



UTAH SYSTEM OF
HIGHER EDUCATION

GENERAL REPORT

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Mike Palica

Utah System of Higher Education Transfer

Executive Summary

- Six cohort years' worth of degree-granting institution data were examined (academic years 2008-09 through 2013-14)
- A total of 356,491 USHE enrollment records were matched to National Student Clearinghouse enrollment records
- 68.16% of all cohort records were identified as transfer students
- In terms of race/ethnicity, the cohorts became slightly more diverse over time
- Transfer students complete a program at higher rates than non-transfer students
- A logistic regression model was run to predict the probability of program completion
 - Academic preparedness (as measured by composite ACT score) is highly associated with the probability of completing a program
 - Females were slightly more likely to complete than males
 - Students who transferred in were slightly more likely to complete than students who did not transfer in
 - Students who transferred out were more likely to complete than students who did not transfer out
 - Bachelor's degree-seeking students were more likely to complete than certificate seeking students
- A second logistic regression model was run to predict the probability of being a transfer student
 - Academic preparedness (as measured by composite ACT score) is highly associated with the probability of being a transfer student
 - 28-year-olds were more likely to be transfer students than 19-year-olds
 - White, Asian, and Non-Resident Alien students were more likely to be transfer students than students of other ethnicities
 - Utah residents were more likely to be transfer students than non-residents
- A third logistic regression was run which determined that transfer-in students who previously attended another USHE institution are more likely to complete a program than transfer-in students who only attended non-USHE institutions prior to cohort entry
- A fourth logistic regression was run which determined that transfer-out students who attend another USHE institution after initially attending their cohort institution are more likely to complete a program than transfer-out students who attended a non-USHE institution subsequent to initial cohort entry

- At cohort entry, transfer students are slightly less likely than non-transfer students to major in liberal arts and sciences, general studies, and humanities and slightly more likely to major in health professions and related programs
- At cohort entry, White students are disproportionately likely to be transfer-in students compared to all other ethnicities
- Concurrent Enrollment could be driving some of these data, but identifying these students across USHE institutions is challenging without a statewide unique student identifier
- R-squared values for both logistic regression models were low, suggesting that variables outside the scope of this study could have a sizeable effect on the probabilities of both completion and transfer
- Having a statewide student identifier for all USHE students would allow USHE to control for Concurrent Enrollment activity that is likely over-inflating the transfer-in numbers

Cohort Methodology

Undergraduate enrollment data from each degree-granting institution within USHE were pulled for six cohort years, starting with the 2008-09 academic year and ending with 2013-14. Undergraduate enrollment was defined as a student's first enrollment at an institution where the student had either:

1. A registration status of:
 - a. First-time student – undergraduate (within 12 months out of high school)
 - b. First-time student – undergraduate (not within 12 months out of high school)
 - c. Transfer-in undergraduate student
2. A declared degree intent of bachelor's degree or lower
 - a. Graduate and technical college student enrollment data were not included in the current study.

Cohort data were matched to the National Student Clearinghouse student enrollment database for several reasons. First, USHE's student data system does not include a unique statewide student identifier. Second, potential inconsistencies around the collection of student-identifying characteristics (name, birth date, etc.) across USHE institutions make a systemwide match against those fields within USHE's data system inaccurate at best. Finally, USHE's data system only includes enrollment and completion data for the 16 public institutions within the state of Utah. In contrast, NSC's data contains enrollment and completion data submitted by over 3,600 higher education institutions across the United States. Additionally, the NSC has been in the business of tracking students since their founding in 1993 and have refined their match process over time.

Due to the issues with matching students across USHE institutions, no effort was made to de-duplicate students who enrolled at multiple institutions either within a single cohort year or across cohort years. Instead, students were included in a yearly cohort if they attended that specific institution for the first time that year. For example, if a student enrolled at Salt Lake Community College in 2011-12 then transferred to the University of Utah for the 2012-13 year, they would be included in both SLCC 2011-12 and U of U 2012-13 cohorts. If that student eventually graduated from the U of U, they would be flagged as a graduate in both SLCC and U of U enrollment records. On the other hand, if a student enrolled at SLCC in both 2011-12 and 2012-13 but didn't enroll at any other institutions between 2008-09 and 2013-14, only a SLCC 2011-12 record would be included for that student.

Graduation/completion was operationalized as a binary yes/no variable. Cohort records were assigned a "yes" value if the NSC reported completion data for that student in the subsequent enrollment file. For example, if a student in the 2008-09 SLCC cohort received a degree from the University of Utah in 2011-12, they were flagged as a completer. On the other hand, if another student in the U of U's 2013-14 cohort received an award from SLCC during the 2011-12 academic year and did not receive any awards later than their U of U cohort entry, that student would not be counted as a completer. In the present study, only

completions that occurred subsequent to cohort entry resulted in a cohort record being flagged as a graduate/completer.

No attempt was made to evaluate what type of award each student received. The NSC data is returned in a non-standardized format — instead of reporting IPEDS award level codes (e.g., five for a bachelor’s degree, seven for a master’s degree, etc.), the NSC data reports an institution-specific alpha code for each award type (i.e., a Doctorate in Clinical Psychology could be reported as Ph.D., ‘Psy.D., etc. while an associate degree could be reported as A.A., A.S., A.A.S., A.P.E., etc.). Because of this issue, we did not identify specific degree types that students received in the present study.

Additionally, it was not feasible to identify students who received an associate degree prior to cohort entry (e.g., a student who enters the U of U with an associate degree from SLCC) to evaluate the impact an associate degree has on transfer and completion outcomes. If USHE’s student data system were to include a unique statewide student identifier, it would be feasible to perform this kind of match, but there would be gaps in the data wherever students received a non-USHE associate degree before transferring to a USHE institution.

A total of 356,498 unique student/institution combinations were submitted to the NSC for matching. After data were returned and cleaned, a total of 356,491 records remained. Once data were returned to USHE, demographic and program of study data were appended to the cohort files for analysis. Since these data can theoretically change (e.g., a student entered an incorrect race/ethnicity when applying but submitted correct data later, their gender could legally change, they could change their degree intent/major, etc.), a few methodological decisions were made:

- Demographic data were pulled from the end-of-term records of the student’s first enrollment at each institution. For example, if a student’s gender was listed as female for their first semester of enrollment but later changed to male, that student was labeled as female for the purposes of this study. With the exception of race/ethnicity, this methodology was applied to all other demographic variables in the present study.
- A large proportion of USHE’s records have “unknown” race/ethnicity data, so a tiered approach was taken. First, if a student had graduation/completion records on file, their race/ethnicity at the time of completion was used. Next, students who either did not have any completion records or whose race/ethnicity was unknown at completion were assigned the race/ethnicity value reported during their final term of enrollment at their cohort institution. Finally, for students who still did not have a valid race/ethnicity, the race/ethnicity value from their cohort entry enrollment term was used.
- Program data were pulled for both the student’s first and last enrollment at each institution. If their degree intent or major changed multiple times during the course of their enrollment, only the first and last major/degree intent were included for analysis.
- An attempt was made to include Pell receipt status as a proxy for low-income/economically disadvantaged status. Unfortunately, USHE did not start collecting any Pell data until the 2011-12

academic year, and the collection of this data was inconsistent for several years. Because of these issues, Pell receipt was not included in the present study.

A few additional variables were created from the NSC match data. Students who the NSC reported attended another institution prior to cohort entry were coded as “yes” in a binary *transfer-in* variable. Students who the NSC reported attended at least one other institution subsequent to cohort entry were coded as “yes” in a binary *transfer-out* variable. Finally, variables were created from the NSC match to identify whether 1) transfer-in students attended at least one other USHE institution prior to cohort entry, and 2) whether transfer-out students attended at least one other USHE institution subsequent to cohort entry.

Models Methodology

Several student demographic variables had a noticeable impact on the present study’s outcome variables (i.e., the likelihood/probability of being a transfer student and the likelihood/probability of program completion). These data are presented in a cross-tabulation format for ease of consumption, but a fundamental issue remains: what happens when multiple variables simultaneously have an impact on these outcomes? While cross-tabulations are useful for eyeballing the relationship between variables, they are not conducive to determining how much of an effect on the outcome variable is due to the other variable in the cross-tabulation and how much of the effect is due to other variables.

When multiple variables appear to have an effect on an outcome (in this case, program completion/graduation and transfer), it is most appropriate to use inferential statistics to describe the effects of each variable independent of all other variables. Logistic regression is a popular statistical method in the social sciences for predicting binary outcomes. Since program completion and transfer both have binary outcomes (e.g., the student *did* or *did not* complete a program, the student *did* or *did not* transfer), logistic regression was used to predict both program completion and transfer in the present study. All models were run in Stata 16 using the *logit* command.

Completion Models

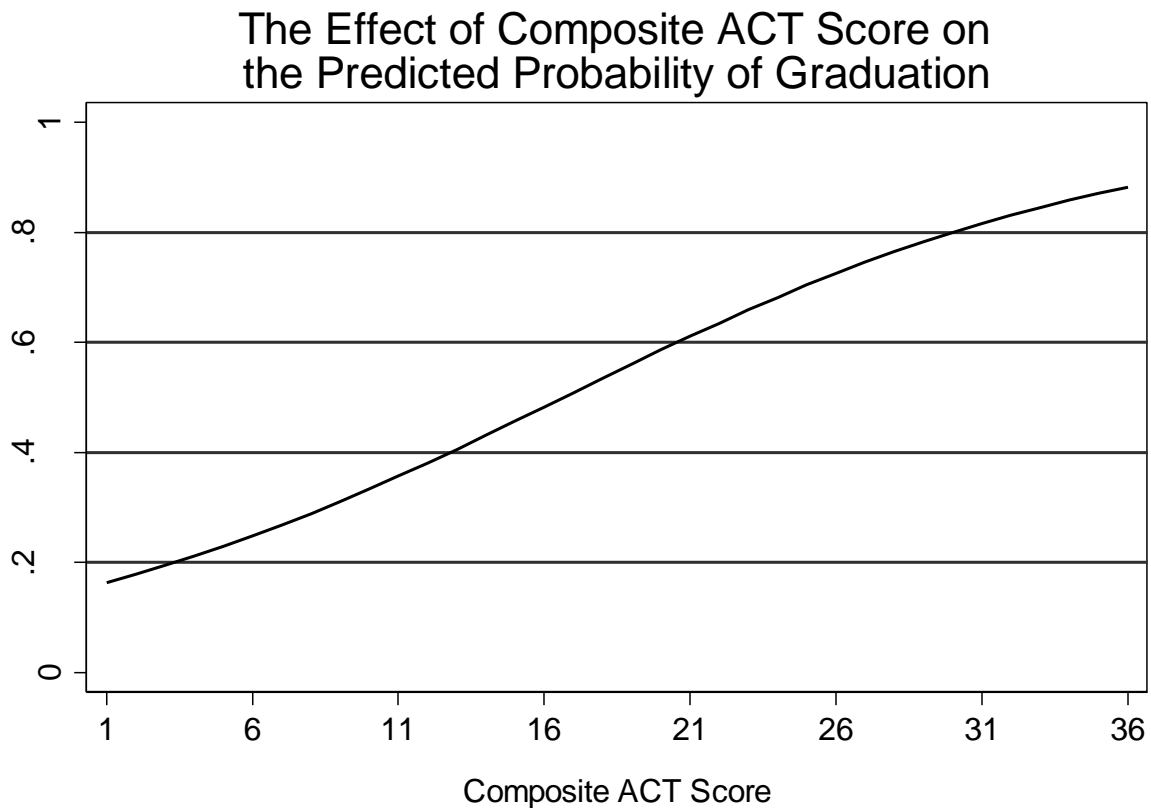
Three models were run to predict program completion. In the first model, independent variables included cohort year, first term of enrollment within the cohort year, age, gender, ethnicity (collapsed into a binary White/Asian/Non-Resident Alien vs. all other race/ethnicity categories field), composite ACT score, Utah residency status, final degree intent within the cohort institution, and critically, transfer in/out/any variables. Residency status was the only independent variable that was not significant at the $p < 0.05$ level.

Of the non-binary outcomes, composite ACT score had the x-standardized coefficient with the highest absolute value. Composite ACT score was used in the present study as a proxy for academic preparedness — the more prepared a student is prior to entering higher education, the more likely they are to eventually

complete a program. To show how composite ACT score affects program completion, the *prgen* Stata package was used to transform the output's odds ratios into predicted probabilities. In logistic regression models, the *prgen* command allows researchers to determine the probability of the dependent variable occurring given specific values for all independent variables. By default, *prgen* holds all independent variables constant at their statistical means unless a specific value is specified. This allows dependent outcome probability values to be generated for the average student across the range of one or more variables. Finally, the odds ratios that logistic regression models generate by default aren't very intuitive to lay audiences, whereas probability is extremely digestible (e.g., a predicted probability of 0 means there's a predicted 0% chance of the dependent outcome occurring, 0.5 means a predicted 50% chance, etc.).

Since composite ACT score has such a noticeable impact on completion, predicted probabilities were generated across the 1-36 score range for average students. When holding all other independent variables constant at their means, composite ACT score had a sizeable impact on the probability that a student would eventually complete a program. See Figure 1 for a graph of predicted probabilities across the range of ACT scores:

Figure 1



As you can see, when all other independent variables are held constant at their means, a composite ACT score of 1 is associated with a predicted probability of program completion/graduation of less than .2

(20%). In contrast, a composite ACT score of 36 is associated with a predicted probability of graduation of

nearly 0.9 (90%). Overall, composite ACT score was the strongest overall predictor of program completion/graduation in the model.

The second completion/graduation model was limited to students who were flagged as transfer-in. In addition to this difference, the second model differed from the first/main completion model in the following ways:

1. The binary variable indicating whether any of the institutions each student attended prior to cohort entry was also a USHE institution was added as an additional independent variable
2. The *transfer in* and *transfer any* variables were removed from the model due to estimability

The third completion/graduation model was limited to students who were flagged as transfer-out. In addition to this difference, the third model differed from the first/main completion model in the following ways:

1. The binary variable indicating whether any of the institutions each student attended *subsequent* to cohort entry was also a USHE institution was added as an additional independent variable
2. Similar to the second completion model, the *transfer out* and *transfer any* variables were removed due to estimability

Unless otherwise noted, all references to the “completion/graduation model” in this report are based on the first completions model that was not limited to transfer-in or transfer-out students.

Transfer Model

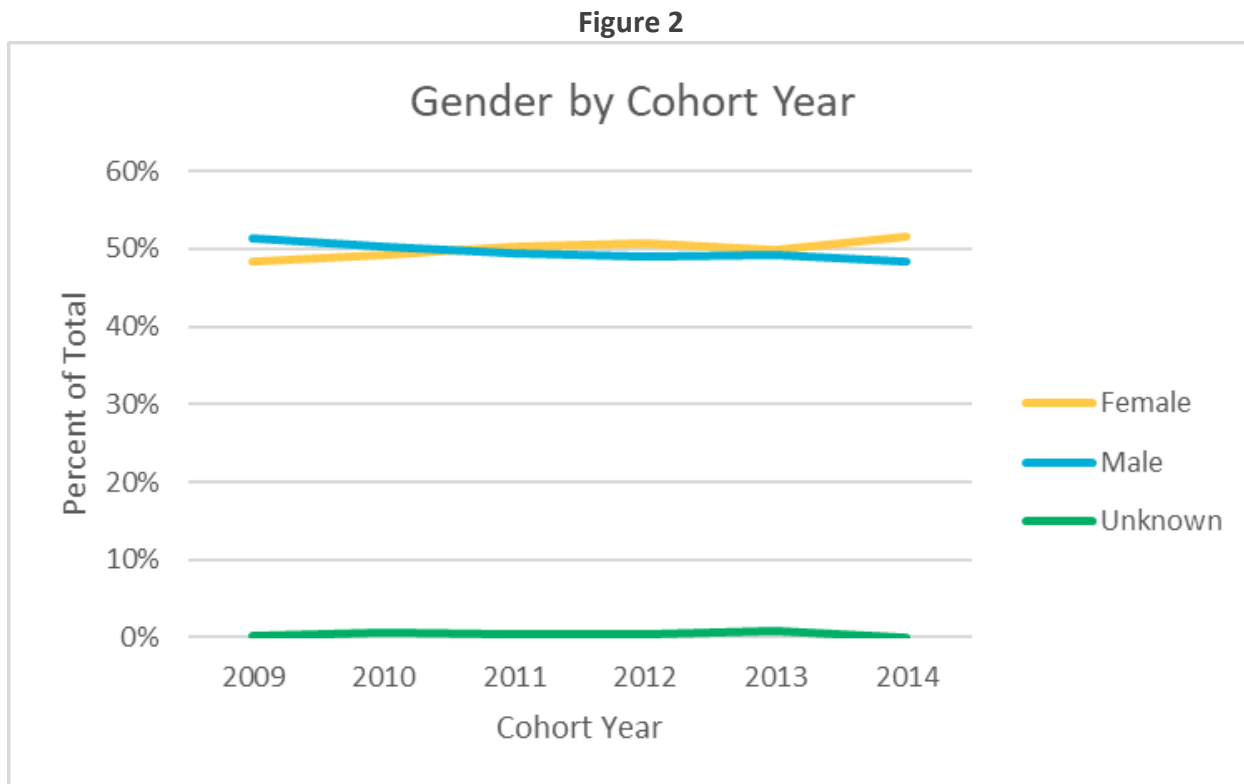
As will be shown in Figures 6 – 8, being a transfer student (compared to non-transfer students) increases the predicted probability of program completion/graduation regardless of composite ACT score. Given that this is true, an additional model was run to determine which kinds of students are most likely to transfer. Since transfer is a binary yes/no outcome (like the program completion/graduation outcome variable), logistic regression was once again utilized.

For the model predicting transfer, independent variables included cohort year, first term of enrollment within the cohort year, age, gender, ethnicity (again collapsed into a binary White/Asian/Non-Resident Alien vs. all other race/ethnicity categories field), composite ACT score, Utah residency status, and final degree intent within the cohort institution. Minus independent variables for transfer status, this model was identical to the completion model.

Demographics

Overall, there was a fairly even split between male and female students across cohort years. In total, 178,240 of the 356,491 records were female (49.99%). 176,850 of the records were male (49.61%), and the remaining 1,401 records (0.4%) were unknown. However, the gender breakdown varied across cohort years. Females comprised 48.48% of students in the 2008-09 cohort, but that figure rose to 51.53% by the

2013-14 cohort year. Figure 2 shows how the gender breakdown has shifted across the six cohort years in the present study:



The race/ethnicity breakdown remained relatively consistent across cohort years for most groups. The share of White students, however, decreased from 73.07% of all students in the 2008-09 cohort year to 64.42% in 2013-14. The relative shares of Hispanic/Latinx students and students with two or more races also increased in this time frame. However, there was also a modest increase in the number of student records with missing or unknown race/ethnicity data. This group of students increased from 10.42% of students in the 2008-09 cohort to 13.57% by 2013-14. Detailed race/ethnicity data are disaggregated by cohort year in Table 1:

Table 1 - Race/Ethnicity by Cohort Year

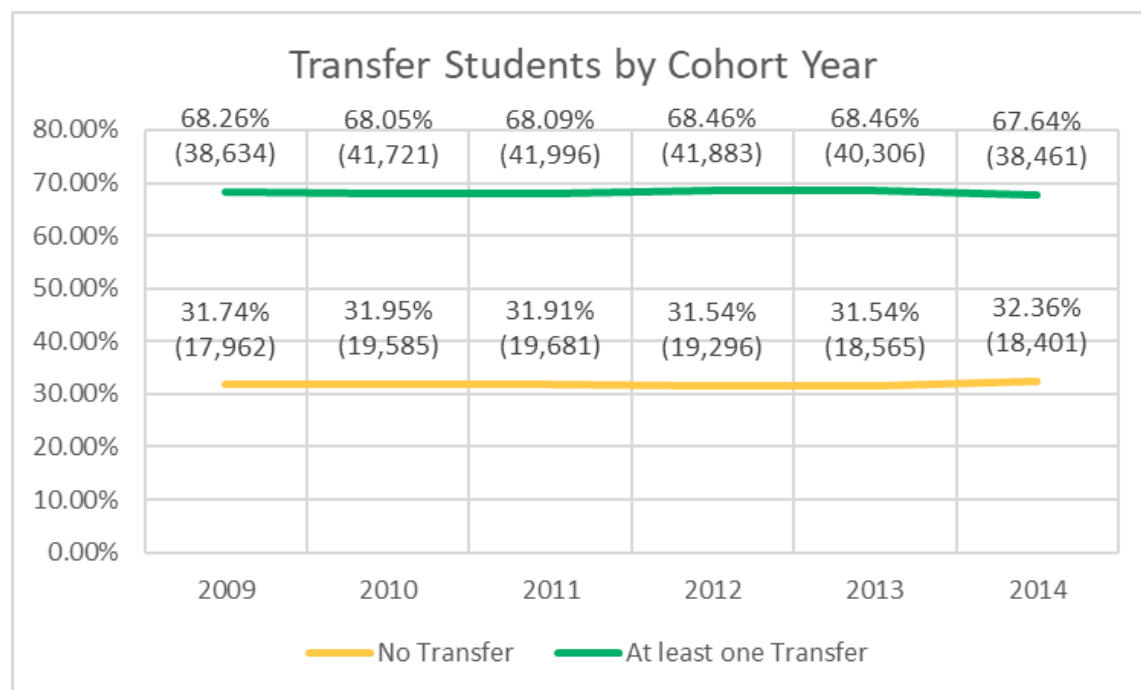
Ethnicity	Cohort Year						Grand Total
	2009	2010	2011	2012	2013	2014	
Asian	1,251 (2.21%)	1,245 (2.03%)	1,159 (1.88%)	1,198 (1.96%)	1,117 (1.90%)	1,135 (2.00%)	7,105 (1.99%)
Black or African American	823 (1.45%)	994 (1.62%)	942 (1.53%)	1,017 (1.66%)	912 (1.55%)	899 (1.58%)	5,587 (1.57%)
Hispanic or Latinx	3,725 (6.58%)	4,431 (7.23%)	5,185 (8.41%)	5,732 (9.37%)	5,854 (9.94%)	5,860 (10.31%)	30,787 (8.64%)

American Indian or Alaskan Native	768 (1.36%)	843 (1.38%)	804 (1.30%)	921 (1.51%)	684 (1.16%)	722 (1.27%)	4,724 (1.33%)
Two or more races	284 (0.50%)	400 (0.65%)	814 (1.32%)	939 (1.53%)	1,069 (1.82%)	1,087 (1.91%)	4,593 (1.29%)
Non-Resident Alien	1,921 (3.39%)	1,846 (3.01%)	1,786 (2.90%)	1,766 (2.89%)	2,080 (3.53%)	2,260 (3.97%)	11,659 (3.27%)
Native Hawaiian or Pacific Islander	567 (1.00%)	668 (1.09%)	634 (1.03%)	601 (0.98%)	585 (0.99%)	549 (0.97%)	3,604 (1.01%)
White	41,357 (73.07%)	43,720 (71.31%)	44,137 (71.56%)	41,048 (67.09%)	38,950 (66.16%)	36,633 (64.42%)	245,845 (68.96%)
Unknown/Unspecified	5,900 (10.42%)	7,159 (11.68%)	6,216 (10.08%)	7,957 (13.01%)	7,620 (12.94%)	7,717 (13.57%)	42,569 (11.94%)
Total	56,596 (100%)	61,306 (100%)	61,677 (100%)	61,179 (100%)	58,871 (100%)	56,862 (100%)	356,491 (100%)

How many students transfer at some point in their college career?

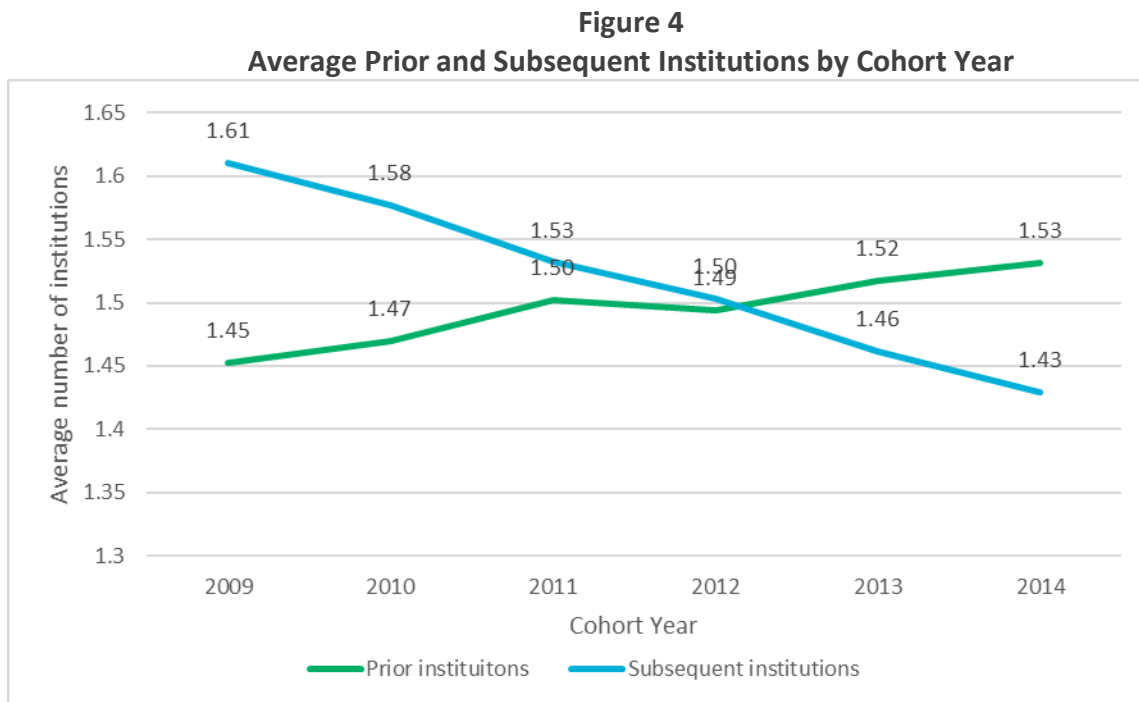
Of the 356,491 student enrollment records included in the present study, 243,001 (68.16%) returned NSC records from a different institution either prior to (transfer-in) or subsequent to (transfer-out) the USHE institution. Furthermore, there weren't any substantive differences for this figure across the six included cohort years. Figure 3 disaggregates transfer status by cohort year:

Figure 3



How many times do students transfer before completing their award?

Students who attended at least one other institution prior to enrolling at a degree-granting USHE institution for the first time attended an average of 1.45 other institutions prior to their enrollment at that USHE institution for the 2008-09 cohort. This figure steadily increased to 1.53 prior institutions on average for the 2013-14 cohort. Students who attended at least one other institution after their initial cohort entry attended an average of 1.61 other institutions after entering their cohort institution (see Figure 4). Interestingly, there appears to be an inverse relationship between these figures:



The average number of prior and subsequent institutions also varies by USHE cohort institution. Across cohort years, students enrolled at the SLCC School of Applied Technology and USU Eastern – Division of Workforce Education had the lowest average number of prior institutions (1.37 at SLCC-SAT and 1.33 at USUE-DWE), while Weber State University and the University of Utah had the highest (1.62 and 1.51, respectively). Students enrolled at USU Eastern-DWE and the U of U had the lowest average number of subsequent institutions (1.28 at USU Eastern-DWE and 1.33 at the U of U) while Snow College and Weber State University had the highest (1.54 and 1.51, respectively). Table 2 shows the average number of prior and subsequent institutions by cohort year and institution:

Table 2**Average number of Prior* and Subsequent******Institutions**

Institution	Metric	Cohort Year						Grand Total
		2009	2010	2011	2012	2013	2014	
Dixie State University	Average Prior Institutions	1.44	1.44	1.44	1.43	1.44	1.47	1.44
	Average Subsequent Institutions	1.65	1.59	1.52	1.51	1.43	1.44	1.53
Salt Lake Community College	Average Prior Institutions	1.45	1.47	1.52	1.50	1.52	1.53	1.50
	Average Subsequent Institutions	1.53	1.52	1.46	1.43	1.37	1.36	1.45
SLCC School of Applied Technology	Average Prior Institutions	1.32	1.36	1.40	1.41	1.48	1.38	1.37
	Average Subsequent Institutions	1.55	1.41	1.30	1.31	1.21	1.33	1.42
Snow College	Average Prior Institutions	1.32	1.27	1.21	1.25	1.26	1.28	1.27
	Average Subsequent Institutions	1.75	1.66	1.64	1.57	1.54	1.54	1.62
Southern Utah University	Average Prior Institutions	1.47	1.41	1.43	1.49	1.48	1.52	1.47
	Average Subsequent Institutions	1.65	1.57	1.57	1.47	1.48	1.44	1.54
University of Utah	Average Prior Institutions	1.51	1.51	1.50	1.53	1.53	1.52	1.52
	Average Subsequent Institutions	1.51	1.49	1.45	1.44	1.38	1.33	1.44
USU Eastern Division of Workforce Ed	Average Prior Institutions	1.18	1.32	1.58	1.43	1.50	1.52	1.33
	Average Subsequent Institutions	1.41	1.49	1.37	1.24	1.21	1.28	1.38
Utah State University	Average Prior Institutions	1.37	1.42	1.47	1.42	1.45	1.50	1.44
	Average Subsequent Institutions	1.53	1.52	1.52	1.47	1.45	1.42	1.48
Utah Valley University	Average Prior Institutions	1.46	1.46	1.48	1.49	1.50	1.48	1.48
	Average Subsequent Institutions	1.59	1.53	1.48	1.45	1.39	1.36	1.48
Weber State University	Average Prior Institutions	1.52	1.57	1.63	1.61	1.68	1.71	1.62
	Average Subsequent Institutions	1.73	1.71	1.65	1.63	1.58	1.52	1.63
Grand Total	Average Prior Institutions	1.45	1.47	1.50	1.49	1.52	1.53	1.50
	Average Subsequent Institutions	1.61	1.58	1.53	1.50	1.46	1.43	1.52

*Average Prior institutions is based on students with at least one prior institution (transfer-in students only)

**Average Subsequent institutions is based on students with at least one subsequent institution (transfer-out students only)

Are transfer students as likely as non-transfer students to complete an award? Do transfer students complete an award at rates similar to non-transfer students?

Transfer students are more likely to complete an award than their non-transfer counterparts. 177,020 of the 356,491 cohort records submitted to the NSC (49.66%) returned post-cohort entry completion data. Of these 177,020 records with completion data, 150,580 were from transfer students, and only 26,440 were from non-transfer students. Adjusting for the differences in sample size between transfer and non-transfer students, transfer students were nearly three times as likely as non-transfer students to complete an award post-cohort entry. Table 3A shows this disaggregated data:

Table 3A
Post-Cohort Entry Completion by Transfer Status

	Did not Complete a Program	Completed a Program	Total
Non-Transfer Students	87,050 (76.70%)	26,440 (23.30%)	113,490 (100.00%)
Transfer Students	92,421 (38.03%)	150,580 (61.97%)	243,001 (100.00%)
All Students	179,471 (50.34%)	177,020 (49.66%)	356,491 (100.00%)

While transfer students were more likely to complete an award than non-transfer students, these differences further vary across racial/ethnic groups. Across racial/ethnic groups, transferring increased the likelihood of completing a program from 23.3% to 61.97% (an increase of 38.67%). Certain groups, however, tended to benefit from transfer more than others. For example, the likelihood of Asian students completing a program increases from 25.86% to 66.98% (an increase of 41.12%) when comparing transfer students to non-transfer students. Meanwhile, the likelihood of Black students completing a program increases from 16.56% to 47.43% (a modest 30.87% increase). Table 3B disaggregates the likelihood of program completion by transfer status and race/ethnicity, and Table 3C shows how much more likely transfer students are to complete a program across race/ethnicity categories:

Table 3B
Post-Cohort Entry Completion by Transfer Status and
Ethnicity

Transfer Status	Race/Ethnicity	Did not Complete a Program	Completed a Program	Total
Non-Transfer Students	Asian	1,657 (74.15%)	578 (25.86%)	2,235 (100.00%)
	Black or African American	1,330 (83.44%)	264 (16.56%)	1,594 (100.00%)
	Hispanic or Latino	10,361 (82.76%)	2,159 (17.24%)	12,520 (100.00%)
	American Indian or Alaskan Native	2,108 (89.86%)	238 (10.14%)	2,346 (100.00%)
	Two or more races	444 (68.94%)	200 (31.06%)	644 (100.00%)
	Non-Resident Alien	7,166 (82.08%)	1,564 (17.92%)	8,730 (100.00%)
	Native Hawaiian or Pacific Islander	1,218 (88.26%)	162 (11.74%)	1,380 (100.00%)
	White	47,448 (71.44%)	18,973 (28.56%)	66,421 (100.00%)
	Unknown/ Unspecified	15,318 (86.94%)	2,302 (13.06%)	17,620 (100.00%)
	All Non-Transfer Students	87,050 (76.70%)	26,440 (23.30%)	113,490 (100.00%)
Transfer Students	Asian	1,541 (33.02%)	3,126 (66.98%)	4,667 (100.00%)
	Black or African American	2,018 (52.57%)	1,821 (47.43%)	3,839 (100.00%)
	Hispanic or Latino	7,814 (45.62%)	9,316 (54.38%)	17,130 (100.00%)
	American Indian or Alaskan Native	1,376 (56.86%)	1,044 (43.14%)	2,420 (100.00%)
	Two or more races	746 (44.67%)	924 (55.33%)	1,670 (100.00%)
	Non-Resident Alien	979 (34.75%)	1,838 (65.25%)	2,817 (100.00%)
	Native Hawaiian or Pacific Islander	1,412 (60.50%)	922 (39.50%)	2,334 (100.00%)
	White	59,437 (35.26%)	109,109 (64.74%)	168,546 (100.00%)
	Unknown/ Unspecified	17,098 (43.20%)	22,480 (56.80%)	39,578 (100.00%)
	All Transfer Students	92,421 (38.03%)	150,580 (61.97%)	243,001 (100.00%)
All Students		179,471 (50.34%)	177,020 (49.66%)	356,491 (100.00%)

Table 3C**Impact of Transfer on Program Completion by Race/Ethnicity**

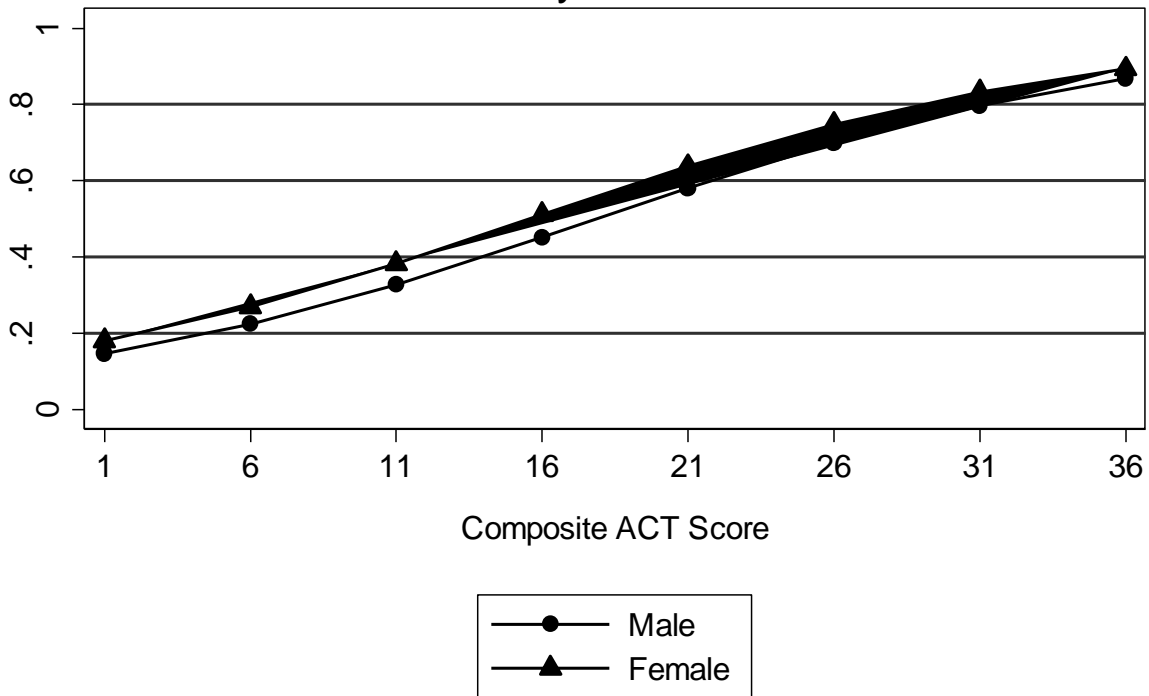
Race/Ethnicity	Completed a Program
Asian	41.12%
Black or African American	30.87%
Hispanic or Latino	37.14%
American Indian or Alaskan Native	33.00%
Two or more races	24.27%
Non-Resident Alien	47.33%
Native Hawaiian or Pacific Islander	27.76%
White	36.17%
Unknown/ Unspecified	43.73%
All Students	38.67%

Tables 3A-3C show that being a transfer student appears to have a sizeable effect on the likelihood of completing a program, and furthermore, there appear to be differences between racial/ethnic groups with regards to completion. As was noted earlier, logistic regression was utilized to control for the effects of all other variables when analyzing the effect of a single variable. Figure 1 showed that composite ACT score (as a proxy for academic preparedness) has a sizeable impact on the probability of program completion. Predicted probabilities were generated (again, across the 1-36 composite ACT score range) for several demographic and transfer variables to show the effect of those variables on program completion, independent of all other variables (by holding them constant at their means).

When controlling for all other independent variables by holding them constant at their means, gender had a small (but statistically significant, $p < 0.001$) effect on the predicted probability of graduation. This effect was noticeable across the entire range of composite ACT scores (see Figure 5):

Figure 5

The Effect of Composite ACT Score and Gender on the Predicted Probability of Graduation

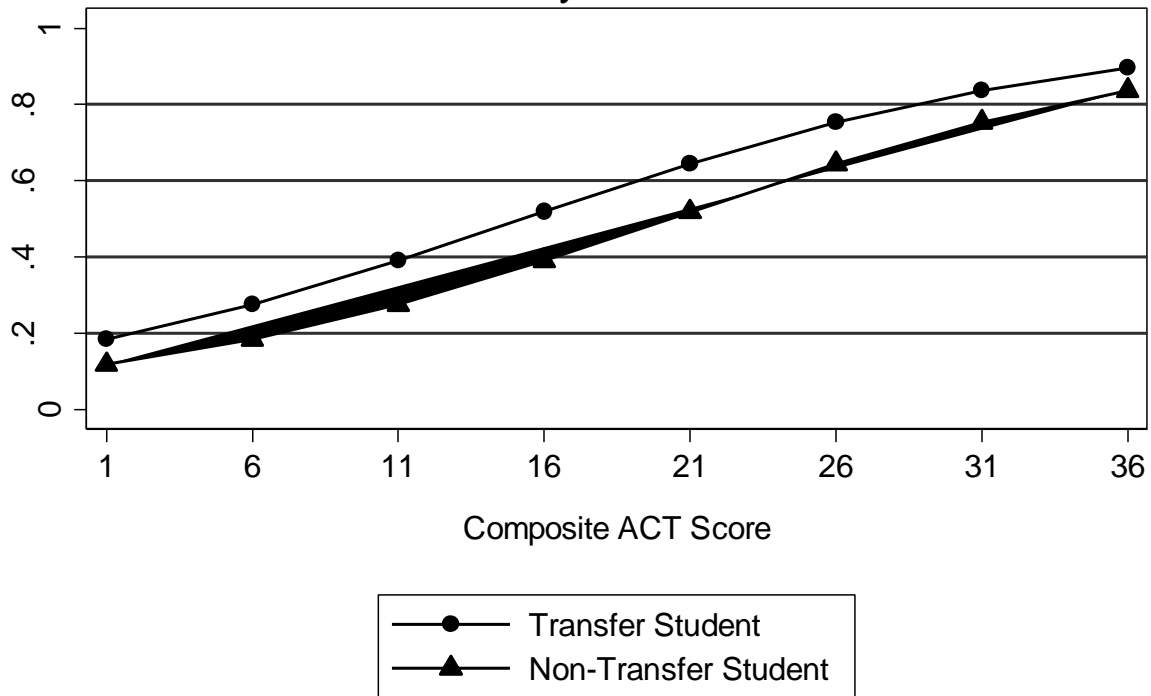


Compared to female students, male students generally had a slightly lower predicted probability of graduation/program completion regardless of composite ACT score. This effect narrows at the extremes of the ACT score scale.

Transferring (both into and out of the USHE cohort institution) also had a noticeable impact on the predicted probability of program completion/graduation. Being a transfer student (compared to students with no transfer activity) increased the predicted probability of program completion across the composite ACT score range (Figure 6):

Figure 6

The Effect of Composite ACT Score and Transfer Status on the Predicted Probability of Graduation



Like gender, transfer status has a more noticeable impact on the predicted probability of graduation in the middle of the composite ACT score range and a more muted impact at the extremes. However, transfer status has a greater effect across the entire ACT range than gender.

A similar trend is observed when transfer status is disaggregated into binary *transfer-in* and *transfer-out* variables. Transferring in is associated with a very slight increase in the predicted probability of graduation compared to students who don't transfer in (Figure 7), while transferring out is associated with a larger increase (Figure 8).

Figure 7

The Effect of Composite ACT Score and Transfer-In Status on the Predicted Probability of Graduation

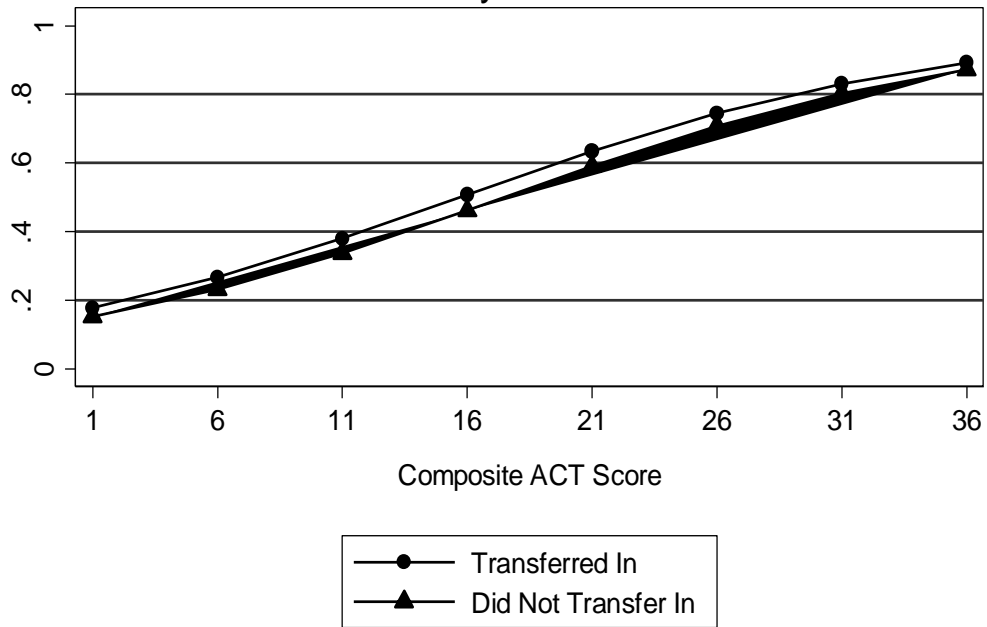
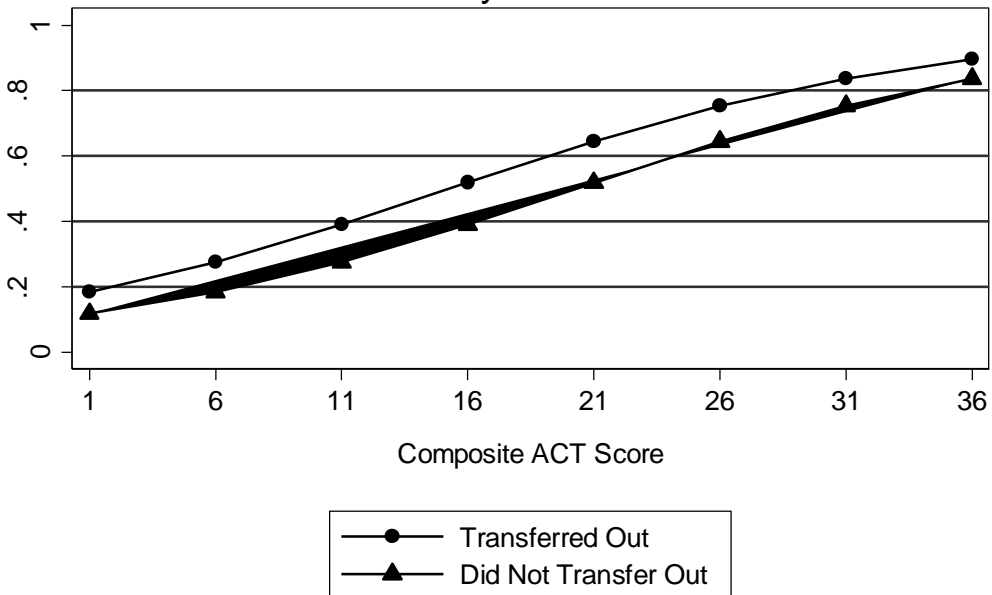


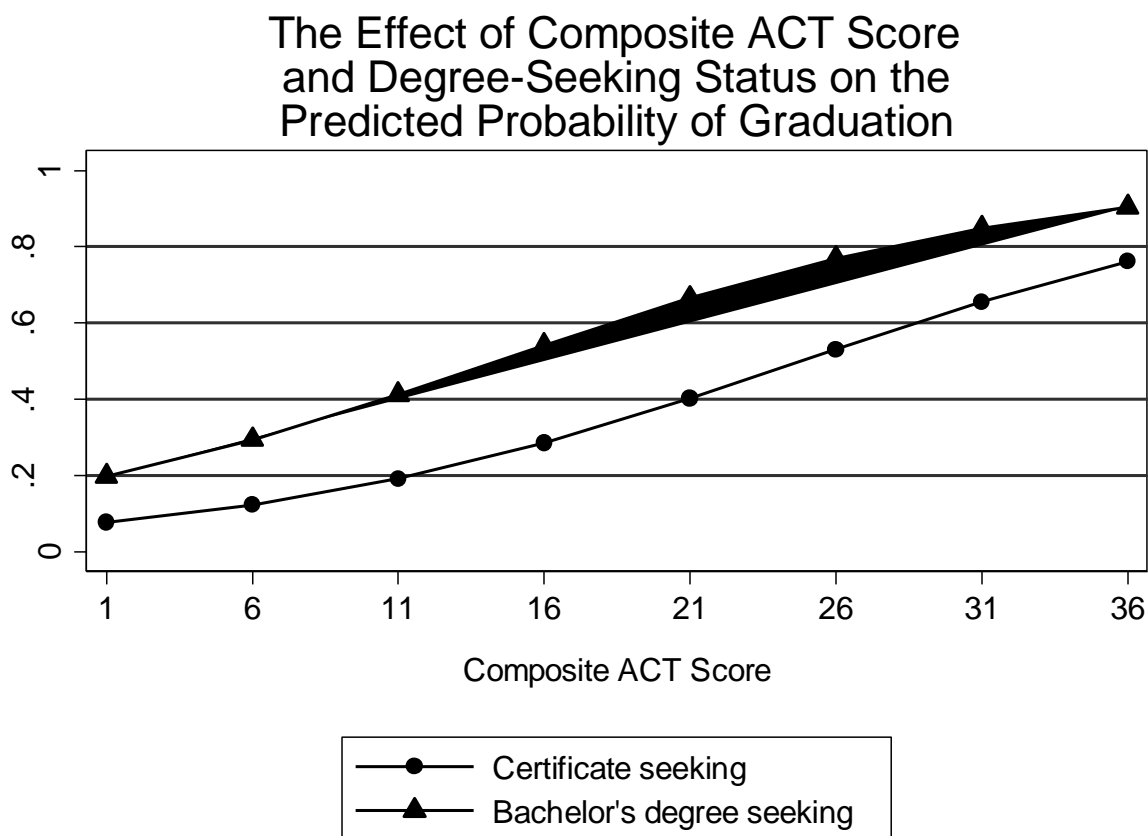
Figure 8

The Effect of Composite ACT Score and Transfer-Out Status on the Predicted Probability of Graduation



Finally, degree intent (defined as the final reported degree intent each student had within their cohort institution) has a noticeable impact on the predicted probability of program completion/graduation. The higher the award level the student sought, the higher the probability of them completing any program. To show the impact of degree intent, predicted probabilities were generated across the composite ACT range for students seeking a certificate of less than one year and for students seeking a bachelor's degree. The predicted probability of completion for both award categories is shown in Figure 9:

Figure 9



The difference between these award level categories is particularly striking. Like gender and transfer status, degree intent (for these two award categories) has an effect across the entire composite ACT score range, but this effect is more pronounced at the middle of the range. For students with a composite ACT score of 21, seeking a bachelor's degree is associated with a roughly 25% increase in the predicted probability of graduation compared to less-than-one-year certificate-seeking students.

Which students are most likely to be transfer students?

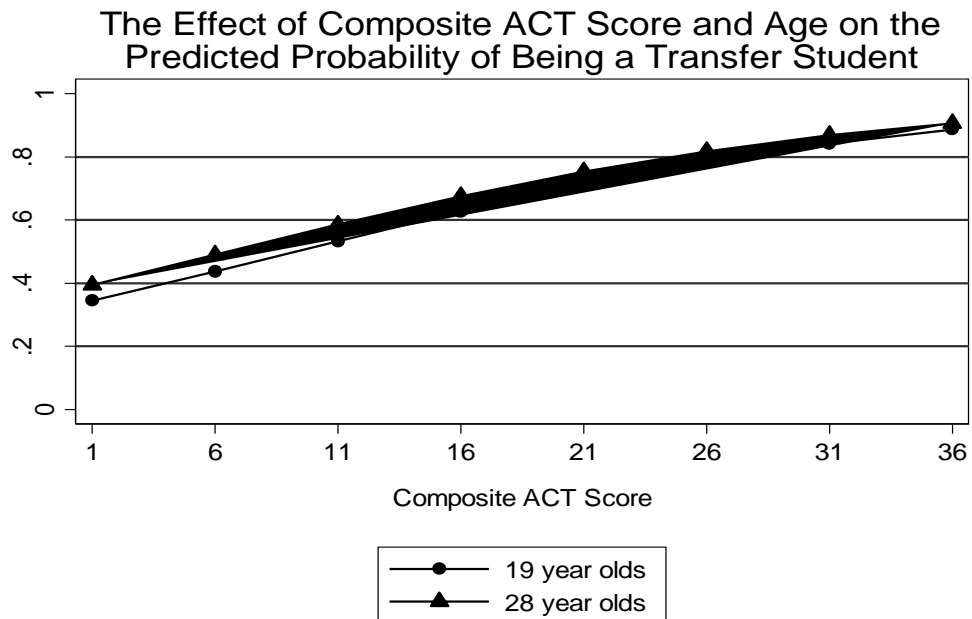
As was shown in Figures 6 – 9, being a transfer student increases the predicted probability of completing a program. This effect was present for both transfer-in and transfer-out but was more noticeable for

students who transferred out of their cohort institution. This begs the question: are some groups of students more likely to transfer than others? The logistic regression model was used to predict the probability of being a transfer student. Of the non-binary outcomes in this model, the composite ACT score again had the x-standardized coefficient with the highest absolute value. Once again, the *prgen* Stata package was used to transform the output's odds ratios into predicted probabilities across several variables.

Age had a small but noticeable impact on the predicted probability of being a transfer student. Since age is a continuous variable (more specifically, a ratio outcome in the nominal, ordinal, interval, ratio classification system), it was not practical to generate the predicted probability of being a transfer student for every age. Instead, probabilities for only two ages were generated. A mean-centered standard deviation was used to determine which ages to include. Across all cohort years in the present study, the mean age was 23.55 years, and the standard deviation was 8.87 years. The values for a mean-centered standard deviation were 19.12 and 27.99 years. These values were then rounded to 19 and 28, respectively, for simplicity.

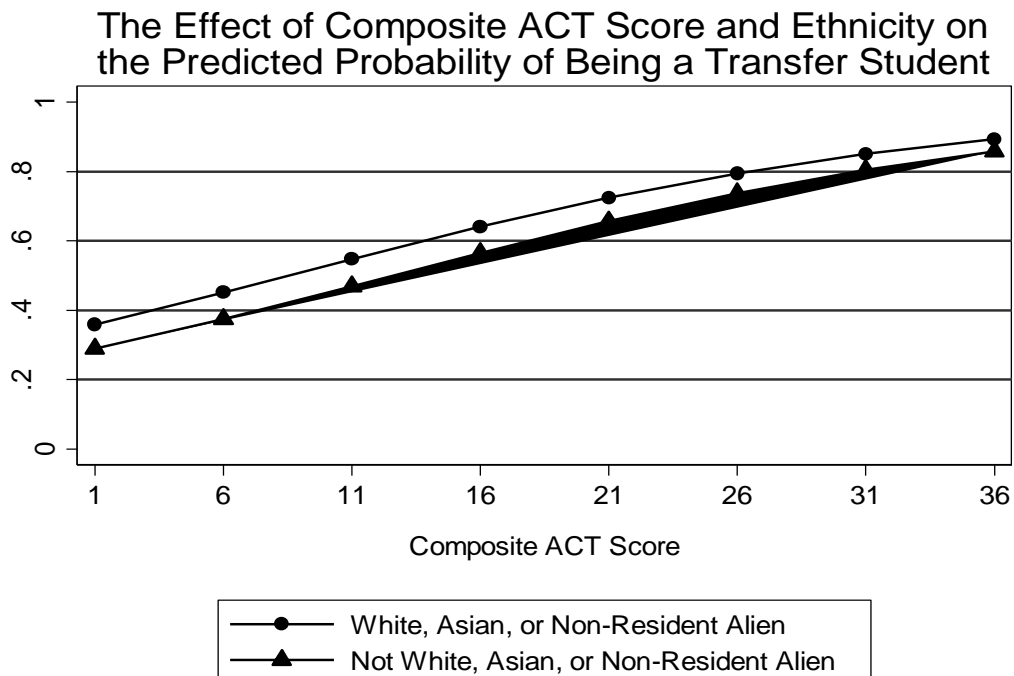
28-year-old students were more likely than 19-year-old students to be a transfer student, but this difference was small across the range of composite ACT scores. Older students, generally, have had more years to enroll (and transfer) within the higher education system. The predicted probability of being a transfer student is shown for both categories across the composite ACT score range in Figure 10:

Figure 10



Race and ethnicity had a modest impact on the predicted probability of being a transfer student. Students with a reported ethnicity of White, Asian, or Non-Resident Alien had a higher predicted probability of being a transfer student across the composite ACT score range. This advantage was present at the low end of the ACT range but tapered off toward the high end (Figure 11):

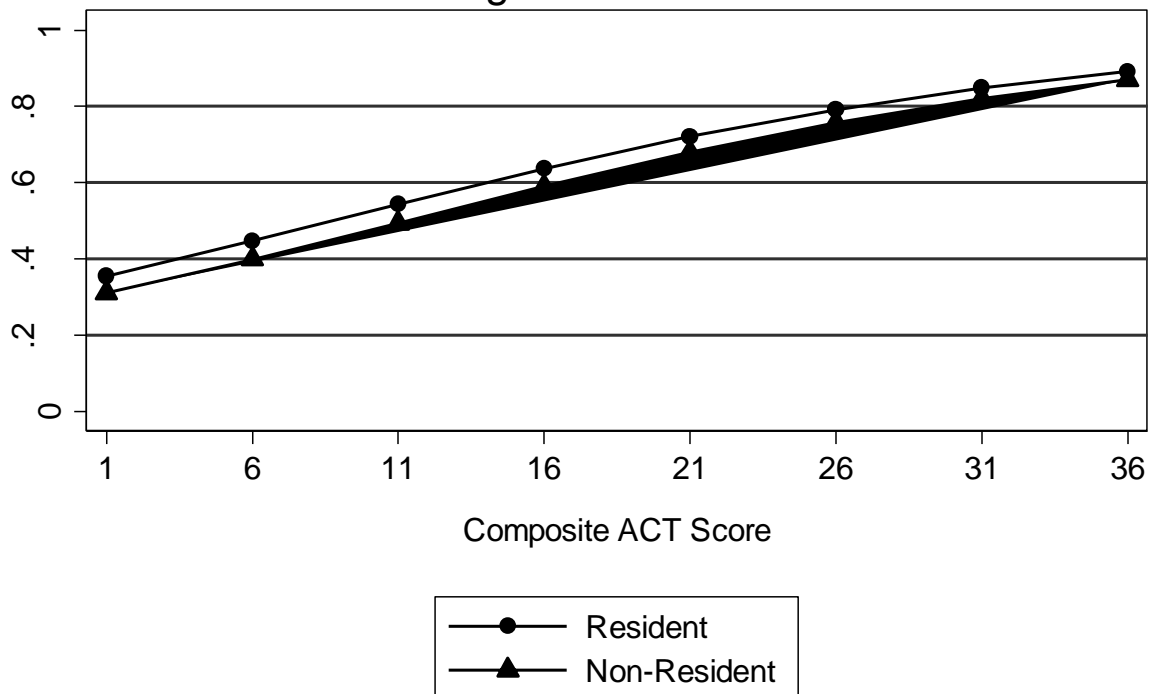
Figure 11



Finally, residency status had a small impact on the predicted probability of being a transfer student. Students who were reported as residents of the State of Utah had a slightly higher predicted probability of being transfer students compared to non-resident students. This trend was present across the composite ACT score range (Figure 12):

Figure 12

The Effect of Composite ACT Score and Residency Status on the Predicted Probability of Being a Transfer Student



Do transfer students who enter USHE from a non-USHE institution complete programs at rates comparable to students who transfer from one USHE institution to another?

Of the 356,491 cohort records included in the present study, 156,880 (44.01%) attended at least one other institution prior to their cohort institution. Of the 156,880 transfer-in students, 96,552 (61.55%) completed an award post-cohort entry. A majority of the students who transferred in did so from another USHE institution. 116,200 (74.07%) of the 156,880 transfer-in students previously attended a USHE institution, while 40,680 (25.93%) attended a non-USHE institution prior to cohort entry.

Completion outcomes differed for transfer-in students depending on whether or not one of their previous institutions was another USHE institution. 64.47% of transfer-in students who previously attended another USHE institution completed a program post-cohort entry compared to 53.18% of transfer-in

students who did not previously attend another USHE institution at any point prior to cohort entry (an 11.29% completion-rate difference). Table 4A shows the differences in program completion rates for transfer-in students by prior USHE attendance status:

Table 4A
Transfer-In Students' Post-Cohort Entry Completion by Prior USHE Attendance

	Did not Complete a Program	Completed a Program	Total
Attended a non-USHE institution prior to cohort entry	19,046 (46.82%)	21,634 (53.18%)	40,680 (100.00%)
Attended another USHE institution prior to cohort entry	41,282 (35.53%)	74,918 (64.47%)	116,200 (100.00%)
All Students	60,328 (38.45%)	96,552 (61.55%)	156,880 (100.00%)

The impact of prior USHE institution attendance has also changed over time. For transfer-in students in the 2008-09 cohort year, prior USHE institution attendance was associated with a 67.45% post-cohort entry program completion rate compared to 56.78% for transfer-in students who attended a non-USHE institution prior to cohort entry (10.67% higher rate). By the 2013-14 cohort year, the difference shrank to a 9.72% improvement (60.82% post-cohort entry program completion rate for transfer-in students with prior USHE attendance vs. 51.10% for transfer-in students without prior USHE attendance). Table 4B shows post-cohort completion rates by prior USHE attendance and cohort year, and Table 4C shows the difference prior USHE attendance has on post-cohort entry completion rates of transfer-in students by cohort year:

Table 4B**Transfer-In Students' Post-Cohort Entry Completion by Prior USHE Attendance and Cohort Year**

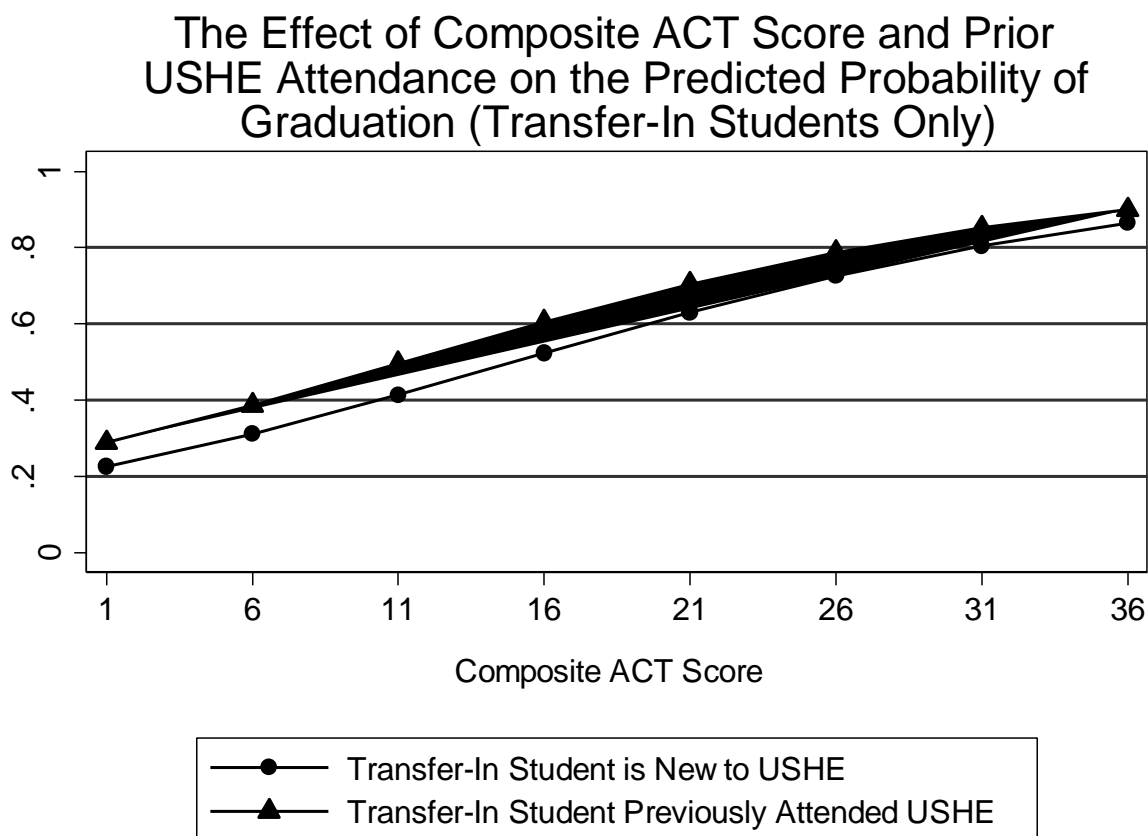
Prior USHE Attendance	Cohort Year	Did not Complete a Program	Completed a Program	Total
Attended a non-USHE institution prior to cohort entry	2009	2,510 (43.22%)	3,298 (56.78%)	5,808 (100.00%)
	2010	3,083 (45.69%)	3,664 (54.31%)	6,747 (100.00%)
	2011	3,307 (46.06%)	3,872 (53.94%)	7,179 (100.00%)
	2012	3,374 (47.49%)	3,731 (52.51%)	7,105 (100.00%)
	2013	3,386 (48.95%)	3,531 (51.05%)	6,917 (100.00%)
	2014	3,386 (48.90%)	3,538 (51.10%)	6,924 (100.00%)
	Total	19,046 (46.82%)	21,634 (53.18%)	40,680 (100.00%)
Attended another USHE institution prior to cohort entry	2009	5,987 (32.55%)	12,406 (67.45%)	18,393 (100.00%)
	2010	6,696 (34.17%)	12,898 (65.83%)	19,594 (100.00%)
	2011	6,777 (34.31%)	12,978 (65.69%)	19,755 (100.00%)
	2012	7,342 (36.11%)	12,988 (63.89%)	20,330 (100.00%)
	2013	7,275 (36.86%)	12,463 (63.14%)	19,738 (100.00%)
	2014	7,205 (39.18%)	11,185 (60.82%)	18,390 (100.00%)
	Total	41,282 (35.53%)	74,918 (64.47%)	116,200 (100.00%)
Grand Total All Students		60,328 (38.45%)	96,552 (61.55%)	156,880 (100.00%)

Table 4C**Impact of Prior USHE Institution Attendance on Transfer-In Students' Post-Cohort Entry Completion by Cohort Year**

Cohort Year	Completion-Rate Difference
2009	10.67%
2010	11.52%
2011	11.76%
2012	11.37%
2013	12.09%
2014	9.72%
Total	11.29%

Without taking cohort year into consideration, students who attended another USHE institution prior to cohort entry were 11.29% more likely to complete a program (see Table 4A). When other factors are taken into consideration using logistic regression, the impact of prior USHE attendance appears to be slightly lessened across the entire range of composite ACT scores. Figure 13 was generated using the second completions/graduation logistic regression model (limited to transfer-in students only) and shows the effect of prior non-cohort institution USHE attendance on graduation for transfer-in students:

Figure 13



As you can see, transfer-in students who attended another USHE institution prior to cohort entry were more likely to complete an award than transfer-in students who did not attend another USHE institution prior to cohort entry. However, this effect is less pronounced than a simple cross-tabulation would suggest.

Do students who transfer from USHE to a non-USHE institution complete at rates comparable to intra-USHE transfer students?

Of the 356,491 cohort records included in the present study, 171,177 (48.02%) attended at least one other institution subsequent to their cohort institution. Of these 171,177 transfer-out students, 114,756 (67.04%) completed an award post-cohort entry. A majority of the students who transferred out left for another

USHE institution. 115,676 (67.58%) of the 171,177 transfer-out students later went on to attend another USHE institution, while 55,501 (32.42%) of these transfer-out students attended a non-USHE institution at some point after cohort entry.

Completion outcomes differed slightly for transfer-out students depending on whether or not one of their subsequent institutions was another USHE institution. 68.80% of transfer-out students who went on to attend another USHE institution post-transfer completed a program post-cohort entry compared to 63.36% of transfer-out students who attended a non-USHE institution (a 5.44% completion-rate difference). Table 5A shows the differences in program completion rates for transfer-out students by subsequent USHE institution attendance status:

Table 5A
Transfer-Out Students’ Post-Cohort Entry Completion by Subsequent USHE Attendance

	Did not Complete a Program	Completed a Program	Total
Attended a non-USHE institution subsequent to cohort institution entry	20,335 (36.64%)	35,166 (63.36%)	55,501 (100.00%)
Attended another USHE institution subsequent to cohort institution entry	36,086 (31.20%)	79,590 (68.80%)	115,676 (100.00%)
All Students	56,421 (32.96%)	114,756 (67.04%)	171,177 (100.00%)

The impact of subsequent USHE institution attendance has also changed over time. For transfer-out students in the 2008-09 cohort year, subsequent USHE institution attendance was associated with a 72.51% post-cohort institution completion rate compared to 66.39% for transfer-out students who attended a non-USHE institution subsequent to their original cohort institution. (6.12% higher rate). By the 2013-14 cohort year, the difference shrank to a 3.24% improvement (62.58% post-cohort entry program completion rate for transfer-out students with subsequent USHE institution attendance vs. 59.34% for transfer-out students who attended a non-USHE institution post-transfer). Table 5B shows post-cohort completion rates by subsequent USHE institution attendance and cohort year, and Table 5C shows the difference subsequent USHE institution attendance has on post-cohort entry completion rates of transfer-out students by cohort year:

Table 5B**Transfer-Out Students' Post-Cohort Entry Completion by Subsequent USHE Attendance and Cohort Year**

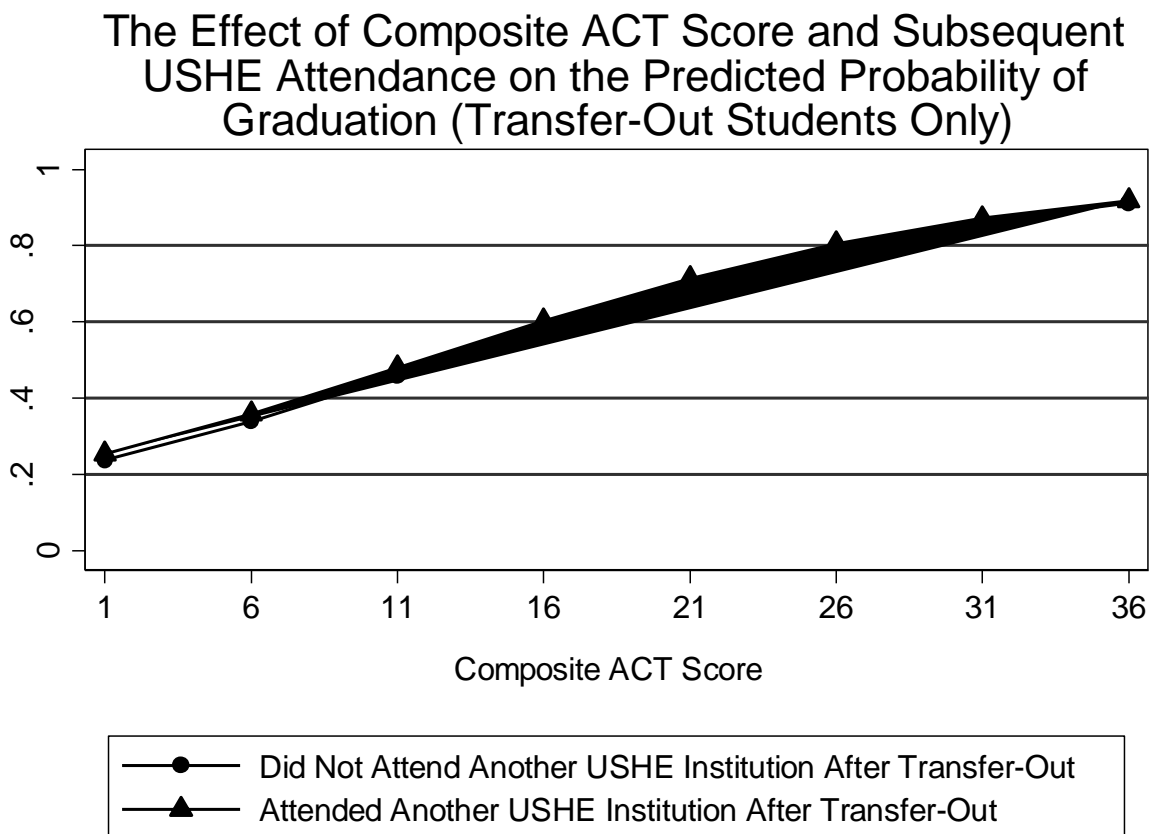
Subsequent USHE Attendance	Cohort Year	Did not Complete a Program	Completed a Program	Total
Attended a non-USHE institution subsequent to cohort institution entry	2009	3,059 (33.61%)	6,042 (66.39%)	9,101 (100.00%)
	2010	3,411 (35.14%)	6,296 (64.86%)	9,707 (100.00%)
	2011	3,503 (36.08%)	6,206 (63.92%)	9,709 (100.00%)
	2012	3,484 (36.68%)	6,015 (63.32%)	9,499 (100.00%)
	2013	3,351 (38.03%)	5,460 (61.97%)	8,811 (100.00%)
	2014	3,527 (40.66%)	5,147 (59.34%)	8,674 (100.00%)
	Total	20,335 (36.64%)	35,166 (63.36%)	55,501 (100.00%)
Attended another USHE institution subsequent to cohort institution entry	2009	5,286 (27.49%)	13,944 (72.51%)	19,230 (100.00%)
	2010	5,975 (29.27%)	14,437 (70.73%)	20,412 (100.00%)
	2011	5,885 (29.30%)	14,198 (70.70%)	20,083 (100.00%)
	2012	6,092 (31.07%)	13,517 (68.93%)	19,609 (100.00%)
	2013	6,338 (33.45%)	12,608 (66.55%)	18,946 (100.00%)
	2014	6,510 (37.42%)	10,886 (62.58%)	17,396 (100.00%)
	Total	36,086 (31.20%)	79,590 (68.80%)	115,676 (100.00%)
Grand Total (All Students)		56,421 (32.96%)	114,756 (67.04%)	171,177 (100.00%)

Table 5C**Impact of Subsequent USHE Institution Attendance on Transfer-Out Students' Post-Cohort Entry Completion by Cohort Year**

Cohort Year	Completion-Rate Difference
2009	6.12%
2010	5.87%
2011	6.78%
2012	5.61%
2013	4.58%
2014	3.24%
Total	5.44%

Without considering cohort year, students who attended another USHE institution after cohort entry were 5.44% more likely to complete a program (see Table 5A). When other factors are considered using logistic regression, the impact of prior USHE attendance appears to be significantly lessened across the entire range of composite ACT scores, particularly at the high end. Figure 14 was generated using the third completions/graduation logistic regression model (limited to transfer-out students only) and shows the effect of subsequent non-cohort institution USHE attendance on graduation for transfer-in students:

Figure 14



While a simple cross-tabulation suggested a small but noticeable effect of attending a non-cohort subsequent USHE institution on the likelihood of completion for transfer-out students, the differences are negligible when controlling for other variables.

At first glance, Figures 13 and 14 appear contradictory. Both figures show the effect of transferring from one USHE institution to another on graduation – the difference is in which type of transfer is occurring. On the one hand, Figure 13 indicates that transferring (more specifically, transferring in) from one USHE institution to another increases the predicted probability of graduation by a fair amount. On the other hand, Figure 14 indicates that transferring (more specifically, transferring out) from one USHE institution to another has a negligible impact on the predicted probability of graduation.

One potential explanation for this discrepancy is that students who transfer from one USHE institution to another might be extremely likely to complete while still enrolled at USHE and much less likely to transfer out to a non-USHE institution before completing. Given USHE institutions' efforts to align curricula (particularly around general education), this seems plausible at face value. Unfortunately, it is impossible to determine if this is the case using logistic regression. An additional variable was created using NSC data to identify which students who completed any program happened to complete a program at a USHE institution. Since only students who completed an award at any institution could be flagged as having completed an award at a USHE institution, this additional completion variable was a subset of the main completion variable. In order for logistic regression to work, the data has to include several observations that include variability in the dependent outcome across all independent variables. Independent variables that perfectly predict the dependent variable don't have this necessary variation. Since all "USHE graduates" were by definition graduates (i.e., no students who graduated from a USHE institution did not graduate from *any* institution since this is impossible), the "graduated from a USHE institution" subset of the main graduation variable only included records with a "yes" value for both graduation variables. Not having "Yes/No" or "No/Yes" combinations in the data prevented any models that attempted to predict graduation from even running. Unfortunately, this is a question that must remain unanswered due to statistical/methodological limitations.

What are the top areas of study selected by transfer students? How do they compare to those of non-transfer students?

When comparing the area of study selected by each student at cohort entry, there were small differences across transfer status. The liberal arts and sciences, general studies, and humanities CIP family (2-digit CIP) was the most popular area of study for both groups. 48.26% of all students chose this major, with 50.14% of non-transfer students and 47.41% of transfer students selecting this major (2.73% difference). Health professions and related programs was the next most popular area of study with 9.08% of all students, 6.50% of non-transfer students, and 10.24% of transfer students, followed by business, management, marketing, and related support services with 7.47% of all students, 8.17% of non-transfer students, and 7.14% of transfer students. Appendix 1 provides further detail.

The areas of study selected by students exhibited a bit more diversity by the time of their last enrollment at their cohort institution. The liberal arts and sciences, general studies, and humanities CIP family only represented 33.84% of all declared majors at final cohort institution enrollment compared to 47.41% at initial cohort institution enrollment. Further data is provided in Appendix 2.

When it comes to area of study and completions data, the NSC data includes non-USHE institutions and several areas of study not offered at any USHE institution (e.g., theology and religious vocations). The liberal arts and sciences, general studies, and humanities family of awards represented a mere 11.77% of all NSC completions data, likely due to this area of study being viewed as a "default major" for students to select if they're unsure about what they want to eventually major in. Appendix 3 provides further detail.

**How do the characteristics of transfer students compare to those of first-time students?
Has this changed over time?**

There are noticeable demographic differences between first-time students and transfer-in students. While some racial/ethnic groups are represented roughly the same across transfer status, others have major differences. For example, Asian students comprise 1.99% of all students in the present study and represent 2.02% and 1.96% of first-time students and transfer-in students, respectively. In contrast, White students comprise 68.96% of all students but represent 63.03% of first-time students and 76.30% of transfer-in students. Hispanic/Latinx students (8.64% of all students, 10.08% of first-time students, and 6.85% of transfer-in students) and Non-Resident Alien students (3.27% of all students, 5.57% of first-time students, and 0.43% of transfer-in students) are proportionally underrepresented in the transfer-in student population. Table 6A shows a race/ethnicity breakdown by Transfer-In Status:

Table 6A
Race/Ethnicity by First Time or Transfer-In

Race/Ethnicity	First-Time Students	Transfer-In Students	Total
Asian	2.02%	1.96%	1.99%
Black or African American	1.54%	1.61%	1.57%
Hispanic or Latino	10.08%	6.85%	8.64%
American Indian or Alaskan Native	1.62%	0.97%	1.33%
Two or more races	1.21%	1.39%	1.29%
Non-Resident Alien	5.57%	0.43%	3.27%
Native Hawaiian or Pacific Islander	1.09%	0.91%	1.01%
White	63.03%	76.30%	68.96%
Unknown/ Unspecified	13.84%	9.59%	11.94%
Grand Total	100.00%	100.00%	100.00%

The proportion of each racial/ethnic group that were transfer-in students has also changed over time. For example, White students represented 80.05% of all transfer-in students in the 2008-09 cohort year but 73.55% of all transfer-in students in the 2013-14 cohort year. At the same time, the proportion of first-time students who were White decreased from 67.68% of students in the 2008-09 cohort to 56.94% by 2013-14. In contrast, Hispanic/Latinx students increased their overall share of both first-time and transfer-in students. This group increased from 7.72% to 12.17% and 5.11 to 8.03% of first-time and transfer-in students (respectively) from 2008-09 to the 2013-14 cohort years. Table 6B shows this data in more detail:

Table 6B**Race/Ethnicity by Cohort Year, First Time or Transfer-In**

	2009	2010	2011	2012	2013	2014	Grand Total
First-Time Students	56.42%	56.26%	55.59%	54.49%	54.13%	54.96%	55.31%
Asian	2.32%	2.04%	2.09%	1.87%	1.81%	1.99%	2.02%
Black or African American	1.41%	1.74%	1.52%	1.60%	1.51%	1.42%	1.54%
Hispanic or Latino	7.72%	8.66%	9.91%	10.54%	11.64%	12.17%	10.08%
American Indian or Alaskan Native	1.68%	1.77%	1.76%	1.70%	1.31%	1.48%	1.62%
Two or more races	0.49%	0.57%	1.21%	1.47%	1.75%	1.79%	1.21%
Non-Resident Alien	5.64%	4.98%	4.84%	4.99%	6.22%	6.89%	5.57%
Native Hawaiian or Pacific Islander	1.11%	1.17%	1.12%	1.05%	1.10%	1.00%	1.09%
White	67.68%	66.16%	66.81%	61.15%	58.85%	56.94%	63.03%
Unknown/ Unspecified	11.94%	12.92%	10.73%	15.62%	15.79%	16.32%	13.84%
Total First Time Students	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Transfer-In Students	43.58%	43.74%	44.41%	45.51%	45.87%	45.04%	44.69%
Asian	2.06%	2.02%	1.62%	2.06%	2.00%	2.00%	1.96%
Black or African American	1.51%	1.47%	1.53%	1.74%	1.60%	1.78%	1.61%
Hispanic or Latino	5.11%	5.39%	6.52%	7.97%	7.94%	8.03%	6.85%
American Indian or Alaskan Native	0.93%	0.87%	0.74%	1.27%	0.98%	1.02%	0.97%
Two or more races	0.52%	0.75%	1.45%	1.61%	1.89%	2.07%	1.39%
Non-Resident Alien	0.49%	0.48%	0.46%	0.36%	0.36%	0.42%	0.43%
Native Hawaiian or Pacific Islander	0.87%	0.99%	0.91%	0.90%	0.86%	0.92%	0.91%
White	80.05%	77.94%	77.51%	74.21%	74.79%	73.55%	76.30%
Unknown/ Unspecified	8.46%	10.08%	9.26%	9.87%	9.58%	10.21%	9.59%
Total Transfer-In Students	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Limitations and Future Considerations

Since USHE does not assign a unique statewide student identifier to each student who enters the public higher education system (and K-12 student identifiers are inconsistently collected by the institutions and reported to USHE), it was not feasible to identify which students had participated in Concurrent Enrollment. Because of the methodology used to pull the cohorts for the present study, it is possible that a

student enrolled at institution 1 in 2010 as a Concurrent Enrollment student, then enrolled at institution 2 in 2011 as a regular student. In the 2011 cohort for institution 2, that student would be flagged as a transfer student since the NSC data has no way of identifying which enrollments were reported to them due to Concurrent Enrollment activity only.

Because of these issues, it is likely that many of the students identified as transfer students in the present study were not transfer students in the traditional sense — rather, they were flagged as transfer students as a function of their Concurrent Enrollment activity occurring prior to their regular college enrollment. This bias in the data could potentially skew the results of the completion model — if Concurrent Enrollment students are more likely to appear in the data as transfer students, but transfer students are more likely to complete a program, how much of the effect of transfer on completion is actually due to Concurrent Enrollment participation? This question is impossible to answer given the current state of the data. Were USHE to implement a statewide unique student identifier system (or even collected Utah State Board of Education’s student identifier field more consistently), it would be theoretically possible to identify which “transfer” students are flagged as transfer students solely due to Concurrent Enrollment.

Additionally, White students are over-represented within Utah’s Concurrent Enrollment program. USHE’s 2017-18 Concurrent Enrollment report (Table 7) shows the race/ethnicity distribution of Concurrent Enrollment students in 2016-17 and 2017-18:

Table 7: 2017-18 CE Student Race/Ethnicity

Race/Ethnicity	2016-17	2017-18	Net Change	Total 2017-18 USBE population
Asian	1.80%	1.93%	0.13%	1.67%
Black	0.65%	0.73%	0.08%	1.42%
Hispanic	9.49%	9.77%	0.28%	17.02%
American Indian/Native Alaskan	0.61%	0.60%	-0.01%	1.04%
Pacific Islander/Hawaiian	0.77%	0.71%	-0.06%	1.57%
White	84.46%	83.98%	-0.48%	74.60%
Two or more races	2.23%	2.27%	0.04%	2.69%

While White students represented 74.60% of all USBE students in the 2017-18 academic year, they were overrepresented in the Concurrent Enrollment population at 83.98% of Concurrent Enrollment students. The present study showed that White/Asian/non-resident alien students were more likely than students in other racial/ethnic groups to complete a program and were more likely to transfer. Given that the data frequently flags Concurrent Enrollment students as transfer students, it’s possible that the effect of race/ethnicity on both completion and transfer is smaller than indicated here (or even nonexistent). Having a unique statewide student identifier would, again, allow researchers to evaluate the effect of Concurrent Enrollment on completion and transfer, regardless of race/ethnicity.

Finally, the r-squared values for both the completion and transfer models were fairly small (0.1339 and 0.0275, respectively). Since only 13.39% of the variability in the completion outcome variable and 2.75% of the variability in the transfer outcome is explained by the variables included in each model, more data is needed better identify what causes students to complete a program and to transfer. A flag for previous Concurrent Enrollment might help, but other data — such as whether or not the student had to work while enrolled in higher education — might shed additional light.

Appendices

Appendix 1: Area of Study at Cohort Entry

CIP Family	Cip Family Title	Transfer Status			Transfer Status Difference
		No Transfer	Transferred In or Out	All Students CIP Share Total	
01	Agriculture, Agriculture Operations, and Related Sciences	0.24%	0.43%	0.37%	0.19%
03	Natural Resources and Conservation	0.09%	0.15%	0.13%	0.06%
04	Architecture and Related Services	0.15%	0.26%	0.23%	0.12%
05	Area, Ethnic, Cultural, Gender, and Group Studies	0.05%	0.07%	0.07%	0.02%
09	Communication, Journalism, and Related Programs	0.85%	1.24%	1.11%	0.39%
10	Communications Technologies/Technicians and Support Services	0.35%	0.16%	0.22%	-0.19%
11	Computer and Information Sciences and Support Services	2.63%	2.24%	2.36%	-0.39%
12	Personal and Culinary Services	1.06%	0.36%	0.58%	-0.70%
13	Education	3.47%	4.85%	4.42%	1.38%
14	Engineering	2.32%	3.01%	2.79%	0.68%
15	Engineering Technologies and Engineering-Related Fields	2.41%	1.20%	1.58%	-1.22%
16	Foreign Languages, Literatures, And Linguistics	0.28%	0.45%	0.40%	0.18%
19	Family and Consumer Sciences/Human Sciences	0.37%	0.67%	0.57%	0.30%
21	Deleted	0.08%	0.07%	0.08%	-0.01%
22	Legal Professions and Studies	0.36%	0.34%	0.35%	-0.01%

23	English Language and Literature/Letters	0.84%	1.04%	0.98%	0.20%
24	Liberal Arts and Sciences, General Studies, and Humanities	50.14%	47.41%	48.26%	-2.73%
26	Biological and Biomedical Sciences	1.29%	2.35%	2.02%	1.06%
27	Mathematics and Statistics	0.18%	0.31%	0.27%	0.13%
30	Multi/Interdisciplinary Studies	0.51%	0.51%	0.51%	0.00%
31	Parks, Recreation, Leisure, And Fitness Studies	0.46%	0.90%	0.76%	0.45%
32	Basic Skills and Developmental/Remedial Education	0.39%	0.10%	0.19%	-0.29%
36	Leisure and Recreational Activities	0.05%	0.02%	0.03%	-0.03%
38	Philosophy and Religious Studies	0.04%	0.10%	0.08%	0.06%
40	Physical Sciences	0.59%	1.06%	0.91%	0.47%
41	Science Technologies/Technicians	0.15%	0.10%	0.12%	-0.04%
42	Psychology	1.98%	2.41%	2.28%	0.44%
43	Homeland Security, Law Enforcement, Firefighting, and Related Protective Services	2.21%	1.75%	1.90%	-0.46%
44	Public Administration and Social Service Professions	0.49%	0.61%	0.57%	0.12%
45	Social Sciences	2.46%	1.61%	1.87%	-0.85%
46	Construction Trades	1.09%	0.50%	0.69%	-0.59%
47	Mechanic And Repair Technologies/Technicians	1.87%	0.58%	0.98%	-1.29%
48	Precision Production	0.57%	0.19%	0.31%	-0.38%
49	Transportation And Materials Moving	1.64%	1.58%	1.60%	-0.06%
50	Visual And Performing Arts	3.19%	3.38%	3.32%	0.20%
51	Health Professions and Related Programs	6.50%	10.24%	9.08%	3.74%

52	Business, Management, Marketing, and Related Support Services	8.17%	7.14%	7.47%	-1.03%
53	High School/Secondary Diplomas and Certificates	0.16%	0.06%	0.09%	-0.10%
54	History	0.31%	0.49%	0.43%	0.18%
60	Residency Programs	0.01%	0.03%	0.03%	0.02%
Grand Total		100.00%	100.00%	100.00%	0.00%

Appendix 2: Area of Study at Final Enrollment at Cohort Institution

CIP Family	CIP Family Title	Transfer Status			Transfer Status Difference
		No Transfer	Transferred In or Out	All Students CIP Share Total	
01	Agriculture, Agriculture Operations, and Related Sciences	0.37%	0.48%	0.44%	0.11%
03	Natural Resources and Conservation	0.20%	0.27%	0.25%	0.06%
04	Architecture and Related Services	0.17%	0.25%	0.22%	0.07%
05	Area, Ethnic, Cultural, Gender, and Group Studies	0.11%	0.13%	0.12%	0.02%
09	Communication, Journalism, and Related Programs	1.99%	2.36%	2.24%	0.36%
10	Communications Technologies/Technicians and Support Services	0.42%	0.19%	0.26%	-0.23%
11	Computer and Information Sciences and Support Services	4.25%	3.26%	3.57%	-0.99%
12	Personal and Culinary Services	1.09%	0.35%	0.58%	-0.74%
13	Education	4.26%	5.74%	5.27%	1.48%
14	Engineering	2.53%	3.20%	2.99%	0.67%
15	Engineering Technologies and Engineering-Related Fields	2.51%	1.26%	1.66%	-1.25%
16	Foreign Languages, Literatures, And Linguistics	0.50%	0.63%	0.59%	0.13%
19	Family and Consumer Sciences/Human Sciences	0.94%	1.39%	1.24%	0.44%
21	Deleted	0.02%	0.01%	0.01%	-0.01%
22	Legal Professions and Studies	0.36%	0.34%	0.35%	-0.02%
23	English Language and Literature/Letters	1.22%	1.39%	1.34%	0.17%

24	Liberal Arts and Sciences, General Studies, and Humanities	34.03%	33.75%	33.84%	-0.28%
26	Biological and Biomedical Sciences	1.70%	2.89%	2.51%	1.19%
27	Mathematics and Statistics	0.35%	0.49%	0.44%	0.14%
30	Multi/Interdisciplinary Studies	1.05%	1.05%	1.05%	0.00%
31	Parks, Recreation, Leisure, and Fitness Studies	0.91%	1.45%	1.28%	0.54%
32	Basic Skills and Developmental/Remedial Education	0.24%	0.15%	0.18%	-0.08%
36	Leisure and Recreational Activities	0.05%	0.02%	0.03%	-0.03%
38	Philosophy and Religious Studies	0.11%	0.16%	0.15%	0.06%
40	Physical Sciences	0.76%	1.26%	1.10%	0.49%
41	Science Technologies/Technicians	0.15%	0.10%	0.12%	-0.05%
42	Psychology	3.01%	3.41%	3.28%	0.40%
43	Homeland Security, Law Enforcement, Firefighting and Related Protective Services	2.86%	2.10%	2.34%	-0.76%
44	Public Administration and Social Service Professions	0.90%	1.05%	1.00%	0.15%
45	Social Sciences	3.72%	2.55%	2.92%	-1.17%
46	Construction Trades	1.28%	0.54%	0.77%	-0.74%
47	Mechanic and Repair Technologies/Technicians	1.98%	0.60%	1.03%	-1.38%
48	Precision Production	0.58%	0.19%	0.31%	-0.40%
49	Transportation and Materials Moving	1.64%	1.54%	1.57%	-0.10%
50	Visual and Performing Arts	3.91%	3.73%	3.79%	-0.18%
51	Health Professions and Related Programs	7.68%	11.50%	10.29%	3.82%
52	Business, Management, Marketing, and Related Support Services	11.55%	9.54%	10.18%	-2.02%

53	High School/Secondary Diplomas and Certificates	0.15%	0.05%	0.08%	-0.09%
54	History	0.43%	0.64%	0.58%	0.21%
60	Residency Programs	0.01%	0.01%	0.01%	0.01%
Grand Total		100.00%	100.00%	100.00%	0.00%

Appendix 3: Post-Cohort Entry Completed Program - Area of Study

CIP Family	CIP Family Title	Percent of Completions
01	Agriculture, Agriculture Operations, And Related Sciences	0.65%
03	Natural Resources and Conservation	0.41%
04	Architecture and Related Services	0.37%
05	Area, Ethnic, Cultural, Gender, and Group Studies	0.26%
09	Communication, Journalism, and Related Programs	2.20%
10	Communications Technologies/Technicians and Support Services	0.10%
11	Computer And Information Sciences and Support Services	3.13%
12	Personal And Culinary Services	0.95%
13	Education	6.53%
14	Engineering	3.40%
15	Engineering Technologies and Engineering-Related Fields	0.91%
16	Foreign Languages, Literatures, And Linguistics	0.80%
19	Family And Consumer Sciences/Human Sciences	1.67%
21	Deleted	0.00%
22	Legal Professions and Studies	1.01%
23	English Language and Literature/Letters	1.74%
24	Liberal Arts and Sciences, General Studies, and Humanities	11.77%
25	Library Science	0.14%
26	Biological and Biomedical Sciences	2.77%
27	Mathematics and Statistics	0.70%
28	Military Science, Leadership and Operational Art	0.01%

29	Military Technologies and Applied Sciences	0.05%
30	Multi/Interdisciplinary Studies	1.44%
31	Parks, Recreation, Leisure, and Fitness Studies	1.80%
34	Health-Related Knowledge and Skills	0.00%
36	Leisure and Recreational Activities	0.02%
38	Philosophy and Religious Studies	0.20%
39	Theology and Religious Vocations	0.08%
40	Physical Sciences	1.11%
41	Science Technologies/Technicians	0.13%
42	Psychology	3.96%
43	Homeland Security, Law Enforcement, Firefighting and Related Protective Services	1.94%
44	Public Administration and Social Service Professions	2.35%
45	Social Sciences	3.29%
46	Construction Trades	0.49%
47	Mechanic and Repair Technologies/Technicians	0.60%
48	Precision Production	0.40%
49	Transportation and Materials Moving	0.69%
50	Visual and Performing Arts	3.19%
51	Health Professions and Related Programs	23.62%
52	Business, Management, Marketing, and Related Support Services	14.39%
54	History	0.74%
60	Residency Programs	0.01%
Grand Total		100.00%

Appendix 4: Area of Study at Any USHE Institution First Completion				
CIP Family	CIP Family Title	Transfer Status		
		No Transfer	Transferred In or Out	All Students CIP Share Total
01	Agriculture, Agriculture Operations, and Related Sciences	0.80%	0.68%	0.70%
03	Natural Resources and Conservation	0.40%	0.40%	0.40%
04	Architecture and Related Services	0.30%	0.34%	0.34%
05	Area, Ethnic, Cultural, Gender, and Group Studies	0.19%	0.20%	0.20%
09	Communication, Journalism, and Related Programs	3.29%	3.34%	3.33%
10	Communications Technologies/Technicians and Support Services	0.29%	0.10%	0.13%
11	Computer And Information Sciences and Support Services	4.10%	2.71%	2.95%
12	Personal And Culinary Services	1.09%	0.29%	0.43%
13	Education	5.29%	5.87%	5.77%
14	Engineering	3.15%	3.94%	3.80%
15	Engineering Technologies and Engineering-Related Fields	1.12%	0.75%	0.81%
16	Foreign Languages, Literatures, And Linguistics	0.91%	0.91%	0.91%
19	Family And Consumer Sciences/Human Sciences	1.89%	2.31%	2.24%
22	Legal Professions and Studies	0.31%	0.26%	0.27%
23	English Language and Literature/Letters	1.96%	1.66%	1.72%
24	Liberal Arts and Sciences, General Studies, and Humanities	30.20%	28.44%	28.75%
26	Biological and Biomedical Sciences	1.79%	2.49%	2.37%
27	Mathematics and Statistics	0.59%	0.58%	0.58%
30	Multi/Interdisciplinary Studies	1.56%	1.53%	1.54%

31	Parks, Recreation, Leisure, and Fitness Studies	1.58%	2.27%	2.15%
36	Leisure and Recreational Activities	0.00%	0.00%	0.00%
38	Philosophy and Religious Studies	0.15%	0.21%	0.20%
40	Physical Sciences	0.79%	1.17%	1.10%
41	Science Technologies/Technicians	0.13%	0.10%	0.10%
42	Psychology	3.43%	4.15%	4.02%
43	Homeland Security, Law Enforcement, Firefighting and Related Protective Services	2.38%	1.82%	1.92%
44	Public Administration and Social Service Professions	0.69%	1.16%	1.08%
45	Social Sciences	3.84%	4.53%	4.41%
46	Construction Trades	0.40%	0.33%	0.34%
47	Mechanic and Repair Technologies/Technicians	1.64%	0.40%	0.61%
48	Precision Production	0.41%	0.10%	0.16%
49	Transportation and Materials Moving	1.04%	0.89%	0.92%
50	Visual and Performing Arts	4.90%	3.48%	3.73%
51	Health Professions and Related Programs	7.07%	11.70%	10.89%
52	Business, Management, Marketing, and Related Support Services	11.68%	10.07%	10.35%
54	History	0.67%	0.83%	0.80%
60	Residency Programs	0.00%	0.00%	0.00%
Grand Total		100.00%	100.00%	100.00%