colleges to ensure that faculty are aware of, and encouraged to use, technological and pedagogical advances in helping under-resourced students learn.

Expand financial aid. One of the clearest messages the committee received from everyone with whom it consulted was that to attract under-resourced students to a university and to ensure their academic success and personal flourishing, it is necessary to provide not only adequate financial aid to cover tuition and the cost of attendance but also to provide supplemental funding to cover such things as summer school, summer research programs, unpaid internships, and so forth. Funds may also be needed for non-academic needs such as stipends to cover summer living expenses if the student is engaged in research or an unpaid internship, room and board costs for students needing year-round housing, transportation to/from summer programs, and health insurance if none is available to them. Each student's situation will need to be evaluated separately and the appropriate funds allocated. Because under-resourced students often make admissions decisions based entirely on the financial aid they are offered, it is recommended that the University create an assurance policy that can be described in appropriate communications (e.g., the financial aid website and print materials) and celebrated in the successful applicant's admissions letter. Communicating this type of assurance would help in the recruitment of under-resourced students, especially those who are the most competitive for admission and will be targeted by multiple highly selective universities.

Support Enrollment Division initiatives. The committee recommends that the University support two initiatives in the Enrollment Division in addition to the financial aid assurance program mentioned above. Each of these two initiatives may require additional funding.

First, the committee recommends funding, or continuing to fund in some cases, the Enrollment Division's growing number of initiatives to identify, cultivate, and recruit high ability, academically prepared, and mission-oriented prospective students, with a focus on the cultivation of partnerships with Catholic organizations investing in K-12 underserved and low resourced students (e.g., Catholic Education Foundation, Catholic Schools Foundation), faith-based schools (e.g., Cristo Rey, Network schools, ACE Academies) and organizations nurturing the underserved (e.g., QuestBridge, Matriculate, and the Kinesis Foundation).

Second, the committee recommends that to aid in the discernment process of under-resourced students who believe, with adequate forethought or not, that they want to major in a STEM field, the Enrollment Division request that these students identify on their application three disciplines in which they would consider majoring. Students who are not academically prepared for a STEM major, even with the help of the University's many academic support programs, but are either uncertain about their intended major or are also interested in non-STEM disciplines for which they are well prepared to be successful, might then be admitted to the University and invited to discuss their intended major further with their advisor.

Strengthen and expand tutoring services. Notre Dame offers excellent tutoring services spread across multiple sources. However, under-resourced students (and some other students

as well) are often in need of longer and more intense tutoring than is currently available. Moreover, the various offices that provide tutoring are not always able to coordinate their services. The committee recommends that a new central office be created that would build upon (and replace) the current Learning Resource Center. The new office would be tasked with coordinating tutoring resources across campus, for all four years, and ensure that under-resourced students have the level and length of tutoring required for them to be successful, especially in areas that under-resourced students appear to be most in need, including STEM, critical reading across the disciplines, and writing. The committee believes that tutoring services and spaces are generally most effective when they are located close to the courses with which help is needed, that is, within various academic departments. We recommend that funding be provided for such tutoring and space. That said, there is also a place for, and the committee recommends investing in, centralized tutoring space and support.

Create multiple avenues for faculty involvement. Faculty play a critical role, perhaps the critical role, not only in the academic success of under-resourced students but also in their sense of belonging and self-confidence. The committee recommends that Notre Dame follow the Princeton model and support three different levels of faculty involvement.

The first level is to ask all faculty to volunteer to interact with a small group of under-resourced students at least once per semester. Examples might include a workshop on preparing for law school, a seminar on leadership, sharing a meal with a group of students interested in the faculty member's discipline, accompanying a student group to a performance in Chicago, and so forth. In addition to helping the students, the goal of this minimal involvement would be to convey to all faculty that they can, and the University hopes will, play a role in helping our under-resourced students.

The second level is to identify "faculty fellows" who would conduct multiple engagement sessions for under-served students, perhaps once a week. These could be one-off programs such as those described above or might be multiple sessions on a given topic or challenge. The faculty fellows might also meet as a group once a semester to discuss their observations, concerns, and suggestions. Faculty committing this level of involvement might be compensated; Princeton currently offers them \$5000 a semester.

The third level of involvement is for faculty to teach classes specifically for under-resourced students. This might entail teaching a small five-day-a-week section of general chemistry as part of the Galvin Scholars Program, which would count toward the faculty member's normal course load. Or it might involve teaching a summer course in Calculus II, which would be compensated as a regular summer course. Tenure-line faculty could teach these courses or, if there is not sufficient interest or availability, teaching faculty should be hired, entirely or largely based on their interest in and ability to relate to and effectively teach under-resourced students.

Create a focused data analytics effort. The universities that had what the committee viewed as the best-in-class support programs for under-resourced students all included a

probing and rigorous data analytic approach to evaluating the impact of their programs. Data analysts also assessed which factors on a student's application best predicted success in STEM courses, and whether early progress in the fall semester predicted success or failure, and if failure, what additional academic support programs or actions (such as "downshifting" to a lower-level course in math) might be most beneficial. Data analysts not only analyzed available data but made recommendations on what data to collect and how best to promote student success. The committee recommends that the umbrella unit be charged with adopting a rigorous data-driven approach to program creation and evaluation, work with data analysts employed by partner divisions (e.g., Enrollment and Student Affairs), and that the resources be provided to it and/or OSPIR to make this possible.

Recommendations for new or revised academic programs

In thinking through how best to support under-resourced students to "be as successful as they can be," in the words of Fr. John, the committee identified several different "pathways" that students might take in their journey through Notre Dame, each requiring a different level and type of support. Students might move from one pathway to another during their time at Notre Dame. We do not see these pathways as being prescribed to students but rather as being offered to them, giving them agency in choosing to participate via an application or by signing up for individual activities.

Below we describe each pathway, starting with the one that requires the least intervention and progressing to the one that requires the most.

Pathway for under-resourced students who are well-prepared for Notre Dame. Students in this pathway may have already taken a range of Advanced Placement or International Baccalaureate (AP/IB) courses prior to arriving on campus, performed well in high school, and in other ways enjoy an excellent preparation for college. They may need mentoring and other social support structures to help them thrive, but may not be in need of any enhanced academic programming. These students should be invited to participate in scholarship programs that are appropriate for them, such as the Transformational Leaders Program, and be offered additional navigational support, peer mentoring, and financial support where warranted.

Pathway for under-resourced students who clearly have academic talent but did not have access to the same high level of AP/IB high school preparation as the large majority of other students, and are thus less well prepared to be successful academically. Many of these students will be STEM students. This group can most benefit from courses which are taught in smaller sections, with instructors committed to helping under-resourced students, and with required problem-solving supplements. The good news is that Notre Dame already has a model program for students in this pathway: the Mary E. Galvin Science & Engineering Scholars program, now in its fifth year. In addition to cohort formation and summer research support, it provides academic support for introductory science and math courses in the first three semesters. Notably, Galvin scholars enroll in small (approximately 40-student) sections of

Calculus I and General Chemistry in their first semester, and are required to co-enroll in one or two credit problem-solving supplements. The Galvin sections have the same exams and homework as the larger non-Galvin sections, but are taught by experienced instructors who get to know the Galvin scholars during intense 5 day/week coursework. Engineers in the program take Calculus II and Physics I during the spring semester, while Science students take Calculus II and Organic Chemistry I. Small Galvin sections of Organic Chemistry II and Physics II, and in other large lecture classes in science such as Biochemistry, could be added if funding were available, which the committee recommends providing.

The Galvin program currently serves students in Science and Engineering majors. The committee recommends that similar programs be created for under-resourced students who fit this pathway but who are not appropriate for the Galvin program. This might include students in other colleges or schools where smaller sections, close interactions with faculty, and tutorials or problem-solving sessions could increase their chance of success. This might be especially needed in disciplines, such as Economics and Finance, that require a high level of quantitative reasoning. Even in Engineering, smaller Galvin-like follow-on courses in the second year could be added as part of the Elite Engineers program.

Pathway for under-resourced students who graduate from high school unprepared for STEM majors but could be successful in them, or in other majors, if given significant support beyond that provided currently at Notre Dame. Most notably, the committee recommends that this pathway include, before matriculating in the fall, a summer of preparatory coursework and other programming to bring these students up to speed and to help them discern whether a STEM discipline is what they truly desire. The committee views these students as the most at risk and the most in need of significant new academic support programs. Specifically, the committee recommends the following:

1. Develop pre-matriculation summer programming, modeled on the Princeton “Freshman Summer Institute” (FSI) and on our own summer program for the Balfour-Hesburgh scholars. One possible name for this program is the Summer Academy at Notre Dame (SAND). It would have these characteristics and components:

- a. The summer program should be by invitation, starting with approximately 30 students and growing to approximately 70 students. Invitations should be determined by the umbrella unit, informed by the Office of Undergraduate Admissions and a math placement test administered by Notre Dame. Students should be provided a summer stipend, housing, and transportation to and from Notre Dame.

- b. The summer coursework should be a mix of skill-building, particularly in writing, critical thinking, and math; and experiential, topical courses, primarily in STEM areas, that help students discern a career path based on interests and aptitudes. Math courses, in particular, should expose students to material from the first three to six weeks of the upcoming semester, and any STEM experiential courses should expose students to the level of math that would be

required for success in that discipline. Some of the coursework should be credit-bearing so that students who complete SAND may take a lower course load in the fall semester.

c. Significant cohort-building and social activities should be included in the summer programming so that these students begin their first year with a tight-knit group of study partners and friends. These students would especially benefit from the inclusion of peer mentors, including SAND alumni (i.e., juniors and seniors who have participated in the SAND program).

d. SAND should also be the point of introduction for leaders of other academic support programs, including the Education and Outreach Specialists in the TLP program, as well as to faculty and deans in their prospective colleges/schools.

2. The committee recommends that the leader of the umbrella unit and the Dean of the College of Science work with the faculty in the Department of Mathematics to encourage them to allow students who have been placed in a math course that exceeds their level of preparation to “downshift” to a lower-level course as late as four weeks into the fall semester. This is a significant departure from Notre Dame’s current implementation of the add/drop period. It is further recommended that practices be put in place, building on the Princeton model, to allow for homework scores and make-up exams to occur seamlessly during the downshift transition.

3. The committee recommends that students in this pathway be given additional curricular flexibility, allowing them to take courses out of the normal sequences in which they are offered. This should include off-sequence options for key STEM courses such as Organic Chemistry 1 and 2, Calculus I/A and II/B, Engineering Physics 1 and 2, and other engineering courses so that students who need to drop a course do not fall too far behind their peers. This recommendation will require STEM disciplines to look at their own curricula to see what can be decoupled from current prerequisite courses. Curricular flexibility, which may require teaching extra sections of a given course, may require additional faculty.

4. A second summer academy (SAND2), following the student’s first year, should be developed featuring in-person (as opposed to online) course offerings to help students get “back on track” if they have taken courses out of the normal sequence, particularly with Calculus II and Physics I. The goal is to ensure that all students enter their second year ready for the essential, major-specific, sophomore-level courses. The second summer should also be coupled with paid on-campus research and internship opportunities.

Pathway for under-resourced students who may need to enroll at another institution for one or more years before transferring to Notre Dame. Some portion of under-resourced students who desire to attend Notre Dame are not yet academically ready to join the University, even with the enhanced academic support and programming described above. For these students, an alternative path to a successful Notre Dame experience might entail beginning their college studies at another institution and transferring to Notre Dame. To that end, the

committee recommends that Notre Dame support, for under-resourced students, carefully designed transfer programs with other universities.

One such program already exists: the Driscoll Scholars Program at Holy Cross College (HCC). The Driscoll Scholars program is a 2+3 program for engineering students. Since the program began in 2018, 31 of 37 Driscoll Scholars have met the requirements (3.5 GPA at HCC) and transferred to Notre Dame, and all are currently on track for graduation. The culture, small-school environment, and coursework at Holy Cross College have been key to this success. However, because the Driscoll Scholars enter as sophomores at Notre Dame, they miss out on important first-year academic and social programs that help the students feel part of their class cohort and might in other ways increase even more their academic success and personal flourishing at Notre Dame. Therefore, the committee recommends redesigning the Driscoll Scholars program to be a 1+4 preparatory program, with students spending their first year at HCC and then being admitted to Notre Dame as first-year students to complete a degree in either the College of Engineering or College of Science. The students' first-year curriculum at HCC would be prescribed by the Notre Dame Colleges of Engineering and Science. Students who meet benchmark performance standards would be invited to enroll at Notre Dame as first-year students. These Driscoll Scholars should be treated in the same manner as all other first-year students, including being placed in residence halls, participating in Welcome Weekend, and being invited to participate in the most appropriate pathway described above (most likely the third one including pre-matriculation summer programs). If a student does not meet the academic standards required to enroll at Notre Dame, she or he may continue at HCC (if approved by HCC) as a regular member of the HCC student body or seek another academic (or non-academic) opportunity. An initial cohort of 8-15 Driscoll Scholars is recommended, with subsequent increases as determined by the Colleges of Engineering and Science, the Undergraduate Enrollment Division, and HCC.

Because the Driscoll Scholars program puts significant financial demands on HCC, the committee recommends that Notre Dame help support Driscoll students financially during their first year at HCC.

It is beyond the charge of this committee to evaluate all of the many existing agreements Notre Dame has with other institutions for transfer programs into the College of Engineering. Consistent with its charge, however, the Committee recommends that all of these agreements be re-evaluated, and priority be given to those that involve (1) under-resourced students and/or (2) students from Catholic institutions, especially Holy Cross affiliated institutions, which do not have engineering programs. All new or renewed programs should be agreed upon by the College of Engineering and the Division of Undergraduate Enrollment.

Pathway for under-resourced students who may benefit from special programming and recruitment in high school. To confront the challenge of a limited pool of well-prepared college applicants, particularly under-resourced students, many peer institutions have implemented programs to offer holistic college preparatory experiences to high school aged students. However, most (if not all) of these programs are focused on high schools within an adjacent

radius of the home institution. For example, the Princeton University Preparatory Program (PUPP) is offered only to high school students enrolled at five high schools in the Mercer County, New Jersey area. Notre Dame has the reach, influence, networks, and mission alignment to scale a high school preparatory engagement program, aimed at under-resourced students, across the country. The Enrollment Division has recently made significant progress in developing this type of program, and has received promising enthusiasm from many under-resourced Catholic high schools along with community-based organizations such as the Catholic Education Network and the Catholic Schools Foundation.

The committee recommends that the University develop strategic relationships with select Catholic high schools to identify under-resourced students with the potential to flourish at a Notre Dame, and offer them virtual and in-person preparatory support.

Over a student's four years of high school, the Notre Dame Enrollment Division, in collaboration with a variety of campus partners, would facilitate a number of educational and formative experiences, including but not limited to:

- Developing virtual programming to educate students and families on issues such as course selection, tutoring, advising, financial aid, and cultural enrichment.
- Sponsoring members of the ND enrollment team to make in-person visits to the high schools at least twice per year, where students, their families, faculty, and counselors nurture a trusting relationship with Notre Dame staff. Academic and enrichment components would be woven into each visit.
- Bringing rising high school seniors to Notre Dame to participate in an immersive two-week Summer Leadership Seminar (note the Enrollment Pre-College office already offers this program so the recommendation is to scale it for more under-resourced students). Students would also take a one-credit college course focused on STEM and writing.
- Hosting at Notre Dame counselors from these high schools for an immersive professional development experience.

The committee suggests four criteria to determine the most promising partner schools: (1) a high percentage of under-resourced students, (2) fidelity to school mission and operational vitality, (3) an assessment of the quality and likely stability of the school's governance and leadership, and (4) the depth and duration of Notre Dame's relationship with the school. Examples of such schools would include those connected with ACE and in the Cristo Rey Network.

The committee also recommends the implementation of additional sites for the Alliance for Catholic Education's PATH program (Pursuing Achievement Through Higher Education), which provides radical accompaniment, formation, and opportunity for low-income, first-generation students to put them on the path to and through college. Both ACE and the Enrollment Division recognize that PATH represents a "long play" designed to increase the number of first-generation, low-income students to complete college. Though not every PATH

scholar will desire or be qualified to attend Notre Dame, we believe that over time, as it expands, PATH has the potential to increase the number of under-resourced students at Notre Dame while also strengthening the University's Catholic culture.

Helping students after graduation. While it is generally agreed that under-resourced students need special support programs early in their college tenure, sometimes even before they begin college, it is also the case that these students may need additional support after graduation from college. The committee recommends that the umbrella unit be charged with collecting data on the success of under-resourced students after graduation and determining how best to help those who might need additional support in order to accomplish their life goals.

BENEFITS TO STUDENTS WHO ARE NOT UNDER-RESOURCED

The committee believes that some of the recommendations in this report, while aimed at under-resourced students, would also be beneficial to some or all other undergraduate students at Notre Dame. A few universities reported that the umbrella unit for under-resourced students shared the results of their academic support programs with the deans and others, and in some cases worked with them to create ways to "scale up" the programs so that they could be offered to much larger numbers of students. This might apply, for example, to tutoring programs, the coordination of honors programs, programs aimed at student athletes, transfer students, etc. The committee recommends that the results of successful academic enhancement programs be shared with other relevant offices at Notre Dame, and that the umbrella office make its resources available to help scale up the programs when this seems appropriate.

FINANCIAL ISSUES

The committee realizes that many, though not all, of the recommendations made above have significant financial implications. While it is hoped that all departments and other units of the university will make helping under-resourced students a priority and contribute to the cost of programming for them, asking department chairs, deans, and other unit leaders to bear all or most of the costs by reallocating significant funds away from their other priorities is, understandably, likely to delay or completely halt the implementation or the scaling up of many of these recommendations. At most of the universities with which we spoke, the provost's office and/or philanthropy covered the majority of the costs of programs for under-resourced students. If possible, the committee recommends a similar approach be taken at Notre Dame.

PRIORITIES FOR IMPLEMENTATION

The committee realizes that whether to implement any of its recommendations is a decision that others will make. With the presumptive assumptions that some of its recommendations will be found worthy of implementation, and that resources will not be

available to implement all the accepted recommendations at once, the Committee suggests that three of its recommendations should receive the highest priority.

The committee recommends that the first priority be to create the umbrella unit to help craft and coordinate the various support programs recommended in this report and to help coordinate the efforts of extant support programs for under-resourced students. The umbrella unit should provide the leadership, oversight, and coordination that is essential to build a superb support program for under-resourced students. We encourage the creation of this umbrella unit be done in close collaboration with the existing scholars programs so as to promote institutional trust and buy-in.

The committee recommends that the second priority be the development of the Summer Academies at Notre Dame (SAND and SAND2) that will help students discern whether a STEM discipline or a different discipline is the best choice for them, assess and strengthen their math and writing skills, and, especially for SAND2, allow them to get back into sequence with their peers on missing or delayed course work. This recommendation is aimed primarily at helping those students in the third pathway described above, a group that is not currently receiving sufficient academic support. Summer programming costs may be significant, including not only the cost of instruction but also room, board, and a stipend for students.

Finally, the committee recommends the extension of the Galvin Scholars Program in two ways. The first is to scale up the number of Science and Engineering students served by the current Galvin program. The second is to create a program similar to the Galvin Scholars Program for under-resourced students in non-STEM disciplines who are also in need of special help in order to succeed academically and thrive personally at Notre Dame. As with the Galvin Scholars Program, the costs of comparable programs in non-STEM areas may be significant.

ENDNOTE

The members of the committee enthusiastically thank Fr. John and Provost McGreevy for inviting us to research, comment on, and make recommendations to strengthen the University's commitment to under-resourced students. It has been a privilege to serve on the committee. We also thank the many individuals from Notre Dame and from other universities who went out of their way to be helpful.