Council of Graduate Schools

RESEARCH REPORT

Data Sources: State-Level Graduate Enrollment and Degree Trends

(Reprinted from the January/February 2010 issue of the CGS *Communicator*)

CGS typically presents trends from the *CGS/GRE Survey of Graduate Enrollment and Degrees* at the national level, breaking out the data by institution type, degree level, demographics, and field, among other variables. While presenting the data in this manner provides important information about the graduate education enterprise in the United States, it can potentially mask substantial differences between states. Using data from the *CGS/GRE Survey of Graduate Enrollment and Degrees*, this article examines changes over the past decade in graduate enrollment and degrees at the state level and compares these trends to population growth and state appropriations for higher education. The enrollment and degrees analyses are limited to the 535 colleges and universities that responded to the survey in both 1998 and 2008. Predominantly online institutions have been removed from the state-level data.

State Graduate Enrollment and Degree Trends

At the national level, graduate enrollment increased by 32% between fall 1998 and fall 2008, but state-level graduate enrollment trends varied widely around this national average. In 23 states, growth in graduate enrollment over this time period exceeded the national average, with Vermont, North Dakota, and North Carolina leading the nation in growth (see Table 1). Four states experienced declines in graduate enrollment over the past decade, including South Carolina (-19%), Rhode Island (-16%), Idaho (-15%), and Michigan (-1%). Graduate enrollment remained unchanged in Connecticut, and in the

Table 1. States with Largest Graduate Enrollment Gains, Fall 1998 to Fall 2008

State	% Chg.
Vermont	115%
North Dakota	85%
North Carolina	80%
Maryland	66%
Alabama	59%
Arkansas	58%
Florida	58%
Montana	55%
Nevada	47%
South Dakota	46%

Source: *CGS/GRE Survey of Graduate Enrollment and Degrees*

Table 2. States with Largest Gains in Master's Degree Production, 1997-98 to 2007-08

State	% Chg.
Nevada	84%
Maryland	83%
North Carolina	80%
Alabama	75%
Puerto Rico	68%
New Hampshire	59%
Illinois	55%
North Dakota	54%
New Jersey	49%
California	48%

Source: *CGS/GRE Survey of Graduate Enrollment and Degrees*

Table 3. States with Largest Gains in Doctoral Degree Production, 1997-98 to 2007-08

State	% Chg.
North Dakota	226%
Mississippi	171%
Puerto Rico	93%
South Dakota	92%
Minnesota	82%
Nevada	69%
Florida	64%
Idaho	62%
Tennessee	55%
Maryland	51%

Source: *CGS/GRE Survey of Graduate Enrollment and Degrees*

remaining 21 states, plus the District of Columbia and Puerto Rico, growth ranged from a low of 3% in Tennessee to a high of 32% in the District of Columbia.

Growth in graduate degree production over the past decade has been driven by a rapid increase in master's degrees, with a 39% increase nationally in degrees awarded at this level between 1997-98 and 2007-08. In 14 states, the increase in master's degree production exceeded the national average, led by gains of 84% in Nevada, 83% in Maryland, and 80% in North Carolina (see Table 2). Four states experienced a decline in master's degree production over the ten-year period: South Carolina (-16%), Louisiana (-9%), Michigan (-4%), and Delaware (-4%).

Doctoral degree production increased 25% nationally between 1997-98 and 2007-08. In 26 states and Puerto Rico growth exceeded the national average, led by gains of 226% in North Dakota and 171% in Mississippi although the growth in both states was from a low base number in 1997-98. Puerto Rico, South Dakota, and Minnesota also experienced strong gains in doctoral degree production (see Table 3). Four states experienced a decline in doctoral degree production between 1997-98 and 2007-08: New Mexico (-20%), Arkansas (-15%), Oklahoma (-5%), and Oregon (-4%).

State Population and Higher Education Funding Trends

Some of the state-level growth in graduate education over the past decade may be due to population increases. For example, the population of Nevada grew fastest in the nation between July 1, 2000 and July 1, 2008, increasing 30% in size (U.S. Census Bureau, 2009). Similarly, Nevada exhibited strong growth in graduate education, ranking ninth in growth in graduate enrollment between fall 1998 and fall 2008 (47%), first in growth in master's degrees (84%), and sixth in growth in doctoral degrees (69%).

Following Nevada in population growth between 2000 and 2008 were Arizona, Utah, Georgia, Idaho, Texas, Florida, North Carolina, Colorado, and South Carolina, with population increases ranging from 26% in Arizona to 12% in South Carolina. In addition to Nevada, three of these states (Idaho, Florida, and North Carolina) were ranked among the top ten in growth in graduate enrollment and/or degrees.

While in some states there appears to be a correlation between population growth and participation in graduate education, this does not appear to be the case in other states. For example, Arizona was second in the nation in population growth between 2000 and 2008, with a 26% increase, yet it ranked 26th in graduate enrollment gains (30%), 37th in master's degree growth (12%), and 43rd in doctoral degree growth (6%). There was also a disconnect between population and graduate enrollment in North Dakota. Although the state ranked second to last and experienced no population growth between 2000 and 2008, it ranked 2nd in graduate enrollment growth over the past decade. In contrast to North Dakota, Louisiana appeared at the bottom of the list in population growth with a 0.4% decline and experienced minimal growth in graduate enrollment, ranking 46th.

State appropriations for higher education over this time period may also play a role in the changes in graduate enrollment and degrees, primarily for public institutions. While the data on state appropriations include funds provided for all levels of higher education, not just graduate education, some interesting parallels and differences emerge in terms of how state appropriations relate to growth in graduate education. Between fiscal year 1998 and fiscal year 2008, Louisiana increased its appropriations for higher education by 121% (in current dollars), the largest increase for any state (Center for the Study of Education Policy, 1999 and 2009). Nevada increased its appropriations by 113%, the second largest increase, followed by Wyoming (109%), Alabama (101%), and New Mexico (97%). Of these five states, only Nevada and Alabama experienced strong growth in graduate education over the same time period. Louisiana's large increase in appropriations is not reflected in its growth in graduate degrees. It ranked 51st in master's degree production (-9%) and 46th in doctoral degree growth (2%). The smallest increases

in state appropriations between 1998 and 2008 occurred in Missouri (11%), Michigan (11%), Colorado (13%), Massachusetts (15%), and Iowa (17%). None of these states were ranked among the top ten in growth in graduate enrollment and degrees.

Implications

While population and state appropriations increases may be two of the drivers of growth in graduate education, many other factors are at play including international enrollment, catastrophic events such as Hurricane Katrina, and the creation and elimination of graduate programs at individual institutions. In addition, the factor with the largest impact may be out-of-state graduate enrollment. Comprehensive national data on student mobility are not available from any source, but two studies by the National Science Foundation provide some insight on out-of-state students. Among science and engineering doctorate recipients in 1999, 71% reported migrating interstate between starting college and completing their doctorate (Sanderson and Dugoni, 2002). Similarly, 47% of science and engineering master's degree recipients from 1997 to 2000 reported migrating interstate between receipt of the bachelor's degree and completion of the master's (Parsad and Gray, 2005).

Although student mobility and other factors make it difficult to measure the impact of population growth and state appropriations on the graduate education enterprise in individual states, states that have successfully increased graduate enrollment and degree production will likely benefit economically from these gains. The two National Science Foundation reports found that nearly two-thirds (65%) of the science and engineering master's degree recipients and 41% of the science and engineering doctorate recipients secured initial employment in the state in which they received their degree.

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