Chapter 5  Graduate Academic & Professional Degree Students

Goals
The University of Michigan offers a rigorous and remarkably broad array of graduate and professional degree programs that stand among the very best in the country. The University attracts outstanding students to graduate study, and prepares them to make lasting contributions to society through successful careers in professions and academic disciplines. Interdisciplinary study and joint degrees are a special strength of the University. The vibrant community of graduate and professional students on campus is highly diverse in citizenship, demographic background, and intellectual perspective.

Overview
The Horace H. Rackham School of Graduate Studies oversees graduate academic education in partnership with the schools and colleges. In fall 2018, the University enrolled 8,695 students in 231 doctorate, 114 master, and 10 graduate-level certificate programs offered by the schools and colleges. In addition to obtaining an education, graduate students contribute significantly to the conduct of research, scholarship and teaching on campus. The research enterprise at the U-M benefits enormously from the talent and intelligence of these students.

Another 7,703 students enrolled in fall 2018 in professional and non-Rackham graduate degree programs in medicine, law, business, public health, dentistry, pharmacy, nursing, information, engineering, social work and architecture and urban planning. The schools or colleges administer these degree programs in keeping with each profession’s requirements and standards.

The tuition paid by graduate and professional students varies considerably depending on the program. Nearly all Ph.D. students and about half of academic Master’s students receive financial support.

Professional degree programs are generally more costly than other graduate programs. A large fraction of the students in professional degree programs complete their degrees with loans to repay.

The Rackham Graduate School collects data on the number of entering graduate students who complete Ph.D. programs Overall, about 74 percent of the students who enrolled in a program between 2003 and 2012 have received a Ph.D. The rates vary somewhat by discipline.

Post-graduation plans vary along disciplinary lines. Ph.D. graduates in the humanities and the arts often find academic positions soon after graduation. Graduates in the biological, physical and social sciences frequently take a postdoctoral training position before moving into other employment. Industry positions attract a large number of graduates from engineering and the physical sciences. U-M’s international students tend to remain in the U.S. after graduation, probably reflecting the kind and number of opportunities available in this country for those holding advanced degrees.

In several professions, prospective practitioners must pass one or more examinations before becoming a licensed member of his or her chosen field; U-M students in medicine, law, dentistry, and pharmacy have high pass rates.

For more information
Horace H. Rackham School of Graduate Studies (rackham.umich.edu)
U-M Graduate Program Information (rackham.umich.edu/academics/programs-of-study)
Office of Budget and Planning - Facts & Figures (obp.umich.edu)
Data about the gender and racial/ethnic diversity of graduate students are reported in Chapter 8.
Charts in Chapter 5

5.1.1 Graduate Academic and Professional Student Enrollment by Level, Fall 2008-18.
5.1.2 Graduate Academic and Professional Student Enrollment by Percent of Total Enrollment for U-M and AAU Public and Private Universities, Fall 2008-18.
5.1.3 U-M Graduate Academic and Professional Student Enrollment Headcount, with Percent of Total Enrollment, for Selected Years from 1960 to 2018.
5.1.4 U-M Graduate Academic and Professional Student Enrollment by School/College and Degree Sought, Fall 2018.

5.2.1 Graduate Academic and Professional Degree Tuition and Required Fees, per Semester, 2018-19.
5.2.2 Graduate Academic Student Tuition and Required Fees, Adjusted for Inflation, per Semester, FY1999-FY2019.
5.2.3 Graduate Professional Student Tuition and Required Fees, Adjusted for Inflation, In-State per Semester, FY1999-FY2019.
5.2.4 Graduate Professional Student Tuition and Required Fees, Adjusted for Inflation, Out-of-State per Semester, FY1999-FY2019.

5.3.1 Graduate Master’s, Academic Doctorate and Professional Doctorate Degrees Awarded, Headcount for U-M, Peers and Big Ten Universities, 2015-16.
5.3.2 Ph.D. Degrees Awarded, Headcount and Percent, by Discipline Group for U-M, Peers and Big Ten Universities, 2015-16.
5.3.3 Master’s Degrees Awarded, Headcount and Percent, by Discipline Group for U-M, Peers and Big Ten Universities, 2015-16.
5.3.4 Professional Degrees Awarded, Headcount and Percent, by Program for U-M, Peers and Big Ten Universities, 2015-16.

5.4.1 Academic Doctoral Completion Rates by Discipline Group, Enrollment Cohorts from 2003-12.
5.4.2 Academic Master’s Completion Rates by Discipline Group, Enrollment Cohorts from 2014-17.
5.5.1 Funding Support for Rackham Ph.D. Students, 2017-18.
5.5.2 Funding Support for Rackham Master’s Students, 2017-18.

5.6.1 Self-reported Cumulative Undergraduate and Graduate Debt by U-M Ph.D. students at Graduation, by Discipline Group for Domestic Students, FY2007-17.
5.6.2 Graduate Professional Students’ Self-Reported Debt at Graduation, by Program, 2007-17.
5.8.2 Geographic Destinations of U-M Graduate Academic Degree Recipients, Headcount and Percent, by Discipline Group, FY2007-17.

5.9.2 Pass Rates for U.S. Medical Licensing Examination by U-M Medical Students, 2013-17.
Total graduate and professional student enrollment is 21 percent higher now compared to 10 years ago.

5.1.1 Graduate Academic and Professional\(^1\) Student Enrollment by Level, Fall 2008-18.

![Graduate Academic and Professional Student Enrollment by Level, Fall 2008-18.](image)

Total university of Michigan graduate and professional student enrollment has increased to 16,398 in Fall 2018 from 13,540 in Fall 2008.

Professional program counts include students enrolled in both professional doctorates (i.e. M.D., J.D) and professional master’s degree programs (i.e. M.B.A., M.Arch.). A detailed list is found in Appendix D.

\(^1\) A list of graduate academic and professional degrees is in Appendix D.
Graduate and professional students comprise more than one-third of the total student enrollment.

5.1.2 Graduate Academic and Professional\(^2\) Student Enrollment by Percent of Total Enrollment for U-M and AAU Public and Private Universities\(^3\), Fall 2008-18.

Total University of Michigan student enrollment has increased to 46,716 for fall 2018 from 39,534 in fall 2008, while the total graduate enrollment – academic and professional – increased to 16,398 from 13,589.

U-M professional student enrollment during the last decade was highest in 2011 as a fraction of the total student enrollment. The academic doctoral fraction rose to its highest level in 2010 (the first year of Rackham’s “continuous enrollment policy,” see p. 52), while the academic masters student fraction reached its maximum in 2015. Combined graduate and professional student enrollment as a fraction of the total student body is 0.6 percent greater in 2016 compared to 2006.

The average percentages reported for AAU Private and Public Universities are based on the combined enrollment of graduate academic and professional students compared to the total student enrollment at all levels – undergraduate, graduate and professional. (Note: AAU school counts as reported to IPEDS are lagged by one-to-two years from U-M data.)

\(\text{\textsuperscript{2}}\) A list of graduate academic and professional degrees is in Appendix D.

\(\text{\textsuperscript{3}}\) A list of Association of American Universities (AAU) member institutions is published in Appendix A.
While the total number of graduate and professional students has grown from 8,916 in 1960 to 16,398 in 2018, the fraction of the total student body on the Ann Arbor campus that they represent has varied by less than five percent.

5.1.3 U-M Graduate Academic and Professional Student Enrollment Headcount, with Percent of Total Enrollment, for Selected Years from 1960 to 2018.

SOURCE: U-M Student Data Sets.

In the chart, the number inside each column represents the total enrollment of graduate academic and professional students in the fall of that year. Over the last 50 years, Ann Arbor campus enrollment increased by about one graduate student for every two additional undergraduates.
The largest academic doctoral enrollment at U-M is in the College of Literature, Science & the Arts. The largest master’s program is the M.B.A. in the Stephen M. Ross School of Business.

### 5.1.4 U-M Graduate Academic and Professional Student Enrollment by School/College and Degree Sought, Fall 2018.

<table>
<thead>
<tr>
<th>College/School</th>
<th>Graduate Academic (Rackham)</th>
<th>Other (non-Rackham)</th>
<th>Professional Doctor’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taubman College of Architecture &amp; Urban Planning</td>
<td>84</td>
<td>352</td>
<td>-</td>
</tr>
<tr>
<td>Penny W. Stamps School of Art &amp; Design</td>
<td>19</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stephen M. Ross School of Business</td>
<td>1</td>
<td>1,802</td>
<td>-</td>
</tr>
<tr>
<td>School of Dentistry</td>
<td>109</td>
<td>-</td>
<td>469</td>
</tr>
<tr>
<td>School of Education</td>
<td>242</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>1,408</td>
<td>438</td>
<td>4</td>
</tr>
<tr>
<td>School for Environment &amp; Sustainability</td>
<td>245</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Horace H. Rackham School of Graduate Studies</td>
<td>120</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>School of Information</td>
<td>-</td>
<td>428</td>
<td>-</td>
</tr>
<tr>
<td>School of Kinesiology</td>
<td>79</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Law School</td>
<td>-</td>
<td>-</td>
<td>1,051</td>
</tr>
<tr>
<td>College of Literature, Science &amp; the Arts</td>
<td>431</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Medical School</td>
<td>146</td>
<td>19</td>
<td>904</td>
</tr>
<tr>
<td>School of Music, Theatre &amp; Dance</td>
<td>12</td>
<td>188</td>
<td>-</td>
</tr>
<tr>
<td>School of Nursing</td>
<td>-</td>
<td>22</td>
<td>122</td>
</tr>
<tr>
<td>College of Pharmacy</td>
<td>-</td>
<td>-</td>
<td>341</td>
</tr>
<tr>
<td>School of Public Health</td>
<td>159</td>
<td>615</td>
<td>1</td>
</tr>
<tr>
<td>Gerald R. Ford School of Public Policy</td>
<td>192</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>School of Social Work</td>
<td>-</td>
<td>711</td>
<td>-</td>
</tr>
<tr>
<td>Joint Programs by two Schools/Colleges</td>
<td>-</td>
<td>71</td>
<td>-</td>
</tr>
<tr>
<td><strong>Grand Total, Graduate Students</strong></td>
<td><strong>3,247</strong></td>
<td><strong>4,851</strong></td>
<td><strong>2,887</strong></td>
</tr>
</tbody>
</table>

**SOURCE:** U-M Office of the Registrar.

The professional doctor’s degrees include M.D., J.D., D.D.S, Pharm.D., and D.N.P. (Doctor of Nursing Practice).

The Joint Program (last row of table) is offered by the School of Information and the School of Public Health.

A complete list of graduate academic (Rackham), other (Non-Rackham), and professional degrees offered by the University of Michigan is found in Appendix D.
Graduate academic and professional tuition and required fees vary by program.

### 5.2.1 Graduate Academic and Professional Degree Tuition and Required Fees, per Semester, 2018-19.

<table>
<thead>
<tr>
<th>School/College</th>
<th>Graduate Academic (Rackham) per semester</th>
<th>Professional or Non-Rackham per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Program</td>
<td>In-State</td>
</tr>
<tr>
<td>Taubman College of Architecture &amp; Urban Planning</td>
<td>M.S./M.U.P.</td>
<td>$15,234</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,384</td>
</tr>
<tr>
<td>Penny W. Stamps School of Art &amp; Design</td>
<td>M.F.A.</td>
<td>$11,953</td>
</tr>
<tr>
<td>Stephen M. Ross School of Business</td>
<td>M.A./Pre-candidate</td>
<td>$12,219</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,667</td>
</tr>
<tr>
<td>School of Dentistry</td>
<td>M.S./M.F.A.</td>
<td>$8,909</td>
</tr>
<tr>
<td></td>
<td>Pre-candidate</td>
<td>$13,208</td>
</tr>
<tr>
<td>School of Education</td>
<td>M.A./Pre-candidate</td>
<td>$11,953</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,444</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>M.S./Pre-candidate</td>
<td>$13,332</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$7,641</td>
</tr>
<tr>
<td>School of Environment &amp; Sustainability</td>
<td>M.S./Pre-candidate</td>
<td>$11,575</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,243</td>
</tr>
<tr>
<td>School of Information</td>
<td>Pre-candidate</td>
<td>$11,728</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,322</td>
</tr>
<tr>
<td>School of Kinesiology</td>
<td>Pre-candidate</td>
<td>$12,726</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,322</td>
</tr>
<tr>
<td>Law School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College of Literature, Science,</td>
<td>M.A./M.S./Pre-candidate</td>
<td>$11,728</td>
</tr>
<tr>
<td>&amp; the Arts</td>
<td>Ph.D. Candidate</td>
<td>$6,322</td>
</tr>
<tr>
<td>Medical School</td>
<td>M.S./Pre-candidate</td>
<td>$11,751</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,458</td>
</tr>
<tr>
<td>School of Music, Theatre &amp; Dance</td>
<td>M.A./M.F.A./Pre-candidate</td>
<td>$11,953</td>
</tr>
<tr>
<td></td>
<td>A.Mus.D. Candidate</td>
<td>$7,824</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,444</td>
</tr>
<tr>
<td>School of Nursing</td>
<td>M.S./Pre-candidate</td>
<td>$12,088</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,444</td>
</tr>
<tr>
<td>College of Pharmacy</td>
<td>M.S./Pre-candidate</td>
<td>$11,728</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,322</td>
</tr>
<tr>
<td>School of Public Health</td>
<td>M.S./Pre-candidate</td>
<td>$14,553</td>
</tr>
<tr>
<td>Gerald R. Ford School of Public Policy</td>
<td>M.P.P./M.P.A.</td>
<td>$13,404</td>
</tr>
<tr>
<td>Rackham Interdepartmental Programs</td>
<td>M.A./M.S./Pre-candidate</td>
<td>$11,728</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,322</td>
</tr>
</tbody>
</table>

**SOURCE:** U-M Office of Budget and Planning

These cost figures represent the published rates, although many students in these programs receive financial aid, which translates to a lower net price. Unless otherwise indicated, students usually attend school for two semesters per academic year.

Some additional specialized degrees and joint degree programs that are not listed above. The Registrar’s Office posts tuition and fees for these programs at [ro.umich.edu/tuition/](http://ro.umich.edu/tuition/).

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4 For D.D.S. students, an academic year consists of three semesters a year. Other programs consist of two academic semesters per year.
The inflation-adjusted tuition and required fees ("sticker price") for both in-state and out-of-state Ph.D. pre-candidacy students increased by nearly 50 percent from FY1999 to FY2019. However, as shown in chart 5.5.1, more than 90 percent of Ph.D. students receive tuition stipends or other financial support.

5.2.2 Graduate Academic (Rackham) Student Tuition and Required Fees, Adjusted for Inflation\textsuperscript{5}, per Semester, FY1999-2019.

The chart represents tuition and required fees for the typical graduate academic (Rackham) student, as represented by those enrolled in the College of Literature, Science and the Arts. Rates can vary for students enrolled in other graduate academic programs. (See chart 5.2.1)

Effective Fall 2010, tuition and required fees paid by Ph.D. candidates declined by $1,137 per year, adjusted for inflation (dotted line). This reduction occurred at the same time that the U-M instituted a continuous enrollment policy for Ph.D. students. The policy calls for these students to register in every fall and winter semester until they complete their degrees, unless they are on approved leaves of absence. The policy is designed to improve the likelihood that students will complete their Ph.D. degrees, without imposing any new financial burden on students or graduate program budgets.

\textsuperscript{5} Based on the FY2019 U.S. Consumer Price Index (as estimated by the U-M Research Seminar in Quantitative Economics).
The inflation-adjusted tuition and required fees for the M.B.A. and Law degrees increased more rapidly over the last 20 years than for other graduate degrees offered by the U-M.

5.2.3 Graduate Professional and Non-Rackham Student Tuition and Required Fees, Adjusted for Inflation\(^6\), In-State per Semester, FY1999-2019.

5.2.4 Graduate Professional and Non-Rackham Student Tuition and Required Fees, Adjusted for Inflation\(^6\), Out-of-State per Semester, FY1999-2019.

\(^{†}\) Starting in Fall 2011, D.D.S. students paid tuition three times per year instead of two, with the per-semester rate adjusted downward to be comparable with the previous annual total.

\(^{6}\) Based on FY 2019 U.S. Consumer Price Index (as estimated by the U-M Research Seminar in Quantitative Economics).
The U-M awards more graduate academic and professional degrees combined than any other Big Ten institution.

### 5.3.1 Graduate Master’s, Academic Doctorate and Professional Doctorate Degrees Awarded, Headcount for U-M, Peers and Big Ten Universities, 2015-16.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Master’s Degrees</th>
<th>Academic Doctorates</th>
<th>Professional Doctorates</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York U</td>
<td>8523</td>
<td>7909</td>
<td>486</td>
</tr>
<tr>
<td>USC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Columbia U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harvard U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U MICHIGAN</td>
<td>4324</td>
<td>843</td>
<td>683</td>
</tr>
<tr>
<td>Johns Hopkins U</td>
<td>5005</td>
<td>528</td>
<td>132</td>
</tr>
<tr>
<td>U Pennsylvania</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northwestern U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U Washington</td>
<td>3588</td>
<td>830</td>
<td>520</td>
</tr>
<tr>
<td>Columbia U</td>
<td>3229</td>
<td>896</td>
<td>490</td>
</tr>
<tr>
<td>U Illinois</td>
<td>3393</td>
<td>724</td>
<td>291</td>
</tr>
<tr>
<td>UCLA</td>
<td>3035</td>
<td>774</td>
<td>599</td>
</tr>
<tr>
<td>Ohio State</td>
<td>2631</td>
<td>807</td>
<td>802</td>
</tr>
<tr>
<td>U Wisconsin</td>
<td>2183</td>
<td>800</td>
<td>598</td>
</tr>
<tr>
<td>UC-Berkeley</td>
<td>2687</td>
<td>563</td>
<td>404</td>
</tr>
<tr>
<td>U Maryland</td>
<td>2835</td>
<td>592</td>
<td>36</td>
</tr>
<tr>
<td>U North Carolina</td>
<td>2188</td>
<td>542</td>
<td>703</td>
</tr>
<tr>
<td>U Chicago</td>
<td>2727</td>
<td>392</td>
<td>300</td>
</tr>
<tr>
<td>Stanford U</td>
<td>2328</td>
<td>761</td>
<td>271</td>
</tr>
<tr>
<td>Cornell U</td>
<td>2510</td>
<td>404</td>
<td>284</td>
</tr>
<tr>
<td>U Virginia</td>
<td>1802</td>
<td>315</td>
<td>482</td>
</tr>
<tr>
<td>Yale U</td>
<td>1818</td>
<td>401</td>
<td>109</td>
</tr>
<tr>
<td>MIT</td>
<td>1754</td>
<td>646</td>
<td>0</td>
</tr>
</tbody>
</table>

**SOURCE:** Integrated Postsecondary Education Data System (IPEDS).

The University of Michigan grants the academic doctorates Ph.D. and D.Mus.Arts. and the professional doctorates M.D., J.D., D.D.S., Pharm.D., and D.N.P.
The U-M is a top producer of STEM Ph.D. graduates compared to its peers.

5.3.2 Ph.D. Degrees Awarded, Headcount (top) and Percent (bottom), by Discipline Group\textsuperscript{7} for U-M, Peers and Big Ten Universities, 2015-16.

<table>
<thead>
<tr>
<th>Disciplines</th>
<th>U-M</th>
<th>Peers</th>
<th>Big Ten</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Sciences</td>
<td>184</td>
<td>392</td>
<td>187</td>
</tr>
<tr>
<td>Physical Sciences &amp; Engineering</td>
<td>67</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>22%</td>
<td>45%</td>
<td>22%</td>
</tr>
<tr>
<td>Humanities &amp; the Arts</td>
<td>22%</td>
<td>8%</td>
<td>3%</td>
</tr>
<tr>
<td>Multidisciplinary</td>
<td>3%</td>
<td>8%</td>
<td>3%</td>
</tr>
</tbody>
</table>

SOURCE: Integrated Postsecondary Education Data System (IPEDS).

\textsuperscript{7} A list of disciplines assigned to each group is found in Appendix C.
In the life sciences, physical sciences and engineering – also known as STEM fields (science, technology, engineering and mathematics) – U-M awarded 566 Ph.D. degrees in 2015-16, more than any of its peers for the academic year. The number of graduates in STEM fields is important because some analyses indicate that the American workforce needs to add many STEM professionals in the coming years.

To keep the comparisons consistent between U-M and the other schools included here, we assigned all degree awards for Charts 5.3.2, 5.3.3 and 5.3.4 at the peer and Big Ten universities to the same academic disciplines and professional categories as the U-M uses, even if other schools might assign the programs differently on their campuses.
Nearly half of U-M’s Master’s degrees are in STEM fields.

5.3.3 Academic Master’s Degrees Awarded, Headcount (top) and Percent (bottom), by Discipline Group⁸ for U-M, Peers and Big Ten Universities, 2015-16.

SOURCE: Integrated Postsecondary Education Data System (IPEDS).

⁸ A list of disciplines assigned to each group is found in Appendix C.
Among the academic Master’s degrees awarded in 2015-16, 2,078 U-M students graduated in the sciences, technology, engineering or mathematics.

To keep the comparisons consistent between U-M and the other schools included here, we assigned all degree awards for Charts 5.3.2, 5.3.3 and 5.3.4 at the peers and Big Ten universities to the same academic disciplines and professional categories as the U-M uses, even if other schools might assign the programs differently on their campuses.
The U-M grants a large number of professional degrees compared to many peer universities.

5.3.4 Professional Degrees Awarded, Headcount (top) and Percent (bottom), by Program for U-M, Peers and Big Ten Universities, 2015-16.

SOURCE: Integrated Postsecondary Education Data System (IPEDS).

9 Includes professional degrees U-M does not offer, such as in Veterinary Medicine, Optometry, Osteopathic Medicine, and Communication Disorders.
The U-M awards degrees in five professional programs: Law, Medicine, Dentistry, Pharmacy, and Nursing Practice (D.N.P.), although in 2015-16, no D.N.P. degrees were awarded.

To keep the comparisons consistent between U-M and the other schools included here, we assigned all degree awards for Charts 5.3.2, 5.3.3 and 5.3.4 at the peers and Big Ten universities to the same academic disciplines and professional categories as the U-M uses, even if other schools might assign the programs differently on their campuses.
The profile of U-M doctoral student graduation rates in recent years is fairly consistent across the disciplines. Overall, 76 percent of students who enrolled in a doctoral program on the Ann Arbor campus between Spring term 2003 and Winter term 2011 have graduated with a Ph.D.

5.4.1 Academic Doctoral Completion Rates by Discipline Group\textsuperscript{10}, Enrollment Cohorts 2003-12.

SOURCE: Horace H. Rackham School of Graduate Studies.

This chart examines a range of doctoral entry cohorts and shows the counts and percentages of each cohort that have completed their degrees, or are still enrolled, as of August 31, 2018.

\textsuperscript{10} A list of disciplines assigned to each group is found in Appendix C.
Of students who enrolled in U-M academic Master's programs on the Ann Arbor campus at least two years ago, 87% have completed their degrees.

5.4.2 Academic Master's Completion Rates by Discipline Group\textsuperscript{11}, Enrollment Cohorts 2014-17

![Completion Rates by Discipline Group Chart]

\textsuperscript{11} A list of disciplines assigned to each group is found in Appendix C.
Ninety-eight percent of Rackham graduate students pursuing Ph.D. degrees receive financial support from the University.

5.5.1 Funding Support for Rackham Ph.D. Students\textsuperscript{12}, 2017-18.

In all fields of study, a large fraction of academic Ph.D. students receives both tuition grants and a stipend to help cover living expenses. In many cases, students competed successfully for external funding and did not need additional financial support. Stipends may be paid as part of an appointment as a Graduate Student Instructor (GSI), Graduate Student Research Assistant (GSRA), Graduate Student Staff Assistant (GSSA), or as a fellowship.

\begin{itemize}
  \item All Rackham Ph.D. Students (5,347 students)
  \begin{itemize}
    \item Tuition & Stipend: 93%
    \item Stipend Only: 4%
    \item Tuition Only: 2%
    \item No Support: 2%
  \end{itemize}

  \item Biological & Health Sciences (1,021 students)
  \begin{itemize}
    \item Tuition & Stipend: 92%
    \item Stipend Only: 6%
    \item Tuition Only: 1%
    \item No Support: 1%
  \end{itemize}

  \item Social Sciences (1,249 students)
  \begin{itemize}
    \item Tuition & Stipend: 91%
    \item Stipend Only: 3%
    \item Tuition Only: 4%
    \item No Support: 2%
  \end{itemize}

  \item Physical Sciences & Engineering (2,460 students)
  \begin{itemize}
    \item Tuition & Stipend: 94%
    \item Stipend Only: 4%
    \item Tuition Only: 1%
    \item No Support: 2%
  \end{itemize}

  \item Humanities & the Arts (617 students)
  \begin{itemize}
    \item Tuition & Stipend: 93%
    \item Stipend Only: 2%
    \item Tuition Only: 4%
    \item No Support: 2%
  \end{itemize}
\end{itemize}

\textbf{SOURCE:} Horace H. Rackham School of Graduate Studies Student Funding Reports.

Percentages might not sum to 100% due to rounding.

\textsuperscript{12} A list of disciplines assigned to each group is found in Appendix C.
Financial support provided to Rackham students pursuing Master’s degrees varies by field of study.

### 5.5.2 Funding Support for Rackham Master’s Students

The five categories of support (No Support, and covering 1%-25%, 26%-50%, 51%-75%, 76%-100% of costs) represent the fraction of the total calculated cost of attendance provided as tuition grants and stipends to students enrolled in Master’s programs. Loans that Master’s students may acquire are not included in these calculations.

A list of disciplines assigned to each group is found in Appendix C.

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**SOURCE:** Horace H. Rackham School of Graduate Studies Student Funding Reports.

Percentages might not sum to 100% due to rounding.

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13 A list of disciplines assigned to each group is found in Appendix C.
Three-fifths of U-M Ph.D. students graduate without any student loan debt.

5.6.1 Self-reported Cumulative Undergraduate and Graduate Debt by U-M Ph.D. students at Graduation, by Discipline Group\textsuperscript{14} for Domestic Students, FY2007-17.

Fewer than half (40% over the time period shown) of University of Michigan Ph.D. students graduate with student-loan debt that was acquired over the course of their undergraduate and graduate careers. The aggregate averages of Ph.D. graduates with debt by discipline groups vary: Life Sciences (44%), Physical Sciences & Engineering (31%), Social Sciences (48%), Humanities & the Arts (52%).

The issue of student debt remains important to the University of Michigan and higher education overall. Student loan debt presents a serious challenge to scholars just starting their careers, especially for the small number of students in the life sciences, physical sciences and engineering and social sciences who have accumulated student loan debt that exceeds $100,000.

\textsuperscript{14} A list of the disciplines assigned to each category is in Appendix C.
After adjusting for inflation\textsuperscript{15}, the level of student loan debt for U-M graduates of professional degree programs in medicine, law and dentistry is high, but somewhat variable year-to-year.

5.6.2 Graduate Professional Students’ Self-reported Debt at Graduation, by Program, 2007-17.

\textbf{Average Debt at Graduation} \hspace{1cm} \textbf{Average Debt, Adjusted for Inflation}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{chart}
\caption{Graduate Professional Students’ Self-reported Debt at Graduation, by Program, 2007-17.}
\end{figure}

\textbf{SOURCE:} School Dean or Financial Aid Office.

Between 80 and 90 percent of professional degree graduates have student loan debt when they complete their programs. For all programs, the debt averages are calculated based only on students with student-loan debt.

The debt acquired by professional students is a matter of national concern. For instance, the likelihood of incurring sizeable debt to attend a professional school may contribute to the relatively small proportion of under-represented minorities enrolled in these programs at the University (see Chart 8.6.1).

\textsuperscript{15} Based on the FY2017 U.S. Consumer Price Index.
A large fraction of Ph.D. graduates in the physical sciences and engineering go into private or non-profit sector jobs. Ph.D. graduates in the other discipline groups tend to move more toward higher education positions.


**Biological & Health Sciences**

- Unknown
- Unemployed/Family care/Other
- Self-employed
- Medical/Clinical Job
- Non-Profit Job
- Government/National Lab Job
- Business/Industry Job
- K-12/Comm. College Job
- Other Continuing Education
- Post-doctoral Education
- Non-Tenure Track, Higher Ed.
- Tenure-Track (Foreign Univ.)
- Tenure-Track (Other U.S. Univ.)
- Tenure-Track (AAU Univ.)

**Physical Sciences & Engineering**

- Unknown
- Unemployed/Family care/Other
- Self-employed
- Medical/Clinical Job
- Non-Profit Job
- Government/National Lab Job
- Business/Industry Job
- K-12/Comm. College Job
- Other Continuing Education
- Post-doctoral Education
- Non-Tenure Track, Higher Ed.
- Tenure-Track (Foreign Univ.)
- Tenure-Track (Other U.S. Univ.)
- Tenure-Track (AAU Univ.)

SOURCE: Survey of Academic Departments by Rackham Graduate School.

Blue shades represent higher education positions, reds indicate post-doctoral or other post-graduate training, greens are positions outside of higher education, and the grays represent unknown activity or not currently employed.

More than half of academic Ph.D. graduates in the biological and health sciences enter post-doctoral training during the first year following graduation. As time since graduation passes, many of the post-docs move into academic positions in higher education or take jobs in industry, government or the non-profit sector.

About the same number of academic Ph.D. graduates in the physical sciences and engineering initially take a position outside of academia as enter post-doctoral training. At five or more years after graduation, they are employed in industry, government or the non-profit sector, or entering academic positions.

\textsuperscript{16} A list of disciplines assigned to each group is found in Appendix C.
More than two-fifths of academic Ph.D. graduates in the social sciences enter a higher education position during the first year following graduation, with about two-thirds of these on the tenure-track. By five years after graduation, about half of U-M’s social science Ph.D. graduates have tenure-track positions, and another 20 percent hold non-tenure-track positions at a college or university.

Ph.D. graduates in the humanities and arts are less likely to pursue postdoctoral training than their counterparts in other disciplines. About one-fourth of humanities and arts Ph.D. graduates are on the tenure track initially, and the fraction doubles by ten years post-graduation.

SOURCE: Survey of Academic Departments by Horace H. Rackham School of Graduate School.

Blue shades represent higher education positions, reds indicate post-doctoral or other post-graduate training, greens are positions outside of higher education, and the grays represent unknown activity or not currently employed.

17 A list of disciplines assigned to each group is found in Appendix C.
U-M Ph.D. programs are attractive to students from all geographic locales.

5.8.1 Geographic Origins of U-M Ph.D. Recipients, Headcount (top) and Percent (bottom) by Discipline Group\textsuperscript{18}, FY2007-17.

The large number of international students enrolled in physical science and engineering Ph.D. programs is not a surprise, given the attractiveness of these kinds of programs. For the decade displayed here, international students make up 49 percent of total enrollment in U-M physical science and engineering Ph.D. programs.

\textsuperscript{18} A list of disciplines assigned to each group is found in Appendix C.
A comparison of geographic origins (5.8.1) and destinations (below) of U-M Ph.D. students illustrates that a large proportion of international students remain in the U.S. after graduation.

5.8.2 Geographic Destinations of U-M Ph.D. Recipients, Headcount (top) and Percent (bottom) by Discipline Group\textsuperscript{19}, FY2007-17.

\textsuperscript{19} A list of disciplines assigned to each group is found in Appendix C.

U-M law, medicine and dentistry students pass their licensing exams at very high rates.


![Chart showing pass rates for four states' bar exams by U-M Law School graduates from 2013 to 2017.]

SOURCE: Registrar, U-M Law School

5.9.2 Pass Rates for U.S. Medical Licensing Examination by U-M Medical Students, FY2013-17.

![Chart showing pass rates for U-M Medical Students for the U.S. Medical Licensing Examination from 2012-13 to 2016-17.]

SOURCE: Registrar, Medical School.

The U.S. Medical Licensing Examination is administered by the National Board of Medical Examiners in several parts: Step 1 exam at the end of the second year of medical school, both Step 2 exams (CK=Clinical Knowledge, CS=Clinical Skills) during the fourth year of medical school, and Step 3 exam 1-2 years after graduation. The rates are computed based on the first-time students take each test.

SOURCE: School of Dentistry.

National Board Dental Examination is now given in two parts at different points in the student's academic career. Part I tests knowledge of anatomy, biochemistry/physiology, microbiology/pathology and dental anatomy/occlusion. Part II covers operative dentistry, pharmacology, prosthodontics, oral surgery, orthodontics/pediatric dentistry, endodontics, periodontics, oral pathology/radiology.

The rates are computed based on the first-time students take each test.


SOURCE: College of Pharmacy.

The rates are computed based on the first-time students take each test.