

TRANSFER STUDENT ACADEMIC OUTCOMES

This Research Brief provides information regarding time to graduation and Science and Mathematics course performance among transfer students graduating within the past three academic years. Academic outcomes are compared among students transferring in to UNCG with a completed associate degree and transfer students with no prior associate degree.

RESEARCH QUESTIONS

This Research Brief examines academic outcomes for transfer students at UNCG and compares time to graduation and science and mathematics course performance among transfer students with and without an associate degree. There are three main research questions (RQ) addressed in this brief.

RQ1. *Do students who transfer with an associate degree graduate in less time than those without a prior degree?*

RQ2. *Are there statistically significant differences in time to graduation overall and by program for students with an associate degree compared to those with no prior degree?*

RQ3. *How well do transfer students perform in their first science or mathematics course? Is this moderated by completing an associate degree before transferring to UNCG?*

MAJOR FINDINGS

- About one-third of the transfer students that graduate from UNCG entered with an associate degree.

RQ1

- Average time to graduation is 3.25 years for transfer students overall.
- For students who transferred with an associate degree average time to graduation was 2.56 years.

- For students who did not transfer with a prior associate degree average time to graduation was 3.59 years.
- Overall, transfer students with no prior associate degree take just over one year longer to graduate.

RQ2

- There was a statistically significant difference in time to completion between students who transferred to UNCG with an associate degree (2.56 years) compared to those with no prior degree (3.59 years).
- There was also a statistically significant difference in time to completion by major. Nursing, Economics, and Geography majors showed the greatest difference, as those without an associate degree took at least two years longer to finish.

RQ3

- There was no statistically significant difference in course grade for transfer students with an associate degree who took a math or science course within their first year compared to transfer students with no prior degree.
- Students with a prior degree earned only a slightly higher course grade (2.52) compared to those with no prior degree (2.43).
- A little over half (51.1%) of transfer students take at least one math or science course during their first year at UNCG.
- Interestingly, 57.7% of transfer students with no prior degree take a math or science course in their first year compared to only 37.7% of those with an associate degree.

METHODOLOGY

For RQ1, transfer students were identified who graduated in the past three academic years. Within this population, transfer students with a prior associate degree were identified. The two comparison groups were thus transfer students who had completed an associate degree before coming to UNCG, and transfer students who had no prior associate degree.

To answer RQ2, the time to graduation was calculated for both categories of transfer students. Average time to graduation was then compared for transfer students who had a prior associate degree and those who did not. A two-sample independent t-test was conducted to determine if the difference was statistically significant.

To evaluate differences in time to graduation among different majors, a factorial analysis of variance (ANOVA) was conducted using a general linear regression model (GLM).

To address RQ3, the first instance of a completed science or mathematics course at UNCG was identified for each transfer student in the population. This analysis was focused on math or science courses taken within the first

year of transfer to UNCG. If a student took, for example, two math courses in their first term, an average grade was calculated for the two courses. Average course grades for those with a prior associate degree were compared to those with no prior degree.

DATA

The population for this research was UNCG's transfer students who earned a degree from UNCG within the past three academic years. The past three academic years include 2016-17, 2017-18, and 2018-19. Academic years capture degrees awarded in Summer, Fall, and Spring; i.e. the 2016-17 academic year includes Summer 2016, Fall 2016, and Spring 2017.

At the time this Brief was written, Spring 2019 graduation data was not yet available. Therefore, the 2018-19 academic year data includes Summer 2018 and Fall 2018 degrees only.

The identified population of transfer students who obtained a degree in the past three academic years was then divided into two groups; transfer students bringing in a completed associate degree, and those without prior degrees.

FIGURE 1. GRADUATING TRANSFER STUDENTS

Graduation Year	All Graduating Transfer Students	Transfer Students with Associate		Transfer Students with No Prior Associate	
	N	n	%	n	%
AY 2016-2017	1,389	427	30.7	962	69.3
AY 2017-2018	1,560	534	34.2	1,026	65.8
AY 2018-2019*	697	249	35.7	448	64.3
Three Year Trend	3,646	1,210	33.2	2,436	66.8

*Academic Year 2018-19 data was available for Summer 2018 and Fall 2018.

FIGURE 2. AVERAGE TIME TO GRADUATION FOR TRANSFER STUDENTS

	Graduation Year	All Graduating Transfer Students	Transfer Students with Associate	Transfer Students with No Prior Associate
Years to Degree	AY 2016-2017	3.25	2.56	3.56
	AY 2017-2018	3.13	2.53	3.44
	AY 2018-2019	3.49	2.64	3.96
	Three Year Trend	3.25	2.56	3.59

FINDINGS

Over the past three years, about one-third of UNCG's graduating transfer students had transferred in with a completed associate degree. **Figure 1** shows the proportion of graduating transfer students with and without a prior associate degree in each of the past three academic years and overall.

Figure 2 presents the average time to graduation for all transfer students, as well as average time to graduation for transfer students with a prior associate degree versus those with no prior associate degree. Across all transfer students, the average time to graduation was 3.25 years. For students who transferred in with a completed associate degree, the

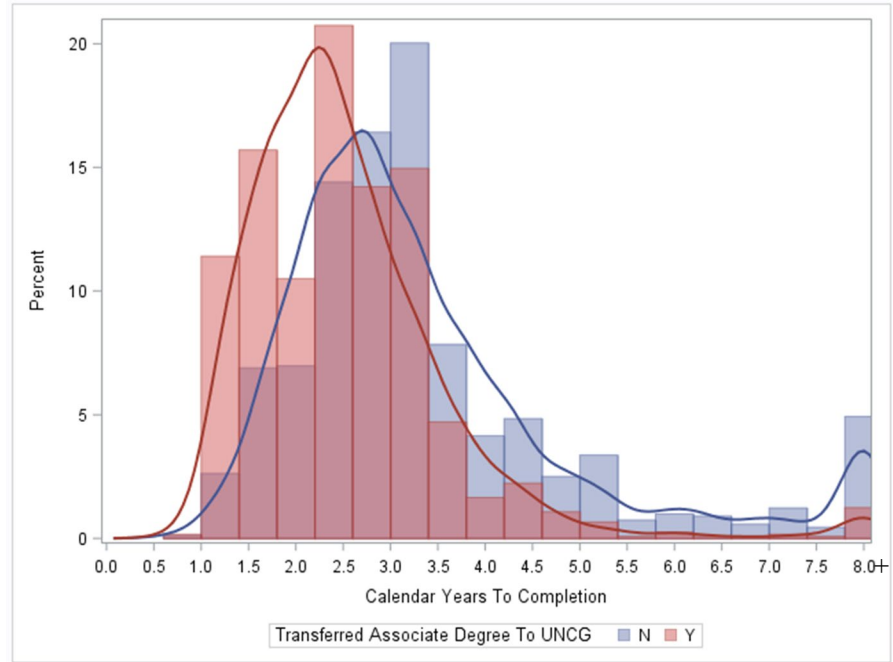
average time to graduation was just 2.56 years. The students who transferred in without a prior associate degree took on average 3.59 years to graduate. Overall, the difference in time to graduation for a transfer student with a prior associate degree versus a transfer student with no prior associate degree was just over one full year.

Figure 3 compares the percentage distribution of degrees awarded over time for transfer students entering with an associate degree versus no prior degree. Figure 3 includes histograms as well as density plots for each group. Plots for the two transfer groups are overlaid to allow for comparisons between the groups.

Students who transferred in to UNCG with a completed associate degree are represented by the color red, while those with no prior degree are represented by blue. Figure 3 shows that for students with a prior associate degree, time to graduation was clustered around 2.5 years (representing 20% of the group) and ranged between 1 and 3.5 years for the majority of this group. For students with no prior associate degree, time to graduation was clustered around 3.5 years and ranged between 1.5 and 5.5 years for the majority of this group. The density plots for the two groups intersected at 2.5 years, and the percent of transfer students taking 2.5 years or more to graduate was always greater for students with no prior associate degree.

There are some outliers in the data; a small

FIGURE 3. TIME TO GRADUATION
Transfer Students with Associate vs. No Prior Associate Degree



percentage of each transfer group took 8 years or more to complete their degree. The rightmost tail of the histogram show that taking 8 or more years to complete a degree was much more common among transfer students with no prior associate degree.

After calculating the average time to graduation for transfer students with a prior associate degree versus those with no prior degree, a two-sample independent t-test was conducted to determine if the difference was statistically significant. Results of the t-test are shown in **Figure 4**. The t-test determined that there was a statistically significant difference ($p < .0001$) in years to

FIGURE 4. EFFECTS OF PRIOR ASSOCIATE DEGREE ON YEARS TO COMPLETION

Results of t-test and Descriptive Statistics for Years to Completion by Prior Associate Degree

	Group						95% CI for Mean Difference	t	df
	Transfer Students with Prior Associate			Transfer Students with No Prior Associate					
	M	SD	N	M	SD	N			
Years to Degree	2.56	1.30	1,210	3.59	2.56	2,436	0.90, 1.15	3.87*	3,642

Note: Satterthwaite approximation employed in cases of unequal group variances.
* $p < .0001$.

There was a statistically significant difference in years to completion between students who enter UNCG with a prior associate degree compared to those with no prior associate degree. Results indicated that students with a prior degree took on average 2.56 calendar years to complete their degree compared to 3.59 calendar years for those with no prior degree, a difference of approximately one year.

FIGURE 5. EFFECTS OF PRIOR ASSOCIATE DEGREE AND MAJOR ON YEARS TO COMPLETION

*THE GLM Procedure
Dependent Variable: Years to Degree*

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	135	2,041.52345	15.12240	3.16	***<.0001
Error	3510	16,793.01006	4.78433		
Corrected Total	3645	18,834.53351			

R-Square	Coeff Var	Root MSE	Mean Years to Degree
0.108393	67.37184	2.187312	3.246626

Variable	DF	Type III SS	Mean Square	F Value	Pr > F
Major	74	551.0422610	7.4465170	1.56	**0.0018
Prior Associate Degree	1	96.4175500	96.4175500	20.15	***<.0001
Prior Associate Degree*Major	60	420.3701103	7.0061685	1.46	*0.0118

*p<.05, **p<.01, ***p<.001, α=.05

completion between students who transferred to UNCG with a completed associate degree compared to those who transferred with no prior degree.

To evaluate differences in time to graduation among different majors, a factorial analysis of variance (ANOVA)

was conducted using a general linear regression model (GLM). The dependent variable was calendar years to degree for transfer students, and the independent variables were student's major, whether a student had a prior associate degree, and the interaction of those two variables. Results of the GLM are presented in **Figure 5**.

Results show that the overall model was

statistically significant ($F=3.16$, $p<.0001$), and all independent variables were also statistically significant. Because the interaction term was statistically significant, the main effects of the two independent variables should not be individually interpreted. Focusing on the interaction term, the results show that the null hypothesis (that student's major and the occurrence of a prior associate degree do not interact) was rejected. In other words, the effect of having a prior associate degree on time to completion does vary on major.

To explore these results further, the model was expanded to examine the effect of having a prior associate degree on time to completion for each specific major. **Figure 6** shows the 13 majors that were statistically significant in this model.

Lastly, there was an interest to see if transfer students with a prior associate degree performed differently in their first math and science classes at UNCG compared to those who entered as transfers without a prior degree. To explore this question, math and science courses taken

FIGURE 6. EFFECTS OF PRIOR ASSOCIATE DEGREE AND MAJOR ON YEARS TO COMPLETION

*THE GLM Procedure
Least Squares Means
Prior Associate Degree*Major Effect Sliced by Major for Years to Degree*

Major	DF	Sum of Squares	Mean Square	F Value	Pr > F	Least Squares Means Years to Degree	
						Prior Associate Degree	No Prior Associate
Business Administration	1	115.881686	115.881686	24.22	***<.0001	2.65	3.60
Nursing	1	527.695170	527.695170	110.3	***<.0001	1.88	4.41
Spec Prog in Liberal Studies	1	67.878873	67.878873	14.19	***0.0002	2.92	4.36
Economics	1	62.903196	62.903196	13.15	***0.0003	1.96	4.42
Human Dev And Family Studies	1	43.748679	43.748679	9.14	**0.0025	2.85	4.45
Geography	1	41.841211	41.841211	8.75	**0.0031	1.68	5.05
Special Programs	1	39.478893	39.478893	8.25	**0.0041	3.04	4.87
English	1	36.062730	36.062730	7.54	**0.0061	2.16	3.59
Art	1	26.977388	26.977388	5.64	*0.0176	2.19	4.08
Sociology	1	24.666941	24.666941	5.16	*0.0232	2.42	3.57
Biology	1	23.493680	23.493680	4.91	*0.0268	2.33	3.38
Communication Studies	1	22.140769	22.140769	4.63	*0.0315	2.21	3.49
Public Health	1	20.480000	20.480000	4.28	*0.0386	2.44	4.04

*p<.05, **p<.01, ***p<.001, α=.05

during the first year after transferring to UNCG were identified for the transfer population. Final course grades were averaged across transfer student group. If a student took more than one math or science course in their first term, an average grade was calculated for the two courses. Overall average course grades for those with a prior associate degree were compared to those with no prior degree.

Figure 7 shows that a little over half (51.1%) of transfer students take at least one math or science course during their first year at UNCG. Most of the students (75.6%) taking these courses did not transfer a prior associate degree (1,407 of 1862). Also of note is that 57.7% of those with no prior degree take a math or science course in first year, while only 37.6% of those with a prior associate degree took a math or science course in their first year.

FIGURE 7. TRANSFER STUDENTS TAKING MATH OR SCIENCE COURSES IN FIRST YEAR

Took Math or Science Course in First Year	All Transfer Students		Transfer Students with Associate		Transfer Students with No Prior Associate	
	N	%	n	%	n	%
No	1,784	48.9	755	62.4	1,029	42.2
Yes	1,862	51.1	455	37.6	1,407	57.8
Total	3,646	100.0	1,210	100.0	2,436	100.0

After calculating the average course grades for transfer students with a prior associate degree versus those with no prior degree, a two-sample independent t-test was conducted to determine if the difference was statistically significant. Results of the t-test are shown in **Figure 8**. The t-test determined that there was no statistically significant difference in course grade for those who transferred to UNCG with a completed associate degree compared to those who transferred with no prior degree.

FIGURE 8. EFFECTS OF PRIOR ASSOCIATE DEGREE ON MATH AND SCIENCE COURSE GRADES

Results of t-test and Descriptive Statistics for Grade in First Math or Science Course at UNCG by Prior Associate Degree

Course Grade	Group			95% CI for Mean Difference		t	df		
	Transfer Students with Prior Associate			Transfer Students with No Prior Associate					
	M	SD	N	M	SD	n			
Course Grade	2.52	1.10	416	2.43	1.13	1,282	-0.21, 0.04	-1.36	1,696

Note: Satterthwaite approximation employed in cases of unequal group variances.

* p < .0001.

There was no statistically significant difference in earned grades for first math or science course(s) between students who enter UNCG with a prior associate degree compared to those with no prior associate degree. Results indicate that students with a prior degree earned only a slightly higher course grade (2.52) compared to those with no prior degree (2.43).

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