

What effect does taking remedial coursework have on student on-time Associate Degree completion in NDUS Community Colleges?

The objective of this study is to determine whether or not the act of taking a remedial Mathematics and/or English course has an impact on on-time Associate Degree completion in NDUS Community Colleges. To find the answer to this question, data was collected from students who graduated from a North Dakota high school and enrolled at an NDUS Community College between the fall semester of the 2008-09 school year and the fall semester of the 2011-12 school year. On-time completion, for the purposes of this study, is defined as a student completing his or her Associate Degree within three years of initial full-time enrollment.

Upon collection of this sample of students, any student who was found to have transferred to an NDUS Regional or Research University, or had transferred to an out-of-state university, was removed from the study. This was done in an effort to limit the study to students whose goal was the completion of an Associate Degree, as opposed to transferring credits before the completion of a degree. After removal of any transfer students, the final sample size for this study was 2,516 students.

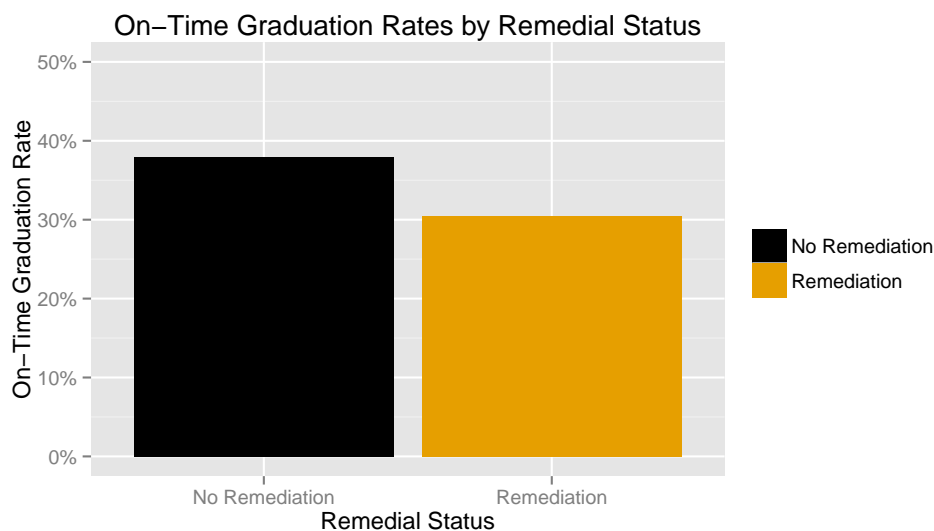


Figure 1: On-Time Graduation Rates by Remedial Status

Figure 1 appears to show that non-remedial students have a higher on-time graduation rate, 38%, than non-remedial students, who have a collective on-time graduation rate of 30.5%. However, these are very general figures, and do not take into account the distinct differences that exist between the group of students who take remedial courses and the group of students that do not.

Remedial Status	On-Time Grad. %	Avg. GPA	Avg. ACT Comp.
No Remediation	38.0%	2.92	20.31
Remediation	30.5%	2.58	17.16

Table 1: Student Averages by Remedial Group

As table 1 shows, the group of students identified as taking remedial courses has a lower average GPA and ACT Composite score when compared to the group of non-remedial students. Therefore, it is difficult to tell if the act of taking remedial courses is a contributing factor to on-time completion or if the academic differences between the groups is the cause. Since, in a previous study¹, it has been shown that ACT Composite and high school GPA are positively correlated with student on-time completion of Associate degrees at NDUS Community Colleges, those factors need to be removed from consideration to accurately measure the effect of remediation.

To mitigate the effect of ACT Composite and GPA on observing the effect of remediation on on-time graduation rates, propensity score matching was used. This technique allows similar students to be matched across groups on the basis of their GPA and ACT Composite score. For example, a student who took remedial coursework with a GPA of 3.75 and an ACT of 19 was matched with a non-remedial student with a GPA of 3.78 and an ACT of 19. This process continued until 798 matched pairs were constructed.

Remedial Status	On-Time Grad. %	Avg. GPA	Avg. ACT Comp.
No Remediation	29.8%	2.63	17.75
Remediation	30.8%	2.62	17.53

Table 2: Student Averages by Remedial Group using Matched Groups

As table 2 shows, the propensity score matching process created much more academically similar groups (based on GPA and ACT Composite score) of remedial and non-remedial students. To more formally test if a statistically significant difference exists in the on-time graduation rate between the two groups of academically similar students, Table 3 was constructed below showing the results of each matched pair of students.

		Remedial Students	
		On-Time Grad	Not On-Time Grad
Matched Non-Remedial Students	On-Time Grad	78	160
	Not On-Time Grad	168	392

Table 3: On-Time Graduation Results for Matched Student Pairs

To determine if a difference existed in the on-time graduation rates between remedial and non-remedial groups of students, the McNemar test for related samples was used. With a test p-value of $p = 0.659$, it cannot be concluded that a difference exists between the remedial group on-time graduation rate and the non-remedial group on-time graduation rate after the effects of GPA and ACT Composite scores are blocked.

Since both groups of students appear to have similar academic baselines, as measured by ACT Composite scores and high school GPA, it does not appear that the act of taking a remedial Mathematics and/or English course at an NDUS Community College negatively affects a student's likelihood of completing an Associate Degree on-time.

¹NDUS Community College ACT/GPA On-Time Degree Completion - January 2015, Published at https://slds.ndcloud.gov/public/SiteAssets/ACT_GPA_Community_College_1-2015.pdf