

## Does English Remediation have an effect on success in the first semester of English Composition I? What factors are associated with English success - High School GPA and/or ACT English?

The data sample for this question consists of students who graduated high school between 2008 and 2012 and have recorded a non-withdrawal grade in their first semester of English Composition I. The total sample size is 5,146 students. Since it appears that current remediation decisions for English rely on the ACT English sub-level score, it has been included as a possible predictor, along with NDUS Core GPA, for the reason that it has shown significance in predicting on-time graduation and success in Math courses.

The analysis process for this question followed very closely the process followed in the similar analysis of Math remediation. First off, to determine whether ACT English and/or NDUS Core GPA were significant predictors of success in English, logistic regression analysis was performed with success in the first semester of English Composition I as the response variable; ACT English sub-level score and NDUS Core GPA were used as potential predictors. Next, correlations between the three variables under consideration were calculated.

	Coefficient	S.E.	Significance
ACT English	-0.0066	0.012	0.567
NDUS Core GPA	1.6572	0.076	<0.0001
Constant	-2.4515	0.215	<0.0001

Table 1: English Logistic Regression Coefficients

	ACT English	NDUS Core GPA	English Success
ACT English		0.534	0.176
NDUS Core GPA	0.534		0.376
English Success	0.176	0.376	

Table 2: English Correlations

From Tables 1 and 2, it seems that NDUS Core GPA is more related to English success than ACT English. In addition, the results of the logistic regression show that **ACT English provides no additional significant information to the model above that of NDUS Core GPA**. To develop propensity scores for each student, a new logistic regression model was designed with only NDUS Core GPA as the predictor variable, since it has been established that ACT English was not significant to the logistic model.

	Coefficient	S.E.	Significance
NDUS Core GPA	1.6381	0.068	<0.0001
Constant	-2.5248	0.173	<0.0001

Table 3: Logistic Regression Coefficients for Propensity Scoring

To begin analyzing the effect of English remediation on the first attempt success rates in English Composition I, the overall success rates for both remedial and non-remedial students were calculated.

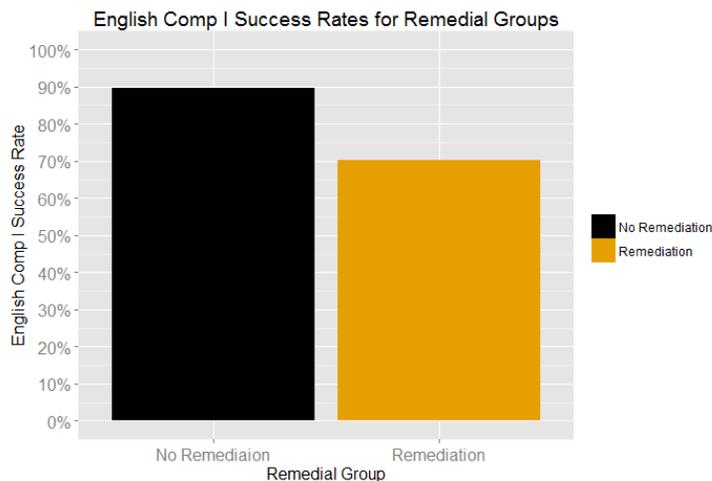


Figure 1: English Success Rates by Remedial Status

The overall success rate in English Composition I in this sample is 89.5% for non-remedial students, compared to 70.2% for remedial students. However, the average NDUS Core GPA is again much higher for the non-remedial group when compared to the remedial group, 3.075 to 2.351. To continue to study the effect of remediation, propensity score matching was again used to match similar remedial and non-remedial students to block the effect of NDUS Core GPA. Matches were found for 786 of the remedial students. McNemar test for related samples was conducted to determine the effect of remediation on similar students.

		Remedial Students	
		Success (A,B,C)	Failure (D,F)
Matched Non-Remedial Students	Success (A,B,C)	440	166
	Failure (D,F)	113	67

Table 4: Overall English McNemar Test Results

$$\hat{p}_1 = \frac{440 + 166}{786} = 77.10\% \quad (1)$$

$$\hat{p}_2 = \frac{440 + 113}{786} = 70.36\% \quad (2)$$

Using McNemar's test:

$H_o : p_1 = p_2$  (The two proportions are the same)

$H_a : p_1 > p_2$  (The proportion of all non-remedial students who succeed in English Composition I is greater than the proportion of all similar remedial students who succeed in English Composition I)

$$z_{test} = \frac{166 - 113}{\sqrt{166 + 113}} = 3.173 \quad (3)$$

$$p \approx 0.0008 \quad (4)$$

Once again, similar to the results from the study on the effect of math remediation on College Algebra success, it appears that among matched pairs of students with similar GPA, the students who undertake English remediation have a lower rate of success than their counterparts that do not take English remedial coursework.

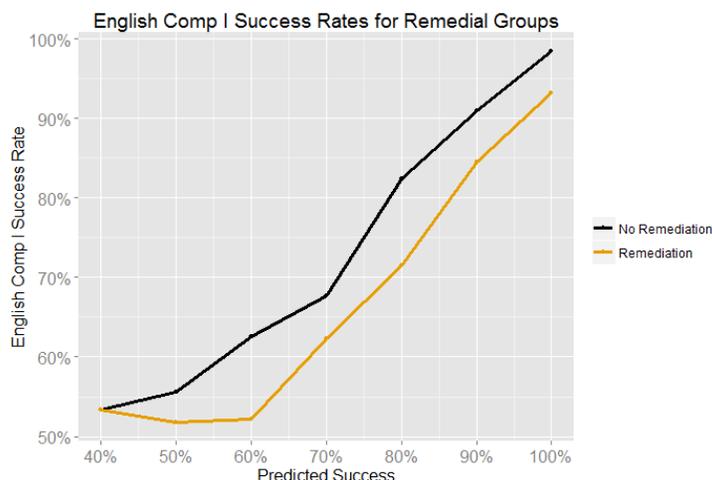


Figure 2: English Success Rates by Remedial Status

However, unlike the result obtained from analysis of Math remediation, there seems to be no point at which English remedial students perform at either the same level or better than their non-remedial matched counterparts. (Below 40% predicted success, the possibility exists, but there are too few students below this level to meaningfully analyze - a 40% predicted success corresponds to an NDUS Core GPA of 1.29)

**Interpretation/Recommendation**

Since there is no point apparent where English remediation is effective, it is impossible to recommend an English remediation cut line similar to the line recommended for Math remediation. There are, however, many possible explanations for this, not limited to the following:

- Perhaps English remediation in its current form inadequately prepares students for English Composition I. Since students were matched by their predicted success (based on NDUS Core GPA), perhaps remediation does more harm than good, and a remedial student would be more likely to succeed in English Composition I directly.
- Additional factors not taken into consideration by this study may possibly play a role in determining a student’s likelihood of success in English Composition I. Perhaps the reason remedial students are less likely to succeed than students who do not take remedial coursework with a similar GPA is that the remedial students share some common factor not under consideration in this study.

Further study of this issue will be possible with the addition of more factors for each student.