

## CHAPTER V

*Of 100 Illinois high school seniors, 57 will go immediately to college, and 33 will complete a 4-year degree within 6 years.*

### COLLEGE PARTICIPATION AND COMPLETION

Keeping Illinois competitive requires increasing the number of students who enter and complete college programs, especially programs leading to STEM degrees. From 1975 to 1999, the United States went from 3rd to 14th in terms of the number of students completing national science and engineering degrees among 19 nations.<sup>133</sup> Even though some countries apparently included less than 4-year degrees in their reporting, the conclusion remains that the U.S. is struggling to compete globally in graduating students in STEM majors. It is not surprising that leading companies represented by the Business Roundtable set the goal of doubling the number of U.S. science, technology, engineering, and mathematics graduates with bachelor's degrees by 2015.<sup>134</sup>

If the U.S. is to reach this goal, students must gain the requisite knowledge and skills needed for a STEM major as they move through the education pipeline. As discussed in Chapter III, the mathematics and science skills of Illinois students are not reaching this level, especially in high school. In addition, students need to complete high school, enroll in college, and complete college. As discussed in Chapter IV, significant numbers of Illinois students are not completing high school, and when they do, many are not prepared for college-level work. This chapter looks at what happens at college in terms of the education pipeline and students in STEM majors

#### The Education Pipeline

One approach to measuring college completion rates is to look at the pipeline of students who complete high school, enroll in college, and complete an associate's or a bachelor's degree. Without a national student tracking system, such as the one proposed in the Data Quality Campaign sponsored by the National Governors Association and other organizations,<sup>135</sup> assessing the pipeline of students from high school through college is very difficult. One problem is that existing data in the pipeline model underestimates students by counting the following as dropouts: students who take more than four years to complete high school, change high schools, obtain a GED, attend multiple colleges, enter college later than directly from high school, drop out of college but later return, or enroll in college part time. These students constitute a significant percentage of the student population. Put simply, existing data collection methods rarely account for the multiple pathways that students follow as they progress through high school and college. Clifford Adelman in *The Toolbox Revisited* (2006) presented a new approach by tracking students' 8.5 years. At this time, comparative data is not available for Illinois.

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That said, compared to the U.S., Illinois has an average pipeline of students but fewer college completers than the top state, Massachusetts.

In Illinois, out of every 100 students in 9th grade, 72 graduated from high school four years later, 43 entered college immediately, 30 were still enrolled their second year of college, and only 20 graduated with an associates degree within 3 years or a bachelor’s degree within 6 years. The U.S. average was 18 final graduates. This is a pipeline model and does not account for students who pursue other pathways.

**Table 10 The College Degree Pipeline**<sup>136</sup>

Out of every 100 9th Graders	United States	All Illinois	Top State Massachusetts
Graduate from High School	68	72	76
Immediately Enroll in College	40	43	53
Are Still Enrolled Sophomore Year	27	30	40
Graduate from College on Time	18	20	29

If Illinois aspires to compete with the top state, approximately 7,000 more students need to graduate from high school, 17,000 more students need to enroll immediately in college, 17,000 more students need to stay enrolled in the sophomore year, and 16,000 more students need to graduate within the established timeframes.

The pipeline presented above is based on a tracking system beginning in 9th grade. If the pipeline begins with high school seniors, 57% of Illinois and U.S. seniors enroll in college immediately after high school, less than the 65% average of the top five states.<sup>137</sup>

As shown in the table below, the percentage of students entering college from high school is comparable to the national average. The freshman-to-sophomore retention rate for Illinois community colleges is less than the U.S. rate, whereas the 4-year college freshman-to-sophomore retention rate is higher than the corresponding national average. A greater percentage of Illinois students complete 4-year degrees within 6 years than the percentages indicated nationally. Compared to the top five U.S. states, however, Illinois has room for improvement in its enrollment, retention, and graduation rates.

**Table 11 Retention and Completion Rates of College Students**

	United States	Illinois	Average of Top Five States
High school seniors enter college	57%	57%	65%
Community college students return for second year	55%	53%	61%
4-year college students return for second year	74%	79%	84%
4-year degree within 6 years	55%	58%	64%

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The averages in the table mask big variations among Illinois subgroups in the percentages of freshmen completing a 4-year degree within 6 years. Nearly two-thirds of Asian students (65%) and white students (64%) complete degrees in six years, but graduation rates of Hispanic students (46%) and black students (33%) are much lower. The differences may be in part due to the number of black and Hispanic students who are also low income. These students are more apt to reduce their course loads to part time to accommodate a job or they may drop out to work but later return to college. The “pipeline” completion rate does not include students who transfer to private institutions, transfer out of state, or drop out of college but later return.

At the current time, Illinois’ recruitment of students into college is comparable to the national average, and the 4-year institutions are exceeding the national rates in retention and degree completion. If Illinois is to increase the number of students graduating from college, more students need to be prepared to enter college and persist to completion.

### Students in STEM Majors

From 1994 to 2004, the percentage of Illinois workers with bachelor’s degrees or higher increased from 30.3% to 36.9%, compared to the U.S. increase of 29.5% to 37.2%.<sup>138</sup> As Illinois looks to bolster the economic infrastructure of the state, more graduates with STEM degrees will be needed.

The percentage of higher education degrees awarded in science and engineering is a broad measure of the preparation of a STEM workforce. Even though nationally and in Illinois the total number of higher education degrees increased, the proportion of STEM degrees remained constant.<sup>139</sup> From 1993 to 2003, the number of science and engineering higher education degrees, including bachelor’s, master’s, and doctorate degrees, conferred in the U.S. increased from 473,414 to 564,444 (19%); in terms of the percentage of all degrees awarded, the proportion of science and engineering degrees stayed rather consistent at approximately 30%.

In Illinois, the number of science and engineering bachelor’s, master’s, and doctorate degrees increased from 20,620 in 1993 to 25,263 (22%), which represents approximately 27% of all degrees awarded in those years.<sup>140</sup> During 1993 to 2003, the proportion of graduate degrees in science and engineering remained around 23% for the U.S. but increased in Illinois from 28% to 30%.<sup>141</sup>

These global measures of science and engineering degrees provide an overall picture but do not measure whether the granted degrees match the state’s workforce needs.