

Developmental Mathematics and Pathways

Precollege or developmental mathematics is a major activity at colleges and universities.

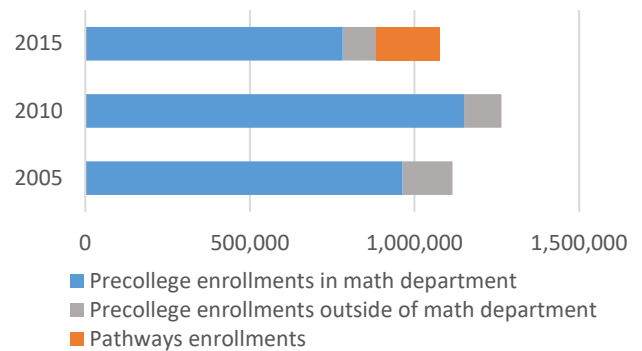
- At two-year colleges, precollege enrollments accounted for 41 percent of college mathematics and statistics enrollments in Fall 2015 (782,000 students), and approximately 57 percent over 1995 through 2010 (Table TYE.4).
- At four-year colleges in Fall 2015, there were 253,000 enrollments in precollege courses, or about 11 percent of total mathematics enrollments (Table E.2).
- The above statistics exclude developmental mathematics that was taught outside of mathematics departments. In 2015, 32 percent of two-year colleges had some precollege mathematics courses that were taught outside of the mathematics department (Table TYE.16), with an estimated enrollment of 102,000 (Table TYE.14), compared with 782,000 in mathematics departments (Table TYE.4).

Pathways courses and sequences that became available in 2009/2010 are an alternative to the traditional remediation curricula. The development of Pathways was a partial response to concerns from two-thirds of mathematics program chairpersons who believed that too many students needed remediation and that many students never advance beyond remedial courses. Pathway courses are aimed at decreasing the number of developmental courses, increasing enrollment in college-level courses, and aligning students' courses to their career paths.

CBMS began its study of Pathways in 2015 with questions in the survey focusing on two-year colleges. In 2015, 58 percent of two-year colleges offered a Pathways course sequence, with 193,000

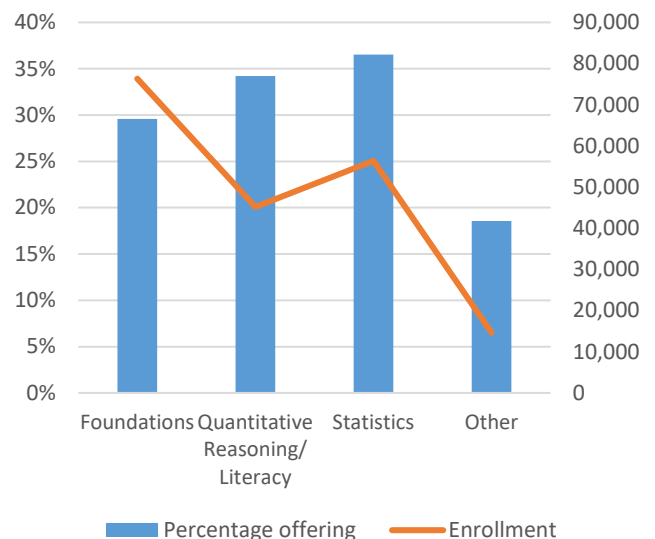
enrollments in Fall 2015. Figure 1 shows how course enrollments changed from 2005 through 2015. Figure 2 shows that Statistics was the Pathways course most commonly offered, while a Pathways Foundations course had the highest enrollment.

FIGURE 1. Precollege enrollments in 2005, 2010, and 2015. In 2015, Pathways courses represented a noteworthy component of precollege enrollments.



Source: 2015 CBMS Survey of Undergraduate Programs, Tables TYE.4 and TYE.11.

FIGURE 2. Statistics was the Pathways course most commonly offered, while Foundations had the highest enrollment



Source: 2015 CBMS Survey of Undergraduate Programs, Table TYE.11.

The adoption of Pathways may help to explain some of the growth in enrollments of existing courses at the precalculus level (from 368,000 in 2010 to 445,000 in 2015) and Statistics in 2015 (from 137,000 in 2010 to 280,000 in 2015). Specifically in Pathways courses, enrollments in Pathways statistics courses were 56,000 and Quantitative Reasoning/Literacy were 45,000 in 2015 (Tables TYE.4 and TYE.11).

CBMS2020 questionnaires will expand research into Pathways through questions on both the four-year college and two-year college questionnaires.

CBMS surveys: Tracking the mathematical and statistical sciences in higher education since 1965

These national surveys, occurring every five years, examine course enrollments and programs at both two-year and four-year colleges and universities. The surveys are sponsored by the Conference Board of the Mathematical Sciences (CBMS), a consortium of nineteen professional associations in the mathematics sciences. The project is administered by the American Mathematical Society and funded by the National Science Foundation. The survey reports can be downloaded from <http://www.ams.org/profession/data/cbms-survey/cbms-survey>. Table references in this brief refer to the CBMS 2015 report.

The 2015 CBMS survey was the eleventh report in this series of now fifty years of data. Three different instruments (two-year colleges, four-year college mathematics, and four-year college statistics) are sent to a stratified random sample of these three populations. Due to the unusual nature of the Fall 2020 semester, the CBMS survey originally planned for 2020 instead will be administered in Fall 2021. See <http://www.ams.org/profession/data/cbms-survey/cbms2020> for further information.