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[1] 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**[2]. 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., 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

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

[2] 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 core-funded GSRs.

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 come at a time when the role and strategic future of graduate education locally and systemwide is undergoing profound changes[3]. 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[4] 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[5]. 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 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

[3] 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.

[4] ITF membership is listed in Appendix I.

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

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 early-career 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 Appendix VIII) and also broken down by figure number cited below.

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.

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).[6]
    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

[6] *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.*

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 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[7]. 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)[8]. 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 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[9]. 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[10] and support source[11] information from multiple units/stakeholders[12] 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**

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

[8] 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.

[9] 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.

[10] Broadly categorized as Academic Student Employees (ASE), Graduate Student Researchers (GSR), and Fellowships.

[11] Core and extramural (EM).

[12] Programs, disciplinary divisions, the graduate division, the CP/EVC office, and Budget and Planning (BAP).

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 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[13]: 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

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

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 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.[14]

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 post-ATC 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[15], including i) measures to alleviate housing-related burdens on graduate students, and ii) adoption of the Okanagan Charter[16]

[14] A proposal for a Professional Development Summer Program and Course Series is included in Appendix V.

[15] The full list of Graduate Wellness Group recommendations are provided in Appendix VI.

[16] 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.

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 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), 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**[17], while Modules 9 - 15 provide data on **future projections**. The content of the individual modules is shown below:

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 (2016/17-2018/19)	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 SUB-CATEGORY (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 SUB-CATEGORY (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 SUB-CATEGORY (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	Historical 3-yr avg relative proportion (%) of student support by OTHER Graduate Division FELLOWSHIP SUB-CATEGORY (Cota-Robles, Other Grad Div,

[17] The GSSM currently includes 3-year average data from 2015 - 16 through 2018-19, but will be updated to 2019-20 - 2021-22 when the data become available). The GSSM is structured to be updated annually.

Fellowships (Level 3 Hierarchy)	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[18] and support level[19]. To accomplish this, the ITF merged and restructured 2005 - 2019[20] graduate student enrollment and demographic data with student payment data (from AIS).[21] The ITF coded this data, created variables to

[18] "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.).

[19] "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).

[20] 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.

[21] 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

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[22] (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[23]. 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.
- 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.

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.

[22] 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.

[23] 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 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 need-basis 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-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); 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 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.

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/1Ayh0p4N1iIZbcTQrYy8Edi30IUHgPnHAMvGLmmHzL-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 post-ATC 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[24]

   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

[24] The full list of Graduate Wellness Group recommendations are provided in Appendix VI.

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 non-academic 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.[25] 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 track academic positions.[26] 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.[27] 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.[28] 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."[29]

***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

[25] 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

(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 non-academic professions), and cutting edge applied research methods and 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.

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.

[26] 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.

[27] 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.

[28] 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)

[29] JWG Final report (p. 6)

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, campus-wide, 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 "co-signer" 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 off-campus 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. ● Explore ways to pay international students more quickly, including through gift cards.	● 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. ● TAs and other ASEs do not receive any fall paychecks until November.
Centralize wellness resources in graduate-only	● Perform a campus audit to identify underused spaces and assess accessibility needs. ● Wellness support staff should hold	● There are not enough rooms and offices for staff and graduate student wellness programs. ● Some buildings are not

and graduate-accessible spaces.	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.	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	● There is a lack of diversity amongst staff, which doesn't reflect the student population. ● Identity-specific graduate student support tends to be

	Interns. ● Hire more staff in CAPS, Slug Support, and other wellness areas who are committed to graduate student support.	housed in the Ethnic Resource Centers, which are under-funded. 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**

Appendix VIII:
Data Slides to Accompany Final Report from the Implementation Task Force (ITF) for Inclusive Excellence in Graduate Education

Doctoral Student Normative Time To Degree (NTTD) by Program and Division

Average, 2005-06 through 2018-19 for graduated doctoral students

Figure 1: Arts NTTD and Post NTTD for Enrolled TTD

Average, 2005-06 through 2018-19 for graduated doctoral students

Division	Dept	Enrolled TTD (Avg)	# Who Graduated	# Who Graduated Past NTTD	# Who Graduated Within NTTD	Of those who Graduated, the % who graduated past NTTD	Of those who Graduated Past NTTD, the Avg # Qtrs Past NTTD
Arts	Film and Digital Media	5.07	9	3	6	33%	1.67
Arts	Music	4.50	33	1	32	3%	3.00
Arts	Visual Studies	5.33	8	1	7	13%	1.00

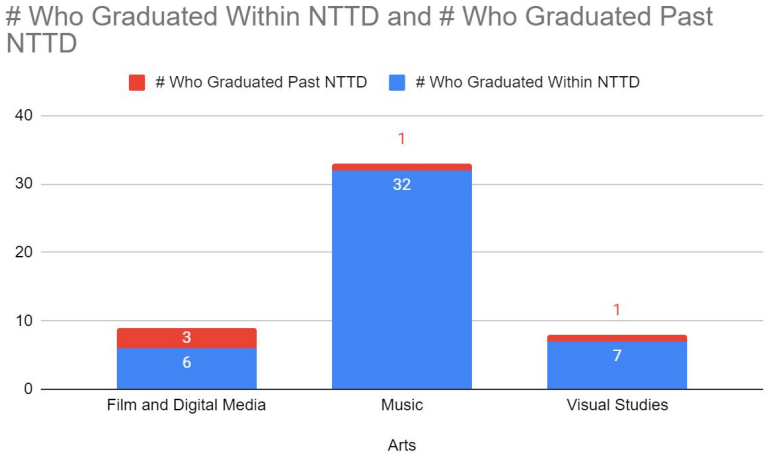


Figure 2: BSOE NTTD and Post NTTD for Enrolled TTD

Average, 2005-06 through 2018-19 for graduated doctoral students

Division	Dept	Enrolled TTD (Avg)	# Who Graduated	# Who Graduated Past NTTD	# Who Graduated Within NTTD	Of those who Graduated, the % who graduated past NTTD	Of those who Graduated Past NTTD, the Avg # Qtrs Past NTTD
BSOE	Biomolecular Eng and Bioinformatics	5.60	37	11	26	30%	2.91
BSOE	Computational Media	5.00	1		1	0%	
BSOE	Computer Engineering	4.70	53	7	46	13%	2.86
BSOE	Computer Science	5.31	98	15	83	15%	3.93
BSOE	Electrical Engineering	4.90	67	12	55	18%	3.67
BSOE	Statistics and Applied Mathematics	4.61	43		43	0%	
BSOE	Technology and Information Management	4.73	5	1	4	20%	2.00

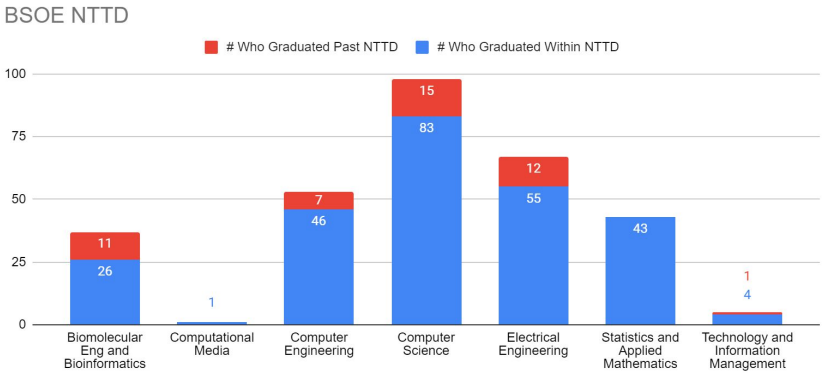


Figure 3: Humanities NTTD and Post NTTD for Enrolled TTD

Average, 2005-06 through 2018-19 for graduated doctoral students

Division	Dept	Enrolled TTD (Avg)	# Who Graduated	# Who Graduated Past NTTD	# Who Graduated Within NTTD	Of those who Graduated, the % who graduated past NTTD	Of those who Graduated Past NTTD, the Avg # Qtrs Past NTTD
Hum	Feminist Studies	5.17	2	0	2	0%	
Hum	History	5.61	24	4	20	17%	3.75
Hum	History of Consciousness	6.10	21	3	18	14%	2.33
Hum	Linguistics	5.52	23	3	20	13%	2.33
Hum	Literature	6.25	52	5	47	10%	2.80
Hum	Philosophy	5.82	13	5	8	38%	2.80

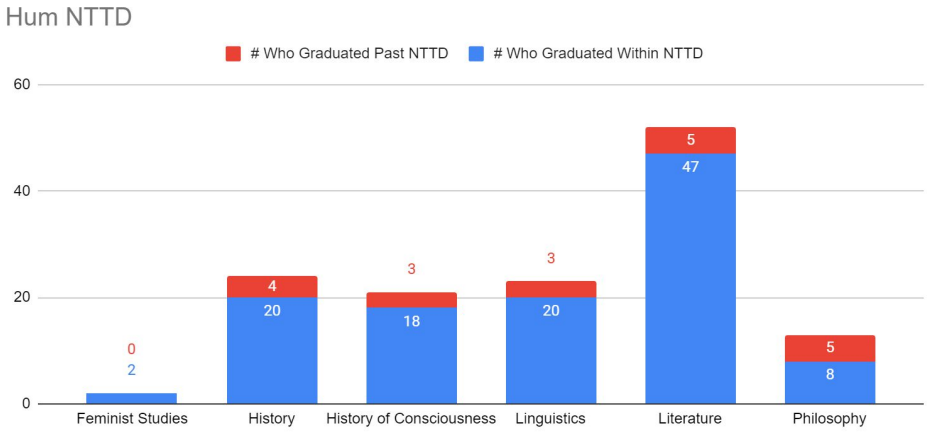


Figure 4: PBSci NTTD and Post NTTD for Enrolled TTD

Average, 2005-06 through 2018-19 for graduated doctoral students

Division	Dept	Enrolled TTD (Avg)	# Who Graduated	# Who Graduated Past NTTD	# Who Graduated Within NTTD	Of those who Graduated, the % who graduated past NTTD	Of those who Graduated Past NTTD, the Avg # Qtrs Past NTTD
PBSci	Astronomy and Astrophysics	5.71	41	4	37	10%	3.25
PBSci	Chemistry and Biochemistry	5.38	114	15	99	13%	2.20
PBSci	Earth Science	5.37	67	17	50	25%	2.88
PBSci	Ecology and Evolutionary Biology	5.56	77	17	60	22%	3.53
PBSci	Environmental Toxicology Grad	5.33	1		1	0%	
PBSci	Mathematics	5.43	44	1	43	2%	1.00
PBSci	Microbiology and Environmental Toxicology	5.18	19		19	0%	
PBSci	Molecular Cell Developmental Biology	5.85	63	15	48	24%	3.47
PBSci	Ocean Sciences	4.85	43	10	33	23%	3.10
PBSci	Physics	5.42	70	9	61	13%	3.11

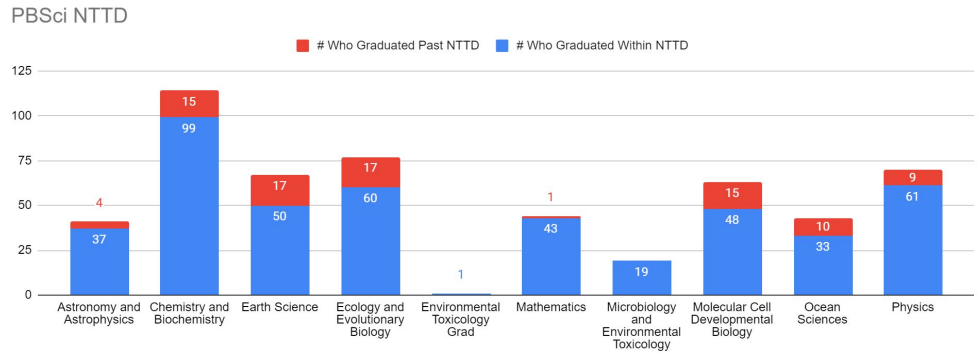
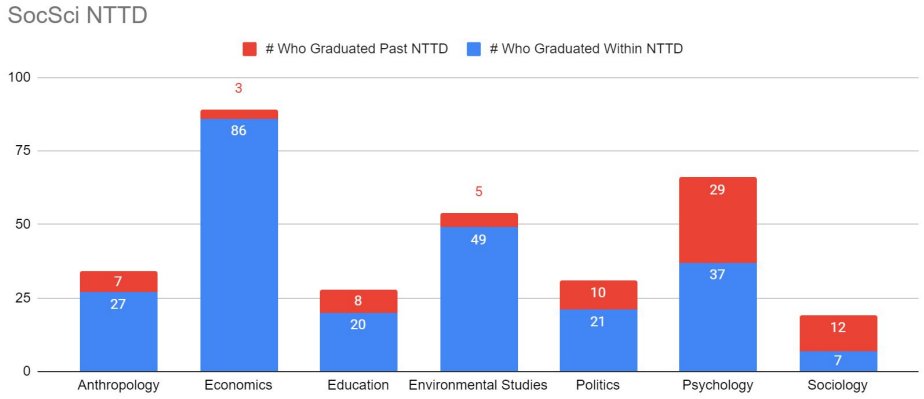


Figure 5: SocSci NTTD and Post NTTD for Enrolled TTD

Average, 2005-06 through 2018-19 for graduated doctoral students

Division	Dept	Enrolled TTD (Avg)	# Who Graduated	# Who Graduated Past NTTD	# Who Graduated Within NTTD	Of those who Graduated, the % who graduated past NTTD	Of those who Graduated Past NTTD, the Avg # Qtrs Past NTTD
SocSci	Anthropology	6.45	34	7	27	21%	2.43
SocSci	Economics	4.59	89	3	86	3%	3.33
SocSci	Education	5.12	28	8	20	29%	2.38
SocSci	Environmental Studies	5.15	54	5	49	9%	3.00
SocSci	Politics	5.79	31	10	21	32%	3.50
SocSci	Psychology	5.92	66	29	37	44%	2.76
SocSci	Sociology	6.33	19	12	7	63%	3.42



Demographic Analysis and Doctoral Graduation Rates

Figure 6: Graduation and Attrition (no longer enrolled) Rates for Doctoral Students by URM Status

Total over 2005-06 - 2018-19 for all matriculated doctoral students

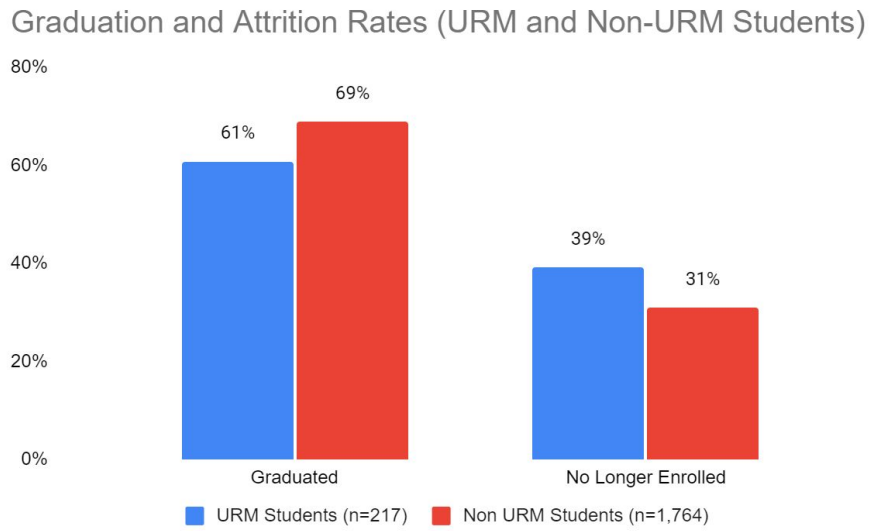


Figure 7: Percent of doctoral students who withdrew from their program before graduating relative to all students within the division over the period 2005-06 through 2018-19 by division and student demographic

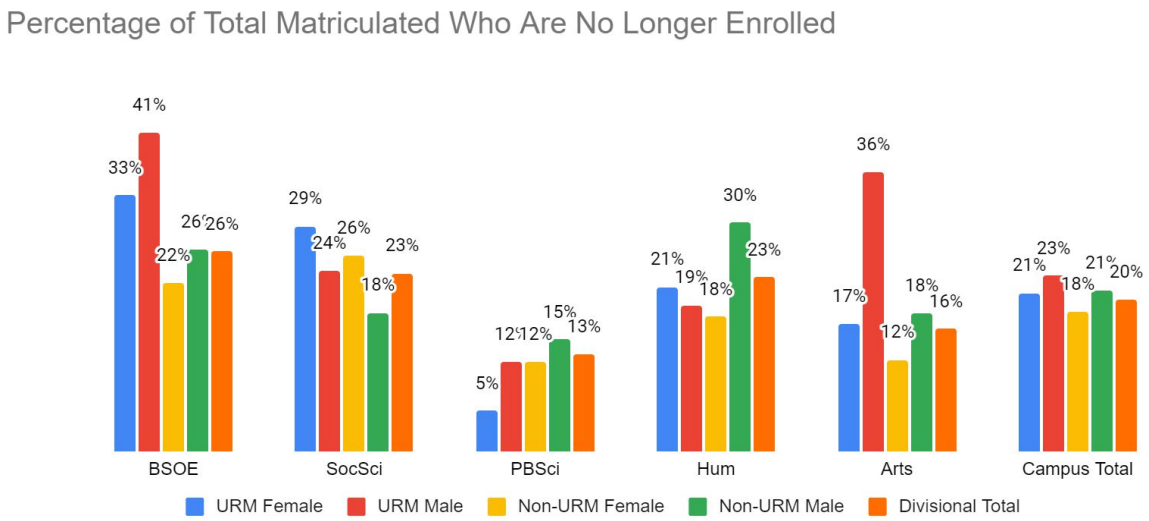
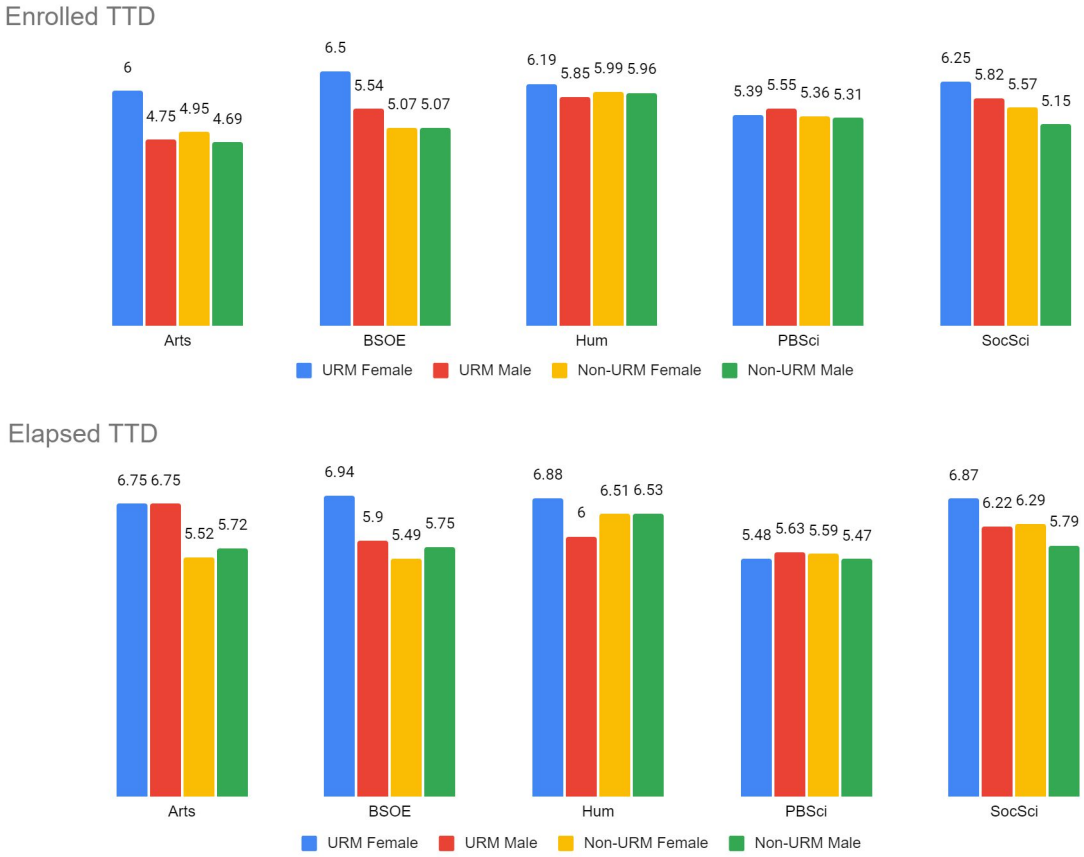


Figure 8: Doctoral Student Time to Degree by URM Status and Division - Shown for Enrolled and Elapsed TTD in Years



Divisional and Departmental Historical Funding Mix

(Average 2015-16 through 2018-19)

- Data structure help illustrate how the ITF funding model can be used for future planning to optimize student support

Figure 9: Arts - Total Annual Academic Year Salary/Stipend Spent Supporting Doctoral Students by Support Category and Department Averaged, 2015-16 - 2018-19

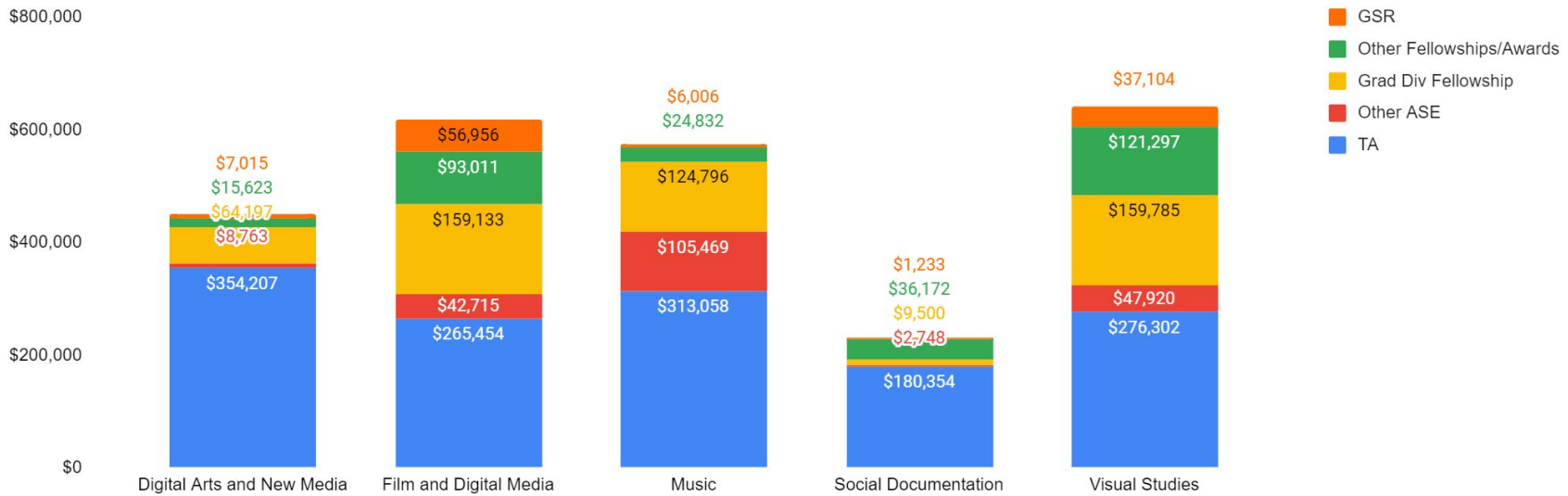
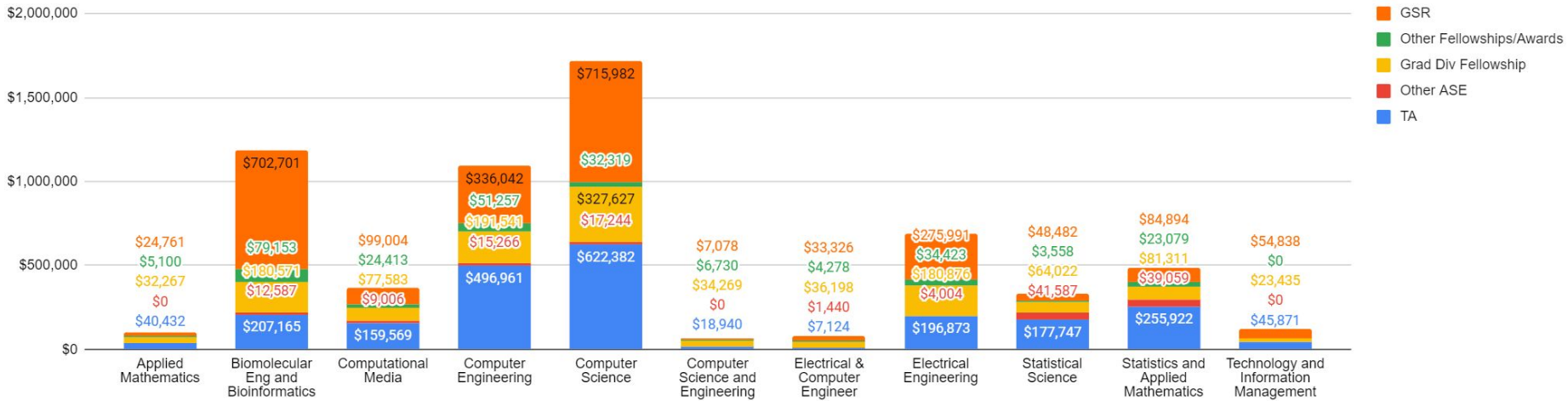


Figure 10: BSOE - Total Annual Academic Year Salary/Stipend Spent Supporting Doctoral Students by Support Category and Department Averaged, 2015-16 - 2018-19



Note: Because of the BSOE ‘Reshaping’, these data and department categories may not reflect the current state.

Figure 11: Humanities - Total Annual Academic Year Salary/Stipend Spent Supporting Doctoral Students by Support Category and Department Averaged, 2015-16 - 2018-19

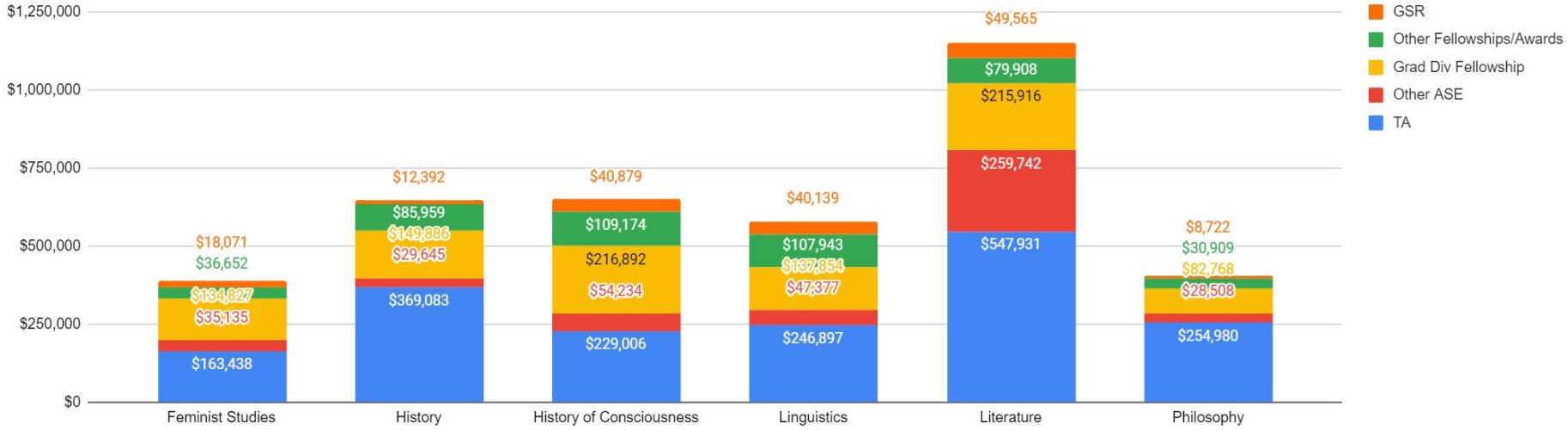


Figure 12: PBSci - Total Annual Academic Year Salary/Stipend Spent Supporting Doctoral Students by Support Category and Department Averaged, 2015-16 - 2018-19

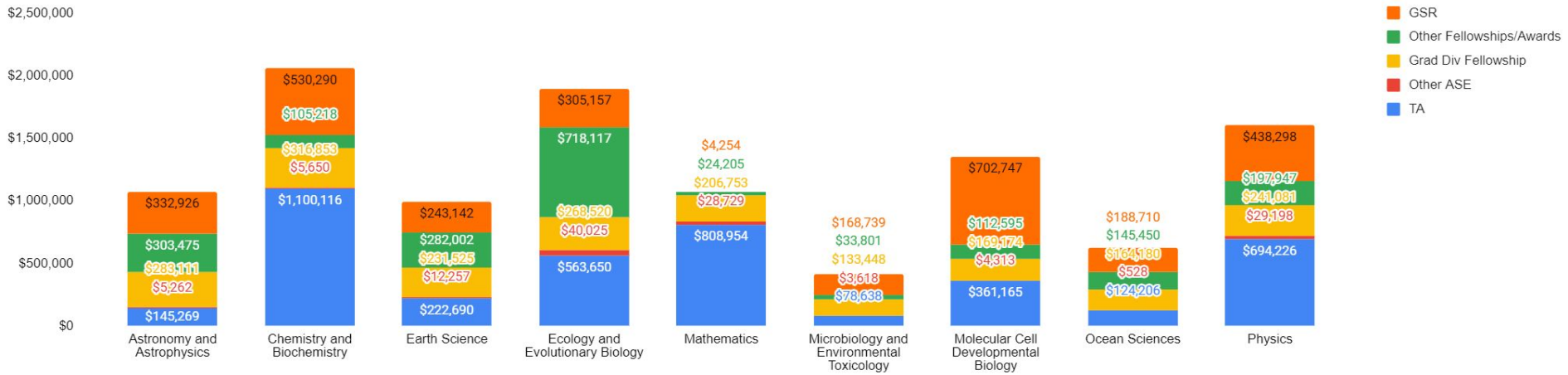


Figure 13: SocSci - Total Annual Academic Year Salary/Stipend Spent Supporting Doctoral Students by Support Category and Department Averaged, 2015-16 - 2018-19

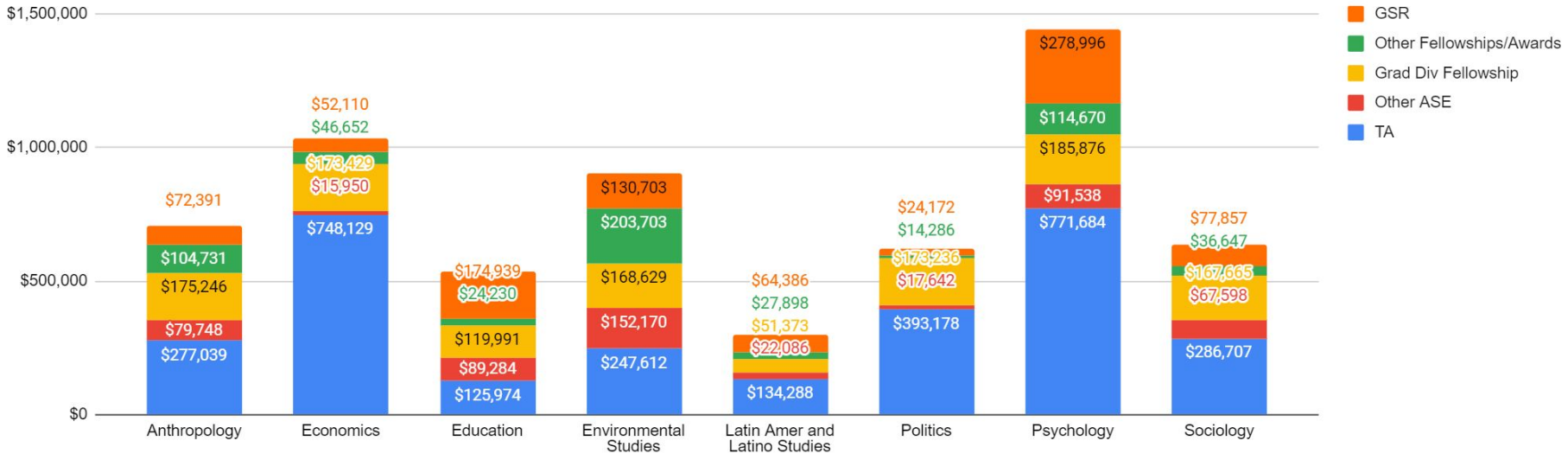


Figure 14: Relative Doctoral Student Support by Support Category and Division
Average, 2015-16 - 2018-19

Predictors of Student Success

FIGURE 15: Doctoral Student Support Predictors of Success: Multivariate Model Results

All significant predictors across all two support categories (% support, ratio levels of support; counts of support) were included in a single full model that was sequentially reduced by omitting non-significant variables to arrive at a final REDUCED model.

Final reduced model shows:

- GREATER full GSR support during AY and SUMMER is associated with LOWER ELAPSED and ENROLLED TTD
- Partial/minimal ASE SUMMER support is associated with LOWER ENROLLED TTD
- HIGHER avg support (relative to TA level of support) in AY is associated with LOWER ELAPSED TTD

Enrolled TTD

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|
Intercept	4.5335254	0.257527	17.60	<.0001*
Log10 Mean(% Total_ASE_Sal_Stip_Level_Minimal and Partial (Summer))	-1.083101	0.359106	-3.02	0.0029*
Log10 Mean(% Total_GSR_Sal_Stip_Level_Greater_and_Full (Summer))	-1.453443	0.343099	-4.24	<.0001*

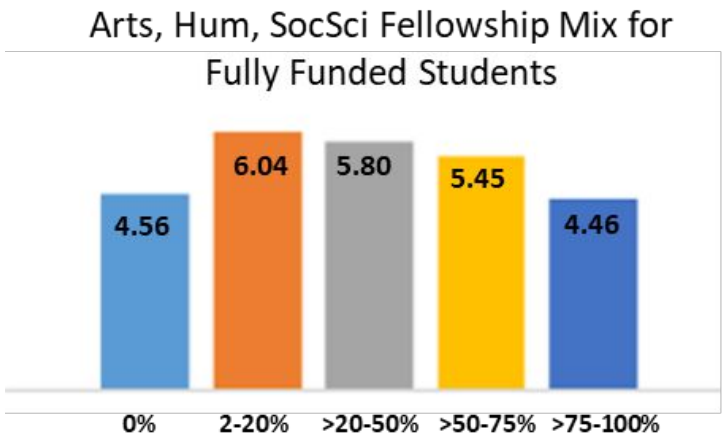
Elapsed TTD

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|
Intercept	6.0465067	0.209544	28.86	<.0001*
Log10 Mean(% Total_GSR_Sal_Stip_Level_Greater_and_Full (Academic Year))	-0.322572	0.11943	-2.70	0.0071*
Mean(Average_Support_Ratio_Per_Enrolled_Qtr_AY)	-0.487765	0.176172	-2.77	0.0058*

FIGURE 16: Mean enrolled academic years to degree for fully-supported doctoral students as a function of the total percent of their support coming from Fellowship appointments.

Largely non-STEM (left panel) and STEM (right panel) divisions over 2005-06 - 2018-19.



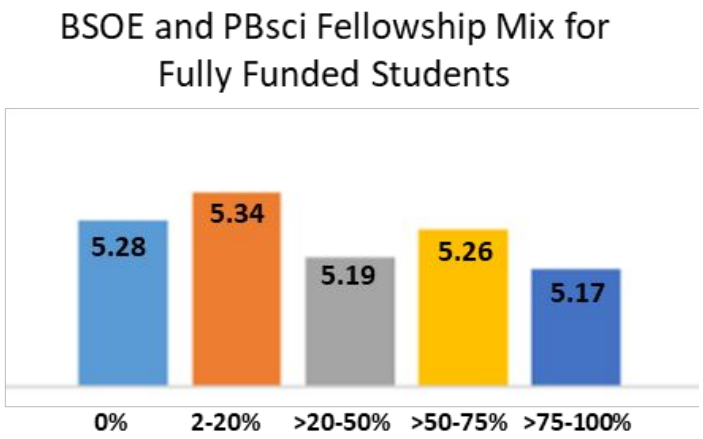


Figure 17: Graduation and Attrition (did not graduate) Rates for Doctoral Students by URM and Cota-Robles Fellowship Status

Total all matriculated doctoral student over 2015-16 - 2018-19

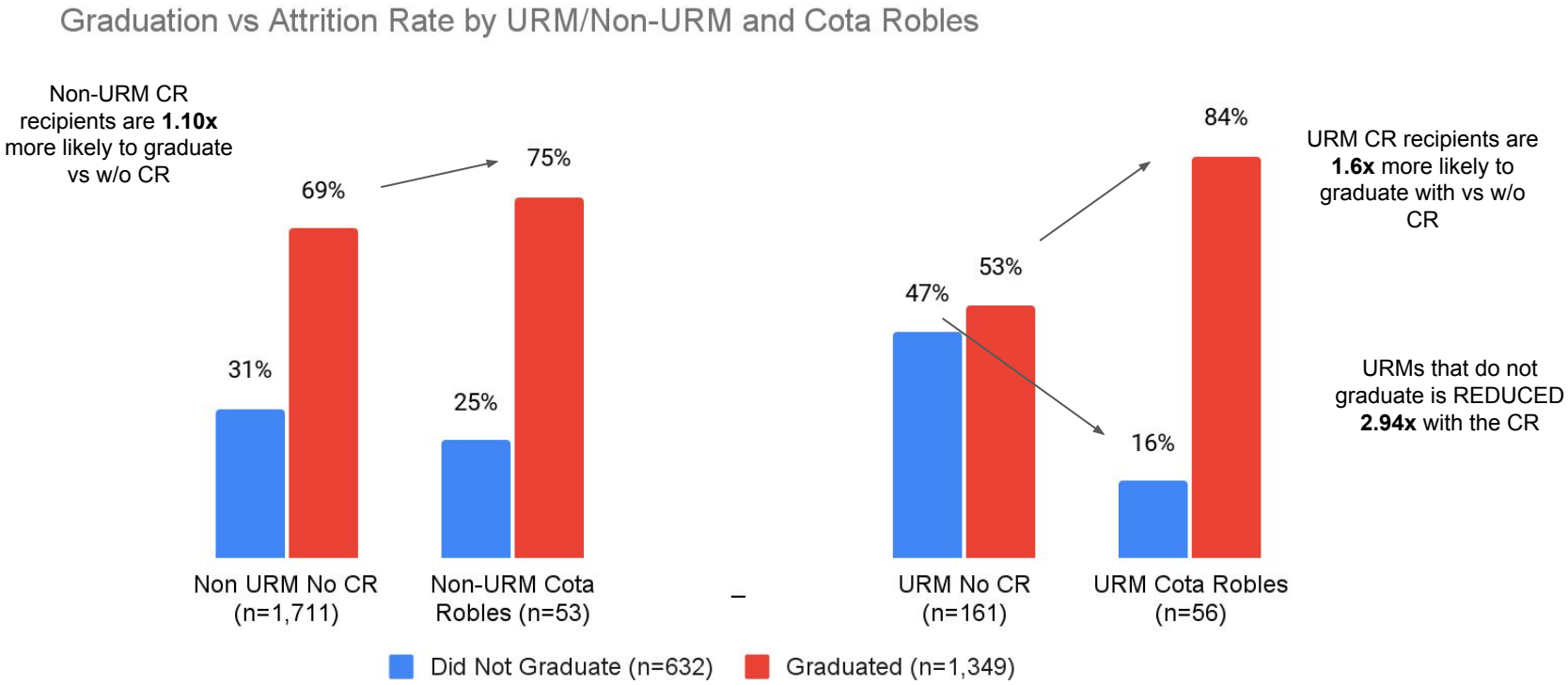
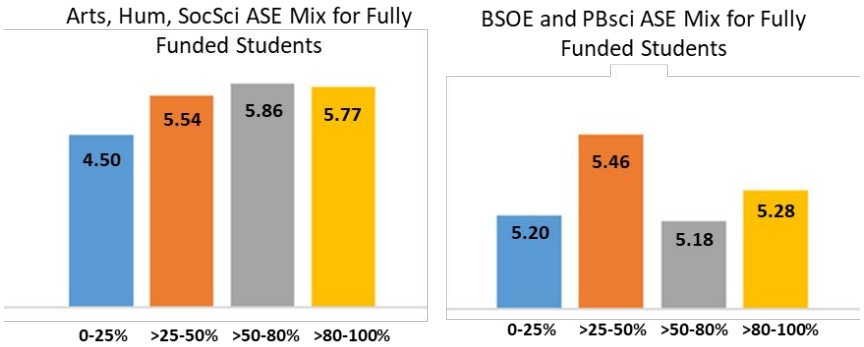


Figure 18: Mean enrolled academic years to degree for fully supported doctoral students as a function of the total percent of their support coming from ASE appointments.
Largely non-STEM (left panel) and STEM (right panel) divisions over 2005-06 - 2018-19.



Mean enrolled academic years to degree for fully supported doctoral students as a function of the total percent of their support coming from GSR appointments.

Largely non-STEM (left panel) and STEM (right panel) divisions over 2005-06 - 2018-19.

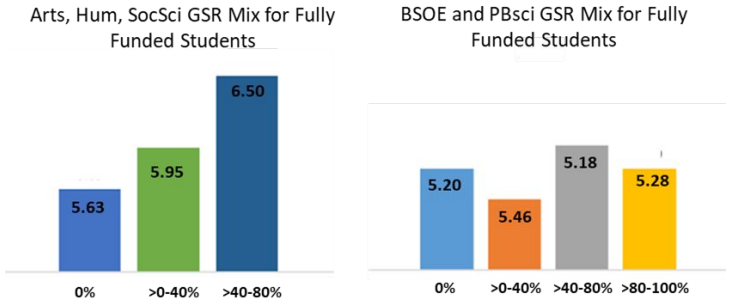


FIGURE 19: ANOVA % Qtrs Full or Greater Support & % Qtrs Total ASE Support Full or Greater (AY+Summer)

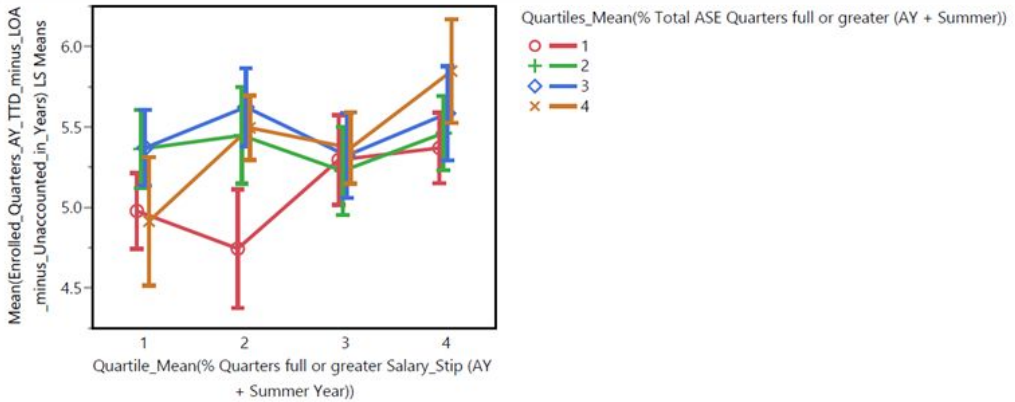
•Students in the highest quartile of Qtrs Full Support + Highest quartile % ASE Quarters Full have significantly longer TTD Vs Lower quartiles of Qtrs Full Support and lower % ASE Qtrs

- Evidence that students supported primarily via ASE have longer TTD vs students supported by external fellowships and few ASE

Effect Tests

Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F
Quartile_Mean(% Quarters full or greater Salary_Stip (AY + Summer Year))	3	3	16.907740	3.8840	0.0089*
Quartiles_Mean(% Total ASE Quarters full or greater (AY + Summer))	3	3	13.266206	3.0475	0.0278*
Quartile_Mean(% Quarters full or greater Salary_Stip (AY + Summer Year))*Quartiles_Mean(% Total ASE Quarters full or greater (AY + Summer))	9	9	24.774488	1.8970	0.0486*

Least Squares Means Plot



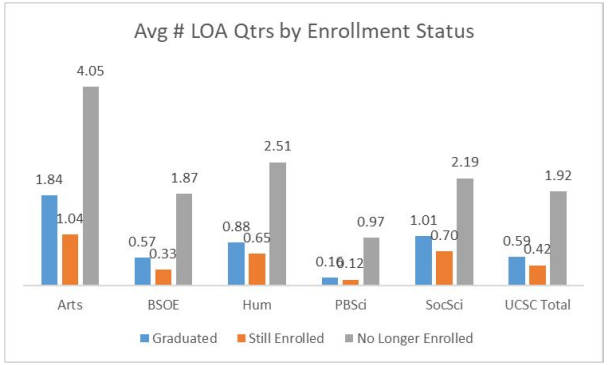
LSMeans Differences Tukey HSD

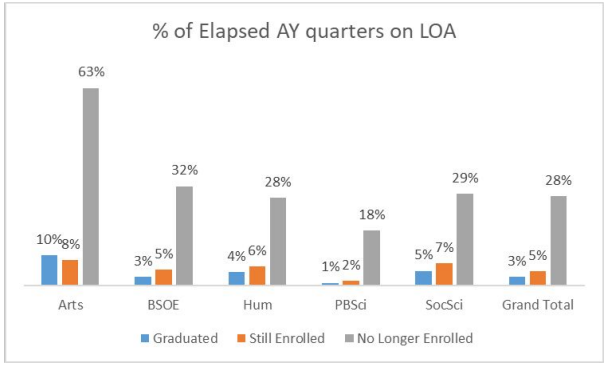
α= 0.050 Q= 3.43267

Level		Least Sq Mean
4,4	A	5.8472222
2,3	A B	5.6236842
4,3	A B C	5.5846154
2,4	A B C	5.4946043
4,2	A B C D	5.4619048
2,2	A B C D	5.4475806
1,3	A B C D	5.3700000
4,1	A B C D	5.3696581
3,4	A B C D	5.3694690
1,2	A B C D	5.3631579
3,3	A B C D	5.3218750
3,1	A B C D	5.2951389
3,2	A B C D	5.2266667
1,1	C D	4.9777228
1,4	B C D	4.9142857
2,1	D	4.7439024

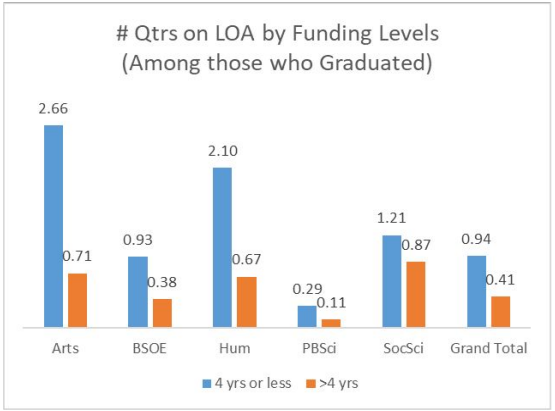
Levels not connected by same letter are significantly different.

FIGURE 20. Mean number of leave of absence (LOA) quarters per doctoral student over their career (left panel) and percent (%) of elapsed academic year quarters spent on LOA (right panel), by enrollment status (graduated, still enrolled, no longer enrolled/withdrew) and academic division over 2005-06 through 2018-19.





Mean number of academic year quarters on leave of absence (LOA) for doctoral students that graduated, shown for students that received full academic year support for 4 years or less of their career versus more than 4 years (left panel). Right panel shows for doctoral students no longer enrolled (withdrew) the number of quarters on LOA by funding level (less than 5 years fully funded versus 5 or more years fully funded). Both over 2005-06 through 2018-19.



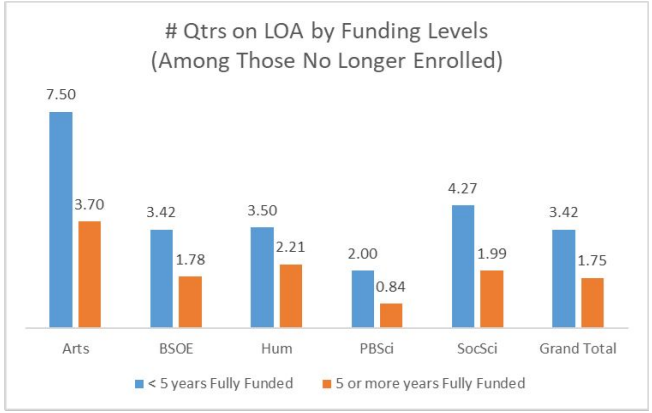
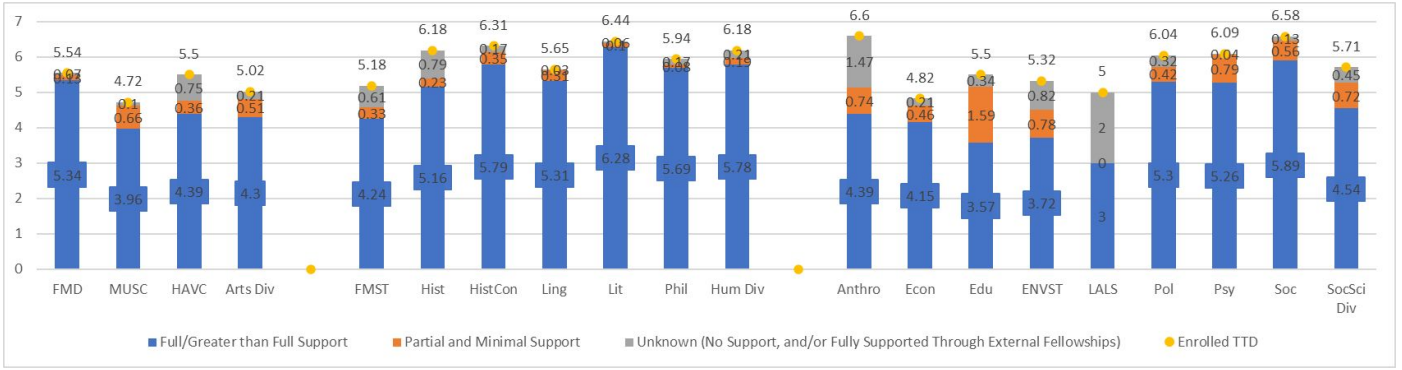
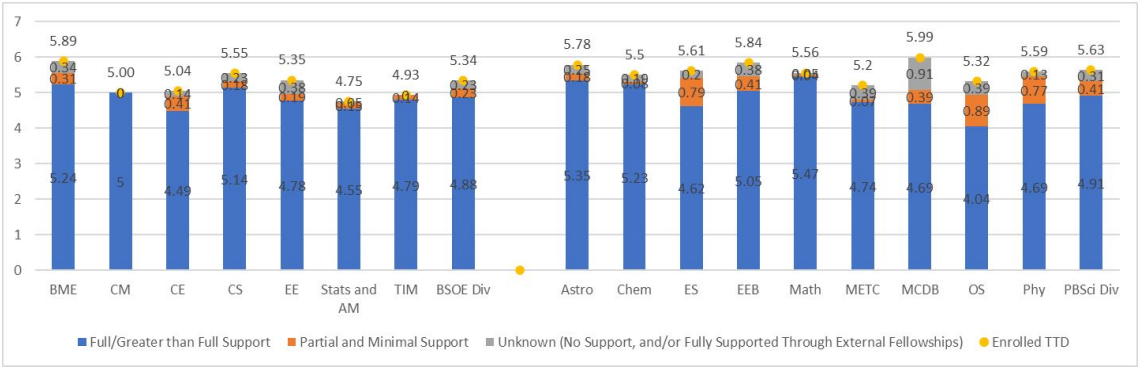


FIGURE 21: Mean academic years fully supported, partially supported, and support unknown from campus sources for graduated doctoral students by program over 2005-06 - 2018-19. (‘Unknown’ sources are not supported and/or supported from external fellowships not routed through the campus)

Note: Values above each bar are enrolled TTD in years. All three sources of support in the stacked bars add up to the program’s mean enrolled TTD





Areas of opportunity to gain resource efficiencies by increasing student success

Table 1: Fully funded quarters spent supporting doctoral students beyond normative time to degree by academic division. Data are dollars spent on salary/stipend and salary/stipend + fees/benefits.

			Beyond NTTD		Within NTTD		Total Sum of AY Payments (Salary_Stipend)	Total Sum of Payments	
Divisions	All funding	# fully supported quarters spent on students enrolled past NTTD	Sum of AY Payments (Salary_Stipend)	Sum of Payments (Salary/Stipend+Fees/Benefits)	Sum of AY Payments (Salary_Stipend)	Sum of Payments (Salary/Stipend+Fees/Benefits)	Sum of AY Payments (Salary_Stipend)	Sum of Payments (Salary/Stipend+Fees/Benefits)	% of Quarters Spent on Students Post NTTD vs Total Quarters of All Students (includes Fees/Benefits)
Arts	4 yr avg	1	$8,677	$15,736	$1,512,154	$2,639,897	$1,520,831	$2,655,633	0.6%
BSOE	4 yr avg	32	$210,794	$423,949	$5,201,022	$10,344,475	$5,411,816	$10,768,424	3.9%
Hum	4 yr avg	14	$91,729	$172,648	$3,359,095	$5,842,181	$3,450,824	$6,014,829	2.9%
PBSci	4 yr avg	46	$297,319	$578,405	$9,280,533	$17,604,367	$9,577,852	$18,182,772	3.2%
SocSci	4 yr avg	50	$322,959	$571,945	$5,564,890	$9,955,351	$5,887,849	$10,527,296	5.4%
	Total (All Funding)	143	$931,478	$1,762,683	$24,917,693	$46,386,270	$25,849,171	$48,148,954	3.7%
	Core ASE & Fellowships								
Arts	4 yr avg	1	$7,427	$14,486	$1,261,709	$2,289,766	$1,269,136	$2,304,252	0.6%
BSOE	4 yr avg	10	$66,646	$136,512	$2,696,695	$5,288,693	$2,763,342	$5,425,205	2.5%
Hum	4 yr avg	13	$84,045	$155,055	$2,900,409	$5,176,206	$2,984,454	$5,331,260	2.9%
PBSci	4 yr avg	24	$156,284	$299,242	$5,298,498	$9,709,201	$5,454,783	$10,008,443	3.0%
SocSci	4 yr avg	41	$270,528	$484,730	$4,312,288	$7,915,549	$4,582,816	$8,400,279	5.8%
	Total (Core ASE & Fellowships)	90	$584,931	$1,090,025	$16,469,599	$30,379,414	$17,054,530	$31,469,439	3.5%

Table 2: Dollars and estimated fully funded quarters spent supporting withdrawn doctoral students that matriculated between 2005 - 2012 (i.e., students separated from the university before earning their degree). Data are dollars spent on salary/stipend only (will be updated to match table above).

		Graduated			No Longer Enrolled/Did NOT Graduate		
Division	Salary/Stipend (4yr Buckets)	Within NTTD	> NTTD	Total	Within NTTD	> NTTD	Total
Arts	2005-2008	$746,356	$0	$746,356	$200,641	$0	$200,641
Arts	2009-2012	$2,603,408	$759,523	$3,362,931	$537,120	$0	$537,120
BSOE	2005-2008	$9,702,790	$3,491,791	$13,194,581	$2,629,558	$236,446	$2,866,005
BSOE	2009-2012	$9,685,278	$2,828,135	$12,513,413	$2,800,437	$394,668	$3,195,105
Hum	2005-2008	$7,438,007	$2,240,707	$9,678,714	$1,714,414	$1,066,055	$2,780,470
Hum	2009-2012	$4,443,218	$905,229	$5,348,447	$1,532,651	$0	$1,532,651
PBSci	2005-2008	$18,527,727	$7,141,378	$25,669,105	$1,346,949	$861,044	$2,207,993
PBSci	2009-2012	$22,533,681	$5,113,850	$27,647,531	$1,205,881	$817,805	$2,023,686
SocSci	2005-2008	$9,588,062	$5,640,858	$15,228,919	$3,240,107	$837,066	$4,077,173
SocSci	2009-2012	$9,876,641	$4,685,915	$14,562,556	$3,028,746	$250,147	$3,278,894
Campus Total	2005-2012	$95,145,169	$32,807,385	$127,952,554	**$18,236,504**	**$4,463,233**	**$22,699,737**
Campus Avg	Yearly Average	$11,893,146	$4,100,923	$15,994,069	**$2,279,563**	**$557,904**	**$2,837,467**
Approximate # funded Qtrs per year (~$5458.88)		2,179	751	2,930	**418**	**102**	**520**
		74%	26%	100%	80%	20%	100%

Table 3. TA positions filled by MA/MS students by division and year.

	Arts			BSOE			Humanities		
Year	# MA/MS TAs	# PhD/MFA TAs	MA/MS TAs as a % of Total	# MA/MS TAs	# PhD/MFA TAs	MA/MS TAs as a % of Total	# MA/MS TAs	# PhD/MFA TAs	MA/MS TAs as a % of Total
2005-06	36	17	68%	32	47	41%	28	41	41%
2006-07	53	67	44%	68	54	56%	55	99	36%
2007-08	60	89	40%	64	89	42%	54	140	28%
2008-9	66	93	41%	48	119	29%	43	180	19%
2009-10	38	95	28%	60	128	32%	36	236	13%
2010-11	48	102	32%	75	145	34%	35	244	13%
2011-12	45	110	29%	70	159	31%	44	216	17%
2012-13	80	125	39%	91	172	35%	60	189	24%
2013-14	71	139	34%	98	188	34%	57	201	22%
2014-15	76	139	35%	113	239	32%	48	242	17%
2015-16	52	166	24%	108	264	29%	22	260	8%
2016-17	28	185	13%	158	309	34%	12	271	4%
2017-18	40	223	15%	172	347	33%	22	261	8%
2018-19	44	214	17%	201	340	37%	28	282	9%

	PBSci			SocSci		
Year	# MA/MS TAs	# PhD/MFA TAs	MA/MS TAs as a % of Total	# MA/MS TAs	# PhD/MFA TAs	MA/MS TAs as a % of Total
2005-06	36	100	26%	14	64	18%
2006-07	75	213	26%	33	178	16%
2007-08	73	281	21%	44	260	15%
2008-9	65	348	16%	55	301	15%
2009-10	56	347	14%	17	372	4%
2010-11	66	391	14%	20	398	5%
2011-12	79	408	16%	14	440	3%
2012-13	98	430	19%	7	442	2%
2013-14	90	490	16%	4	436	1%
2014-15	70	525	12%	12	429	3%
2015-16	84	574	13%	22	434	5%
2016-17	97	601	14%	30	459	6%
2017-18	98	609	14%	27	455	6%
2018-19	91	653	12%	37	450	8%

FIGURE 22: Doctoral student matriculation by demographic and year (top panel), and as a percent of admitted students per year (bottom panel)