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Establishing the Bedrock of Future Scholarship: Liberal Arts Colleges and Doctorate Creation

Large institutions have dominated the baccalaureate-origin of doctorate earners over time, due to their sheer volume of student enrollments and graduates. However, when institutional size is controlled for by enrollments or total output of baccalaureates to arrive at a measure of doctoral productivity, several liberal arts colleges rank with research-intensive publics as leading baccalaureate-origin institutions for doctorate earners (National Science Foundation, 2006).

Between 1900 and 1999 the U.S. graduate education system developed into an integral part of the social and economic structure of the country. Throughout the history of the United States, a total of 426 institutions have awarded more than 1.36 million doctorates. American doctoral education produces cutting-edge knowledge and highly trained personnel who go on to fill specialized positions as teachers, researchers, and professionals in academe, industry, government, and nonprofit organizations. Of individuals graduating with doctorates in 1999, just over half of went to work in higher education. About 22 percent found jobs in industry or planned to be self-employed. Eleven percent planned to take jobs in elementary or secondary schools, 9 percent in government (mainly within the federal government), and 6 percent in nonprofit organizations (National Science Foundation, 2006).

The doctorate program is designed to prepare a student to become a scholar—to discover, integrate, and apply knowledge, as well as communicate and disseminate it. The program emphasizes the development of the student's capacity to make significant original contributions to knowledge in a context of freedom of inquiry and expression. According to a policy statement by the Council of Graduate Schools (1990), a well-prepared doctoral student will have developed the ability to understand and evaluate critically the literature of the field and to apply appropriate principles and procedures to the recognition, evaluation, interpretation, and understanding of issues and problems at the frontiers of knowledge. This policy statement appears to establish a prerequisite that many students earning bachelor's degrees at Minnesota Private College Council (MPCC) institutions can meet.

This is one in a series of research-based briefs prepared by the Minnesota Private College Research Foundation for Minnesota Private College Council members and other interested parties.

If you have a question or suggestion for a topic for a future issue brief, please contact the Research Foundation.

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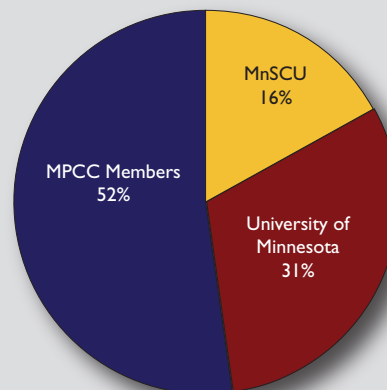
At the core of the undergraduate experience at liberal arts-focused institutions is a holistic and multi-disciplinary approach to learning. With opportunity to participate in class discussions and research projects in an array of disciplines, students develop key skills that are sought by future employers in many industries. Benefits of a liberal arts education include critical thinking, adaptability, both written and oral communication and the ability to collaborate with diverse team members (MPCC Newsletter, August 2008).

Research indicates that “about 5.3 percent of all graduates from the best liberal arts colleges eventually earn a Ph.D., while only 2.2 percent of graduates from the best public universities do” (Lemke, 2006, p. 1).ⁱ It may be convenient to suggest that the higher academic profile of students attending private not-for-profit colleges may contribute to a higher rate of students continuing on to receive their doctorates. However, literature suggests that rather than the type of student or advice from faculty at liberal arts institutions, it is the experiences afforded by these institutions that naturally foster a desire to learn and continue scholarly work (Lemke, 2006). Warch (2001) suggests that undergraduate research experiences offered to undergraduate students at liberal arts colleges are not only transformative, but equivalent opportunities are rarely found at large public universities where graduate students have first claim to laboratories, equipment, and time with professors.

MPCC Institutions are a Large Contributor of Baccalaureate Education for Future Doctorates

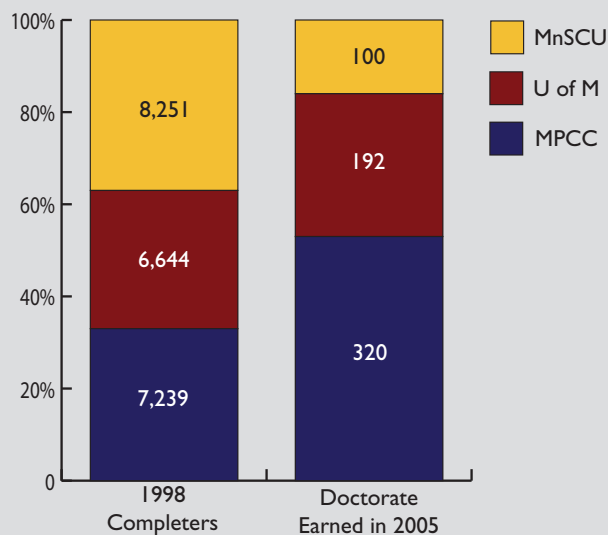
Minnesota Private College Council members lead in providing the foundational education for the next generation of scientists, researchers and others who

Figure 1: Fifty-two percent of earned doctorates in 2005 with Minnesota baccalaureate origin were from MPCC institutions (620 total).



Source: Minnesota Private College Research Foundation analysis of the Survey of Earned Doctorates, 2006

Figure 2: Doctorate earners with undergraduate degrees from Minnesota are more likely to have a MPCC bachelor’s degree—MPCC institutions comprise 30% of bachelor’s degrees in Minnesota and over 50% of earned doctorates had an MPCC bachelor’s degree.



Source: Minnesota Private College Research Foundation analysis of the Survey of Earned Doctorates, 2006 and IPEDS

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have earned doctorates. In 2005, 620 doctorate degrees were awarded to graduates receiving their undergraduate degree at a Minnesota institution. As shown in figure 1, more than half (52 percent) were earned by graduates from a MPCC institution, compared to 31 percent from the University of Minnesota and 16 percent from Minnesota State Colleges and Universities (MnSCU). Comparatively, as shown in figure 2, MPCC institutions generate one-third of the baccalaureate degrees, thus our success in fostering graduate study is disproportionately higher than the other systems.

Table 1: Doctorate earners, doctorate conversion rate and projected doctorate production

Institutions	1998 Completers	Doctorates Earned in 2005	Estimated Conversion Rate 1998 Completers Earning Doctorate in Seven Years	2007 Completers	Estimated Number of 2007 Completers Earning Doctorate in Seven Years
MPCC	7,239	320	4.4%	8,962	348
U of M System	6,644	192	2.9%	8,679	248
McSCU System	8,251	100	1.2%	9,741	121
Other Private Not for Profits*	625	6	1.0%	858	8

Source: Minnesota Private College Research Foundation analysis of the *Survey of Earned Doctorates, 2006*

*Includes Northwestern College, Martin Luther College and North Central University due to availability of completers data from IPEDS and doctorates with other private not-for-profit baccalaureate-origin.

MPCC Future Doctorate Production

As shown in table 1, MPCC institutions have a higher conversion rate and number of doctorates created compared to other systems. Further, the current production suggests MPCC institutions will have a strong contribution to developing future scholars. Using 2007 completions data, the Research Foundation forecasts that 348 Minnesota private college graduates will receive a doctorate in seven years compared to 248 from the University of Minnesota, 121 for MnSCU and eight from other not-for-profit institutions.ⁱⁱ

Doctorate Creation Rate for Students of Color

MPCC members are also a source of the majority of undergraduates of color who go on to earn doctorates— 56 percent compared to 30 percent from the University of Minnesota and 15 percent from Minnesota State Colleges and Universities (table 2). This contribution to our state will grow in importance as our high school graduates become increasingly diverse. In order to maintain current doctorate production, Minnesota must improve enrollment, persistence and graduation of students of color.

Increased production of doctorates of color has impacts on various settings. As Minnesota’s student population becomes more diverse, more doctorates of color provide universities a pool from which to hire. This helps diversify faculty and increase equity in representation for the increasingly diverse

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Table 2: MPCC is a larger contributor of doctorates earned by students of color

Institutions	Number of Doctorate Recipients of Color by Sector of Baccalaureate Completion	Percent of Doctorate Recipients of Color by Sector of Baccalaureate Completion
MPCC	30	56%
U of M System	16	30%
McSCU System	8	15%
Total Student Doctoral Recipients	54	

Source: Minnesota Private College Research Foundation analysis of the *Survey of Earned Doctorates*, 2006

Note: Total exceeds 100 percent due to rounding. Other not-for-profits not included due to very small number of doctorates of color created by one institution.

students they serve. Secondly, increased doctorates of color provide a new lens for which social scientific study can be advanced. Diverse backgrounds will enrich current literature regarding topics such as educational gaps, postsecondary participation and completion.

Importance of Graduate Education

Due to the aging of our workforce as well as growth in new jobs, employment opportunities will be available for individuals with all levels of education. Recent national projections from the Bureau of Labor Statistics indicate openings for individuals with a doctorate degree will have the greatest percent change in growth from 2006-2016 (Bureau of Labor Statistics, p. 103, 2007). However, given the changing demographics in the population destined to replace our retirees, filling occupations requiring graduate education may be difficult as students of color and low-income students complete baccalaureate degrees at lower rates than whites.

Similar to national trends, according to projections from Minnesota’s Department of Employment and Economic Development, a quarter of Minnesota’s fastest 115 growing jobs will require a doctoral education—representing growth of over 7,500 new openings from 2006-2016.ⁱⁱⁱ While this may not seem like a large number of jobs over the ten year period, the time and rigor involved in obtaining a doctorate make these jobs more difficult to fill than jobs requiring on-the-job training or even a baccalaureate degree.

Given the aging of our workforce, including those working with doctorates, and the fact these positions are harder to fill due to extensive education requirements, the ability of private colleges and universities to provide undergraduate education that serves as a launching pad for further academic inquiry and successful pursuit of doctoral degrees will be needed more than ever.

Further, some of Minnesota’s Private Colleges create their own doctorates. In an effort to contribute to total doctorates needed for employment in Minnesota, MPCC institutions supplement Minnesota’s

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production of doctoral degrees. Six MPCC institutions have contributed to doctorate production from Minnesota institutions since 2004 (table 3).

Table 3: MPCC contribution to doctorates awarded from Minnesota institutions

	Doctorates Awarded 2004	Doctorates Awarded 2005	Doctorates Awarded 2006	Doctorates Awarded 2007
MPCC	63	88	102	174
Total Doctorates Awarded in Minnesota	1,032	1,239	1,590	1,968

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ⁱLemke focuses attention on “top” institutions from Carnegie Classified institutions of BA I (liberal arts) and Research I (top universities).

ⁱⁱThe Minnesota Private College Research Foundation estimate of future doctorate production is derived from three figures: completions in a given year, registered time to doctorate (RTD), and number of doctorates by origin of baccalaureate provided by the Survey of Earned Doctorates. RTD is calculated by NSF and measures the time of attendance at all colleges and universities between receipt of the baccalaureate and receipt of the doctorate. The NSF estimates this figure to be seven years. Thus, to estimate the conversion rate based on 2005 completers earning a doctorate, this figure is divided by completions data from seven years ago (1998 completers).

ⁱⁱⁱThe Minnesota Department of Employment and Economic Development has indicated that required education and training for all postsecondary teaching occupations is a master’s degree. While this may be considered the minimum education needed for these positions, for this analysis, postsecondary teaching occupations are included with other occupations requiring doctorate education.