Chapter 5  Graduate Academic & Professional Degree Students

Goals
The University of Michigan offers a remarkably broad and rigorous array of graduate and professional degree programs that are among the very best in the country in each field of study. 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 2013, the University enrolled 8,286 students in 108 Ph.D., 87 master’s, and 34 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 7,141 students enrolled in professional degree programs in medicine, law, business, public health, dentistry, pharmacy, nursing, information, engineering, social work and architecture and urban planning in fall 2013. The schools or colleges administer these degree programs in keeping with each profession’s requirements and standards.

Compared to its peers, the University of Michigan awards a high number of graduate and professional degrees. Among its peers, only the combined total of Columbia University’s advanced degrees is higher than Michigan’s.

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

Professional degree programs are generally more costly than graduate academic tuition. A large fraction of the students in professional degree programs complete graduate school with loans to repay. Eighty percent of students who recently completed U-M programs in medicine, law and dentistry owe $100,000 or more in student loans.

The Rackham Graduate School collects data on the number of entering graduate students who complete Ph.D. programs Overall, about 68 percent of the students who enrolled in a program between 2000 and 2006 have received a Ph.D. The rates vary somewhat by discipline.

By the time U-M Ph.D. students complete their degrees, a significant fraction will have published scholarly articles in journals or have articles accepted for publication. Since 2007, more than 80 percent of graduates from programs in the biological, health and physical sciences and engineering will have a publication record to include on their CVs. In that same time period, two-thirds of Michigan graduates in the social sciences and one-third of those in the humanities and arts are or soon will be published.

Post-graduation plans vary along disciplinary lines. Ph.D. graduates in the humanities and the arts often find academic positions immediately after graduating. 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 full member of his or her chosen career; U-M students in medicine, law and dentistry 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/

Data about the gender and racial/ethnic diversity of graduate students are reported in Chapter 8.
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5.1.2 U-M Graduate Academic and Professional Student Enrollment as Percent of Total Enrollment, with Headcount, Selected Years from 1960-2013.

5.1.3 U-M Graduate Academic and Professional Student Enrollment by School/College and Degree Sought, Fall 2013.

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5.2.2 Graduate Academic Student Tuition and Required Fees, Adjusted for Inflation, per Semester, 1994-95 to 2013-14.

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5.9.2 Pass Rates for U.S. Medical Licensing Examination by U-M Medical Students, 2008-12.

About one-third of the total student enrollment is comprised of graduate and professional students.

5.1.1 Graduate Academic and Professional\(^1\) Student Enrollment by Percent of Total Enrollment for U-M and AAU Public and Private Universities\(^2\), Fall 2003-13.

Total University of Michigan student enrollment has increased to 43,710 for fall 2013 from 37,864 in fall 2003, while the total graduate enrollment – academic and professional – increased to 15,369 from 13,347.

U-M professional student enrollment during the last decade was highest in 2003 and 2004 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 maximums in 2009 and 2012. Combined graduate and professional student enrollment as a fraction of the total student body has increased just under two percent between 2003 and 2012.

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. (IPEDS fall 2012 data for AAU universities is based on reported estimates; fall 2013 data was not available at the time of publication.)

\(^{1}\) A list of graduate academic and professional degrees is in Appendix D.

\(^{2}\) A list of Association of American Universities member institutions, including institutional control, is in Appendix A.
While the total number of graduate and professional students has grown from 8,916 in 1960 to 15,427 in 2013, the fraction of the total student body on the Ann Arbor campus that they represent has varied only slightly.

5.1.2 U-M Graduate Academic and Professional Student Enrollment as Percent of Total Enrollment, with Headcount, Selected Years from 1960-2013.

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, while the most master's students are enrolled in the College of Engineering. Michigan's largest professional program is the M.B.A. in the Stephen M. Ross School of Business.

### 5.1.3 U-M Graduate Academic and Professional Student Enrollment by School/College and Degree Sought, Fall 2013.

<table>
<thead>
<tr>
<th>College/School</th>
<th>Academic Master’s</th>
<th>Academic Ph.D.</th>
<th>Professional Master’s</th>
<th>Professional Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taubman College of Architecture &amp; Urban Planning</td>
<td>128</td>
<td>52</td>
<td>299</td>
<td>-</td>
</tr>
<tr>
<td>Penny W. Stamps School of Art &amp; Design</td>
<td>19</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stephen M. Ross School of Business</td>
<td>-</td>
<td>95</td>
<td>1,776</td>
<td>-</td>
</tr>
<tr>
<td>School of Dentistry</td>
<td>98</td>
<td>14</td>
<td>-</td>
<td>430</td>
</tr>
<tr>
<td>School of Education</td>
<td>197</td>
<td>167</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>1,190</td>
<td>1,496</td>
<td>468</td>
<td>3</td>
</tr>
<tr>
<td>Horace H. Rackham School of Graduate Studies</td>
<td>68</td>
<td>406</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>School of Information</td>
<td>1</td>
<td>49</td>
<td>391</td>
<td>-</td>
</tr>
<tr>
<td>School of Kinesiology</td>
<td>32</td>
<td>28</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Law School</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,098</td>
</tr>
<tr>
<td>College of Literature, Science &amp; the Arts</td>
<td>357</td>
<td>2,052</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Medical School</td>
<td>92</td>
<td>333</td>
<td>1</td>
<td>852</td>
</tr>
<tr>
<td>School of Music, Theatre &amp; Dance</td>
<td>11</td>
<td>114</td>
<td>183</td>
<td>-</td>
</tr>
<tr>
<td>School of Natural Resources &amp; Environment</td>
<td>296</td>
<td>39</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>School of Nursing</td>
<td>275</td>
<td>51</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>College of Pharmacy</td>
<td>-</td>
<td>103</td>
<td>-</td>
<td>307</td>
</tr>
<tr>
<td>School of Public Health</td>
<td>112</td>
<td>224</td>
<td>631</td>
<td>-</td>
</tr>
<tr>
<td>Gerald R. Ford School of Public Policy</td>
<td>187</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>School of Social Work</td>
<td>-</td>
<td>-</td>
<td>630</td>
<td>-</td>
</tr>
<tr>
<td>Joint Programs sponsored by two Schools/Colleges</td>
<td>-</td>
<td>-</td>
<td>23</td>
<td>-</td>
</tr>
<tr>
<td><strong>Grand Total, Graduate Students</strong></td>
<td><strong>3,063</strong></td>
<td><strong>5,223</strong></td>
<td><strong>4,436</strong></td>
<td><strong>2,705</strong></td>
</tr>
</tbody>
</table>

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

The “Other” professional degrees column includes M.D., J.D., D.D.S, Pharm.D (Doctor of Pharmacy), D.Eng. (Doctor of Engineering), and D.N.P. (Doctor of Nursing Practice).

The Joint Programs (last row of table) are offered by a) the Penny W. Stamps School of Art & Design and the School of Music, Theatre & Dance, b) the Stephen M. Ross School of Business and the College of Engineering, and c) the School of Information and the School of Public Health.

A complete list of graduate academic 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, 2013-14.

<table>
<thead>
<tr>
<th>School/College</th>
<th>Graduate Academic, per semester</th>
<th>Professional, 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>$12,873</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,360</td>
</tr>
<tr>
<td>Penny W. Stamps School of Art &amp; Design</td>
<td>M.F.A</td>
<td>$10,088</td>
</tr>
<tr>
<td>Stephen M. Ross School of Business</td>
<td>M.A./Pre-candidate</td>
<td>$10,312</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,599</td>
</tr>
<tr>
<td>School of Dentistry</td>
<td>M.S./Pre-candidate</td>
<td>$11,153</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,336</td>
</tr>
<tr>
<td>School of Education</td>
<td>M.A./Pre-candidate</td>
<td>$10,088</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,411</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>M.S./Pre-candidate</td>
<td>$11,258</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$6,427</td>
</tr>
<tr>
<td>School of Information</td>
<td>Pre-candidate</td>
<td>$9,896</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,308</td>
</tr>
<tr>
<td>School of Kinesiology</td>
<td>M.S./Pre-candidate</td>
<td>$10,744</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,308</td>
</tr>
<tr>
<td>Law School</td>
<td>M.A./M.S./Pre-candidate</td>
<td>$9,896</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,308</td>
</tr>
<tr>
<td>Medical School</td>
<td>M.S./Pre-candidate</td>
<td>$9,916</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,421</td>
</tr>
<tr>
<td>School of Music, Theatre &amp; Dance</td>
<td>M.A./M.F.A./Pre-candidate</td>
<td>$10,088</td>
</tr>
<tr>
<td></td>
<td>D.M.A. Candidate</td>
<td>$6,582</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,411</td>
</tr>
<tr>
<td>School of Natural Resources &amp; Environment</td>
<td>M.S./Pre-candidate</td>
<td>$10,003</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,411</td>
</tr>
<tr>
<td>School of Nursing</td>
<td>M.S./Pre-candidate</td>
<td>$10,202</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,411</td>
</tr>
<tr>
<td>College of Pharmacy</td>
<td>M.S./Pre-candidate</td>
<td>$9,896</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,308</td>
</tr>
<tr>
<td>School of Public Health</td>
<td>M.S./Pre-candidate</td>
<td>$12,295</td>
</tr>
<tr>
<td></td>
<td>Ph.D. Candidate</td>
<td>$5,404</td>
</tr>
<tr>
<td>Gerald R. Ford School of Public Policy</td>
<td>M.P.P./M.P.A.</td>
<td>$11,199</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


These cost figures represent the published rates, although many students in these programs receive financial aid, which translates to a lower net price.

Several schools and colleges offer joint degree programs; the Office of the Registrar posts the tuition and fees for these programs on its web site ([ro.umich.edu](http://ro.umich.edu)).

New programs:
- * M.E.: Master’s in Entrepreneurship
- ** M.H.P.E.: Master’s in Health Professions Education
The inflation-adjusted tuition and required fees (“sticker price”) for both in-state and out-of-state Ph.D. pre-candidacy students increased about 50 percent from 1994 to 2013. However, as shown in chart 5.5.1, about 90 percent of Ph.D. students receive tuition stipends or other financial support.

5.2.2 Graduate Academic Student Tuition and Required Fees, Adjusted for Inflation, per Semester, 1994-95 to 2013-14.

Effective Fall 2010, tuition and required fees paid by Ph.D. candidates declined by $1,760 per year (dashed 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.

3 Based on the FY2013 U.S. Consumer Price Index.

4 “Policy to provide greater structure, support for Ph.D. students,” University Record, Jan. 11, 2010.
The inflation-adjusted tuition and required fees for the M.B.A. and Law degrees increased more rapidly over the last 19 years than for other professional degrees offered by the U-M.

5.2.3 Graduate Professional Student Tuition and Required Fees, Adjusted for Inflation\(^5\), In-State per Semester, 1994-95 to 2013-14.

SOURCE: Annual UM Student Fees and Regulations booklets.

5 Based on FY 2013 U.S. Consumer Price Index.
The U-M awards more graduate academic and professional degrees than any of its peers or Big Ten schools except for Columbia University.

5.3.1 Graduate Academic and Professional Degrees Awarded, Headcount for U-M, Peers\textsuperscript{6} and Big Ten Universities, 2011-12.

SOURCE: Integrated Postsecondary Education Data System (IPEDS).

At the University of Michigan, graduate academic degrees include the Ph.D., M.A., M.S. and M.F.A. U-M’s graduate professional degrees include M.D., J.D., M.B.A., D.D.S., M.P.H., Pharm.D., M.S.W., M.Arch., M.S.I., D.Eng., M.Eng., D.P.N., D.M.A, M.M. and Spec.M.

In this chart, the division into graduate academic or professional programs for all universities is based on the taxonomy used by the University of Michigan, and so may differ from a school’s own designations. For instance, the U-M includes all graduate degrees in the field of education with academic programs, while some of its peers choose to group education with professional programs.

\textsuperscript{6} A list of the “official” peers used for comparison in the top group on this page is found in Appendix A. Big Ten universities are in the bottom group.
The U-M joins UC-Berkeley and U Illinois as top producers of Ph.D. graduates among their peers.

5.3.2 Ph.D. Degrees Awarded, Headcount (top) and Percent (bottom) by Discipline Group⁷ for U-M, Peers and Big Ten Universities, 2011-12.

SOURCE: Integrated Postsecondary Education Data System (IPEDS).

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 562 Ph.D. degrees in 2011-12, more than any of its peers for that academic year. The next peer institutions after Michigan to graduate the most students with Ph.D. degrees in STEM fields were UC-Berkeley (532), Stanford (527) and University of Illinois (504). The number of graduates in STEM fields is important because several analyses indicate that the American workforce will need to add about one million more STEM professionals over the next decade than the U.S. will produce at current rates.8

To keep the comparisons consistent between U-M and the other schools included here, we assigned all degree holders for Charts 5.3.2 and 5.3.3 at the peers and Big Ten universities to the same academic disciplines and professional categories as the U-M uses, even if other schools assign the programs differently on their campuses.

8 “Engage To Excel: Producing One Million Additional College Graduates With Degrees In Science, Technology, Engineering, And Mathematics,” President’s Council of Advisors on Science and Technology (PCAST), February 2012.
More than half of U-M’s academic Master's degrees are in STEM fields.

5.3.3 Academic Master's Degrees Awarded, Headcount (top) and Percent (bottom) by Discipline Group for U-M, Peers and Big Ten Universities, 2011-12.

SOURCE: Integrated Postsecondary Education Data System (IPEDS).

9 A list of disciplines assigned to each group is found in Appendix C.
Among the academic Master’s degrees awarded in 2011-12, 1,397 U-M students graduated in STEM fields – that is, the sciences, technology, engineering and mathematics. Among U-M’s peers, only Columbia (1,598) awarded a somewhat higher number of Master’s degrees in STEM fields.

The life sciences totals do not include students who graduated with a Master’s in Public Health and a subset of engineering graduate students who received a Master’s in Engineering (as opposed to a Master’s of Science in Engineering), as both the M.P.H. and M.Eng. degrees are counted with professional degrees.
The U-M awards more graduate professional degrees than any of its peers or Big Ten universities.

5.3.4 Graduate Professional Degrees Awarded, Headcount (top) and Percent (bottom) by Program for U-M, Peers<sup>10</sup> and Big Ten Universities, 2011-12.

SOURCE: Integrated Postsecondary Education Data System (IPEDS).

<sup>10</sup> A list of the “official” peers used for comparison in the top group on this page is found in Appendix A. Big Ten universities are in the bottom group.
The U-M awards degrees in 11 professional programs: Business, Law, Medicine, Social Work, Dentistry, Pharmacy, Public Health, Architecture, Engineering, Information and Music. The two aggregate degree groups in the chart have been broken down into individual degree counts in the table at the right. (Note that unlike many other universities, U-M does not include graduate degrees in the field of education with its professional degrees.)

The U-M and other schools in this chart also offer graduate academic degrees at the Master’s and Ph.D. levels in these fields. For example, the U-M College of Engineering offers academic graduate programs that enroll more students seeking a Master’s of Science in Engineering than its professional degree program, the Master’s of Engineering degree.

For some of the peer and Big Ten universities, the “Other Health” category also includes professional degrees not offered by the U-M: Veterinary Medicine, Optometry, Osteopathic Medicine, Communication Disorders, and a few other specialized health areas.

<table>
<thead>
<tr>
<th>Professional Degree Program Group</th>
<th>Number of 2011-12 Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Other Health</strong></td>
<td></td>
</tr>
<tr>
<td>Public Health</td>
<td>297</td>
</tr>
<tr>
<td>Dentistry</td>
<td>114</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>62</td>
</tr>
<tr>
<td><strong>Other Disciplines</strong></td>
<td></td>
</tr>
<tr>
<td>Social Work</td>
<td>364</td>
</tr>
<tr>
<td>Information</td>
<td>176</td>
</tr>
<tr>
<td>Architecture</td>
<td>103</td>
</tr>
<tr>
<td>Engineering</td>
<td>147</td>
</tr>
<tr>
<td>Music</td>
<td>111</td>
</tr>
</tbody>
</table>
The profile of U-M doctoral student graduation rates in recent years is fairly consistent across the disciplines. Seventy percent or more of students who enrolled in a doctoral program between 2000 and 2006* on the Ann Arbor campus either have completed a Ph.D. or are on-track to complete with the next year.

5.4.1 Academic Doctoral Completion Rates by Discipline Group¹², Enrollment Cohorts from 2000-06.

SOURCE: Horace H. Rackham School of Graduate Studies.

This chart examines a range of enrollment cohorts and shows the number and percent of each cohort that have completed their degrees, or are still enrolled, as of August 31, 2012.

*The 2000 cohorts in physical sciences/engineering and humanities/arts did not attain the 70 percent rate cited in the headline.

¹² A list of disciplines assigned to each group is found in Appendix C.
On average, 85 percent of U-M academic Master’s students complete their programs.

5.4.2 Academic Master's Completion Rates by Discipline Group, Enrollment Cohorts from 2006-10.

SOURCE: Horace H. Rackham School of Graduate Studies.

U-M Master’s programs usually require about two years to complete.

13 A list of disciplines assigned to each group is found in Appendix C.
Ninety-six 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, 2011-12.

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. The level of financial aid offered varies and may not cover the full cost of attendance for every student. 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 Student Records.
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, 2011-12.

The five categories of support (None, 1%-25%, 26%-50%, 51%-75%, 76%-100%) 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 Student Records.
Most U-M doctoral students graduate without any student loan debt.

5.6.1 Academic Doctoral Students’ Self-reported Cumulative Undergraduate and Graduate Debt at Graduation, by Discipline Group\(^\text{14}\) for Domestic Students, 2002-03 to 2010-11.

This chart shows that just less than half of University of Michigan Ph.D. students (a combined 47% over the time period shown) have acquired student-loan debt over the course of their undergraduate and graduate careers. The issue of student debt remains important, however. 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.

\(^{14}\) A list of the disciplines assigned to each category is in Appendix C.
After adjusting for inflation, the level of student loan debt for M.D. graduates is high, but fairly stable. It has increased for J.D. and D.D.S. graduates.

5.6.2 Graduate Professional Students’ Self-reported Cumulative Undergraduate and Graduate Debt at Graduation, by Program, 2003-12.

SOURCE: School Dean’s or Financial Aid Offices.

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).

About 80 percent of M.D. graduates and 90 percent of J.D. and D.D.S. 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. Debt for M.D. and J.D. graduates includes loans for both undergraduate and professional school. Data for D.D.S. graduates represents loans only obtained to finance Dental School.
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 more toward higher education positions.

5.7 Placement Outcomes for U-M Ph.D. Students, by Discipline Group\(^{15}\), FY02-FY12.

**Biological & Health Sciences**

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.

**Physical Sciences & Engineering**

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. By five years after graduation they are primarily taking jobs in industry, government or the non-profit sector, or entering academic positions.

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.

* A methodology change for students 7- and 10-years after graduation causes an increase in the number of unknown data points.

\(^{15}\) A list of disciplines assigned to each group is found in Appendix C.
Half of academic Ph.D. graduates in the social sciences enter a higher education position during the first year following graduation, with more than two-thirds of these on the tenure-track. By the fifth year post-graduation, nearly 60 percent of U-M’s social science Ph.D. graduates have tenure-track positions, and another 16 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. A third of humanities and arts Ph.D. graduates are on the tenure track initially, and the fraction climbs to two-thirds 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.

* A methodology change for students 7- and 10-years after graduation causes an increase in the number of unknown data points.

16 A list of disciplines assigned to each group is found in Appendix C.
U-M graduate academic 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, 2001-2 to 2010-11.

The large number of international students enrolled in physical science and engineering graduate programs is not a surprise, given the attractiveness of these kinds of programs for many students from other countries. According to a recent National Science Foundation report, international students comprise 30 percent of U.S. graduate science and engineering programs; for the decade displayed here, international students make up 48 percent of total enrollment in U-M physical science and engineering programs.


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 graduate 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}, 2001-2 to 2010-11.

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

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


SOURCE: Registrar, U-M Law School

5.9.2 Pass Rates for U.S. Medical Licensing Examination by U-M Medical Students, FY2008-12.

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 pass rates are computed based on first-time takers of each segment.


Pass rates for the Northeast Regional Board Examination are computed for graduating U-M D.D.S. students who have passed all components of the “curriculum integrated format” examination prior to graduation.

SOURCE: Dean’s Office, School of Dentistry.