NAGPS

Graduate Student Life Brief

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Executive Summary

Graduate education is distinct from professional education, with unique training, experiences, and professional outcomes that require unique policy solutions. Graduate students study under the direction of a research advisor as they take classes, teach undergraduate students, conduct research, write journal articles, and apply for grant funding. With focus on developing critical thinking and research skills, those with advanced degrees are in high demand in the private sector. Graduate students are less likely than professional students to depend on student loans, instead often relying on stipends to support themselves in school. It takes approximately eight years for a student to complete both a masters and doctoral degree, during which they usually live below a living wage while often working 60 hours a week.

Graduate students face a growing mental health crisis, with rates of serious mental health problems six times that of the general population. Nearly half of students report symptoms of anxiety and/or depression, one in five taking medication, and one in ten having suicidal thoughts. The primary factors contributing to the crisis lie in a poor work-life balance and poor relationships with their research advisors, who can be neglectful, exploitative, or sometimes, abusive. There is little advisor training or oversight in graduate education, and students are disincentivized from reporting inappropriate behavior. As a result, approximately half of doctoral students dropout of school before completing their degree.

Potential solutions to this problem include training for mentors and advisors; transparency regarding advisor and program attrition rates; implementing standardized procedures to prevent neglect, exploitation, and abuse; increasing mental health resources; providing training for diverse career paths; and providing reasonable financial and non-financial support for students.

Graduate Student Life

The Basics of Graduate Education

Higher education policy decisions often affect graduate and professional students similarly. After all, both types of students earn their degrees after completing a bachelor's degree and have proven records of academic excellence. However, the training and experiences of the two types of students are very different, and these distinctions must be incorporated into higher education policy decisions.

What Makes Graduate Education Unique

In many ways, professional student training is similar to undergraduate training. Professional students are those in medical, dental, pharmacy, law, or other similar fields, and those who enter a professional program do so to become licensed in their chosen field. Students enter as a cohort and spend most of their time in school in classes, taking exams, and gaining practicum training. The amount of time spent in school is very specific and is determined by national standards and standardized exams. The experiences of students in the cohort are similar, with many of the same classes and exams, and the group forms the foundation of their social life while in school.

Graduate education is very different. Students pursue graduate degrees for many reasons, including a passion to solve a problem, to broaden a skill base, and to gain specialist training in a field. These degrees are often required to go into management positions in industry or government, to teach or research in academia, or to pursue scientific achievement in the public or private sector. Unlike professional education, there is no "one career" that students in the same field have as their goal. The training in graduate school is broad. Instead of an emphasis on coursework and examinations, graduate students are full participants in the academic community - applying for grants, writing journal articles, teaching classes, and conducting research. The primary focus of graduate school is to develop research skills, those related to problem solving, critical thinking, and data analysis. Because each student undergoes unique training geared toward their research interests, students are not guaranteed consistent interaction with other students, and there is no strong social foundation. This often leads to isolation as students can go for days or weeks at a time without meaningful interaction with a peer. The amount of time and work it takes for a graduate student to finish is highly variable, especially for those in PhD programs, as the standards vary considerably from program to program, advisor to advisor,

as do opportunities for funding, research, and professional development.

In 2012, 82% of post-secondary students were enrolled in a master's program, 7% were in a research doctoral program, and 11% were in a professional program[1]. More than 1.8 million students were enrolled in graduate programs in 2017[2], and more students graduated with a graduate degree than medical, dental, and law students combined[3].

Graduate Degree Frameworks: Types, Timelines, and Mentorship

There are two general types of graduate degrees: a master's degree and a doctoral degree. In 2017, 83% of graduate students were pursuing a master's degree and 11% a doctoral degree[4]. Master's degrees usually require two years of coursework and a research-centered thesis, though the time and requirements vary from program to program. A doctoral degree lasts considerably longer: depending on the program, the median time to earn a doctoral degree is between 6 and 12 years[5]. The doctoral degree is generally divided into two stages. The first stage involves coursework, specialized training, and the development of a research proposal. The second stage is the implementation of the research proposal and the writing of a dissertation. In order to move from one stage to the next, the research proposal must be approved by a dissertation committee, and the student must pass a qualifying exam. To earn a doctoral degree, the student must complete and defend their dissertation.

While in school, graduate students are under the direction of a research mentor or advisor. As chair of their dissertation committee, this advisor's primary job is to provide support and direction for the student's research. Depending on the field, this can range from general and

[1] Baum, S. and Steele, P. (2018, January) Graduate and Professional School Debt: How Much Students Borrow. *Urban Institute* Retrieved from https://www.urban.org/sites/default/files/publication/95626/graduate-and-professional-school-debt.pdf

[2] Okahana, H. and Zhou, E. (2018, October) Graduate Enrollment and Degrees: 2007 to 2017. *Council of Graduate Schools.* Retrieved from https://cgsnet.org/ckfinder/userfiles/files/CGS_GED17_Report.pdf

[3] National Center for Science and Engineering Statistics Directorate for Social, Behavioral, and Economic Sciences (2017, June) 2015 Doctorate Recipients from U.S. Universities. *National Science Foundation.* Retrieved from https://www.nsf.gov/statistics/2017/nsf17306/static/report/nsf17306.pdf

[4] Okahana, H. and Zhou, E. (2018, October) Graduate Enrollment and Degrees: 2007 to 2017. *Council of Graduate Schools.* Retrieved from https://cgsnet.org/ckfinder/userfiles/files/CGS_GED17_Report.pdf

[5] National Center for Science and Engineering Statistics Directorate for Social, Behavioral, and Economic Sciences (2017, June) 2015 Doctorate Recipients from U.S. Universities. *National Science Foundation.* Retrieved from https://www.nsf.gov/statistics/2017/nsf17306/static/report/nsf17306.pdf

periodic guidance to day-to-day use of facilities and supplies as well as collaboration on research projects. Many advisors rely on the research of their graduate students to further their own career, co-publishing papers and presenting together, and therefore an advisor's career is often dependent upon the research productivity of their students. There is often a close relationship between advisor and student, and joining a research group can be compared to joining a family and becoming part of an academic lineage. Research advisors have great control over what students study, how they study it, how they spend their time, the skills they develop, and funds and professional development opportunities to which they have access. Therefore, advisors significantly impact a student's progress through their degree as well as their well-being and quality of life in school[6]. Because of this degree of control and influence, the quality of a student's relationship with their advisor is one of the best indicators of graduate student success [7] [8], as well as their long-term job security [9].

Time and Financial Commitment

As mentioned earlier, on average, it takes two years to complete a master's degree and six years to complete a PhD [10]. However, there is a great degree of variation, especially across fields. In 2013, a Council of Graduate Schools study showed that only two-thirds of Science, Technology, Engineering, and Mathematics (STEM) masters students had completed their program in four years, whereas 86% of those in MBA programs had[11]. For doctoral students, 57% finish their degrees within ten years, and while the rates are generally higher for those in STEM fields, there is a considerable variation within disciplines as well as

demographics: women and underrepresented minority students take longer to finish[12].

Most graduate students are enrolled full-time in school, with students in STEM fields being more likely to attend school full-time[13]. Many full-time graduate students are eligible for teaching and research assistantships, which require work on behalf of the university in exchange for a stipend, and doctoral students are often provided with tuition waivers. The purpose of the stipend is to help ensure students can devote the time necessary to complete their degree without taking on additional work or student loans. Moreover, the work done in exchange for the stipend also provides skill-based training. Approximately 80% of students who received doctoral degrees in the United States either received stipends from their institution or from fellowships and grants[14]. Students least likely to receive stipends (namely those in education programs) are also those most likely to be attending school part-time and often have the longest expected time until they earn their degree[15] [16].

Unfortunately, many stipends for doctoral students are at or below the cost of living expected for a single-person home[17]. This is because their stipends officially only compensate them for their part-time assistantships (usually 20 hours per week), even though their school-related responsibilities require considerably more hours. Students in STEM fields might have a stipend of around $30,000[18], but those in other fields are expected to live on considerably less[19]. Assistantships also include the expectation that students

[6] Tenenbaum, H.R., Crosby, F.J., Gliner, M.D. (2001) Mentoring Relationships in Graduate School. *Journal of Vocational Behavior.* 59(3) 326-341 doi: https://doi.org/10.1006/jvbe.2001.1804

[7] Spalter-Roth, R., and Erskine, W. (2007, March). ASA Research Brief: Race and Ethnicity in the Sociology Pipeline. *American Sociological Association Research and Development Department* Retrieved from https://www.asanet.org/sites/default/files/files/pdf/raceethsociologypipe.pdf

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[9] Brunsmsa, D.L., Embrick, D.G., Shin, J.H. (2016) Graduate Students of Color: Race, Racism, and Mentoring in the White Waters of Academia. *Sociology of Race and Ethnicity* https://doi.org/10.1177/2332649216681565

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[12] Sowell, R., Zhang, T., Bell, N., Redd, K., King, M.F. (2008) Ph.D. Completion and Attrition: Demographic Data from the Ph.D. Completion Project. *Council of Graduate Schools.* Retrieved from https://cgsnet.org/phd-completion-and-attrition-policies-and-practices-promote-student-success-0

[13] Okahana, H. and Zhou, E. (2018, October) Graduate Enrollment and Degrees: 2007 to 2017. *Council of Graduate Schools.* Retrieved from https://cgsnet.org/ckfinder/userfiles/files/CGS_GED17_Report.pdf

[14] National Center for Science and Engineering Statistics Directorate for Social, Behavioral, and Economic Sciences (2017, June) 2015 Doctorate Recipients from U.S. Universities. *National Science Foundation.* Retrieved from https://www.nsf.gov/statistics/2017/nsf17306/static/report/nsf17306.pdf

[15]Ibid

[16] Okahana, H. and Zhou, E. (2018, October) Graduate Enrollment and Degrees: 2007 to 2017. *Council of Graduate Schools.* Retrieved from https://cgsnet.org/ckfinder/userfiles/files/CGS_GED17_Report.pdf

[17] *PhD Stipends* (n.d.) Retrieved February 10, 2019 from http://www.phdstipends.com/results

[18] Office of the Vice President for Student Affairs (2017, November) UC Graduate Student Support Survey: Trends in the Comparability of Graduate Support Stipends. University of California. https://www.ucop.edu/student-affairs/_files/GSSS%20report%202017.pdf

[19] Patel, V. (2015, May 11) The Ph.D. Pay Gap: How unequal stipends foster an unequal education. The Chronicle of Higher Education. Retrieved from https://www.chronicle.com/article/The-PhD-Pay-Gap/230041

not work outside of their assigned duties, an expectation that is often stipulated contractually. This requirement is, in large part, due to the excessive workload in graduate school; between attending classes, conducting research, engaging in professional development opportunities, and completing work required for their assistantships, many students commit at least 60 hours a week to their graduate education[20]. Therefore, even though tuition is waived for full-time doctoral students, many students take out student loans to cover the cost of living while attending school, though they are often discouraged from doing so by their programs.

In general, both graduate and professional students rely on student loans while they are in school. They make make up only 17% of student loan borrowers, but they account for 38% of student loan debt[21]. However, most post secondary education-related debt comes from professional programs, not graduate programs. In 2012, approximately 90% of professional students had education-related debt, 50% of which borrowed $120,000 or more. In contrast, 74% of those with a master's degree had debt, while only 67% of doctoral students did, and only 11% of all graduate students accumulated over $120,000 of student loan debt[22]. Approximately 37% of all graduating doctoral students have education-related debt, with 19% having debt higher than $30,000. Doctoral graduates most likely to have high amounts of education-related debt are enrolled in programs that are less likely to be supported by their institutions or by fellowships and grants[23].

Impacts of Graduate Education on the Economy and Society

Those with advanced degrees are conducting ground-breaking research; teaching and training future generations; developing new technology; solving social and health problems; protecting economic and national security;

enriching the lives of others through art, music, and literature; studying our history and the human condition; and leading in business, non-profit, and government fields[24]. From developing new treatment strategies for cancer to understanding natural disaster responses, graduate education improves the lives of millions.

In-School Impact

While in school, graduate students are not only being trained to enter a field; their participation in their graduate education directly contributes to their field. Many students serve vital functions within the university, including filling administrative positions, teaching courses, mentoring undergraduate students, and leading research projects. Scientific progress depends on the success of enrolled graduate students, who often serve as the primary investigators on their projects. In addition to their school work, many graduate students raise families and actively engage outside of their university, thus often becoming more invested in their community than they did as undergraduate students.

Graduate students in STEM fields provide a significant economic and research impact. Because conducting research is integrated into educational training and is not tied to a company's profit margin, investing in basic research at the university level is less risky than in the private sector. Companies have been shown to be unwilling or unable to compensate for the lack of federally-funded university research. Instead, private companies are best suited to further develop research ideas conducted at universities, largely by graduate students. This pattern has been shown historically: when basic research has been privatized, scientific productivity decreases[25]. When universities conduct basic research and companies focus on development, scientific progress is most productive and profitable[26].

Benefits and Demands for Graduate Degrees

The specialized training earned in graduate school is in demand, with broad applications across fields and sectors of work. In 2000, 70% of those with a PhD worked outside of

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[21] Baum, S. and Steele, P. (2018, January) Graduate and Professional School Debt: How Much Students Borrow. *Urban Institute* Retrieved from https://www.urban.org/sites/default/files/publication/95626/graduate-and-professional-school-debt.pdf

[22] The College Board (n.d.) Cumulative Debt for Undergraduate and Graduate Studies over Time. *Trends in Higher Education.* Retrieved from https://trends.collegeboard.org/student-aid/figures-tables/cumulative-debt-undergraduate-graduate-studies-time

[23] National Center for Science and Engineering Statistics Directorate for Social, Behavioral, and Economic Sciences (2017, June) 2015 Doctorate Recipients from U.S. Universities. *National Science Foundation.* Retrieved from https://www.nsf.gov/statistics/2017/nsf17306/static/report/nsf17306.pdf

[24] Advisory Committee on Graduate Education and the Public Good (2008) Graduate Education and the Public Good. *Council of Graduate Schools.* Retrieved from https://cgsnet.org/sites/default/files/GradEduPublicGood.pdf

[25] Hourihan, M. (2017, October 16) If Government Scales Back Technology Research, Should We Expect Industry to Step In? *AAAS R&D Budget and Policy Program.* Retrieved from https://mcmprodaaas.s3.amazonaws.com/s3fs-public/AAAS%20Public%20%26%20Private%20R%26D.pdf?AYBSf.tHhNcjLd1ZMW2RSRpJgve.tbQ1

[26] Ibid

academia[27], and 60% of the predicted fastest growing occupations require training beyond an undergraduate degree[28]. The projected occupational growth rate for those with master's and PhDs is higher than any other level of employment[29], and in 2017 there was a six-percent increase in the number of hires of those with a masters degree for positions that previously held bachelors degrees [30].

The value of graduate education is evidenced by the increased earning potential of those with advanced degrees regardless of their field[31]. Of alumni in the humanities, 96% are employed and 87% are satisfied with their jobs[32]. The demand for expertise in STEM fields is indicated by increased earning potential and job growth: 93% of STEM occupations earned more than the national average in 2015, and STEM-related jobs grew at nearly twice the rate of non-STEM jobs from 2009-2015[33].

The demand for advanced degrees outside of academia is especially high for STEM fields[34]. Proficiency in a STEM field requires a great degree of additional training that is not possible to earn during an undergraduate degree. Economic projections from 2012 reported a shortage of STEM professionals necessary to retain U.S. success in science and technology that will rise to 1 million by 2022[35].

While difficult to quantify, the benefits of advanced degrees are real to both individuals and societies[36]. Highly educated people are more likely to be actively involved in their community[37], and due to increased earning potential, those with graduate degrees provide increased tax revenue, are less likely to be reliant upon the government for financial assistance, and are less likely to be unemployed[38]. Employees with higher levels of education are more productive, produce higher quality work, instill greater customer loyalty, increase revenue, are more innovative, and are more likely to remain with a company[39]. Overall, education plays a direct role in socioeconomic status and impacts mental health and quality of life; these implications have important long-term outcomes, such as encouraging the pursuit of STEM careers among children[40].

However, there is growing concern regarding the financial situation of those with graduate degrees. A higher earning potential is counterbalanced by the lengthy duration of graduate degree programs and burdensome debt, which force graduates to live on rather modest incomes, especially as they first leave school and enter the workforce at lower-paying jobs. This is especially true as many PhDs who seek to work in academia spend several years as post-doctoral scholars or in adjunct positions, sometimes working part-time at different institutions[41]. These

[27] The Economics Daily (2003, February 25) Most doctoral grads work outside of academia *Bureau of Labor Statistics, U.S. Department of Labor.* Retrieved from https://www.bls.gov/opub/ted/2003/feb/wk4/art02.htm

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[30] CareerBuilder.com (2017, March 16) Press Release: 41 Percent of Employers Are Hiring College-Educated Workers for Positions That Had Been Primarily Held by Those with High School Degrees, Finds CareerBuilder Survey. Career Builder. Retrieved from http://press.careerbuilder.com/2017-03-16-41-Percent-of-Employers-Are-Hiring-College-Educated-Workers-for-Positions-That-Had-Been-Primarily-Held-by-Those-with-High-School-Degrees-Finds-CareerBuilder-Survey

[31] Torpey, E. (2018, April) Measuring the value of education. *Bureau of Labor Statistics, U.S. Department of Labor* Retrieved from https://www.bls.gov/careeroutlook/2018/data-on-display/education-pays.htm

[32] Humanitiesindicators.org (2018) The State of the Humanities 2018: Graduates in the Workforce & Beyond. American Academy of Arts and Sciences. Retrieved from http://bit.ly/HIWorkforce2018

[33] Fayer, S., Lacey, A., and Watson, A. (2017, January) STEM Occupations: Past, Present, And Future. *Bureau of Labor Statistics, U.S. Department of Labor.* Retrieved from https://www.bls.gov/spotlight/2017/science-technology-engineering-and-mathematics-stem-occupations-past-present-and-future/pdf/science-technology-engineering-and-mathematics-stem-occupations-past-present-and-future.pdf

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positions pay significantly less than tenure-track research positions and are becoming more common as institutions increase these positions over tenure-track[42]. The graduate student loan situation has been described as "indentured servitude," with students delaying purchasing homes and starting families when faced with the likelihood of lifelong debt[43].

Major Problems in Graduate Education

The benefits of graduate education are evident, but there are significant problems within this system. Numerous studies conducted in recent years reveal a growing mental health crisis among graduate students, a crisis so severe that only half of PhD students graduate with their degree[44][45], even though they overwhelmingly have the academic ability to be successful in graduate school[46]. A 2018 survey of Graduate School deans by the Council of Graduate Schools showed that the vast majority of deans recognized that the mental health of graduate students is growing worse, remarkably so even within the last five years[47].

A global study involving thousands of graduate students, the majority of which were PhD students, showed that graduate students suffer from extreme rates of mental health problems, six times that of the general population: 41% showed moderate to severe anxiety and 39% moderate to severe depression, with minority students having significantly higher rates than their peers[48]. Other studies have shown similar trends: at the University of California, Berkley, a 2014 report indicated approximately 47% of PhD students and 37% of master's and professional students were depressed; 62% of those in Arts and Humanities and 42-48% of science and engineering students[49]. A 2015 study revealed that University of Arizona graduate students reported significant drops in their physical health, quantity of sleep, diet, and mental health after beginning graduate school[50]. A 2018 Harvard study showed that doctoral students in economics were over three times more likely to suffer mental health problems[51], and for graduate students at Emory University in 2014, more than 34% had depression, almost 20% were in therapy, more than 20% were on medication, and over 7% had suicidal thoughts, with 2% making suicidal plans[52]. In a Belgium study, nearly half of PhD students were psychologically distressed, and nearly a third were at risk of developing a psychiatric disorder[53].

Again, the problems compound for students of minority populations. They report frequent instances of implicit and explicit racism, discrimination, and microaggressions, accompanied by assumptions of criminality, inability, and inferiority. They report more instances of hostility and are more culturally, socially, and intellectually isolated. Therefore, in order to be successful, they must tolerate higher degrees of mistreatment than their peers, which adds to the emotional and mental toll of graduate school. In addition, biases from faculty and peers affect their academic performance directly: minority students receive poorer ratings from faculty for fellowships and awards than their peers regardless of their academic success[54][55].

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[48] Evans, T.M., Bira, L., Gastelum, J.B., Weiss, L.T., and Vanderford, N.L. (2018) Evidence for a mental health crisis in graduate education. *Nature Biotechnology* 36 282–284 Retrieved from https://www.nature.com/articles/nbt.4089.pdf?origin=ppub

[49] The Graduate Assembly (2014) Graduate Student Happiness & Well-Being Report. *University of California, Berkeley* Retrieved from http://ga.berkeley.edu/wellbeingreport/

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There are several factors behind the graduate student mental health crisis[56], but evidence points to two primary sources. The first is work-life balance, which greatly impacts mental health outcomes[57]. Significantly, less than a quarter of graduate students with anxiety and/or depression indicated that they had a good work-life balance[58]. This is supported by numerous informal polls and anecdotal reports of students regularly working 60-80 hours a week; being denied time off on weekends, evenings, or to visit family; or reprimanded for prioritizing family or personal health. The cultural stigma against taking any personal time is such that many students avoid even asking for fear of retribution. For the approximately 10-13% of graduate students who are parents[59][60], a healthy work-life balance is even more important for their mental well-being[61]. However, most universities do not provide help for student-parents. In 2009, only 13% of AAU Universities provided maternity leave to doctoral students and only 5% offered dependent health care[62].

The second contributor is the quality of the relationship between the student and their advisor. Studies consistently show that quality mentorship is one of the most consistent indicators of graduate student success[63][64], as well as their ability to get a job afterwards (particularly in academia), to earn tenure, and to secure a position with good long-term job security[65]. However, most institutions have no required mentorship training, either for graduate students who mentor undergraduates or faculty who mentor graduate students. As a result, many graduate students do not receive quality mentorship, and this, tied with financial reasons, is the number one reason doctoral students give for leaving of school[66]. Its effect on the graduate student mental health crisis is evident: approximately half of students with anxiety and/or depression report not receiving either ample support or "real" mentorship from their advisors. Nearly half report that their advisor does not positively impact their mental health, and more than half reported feeling as though their advisor was not an asset to their career and that they do not feel valued by them[67]. Other studies confirm the root problem in mentor relationships, with overwhelming numbers of students reporting a lack of support[68]. Of particular importance is the impact of mentor relationships on students from minority populations, where quality mentor support is one of the strongest determining factors of graduate school success. Minority students are more likely to receive exceptionally poor mentoring, if any at all[69]. While nearly half of graduate students report having no support for publishing, this number drops to nearly one third for students of color[70].

Mentorship requires a sustained relationship and involves an emotional commitment with long-term investment. Effective mentors are accessible, supportive, caring, practical, and have an ability to listen. They are discrete and honest, engage in self-reflection, and assume the role of a guide, not an enforcer[71]. Not only do many students report not having positive relationships with their advisors,

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students often report behavior that is neglectful, exploitative, and abusive. This brutal climate of graduate school has been compared to "academic hazing"[72].

Students commonly report excessive neglect on the part of their advisor. For example, students send manuscript drafts or dissertation chapters to their advisors, who may ignore them for months on end and then provide sparse or even demeaning feedback. For students trying to meet graduation deadlines, this can cause them to extend their time in school. Other students are left designing research protocols entirely on their own, navigating Institutional Review Board (IRB) ethical reviews, funding applications, and university regulations without assistance, resulting in the accumulation of errors that wastes funding and delays graduation, as well as contributing to mental health problems like imposter syndrome, anxiety, and depression.

Exploitation is also reported. For example, students have been called on weekends or evenings to run personal errands for their advisor unrelated to their research or academic responsibilities. Students have had their data stolen by their advisors or peers, while others report their advisors pushing them to falsify data. Some advisors have made their students take on teaching loads assigned to the advisor - work that goes unreported and uncompensated - freeing their advisor to do other things while overloading the students. Some advisors rely nearly entirely upon graduate student research for their own publications, giving advisors personal incentive to push graduate students in inappropriate ways.

Unfortunately, some advisors are abusive. For example, some advisors have been known to yell at their students, privately and publicly. Students who do not meet their advisor's deadlines, regardless of how unreasonable they are, are belittled, called "failures," and told they aren't committed enough to their research. Advisors have required that their students cater food to their own qualifying exam, with the implication being that the effort and expense made for the comfort of their committees will affect the results of their exams. The exams themselves are grueling, with the expressed purpose of mentally and emotionally breaking the student to the point that they admit that they know nothing and question their competency. For students who are willing to speak with their advisors about their struggles in school and about their mental health conditions, they are sometimes met with condescending and dismissive attitudes. One student, after telling her advisor she was suicidal, was told, "What problems could you have? Your life isn't hard. You need to grow up." When she told him it was due to a recent sexual assault, he called her a "sexual assault magnet" - a comment that was neither pervasive nor severe enough to warrant an policy violation under Title IX.

Much of the behavior described above is neither illegal nor prohibited in any official capacity that protects graduate students, who, while often working for the university, are not protected under employee protection laws. Switching to a new advisor is difficult, and sometimes impossible, as it is hard to find someone else at your institution with the research expertise to support and advise your research, not to mention the ability to take on a new advisee. Students who leave an advisor do so with a stigma of being "difficult to work with", with the fault placed of the student, not the advisor. Potential advisors may also be hesitant to take on a student for fear of retribution by the student's former advisor and colleague in tenure applications or work assignments, especially if the former advisor is well-established and influential.

Consequently, students have few places to go for help and often focus on just trying to survive the system long enough to graduate. In the event that they do seek help from program supervisors, some have been told to "avoid antagonizing" their advisors and are reminded that "graduate school is hard" and they should learn how to handle it. Some are directly warned that, if they report to a higher authority, like Title IX or the College, it would be considered a betrayal to the program. Students are discouraged from actively trying to change the system, and efforts to do so risks their ability to graduate, receive letters of recommendation, and be successful in a research career. This is especially true if the graduate student is to pursue a career in academia, where they may face former advisors in professional settings.

Compounding these problems of a poor work-life balance and poor, if not abusive, advisor relationships, many graduate students report living near or below the living wage for a single-person home[73], and many have limited (if any) access to adequate health or dental care for themselves. With the increasing time required to earn a degree, students can expect to earn this wage for six to eight years[74]

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[75] [76], during which many want to buy their first home and begin raising a family. The lack of financial support, as well as aid for student parents or those with dependents, cause many students delay these significant milestones until they are in their 30's and 40's.

Additionally, within academia, there is an expectation that a student's first choice of careers should also be within academia; therefore, there is little consistent training for diverse career fields[77] [78] or careers that have higher earning potential than those within academia[79] [80]. Because of this expectation, students who do pursue careers outside of academia often lack resources and support and must seek professional development opportunities on their own and in addition to their research and teaching. Efforts to do so are often met with criticism from their advisors and their program which adds to their feelings of isolation and failure. Many students report having to hide their ambitions from their advisors and programs in order to receive adequate support.

While it is true that having an advanced degree generally increases earning potential[81] [82] [83], there is a lot of variability in outcomes, and graduate students pay high costs to earn their degree. In addition to spending years living in strained financial circumstances, their mental and physical health suffers as their feelings of value plummet, their productivity and academic success drop, and their relationships become strained. For the half of PhD students who dropout of school, these stressors intensify as they are burdened with tens of thousands of dollars of debt for an education that they were unable to finish, due not to their inability to research but to their inability or unwillingness to tolerate abuse. As one doctoral student put it, "Graduate school should be challenging, not traumatic."[84]

Proposed Solutions

The most significant problems facing graduate students today originate from the climate of academia that perpetuates unhealthy work-life balance and advisor relationships that are often unhelpful, unsupportive, and, at times, abusive. In turn, they are unable to finish their degrees within a reasonable time, if at all, and suffer lifelong financial, personal, and emotional consequences. Therefore, these issues must be addressed to ensure the continued strength of the U.S. workforce, scientific discovery, and social progress.

Of utmost importance is the need for training of research advisors on appropriate relationships and best mentoring practices[85]. Academia has historically prioritized technical training for advisors, and while this is necessary, it is not sufficient. This training should begin at the graduate level and extend to all faculty who mentor students. Effort should be made to ensure that abusive behavior by advisors is not tolerated, and that programs and institutions are held accountable for the behavior of individuals they entrust with the education and training of future leaders, scientists, and entrepreneurs. At this time, there are few regulations prohibiting neglectful, exploitative, and abusive behavior by research advisors in academia, other than those that stem from class-based discrimination. An advisor may be abusive, but so long as they are abusive to all of his students equally, there is no violation. The degree to which an institution ensures appropriate mentor relationships in graduate education is highly variable and largely falls on internal pressures, which are often invested in maintaining

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the status quo and preserving a program or institution's reputation.

Mentorship training may be implemented in a variety of ways. In the Higher Education Act reauthorization, provisions may be included within Title I that ensure that institutions of higher education eligible for federal funds must provide evidence of quality and regular training for research advisors and mentors. Granting federal agencies may require eligible institutions to do the same. Incentives could be provided for institutions that implement these policies, and researchers with a history of good mentoring behavior could be rewarded. Institutions may require that all graduate students have at least two advisors, helping to balance the power dynamics between several individuals and ensuring no one advisor abuses or exploits their students. Institutions may be required to release graduate student attrition rates, and students could be warned of advisors with a history of poor mentoring. Graduation criteria could be standardized or streamlined to ensure students can finish in a timely fashion. The Department of Education may investigate institutions, potentially establishing an anonymous reporting site where students can request inquiries or initiate them based on suspiciously low attrition rates. Institutions could be provided with additional support for graduate student mental health, in the form of trained counselors and therapists as well as resources to provide community support to foster a healthy culture as opposed to a toxic one.

In addition to addressing the needs for improved mentor relationships, other needs could be met, such as ensuring that universities provide support and training for students who are interested in careers beyond academia. Institutions could alleviate the financial burdens of students by providing subsidized housing, dependent care, maternity leave, and comprehensive medical and dental care, as well as establishing minimum stipends at living wages. Students who were eligible for Pell grants as undergraduates could be allowed access to any remaining Pell to help ensure that students from low-income families are not dissuaded from advanced degrees due to fears of overwhelming debt. The Public Service Loan Forgiveness program could be maintained to help alleviate some of the life-long debt of those with advanced degrees who are dedicated to serving the public. Graduate students who do take out loans could be offered interest rates similar to those of undergrads, especially those from low-income families.

Graduate students enter school for myriad reasons, but most do so out of a desire to contribute to society: to solve problems, to teach, and to aid the public in understanding the world. Advanced degrees are necessary for our social, scientific, and economic progress, and we should implement policies that support those who commit themselves to earning a degree. That includes ensuring that the culture of graduate education is one that challenges, but not abuses, and that pushes, but not destroys. No one should have to tolerate abusive behavior in order to get an education.

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