

ACT Residual Math Exam: An Analysis of Testers and Results

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This analysis was produced by OPEIR after receiving data from the UTC Testing Center. Results are not necessarily generalizable and attempts to use results outside the scope of this project should be avoided.

ACTR Exam Takers and Types of Exam Takers

A number of students take the ACTR exam as part of their UTC experience as shown in Table 1. In some cases, students take the exam multiple times.

Table 1: Individual Testers 2017-2019

Year	Number of Unique Individuals Tested
2017	137
2018	119
2019	88
All Three Years	343

Students appear to take ACTR testing for a variety of reasons, including placing into lower division math courses that are required for their program of study such as MATH 1130 as shown in Table 2. Some students do not enroll at UTC; these students may be assigned a UTCID so may have applied for admission but not enrolled. Others appear to take the ACTR for reasons other than lower division math placement.

Table 2: Breakdown of Testers by Type

Year	Not Enrolled at UTC	Took ACTR for Lower Division Math Placement	Took ACTR for Other Reason
2017	16%	61%	23%
2018 ¹	12%	42%	45%
2019	9%	67%	24%

There is wide variance across the three years of test data, and each year has unique patterns. For this reason, three-year averages of this data are not particularly meaningful. Overall, there appears to be a policy change that occurred after 2017 that limited access to students who fail to meet the score benchmark for the ACTR math section to lower division classes requiring an ACTR benchmark score; in 2017, many students who did not meet the math benchmark nonetheless took math classes requiring a benchmark score or other entry criteria but this was not the case for 2018 and 2019 testers.

¹ One 2018 tester was an undefined student type without a program of study and is not included in this table.

Other variance is probably due to testing recency. It can be difficult to tell which program of study students pursued when. In 2018, more students who took the ACTR are enrolled in programs that do not require math courses associated with benchmark ACTR scores. It is possible that testers in 2018 who did not meet the benchmark changed their program of study to one that did not require these math classes. Since less time has elapsed for 2019 testers to make changes to their program of study, these numbers are not as high.

Testers Taking the ACTR for Lower Division Math Placement

Overall, students who take the ACTR in order to place into math classes necessary for their programs of study are not very successful at meeting the necessary benchmark as shown in Table 3. Again, there is wide variance by year.

Table 3: Students Taking the ACTR for Lower Division Math Placement (19 Math Score)

Year	Met Necessary Benchmark	Did Not Meet Benchmark
2017	22%	78%
2018	46%	54%
2019	27%	73%

In 2017, a large proportion of testers were international students in Engineering majors. Most did not earn the necessary benchmark score but many nonetheless went on to enroll in the necessary math classes anyway. This was not the case in 2018 or in 2019. It is possible that 2019 students may engage in additional ACTR testing in an attempt to boost math scores and meet the necessary benchmark, change their programs of study, or pursue other strategies (CLEP testing, etc.) but not enough time has elapsed for them to do so.

Students who took the ACTR for lower division math placement were clustered in certain majors, particularly majors in engineering, business management and marketing, and HHP and nursing. Engineering majors comprised a relatively large number of 2017 testers but were not common majors among 2018 and 2019 testers. Business majors are a consistent presence across years, while students in health majors like Nursing and HHP are more common in 2019; these students may ultimately decide to change their majors.

Surprisingly, whether or not students attempting to pass into lower division math classes earned the necessary scores made no difference in their retention at UTC as shown in Table 4; due to low overall numbers of students represented, any variation between students meeting and not meeting the required benchmark score is the difference of one student.

Table 4: Retention² of ACTR Testers for Lower Division Math Placement by Benchmark Passage

Year	Retention: Met Benchmark	Retention: Did Not Meet Benchmark
2017	67%	69%
2018	61%	59%
2019	81%	81%

² Students who graduated with a bachelor’s degree are counted as retained in this analysis.

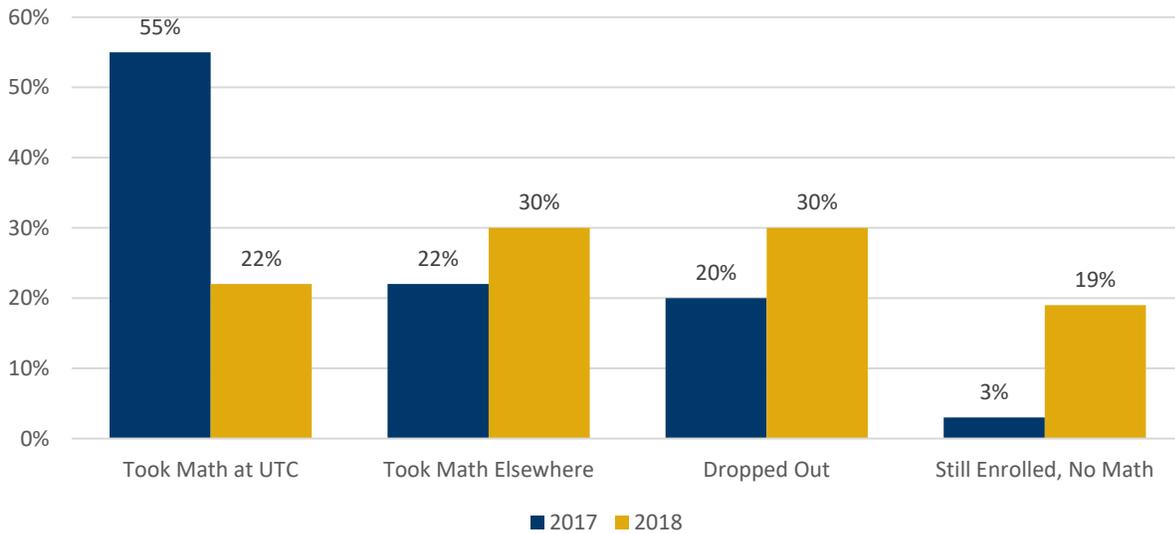
It is interesting that 2017 testers were retained at higher rates than 2018 testers. It is possible that the policy of allowing students not meeting benchmark scores into lower division math classes positively impacted retention. 2019 retention numbers are high due to how recently students tested.

Students who did not meet the benchmark score responded in four primary ways:

1. They enrolled in a lower division math course at UTC despite not meeting the benchmark score.
2. They took and passed a lower division math course at a different institution such as Chattanooga State Community College.
3. They dropped out.
4. They remained enrolled but have not yet completed the math needed for their program of study.

Only testers in 2017 and 2018 were examined since 2019 testers have not had time to respond in these ways yet. Due to the apparent policy change, 2017 and 2018 had very different numbers of testers not passing (65 and 27 students respectively) and different outcomes as shown in Figure 1 below.

Figure 1: Response of Testers Not Meeting Benchmark Score



A couple of things are important to note about the data in Figure 1. First, only students who passed math classes elsewhere are included in this data, since UTC’s data system only shows classes that result in transfer credit. It is possible more students attempted to take lower division math courses elsewhere but did not pass those classes.

It is also possible that more students than those whose data is represented in Figure 1 attempted to place into lower division math classes using the ACTR but, having not met the benchmark, changed their program of study and are not included in this chart.

While the small number of students this encompasses and variance from year to year makes it difficult to draw conclusions from this data, the increased retention for 2017 testers combined with the fact that the majority of the students who took lower division math at UTC despite not meeting benchmark scores still passed the class suggest that the old policy positively affected student outcomes. Of the 2017 testers who took math anyway, only 6% did not pass the lower division class.

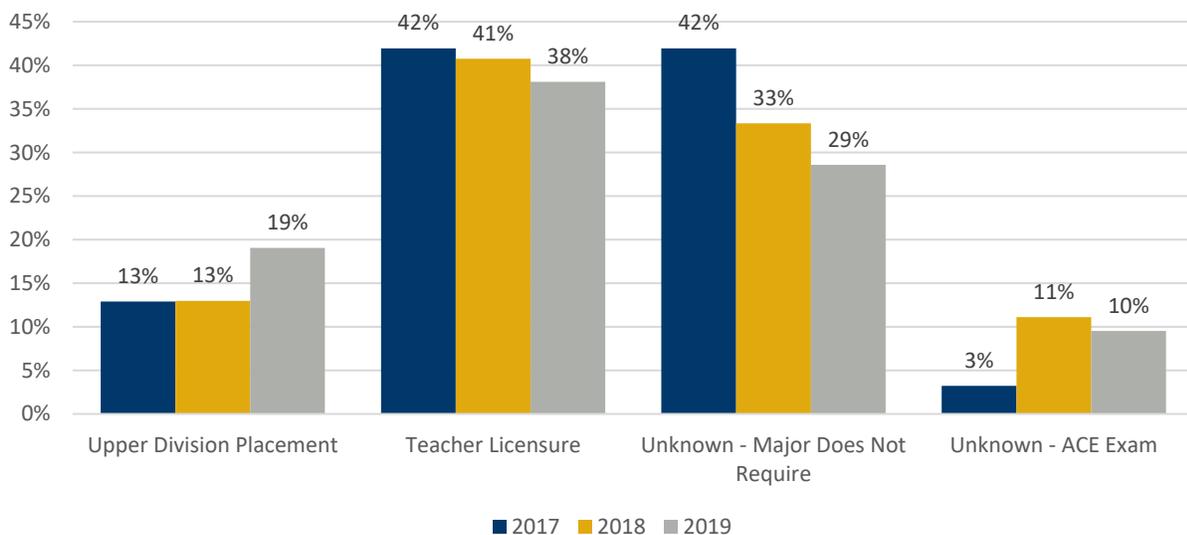
Students Taking the ACTR for Other Reasons than Lower Division Math Placement

There are a number of students who appear to take the ACTR for reasons other than lower division math placement as shown in Figure 2.

Reasons students take the ACTR other than lower division math placement:

1. Upper division math placement or testing out of math requirements.
2. Teacher licensure.
3. Unknown reasons. Students who fall into this category include:
 - a. Students enrolled in majors with open access math requirements (i.e.: math classes required for the major are open to any student regardless of math subscore or other criteria).
 - b. Students who passed lower division math requirements by taking an ACE exam.

Figure 2: Reasons Students Use ACTR Testing Other than Lower Division Math Placement



Students were identified as seeking upper division placement if their incoming ACT scores already met the 19 required for entrance into lower division math courses. Most of these students were Engineering or Physics majors.

Students were identified as seeking teacher licensure if they were enrolled in an education major or minor which also did not have a required benchmark score for math in the program of study. Students in this group were enrolled in a wide range of majors including those in the School of Education as well as others such as Art Education, Vocal Music Education, and Physical Education. These students tended to complete the ACTR after earning significant credit and many have since graduated.

Students in the unknown group are likely students who tried to use the ACTR to get into lower division math courses but were unsuccessful and then changed their majors or took ACE exams. It can be difficult to know for sure since ACE exams are not dated. It is also possible this third group includes students whose majors do not require lower division math but students are opting to take these classes due to interests in elective courses that do have these requirements.