Future of Doctoral Programs at the University of California

Challenges, Opportunities, and Potential Paths Ahead

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Executive summary

Our charge

In Spring 2023, the University of California's Academic Planning Council (UC APC), led by UC Provost Katherine Newman and then-Academic Senate Chair Susan Cochran, created a Workgroup with the title "The Future of Doctoral Programs at UC."[1] The Workgroup was tasked with identifying ways to ensure both the excellence and the sustainability of our doctoral programs in light of significant and growing pressures both internal and external to the UC. These pressures, especially financial ones, threaten the long-term existence of many of our doctoral programs in their current forms. This report contains our recommendations based on the Workgroup's deliberations and consultations over the past year and a half.

Our principles and priorities

This report affirms the overarching principles and values of the University of California with respect to graduate education, including the importance of PhD/MFA[2] students to the UC's mission and our obligation to design programs that will enable these students' success. We must ensure that the UC continues to play a positive role in shaping PhD/MFA education for California and the nation. More specifically, we identify key issues related to graduate education that require urgent and coordinated action by the UC, its campuses, and its faculty. Specifically, we urge the UC to prioritize action in each of the six following areas:

- More clearly define academic expectations;
- Provide financial resources appropriate to successful and timely degree completion;
- Actively manage PhD/MFA enrollments, including supporting access;
- Re-evaluate graduate pedagogy;
- Strengthen advising and mentoring;
- Diversify career preparation.

Overview of this Workgroup's recommendations

For these six key areas, we offer specific recommendations as well as possible actions. They are intended for broad discussion followed by expeditious implementation. Many of the problem areas have been mentioned, some quite extensively, in previous reports.[3] None have been remedied systematically. Our goal was to provide a range of possible solutions that could be useful to the UC system. We sought to articulate wide-ranging yet specific recommendations that

[1] See Appendices 1-3. Although this Workgroup's title specified "doctoral programs" at the time the group was convened, we have made an explicit point not to consider professional doctorates (*e.g.,* MD, DNP, EDD) within our scope, and to include the Master of Fine Arts (MFA) since it serves as the terminal degree in many arts and some humanities programs. Unless otherwise specified, the recommendations in this report should be assumed to apply to both the PhD and MFA degrees, and to all the UC students who pursue them.

[2] Doctor of Philosophy (PhD) and Master of Fine Arts (MFA) are the primary terminal research-oriented degrees that lead to the professoriate and so were the target of our work.

[3] Some of the most relevant examples are provided in Appendices 8-10 of this report.

could be adopted, even as we acknowledge that, in many instances, a single approach is unlikely to be appropriate for all academic graduate programs. Our intra-system and disciplinary differences will require flexibility and adaptation. Our recommendations (**R**) are grouped and summarized as follows, with details in Section 2 of this report:

R1. The UC, and every PhD/MFA program it offers, must clearly *define academic expectations for its graduate students*, particularly as they are distinct from any other relationships these students may have with the University. Faculty must articulate explicitly their expectations for graduate students and use them to evaluate progress towards the degree. These expectations must be fully independent of any employment in which graduate students may engage. Furthermore, students should be asked to attest to their intellectual contributions in any work-for-hire they wish to use, with the assent of their faculty advisor and/or thesis/dissertation committee, as evidence of academic achievement.

R2. The UC and all of its PhD/MFA programs must endeavor to provide PhD/MFA students with *stable and competitive financial resources* appropriate to successful and timely degree completion. The effort must begin by understanding the true costs of this type of education and how they are allocated. We must think holistically about all resources that contribute to supporting graduate students, including various subsidies; assigning time limits to ensure they are distributed efficiently; and (in the long term) building a broader base from which to draw them.

R3. The UC must more *actively manage its PhD/MFA enrollments*, while centering its students and program quality. Program sizes should be based on graduate educational needs and values, rather than on the University's need to accomplish our undergraduate teaching and research missions. The UC must establish metrics for determining optimal program size and must collect data to measure how programs are performing relative to these metrics.

R4. The UC must *align its graduate pedagogy better* with the goals of our PhD/MFA programs and our students, as well as workforce opportunities. Programs should reflect regularly and consequentially on academic expectations and practices, and should conduct more frequent assessments of graduate students to ensure they are making continuous academic progress. Campuses must identify and address programs with sustained weaknesses and students who consistently fail to progress.

R5. *Advising and mentoring partnerships*, the cornerstones of the UC's PhD/MFA programs, must be *enhanced, incentivized, broadened, and assessed.* The roles and responsibilities of both faculty and staff mentors and graduate student mentees must be clearly articulated and widely embraced. The UC needs to play a more active role in promoting healthy relationships, and in preventing or redirecting unhealthy ones. Creating broader, more structured mentoring networks will reduce the burden on individuals while providing students with a wider range of complementary mentoring experiences.

R6. The UC must better prepare its PhD/MFA students for *a wide variety of post-graduation careers*, including and beyond the academy. Comprehensive campus-wide and systemwide strategies must confer skills needed in the job market and connect

students with career resources and employers. Post-candidacy, students must be expected and empowered to begin exploring a range of career paths.

Re-imagining doctoral education

In addition to formulating recommendations, our Workgroup also engaged in many forward-looking discussions. We asked how we might adapt doctoral education for new contexts that differ radically from what existed when the UC was created. The resulting "bold ideas" (**B**) are, necessarily, *not* recommendations. Instead, we intend discussion of these creative concepts to expand the boundaries of our thinking to stimulate a broad re-thinking of doctoral education, empowering us to shape new versions of our academic graduate programs. We summarize them below, and describe them in more detail in Section 3 of this report:

B1. Target *dramatic reductions in time-to-degree* across all PhD/MFA programs. Resource scarcity means that program length and access are inversely correlated. To motivate students to progress faster towards their degree objectives, programs could institute and enforce stricter time limits, and students could be encouraged to use AI and other tools to automate tedious tasks. Programs could help students get a faster start by designing ways for them to fill in skills gaps in their preparation for graduate study. One motivation for programs to keep students moving along might involve gating admissions. Alternatively, requiring graduate students to earn a Masters' degree before advancing to the PhD could allow programs to focus their resources on the smaller number who choose to do so.

B2. Exercise *more central oversight* over PhD/MFA programs. Program budgets and resource allocations could be better aligned with campus-level goals for graduate education, and adjusted more frequently to respond to changes in program successes and needs. A larger fraction of resources could be managed centrally and redistributed to maintain the vibrant intellectual communities that graduate education depends on. Graduate programs could be reconfigured campus-wide or systemwide to optimize cohort sizes.

B3. *Decouple graduate curricula from undergraduate-focused departmental structures.* Acknowledging the differences in scope and purpose between graduate and undergraduate programs leads us to consider how graduate student experiences and faculty advising might be more fully separated from their undergraduate affiliations. For example, graduate students could rotate across multiple programs to gain broader research experiences. Faculty advisors could be required to acquire and maintain membership in non-departmental graduate groups and/or a graduate college to be eligible to chair dissertation committees.

B4. Explore *new types of PhD/MFA programs.* Traditional PhD/MFA programs could be modernized by tailoring them to better align with student interests in career paths, focusing on either academic or non-academic research, teaching, policy, etc. Programs could be further personalized and modularized around acquiring competencies in student-selected areas. Students in a broader range of disciplines may benefit from targeted teaching skills development through postdoctoral or similar appointments.

B5. Create graduate programs that *span multiple campuses.* The UC could better leverage its size and mitigate effects of decreasing graduate cohort sizes by expanding multicampus graduate course offerings and advising, and eventually multicampus graduate programs. Such efforts could also extend to creating joint PhD/MFA programs with non-UC institutions, as well as study-abroad opportunities for graduate students.

B6. *Fully decouple academic effort from employment* and other forms of financial support. Providing all graduate students with a universal basic stipend unconnected to employment could alleviate many pressures and accelerate time-to-degree. One idea to fund such an initiative involves having alumni pay back some portion of their income to fund the next generation of graduate students. The University could also change the incentives in current models for graduate student support by requiring that all academic products used to satisfy degree requirements arise from students' own intellectual efforts, or by prohibiting the use of work-for-hire products/outcomes in dissertations.

B7. *Engage more substantively* with industry, government, and the community. The UC has not fully realized opportunities to communicate the value of graduate education outside the university. A more intentional approach and a greater willingness to partner or accept sponsorship could yield major dividends for funding of graduate education. At the same time, opportunities for graduate students to take part in residencies, fieldwork, and internships could expand their skillsets and their future employability.

B8. Innovate in systemwide approaches for *cost control and revenue generation* related to PhD/MFA education. UC could deploy flexible benefit packages to improve graduate student satisfaction while targeting resources where they are most appreciated. A more audacious version of this idea would give graduate student cooperatives the responsibility for decisions about how to allocate a fixed pot of resources to various needs. Finally, trading credits could allow each UC campus to achieve its preferred mix of students and resources.

So what *is* the future of doctoral education at the UC? We believe that PhD/MFA education will become more student-centered, more accomplishment-focused and considerably more time-efficient, preparing students better for diverse challenges and opportunities in academia and other professional fields. Thriving graduate programs will remain committed to scholarship and be solidly grounded in disciplinary values, while adapting both decision-making and advising to a more distributed model that engages multiple faculty across our programs and departments. Central management of some program elements will help us become more responsive to regulatory concerns and resource constraints.

Finally, we end this report with an exhortation to the UC, its faculty, and our graduate students, to begin to chart our future together. We need to explore many new ideas. In short, we need much more than discussion and reflection: this report needs to inspire planning and action.

1. Introduction

1.1 How we got here

The expansion of US universities in the post-war era between 1945 and 1970, also known as the "Golden Age" of higher education,[4] allowed research universities to grow their enrollments at all educational levels. This growth provided opportunities for established disciplines as well as for new fields. Notably, the creation of many doctoral education programs assisted universities in expanding access to undergraduate education. By the 1970s, however, state governments had begun to reduce their subsidies for higher education, shifting costs onto (1) undergraduate and graduate students, in the form of tuition increases, and (2) faculty, particularly in the STEM disciplines, by obligating them to secure extramural grants to partially fund the degrees of research doctoral students.[5] Since that period, all types of support for doctoral students, including student stipends, tuition, fees and other benefits, research expenses and equipment, and travel for professional development, have failed to keep pace with costs. At the same time, it has become more expensive to educate such students, including the need for more faculty time to meet increased expectations for the quantity of dissertation research as well as the quality of academic publications, rising costs for research expenditures, and assumptions on the parts of the students and their future employers that students will have had opportunities to attend multiple academic conferences by the time they graduate. Neither state support for higher education, nor the size of extramural grants, has expanded at the rate needed to cover the inexorably rising costs.

Over the same time period, economic insecurity during and sometimes post-graduate school have grown while job opportunities within the academy have tightened, contributing to dissatisfaction among doctoral students. Increasing competition in the job market has led to higher expectations for scholarly productivity (*e.g.,* research completion, publication counts, citations) for doctoral student, resulting in longer times-to-degree. Although most PhD/MFA students begin their studies expecting to secure a stable, fulfilling position in academia, public service, or the private sector, some discover – after significant investments of time, effort, and hope – that job markets are saturated and highly competitive. This is particularly true for academic positions and especially in a subset of disciplines. The sense of uncertainty about their prospects can leave students feeling overwhelmed, directionless, and unprepared for the challenges that lie ahead of them. The malaise may even create perverse incentives for students to prolong their degree programs more than is strictly necessary for the achievement of their academic goals.

The prevalence of mental health issues among PhD students[6] has also been the cause of much

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[4] Freeland, R. M. (1992) The World Transformed: A Golden Age for American Universities, 1945-1970. In *Academia's Golden Age: Universities in Massachusetts, 1945-1970*. Chapter 2. Oxford University Press: New York, NY. https://doi.org/10.1093/oso/9780195054644.003.0008

[5] Bennett, J. W. (1971) The 1970's - Decade of crisis for higher education. *NACTA Journal*, 15(3), 72–74. http://www.jstor.org/stable/43762656

[6] Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., and Gisle, L. (2017) Work organization and mental health problems in PhD students, *Research Policy*, 46(4), 868-879. https://doi.org/10.1016/j.respol.2017.02.008

soul-searching nationally.[7] The recent global pandemic appears to have worsened both the economic and emotional distress of our students.[8] Substantial additional faculty effort and support have been required, often through times when students are not making much progress in their research. Undoubtedly, the University and the faculty have sometimes exacerbated these problems, by failing to provide the mentorship that PhD/MFA students need to thrive, and by neglecting to help students prepare well for careers in academia and beyond.

While the career challenges of US-based PhD/MFA students in the Arts, Humanities, and Behavioral Sciences have received much of the recent attention,[9] concerns are now spreading to the STEM fields as well.[10] According to a National Science Foundation biennial survey of science, engineering, and health STEM doctorate recipients, less than half of all US-residing PhD recipients (about 42%) were employed in tenured or tenure-track positions in their primary field in 2021.[11] For STEM PhDs *in all age groups*, the extent of private sector, government and non-profit employment is now on par with employment at educational institutions, with the biggest shift over the past two decades affecting doctorates in the life and health sciences.[12] Furthermore, since that analysis includes several generations of degree recipients, the impact is presumably much larger on STEM PhDs who entered the workforce more recently. Data on new PhD recipients show that the fraction in 2021-22 who secured an academic employment offer had declined another 3.7% over the previous year, while the fraction with job offers in the private sector had increased by 4.4%.[13] While we welcome a broader demand for our graduates' skills, we nevertheless acknowledge that career opportunities are changing in ways that doctoral students and the academy have yet to fully embrace.

Broad structural issues in higher education must now be considered, requiring adjustments far beyond the specific disciplines where questions about post-degree employment are most urgent. The University of California plays a significant role in doctoral education. We contribute 64% of all PhDs earned in the state of California, and 7% of all PhDs earned nationally. Therefore, UC has a unique responsibility and leadership opportunity to assess and shape the future of doctoral education.

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7 Council of Graduate Schools and The JED Foundation. (2021) *Supporting Graduate Student Mental Health and Well-being: Evidence-informed Recommendations for the Graduate Community*. Council of Graduate Schools: Washington, DC. https://cgsnet.org/wp-content/uploads/2022/01/CGS_JED_GradStudentMentalHealthReport.pdf

8 Langin, K. (2020) Amid pandemic, U.S. faculty job openings plummet. *Science* (Oct 6, 2020). doi: 10.1126/science.caredit.abf1379

9 American Academy of Arts and Sciences. (2022) *State of the Humanities 2022: From Graduate Education to the Workforce*. American Academy of Arts and Sciences: Cambridge, MA. https://www.amacad.org/publication/humanities-graduate-education-workforce

10 Xue, Y., and Larson, R. C. (2015) STEM crisis or STEM surplus? Yes and yes, *Monthly Labor Review,* U.S. Bureau of Labor Statistics, May 2015. https://doi.org/10.21916/mlr.2015.14

11 National Center for Science and Engineering Statistics (NCSES). (2023) *Survey of Doctorate Recipients, 2021*. NSF 23-319. National Science Foundation: Alexandria, VA. https://ncses.nsf.gov/pubs/nsf23319

12 Langin, K. (2019) In a First, U.S. Private Sector Employs As Many Ph.D.s as Schools Do. *Science* (March 12, 2019). doi: 10.1126/science.caredit.aax3138

13 Heuer, R., Einaudi, P., and Kang, K. (2023) *Research Doctorate Conferrals Rebound, Leading to Record Number of U.S. Doctorate Recipients in 2022.* NSF 23-353. National Center for Science and Engineering Statistics (NCSES). National Science Foundation: Alexandria, VA. https://ncses.nsf.gov/pubs/nsf23353/

1.2 The challenges and opportunities ahead

The UC, as an institution, is a highly interconnected ecosystem. Each of our constituencies – undergraduate students, graduate students in both academic and professional programs, staff, faculty, and other academic employees – must be able to thrive together to deliver high-quality educational experiences and create the new knowledge that will address our most important and complex societal and technical challenges. PhD/MFA students are key members of the UC community, enriching the academic environment with their diverse perspectives and fresh ideas, and contributing to the vibrancy of the academic atmosphere. The unique viewpoints and innovative approaches of our students can challenge established norms and propel disciplines towards new frontiers of knowledge. These students undergo a rigorous admission selection process, then complete challenging coursework before dedicating themselves to research under the close and sustained supervision of faculty advisors, culminating in an original dissertation or thesis. Their academic journeys demand a high level of commitment, intellectual curiosity, perseverance, and faculty and institutional support. When our PhD/MFA programs fully engage students from various backgrounds and disciplines, the rich tapestry of ideas that enhance the educational experience of all students. Without the contributions of graduate students, the intellectual atmosphere of research universities might stagnate, causing the pace of broader societal and technical advances to slow.

We have now arrived at a pivotal – even historic – moment in PhD/MFA education. Our student bodies have never been more ethnically diverse,[14] even as we acknowledge that their composition still differs significantly from the general population of California. Yet graduate programs nationally are starting to see declines in first-time enrollments of minoritized students.[15] Politicization and polarization of opinion have increased, creating stress on our aspirations for free speech and academic freedom. The rate of hiring into academic positions is low, and while job placements outside academia remain strong in some fields, we question whether our students are truly well-prepared to translate their academic knowledge into skills appreciated by the private and non-profit sectors. And in the midst of all the turbulence, the UC has committed to significant changes in the way we interact with, and support, our doctoral students. Increasingly, we must separate how we provide funding to our students from their academic needs and achievements. We must more clearly define expectations of both students and faculty in these intersecting relationships and activities, by describing program learning outcomes, creating syllabi for independent study, and/or using Individual Development Plans (IDP). These and other interventions have profound consequences for our academic relationships, pushing faculty and PhD/MFA student relationships in new directions that are more structured, more tense, and less flexible than those to which we have historically been accustomed.

Although our relationships must evolve, it is nevertheless crucial that we strive to preserve our vibrant, mentorship-driven academic culture. The pursuit of knowledge and the joy of discovery

[14] Graduate admissions. University of California Accountability Report (2023). https://www.universityofcalifornia.edu/about-us/information-center/graduate-admissions

[15] McKenzie, B. D., Zhou, E., and Regio, A. (2023) Graduate enrollment and degrees: 2012 to 2022. Council of Graduate Schools: Washington, DC. https://cgsnet.org/wp-content/uploads/2023/10/2022-Graduate-Enrollment-and-Degrees-Final-Report.pdf

must remain central to the academic experience, to sustain the enthusiasm and creativity that drive research progress. We realize that existing approaches, infrastructure, and policies for PhD/MFA education need revising, both at the UC and nationally, to meet the educational, professional, and emotional needs of our students, and to prepare them better for the discoveries they will make in the types of careers they will pursue and, in some cases, create. We also need to ensure our faculty are equipped with the tools and resources they need to do their own jobs and to meet their ever-increasing responsibilities in this new context, while respecting their rights and needs.

We begin by articulating the combination of factors intrinsic to the quality and effectiveness of UC PhD/MFA programs:

- a positive program climate, including both structural and cultural components;
- competitive funding support that attracts highly qualified students;
- supportive advising and mentoring, often with substantial time investment from multiple faculty, that fosters independent inquiry;
- appropriate time-to-degree, and a high overall degree completion rate within this time;
- broad opportunities to prepare for careers in teaching, research, leadership, and other intellectually demanding endeavors;
- strong placement of our graduates in academia, the private sector, and non-profit and governmental agencies.

Virtually all UC PhD/MFA programs face challenges in achieving at least some of these goals. Furthermore, many of the challenges intersect. For example, weak alumni outcomes may be a function of the job market in a given field, insufficient mentoring, and/or a problematic program climate. Likewise, program climate data suggest that impacts may be distributed unevenly within programs and across campuses, with minoritized students sometimes reporting more concerns about climate than students who are traditionally better-served by educational institutions. For every PhD and MFA program across the UC, we — the faculty and administrators charged with their conception and delivery — are now asking serious questions about how and why they exist, their roles in the current and future university, and how we will ensure that UC quality is maintained. These considerations spur us to reassess our PhD/MFA programs and compel us to redesign them as needed. We must look to the future even as we continue to draw inspiration from the past. Questions we must now pose about each of our programs include:

- Which core competencies define this field or discipline (or, if interdisciplinary, the collection of fields or disciplines)?
- Does this program prepare students to pursue careers in academia, and/or other jobs that require the use of the core competencies specific to the program?
- Is this program competitive with others in the UC system, the nation, or the world? How do its degree requirements compare to those at other top-ranked programs?
- Is the applicant pool sufficiently large and diverse, and is the number of enrolled students large enough to create a viable cohort?
- Are there effective processes to assist students in finding a faculty advisor/mentor, and in changing their faculty advisor/mentor as needed? Are faculty appropriately supported in the substantial investment of time and knowledge that quality mentoring requires?

- Are there regular assessments to verify that students are making steady academic progress, and do students receive enough advising and mentoring to achieve their degree objectives within normative time?
- Do students in this program produce high quality original research and/or creative contributions?
- Does the program have sufficient resources to support its students through degree completion?
- Is the normative time-to-degree reasonable, and are students generally finishing all degree requirements in close to this normative time?
- Does this program provide viable exit paths for students who do not finish the PhD degree objective?
- Does this program positively impact the community surrounding the campus, the state of California, and/or the world?

1.3 Principles and values guiding this Workgroup's deliberations

Advising graduate students is, for most faculty, a labor of love. We affirm that we value our PhD and MFA students *first and foremost as students.* Faculty find joy and fulfillment in guiding their academic journeys, even as graduate students require more time and effort to teach than any other population at the university. Our academic relationships are much more than a duty – they are a significant and rewarding aspect of a professor's career, and frequently become relationships for life as faculty advisors continue to mentor, write letters for, and support their PhD/MFA alumni long into their independent careers. Faculty members often see their mentorship of graduate students as a way to pass on their knowledge, skills, and passion for learning. Through the success of their students, faculty extend their legacies, knowing they have contributed to shaping the next generation of scholars, researchers, and leaders.

Faculty are also acutely aware of our major role in the advancement of scholarly knowledge in California and in the world, our systemwide capacity for and track record in PhD/MFA education, and of our status as federally designated minority-serving institutions. These attributes uniquely position the University of California to transform the professoriate as well as the intellectual leadership of the state and the nation, making them more equitable and inclusive. As the UC educates an increasingly diverse population of PhD/MFA students, including large numbers of first-generation and parenting students, we must remain committed to the accessibility of pathways into and out of PhD/MFA education.

Throughout their educational journeys, our PhD/MFA students engage in many types of activities, each one aligned directly or indirectly with their dissertation/thesis research and academic goals. This holistic view of graduate education underscores the importance of viewing the academic employment of PhD/MFA students within the broader context of their professional growth, and vital to their nurturing as the next generation of scholars and professionals. Even activities associated with remuneration are *and must be* essential components of the overall educational experience. In this light, our PhD/MFA enrollments should be determined by the academic goals of our students and their programs, rather than the University's needs for undergraduate pedagogy, its research enterprise, and other core missions.

The education of a PhD/MFA student entails substantially greater investments relative to a student from any other group. Beyond their tuition-free, stipend-supported costs, the faculty time and university facilities needed to support these students in their degree programs are considerable. For the duration of their degree, the average PhD student in a STEM field meets with their faculty advisor for an hour each week one-on-one, as well as an hour or more each week in a small group setting with a faculty advisor, other graduate students, and in some cases, postdoctoral scholars. While non-STEM PhD and MFA students may meet with their advisors less frequently, they still receive significantly more one-on-one time than even the most eager undergraduate student. Faculty also spend many hours assessing papers from PhD/MFA seminars and qualifying/candidacy exams, and even more hours editing and commenting on parts of the dissertations/theses from their own student advisees as well as those on whose dissertation and thesis committees they serve. PhD/MFA students tend to have dedicated office and lab/studio spaces, and they make greater use of university services like libraries and childcare, while remaining on campus for more years, compared to any other category of students. And while many of our campuses have important housing challenges, we still offer more graduate housing per capita, across the entire UC system, than any other research university in the country. Other needs will never fully compensate for the substantial costs of these students, although they do help to defray them.

Our commitment to the education of PhD/MFA students derives from the central importance of our graduate programs and our students to UC's educational mission. Despite the costs and multiple stress points apparent in our current system, *some aspects of PhD and MFA education at the University of California still work well and are worth preserving*. Many of our graduate programs are ranked among the best in the country and are highly desired by students seeking advanced degrees. Our 10-year completion rate, 73%, is much higher than the national average of 57%.[16] Indeed, we are proud that 71% of UC's PhD students complete their degrees within 8 years.[17] Our MFA completion rates are nearly 84% at 3 years, rising above 94% at 5 years. Nevertheless, changes are necessary, not only to better meet the needs of our current and future graduate students, but also because policies, costs, and current and foreseeable support levels demand it. Each PhD/MFA student admitted to the UC should be adequately supported, not only in terms of funding, but also in student advising, student services, staff support, and other needs, for the normative period required to attain the degree objective. In return, students must take responsibility for seeking, accessing, and using these resources to ensure timely completion of their degrees.

1.4 Objectives of this report

With this our final report, we seek to catalyze conversations across the UC system and beyond that spur a radical rethinking of PhD/MFA education.[18] In the course of our deliberations, members of our Workgroup consulted several times with the leaders of campus-based task forces

[16] Sowell, R.; Zhang, T.; Bell, N.; Redd, K. (2008) Analysis of Baseline Demographic Data from the Ph.D. Completion Project. Council of Graduate Schools: Washington, DC. https://cgsnet.org/wp-content/uploads/2022/01/phd_completion_and_attrition_analysis_of_baseline_demographic_data-2.pdf

[17] https://www.universityofcalifornia.edu/about-us/information-center/doctoral-rates

[18] See Appendix 2 for a complete statement of our Charge. Our processes and procedures are described in more detail in Appendix 3.

formed to address the new challenges in PhD/MFA education. We had access to guidance in the APC's 2019 Report on Doctoral Education,[19] as well as the reports on Graduate Education from UC Irvine and UC Santa Cruz.[20] We acknowledge with regret the limited impact of many earlier reports. Implementation of their recommendations was undoubtedly hampered by the vastness of the UC's doctoral program offerings, resource constraints, and varying other priorities of the UC and its individual campuses in recent years.

In section 2 ("Major findings"), we summarize briefly the Workgroup's considerations in each of the six areas of our initial charge and present a set of actionable recommendations targeted variously to the University, its campuses, colleges and schools, programs, and individual faculty advisors of PhD/MFA students. In section 3 ("Re-imagining doctoral education"), we present a series of bolder ideas. They are intentionally far-reaching and thought-provoking. They should not be considered recommendations, nor as the consensus opinion of the Workgroup. Indeed, at times they conflict with one another. In addition, since each of our programs operates within a national disciplinary context, unilateral changes can be risky. Our goal is to stimulate broad, creative thinking about how individual campuses and individual disciplines might make significant and strategic changes, as well as how we might as a system push away from existing boundaries and norms in order to meet the goals and address the realities of modern doctoral education. We must be willing to reexamine the traditional apprenticeship model for PhD/MFA education, whose success was achieved under dramatically different conditions from those we face today.

These ideas, and this report overall, are intended to help our unique campuses, and disciplines across our campuses, with their different contexts, needs, and possibilities, to envision their own futures. We close in section 4 ("The path forward") with a call to action, addressed to both university administrators and faculty leaders. Dramatic changes will be needed in the coming years, both to prepare students for the world that awaits them, and to deal with the structural budget issues that make our current trajectory feel profoundly unsustainable. We describe general considerations for looking ahead. With this report to inspire the very necessary discussions about how to proceed, we urge everyone who cares about preserving a place for doctoral education at the UC to join the conversation, and to help ensure that changes can and do happen. We implore all those who read this report to find a way to act, whether big or small. The need for change has never seemed more important, its urgency never greater, and we must begin soon.

[19] See Appendix 8, which itself refers to the reports of five (!) previous UC workgroup and task force reports on similar topics, all written since 2000.

[20] See Appendices 9 and 10.

2. Major findings and recommendations

2.1 Define academic expectations

The UC, and every PhD/MFA program it offers, must clearly define academic expectations for its graduate students, particularly as they are distinct from any other relationships these students may have with the University.

2.1.1 Considerations

UC faculty, administrators, and staff, are committed to preserving and enhancing the core values and traditions that define excellent research universities, including the education of PhD and MFA students. The Faculty of the University of California's Academic Senate are empowered by the UC Regents to oversee academic matters of central importance to the University. The Faculty establish academic policy, set conditions for admission and the granting of degrees, authorize and supervise courses and curricula, and set professional standards relevant to the academic mission, consistent with the policies and procedures of the Academic Senate. Collectively and individually, faculty members have the expertise, the authority, and the responsibility to require, assess, and judge academic outcomes, as well as progress toward academic degrees. In the specific case of PhD/MFA education, academic expectations and faculty instruction extend far beyond formal, graded coursework. Accordingly, faculty members must assess progress for all of the types of academic activities undertaken by graduate students at the University, whether graded or ungraded. Faculty who certify academic accomplishments (whether they be assigning course grades, evaluating annual academic progress, or determining the outcomes of exams or dissertation/thesis defenses) are responsible for establishing the criteria by which these accomplishments are assessed, and must apply the criteria fairly to evaluate all students. These rights and responsibilities must not be abridged or impinged upon by any actors, whether internal or external to the University.

Our traditions, models, and practices provide the basis for our academic expectations of PhD and MFA students. To accomplish our academic mission, faculty must clearly articulate these expectations, distinct from any other relationship graduate students might have with the university. Academic progress *has always been and must continue to be* measured according to academic standards. For example, graduate students might apply knowledge and skills they acquire in the course of their employment - whether within the university or outside it - to their academic objectives, but their academic progress *is not predicated* on any such employment. UC faculty have already invested considerable time and effort in delineating and assessing learning outcomes for undergraduate and graduate courses and programs, as required by our accreditation agencies. In extending our efforts to the independent study courses at the core of our PhD/MFA programs, we assert our commitment to this academic principle.

Members of the UC Faculty who enter into advisor-advisee relationships with graduate students must set academic expectations for these students and assess their academic progress, regardless of course enrollment or employment status. To further clarify the distinction between academic effort and employment, this APC Workgroup stated:

> *While employment is performed as a service for a defined period of time or for a specified set of activities, academic effort is undertaken in pursuit of a defined academic goal that is not always associated with a precise expectation of time or with predetermined activities.*[21]

Regarding all academic tasks, graded and ungraded, we noted that:

> *…faculty have the authority to set expectations regarding overall academic progress in graduate programs and are responsible for providing regular feedback to their advisees about their progress. This authority applies not only to graded directed-studies coursework, but also to any other academic effort required to make satisfactory academic progress.*[22]

The Academic Senate's Coordinating Committee on Graduate Affairs (CCGA) provided the following guidance on independent study courses:

> *At the beginning of each term, faculty should clearly describe to their graduate students the expectations for their academic progress, as distinct from the expectations for their employment. …while activities performed for academic goals and expectations may be similar or even the same as activities performed for employment, their purposes are different, and the standards by which these activities must be measured are different. While employment is performed as service for defined periods of time or for specified sets of activities, academic effort is undertaken in pursuit of defined academic goals and expectations that are not always associated with defined periods of time or specified sets of activities*.[23]

CCGA also issued a statement of principles clarifying the roles and responsibilities of faculty in guiding PhD/MFA students and assessing their academic progress:

> *The fundamental commitment to education is the basis for the faculty's purview over academic programs, policies, and standards. UC faculty authority for oversight and assessment of academic progress is infrangible and applies whether or not a graduate student is supported with a fellowship; whether or not a graduate student is employed as a researcher, teaching assistant, or in any other capacity; and/or whether or not a graduate student is enrolled in a traditional or independent study course. UC faculty oversee and have plenary authority over all graduate programs, degrees, and courses, and are responsible for setting disciplinary and interdisciplinary standards and assessing the academic progress of students they advise. Mentoring, collaboration, and creative discovery may occur through a wide variety of activities and methods, on the basis of both formal and informal interactions. These activities and assessments are intended to benefit graduate students, in their pursuit of advanced degrees, by helping to assure that students remain on track and on schedule, have clear goals and expectations, and establish themselves as experts and leaders in their chosen fields.*[24]

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[21] See Appendix 4.
[22] See Appendix 6.
[23] See Appendix 5.
[24] See Appendix 7.

Guided by these statements, programs that enroll PhD/MFA students, as well as the individual faculty members who advise these students in their dissertation and thesis projects, must consider the following key questions:

- For each activity deemed essential for the degree objective, what learning outcomes prepare a student to become an independent scholar, scientist, engineer, or artist?
- What metrics measure the academic progress of a student towards these outcomes, and how will the value to their field of their original discoveries, creative contributions, and advances in knowledge be judged?
- What milestones must a graduate student accomplish, and in what reasonable time period, to demonstrate acceptable progress toward these learning outcomes and degree objectives?

We must now undertake a collective effort across our campuses, and systemwide, to more clearly define the academic progress required of students in our PhD and MFA programs. We must strike a reasonable balance between providing models and guidance documents to campuses, departments, individual faculty, and graduate students themselves; respecting the traditions and expectations of individual fields and disciplines; and acknowledging the highly individualized journey that each PhD/MFA student undertakes with their faculty advisor(s) towards discovery and mastery. Embracing this opportunity, we will better be able to articulate the essential nature of graduate education and its intrinsic value to the University of California, while adapting our practices, policies, and cultures to optimize educational outcomes. We expect our efforts to articulate and formalize our expectations to improve academic outcomes in PhD/MFA education. Such efforts are also opportunities for renewed discussions about the merits, concerns, and pedagogical considerations for UC's PhD/MFA programs within our broader academic mission to educate the scholars, scientists, artists, and thought leaders of the future.[25]

We are well aware that in many disciplines, particularly in STEM fields, faculty apply for and are awarded extramural research grants with implicit expectations that any PhD students contributing to the research project will also use their results to make academic progress. In some cases, fellowships awarded directly to students (*e.g.,* those provided by NSF's Graduate Research Fellowship Program) are explicitly intended by the funding agency to support the student's academic progress, without benefit necessarily to the faculty advisor nor to the University. Some PhD students whose research is supported in this way are treated as employees under the terms of the Graduate Student Researcher collective bargaining agreement, even while they are not our employees, and are recipients of fellowships whose terms explicitly disallow employment. Unless and until our extramural funding agencies issue new guidance, distinguishing between academic progress and employment will remain difficult. Individual faculty, as well as their graduate programs and disciplines, will continue to wrestle with the following broad questions:

- How can faculty advisors and principal investigators (PIs) better distinguish the academic goals and objectives of PhD/MFA students from the employment tasks and duties of graduate student researchers (GSRs), particularly when the expectations currently associated with extramural funding are not aligned with such distinctions?

[25] Pedagogical and curricular considerations are described in more detail in Section 2.4 of this document.

- In cases of significant overlap, how will faculty advisors and PIs determine and deploy the appropriate mechanism(s) to address inadequate academic progress as distinct from unsatisfactory employee performance?

We reiterate that the rights and responsibilities of the faculty, whose intellectual activities are largely responsible for acquiring the research funding, must remain foremost in deciding how to manage these situations. Academic decisions cannot be dictated by any entity external to the university and/or unconnected to its academic mission. The recommendations below aim to assist faculty in describing academic expectations for graduate students distinct from any requirements related to their employment.

2.1.2 Actionable recommendations

R1a. Articulate clear expectations, in the form of syllabi or other written expectations, for all PhD/MFA student learning outcomes.

PhD/MFA students are, by definition, scholars-in-training. In the context of their program of study, their primary purpose is to cultivate core competencies, master canons of knowledge, and develop ways of knowing and learning specific to their discipline and/or field. Every aspect of their university experience, in formal coursework as well as in all other scholarly efforts (including but not limited to courses that teach students how to conduct research or to undertake scholarly/artistic activities, and those that teach them how to teach) is intended to contribute to the attainment of a graduate degree. Through course grades, formal annual reviews, and informal feedback, PhD/MFA students are evaluated and should be informed of the outcomes of these evaluations by their faculty advisor(s), dissertation committee, other faculty members, and the university administration.

Faculty must clearly articulate and communicate to their advisees the academic criteria by which each student will be assessed, and which accomplishments constitute significant original contributions worthy of a PhD/MFA degree. Because the scholarly work at the core of PhD/MFA education is highly personalized, often open-ended, and frequently unpredictable, standard syllabi cannot be created for any discipline, department, or school. Substantial faculty expertise and oversight are required at every stage. Nevertheless, learning outcomes can describe broadly the types of knowledge and skills that the program of study aims to cultivate (*e.g.*, designing and conducting research; understanding and applying professional standards; articulating and advocating, both verbally and in writing, for a particular position, interpretation, or result; becoming an expert on the dissertation topic; and collaborating with other experts on this and related topics).

Beyond these broad goals, any syllabi or, where appropriate, individual development plans (IDPs) will need to be customized to the project and educational stage of the student. In independent study courses, individual faculty have the authority to establish the goals and expectations appropriate for syllabi, adapted to the context of their fields and disciplines. However, academic outcomes will likely better be supported if the UC system, disciplinary groups within the system, and individual campuses, articulate core principles and share resources and common templates. The UC, its campuses, and their programs should curate resource banks

with sample syllabi and IDPs as well as templates that are readily adapted based on discipline, project, and student. This practice, already underway, should ease the burden on faculty of creating and using more detailed assessments for their graduate student advisees.

R1b. Have PhD/MFA students attest to their specific intellectual/creative contributions.

Graduate students are expected to present the products of their own scholarly activities as evidence of academic achievement for the degree. The evaluation of such products by the Faculty occurs at two major milestones. The first is the examination for advancement to PhD candidacy, at which the student must demonstrate mastery of the field as well as *readiness to conduct independent research.* The second is the final approval of the dissertation (PhD students) or MFA thesis (MFA students), often via an oral defense, through which the outcomes of the research are examined as original contributions to knowledge in the field. At each of these examinations, graduate students must describe and discuss their specific intellectual contributions, even though the research or creative activities are almost always conducted with guidance from one or more faculty advisors and are sometimes produced in collaboration with other scholars or researchers.

When a graduate student receives fellowship funding for an original research proposal written entirely by the student, that is not based on or derived from a faculty member's research, the resulting intellectual property is typically owned by the graduate student.[26] Frequently, a graduate student is hired as a part-time employee to work on a project that is partly or wholly related to their dissertation/thesis topic, with funding from an award made to a faculty member serving as Principal Investigator (PI) based on the PI's intellectual property. While such students may engage in university employment to defray the cost of their education, such employment is always undertaken *in addition to* their status as full-time students.

The University has the authority to control the use of products that arise from its paid employment. In particular, work products paid for by the university and/or by a faculty member's original research proposal are not automatically eligible to be included in the dissertation/thesis. Being allowed to use some part of this work-for-hire for academic purposes often helps to shorten the time-to-degree. Products of work-for-hire are therefore sometimes counted towards an advanced degree, but the University has no expectation that such work is a requirement for the degree, or that it must count towards the degree. It follows that no graduate student has a right to include products generated as a result of work-for-hire as an employee as evidence of academic accomplishments for advancement to PhD candidacy, or in the dissertation/thesis, without approvals from both the dissertation committee chair and the PI of the grant. Furthermore, it is always the case that the entire committee must approve the final dissertation, including authenticating and affirming which research products are included or excluded from academic consideration.

Obviously, a graduate student may, in the course of employment, make additional intellectual contributions to the project of a faculty PI (who is usually also the faculty advisor and

[26] UC Copyright Ownership Policy: https://copyright.universityofcalifornia.edu/resources/copyright-ownership.html

dissertation chair for the student). Since research is inherently unpredictable, outcomes not envisioned by anyone may emerge in the conduct of a project, while others may not come to fruition despite best efforts. The decision about the extent to which such work is eligible to be used for academic assessment of intellectual advances must result from discussion with the dissertation committee. While the PI of the grant may provide insight (*e.g.,* which intellectual contributions pre-date or are not related to the student's research), the dissertation is ultimately an academic product subject to academic judgment.

Overall, work-for-hire presented as evidence of academic achievement for an advanced degree, in whole or in part, must have the faculty advisor's permission, and should be justified by the graduate student's attestation regarding their specific intellectual/creative contributions (*e.g.,* in a dissertation acknowledgements section). When co-attribution of intellectual property may be appropriate, the graduate student should discuss with the faculty advisor/dissertation committee the extent to which any employment-related work products may be used to satisfy academic requirements.

R1c. Explicitly recognize faculty advising of PhD/MFA students as a contribution to the educational mission of the University.

Considerable work is required of faculty to create and continually update personalized academic expectations for their graduate student advisees, via syllabi and/or other mechanisms (**R1a**). As described above in **R1b**, faculty may also be responsible for seeking extramural funding to support these students, involving the time-consuming preparation of research proposals as well as post-award grant management and reporting. Increasingly, they must manage expanding and complex compliance burdens in many aspects of their own and their advisees' scholarly activities, often with little staff support.

The UC Academic Personnel Manual (APM) already recognizes "general guidance, mentoring, and advising of undergraduate students, graduate/professional students, postdoctoral researchers, and other academic researchers and research staff; ability to awaken curiosity, encourage high standards, and inspire students to creative work; achievements in creating an academic environment that is open and encouraging to all mentees, including development of effective strategies for the educational advancement of mentees in underrepresented groups."[27] This section of the APM should be interpreted to include faculty efforts in articulating academic expectations to graduate students, advising and guiding them, and assessing their academic progress. Furthermore, this recognition should extend to faculty efforts to educate and assist all graduate student advisees and mentees, including those who do not ultimately complete their degrees.

[27] UC Academic Personnel Manual 201-1.d.1. https://www.ucop.edu/academic-personnel-programs/_files/apm/apm-210.pdf

2.2 Understand, consolidate, and steward financial resources

The UC, and all of its PhD/MFA programs, must endeavor to support its PhD/MFA students with resources appropriate to successful and timely degree completion.

2.2.1 Considerations

In California's visionary Master Plan for Higher Education,[28] the UC is assigned a distinct role relative to the California State Universities and the California Community Colleges. In particular, the UC has a unique mandate in the area of knowledge creation and workforce preparation via doctoral education. Furthermore, UC's PhD/MFA programs and the students they enroll are critical to fulfilling all three key components of UC's mission:

1. *Research*, by contributing directly to the creation of new knowledge, and the development of new approaches to inquiry;
2. *Education*: by disseminating that knowledge broadly, via UC's research-based teaching mission; and
3. *Public Service*: by supplying the state with a highly educated workforce capable of both idea generation and realization.

In the long-term, the health of the UC and the state of California depends on a robust defense of the inherent value of research-focused graduate education and scholarly activities. While we remain committed to the Master Plan regardless of short-term budget constraints or other external factors, we fear this commitment will become increasingly difficult to maintain absent more resources.

Without question, academic graduate education is costly – many programs are very specialized, graduate seminar courses are typically small and require substantial faculty preparation to run, and students develop expertise via faculty advising that is sustained and highly interactive, frequently amounting to multiple hours per week of dedicated, personalized faculty instruction. The support that faculty advisors provide to each and every PhD and MFA student represents substantially more personal instructional time than almost any undergraduate or professional graduate student (who, instead, receive instruction in cohorts of tens or hundreds). Faculty instruction includes the time-intensive editing of papers and dissertations, the coordination and engagement of thesis committees, and many advising meetings over multiple years. Current and future advances in artificial intelligence notwithstanding, there is simply no viable way to automate or scale the creation of deep new knowledge or meaningful art, and the tuition collected for these students (much of it from extramural grants) comes nowhere near to covering the costs of their instruction, especially after formal coursework is complete and they receive instruction entirely via individual advising and committee meetings.

The formula used by the UC and the California Department of Finance for assessing the marginal cost of enrollment growth does contain a provision for graduate enrollment, but the

[28] Liaison Committee of the State Board of Education and The Regents of the University of California (1960). A Master Plan for Higher Education in California: 1960-1875. California State Department of Education: Sacramento, CA, 1960. https://www.ucop.edu/acadinit/mastplan/MasterPlan1960.pdf

funds supplied to UC by this mechanism have not been adequate to expand our doctoral programs commensurate with undergraduate enrollment growth.[29] The fraction of all graduate students (including professional graduate students) relative to the total student body on the 9 comprehensive UC campuses has declined from over 25% in the 1970s to less than 15% today (Figure 1, upper). The fraction is now significantly lower than at our eight "comparison institutions" (Figure 1, lower).[30]

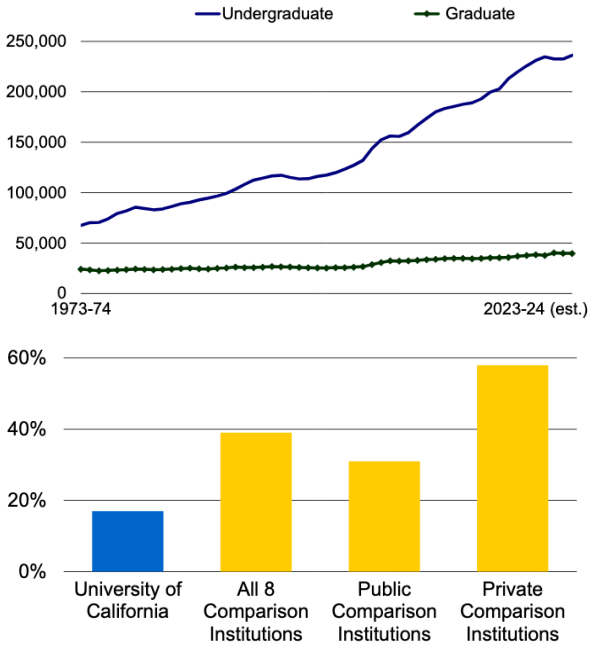

Figure 1. Upper: Trends in undergraduate and graduate general campus FTE enrollment at UC, 1973-2023. Lower: Proportion of all graduate enrollment (academic, professional, and self-supporting) at UC in fall 2021, relative to our "comparison institutions."

Like all other UC students enrolled in academic programs, PhD/MFA students must pay for their tuition and fees, as well as their living expenses. Unlike other students (at the undergraduate and Masters' levels, as well as in professional graduate programs), however, the University currently provides most PhD/MFA students with the means to cover the full cost of their tuition and fees, health insurance, in addition to most of their living expenses. Much of these resources originate from compensation for employment. For PhD/MFA students, the main sources of employment-related funding are (1) extramural research grants (largely from federal agencies) awarded to faculty principal investigators (PIs) who allocate a portion of the funds to employ their PhD/MFA student advisees to conduct research for their own dissertations, and (2) institutional funds (*i.e.*, instructional budgets), Figure 2.[31] The on-campus jobs performed by our PhD/MFA

[29] University of California, Budget for Current Operations. Context for the Budget Request 2024-25, p. 45. https://www.ucop.edu/operating-budget/_files/rbudget/2024-25-budget-detail.pdf

[30] The eight comparison institutions, used by UC to benchmark salaries, are: University of Illinois, University of Michigan, University of Virginia, SUNY Buffalo, Harvard, MIT, Stanford and Yale. https://apb.ucla.edu/faq/comparison-8-schools

[31] University of California Research Expenditure Comparisons. https://www.universityofcalifornia.edu/about-us/information-center/research-expenditure-comparisons#UCresearchexpenditures/8b001625-53b8-457e-91b4-05ac27dc06f5/acct2024-9-1-1

students provide not only financial support but also valuable teaching and research experiences that enable them to immerse themselves fully in the academic environment. Financial support of doctoral students therefore represents not only a wage for labor, but also an investment in their academic and professional development.

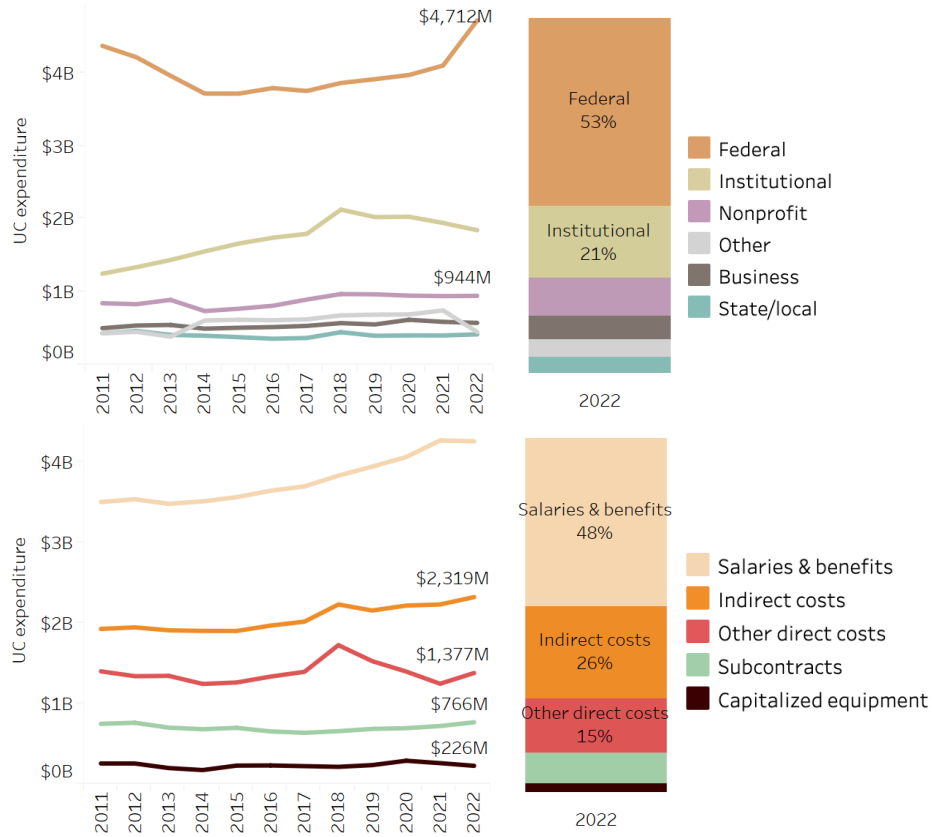

Figure 2. Total UC research expenditures broken down by fund source (upper) and by cost type (lower), 2011-2022.

While UC provides much of the necessary infrastructure, facilities, and academic program structures to support research and creative activities by doctoral students, the faculty are personally responsible for securing much of the funding necessary to conduct the research. Whether grant-supported or not, faculty are responsible for generating original research ideas and transforming them into feasible projects. When grant-supported, they must also write proposals and apply for funds from federal agencies, private foundations, and industry sponsors to support their research and that of their graduate students. Deep expertise acquired over many years of experience working at the frontiers of a field is often required to develop and submit competitive proposals for peer (*i.e.,* faculty) review. Obtaining and maintaining a significant level of research funding is therefore a time-consuming process that demands sustained effort and a high level of intellectual engagement from each faculty PI.

Once awarded, these contracts and grants must cover all costs associated with faculty-guided research activities. In this respect, research projects led by faculty PIs often function much like loosely affiliated small businesses within the broader framework of each campus and of the University as a whole. Working within the guidelines of the funding agency, faculty allocate

their research funds to the various expenses essential for conducting research, and are obliged to ensure that their decisions achieve the project deliverables. Funding needs include a portion of their own salaries and benefits, the salaries and benefits of all other research staff (including postdoctoral scholars and graduate student researchers), and expenses to conduct the research, including essential supplies and access to advanced instrumentation. Research grant funds must also cover the indirect costs of research (infrastructure, utilities, etc.) at a rate that is typically slightly more than 50% of the funds spent directly on research. Faculty PIs must manage budgets carefully to ensure that all aspects of their research operations are adequately funded, and are accountable for the eligibility of all expenses they incur. *Funding agencies do not provide additional resources to faculty in response to changes in collective bargaining agreements,* nor can the University offer more than short-term, emergency assistance when budgets fall short.

Trends in graduate student financial support suggest that the ability of the University and its Faculty to provide enough of this funding may soon be exceeded, if indeed it has not already been. For benchmarking, the 2023-2024 median annualized size of a research grant from the National Science Foundation (NSF) was approx. $150,000.[32] Supporting one graduate student with an extramural grant can incur costs of $100,000 or more per year, including mandatory charges for tuition and benefits, health insurance, campus fees, and indirect cost recovery.[33] Notably, this total does not include any budget for the supplies and charges associated with conducting the research, travel for the purposes of conducting the research or disseminating its outcomes (*e.g.,* at scholarly meetings), or a contribution to the summer salary of the PI, which may be viewed by the funding agencies and their reviewers as necessary to demonstrate the faculty researcher's commitment to the project. It is unrealistic in the current fiscal environment to expect federal funding agencies to increase the average sizes of faculty research grants substantially. Their overall budgets are mostly flat from year to year, and larger grants would mean lower success rates (already < 25% in most programs and < 10% in others) for researchers at institutions across the country.

Furthermore, when academic research is supported by the National Institutes for Health (NIH), the total compensation for a graduate student (including salary, tuition and fee remission, and benefits) from an NIH research grant or cooperative agreement may not exceed the compensation offered to an entry-level postdoctoral researcher.[34] The University is required to use (non-federal) funds for any financial commitments made to UC graduate students in excess of this amount. The NIH rule is based on the principle that PhD student researchers should not be compensated more than postdoctoral researchers, who have both more experience and more formal qualifications. For FY 2024, the level-zero salary for a full-time postdoctoral researcher was $61,008.[35]

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[32] NSF Budget Internet Information System. Summary Proposal and Award Information (Funding Rate) by State and Organization. https://dellweb.bfa.nsf.gov/awdfr3/default.asp

[33] The obvious consequence is that the amount of funds a faculty PI must raise to fully support a doctoral student (salary and benefits only) through a 5-year PhD program is now approx. $0.5 million and rising.

[34] NIH Grants Policy Statement. Revised April 2024. https://grants.nih.gov/grants/policy/nihgps/HTML5/section_7/7.9_allowability_of_costs_activities.htm

[35] Ruth L. Kirschstein National Research Service Award (NRSA) Stipends, Tuition/Fees and Other Budgetary Levels Effective for Fiscal Year 2024. NOT-OD-24-104, April 23, 2024. https://grants.nih.gov/grants/guide/notice-files/NOT-OD-24-104.html

The urgency of the situation is clear: large increases in funding and greater efficiency of funding deployment will be necessary to maintain the current system, particularly if costs continue to rise at unsustainable rates. Regardless of the specific details for individual campuses and disciplines, it is clear that UC must address the growing misalignment between the demand for and availability of resources to support PhD/MFA education. Faculty PIs will likely also face difficult decisions regarding the organization and sustainability of their individual research programs, and if resources cannot be appropriately marshalled to support the research education mission of the University, the UC as a whole will be obliged to accept a diminished role in PhD/MFA education.

Our desire to maintain healthy, vibrant graduate programs at the UC in the face of significant and increasing financial pressures motivate us to consider the following fundamental questions:

- What kinds and levels of support are essential to recruit and retain the best PhD/MFA students, to maintain equitable access, and to provide the broadest opportunities to conduct cutting-edge research for these students and their faculty advisors?
- How can we work towards establishing a stable funding base to support the level of graduate education the UC and its faculty aspire to provide?

Across disciplines and UC campuses, and despite the systemwide nature of contractual agreements with graduate student employees, there is significant variability in the administration and funding levels of doctoral programs. Sustained and coordinated efforts will be required to produce significant increases in the overall amount of financial support for academic graduate education, to meet current programmatic needs, without even beginning to consider any expansion or new PhD/MFA programs in areas of growing need. This report cannot address the short-term need to increase funding for doctoral students currently employed by UC under existing contracts and grants. Campuses, academic units and/or programs will simply have to bear the increase in contracted costs, either by shifting funds from other budgeted activities or by mobilizing reserves and carryforward funds. Instead, the following recommendations deal with longer-term strategies, with impacts expected over 3+ years.

2.2.2 Actionable recommendations

R2a. Develop stable and sustainable funding models for PhD/MFA education.

Developing sustainable strategies for funding PhD/MFA education must begin with a transparent accounting of the true costs of this endeavor. Currently, many costs associated with our graduate programs are hidden in the delivery of undergraduate education. Decisions about how much of the University's resources to invest in PhD/MFA education must be informed by a careful analysis of needs, impacts, and tradeoffs. The costs associated with our graduate programs cannot be allowed to overburden other sectors of the University, including the programs and services offered to other students, or the compensation allocated to staff and faculty. Cross-subsidies for PhD/MFA education using university funds allocated to undergraduate instruction, or revenues generated by self-supporting professional graduate programs, can be justified by the co-benefits of PhD/MFA students' many contributions to our campus communities. Informed discussions on how to advocate for the resources needed for PhD/MFA education must,

however, be based on a full understanding and acknowledgement of these costs, which need to be assessed at both systemwide and campus levels.

UC campuses must share in the faculty's responsibility for increasing the supply of research funding to match commitments to our graduate students. The caps imposed by federal funding agencies on academic graduate student employee compensation are extremely difficult to change. Such rules are sometimes enshrined in policy regulations set by Congress, or by higher level public agencies. These caps could be used to set a maximum for total graduate student employee compensation at UC. If such a policy is not viable, the UC should nevertheless limit the required contribution by faculty to funding their graduate student advisees to the level of these caps, *i.e.,* non-federal UC funds should be allocated to cover the shortfalls.

In addition, campuses must find ways to better incentivize and support PhD/MFA students in applying for graduate fellowships and faculty in applying for doctoral student training grants. Campuses should also develop strategies to build and expand endowments for doctoral fellowships. For example, orphaned endowments no longer needed for their original purposes could potentially be redirected for doctoral student support. Campuses could encourage - or even require - donors to include PhD/MFA student support in endowments for faculty Chair positions. Partnerships with private companies who depend on the UC for a highly educated state workforce and professional continuing education should be explored and expanded. For example, industry-sponsored fellowships and paid internships could be sources of revenue for doctoral education, as well as being valuable experiential learning opportunities for students (although they would have to be configured so as not to negatively impact time-to-degree).

R2b. Incentivize faster completion of academic milestones.

The UC system has traditionally offered substantial stability in the funding of PhD/MFA students, which is often more uniform and generous than the need-based financial aid offered to undergraduates and other types of graduate students. While future aid for undergraduate students is often tied to academic performance, eligibility for funding in academic graduate programs is not strongly tied to degree progress (other than the fairly low bar of "good academic standing").

To incentivize and reward academic achievement, UC's PhD/MFA programs could make fellowship renewals and other types of funding dependent on specific metrics for academic achievement. In such models, graduate funding offers might be renewed on an annual basis, but only if relevant academic milestones are met. Likewise, funding should not be guaranteed beyond normative time (as determined by each academic program), in the absence of serious extenuating circumstances. The current practice in some programs to grant virtually any reasonable request for an extension (with continued funding support) does a disservice to both the program and its students. A systemwide policy on gradually reducing funding eligibility for graduate students who exceed normative time could incentivize more timely graduation. Since stricter limits on funding duration could result in more graduate students leaving their programs sooner than they might otherwise choose, in some cases without a PhD or MFA degree, low-cost loans could be made available to provide some additional support to students who have exhausted their funding eligibility.

Employment that is unrelated to a student's academic goals should be limited to the amount and duration justified by its educational and professional training benefits in each discipline. Closer monitoring of employment outside the University may also help to identify challenges in time management faced by PhD/MFA students. The overarching goal is to ensure that PhD/MFA students can spend the majority of their intellectual energy on completing their degree requirements, rather than on activities that divert time and effort away from academic progress. When coupled with the implementation of smaller, more frequent academic milestones[36] and improved mentoring,[37] such a shift could reduce the total cost of a graduate degree significantly by decreasing time-to-degree.[38] Financially, the change would require much greater reliance on graduate fellowships and on employment related to the dissertation topic. The additional costs to the UC would be substantial but could be partly offset by smaller graduate cohorts as well as an intentional (and, it may be argued, long overdue) transition to greater efficiencies throughout the enterprise.

R2c. Consider the resources that support PhD/MFA students in their academic endeavors more holistically.

Ensuring greater financial stability for UC graduate students should assist them in completing their degrees on time, without incurring substantial student debt beyond that already acquired in the course of obtaining prior degrees. Timely degree completion also helps programs to make budget decisions, including enrollment decisions.[39] Campuses and their graduate programs should aim to provide overall financial packages to PhD/MFA students commensurate with these goals. This strategy is also necessary for ensuring that UC remains competitive with other top R1 universities nationwide for talented students and faculty. Overall funding packages include several advantages currently provided at no-cost to almost all PhD/MFA students (but not to other kinds of UC students): tuition; non-resident fees where applicable; other campus-based fees; health insurance; support for their own research and travel; office and lab/studio space; research equipment; in addition to (on some campuses) subsidies for campus housing and childcare. It is essential that all of these benefits be included in accounting for the true costs of graduate education.[40]

The high cost and limited availability of suitable housing in many communities that host UC campuses make affordable housing an especially critical component of overall graduate student support. Access to graduate housing at below local market rates should be viewed as a significant and quantifiable benefit. Providing sufficient housing designed and designated for graduate students, with some form of access guarantee (*e.g.*, the first two years, or perhaps the last two years, of graduate study) should be a priority for all campuses. UC must continue to work with the California legislature to resolve regulatory issues that hinder new housing construction and raise its costs. Campuses that need to build more graduate housing should endeavor to obtain state grants, but UCOP could help by offering low-cost financing, making additional capital

[36] See Section 2.4.
[37] See Section 2.5.
[38] See Section 3.1 for some bolder formulations of this idea.
[39] See Section 2.3.
[40] See Section 3.8 (specifically, **B8a**) for a bolder formulation of this idea.

resource investments, or other creative solutions, as is already a priority for a wide range of university constituents including undergraduate students and staff.

R2d. Build public support long-term for PhD/MFA education.

In the decades since the formulation of the California Master Plan for Higher Education, the California State Legislature has prioritized expanding access to the UC by providing funding to increase enrollment mostly at the undergraduate level. In the short-term, it is unlikely that UC can influence this priority by advocating for more direct funding for its PhD/MFA programs and students. However, the Legislature has repeatedly recognized the important role of UC-sponsored research in the well-being of the state by supporting targeted, high priority research initiatives and institutes. Prominent examples of recent major state investments in UC-sponsored research activity include one-time funds provided in 2022-23 for systemwide climate change research, and in 2023-24 for UCLA's Institute of Immunology & Immunotherapy. These initiatives are part of a longer-term pattern of major state investments that include the California Institute for Regenerative Medicine (CIRM)[41] and the Governor Gray Davis Institutes for Science & Innovation.[42] To the extent that this type of funding increases opportunities for doctoral research projects, it serves to support doctoral education.

While encouraging more such investments, the UC should also take a longer-term approach to improving both public and political support for PhD/MFA education based on the role it plays in the scholarly accomplishments of the University and the workforce needs of the state. Such efforts could pave the way for more direct advocacy that will support graduate education in the decades to come. The public profile of UC's doctoral education programs and the outcomes they generate must justify increased state and extramural funding, and attract additional donor and corporate support. The UC must proactively communicate its unique role in California's higher education ecosystem, emphasizing the role of doctoral students and their education in creating new knowledge and disseminating it broadly, including via its contributions to the education of undergraduates (not only via classroom instruction but also through opportunities for them to participate in research). As a point of comparison, we note that UC's comprehensive efforts over the past decade to highlight diversity and equity as intrinsic components of access to higher education have succeeded in making these priorities central in our conversations with potential funders. We must aim for similar levels of success in articulating the importance of doctoral education to the UC, to the state of California, and to the nation.

Components of a systemwide effort, led by UCOP and supported by Chancellors and Academic Senate leaders, could include featuring doctoral education in public-facing reports and presentations, such as the Annual Accountability Report[43] and the Multi-Year Compact Annual Report;[44] quarterly presentations to the UC Regents; and discussions between UC's Office of

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[41] California Institute for Regenerative Medicine. https://www.cirm.ca.gov/

[42] California Institutes for Science & Innovation. Innovation Transfer & Entrepreneurship. UC Office of the President. https://www.ucop.edu/innovation-entrepreneurship/ie-resources/ie-alliances/cal-isis.html

[43] Accountability Report 2024. UC Office of the President. https://accountability.universityofcalifornia.edu/

[44] Multi-year Compact Annual Report 2023-24. UC Office of the President, November 2023. https://www.ucop.edu/operating-budget/_files/legreports/2023-24/2023_uc_mutli-year_compact_annual_legrpt.pdf

State Governmental Relations and legislators/legislative staff. Events at UC Center Sacramento[45] could be appropriate opportunities to showcase the success of our doctoral programs and students, and their contributions to the state's research and business climate. Campus leaders should also contribute to this effort by showcasing doctoral programs in presentations to their Trustees and other potential donors who invest in UC's success, to industrial sponsors of our research who benefit from our doctoral programs by employing our graduates, to public interest groups with an interest in applying UC's scholarly output to advocate for research-based decision-making, and to the general public. Graduate education will need feature prominently in private fund-raising campaigns on all UC campuses for the foreseeable future.

We acknowledge the unique pressures of California's political system, coupled with national weakening of public support for higher education, that together make increasing government support a challenge that is unlikely to be addressed quickly or easily. Our work must nevertheless start now, without an expectation of immediate or even short-term benefit. In this quest, we may find willing partners in California's private sector employers who hire our graduates. We may find allies in the labor unions who at times represent those students when they are employed by the university, as well as our alumni in their careers post-graduation. We can engage our community partners from the non-profit sector who rely on our insights and civic and community engagement to forward their own missions.

2.3 Manage PhD/MFA enrollments

The UC must more actively manage its PhD/MFA enrollments, while centering student success, disciplinary opportunities and challenges, inclusion and community, program and applicant quality.

2.3.1 Considerations

Ensuring that the UC maintains a critical mass of graduate students on each of its nine comprehensive campuses (with UCSF being a unique, graduate-only campus) is essential for the overall health of our institution. Appropriately sized PhD/MFA cohorts support the collective well-being of our graduate students directly. In addition, UC undergraduates benefit from the knowledge, mentoring, and passion for learning of our graduate students, who can be particularly effective near-peer mentors and role models. They shape the aspirations of undergraduates and guide their career choices while also expanding opportunities for life-changing research experiences. PhD/MFA education further benefits the UC and its campuses through its role in shaping the future directions of our disciplines, helping us to excel in rankings and other program quality measures of reputational excellence. UC's ability to recruit and retain excellent faculty also depends on our ability to attract the nation's best PhD/MFA students, whom faculty teach and mentor, and with whom they often co-create new knowledge. UC faculty value opportunities to teach smaller, highly specialized graduate-level classes, and benefit from the enhanced merit and promotion outcomes that result from advising/mentoring PhD/MFA students, and the research accomplishments that these activities enable.

[45] University of California Center Sacramento. https://uccs.ucdavis.edu/

Changes to our enrollment practices incur potential risks to these benefits. Furthermore, although UC doctoral programs are particularly large and diverse, they are nevertheless embedded in a national context whose timeframe for change and willingness to do so may differ from ours. Nevertheless, intense budget pressures, coupled with evolution in the external demand for graduates with particular types of academic research degrees, and other challenging contexts, compel us to reexamine our models.

The traditional, decentralized model for PhD/MFA enrollment is driven largely by the preferences and/or idiosyncratic research interests of individual students and faculty, as well as the teaching needs of departments and programs. Managing enrollments differently will entail changes in culture, processes, and norms. Such changes will require discipline-specific discussions, as well as deep reflection and difficult decisions by individual faculty, Senate leaders, and administrators across the UC system. Key questions include:

- What factors should determine the optimal sizes of our doctoral programs, and how should PhD/MFA enrollments reflect and respond to the fundamental budgetary realities of each department or program?
- How do we maintain (or even increase) access to the highest levels of education, particularly for groups who are currently under-represented at these levels (first-generation, disabled, racial and ethnic minorities, veterans, etc.), allowing the UC to continue to produce the next generation of professors, entrepreneurs, and leaders with an increasingly diverse profile?
- How do we ensure the continued high quality of our research and teaching, even as graduate enrollments change across the university?
- How should we manage, rethink, or reconfigure small graduate programs that may not be viable in the face of further enrollment compression?

Faculty must urgently reflect on needed program changes, while considering our core principles and larger goals (*e.g.,* high quality programs, diversity of the student body, broad access) and being cognizant of the escalating competition in PhD admissions. For example, undergraduate applicants are increasingly expected to have extensive research experience, and even co-authored publications. Such expectations disadvantage students unaware of this hidden curriculum, or who have been unable to participate in undergraduate research, for example, because they must work to support themselves and/or their families while attending college. While we adamantly assert that excellence and inclusion are not at odds, any contraction in graduate admissions could undermine our inclusion goals if risk-averse decisions privilege applicants who most resemble our prior students.

2.3.2 Actionable recommendations

R3a. Size PhD/MFA programs based on student interests and the availability of resources, as well as external workforce opportunities, rather than on the University's need for people to teach and to perform research.

PhD/MFA education is inextricably embedded in the university's teaching and research missions. Yet because these programs are so expensive to offer, and direct state support for them

falls well below actual costs,[46] the financial burden falls largely on other parts of the university's budget. Undergraduate instructional budgets are a significant source of financial support for academic graduate students, such that in some disciplines the size of the graduate program is strongly influenced by the need for teaching support. In other disciplines, most of the financial support comes from extramural grants awarded to faculty for research; here, the size of the graduate program is largely determined by research needs.

To align our enrollment practices with our educational values, we must re-assert the needs of and outcomes for our graduate students as the primary factors determining the size of our PhD/MFA programs. Enrollments should reflect the long-term availability of resources, including the availability of appropriate advising and mentoring, research infrastructure, financial support including affordable housing,[47] and all other types of support necessary for graduate student success. Across the UC and on its campuses, such support should be allocated based on student interests, the scholarly interests of the university in providing vigorous PhD/MFA learning environments, the availability of essential funding for research costs, and external workforce needs for these highly skilled graduates/alumni.

To achieve this alignment, the size of graduate programs will have to be less strongly coupled to undergraduate teaching needs than in the past. Recognizing that teaching is an essential part of the education of a scholar, graduate students may be required to complete experiential learning related to teaching for a defined number of terms (set by the program according to disciplinary best practices), after which they are expected to focus primarily (or solely) on their scholarly progress towards the dissertation/thesis.

The impact of resource scarcity is also growing in disciplines that rely mostly on extramural grants for the financial support of graduate students. Even if the total number of such grants increases due to the success of faculty efforts in proposal writing, the amount that can be allocated for support of an individual graduate student is limited by inelastic funding agency budgets and, in some cases, agency compensation caps. Furthermore, the overall size of federal research budgets is not growing nationally at the rate of cost increases, and future political or economic shifts could shrink these budgets rapidly and substantially. Consequently, extramurally funded grant support is becoming concentrated in certain disciplines (as well as topics within those disciplines, and faculty experts on those topics) capable of bringing in the largest grants. Because these areas do not always align with student/faculty interests or external workforce needs broadly, more doctoral fellowships will be needed to ensure that the sizes of our graduate programs continue to be determined by their scholarly and post-degree value, rather than by extramural funding success.

R3b. Control graduate admissions and yields more intentionally.

Purposeful management of enrollment in our PhD/MFA programs will require extensive and detailed program-level budget planning; candidate selection and recruitment; and holistic monitoring of degree completion and placement. At each UC campus, these tasks will need to be embraced and implemented by individual schools, departments, and programs. Campuses must

[46] See Section 2.2.1.
[47] See Section 2.2.2 (specifically, **R2c**).

therefore provide their graduate programs with information needed for budget planning, projections of future costs and likely graduation rates, faculty surveys of readiness to fund and advise students, and other tools to support their ability to make informed decisions about how many PhD/MFA students they can and should admit each year. In addition, programs must intentionally use waitlists, deadlines, and other strategies to ensure their admissions procedures do not yield more enrolled students than they can afford to support.

The effectiveness of enrollment management also depends on timely assessment. Metrics and measurement in each phase of PhD/MFA education will require both the UC system and individual campuses to gather and disseminate data on program size and cost; timeliness of degree milestone completion; student success and satisfaction; diversity and inclusion; and career placement of graduates in positions that require or benefit from the degree. Readily measured and widely endorsed benchmarks are needed, by discipline, by campus, and, where appropriate, for the UC system as a whole. Defining the metrics to be used in enrollment planning will allow campuses to fortify their highest-performing programs and address challenges in their lower-performing programs, while setting clear expectations for all. Possible benchmarks might include:

- achieving an eight-year graduation rate of at least 80% for admitted PhD students;[48]
- for graduate students who exit a PhD program without a degree, ensuring that the vast majority (*e.g.,* 90%) of those eligible to do so[49] leave with a MS/MA degree instead;[50]
- maintaining a targeted level of graduate student satisfaction, which could be assessed using exit surveys and alumni surveys, as well as the UC Graduate Student Experience Survey (UCGSES);[51]
- for those who earn a PhD, as well as those who exit the program with another degree or without a degree, ensuring that these former students are eventually employed in positions that require or benefit from the training they received at the UC.

For such measurements to be effective, funding support and other resources/incentives for individual programs will need to respond to them, even as they mitigate the impact of year-to-

[48] Currently, 71% of UC's enrolled PhD students complete their degrees within 8 years and 73% complete within 10 years (https://www.universityofcalifornia.edu/about-us/information-center/doctoral-program), far exceeding the national average of 57% (https://cgsnet.org/guide/ph-d-completion-project/). Nationally, the median time to complete a doctorate is now below this level at 7.2 years in 2022, according to the NSF Survey of Earned Doctorates (https://ncses.nsf.gov/surveys/earned-doctorates/2022#tabs-1). While the proposed 8-year target is therefore more ambitious, it should not be viewed as a recommendation for an 8-year normative time. Instead, it reflects our understanding that extenuating circumstances do delay graduation for some students. In this respect, the philosophy is similar to the widely-used metric of a 6-year graduation rate to compare undergraduate programs (whose normative times are generally four years).

[49] We note that UC currently has a structural issue with awarding MS/MA degrees to students who have already earned such a degree in the same field at the time of their admission to a PhD program. Although these students would not be able to earn a second Masters' degree in the same field, they should also not generally be required to take much if any formal coursework during the PhD, which should greatly reduce the time to degree and the risk associated with attempting such a degree.

[50] See Section 2.4. In addition, Section 3.1 contains a more provocative formulation of this idea.

[51] UC Graduate Student Experience Survey. Institutional Research and Academic Planning, UC Office of the President. https://www.ucop.edu/institutional-research-academic-planning/services/survey-services/uc-graduate-student-experience-survey.html

year fluctuations. Funding commitments may entail greater centralization of graduate admissions and the setting of specific enrollment targets, presumably at the level of campus Graduate Divisions. Central enrollment management is already practiced at some universities (although it is not yet common at UC). Although such an approach would help support institutional priorities, it must be done with due consideration of the Academic Senate's authority to set admissions criteria.

If particular PhD/MFA programs show consistently low performance according to the chosen metrics, campuses must be strict in applying pressure to the departments that host them, up to and including shuttering those programs when no other solution can be found. If program enrollment is reduced dramatically or programs are closed, the University must find other ways to support faculty who previously advised PhD/MFA students to meet their career advancement goals. Specifically, APM-210d describes mentoring effectiveness in relation to advising undergraduate, graduate, and professional students as well as other academic researchers (*e.g.,* postdoctoral scholars or research staff) as a criterion for appointment, promotion, and appraisal.[52] Frequently, faculty have chosen the UC over other career opportunities specifically for their ability to teach and advise our PhD/MFA students. Faculty who have more limited opportunities in the future to advise graduate students in their home department might need to demonstrate mentoring effectiveness through co-advising of graduate students in other departments, and/or through mentoring of other kinds of students.

R3c. Assist graduate programs in collecting, disseminating, and using post-degree placement data.

Collecting more data regarding post-graduation placement, and promoting greater transparency in the collection and sharing of such data, will benefit prospective graduate students in making informed decisions about the graduate programs they want to join. It will also allow the University and its programs to use placement as an element in admissions planning. Analysis of this data will require metrics that are still being developed, for example, the relationship between program cost and market demand for graduates with that training, which relates to the Financial Value Transparency and Gainful Employment (FVT/GE) Final Regulations.[53]

The large, broad, and diverse network of UC graduates is an important opportunity. Collecting and maintaining extensive placement data would provide the University and its programs with a robust way to maintain its connections with graduates, for graduates to maintain connections with each other, and for graduates to create new connections after they leave the University. In particular, the ability of the UC to play a role in their continuing education would be greatly enhanced.

[52] UC Academic Personnel Manual 201-1.d.1. https://www.ucop.edu/academic-personnel-programs/_files/apm/apm-210.pdf

[53] Financial Value Transparency and Gainful Employment, Federal Register 2023-20385 (88 FR 70004), October 10, 2023. https://www.federalregister.gov/d/2023-20385

2.4 Re-evaluate graduate pedagogy

The UC must address its graduate pedagogy as a priority in the design of its PhD/MFA programs, aligning it with the academic and career goals of our students.

2.4.1 Considerations

Earning a terminal scholarly degree requires a sustained level of intellectual effort that goes far beyond traditional coursework. Conferral of the degree affirms mastery of the subject, as well as an original contribution to advancing knowledge or a significant artistic creation. In the traditional PhD/MFA model, students pursuing the degree first complete foundational coursework (typically 1-2 years, although perhaps longer in some fields), followed by self-directed and faculty-mentored study to develop expert knowledge in their chosen area. In the latter stage, students undertake extensive scholarly and creative activities, such as designing studies, collecting data, analyzing and interpreting results, or creating an original work of art or music led by student interest with faculty instruction. Via these individualized forms of intensive experiential learning, each student acquires the core competencies and skills of the discipline, under the expert guidance of one or more faculty members. The degree program culminates in the submission of an original dissertation/thesis and its defense.

The ability to teach a subject is a key indicator of academic mastery, a prerequisite to successful interdisciplinary research collaboration, and necessary for effective research team leadership. Therefore, learning how to teach less advanced (*e.g.*, undergraduate) students is an essential component of PhD/MFA training. Furthermore, the ability to teach advanced subjects confers eligibility to become members of the professoriate. Faculty experts who are the instructors of record responsible for course content advise graduate students on their development as teachers.

The style of graduate pedagogy, especially that of the PhD, has not been seriously reconsidered in centuries. Despite massive growth and change, universities still largely practice the apprenticeship model described above as it was established in Europe nearly a thousand years ago. Now that higher education has arguably reached a point of maturity,[54] it is time to revisit many aspects of our pedagogical approach. We have the opportunity to envision new ways to structuring existing forms of graduate education, possibly with more interdepartmental and intercampus focus, while considering how to configure professional and academic masters' and doctoral programs more broadly. Ideas for some more substantial changes are discussed in Section 3.

In this section, we propose to begin our journey with changes that can be implemented in the near term. In reflecting on our desire to maintain high quality PhD/MFA programs in light of fiscal and contractual realities and to align them with the needs of today's graduate students, we considered the following key questions:

[54] Blumenstyk, G. What Higher Education Will Look Like in 10 Years: Fundamental Change is Coming Quickly. (2024) *The Chronicle of Higher Education*. https://chronicle.brightspotcdn.com/b9/98/d61e27e14ccdb738fd0724cbbcd0/higher-ed-in-2035-free-digital-postchronfest-1.pdf

- What characteristics indicate high quality in a graduate degree program, and what should be done if a program does not meet this bar?
- What cohort size is required for graduate program viability, and what should happen to programs whose enrollment falls below this threshold for an extended period?
- How can we reduce the average time-to-degree in our PhD programs significantly, while ensuring that students who undertake these programs with inadequate preparation can still be successful?

Actionable recommendations

R4a. Evaluate, regularly and rigorously, all PhD/MFA programs for their scholarly, career, and community outcomes.

All graduate programs should be evaluated periodically, using standards that include, but are not limited to, assessment of their academic strengths, as well as the students' return on investment measured broadly, their long-term career prospects, and the contributions of the program to the campus, the UC, and the communities in which we live and work. Although UC currently has a robust mechanism for evaluating proposals for new graduate programs, to ensure that they meet expectations for "UC quality," a graduate program once approved is rarely subject to re-evaluation. We suggest that robust reviews be undertaken regularly with the explicit goal of assisting campuses in their decisions about how to allocate resources to graduate programs. Some questions that the Academic Senate as well as administrative offices (*e.g.,* the campus budget office) require to be addressed in proposals for new graduate programs will also be appropriate to ask existing programs to revisit periodically; additional questions will be needed for programs that already enroll students.

Strong programs must reflect on their successes and make decisions about resource allocation that will ensure continued strength. Likewise, struggling programs must reflect on their external and internal challenges and, with the support of their campuses, make changes to address them. PhD/MFA programs that fail to perform adequately should be subject to remediation. In some cases, this may involve investing more resources or taking specific actions prior to re-review. In other cases, it may involve pausing admissions. Programs that are unwilling or unable to improve must be considered for closing or merging with other programs, with new enrollment stopped and pathways to complete their degrees provided to remaining enrolled students.

R4b. Improve academic readiness and promote academic belonging in graduate programs.

Incoming graduate students arrive at UC from a wide range of institutions, both national and international. Their academic readiness, as well as community and familial support structures, vary considerably. Because students must master core competencies, programs often require all members of a cohort to take a significant amount of preparatory coursework, regardless of their prior educational experiences, opportunities, and accomplishments. Consequently, some students wait longer than they need to begin the experiential learning part of their PhD programs.

Mechanisms to streamline program course requirements by improving the academic readiness of incoming graduate students should be explored with the aim of decreasing average time-to-degree. Programs may investigate ways to assess student knowledge prior to arrival on campus, or shortly thereafter, and then tailor requirements to each student's needs without compromising quality. Alternatively, programs could leverage campus expertise in instructional design and our extensive online platform to help students to fill in gaps in their academic preparation prior to the formal start of their programs.

Given that about a quarter of all UC doctoral students had UC undergraduate degrees in 2023-24,[55] we could further examine our own undergraduate programs and improve how we prepare students who wish to pursue a graduate degree. For example, advanced undergraduates could be encouraged to enroll in appropriate graduate courses, and to learn principles of research study design and academic writing. Participation in a research project as an undergraduate is known to be a strong motivator for graduate enrollment,[56,57] and many programs exist to allow students to experience research in this way across the UC system. Wee could lead the nation in creating more structured courses in guided research to prepare undergraduates who intend to pursue graduate studies. Post-baccalaureate programs could also be used more extensively to prepare students as they switch fields or return to graduate school after a period away from higher education. The Academic Senate could consider whether to allow such courses to count towards a graduate degree more consistently, with the goal of reducing time-to-degree.

Expectations of undergraduate research experience, while accelerating the undertaking of graduate-level research, disadvantage undergraduate applicants to our graduate programs who lack such opportunities at their institutions, or who are unable to participate for family or other reasons. Early summer start programs for incoming graduate students can be effective in familiarizing such students with their new campus and its research environment and in teaching foundational research skills, fostering a sense of academic belonging and better preparing them for success once they begin their graduate programs with the rest of their cohort. The UC and its campuses should create programs to provide these opportunities to advance inclusion and ensure that we are well-positioned to support the success of all our graduate students.

R4c. Accelerate skills acquisition in research study design and academic writing.

Graduate students must learn how to conduct independent research, how to write about it, and how to publish their writing. All are complex skills that require considerable time and effort to master, as well as support from faculty. The current model of experiential learning in academic

[55] UC Doctoral Program Statistics. Information Center, UC Office of the President. June 4, 2024. https://www.universityofcalifornia.edu/about-us/information-center/doctoral-program

[56] See, for example: Dukhan, N., and Jenkins, M. (2007) Undergraduate research as a motivation for attending graduate school. Proceedings of the ASEE Annual Conference, Honolulu, Hawaii, June 24-27, 2007 (AC 2007-617). https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=c1cc4f641f19f6e081bf51e665411bedd2edb29e

[57] Hathaway, R. S., Nagda, B. A., and Gregerman, S. R. (2002) The relationship of undergraduate research participation to graduate and professional education pursuit: An empirical study. *Journal of College Student Development*, 43(5), 614-631. https://eric.ed.gov/?id=EJ653327

graduate programs involves individual students learning by doing under the guidance of a faculty advisor. Yet many students struggle to acquire these skills early enough in their degree programs to deploy them most effectively, resulting in slow identification of a viable thesis research topic, inefficient research study design, and excessive time to draft and revise manuscripts. All tend to lead to student frustration and long time-to-degree.

Programs should consider whether there are more efficient and effective ways of teaching students the principles of research study design and academic writing earlier and more efficiently than the individual apprenticeship model. While the principles may be general, their implementation is highly discipline-specific, therefore instruction is likely to require a disciplinary focus (although best practices should be shared across disciplines). The optimal length of instruction and its timing within each program will need to be explored, but brief workshops during incoming student orientation are not likely to have the desired effect. Done well, the outcome should be an overall acceleration of dissertation completion.

Because open-ended PhD projects can seem amorphous and difficult to prioritize over other projects with shorter deadlines, programs may also consider helping students learn how to set goals and manage their time effectively. Cohort-based approaches may be considered to complement regular individual faculty advising and meetings with the dissertation committee.

R4d. Assess academic progress at least annually and establish smaller, more frequent milestones.

Enrolled PhD/MFA students are expected to make at least adequate progress towards their degree in every academic term. In practice, however, the use of tools like academic conditional status, academic probation, and academic disqualification are not applied universally and exceptions are made regularly across disciplines and campuses. Students who fail to make progress are a drain on the University's financial resources, housing, faculty time—including faculty other than the primary advisor— the culture and climate of departments, and the graduate student body generally. In our current circumstances, it is no longer tenable for graduate students who are not making progress to remain enrolled, nor for faculty advisors who fail to attend to such students to continue to advise them.

To ensure that every graduate student is making at least adequate progress, each program should assess all of its graduate students holistically at least once per year. For example, annual meetings of the student with the dissertation committee can serve to review goals, assess progress, and provide feedback. When a student is struggling, assessment should be more frequent. Students who fail to make progress as well as faculty with problematic advising patterns should be identified and issues addressed. Programs, schools, and campuses must be accountable for ensuring that notices to students and their faculty advisors about their academic progress are frequent, clear, and impactful.

Conducting the scholarly work required to write a thesis, and to do the writing itself, require several years of planning, effort, and reflection. Smaller goals and more frequent milestones monitored at shorter intervals can promote longer-term student success. Intermediate goals are particularly important during the prospectus/proposal stage of defining the thesis project.

Programs with longer normative times may need to be more proactive in ensuring students have early and sustained access to faculty advisors who meet with them regularly and help them identify a productive and appropriate research area. Programs should also consider all the types of experiences and products that could potentially satisfy degree requirements for each milestone, up to and including the dissertation.

Career advising should be integrated into every graduate curriculum. Students with concrete career plans, and who have secured post-degree employment, are likely to complete degree requirements faster and have better career outcomes.[58]

R4e. Create more, and more accessible, exit paths for all PhD programs.

Some PhD programs offer their students the option—or even have a requirement—to complete a Masters' degree on the way to earning a PhD. Others offer a Masters' degree only to PhD students who decide to abandon their PhD degree objective, or who fail to complete the PhD degree requirements (*e.g.,* the exam for advancement to PhD candidacy). More students might elect to earn a terminal Masters' degree after exploring the academic demands of the PhD program and their own career interests. Such students should be empowered to choose a Masters' option without additional barriers (*e.g.,* additional coursework not required of the PhD or a thesis-based MS degree).

All UC academic graduate programs should be configured to offer terminal MA or MS options, designed to be completed in a much shorter period (typically, not more than 2 years) compared to the PhD (typically, 4 or more years), and without the stigma of having failed in pursuit of a PhD. The goal is to allow graduate students to decide to pursue a PhD as an active choice, with input from their faculty advisors and mentors, at an appropriate point in their programs. This approach could align with and reinforce other recommendations in this report about clearly distinguishing the coursework that makes one facile in a discipline (and often matches that of a Masters' program) from the deep individual scholarship expected in a PhD program.[59]

2.5 Strengthen advising and mentoring

Advising and mentoring partnerships, the cornerstones of UC's PhD/MFA programs, must be enhanced, incentivized, broadened, and assessed.

2.5.1 Considerations

Because most PhD/MFA education occurs outside of formal classroom instruction and with substantial investment of faculty time and effort, individual graduate student-faculty relationships have a special place in graduate education. Each student has a faculty advisor, who chairs the dissertation/thesis committee. This advisor is responsible for monitoring the student's academic progress, overseeing and facilitating the design of research studies and the analysis of their results, assigning grades in independent study courses as appropriate, recommending remedial actions if the student falls behind in making progress toward academic goals, and

[58] See Section 2.6 for a deeper discussion.
[59] See Section 3.1, B1d, for a more provocative form of this idea.

providing feedback on the dissertation or thesis as it evolves. Faculty also provide expert guidance in time management, career preparation, and other critical academic and professional skills. In addition to the dissertation/thesis advisor, many other faculty members contribute to advising, regardless of whether these faculty have the formal status of departmental advisor or dissertation/thesis co-advisor, are members of the dissertation committee, or are simply subject matter or career path experts.

The dual roles of academic advisor and career mentor are not distinct; often, they are fulfilled by the same faculty member. Faculty advisors/mentors may also supervise graduate student employees,[60] whose duties and the learning that emerges from them may be inseparable from academic activities in our current model for graduate education.[61] Nevertheless, all of these relationships are critical to the education of graduate students and to their subsequent professional success.

Advising and mentoring require significant effort. Expectations regarding advising/mentoring must be transparent to all, with good practices incentivized by the institution's reward structures, and poor practices discouraged. Departments, schools, and programs have too often been obliged to tolerate inadequate advising and mentoring due to its sometimes personal nature, and the scarcity of effective and accessible assessment mechanisms. Nevertheless, allowing poor practices to persist leads to graduate student dissatisfaction with the educational process and may be a major contributor to excessive time-to-degree. Several federal funding agencies, including the NSF,[62] the NIH,[63] and the US Department of Energy,[64] as well as the Council of Graduate Schools,[65] have begun to show strong interest in ensuring positive mentoring environments, and in many cases to require written mentoring plans to accompany research proposals. For example, the NIH now requires all T-32 training grant applicants to describe in detail the advising and mentoring of the training program, including training of participating faculty in the use of evidence-informed inclusive mentoring practices and oversight mechanisms for advising matches.

Two principles shaped our recommendations regarding formal academic advising and informal academic mentoring.[66] *First*, the responsibility for the education of graduate students resides

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[60] While not the subject of this report, we acknowledge that this additional role of supervisor of graduate student employees can introduce strain and confusion into graduate student advising and mentoring relationships.

[61] Described further in Section 2.1.

[62] NSF 101: The Mentoring Plan. Science Matters, National Science Foundation. https://new.nsf.gov/science-matters/nsf-101-mentoring-plan

[63] Updates to NIH Institutional Training Grant Applications for Due Dates on or After January 25, 2025. NOT-OD-24-129 (May 31, 2024). https://grants.nih.gov/grants/guide/notice-files/NOT-OD-24-129.html

[64] Graduate student mentoring is a component of the required Promoting Inclusive and Excellent Research (PIER) plans that must accompany research proposals submitted to the Office of Science, U.S. Department of Energy, as of FY 2023. https://science.osti.gov/grants/Applicant-and-Awardee-Resources/PIER-Plans

[65] Mentoring Resources. (2024) Council of Graduate Schools. https://cgsnet.org/data-insights/graduate-professional-development/mentoring-resources

[66] For the purposes of this report, the term "faculty advisor" is used to refer to a faculty-student relationship of a predominantly academic nature. Typically, the "advisor" is codified by the university as the dissertation

primarily with the Faculty, who have the authority and responsibility to oversee all educational activities based on their expertise and professional judgment. This principle is asserted and justified in recent statements from this APC Workgroup and CCGA.[67] *Second*, advising/mentoring a graduate student and being so advised/mentored by a faculty member is a privilege, not a right guaranteed to any faculty member or graduate student. While all graduate students are provided with the opportunity to be advised by faculty, and programs should minimally assign an interim advisor to each graduate student when they first join a program, the long-term matching of a student advisee with a faculty advisor requires mutual agreement, from which either party can withdraw. Once faculty members and graduate students consent to an advising/mentoring relationship, however, all parties have a good faith obligation to participate in ways that contribute to a positive relationship.

Our desire to strengthen graduate student advising and mentoring motivates the following questions:

- What are the key roles and responsibilities of the faculty, individually and collectively, in advising/mentoring graduate students?
- What are the key roles and responsibilities of graduate students in their own advising/mentoring relationships?
- Which university structures and procedures promote good advising/mentoring, and how can they be strengthened and broadened?

2.5.2 Actionable recommendations

R5a. Acknowledge advising/mentoring as a partnership, and provide training for both faculty and graduate students in their respective roles.

Advising/mentoring relationships always have at least two participants, each with distinct responsibilities. In PhD/MFA student education, the close relationship between a faculty advisor/mentor and a graduate student is difficult to define and formalize. Yet there is benefit in articulating each party's expectations and describing their roles, informing them about best practices, and providing resources to redress situations that fail to live up to them.

Campuses should support faculty better in their professional development as academic advisors and mentors of graduate students. Coordinated distribution of information and guidance by CCGA and UCAP, as well as local Graduate Councils, could help faculty to understand standards, develop and articulate their own mentoring philosophies, and institutionalize effective processes. Guidelines could address, for example, best practices for meetings, evaluation of academic progress, and management of independent study courses. Insight from university staff and experts outside the university may be valuable to include here. These guidelines could be

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or thesis committee chair, although an interim advisor may be assigned prior to the formation of the committee. The role of "faculty mentor" is broader and less formal than academic advising, even though most advisors and dissertation/thesis chairs also mentor their advisees. This report intentionally broadens the definition, scope, and potential individuals who fulfill the mentor role to encompass the wide swath of mentoring now expected of faculty, frequently without formal University recognition.

[67] See Section 2.1 and Appendices 6 and 7.

described and discussed during orientations for new faculty. Notably, we do not prescribe mandatory standardized training of the sort now required for cybersecurity or sexual harassment. The instruction, education, and coaching we recommend must be discipline-specific, local, and hands-on. Such education requires highly skilled facilitators and educators, including senior faculty who are experienced and adept at advising/mentoring graduate students. This level of commitment to faculty professional development will require substantial, sustained investment and buy-in across many sectors of the university.

A mentoring philosophy could be a required component of teaching statements submitted in faculty merit and promotion processes. Faculty could give their prospective advisees such statements during graduate student recruitment and advisor-advisee matching. Similarly, "lab manuals" have become popular in some STEM fields as a space for academic research groups to outline the norms and expectations of the group. Some faculty, including some on this Workgroup, co-create this document with their research groups as a mechanism for education and community-building. Mentoring philosophies, lab manuals, and other statements about advising and mentoring should not, however, become standardized, or boiler-plate. Each faculty member can and should advise graduate students in ways adapted to individual preferences, skills and needs; this diversity should be embraced and communicated to potential advisees.

In parallel, campuses must begin to educate graduate students about their roles in the partnership, starting with new graduate student orientations. Creating expectations that are reasonable and productive will require graduate students to have a fuller understanding of university policies, and the full extent of faculty jobs. Such training could include information on how university instructional and research budgets work, sources of graduate student funding, how it is allocated and what it can and cannot be used for. Here too, standardized self-study in an online format is not an acceptable approach to this type of education. Understanding their advising and mentoring relationships and opportunities must be an essential goal for graduate student instruction for all PhD/MFA programs and at each level in the curriculum.

R5b. Support PhD/MFA students in identifying a different faculty advisor, when a match proves unsuccessful.

An advising relationship can also rupture abruptly for a variety of reasons. Occasionally, one or both parties in an advising relationship may determine that the fit is simply not good enough to warrant its continuation. Because the relationship is usually very close and meaningful to both the faculty advisor and the graduate student, becoming a lifelong commitment in many cases, any dysfunction can cause intense stress.

In such situations, the parties should be able to call on the University for assistance in changing advisors. Having a formal mechanism to manage the transition can prevent both students and faculty from feeling trapped in untenable relationships. For example, in grant-funded disciplines, the institution could make available short-term "bridge funds" to help a student transition to a new research project, while giving the new advisor time to adjust grant budgets to accommodate the new student. Although instructional funds have been used in the past to provide such assistance, through the provision of TAships, such funding is likely to be less readily available in the future as instructional budgets become more strained. In addition, students who switch

faculty advisors, regardless of field, can experience a set-back in their academic progress. Allocating fellowship funds to assist a student in making this transition would allow them to focus on research or scholarly activities without taking on additional employment duties, thereby staying on track to graduate within or close to normative time. While any such assistance should be designed and optimized locally, systemwide policies can help to standardize best practices.

Students should be shielded from the consequences of sub-standard advising as much as possible, and faculty are entitled to protection from the consequences of inappropriate or false allegations of poor advising. Abusive conduct policies and Academic Senate procedures such as appeals to Academic Senate Committees on Privilege and Tenure already exist to handle some situations. However, the requirement that a behavior rises to the level of a policy violation can be a substantial barrier, and the path to achieving resolution can be lengthy. PhD/MFA students should be expected to continue to make academic progress, and provided with the support to do so, even while an investigation is ongoing. At the same time, faculty advisors cannot be obligated to expend grant funds to support students who do not fulfill their responsibility to make academic progress.

R5c. Build mentoring networks across the broader university community.

The faculty advisor is traditionally the primary mentor of a graduate student, responsible for guiding the student in research, professional development, and career trajectory. The one-to-one model places a lot of weight on a single relationship within the formal academic hierarchy. Such a narrow focus can be limiting, particularly when the advisor's expertise and/or availability is not well-aligned with the student's evolving mentorship needs. Broadening mentoring beyond traditional faculty advisor-graduate student pairs could enhance the overall academic experience and success of graduate students significantly.

Network models of mentorship make use of the collective nature of knowledge and support, including a range of voices and experiences that emphasizes sharing of responsibility in nurturing talent and advancing learning. Collaborative mentorship networks are a more dynamic, supportive, and flexible approach to mentorship, in which multiple individuals—postdoctoral scholars, graduate student peers, staff, faculty from other departments, and even alumni—can contribute to a student's growth. One obvious benefit is better use of the breadth of expertise available across a campus or campuses, helping graduate students to access the deep and diverse resources that the university community has to offer. Rather than relying solely on their individual faculty advisors, students could have multiple mentors across disciplines and professional roles to fulfill different aspects of their personal and academic development. Thus, a student might turn to one mentor for research guidance, another for advice on teaching, and yet another for professional support. Viewing mentorship through this broader lens can further serve to dismantle academic silos, by encouraging collaboration and interdisciplinary exchanges. Graduate students who engage with mentors from different fields gain a more holistic educational experience, and build professional networks that continue to serve them long after they complete their degrees. Collaborative mentoring is also better aligned with the realities of the modern workforce, where professional success often depends on the ability to navigate complex, interconnected systems and engage productively with a wide range of stakeholders.

The UC should create robust structures that support network-based mentorship to underpin a richer, more resilient academic ecosystem. Many such networks likely exist already, and they could serve as models to incentivize the development of others. Campuses may experiment with formal mentorship programs that pair graduate students with multiple mentors, organize interdisciplinary workshops and networking events where such pairings may arise, and create online platforms to help students connect with potential mentors from other departments or fields. The UC could further create a systemwide platform to connect PhD/MFA students with mentors across different campuses, although we acknowledge that the logistics of creating and managing such a large network could be complex and resource intensive.

Campuses could explore structured advising teams, in which every PhD/MFA student is assigned multiple mentors, including faculty members, industry or non-profit professionals, and alumni. This multi-mentor model would reduce the pressure on any single faculty advisor and ensure that students receive guidance from diverse perspectives, allowing for both academic and career-focused mentorship. Faculty advisors would focus on academic progress and research, while alumni or industry professionals could guide students on career readiness, providing insights into non-academic career paths. In this way, students would be likely to consider a wider range of career options early in their programs. Coordination of such advising teams could be time-intensive, so we must consider what new or different incentives would motivate faculty and staff participation and how to clearly delineate roles. Multiple mentors provide students with opportunities to learn the valuable life skill of managing multiple, sometimes conflicting, advice streams and making their own decisions in light of these recommendations. A shared responsibility for mentoring distributes the workload, and fosters a more inclusive and supportive community.

The UC and its campuses should also incentivize peer mentoring networks. Like undergraduates,[68] graduate students can benefit immensely from learning with and from their peers, who often have similar experiences and can offer valuable perspectives and advice.[69] This approach encourages PhD/MFA students to take a more active role in shaping their own educational experiences, broadens their professional networks, and creates a more inclusive and collaborative academic culture. Laboratory-based PhD programs are inherently well-suited to peer mentoring due to the nature of the shared space and collaborative research efforts. Other disciplines can learn from and adapt these practices, such as the shared writing sessions, peer-learning, and sense of community engendered by close-knit collaborative lab teams.

Different mentoring contributions would have to be acknowledged in ways that are reportable in the faculty merit and promotion process. New structures must be designed to ensure that we do not allocate to senior faculty the bulk of the formal advising relationships (for which there are

[68] Lorenzetti, D. L., Shipton, L., Nowell, L., Jacobsen, M., Lorenzetti, L., Clancy, T., and Paolucci, E. O. (2019) A systematic review of graduate student peer mentorship in academia. *Mentoring & Tutoring: Partnership in Learning*, *27*(5), 549-576. https://doi.org/10.1080/13611267.2019.1686694

[69] Oddone Paolucci, E., Jacobsen, M., Nowell, L., Freeman, G., Lorenzetti, L., Clancy, T., Paolucci, A., Pethrick, H., and Lorenzetti, D. L. (2021) An exploration of graduate student peer mentorship, social connectedness and well-being across four disciplines of study. *Studies in Graduate and Postdoctoral Education*, *12*(1), 73-88. https://doi.org/10.1108/SGPE-07-2020-0041

already ample incentives and recognition), leaving the less lucrative informal mentoring, career advice, and professional development tasks to our minoritized scholars and early career faculty.

R5d. Recognize faculty appropriately for their contributions to advising and mentoring.

Effective advising and mentoring are expected of all faculty as part of their jobs, albeit in varying degrees depending on discipline and career stage. These efforts are formally recognized in the faculty merit and promotion process and codified in the APM. However, simple enumeration of graduate student advisees does not accurately convey the effort and care that many faculty invest in helping their advisees to be successful. Many campuses already have mentoring awards, while others are developing them. This is a good time for the University to reflect on what these awards mean, how their winners are determined, and whether they meet our current goals. Such reflection could assist us in better articulating how we should assess advising and mentoring.

Current merit and promotion practices do not always appropriately recognize faculty who participate in or develop mentoring activities for students other than those they advise directly. First-generation and minoritized students tend to seek out faculty with similar backgrounds[70] and URM faculty report a larger share of service work,[71] even as majority groups continue to outpace others in formally recognized advising roles.[72] We must pay attention to these concerns in both our existing review processes and in any additional recognition. Simple metrics for PhD student advising (*e.g.,* the number of students who complete the degree) tend to reward disproportionately faculty who take on easier advising and mentoring roles, especially in disciplines where student advising is more important to faculty research. For example, mentoring first-generation and minoritized students may require heavier time commitments from faculty advisors. Similarly, a student who switches research advisors or projects mid-program may require additional years of advising from the new faculty advisor, who does not receive full "credit" for time spent as chair of the thesis committee.

Additional support or recognition might be provided to exceptional faculty who spend far beyond the expected amount of time being highly effective advisors and mentors of graduate students. Such programs could be analogous to those that provide teaching release or other incentives for UC faculty who engage in extensive service, and must align with the goals of the department, school, and/or campus. Because such recognition would benefit the mentor in merit and promotion review and the mentee in resume-building, its use must also be monitored closely to ensure that it does not provide double benefit to people who already represent their mentoring well in existing merit and promotion processes, and to ensure that we identify faculty who do

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[70] Thomas, K. M., Willis, L. A., and Davis, J. (2007). Mentoring minority graduate students: Issues and strategies for institutions, faculty, and students. *Equal Opportunities International*, *26*(3), 178-192. https://doi.org/10.1108/02610150710735471

[71] Hare, H. E. (2018). *Service work of underrepresented faculty*. University of California, Los Angeles. UCLA Electronic Theses and Dissertations Series. https://escholarship.org/uc/item/6pr0b5jz

[72] Chamely-Wiik, D., Cooney, B. T., and DeDonno, M. A. (2020). Who mentors undergraduate student researchers? An analysis of faculty involvement at a four-year university. *Mentoring & Tutoring: Partnership in Learning*, *28*(1), 78-97. https://doi.org/10.1080/13611267.2020.1737784

exceptional work but do not promote themselves for it. While existing AP processes include reflective teaching statements in which faculty describe their mentoring and advising approaches, such statements are not universally recognized, and may not match the assumptions of external evaluators.

2.6 Diversify career preparation

The UC must better prepare its PhD/MFA students for a wide variety of post-graduation careers, including and beyond the academy.

2.6.1 Considerations

The deep subject mastery, critical thinking, skills and perseverance required to do ground-breaking research and generate new knowledge can serve to launch careers in a variety of sectors, including academia, industry, government, non-profits, and start-ups. Some less traditional paths are now a major route to employment for our students. Consequently, the proportion of doctorate recipients taking jobs in the private sector has increased dramatically in the last two decades, from 24% in 2002 to 48% in 2022.[73] At the same time, academic job opportunities have been in steady decline in nearly every field for decades, albeit most severely in the humanities, arts, and social sciences.[74,75,76] As tenure-track positions become increasingly scarce and the competition for them intensifies, the UC has a responsibility to train its graduate students to become adaptable professionals who contribute to society beyond traditional academic roles.

The UC needs to redouble its efforts to prepare its students comprehensively and holistically for success in multiple career paths, and to ensure that campus culture supports all of these opportunities as desirable choices, not as backups. At the same time, PhD/MFA students have a responsibility to explore a wide variety of career options to prepare themselves for a dynamic and evolving job market. As a co-benefit, exploring diverse career options can mitigate stress and uncertainty this population experiences.[77] The key questions we considered include:

- Which core competencies and transferable skills (*e.g.*, project management, oral and written communication, leadership, interdisciplinary collaboration, grant writing, entrepreneurship, ethics) do graduate students need most to secure appropriate employment and build successful careers?

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[73] NSF Survey of Earned Doctorates (2022). https://ncses.nsf.gov/surveys/earned-doctorates/2022#tabs-1

[74] MacKenzie, B. (2002). The decline of the professor: The impact of higher education change on academic roles. In *The University of Crisis* Preston, D. S., Ed. (pp. 1-19). Rodopi: Amsterdam. https://doi.org/10.1163/9789004495340_004

[75] Lederman, D. The New Ph.D.s. *Inside Higher Ed.* December 8, 2016 https://www.insidehighered.com/news/2016/12/09/phd-recipients-increase-number-job-prospects-vary-new-us-data-show

[76] Flaherty, C. History Jobs Flat. *Inside Higher Ed.* January 11, 2017 https://www.insidehighered.com/news/2017/01/12/teaching-jobs-historians-are-down-data-suggest-opportunities-outside-professoriate

[77] Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., and Vanderford, N. L. (2018) Evidence for a mental health crisis in graduate education. *Nature Biotechnol.*, *36*(3), 282-284. https://doi.org/10.1038/nbt.4089

- How can we support and encourage broader career exploration by graduate students?
- Can we mobilize public/private partnerships among academia, industry, non-profits and government to expose students to advanced technology and methods, expand their professional networks, and provide them with valuable real-world experiences?

2.6.2 Actionable recommendations

R6a. Develop comprehensive campus and systemwide career counseling and professional development opportunities.

Career counseling and professional development must be embedded in PhD/MFA programs to help students navigate both academic and non-academic career paths. The University must first audit our resources across disciplines, across campuses, and systemwide. This task entails inventorying and assessing current career services, and understanding how they do or could serve doctoral students. Surveying our alumni and employers, as well as taking advantage of existing datasets like those used to assess potential markets for professional programs, will help us to identify where career interests and market needs overlap. To ensure the effectiveness of our efforts, we must create robust systems to monitor and report graduate career outcomes, as well as mechanisms to use the data to continually improve support and allocate resources where they are needed most.

Typically, each UC campus runs its own career services and professional development programs.[78] While these are effective at the undergraduate level, small cohort sizes make them less viable at the graduate level. Some programs for doctoral students could be piloted systemwide and, when successful, supported with permanent funds from UCOP. Such an approach could be both more visible to recruiters and more readily tailored by discipline, due to the ability to combine graduate student numbers across all UC campuses.

Courses and workshops that emphasize practical skills like dissertation writing, grant writing, and oral presentations should be developed or expanded to ensure that graduate students become more versatile and marketable. Evidence-based training to enhance communication skills, including public speaking and presentation, benefits students who wish to pursue teaching as a career, but is generally valued in many other professional roles. Some advice and resources will need to be tailored by discipline and career path, but workshops on skills such as writing, project management, and data analysis have value across multiple disciplines and in many career paths. Online resources can be deployed widely for career exploration, along with tools to help students set and achieve career goals. Alumni networks can be tapped for mentorship and career advice, with added benefits in community-building and opportunities for networking.

[78] There are a few notable exceptions at a systemwide level. Some may provide interesting models that may be scaleable. Examples include the systemwide UC-HBCU program, in which UC faculty partner with HBCU students interested in graduate study (https://www.ucop.edu/uc-hbcu-initiative/index.html), and the California Community College Internship Program, which provides training for graduate students to become California Community College Professors (https://grad.uci.edu/professional-development/graduate-postdoctoral-scholar-resource-center/california-community-college-internship-program-cccip/). The latter program is operated by the Irvine campus but serves multiple campuses. There are plans to expand this program systemwide.

Faculty advisors and programs should encourage graduate students to take advantage of campus training, resources, and support for those interested in starting businesses, including access to incubators and business plan competitions that provide mentoring and funding opportunities. Most UC campuses already have substantial efforts in technology transfer and entrepreneurship training, which could be leveraged to train graduate students with some additional outreach and support from faculty advisors. Workshops on entrepreneurship and innovation could be tailored for graduate students in various fields, both at the campus level and systemwide. Students with particular interest could be further encouraged to compete for funding related to innovation transfer, such as Small Business Innovative Research (SBIR) and Small Business Technology Transfer (STTR) grants.[79] These federally funded programs support research and development by small businesses in the US and have been a major support mechanism for technology transfer since the program was created by Congress in 1982. Such experiences aid students in starting companies, but are also broadly useful to employees of all kinds of businesses and may give our students an advantage in securing positions in the private sector. Proof-of-concept grants and other funding mechanisms may allow the UC to reap substantial gains in terms of technology licensing, entrepreneurial outcomes, and career support for graduate students with minimal additional resources. This a particular exciting time for such research, because the UC recently broadened its policies and opportunities for taking equity in companies as investments and support for technology transfer.

It may prove challenging to include more transferable skills development into existing doctoral programs without overloading students, disrupting the curriculum, or extending time-to-degree. Graduate students know their own personal lives, incentives, work styles, and more. By providing them with information about potential career paths, the University and faculty advisors/mentors can empower each student to find a path that is right for them, without adding extensive training requirements.

R6b. Require goal-driven career planning shortly after advancement to candidacy.

Advancement to PhD candidacy, typically near the end of the second year of the program, is an appropriate time for graduate students to revisit their career goals and start to make concrete plans for dissertation completion. We envision a “third-year relaunch” post-candidacy, designed to accelerate this process and enhance career readiness. First, students should be reintroduced to the resources, tools, and people available to support their planning, within their program, at their campus, and across the UC system. Some of these will likely be discipline-specific. Next, students should be guided to set clear goals and expectations for their path to degree completion, including a timeline to achieve their academic and career objectives.

UC could also pilot more formal advising contracts that articulate both academic and career preparation goals at this stage of the academic program. Co-signed by the graduate student and the faculty advisor, they would create expectations for both parties by setting academic milestones and professional skill development goals. These contracts would ensure that career

[79] America’s Seed Fund. About SBIR and STTR. U.S. Small Business Administration. https://www.sbir.gov/about

preparation is built into the advising relationship. They would also facilitate timely identification of situations in which members may need to be added to the student's mentoring team. For example, contracts could specify deadlines for submitting articles for publication, applying for internships, or developing teaching skills. Advisors would be helping their students to stay on track in their progress toward both their academic and career goals, by ensuring that their mentorship includes a strong focus on professional development.

This approach is intended to create momentum and provide a roadmap for students and their dissertation committees to follow. A "third-year relaunch" initiative should be aligned with existing graduate program curricula to streamline implementation and maximize student engagement. Students who do not continue on to the PhD, but who decide instead to complete a Masters' degree, could also benefit from a brief, intensive period of goal-setting and career planning at a similar point (*i.e.*, after two years of study).

3. Re-imagining doctoral education

This section is intended to be bold and thought-provoking. Given the collective intellectual power and deep experience of this Workgroup, we saw it as our duty to think broadly about potential futures for graduate education. The ideas presented below are creative, at times impractical, and occasionally controversial. The goal is to engage in flights of fancy, to push the boundaries of what we imagine to be possible, and to reconsider the entire enterprise that is graduate education. Rather than be carried along or even stymied by external forces which have obliged us to react, we choose this moment to engage deeply and collectively in provocative new ideas.

We acknowledge that many of the directions outlined below are deeply incompatible with one another. No university can or should attempt to do all, or perhaps not even any, as they are currently articulated. Nevertheless, imagining where we might go may help us to determine which futures we should strive to avoid, as well as which futures we want to pursue. We invite readers to engage with these bold ideas and to use the broad discussions we hope they initiate to generate even more.

3.1 Target dramatic reductions in time-to-degree across all PhD/MFA programs

3.1.1 Considerations

When many PhD students are contemplating completing their degree programs, other adults of similar age are already engaged in early career wealth-building, finding a partner, and sometimes having children or buying a first home. Many PhD students are obliged to defer these goals. Every year they spend in their programs is an additional year's opportunity cost, charged against their futures. Extended times-to-degree can increase financial strain on graduate students, delay their entry into professional careers, and limit the adaptability of their programs to emerging or rapidly changing research fields. First-generation and minoritized students can also be deterred from entering PhD programs by the prospect of spending several additional years studying. At the same time, each year a PhD student is supported financially by the University—often via a research grant awarded to a faculty PI—is a considerable expenditure of resources.[80] Extended times-to-degree limit the availability of program resources for other students.

Dramatically shortening times-to-degree (*e.g.*, by 10-20%) may be essential to ensuring the sustainability of UC's PhD programs in the long term. We must address not only *average* time-to-degree (which can be reduced somewhat by managing excessively long outliers), but also *normative* time-to-degree (requiring substantial change to pedagogy, standards, practices, and policies). We could increase the fraction of time students spend on the academic components of their degrees (including experiential learning) by significantly reducing the fraction allocated to employment-related duties. This is a way to expand access without significant additional resources.[81] By streamlining time commitments across our academic graduate programs broadly,

[80] Currently ca. $100,000 (see Section 2.2.1).
[81] See Section 2.2.2 (specifically, **R2b**) for a cost-based argument for this approach.

coupled with clearer milestones and enhanced mentoring, the UC can aspire to enhance the impact and the efficiency of graduate education, benefiting both our students and society. At the same time, we must reckon with faculty reluctance to resort to an unpopular "PhD-lite" model, and the risk that shorter time-to-degree might limit students' ability to publish as much as they could of their dissertation. We must strive to maintain the quality of the educational experience for PhD students as well as the outcomes, including the primary product of this enterprise, the PhD alumni who go on to have successful careers in California and around the world.

3.1.2 Bold ideas for discussion

B1a. Set firm time limits for graduation.

Setting clear time limits for degree completion[82] and adhering to them firmly, coupled with lowering these limits relative to current standards, could ensure that students sustain progress toward completing their degrees. For this to work, existing practices of approving almost all requests for extensions must stop. Such practices, which became the norm during the COVID-19 pandemic, must become rare exceptions if time limits are to be successful in changing behaviors. Students should be evaluated regularly and supported to complete their degrees in a timely manner, as well as disqualified if the amount of time they are given runs out—or even earlier for students identified as highly unlikely to successfully complete a PhD.

Having and enforcing time limits would help to align student progress with funding resources, and improve the clarity of expectations for entering students, similar to the clear timelines in other graduate programs (*e.g.,* MBA, JD, MD). It would also pre-empt situations in which students' progress becomes indefinitely delayed, draining both university resources and student morale. At the same time, the ability of a faculty member to delay graduation, *e.g.*, because a student has become productive as a research collaborator or is needed as an instructor, would be abridged.

Any strategy must be designed to avoid shifting too much responsibility for completing program requirements onto individual students, who may present rushed and/or incomplete work that compromises the quality of dissertations or creative projects. Time extensions without extensions of funding could put students' ability to thrive at great risk. Strict time limits may prove too confining for students who are entitled to additional time to develop competencies, *e.g.*, those with legally protected disabilities. Justified exceptions should be allowed for students experiencing severe personal or academic challenges, or students whose project timelines have been disrupted.

B1b. Establish pre-doctoral bridge programs.

Successful time limits would probably need to be coupled with a strategy to ensure most students enter PhD/MFA programs with adequate preparation. Such efforts could start during the undergraduate program years by targeting students with an interest in graduate school.[83] In addition, UC could create a system of intensive, one-year pre-doctoral (but post-baccalaureate)

[82] In the UC system, this is called "Max Time to Degree".
[83] See Section 2.4 (specifically, **R4b**).

bridge programs for promising students with gaps in their preparation, or students who want to change fields of study and therefore need additional foundational learning. Such programs could increase access for students who would otherwise be unprepared for UC-level graduate work. They could also be used to target students who may be well-prepared academically but for whom additional time for cohort- and community-building would help them develop a stronger sense of belonging.

Bridge programs could focus on critical thinking, research methodology, and foundational knowledge, creating a more uniform starting point for all students and shortening average time-to-degree without sacrificing quality. Such programs would require additional resources, although in some cases, they could also generate revenue for units providing them. They should be carefully designed to avoid giving the impression that they represent an extra barrier, thereby disadvantaging UC graduate recruiting relative to other institutions.

B1c. Implement "one in-one out" PhD admissions.

Campuses can create incentives for programs to shorten their PhD programs by ensuring timely completion of degree milestones by graduate students, and academic disqualification of students who fail to perform at the PhD level. Redesigning policies regarding admissions and enrollment management may be required. On campuses and in programs without plans for graduate student enrollment growth, a policy that allows admission of a new student only when another student leaves the program could create these incentives. Some programs at other top US universities already use such a model. The difficulties in knowing exactly when student will leave and how many new students will choose to enroll makes its strict implementation challenging. However, even an approximate model could help to make enrollments more intentional and predictable.

B1d. Require a Master's degree to advance to PhD study.

Many PhD programs currently admit students directly upon completion of a Bachelor's degree, then require a significant amount of coursework (1-2 years) and learning of basic research skills prior to advancement to PhD candidacy. Students who choose to leave their program at this point (*i.e.*, without completing the PhD) may have earned a Masters' degree with full University funding, and some students may enroll in PhD programs with exactly this plan in mind. While the outcome is a tremendous bargain for the student, it represents an expensive lost investment for the University.

In an alternative model, incoming graduate students would complete most or all of the coursework currently required for a PhD program (including, potentially, learning foundational research and writing skills) in a non-terminal Masters' degree program, either at the same campus where they will eventually earn a PhD, or at another. The time spent earning a Masters' degree (*e.g.*, two years) would give these students an opportunity to mature and decide if they truly want to pursue a PhD. It would also provide faculty with more information to make better PhD admissions decisions. Students who decide not to proceed to the PhD program would receive an MS/MA degree, without the stigma of having 'failed' to advance to PhD candidacy.

Funding offers to support these MS/MA students would likely depend on the discipline and the campus, but admitting students without up-front, long-term (*e.g.*, 5-6 year) funding guarantees could allow campuses to take more risks on a greater number of students. This practice would also alleviate budget and equity concerns relative to other Masters'-level students. In another variation, much of the accumulated debt for the Master's degree could be forgiven for certain academic outcomes (*e.g.,* subsequent attainment of the PhD).

In such a scenario, time spent in the PhD program (*e.g.*, three years post-Masters' degree) would be dedicated almost exclusively to advanced, original research or activities of similar scholarly value. For research funded by extramural grants, the shorter PhD timeline would be better aligned with the 3-year duration of many research grants. Many European graduate programs already follow variations on this model, motivated in part by limitations in funding availability.

Competition with other top US universities who continue to offer direct admission to 5- or 6-year PhD programs could be an issue for recruiting highly qualified graduate students. While other graduate programs across the country are starting to feel the same pressures as UC, we must monitor the market carefully and ensure that we do not cede our competitive advantage in recruiting the best and most diverse cohorts possible. Another version of this model admits students to a Masters' program with a competitive funding commitment similar to other US programs that admit directly to the PhD, but with a more explicit indication that they must spend this time building the skills required to become an expert in the field and thereby earn a slot in the PhD program.

The benefits of more risk-taking in admissions practices must be balanced by support to improve access to graduate education. We would need to monitor outcomes closely. Whether the additional barrier of an MA/MS degree would deter lower-income and first-generation students from pursuing a PhD is an empirical question. Lack of a PhD admission guarantee (especially without funding) may make such students less willing to take on advanced studies. However, it is also possible they would be *more* likely to proceed to graduate school knowing they are initially committing to a 2-year MS/MA program with a PhD option, rather than a 5- or 6-year program (especially if offered substantial funding at the outset). As needed, additional fellowships could be reserved for low-income, first-generation, or students whose work, interests, and experiences advance the University's goals of creating a broad and diverse community. In truly exceptional cases, programs might allow direct-admit PhD students, or offer combined admission packages (*e.g.,* admission to a Masters' program with a promise of admission to a PhD program pending satisfactory progress). Such policies and practices would have to be developed with Academic Senate support, because most programs do not currently allow for such exceptions or long-term admission promises.

We would also have to track outcomes to ensure that cohorts who advance to the PhD are as diverse in their backgrounds and experiences as those who do not. There are undoubtedly many other unintended consequences, requiring careful analysis of these issues prior to and during implementation. For example, such a move could risk limiting the ability of PhD students to receive funding via mechanisms like the National Science Foundation Graduate Research Fellowship Program (NSF GRFP), which currently restricts eligibility to those who have not

spent much time in graduate school.[84] A cautious approach could involve pilot programs in select disciplines.

B1e. Embrace AI-augmented personalized learning, research training, and autonomous research.

Artificial intelligence (AI) systems will become more powerful and it seems inevitable that they will eventually be more fully integrated into academic teaching and research. AI tools could also be used to tailor PhD/MFA pedagogy to each student's learning style, pace, and interests. Personalized AI tutors could guide students through complex concepts, keeping them engaged while accelerating their learning. They could also provide students with learning differences or disabilities greater access to PhD/MFA pathways. Existing biases in these tools and models would need to be assessed and managed to ensure equitable outcomes.

Advanced AI tools could be used to automate labor-intensive, repetitive research tasks such as data collection and analysis, and to perform literature reviews. The increased efficiency would free up student time to focus on creative, high-level thinking and groundbreaking research, and thereby accelerate completion of some projects. UC graduate students could pioneer the use of AI to help them design experiments, write research proposals, or simulate potential research outcomes before conducting physical experiments. These activities could eventually reduce the time and cost of doing research dramatically.

Substantial investment in AI development is still needed, and the approach raises questions about intellectual property in AI-enabled research. Over-reliance on AI could diminish the value of human mentorship and collaboration. Some disciplines may find that AI use hinders the development of essential research skills and critical thinking. The ethical concerns about the potential for dehumanizing graduate education and research will require extensive discussion, as well as careful planning and assessment as part of any purposeful implementation.

3.2 Exercise more central oversight over PhD/MFA programs

3.2.1 Considerations

PhD/MFA program design and delivery, as well as enrollment decisions, are traditionally determined—or at least heavily influenced—by individual faculty preferences. In the future, joint faculty-administration councils could develop guidelines to optimize these aspects of programs across disciplines, campuses, or other units. Such guidelines might be used centrally for assessment, to make funding and admissions decisions, or even to allocate faculty lines. Central oversight would increase alignment with priorities larger than those of an individual program and consistency in the graduate student experience across disciplines. Such oversight would have to be implemented carefully to balance local, disciplinary, and campus-based issues, ensure that programs retain a prominent role in their own decision-making, and avoid creating a burdensome bureaucracy. Some of the forms such oversight might take are explored in this section.

[84] Applicant eligibility, NSF Graduate Research Fellowship Program. https://www.nsfgrfp.org/applicants/applicant-eligibility/

3.2.2 Bold ideas for discussion

B2a. Make budgets more responsive to program health.

UC campuses could adjust annual program/department budgets related to PhD/MFA education based on key performance metrics, such as student success rates, faculty-to-student ratios, inclusive excellence, funding availability, and career placement outcomes. Faculty hiring, physical space allocations, and other resources could also be tied more closely to graduate education, linking program success to central faculty interests. In balancing a centralized strategic vision with program autonomy, such an approach could promote transparency and adaptability while helping UC to achieve its broader goals. It could also encourage growth in high-performing programs while preventing over-enrollment in struggling ones. A smoothing mechanism would be necessary to avoid funding instability due to inevitable yearly fluctuations and bureaucratic delays, which could complicate long-term program planning for faculty and graduate students alike. We would also have to be mindful not to allocate too much of the University's resources to already successful programs, nor to create undesired distortions and tensions between faculty and the central administration.

Doctoral admissions could also be tied more directly to faculty retirements and new hires. As senior faculty retire, their replacement by early-career scholars might be paired with proportional enrollment shifts to reflect changes in departmental capacity, funding, and mentoring availability. Similarly, the allocation of new faculty lines could be tied to graduate program outcomes. In this way, program size would be responsive to faculty availability, ensuring students receive appropriate mentorship and research opportunities. The aim would be to better align enrollment with real-time program capacity, although gaps in enrollment and/or research coverage could occur if faculty retirements outpace our ability to recruit new hires.

B2b. Redistribute resources for PhD/MFA education across multiple departments.

Campuses could implement a system in which departments and schools with more resources contribute a portion of their funds, perhaps including those related to self-supporting graduate degree programs (SSGDPs) or non-resident supplemental tuition (NRST) depending on the overall campus budget model, to support programs in departments with fewer resources and/or less revenue-generating potential. Programs with lower enrollments or fewer external funding opportunities would therefore still be able to offer high-quality graduate education and promote academic diversity at the institution. Such redistribution would aim to ensure equitable access to funding, creating a more balanced system for managing graduate education costs and revenues. In the best case, it would foster a stronger sense of interdepartmental cooperation, encouraging programs to see themselves as part of a larger institutional ecosystem rather than independent small businesses competing for resources.

Substantial administrative support (and therefore increased bureaucratic costs) would be required to manage the redistribution of funds and determine reasonable allocations. Campuses will need to ensure that departments with strong self-supporting programs are still motivated to grow and

innovate even if the additional revenue does not benefit primarily their own faculty, students, or infrastructure. Ensuring transparency and fairness would require careful oversight.

B2c. Reconfigure existing PhD/MFA programs.

Smaller PhD/MFA programs with subcritical cohort sizes might be induced to restructure into new interdisciplinary or cross-campus programs. By pooling resources and creating collaborative opportunities, the UC could retain niche academic strengths either across programs on a single campus, or across the system, without the financial burden of supporting too many small, standalone programs. Such reconfigurations could encourage innovation and interdepartmental collaboration, diversify student experiences, and keep specialized fields alive by allowing even small programs to have student cohorts with appropriately-sized communities in which to be scholars. However, faculty and students in smaller programs would need to be supported by the change management required of such integration, including help to reestablish any potential or perceived losses of identity and autonomy.

The merging of small programs is not the only, or even possibly the most desirable, outcome of a reconfiguration. Larger graduate programs nominally identified with undergraduate majors may not be as coherent as groups of subdisciplines from different departments. Other potential strategies to explore include reconfiguring larger graduate programs along various interdisciplinary themes, and reconfiguring them to incorporate specializations or emphases that are inclusive of current smaller programs.

Clearly, graduate program mergers could have repercussions for UC's undergraduate program offerings.[85] The purpose of graduate education, which is intrinsically more collaborative and interdisciplinary, is not necessarily aligned with our foundational undergraduate education structures. Thus, reconfigurations should be discussed broadly with a view to identifying new opportunities across departments, divisions, and colleges.

3.3 Decouple graduate curricula from undergraduate-focused departmental structures

3.3.1 Considerations

The alignment of our PhD and MFA programs with academic departments and their undergraduate majors is largely a bureaucratic product of the University's traditional structure. A radical reimagining of the academic map of the university would decouple these structures to better achieve the objectives of 21st-century higher education. A new model would enable graduate students and faculty advisors alike to have looser ties to undergraduate-focused departments, while acquiring new affiliations to graduate groups or other similar structures organized on the basis of affinities in original research and creative activities.

[85] It may be desirable for graduate and undergraduate programs to become much less tightly coupled. Aspects of this scenario are explored in Section 3.3 below.

3.3.2 Bold ideas for discussion

B3a. Create interdisciplinary PhD/MFA hubs based on research project rotations.

Rather than limiting PhD/MFA students to a single discipline associated with a department and its undergraduate major, they could rotate through several departments in their first year or two, exploring their interests before committing to a specific dissertation topic. Such interdepartmental program—sometimes call "hub" models, gateway programs, or rotations—expose students to a variety of methods and perspectives, and equip them with interdisciplinary outlooks on their research. If broadly adopted, faculty teams from different disciplines would guide students, emphasizing collaborative problem-solving across fields. The interdisciplinary research and cross-campus collaborations that emerge could lead to novel discoveries or creative works. Rotations could result in delayed starts to research (and an undesired lengthening of time-to-degree), as well as misalignment with current department- and discipline-based funding models. Certainly, the management and oversight of such multi-department programs has historically been challenging, making new structures, policies, procedures, and funding necessary to achieve positive outcomes. However, existing well-managed programs that use such models tend to have good outcomes, offering promise for the future.

Students trained in such a way would have multiple collaborators and mentors who could support their transition to post-graduation careers. In some fields, having collaborated with people in different sub-fields, or at least in different research groups, is considered a sign of strength and is an advantage in the job market. Such a structure might also better prepare students for the academic careers of the future, although this outcome could depend on other universities to undertake similar realignments. In the meantime, students might be less well-prepared to apply for faculty positions as they exist now, and it will be difficult for any department in the country to be first.

B3b. Organize faculty into graduate groups, as a prerequisite to chairing dissertation committees.

According to the APM,[86] "participation in the general guidance, mentoring, and advising of … graduate/professional students" is a formal criterion for the review of UC faculty. Nevertheless, serving as a thesis committee chair is not a right but a privilege of the Faculty.[87] UC could require faculty to be members of graduate groups, or their campus Graduate College or Division, as a qualification to advise graduate students. Any such requirement would have to articulate a clear basis for membership, which could be established at the system, campus and/or program level based on criteria established by the Academic Senate, with input from graduate student administrators (*e.g.,* department chairs, graduate deans, and faculty graduate program

[86] UC Academic Personnel Manual 201-1.d.1. https://www.ucop.edu/academic-personnel-programs/_files/apm/apm-210.pdf

[87] See section 2.5.1.

directors).[88] Criteria could include: having an active program of creative or scholarly activities at the level of excellence expected by the University of California; articulating an advising/mentoring philosophy; agreeing to respect affirmative guidelines for engaging with graduate students; having a history of co-advising with a more senior colleague; and/or otherwise successfully demonstrating competency for this role, either through past performance or completion of appropriate training. In principle, non-Senate faculty, research scientists, and other academic personnel might be eligible for admission to graduate groups, in addition to Senate faculty. As in the case of faculty training in mentoring,[89] standardized online training is not likely to be an appropriate way to ensure that faculty or others are well-prepared to advise PhD/MFA students.

Criteria for denying membership or removing faculty or others from a graduate group or their campus Graduate College or Division would have to be clear and consistent. They might include substantiated abusive conduct charges, failure to consistently fund students adequately in grant-supported fields, students repeatedly leaving a faculty advisor for another advisor, poor degree completion rates, or advising students who regularly fall out of compliance with the program's normative time-to-degree. Faculty who are or become ineligible to be members would need to meet the APM's requirement for mentoring and advising by other means, such as engagement with undergraduates or postdoctoral scholars. Reintegration of a faculty member or other University personnel removed from membership for cause could be coupled with successful completion of training and/or evidence of significant change. Action plans are already regularly used by faculty with multiple problematic merit and promotion reviews; a similar system could be deployed to support faculty in regaining their eligibility for graduate student advising.

3.4 Explore new types of PhD/MFA programs

3.4.1 Considerations

The structures of PhD/MFA programs are based on models that, in many cases, have not changed appreciably in centuries. They were originally conceived to prepare scholars for much narrower career paths than those our students undertake today. The new boundary conditions motivate us to reconsider whether such models serve all graduate students well, and in cases where they do not, to reflect on whether alternative models might better meet their needs. We ask whether programs could and should be redesigned for the specific career outcomes students seek (academic positions, industry roles, entrepreneurial ventures, *etc.*) and the learning outcomes aligned with those career goals. For example, students aiming for research-oriented academic careers might focus more on publishing, research presentation, and teaching; those seeking careers in industry might focus more on project management, commercialization of research and intellectual property considerations, teamwork and collaboration with industry mentors; those seeking teaching-oriented academic positions might focus more on curriculum development, pedagogy, and classroom facilitation skills. The following ideas, not intended to be exhaustive, are presented in this spirit.

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[88] Similar requirements already exist, *e.g.,* some programs at UC Davis (https://grad.ucdavis.edu/graduate-groups) and UC Merced (https://www.ucmerced.edu/graduate-research-areas) are run by graduate groups rather than by departments, and faculty must qualify for inclusion in such groups.

[89] See Section 2.5.2 (specifically, **R5a**).

3.4.2 Bold ideas for discussion

B4a. Create advanced teaching programs and awards.

In the STEM disciplines, many students who wish to pursue a career in the professoriate spend one or more years as a postdoctoral scholar after earning a PhD. This additional mentored research experience, which broadens research skills while expanding the list of research accomplishments, makes the scholar more competitive in the job market for tenure-track STEM faculty positions. Such a model might be adapted to serve scholars in the Humanities, Social Sciences, and other disciplines with particularly long times-to-degree, particularly in future scenarios where PhD programs have shorter normative times.[90] Providing such opportunities could simultaneously allow programs to streamline teaching requirements for graduate students not aiming for academic careers.[91]

Scholars who wish to acquire more teaching experience prior to applying for faculty positions might strengthen these skills while continuing to pursue research and publication. An expectation of additional time to build one's CV might help both students and faculty become more comfortable with the idea of significantly shorter times-to-degree.[92] The existing Presidential and/or Chancellor's postdoctoral fellowship programs could provide a suitable framework. Other possible appointment categories include lecturer, adjunct assistant professor, and postdoctoral scholar. In the STEM fields, postdoctoral scholars can already split their appointments and responsibilities between those of postdoctoral researcher and lecturer. A new, distinct job category may be needed for such positions if a broader program is developed.

B4b. Explore programs that purposefully prepare a broader range of students for more types of professional careers outside the academy.

Traditional PhD degree programs have milestones and activities that are less helpful to students who do not seek to build a career in the academy, even if a PhD (rather than a professional doctorate) is the most appropriate degree for their career goals. Professional doctorate programs, in contrast, prepare graduate students for non-research careers in the health sciences, education, and law (with additional exams and licensing requirements). The UC system could lead the way in thinking creatively about other career paths that may benefit from similarly configured programs. For example, although PhD/MFA students should demonstrate mastery in all components of their degrees, publishing research papers and teaching may be less relevant to a graduate student who plans to work in a non-academic research laboratory that does not train students and whose findings are expected to remain largely confidential. Thus, programs tailored for such students might weight the traditional components of the PhD differently, including the

[90] See Section 3.1 for an imagining of such scenarios.

[91] For a slightly different version of this idea, see Bell, D. A. (2023) So You Want to Be a History Professor. *Chronicle of Higher Education*, January 5, 2023. https://www.chronicle.com/article/so-you-want-to-be-a-history-professor?

[92] UC Irvine trialed such a model with their popular "5+2" Humanities PhD, with funding from the Mellon Foundation. Students completed their PhD in five years, then spent two years building their teaching and research portfolios. Before expanding such a program systemwide, it will be important to examine lessons learned. Notably, the program in its original configuration was very expensive to operate, making it difficult to sustain and to scale systemwide.

structure and format of the dissertation. Programs that provide a similar level of academic and research rigor, but which are intended (and specifically designed) to prepare students for careers in research leadership outside academia, could be attractive to some students.

Even traditional PhD programs should begin to imagine how students might tailor their degree requirements more closely to their career objectives by including more diverse experiential learning opportunities. For example, a student may wish to acquire more extensive teaching experience (*e.g.*, by serving as a Teaching Associate); learn how R&D is conducted in the private sector (*e.g.*, via an industrial internship); or analyze the impacts of regulatory policy (*e.g.*, by a policy internship or by engaging directly with policymakers). Of course, increased flexibility in new degree styles must be incorporated without increasing time-to-degree significantly.

UC could also expand the use of models for professional doctoral programs such as Doctor of Pharmacy (PharmD), Doctor of Education (EdD), and similar degrees designed for specific professional fields. Such programs could prepare students for careers in industry, public service, entrepreneurship, non-faculty roles at universities, or teaching at institutions like small liberal arts colleges. For example, programs geared toward teaching-oriented professionals could emphasize pedagogical training and the specific skills needed for effective teaching at small colleges or in other educational settings. By offering more career-targeted doctoral degrees, the university could diversify its graduate offerings and better align with modern workforce needs in high-demand fields such as education, healthcare, and business. Alternatives to traditional research-focused PhD tracks could attract new pools of graduate students, including working professionals who may not have the desire or the flexibility to pursue a traditional PhD but seek advanced training to enhance their careers by earning a terminal degree. Collaboration with industry, government, and other external partners, could lead to more internship opportunities, real-world experience, and funding for students.

Some research-focused faculty will be reluctant to engage in the design and delivery of professional doctoral programs. The demand for such programs without strong faculty engagement or established track records is uncertain, possibly leading to under-enrollment and difficulty in sustaining them. However, successful professional doctoral programs could be revenue-generating. The UC would have to navigate competition with the California State University system in this space. There would also need to be significant administrative oversight and coordination to ensure quality and relevance across various disciplines, and to avoid diverting too much faculty time and resources away from traditional undergraduate and PhD programs (especially if the University cannot expand its overall budget and staffing levels proportionately).

B4c. Allow graduate students to tailor PhD/MFA curricula to their individual interests.

In the traditional model, graduate students progress along a fairly linear path towards the dissertation or thesis in a defined normative time. UC could experiment instead with modular graduate programs that focus instead on acquiring competencies. Students would construct their own paths through a series of modules that align with their personal goals—whether they be academic research, industry, entrepreneurship, or interdisciplinary work. Each student could

combine core modules with specialized ones that reflect a desired career trajectory. Students who do not know at the outset precisely which courses and skills they want or need for their careers would have flexibility to add modules and explore alternate pathways as they progress, with the support of their advisor and faculty committee.

To motivate such changes, UC could develop a system where PhD/MFA both students and faculty earn digital badges or certifications for career-related skills. Badges would be awarded when students reach milestones, such as publishing a paper, presenting at a conference, leading a project, or completing a teaching assignment. While students would be awarded a badge for having completed a skill, advisors would receive badges for having guided a student through the milestone. Over time, students and advisors might acquire more advanced levels of the same badge (*e.g.,* silver for a student submitting their first paper, gold for ten such submissions, and so on). This kind of approach would formalize the development of transferable skills, potentially making it easier for students to demonstrate their readiness for diverse career paths. Mentors, advisors, and graduate program directors would need to be diligent in tracking progress, while being mindful of the additional workload. Finally, badges would have to be understood by our students' future employers, UC's Academic Personnel process, and other interested parties.

A focus on competencies could eliminate the need for arbitrary time-to-degree rules, giving students greater control of their timelines but also potentially risking the control and structure of the current system. Optimal implementations of such models would enable students to graduate faster while focusing on the skills that are most relevant to their career plans. Regardless of specific mechanisms, faculty and advising teams would have to determine how to maintain academic standards for advanced degrees with such a high degree of personalization.

3.5 Create graduate programs that span multiple campuses

3.5.1 Considerations

The organization of ten UC campuses into the larger UC system is one reason for UC's global visibility and reputation. Collectively, we contribute a substantial amount of the world's research, intellectual property, and PhD/MFA graduates. Not surprisingly, however, the existence of ten separate campuses means considerable duplication in graduate coursework across the system. Some redundancy is, of course, necessary for cohort-building on each campus, and for imparting advanced knowledge tailored to the needs of each program via small, specialized courses. At the same time, such course offerings are necessarily infrequent due to limits on faculty time and expertise, so that students on a particular campus may not have an opportunity to take the courses most relevant to them at the time when they can be most helpful in advancing the degree objectives (*e.g.*, in the first two years of the PhD program). In some cases, a graduate course may not be offered at all when a student is pursuing their degree.

The UC system benefits from its shared resources and infrastructure, yet effective examples of this sharing are less extensive than they could be. The interconnectedness of our campuses could be better leveraged to promote academic excellence, collaboration, and innovation. This section considers how we might better take advantage of the strength of the UC *as a system* to modernize our graduate programs.

3.5.2 Bold ideas for discussion

B5a. Encourage multi-campus PhD/MFA courses and programs across the UC.

The UC, its campuses and their programs, could strive to broaden the types of graduate courses we offer and their frequency by lowering barriers for graduate students to enroll in and receive credit for them on other UC campuses.[93] Recent advances in instructional technologies such as videoconferencing have made such multi-campus course offerings more feasible. Potential benefits could include more timely skills acquisition, a wider range of options in course selection and therefore more possibilities for tailoring to a student's interests and academic needs, and opportunities for students to build larger professional networks that include students and faculty with similar interests on other campuses. Students in some programs might choose to design their own doctoral degree, similar to how undergraduate students on some UC campuses have the ability to design their own major. Intercampus courses could also emphasize general skills development like academic writing, public speaking, statistical training, and study design.

The UC system would have to reduce institutional barriers to multicampus graduate courses, addressing with the lack of agreement on how to apportion tuition and how to assign teaching credit to faculty (similar issues have been encountered in multi-campus undergraduate course offerings). Concerns about the online instructional modality, including the effectiveness of interactions with other class members on different campuses, opportunities for active participation, and academic integrity, would make this modality inappropriate for some courses and for some students. When scheduling across the system, certain fields would need to coordinate multi-campus offerings to ensure appropriate numbers of opportunities for faculty to teach graduate classes in their specialty. We are nevertheless confident that UC faculty could find ways to identify opportunities and surmount difficulties to create exciting new opportunities for our PhD/MFA students to tailor how they meet their degree requirements.

Experiments with multi-campus graduate course offerings could eventually be extended to the creation of multi-campus graduate programs. Such a strategy might be essential for low-enrollment PhD programs in which the number of graduate students on individual UC campuses is already subcritical. It could also benefit fields in which the number of faculty experts present on a campus is insufficient to sustain a viable single-campus graduate program. A model in which all students in one program are enrolled at a core campus but can take courses and be advised by faculty at other campuses may be effective at ensuring that students do not feel isolated or languish academically for lack of advising and mentoring. The ideal multi-campus graduate program would be one that attains much greater stature and visibility than analogous single-campus programs. Here too, much discussion and planning regarding resource allocation will be needed.

[93] A similar systemwide model already exists for cross-campus enrollment in undergraduate courses, although offerings are only particularly well-developed in the summer. See the 2020 University of California Summer Enrollment Report: https://www.ucop.edu/operating-budget/_files/legreports/20-21/summer_enrollment_legrpt.pdf

B5b. Explore national/global PhD collaborations and co-tutelle programs.

UC could formalize international collaborations in which PhD/MFA students pursue joint degrees with global institutions. In the co-tutelle model,[94] UC students would be paired with international advisors to allow them to conduct part of their research abroad, participate in global research teams, build broader mentor networks, and gain exposure to diverse academic cultures while enhancing international collaboration. There may be lessons and analogies in UC's successful Education Abroad Program for undergraduates.[95] Extending such programs to the graduate level could help students address challenges with a cross-cultural academic lens and become globally competitive. Considerable effort and resources would be necessary to achieve the required level of coordination between institutions. Programs would have to be carefully designed to ensure that meeting dual requirements does not increase time-to-degree significantly.

3.6 Fully decouple academic effort from employment and other forms of financial support

3.6.1 Considerations

Over the last two years, the UC has worked doggedly to separate the deeply interconnected issues of academic training and paid employment as much as possible. It may be simply impossible to do so completely in our current system. Continuing to attempt to make such distinctions in this messy environment may only lead to further confusion and misunderstandings. The ideas in this section are intended to provoke discussion about what would happen if they were separated completely and intentionally, at least in the lives of our graduate students.

3.6.2 Bold ideas for discussion

B6a. Establish a universal basic stipend for graduate students.

A Universal Basic Stipend (UBS) specifically for graduate students in doctoral programs would provide students with a living stipend throughout their studies, eliminating the need for them to rely on employment for survival. Funded by a combination of state resources, public-private partnerships, and endowments, students could focus entirely on their academic goals. Students would be freer to pursue bold, high-risk research without the pressure of securing external funding, and time-to-degree should decrease significantly by removing the need for students to spend time on external employment. Eliminating financial barriers would also likely increase access and equity for students from more diverse backgrounds.

This idea would, however, require a total rethinking of the contributions of graduate students to UC's teaching and research operations, with implications for the University's workforce. Furthermore, freeing students from all financial constraints without specific benchmarks could

[94] See, for example, How a Co-tutelle Works, Fordham Graduate School of Arts and Sciences. https://www.fordham.edu/graduate-school-of-arts-and-sciences/academics/academic-enrichment/co-tutelle-for-doctoral-students/how-a-co-tutelle-works/

[95] UC Education Abroad Program. https://uceap.universityofcalifornia.edu/

create problems with individual accountability and productivity. Thus, we recommend any discussion of such approaches include careful consideration of how to maintain academic quality and time limits to ensure steady progress.

B6b. Create a "pay-it-forward" model for PhD/MFA funding.

In this model, some graduate students could choose to pay tuition while others would receive their education entirely tuition-free, with the understanding that once they secure employment after graduation, they will pay a small percentage of their income back into a fund dedicated to supporting future graduate students. This approach would create a self-sustaining funding model that spreads the cost of education over time, as successful graduates contribute to the support of future generations. We must be careful that students do not feel like this approach is wage garnishment. Students might also defray their costs after graduation through service commitments, such as participation in Teach for America, mentoring undergraduate students, or teaching/engaging in research for a set period of time in areas of particular need for the state of California.

While this model for access to graduate education would lower up-front financial barriers, it could take many years to build a robust funding pool, resulting in short-term gaps. Of course, only graduates employed in well-paying jobs would be able to make meaningful financial contributions, and the system would be sensitive to economic downturns. Furthermore, because UC graduates are employed worldwide, the system could be prohibitively difficult to administer and subject to “gaming.” Nevertheless, a well-designed model could provide a stable, long-term source of funding for graduate programs while stimulating a sense of community and responsibility among alumni to give back and support future students.

B6c. Prohibit the use of outcomes from paid work as evidence of academic progress and accomplishment.

In some disciplines (usually, in the Social Sciences, Humanities, and Fine Arts), duties performed by graduate students in the course of employment often have only a limited relationship to the topic of the dissertation/thesis. While research and writing skills may be required of graduate student employees and may be enhanced as a consequence of their employment, graduate students have no intellectual ownership of the work-for-hire and do not typically present it as their own original contributions to knowledge.

The UC could also discourage or even prohibit all PhD/MFA students from using research results obtained while working as an employee in any thesis and dissertation for academic credit. Instead, students would be required to conduct independent research for their dissertation, distinct from their paid work as graduate student researchers (GSRs). The idea stems from concerns about the ownership of intellectual property, faculty-student power dynamics, and potential over-reliance on paid work to fulfill degree requirements. Cleanly separating employment from academic activities would promote intellectual independence and encourage originality and self-driven inquiry, reinforcing the expectation that PhD students contribute novel ideas and results to their fields. Furthermore, graduate students would not be pressured to align their dissertation research with their advisor’s interests or existing projects, creating more

equitable faculty-student relationships. It would also clarify intellectual property issues, confirming that research conducted as part of paid employment belongs to the institution or faculty sponsor, while dissertation work is entirely the student's intellectual property. A likely outcome in many STEM fields would be increased time-to-degree, because graduate students who rely for financial support on employment related to their dissertation would be disproportionately affected.

The chair of the thesis or dissertation committee might have to be someone other than the supervisor of any employment position. The Principal Investigator (the PI, who is usually, but not always, a faculty member) whose intellectual ideas generate a funding award would be able to hire any eligible graduate student (or indeed any other university employee) to perform work on a project. PIs would not be required - or even incentivized - to hire their own graduate student advisees for such work. If any appropriately skilled graduate student might apply for any such research position, students' skills and professional networks would be broadened, and in some cases, could make changing dissertation projects easier.

This approach may be infeasible for dissertation projects that require access to specialized equipment owned by the University and/or provided through extramural support. Students who have to pursue research that is less relevant or tangential to their broader academic or career goals as a consequence could miss out on opportunities to collaborate with faculty PIs on PI-led research.

3.7 Engage more substantively with industry, government, and the community

3.7.1 Considerations

The UC should make more strenuous efforts to remove barriers between our research and the outside world. There are multiple challenges associated with including applied research supported by the private sector (IP sensitivity) or by the government (national security implications) in dissertations, which have a general requirement for public release. More flexibility to integrate the results of applied research into dissertations could, however, give UC access to new sources of research funding, and make some graduate student research more relevant and impactful.

The benefits of such external partnerships would come with considerable potential costs to be managed. We would have to align expectations regarding timelines and outcomes. Complex IP issues would arise, requiring much time and effort to negotiate agreements on a case-by-case basis. Faculty advisors would need to help students identify opportunities, then guide projects further from their core expertise, find new ways to fund such projects (if a partner does not sustain funding), and replace effort on grant-funded projects when a student chooses to redirect their efforts external to the university. Perceptions of the academic quality and rigor of more applied research would have to be managed.

3.7.2 Bold ideas for discussion

B7a. Adapt enrollments and graduate student funding to workforce needs.

UC campuses could more actively manage graduate enrollments by aligning PhD/MFA intakes with workforce needs and opportunities post-graduation. Disciplines where demand for PhD-level expertise is growing would be prioritized, while enrollment in saturated areas would be scaled back. Targeted funding could support growth in fields deemed high priority for addressing societal or institutional goals (*e.g.,* climate science, AI ethics, public health), and enrollment in such fields incentivized with fellowships that make them more attractive to prospective students.

This approach could align enrollment management with campus strategic goals, directing university resources to chosen disciplines. It could reduce the oversupply of graduates in academic fields with fewer job prospects, thereby maximizing opportunities for all graduates. The University would have to become faster to recognize or adapt to shifts in priorities. Such an approach could easily go too far in devaluing fundamental research or research in fields that lack immediate market demand, potentially undermining the broader mission of graduate education. We must ensure that we do not neglect areas that contribute to our interdisciplinary richness, even if they are perceived to lack short-term value.

B7b. Embed fieldwork and creative residencies in graduate programs.

UC could encourage intensive fieldwork or creative residencies within PhD/MFA programs. Students would spend 1-3 months fully immersed in their research or creative process outside the University by undertaking an artistic residency, spending time in a lab on another campus or even another country, or conducting fieldwork for the dissertation or thesis project. Such experiences would push students to apply their academic skills in novel environments, provide hands-on, real-world experiences, foster innovation, broaden networks, and make graduates more competitive when they enter the workforce.

The costs associated with offering such experiences could be a barrier, and logistical challenges would have to be addressed, especially for students with dependents or limited mobility. In disciplines where graduate student research is largely funded by extramural grants, additional incentives would likely be required to motivate faculty to provide such opportunities to their advisees and/or to support their projects financially.

B7c. Encourage new kinds of public-private sector partnerships.

In some fields, graduate research internships could be strongly encouraged or even required. Graduate students would thereby gain practical experience, develop broader skill sets, expand their professional networks, and increase their employability. In some cases, internship partners would help to defray graduate student support costs. Dissertation committees could be allowed (or required) to have at least one member from outside the University (as many other universities already do). Facilitating without-salary university appointments for visitors and part-time faculty from industry, the public sector, and the national labs would also broaden committee compositions.

Pilot programs could offer opportunities to graduate students to apply for small grants for public/community-based projects. Public service programs that already exist at the UC and other universities that could serve as models; donor funding might also support projects without cost to the non-profit sector.[96] To take advantage of these opportunities, programs could support graduate student proposal writing. Funded projects would provide them with experience in project management, budgeting, collaboration, and job skills. Follow-on applications to foundations and other granting mechanisms could be encouraged.

To encourage skills development in communicating research to broader audiences and to incentivize creative thinking, graduate students could participate in annual research competitions where they pitch projects or showcase artistic endeavors to a diverse panel of private sector, government, and philanthropic leaders. These events could function like business startup competitions, in which the most compelling ideas are awarded significant funding or in-kind support (*e.g.*, access to state-of-the-art research facilities, internships, opportunities to showcase their projects externally, or mentorship by industry leaders). Students consistently not supported by these groups could be identified for coaching, or even eventual counseling out of the program. Oversight mechanisms would need to ensure that such competitions do not simply reward the most charismatic presenters rather than the best ideas, or prioritize short-term or trendy research over long-term, foundational inquiry. It could also be challenging to avoid discouraging otherwise qualified students with unpopular ideas from completing their degrees.

Some UC research centers and departments are already funded by industry partners, in exchange for brand visibility and first access to intellectual property developed through research. The concept could be expanded to specific PhD/MFA students or cohorts of students by allowing corporations to sponsor them. This unconventional partnership model would encourage collaboration with industry, provide students with direct access to industry mentors, internships, and job opportunities, and accelerate technology transfer. It would give programs access to new funding streams not reliant on state or federal grants. Programs could also collaborate with external organizations to offer "embedded" degree tracks, in which students spend a significant amount of time working in an industry, government agency, or non-profit as part of their graduate education. Research projects or creative works could be co-designed with industry partners, introducing real-world problems while retaining academic rigor. Guardrails would need to mitigate concerns about academic independence and the potential for undue corporate influence on research agendas. Branding of academic programs could further jeopardize the public perception of the university as an institution dedicated to the pursuit of knowledge.

B7d. Cultivate closer relationships with government and its agencies.

By more intentionally engaging with local, state, and federal governments as well as government agencies, the UC can potentially increase support for its PhD/MFA programs in the long term, and better align research with government priorities and societal needs. The resulting opportunities for impactful research projects would benefit both students and our communities

[96] One example is the UCI School of Education's Orange County Educational Advancement Network (OCEAN), which conducts donor-supported action research projects in partnership with K-12 schools and non-profits. https://ocean.education.uci.edu/

by promoting non-academic career paths in public service, government research, and policy making, thereby expanding professional opportunities and contributing to the workforce in meaningful ways.

There are risks associated with becoming more dependent on government directives and funding, rather than being driven largely by intellectual inquiry or disciplinary goals. We would not wish graduate education to become more politicized, potentially creating friction amongst people with differing views on public funding, labor, and the role of higher education in society. Nor do we aim to attract more oversight from government officials. We must be mindful not to over-promise and/or under-deliver on the benefits of graduate education, which could undermine desired outcomes.

By advocating for specific policies and initiatives related to graduate education over extended periods of time, the UC could influence public perception and secure more stable funding that better reflects the actual costs of graduate research.[97] While these efforts might take many years and substantial expertise, they should be considered as part of our long-term strategic engagement with public offices. For example, at the state level, the UC could co-sponsor state-wide propositions to put issues relevant to graduate education before California voters. We could work more closely with federal grant-making agencies to ensure they understand and support the actual costs (*e.g.,* facilities, training, mentorship) of conducting research in conjunction with graduate education. Finally, a public relations campaign would build shared pride around UC graduate education, buoyed by the development of metrics that describe the value of PhDs and their skills to the state, the nation, and the world.

3.8 Innovate in systemwide approaches for cost control and revenue generation related to PhD/MFA education

The UC is a multi-campus institution with the ability to leverage its size by experimenting with financial strategies that may not be feasible for smaller institutions. Although we are state-supported, we can strive to be more entrepreneurial when opportunities to be more innovative in our budgeting could lead to better outcomes. Some practices would require changes to systemwide policy before they could be implemented. With the two example scenarios described briefly below, we aim to spur discussion about new systemwide strategies to accomplish our mission.

B8a. Provide graduate students with flexible benefits and advantages.

The wide variety of advantages currently provided to graduate students include tuition; non-resident fees; other campus-based fees; subsidized student housing; and subsidized childcare. In almost every case, these benefits are offered to all PhD/MFA students regardless of employment status, although only a few (resident tuition, some fees) are used universally by all students across the system. To improve living conditions for UC graduate students broadly while ensuring benefit costs remain reasonable, UC could implement flexible benefits. Such a model would allocate a fixed amount for those benefits not used by all students. Each graduate student would

[97] See section 2.2.2 (specifically, **R2d**), for another version of this argument.

assign their personal allocation annually to the resources most important to them. A student who chooses not to use all of the allocation to purchase benefits packages might be given the remainder (at an appropriately discounted rate) as a fellowship, stipend, travel funds, or some other type of payout. A well-designed model could result in higher graduate student satisfaction, more efficient use of benefits, and better control of benefit costs. The change in incentives this approach might generate would need to be studied and anticipated, to ensure that costs for any one type of benefit do not escalate dramatically based on who opts in or out (*i.e.*, adverse selection).

Depending upon the specific implementation, such an approach could appear inequitable, because those students who choose to receive more resources would receive less take-home cash. Alternatively, it might undo current perceptions of inequity by students who currently use very few benefits (*e.g.,* those with other health insurance, who do not live in campus housing, without children, and so on). Certainly, the fact that many students currently receive their benefits via their employment status while others receive them through their student status would make this model complicated to implement. It could, however, provide more consistent experiences as students move in and out of employment status from one academic term to the next.

B8b. Create graduate student cooperatives.

A substantial deficiency in PhD/MFA education is a reasonable understanding of how the university's budget works. Each year, every campus receives an allocation for PhD/MFA graduate student support (fellowships, tuition waivers, *etc*.) that is not directly tied to employment. PhD/MFA students could manage these budgets themselves through self-governing cooperatives. As semi-independent entities within the University, such cooperatives would need to pool resources to cover costs. Annual budgets would be capped, giving student groups a fixed amount of resources to manage. Faculty members could act as advisors, but graduate students would make collective decisions on how funding is allocated, including purchasing research equipment and services, or expanding collaborative networks.

In an even more radical approach, employment funds could also be included, although such an approach would require a massive restructuring of existing employment contracts, negotiation with the systemwide leadership and organized labor, and so on. The student collective would be responsible for labor contract negotiations and determining how to allocate their resources to pay for approved pay and/or benefit increases, *i.e.*, making decisions about how much of each type of increased cost they choose to bear through their collective management of funds vs. individual student contributions.

This type of arrangement could promote leadership, autonomy, and collaboration among graduate students, while better preparing some of them to enter the work world with experience managing complex budgets and disparate constituencies. However, faculty oversight of dissertation projects might be weakened, especially in fields where grant funding currently supports graduate student research. The time needed to manage complex finances and resources in such a collective could distract students from making academic progress. There is also a high potential for dissatisfaction with unequal resource distributions, especially in a group as large and diverse as UC's PhD/MFA students.

B8c. Allow (and even incentivize) trading of credits between UC campuses.

When resources are scarce and/or when individual decisions by organizations have collective outcomes (*e.g.*, emissions of greenhouse gases or other environmental pollutants), the trading of credits between organizations can help to balance budgets and motivate progress toward overall goals. Although the UC is a single university, each campus has different strengths, capacities, and needs, resulting in different strategies for attaining an optimum student profile. For example, if campuses could trade enrollment credits with each other, some might grow their PhD/MFA enrollments by buying credits with those wishing to expand other kinds of enrollment (*e.g.*, undergraduate students, professional graduate students). Likewise, campuses who wish to enroll more non-resident students might buy credits for those slots from campuses who can enroll more California resident students. If such creative concepts were modeled carefully, they could provide a new framework for thinking about costs and revenues related to graduate enrollment systemwide, rather than campus by campus.[98]

[98] Enrollment management is explored in Sections 2.3 and 3.1.2.

4. The path forward

Although this report begins to address the vast and varied issues related to UC PhD/MFA programs, our recommendations are assuredly incomplete. In places, they simply raise more questions, not only about their implementation at the program and campus levels, but also more broadly about how they would reverberate across higher education nationally. The full impacts of even seemingly straightforward actions, such as a more rigid separation of academic expectations from employment, changes to our budgets and financial models, and purposeful management of PhD/MFA enrollments, will be known only many years after their adoption.

Throughout our deliberations, our goal has been to go beyond specific recommendations (although they are described as such in Section 2), in order to supply a range of provocations (found in Section 3). With these ideas, we hope to inspire our colleagues to embrace a spirit of experimentation. Our aim is to spark creativity across the UC system and around the world, to be sure, but also to require action. Pilot programs must be pursued, the more creative the better. They must be funded, supported, and measured for success.

Our main argument here: *we can choose our own future.* While there is risk associated with change, in the long term, the risk of being unwilling to change is even greater. The University of California is arguably the most powerful, innovative, and creative university system in the world. It would be a shame for us to miss this opportunity to shape more vibrant doctoral training environments adapted for the needs of our future students and our communities. *We can and should test-drive some of these ideas across the UC system, learn from our experiences, adapt, and lead the way.*

To accomplish this goal, the UC's administration and Academic Senate must work closely together, both systemwide and on the ten campuses, to chart a path forward, assume the monitoring and assessment of changes to maintain the quality of the UC, and ensure that graduate education continues to thrive in response to these adjustments. Specifically:

1. The UC should take immediate steps to create innovative pilot programs that address the many concerns raised in this report. These programs should experiment with significant new models and methods and have audacious goals. As a system, the UC should seek to incentivize multi-campus pilots through central funding of some initiatives and streamlining of approval processes. *We ask the UC President and Provost to provide funding for these pilot programs, and the systemwide Academic Senate to enable their implementation with flexibility, speed, and vision.*

2. At the campus level, Chancellors, Provosts/EVCs, VCRs, and Graduate Deans should also seek to encourage and incentivize local pilot programs. *We likewise ask campus leadership to provide funding and support to faculty groups who innovate in this space, and Academic Senate divisions to support them by minimizing regulatory burdens.*

3. *Assessment is integral to all efforts.* The success of these pilots will require clear, outcomes-based measurements and sharing of lessons learned with the goal of long-term institutionalization of successful programs across and between campuses. Both senior

campus administrators and Senate leadership should report annually on their efforts and be rewarded for their attempts, whether successful or not, as long as the ideas are innovative, adequately-supported, and have documented outcomes and impact. Even initiatives that ultimately fail should be acknowledged, as long lessons are learned and appropriate actions are taken.

4. Best practices in change management and communication must be prioritized. Many faculty, staff, and students will be concerned about and/or skeptical of change in its various forms, and their reluctance will need to be addressed. *Effective change management includes listening, allaying concerns, and disseminating information about measured outcomes and best practices.*

5. Town halls, congresses, and other discussion mechanisms must convene various stakeholders to brainstorm and innovate. These activities may require local funding, and could benefit from central organization when they involve issues requiring broader input. Any new meetings or workshops must augment rather than limit on-going efforts. In particular, *existing programs already launched to address the issues raised here should be supported, not derailed,* by this report and its recommendations.

In any implementation—whether pilot or long-term—the needs of and impacts on a wide variety of campus constituents must be considered. Certainly, any educational initiative must center our students, and any changes must be assessed in terms of how they enable student success, including through proper resourcing, evaluation, and tracking. However, graduate education is a multi-faceted enterprise that has become deeply embedded in the overall work of the University. Consequently, impacts on faculty must also be examined and understood. Faculty should have opportunities to engage with PhD/MFA students beyond the role of primary advisor, and to be recognized for exceptionally positive contributions to their education. Based on our long and successful history of shared governance, UC faculty must lead these conversations—colleague to colleague, as leaders of their disciplines and programs, and as faculty administrators. Behaviors not aligned with the University's goals for graduate education must be disincentivized, by both faculty governance and administrative policies and procedures. Staff—both academic and non-academic—must also be recognized as essential to the University's successful delivery of graduate education, and their contributions must be appropriately recognized and incentivized.

So what *is* the future of doctoral education at the UC? The question that motivated us has been discussed across our ten campuses as our report has circulated in various draft forms throughout the UC system and—even before its formal release—elicited attention across US higher education more broadly. A concise answer remains elusive. Both internal and external forces are likely to change higher education in ways big and small, predictable and not, in the coming years, and no member of this Workgroup claims to be able to predict the future. Based on what we can see now, however, we believe doctoral/MFA education will have to adapt to the student cohorts and employer bases that are emerging from the personalized, on-demand ecosystems of the digital and AI ages. Thus, the future is likely to be more student-centered than it is today, with graduate programs that can be readily tailored to individual student needs and interests. Future doctoral/MFA programs will be more accomplishment-focused and considerably more time-efficient, emphasizing shorter and more intense educational experiences

that maximize returns for most students while minimizing costs to the university and to the public. Thriving graduate programs will remain committed to scholarship and be solidly grounded in disciplinary values, while adapting both decision-making and advising to a more distributed model that engages multiple faculty across programs/departments. Some program activities will become more centrally-managed to be more responsive to regulatory concerns and resource constraints.

These directions for graduate education align with broader cultural shifts in higher education, towards learning that is simultaneously more personal and more accessible. The imperative to pay closer attention to resource management in graduate education likewise reflects more general pressures evident in the organizational evolution of universities. The multifaceted approach this report takes aims to maintain a strong academic foundation under the direction and authority of the faculty, while preparing students better for the diverse challenges and opportunities that lie ahead of them, whether in academia or other professional fields.

The University of California is arguably the finest public institution of higher education in the world. If any university can rise to these challenges, it should be the UC. Change is hard, without a doubt—but the UC has done hard things before. As this report emphasizes, radical changes require intensive change management, with serious consideration for both culture and compensation. Buy-in from students, faculty, staff, administrators, and the external community is essential. Perhaps even more important, radical change requires a very long-term view. Since the original Golden Era of higher education, we have seen several decades of change in graduate education, as well as the higher education landscape more broadly. It may well take us as long again to arrive at the next Golden Era of higher education. We must do what is possible now to prepare for the future.

None of this will be simple, but change is necessary, and the potential rewards are considerable. The journey starts here.

Appendices

Appendix 1

Membership of this APC Workgroup (2023-2025)

Co-Chairs		
Susannah Scott	Duncan and Suzanne Mellichamp Professor of Sustainable Catalysis Distinguished Professor of Chemical Engineering, and Chemistry & Biochemistry Chair of the Santa Barbara Division of the UC Academic Senate, 2020-2024	UC Santa Barbara
Gillian Hayes	Vice Provost for Academic Personnel Vice Provost for Graduate Education, 2019-2024 Dean of the Graduate Division, 2019-2024 Robert A. and Barbara L. Kleist Professor of Informatics	UC Irvine
Members		
Nicquet Blake	Vice Provost of Student Academic Affairs Dean of the Graduate Division	UC San Francisco
Jennifer Burney	Chair of the Committee on Affirmative Action, Diversity, and Equity (UCAADE) of the UC Academic Senate, 2022-2024 Marshall Saunders Chancellor's Professor in Global Climate Policy and Research	UC San Diego
Lisa García-Bedolla	Vice Provost for Graduate Education Dean of the Graduate Division Professor of Education	UC Berkeley
Richard Hughey	Vice Provost and Dean of Undergraduate Education and Global Engagement Professor of Computer Science and Engineering, and Biomolecular Engineering	UC Santa Cruz
Jill Huynh	PhD Candidate	UC Davis
Erith Jaffee-Berg Member, 2022-2023	Chair of the Coordinating Committee on Graduate Affairs (CCGA) of the UC Academic Senate, 2022-2023 Professor of Theatre	UC Riverside
Andrea Kasko	Professor of Bioengineering Chair of the UCLA Division of the UC Academic Senate, 2023-2024 Past Chair of the Coordinating Committee on Graduate Affairs (CCGA) of the UC Academic Senate, 2021-2022	UCLA
Sang-Hee Lee Member, 2023-2024	Professor of Anthropology Chair of the UC Riverside Division of the UC Academic Senate, 2023-2024	UC Riverside

Members, continued

Patricia LiWang Member, 2022-2023	Chair of the Merced Division of the UC Academic Senate, 2022-2024 Professor of Molecular & Cell Biology	UC Merced
Errol Lobo Member, 2023-2024	Professor of Anesthesia Vice-Chair of the UC San Francisco Division of the UC Academic Senate, 2023-2024	UC San Francisco
David Marshall	Provost and Executive Vice Chancellor	UC Santa Barbara
Cynthia Schumann	Chair of the University Committee on Research Policy (UCORP) of the UC Academic Senate, 2022-2024 Professor of Psychiatry and Behavioral Sciences	UC Davis
Donald Senear	Chair of the University Committee on Planning and Budget (UCPB) of the UC Academic Senate, 2022-2024 Emeritus Professor of Molecular Biology and Biochemistry	UC Irvine
Elizabeth Simmons	Executive Vice Chancellor	UC San Diego
Mary Ann Smart Member, 2022-2023	Chair of the Berkeley Division of the UC Academic Senate, 2022-2023 Gladyce Arata Terrill Professor of Music	UC Berkeley
Dean Tantillo Member, 2023-2024	Professor of Chemistry Chair of the Coordinating Committee on Graduate Affairs (CCGA) of the UC Academic Senate, 2023-2024	UC Davis
Rodolfo Torres	Vice Chancellor for Research and Economic Development Distinguished Professor of Mathematics	UC Riverside
Douglas Haynes	Vice Provost for Academic Personnel and Programs Professor of History	UC Office of the President UC Irvine

Consultants

Pamela Brown	Vice President for Institutional Research and Academic Planning	UC Office of the President
Todd Greenspan	Executive Advisor for Academic Planning and Policy Development, Institutional Research and Academic Planning	UC Office of the President
Pamela D. Jennings	Associate Vice Provost for Graduate Studies	UC Office of the President
Stefani Leto	Principal Policy Analyst, UC Academic Senate	UC Office of the President
Monica Lin	Executive Director of the UC Academic Senate	UC Office of the President
Allison Woodall	Deputy General Counsel	UC Office of the President

Appendix 2

Charge to the Joint Senate-Administration Workgroup on the Future of Doctoral Programs at UC (2023)

Background

California's Master Plan for Higher Education gives the University of California the responsibility of enrolling and preparing graduate academic and professional students to help meet the needs of California and the nation and to further the UC mission of teaching, research, and public service. According to the 2022 UC Accountability Report "UC's goals for graduate education are to offer outstanding degree programs, advance research, support undergraduate instruction, and prepare students to join a professional workforce or innovate on behalf of it."

Because UC produces the leaders of the future, the university is a global beacon for discovery, innovation, and creativity. In advancing this enduring mission on behalf of the state, nation, and world, UC graduate education also "allows California to grow, create jobs, drive industry, tackle unique challenges facing the state, and help improve the everyday lives of its inhabitants."

Academic doctoral degree programs lie at the heart of the UC graduate education mission and UC's doctoral programs rank among the best in the world. UC offers nearly 500 doctoral degree programs across all 10 campuses and across all major fields of study. In 2021, over 28,000 students were enrolled in doctoral degree programs at UC and nearly 4,000 doctoral degrees are awarded each year. Over 25% of UC domestic doctoral degree students are from historically underrepresented groups, a percentage share that has increased every year since 2001 but lags behind the diversity of UC's undergraduate student population.

The average time to doctoral degree was 6.0 elapsed years for the most recent cohorts. The eight-year, and 10-year, doctoral degree completion rates were 68% and 72%, respectively.

Workgroup charge

Building upon past recommendations on graduation education, including the 2019 Academic Planning Council Graduate Education Workgroup Recommendations for Greater Support of Doctoral Education, data and information on the current and projected demand for Ph.D. recipients, the current and projected fiscal climate in California, and the evaluation of a graduate funding model that is comprised of student financial support and part-time employment, the workgroup will consider whether, and how, the current goals of UC doctoral programs could evolve to support UCs mission. The workgroup will consider what needs to be retained in the current mode of doctoral education and what, if anything, needs to change in order to sustain the commitment to the University's tripartite mission of instruction, research, and service.

To help conduct its work, the workgroup will use existing University data sources, including but not limited to doctoral program application, admissions, enrollment, and completion trends and projections. The workgroup will also identify data gaps. The workgroup may also consult with

campus workgroups that are currently convening to also address these issues in their local context to identify best practices and innovations that might be of benefit systemwide.

We ask that the workgroup plan for sharing preliminary recommendations with the APC by the end of October, 2023 and a final report by June, 2024.

Questions for the workgroup to consider:

1. How, if at all, should the current model of academic doctoral program training change to serve the research needs of the university while also meeting the projected demand for PhDs in academic and professional fields?
2. What kinds of degree requirements and program design best foster scholarship and high levels of accomplishment for doctoral students?
3. How could targets for graduate student enrollment be set to maximize benefits for both the core missions of the UC and its graduates and California's workforce development needs? What is the appropriate relationship between admission targets in graduate programs and departmental placement records as well as projections of demand for doctoral recipients?
4. How might we better prepare our graduate students for both academic and non-academic careers?
5. What would be the cost of maintaining the current model of graduate training and funding? Are there opportunities to reduce costs associated with academic doctoral training? These opportunities might include changes in curriculum and training sequences, reduction of time to degree, and identifying optimal modes of student support for academic progress.
6. What are the principles defining skillsets and work that principally contribute to a student's academic progress and professional training? What opportunities exist to more clearly delineate between work for hire and academic progress and professional training?
7. How can we enhance and strengthen the faculty-student mentoring relationship?
8. Are there new models of pedagogy that should support academic doctoral training? If so, what are these and how do they provide this support?

Appendix 3

Processes and procedures of this APC Workgroup

In 2023, the Workgroup met monthly from June to August by Zoom, for two hours at a time, and spent a full day together in Oakland on August 31, 2023. The Workgroup started by agreeing on a set of Principles and Values to ensure we would work well together and accomplish our goals:

1. Making Progress:
    - Be bold, and be wise
    - Be willing to experiment and iterate
    - Allow for good, not just perfect
    - Question assumptions about everything (excellence", "DEI," "quality")
    - Recognize what was already good/working and what was not

2. Confidentiality and Care:
    - Confidential discussions, with a collective statement at the end, no attribution to individuals
    - Read suggestions generously and assume we are all here to be productive
    - Provide honest and respectful feedback
    - Ask tough questions and challenge norms and expectations
    - Value each other's lived experiences

3. Campus and System:
    - Balance needs of the "system" with local differences
    - Understand differences between disciplines
    - Incorporate flexibility into recommendations to account for differences
    - Remember the people back on our campuses who are at the heart of this, including the students (both grad and undergrad), faculty, and staff who are impacted
    - Center our public mission

After a brief discussion, the full Workgroup agreed to divide our overall charge into two groups of issues: (1) more urgent practical issues for which faculty and administrators were requesting guidance as soon as possible, and (2) less urgent philosophical issues whose discussion was expected to require considerably more time. The first group of issues (described extensively in this interim report) were discussed first by the full Workgroup, which identified the following components needing more in-depth discussion: key questions, macro-micro issues, implementation concerns, and data needs. The Workgroup then divided into three sub-committees during the summer of 2023 to further discuss each of the urgent issues, based on the overall Workgroup priming. Each sub-committee met virtually using Zoom, typically 1-2 times per week for several weeks for 60-90 min at a time. Each sub-committee also met virtually with representatives of campus taskforces to understand campus-level approaches and solicit specific input and ideas. Individual committee members and sub-committee groups dedicated substantial time asynchronously to preparing both written and oral reports for the meetings.

Each sub-committee presented its findings and preliminary recommendations to the full Workgroup for broad discussion at one of the monthly all-hands meetings. Frequently, following this presentation, the sub-committees then met another 1-2 times, culminating in an all-day in-person meeting and the drafting of sections of this report. In one case (the subcommittee dealing with defining academic expectations), some findings were deemed urgent enough to require dissemination prior to the beginning of the Fall 2023 semester. Thus, a shorter version of their findings was compiled collectively by the group and presented as part of a memo from the Co-chairs to the Provost and Senate chair (Appendix 4), accompanied by relevant guidance from the Academic Senate's Coordinating Committee on Graduate Affairs (CCGA) (Appendix 5).The Co-chairs assembled and edited the report sections from the three sub-committees, sharing drafts with representatives from UCOP as well as with the full Workgroup for feedback. They then finalized the draft for distribution to the larger APC.

The draft report was distributed broadly and additional feedback was solicited from all campuses and UCOP. The results of this preliminary report were also discussed at the UC Systemwide Congress on Innovations in Graduate Education in the fall of 2023. During the 2023-2024 academic year, the group then again met to address the second set of three areas of concern. A similar workflow was followed in the second year, with subcommittees meeting, developing draft recommendations, seeking feedback from the campuses, and presenting this information to the larger workgroup. While this work was underway, we deemed it urgent to create a second memo to the Provost and Senate chair on expectations for nongraded academic effort prior to the start of the Summer 2024 term (Appendix 6). This memo was soon followed by a statement from CCGA on faculty roles and responsibilities (Appendix 7).

The work of the groups culminated again in a day-long working season in Oakland on May 24, 2024. A primary goal of that culminating day, beyond simply the reporting of the findings of each of the subgroups, was to collect innovative "bold" ideas that could be used to push the boundaries of our imaginations around doctoral education. These ideas are manifest throughout this report and should be considered not as recommendations but as provocations.

Appendix 4

Memo from the APC Workgroup Co-chairs regarding delineation of academic expectations (2023)

JOINT SENATE-ADMINISTRATION WORKGROUP ON THE FUTURE OF UC DOCTORAL PROGRAMS

BERKELEY • DAVIS • IRVINE • LOS ANGELES • MERCED • RIVERSIDE • SAN DIEGO • SAN FRANCISCO

SANTA BARBARA • SANTA CRUZ

August 11, 2023

Provost Katherine Newman and Academic Council Chair Susan Cochran, Co-Chairs, Academic Planning Council

RE: UPDATE ON THE JOINT SENATE-ADMINISTRATION WORKGROUP ON THE FUTURE OF UC DOCTORAL PROGRAMS

Dear Provost Newman and Senate Chair Cochran:

Our Workgroup is pleased to provide this interim guidance for UC faculty on the delineation of expectations for academic research, distinct from our expectations for employment, related to some of the questions in our charge, summarized as follows:

- What are the principles that should guide academic progress towards the completion of a graduate degree?
- What opportunities exist to more clearly delineate between compensated work and academic progress?

We recognize that interim guidelines are urgently needed in advance of the impending start of the fall term. We also acknowledge that any recommendations may need to evolve as we collectively clarify, adapt, and implement our new procedures.

When graduate students serve in an employment (Graduate Student Researcher) role, the distinction between work done for pay and activities undertaken in pursuit of academic goals can be challenging to articulate, particularly when extramural support provides GSR funding for research that is fundamental to a student's academic program. In some fields, GSR work and student research have traditionally been seen as indistinguishable in terms of many of the specific activities undertaken. Over the past several years, some campus-level Graduate Councils have attempted to clarify the meaning of academic credit in directed studies courses through a variety of mechanisms (e.g., requiring written expectations aligned with accreditation standards for all courses that confer academic credit). However, these approaches have not been implemented consistently across all UC campuses. Graduate students occupy different employee and student roles, sometimes simultaneously, throughout their time at the university. This dual status as well as the implications of the new contracts, have created a need for a systemwide approach.

First, we refer our colleagues to the Interim Guidelines for Directed Studies Courses (e.g., courses numbered 299 or 599) recently released by the Academic Senate's Coordinating Committee on Graduate Affairs (CCGA). This document states: "At the beginning of each term, faculty should clearly describe to their graduate students the expectations for their academic progress, as distinct from the expectations for their employment." Underlying this statement is the principle that while activities performed for academic

credit may be similar or even the same as activities performed for employment, their purposes are different, and the standards by which the activities must be measured are different. ***While employment is performed as a service for a defined period of time or for a specified set of activities, academic effort is undertaken in pursuit of a defined academic goal that is not always associated with a precise expectation of time or with predetermined activities.*** We and the CCGA further recommend that faculty advisors of graduate students enrolled in directed studies courses document their academic expectations, as well the basis on which the students will be graded, in a syllabus (or equivalent) for each student in each course.

Second, while the content of a syllabus attached to any course, including its grading plan, is at the discretion of the faculty member responsible for that course, we must create such documents based on common principles. In particular, the overarching goal of directed studies courses for graduate students is to provide a framework for, and faculty guidance of, student academic progress. ***Thus, academic expectations are defined by progress toward the dissertation or final thesis project, including through a collection of intermediate goals and learning outcomes.*** Research and creative activities are by their nature open-ended. Learning from trial and error, and even failure, are intrinsic parts of the process. Finally, the effort required to engage in original research and to create new knowledge may vary from one student to another, from one term to another, and from one dissertation project to another. In general, faculty advisors are highly experienced at guiding such projects, and they should discuss with their students how to pursue their academic goals in light of these varying parameters.

Third, we acknowledge that considerable additional effort may be required of faculty advisors to articulate academic expectations clearly in writing and to discuss them with each advisee. Faculty are encouraged to make use of sample documents when possible, while adapting such examples and templates based on discipline, project, student, or other specific details. Faculty may also decide to create yearly plans that can be updated periodically as needed, as long as the basis for grading each term's progress is clearly articulated. Faculty may wish to highlight their development of academic progress expectations when they document tenure, merit, and promotion activities, as described in APM 210-1.d.1: "general guidance, mentoring, and advising of students; effectiveness in creating an academic environment that is open and encouraging to all students, including development of particularly effective strategies for the educational advancement of students in various underrepresented groups."

In summary, faculty have the authority to require, assess, and judge academic outcomes, and they must do so for all graded experiences in the university, consistent with the policies and procedures of the Academic Senate. Faculty, when they supervise the work of graduate student employees, also have the responsibility to evaluate employment appropriately.

For situations in which employment activities overlap with activities related to the academic progress of graduate students, faculty should use employment assessment processes (e.g., reappointment, letters of concern, discipline) to address employment expectations and outcomes (e.g., time spent, activities completed). They should use academic assessment processes (e.g., grades, annual student reviews) to address academic outcomes (e.g., learning outcomes, dissertation progress).

Sincerely,

Susannah Scott, Co-Chair (sscott@ucsb.edu)

Gillian Hayes, Co-Chair (hayesg@uci.edu)

cc. Academic Senate Vice-Chair and Chair-Elect James Steintrager
Members of the Academic Council of the UC Academic Senate
Executive Directors of the divisional Academic Senates

Appendix 5

Recommendations from the Academic Senate's Coordinating Committee on Graduate Affairs (CCGA) regarding independent study courses (2023)

Definition of 299 Courses

On most campuses, 299 courses come under the category of graduate-level directed studies courses (290s). On some campuses, 299s are used interchangeably with 297 or 295, and on some campuses 596 and 599 are used for directed study courses, while others use 299 for education-only courses, but for the purposes of this document, we will refer to all directed study courses as "299". 299 courses are often classified as research for the thesis or dissertation. They may also be taken as a form of independent study, in connection with research in laboratories and towards a student's thesis. The material produced as part of the 299 may be intended for future publication or other activities (e.g., performances, poster presentations, etc.). In a lab setting, the 299 allows a student to conduct research under the oversight and mentorship of a professor. 299 courses are typically for S/U grades and taken for 1 up to 12/16 units (quarter/semester) per term. Clarifying the research and mentorship component of 299 courses is ongoing on a departmental, campus, and systemwide level. CCGA discussed this issue and compiled a repository of campus-level efforts, including documents generated by graduate councils on the various campuses, often in the form of guidance on syllabus development for graduate-level individual study or research courses.

Guidelines for Clarifying the Research and Mentorship Component of 299 Courses

The following may help clarify the academic expectations from the faculty member to the student and mentorship involved with 299s.

Articulating the academic coursework expectations of the instructor establishes the basis for grading as well as the scope of academic coursework effort (separate and apart from any employment responsibilities) to be undertaken by the student. Such articulation should also specify the types of activities that will be mentored and overseen by faculty.

CCGA affirms that:

(i) The definition and clarification of the expectations in terms of scheduled time for graduate students taking 299 courses is at the discretion of faculty members.

(ii) At the beginning of each term, faculty should clearly describe to their graduate students the expectations for their academic progress as part of a 299 course.

(iii) Underlying statement (ii) is the recognition that while activities performed for academic goals and expectations may be similar or even the same as activities performed for employment, their purposes are different, and the standards by which these activities must be measured are different. While employment is

performed as service for defined periods of time or for specified sets of activities, academic effort is undertaken in pursuit of defined academic goals and expectations that are not always associated with defined periods of time or specified sets of activities.

(iv) Disagreements about academic effort should be handled through existing procedures.

The following are some suggestions faculty members and programs may want to consider:

1. Faculty mentors may articulate their expectations for the graduate student taking a 299 course in the form of a syllabus, a course description, or a course add form. Faculty are encouraged to formalize grading criteria to create clarity for the students and to prevent misunderstanding. The scope of the research as well as the basis for grading the research should be defined by the professor, and understanding of these should be acknowledged by the student. Other factors to consider include the number of meetings to be held, the timeline for completing research projects, milestones in the process, and criteria for the evaluation. We emphasize that Senate Regulation 760 states: “The value of a course in units shall be reckoned at the rate of one unit for three hours' work per week per term on the part of a student, or the equivalent.” Consequently, it is important that students enroll for the number of units consistent with stated expectations.

2. In order to set, assess and gauge expectations in 299s, faculty may use different tools, including self-assessment surveys provided by the graduate division or graduate groups, Gantt charts, and meetings with the student.

3. For 299s taken in the context of lab research, the faculty PI can clarify expectations that are part of the academic training of the graduate student.

4. Academic credit may be based on research activities conducted by a student such as: writing a paper, preparing research towards a thesis chapter, designing an experiment, preparing or compiling a research survey or questionnaire as part of an experiment, writing a play or screenplay, creating a performance, or developing an original work of art.

5. 299s are not used for teaching/TAing responsibilities.

6. Departments may collate a repository of examples and templates of expectations or course syllabi for 299 courses to share with faculty members. Alternatively, there could be a program-level syllabus template with example language, such as wet lab-specific sentences that a faculty may use.

Appendix 6

Memo from the APC Workgroup on nongraded academic effort (2024)

JOINT SENATE-ADMINISTRATION WORKGROUP ON THE FUTURE OF UC DOCTORAL PROGRAMS

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April 19, 2024

Provost Katherine Newman and Academic Council Chair Jim Steintrager, Co-Chairs, Academic Planning Council

RE: EXPECTATIONS FOR NON-GRADED ACADEMIC EFFORT IN PhD AND MFA PROGRAMS

Dear Provost Newman and Senate Chair Steintrager:

We recognize that UC faculty, who have both the authority and the responsibility to assess academic progress and outcomes for graduate students, are seeking guidance on how to advise their students regarding expectations for academic effort that is neither graded nor associated with academic course credit (for example, during the summer period). To frame our recommendations, the APC Workgroup builds on the following UC principles for graduate education:

- Each PhD and MFA program is defined by a set of requirements and expectations that include, but are not limited to, conventional required and elective coursework, non-course-related exams (e.g., qualifying and candidacy exams), regular and occasional check-ins (e.g., meetings with the dissertation/thesis advisor and dissertation/thesis committee, research group meetings and sub-group meetings), as well as conducting the research and/or creative activities to acquire the results needed to prepare, to write, and eventually to defend a dissertation or thesis.

- PhD and MFA students enroll in directed studies courses during the academic year (fall/winter/spring) to provide them with regular and sustained access to faculty advice and expertise. In such courses, they are expected to develop and refine the skills they need to accomplish their research and/or creative activities at the high intellectual level expected in a terminal graduate program.

- Graduate education in the pursuit of a research-focused graduate degree is a process that is more than a set of tasks, assignments, jobs, or work products. A PhD dissertation or MFA thesis is a long-term (multi-year) project largely unconnected to the short-term rhythms of the undergraduate quarter/semester system.

- For this reason, each PhD and MFA program specifies a normative time, in years, in which a student pursuing the degree is expected to be able to finish all requirements, up to and including the defense and filing of the dissertation/thesis.

Adequate progress towards the dissertation/thesis is expected of each PhD/MFA student throughout the calendar year. This progress includes the regular academic terms (fall/winter/spring), times between instructional dates in these terms, and during the summer, at a pace that is likely to result in completion of the degree program within its normative time. The amount of effort required will vary depending on the ability and efficiency of each student. Oversight mechanisms for academic progress reside principally with the faculty, as well as (to a lesser extent) with academic administration. Departmental graduate advisors and individual faculty advisors are experienced in judging the pace of progress in research and/or creative activities necessary to meet the expectations of academic achievement within normative time.

In our March 2023 memo to you regarding the delineation of directed studies efforts from employment, the APC Workgroup acknowledged the need to articulate distinctions between activities undertaken for academic credit and work done for pay when a graduate student is concurrently employed as a Graduate Student Researcher for work that contributes to a student's dissertation or thesis project. Any periods during which a graduate student invests academic effort *without* formal coursework and is also employed part-time in this way pose a different challenge for the delineation, because academic expectations are not articulated in a course syllabus.

For PhD and MFA students in many fields, the summer period is an essential time to make academic progress. The scholarly contributions that make up a dissertation/thesis may arise in part from a GSR appointment, but academic progress does not *and should not* emerge mainly from this paid employment. In fields in which students employed as GSRs perform tasks that overlap with and provide results or insights that will appear in the student's doctoral dissertation or MFA thesis, the additional effort required to advance the dissertation/thesis is usually considerably more than the time a student spends performing GSR duties.

We affirm again that faculty have the authority to set expectations regarding overall academic progress in graduate programs and are responsible for providing regular feedback to their advisees about their progress. This authority applies not only to graded directed studies coursework, but also to any other academic effort required to make satisfactory academic progress. The pace of academic progress should be sufficient to complete all degree requirements within normative time. It should be assessed regularly in meetings with the dissertation advisor, dissertation committee, and as part of annual reviews typically conducted by the program. For example, the advisor and advisee *may* find it useful to schedule meetings during ungraded periods to discuss academic progress. Such meetings may also involve the setting or measuring of annual goals. Programs *should* implement annual academic reviews of all PhD and MFA students if they do not already have such a practice in place, with the outcome being a written notice to the student of their academic progress as judged by the program faculty.

We hope this guidance for academic expectations outside of formal coursework is useful, even as we recognize that it may need to evolve as we collectively clarify these expectations and adapt our procedures.

Sincerely,

Susannah L Scott

Susannah Scott, Co-Chair (sscott@ucsb.edu)

Gillian R. Hayes

Gillian Hayes, Co-Chair (hayesg@uci.edu)

cc. Academic Senate Vice-Chair and Chair-Elect Steven Cheung
Members of the Academic Council of the UC Academic Senate
Executive Directors of the divisional Academic Senates

Appendix 7

CCGA statement regarding faculty roles and responsibilities (2024)

UNIVERSITY OF CALIFORNIA, ACADEMIC SENATE

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James Steintrager
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Chair of the Assembly of the Academic Senate
Faculty Representative to the Regents
University of California
1111 Franklin Street, 12th Floor
Oakland, California 94607-5200

June 13, 2024

KATHERINE S. NEWMAN
PROVOST & EXECUTIVE VICE PRESIDENT

Re: Statement on Faculty Responsibility

Dear Provost Newman,

At its May 22, 2024 meeting, the Academic Council endorsed the attached statement from the Coordinating Committee on Graduate Affairs (CCGA). The statement addresses the role and responsibilities of faculty in guiding graduate students and assessing their academic progress.

This statement has been reviewed by UC Legal and the Office of Academic Personnel and Programs. We believe it will serve as a valuable resource in the upcoming negotiations with academic employees, helping to clarify and reaffirm the central role of faculty in graduate education.

Please do not hesitate to contact me if you have any questions.

Sincerely,

James Steintrager, Chair
Academic Council

Cc: Academic Council
Vice Provost Haynes
Associate Vice Provost Lee
Senate Division Executive Directors
Senate Executive Director Lin

Encl:

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COORDINATING COMMITTEE ON GRADUATE AFFAIRS (CCGA)
Dean J. Tantillo, Chair
deanjtantillo@ucdavis.edu

ACADEMIC SENATE
University of California
1111 Franklin Street, 12th Floor
Oakland, California 94607-5200

June 6, 2024

ACADEMIC SENATE CHAIR JAMES STEINTRAGER

Dear Chair Steintrager,

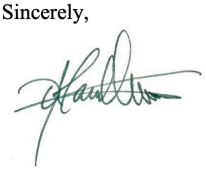
This spring, CCGA has worked to develop a statement that concisely defines the role and responsibilities of faculty with regard to graduate students. That statement is as follows:

> The Coordinating Committee on Graduate Affairs (CCGA) prepared this statement of intent and principles to help clarify the roles and responsibilities of faculty in guiding graduate students and assessing academic progress.
>
> The fundamental commitment to education is the basis for the faculty's purview over academic programs, policies, and standards. UC faculty authority for oversight and assessment of academic progress is infrangible and applies whether or not a graduate student is supported with a fellowship; whether or not a graduate student is employed as a researcher, teaching assistant, or in any other capacity; and/or whether or not a graduate student is enrolled in a traditional or independent study course. UC faculty oversee and have plenary authority over all graduate programs, degrees, and courses, and are responsible for setting disciplinary and interdisciplinary standards and assessing the academic progress of students they advise. Mentoring, collaboration, and creative discovery may occur through a wide variety of activities and methods, on the basis of both formal and informal interactions. These activities and assessments are intended to benefit graduate students, in their pursuit of advanced degrees, by helping to assure that students remain on track and on schedule, have clear goals and expectations, and establish themselves as experts and leaders in their chosen fields.

CCGA respectfully requests that Council hold an email vote to endorse this statement so that it can be forwarded to the Provost and campuses as soon as possible.

Thank you. Please feel free to reach out to me if you have any questions.

Sincerely,



Dean J. Tantillo
Chair, CCGA

c: Steven Cheung, Academic Senate Vice Chair
Monica Lin, Academic Senate Executive Director
Michael LaBriola, Academic Senate Assistant Director
CCGA Members

Appendix 8

Academic Planning Council Workgroup Report on Graduate Education (2019)

UNIVERSITY
OF
CALIFORNIA

ACADEMIC PLANNING COUNCIL
Graduate Education Workgroup

Recommendations for Greater Support of Doctoral Education
June 2019

I. DOCTORAL EDUCATION AT UC

Academic graduate education is the foundation of the University of California's status as a world-class research university. As the nation's leading public academic research institution and as the research arm of the State of California, UC's role in training the next generation of researchers is a centerpiece of its mission. The achievements, prestige, and renown of the University of California and its faculty are not possible without its doctoral student body. Academic graduate education produces the next generation of professors, without whom there can be no undergraduate education to both support State needs and ensure equality of opportunity for all students. UC's academic graduate training also produces the highly-skilled and analytic professionals who drive the modern economy. Finally, doctoral students are central and indispensable participants in the research that defines UC as a premier research university.

The quality of UC's academic graduate education has several important implications for the University's mission:

- Training the next generation of faculty and researchers – One of UC's unique contributions to public education in California is the peerless training it provides to academic doctoral students who will become the next generation of faculty and researchers.
- Faculty recruitment and retention – The ability to attract the best doctoral candidates from a world-wide pool is one of the most important factors in appealing to and retaining top faculty.
- International reputation – The internationally recognized productivity and quality of UC's research is impossible without the collaborative contributions of academic graduate student researchers, a key factor in UC's high international rankings.
- Creating and applying new knowledge and skills – As the economy increasingly transitions to new forms of knowledge and new analytical skills, the value of training students to carry out critical and independent research will become even more important to California's economy and quality of life.
- Contributions to civil society – The ability to constantly and reliably replenish new generations of well-educated professionals in ever larger numbers is an invaluable public service and a necessary element for the maintenance and growth of a civil society.

UC's competitiveness for attracting top doctoral students depends primarily on three factors:

- The world-wide reputation of its programs;
- Sufficient financial support for Ph.D. students to allow them to study with minimal financial burden; and
- A merit-based admission process that draws from the largest talent pool, and considers both domestic and international students equally.

Understanding the value to UC of academic doctoral education is key to grasping the impact of chronic underinvestment in doctoral education. Doctoral education at UC is inadequately funded and students are inadequately supported. Among those familiar with postbaccalaureate degrees at UC, there is substantial awareness of these inadequacies, despite repeated efforts to address them. In fact, since 2000 alone, five task forces before this one have issued recommendations on graduate education at UC: 2001 – Innovation and Prosperity at Risk - Investing in Graduate Education to Sustain California's Future; 2003 – Commission on Growth and Support of Graduate Education; 2007 – Work Team on Graduate and Professional School Diversity; 2012 – Joint Administrative/Senate Workgroup on Academic Graduate Student Issues; and 2012 – Task Force on Competitiveness in Academic Graduate Student Support. Each committee produced a report with recommendations that echoed and amplified the previous group's efforts.

Despite all of this thoughtful attention, these perennially concerning issues persist. Put most simply, both UC leadership and the State of California need to recognize the value of academic doctoral education as

distinct from undergraduate education: it is a crucial component of the continuity of the University system, and essential to the State's economy and vitality. The importance of doctoral education is recognized by emerging economies such as India, where academic research institutions are being established at remarkable rates.[99] Indeed, given the size of California's economy, and UC's scale and contributions to the state, nation, and world, UC should be comparing its conception of, and commitments to, doctoral education with growing nations rather than other states.

The report you are now reading is the product of yet another task force, the APC Workgroup on Graduate Education, a subcommittee of the Academic Planning Council. It necessarily reflects, however, new issues that have become more urgent because of radical changes in research, technology, and society, and the cumulative effect of neglecting these issues or inadequately addressing them. Ultimately the core message is straightforward and familiar: **UC must adequately fund and support doctoral education.** Without adequate support UC cannot maintain the quality of its research and instruction. If UC is serious about protecting and building on its excellence, and continuing its role as a key contributor to California's economy, it must demonstrate its commitment to academic doctoral education. It cannot simply talk proudly about the system that previous generations created.

II. DOCTORAL EDUCATION IN THE 21st CENTURY

The Workgroup's recommendations respond in part to the substantial changes taking place in the world of graduate education. These include the explosion in information technology and accessibility; new technologies and research methodologies; the growth of interdisciplinary scholarship; career opportunities beyond the Academy; greater weight given to work-life balance; and changes in the makeup of the doctoral student body. These are just a few of the developments that doctoral education grapples with today. With a new century comes the need for new best practices, and the realization that old best practices have become outdated.

The National Academy of Sciences, Engineering, and Medicine (NASEM), in a recently-issued report on graduate STEM education, calls for "a shift from the current system that focuses primarily on the needs of institutions of higher education and of the research enterprise itself to one that is student centered, placing greater emphasis and focus on graduate students as individuals with diverse needs and challenges."[100] Among the NASEM recommendations are: reward effective teaching and faculty mentoring; prioritize diversity and inclusivity; address student mental health and well-being; and expand professional development to include nonacademic careers. The Workgroup's recommendations below echo the NASEM report.

III. RECOMMENDATIONS

The Workgroup focused on five key areas:

A. **Financial support;**
B. **Modern academic practices;**
C. **Mental health and well-being;**
D. **Diversity; and**
E. **Professional development.**

Below are: 1) recommendations; 2) suggestions for campuses to consider; and 3) promising practices currently under way at UC campuses in the above five key areas.

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[99] India has established fifty-six Institutes of National Importance since 2010, out of a total of 134 established since 1823.

[100] National Academy of Sciences, Graduate STEM Education in the 21st Century, May 2018, pg.3.

A. FINANCIAL SUPPORT

UC must do better at financially supporting its doctoral students, particularly as it seeks to diversify the graduate student body. The University cannot compete with its peers for talented candidates if it does not offer competitive support. In 2017 the gap in average net stipend between UC and its peers was nominally $680.[101] In actuality the gap is much greater due to California's high cost of living - with COL factored in, the average gap in doctoral support is closer to $3,400.[102] This is a huge difference but not insurmountable. The Workgroup urges UC leadership to make every effort to close the gap so that the quality of UC's doctoral programs is maintained and enhanced.

UC campuses, with planning and prioritization, *could* guarantee five-year multi-year funding to doctoral students upon admission. According to current data, about 77 percent of doctoral students across UC receive stable or increasing net stipends for five consecutive years.[103] (Appendix 1.) With some exceptions, this multi-year funding is relatively consistent across campuses and disciplines. However, this funding is typically not presented as a full five-year multi-year guaranteed package upon admission. Offering five-year funding upon admission would enhance recruitment of high-potential students, offer financial security, and address one of the chief stressors for doctoral students - worry over continued funding while in the program.

In addition to offering guaranteed five-year funding, the University must address the issue of graduate student housing. Graduate students, many of whom have family responsibilities, face enormous challenges in finding affordable housing. Without a targeted effort to address graduate student housing, UC's capacity to attract and retain qualified candidates is at serious risk.

Doctoral funding must also address the cost-of-living differential faced by California students who choose to attend UC rather than an out-of-state institution. As noted above, the California cost-of-living premium is significant, and must be factored into doctoral student support.[104] Finally, doctoral education funding should be considered in all budget discussions, in particular with the Regents and the State.

Recommendations on financial support:

1. **Institute five-year (or normative time-to-degree) funding upon admission** – By Fall 2022, all UC campuses should offer incoming doctoral students five-year funding packages upon admission that address local living costs including housing. Alternatively, campuses should offer multi-year support upon admission through normative time to degree for the student's academic program. Campuses should establish bridge funding programs in the event faculty grant funding is discontinued.
2. **Address housing issues** – Lack of affordable housing is a significant issue in recruitment and retention of doctoral students. According to the 2017 UC Graduate Student WellBeing Survey,[105] housing is one of the top five areas that graduate students want UC to prioritize with attention and

[101] UC Graduate Student Support Survey: Trends in the Comparability of Graduate Support Stipends, Nov. 2017, pg.4.
[102] Ibid.
[103] UC campuses do not collect or track doctoral funding in a systematic fashion. The data relied on here is derived from systemwide data and includes assumptions about doctoral support packages.
[104] Separate from this Workgroup's efforts, UCOP staff are drafting a report in response to a request from President Napolitano to examine the landscape for funding UC academic doctoral students in relation to her concern for maintaining UC's competitiveness in recruiting and supporting doctoral students. That report will include an example of how campuses can effectively transition from current year-by year support to five-year guaranteed funding upon admission.
[105] UC Graduate Student Well-Being Survey, 2017, pg. 8.

resources. Graduate student housing should therefore have a much higher priority in all planning processes and be afforded the same attention and resources that undergraduate housing receives. On-campus housing should take the standard Ph.D. stipend into consideration when setting rent. Partnerships with private developers should be explored for off-campus housing.

3. **State action** – UCOP should better articulate to the Legislature the value of graduate education to the State. Legislators should be educated on the rewards for the state of funding doctoral education and the very real costs of continued underinvestment. The California lottery, which provides resources to educational institutions, should be explored as a fund source for doctoral education.

The Workgroup considered **tuition reduction**, a recommendation made by several previous task forces. A tuition reduction plan would reduce tuition by 50 percent once the doctoral student advances to candidacy. An assessment of the financial impact reveals that this tuition reduction would result in a cut to core UC funding by decreasing external grant and fellowship funding as well as campus block fellowship funds, which receive a large component of graduate student return-to-aid derived from tuition revenue. Furthermore, once five-year funding is established, only a small number of doctoral students would benefit from this tuition decrease. (Appendix 2.) The Workgroup therefore does not recommend tuition reduction upon doctoral advancement to candidacy.

In the course of Workgroup discussions, the following measures to address doctoral student funding were also discussed:

- **Degree completion within normative time** – Doctoral students should be expected to complete their degree within the program's normative time-to-degree. Annual assessments should be undertaken to ensure adequate progress towards degree.
- **Dissertation fellowships** – Campuses should consider awarding dissertation fellowships for timely degree completion. If the candidate fails to complete their dissertation in a timely fashion, penalties may be applied to the program.
- **Philanthropic support** – Campus development staff should be consulted about prioritizing doctoral education for philanthropic support. Campuses might also consider using return-to-aid funds as matches for current-use or term-endowment philanthropic awards, or dedicating large unrestricted gifts as matches to create larger endowments that fund fellowships.
- **Research overhead** – Where permitted, research overhead for facilities and administration costs arising from academic graduate programs should be considered for redirection back to the programs.
- **Partnerships with industry** – Some industries are open to partnerships with campuses, such as scholarship or fellowship programs, particularly when there is potential for career opportunities for graduates. Industry partnerships are underutilized however, and issues surrounding intellectual property are involved, but the payoff may justify the effort of exploring professional development tracks across a variety of industry fellowships.
- **Applications for external funding** – The campuses should expect, facilitate, and incentivize doctoral students to apply for external funding even if the student has been awarded a multi-year package. Successful applications free up funds for other students, and the application process is an essential skill for Ph.Ds. In support of this, campuses should regularly offer grant application training.

Current programs and initiatives at UC campuses for financial support of doctoral education - Listed below are UC campus programs and initiatives for financial support of doctoral education. The list is not exhaustive - far from it - and is offered to generate discussion and ideas for funding doctoral education.

- **Berkeley** – Berkeley Connect - graduate student philanthropic support while mentoring undergraduates; Graduate Division support for costs not covered by foundation and agency funding fellowships; dissertation completion fellowships for arts, humanities, and social sciences; travel grants

for professional development; parent grants; strategic partnerships with development staff in academic units with engaged alumni support.

- **Davis** – Mandatory Student Progress Assessment report (on-line tool) to support degree completion within normative time (among other objectives); matching commitments to cover the balance of fees and tuition not paid by the external agency; degree completion metrics included in block fellowship allocations; Graduate Division matches extramural training grants.
- **Irvine** – Minimum five-year funding guarantee for all doctoral programs except Engineering; multi-year housing guarantee; degree completion metrics included in block fellowship allocations; non-resident supplemental tuition for all international doctoral students from year 2 through advancement to candidacy; extramural fellowship applications incentivized by matching funds to cover the cost of education not covered by the fellowship; bridge funding for multi-year support if faculty loses grant funding; Graduate Division matches extramural training grants.
- **UCLA** – Graduate Division matches extramural training grants; $1000 grant per student for research, conference, or professional development; extramural fellowship applications incentivized by offering matching funds to cover the cost of education not covered by the fellowship; donor support for Grad Slam.
- **Merced** – Fellowship and grant applications incentivized with monetary awards; matching funds to cover the cost of education not covered by fellowships; dollar match for extramural training grants; one-semester dissertation fellowships with future funding dependent upon semester completion; donor support for Grad Slam.
- **San Diego** – Graduate Fellowship Initiative - supplementary tuition/fee support to student applications for fellowships/grants; multi-year housing guarantee; degree completion metrics included in block fellowship allocations; extramural fellowship applications incentivized by matching funds; Graduate Division matches extramural training grants; graduate housing at 20 percent below market value.
- **San Francisco** – Discovery Fellows program - philanthropic support for all basic science students.
- **Santa Barbara** – Extramural fellowship applications incentivized by offering matching funds to cover the cost of education not covered by the fellowship; non-resident supplemental tuition for all international doctoral students from year 2 through advancement to candidacy; Graduate Division matches extramural training grants; Chancellor-mandated reduction in graduate student housing costs; donor support for Grad Slam.
- **Santa Cruz** – Graduate Division support for costs not covered by foundation and agency funding fellowships; extramural grant applications incentivized by matching funds to cover the cost of education not covered by the grant; dissertation year fellowships for NSF GRFP students; cost sharing with the Division of Student Success (DSS) to provide fee remission and GSHIP benefits to graduate students working as on-campus interns in DSS offices.

B. MODERN EDUCATIONAL PRACTICES

As noted in the NASEM report, "Our nation's future depends on a graduate education system that continues to evolve and meet its charge to create highly trained researchers, to develop future faculty and teachers responsible for the educational enterprise, and to support national economic, social, and cultural development."[106] The report noted that there was a mismatch between the incentives that underlie the priorities of faculty members and those of their graduate students, and called for graduate education to be more student-centered, transparent, and accountable. Whereas this requires changes to be made at all levels of the educational enterprise, the report particularly emphasizes the need for changes in faculty behavior. The NASEM report, although focused on STEM graduate students, provides a blueprint for modernizing doctoral education in all disciplines. Indeed, the need for greater interdisciplinary interaction is highlighted in the report. Improved faculty mentoring of graduate

[106] National Academies, Graduate STEM Education in the 21st Century, pg. 17.

students and greater data transparency are needed. Enhanced mentoring, in particular, is both an individual and a collective responsibility.

Recommendations on modern educational practices

1. **Improve faculty mentoring** - The following measures should be taken to improve faculty mentoring:
    a. Revise Section 210 of the Academic Personnel Manual concerning appointment and promotion to include mentoring as an element of faculty review;
    b. Require faculty to undergo in-person mentoring training, including issues of diversity, equity, and inclusivity.
    c. Ensure that there is a balance of mentoring responsibilities across all faculty. Mechanisms should be developed to accurately determine individual mentoring loads, including those aspects that may not be easily observed or quantified, since these often have a greater impact on faculty of color and female faculty in disciplines in which they are underrepresented.
    d. Promote use of the Individual Development Plan (IDP), in which a student works with a faculty mentor to craft a plan for course work, research, presentations, publications, annual goals, timeline for completion, and professional development. The IDP is increasingly important in multi-disciplinary programs.
    e. Train doctoral students on mentoring so they can be better prepared in their role as mentees and as mentors for undergraduates and peers, and as faculty mentors if and or when they reach the professoriate.
    f. Institute and broadly communicate a process for handling mentoring issues that may arise during the student's tenure at the institution.
2. **Increase data transparency** – Steps for increasing data transparency:
    a. Campuses should clearly post on program websites data on admissions, degree completion, and financial support.
    b. Where possible demographic breakdowns of such data should be provided at the disciplinary level.
    c. Career outcomes data for every graduate should be shown for a 15-year period.
    d. Where possible, alumni satisfaction data should be shown.

The Workgroup also discussed **co-mentoring**, another modern educational practice, in which two or more mentors are assigned to a student. Co-mentoring can reduce power differentials between mentor and mentee, and alleviate conflicts of interest that may arise from having a single primary advisor. Also with the increase in multi-disciplinary doctoral training programs, co-mentoring by faculty in all applicable disciplines is increasingly important and will improve the quality of academic outcomes.

Current programs and initiatives at UC campuses for modern educational practices:

- **Berkeley** - Mentoring programs; mentoring awards; mandatory IDP for many doctoral students.
- **Davis** - Mentoring programs; mentoring awards.
- **Irvine** - Mentoring programs; mentoring awards; mandatory IDP for doctoral students; degree program data.
- **UCLA** – Degree program data.
- **Merced** - Mentoring programs.
- **San Diego** - Training and certificate programs in teamwork and leadership for graduate students.
- **San Francisco** - Mentoring programs; mentoring awards.
- **UCOP** – Doctoral program dashboard; doctoral experience and employment dashboard.

C. MENTAL HEALTH AND WELL-BEING

There is a growing awareness among universities that the pressures of academic graduate education are leading to significant mental health issues among students.[107] Research reveals that there is a strikingly high prevalence of anxiety and depression among academic graduate students, and that students are more than six times as likely to experience depression and anxiety as compared to the general population.[108] UC's 2017 Graduate Student Well-Being Survey revealed that over one-third of respondents reported symptoms indicative of clinical depression, and mental health is one of the five priority areas that UC graduate students say need greater attention and resources.[109] The reasons for this growing scourge are several, including financial worries, inadequate mentoring, isolation, and concerns about job prospects. UC clearly must address these issues, and not only because symptoms of depression interfere with quality of work, advancement to candidacy, and degree completion.[11012] Measures to make the doctoral experience a positive one produce short- and long-term benefits for both the student and the institution.

The Workgroup recommends that UC undertake a campaign to address doctoral student mental health and well-being. It is in the best interest of the entire UC community for leadership to implement measures to address the issues and deficits surrounding the mental health and well-being of its doctoral students. Central to increasing well-being within the graduate student community is improving financial support, improving faculty mentoring, cultural sensitivity, and inclusion, and improving career preparation, issues that are addressed elsewhere in this report. The Workgroup recommends that measures to improve graduate student mental health and wellness focus on prevention and targeted intervention, as recommended by the 2006 University of California Student Mental Health Committee.[111]

Recommendations on mental health and well-being:

1. **Promote a culture of wellness** – UC should undertake a campaign to create a culture of wellness across the UC system by embedding good health practices and greater wellbeing awareness in all policies and all aspects of campus culture. The Workgroup directs readers to the **Okanagan Charter**,[112] issued by the 2015 International Conference on Health Promoting Universities and Colleges, which offers a general framework for integrating wellness into campus culture and creating a community of care.
2. **Create campus websites** – Establish and publicize health and wellness resources online.
3. **Involve faculty** – Encourage faculty to promote healthy behaviors.
4. **Graduate wellness coordinator** – Create a staff position to coordinate wellness services for graduate students.
5. **Employ preventive and targeted interventions** - Currently mental health services at UC campuses focus primarily on crisis management. The Workgroup recommends that campuses implement the stepped care approach recommended by the 2006 UC Student Mental Health Committee, which involves targeted interventions through education, support, and prevention. This approach is becoming more commonly used at higher education institutions.[113]
6. **Institute accountability measures** – Institute accountability measures for wellness, e.g., data collection; student satisfaction surveys, exit surveys.

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[107] Evidence for a mental health crisis in graduate education, *Nature Biotechnol.* (2018), 36: 282-284.
[108] *Ibid*.
[109] UC Graduate Student Well-Being Survey, May 2017, pg. 8.
[110] *Ibid*., pg. 38.
[111] Student Mental Health Committee Final Report, September 2006.
[112] Okanagan Charter, An International Charter for Health Promoting Universities & Colleges, 2015.
[113] Colleges Say They Don't Have Money for Mental Health. Here's What They Should Do. *Vice*. May 8, 2019.

7. **Clarify degree completion requirements** – Make degree completion requirements clear, memorialize them in writing, and include norms and expectations.

The Workgroup discussed the following additional measures for mental health and wellbeing:

- **Graduate student center** – To combat social isolation, create a physical space for graduate students, separate from undergraduates, to meet and socialize.
- **Cross-disciplinary activities** - Offer opportunities for cross-disciplinary interaction, e.g., brown bag gatherings, social events, topic discussions, research presentations, etc.
- **Extracurricular activities** – Encourage students to engage in extra-curricular activities and self-care. Advise faculty to refrain from discouraging students from engaging in extracurricular activities, and from giving negative evaluations to students who do.

Current programs and initiatives at UC campuses for supporting mental health and wellbeing:

- **Berkeley** - Be Well at Cal and Recalibrate.
- **Davis** - Graduate wellness counselor.
- **Irvine** - Graduate resource center; graduate wellness counselor.
- **UCLA** - Graduate resource center; graduate wellness counselor.
- **Merced** - Graduate wellness counselor; peer mentoring program for new doctoral students - Grad EXCEL.
- **Riverside** – Diversity and Inclusion Academic Liaison (DIAL) coordinator who supports and educates graduate students on issues related to sexual violence and sexual harassment, as well as discrimination against protected groups.
- **San Diego** - Social innovation projects; GradLife; graduate wellness counselor.
- **San Francisco** - Annual workshops for faculty on how to assist students in distress including information on Student Health and Counseling Services.
- **Santa Barbara** - Graduate wellness counselor.
- **Santa Cruz** - Collaboration with Division of Student Success to bring CAPS counseling services into graduate-student-specific spaces.

D. DIVERSITY

Campus leadership including faculty leaders must articulate the importance of improving the inclusion of groups historically underrepresented at UC, especially within the ranks of faculty and doctoral students. Improving and increasing diversity means not only enrolling greater numbers of diverse students, but also incorporating inclusion when shaping curriculum, policies, and processes, including resource decisions. **Policies, processes, and resources should be aligned to support this priority.** Strategic plans, budgets, resource allocations, and incentives should all demonstrate that inclusive excellence is both a campus and a systemwide priority. Departments and programs that make notable advancements in this area should be rewarded; those that consistently fail to advance inclusive excellence should bear a consequence, as they would for other undesirable outcomes. UC should support pipeline and pathway programs that expose, equip, and support members of historically underrepresented groups to pursue their chosen careers. Particular attention should be paid to expanding pathways to the professoriate for underrepresented scholars. The University must allocate sufficient resources for summer bridge programs so students can get adequate preparation before their entry to doctoral programs. The University must also diversify pathways to faculty positions.

Recommendations on diversity

1. **Leadership** – Campus leadership, including faculty leaders, must articulate the importance of significantly improving the inclusion of groups historically underrepresented at UC, especially within the ranks of faculty and doctoral students. Leadership must be specific in communicating the priority of efforts aligned with this goal and accountability measures to incentivize notable progress

and to discourage failure to improve. All annual budgets and strategic plans should be evidence of this top priority. Chancellors, EVCs, Deans, Chairs, and Academic Senate leadership, at all levels, must commit to accountability for the areas under their purview. They should also articulate clear and workable proposals for how to achieve this, since too often there is a mandate to achieve particular goals but little articulation of how the goals may should be accomplished.

2. **Pipeline** – Create and improve pipelines from minority-serving colleges and institutions to UC graduate programs, e.g., intersegmental programs, retention programs, summer bridge programs, UC-HBCU Initiative.
3. **Holistic review** – Conduct holistic review of student applications rather than rejecting any application that does not come from a top-20 college or that does not meet a GRE cut score. Conduct faculty discussions, and offer training, on holistic review.
4. **Fellowship support** – UCOP should expand fellowship programs that focus on diversity in doctoral education, such as the Eugene Cota-Robles Fellowship.
5. **Retention programs** – Attention should be paid to retention and degree completion for all members of a diverse graduate student body.
6. **President's Postdoctoral Fellowship Program (PPFP)** – Direct students from historically under-represented groups to the PPFP, UC's successful pathway to a diverse professoriate.

Current programs and initiatives at UC campuses for increasing diversity in doctoral education:

- **Davis** - Alliance for Multicampus Graduate Admissions to advance holistic admissions practices.
- **Irvine** - Diverse Educational Community and Doctoral Experience Decade; Diversity Recruitment Fellowship supplements financial support packages of admitted doctoral and M.F.A. diversity students; Cota-Robles Fellowships and Competitive Edge summer bridge program.
- **UCLA** - Alliance for Multicampus Graduate Admissions to advance holistic admissions practices; Cota-Robles Fellowships and Competitive Edge summer bridge program. **Merced** - California HSI Alliance for Graduate Education and the Professoriate (NSF AGEP) program; National Research Training in Interdisciplinary Computational Graduate Education (supported by NSF NRT-Innovations in Graduate Education).
- **San Diego** - San Diego, Cota-Robles, SEED, and other Fellowships.
- **San Francisco** – Initiative for Maximizing Student Development (IMSD) fellowship at UCSF (supported by NIGMS and Graduate Division).
- **Santa Barbara** - Graduate Scholars Program; California HSI Alliance for Graduate Education and the Professoriate (NSF AGEP).
- **Santa Cruz** - Expanded funding for Cota-Robles fellowship (more and larger awards offered).

E. PROFESSIONAL DEVELOPMENT

While there is a diminishing job market for faculty positions, which are the traditional career outcomes for doctoral students, a broad array of careers for doctoral graduates outside the Academy are emerging. The expansion of career prospects has a direct positive impact on student mental health and well-being as data show that confidence about future careers is a major protective factor from the risk of clinical depression.[114] Professional development for academic doctoral students should be addressed on two fronts: 1) devote additional resources and multipronged efforts to effect a cultural shift that expands professional development at UC campuses to include non-academic careers; and 2) actively support students exploring both academic and non-academic careers.

[114] UC Graduate Student Well-Being Survey, May 2017.

Recommendations for professional development

1. **Expand professional development resources** – Offer workshops, seminars, and information on the broad range of careers an academic graduate degree can lead to. Encourage faculty to support student interest in non-academic careers.
2. **Funding for conference attendance** – Establish a fund source for the cost of student attendance at professional conferences.
3. **Increase faculty involvement** – Advise faculty not to discourage students from pursuing non-academic careers, and ask them to partner with other career-service providers. Ensure faculty are aware of campus career and professional development resources.
4. **Campus career resources** – Make sure that campus career resources include services tailored to the needs of graduate students.
5. **Alumni engagement** – Encourage alumni engagement in graduate student professional development.
6. **Showcase all graduate alumni on campus websites** – All alumni, not just those in academe, should be showcased on graduate program websites.

Current programs and initiatives at UC campuses for professional development:

- **Berkeley** - NSF AGEP California Alliance; Graduate Professional Development program (GradPro); Preparing Future Faculty program; student-run Beyond Academia conference
- **Davis** - GradPathways
- **Irvine** - Graduate Professional Success
- **UCLA** - PhD and Master's Career Services; Edward A. Bouchet Graduate Honor Society; NSF AGEP California Alliance
- **Merced** - NSF AGEP California Alliance; Graduate Enrichment and Advancement Resources and Services (GEARS); Dissertation Bootcamp
- **Riverside** -'Grad Success' umbrella that provides a range of workshops/professional development trainings and mentorship to students
- **San Diego** - grAdvantage
- **San Francisco** - UCSF MIND: Motivating Informed Decisions career exploration program; Training Researchers and INterns for Upcoming Professors (TRAIN-UP)
- **Santa Barbara** - Annual student-run Beyond Academia conference
- **Santa Cruz** - Grad Division sponsors and administers fall quarter Graduate Student Communication Certificate program and winter quarter Graduate Student Leadership Certificate program; GradHorizons

IV. CONCLUSION

The graduate education system at UC is a signature example of research excellence - it trains new generations of contributors to civil society in myriad fields and it is an economic engine for California, the nation, and the world. The time for UC to decide whether it wants this stellar system to continue is now. The factors that currently threaten academic graduate education at UC are serious, and must be met with boldness and commitment. The Graduate Education Workgroup therefore urges campus and UCOP leaders to take the Workgroup's recommendations seriously and to take action promptly. As already stated, academic graduate education is at the core of the mission of the University of California and the chief reason for its stature as the premier public research university in the world. It is incumbent upon all of us to follow through on improving the support and conditions of academic graduate education, and to make sure that UC's position as an academic leader for the world and an economic engine for the state of California continues.

It is the Workgroup's expectation that these recommendations will be given to the Regents and to campus Chancellors, Executive Vice Chancellors, Vice Chancellors for Research, Graduate Deans,

Graduate Student Associations, and Senate Divisions for review. It is also the Workgroup's expectation that the recommendations will be acted upon. In order to ensure that such action takes place, however, and to prevent the same fate as prior task force reports, the Workgroup recommends that APC establish a committee in two years to examine the extent to which the recommendations have been achieved. The plan for a follow-up committee should include metrics for measuring implementation and success in strengthening academic graduate education at UC.

V. WORKGROUP CHARGE and MEMBERSHIP

Charge – The Graduate Education Workgroup is a subcommittee of the Academic Planning Council, a systemwide committee of campus and UCOP administration and Senate leaders. The Workgroup was charged with drafting recommendations for grappling with issues facing academic doctoral education at UC today.

Membership

Frances Leslie, Workgroup Chair, Vice Provost for Graduate Education and Dean of the Graduate Division at UC Irvine
Michael Brown, UC Provost and Executive Vice President
Fiona Doyle, Vice Provost for Graduate Studies and Dean of the Graduate Division at UC Berkeley
Onyebuchi Arah, Chair of CCGA, Professor of Public Health and Epidemiology at UCLA
Scott Brandt, Vice Chancellor for Research at UC Santa Cruz
Sandra Brown, Vice Chancellor for Research at UC San Diego
Farrell Ackerman, Professor of Linguistics at UC San Diego
Josh Schimel, Professor of Ecology, Evolution, and Marine Biology at UC Santa Barbara
Devon Graves, Student Regent and UCLA doctoral candidate
Becky Hofstein Grady, UC Irvine doctoral candidate
Pamela D. Jennings, Executive Director of Graduate Studies at UCOP

Appendix 9A

Report of the Academic Planning Group Workgroup on Reimagining Graduate Education, UC Irvine

Part I (2021)

Report on APG Workgroup on Reimagining Graduate Education

June 2021

Committee Members
Jeffrey A. Barrett, Chancellor's Professor; Chair, Academic Senate
Ryan Cherland, Associate Vice Provost for Institutional Research and Decision Support
Bridget R. Cooks, Associate Professor, Department of African American Studies, Department of Art History, Associate Director of the UCI Institute and Museum of California Art
John Crawford, Professor, Dance Department, School of the Arts
Franklin Dollar, Associate Professor, Department of Physics & Astronomy, School of Physical Sciences
Gillian Hayes, Kleist Professor of Informatics; Vice Provost for Graduate Education and Dean of the Graduate Division
Jan Hirsch, Dean School of Pharmacy & Pharmaceutical Sciences
Sunny Jiang, Professor and Chair, Civil and Environmental Engineering, Henry Samueli School of Engineering
Michael Leon, Professor Emeritus, Recalled, Department of Neurobiology and Behavior, School of Biological Sciences
Gerardo Okhuysen - Professor, Paul Merage School of Business (Equity Advisor)
Liz Peña, Associate Dean of Faculty Development & Diversity, School of Education
Ruth Quinnan, Executive Director of Academic and Student Affairs, Graduate Division
Carroll Seron, Professor Emerita, Department of Criminology, Law & Society
James Steintrager, Professor, English and Comparative Literature
Verónica M. Vieira, Professor and Interim Chair, Environmental and Occupational Health, Program in Public Health, Susan and Henry Samueli College of Health Sciences

Last Updated: 6/17/21

Executive Summary

The APG Workgroup on Reimagining Graduate Education was charged to develop data-driven criteria by which the Academic Senate and the campus administration might assess whether PhD and MFA programs are appropriately sized and have appropriate levels of support. The workgroup conducted its work during winter and spring quarters of 2021, meeting every two weeks for two hours, with offline work in between.

The criteria for evaluating graduate programs fell into these major categories:

1. Competitiveness, recognition, and reputation
2. Diversity, equity, and inclusion
3. Contributions of program to campus teaching, research, and service missions
4. Career pathways and opportunities
5. Financial support levels for program

The workgroup developed a set of questions related to each of these categories, and identified data sources, both **central** and **local**, to help answer these questions. For local questions, that is, those that must be answered by the programs and departments themselves, we developed a questionnaire.

Recommended next steps include:

Inform school deans about findings of this group and overall plans and timelines.

1. Collect central data by OIR, Graduate Division, and other campus offices over the summer.
2. Distribute the questionnaire to graduate program directors and/or department chairs for completion by early fall to collect the first-pass local data.
3. Share the summary of the first-pass local data with deans, associate deans for graduate affairs, and assistant deans for return comment in fall.
4. Handover of all data to a follow-up APG workgroup on this topic for analysis and action planning.

Introduction
The first APG Workgroup on Reimagining Graduate Education was charged to develop datadriven criteria by which the Academic Senate and the campus administration might assess whether PhD and MFA programs are appropriately sized and have appropriate levels of support. The idea was that these criteria would be used by a second APG Workgroup on Reimagining Graduate Education that would be convened in fall of 2021. The work of this second workgroup would be to apply the criteria from the first workgroup to all PhD and MFA programs, assess the results, and make recommendations regarding appropriate size and funding support models that allow for the possibility of programs growing, contracting, or maintaining steady state and attach appropriate resources to ensure program quality.

The charge listed some of the key categories to consider in developing criteria. These included: measures of program quality (national rankings, recognition, competitiveness for students); measures of student success in the program and thereafter (i.e., employment placements and prospects); contributions to diversity, equity, and inclusion; availability, nature and trajectory of financial support; and national trends for comparable programs. The first workgroup was to deliver its report at the end of the 2020-21 academic year.

The first workgroup aimed to establish a list of criteria appropriate to evaluating all PhD and MFA programs. The emphasis was on understanding which programs and students are thriving given both local and campus goals. In those cases where a program is not thriving or could be doing better, we wanted criteria that would help us understand why not and provide sufficient information to give a sense of what remediation and support might be appropriate.

The criteria for evaluating graduate programs fell into these major categories:

1. Competitiveness, recognition, and reputation
2. Diversity, equity, and inclusion
3. Contributions of program to campus teaching, research, and service missions
4. Career pathways and opportunities
5. Financial support levels for program

The first workgroup developed a set of central and local questions related to each of these categories. The central questions can be answered with data from OIR, Graduate Division, and other campus offices. Most of this data is already at hand. The proposal is to get started with putting that data together over the summer. The local questions can only be answered by the programs and departments themselves. These questions reflect how the people involved in running a program think of it and the goals they have for the program in their local context.

Throughout the process, we have aimed to reduce the burden in data collection as much as possible. To this end, the questionnaire was edited to make it as easy to complete as possible.
It also uses explicit word limits to encourage our colleagues not to devote unnecessary resources to the task. How the first-pass questions are answered may result in the need to collect additional data or to compile data from existing sources at the local level (program, department, and/or school) or centrally (e.g., Registrar, Institutional Research, Graduate Division). The second workgroup will then use all of the data to conduct the actual evaluations of the programs and to determine possible next steps and recommendations. We expect that this APG workgroup will need the full 2021-22 academic year to accomplish these tasks.

The table of questions and metrics that were developed by the first workgroup are included below. The table of metrics also includes the sources of data to answer each question. Following that table is the questionnaire we developed to solicit the local data from programs and departments. That local data will

then be given to schools for comment. Further, we may conduct meetings or interviews with key stakeholders. The full data set will then be given to the second workgroup to inform their deliberations. We include here a draft charge for the second workgroup.

Draft Charge for the Second APG Workgroup on Reimagining Graduate Education

The charge of this APG work group is to use the data-driven criteria determined by the first APG Workgroup on Reimagining Graduate Education to assess whether PhD and MFA programs are appropriately sized and have appropriate levels of support. Graduate Division and the Senate office will collect the central data, the local data, and the school comments on the local data. The second workgroup will then apply the criteria to all PhD and MFA programs and assess the results. Using this analysis, the second workgroup will make recommendations regarding appropriate size and funding-support models. These recommendations should allow for the possibility of programs growing, contracting, or maintaining steady state as well as considerations for support—both human and financial resources—that different programs with different disciplinary norms may require. The recommendations should be made with an eye to furthering the strategic goals of the campus, including but not limited to the academic recognition of PhD and MFA programs at UC Irvine.

Table of Recommended Metrics

Topic	Question	Data location(s)
Competitiveness and Recognition	If ranked, what is the current ranking of the program in its field? Opportunities for upward moves?	OIR
	Goals for the graduate program	Local
	How does the graduate program support campus strategic priorities?	Local
	Yield: How successful is the program in recruiting students? *5 year range*	UCI program yield - GD Competitor list – local Competitor yield - OIR
DEI	How diverse is the graduate student body? How diverse is the faculty?	OIR [gender, LGBTQIA, disability status, racial/ethnic minority]
	How does the graduate student population in the program compare to the undergraduate population? To the discipline?	OIR

	Are underrepresented students thriving? • Funding • Mentoring • Career outcomes • Retention • TTA/TTD • Climate	GD [Exit surveys, TTA, TTD, Competitive Edge Surveys], OIR, DSC Possible: OEOD /Title IX data
	International students – what is reliance on this population? How comfortable do the international students feel in the program?	GD Local
	Current perceived barriers to diversification of graduate program	Local
What work are the students doing? (Opportunities and expectations) (for money, tuition, and job-related experience)	On average, how many quarters are students on fellowship, how many do they work as TAs, how many as GSRs? What is the type of labor provided?	GD Local
	How many of the program's students work in other departments? Where do the students go?	GD
	How do graduate students contribute to the scholarly mission of the department?	Local
	How well do the GSR expenditures track against research expenditures?	GD
	How does the mix of TA/GSR/fellowship support for UCI students compare to those at peer institutions?	OIR - CGS Survey for NSF
	Do students feel they have adequate/appropriate opportunities to do jobs that will prepare them for future careers (e.g., lead instructor positions, research work, internships, pedagogical fellowships)	GD [AGS, UCOP, and Exit Surveys]
Student Employment Pathways	What is the job market like in the discipline? What type of job are students expecting? What type do they end up with when they go on the market? Salary expectations and results Do these differ by area within discipline?	Local, OIR [Academic Analytics], GD [Exit surveys]
	What are the viable options for jobs that use their PhD/MFA beyond tenure-track positions at a research university? How much of a requirement is a PhD vs. MFA vs. other graduate degree for these options?	Local OIR/GD

Financial Support	Average current time to degree compared to average current quarters of financial support	GD
	Proportion of current and recently graduated (last ten years) students who have financial support for their entire graduate career	GD
	Current average support level for students (and comparisons to other similarly situated programs (e.g., AAU public universities, other UCs).	GD/OIR
	(How) are students funded in the summer? Throughout the year?	Local GD
	Level of **new** debt incurred while at UCI as part of the graduate programs	Financial Aid
	Sources of funding, including research grants, training grants, etc.	Local, GD, OR
	What would the program invest in if they had more resources	Local
Human Support	Quantity, quality, and engagement of faculty mentors. Staff support.	Local, GD [Exit surveys, AGS survey]
	Does evidence suggest students are receiving adequate mentoring from faculty? How successful are students in meeting their goals, matching with advisors, completing their degrees?	GD [AGS, Exit, and UCOP surveys; TTA/TTD]
	Wellness indicators of students in program (mental health, students reporting problematic culture), segmented by URM status or other high-risk groups	GD [AGS, UCOP surveys]
Education/Academic Offerings	How much do the grad programs courses serve other parts of campus/the interdisciplinary mission?	OIR
	Are there reasons a program needs to be in heavy growth mode, such as new school/department, substantial investment by outside donor or research effort, evidence that the program is part of national growth trend, etc.?	Local

Program Questionnaire, with suggested word count limits

Current Goals for the Graduate Program

1. Please describe any particular reasons that your program would prefer to grow, contract, or remain constant at this time. [100 words]

   Given your currently expected budget resources, what would be the TOTAL number of PhD/MFA students in your program five years from now? [50 words]

What would be the ideal TOTAL steady-state number of PhD/MFA students in your program? Describe the resources you would need [50 words]

2. Please list the top universities and programs you view as most competitive with your program in drawing prospective students. [50 words] What are your aspirations for your program in relation to this group? [100 words] How do you aim to accomplish this? [100 words]

Employment and Financial Support

1. Please describe the most common employment scenarios for your graduate students. [100 words] (e.g., leading discussion sections, grading and support for teaching, conducting research related to their dissertation, conducting research unrelated to their dissertation, etc.)
2. Please describe other ways in which the program's graduate students contribute to the research and/or creative missions of the department. [250 words]
3. How do PhD & MFA students currently support themselves in the summer? (what is your best estimate regarding the proportion of students involved in each activity)
    a. Savings
    b. Jobs unrelated to discipline
    c. Return to home country to work
    d. Internships and jobs related to discipline
    e. GSRs
    f. ASEs
    g. Other [20 words]
4. What would be your top three priorities to invest in student support if provided with new strategic funds? [250 words]

Mentoring, Preparation, and Future Prospects

1. How does mentoring of graduate students work in the program (e.g., goal setting, use of IDPs and annual reviews, assignment/matching of advisors, advisor only or multiple mentors)? What do faculty expect of their advisees and vice-versa? [250 words]
2. Is there a sufficient number of faculty to mentor your current students? [20 words]
3. Is there a sufficient number of students for current faculty? [20 words]
4. What is the job market like in the discipline? What type of job are students expecting? What type do they end up with when they go on the market? What are the viable options for jobs that use their PhD/MFA beyond tenure-track positions at a research university (e.g., non TT positions, TT at colleges and universities that are not research focused, corporate or non-profit positions)? How much of a requirement is a PhD vs. MFA vs. other graduate degree for these options? [250 words]
5. What are the most essential challenges and opportunities for your program in these areas [200 words each]:
    a. student success and wellness
    b. engaging with the outside community, including non-profit, for-profit, and governmental agencies
    c. driving improvements in your graduate program's retention and thriving in diversity, equity, and inclusion
    d. career placement and professional development

Appendix 9B

Report of the Academic Planning Group Workgroup on Reimagining Graduate Education, UC Irvine

Part II (2022)

Report of the **APG Workgroup on Reimagining Graduate Education: Part II, AY 2021-22**

Executive Summary:

The second APG workgroup to examine PhD and MFA programs at UCI met biweekly throughout the 21-22 academic year. The group assessed a variety of institutionally held data, including those held centrally by Institutional Research, the Graduate Division, as well as reports from each program directly. This report describes a series of general recommendations that apply to PhD and MFA programs broadly, the campus's approach to student support, and best practices moving forward, as well as detailed recommendations from each of five areas identified by the 20-21 workgroup: competitiveness, recognition, and reputation; financial support levels for programs; diversity, equity, and inclusion; and contributions to the campus mission. The committee also analyzed each PhD and MFA program on campus individually. Each group member analyzed all of the programs in two to three schools, depending on the size of the school. Group members did not analyze their own schools but were present for discussions of them. Appendixes to this report include: the workgroup roster (appendix 1); the charge and description of methods (appendix 2); a table of key metrics recommended to be examined annually (appendix 3); and a program-by-program assessment of individual programs on the basis of these criteria (appendix 4).[115]

Recommendations

We considered at length factors viewed as intrinsic to the quality of graduate programs:

- Insufficiently competitive funding packages
- Poor placement records
- Insufficient mentoring and advising
- Program climate, as well as program cultural and structural issues
- Extended time-to-degree and retention issues
- Inadequate teacher training

Despite the close alignment of faculty and graduate programs, the task group neither considered nor assessed the quality of faculty except in so far as such is reflected in external rankings. We did consider the quality of mentoring and advising as reflected in student exit surveys and graduate division records.

All reviewed programs faced at least some of the challenges mentioned above, and low student morale in particular, while concentrated in some schools more than others, appears to be a fairly widespread phenomenon and one that UCI needs to address. Further, these challenges interact in many ways. Poor placement, for example, may be a function of the job market in a given field, insufficient mentoring,

[115] Appendices are not available in this version.

and/or a problematic campus, departmental, or program climate[116]. Likewise, climate data suggest that the impact of various constraints may be distributed unevenly within programs, with URM students sometimes reporting greater concerns about program climate than non-URM students. Addressing each of these constraints sufficiently is necessary given our goals as a campus in terms of diversity, equity, and inclusion as well as quality and excellence.

The flipside of what have identified as challenges are various strategic goals aimed at enhancing program quality:

- Providing more competitive and consistent funding
- Paying better attention to placement
- Increasing the diversity of the student body and pathways to the professoriate
- Identifying and implementing best practices for mentoring and career advising, including both academic and non-academic careers

Below we have broken out our recommendations for addressing these challenges and achieving our goals with overarching recommendations according to the five primary categories of assessment that we were given. This report is advisory to the Provost, but many recommendations would need to be implemented via the Graduate Division and/or within the schools. Such local change requires oversight, encouragement, and resources of school deans and associate deans. The Provost nonetheless can play a fundamental role in implementing recommendations that he deems worthwhile by communicating priorities, rewarding progress, and requiring accountability.

General Recommendations:

1. Provide data to inform allocational and programmatic decisions, help pinpoint problem areas, and increase transparency.
    - All data dashboards developed in conjunction with and provided to the APG workgroup should be provided to leadership in schools and departments (chairs, deans, associate deans), to key senate committees, and to other interested parties on campus as appropriate. Doing so will provide transparency as well as data and instruments for decision makers.
        - Data on program quality and diversity should be available to all UCI faculty and staff.
        - Financial data should be restricted to appropriate administrators.
        - A subset of data (e.g., information on time-to-degree and placement) should be easily available to all prospective applicants and students.
    - Data dashboards should be maintained and updated annually.
    - Data sharing should be accompanied by messaging noting that the information provided, while illuminating and helpful, does not provide a complete picture and that consequently the use of this information for decision-making should be approached with circumspection.
    - All data sharing must respect personal privacy and confidentiality.

2. Treat infrastructure as integral to graduate training and the graduate-student experience.
    - Annually, all programs should analyze the infrastructure needs of their graduate programs and consider infrastructure enhancements to improve the graduate-student experience. Infrastructure in this context is not exclusively or mainly laboratory space and equipment but includes, non-exhaustively: physical space for graduate student research and social interaction, staffing resources in programs (including both student-facing and general administrative support), support

[116] On the definition of "climate" in the university and more specifically UC context, see https://campusclimate.ucop.edu/what-is-campus-climate/.

for research (including travel), materials for scholarly production, and digital infrastructure (e.g., software, hardware, storage).
- Program leaders (chairs et al.) should continue to work with their local development officers to identify opportunities for fundraising, should work to identify strategic grant opportunities, and should pursue other funding that targets infrastructure enhancements for graduate programs.
- Research and scholarship infrastructure on some parts of campus is limited and unevenly distributed. Shared investments might help mitigate these problems, as well as providing efficiencies and cost savings. The workgroup considered these infrastructure issues outside of its charge, but thought that the identification of areas of developments, possibilities for shared investments, etc., should be studied.

3. Continue efforts to expand summer support.
   - When asked what they would do with additional resources, nearly every program reported they would prioritize summer support. Outliers were programs that already provided substantial support during the summer.
   - The Graduate Division in conjunction with the office of the Provost has already begun to implement a long-range plan for summer support. Anything that might accelerate this plan and/or include currently enrolled students would be an effective use of resources.

<u>Recommendations by Category of Assessment</u>:

1. Competitiveness, recognition, and reputation
   The workgroup generally held that our main aim should be to address program quality, placement, diversity, and other campus goals and that reputation and recognition—national and international—should follow improvements in these areas. That is, as an institution, we should generally pursue our aims and not chase rankings. However, should enhancing rankings be determined by the campus to be a priority, school deans and associate deans should be informed of this campuswide strategy and allowances made for program titles that are not ranked (e.g., interdisciplinary and niche programs, where UCI wants to and often does excel are rarely covered adequately, if at all, by the usual ranking outlets). Notwithstanding, we recommend the following two strategies to enhance rankings:
   - School deans, department chairs, and other leaders would need to support programs selectively. Moving in the rankings once in the top ten is particularly challenging and very low ranked programs may not provide substantial return on investment. However, we suggest that programs in the 15-30 range (US News & World Report; see appendix 5) may make ideal targets for moving into higher tiers that come with substantial return on reputation and other metrics.
   - The Office of Strategic Communications and the Graduate Division should work together to ensure a comprehensive strategy around messaging about the positive changes we are making on campus, the excellence of our research, and in particular the excellence of our graduate programs. Such messaging should be further pursued at the school level.

2. Financial support levels for programs
   - If the Provost has financial resources to commit to graduate programs, then the top priority would be to help provide competitive funding packages for incoming students, where UCI all too often significantly lags vis-à-vis aspirational, comparable, and even less highly regarded programs.
     - Additional funding might logically be drawn from self-supporting programs. Thorny issues such as taxing and redistributing a portion of SSGPDP revenues are, however, beyond the expertise and remit of the group.
     - Schools are currently mixed in their approach to distribution of graduate funding, with some choosing egalitarian funding models rather than differential funding models. Those with more even distributions may be limiting their ability to provide their top programs

with the resources to recruit their most promising applicants and in so doing raise the profile of these programs. As above, the group did not consider itself empowered to provide pointed financial guidance in this regard but did wish to point out the consequences of the strategy.
    - Additional resources should be provided and allocated centrally to support strategic priorities of the campus (e.g., recruiting competitively, diversification of the professoriate, decreasing time to degree, improving job prospects). In particular, the committee identified summer and dissertation writing fellowships as essential to these priorities and would provide good return on investment.
- Increase extramural funding and other external resources for PhD and MFA students, in particular fellowships–federal, state, donor, corporate, and foundation–and training grants.
- Encourage and enable programs that have over-enrolled to reduce cohort sizes and increase support per student. Several programs recruit cohorts that the job market (both academic and otherwise) and current funding resources cannot adequately support. The reasons that programs have grown beyond their capacity to support and place students include:
    - Historically, programs were encouraged to grow to achieve certain undergraduate-graduate student ratios deemed appropriate for an AAU R1 institution.
    - Faculty wish to regularly teach graduate seminars and train graduate students.
    - Programs with large undergraduate populations have large instructional needs.

  These reasons are insufficient justifications for recruiting graduate cohorts wherein a large proportion is not placeable. Programs that fall under this category should work with the Graduate Division to achieve an appropriate balance of size and support. The Provost, Graduate Division, and the Academic Senate should work together to develop incentive structures and consequences for programs to meet an appropriate sustainable size.

  Note: because larger cohorts do provide benefits in terms of climate and program cohesion, some programs may wish to explore every-other-year admissions cycles.

- Substantial financial support is delivered to PhD and MFA students in the form of Academic Student Employee (ASE) appointments. These appointments include Teaching Assistant, Reader, and Teaching Associate titles.
    - Programs remain confused about these allocations and nearly all believe they are not provided enough support in the form of ASE positions. A task force to examine this issue in particular may be warranted.
    - Fee Remission, including tuition and other mandated fees, a student support mechanism, is allocated alongside ASE positions, a portion of the instructional budget. Conversion of these funds to fellowships is a major part of some schools' strategy for dealing with graduate funding but technically out of policy. It may be useful to examine these policies and ensure they are working as intended.
- Financial support for PhD and MFA students must include infrastructure for their scholarly work (e.g., travel funding, data and IT support, research materials, artistic production materials, staff support).

3. Diversity, equity, and inclusion
    - We recommend a comprehensive assessment strategy be launched across OIE, Academic Planning, and the Graduate Division to determine return on investment of the many diversity-related programs, events, recruiting tactics, fellowships, and so forth.
    - Forms of diversity other than those on which data is already collected and readily available (race/ethnicity and gender) should be folded into our understanding of inclusion at the graduate

level and attempts made to recruit and to enhance the climate for, e.g., disabled students, LGBTQIA+ students, first-generation students, and other groups as appropriate.
- Graduate programs generally aim to recruit the best possible applicants from across the globe. Within the UC system we also understand that many of our international students will go on to contribute directly to the California economy. International students contribute to the diversity of our campus, albeit in ways that are not registered as such by official categories. The campus needs to assess and formalize how international students fit into our understanding of diversity.
- Chairs, directors, and faculty more generally need to be more aware of climate problems, as well as program cultural and structural issues, and be more analytical and proactive in addressing these problems. Further, these problems are sometimes worse with respect to diversity categories (gender and/or URM status). Low student morale is frequently a symptom of poor climate, although morale is also impacted by other factors such as placement. Attention to program quality and related factors should mitigate these problems but should not be taken as a panacea.
- This group did not review the most recent surveys of graduate students taken as part of the WSCUC reaffirmation process and recommend review of such data to augment these findings.

4. Career pathways and opportunities

The workgroup identified placement as the most important metric for assessing the quality of graduate programs, and yet we came to realize that the data on placement that we have are unreliable and incomplete.
- Exit surveys, through which students self-report on their job status at the time of graduation, are limited by the time point (just before degree conferral) of the data collection.
- Programs may or may not consistently track their students in the years following graduation when data are likely to be more indicative of program success (or failure).
- Academic Analytics provides the campus with some information on placement, but these are not easily analyzed for key outcomes of interest (e.g., jobs in the "education sector" is not a sufficiently fine-grained category and includes K-12, adjunct faculty, as well as tenure track faculty).

Placement should be an explicit and supported goal of graduate education. Career mentoring and advising should be improved for both academic and non-academic positions. While all programs should provide additional support to increase the likelihood that students can get top-tier academic positions as well as positions in non-R1 institutions, in industry, and otherwise outside of academia (so-called alt ac positions), the Graduate Division in conjunction with the Provost might consider funding to be awarded competitively for programs to develop better placement support and strategies. Programs awarded funding should present on their successes, failures, and otherwise share the results of their development schemes.
- Campus and/or programs must improve alumni tracking and analysis of placement data. These data should be published to ensure transparency to applicants and to improve attention to placement issues by program and campus leaders.
    - Improved centralized and local tracking of alumni who complete their PhD and MFA programs.
    - Improved tracking of those who change to an MA/MS from a PhD program and/or leave without any degree.
- A follow-up APG workgroup dedicated to graduate placement and alumni career success is warranted.
    - Such a workgroup could gather best practices on placement and career development, consider how to better coordinate career advising within programs and centrally, make recommendations on how to better differentiate categories of placement, etc.
    - This group should also consider questions about what constitutes a "quality" placement and career (e.g., requirement of a PhD or MFA for the job, full-time versus part-time or

adjunct, tenure-track or not, salary levels and total compensation) and be mindful of the variations in what successful placement looks like across the disciplines.
    - A follow-up group should also seek to understand what else alumni may value from their degrees beyond career placement (e.g. critical thinking and communications skills, a broader and/or deeper view of their discipline, and so on). Partnering with efforts to assess similar outcomes in the undergraduate population may be useful.
- The Graduate Division, School Deans and Associate Deans, and Graduate Program Directors should develop plans to actively set appropriate expectations for graduate students around career pathways. Such efforts might include but not be limited to transparency around career outcomes for applicants as well as direct querying of applicant plans for careers outside of tenure-track academic jobs, particularly in disciplines in which obtaining a tenure-track position is unlikely.

5. Contributions of program to campus teaching, research, and service missions
    - In many programs, better school-level and departmental pedagogical training is needed to augment the DTEI training that already exists. Such training would not only enhance the undergraduate learning experience but in many instances better position graduate students on the academic job market in particular. Training, as appropriate, should include training in English communication for those whose first language is other than English.
    - Given how differently various programs contribute to the research, teaching, and service missions of the campus, the group decided that general statements on these items was not possible. However, before any substantial changes are made to size and scope of programs, their contributions to core campus missions (research, educating undergraduates, training for careers in areas of economic demand and social need) should be considered. Should programs radically change their sizes, for example, the impact to the ability of campus to hold courses, produce arts programs, conduct research, and so on should be considered and alternative staffing models must be developed.

Appendix 10A

UC Santa Cruz Joint Working Group Report (2021)

UNIVERSITY OF CALIFORNIA, SANTA CRUZ AS/SCP/1999

Joint Senate-Administration Working Group on
Graduate Education
Final Report: March 2021

Executive Summary

Strengthening the graduate enterprise, cultivating research excellence and professional development, advancing diversity, and providing an environment for student success and welfare are key drivers to maintaining and enhancing UCSC's status as an outstanding public research university. The Joint-Senate Administration Working Group on Graduate Education (JWG) was created following consultation between Graduate Council and the Chancellor and CP/EVC, and launched in spring 2020. The work of the JWG focused on: 1) developing a comprehensive revenue analysis of the graduate enterprise[117] at UCSC, including the recently enacted 5 year funding guarantee for doctoral students (2 years for MFA); 2) exploration of alternative graduate student funding models, including close examination of the "cohort model" implemented at UC Riverside; 3) the development and analysis of the Faculty Graduate Education Survey (FGES), intended to elicit the perspectives of faculty on graduate education and funding at UCSC, and particularly views on the carrying capacity of different programs; and 4) analysis of Graduate Division staffing levels at UC campuses.

The JWG's revenue analysis brought clarity, even to working group members, regarding the budget allocation "rebenching" process and its on-going fiscal benefits to UCSC and the graduate enterprise. The budget allocation rebenching process modified how state enrollment-based revenues flowed to UC campuses. It resulted in the allocation of $24.3M in one-time funding to UCSC distributed over the 5 year transition period beginning in 2012-13, and ongoing doctoral student enrollment-based funding for 1,778 doctoral enrollments, which was equivalent to a 12% doctoral:undergraduate student enrollment ratio established at the start of the rebenching process. Notably, because of extensions of the rebenching process, UCSC continues to receive state enrollment-based funding for 1,778 doctoral students, even though actual doctoral enrollments have not reached this goal (doctoral enrollments were 1,420 as of end fall quarter 2020). The difference between the dollars UCSC receives for the 1,778 doctoral enrollments versus the dollars it would receive for actual doctoral enrollments constitute upfront "aspirational" dollars to support doctoral enrollment growth. In 2018-19 (a focus year for the JWG's revenue analysis), the amount of state enrollment-based funding UCSC received for these 441 "aspirational" doctoral enrollments (i.e., 1,778 - 1,337 actual) was $8.4M. One implication of continuing to receive state funding for more doctoral students than UCSC actually has is that increases in doctoral enrollments will not lead to additional state enrollment-based revenue until UCSC surpasses 1,778 doctoral enrollments. It is also possible that UCSC may lose those aspirational growth dollars if doctoral enrollments do not grow. Given this, the campus should develop concrete strategic plans with UCOP for the stabilization of these aspirational doctoral enrollment dollars, and articulate specific plans and resources to support doctoral enrollment growth that are sensitive to disciplinary desires for growth. Indeed, the Faculty Graduate

[117] Here, the term "graduate enterprise" is used to encompass the totality of revenues generated by graduate student enrollments, how those funds are spent supporting graduate students, the instructional roles played by graduate students, and the faculty advising and co-curricular aspects of graduate education.

Education Survey (FGES) revealed important differences across disciplines in the desire and ability to sustainably grow doctoral enrollments.

The JWG's revenue analysis also revealed that Academic Student Employee appointments (ASEs, which includes Teaching Assistants [TAs] and Graduate Student Instructors [GSIs]) play an outsized role as a means of support for graduate students at UCSC. A relatively large proportion (65%) of core state enrollment + tuition-based revenues spent supporting graduate students in 2018-19 were spent on graduate student ASEs (TAs, GSIs), the majority of which were TAships. The question of whether this is appropriate depends on whether we as a campus view the primary role of ASE appointments as supporting undergraduate or graduate education, or a mix of both. The former (i.e., ASEs primarily supporting undergraduate education) implies that only 28% of the core state + tuition revenue generated by the graduate student enrollments was spent supporting graduate students (with the majority of this funding supporting the undergraduate enterprise). However, if ASE appointments are considered as the primary mechanism to support graduate students, then 78% was spent supporting graduate students (i.e., $48.5M of the $62M core revenues generated by graduate student enrollments + tuition). Regardless, this analysis shows that UCSC relies very heavily on ASE appointments (especially TAships) to support doctoral/MFA students, especially in the Arts, Humanities, and Social Sciences Divisions, where there are fewer opportunities for other forms of student support (fellowships, extramurally-funded GSRs, etc.). This not only makes graduate students highly dependent upon TAships over the course of their graduate careers, with implications of prolonged time to degree, but it also makes programs and academic divisions (some much more than others) highly reliant on TA/GSI allocations that are not currently predictable over the 5 year guaranteed graduate student support window, creating unnecessary funding uncertainties for both students and programs. This sentiment is underscored by a majority of faculty respondents to the FGES across all divisions, who stated that students are serving as ASEs too often at the cost of prolonging their time to degree.

It is noteworthy, however, that many faculty respondents also indicated that they do not receive sufficient TA support for their courses. This conundrum between faculty thinking that graduate students TA too much over their careers versus many faculty thinking they do not receive sufficient TA support for their courses suggests a possible opportunity to strengthen both graduate and undergraduate education by creating a mix of alternative modes of instructional assistance that does not rely so heavily on graduate student ASEs. The JWG recommends that programs and the broader campus explore creative modes of instructional assistance to complement graduate student ASE appointments, with the goal of reducing the number of ASE quarters a graduate student would serve over their career in favor of additional fellowship quarters, while at the same time maintaining or increasing the level of instructional assistance to qualifying undergraduate courses.

The JWG revenue analyses also revealed that a relatively modest amount of extramural funding is directed to supporting graduate students ($20.4M in 2018-19), which is 29% of the total amount spent supporting graduate students in 2018-19, and 12% of total extramural funds brought to campus that year. Similarly, a relatively low proportion of gifts and endowment-based extramural funding (15% of total extramural) was spent to support graduate students in 2018-19. Together, these findings suggest that there is capacity to grow support for funding graduate students through growth in extramural funding and associated Indirect Cost Recovery (ICR), and by growing gifts and endowments overall by increasing fund-raising efforts for graduate student support at all levels of the institution, including University Relations, Graduate Division, and the academic divisions. Supporting this suggestion, respondents to the FGES stated that more graduate student support could be worked into extramural funding proposals, but also noted that there are barriers to doing so, chief among them being the high cost of supporting graduate students, which is nearly on par with the cost of supporting postdocs. This issue should raise significant concerns for the campus, i.e., there is the potential that increasing costs of graduate student support could lead to proportional reductions in the number of graduate students included in extramural proposals. In

light of this, the JWG believes it is imperative that faculty-identified challenges/barriers for increasing both the number of extramural proposals submitted, and the proportion of proposals with significant graduate student support, including levels of institutional support, workload recognition and accommodation, etc., be addressed. In addition, we recommend that the campus develop a cost-sharing program for faculty supporting graduate students as GSRs on extramural funding in order to reduce the costs of supporting graduate students on extramural funds, and to incentivize including more graduate student support in extramural proposals.

The Faculty Graduate Education Survey (FGES) was conducted during Phase III of the JWG, with 293 responses (a 47% response rate) from all academic divisions (Arts n = 40, BSOE 44, Humanities 55, PBSci 75, Social Sciences 79). The findings of the survey are incorporated throughout the report, and in this summary, we call out a few key findings and resulting recommendations.

- Access to doctoral/MFA students is important to faculty. However, the degree to which having access to doctoral/MFA students advances, versus takes time away from faculty's research, and hence the extent that advising/mentoring doctoral/MFA students may directly contribute to faculty advancement, varies by academic division and faculty race/ethnicity and gender. In general, faculty in BSOE, PBSci and, to a lesser extent, SocSci, are much more likely to view advising doctoral/MFA students as an important factor in advancing their research. Faculty in the Arts & Humanities are, conversely, much more likely to state that while advising doctoral/MFA students is important to them, mentoring/advising doctoral/MFA students does not advance their research, and even takes time away from it. These trends are even more pronounced with underrepresented minority (URM) faculty, and especially URM women.
- Many faculty do not feel that their efforts mentoring/advising doctoral/MFA students are adequately valued or recognized in the personnel merit review process, especially faculty in Arts, Humanities, and SocSci divisions. There were also notable race/ethnicity and gender-based differences, with women being ~20% less likely than men to state their work advising doctoral/MFA students has been adequately recognized and valued in their personnel reviews by their home department. Further, URM faculty are more likely to disagree/strongly disagree that their work advising/mentoring graduate students is adequately recognized and valued as part of their department/program teaching workload.
- Less than a quarter of all respondents stated their doctoral students can finish within 5 years. However, when faculty survey respondents were asked to consider whether their doctoral students could finish within 5 years under “ideal” conditions (with guaranteed and increased financial student support), a substantially increased majority of ~60% stated their doctoral students could finish within 5 years, with notable increases across all academic divisions.
- The vast majority of faculty stated that the campus should provide higher levels of financial support to doctoral/MFA students, as the current amount of funding is not sufficient to meet costs in the Santa Cruz market. Importantly, the gap between salary/stipends and cost of attendance disproportionately and negatively impacts underrepresented graduate students and therefore impedes the campus’ efforts to increase graduate student diversity. Most faculty respondents state UCSC should provide most of a doctoral/MFA student’s cost-of-attendance, and at least some support for MA/MS students, though many also stated that graduate students, including doctoral/MFA students, should be partly obligated to meet some of their cost-of-attendance needs as an opportunity cost to the student for the training they receive in earning a higher degree.

Based on these key findings, the JWG recommends that all departments/programs and academic divisions update and/or develop clear and comprehensive faculty workload policies that appropriately quantify, recognize and value the workload associated with graduate student mentoring and advising, and graduate education more broadly, on par with undergraduate education, formal classroom teaching, etc., that is

appropriate for the discipline.[118] The disciplinary, gender, and race/ethnicity differences in whether advising/mentoring doctoral/MFA students actually advances the faculty mentor/advisor's research, and whether the workload associated with advising/mentoring graduate students is adequately recognized in personnel actions, should be carefully considered in establishing mentoring/advising expectations and workload. Second, given that time-to-degree varies by discipline and that even under ideal circumstances, a substantial number of doctoral students will take more than 5 years to earn their degree, the JWG concludes that the 5 year guarantee should not foreclose flexibility for departments to pursue additional funding (i.e., from ASE and/or extramural fellowship opportunities) for students beyond their 5 year guarantee.

The 5/2 year funding guarantee for doctoral/MFA students was announced in winter 2020, and became effective fall 2020.[119] JWG's revenue analysis of the 5/2 year funding guarantee shows that it is readily feasible at current funding levels, so long as supporting doctoral/MFA students is prioritized over master's students. However, current practices for funding graduate students, which operate on annual or semi-annual timeframes at the divisional and program level, do not provide sufficient stability and predictability for planning graduate student support over the 5/2 year guarantee window, nor do they factor in possible graduate enrollment growth.

One important aspect of the 5/2 year support guarantee is that it suggests, in concept, a potential framework to plan for and parameterize the cost of supporting doctoral/MFA students through the majority of their careers, and may provide the foundation for developing alternative graduate student funding models to achieve greater funding stability and predictability. To optimize divisional and programmatic planning in conjunction with the 5 year guarantee, we recommend that the central funding (ASEs and Block) for doctoral/MFA students be stabilized and rendered more predictable over the 5 year period over which groups of students are covered by the guarantee. To this end, the JWG recommends that the Graduate Division, in conjunction with Planning and Budget, develop a plan to implement a cohort funding model at UCSC. The cohort model (as practiced at UCR) guarantees the amount of central funding over a 5 year span for an entering graduate class, ensuring a 5-year fiscal planning window for programs. Optimally, such cohort funding would define both central fellowship funding and a minimum level of ASE funding for a cadre of entering doctoral/MFA students. The principal challenges for implementing a cohort funding model are: (1) developing 5 year central funding commitments, and (2) establishing baseline long-term ASE/fellowship commitments to programs that allow planning for a 5 year guaranteed period of support for entering cohorts of doctoral students (2 years for MFAs). This plan would allot a designated amount of fellowship support over a 5/2 year duration of a doctoral/MFA student cohort, and guarantee a base level of ASE support per doctoral/MFA student each year. In this plan, support of doctoral/MFA students would be a primary driver of baseline ASE funding allocations to divisions and programs, with undergraduate and large master's course enrollments being secondary drivers.

[118] The Joint Senate Administrative Task Force on Graduate Growth's 2015 report also recommended that divisions and programs produce and implement comprehensive faculty workload policies, which was taken up by the VPAA. The FGES findings indicate that those efforts remain incomplete, and that workload policies should be further examined for recognition of differences across discipline, race/ethnicity, and gender.

[119] On January 27th, 2020, UCSC Chancellor Larive announced two programs to enhance support for doctoral and MFA students: the 5/2 year support guarantee program for doctoral/MFA students, which provides a minimum level of support equivalent to that of a 50% teaching assistantship; and an annual $2,500 housing supplement fellowship program. https://news.ucsc.edu/2020/01/chancellor-new-graduate-student-programs.html#:~:text=First%2C%20beginning%20in%20fall%202020

Lastly, our findings indicate that the Graduate Division is significantly under-resourced, with likely significant negative impacts on the graduate enterprise. The level of staffing within the Graduate Division, which may be an indicator of graduate student programming and support capabilities, is the lowest in the UC system and well below what is expected based on graduate student enrollment numbers. Comparison with our sister campuses suggests that the number of graduate enrollments at UCSC (1,908 doctoral + MFA + master's in 2018-19) could justify ~23 graduate division staff and administrators, ~35% more than the current number of staff and administrators (14.5 as of 2 years ago; fewer now). The JWG recommends increased investment in the Graduate Division to provide much needed support for students and the graduate enterprise more broadly, including staffing and programming to support significantly increased efforts to recruit, retain, and graduate demographically diverse students, enhanced professional development opportunities for students across all disciplines, and improved student success. Supporting this need, a majority of FGES respondents believe their students are more likely to get professional (versus tenure track academic) jobs post-degree, underscoring the importance and likely impact of enhanced professional development programming across all institutional levels (departments, divisions, etc.). These findings reflect and align with national trends in graduate education.

Recommendations

Priority	Recommendation	Responsibility
Highest	Develop a 5/2 year doctoral/MFA student Cohort Funding Model for implementation at UCSC. The model should provide stability and predictability in graduate student support over a 5/2 year timeframe, and address specific plans and resources to support doctoral enrollments in conjunction with department/program goals and aspirations, given that there are important differences across disciplines in the desire and ability to sustainably grow doctoral enrollments.	CP/EVC, P&B in conjunction with Grad Div, academic divisions, CPB and GC
Highest	Build the graduate funding model into the proposed Academic Resource Model (if adopted), in which support of doctoral/MFA students is a driver of baseline ASE funding allocations to divisions and programs, with undergraduate and large master's program enrollments as secondary drivers.	CP/EVC, P&B, Grad Div, academic divisions, in consultation with CPB and GC
Highest	Utilize the JWG framework of Graduate Division data to conduct a cost-benefit analysis to determine whether increased fellowship support for doctoral/MFA students would reduce time to degree and offset the increased costs of support.	P&B, Grad Div, in consultation with CPB and GC
Highest	Continue analysis of graduate student support needs, and ways the campus can better meet these, including possibly through enhanced fellowship support. This should be reassessed regularly.	P&B, Grad Div, CPB, GC
Highest	Increase Graduate Division staffing resources to provide much needed support for students and the graduate enterprise more broadly, including programming to support significantly increased efforts to recruit, retain, and graduate demographically diverse students, enhance professional development opportunities for students across all disciplines, and improve student success.	CP/EVC
High	Institute clear and comprehensive faculty workload policies for all departments and divisions, appropriate for the discipline, that appropriately recognize and value efforts associated with mentoring and advising graduate students.	VPAA/APO, academic divisions, departments, and Senate committees
High	Establish a committee to investigate whether demographic and disciplinary inequities exist in faculty workload associated with graduate advising and its recognition in personnel actions.	VPAA/APO, in consultation with academic divisions, departments, and Senate committees

High	Provide incentives for including more graduate student support in extramural funding proposals, and from philanthropic sources. These may include enhanced institutional support for grant/proposal writing; development of a cost-sharing program for faculty supporting graduate students as GSRs on extramural funding, enhanced prioritization of graduate support by University Relations, etc.	Chancellor/CPEVC/OR/UR/P&B
High	Evaluate the effectiveness of the Master's Incentive Program (MIP) in strengthening graduate education, including its role in supporting or growing doctoral and/or master's programs. More broadly, evaluate the role that master's programs should play in the graduate education ecosystem, including whether and how to grow master's programs and where interest and capacity exists.	CPB, GC, Grad Div, academic divisions, P&B
High	Institutionalize and regularize updating the data framework annually on: revenues generated by and spent in support of graduate students; graduate student level data on time to degree and funding support, so as to inform strategic and tactical decisions to strengthen graduate education.	P&B and Grad Div, in consultation with CPB and GC
Medium	Develop enhanced professionalization programming within the Graduate Division, academic divisions, and departments to better serve professional development needs of graduate students.	Grad Div, in conjunction with academic divisions, departments, and Career Center
Medium	Develop policies that better integrate and recognize LSOEs and Research Faculty as graduate student mentors/advisors and valued contributors to graduate education.	VPAA/APO in conjunction with divisions, departments and Senate committees

1. Introduction

Maintaining and enhancing UCSC's status as an outstanding public research university, and its ability to attract top faculty and provide the most stimulating undergraduate educational experience all depend upon strong and vibrant graduate programs. The Joint-Senate Administration Working Group on Graduate Education (JWG) was created following consultation between Graduate Council and the Chancellor and CP/EVC, and broadly charged with conducting a revenue analysis of graduate funding in order to assess the totality of revenues generated by and spent on graduate students and the ways in which these are currently used. These analyses were to inform JWG recommendations to stabilize and strengthen the graduate enterprise in the near and long term, centering on diversity, broadly defined (see the full charge at the end of the report, Appendix A). The JWG addressed the charge by conducting a comprehensive analysis of revenues generated by graduate student enrollments and funds spent supporting graduate students, conducting a faculty graduate education survey, performing analysis of the 5/2 year doctoral/MFA support guarantee, assessing alternative models for supporting graduate students, and comparing Graduate Division staffing across the UC campuses. Here, the term "graduate enterprise" is used to encompass the totality of revenues generated by graduate student enrollments, how those funds are spent supporting graduate students, the instructional roles played by graduate students, and the faculty advising and co-curricular aspects of graduate education.

The JWG conducted its work in three phases. In Phase I, the JWG developed principles, listed below, to guide the JWG's efforts, constructed a comprehensive dataset framework capturing the totality of revenues and expenditures related to graduate student support, broken down by academic division for 2018-2019, and identified key challenges that the campus and graduate enterprise will need to face moving forward in order to meet the 5 year funding guarantee. In Phase II, the revenue analysis was expanded to encompass 3 years (2016-17, 2017-18, 2018-19), and a Faculty Graduate Education Survey (FGES) was developed (see Appendix B) to assess faculty's perspectives on i) the importance of advising/mentoring graduate students in their profession and the workload associated with those efforts, ii) the roles of Academic Student Employee (ASE) appointments to support graduate students and their cost of attendance, and iii) the importance of demographic and disciplinary diversity in the graduate enterprise. The JWG's work concluded in Phase III in fall 2020 and early winter 2021 with further expansion of the revenue analysis of graduate student funding to the department/program level, the administration of the Faculty Graduate Education Survey, collection/analysis of Graduate Division data on graduate student support practices over the past decade, financial modeling of the 5/2 year doctoral/MFA student funding guarantee, analysis of graduate division staffing across the UC, and development of an alternative graduate student cohort funding model. Some aspects of the JWG's work remains incomplete, such as a comprehensive analysis of the Master's Incentive Fund Program (MIP) and the role of master's enrollments in the graduate education ecosystem, as well as a comprehensive analyses of Graduate Division student enrollment and support data, with a recommendation that those efforts continue through appropriate Senate and Administration collaboration.

It was apparent at the onset of JWG's work that there existed varying degrees of knowledge among group members about how the campus supports graduate education at UCSC, including: the recent history and context shaping the graduate growth initiative; how state and tuition revenues are generated; how the rebenching funding model affects graduate enrollment revenues; what UCSC is obliged to regarding rebenching and graduate growth enrollment numbers; and how revenues flow to UCSC and are used to support graduate students.

2. Guiding Principles and Approach

The JWG reviewed previous reports (Senate and Administrative) related to graduate education, including two systemwide statements and reports, which set out principles and goals related to the graduate

enterprise.[120] The JWG developed a set of principles to guide current efforts. These are to:

- **Strengthen the Graduate Enterprise:** UCSC's graduate enterprise is integral to our teaching, research, and service mission and a vital component of our R1 and AAU statuses. We are thus committed to strong graduate programs and the overall strengthening of graduate education at UCSC.
- **Cultivate Research Excellence and Professional Development:** We favor an enhanced educational environment that supports the development of outstanding scholars and practitioners by creating outstanding research environments coupled with strong career-relevant professional development opportunities.
- **Advance Disciplinary, Faculty and Student Diversity:** We are committed to disciplinary and student diversity, knowing that human and planetary well-being, now and in the future, requires critical and creative knowledge from diverse sources. To this end, we are committed to ensuring that our graduate programs attract, support, retain, and graduate a diverse body of students.
- **Provide an Environment for Student Success & Welfare:** A climate that engenders belonging and dignity is central to the mission of UC and is critical to student success and welfare. We are committed to a strong and healthy graduate education institution that provides students the time, financial support, and creative environment they need to execute their studies and research successfully.

3. Revenue Analysis Process and Overview

A significant proportion of the JWG's effort was spent on conducting a comprehensive revenue analysis of how UCSC supports graduate students. One key finding is that prior to JWG's efforts there were reporting mechanisms for analyzing graduate student financial support expenses, but no means to readily assemble necessary data for a comprehensive revenue analysis of graduate support practices. This circumstance has likely affected, if not precluded, the comprehensive analysis of graduate support that should serve as a basis for major decision making. As each of these pools of data were obtained in disaggregated form (i.e., multiple spreadsheets, and multiple worksheets per spreadsheet), the JWG developed a data management and analyses framework that integrated the revenues generated by (via enrollment and tuition) and spent supporting graduate students (including ASE employment, fellowships, and extramural sources). This data framework allowed for analysis across datasets that previously had been difficult if not impossible to achieve. JWG worked with the Office of Planning and Budget (P&B) to develop a programmed workflow to automate the generation of integrated datasets for subsequent years moving forward so as to facilitate the reporting process of this information.

3.1 Revenue and expense analysis of graduate student support

Revenue analysis of graduate student support was performed for three fiscal years (2016-17, 2017-18, 201819) using data acquired through Planning and Budget to determine and summarize: 1) revenue generated by graduate student enrollments through core state enrollment and tuition; and 2) money spent supporting graduate students through ASEs, GSRs, and fellowships, etc. The major revenue sources that are spent to support graduate students are: 1) core state enrollment and tuition revenues, which includes tuition and state enrollment-based revenue; 2) extramural revenues, which includes contracts, grants, gifts and endowments; and 3) other funding sources, which include sales and service, indirect cost recovery,

[120] Documents reviewed included: Joint Senate Administrative Task Force Report on Academic Structures (2013); Senate Executive Committee Guiding Principles for Graduate Growth (October 2014); Joint Senate Administrative Task Force on Graduate Growth Report and Recommendations (June 2015); Graduate Council Statement and Report on Strengthening and Growing Graduate Programs at UCSC (May 2017); Graduate Council Report on Growing and Sustaining Graduate Student Research (May 2019); Academic Council Re: UCPB Letter on Graduate Student Funding (April 2020); Report of the Joint Advisory Committee on Graduate Student Support (Attiyeh Report) (January 1991).

and student fees. Notably, the revenue data from P&B are based on graduate student FTE, and not individual students per se, and thus were not readily aligned with support of specific students. Therefore, the JWG also conducted analysis of data from the Graduate Division[121] on how students were actually supported over the course of their graduate career to determine: 1) what proportion of students have gone without any form of institutional support (i.e., self-funded or funded by external entities) during some portion of their graduate career; 2) what percentage of graduate students received full, partial, or no funding, by degree type (doctoral and master's), academic division and department; 3) actual time-to-degree by degree type, division and department; and 4) correlational analysis of the relationship between funding, funding-type and timeto-degree. This project revealed some important gaps in UCSC's data, such as funding external to UCSC that some graduate students are supported by, and grants such as Fulbright, SSRC, or support of international students from a student's country of origin, etc. Those analyses are ongoing and will be reported separately.

Core state enrollment-based revenue arises from state dollars that come to campus based on graduate student enrollments. State enrollment dollars are based on a per student amount ($7,623 in 2018-19), and a weighting factor based on student status (i.e., undergraduate, graduate, or professional). Undergraduates and master's students are weighted 1.0 (i.e., campus received $7,623 per enrollment in 2018-19), while doctoral students are weighted 2.5 ($19,058 per enrollment in 2018-19). These state-based revenues for student enrollments arose out of a budget allocation "rebenching" process implemented by the University of California Office of the President (UCOP) in 2012-13 that affected how state enrollment-based revenues flowed to UC campuses. The UCOP budget allocation rebenching process resulted in the allocation of $24.3M in one time funding to UCSC distributed over the 5 year transition period beginning in 2012-13, and ongoing doctoral student enrollment-based funding for 1,778 doctoral enrollments, which was equivalent to a 12% doctoral:undergraduate student enrollment ratio established at the start of the rebenching process. Notably, because of extensions of the rebenching process, UCSC continues to receive state enrollment-based funding for 1,778 doctoral students, even though actual doctoral enrollments have not reached this goal (doctoral enrollments were 1,420 as of end fall quarter 2020). The difference between the dollars UCSC receives for the 1,778 doctoral enrollments versus the dollars it would receive for actual doctoral enrollments constitute upfront "aspirational" dollars to support doctoral enrollment growth. In 2018-19, the amount of state enrollment-based funding UCSC received for the 441 "aspirational" doctoral enrollments (i.e., 1,778 - 1,337 actual) was $8.4M. One implication of continuing to receive state funding for more doctoral students than UCSC actually has is that increases in doctoral enrollments will not lead to additional state enrollment-based revenue until UCSC surpasses 1,778 doctoral enrollments. It is also possible that UCSC may lose future aspirational growth dollars if doctoral enrollments do not grow.

In 2018-19, **core state revenue** from doctoral enrollments (including aspirational) was $33.9M, based on 1,778 doctoral enrollments, a 2.5 weighting factor, and a per student FTE funding level of $7,623. State revenue from master's enrollment (397 student FTE) created $3M in revenue. Though state dollars from graduate enrollment have increased by 8% from 2014-15 ($31.3M) to 2018-19 ($36.9M), this increase did not occur because of doctoral enrollment growth, but rather because of increases in the state budget, which provided $7,038 per student FTE in 2014-15 and increased to $7,948 in 2019-20. By comparison, state revenue from undergraduate enrollment in 2018-19 (16,441 student FTE) resulted in $125M to UCSC. As a percentage of total state revenue from total student enrollments ($162M), state dollars

[121] Data obtained from the Graduate Division included: a 10 year longitudinal dataset (from 2010-2019) with data per student including anonymized ID, division, department, and degree type (PhD, DMA, MFA, MA, MS), year and quarter enrolled, enrollment status (full time, part time, in absentia, on leave), support level (full, partial, none), and type of support (TA, GSI, GSR, fellowship). The JWG worked with P&B to restructure these data into a single analyzable dataset, and to create a programmed workflow to make analysis semi-automated for the Graduate Division moving forward.

generated from undergraduate enrollments was 77% of UCSC's total student enrollment-based revenue, doctoral enrollments (1,778) generated 20.9%, and master's enrollments generated 1.8% of total student enrollment based revenue.

4. Key Accomplishments, Findings and Implications

4.1 Bird's eye view summary of revenue analysis

Revenue analysis was performed for three fiscal years (2016-17, 2017-18, 2018-19), which showed similar trends in revenues generated by graduate enrollments and spent on graduate students. In light of this similarity, and to simplify the presentation of findings, only data from the 2018-19 fiscal year are summarized here.

The primary total revenues generated through core state and tuition enrollments of UCSC graduate students in 2018-19 was $62M. For the same year the total amount spent supporting graduate students at UCSC was $71M. Of this $71M, $48.5M (68%) came from core state + tuition revenues, and $20.4M (29%) from extramural revenues, which included grants, contracts, endowments and gifts. The remaining $2.1M (3%) came from "other" funding sources such as sales & service, indirect cost recovery (ICR) and student fees. Notably, the costs associated with educating graduate students (e.g., costs of faculty, program and administrative staff, facilities, services, etc.) were not considered in this analysis.

Most of the graduate student support coming from **core state funds** was through ASE appointments (65% of core state/43% of total (core state + extramural + other) expenses), the majority of which were TAships (98% of ASE assignments). Other significant forms of core support came in the form of fellowships from the Graduate Division (19% of core state/13% of total) and core state-funded GSRs (13% of core/9% of total).

The majority of graduate student support from **extramural funds** (grants and gifts) came as GSRships (70% of extramural/20% of total), with the remainder through fellowships from academic divisions (16% of extramural/4.5% of total) or the Graduate Division (13% of extramural/3.7% of total).

The majority of graduate student support from **other** sources (indirect cost recovery, student fees, sales and service) came as GSRships (40% of "other"/ 1.2% of total), Graduate Division fellowships (26% of "other"/0.8% of total), and other fellowships (25% of "other/0.8% of total).

Implications. A bird's eye view of the revenue analysis shows that UCSC spends more supporting graduate students than is generated from their core state and tuition-based enrollment revenues, underscoring the importance of extramural revenues in supporting graduate students. It also highlights the need for continued advocacy for a state / higher education compact that values graduate education and the unique role of the UC in California's tripartite higher education system. Moreover, since graduate students appointed as ASEs generate no net tuition revenue (as the institution pays itself for their tuition), the difference between the cost of supporting/educating graduate students versus the revenue their enrollments generate is further exacerbated. Of course, one vitally important factor is that ASE appointments, which are a primary mechanism for supporting graduate students, are also critical for supporting the undergraduate teaching mission of the campus (see below), and hence play a major role in the campus' undergraduate revenue generation.

4.2 UCSC relies heavily on ASE appointments (especially TAships) to support doctoral/MFA students, especially in the Arts, Hum and SocSci divisions, where there are fewer opportunities for other forms of student support (fellowships, extramurally-funded GSRs, etc.).

A relatively large proportion (65%) of core state enrollment + tuition-based revenues spent supporting graduate students in 2018-19 were spent on graduate student ASEs (TAs, GSIs), the majority of which

were TAships. The question of whether this is appropriate depends on whether we as a campus view the primary role of ASE appointments as supporting undergraduate or graduate education, or a mix of both. The former (i.e., ASEs primarily supporting undergraduate education) implies that only 28% of the core state + tuition revenue generated by the graduate student enrollments was spent supporting graduate students (with the majority of this funding supporting the undergraduate enterprise). However, if ASE appointments are considered as the primary mechanism to support graduate students, then 78% was spent supporting graduate students (i.e., 48.5M of the $62M core revenues generated by graduate student enrollments + tuition) (see Figure 1). This reliance on TAships as a critical in support of undergraduate education and as the primary mechanism for supporting graduate students has several important implications. First, in some divisions it makes graduate students overly dependent upon TAships over the course of their graduate studies, and quite likely extends their time-to-degree. And second, it makes departments and divisions (some much more than others) unduly reliant on TA/GSI allocations that are not currently predictable over the 5 year guaranteed doctoral student support window.

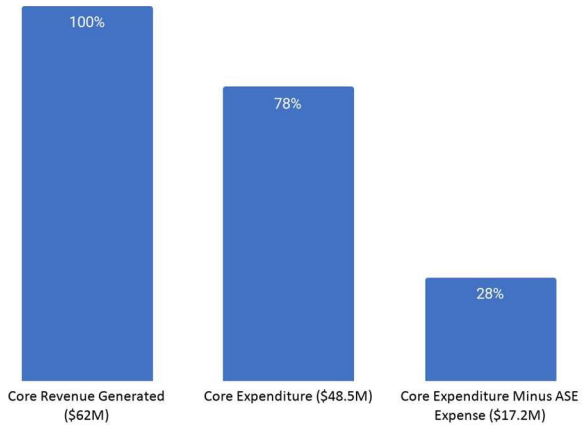

Figure 1. Percentage of total core state + tuition-based revenue generated by graduate student enrollments ($62M) that was spent supporting graduate students if ASE appointments are included ($48.5M, 78% of total core revenue), and if ASE appointments are excluded ($17.2M, 28%) for 2018-19.

Results from the Faculty Graduate Education Survey (FGES) suggest that if the two support cases represented above (78% vs 28%) represent philosophical extremes of the role of ASEs in university education, then UCSC has leaned too much towards treating ASEs as the primary mechanism to financially support graduate students. For example, while nearly two-thirds of all faculty respondents (63%) report that they typically advise students who serve as ASEs for two or three quarters/year, a majority (54%) of faculty stated that students should serve as an ASE for no more than one to two quarters/year, and a clear majority (73%) indicated that serving as an ASE for two or more quarters/year prolongs a student's time to degree.

The majority (67%) of all respondents stated that the typical time to degree for their doctoral students was 6 years or more, while only a quarter (23%) stated that the typical time to degree is 5 years or less[122]. BSOE was an exception to this, with a majority (55%) of BSOE respondents stating that the typical time to degree for their doctoral students was 5 years or less. This is corroborated by longitudinal analysis of data from that Graduate Division, which shows that from 2010-2019, only 37% of doctoral students finished in 5 years or less (see Table 1).

[122] Appendix D of the UCSC Academic Senate Manual lists normative (i.e., maximum) time to degree for doctoral students as 6 years for most doctoral programs, while four programs have an approved 7 year normative time to degree.

Table 1. Percent of doctoral students enrolled between 2010-2019 who earned their degree in less than 5 years, 5 years, or more than 5 years, by academic division.

Time to Degree (doctorates)	Arts (n=39)	BSOE (n=147)	Hum (n=56)	PBSci (n=292)	SocSci (n=151)	Grand Total (n=685)
< 5 years	15%	22%	11%	12%	9%	14%
5 years	18%	21%	21%	27%	17%	23%
> 5 years	67%	56%	68%	60%	75%	64%
Total	100%	100%	100%	100%	100%	100%
7 years or more	23%	14%	36%	7%	28%	16%

It is noteworthy that less than a quarter (23%) of all faculty respondents stated their doctoral students can finish within 5 years (ranging from 4% in Humanities to 55% in BSOE). But when asked to consider this same question under "ideal" conditions (i.e., fewer quarters spent as ASE, higher salary/stipends to meet cost of attendance needs), this increased substantially to a majority (59%) of all respondents stating that their doctoral students could finish within 5 years, with notable increases across all academic divisions (up to 40% in Arts and 84% in BSOE). Moreover, in a follow up open-ended question where respondents were asked to elaborate on the differences between their perceived ideal and current state conditions favoring 5 years or less time to degree, 79% of respondents providing relevant answers defined their ideal state as providing greater financial support for graduate students with commensurate reduced need to serve as an ASE as frequently. However, when respondents were asked about the overall level of TA support for courses that they teach, over half (58%) indicated that they receive insufficient TA support for courses they teach.

Implications. There are multiple factors that contribute to doctoral student time to degree, including program curricula and research needs, availability of research support (fellowships, GSRships, etc.), and the frequency that students serve as ASEs over their career - all of which vary across programs and disciplines. Since actual time to degree has significant implications for graduate student support that should be considered within the context of the 5 year doctoral student funding guarantee, the JWG recommends analyzing the cost of lowering barriers to degree completion relative to the benefit of graduating more doctoral students earlier and with an enhanced educational experience. This should be done in combination with expanded efforts to enhance extramural and fellowship funding to augment ASE sources of student support.

The FGES responses also raised somewhat of a conundrum between the heavy reliance on ASEs to support doctoral/MFA students, and the sentiment from a majority of faculty respondents across all divisions that students are serving as ASEs too often at the cost of prolonged time to degree, versus many faculty indicating that they do not receive sufficient TA support for their courses. This conundrum suggests a possible opportunity to strengthen both graduate and undergraduate education by creating a mix of alternative modes of instructional assistance that does not rely so heavily on doctoral/MFA student ASEs (e.g., doctoral student TAs, along with other forms of instructional support such as non-student tutors, readers, lecturers, as appropriate for the discipline), with the goal of reducing the number of ASE quarters a graduate student would serve over their career while at the same time increasing (or at least not diminishing) the level of instructional assistance to qualifying undergraduate courses. Possible strategies for achieving this goal are presented in the Alternative Funding Models section below.

4.3 A relatively modest amount of extramural funding is directed to supporting graduate students, suggesting there is capacity to grow support for graduate students through growth in extramural funding and associated Indirect Cost Recovery (ICR).

The JWG revenue analyses revealed that a relatively modest amount of extramural funding is directed to supporting graduate students ($20.4M in 2018-19), which is 29% of the total amount spent supporting graduate students, and 12% of total extramural funds brought to campus that year. Similarly, a seemingly low proportion of gifts and endowment-based extramural funding (15% of total extramural) was raised to support graduate students in 2018-19. Overall, nearly three quarters (70%) of extramural funding supporting graduate students was through GSRships, with the remainder through other divisional fellowships (16%), Graduate Division fellowships (13%), etc. Finally, of the extramural funding-based revenue spent supporting graduate students, 86% came from contracts and grants, while 15% came from gifts and endowments.

The amount of extramural funds spent supporting graduate students varied greatly across divisions, with PBSci and BSOE spending $11.2M and $5.8M respectively, and SocSci ($1.7M), Hum ($334K), and Arts ($160K) generating and spending considerably less. Even within PBSci and BSOE departments, there are large differences in extramural support for graduate students. Six departments supported their graduate students with approximately half of total funding (core state + extramural + other) coming from extramural sources: Molecular, Cell, and Developmental Biology (58%); Ecological & Evolutionary Biology (52%); Earth and Planetary Sciences (51%); Astronomy and Astrophysics (51%); Biomolecular Engineering (47%); and Electrical and Computer Engineering (43%). Three departments supported graduate students with at least 30% of funding coming from extramural sources: Microbiology and Environmental Toxicology (40%); Ocean Sciences (38%); and Chemistry & Biochemistry (31%). Six departments supported graduate students with at least 20% of funding coming from extramural sources: Environmental Studies (27%); Education (22%); Applied Math (21%); Computer Science and Engineering (21%); Computational Media (20%); and Sociology (20%).

According to the FGES, a majority of faculty stated they have and/or are interested in pursuing extramural funding, but there are barriers that require division specific solutions. Nearly all respondents in BSOE and PBSci have pursued federal or state grants, while a lower but still majority of respondents (>55%) in Arts/Hum/SocSci disciplines have done so. Approximately three quarters or more of Arts/Hum/SocSci respondents have pursued grants from foundations/non-profits. In general, a relatively small proportion of respondents across all divisions (<15%) have pursued endowments or gifts (excepting BSOE respondents, where nearly 60% have pursued corporate gifts). In combination with responses to the open ended question about what could be done to support increased efforts to pursue extramural funding (e.g., course relief, increased institutional assistance and support), these data suggest that greater institutional investments should be made to support the pursuit of more gifts and endowments, and increased extramural funding in general. Moreover, a majority of respondents across all divisions said they would increase their efforts to secure extramural funding that directly supports graduate students if they received what they considered appropriate campus support, such as matching funds from the campus for extramural funding raised for graduate student support, or availability of seed funds for developing early-stage ideas and/or writing proposals. Respondents also made clear that the high cost of supporting doctoral/MFA students was the predominant barrier to adding more graduate student support into their extramural funding efforts.

Only one third of respondents (31%) stated that campus support/recognition was adequate for their extramural funding efforts, and that providing teaching relief and greater divisional support would be most helpful in their efforts to secure more extramural funding. That said, whether deploying ~12% of extramural award dollars to support graduate students is reasonable as an institution-wide average represents a separate, difficult-to-address question. From the survey, faculty stated that more graduate support could be worked into proposals, but that there are barriers to doing this, chief among them being

the high cost of graduate students. This suggests that future increases in the cost of graduate student support could lead to proportional reductions in the number of students included in extramural proposals.

Implications. Together, these data suggest that there is capacity to grow support for graduate students through growth in extramural funding and associated Indirect Cost Recoveries (ICR), and by focusing on growing gifts and endowments overall by increasing fundraising efforts for graduate student support at all levels of the institution, including University Relations, Graduate Division, and the academic divisions. This capacity can be assessed and analyzed at both the divisional and department levels, as there is much variation in extramural funds raised between and within divisions. Despite those differences, there are opportunities for growth across divisions by addressing barriers associated with overall support for grant/proposal writing, and for graduate support within grants/proposals more specifically. Similarly, the relatively low proportion of gifts and endowment-based extramural funding (15% of total extramural) that supports graduate students suggests that there is an opportunity to more strategically focus on growing gifts and endowments overall by increasing fundraising efforts for graduate student support across the institution.

Within BSOE, PBSci, and SocSci divisions, there are notable differences between departments in the extent to which they rely upon core state vs extramural funding sources to support graduate students. These differences suggest that follow up analyses at the division/department level should explore the underlying reasons for this as a means to normalize these sources of graduate support across departments to the extent possible - such as possibly targeting institutional and divisional resources and support to increase extramural funds for graduate students in the departments with the greatest potential to derive benefits. The relatively low use of extramural funding sources to support graduate students in the Arts and Humanities suggests that those departments might benefit from greater institutional support, enhanced fund-raising efforts, and recognition of faculty workload associated with mentoring/advising graduate students.

4.4 Graduate students are integral to the success of faculty, UCSC as a public R1 research institution, and to providing the next generation of California's innovators, leaders, and academicians, but faculty perspectives differ on the extent that advising/mentoring graduate students is adequately recognized in their workload expectations.

The vast majority of faculty across academic divisions felt that being able to work with doctoral/MFA students is important to them (in total, 89% agree/strongly agree). However, the extent that faculty's research is seen as advanced by having access to doctoral/MFA students notably varied across academic divisions. For example, in BSOE, PBSci, and SocSci 100%, 85%, 67% of faculty, respectively, agree/strongly agree that advising doctoral/MFA students is an important factor in advancing their research, whereas in Arts & Humanities only 40% agree/strongly agree. Conversely, faculty in the Arts and Humanities divisions were more likely to respond that advising/mentoring doctoral/MFA students takes time away from their research (e.g., for Humanities and Arts respondents, 53 - 63% agreed/strongly agreed, whereas 12, 19, and 38% agreed/strongly agreed in BSOE, PBSci and SocSci, respectively). Moreover, underrepresented minority (URM) faculty in Hum/SocSci/Arts are less likely to agree/strongly agree than Caucasian and "all other" demographics that having access to doctoral/MFA students is an important factor in advancing their research (i.e., 36% compared to 57% and 50%, respectively)[123]. Similarly, female URM faculty in the Hum/SocSci/Arts are least likely of all groups to agree/strongly agree (only 29%) that having access to doctoral/MFA students is an important factor in advancing their

[123] The FGES allowed respondents to self-identify race/ethnicity and gender via open-ended questions. There were a variety of responses that reflected the diversity of respondents' racial/ethnic self-understandings. In order to create categories that would allow analysis of patterns, if any existed, the JWG interpreted the responses and reported the following categories: Caucasian, URM, and "all others" (See Appendix E for details). For gender, the majority of responses were female, male and no answer.

research. In general, these percentages are higher and the differences between demographic groups are smaller in BSOE/PBSci.

Conversely, faculty in the Arts, Humanities, and Social Sciences divisions were more likely to respond that advising/mentoring doctoral/MFA students takes time away from their research (e.g., for Humanities and Arts respondents, 53 - 63% agreed/strongly agreed, in Social Sciences 38% agreed/strongly agreed, whereas only 12 - 19% agreed/strongly agreed in BSOE and PBSci). When looking at the percent of faculty who strongly agree (as opposed to agree/strongly agree), important demographic differences emerge: URM in Hum/SocSci/Arts are more likely to strongly agree that advising/mentoring doctoral/MFA students takes time away from their research (32%, compared to a campus total of 17%). Female URM in Hum/SocSci/Arts are also most likely of all groups to strongly agree on this question (43%, compared to a campus average of 17%).

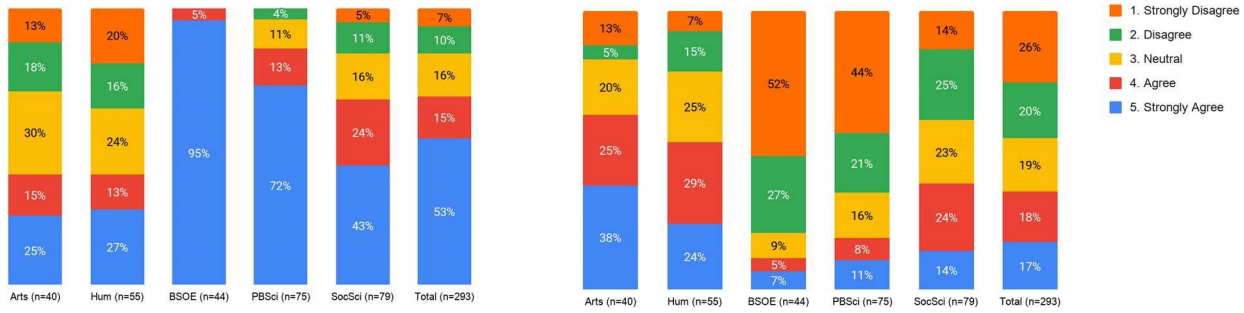

Figure 2. Left panel, proportion of faculty responses to the question "Having access to doctoral/MFA students is an important factor in my research". Right panel, responses to question "At present, advising/mentoring doctoral/MFA students takes time AWAY from my research".

Moreover, many faculty do not think that their efforts mentoring/advising graduate students are adequately valued or recognized in the personnel merit review process, especially for faculty in the Arts, Humanities, and SocSci divisions. While nearly 60% of respondents agreed/strongly agreed that their work advising graduate students is adequately recognized by their department/program in their personnel reviews, this dropped off sharply with the stages of review beyond the department (38% at the divisional review stage, 29% at the CAP review stage). There were also notable divisional/disciplinary and gender-based differences. For example, 53 - 68% of respondents in BSOE, Humanities, PBSci, and SocSci, but only 35% of respondents in Arts agreed/strongly agreed that their graduate student mentoring efforts were adequately recognized by their home department. Moreover, female faculty respondents are ~20% less likely than their male counterparts to state their work advising graduate students has been adequately recognized and valued in their personnel reviews by their home department (i.e., 49% of female versus 67% of male respondents), a disparity that was slightly greater in Arts, Humanities, and SocSci versus BSOE and PBSci. URM faculty are more likely to disagree/strongly disagree that their work advising/mentoring graduate students is adequately recognized and valued as part of their department/program teaching workload (48% URM compared to 37% total). Lastly, there are perceived disparities with unrecognized mentoring. For example, female and male URM faculty are more likely to state they do professional development mentoring (94% and 90% respectively, compared to a 75% campus total). Female faculty are more likely to state they do "other kinds" of mentoring (e.g., personal mentoring), with female URM faculty being the most likely of all groups (82% vs 72% campus total). These responses illustrate a continuing perception among faculty that the workload advising graduate students, the institutional expectation that faculty should be engaged with and contribute to graduate education, and the perception of institutional reward structures are not sufficiently aligned.

Implications. The FGES suggests that the extent to which mentoring/advising students actually advances or hinders a faculty's research might be affected by a faculty's discipline, gender, and race/ethnicity. This interplay of discipline, gender, and race/ethnicity with faculty workload should be carefully considered when establishing mentor/advisor workload expectations. Further, the perception of faculty that their graduate advising efforts are not sufficiently recognized in their personnel reviews - a perception that is heightened among female and female URM faculty, needs to be addressed at all levels of the institution. If they do not already exist, all departments/programs and academic divisions should be mandated to develop clear and comprehensive faculty workload policies that appropriately recognize and value workload associated with graduate student mentoring and advising, and graduate education more broadly, on a par with undergraduate education, formal classroom teaching, etc., as appropriate for the discipline. In addition, the JWG recommends a study that examines the interplay of discipline, gender and race/ethnicity on workload and faculty advancement.

4.5 The 5/2 year doctoral/MFA student guarantee is feasible and fits within our current funding envelope, so long as supporting doctoral/MFA students is prioritized over master's. However, current practices for funding graduate students are not sufficiently predictable to support planning for the 5 year guaranteed support horizon - thus, an alternative graduate student funding model is needed.

In winter 2020, the campus announced a 5 year funding guarantee for doctoral students (2 years for MFA), effective fall 2020. The FGES shows that this recently enacted initiative is an important step in the right direction that will help strengthen the graduate enterprise. It was also clear that most faculty respondents (75%) believe UCSC should provide all of a doctoral/MFA student's cost-of-attendance. Most faculty (65%) also believe UCSC should provide at least some support for MA/MS students (13% stated full support, 15% most, and 37% partial support). However, many faculty (42%) also believe that doctoral/MFA students are partly obligated to meet some of their cost-of-attendance needs as an opportunity cost for the training they receive in earning a higher degree, ranging from 29% in Hum to 54% in SocSci (see Figure 3 below).

For 2020-21 the projected total cost of supporting the 1,202 doctoral/MFA students eligible for guaranteed funding (including the new $2,500 housing fellowship supplement) is $51.5M, or $42.8K per eligible student.[124] To put that number in context, $51.5M is $19.5M less than the $71M spent supporting all graduate students (doctoral, MFA, and master's) in 2018-19, but $3M more than total core state + tuition-based revenues ($48.5M) spent supporting graduate students in that same year, indicating that core state + tuition graduate enrollment-based revenues alone will not be sufficient to meet the 5/2 year funding guarantee for doctoral/MFA students. However, if all sources of revenues used to support doctoral/MFA students are considered at their proportional contribution based on analysis of 2018-19 data (i.e., 68% from core, 29% from extramural, etc.), then $35.5M of the needed $51.5M (68% of $51.5M) would come from core state revenue funds, and $14.5M from extramural funding (29% of $51.5M).

This shows that the amount of core state + tuition enrollment-based funds needed to meet the 5/2 year funding obligation for doctoral/MFA students is less than what was actually spent supporting all graduate students, and that current practices for supporting doctoral/MFA students are able to meet the 5/2 year funding obligation moving forward, if supporting doctoral/MFA students remains prioritized over supporting master's students. This is, in part, because extramural funding sources play an important role in supporting doctoral students, and because undergraduate instructional needs require more TAs/GSIs than needed to meet the 5 year guarantee. In some cases master's students, or undergraduate or non-student course assistants, have filled this need. For example in 2018-19, 28% of full time master's students were fully funded, in many cases by serving as ASEs (see Table 3).

[124] Based on 3 quarters of TAship plus tuition and fees. In 2020-21, the baseline salary for ASEs is $22,569; the tuition/benefits/GSHIP for CA residents is $17,808.

Table 2. Percentage of doctoral students fully or partially funded by year from UCSC funds.

Doctoral Student Support	2016-17	2017-18	2018-19	2019-20
# Doc students enrolled (3 quarter average)	1282	1333	1382	1429
Fully funded	874	914	1001	1075
% total enrolled fully funded	68%	69%	72%	75%
# Full time enrolled (excludes in absentia)	1198	1251	1286	1336
Full time enrolled fully funded	851	883	971	1036
% of full time enrolled who are fully funded	71%	71%	75%	78%
Part time enrolled	46	38	39	40
Part time fully funded	4	5	5	7
% part time, fully funded	8%	14%	14%	17%

Table 3. Percentage of master's students fully or partially funded by year from UCSC funds.

Master's Student Support	2016-17	2017-18	2018-19	2019-20
Total master's Student bodies enrolled	444	470	441	454
Fully funded	86	97	115	120
% total enrolled fully funded	19%	21%	26%	26%
# Full time enrolled (excludes in absentia)	421	440	415	426
Full time enrolled fully funded	85	96	115	112
% of full time enrolled who are fully funded	20%	22%	28%	26%

Nevertheless, current graduate student support practices, which operate on annual or semi-annual timeframes at the divisional and program level, do not provide sufficient predictability for planning graduate student support over the 5 year guarantee window, nor do they factor in possible graduate enrollment growth. Also, the normative (i.e., maximum) time to degree for the vast majority of doctoral programs is 6 years (four programs have normative times of 7 years)[125] - something that should also be taken into account in doctoral student funding models. It is also noteworthy that our current system for allocating ASE FTE to divisions, and disbursement of ASEs to programs by divisional deans, is based solely on numbers of undergraduate enrollments within divisions/programs. Hence, undergraduate enrollment fluctuations within divisions and programs can directly impact the amount of ASE-based graduate support available to a program, and jeopardize the ability of programs to fulfill the 5 year guarantee with sufficient predictability.

For comparison, the Graduate Division block fellowship allocations to programs, which are used to make first year funding offers to new doctoral/MFA students and support continuing students, are based primarily on a program's 3 year average doctoral student enrollments. Recently, the block fellowship amount across the campus equated to about $4,800 per doctoral student per year. Support of graduate students through GSR appointments can, of course, not only depend on faculty extramural funding

[125] UCSC Academic Senate Manual, Appendix D.

success, but also hinge on variable federal and state research support opportunities. In order for programs to plan their funding packages for doctoral students over the 5 year guaranteed support window with reasonable confidence, a greater degree of stability of both ASE and fellowship allocations to programs is needed. Such multi-year central funding guarantees to programs were instituted almost two decades ago at UC Riverside with their "cohort" funding system. In this system, the institution guarantees a total amount of funding over the 5 (or 6) year career of a student (discussed more fully in section 4.6). If UCSC adopted a similar graduate student funding model to meet the 5 year funding guarantee, as we propose, our current level of Graduate Division block fellowship funding would require $24,000/student over 5 years (i.e., 5 years x $4,800/year). A more straightforward but modestly more expensive approach might be to increase this amount to two quarters of in-state fellowship support over the duration of an average student's career which, if equivalent to a TAship, would be ~$27,000 over 5-6 years. We believe that such a system, with both guaranteed levels of fellowship funding, and long-term floors on ASE funding to programs, would allow campus programs to not only plan their financial support to match the 5 year guarantee, but also to tailor their support packages so that a subset of students could, for example, receive fellowship support later in their graduate careers to support timely degree completion.

One possible vision of such a cohort system might:

1) Require that support of doctoral/MFA students be a driver of baseline ASE funding allocations to divisions and programs. For example, graduate programs could be allocated a minimum of 1 TAship per year per eligible doctoral/MFA student. Remaining centrally-funded TAships could continue to be allocated based on undergraduate and large master's program enrollments to meet curricular needs (or, be allocated by whatever method is determined for undergraduate courses should we adopt a new Academic Resource Model).
2) Include within the cohort funding model for the 5 year guarantee duration at least two fellowship quarters from the block allocation per eligible doctoral student (support equivalent to a TAship with stipend and fees), that could be deployed to support the student beyond their first year as they progress towards their qualifying exam and dissertation. This would serve to both strengthen graduate education overall, and would likely also reduce time to degree in many programs. We recognize, from a financial perspective, that the campus might need to phase in such a program over several years.
3) For some programs/divisions, additional non-ASE-based support could be garnered for doctoral students through either return funds from master's enrollments (as with the current MIP program), or for those with large undergraduate teaching loads, non-student employees/lecturers could be deployed to meet some instructional assistance needs, thus freeing up support that would have been expended on tuition/fees. Deployment of this type of revenue-generating mechanisms would be enabled by enhanced stability of ASE allocations.

Implications. The funding needed to meet the campus' 5/2 year doctoral/MFA funding guarantee is within the envelope of resources that the campus already spends supporting graduate students, and thus is readily achievable in the current fiscal environment. Several qualifiers to this statement are that 1) many graduate students, especially in BSOE and PBSci, are supported as GSRs at a higher dollar level than would be provided by a TA appointment, and 2) the number of graduate students currently eligible for the 5 year guarantee (1,202 in 2020-21) is less than the actual number of graduate students that are actually receiving support.

One important aspect of the 5 year guarantee is that it suggests, in concept, a potential framework to plan for and parameterize the cost of supporting doctoral/MFA students through the majority of their careers, and may provide the foundation for developing alternative graduate student funding models to achieve greater funding stability and predictability. To optimize divisional and programmatic planning in conjunction with the 5 year guarantee, we recommend that the central funding (ASEs and Graduate

Division block) for doctoral/MFA students be stabilized and rendered more predictable over the 5 year period over which groups of students are covered by the guarantee. A modified version of UCR's Cohort Funding System, allotting a designated amount of fellowship support over the entire duration of a student cohort, and guaranteeing a base level of ASE support per doctoral/MFA student each year appears the most straightforward way of achieving a funding model that matches the 5 year guarantee commitment. This possibility is discussed further in Section 4.6.

4.6 Alternative Funding Models: The Cohort Doctoral/MFA Funding Model as a Possibility for UCSC

A Brief Description of the Cohort Model. There is one alternate model to the standard block/TA allocation algorithm that has been deployed within the University of California system, and whose intent/logistics match well with our new 5 year guarantee. UC Riverside has, since 2001-02, deployed the Cohort Graduate Funding Model. This involves funding sources being tied to an entering cohort (class) of doctoral students – these funding sources include central funds, ASEs, GSRs, and fellowships. The central administration allocates a designated amount of central funds to an enrolled class (cohort) of students, with the amount allocated per cohort being determined by the number of entering doctoral students in the cohort in a given year. The Graduate Dean works closely with each doctoral program to 1) establish the number of incoming students that will make up the cohort, and 2) map out funding sources (central funds, ASE, GSRs, etc.) to support the incoming cohort over its 6 year normative time to degree. The central funding can, in concept, be expended by the program on students within the cohort at any time over the course of the cohort's existence (up to 6 years, for most programs at UCR). In practice, however, much of the expenditures of central funding by programs occurs in the first 2 years, and the program is responsible for meeting the cohort's funding needs thereafter (e.g., through ASEs, GSRs, and fellowships). As part of the Cohort Model, the Graduate Division works interactively with each program to determine admissions offers and targets, and has oversight over cohort funding expenditures. Another key feature of the Cohort Funding Model is that longer term commitments of other major sources of doctoral student support (ASEs, GSRs) are planned and made at the program and institutional level to provide predictable funding for a cohort over its 6 year normative time to degree.

Comparison with the Block Allocation Funding Model. In comparison, the Block Allocation Funding Model at UCSC has, since the early 2000's, allocated an annual budget to each program via a formula that is currently based on two factors, 1) the 3 year average of their doctoral enrollments (weighted at ~80%), and 2) the program's 3 year average of doctoral degrees awarded (weighted ~20%). At UCSC, each program declares how much of their block they plan to spend on incoming students versus how much they will reserve for their continuing students. The incoming student allocation is deployed in conjunction with an admissions multiplier (the over-offer ratio) to construct admissions offers. When programs experience lower than expected acceptances (i.e., shortfalls in acceptances), their unexpended block allocation for incoming students is, in concept at least, swept back to the Graduate Division to fund (i.e., back-fill) programs that exceeded their admissions targets and that had, based on their larger-than-expected class, an over-commitment of their block. At UCSC, the Block Allocation Model does allow some unused funding to be retained by the program between years, since 10% of the block (more by request) is allowed to be carried forward by the program between years (this carryforward capability is only occasionally deployed by programs). Expenditures of the Block Allocation are approved by the Graduate Division, and the boundaries of what the block can be spent on are frequently an area of discussion, and at times contention, between the Graduate Division and programs.

Notably, other sources of doctoral student support (ASEs, GSRs, etc.) are managed and allocated via entirely separate and uncoordinated annual (and, in some cases, quarter by quarter) processes to the Block Allocation Model.

To summarize, relative features of the Cohort and Block Models include:

- The Cohort Model has long-term predictability; programs know precisely what the center will provide for the normative-time-to-degree of an incoming doctoral class, and what the program commitments need to be associated with other sources of funding support (ASEs, GSRs, etc.).
- The Cohort Model provides programs with the flexibility to pursue multi-year planning for each class, with central funds prospectively being deployed at any stage during the cohort's normative time. For example, centrally funded quarters designed to assist with thesis completion could be planned years in advance.
- Both the Block and Cohort Models, in tandem with the 5 year guarantee, require a level of commitment to (or at least confidence in) funding levels from other sources (ASE, GSRs, external fellowships) in the out-years.
- The Block Allocation can be expended by programs in ways other than sensu stricto fellowships and tuition/fees (e.g., ad hoc fellowships that might support research or travel expenses), though whether this practice should continue is a point of discussion.
- The Block Model has greater administrative flexibility, in that it can be toggled upwards or downwards on an annual basis, whereas the Cohort Model delivers a commitment that the central funding complement for a cohort will be delivered at the discretion of the program.

What Changes Would Facilitate Adoption of the Cohort Model in Tandem with the 5/2 Year Guarantee? UCSC doctoral/MFA students are highly dependent on ASE employment and, as internally derived funding, this means of support could be committed over a multi-year timeframe (research funds/GSRs are, by their nature, somewhat predictable but not guarantee-able). Indeed, 65% of the core funding supporting doctoral students is derived from ASE (TA/GSI) employment. The bulk of these resources are currently allocated to academic divisions based on undergraduate enrollments, and in turn allocated from divisions to programs. Thus, ASE employment opportunities are the primary component of graduate student support funding within the 5 year guarantee, and these are currently subject to both annual fluctuations and long-term trends in undergraduate enrollments. Hence, the long-term ability of programs to engage in realistic long-term financial planning for their cohort hinges on being confident in at least a minimum level of support from ASE/teaching support allocations over time-frames that approach normative times to degree. A possibility for UCSC, driven by the recognition that the teaching support allocation has a tandem role in both instruction and in graduate student support, and that some proportion of funds supporting ASEs comes from graduate student enrollment-based revenues, is that a minimum base level of teaching support (e.g., ASE funding) for a program could be defined based on doctoral student enrollments in the program, with the balance of the ASE allocation being determined by undergraduate (and possibly master's) enrollments.

Such a guaranteed minimum level of teaching support would generate a mechanism for programs to enhance their level of graduate support through internal prioritizations. Specifically, if teaching support represents an allocated budget for the program to flexibly support its teaching mission, a program could prioritize other creative means to provide instructional support for some classes. Graduate programs that are not affiliated with undergraduate programs or have limited undergraduate course offerings may require alternate funding allocation mechanisms to ensure that their base-level of resources is sufficient for their long-term graduate support needs. Currently, such programs rely on semi-formal understandings with other programs on TA availability, and/or on their students proactively seeking out other ASE opportunities for which they are qualified. If a Cohort Model is adopted, stable base-level funding for such programs might be leveraged by memoranda of understanding with programs or divisions to guarantee a base-level teaching support budget for their graduate students.

Implications: A plan should be developed to implement a cohort funding model at UCSC. The principal challenges for such a plan are: (1) developing 5 year central funding commitments, and (2) establishing baseline long-term ASE commitments to programs that allow planning for a 5 year cohort.

4.7 Graduate Student Support and Cost of Attendance

Issues surrounding graduate student support, both in absolute levels of support per quarter and number of quarters of support over a student's graduate career, have received substantial attention across the campus (and in fact UC system-wide) over the past several years. An important point of consideration is "what is UCSC's obligation to meet the cost of attendance needs of graduate students?" While this question is partly addressed with the implementation of the 5/2 year doctoral/MFA student guaranteed funding policy, the level of guaranteed support does not fully meet the cost of attendance needs of students. The FGES responses show that the vast majority of faculty (87%) stated that the campus should provide higher levels of financial support to our doctoral/MFA students. Further, most faculty felt that what students receive is not sufficient in the Santa Cruz housing market, disproportionately and negatively impacting underrepresented students and the campus' efforts to increase graduate student diversity. In particular, when asked in principle what level of support UCSC is obligated to provide doctoral students (i.e., full, partial, etc.), three quarters (75%) of all respondents stated UCSC should, in principle, provide full support of a doctoral student's cost of attendance. However, when asked a follow-up question about the doctoral student's obligation to financially support their own cost of attendance, with the stated assumption that earning a graduate degree provides opportunity to the student, a little more than half (57%) of all respondents stated "none", 34% stated "partial," and 8% said "most" or "full."

When asked about trade-offs between supporting doctoral students at a higher level and admitting fewer, the same, or more students, only 28% of respondents would trade off higher levels of support with admitting fewer students. In other words, respondents favored admitting the same number or more students, while also supporting them at a higher level. In both cases, there are significant financial implications to the campus and faculty supporting students as GSRs.

If UCSC were to increase its annual housing fellowship supplement, say to $4,500, $6,750, $9,000 or to $11,250, it would cost an additional $2.4M, $5.1M, $7.8M and $10.5M, respectively, given our current student cadre. In lieu of a simple enhancement of the housing fellowship supplement, making summer support more widely available for graduate students would also generate a more fiscally viable annual fellowship for students. While summer support via GSRs is relatively common in the STEM fields that generate significant extramural funding to support graduate students, it is more challenging to access such support in other divisions. In this regard, the recent growth of summer session (for which predicting the build-out enrollments is beyond the scope of this report) has provided additional support for a subset of our students.

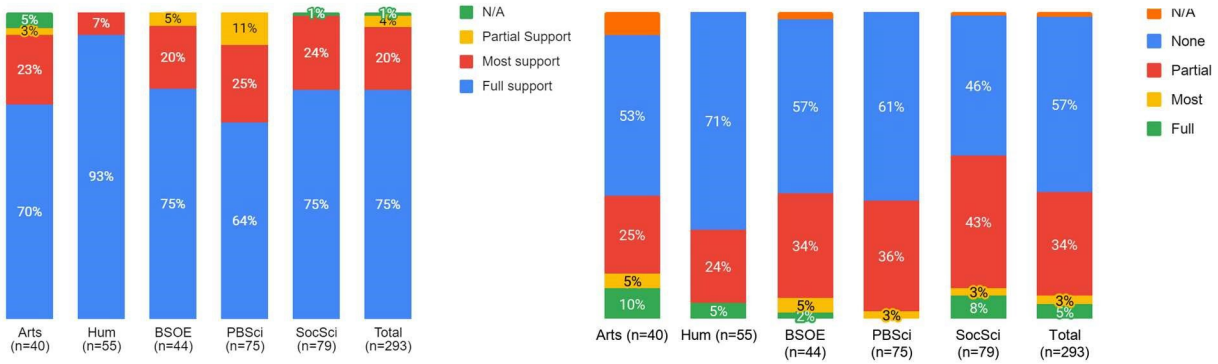

Figure 3. Left panel, proportion of faculty responses to the question "In principle, what do you think are UCSC's obligations to financially supporting doctoral students' cost-of-attendance in your discipline?" Right panel, faculty responses to question "Assuming that earning a doctoral degree provides opportunity to the student, what do you think students' obligations are to financially support their own cost-of-attendance needs in your discipline?"

Implications. Most faculty (87%) believe that UCSC should be providing higher levels of financial support per doctoral student than we do at present, and most faculty (75%) also believe that UCSC is in principle obliged to provide full financial support for doctoral/MFA students in their discipline. However, these responses also display important divisional differences in how respondents view the trade-offs between the number of student admits and the levels of student support, suggesting that approaches for balancing these trade-offs should emerge, at least in part, out of programs and academic divisions.

Collectively the survey shows that the recently enacted policy to provide 5/2 years of guaranteed support to doctoral/MFA students is an important step in the right direction that will help strengthen the graduate enterprise. While most faculty respondents feel UCSC should provide much of a doctoral/MFA student's cost-of-attendance, and at least some support for MA/MS students, there is not a consensus on whether the support levels should necessarily match the cost-of-attendance needs. It may also be considered that the training and opportunity benefits associated with earning a graduate degree are likely of long-term financial benefit to the student, partly justifying the student's cost-of-attendance as an opportunity cost. In addition, there is a clear majority sentiment among faculty respondents that doctoral/MFA students should be provided higher levels of support than they currently receive, though only 28% of respondents would trade off higher levels of support with fewer admitted students. In other words, respondents favored admitting the same or larger numbers of students, while also supporting them at a higher level.

4.8 Faculty perspectives on graduate student training, professional development, and career competitiveness

A series of questions were asked to gain perspective on how faculty respondents felt about whether graduate students in their programs were receiving appropriate training to be competitive for various career paths post-graduation. The vast majority of respondents indicated that their graduates are competitive for academic or professional jobs. Faculty in the Arts (60%) and PBSci (61%) were somewhat more likely to state that doctoral graduates are competitive for tenure track jobs in academia, compared to respondents in the other divisions (Hum 40%, BSOE 50%, SocSci 56%). Faculty respondents in BSOE (98%) and PBSci (93%) were most likely to state that graduates were competitive for applied/professional jobs in their field of discipline, compared to the other divisions (Arts 60%, Hum 64%, and SocSci 77%).

Complementing the above responses, one quarter of all faculty respondents (27%) agree/strongly agree that their department/program has an ethical obligation to train their doctoral/MFA students to be competitive for tenure-track academic jobs over other types of career paths, with faculty in the Arts (43%) and Humanities (34%) being more likely to agree/strongly agree. However, a slightly larger proportion of respondents (36%), especially faculty in BSOE and PBSci (52% each), disagree/strongly disagree with that statement. Regarding MA/MS graduates, BSOE (especially) and PBSci respondents are much more likely to claim that MA/MS graduates from their programs have competitive opportunities in professional jobs outside of academia, including applied/professional jobs in their disciplinary field (BSOE 93%, PBSci 59%), and professional jobs more broadly (BSOE 77%, PBSci 59%), compared to the other academic divisions (<40%).

Implications. Collectively, these responses suggest that a majority of faculty believe their students are more likely to be hired for professional versus tenure track academic jobs, underscoring the need and importance of professional development programming across institutional levels (departments, divisions, etc.).

4.9 The UCSC Graduate Division is Under-Staffed Compared to Other UCs

The level of staffing within the Graduate Division at UCSC, which may be an indicator of graduate student programming and support capabilities, is the lowest in the UC system and well below what it

should be compared to graduate student enrollment numbers and staffing at other UC's. Given that graduate student populations may differ somewhat across the UC's, an assessment of the service levels at our campus relative to other UC's should be conducted. Nevertheless, the relationship between total number of Graduate Division staff and total graduate student enrollments (academic and professional) across UCs shows that Graduate Division staffing levels at UCSC are notably below other UCs, including UC Merced with significantly fewer graduate students. A simple best-fit regression to those data suggest that the number of graduate enrollments at UCSC (1,908 in 2018-19) could justify ~23 graduate division staff and administrators (~25 graduate division staff and administrators if only academic master's and PhD enrollments are considered), ~35% more than the number of staff and administrators as of this year (14.5: this number has slightly declined since 2019). Supporting this need, a majority of FGES respondents believe their students are most competitive for professional (versus tenure track academic) jobs post-degree, underscoring the importance and likely impact of enhanced professional development programming across all institutional levels (departments, divisions, etc.).

Implications. These findings suggest greater investment in the Graduate Division is critical to provide much needed co-curricular and service support for students and the graduate enterprise more broadly, including staffing and programming to support significantly increased efforts to recruit, retain, and graduate demographically diverse students, enhanced professional development opportunities for students across all disciplines, and improved student success.

Appendix A:
Joint Senate Administration Working Group on Education:
Charge and Membership

At the February 2020 Academic Senate meeting Chancellor Cynthia Larive announced the establishment of a working group to develop a comprehensive, realistic and actionable plan for strengthening graduate education. The idea of this working group came from conversations with Graduate Council and acting Vice Provost and Dean of Graduate Studies Quentin Williams. We provide the announcement below:

I am pleased to share today the charge and membership for that working group.
As part of our campus efforts to develop a strategic, realistic and actionable plan to enhance graduate student welfare and strengthen graduate programs, the Joint Working Group on Support for Graduate Education is charged with assessing the totality of the revenues related to the graduate enterprise and the ways those revenues are currently used. Specifically, this analysis should include:

A revenue analysis of the graduate enterprise relative to the various expenditures on the enterprise focusing on:

- Current Graduate Division fellowships and block funding allocations and the ways they are used by programs, including for the recruitment of students who enhance the excellence of our research enterprise, contribute to the diversity of our graduate programs, and improve our teaching mission ▪ Number and distribution of teaching assistantships and graduate student instructors, particularly in relationship to the undergraduate and graduate student enrollments of the program
- Number and distribution of research assistants and external fellowships (e.g. T32, NSF GRFP, GAANN, philanthropy)
- Assessment of the short-term impacts of the 5-year funding guarantees for doctoral students (2year for MFAs) on graduate programs and the institution, and possible strategies for navigating the transition period as programs adapt
- Goals and the carrying capacity of Divisions and individual PhD and MFA graduate programs

- Potential of alternative funding streams including cross-subsidies from MS/MA programs, including professional, self-supporting and 4+1 programs, and the role of research development and prospective Center- or graduate block grant funding.

In addition, we ask that the working group build on the information and insights gained from this analysis to provide recommendations about near and longer-term ways to stabilize and/or enhance the graduate enterprise across disciplines on campus. Throughout this group's work, we ask for explicit consideration of student diversity, broadly defined.

We ask the working group to submit a report by July 1, 2020.

Membership

Co-Chairs:
Donald Smith, Microbiology & Environmental Toxicology, Chair, Graduate Council
Quentin Williams, Acting Vice Provost/Dean Graduate Studies

Senate:
David Brundage, History, Senate Vice Chair
Gina Dent, Feminist Studies, Graduate Council
Debbie Gould, Sociology, Committee on Planning & Budget
Longzhi Lin, Mathematics, Graduate Council
Dard Neuman, Music, Committee on Planning & Budget

Administration:
Scott Brandt, Vice Chancellor of Research
Katharyne Mitchell, Dean of Social Sciences (Phase I & II)
Jim Moore, Assistant Dean, Graduate Studies (Phase I)
Kimberly Register, Planning & Budget
Alexander Wolf, Dean, Baskin School of Engineering

Staff Support to the Joint Working Group:
Esthela Bañuelos, Academic Senate
Zack Myers, Music Department (Phase III)
Barbara Smee, Graduate Division
Oliver Spires, Office of Planning and Budget (Phase II & III)

Appendix B:

Faculty Graduate Education Survey (FGES): This appendix presents the complete FGES instrument as administered to UCSC faculty in October, 2020.

https://drive.google.com/file/d/1ONab--KuT4Sfl3NlsK9hg1UigWgyXhNz/view?usp=sharing

Appendix C:

Narrative Appendix: This appendix contains an expanded presentation of the data and their analyses, as well as discussion of the major findings that are summarized in the JWG report. As such, this appendix serves as an important linkage between the final report and the complete revenue analysis and Faculty Graduate Education Survey (FGES) data appendices (i.e., Appendices D and E).

https://drive.google.com/file/d/1W6r3yBJ2oJ3zulpsMu8IdISgvKAkKdOj/view?usp=sharing

Appendix D:

Revenue Analysis Slides: This appendix presents a comprehensive report of the revenue data collected and analyzed by the JWG, including: revenue generated by graduate enrollments; revenue spent supporting graduate students; 5/2 year guaranteed support projections; cost of attendance adjustment projections; master's incentive fund program (MIP) information; longitudinal data on graduate support and time-todegree using Graduate Division student-level data. This appendix also contains a three-year overview of revenue expenditures and then detailed data by division and department.

https://drive.google.com/file/d/1JGhmXPJtg3IYG2Nndax_E_Atqp916H8J/view?usp=sharing

Appendix E:

Faculty Graduate Education Survey Data Slides: This appendix contains responses to all questions in the Faculty Graduate Education Survey, broken down by division and in some cases by demographics.

https://drive.google.com/file/d/1QmFPuAyrdVqCH9tGoRtTWBx0UQ11r5lj/view?usp=sharing

Appendix 10B

UC Santa Cruz Final Report of the Implementation Task Force for Inclusive Excellence in Graduate Education (2023)

Implementation Task Force for Inclusive Excellence in Graduate Education

Final Report – Completed 3/10/23

I. JUSTIFICATION AND NEED

As a R1, AAU member public research institution, the University of California has a mission of advancing knowledge and a responsibility to serve as an "engine of social mobility." Graduate education is a cornerstone of that mission. Graduate programs and students are therefore an essential part of the university's dynamic "ecosystem," helping to advance knowledge, and through that, advancing the university's research profile, benefitting undergraduate education, and serving communities, the state and the nation. At a high level, the Implementation Task Force for Inclusive Excellence in Graduate Education (ITF) was charged to implement the Joint Senate-Administration Working Group on Graduate Education's (JWG) recommendations (March 2021) to strengthen graduate education on all those fronts. The overall approach is a shift in strategic emphasis from graduate growth to a focus on graduate student success and well-being, with shaped growth for programs with aspiration and capacity to grow.

The ITF mission is informed by the fundamental principle that the UC is dedicated to educating undergraduate and graduate students through direct and equitable access to world-class research faculty, regardless of socioeconomic background and financial resources. As such, the ITF believes that resources supporting excellence, equity, and inclusion in graduate education at UCSC should be a priority on par with other educational resource needs. Historically, however, this has not been the case. As noted in the JWG report, a relatively large proportion (65%) of core revenues[126] generated by graduate enrollment has supported graduate students as ASEs (TAs, GSIs), the majority in the form of TAships. What this means for support of graduate education may not be obvious; given that ASE appointments are primarily allocated in service of the undergraduate instructional mission of the campus, **only 28% of core revenue dollars generated by graduate student enrollments are actually spent directly in support of graduate students**.[127] Moreover, the largest proportion of return to aid revenues committed to "needs based aid" is spent on TA fee remission (60%), with less (40%) on actual return to aid such as fellowships. We conclude that many of the broad challenges UCSC has faced in recent decades can be traced to the lack of dedicated support of graduate student success, defined here as (a) retention, (b) time to degree, and (c) post-graduation placement.

Historically, graduate education at UCSC, and in particular the means of supporting graduate students over their careers, were (sometimes inadequately) met via a suite of sources (ASEs, fellowships, GSRs, etc.) that were dispersed *ad hoc* quarter by quarter, with little or no longer-term institutional planning to take into account the multi-year career of doctoral students. This practice generated systemic funding and planning uncertainties at the department, academic division, and Graduate Division levels. It also often led to substantial anxiety among our graduate students about the source(s) and level(s) of support (e.g.,

[126] State enrollment revenues via re-benching, and tuition-based revenues.

[127] Of the ~30% of core revenue dollars generated by graduate student enrollments that are spent directly in support of graduate students, two-thirds (or ~20% of total) are spent on fellowships and a third (~10% of total) is spent on corefunded GSRs.

students were often notified one quarter at a time and with little advance warning about pending changes). In addition, factors related to graduate student support that best predict student success have not been tracked, let alone carefully analyzed, and impacts on specific cohorts (particularly underrepresented minority (URM) students) have not been assessed. With the emergence in 2020 of UCSC's 5/2 year support commitment for doctoral/MFA students, and the necessary increasing costs of supporting doctoral/MFA students to graduation, the ITF prioritized two major goals: (1) the development of a multi-year planning model to estimate and project, at the individual program level, the quarters and associated dollars needed to support doctoral/MFA students within the 5/2 yr support commitment and/or a program's normative time; and (2) the implementation and/or recommendations for implementation programming, practices, and additional resource investments to enhance student well-being and success.

The ITF's work and this report comes at a time when the role and strategic future of graduate education locally and systemwide is undergoing profound changes.[128] We must understand current and anticipated future decisions, and examine the basis for allocating financial resources if we are to successfully diversify graduate programs and holistically support all of our students. Future trends in graduate student enrollments must also be considered within the context of the aspirational doctoral growth dollars (currently ~$8M annually) that the campus receives towards achieving doctoral growth targets established in the systemwide 'rebenching' process. Re-envisioning graduate programs will be a longer-term effort requiring systemwide alignment and collective engagement of all campus stakeholders, with the goal of strengthening and ensuring sustainability of our graduate programs and the university's broader success as a R1 AAU institution. In the short term, there are immediate adjustments to policy and resource allocations that should be made quickly to address immediate and long-term needs, as proposed with our recommendations below.

II. CHARGE & PROCESS

The ITF[129] was established by the Vice Provost and Dean of Graduate Studies (VPDGS) and composed of two parallel subgroups, the ITF Graduate Education and Student Financial Support subgroup, and the ITF Graduate Student Success and Well-being subgroup. The ITF Support subgroup was charged with i) developing a 5/2 year doctoral/MFA student support model (the Graduate Student Support Model, GSSM), ii) proposing incentives for including more graduate student support in extramural proposals, and from philanthropic sources, iii) institutionalizing a data framework on the ecosystem of graduate education and support (e.g., funds spent in support of graduate students, and graduate student level data on time to degree and funding support, etc.), and iv) determining the effectiveness of the Master's Incentive Program (MIP) in strengthening graduate education. The ITF Student Success subgroup was charged with i) developing enhanced professionalization programming within the Graduate Division to better serve the professional development needs of graduate students, ii) performing, in collaboration with the ITF Support subgroup, an evidence-based analysis to determine whether increased support for doctoral/MFA students is associated with student success (i.e., retention, graduation within normative time, etc.), iii) exploring solutions around enhanced support for student well-being, and iv) developing guidelines/best practices associated with faculty mentoring of graduate students. In addressing its Charge, the ITF developed a set of guiding principles.[130] The two ITF subgroups met twice monthly over March - June and October - December, 2022. In addition, the ITF co-chairs met with the ITF Steering Committee

[128] At the local, UC-systemwide, and national level, these changes have included a renewed urgency around housing affordability, financial support of graduate students at competitive levels, and the need for doctoral training, mentoring, and professional development that better prepares students for career paths within and outside of the professoriate.

[129] ITF membership is listed in Appendix I.

[130] The ITF Guiding Principles are listed in Appendix II.

for input and guidance in June and December, 2022. Additional one-on-one information sessions were held with each of the academic divisional deans and their staff, the ITF co-chairs, and the Graduate Dean.

III. KEY FINDINGS, IMPLEMENTATIONS AND RECOMMENDATIONS

The primary work products of the ITF are: 1) The Key Findings based on analysis of student support and success data over 14 academic years (2005-06 to 2018-19); this analysis identifies significant predictors/contributors to doctoral student success (defined here as retention, time to degree, graduation, and post-graduation placement). The purpose of this analysis is to determine *whether* and *how* changes in policy and resourcing could directly improve student success; 2) A broad-based Graduate Student Support Model (GSSM) planning tool to inform graduate enrollment management and optimal approaches to student support and success; and 3) Recommendations to strengthen and diversify graduate education via targeted enhancement of student support and well-being programming, including the investment and use of graduate student support resources to enhance graduate student welfare and success, and thus the pipeline of earlycareer professionals who have succeeded in securing graduate degrees.

IIIa. ITF KEY FINDINGS

The ITF **Key Findings** are grouped into five categories: 1) Student enrollment, demographic, and placement findings; 2) Sources of doctoral student support; 3) Predictors of student success; 4) Areas of opportunity to gain resource efficiencies by increasing student success; and 5) Other notable findings. The complete slide deck of findings is here, and also broken down by figure number cited below.[131]

III.a1 Enrollment, Demographic, and Placement Findings

1) Approximately 20% of matriculated doctoral students separated from the university before graduating (i.e., a 20% attrition rate), with the percentage varying by academic division: 13-15% in PBSci and Arts; 24-25% in Hum and SocSci; 29% in BSOE.
2) Many doctoral students graduate beyond their program's normative (i.e., intended maximum) time to degree, ranging from 10% (Arts) to 23% (SocSci). In addition, for some programs, the percentage is much higher, ≥1/3 of students (FIGURES 1-5).
3) URM students, and especially URM female students (except in PBSci), are more likely to separate from the university before graduating (FIGURE 6, 7), and have a longer time to degree (TTD) than non-URM students (FIGURE 8).
4) In aggregate, ~48% of graduated doctoral students over the past 15 years have gone on to careers in academia, while ~52% have gone on to careers outside of academia. However, these figures vary widely by academic discipline/division. For example, 25% of BSOE graduates and 40% of PBSci graduates have gone on to academic careers, compared to ~65 - 70% of Arts, Humanities, and SocSci doctoral graduates. The top employer of UCSC doctoral graduates who completed their degrees over the past 15 years and entered academia is UCSC itself.

These findings are consistent with the published educational literature regarding the significance of the intersection of race/ethnicity and gender in student success. They also underscore the importance of not just diversifying the campus but also focusing on developing and supporting an equity-minded campus culture, and providing mentoring and other support structures to increase the success of students from diverse backgrounds.

[131] The original figures are not included here; please consult the original report as needed.

III.a2 Key Findings - Sources and Levels of Doctoral Student Support

1) There are notable differences across academic divisions in how doctoral/MFA students are supported financially. For example, in non-STEM fields, students are supported at generally lower absolute levels (dollars) and predominantly as TAs, whereas in the STEM fields, TAships provide an important but smaller fraction of support compared to extramurally funded GSRs and fellowships (FIGURES 9 - 14).
2) The variations among disciplines and programs in doctoral student support sources/levels substantiates the need for the Graduate Student Support Model to inform program and divisional management of graduate student enrollments and graduate student support and success within the 5/2 yr support commitment.

Collectively, these findings underscore the fact that there are important disciplinary differences in how graduate students are supported through their graduate careers that must be taken into account in developing support structures to enhance student success. To address this, the campus needs a mix of options that are sufficiently flexible to address specific program needs.

III.a3 Key Findings - Predictors of Student Success

The ITF identified specific factors that are either positively or negatively associated with student success. The ITF used Time to Degree (TTD) as a basic measure of student success, and specifically considered both elapsed and enrolled academic years TTD. Elapsed TTD is the total academic years regardless of whether a student took a leave of absence, whereas enrolled TTD comprises only the academic quarters/years when the student was enrolled. Enrolled TTD represents academic year quarters when graduate students pay tuition, and so the difference between the two TTD measures have implications on student success more broadly and the 5/2 year support commitment in particular. For example, while most programs have a median Elapsed TTD of 5 years, and several have median Elapsed TTDs of 6 or 7 years, their median Enrolled TTDs are generally shorter. **This results from the average UCSC doctoral student spending 1.4 quarters on a LOA, withdrawn or otherwise not enrolled.**

1) Multiple factors related to increased student support were **positively** associated with student success (TTD and graduation rates):
   a) Fully supported students with a greater proportion of their support coming from GSRs, as opposed to TAs, have shorter TTDs (FIGURE 15). The ITF infers better outcomes for students who are supported in ways more closely related to their research progress.
   b) Summer support is associated with shorter TTD (FIGURE 15).
   c) Fully supported students in Arts, Hum, and SocSci with a greater proportion of their support coming from fellowships have shorter TTD (FIGURE 16).
   d) Both URM and non-URM Cota-Robles Fellowship recipients graduate at higher rates compared to their non-Cota-Robles recipient counterparts, but URM students benefit significantly more from the Cota-Robles Fellowship in terms of graduation rates (i.e., 54% → 84% improved graduation rate in URM non-CR vs URM CR), compared to non-URM Cota-Robles Fellowship recipients (60% → 75% improved graduation rate in non-URM non-CR vs non-URM CR) (FIGURE 17).
2) Other factors related to student support were **negatively** associated with student success (TTD and graduation rates):

a) Fully supported students who work primarily as ASEs (and GSRs in non-STEM fields) have longer TTD (FIGURE 18, 19).[132]
b) Historically, not all departments have fully funded their students over 5 years or NTTD, using funding sources that are routed through the university (FIGURE 21).
    i) Lower support levels over a student's career (e.g., students supported for 4 years or less, or not fully supported, with funding routed through the campus) are associated with lower levels of student success, including:
        (1) Increased numbers of quarters on leave of absence (LOA) (FIGURE 20).
        (2) In-turn, increased quarters on LOA are associated with higher attrition rates (FIGURE 20).

These findings suggest several opportunities to improve student success by: 1) Reducing the need for students to take LOAs, and therefore 2) Reducing TTDs so that students are graduating within their program's approved normative time. This is particularly true when looking at time to degree by demographic groups, where there is higher enrolled and elapsed time to degree with URM female doctoral students across all divisions except PBSci. This finding again underscores the importance of identifying barriers to success and for campus support to both faculty mentorship and enhanced structures to improve student success for URM doctoral students.

III.a4 Key Findings - Areas of opportunity to gain resource efficiencies by increasing student success and integrated planning

1) Significant resources are spent supporting students who are past NTTD and/or who separate from the university before graduating (Tables 1 and 2).
    a) Historically, ~3.5% (range <1 - ~6%) of fully funded quarters annually were spent supporting doctoral students post-NTTD (annually ~$1M salary/stipend/fees/benefits).
    b) Historically, 15-20% of annual student support was spent supporting students who ultimately separated from the university (~$2.8M salary/stipend and fees/benefits).
2) Planning for graduate student support involves multiple stakeholders and has multiple gaps in information flow. The responsibility, authority, and oversight over graduate student support is spread across PI's, programs/departments, divisional deans, and the Graduate Division, which requires coordination between stakeholders. **At present, however, there is sub-optimal coordination of graduate support information, which impacts planning.** Some of the reasons for this situation are structural: For example, ASE appointments constitute a significant source of support for doctoral students across most programs, yet ASE allocations to divisions with subsequent deployment to departments has been driven primarily, if not exclusively, by undergraduate instructional needs and not in relation to planning recruitment and continuing graduate student support needs.

III.a5 Key Findings - Other Notable Findings

1) At present, the campus systematically tracks some, but not all, external fellowships (i.e. fellowship funding awarded directly to the student and not passed through the university). As a result, there are a notable number of students, particularly in the STEM disciplines, that appear as unsupported or minimally supported in our dataset, when in fact they are likely fully supported.
2) A notable number of TA positions are filled annually by MA/MS students, particularly in BSOE (~7% Hum & SocSci, ~14-15% Arts & PBSci, ~35% BSOE) (Table 3). This likely results from

[132] While this campus-wide analysis suggests that doctoral students for whom a large proportion of their support comes from TAships may have longer times to degree, these results may be influenced by underlying, covarying programmatic differences that make it difficult to have high confidence in a causal relationship.

multiple factors, including: i) limited availability of qualified doctoral students to serve as TAs in some disciplines; ii) preferential funding of doctoral students with fellowships and/or GSRs; and/or iii) doctoral students being more strongly focused on research and creative activity compared to their MA/MS peers.

3) During the period analyzed, the percentage of matriculated URM doctoral/MFA students has increased for Hispanic/Latino students but has not increased for African-American/Black and American Indian/Alaska Native self-identified students (FIGURE 22). In addition, the number and percentage of international students have also increased over this time (FIGURE 22).

These **Key Findings** informed the development of the ITF's Graduate Student Support Model (GSSM) and recommendations to enhance student success and strengthen graduate education at UCSC. Development of the GSSM and some of the recommendations have progressed into an implementation stage, and others should be adopted immediately, whereas others remain as actionable recommendations to be addressed over time.

IIIb. ITF IMPLEMENTATIONS

III.b1 Graduate Student Support Model and Planning Tool: It is more pressing than ever to adopt comprehensive planning strategies to ensure that our continuing and newly admitted graduate students are supported in ways that allow them to succeed. It is essential that graduate student support strategies and planning take into account the need for different funding options across disciplines. To help meet this challenge, the Graduate Student Support Model and Planning Tool (GSSM) was constructed to help programs and divisions examine and assess projected graduate student support resources in order to optimally meet their commitments to graduate student success.[133] UCSC is among the few but growing number of UCs to provide a commitment of 5 academic years of support for all doctoral students and 2 years for all MFA students. However, graduate student support comes from a variety of sources with different lines of responsibility and accountability, not to mention different degrees of stability, predictability, and benefit (as shown in Key Findings). **As such, there is a need for a graduate student support planning tool to assist programs and divisions in assessing graduate student support capacity and to inform graduate student admissions and enrollments.**

Specifically, the GSSM inputs include i) program enrollment size, broken down by enrollments eligible for the 5/2 yr support commitment, within normative time, and total enrollments, ii) projected academic year quarters of available support in the coming academic year in categories of TA/GSI, fellowship, GSR (provided by the center/academic divisions, departments, and Graduate Division), iii) the relative 'mix' of support categories (i.e., TAs, fellowships, GSRs, etc.) that programs have historically used to support their doctoral/MFA students (provided by the model). From this, the GSSM provides program level outputs that include the projected number of quarters (and associated dollars) needed to support a program's current doctoral/MFA students in the following academic year, broken down by categories of support (TA, fellowship, GSR, etc.) for students within the 5/2 yr commitment, within the normative time, and for all students; quarters of support that are available and required are projected by the GSSM using data on historical practice (GSSM-based projections).[134] In addition, the GSSM projections of the number of quarters of support (and associated dollars) by category are further broken down by the source of support (e.g., core institutional funds via TAship, Block, Other Grad Div Non-Block, Non-Grad Div internal fellowships, external fellowships, extramurally funded GSRs, etc.). ASE resource needs are obligated by the central administration and academic division; fellowship resource needs are obligated by

[133] The GSSM is described in detail in Appendix III.

[134] For support projections, individual students will be categorized by enrollment year so as to determine if they are 5 yr commitment-eligible and Within Normative Time-eligible.

the Graduate Division (for Block-based, CR, and DYF fellowships, etc.), and the programs (for external fellowships); GSR resource needs are obligated primarily by the program (and PIs).

III.b2 Graduate Student Support Model Dashboard: The Graduate Student Support Model Dashboard is a simplified derivative of the full GSSM.[135] The GSSM Dashboard is meant to inform discussions within and between programs, their academic division, and the Graduate Division. The Dashboard integrates historical and available future (budgeted) support type[136] and support source[137] information from multiple units/stakeholders[138] to project resource availability and requirements (via quarters of full support) to support continuing and prospective new graduate students. Specifically, the GSSM Dashboard generates three benchmarks for the projected number of ASE, GSR, and Fellowship quarters available to a department: 1) The program's own projections for the coming (e.g., 2023/24) academic year (AY); 2) the dashboard model projections for coming AY; and 3) historical 3 year program averages. As with the full GSSM, the Dashboard projects continuing student support needs based on: 1) Students within the 5/2 year campus commitment window; 2) Students within a program's established normative time to degree (NTTD); and 3) All continuing students. **The overall objective of the Dashboard is to assist campus stakeholders in coordinating a more predictable, stable, and data-driven planning process to assist in managing graduate student enrollments and support, including new admissions.** Details on the Dashboard structure, including specific inputs and outputs are provided in Appendix III). Finally, the Dashboard projections are not meant to be definitive, as uncertainties will always remain, but they should nonetheless provide a basis for mutual understanding and discussions within and between programs, their academic division, and the Graduate Division.

III.b3 Student Support and Well-being:

1) **Professional Development Resources**: The ITF and Graduate Division developed a Professional Development portal within the Graduate Division's web page. This newly developed web portal collects and organizes the vast array of professional development resources in a user experience design to enhance the communication and availability of those resources for UCSC's graduate students.
2) **Mentoring Resources:** The ITF and Graduate Division are currently developing a Graduate Student Mentoring web portal within the Graduate Division's web page. This newly developed web portal will collect and organize the vast array of student mentoring resources in a user experience design to enhance the communication and availability of those resources to students and faculty in order to incentivize increased student retention and graduation within NTTD, particularly for URM students. The web portal should be completed by the end of spring quarter 2023.
3) **Diversity, Equity, and Inclusion (DEI) Resources:** Similarly, the ITF and Graduate Division are currently developing a DEI web portal within the Graduate Division's web page. This newly developed web portal will collect and organize the vast array of DEI resources in a user experience design to enhance the communication and availability of those resources to students and faculty in order to enhance awareness of DEI efforts across the campus and better support

[135] The Graduate Student Support Model has been simplified into a prototype dashboard for pilot use and assessment in the current 2022-23 graduate student admissions cycle. The model remains under development and will be subject to thorough vetting by the Implementation Task Force for Inclusive Excellence in Graduate Education, as well as other stakeholders.
[136] Broadly categorized as Academic Student Employees (ASE), Graduate Student Researchers (GSR), and Fellowships.
[137] Core and extramural (EM).
[138] Programs, disciplinary divisions, the graduate division, the CP/EVC office, and Budget and Planning (BAP).

graduate students from diverse backgrounds. The web portal should be completed by the end of spring quarter 2023.

4) **Student Academic Progress Tracking Resources**: The ITF and Graduate Division are developing a Graduate Division-centralized tracking process for annual student mentoring and academic progress to ensure students are receiving appropriate advising and mentoring, and are making satisfactory progress towards their degree. This form/process (in draft here) will be introduced to programs in spring 2023 for potential implementation in the 2023-24 academic year.

IIIc. ITF RECOMMENDATIONS

III.c1 Recommendations for Investments to Enhance Graduate Student Support:[139] In addition to the measures above that are currently being implemented, the ITF recommends additional policies and investments to enhance student success and to strengthen graduate education, broadly defined as increased retention and graduation rates within normative time, and improved training and other professional development for post-graduate non-academic career tracks. These recommendations are based on the ITF's **Key Findings** (above), which identified potential 'key support levers' that, when combined with enhanced student mentoring and professional development, would measurably increase student success. The 12 ITF recommendations are listed below.

III.c.1a Essential Recommendations to Address in the Near-Term:

1) **Establish a summer graduate student support program to enhance student success**: Provide need-based summer research fellowships at the 50% TAship Step 1 level for eligible doctoral and MFA students. Provide up to three summer support fellowships per eligible doctoral student (one for MFAs) to be awarded within the program's NTTD and preferably post-ATC. Summer support fellowships should be applied for based on demonstrated financial need.
2) **Strengthen DEI support programming to enhance student diversity and success**: Committed support to enhance graduate student diversity and success, including:
    - Increase Cota-Robles fellowship support by 10 fellowships annually (~25% increase).
    - Create 10 additional DEI 1-year fellowships with undocumented non-DACA doctoral and MFA student eligibility.
    - Establish programming to support DEI efforts at the program level, including at a minimum establishing a DEI Innovation Fund to enhance DEI programming and support for faculty/programs supporting and mentoring URMs.
3) **Incentivize extramural GSR support**: Establish incentives for supporting doctoral students on intra and extramurally funded GSRs, linking use of grant funds to GSR admission and mentoring. Several approaches for accomplishing this were discussed on the ITF, including i) a GSRship Tuition/Fee Offset (GTO) program, where UCSC covers all (or a fraction) of GSR-quarter tuition/fees for all doctoral students post-ATC that are supported as a GSR and are within 9 academic quarters post-ATC (i.e., pre Doc2a); and/or ii) a GSRship Tuition/Fee Incentive (GTI) program, where a portion (% TBD, perhaps a fraction of the fee/tuition costs on a per-quarter basis) of the ICR associated with supporting doctoral students on extramural grants is returned directly to the PI or program as discretionary funds. The particular program(s) to be adopted and implemented (could be a combination) will depend upon further discussions with campus administrators/stakeholders.
4) **Incentivize and support enhanced mentoring and annual student assessment to promote student success:** In addition to the Graduate Division Mentoring web portal under development (noted above), establish a standardized Graduate Division-centered annual student progress

[139] See Appendix IV for recommendation details and justifications, and Appendix VII for cost estimates.

assessment process, with the ability to include program-specific metrics, for the annual assessment of graduate student progress to degree.

5) **Establish a Professional Development and Entrepreneurship Program:** To address this, the ITF developed a proposal for a summer professional development/entrepreneurship program and course series to enhance graduate student career success.[140]

III.c.1b Other Essential and Longer-Term Recommendations:

6) **Increase research fellowship support**: Make available two additional quarters of fellowship support for eligible doctoral students (one quarter for eligible MFA) to be deployed in the postATC stage of a doctoral student's career (or 2nd year for MFA), and made available within their normative time to degree. These additional fellowships should augment existing advanced-stage fellowship programs currently in place (DYF, Presidents, etc.).
7) **Enhance graduate student wellness at UCSC** by instituting practices to address and implement the Graduate Wellness Group recommendations,[141] including i) measures to alleviate housingrelated burdens on graduate students, and ii) adoption of the Okanagan Charter.[142]
8) **Direct University Relations and Divisional Development Offices** to i) prioritize fundraising for graduate student fellowships, particularly for URM students, potentially through endowments similar to other R1 universities and ii) develop a UCSC graduate student alumni engagement process to enhance career awareness and development for our current graduate students.
9) **Conduct a comprehensive review and audit of the MIP** to evaluate the impacts of this program on enrollment growth (for both Master's and PhD students), possible side-effects, and overall effectiveness of the program, as was originally required at the 3 year mark of the program in 2017 (per January 21, 2014 MIP approval letter from EVC Galloway). **In the meantime, the ITF also recommends that the CP/EVC consult with Graduate Council, Graduate Division, and the academic divisions in order to issue an updated memo that clearly states the goals and metrics of success for the Master's Incentive Program (MIP)**, appropriate uses for MIP funds at both the program and divisional level, and the requirement for annual financial reporting of MIP allocations, expenditures, and carryforward use commitments that is available to stakeholders (programs, divisions, Graduate Division, central administration).
Moreover, given MIP's purpose historically to in part support doctoral growth, the role of academic master's programs in the graduate ecosystem has received little attention. Given this, **the campus should reevaluate the role of academic versus professional (or professionally-oriented) master's programs in the broader graduate education ecosystem**, and how master's programs should complement and strengthen doctoral and graduate programs in general on campus.
10) **Incentivize development of cross-departmental TA allocation processes**. Given the critical role of TAship appointments in the training and support of our doctoral students, and the fact that the undergraduate enrollments that generate TAships may not coincide with graduate student training/support needs within a program, transparent processes should be developed within academic divisions, in consultation with Labor Relations, that facilitate the matching of graduate

[140] A proposal for a Professional Development Summer Program and Course Series is included in Appendix V.
[141] The full list of Graduate Wellness Group recommendations are provided in Appendix VI.
[142] The purpose of the Okanagan Charter is threefold: 1) Guide and inspire action by providing a framework that reflects the latest concepts, processes and principles relevant to the Health Promoting Universities and Colleges movement; 2) Generate dialogue and research that expands local, regional, national and international networks and accelerates action on, off and between campuses; And 3) Mobilize international, cross-sector action for the integration of health in all policies and practices, thus advancing the continued development of health promoting universities and colleges.

students in one program with TA training/support opportunities that may exist in a different program.

IV. CONCLUSIONS

The direct benefits of fulfilling these recommendations are expected to include a **significant increase** in: i) the proportion of students that graduate within their program's normative time; ii) The number of matriculated students that graduate; iii) The retention and graduation rates for URM students so that they are retained and graduated at same rates as non-URM students; and iv) Post-graduation success in career paths within and outside of academia. More broadly, improving graduate student success will also strengthen undergraduate education and UCSC's service mission, and thus the campus and regional communities as a whole. Finally, implementing these recommendations will help to align UCSC's commitment to graduate students and programs with past assertions that graduate education is a priority for the campus, and will demonstrate how robust graduate programs contribute to economic growth, creative discovery, and enhanced representation in essential professions.

APPENDICES

Appendix I. ITF and ITF Steering Committee Membership

ITF Support Subcommittee membership

Co-Chairs:

- Don Smith, Grad Div/METX, Co-Chair
- Dard Neuman, Music, Co-Chair (CPB Chair)

CPB, GC, Academic Senate:

- David Brundage, History (Senate Chair)
- Andrew Fisher, EART (GC Chair)
- Cameron Monroe, ANTH (CPB)
- Daniele Venturi, Applied Math (CPB)

Academic Divisions:

- Stephanie Moore, Asst Dean (Arts)
- Matt Guthaus, CSE (BSOE)
- Nirvikar Singh, ECON (Soc Sci)
- Kent Eaton, POL (Soc Sci)
- Susan Gillman, LIT (Hum)
- Pete Raimondi, EEB (PBSci)
- Lorato Andersson (Grad Div)

BAP:

- Kimberly Register, BAP
- Alex McCafferty, BAP
- Oliver Spires, BAP

Graduate Student Reps:
- Stefany Arevalo Escobar, CMPM (GSA)
- Brittney Jimenez, LALS (GSA)

Staffing
- Stephanie Casher (Grad Div)

ITF Student Success and Well-being Subcommittee (SSWB) membership

Co-Chairs:
- Don Smith, Grad Div/METX, Co-Chair
- Lissa Caldwell, ANTH, Co-Chair (GC Chair and Vice Chair of Senate)
- Garrett Naiman, DSAS, Co-Chair

CBP, GC, Academic Senate:
- Hillary Angelo, SOC (CPB)
- Banu Bargu, HISC (GC)
- Greg Gilbert, ENVS (GC)
- Phoebe Lam, OCEA (CAAD)
- Esthela Bañuelos (CPB/GC Analyst)

Divisions
- Stephanie Casher (Grad Div)

Graduate student reps:
- Alix MacDonald, PSYC (GSA)
- Dori Weiler, EEB (GSA)

Staffing:
- Lorato Anderson (Grad Div)

ITF Steering Committee

Don Smith, Task Force Co-Chair
Dard Neuman, Task Force Co-Chair
Peter Biehl, VPDGS
Celine Parrenas Shimizu, Dean of Arts
Alexander Wolf, Dean of BSOE
Jasmine Alinder, Dean of Humanities
Paul Koch, Dean of PBSci
Katharyne Mitchell, Dean of Social Sciences
David Brundage, Chair Academic Senate (rotating off in 22-23)
Melissa Caldwell, Vice Chair Academic Senate
Andrew Fisher, Chair, Graduate Council
Garrett Naiman, AVC and Dean of Students
Kimberly Register, AVC BAP
Esthela Bañuelos, CPB/GC Analyst
Richard Hughey, VPDUE John
MacMillan, Interim VC of Research
Brittney Jimenez, GSA Representative

Alix MacDonald, GSA Representative
Rachel Holser, PostDoc Representative
Stephanie Casher, Assistant Dean, Graduate Division
Lorato Anderson, Director of DEI, Graduate Division

Appendix II. ITF Guiding Principles

The ITF Guiding Principles informing its analysis, assessments, and implementation recommendations are derived from the Guiding Principles established by the Joint Working Group on Graduate Education (JWG Report),[143] as follows:

- **Strengthen the Graduate Enterprise Through Enhanced Financial Stability and Responsibility**: UCSC's graduate enterprise is integral to our teaching, research, and service mission and a vital component of our R1 and AAU statuses. We are thus committed to strong graduate programs and the overall strengthening of graduate education at UCSC by enhancing transparency, stability, and responsibility in graduate student financial support.
- **Cultivate Research Excellence and Professional Development:** We favor an enhanced educational environment that supports the development of outstanding scholars and practitioners by creating outstanding research environments coupled with strong career-relevant professional development opportunities.
- **Advance Disciplinary, Faculty and Student Diversity:** We are committed to disciplinary and student diversity, knowing that human and planetary well-being, now and in the future, requires critical and creative knowledge from diverse sources. To this end, we are committed to ensuring that our graduate programs attract, support, retain, and graduate a diverse body of students.
- **Provide an Environment for Student Success & Welfare:** A climate that engenders belonging and dignity is central to the mission of UC and is critical to student success and welfare. We are committed to a strong and healthy graduate education institution that provides students the time, financial support, and creative environment they need to execute their studies and research successfully.

Appendix III. Staged Development of the ITF Graduate Student Support Model and Planning Tool

The ITF developed a broadly-based Graduate Student Support Model (GSSM) to assist campus stakeholders in coordinating a more predictable, stable, and data-driven planning process to assist in managing graduate student enrollments and support, including new admissions. In particular, the GSSM is meant to inform discussions within and between programs, their academic division, and the Graduate Division.

GSSM Structure: The GSSM is composed of 15 modules of program-level data and information broadly grouped into two categories, historical practice and future projections. Modules 1 - 8 provide data/information on **historical practices**,[144] while Modules 9 - 15 provide data on **future projections**. The content of the individual modules is shown below:

[143] See Appendix 10A, above.
[144] The GSSM currently includes 3-year average data from 2015 - 16 through 2018-19, but will be updated to 201920 - 2021-22 when the data become available). The GSSM is structured to be updated annually.

Module #: Title	Module Content
Module 1: Historical Program Size, NTTD, & Expenditure	Historical 3-yr avg program size, program normative time to degree, and 3-yr avg total dollars spent supporting doctoral/MFA student during the FWS academic year or summer
Module 2a: Fund Type Mix: 3 Yr Average ACADEMIC YEAR (2016/17-2018/19)	Historical 3-yr avg relative proportion (%) of student support by support category (ASE, Fellowship, GSR) for the ACADEMIC YEAR
Module 2b: Fund Type Mix: 3 Yr Average SUMMER (2016/172018/19)	Historical 3-yr avg relative proportion (%) of student support by support category (ASE, Fellowship, GSR) for the SUMMER. Also included are the avg per student dollars of summer support and the equivalent summer quarters of support
Module 3a: Academic Year Support Mix by Fund Source	Historical 3-yr avg relative proportion (%) of student support by support CATEGORY (ASE, Fellowship, GSR) and support SOURCE (Core, EM, Other) for the ACADEMIC YEAR
Module 3b: Summer Support Mix by Fund Source	Historical 3-yr avg relative proportion (%) of student support by support CATEGORY (ASE, Fellowship, GSR) and support SOURCE (Core, EM, Other) for the SUMMER.
4a. AY ASE: Level 2 Hierarchy	Historical 3-yr avg relative proportion (%) of student support by ASE SUBCATEGORY (TA, GSI, OTHER ASE) for the ACADEMIC YEAR
4b. AY Fellowships/Grants/ Scholarships/Awards: Level 2 Hierarchy	Historical 3-yr avg relative proportion (%) of student support by FELLOWSHIP SUBCATEGORY (Grad Div, Other Internal, External) for the ACADEMIC YEAR
4c. AY GSR Core (Level 2 Hierarchy)	Historical 3-yr avg relative proportion (%) of student support by GSR SUBCATEGORY (Core State, Extramural) for the ACADEMIC YEAR
4d1. AY Fellowship Categories and Elements as a % of Total (Level 3 Hierarchy)	Historical 3-yr avg relative proportion (%) of student support by Graduate Division BLOCK FELLOWSHIP SUB-CATEGORY (Regents, Other Block, etc.) for the ACADEMIC YEAR
4d2. AY Fellowship Categories and Elements as a % of Total Fellowships (Level 3 Hierarchy)	Historical 3-yr avg relative proportion (%) of student support by OTHER Graduate Division FELLOWSHIP SUB-CATEGORY (Cota-Robles, Other Grad Div, Chancellors, Presidents, DYF, Other Non-Grad Div, External) for the ACADEMIC YEAR
Module 5a: Per Student Per Academic Year Fund Mix	Historical 3-yr avg PER STUDENT mix of ACADEMIC YEAR QUARTERS of student support (funding) by CATEGORY (ASE, Fellowship, GSR)
Module 5b: Per Student Per SUMMER Fund Mix	Historical 3-yr avg PER STUDENT mix of SUMMER QUARTERS of student support (funding) by CATEGORY (ASE, Fellowship, GSR)
Module 6a: Per Student Per Year Fund Type Mix By Fund Source (Academic Year)	Historical 3-yr avg PER STUDENT mix of ACADEMIC YEAR QUARTERS of student support (funding) by CATEGORY (ASE, Fellowship, GSR) and SOURCE (Core State, extramural, other)

Module 6b. Per Student Per Year Fund Type Mix By Fund Source (Summer)	Historical 3-yr avg PER STUDENT mix of SUMMER QUARTERS of student support (funding) by CATEGORY (ASE, Fellowship, GSR) and SOURCE (Core State, extramural, other)
Module 7a: Qtrs Fund Type Mix Per Student Over 5 Year Commitment (Academic Year)	Historical 3-yr avg PER STUDENT mix of ACADEMIC YEAR QUARTERS of student support (funding) projected over the 5/2-YR COMMITMENT by CATEGORY (ASE, Fellowship, GSR) and SOURCE (Core State, extramural, other)
Module 7b. Qtrs Fund Type Mix Per Student Over 5 Year Commitment (SUMMER)	Historical 3-yr avg PER STUDENT mix of SUMMER QUARTERS of student support (funding) projected over the 5/2-YR COMMITMENT by CATEGORY (ASE, Fellowship, GSR) and SOURCE (Core State, extramural, other)
Module 8a: Qtrs Fund Type Mix Per Student Over Normative Time to Degree (Academic Year)	Historical 3-yr avg PER STUDENT mix of ACADEMIC YEAR QUARTERS of student support (funding) projected over the program's NORMATIVE TIME TO DEGREE by CATEGORY (ASE, Fellowship, GSR) and SOURCE (Core State, extramural, other)
Module 8b: Qtrs Fund Type Mix Per Student Over Normative Time to Degree (SUMMER)	Historical 3-yr avg PER STUDENT mix of SUMMER QUARTERS of student support (funding) projected over the program's NORMATIVE TIME TO DEGREE by CATEGORY (ASE, Fellowship, GSR) and SOURCE (Core State, extramural, other)
Module 9: Projected Next-Year Program Size by Enrollment Level	Projected program doctoral/MFA ENROLLMENTS in the next academic year. Program and Graduate Division projections shown, and include proposed incoming cohort size, continuing students within the 5/2 yr commitment, NTTD, and all students
Module 10: Projected Requirements by Fund Type (Number of Quarters of Support Required Per Program to Support New and Continuing Students at Three Enrollment Levels)	Projected QUARTERS OF SUPPORT needed to support new and continuing students in the next academic year by CATEGORY of SUPPORT (ASE, Fellowship, GSR) and STUDENT STANDING (within 5/2 yr commitment, NTTD, all students)
Module 11a. Scenario Dial for Model Module 11b: Academic Year Quarters Required Per Program by Fund Type and Source (Based on Scenario of Program Size) Module 11c: Summer Quarters Required Per Program by Fund Type and Source (Based on Scenario of Program Size)	Projected QUARTERS of SUPPORT needed per ACADEMIC YEAR or SUMMER to support new and continuing students in the next academic year by CATEGORY of SUPPORT (ASE, Fellowship, GSR), SOURCE of SUPPORT based on the SCENARIO of STUDENT STANDING (within 5/2 yr commitment, NTTD, all students)
Module 12a: Historical Baseline ASE Salary	Historical baseline per quarter TAship salary/tuition/fees amounts (3-yr avg and 2018-19)

Module 12b: GSR Level Salary Amounts	New 2022-23 per quarter GSR salary amounts (GSR Levels 1 - 6)
Module 12c: Distribution of GSR Levels by Program (percentages are placeholders for now)	Projected GSR Level distribution (% of program students per GSR Level), used to then calculate program-avg GSR salary per quarter
Module 12d: ASE Salary Levels	New 2022-23 per quarter TAship salary amounts (TA Levels 1 - 3)
Module 12e: Distribution of ASE Levels by Programs (Using Adrian's Divisional Estimates)	Projected TA Level distribution (% of program students per TA Level), used to then calculate program-avg TA salary per quarter
Module 12f: Quarterly Tuition, Fees, Benefits	Projected (2023-24) quarterly tuition, fees, benefit amounts
Module 12g: Blended Avg ASE, Fellowship, GSR	Projected (2023-24) quarterly tuition, fees, benefit amounts
Module 12h: Summer Salary	Projected summer salary as ASE or GSR
Module 13: Per Student Per Year Dollar Expenditure by Support Type	Projected PER STUDENT PER YEAR support EXPENSE for the next ACADEMIC YEAR (13a) or SUMMER (13b) by CATEGORY of SUPPORT (ASE, Fellowship, GSR)
Module 14. Per Student Per Year Dollar Expenditure by Support Type AND SOURCE (AY or Summer)	Projected PER STUDENT PER YEAR support EXPENSE for the next ACADEMIC YEAR (14a) or SUMMER (14b) by CATEGORY (ASE, Fellowship, GSR) and SOURCE (Core State, Extramural, Other) of SUPPORT
Module 15: Per Program Per Year Dollar Expenditure (All Continuing Students + Proposed New)	Projected TOTAL EXPENSE PER PROGRAM PER YEAR for the next ACADEMIC YEAR (15a) or SUMMER (15b) by CATEGORY (ASE, Fellowship, GSR) and SOURCE (Core State, Extramural, Other) of SUPPORT, based on selected SCENARIO of STUDENT STANDING (within 5/2-yr commitment, NTTD, all)

Development of the GSSM: The ITF's work in developing the GSSM occurred in three stages:

Stage 1 prioritized the analysis of data on student success relative to support type[145] and support level.[146]

[145] "Support type" refers broadly to student support as Academic Student Employees (ASE), Fellowships, and Graduate Student Research (GSR). ASE is further subdivided into Teaching Assistant (TA), Graduate Student Instructor (GSI), and "other" employee categories (such as readers, tutors). Fellowships are further subdivided into Graduate Division fellowships, other internal and external fellowships, and other internal and external grants/awards. Graduate Division Fellowships are even further subdivided into the various Graduate Division Block and other fellowships (Cota-Robles, Regents, Presidents, and Chancellor's, etc.).

[146] "Support level" refers to: 1) the amount of funding support a student received per quarter and; 2) the duration of support over their graduate career (e.g., the number and % of enrolled quarters that were supported and at what level). The ITF established its baseline support level by a particular academic year's UC-wide ASE salary/benefit rate for 50% quarterly employment (consistent with UCSC's current 5 year support commitment to doctoral students).

To accomplish this, the ITF merged and restructured 2005 - 2019[147] graduate student enrollment and demographic data with student payment data (from AIS).[148] The ITF coded this data, created variables to more efficiently analyze it, and restructured the datasets to conduct: a) historical analysis of how programs support students (by support levels, amounts and duration, support type, and support source); b) bivariate analysis to model relationships between student support levels, support types, demographics, and success (using graduation, attrition, leaves of absence (LOA)), and elapsed/enrolled time to degree[149] (TTD) metrics), and; c) multivariate regression analysis to determine whether, and if so to what extent, types and levels of support are associated with student success outcomes. Please see the ITF Data Description and Identification of Terms file for details.

In **stage 2**, the ITF developed its Graduate Student Support Model (GSSM), which determines for each program and academic division the per-student number of quarters and associated cost of support by support type (ASE, Fellowship, GSR) and source (Core State, extramural, other), which can then be used to estimate annual (or 5 yr, normative time, etc.) current and future resource needs at the program, division, and campus level.[150] The model is based on units of 'quarters of support'.

In **stage 3,** the ITF analyzed how this campus might optimize resources spent supporting doctoral students. Specifically, the ITF analyzed resources spent: a) supporting students within normative TTD (NTTD) vs students that are beyond NTTD, and; b) supporting students who graduate vs. those who separate prior to graduation. The goal of this exercise is to identify opportunities to increase the impact of financial resources if, as ITF proposes and predicts, we can increase graduation rates and increase the percentage of students who graduate within normative time.

GSSM Dashboard. A simplified GSSM Dashboard was developed from the full GSSM to more easily facilitate assessment of resources (i.e., quarters of support) needed and available to support continuing and proposed new student admits. The GSSM Dashboard is segmented into six modules. Each module juxtaposes information provided by programs with information from the graduate division and/or the GSSM.

- Module 1 (**New Student Recruitment Targets**) displays each program's recruitment targets with a comparison to the most recent historical three year program medians of new cohort sizes.

[147] At the time of analysis, the UCSC data warehouse could provide reliable data for the period 2005-06 through 2018-19, but not 2019-20 to present due to complexities and quality of UC Path data. We expect the latter data, updated and cleaned, to be available at some time during the current (2022-23) academic year.

[148] This merged dataset contains the following student information by program, division, and academic year (with anonymized student IDs): student demographics; matriculation and (if applicable) graduation year and quarter; number of quarters on leave of absence (LOA), in absentia (IA), pre and post Advanced to Candidacy (ATC); and by-quarter details on support levels, support types and, support sources. "Support source" refers to whether the support types were provided by UCSC core, extramural, or other resources. The ITF also created syntaxes to automate much of this process so that the datasets and report tables can be updated annually for planning between the Graduate Division, doctoral and MFA programs, disciplinary divisions, and the campus center.

[149] Elapsed TTD refers to the absolute number of calendar years it took a student to graduate from matriculation to graduation. Enrolled TTD refers only to the time it took to graduate when a student was enrolled, either full time, part time or in absentia. Enrolled TTD therefore subtracts/does not include time a student was on leave of absence, withdrawn, or otherwise not enrolled.

[150] Historical data informing this model include: past 3 year averages of program size, incoming cohort size, dollar and percent expenditure supporting graduate students by fund type, as well as the dollar amount and percentage of each of those fund types by fund sources (core, extramural, other).

- Module 2 (**Continuing Student Numbers**) displays continuing student enrollments in three categories: i) within the 5/2 year commitment window, ii) within normative time to degree (NTTD), and iii) all continuing students. These data are derived from two different sources, department projections and graduate division data.
- Module 3 (**2023/24 Support Projections)** displays the projected number of ASE, GSR, Fellowship, and MIP quarters of support available to a program, further broken down into four main categories:
    - 3a: **ASE** (TA and GSI/other ASE), based on department, GSSM, and historical levels TA FTE allocations to divisions, versus historical averages;
    - 3b: **GSR**, based on department and historical projections.
    - 3c: **Fellowships**, based on department and historical projections; Projected fellowships are further broken down into categories of Graduate Division fellowships, Other internal and external fellowships/awards.
    - 3d: **MIP**-based fellowships or ASE quarters.
- Module 4 (**Support Capacity**) projects the sum total of available quarters of support across all categories from Module 3, and compares department projections with GSSM projections.
- Module 5 (**Support Requirements**) projects the number of quarters required to support new students *and* continuing students at the three enrollment levels noted above.
- Module 6 (**Recruitment Capacity**) projects the number of new students a program can admit/support while also supporting continuing students at the three enrollment levels.

The dashboard contains two tables. Table 1 is a static display of projected support requirements and availability. Table 2 is structured identically as Table 1, but is dynamic and allows programs and divisions to revise their projected resources and new student admission targets to update final projections.

All program new admission projections were provided before resolution of recent labor negotiations, and while the number of TAships available to the campus as a whole will be unchanged this coming year, we cannot assume that will always be the case in outer years. The dynamic components in Table 2 are tied to departmental projections, with the idea that the iteration between the disciplinary divisions, the graduate divisions, and the programs will manifest in department/program-based adjustments to recruitment targets.

Appendix IV. ITF Recommendations, Needs and Justifications (see Appendix VII for cost estimates)

Essential Recommendations to Address in the Near-Term:

1) **Establish a summer graduate student support program to enhance student success**: Provide need-based summer research fellowships at the 50% TAship Step 1 level for eligible doctoral and MFA students. Provide up to three summer support fellowships per eligible doctoral student (one for MFAs) to be awarded within the program's NTTD and preferably post-ATC. Summer support fellowships should be applied for based on demonstrated financial need.

   Justification/Need: A main Key Finding of the ITF was that summer support at any level (except fully through TAships) was associated with enhanced student success in terms of reduced TTD. Investment in summer support to be made available to doctoral students on a competitive needbasis is predicted to reduce the TTD for those very students that would otherwise not have access to summer support and as a result experience longer TTDs, including beyond NTTD, thereby requiring longer durations of support to graduation.

2) **Strengthen DEI support programming to enhance student diversity and success**: Commit support to enhance graduate student diversity and success.
    - Increase Cota-Robles fellowship support by 10 fellowships annually (~25% increase).
    - Create 10 additional DEI 1-year fellowships with undocumented non-DACA doctoral and MFA student eligibility.
    - Establish programming to support DEI efforts at the program level, including at a minimum establishing a DEI Innovation Fund to enhance DEI programming and support for faculty/programs supporting and mentoring underrepresented students.

    Justification and Need: The need for graduate student-focused DEI programming at UCSC is clear, based on the ITF's findings and data from UC Information Center. In addition, 1) Both URM and non-URM Cota-Robles Fellowship recipients graduate at higher rates compared to their non-CotaRobles recipient counterparts, but URM students benefit significantly more from the Cota-Robles Fellowship in terms of graduation rates (i.e., 54% → 84% improved graduation rate in URM nonCR vs URM CR), compared to non-URM Cota-Robles Fellowship recipients (60% → 75% improved graduation rate in non-URM non-CR vs non-URM CR); 2) The percentage of matriculated URM doctoral/MFA students has increased for Hispanic/Latino students but has not increased for African-American/Black and American Indian/Alaska Native self-identified students; 3) The 10-year doctoral completion rate for domestic underrepresented racial/ethnic groups (URGs) in the 2008-2010 cohorts is lower than that for domestic non-URGs in all academic divisions except Social Sciences; And 4) The time to doctoral degree among the 2016-2019 graduating cohorts is 6.8 years for African American students and 6.0 years for White students.

    Success of the above DEI investments will be assessed by the Graduate Division DEI Director's office by 1) tracking milestone achievements via collected quarterly updates from recipients' Graduate Program Coordinators and compiling them in a Graduate Division database. Annual progress reports will also be collected from recipients directly to ensure the fellowships are promoting timely progress through the degree. And 2) annual assessment of DEI Innovation Fund (DIF) recipients' programming supported by the DIF. The Director will make recommendations for strategic changes based on these assessments.

3) **Incentivize extramural GSR support**: Establish incentives for supporting doctoral students on extramurally funded GSRs, linking use of grant funds to GSR admission and mentoring. The ultimate goal is to incentivize the support of doctoral students on intra and extramurally-funded GSRships. Several approaches for accomplishing this were discussed on the ITF, including i) a GSRship Tuition/Fee Offset (GTO) program, where the institution covers all (or a fraction) of GSRquarter tuition/fees for all doctoral students post-ATC that are supported as a GSR and are within 9 academic quarters post-ATC (i.e., pre Doc2a), and/or ii) a GSRship Tuition/Fee Incentive (GTI) program, where a portion (% TBD, perhaps a fraction of the fee/tuition costs on a per-quarter basis) of the ICR associated with supporting doctoral students on extramural grants is returned directly to the PI or program as discretionary funds. The particular program(s) to be adopted and implemented (could be a combination) will depend upon further discussions with campus administrators.

    Justification/Need: Extramural research support is the largest (e.g. >40 - 50%) source of GSR support for the majority of doctoral students in STEM fields, and those students constitute approximately two-thirds of doctoral students at UCSC. Supporting doctoral students on extramural GSRs not only provides stipends for those students, but also covers the tuition and fees associated with those enrollments, unlike other major forms of student support across the campus (e.g., TA/GSIships, most fellowships). This in-turn generates an important source of

resources that support graduate education more broadly across all disciplines on campus. However, the increasing costs of supporting doctoral students creates significant pressure on extramural funding, which may lead to fewer students being supported on extramural GSRs and a decline in the inclusion of GSR support in future grant proposals that include doctoral student trainees. To address this, the campus must develop a GSR incentive program where the campus covers the GSR-quarter tuition and fees for students post-ATC and within eligibility for the 5 yr support commitment. This will incentivize supporting post-ATC doctoral students (i.e., the subset of doctoral students most likely to be sufficiently trained in research methods and unencumbered with meeting other program requirements/milestones) on extramural funding.

4) **Incentivize and support enhanced mentoring and annual student assessment to promote student success.** Establish a standardized Graduate Division-centered process, with the ability to include program-specific metrics, for the annual assessment of graduate student progress to degree (draft progress form here). The multi-pronged program includes:
    - Create a site on the Graduate Division webpage dedicated to mentoring that foregrounds UCSC's commitment to DEI, first-gen, BIPOC students and links to CITL's Mentoring page, which has best practice guides (long and short) and templates for mentor-mentee compacts, individual development plans. Also model UCB's mentoring web page for some format/emphasis options.
    - Work with CITL to enhance resources on CITL's web page for first-gen and BIPOC students, and resources for faculty mentoring first-gen and BIPOC students. In particular, consider how to enhance resources directed specifically to BIPOC mentee students. (an example of good link for faculty: https://docs.google.com/document/d/1Ayh0p4N1iIZbcTQrYy8Edi30IUHgPnHAMvGLm mHzL-k/edit).
    - Devise incentive programs to encourage programs and faculty to adopt mentoring best practices, possibly under a 'student success' umbrella that encompasses both mentoring and annual student progress reports filled out jointly by student and student advisor, with incentive structure to cover both.
    - Incentivize departmental reward programs for implementing structural things such as:
        - requiring a mentor-mentee compact or individual development plan (templates on CITL's page)
        - annual progress report
        - a comprehensive graduate student handbook
        - explicit structure for students whose relationship with their mentors breaks down to have alternate faculty to consult (e.g. grad advising committee that includes at least two people in case student's advisor is on the committee)

      The departmental reward program could be incentivized via:
        - One time reward to departments for implementing a minimum number of structural changes, if needed (see above list). Say $2.5K/department * 40 departments = $100K.
        - Annual incentive to departments for meeting a minimum threshold compliance of filling out annual student progress reports (could be additional block allocation $2k annually (up to $50k total)
        - Annual award given at the divisional level (1-2 awards/division depending on size of division?) to reward quality and quantity of faculty mentorship of graduate departments ($1k/award, $10k total).
        - Any developed plans should also consider workload for graduate coordinators associated with setting up the structure, checking, verifying, required information.

Justification/Need: Enhanced student mentoring practices and programming, especially in support of first-gen and BIPOC students, is expected to be among the most impactful set of efforts to increase the retention, graduation, and success of our underrepresented graduate students. Many outstanding mentoring programs and practices are already in place at UCSC, but they often are not sufficiently supported and incentivized, nor are they universally available across the campus. Enhanced graduate student success at UCSC will require that we provide sustained holistic mentoring for our students in ways and levels appropriate for the discipline, and that the faculty and staff workload required to provide enhanced mentoring, particularly for BIPOC faculty and staff, be appropriately recognized and rewarded.

5) **Establish a Professional Development and Entrepreneurship Program:** Create a summer professional development/entrepreneurship program and course series.

   Justification/Need: Graduate training is clearly and inextricably tied to career success. Yet, many of UCSC's graduate programs are not organized to support non-academic pathways, and many faculty do not have the experience or bandwidth to provide such training. The proposed program would centralize and collectivize responsibility for providing professional development. Departments would be relieved from having to shoulder this responsibility on their own, while also incentivizing and leveraging Senate Faculty and Applied Lecturer Faculty from across campus, who would serve as cutting edge researchers and professional subject matter experts. This program could position UCSC as national leaders in professional development in non-academic paths for students in academic programs.

Other Essential Recommendations:

6) **Increase research fellowship support**: Make available two additional quarters of fellowship support for eligible doctoral students (one quarter for eligible MFA) to be deployed in the postATC stage of a doctoral student's career (or 2nd year for MFA), and made available within their normative time to degree. These additional fellowships should augment existing advanced-stage fellowship programs currently in place (DYF, Presidents, etc.).

   Justification/Need: Analyses of data collected by the ITF clearly demonstrate that enhanced research GSR/fellowship support (versus support coming primarily from ASEs) is associated with increased retention and shorter time to degree for doctoral students. Given the not-insignificant number of doctoral students that separate from the university without graduating, or that graduate beyond their program's normative time to degree (and with the requisite need to continue supporting those post-normative time students until they do finally graduate), allowing students to focus more on their research during the critical post-ATC stage of their career, coupled with incentivizing programs to enhance mentoring of student to graduation, would overall allow programs and the university to educate, train, and graduate more doctoral students in alignment with UC's education and research mission. This is simply a better use of UC funds than letting students drop out without completion or take 1+ more years to finish. Both of the latter are expensive.

7) **Enhance graduate student wellness at UCSC** by instituting measures to address and implement the Graduate Wellness Group recommendations, including i) measures to alleviate housing-related burdens on graduate students, and ii) adoption of the Okanagan Charter.[151]

[151] The full list of Graduate Wellness Group recommendations are provided in Appendix VI.

Justification/Need: Holistic student success depends not only on appropriate support and mentoring, but also on a broader supportive environment that minimizes unnecessary barriers and challenges that negatively impact daily life and general wellness. Being able to succeed and thrive while in graduate school relies on having the mental and physical capacity to perform research, teach effectively, manage coursework, and create knowledge. Graduate students face unique challenges at UCSC in accessing basic needs, as well as physical and mental health and wellness resources and support. Our aim is to help graduate students thrive by increasing their access to basic needs, health, and wellness.

8) **Direct University Relations and Divisional Development Offices** to i) prioritize fundraising for graduate student fellowships, particularly for URM students, and ii) develop a UCSC graduate student alumni engagement process to enhance career awareness and development for our current graduate students.

   Justification/Need: Increased campus fundraising in support of graduate student research fellowships, career development, and wellness programming, will be essential in sustaining future graduate education and research excellence at UCSC. Likewise, UCSC's graduate student alumni represent a largely untapped resource as potential partners in the success and career development of our current graduate students. Engaging those alumni with our current students would not only enhance post-graduation career awareness and opportunity, but it would provide an important means for our graduate alumni to engage and contribute to the success of the next generation of graduates. Because UCSC has not previously made graduate student success a major focus of a campaign, there is untapped opportunity here. This effort should be closely aligned and completed in collaboration with individual graduate programs, particularly because the personal and professional connections and loyalty that most alumni feel is with these programs and their faculty, and because current graduate students provide compelling stories and examples of impacts and benefits.

9) **Conduct a comprehensive review and audit of the MIP** to evaluate the impacts of this program on enrollment growth (for both Master's and PhD students), possible side-effects, and overall effectiveness of the program, as was originally required at the three year mark of the program in 2017 (per January 21, 2014 MIP approval letter from EVC Galloway). **In the meantime, we also recommend that the CP/EVC issue an updated memo that clearly states the goals and metrics of success for the Master's Incentive Program (MIP)**, appropriate uses for MIP funds at both the program and divisional level, and the requirement for annual financial reporting of MIP allocations, expenditures, and carryforward use commitments that is available to stakeholders (programs, divisions, Graduate Division, central administration).

   Moreover, given MIP's purpose historically to in part support doctoral growth, the role of academic master's programs in the graduate ecosystem has received little attention. Given this, **the campus should reevaluate the role of academic versus professional (or professionally-oriented) master's programs in the broader graduate education ecosystem**, and how master's programs should complement and strengthen doctoral and graduate programs in general on campus.

   Justification/Need: The success and broader impacts of the MIP program, either positive or negative, remain unclear, since a comprehensive review of the program has not occurred, as was originally required at the three year mark of the program in 2017 (per January 21, 2014 MIP approval letter from EVC Galloway). Even if the MIP has worked exactly as was intended when it launched, conditions have changed, as have costs and student and program needs. It is essential to reassess the roles that the MIP is currently playing, and how the program aligns with campus

priorities going forward. In the immediate term, there is uncertainty among MIP participant programs about what constitutes appropriate use and priorities for MIP funds, and how MIP funds are used by academic divisions and programs vary widely. Clarification of appropriate use of MIP would address this uncertainty, as an interim measure, while a broader evaluation of the MIP program is conducted.

Regarding master's programs in the graduate education ecosystem at UCSC, there has been no comprehensive assessment of the role that academic and professionally-oriented master's programs should play in complementing and strengthening graduate education more broadly, including a role for academic master's serving as a pathway for students into competitive doctoral programs at UCSC or elsewhere.

10) **Incentivize development of cross-departmental TA allocation processes**.

Justification/Need: Given the central role of TAship appointments in the training and support of our doctoral students, and the fact that the undergraduate enrollments that generate TAships may not coincide with graduate student training/support needs within a program, transparent processes should be developed within academic divisions that facilitate the matching of doctoral students in one program with TA training/support opportunities that may exist in a different program.

Appendix V. Professional Development Summer Program and Course Series

Abstract: This proposal is for the establishment of a Professional Development Summer Program and Course Series (PDSPCS) for graduate students. The proposed program will i) provide intensive professional development training, complementing professional development programming currently delivered on campus, ii) support graduate training core competencies, including networking and professionalization, and iii) grow doctoral campus FTE counts towards meeting the campus' rebenching targets. These benefits will require modest campus investments, including meeting the costs of instruction, and reducing existing barriers to doctoral student summer enrollment (mainly student tuition/fees). Overall, the proposed program will contribute to graduate student success by focusing on professional development training for nonacademic career paths, something that is under-emphasized in our graduate programs, even though the majority of doctoral graduates enter non-academic career paths following graduation.

Background: There has been a longstanding cross-committee Academic Senate effort to systematize best practices for graduate professional development across the campus. In 2016 Grad Council and the Special Committee on Development and Fundraising jointly drafted a list of possible grad career development initiatives that could be centrally managed.[152] Most recently, in 2020/21, the Joint Working Group on Graduate Education conducted a survey in which the majority of campus Senate faculty across all divisions agreed that UCSC doctoral/MFA graduates face an unsustainably competitive market for tenure

[152] They include: Create a central clearinghouse to identify current departmental and divisional resources for graduate student professional development both inside and outside the academy; Identify successful programs in career-training as potential pilots to be adapted across campus (Grad internship program; IHR Public Fellows; MCD Bio Training Grant); Plan for career-training in teaching across the disciplines in 2 and 4-year primarily undergraduate institutions (PUI); Coordinate a campus-wide internship program placing students in industry, non-profits and arts organizations; Develop a "Distinguished Visiting Professionals" program to bring in leading practitioners to campus, enhancing both graduate education and placement; Plan a professional development seminar series; Hire or put in place part-time staff person to help coordinate department efforts at graduate professional development.

track academic positions.[153] A recent study from Academic Analytics validates those concerns, showing that UCSC placement of graduate students outside of paths to tenured academic positions ranges from 25 and 40% in BSOE and PBSci respectively, to ~65 - 70% in the Arts, Humanities, and SocSci Divisions. Most faculty nevertheless strongly value engaging in graduate education, specifically being able to work with and mentor Doctoral and MFA students.[154] The majority of faculty also agreed that the diminishing tenure track job prospects should not be used as a reason to close off opportunities for future generations. There is also a recognition that doctoral programs have an ethical and professional responsibility to mentor, train, and help facilitate their PhD graduates' success in a wide variety of existing and new career paths.[155] Graduate training is clearly and inextricably tied to career success. Yet, many of our programs are not organized to support non-academic pathways, and many faculty do not have the experience or bandwidth to provide such training. The JWG therefore recommended that the campus "develop enhanced professionalization programming within the Graduate Division, academic divisions, and departments to better serve professional development needs of graduate students."[156]

Proposal: Following the JWG recommendation, the ITF proposes the Professional Development Summer Program and Course Series for implementation. This program would centralize and collectivize responsibility for providing professional development. Departments would be relieved from having to shoulder this responsibility on their own, while also incentivizing and leveraging Senate Faculty and Applied Lecturer Faculty from across campus, who would serve as cutting edge researchers and professional subject matter experts. This program could position UCSC as national leaders in professional development in non-academic paths for students in academic programs (and not just for those students in professional masters programs).

Specifically, this proposal calls for increased campus revenue to flow to the Graduate Division, as a course sponsoring agency, to create a pilot Professional Development Summer Program and Course Series (PDSPCS), with a structural potential to grow core and extramural funding based on enrollment and success outcomes. The program would include a course series, staff support, and guest lecturers. The courses would build different but complementary skills across disciplines, chosen for their broad transferability to a range of careers in teaching, business, and research (e.g., research and writing, team-research project leadership, grant writing, entrepreneurship, etc.). Placement staff would help identify career and placement pathways, including internship opportunities. Guest speakers, including alumni, would be invited from the private and public sectors to present both in-demand skills, models of success (in moving from academia to nonacademic professions), and cutting edge applied research methods and

[153] Only a fifth (21%) of responding UCSC faculty strongly agreed (and half (54%) agreed/strongly agreed), that doctoral/MFA graduates were competitive for career opportunities in academia with tenure-track jobs. By contrast, nearly half (46%) strongly agreed (and 80% agreed/strongly agreed) that doctoral /MFa graduates were competitive for applied/professional (non-academic) jobs in the field of their discipline. And just under a third (29%) strongly agreed and two thirds (67% agreed/strongly agreed) that doctoral/MFA graduates were competitive in professional jobs more broadly.

[154] 90% of all responding faculty strongly agreed/agreed that "being able to work with doctoral/MFA students is important to me" and 68% strongly agreed/agreed that "Having access to doctoral/MFA students is an important factor in advancing my research." Faculty in the STEM fields were more likely to strongly agree/agree with this last statement than in the non-STEM Divisions: 100% BSOE, 85% PBSci; 67% SocSci; 41% Hum; 40% Arts.

[155] For example, over half (57%) of all faculty who responded answered that we should admit as many doctoral/MFA students as we can place them in "relevant jobs in ANY AREA (academia, private sector, government, etc.)" and only a tenth (10%) responded that we should only admit as many Doc/MFA students as can be placed in tenure track jobs. The remaining 30% felt their programs should "give as many qualified students as can be advised the opportunity to get a doctoral/MFA degree." (Appendix E, p. 152)

[156] JWG Final report (Appendix 10A, p. 6).

technologies to keep the program current and relevant (for faculty, students, and staff). Students could be paired with grad alumni as part of a mentoring network that the program would build.

Courses: The proposal includes start-up costs so that the Graduate Division can incentivize Senate and Lecture faculty to collaborate with the Graduate Division on the larger rubrics for the course series, and then collaborate to develop summer graduate courses that provide advanced training in transferable research, writing, entrepreneurial, and leadership skills. These skills are meant to increase student success both within a student's programs and after graduation. The courses will be cross disciplinary, intended to attract Senate and Lecture faculty who are interested in collaborating and in team teaching such areas as (but not limited to): 1) research and writing drawn from different data sources (field, archive, and lab based data) that could be variously useful to students across the disciplines; 2) team-research project leadership; 3) grant and proposal writing (for federal, state, and corporate calls and RFPs); 4) entrepreneurship. The collaborative nature of the course development process and team-teaching approach works to ensure that the courses are not discipline specific but instead bring together the expertise of Senate and Applied Lecturer faculty to help students draw on skills in writing and research that are transferable across campus, disciplines, and career paths. The teaching of these courses could also be open to post-doctoral students, and courses do not have to be team-taught. However, the ITF believes that as a collective effort Senate faculty should be recruited and incentivized to participate through course overloads, and that the excellence and applicability of the courses and course series would benefit from cross and interdisciplinary collaborations.

*Staffing and Programming***:** We envision the PDSPCS as also supported by guest speakers who are professionals, experts, and leaders in their field. They would give presentations to all enrolled summer graduate students in the Series, as well as faculty to help keep current with the needs, skills, technologies, and methodologies in the workplace.

Additionally, this proposal includes the hiring of placement coordinators to work with graduate students to identify career tracks outside of academia and to establish internships and other career pathways in both the private and public sectors. This pilot program would set the stage for deepening relationships between UCSC and Silicon Valley, other private sector companies and agencies, as well as California state programs, etc. We envision setting up a mentoring network of grad alumni who would connect with the campus as distinguished visitors, possible links to internships, and as mentors matched to our current grads. These initial relationships between UCSC and the private and public sector should lead to more established channels and predictable pathways for graduate students to non-academic jobs and careers.

*Entrepreneurship***:** While this proposal calls for seed money and year-over-year commitments from the campus center, this initiative is also intended to attract corporate and private donor support. We recommend that the Graduate Division, Summer Session, CITL, Disciplinary Division Units, Institutes (e.g., THI, ARI, ASI), and University Relations work together to leverage the synergies to grow the PDSPCS.

Timeline and Process: If approved by the end of the Winter quarter (2023), the Graduate Division would advertise the program and put out a call to all Senate and Lecturer Faculty in the Spring of 2023. After review and selection, the Graduate Division would incentivize selected faculty or faculty-teams to collaborate on the rubrics and write and submit course proposals to CIE for review and approval, with a goal of launching in the Summer of 2024. The Graduate Division would hire and staff the program during the 2023-24 academic year.

Budget: The budget supports five areas: 1) summer course overload compensation for Senate Faculty and Applied Lecturers; 2) course rubric development and course development support (one time per course) and refreshes (~once every five years); 3) staffing; 4) programming; 5) tuition/fee waivers for enrolled

graduate students. While many of these costs can eventually be supported by extramural funding, core investments will be necessary to get the program off the ground and would, moreover, support: 1) core campus priorities (student success within programs and post-graduation) and; 2) campus requirements (increased graduate enrollment in relation to rebenching targets).

Synergies: This proposal leverages and creates synergies between different Units (Graduate Division, Summer Session, CITL), and Campus Initiatives (Summer Session, Advancing Student Success). Perhaps most important will be the active participation and partnership of the Committee on Development and Fundraising and University Relations to work together on external fundraising. The ITF has started to consult and collaborate with these different units so that the proposal represents an optimized, campuswide, proposal, rather than discrete and disconnected asks.

Appendix VI. ITF-endorsed recommendations for measures to improve graduate student well-being at UCSC.

These recommendations were developed by the Graduate Wellness Group subcommittee composed of Lorato Anderson (Director of DEI, Graduate Division), Kednel Jean (Director of Basic Needs Programs), Betty Desta (Graduate Student Slug Support Case Manager), and Meg Kobe (Director for Student Health Outreach & Promotion (SHOP).

Intervention	Details	Needs Addressed
Alleviate housing-related burdens on graduate students.	• Follow the UC Santa Barbara model: the university acts as a "cosigner" for international graduate students, as well as provides a support letter and a staff contact for landlords to alleviate concerns. • Open Graduate Student Housing earlier in the summer and fall quarters. • Build more graduate student housing.	• Many graduate students (especially international) do not have a credit history or U.S.based cosigner, creating difficulty in attaining offcampus housing. • When students have been approved for Graduate Student Housing, their contract doesn't begin until Fall Quarter. This creates a gap of a few weeks for students who must arrive in Santa Cruz earlier (e.g. international) and are not able to afford a hotel or short term rental. • Cost of Graduate Student Housing is prohibitive for many graduate students. • Food costs are increased for graduate students in the hotel program due to lack of kitchens.
Adjust payment processes to eliminate basic needs support gaps between the summer and fall.	• Establish guaranteed summer support for graduate students. • Allow graduate students the option to be paid over 12 months instead of 9. • Explore ways to pay relocation/housing supplements at the beginning of fall quarter.	• Slug Support basic needs funding for graduate students is insufficient to cover all gaps, especially the gap between spring and fall quarters. • Fellowship payments take weeks to process, especially for new and international students.

	• Explore ways to pay international students more quickly, including through gift cards.	• TAs and other ASEs do not receive any fall paychecks until November.
Centralize wellness resources in graduate-only and graduate accessible spaces.	• Perform a campus audit to identify underused spaces and assess accessibility needs. • Wellness support staff should hold office hours in designated graduate student areas, like the Graduate Student Commons. • Establish more graduate student-only hours in existing wellness services. • Provide more virtual options for graduate wellness programming. Create a web page dedicated to graduate student wellness resources. • Establish intentional outreach to graduate students about available wellness services through events, emails, and flyers. • Encourage academic divisions and departments to proactively engage with graduate students about stress reduction and wellbeing.	• There are not enough rooms and offices for staff and graduate student wellness programs. • Some buildings are not accessible for people with mobility limitations. • Graduate students are largely unaware of the wellness resources available to them. • Graduate students often feel that wellness spaces and resources are not catered to them; they assume the services are only for undergraduate students or that graduate students are an afterthought. • Graduate students often feel uncomfortable accessing basic needs and wellness resources when undergraduate students are present. • Graduate students report that faculty often treat wellbeing and self-care as separate from the academic setting.
Adopt the Okanagan Charter at UC Santa Cruz.	• The Okanagan Charter is an international charter for health promoting universities and colleges that "calls upon higher education institutions to incorporate health promotion values and principles into their mission, vision and strategic plans, and model and test approaches for the wider community and society." • The Charter requires the institution to establish centralized, clear, achievable goals and strategies dedicated to health and wellness promotion. • Joining the Charter provides access to the US Health Promoting Campus Network (which includes UCLA, UC Berkeley, and UC Irvine), connecting us to resources and support to establish priorities and programs.	• There is a lack of a clear, cohesive vision from campus leadership regarding basic needs and wellbeing for graduate students. • Campus offices compete for the same funding to support student wellbeing, as there is a lack of cohesion around fundraising.

Target more staff hiring to graduate wellness support.	• Hire more trans/queer-identified CAPS counselors of color. • Provide more permanent funding to the Ethnic Resource Centers, especially their Graduate Retention Interns. • Hire more staff in CAPS, Slug Support, and other wellness areas who are committed to graduate student support.	• There is a lack of diversity amongst staff, which doesn't reflect the student population. Identity-specific graduate student support tends to be housed in the Ethnic Resource Centers, which are underfunded. The ERC Graduate Retention Interns are paid less than similar positions on campus, and are not permanently funded. • There is a general lack of wellness staff committed to graduate students.
Prioritize transparency in communications between leadership and graduate students.	• Leadership should create targeted communications to graduate students to promote transparency around graduate support initiatives. These communications should be regular.	• Relations between graduate students and campus leadership have not healed since the wildcat strike, and 80% of UCSC graduate students did not vote for the new contract.

Source Document

Appendix VII. Estimated Costs For Recommended Increased Investments in Graduate Education.

I. Establish a summer support program to enhance student success		
Summer stipend (50% TA)	$9,908	$9,908
Current Doc/MFA Program Size (minus Doc2a)	1,441	1,441
% Eligible	35%	50%
Subtotal Summer Stipend Per Year	**$4,997,100**	**$7,138,714**
II. Strengthen DEI support programming to enhance student diversity and success		
10 Additional Cota-Robles Fellowships per year	$1,263,690	
10 DEI 1-Yr Fellowships	$421,230	
DEI Support Programming (e.g., DEI Innovation)	$100,000	
Subtotal DEI Support Per Year	**$1,784,920**	
III. Incentivize extramural GSR support	**TBD**	
IV. Incentivize and support enhanced mentoring and annual student assessment to promote student success.	**$60,000**	

V. Establish a Professional Development and Entrepreneurship program		
# Graduate Students Enrolled	50	100
# of Courses Sections Offered	5	10
Instructional Cost (recurring)	$75,000	$150,000
Course Development Cost (one time)	$86,250	$86,250
Tuition/Fee Waiver (if ASE) or Scholarship (if not)	$139,250	$278,500
Total Cost for Year One	**$300,500**	**$514,750**
Subtotal Summer Course Series (after courses have been developed)	$214,250	$428,500
VI. Increased research fellowships (2 post-ATC career quarters per student)		
Current Doc/MFA Program Size (minus Doc2a)	1,441	
Additional Fellowships Per Year (assuming 25% of students eligible per yr)	360	
Salary/Stipend + Tuition/Fees/Benefits	$16,200	
Total Fellowship Cost Per Year	**$5,832,000**	
VII. Enhance graduate student wellness	**TBD**	
VIII. Engage University Relations and Divisional Development Offices	**No direct cost**	
IX. Conduct a comprehensive review and audit of the MIP	**No direct cost**	
X. Incentivize development of cross- departmental TA allocation processes.	**No direct cost**	
Total Investment (minus TBDs)	**~$13M - $15M**	