Writing Center Outcomes

Executive Summary

Overview

This report analyzes the records of 135 new freshman who took English 1010 or 1010D and went to the Writing Center to receive assistance with their papers in fall 2016. It includes another 669 students taking English 1010 or 1010D in the same semester who did not receive assistance. The outcomes (measured in terms of GPA in the English course, GPA during the fall term, and retention as of fall 2017) are presented below. Although no analysis accounts for all factors, results provide support that the Writing Center has a positive impact on these outcomes. This information should be shared with students to encourage their participation.

Results

- The fall-to-fall retention rate for new freshman obtaining assistance from the Writing Center was 60% compared to 48% for new freshman not obtaining help from the Writing Center (Chi-Square 5.507, significant $p < .01$).
- The average GPA in English 1010 or 1010D for new freshman obtaining assistance from the Writing Center was 3.03 compared to 2.51 for students not obtaining assistance (t-test -4.27, significant $p < .01$).
- The average fall term GPA for new freshman obtaining assistance from the Writing Center was 3.09 compared to 2.47 for new freshman not obtaining assistance from the Writing Center (t-test -6.792 significant $p < .01$).

One counter hypotheses is that those attending the center may have better academic preparation in high school, which was the reason for the differences. However, the average ACT composite score was 21 for new freshman who obtained assistance from the center, but also 21 for new freshman who did not attend the center, no difference. As well the index score was an average of 55 for both groups. The index score is the student's high school GPA multiplied by 10 plus their ACT composite score. Therefore, both groups appeared equally prepared based on high school GPA and ACT scores. When controlling for composite score in a univariate analysis of variance and logistic regression, obtaining assistance from the Writing Center had a significant and positive effect.

A matched pair analysis was also completed in this work. The goal was to match students on gender, ethnicity, college and index score (within the same 5 point range). These are variables associated with substantial differences in retention and academic success on campus. When there was more than one student match, the match was randomly selected using a random number generator. However, matches, using these factors, resulted in only 53 matched pairs. Those attending the center always had higher GPAs and retention: Term GPA 3.22 vs 2.75, English GPA 3.10 vs 2.88, and retention 62.3% vs 54.7%. The difference in term GPA was significant (t-test 2.425, significant $p < .05$). The other outcomes were not significant, likely due to smaller sample sizes.

```
T-TEST GROUPS=WRTG_CTR(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=ENGLISH_GPA
  /CRITERIA=CI(.95).
```

T-Test

Notes

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Comments		
Input	Active Dataset	DataSet1
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Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.

Syntax		T-TEST GROUPS=WRTG_CTR(0 1) /MISSING=ANALYSIS /VARIABLES=ENGLISH_GPA /CRITERIA=CI(.95).
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	Elapsed Time	00:00:00.02

Group Statistics

	WRTG_CTR	N	Mean	Std. Deviation	Std. Error Mean
ENGLISH_GPA	.00	651	2.508	1.4690	.0576
	1.00	134	3.032	1.1961	.1033

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Er Differe
ENGLISH_GPA	Equal variances assumed	18.364	.000	-3.870	783	.000	-.5236	
	Equal variances not assumed			-4.427	223.998	.000	-.5236	

```
T-TEST GROUPS=WRTG_CTR(0 1)
  /MISSING=ANALYSIS
  /VARIABLES=S_TERM_GPA2
  /CRITERIA=CI(.95).
```

T-Test

Notes

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	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.
Syntax		T-TEST GROUPS=WRTG_CTR(0 1) /MISSING=ANALYSIS /VARIABLES=S_TERM_GPA2 /CRITERIA=CI(.95).
Resources	Processor Time	00:00:00.02

Elapsed Time	00:00:00.02

Group Statistics

	WRTG_CTR	N	Mean	Std. Deviation	Std. Error Mean
S_TERM_GPA2	.00	669	2.468998505000000	1.241110444000000	.047984102000000
	1.00	135	3.095925926000000	.916241753000000	.078857534400000

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. E Differe
S_TERM_GPA2	Equal variances assumed	29.105	.000	-5.570	802	.000	-.626927421000000	.11256136
	Equal variances not assumed			-6.792	244.867	.000	-.626927421000000	.09230918

Notes

Output Created	22-JUN-2018 09:33:30
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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each table are based on all the cases with valid data in the specified range(s) for all variables in each table.
Syntax		CROSSTABS /TABLES=RY1 BY WRTG_CTR /FORMAT=AVALUE TABLES /STATISTICS=CHISQ PHI /CELLS=COUNT ROW COLUMN TOTAL /COUNT ROUND CELL.
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	Cells Available	524245

```
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  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT ROW COLUMN TOTAL
  /COUNT ROUND CELL.
```

Crosstabs

Notes

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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each table are based on all the cases with valid data in the specified range(s) for all variables in each table.

Syntax		CROSSTABS /TABLES=WRTG_CTR BY RY1 /FORMAT=AVALUE TABLES /STATISTICS=CHISQ PHI /CELLS=COUNT ROW COLUMN TOTAL /COUNT ROUND CELL.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01
	Dimensions Requested	2
	Cells Available	524245

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
WRTG_CTR * RY1	822	100.0%	0	0.0%	822	100.0%

WRTG_CTR * RY1 Crosstabulation

			RY1		
			0	1	Total
WRTG_CTR	.00	Count	356	330	686
		% within WRTG_CTR	51.9%	48.1%	100.0%
		% within RY1	86.6%	80.3%	83.5%
		% of Total	43.3%	40.1%	83.5%

1.00	Count	55	81	136
	% within WRTG_CTR	40.4%	59.6%	100.0%
	% within RY1	13.4%	19.7%	16.5%
	% of Total	6.7%	9.9%	16.5%
Total	Count	411	411	822
	% within WRTG_CTR	50.0%	50.0%	100.0%
	% within RY1	100.0%	100.0%	100.0%
	% of Total	50.0%	50.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.956[a]	1	.015		
Continuity Correction[b]	5.507	1	.019		
Likelihood Ratio	5.987	1	.014		
Fisher's Exact Test				.019	.009
Linear-by-Linear Association	5.949	1	.015		
N of Valid Cases	822				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 68.00.

b. Computed only for a 2x2 table

Symmetric Measures

	Value	Approximate Significance

Nominal by Nominal	Phi	.085	.015
	Cramer's V	.085	.015
N of Valid Cases		822	

```
LOGISTIC REGRESSION VARIABLES RY1
  /METHOD=ENTER ACT_SCORE WRTG_CTR
  /CONTRAST (WRTG_CTR)=Indicator
  /CLASSPLOT
  /PRINT=GOODFIT
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
```

Logistic Regression

Notes

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	N of Rows in Working Data File	822
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing

Syntax		LOGISTIC REGRESSION VARIABLES RY1 /METHOD=ENTER ACT_SCORE WRTG_CTR /CONTRAST (WRTG_CTR)=Indicator /CLASSPLOT /PRINT=GOODFIT /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.04

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	689	83.8
	Missing Cases	133	16.2
	Total	822	100.0
Unselected Cases		0	.0
Total		822	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value

0	0
1	1

Categorical Variables Codings

		Frequency	Parameter coding (1)
WRTG_CTR	.00	584	1.000
	1.00	105	.000

Block 0: Beginning Block

Classification Table[a,b]

			Predicted		
			RY1		
	Observed		0	1	Percentage Correct
Step 0	RY1	0	358	0	100.0
		1	331	0	.0
	Overall Percentage				52.0

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.078	.076	1.058	1	.304	.925

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	ACT_SCORE	4.001	1	.045
		WRTG_CTR(1)	5.017	1	.025
	Overall Statistics		9.320	2	.009

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	9.371	2	.009
	Block	9.371	2	.009
	Model	9.371	2	.009

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	944.727[a]	.014	.018

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	3.825	8	.873

Contingency Table for Hosmer and Lemeshow Test

		RY1 = 0		RY1 = 1		
		Observed	Expected	Observed	Expected	Total
Step 1	1	36	38.529	28	25.471	64
	2	24	23.164	16	16.836	40
	3	49	45.310	31	34.690	80
	4	41	37.641	27	30.359	68
	5	35	38.926	37	33.074	72
	6	36	36.404	33	32.596	69
	7	28	27.273	25	25.727	53
	8	25	25.071	25	24.929	50
	9	29	32.904	39	35.096	68
	10	55	52.777	70	72.223	125

Classification Table[a]

Observed			Predicted RY1		
			0	1	Percentage Correct
Step 1	RY1	0	274	84	76.5
		1	220	111	33.5
	Overall Percentage				55.9

a. The cut value is .500

Variables in the Equation

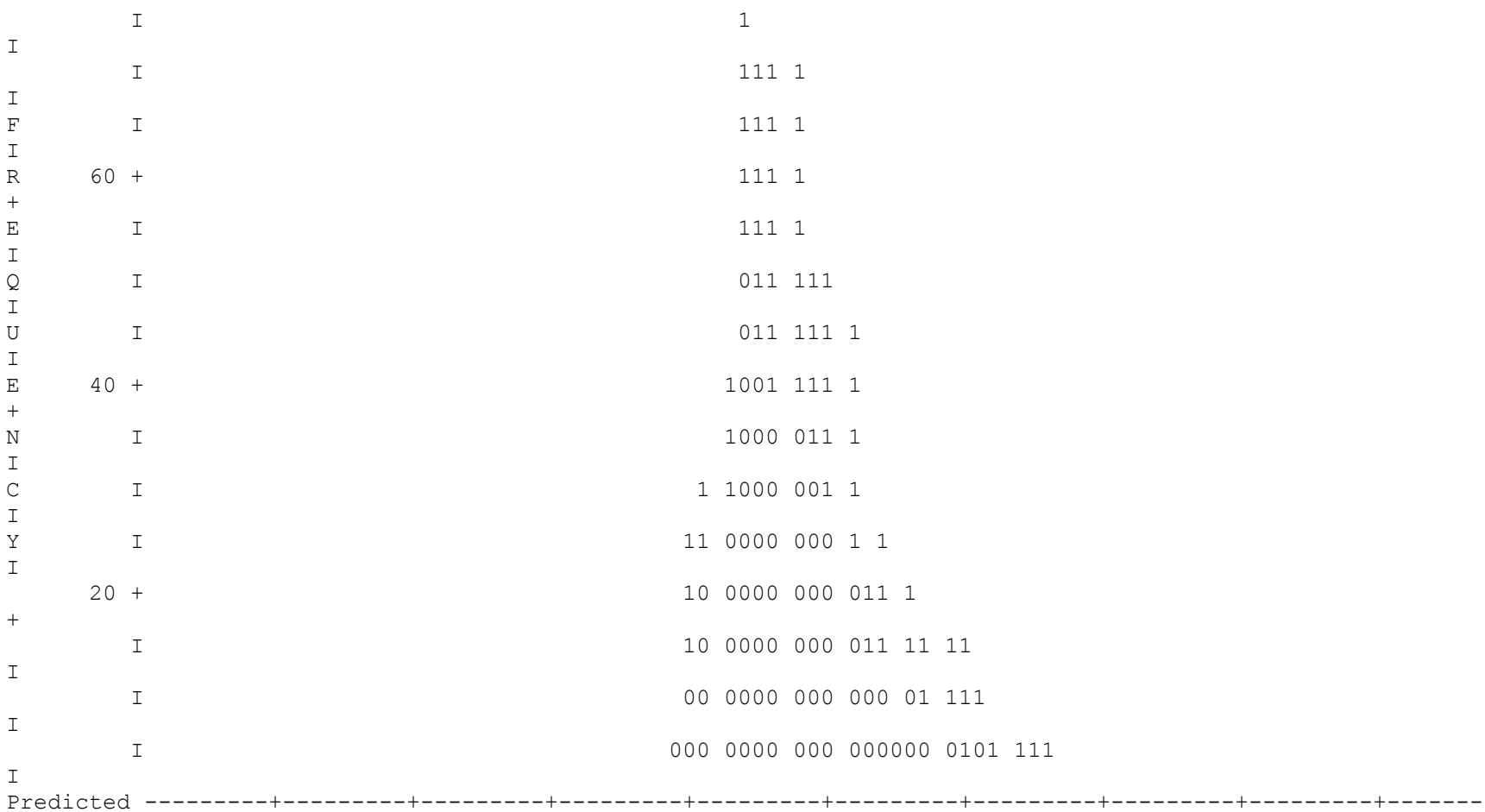
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	ACT_SCORE	.052	.025	4.310	1	.038	1.053
	WRTG_CTR(1)	-.495	.215	5.286	1	.021	.609
	Constant	-.761	.559	1.852	1	.174	.467

a. Variable(s) entered on step 1: ACT_SCORE, WRTG_CTR.

```
            Step number: 1

            Observed Groups and Predicted Probabilities

      80 +                                          1
+
```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I 10 0000 000 011 11 11
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I 00 0000 000 000 01 111
I
I 000 0000 000 000000 0101 111
I
Predicted ---------+---------+---------+---------+---------+---------+---------+---------+---------+-------
---
Prob: 0 .1 .2 .3 .4 .5 .6 .7 .8 .9
1
Group:
0000000000000000000000000000000000000000000000000000000011111111111111111111111111111111111111111111111111
Predicted Probability is of Membership for 1
The Cut Value is .50
Symbols: 0 - 0
1 - 1

```
UNIANOVA ENGLISH_GPA BY WRTG_CTR WITH ACT_SCORE
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT=DESCRIPTIVE HOMOGENEITY
  /CRITERIA=ALPHA(.05)
  /DESIGN=ACT_SCORE WRTG_CTR.
```

Univariate Analysis of Variance

Notes

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	N of Rows in Working Data File	822
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

Syntax		UNIANOVA ENGLISH_GPA BY WRTG_CTR WITH ACT_SCORE /METHOD=SSTYPE(3) /INTERCEPT=INCLUDE /PRINT=DESCRIPTIVE HOMOGENEITY /CRITERIA=ALPHA(.05) /DESIGN=ACT_SCORE WRTG_CTR.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01

Between-Subjects Factors

		N
WRTG_CTR	.00	554
	1.00	103

Descriptive Statistics

Dependent Variable: ENGLISH_GPA

WRTG_CTR	Mean	Std. Deviation	N
.00	2.506	1.4818	554
1.00	3.017	1.1501	103
Total	2.586	1.4461	657

Levene's Test of Equality of Error Variances[a]

Dependent Variable: ENGLISH_GPA

F	df1	df2	Sig.
19.408	1	655	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + ACT_SCORE + WRTG_CTR

Tests of Between-Subjects Effects

Dependent Variable: ENGLISH_GPA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	47.357[a]	2	23.679	11.692	.000
Intercept	28.634	1	28.634	14.139	.000
ACT_SCORE	24.648	1	24.648	12.171	.001
WRTG_CTR	23.987	1	23.987	11.844	.001
Error	1324.480	654	2.025		
Total	5766.480	657			
Corrected Total	1371.837	656			

a. R Squared = .035 (Adjusted R Squared = .032)

```
UNIANOVA S_TERM_GPA2 BY WRTG_CTR WITH ACT_SCORE
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT=DESCRIPTIVE HOMOGENEITY
  /CRITERIA=ALPHA(.05)
```

```
  /DESIGN=ACT_SCORE WRTG_CTR.
```

Univariate Analysis of Variance

Notes

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	N of Rows in Working Data File	822
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

Syntax		UNIANOVA S_TERM_GPA2 BY WRTG_CTR WITH ACT_SCORE /METHOD=SSTYPE(3) /INTERCEPT=INCLUDE /PRINT=DESCRIPTIVE HOMOGENEITY /CRITERIA=ALPHA(.05) /DESIGN=ACT_SCORE WRTG_CTR.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Between-Subjects Factors

		N
WRTG_CTR	.00	570
	1.00	104

Descriptive Statistics

Dependent Variable: S_TERM_GPA2

WRTG_CTR	Mean	Std. Deviation	N
.00	2.465368421000000	1.258176892000000	570
1.00	3.085865385000000	.853955514000000	104

Total	2.561112760000000	1.224870473000000	674

Levene's Test of Equality of Error Variances[a]

Dependent Variable: S_TERM_GPA2

F	df1	df2	Sig.
27.638	1	672	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + ACT_SCORE + WRTG_CTR

Tests of Between-Subjects Effects

Dependent Variable: S_TERM_GPA2

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	61.515[a]	2	30.757	21.766	.000
Intercept	27.216	1	27.216	19.260	.000
ACT_SCORE	27.651	1	27.651	19.568	.000
WRTG_CTR	35.826	1	35.826	25.353	.000
Error	948.192	671	1.413		
Total	5430.674	674			
Corrected Total	1009.707	673			

a. R Squared = .061 (Adjusted R Squared = .058)

Notes

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Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.
Syntax		T-TEST GROUPS=MATCHED_GROUP(1 2) /MISSING=ANALYSIS /VARIABLES=RY1 /CRITERIA=CI(.95).
Resources	Processor Time	00:00:00.00
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T-Test

Notes

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	N of Rows in Working Data File	106
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.
Syntax		T-TEST GROUPS=MATCHED_GROUP(1 2) /MISSING=ANALYSIS /VARIABLES=S_TERM_GPA2 /CRITERIA=CI(.95).
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Group Statistics

	MATCHED_GROUP	N	Mean	Std. Deviation	Std. Error Mean
S_TERM_GPA2	1	53	3.22188679200000	.753336314000000	.103478701000000
	2	53	2.75415094300000	1.18494796000000	.162765120000000

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. E Differe
S_TERM_GPA2	Equal variances assumed	9.703	.002	2.425	104	.017	.467735849000000	.19287386
	Equal variances not assumed			2.425	88.132	.017	.467735849000000	.19287386

```
T-TEST GROUPS=MATCHED_GROUP(1 2)
  /MISSING=ANALYSIS
  /VARIABLES=ENGLISH_GPA
  /CRITERIA=CI(.95).
```

T-Test

Notes

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	N of Rows in Working Data File	106
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.
Syntax		T-TEST GROUPS=MATCHED_GROUP(1 2) /MISSING=ANALYSIS /VARIABLES=ENGLISH_GPA /CRITERIA=CI(.95).
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Group Statistics

	MATCHED_GROUP	N	Mean	Std. Deviation	Std. Error Mean
ENGLISH_GPA	1	53	3.100	1.0643	.1462
	2	53	2.881	1.3776	.1892

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Er Differe
ENGLISH_GPA	Equal variances assumed	4.631	.034	.915	104	.362	.2189	
	Equal variances not assumed			.915	97.769	.362	.2189	

Notes

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	N of Rows in Working Data File	106

Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each table are based on all the cases with valid data in the specified range(s) for all variables in each table.
Syntax		CROSSTABS /TABLES=MATCHED_GROUP BY S_TERM_GPA2 /FORMAT=AVALUE TABLES /STATISTICS=CHISQ /CELLS=COUNT /COUNT ROUND CELL.
Resources	Processor Time	00:00:00.02
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Notes

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	N of Rows in Working Data File	106
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each table are based on all the cases with valid data in the specified range(s) for all variables in each table.
Syntax		CROSSTABS /TABLES=MATCHED_GROUP BY RY1 /FORMAT=AVALUE TABLES /STATISTICS=CHISQ /CELLS=COUNT /COUNT ROUND CELL.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01
	Dimensions Requested	2
	Cells Available	524245

```
CROSSTABS
  /TABLES=MATCHED_GROUP BY RY1
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ
  /CELLS=COUNT ROW COLUMN
  /COUNT ROUND CELL.
```

Crosstabs

Notes

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	N of Rows in Working Data File	106
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	Cases Used	Statistics for each table are based on all the cases with valid data in the specified range(s) for all variables in each table.
Syntax		CROSSTABS /TABLES=MATCHED_GROUP BY RY1 /FORMAT=AVALUE TABLES /STATISTICS=CHISQ /CELLS=COUNT ROW COLUMN /COUNT ROUND CELL.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

	Dimensions Requested	2
	Cells Available	524245

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
MATCHED_GROUP * RY1	106	100.0%	0	0.0%	106	100.0%

MATCHED_GROUP * RY1 Crosstabulation

			RY1		
			0	1	Total
MATCHED_GROUP	1	Count	20	33	53
		% within MATCHED_GROUP	37.7%	62.3%	100.0%
		% within RY1	45.5%	53.2%	50.0%
	2	Count	24	29	53
		% within MATCHED_GROUP	45.3%	54.7%	100.0%
		% within RY1	54.5%	46.8%	50.0%
Total		Count	44	62	106
		% within MATCHED_GROUP	41.5%	58.5%	100.0%
		% within RY1	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.622[a]	1	.430		
Continuity Correction[b]	.350	1	.554		
Likelihood Ratio	.622	1	.430		
Fisher's Exact Test				.555	.277
Linear-by-Linear Association	.616	1	.433		
N of Valid Cases	106				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 22.00.

b. Computed only for a 2x2 table

```
NEW FILE.
DATASET NAME DataSet2 WINDOW=FRONT.

GET DATA
  /TYPE=XLSX
  /FILE='C:\Users\D00377737\Documents\ALL New Freshman.xlsx'
  /SHEET=name 'All_New_Freshman'
  /CELLRANGE=FULL
  /READNAMES=ON
  /DATATYPEMIN PERCENTAGE=95.0
  /HIDDEN IGNORE=YES.
EXECUTE.
DATASET NAME DataSet3 WINDOW=FRONT.
ONEWAY ENGLISH_GPA BY VISITS
  /STATISTICS DESCRIPTIVES HOMOGENEITY BROWNFORSYTHE
  /MISSING ANALYSIS
  /POSTHOC=DUNNETT ALPHA(0.05).
```