

## Introduction

The objective of this particular study is to determine an estimate for the effect of delaying developmental coursework within the North Dakota University System; i.e. if there is a disadvantage to taking developmental coursework in a semester *other* than the first semester.

The students involved in this resesarch study are any who were enrolled in any North Dakota University System school with their first full-time semester occurring anywhere between the 2009-2010 through the 2013-2014 school years. Students were only selected if they took developmental courses during a single semester, and were split into two groups - those that took their developmental course(s) during their first semester, and those that delayed their developmental course(s). Following the creation of the groups, students were matched one-to-one with a similar student from the opposing group using propensity score matching, based on their high school GPA, ACT Composite score, and demographic information such as IEP and Free/Reduced Lunch status. This process created two academically similar groups of 1,336 students; half of whom took their developmental course(s) during their first full-time semester in NDUS, and half who took their developmental course(s) during some other semester in NDUS.

## Results

To create an estimate for the effect of delaying developmental coursework in NDUS, the two groups were compared on the basis of degree completion. Each student was considered to have completed a degree if they had earned either an Associate or Bachelor degree by the fall semester of 2018. The results of each of the student pairs is tabulated below.

Results for Each Pair Of Students			
Student Who Took First-Term Developmental	Student Who Took Non First-Term Developmental	Count	
Earned Degree	Earned Degree	96	
Earned Degree	Did Not Earn Degree	186	
Did Not Earn Degree	Earned Degree	131	
Did Not Earn Degree	Did Not Earn Degree	255	

Table 1: Results of Developmental Student Pairs

Using these results to create a confidence interval based on McNemar's test for related differences, the estimated effect of delaying developmental courses beyond the first semester on degree completion is estimated to be between -12.6% and -3.9%. This means that, among similar students, if a student delays taking developmental courses, they are 3.9 to 12.6 percentage points less likely to complete their degree when compared to a student that takes developmental classes in their first semester.

It is worth noting that there are likely multiple factors that cannot be controlled for in this study, particularly **choice**. Perhaps students who take developmental classes in their first semester are more ambitious and studious when compared to students that delayed taking developmental courses; there is no method to account for this during this study. Thus, the range of -3.9% to -12.6% can, at best, be considered an estimate.