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. 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 2020, the University enrolled 8,858 students in doctoral, master's, and graduate-level certificate programs offered by Rackham and the schools and colleges. In addition to earning degrees and certificates, graduate students contribute significantly to research, scholarship and teaching activity on campus. The research enterprise at the U-M benefits enormously from the talent and intelligence of these students.

Another 7,720 students enrolled in fall 2020 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 and 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, 78 percent of the students who enrolled in such programs between 2005 and 2014 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 to 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, likely reflecting the types 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/programs-of-study)
Office of Budget and Planning – Campus Statistics (obp.umich.edu)

Reports about the gender and racial/ethnic diversity of graduate students are in Chapter 8.
Charts in Chapter 5

5.1.1 Graduate Academic and Professional Student Enrollment by Level, Fall 2010-2020.
5.1.2 Graduate Academic and Professional Student Enrollment by Percent of Total Enrollment for U-M and AAU Public and Private Universities, Fall 2010-2020.
5.1.3 U-M Graduate Academic and Professional Student Enrollment Headcount, with Percent of Total Enrollment, for Selected Years from 1960 to 2020.
5.1.4 U-M Graduate Academic and Professional Student Enrollment by School/College and Degree Sought, Fall 2020.
5.2.1 Graduate Academic and Professional Degree Tuition and Required Fees, per Semester, 2020-2021.
5.2.2 Graduate Academic Student Tuition and Required Fees, Adjusted for Inflation, per Semester, FY2001-FY2021.
5.2.3 Graduate Professional Student Tuition and Required Fees, Adjusted for Inflation, In-State per Semester, FY20001-FY2021.
5.2.4 Graduate Professional Student Tuition and Required Fees, Adjusted for Inflation, Out-of-State per Semester, FY2001-FY2021.
5.3.1 Graduate Master’s, Academic Doctoral and Professional Doctoral Degrees Awarded for U-M, Peers and Big Ten Universities, 2018.
5.3.2 Ph.D. Degrees Awarded by Discipline Group for U-M, Peers and Big Ten Universities, 2018-19.
5.3.3 Master’s Degrees Awarded by Discipline Group for U-M, Peers and Big Ten Universities, 2018-19.
5.3.4 Professional Degrees Awarded by Program for U-M, Peers and Big Ten Universities, 2018-19.
5.4.1 Academic Doctoral Completion Rates by Discipline Group, Enrollment Cohorts from 2005-2014.
5.4.2 Academic Master’s Completion Rates by Discipline Group, Enrollment Cohorts from 2016-2019.
5.5.1 Funding Support for Rackham Ph.D. Students, 2019-20
5.5.2 Funding Support for Rackham Master’s Students, 2019-20.
5.6.1 Self-reported Cumulative Undergraduate and Graduate Debt by U-M Ph.D. students at Graduation, by Discipline Group for Domestic Students, FY2009-2019.

Chart updated since the January 2020 edition.
Total graduate and professional student enrollment is 11 percent higher now compared to 10 years ago.

5.1.1 Graduate Academic and Professional\(^1\) Student Enrollment by Level, Fall 2010-2020.

Total University of Michigan graduate and professional student enrollment has increased to 16,578 in Fall 2020 from 14,937 in Fall 2010.

\(^1\) A list of graduate academic and professional degrees is in Appendix C.
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 2010-2020.

![Graph showing enrollment percentage]

**Source:** U-M Student Data Sets; Integrated Postsecondary Education Data System (IPEDS)

Total University of Michigan student enrollment—undergraduate and graduate—has increased to 47,907 for fall 2020 from 41,924 in fall 2010, while the total graduate enrollment—academic and professional—increased to 16,578 from 14,937.

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.)

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\(^2\) A list of graduate academic and professional degrees is in Appendix C.

\(^3\) 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 16,578 in 2020, 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 2020.

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.

SOURCE: U-M Student Data Sets
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 2020.

<table>
<thead>
<tr>
<th>College/School</th>
<th>Graduate Academic (Rackham)</th>
<th>Other Graduate (Non-Rackham)</th>
<th>Professional Doctor’s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Master’s</td>
<td>Doctor’s</td>
<td>Master’s</td>
</tr>
<tr>
<td>Taubman College of Architecture &amp; Urban Planning</td>
<td>81</td>
<td>40</td>
<td>282</td>
</tr>
<tr>
<td>Penny W. Stamps School of Art &amp; Design</td>
<td>17</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stephen M. Ross School of Business</td>
<td>2</td>
<td>76</td>
<td>1,710</td>
</tr>
<tr>
<td>School of Dentistry</td>
<td>102</td>
<td>13</td>
<td>-</td>
</tr>
<tr>
<td>School of Education</td>
<td>193</td>
<td>117</td>
<td>-</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>1,296</td>
<td>1,708</td>
<td>361</td>
</tr>
<tr>
<td>School for Environment &amp; Sustainability</td>
<td>437</td>
<td>36</td>
<td>-</td>
</tr>
<tr>
<td>Horace H. Rackham School of Graduate Studies</td>
<td>96</td>
<td>237</td>
<td>-</td>
</tr>
<tr>
<td>School of Information</td>
<td>-</td>
<td>113</td>
<td>873</td>
</tr>
<tr>
<td>School of Kinesiology</td>
<td>57</td>
<td>36</td>
<td>-</td>
</tr>
<tr>
<td>Law School</td>
<td>-</td>
<td>-</td>
<td>21</td>
</tr>
<tr>
<td>College of Literature, Science &amp; the Arts</td>
<td>518</td>
<td>2,138</td>
<td>-</td>
</tr>
<tr>
<td>Medical School</td>
<td>131</td>
<td>601</td>
<td>44</td>
</tr>
<tr>
<td>School of Music, Theatre &amp; Dance</td>
<td>14</td>
<td>118</td>
<td>134</td>
</tr>
<tr>
<td>School of Nursing</td>
<td>-</td>
<td>13</td>
<td>282</td>
</tr>
<tr>
<td>College of Pharmacy</td>
<td>6</td>
<td>87</td>
<td>-</td>
</tr>
<tr>
<td>School of Public Health</td>
<td>140</td>
<td>229</td>
<td>533</td>
</tr>
<tr>
<td>Gerald R. Ford School of Public Policy</td>
<td>206</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>School of Social Work</td>
<td>-</td>
<td>-</td>
<td>751</td>
</tr>
<tr>
<td>Joint Programs by two Schools/Colleges</td>
<td>-</td>
<td>-</td>
<td>74</td>
</tr>
<tr>
<td>Grand Total, Graduate Students</td>
<td>3,296</td>
<td>5,562</td>
<td>5,065</td>
</tr>
</tbody>
</table>

SOURCE: U-M Student Data Sets

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.

Students enrolled in a non-degree-seeking program are listed in either "Rackham-Master's" or "Other-Master's," depending on the nature of the non-degree program.

A complete list of graduate academic (Rackham), other graduate, and professional programs offered by the University of Michigan is found in Appendix C.
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, 2020-2021.

<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>$16,075</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,763</td>
</tr>
<tr>
<td>Penny W. Stamps School of Art &amp; Design</td>
<td>M.F.A.</td>
<td>$12,622</td>
</tr>
<tr>
<td>Stephen M. Ross School of Business</td>
<td>M.A./Pre-candidate</td>
<td>$12,903</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$7,061</td>
</tr>
<tr>
<td></td>
<td>Pre-candidate</td>
<td>$9,420</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$13,943</td>
</tr>
<tr>
<td>School of Dentistry 4</td>
<td>M.S.</td>
<td>$6,735</td>
</tr>
<tr>
<td></td>
<td>Pre-candidate</td>
<td>$13,943</td>
</tr>
<tr>
<td>School of Education</td>
<td>M.A./Pre-candidate</td>
<td>$12,622</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$8,086</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>M.S./Pre-candidate</td>
<td>$14,073</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$8,086</td>
</tr>
<tr>
<td>School of Environment &amp; Sustainability</td>
<td>M.S./Pre-candidate</td>
<td>$12,225</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,614</td>
</tr>
<tr>
<td>School of Information</td>
<td>M.S./Pre-candidate</td>
<td>$12,386</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,698</td>
</tr>
<tr>
<td>School of Kinesiology</td>
<td>M.A./Pre-candidate</td>
<td>$12,386</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,698</td>
</tr>
<tr>
<td>Law School</td>
<td>M.A./M.S./Pre-candidate</td>
<td>$12,386</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,698</td>
</tr>
<tr>
<td>Medical School 4</td>
<td>M.A./F.A. /Pre-candidate</td>
<td>$12,409</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,841</td>
</tr>
<tr>
<td>School of Music, Theatre &amp; Dance</td>
<td>M.A./M.F.A. /Pre-candidate</td>
<td>$12,622</td>
</tr>
<tr>
<td></td>
<td>D.Mus. Arts Candidate</td>
<td>$8,278</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,826</td>
</tr>
<tr>
<td>School of Nursing</td>
<td>M.S./Pre-candidate</td>
<td>$12,764</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,826</td>
</tr>
<tr>
<td>College of Pharmacy</td>
<td>M.S./Pre-candidate</td>
<td>$12,386</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,698</td>
</tr>
<tr>
<td>School of Public Health</td>
<td>M.S./Pre-candidate</td>
<td>$15,357</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,820</td>
</tr>
<tr>
<td>Gerald R. Ford School of Public Policy</td>
<td>M.P.P./M.P.A.</td>
<td>$14,950</td>
</tr>
<tr>
<td>Rackham Interdepartmental Programs</td>
<td>M.A./M.S./Pre-candidate</td>
<td>$12,386</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,698</td>
</tr>
</tbody>
</table>

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

These are the published rates, although many students receive financial aid. Unless otherwise indicated, students usually attend school for two semesters per academic year. Some additional specialized degrees and joint degree programs are not listed above. The Registrar’s Office posts tuition and fees for these programs: [ro.umich.edu/tuition-residency/tuition-fees](http://ro.umich.edu/tuition-residency/tuition-fees).

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4 For D.D.S. and M.D. students, an academic year consists of three semesters. Other programs consist of two academic semesters per year.
The inflation-adjusted tuition and required fees (“sticker price”) increased by 51 percent from FY2001 to FY2021 for both in-state and out-of-state Ph.D. pre-candidacy students. However, more than 90 percent of Ph.D. students receive tuition stipends or other financial support. (See chart 5.5.1.)

5.2.2 Graduate Academic (Rackham) Student Tuition and Required Fees, Adjusted for Inflation* per Semester, FY2001-2021.

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 $1,165 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 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.

* Based on the FY2021 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. declined slightly this year compared to last, although both the M.B.A. and Law degrees overall increased at a faster pace 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, FY2001-2021.

5.2.4 Graduate Professional and Non-Rackham Student Tuition and Required Fees, Adjusted for Inflation\(^6\), Out-of-State per Semester, FY2001-2021.

\( ^6 \) Based on FY 2021 U.S. Consumer Price Index (as estimated by the U-M Research Seminar in Quantitative Economics).

\( ^\dagger \) D.D.S. students, starting Fall 2011, and M.D. students, starting Fall 2020, pay tuition three times per year instead of two, with the per-semester rates adjusted downward to be comparable with previous annual totals.
The U-M awards more graduate academic and professional degrees combined than any other Big Ten institution, and is among the top ten of its peer universities.

5.3.1 Graduate Master’s, Academic Doctoral and Professional Doctoral Degrees Awarded, Headcount for U-M, Peers and Big Ten Universities, 2018-19.

The University of Michigan grants the academic doctorates of Ph.D. and D.Mus.Arts and the professional doctorates of M.D., J.D., D.D.S., Pharm.D., and D.N.P.

SOURCE: Integrated Postsecondary Education Data System (IPEDS)
The U-M produces a large number of Ph.D. graduates in the sciences, technology, engineering and mathematics (STEM).

5.3.2 Ph.D. Degrees Awarded, Headcount (top) and Percent (bottom), by Discipline Group for U-M, Peers and Big Ten Universities, 2018-19.

SOURCE: Integrated Postsecondary Education Data System (IPEDS)

In the life sciences, physical sciences and engineering – also known as STEM fields (science, technology, engineering and mathematics) – U-M awarded 566 such Ph.D. degrees in 2018-19. The number of graduates in STEM fields is important because labor analyses often 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 peer and Big Ten universities to the same academic disciplines and professional categories the U-M uses, even if other schools categorize the programs differently on their campuses.

7 A list of disciplines assigned to each group is found in Appendix C.
Half of U-M’s Master's degrees are in the sciences, technology, engineering and mathematics (STEM).

5.3.3 Academic Master's Degrees Awarded, Headcount (top) and Percent (bottom), by Discipline Group\(^8\) for U-M, Peers and Big Ten Universities, 2018-19.

SOURCE: Integrated Postsecondary Education Data System (IPEDS)

In the life sciences, physical sciences and engineering – also known as STEM fields (science, technology, engineering and mathematics) – 2,397 U-M students graduated with master’s degrees during 2018-19.

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 peer and Big Ten universities to the same academic disciplines and professional categories the U-M uses, even if other schools categorize the programs differently on their campuses.

\(^8\) A list of disciplines assigned to each group is found in Appendix C.
The U-M grants a large number of professional degrees compared to many peer universities.

5.3.4 Professional Degrees Awarded by Program for U-M, Peers and Big Ten Universities, 2018-19.

SOURCE: Integrated Postsecondary Education Data System (IPEDS)

The U-M awards degrees in five professional programs: Law, Medicine, Dentistry, Pharmacy, and Nursing Practice (D.N.P.).

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 peer and Big Ten universities to the same academic disciplines and professional categories the U-M uses, even if other schools categorize the programs differently on their campuses.

9 Includes professional degrees U-M does not offer, such as in Veterinary Medicine, Optometry, and Communication Disorders.
The profile of U-M doctoral student graduation rates in recent years is fairly consistent across the disciplines. Overall, 78 percent of students who enrolled in a doctoral program on the Ann Arbor campus between Spring term 2005 and Winter term 2015 have graduated with a Ph.D.

5.4.1 Academic Doctoral Completion Rates by Discipline Group\(^{10}\), Enrollment Cohorts 2005-2014.

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 September 2020.

\(^{10}\) 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, 88% have completed their degrees.

5.4.2 Academic Master’s Completion Rates by Discipline Group\textsuperscript{11}, Enrollment Cohorts 2016-19

<table>
<thead>
<tr>
<th></th>
<th>Graduated as of 9/24/2020</th>
<th>Still Enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>35</td>
<td>49</td>
</tr>
<tr>
<td>2017</td>
<td>1,539</td>
<td>1,545</td>
</tr>
<tr>
<td>2018</td>
<td>3,318</td>
<td>3,488</td>
</tr>
<tr>
<td>2019</td>
<td>4,111</td>
<td>88</td>
</tr>
</tbody>
</table>

### SOURCE
Horace H. Rackham School of Graduate Studies

U-M master’s programs usually require about two years to complete, so the average in the headline does not take into account the completion counts for the master’s students who first enrolled in the Fall 2019 term.

\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}, 2019-20.

In all fields of study, a large fraction of academic Ph.D. students receive 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.

SOURCE: Horace H. Rackham School of Graduate Studies

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, 2019-20.

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.

SOURCE: Horace H. Rackham School of Graduate Studies
Percentages might not sum to 100% due to rounding.

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\(^{14}\) for Domestic Students, FY2009-2019.

Fewer than half (39\% 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 (30\%), Social Sciences (48\%), Humanities & the Arts (50\%).

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 who have accumulated student loan debt that exceeds $100,000.

\(^{14}\) A list of the disciplines assigned to each category is in Appendix C.
After adjusting for inflation\(^{15}\), 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, 2009-19.

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).

\(^{15}\) Based on the FY2019 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.


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, more graduates 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, graduates are more likely to be employed in industry, government or the non-profit sector, or entering academic positions.

SOURCE: Survey of Academic Departments by Rackham Graduate School

Note: These charts indicate a fairly large percentage of graduates whose plans are unknown compared to past years. Presumably, this is due in part to disruption of careers due to the coronavirus pandemic.

\textsuperscript{16} A list of disciplines assigned to each group is found in Appendix C.
5.7 Placement outcomes for U-M Ph.D. Students, by Discipline Group\textsuperscript{17}, FY2007-2020 (continued).

About a third 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, nearly 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-fifth 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 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.

Note: These charts indicate a fairly large percentage of graduates whose plans are unknown compared to past years. Presumably, this is due in part to disruption of careers due to the coronavirus pandemic.

\textsuperscript{16} 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}, FY2009-2019.

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}, FY2009-2019.

SOURCE: NSF/NIH/USED/USDA/NEH/NASA, Survey of Earned Doctorates

\textsuperscript{19} A list of disciplines assigned to each group is found in Appendix C.
U-M law, medicine, dentistry and pharmacy professional students pass their licensing exams at very high rates.


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, and both Step 2 exams (CK=Clinical Knowledge, CS=Clinical Skills) during the fourth year of medical school.

The rates are computed based on the first-time students take each test. U-M medical students pass these exams at equal or higher rates than the national averages.
U-M law, medicine, dentistry and pharmacy professional students pass their licensing exams at very high rates. (cont.)


 SOURCE: School of Dentistry

National Board Dental Examination is now given in two parts at different points in the student's academic career with each part testing different subject areas. 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.