

# Task Force on the Future of the Graduate School

## Final Report

August 2015

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## **Working Group members**

The Task Force divided into four working groups and added additional members, as outlined below. The Task Force met as a whole ten times between October and May, and the Working Groups met separately and additionally, as needed.

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## Executive Summary

The Graduate School at Princeton University is distinctive in several ways including its excellence across the humanities, social sciences, sciences, and engineering; relatively small size; emphasis on doctoral education together with a limited number of master's degree programs; and a residential campus environment and surrounding area that fosters a community of scholars. These attributes set Princeton apart from perhaps all other institutions, including our closest competitors. Some additional attributes that Princeton shares with a few other top universities include a high level of engagement between distinguished faculty and outstanding students, superb resources and facilities, and generous financial support that allows concentration on academics.

As part of the University-wide strategic planning process, the Task Force on the Future of the Graduate School was charged with conducting a self-study to identify strengths, weaknesses, challenges, and opportunities, and developing a suite of recommendations to sustain the excellence and further enhance the University's graduate programs.

To encourage robust and productive engagement around the future of the Graduate School, the committee was asked to consider fundamental questions about the University's current graduate education model and to engage in creative thinking on several topics. In particular, the committee was asked to explore the following areas: (1) the mission and goals of the Graduate School and its role and integration within Princeton University; (2) the size and composition of the graduate student body; and (3) the best ways for Princeton to support its mission, including how best to provide graduate students with social and intellectual community, engagement, support, advising, and mentorship. Addressing diversity and inclusion remains an important priority of the Graduate School. Attracting and retaining a diverse graduate student body were highlighted in the 2013 Report of the Trustee Ad Hoc Committee on Diversity, and issues of climate and inclusion were considered by the Special Task Force on Diversity, Equity and Inclusion in Spring 2015. The work of these committees was not repeated, but is fully endorsed and supported, by the current task force.

In addressing the questions raised by the charge, the task force identified five strategic priorities in support of advancing Princeton's mission as a leading research university:

1. Enable growth in the number of graduate students in response to growth in faculty and to needs in specific scholarly disciplines.
2. Address funding pressures across divisions. Specifically, for the sciences and engineering, respond to declines in sponsored research, and in the humanities and social sciences, respond to time-to-degree and placement pressures through creative sixth-year initiatives.
3. Leverage our small size and residential community to provide all graduate students with an outstanding student experience.
4. Create a supportive climate and provide resources and professional development opportunities to enhance placement outcomes, both within and outside of the academy, for all graduate students.
5. Continue to enhance the world-class academic experience across all divisions.

The Graduate School at Princeton University is distinctive in its size, scope, character, and quality. Our students generally report high satisfaction with the quality of our academic programs and the extent of our financial support. We recruit and retain outstanding faculty and graduate students, we are highly competitive with graduate programs at our peer institutions, we place our students well upon completion of their degrees, and our graduates go on to have distinguished careers within and outside of the academy. Our historical success, however, does not guarantee a bright future without the continued commitment of resources and educational innovation, and a clear recognition of the importance of the Graduate School to the overall mission of the University.

## Introduction and Overview

Princeton University's Graduate School was formally established in 1900 and, by history and design, it is relatively small compared with our peers. Current enrollment in the Graduate School is around 2700, representing about one-third of all Princeton students. Princeton's Graduate School possesses a number of desirable features: a high level of engagement among distinguished faculty and outstanding students; a residential campus environment that fosters a community of scholars; and a depth of financial support that enables students to concentrate on academics. Advanced degrees are offered through 42 degree-granting departments and programs spanning the divisions of humanities, social sciences, natural sciences, and engineering.

Graduate education at Princeton has focused primarily on the Ph.D. degree. **Figure 1** shows that currently, nearly 90 percent of the University's enrolled graduate students are Ph.D. candidates. Doctoral education, available in all divisions, emphasizes original and independent scholarship, while master's degree programs in architecture, engineering, finance, public affairs, and public policy prepare candidates for careers in public life and professional practice. The wide range of interdisciplinary study opportunities complements and enriches the degree-granting programs, promoting intellectual activities and research across departmental and divisional boundaries.

	<b>Hum</b>	<b>Soc Sci</b>	<b>Nat Sci</b>	<b>Eng</b>	<b>Arch</b>	<b>WWS</b>	<b>Total</b>
Ph.D.	393	436	695	489	22	27	2,062
Ph.D. (DCE)	89	79	73	66	9	4	320
Master's	5	46	0	28	55	155	289
<b>Total</b>	<b>487</b>	<b>561</b>	<b>768</b>	<b>583</b>	<b>86</b>	<b>186</b>	<b>2,671</b>
<b>% Ph.D.</b>	<b>99%</b>	<b>92%</b>	<b>100%</b>	<b>95%</b>	<b>36%</b>	<b>17%</b>	<b>89%</b>

**Figure 1:** Enrollment by degree and division for 2014-15.

Admission to the Graduate School is highly competitive. While departments have a primary role in the graduate student admission process, the Graduate School exercises significant central oversight on the number and quality of students who are admitted. Admission targets are set by the Graduate School and vary year to year based on a number of factors, including historical yield, current enrollment, prior year deferrals, and the total overall departmental enrollment targets. In addition, the Graduate School works with departments throughout the admissions process and beyond to facilitate the recruitment, retention, and education of a strong and diverse graduate student body.

In terms of competitive success, our Graduate School is unrivaled. **Figure 2** shows our highly selective admissions rates across all four divisions for academic year 2014-15. There is intense competition for spaces in all of our 42 degree-granting programs and there is not a single institution that competes effectively with Princeton for students across all four academic divisions. For example, **Figure 3** shows that Harvard is a strong competitor for students in the humanities, social sciences, and natural sciences, but not in engineering (at least not yet, although Harvard is investing heavily in its engineering school). And Stanford competes with us for students in engineering, the social sciences, and the natural sciences, but is not as competitive in the humanities.

	Hum	Soc Sci	Nat Sci	Eng	Arch	WWS	Total
Applicants	1,480	2,742	2,402	2,826	516	998	10,964
<i>Selectivity</i>	<i>9%</i>	<i>9%</i>	<i>14%</i>	<i>11%</i>	<i>10%</i>	<i>14%</i>	<i>11%</i>
<i>Yield</i>	<i>54%</i>	<i>52%</i>	<i>41%</i>	<i>40%</i>	<i>70%</i>	<i>75%</i>	<i>49%</i>
Entering	75	127	141	127	35	103	608

**Figure 2:** Admissions statistics by division for 2014-15.

Humanities		Social Sciences		Natural Sciences		Engineering		Architecture		WWS	
Harvard	17	Harvard	45	Harvard	68	MIT	83	Harvard	14	Harvard	37
Yale	13	Stanford	30	MIT	55	Stanford	59	Yale	5	Columbia	3
Columbia	9	MIT	24	Stanford	45	UC Berkeley	30	MIT	3	UC Berkeley	3
UC Berkeley	7	UC Berkeley	16	UC Berkeley	42	Caltech	10	Brown	1	Yale	2
Stanford	4	Yale	15	Caltech	19	Carnegie M	10	Columbia	1	Johns Hopkins	1
Brown	3	Columbia	10	Yale	14	Harvard	10			Stanford	1
U Chicago	3	U Chicago	6	Columbia	12	Columbia	7			U Penn	1
Cornell	2	U Penn	5	U Chicago	12	UC SB	7			U Texas	1
Rutgers	2	NYU	3	U Penn	9	U Michigan	5				
U Penn	2	Cornell	2	U Washington	6	U Texas	5				
Cambridge	1	Cambridge	1	NYU	5	Cornell	4				
Duke	1	Johns Hopkins	1	UNC-Chapel Hill	5	Yale	3				
Michigan State	1	UC San Diego	1	Cornell	4	Illinois-Urbana	2				
MIT	1	UC Irvine	1	UC LA	4	UC LA	2				
UC LA	1	Washington U	1	U Wisc	4	U Washington	2				
				UC LA	4	U Wisconsin	2				
				Duke	3	Cambridge	1				
				UC SD	3	NYU	1				
				UC SF	3	Rice	1				
				Dartmouth	2	U Chicago	1				
				Rockefeller	2	U Penn	1				
				U Michigan	2	UC SD	1				
				Brown	1						
				Cambridge	1						
				Johns Hopkins	1						
				Scripps	1						
				UC Davis	1						
				Vanderbilt	1						

\*This is not comprehensive data. It represents results from the voluntary accept/decline survey: *Graduate Schools Chosen by Admitted Applicants who declined Princeton in Academic Years 2013-2014 and 2014-2015.*

**Figure 3:** This table shows Princeton’s main competitors by division. In each division, our competitors are ranked by the number of prospective graduate students who declined admission to Princeton in order to attend that institution. Shading is based on a combination of voluntary accept/decline student surveys, and self-reported DGS impressions of each program’s main competitors.

Our graduate students play a critical role in the research enterprise, contribute to the undergraduate teaching program, and help us attract a world-class faculty. Ph.D. students engage in research and scholarship from the moment they set foot on campus, starting as trainees and assistants and emerging as independent scholars by the time they receive their doctorates. They serve as mentors to the undergraduates: sources of help and advice both in and out of the classroom; and role models who demonstrate the exciting places that deep engagement with academic work can lead. At the same time, our graduate students are fledgling scholars in their own right – the great scholars, scientists, innovators, educators, and leaders of tomorrow. While it is true that the Graduate School is *instrumental* to the success of our undergraduate programs

and faculty research, it is equally and importantly true that the graduate program is *intrinsic* to the fundamental mission of the University as well as its quality and reputation.

The task force identified the following five strategic priorities to sustain and enhance the excellence of the Graduate School and support Princeton's mission as a leading research university:

1. Enable growth in the number of graduate students in response to growth in faculty and to needs in specific scholarly disciplines.
2. Address funding pressures across divisions. Specifically, for the sciences and engineering, respond to declines in sponsored research, and for the humanities and social sciences, respond to time-to-degree and placement pressures through creative sixth-year initiatives.
3. Leverage our small size and residential community to provide all graduate students with an outstanding student experience.
4. Create a supportive climate and provide resources and professional development opportunities to enhance placement outcomes, both within and outside of the academy, for all graduate students.
5. Continue to enhance the world-class academic experience across all divisions.

**Recommendation 1: Sustain and enhance the excellence of the Graduate School by enabling growth in response to growth in faculty and to needs in specific scholarly disciplines**

The size of our graduate programs is small, relative to the size of comparable programs at peer institutions. In addition, Princeton's Graduate School stands out among its peers in the very high percentage of its students (nearly 90 percent) who are candidates for the Ph.D. Whereas our peers tend to have large professional schools and a broad array of master's degree programs, Princeton has only a few small professional and master's degree programs while overwhelmingly the defining element of our Graduate School is our commitment to doctoral programs. As a result, the overall size of our Graduate School is much smaller than the graduate schools at peer institutions. However, to remain competitive, there are times that the Graduate School needs to grow.

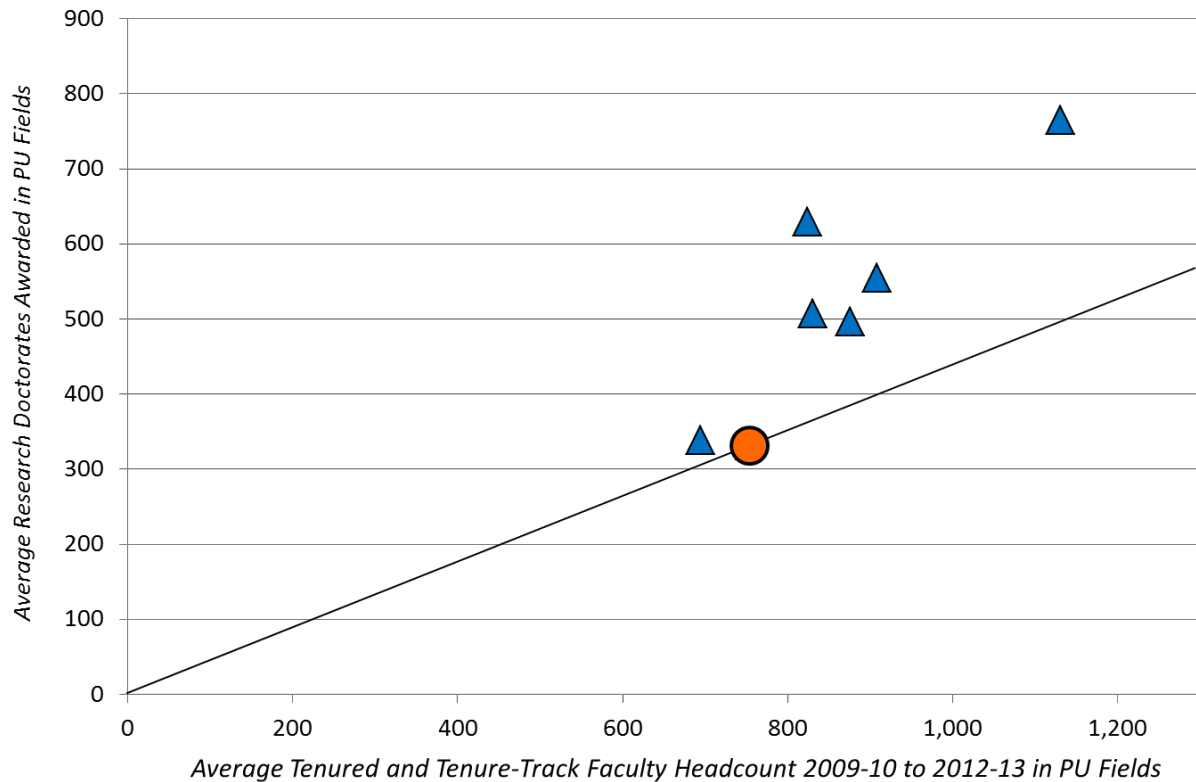
1. We add faculty (and therefore students) to existing programs. This happens when fields grow (as we are currently seeing in computer science and engineering) and when research projects increase in scope (as we are currently seeing in some areas of experimental science). Inherent in this growth is the understanding that an increase in faculty can necessitate an increase in the number of graduate students when those students are integral to the research enterprise.
2. We lengthen degree programs. This happens when the technical expertise needed in a field expands. It happened across the board in the 1990s and 2000s, as most graduate programs added a fifth year and we formalized "Dissertation Completion Enrollment" (DCE) status – an enrollment status for Ph.D. students who have not completed their degree within their department's normal program period and who are working full time towards completion of their degree. Students may be enrolled in DCE status for up to two additional years beyond the normal program period.
3. We develop new programs. In the last decade, we established new Ph.D. programs in quantitative and computational biology and neuroscience. We also established a joint degree program in social policy – an interdisciplinary program introduced by the Woodrow Wilson School for Public and International Affairs for students in the departments of psychology, economics, politics, sociology, and population studies. These new programs involve growth not just of the Graduate School but also of the faculty and the undergraduate curriculum. The next area in which we are likely to see this kind of growth is statistics and machine learning.

None of these additions can occur without central approval, and that marks another significant difference between Princeton's graduate school and programs at peer institutions. At most universities, units are free to increase graduate student cohorts if they have funding sufficient to cover tuition and stipends. As outside grant funding increases, often so too does the number of graduate students. Not so at Princeton: any increases or decreases to the target size of a department's incoming cohort and overall size of their graduate program require the approval of the Dean of the Graduate School and the Academic Planning Group, after consideration of many factors including the size of the faculty, position with respect to our peers, post-graduate job market conditions, and overall size of the University's graduate programs.



To understand growth in the Graduate School, it is important to consider how the total number of enrolled graduate students fit into the overall research and teaching enterprise. One way to do this is to look at the average number of doctorates awarded per year as a function of total faculty.

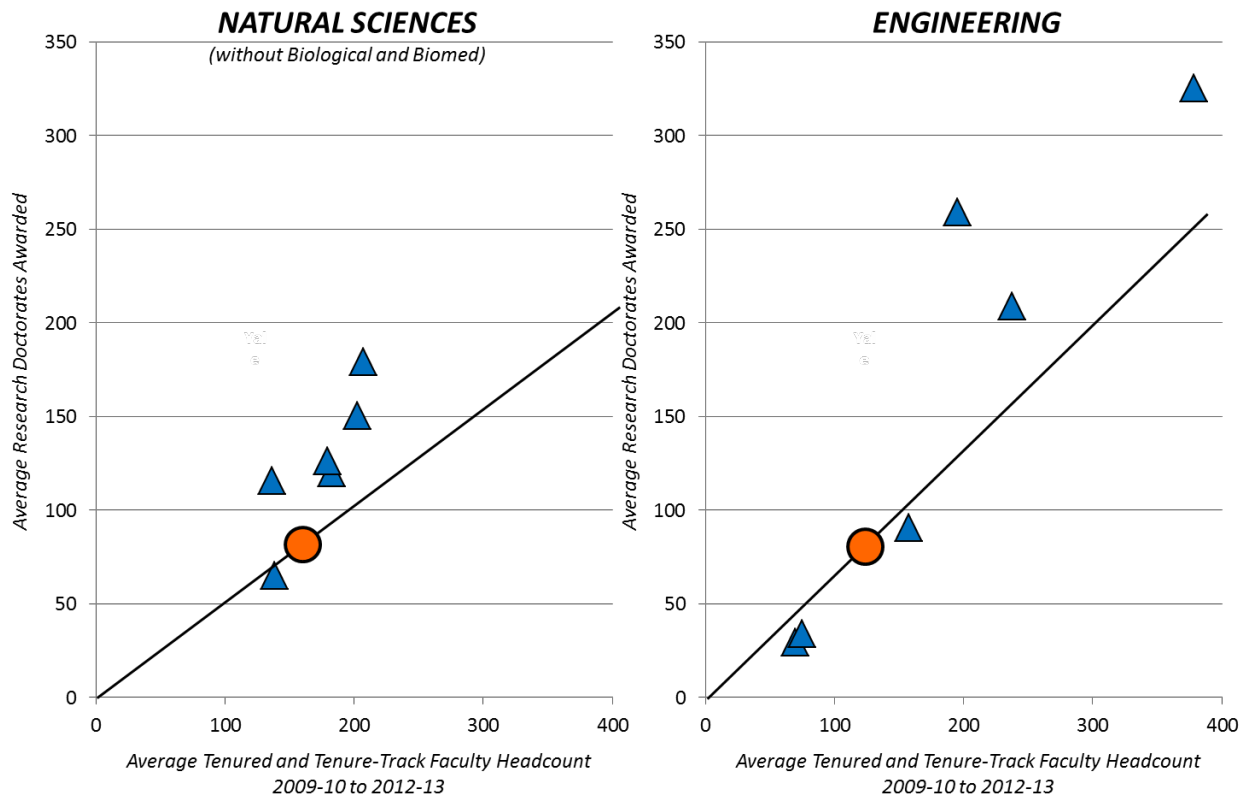
**Figure 4** shows this relationship for Princeton and for our main competitors, in all fields in which Princeton awards doctorate degrees.



**Figure 4:** This chart shows average number of research doctorates awarded per year (2009-2013) in all fields in which Princeton awards doctorates, as a function of total faculty at Princeton (orange circle) and our main competitors (blue triangles).

While this chart shows that Princeton awards fewer total doctorates per faculty member than our peers in aggregate across all fields, there are important differences to consider by division.

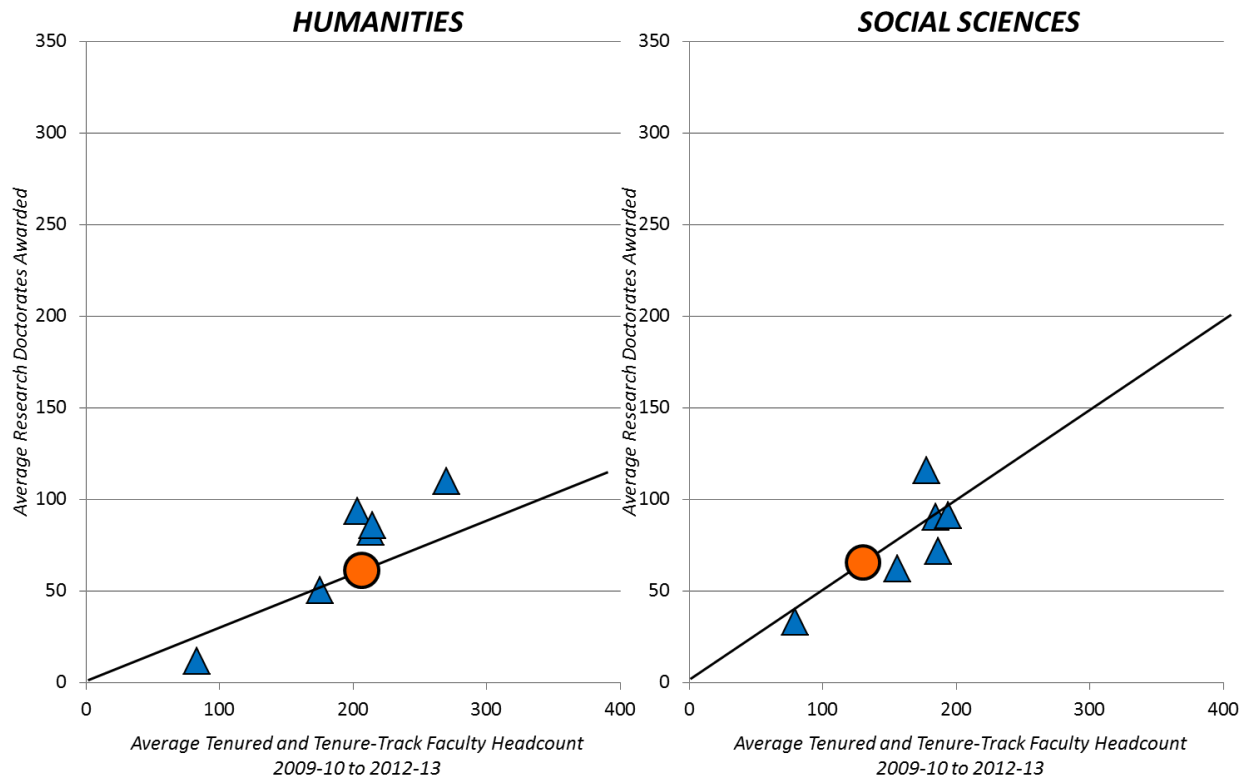
**Figures 5 and 6** show that in the humanities and social science divisions, Princeton remains comparable in size and ratio to our major competitors. In engineering and the natural sciences, on the other hand, the divisions are significantly smaller, with a lower ratio of Ph.D.'s to faculty than those of our major competitors in those fields.



**Figure 5:** This chart shows average number of research doctorates awarded per year (2009-2013) in the natural sciences and engineering, as a function of faculty in those divisions at Princeton (orange circle) and our main competitors (blue triangles).

At research universities, academic reputation, quality of the faculty, and quality of the graduate programs are all intimately connected. The ability of Princeton to recruit outstanding faculty is, in large part, due to the excellence of its graduate programs. This is especially true in science and engineering (and even more so in experimental areas), where a contingent of graduate students is essential to the pursuit of the scholarly enterprise. Our small student-faculty ratio is, from this perspective, a potential disadvantage to the mission and quality of these divisions rather than an advantage. It is vitally important to recognize the need for incremental growth in the size of the graduate student body in response to growth in faculty. The ratio of growth in graduate students to growth in faculty varies by discipline and type of research (experimental versus theoretical). To maintain the current ratio by division, growth would move along the lines shown in Figures 5 and 6; however, the desired ratio will vary by discipline and should be a topic of ongoing conversation. In engineering, there is significant pressure, especially in certain fields, to increase the current graduate student to faculty ratio — i.e., there is upward pressure to move above the line shown in Figure 5. Graduate students are a critical part of the research programs in these fields. A graduate student’s work over the course of his or her Ph.D. program can lay the groundwork for new directions, and it is often through the work of graduate students that the contributions of a research lab take shape. It is important to recognize that in some areas of study, we may need to increase the number of Ph.D.’s granted per faculty member in order to maintain our current level of excellence. That said, there may also be fields where a small

reduction in the ratio of graduate students per faculty member would allow resources to be used to enhance the graduate program in these fields in other ways. Allowing graduate student enrollment to adjust with both the size of the faculty and the needs of the discipline will allow Princeton to remain competitive across all four divisions of the Graduate School.



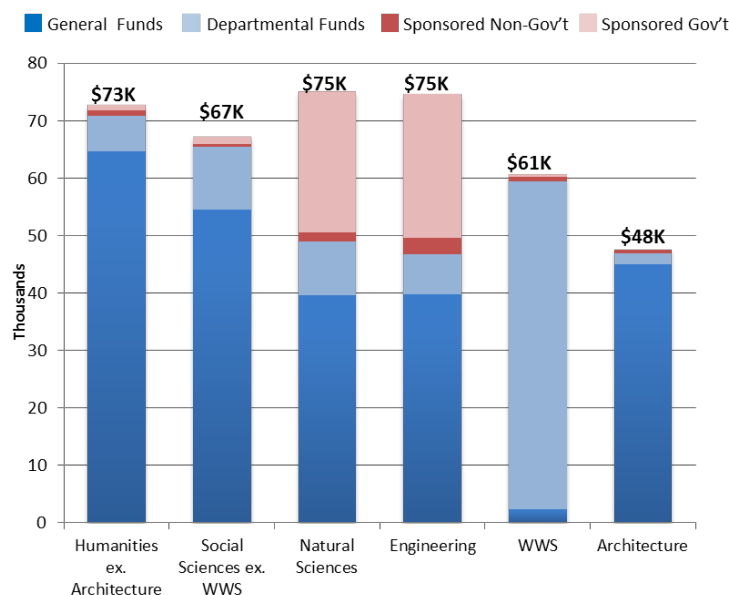
**Figure 6:** This chart shows average number of research doctorates awarded per year (2009-2013) in the humanities and social sciences, as a function of faculty in those divisions at Princeton (orange circle) and our main competitors (blue triangles).

**Recommendation 2: Continue to support our leading research engine by addressing funding pressures across divisions**

As outlined in the overview, we have a highly selective graduate school. We choose graduate students carefully, fund Ph.D. students fully (through a combination of fellowship, research assistantship, and teaching assistantship), and intend and expect every one of them to succeed. The Princeton model of graduate education is healthy and successful. However, as we plan for the future of the Graduate School, we must be mindful of trends that are currently manageable as well as those that may require a more substantial response.

Much of the national conversation around graduate education is focused on challenges pertaining to funding, specifically from declining sponsored research budgets. While this trend is important, Princeton is relatively well-positioned, as we describe below, although the pressures are significant and increasing. We feel this is manageable without a need to fundamentally change our current model, though we will need to respond in order to remain competitive.

**FY2014 Graduate Student Average Support by Division and Fund \$**  
(thousands of \$)



**Figure 7:** This chart shows the average financial support provided to each student by division. The color shading in each bar shows the source of funds, with the blue coming from University funds, and the red coming from outside funding sources.

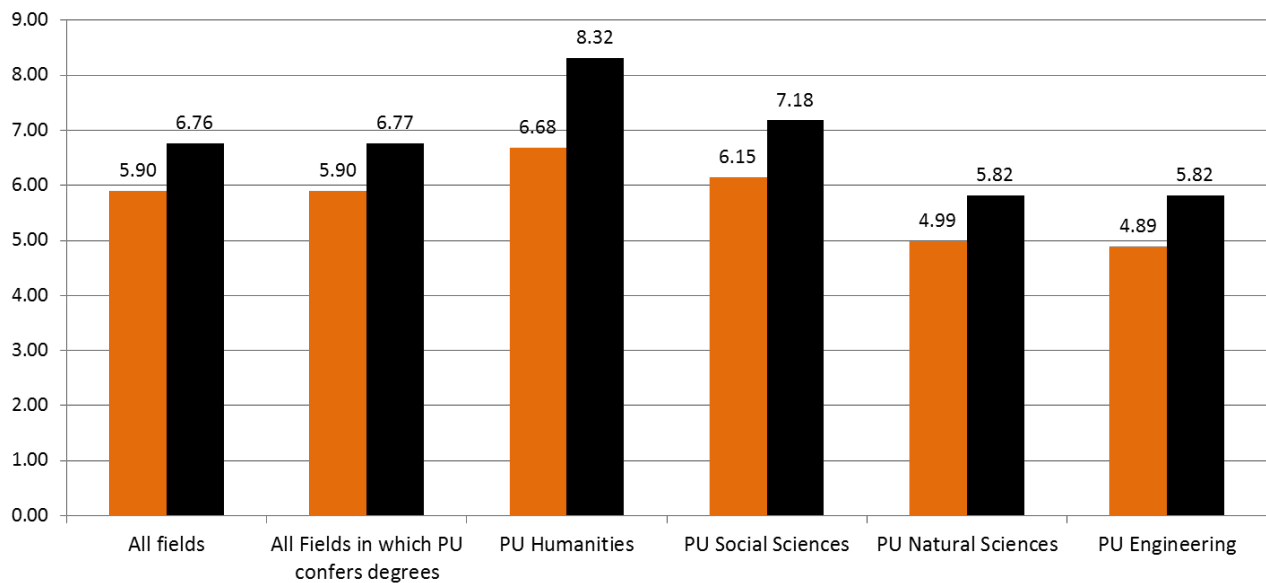
Funding in humanities and social sciences comes almost exclusively from the University, where as in science and engineering, it is more than one-third from sponsored research.

Concerns about declining funding streams from sponsored research are certainly real, and many institutions are already facing significant budget challenges as federal support declines. Princeton is not yet facing the same dire situation that is affecting many in the higher education realm, thanks to the competitiveness of our world-class faculty and the strength of our research enterprise. However, we will need to respond to the changing landscape if current trends continue or worsen.

Declines in sponsored research impact all of the sciences and engineering, where more than a third of the financial support in these divisions comes from outside funding sources as shown in **Figure 7**. The greatest pressure is being felt in the sciences, especially the life sciences, where

NIH is the main source of sponsored research and departmental training grants. The average grant size and length have decreased and the number of training grant slots has decreased, while at the same time costs have continued to increase. Developing policies and sources of funding at Princeton to complement the flattening sponsored research dollars is a major priority to be able to maintain our competitive edge in both academic excellence and faculty recruitment and retention. Some approaches to address this issue include increased tuition cost-sharing from central funds in later years (e.g., G4 and G5), competitive multi-year fellowships, and University-funded innovation grants for faculty that would complement sponsored research. The Committee on Sponsored Research is exploring options and developing recommendations for addressing these funding pressures.

Different pressures are being felt in the humanities and social sciences. This will also require funding, but of a different sort. The time-to-degree in the humanities and social sciences is significantly longer than in science and engineering, especially in the humanities. This is true at Princeton and elsewhere. While time-to-degree at Princeton is significantly better than national figures across all divisions (see **Figure 8**), in the humanities at Princeton median time-to-degree is about 6.7 years, and in social sciences it is about 6.2 years.



**Figure 8:** This chart shows median time to Ph.D. since first term as a graduate student in degree program by division (weighted average of degrees conferred in 2012-13), for Princeton (orange bars) vs. 27 AAU institutions (black bars).

Given that funding is guaranteed for only five years, this puts significant pressure on our students in these divisions as they try to complete their degrees and secure positions upon completion. This is exacerbated by the academic job market, especially in the humanities. Placement success in the academy is increasingly requiring graduate students to demonstrate more academic experience than can be obtained in the typical five-year program. As our peers begin providing funding and experiences for a sixth year in the humanities and social sciences, our students in these divisions face additional competitive pressures.

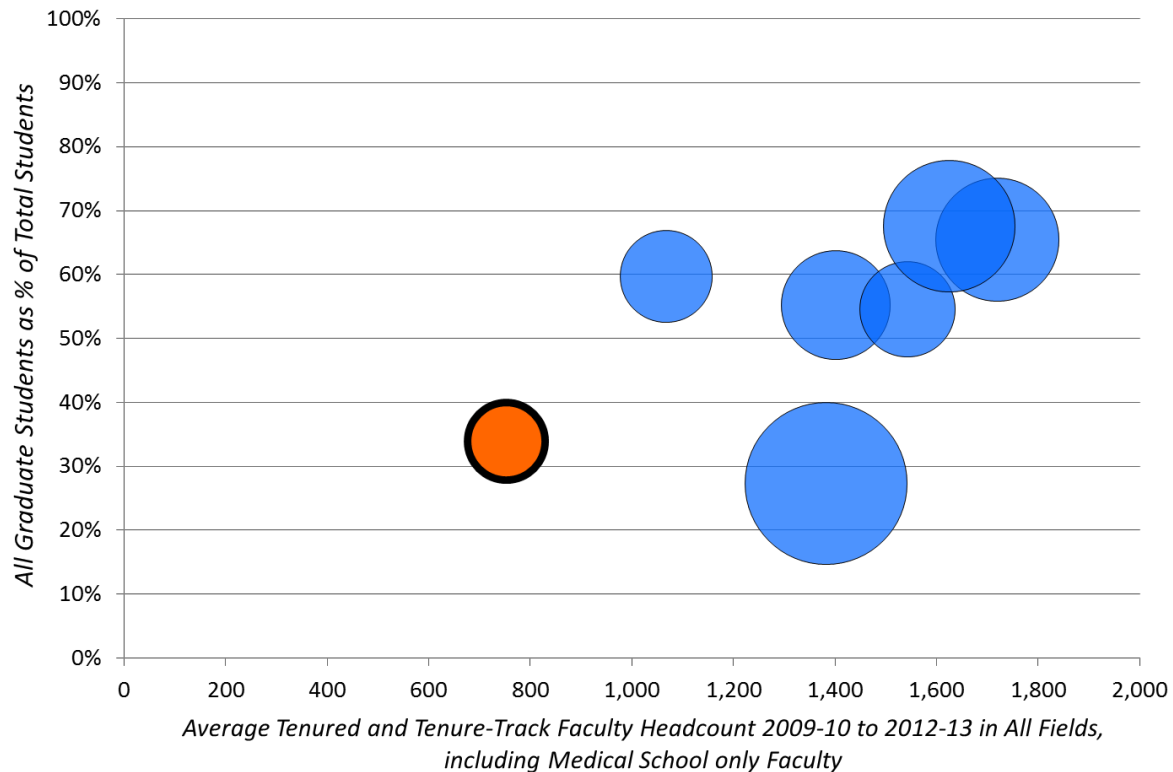
To maintain our commitment to and excellence in the humanities and social sciences, we will need to consider systematic funding for a sixth year in these divisions for students who are on track to complete their dissertation. We already provide partial funding to many students in these divisions, but currently there is significant uncertainty and anxiety as students search for teaching positions without knowing, sometimes until several weeks after the semester starts, whether they will secure one. Sixth-year funding could be competitive, and should be structured so that it not only incentivizes degree completion and hence reduces time-to-degree, but also provides teaching experiences, an opportunity to enhance scholarship, and professional development for better placement outcomes. For example, there may be funding structures that incentivize completion and allow students to transition to a post-doctoral position in their sixth year to bolster preparation for the job market. Note that we are not recommending an increase in regular program length, but rather recommending innovative funding options, policies, and programs during the first year of DCE enrollment that we hope will enhance degree completion, reduce time-to-degree, and improve placement outcomes.

Princeton is committed to providing full funding for Ph.D. students through the duration of their regular degree programs. However, sixth year funding in the humanities and social sciences and additional central funding during the regular degree program in the sciences and engineering must be major priorities for graduate education at Princeton.

In addition to these two major funding recommendations, there are a number of other initiatives that would be worth pursuing in order to improve financial support and associated policies for Princeton graduate students. For example, we recommend undertaking a review of incentives for securing external fellowships across divisions. It would also be worthwhile to review our tuition cost-sharing policies for sponsored research. A third example is the analysis of best practices for managing Assistantships in Instruction (AI) appointments. These and other initiatives will require resources, including staff time, though this should be modest compared to the two major funding initiatives described above. Princeton must continue to pay attention to the evolving funding pressures across all divisions in order to support our research engine and to stay competitive.

### **Recommendation 3: Enhance the graduate student experience and integration into the University community**

As we have discussed, it is important to recognize that Princeton offers the powerful and unique combination of a premier teaching and research university across all four divisions, together with a largely residential and relatively small campus community. As shown in **Figure 9**, Princeton stands out relative to its peers in terms of the small size of its faculty, the small total student body (undergraduate and graduate), and the low percentage of graduate students among all students at the institution.

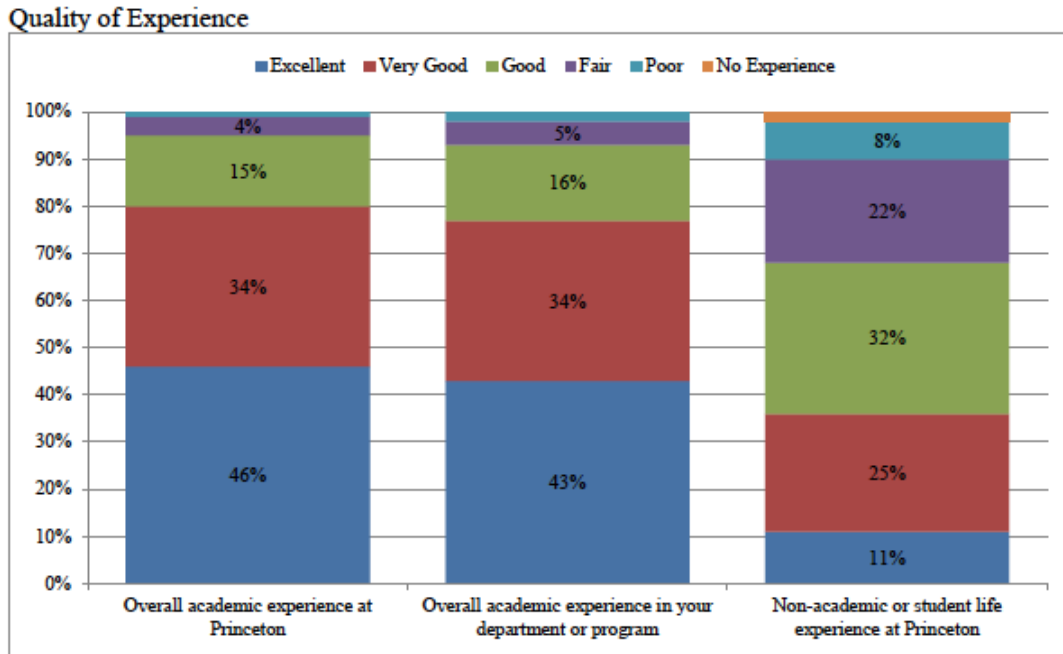


**Figure 9:** This chart shows the size of the faculty (x-axis) and the percentage of graduate students as a function of total students (y-axis) at Princeton (orange with black border) and our main competitors (blue). Circle size is scaled to the total student population (undergraduate and graduate students, including those in professional schools).

Princeton has an opportunity to leverage these attributes to fully integrate graduate students into the University community, create a graduate experience distinct from our peers, leverage interactions among undergraduates, graduate students, and faculty, and launch initiatives that are genuinely cross-disciplinary, service-oriented, or international in flavor. As we think about strategic priorities going forward, it is important to recognize what differentiates Princeton from our peers and consider opportunities to leverage these attributes. This is an area in which Princeton could distinguish itself from all of our peers.

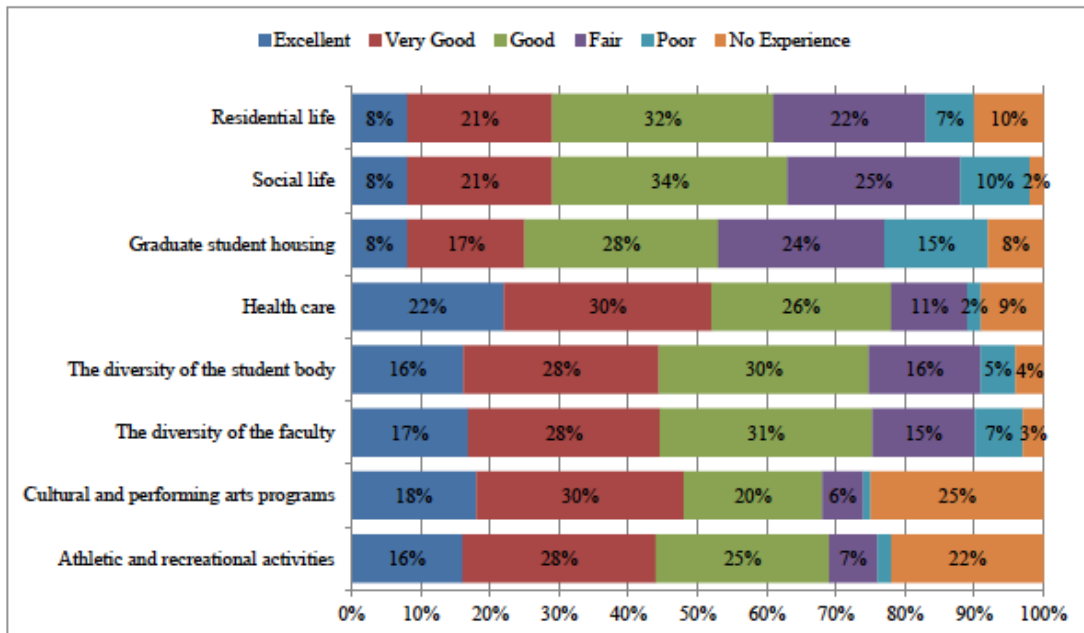
Princeton’s combination of small size and world-class research program could make for a vibrant and cohesive graduate student community. However, as shown in **Figure 10**, surveys of

graduate students show that satisfaction ratings for student life are lower than those for overall academic and departmental experiences. It is also interesting to note that the primary areas of student dissatisfaction with student life seem to arise principally from dissatisfaction with graduate student housing, residential life, and social life, as shown in **Figure 11**.



**Figure 10:** Satisfaction levels of graduate students from the 2013 Enrolled Graduate Student Survey.

Thus far, how would you assess each of the following aspects of your experience at Princeton?



**Figure 11:** Satisfaction levels of graduate students from the 2013 Enrolled Graduate Student Survey.



There are a wide range of opportunities and programs to pursue in creating an outstanding student experience. While most would be relatively inexpensive, there are some that would require significant resources in the form of space and/or facilities. We focus on three of these here, specifically housing, departmental space, and a graduate student center.

One of the distinctive features of the Princeton graduate experience is our commitment to a residential community of scholars. By offering University housing accommodations for our graduate students, we seek to foster a sense of community amongst graduate students that allows for connections across disciplines and outside of the classroom or lab. We also recognize that providing housing for our graduate students is important in supporting graduate student success. Princeton recently opened the Lakeside Graduate Apartments, the newest addition to graduate student housing offerings. The Lakeside graduate housing complex provides housing for 715 residents in 74 townhome units and 255 apartments. In addition, the complex includes a 6,000 square-foot community center, open to all graduate students, serving as a gathering place for collaboration and socialization. While this space is not located on central campus, it will clearly be a stepping stone towards supporting increased graduate student community-building.

Princeton provides capacity to house approximately 70% of its eligible graduate students within their regular program length (i.e., not including approximately 300 DCE students) in University housing, a figure that has remained steady in recent years. Despite housing a larger percentage of graduate students than our peers, concerns over graduate student housing at Princeton have long been voiced by the graduate student body. The dissatisfaction stems from three major factors: we have a higher demand for University housing than supply in a limited and expensive local housing market, public transportation to campus is limited and not convenient, and our housing policies result in less stability for students than desired. We recommend conducting a housing demand study and consider policy and priority options that would allow students who so desire to remain in housing for their regular program length.

Recent survey results also show “academic or social isolation” as one of the primary obstacles to academic progress. It would be helpful to conduct further assessment on the social and residential experiences of graduate students, and propose ways to combat isolation and foster community, especially for students with minority identities. Addressing climate issues and improving the experiences of underrepresented students are important goals of the recommendations of the Spring 2015 report from the Special Task Force on Diversity.

The survey results also show differences in the student experience by division. More than half of the students who responded in the humanities and social science divisions identified academic or social isolation as an obstacle to academic progress, compared with significantly lower numbers in the science and engineering divisions. The divisional differences are likely related to issues of space and style of work in the humanities and social sciences. Graduate students in engineering and life sciences generally have dedicated departmental office or lab space and often are part of a research group. This contributes to a lifestyle that may feel more like a traditional “work” environment, where students come into the office or lab daily and often interact with fellow students, faculty, and staff members.

The same cannot be said for graduate students in the humanities and social sciences. While some students may have dedicated office space, this is not the norm, and many graduate students in these divisions do not have a dedicated space in the same building as their academic

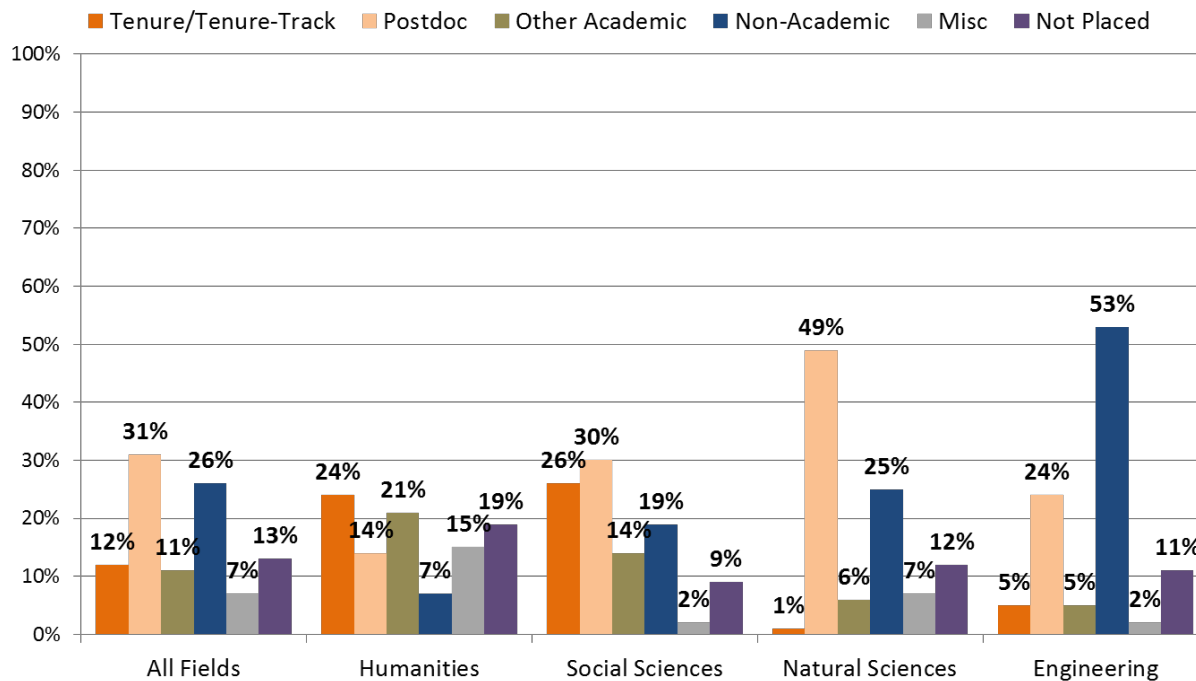
department. For these students, their work schedules and routines may have more variability and they may work in different locations, such as the library or their homes. These students are also far less likely to have daily interactions with peers, faculty members, or staff. This could be a contributing factor to the academic or social isolation that more than half of these students reported. As the University thinks through the campus plan going forward, we recommend that departmental space for graduate students in these disciplines be considered.

While the Graduate College currently serves as a space for graduate students on the campus, it is removed from central campus activities, academic departments, and graduate student work spaces. As a result, few students make the trip to the Graduate College for social gatherings, and its current location emphasizes the isolation and marginalization that graduate students feel from University life in general.

When graduate students decide to accept their offer of admission to Princeton's Graduate School, they recognize that they are joining a research powerhouse within a small residential community. For many, the size and culture are a positive factor in their decision to come here. However, many of those same students are disappointed when they come to campus and realize that Princeton is not fully leveraging these qualities, leaving them feeling very separate from the Princeton community. Space has been raised as one cause of this feeling of isolation, and we recommend that during the campus planning process the University think carefully about how to support the Graduate School and the graduate student experience, including considering options pertaining to housing, social spaces, and work spaces. We also recommend that the Office for Campus Life partner with the Graduate School to identify programmatic and communication strategies for fully integrating graduate students into the Princeton community and creating a positive student experience for both undergraduate and graduate students alike. It is important to recognize that executing on these recommendations would likely require additional funding and/or staff support.

#### **Recommendation 4: Support and enhance professional development and placement**

The topic of post-degree placement has been part of the national conversation on graduate education. It is a topic for which we currently are in an enviable position relative to national trends. While it is true that there is a national “overproduction” of Ph.D.’s compared with the number of available faculty positions, our graduate students in all divisions compete far better than most in the job market, both within and beyond the academy.



**Figure 12:** This chart shows the placement of Princeton Ph.D.’s by division at the time of the FPO. The bars represent the percent of respondents per question for the four year period from 2010-11 to 2013-14.

The excellence of our graduate programs, and the fact that we are able to attract the best students and train them to be the leaders and scholars of tomorrow, will help our graduate students continue to fare well in what is undoubtedly a challenging environment. **Figure 12** shows how the types of placement found by our graduate students varies by division, with a higher percentage of engineering students going directly into non-academic jobs, and a higher percentage of humanities students not placed at the time of their final public oral examination.

While the data show strong placement statistics for our students, there are fewer jobs in the academy, and there is increasing pressure for higher levels of professional development for positions both within and outside of academia. In order to address these concerns, we recommend that the University consider a number of initiatives for placement and professional development. These can be addressed with relatively modest resources in some cases, and minimal resources in other cases.

While individual academic departments and faculty take the lead on supporting their graduate students through placement, the Graduate School can provide increased access to information concerning (a) what other units are doing, (b) what the best placement/professional development

practices may be, and (c) a repository for data on placement outcomes. To raise awareness of what other units provide, the Graduate School might share placement and placement support data across divisions, prompting important conversations at the department level. In addition, there is an opportunity to bring Career Services and the McGraw Center into these conversations, especially with the significant number of students pursuing non-academic jobs. The Graduate School can also play an important role in developing policies and a culture that help promote/enable professional development. It is important to recognize that the Graduate School would likely require additional funding and/or staff to effectively provide this additional placement and professional development support.

Career Services supports graduate student placement and professional development in a variety of ways, including counseling, career panels, and networking. One concern is the level of support dedicated to graduate students. We currently have only one staff member in Career Services to serve the entire graduate student population. Reports from graduate students suggest that working with this staff member is enormously helpful and, in many cases, has proved transformative to their career prospects. If more graduate students were able to access this level of support, there is little doubt that placement outcomes would be greatly improved. However, it is unreasonable to expect that one person can adequately serve over 2,600 students in this way; thus we recommend that additional full-time staff resources be dedicated to serving graduate students.

The McGraw Center offers various professional development opportunities for graduate students, including intensive training and preparation for teaching, as well as workshops on pedagogy and learning. As with Career Services, efforts should be made to increase awareness of these professional development opportunities for graduate students.

An important issue is the culture (or presumed culture) in some departments that leads students to be fearful of openly discussing and seeking careers outside of the academy. Related to this, it seems that graduate students may not be taking full advantage of offerings provided by Career Services, the Graduate School, and the McGraw Center. They may simply not know what is offered, or they may fear that participating in events will get back to their advisers and be viewed negatively as a sign that they are considering non-academic careers. We recommend increased outreach efforts to graduate students, and exploring partnerships with academic departments to create a culture in which graduate students in all divisions can freely pursue their placement options (both inside and outside the academy) without fear or anxiety. Of course, we also need to ensure that the resources are available in the departments, the Graduate School, Career Services, and the McGraw Center to support them.

Some approaches for increasing professional development opportunities are related to policy and funding issues. For example, Ph.D. students in the humanities and social sciences rarely avail themselves of internship opportunities due to the structure of their funding. In these divisions, financial support is currently paid on a 12-month basis, requiring students to devote themselves to their graduate work full-time and possibly discouraging them from seeking internships. A relatively simple alternative would be to return to a 9 or 10-month stipend plus optional summer support. The summer support would be automatically provided to students who wished to receive it and focus on their research, but if a student prefers to spend a summer pursuing

internship opportunities, the more flexible payment structure would enable this and signal that it is acceptable for them to do so.

The recommendation for 6<sup>th</sup>-year funding in the Humanities and Social Sciences is also related to placement and professional development. As mentioned, consideration should be given to implementations that incentivize degree completion and also provide opportunities for professional development.

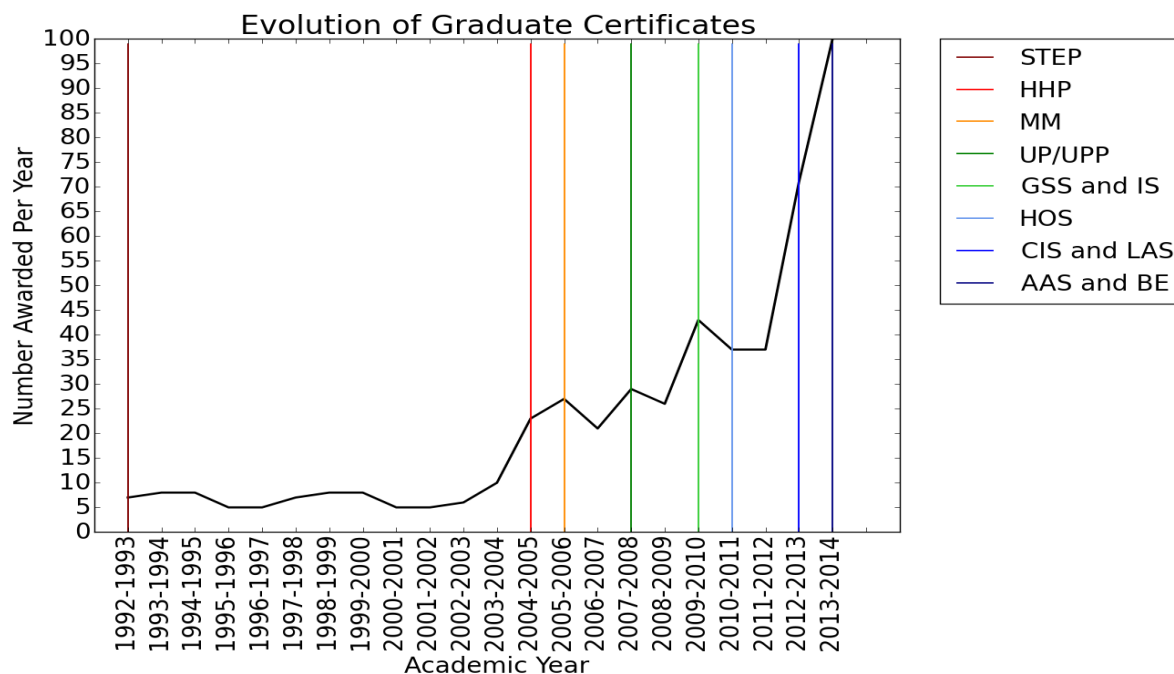
A key component of a successful graduate program is leaving our students well-prepared and well-positioned to find fulfilling employment upon completion of the degree, whether inside or outside the academy. There is a crisis internationally around placement in the academy, and we need to recognize that it will become increasingly difficult to attract top students to our programs with uncertain placement and pay-off. If we are not proactive in addressing these challenges, we put the future of the enterprise at risk. We recommend addressing culture, resources, programs, and policies, in coordination with the recommendations for 6<sup>th</sup>-year funding in the humanities and increased interdisciplinary opportunities, to enhance professional development opportunities and placement outcomes both within and outside the academy for all of our graduate students.

### **Recommendation 5: Continue to enhance the world-class academic experience across all divisions**

The quality of the Graduate School at Princeton plays a critical role in the University's ability to attract faculty who are world-class scholars in their fields. The quality of our faculty in turn creates a draw for aspiring new scholars in all of our 42 degree-granting departments and programs. Together, our faculty and our graduate programs drive the international academic reputation that allows Princeton to be a world-leader in advancing research and scholarship across all disciplines. Historically, we have earned high satisfaction among our graduate students with regard to the structure, quality, and rigor of our academic programs. However, our historical success does not guarantee a bright future without the continued commitment to resources and policies that will sustain and enhance academic excellence.

Princeton's Graduate School has enrollment procedures that are highly centralized compared with our peers, but we impose few curricular requirements on individual programs. We also have a number of centralized policies and support systems. Thus, while the individual academic departments/programs and their faculty are responsible for the academic excellence of Princeton's graduate programs, University policies and programs can play an important role in enhancing the academic programs and experiences of graduate students. Two specific areas, among others, that we believe will require minimal resources but will have significant impact are the creation of additional interdisciplinary opportunities and enabling flexibility in enrollment and leave-of-absence policies.

At Princeton there are several doctoral programs that are interdisciplinary in nature and have their own department (e.g., Near Eastern Studies, and Ecology and Evolutionary Biology). However, there are also other interdepartmental initiatives, joint degrees, and comprehensive graduate certificates that involve two or more academic departments, sometimes across divisions, and they allow students to graduate with a degree that consists mostly of interdisciplinary coursework and research. Moreover, graduate certificates allow students to pursue their interest in a given field while completing their program in their home department. Our students have increasingly sought interdisciplinary training and research, especially in the last five years, during which time the number of graduate certificates increased from six to thirteen, tripling the number of graduate students who completed a certificate (see **Figure 13**). These interdisciplinary forays have been decentralized, providing evidence that students find their own way to build interdisciplinary projects. This strategy has worked well to date. We support keeping the barriers to interdisciplinary engagement low.



**Figure 13. Total number of Graduate Certificates awarded in each academic year.** The vertical colored lines represent the years when the respective certificate programs started being offered or were first awarded (these two are not differentiated further for lack of better data). STEP: Science Technology and Environmental Policy, HHP: Health and Health Policy, MM: Media and Modernity, UP/UPP: Urban Policy and Urban Policy and Planning, GSS: Gender and Sexuality Studies, HOS: History of Science, CIS: Computational and Information Science, LAS: Latin American Studies, AAS: African American Studies, and BE: Bioengineering.

All of these certificates include coursework requirements, and some of them also include a research component. For doctoral students, this takes the form of an extra chapter in their thesis in which they apply the knowledge from the graduate certificate to their own research work. It is important to note that all of these graduate certificates are administered by the respective departments and programs and not by the Graduate School, so they do not appear on the students' transcripts when awarded.

Most of the other institutions within the Ivy Plus group have some mechanism to allow graduate students to pursue coursework in a discipline outside their home degree program. Around half of the universities considered have some way of recognizing this in the students' transcripts, aside from listing the courses taken. Princeton is well-positioned to encourage the involvement of graduate students in interdisciplinary work, and we encourage the Graduate School to keep official track of interdisciplinary graduate certificates and consider including them on students' transcripts. This would involve more robust tracking, as well as consideration of a more formal process around creating graduate certificate programs, which would likely require additional funding and/or staff support.

Given the Task Force's overall recommendation that we pay attention to training students for both academic and non-academic positions, we recommend investigating if it would be possible

to grant our students access to classes in the professional schools at Inter-University Doctoral Consortium (IUDC) member institutions. Classes in, for example, law or business could help students obtain interdisciplinary training (but not degrees) in related fields.

In addition to enhancing the currently strong interdisciplinary options available to our graduate students, we have an opportunity to improve our students' academic experience by considering some changes to our Leave of Absence (LOA) policies and our enrollment options. Small changes in these policies have the potential to substantially affect the quality of the student experience.

For example, we recommend that the Graduate School make available a non-cumulative re-enrollment status for students engaged in professional internships that further their training but are not directly related to their dissertation research (e.g., internships at MOMA or at a start-up company). Non-cumulative enrollment would allow students interested in a non-academic experience to retain access to certain student benefits (such as healthcare), but temporarily stop their enrollment clock, allowing graduate students more freedom within their academic training to explore nontraditional opportunities. Creating a new enrollment category would not only allow the Graduate School to keep better track of how many students are taking advantage of such opportunities, but also would make these opportunities more visible for current and future students. In addition to our traditional successes placing graduate students in tenure-track positions at universities and colleges, our commitment to training students to succeed in administrative and non-academic positions, where professional experience outside the classroom can be quite helpful in obtaining employment, makes this initiative especially timely.

While our graduate students express great satisfaction with their academic experiences, we must be responsive to opportunities to make enhancements. For example, we recommend that the Graduate School consider policies to strengthen the commitment to interdisciplinary studies and to facilitate flexibility in enrollment and LOA options. A vibrant graduate school is essential to advancing the University's mission, and academic excellence is at the core of the Graduate School's identity.



## **Resources, tradeoffs, and prioritization**

The five recommendations are quite broad, and within each recommendation, there are a number of specific programs and initiatives that could be pursued. The task force has considered a wide range of possibilities within each broad recommendation. These are captured in task force minutes and working group reports. The various initiatives require different levels of resources, including funding, personnel, time, and space/facilities. Those initiatives requiring a moderate level of funding and those requiring little or no funding will be pursued as time and resources become available.

Here we prioritize our recommendations that require a significant level of funding:

1. Growth in graduate students in response to growth in faculty and needs in scholarly disciplines
2. Funding in science and engineering and 6<sup>th</sup> year initiatives in the humanities and social sciences
3. Space and facilities for graduate students, namely housing, departmental space, and a graduate student center

Each graduate student at Princeton requires a significant investment of University resources, even in science and engineering, but this is an investment that if not pursued would quickly put the standing of our graduate programs and the University at risk. To maintain and enhance the quality of the Graduate School, appropriate adjustments to the size of our graduate programs in response to changes in the size of the faculty are crucial. In many areas, Princeton already has fewer Ph.D. students per faculty member than our peers, and we cannot afford even smaller ratios. The recommendations on funding are also critical to maintain competitiveness with our peers. The size and scope of the necessary response will depend to some extent on the landscape of sponsored research funding, the job market in various disciplines, and the responses of our peers, but it is clear that a significant investment will be necessary to maintain competitiveness. The recommendations on housing, space, and facilities will need to be addressed in the context of broader campus planning efforts. While new housing at Lakeside has just opened, anticipated growth in the graduate student body will put further pressure on housing. The close-knit and residential character of Princeton is an important distinguishing feature compared with our peers and one we should strive to maintain and enhance.