Insights into First-Generation Doctoral Students

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Introduction

First-generation doctoral students, defined as those who are the first of their generation to both complete a Bachelor's degree and pursue a doctoral degree, are an under-examined part of the student population. While about one-third of doctoral students are first-generation (Hoffer et al., 2003, National Science Foundation, 2015), only about three percent of first-generation undergraduates pursue doctoral studies (Redford et al., 2017). As a result, much of the research and discussion of first-generation students has focused on undergraduates, but first-generation graduate students who have persisted in postsecondary education also bring with them unique strengths and resilience. Graduate schools and programs need to identify and consider the needs of this diverse student population at a time when a doctoral degree has become key to positions in academia as well as business, non-profits, and government. To aid and transform campus conversations, using data from the Council of Graduate Schools' Understanding Career Pathways for Program Improvement project, this brief provides insights into the career concerns of first-generation doctoral students.

Key Findings:

- **Students of color more likely to be first-generation.** Career Pathways data largely confirms prior studies by observing that 27% of doctoral students identify as first-generation. While there were no significant differences between first-generation students by gender, Hispanic or Latinx (52%), American Indian/Alaskan Native (51%), Black or African American (41%) identified as first-generation doctoral students (Figure 1). By field of study, 35% of education PhD students were first-generation, confirming prior work by Hoffer et al. (2003) and Nettles and Millett (2006). 32% of health sciences PhDs identified as first-generation, contrasted with 19% in business (Figure 2).

- **Post-graduation career aspirations.** When examining differences between first-generation and continuing-generation doctoral students, several differences in career aspirations emerged. Of 12 factors, first-generation students rated job security, salary, and benefits as more important than their continuing-generation peers. There were no large or statistically significant differences for the other nine factors, including prestige, job location, or intellectual challenge (Figure 3).
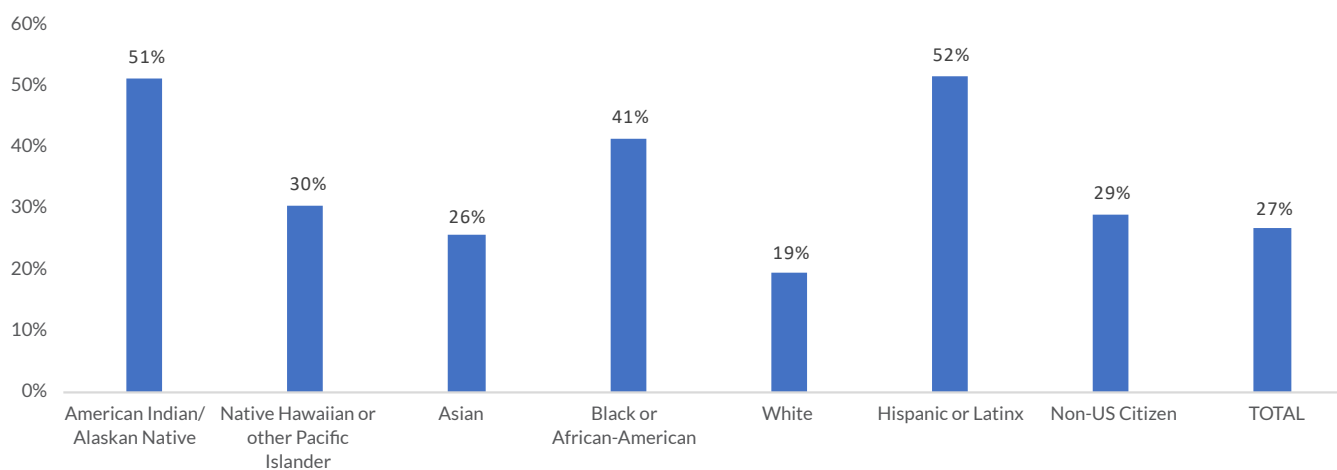
- **Finances are a primary concern.** A greater proportion of first-generation doctoral students hold undergraduate student loans (47%) than continuing-generation students (31%). For those students holding undergraduate loans, the average unpaid loan was 65% higher for first-generation students ($34,243 versus $20,699). At the start of the COVID-19 pandemic, first-generation students (M = 2.39 out of 5, SD = 1.40) were more worried that they would run out of money in the next three months than their continuing-generation colleagues (M = 1.89 out of 5, SD = 1.13). These concerns may explain the higher importance placed on job security, salary, and benefits among first-generation doctoral students.

- **Greater attraction to positions outside the research university.** First-generation doctoral students appear more attracted to positions at master's/regional universities, community colleges, and US state/local government than their continuing-generation peers. They are less attracted, however, to post-graduation employment in for-profit business/industry. There are no significant differences in other sectors such as research universities, liberal arts colleges, or non-profits (Figure 4).

- **Lower perceived program support for desired career.** There were no statistical differences between first-generation and continuing-generation students in terms of their sense of direction and preparation for their career. However, first-generation doctoral students held lower perceptions of PhD program support in terms of their desired post-graduation career (M = 3.50 out of 5, SD = 1.06 versus M = 3.69 out of 5, SD = 1.02), perhaps due to their more diverse career aspirations beyond the research university (Figure 5).

Takeaway Points

- First-generation doctoral students represent a diverse group in terms of race/ethnicity and field of study. A majority or large plurality of students of color bring their experiences to doctoral education as both first-generation and racially/ethnically minoritized students, which include strengths to meet the challenges of earning a PhD.

- Pre- and post-graduation financial concerns may be shaping career priorities and desired job destinations for first-generation doctoral students. With more undergraduate debt and greater short-term financial fears, these students may be more eager to pursue options that secure a better post-PhD financial situation.

- First-generation doctoral students may have more diverse career interests, particularly within the academy. The greater attraction to master's/regional universities and community colleges may indicate interest in working and teaching at institutions that serve more first-generation students and students of color.

- First-generation students are open to more diverse post-PhD career options. Perhaps for this reason they feel less supported by their program. These perceptions exist despite the feeling that they have a solid sense of direction and preparation for their desired career.
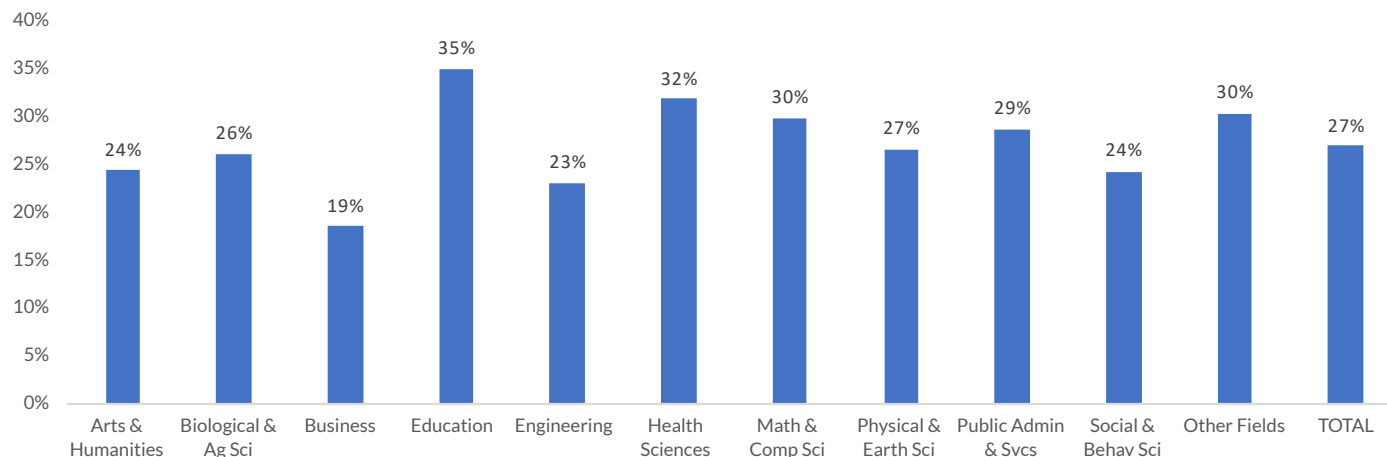
Figure 1. First-generation doctoral students by race/ethnicity

Figure 2. First-generation doctoral students by PhD field of study

Field	Percentage
Arts & Humanities	24%
Biological & Ag Sci	26%
Business	19%
Education	35%
Engineering	23%
Health Sciences	32%
Math & Comp Sci	30%
Physical & Earth Sci	27%
Public Admin & Svcs	29%
Social & Behav Sci	24%
Other Fields	30%
TOTAL	27%

Data Source: Council of Graduate Schools, Understanding PhD Career Pathways for Program Improvement (NSF/DGE #1661272 and Mellon Foundation #31600612), Spring 2019 Student Survey
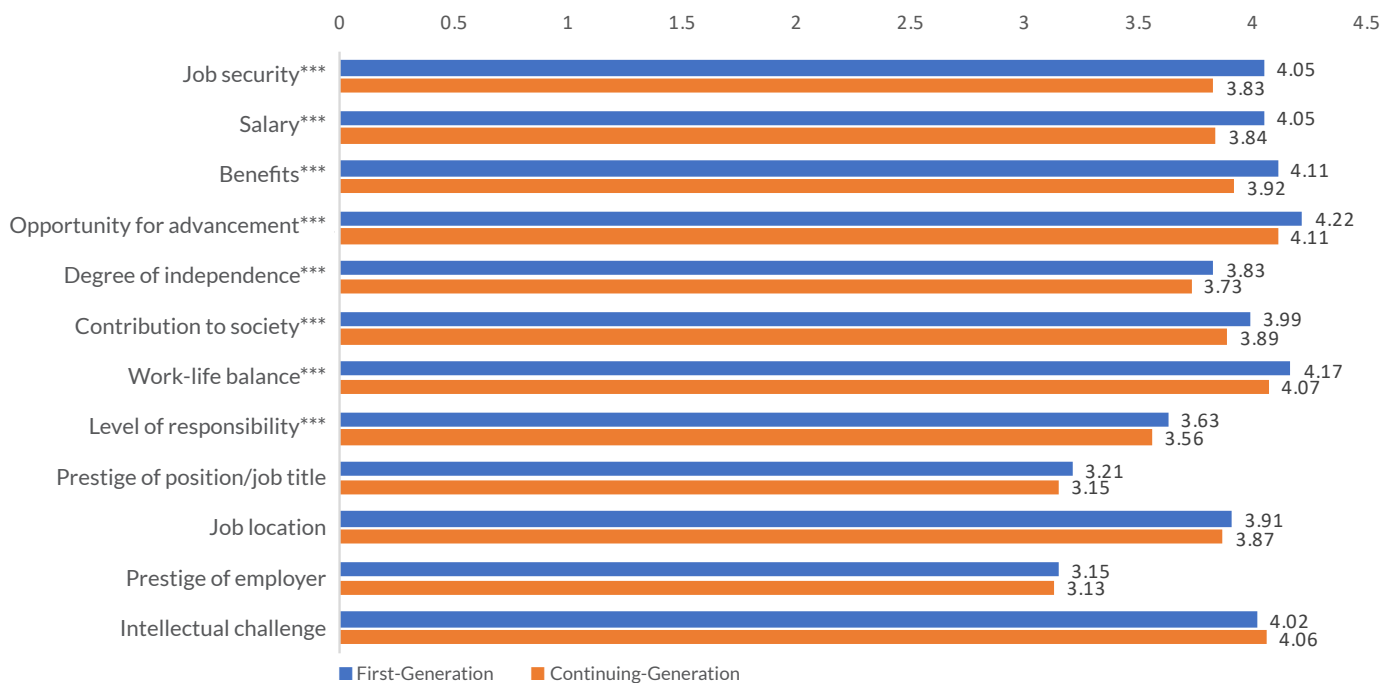
Figure 3. Importance of post-graduation employment factors

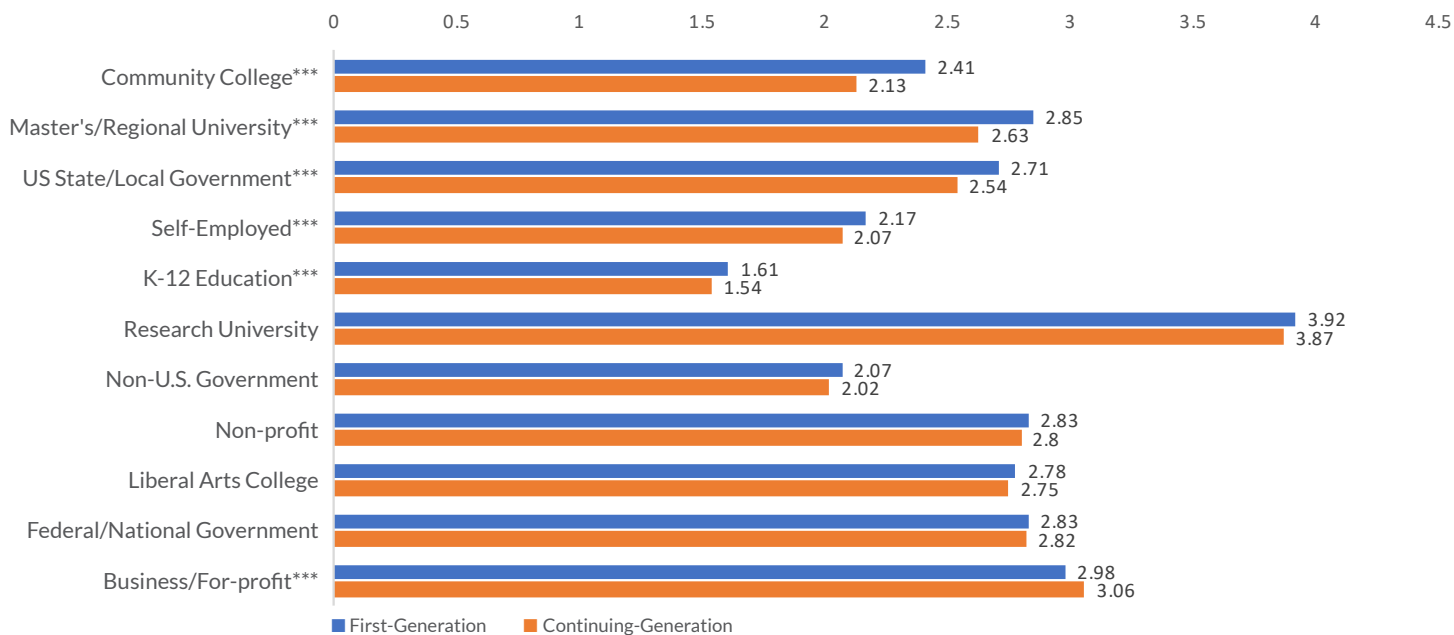| Factor	First-Generation	Continuing-Generation
Job security***	4.05	3.83
Salary***	4.05	3.84
Benefits***	4.11	3.92
Opportunity for advancement***	4.22	4.11
Degree of independence***	3.83	3.73
Contribution to society***	3.99	3.89
Work-life balance***	4.17	4.07
Level of responsibility***	3.63	3.56
Prestige of position/job title	3.21	3.15
Job location	3.91	3.87
Prestige of employer	3.15	3.13
Intellectual challenge	4.02	4.06

Data Source: Council of Graduate Schools, Understanding PhD Career Pathways for Program Improvement (NSF/DGE #1661272 and Mellon Foundation #31600612), Spring 2019 Student Survey

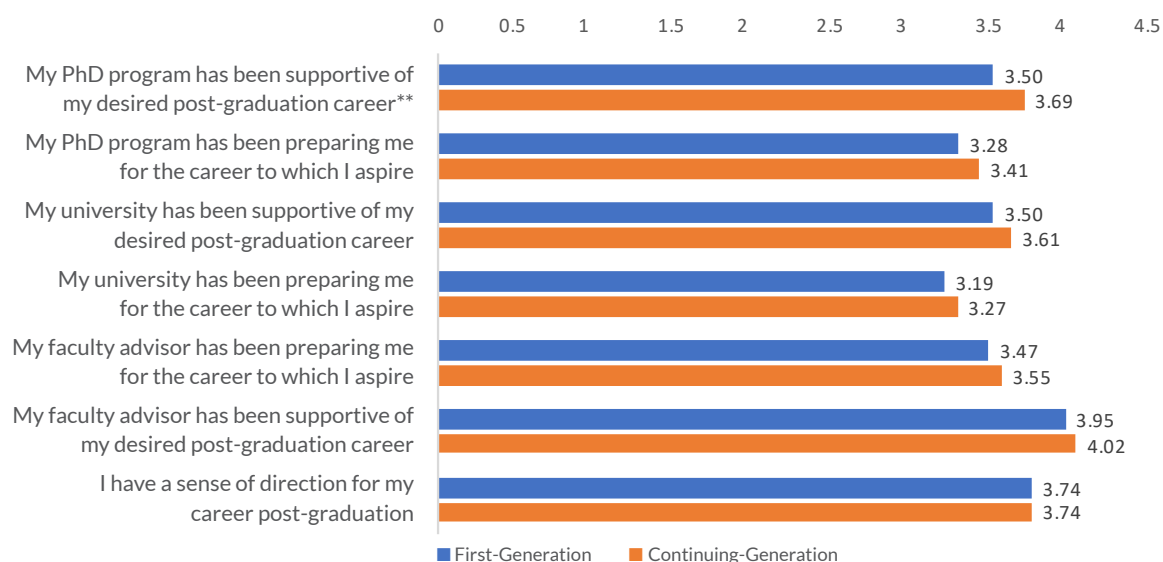*** *statistically significant difference at $p < .001$*

Figure 4. Desirability of post-graduation employment sector

Sector	First-Generation	Continuing-Generation
Community College***	2.41	2.13
Master's/Regional University***	2.85	2.63
US State/Local Government***	2.71	2.54
Self-Employed***	2.17	2.07
K-12 Education***	1.61	1.54
Research University	3.92	3.87
Non-U.S. Government	2.07	2.02
Non-profit	2.83	2.8
Liberal Arts College	2.78	2.75
Federal/National Government	2.83	2.82
Business/For-profit***	2.98	3.06

Data Source: Council of Graduate Schools, Understanding PhD Career Pathways for Program Improvement (NSF/DGE #2000750 and Mellon Foundation #1809-06155), Spring 2019 Student Survey

*** statistically significant difference at p < .001

Figure 5. Perceptions of sense of direction, preparation, and support

Statement	First-Generation	Continuing-Generation
My PhD program has been supportive of my desired post-graduation career**	3.50	3.69
My PhD program has been preparing me for the career to which I aspire	3.28	3.41
My university has been supportive of my desired post-graduation career	3.50	3.61
My university has been preparing me for the career to which I aspire	3.19	3.27
My faculty advisor has been preparing me for the career to which I aspire	3.47	3.55
My faculty advisor has been supportive of my desired post-graduation career	3.95	4.02
I have a sense of direction for my career post-graduation	3.74	3.74

Data Source: Council of Graduate Schools, Understanding PhD Career Pathways for Program Improvement (NSF/DGE #2000750 and Mellon Foundation #1809-06155), Spring 2019 Student Survey

** statistically significant difference at p < .01

Conversation Starters for PhD Program Improvement

We encourage graduate schools to engage in campus conversations about how to best serve first-generation doctoral students. Culture change happens incrementally and requires active participation by students, faculty, and administrators. A good first step is understanding how your campus community communicates with first-generation doctoral students. Some of the questions that you may begin asking your campus colleagues (e.g. graduate school staff, college deans, graduate program directors, etc.) and others include:

- How do you identify and support first-generation doctoral students who may be experiencing imposter syndrome and difficulties relaying their doctoral experience to their families?

- How can you create an environment that is supportive of first-generation students and other aspects of their identities to ensure their sense of belonging in your program and institution?

- How do you engage first-generation doctoral students with the "hidden curriculum" that includes many informal forms of professional development, such as networking and building a scholarly identity?

- How do you support first-generation students who make education and career decisions with a clear eye on financial security – whether it is during the program (e.g. the decision to take on additional work responsibilities that do not advance their education) or after graduation?

- How do you support undergraduate students (particularly community college transfers) in their career aspirations and preparation for work in university settings, through bridge programs and undergraduate research opportunities, where many first-generation and racially/ethnically minoritized students begin their higher education journey?

Additional Resources

Campus Resources for First-Generation Graduate Students: Several graduate colleges have created dedicated webpages and student programming for first-generation graduate students. These efforts help bring a sense of community and reduce the stigma associated with being among the first in one's family to pursue a graduate degree. Learn more about first-generation graduate student resources from the *University of Minnesota* and the *University of Washington*.

CGS Resources for Graduate Student Professional Development: CGS has led a series of Best Practices projects in the professional development domain. Project reports and resulting resources for graduate schools are *available on the CGS website*.

CGS Communications Guide for Career Diversity: CGS has developed a communications resource that is designed to help university partners advocate for greater transparency about PhD careers and to support career diversity. The tool includes tips for supporting career diversity in campus social media as well as guidance on communicating the value of diverse careers. For example, *the guide* encourages the shift in some of the skills discussed in this brief (e.g. communication, diversity/multicultural competency) towards the label "essential skills" rather than "soft skills" to put them on equal footing with more traditional academic skillsets.

Individual Development Plans (IDP): With increased focus on career planning in doctoral education, several disciplinary societies and academic institutions have created resources meant for doctoral students and postdoctoral associates. These resources can be used iteratively by early career academics and their mentors to assess career options and set goals. Learn more about IDPs from the *American Psychological Association* and the *University of California, Berkeley*.

Graduate Career Consortium (GCC): Since 1987, the Graduate Career Consortium is a 400+ member organization of higher education professionals who work with graduate students and postdoctoral associates on issues related to career and professional development. Learn more about the *Graduate Career Consortium*.

About the Data Source

The CGS PhD Career Pathways Project Student Survey was distributed in spring 2019 to current PhD students with 17,942 students from 54 institutions who completed the survey. In summer 2020, 1,324 students who were still currently enrolled in their doctoral program completed the follow-up survey. This brief is based upon this aggregated data set, which includes items from both the baseline and follow-up survey, as noted in each figure.

References

Hoffer, T.B., Sederstrom, S., Selfa, L., Welch, V., Hess, M., Brown, S., Reyes, S., Webber, K., & Guzman-Barron, I. (2003). *Doctorate recipients from United States universities: Summary report 2002.* National Opinion Research Center.

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Redford, J., Hoyer, K.M., & Ralph, J. (2017). *First-generation and continuing-generation college students: A comparison of high school and postsecondary experiences.* National Center for Educational Statistics (NCES).

The CGS PhD Career Pathways Coalition

CGS PhD Career Pathways is a coalition of 75 doctoral institutions working to better understand and support PhD careers across all broad fields of study. Over the course of the project, universities will continue collecting data from current PhD students and alumni using surveys that were developed by CGS in consultation with senior university leaders, funding agencies, disciplinary societies, researchers, and PhD students and alumni. The resulting data are allowing universities to analyze PhD career preferences and outcomes at the program level and help faculty and university leaders strengthen career services, professional development opportunities, and mentoring.

About CGS

For over 60 years, the Council of Graduate Schools has been the only national organization dedicated solely to advancing master's and doctoral education and research. CGS members award 86.9% of all U.S. doctoral degrees and 59.8% of all U.S. master's degrees. CGS accomplishes its mission through advocacy, the development and dissemination of best practices, and innovative research.

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