



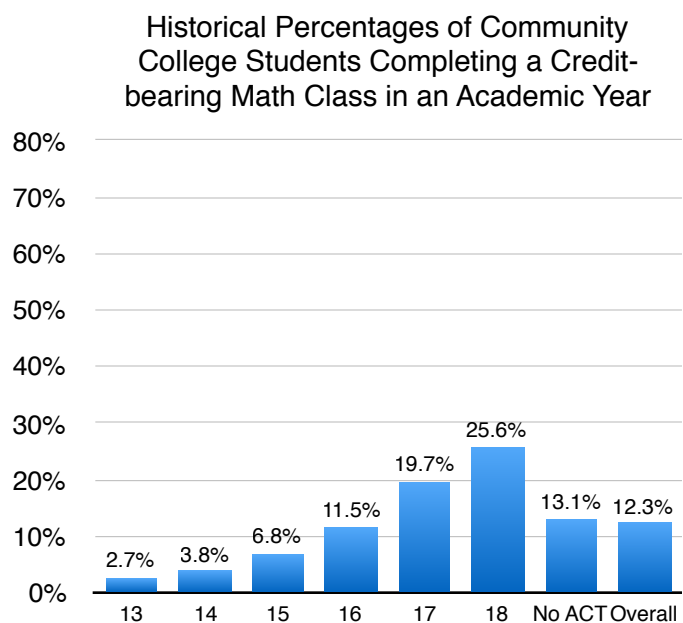
Tennessee Board of Regents

Office of the Vice Chancellor for Academic Affairs

Co-requisite Remediation

Full Implementation 2015-16

In the Fall of 2013 the Tennessee Board of Regents (TBR) began a study of the effectiveness of its system-wide approach to developmental education in community colleges, when success was viewed from the perspective of students completing a credit-bearing math, writing or reading-intensive class



Data from academic year 2012-13

within an academic year. To understand more clearly how the preparedness of students would affect their potential success in these course completions, we chose to disaggregate the data by ACT sub-score. Since system-wide, more than 60% of TBR students begin college with need for remediation in math, reading and/or writing, the results of the analysis were startling. Overall only 12.3% of the students who began in a remediation course completed a credit-bearing mathematics class within an academic year, and only 30.9% completed a credit-bearing writing class.

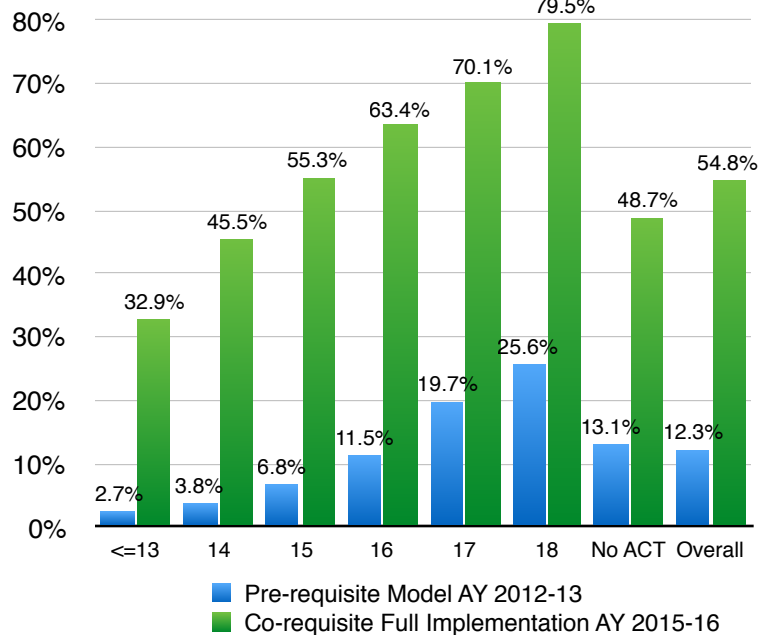
In an effort to increase these success rates, TBR community colleges and universities piloted a co-requisite approach to remediation during the academic year 2014-15. Encouraged by the results of the large-scale prototype work carried out in academic year 2014-15 (see [1]) all TBR universities and community colleges began fully implementing the co-requisite mathematics, reading and writing models for all students beginning Fall 2015. Although there is still much more to analyze in the year's data, we can already see that the initial improvements promised by the pilot are apparent in the full scale implementation, with substantial increases in students' success rates both in the university and community college sectors.

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Overall, for those community college students who took a co-requisite mathematics class 55

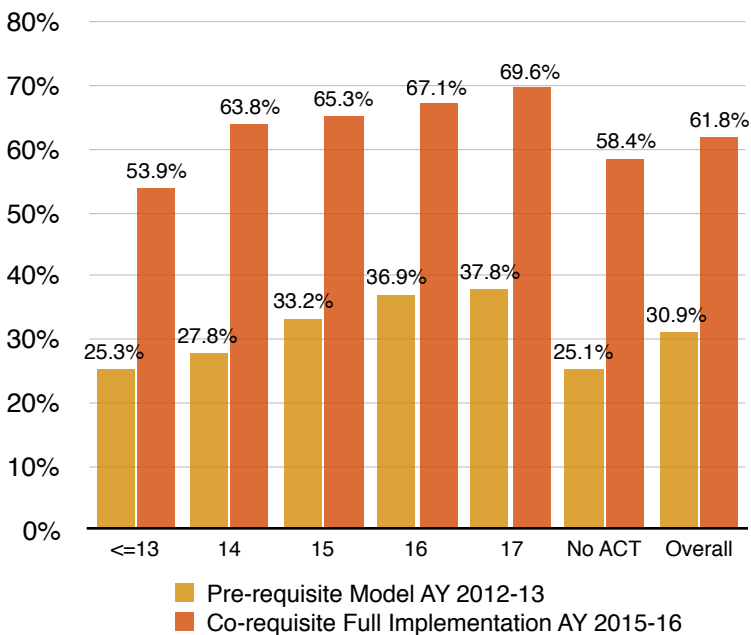
percent received a passing grade in their credit bearing mathematics class, with 52 percent passing in their first semester. This is a more than four-fold increase over the original pre-requisite model, in which only 12.3 percent of those students achieved that same passing grade in an entire academic year. As with the pilot results, we saw equally substantial increases for students at every ACT level, with a more than 10-fold increase in success rates for students with math ACT scores of 14 or below.

Results of TBR Full Implementation
Co-requisite Mathematics in Community Colleges



Similarly the pass rate for those students who took a co-requisite writing class doubled over the historic 30.9 percent within an academic year to 61.8 percent, with 58.7 percent passing their English

Results of TBR Full Implementation
Co-requisite Writing in Community Colleges



Composition I class the first semester. Again the increases in success rates were not limited to the students close to the upper ends of the ACT band. The doubling in success rates was apparent across the full student population. Where in mathematics most students had attempted no further mathematics in the spring, this was not true for writing. Of those student who continued on to English Composition II in the Spring

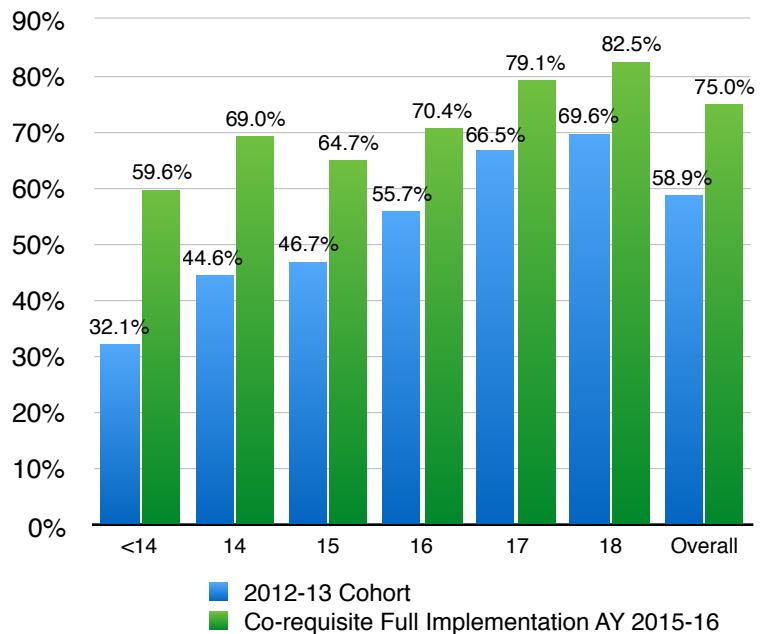
semester, 67 percent earned a passing grade.

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The Tennessee Board of Regents universities also implemented the co-requisite model during the 2015-16 academic year. Rather than delivering the co-requisite support as a separate class, in the universities the students were required to attend a supplementary lab experience.

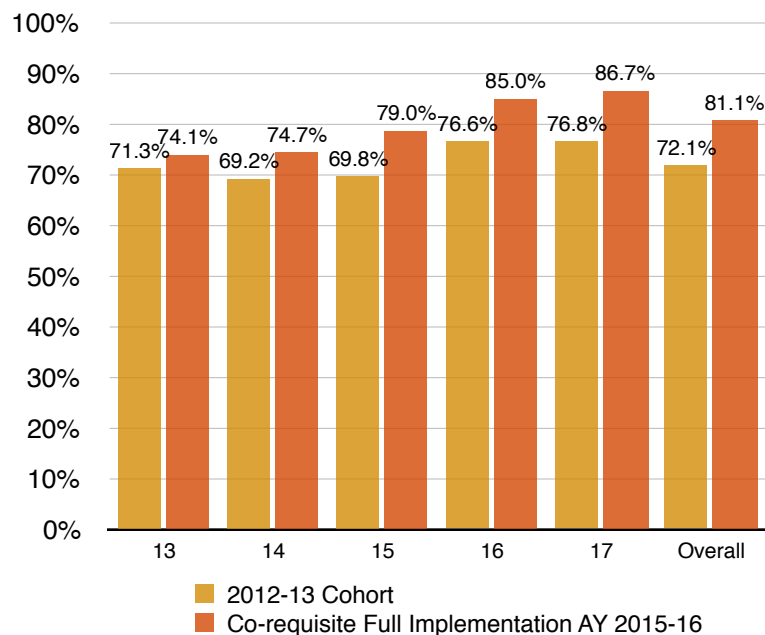
Once again this change in pedagogy structure produced significant success gains. Overall for those students who took a co-requisite mathematics class, 75 percent received a passing grade in their credit bearing mathematics class, with 67 percent passing in their first semester. As in the community colleges, we see significant gains across the full spectrum of ACT scores. There was also essentially no achievement gap: 73 percent of minority students, and 72 percent of low-income students achieved passing grades. It was also the case, that in the co-requisite approach, the majority of students were enrolled directly into either an elementary statistics or quantitative reasoning class, and so were able to satisfy their general education mathematics requirement in a single semester.

Results of TBR Full Implementation
Co-requisite Mathematics in Universities



Similarly the pass rate for those

Results of TBR Full Implementation
Co-requisite Writing in Universities



students who took a co-requisite writing class increased from 72 percent to 81 percent, with 77 percent of students passing their English Composition I class in the first semester. There was essentially no achievement gap for low minority and low-income students with 79 and 80 percent of students receiving a passing grade respectively. All degrees in TBR

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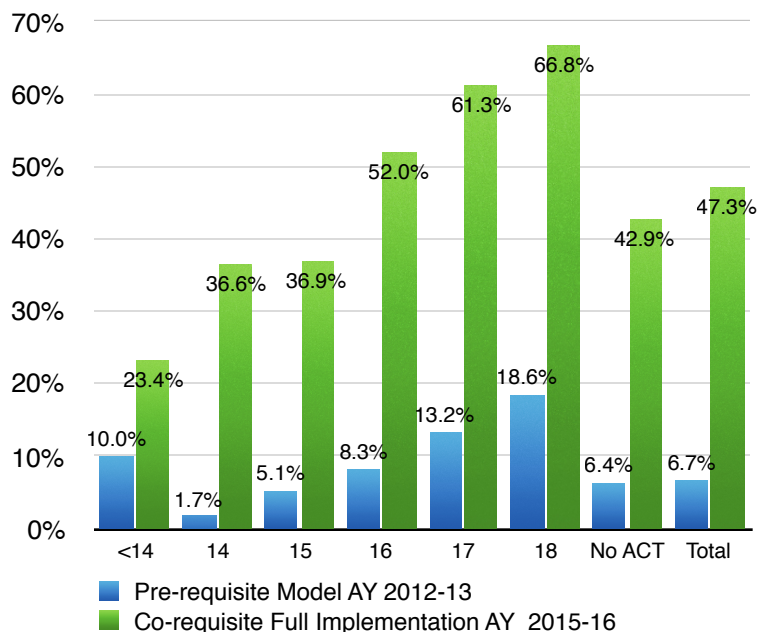
universities require both English Composition I and II. Those students who went on to attempt English Composition II in the Spring semester had a pass rate of 83 percent.

We saw similar gains when we disaggregated the community college results, looking specifically at minority, adult and low-income students. For minority students the success rate in mathematics rose more than seven-fold to 47.3 percent, with 42.6 percent passing in the first semester. In writing, the achievement gap was all but eliminated at full scale with a success rate increase from a historic 18.6 percent to 57.6 percent in 2015-16 with the typical significant gains across the ACT spectrum.

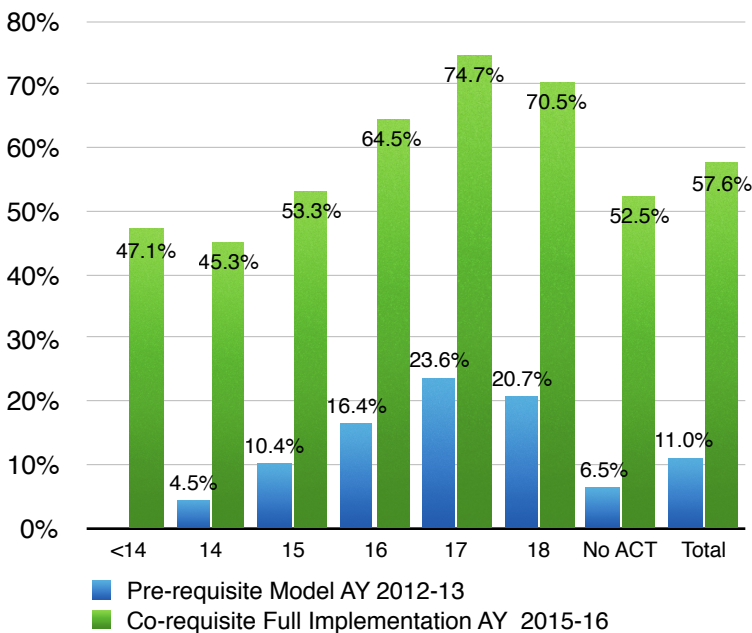
Results for adult and low-income students followed that same

pattern across the board. The success rates for adults in mathematics showed a more than five-fold

Results of TBR Co-requisite Mathematics Full Implementation - Minority Students



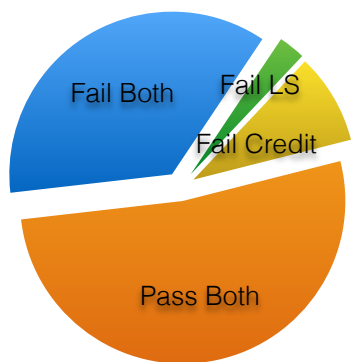
Results of TBR Full Implementation Co-requisite Mathematics - Adult Students



increase in mathematics from 11 percent to 57.6 percent, and a doubling in writing from 30.9 percent to 67.6 percent. Results for low-income students in the full implementation showed little difference from the general population with success rates in mathematics at 52.5 percent and 60.8 percent in writing.

These data certainly show a significant impact in success rates across the full ACT and population

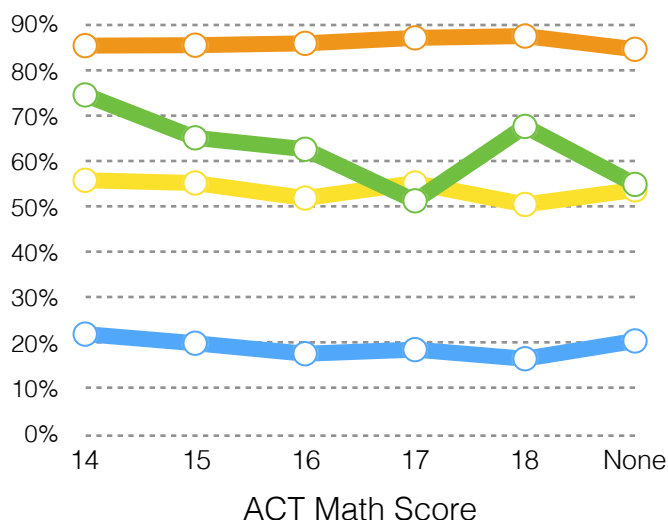
We also began an analysis of factors that might contribute to a student's lack of success, as well as evidence that those students who were successful were able to transfer that success across their studies. The co-requisite class structure creates four possible outcomes: students may pass both parts; fail both parts; pass only the credit bearing portion; or pass only the learning support component. We found that



the pattern of the distribution for these four possibilities hardly varied between math and writing, or between university and community college sectors. Here we have shown the breakdown for community college mathematics: 52 percent passed both; 3 percent passed only the general education course; 9 percent passed only the learning support; 36 percent failed both parts.

We retained an independence in the grading structure between the two co-requisite elements (credit bearing class and learning support class) so that students would not consider the learning support to be an *optional* element. That created the possibility for students to pass the credit bearing class whilst failing the learning support

Earned Hour Percentage for
Students taking Co-requisite
Mathematics



experience. While this was a possibility only 3 percent of the students passed their general education class in this way. Of those students who passed the learning support component of the course 85 percent also passed their credit bearing class.

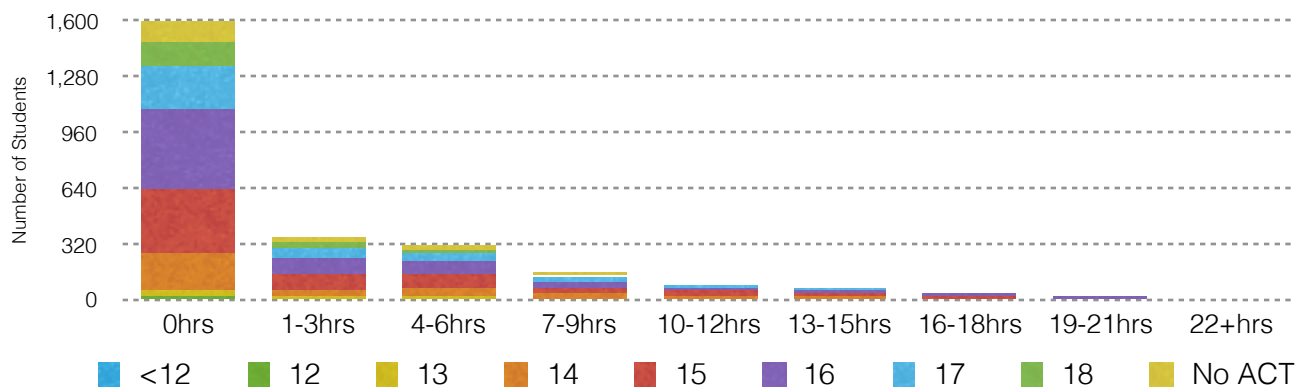
We also examined how the students performed across the rest of their academic studies, desegregated in this four-fold fashion. Once again we saw a similar pattern between math and writing, and between university and community college sectors.

Those students who were successful in their co-requisite pair were also successfully in their other classes, earning roughly 85 percent of the hours that they attempted. Surprisingly, this earned hour percentage hardly varied by ACT sub-scores. Those

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students who failed one or other of the co-requisite parts were less successful, but still earned more than 60 percent of their attempted hours. The greater variation in the earned hour percentage for those students who passed only the general education part is explained by the much smaller number of students. Finally those students who were unable to earn a passing grade in either co-requisite part on average earned credit for only 20 percent of the hours that they attempted. A more granular look at these students shows that

Hours Earned by Full-time Students Who Failed Both Parts of Their Co-requisite Mathematics Courses



while on average they earn 20 percent of their attempted hours, in fact more than two thirds of these students failed every class that they attempted that year. Once again this behavior does not appear to be correlated to ACT scores. Instead we believe that there is a connection with the academic mindset of this student population, and we will be exploring ways to make further progress with their success this year.

For further information concerning this study or other student success initiatives in the Tennessee Board of Regents contact Dr. Tristan Denley, Vice Chancellor for Academic Affairs, tristan.denley@tbr.edu

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