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# The Impact of Transfer on Baccalaureate Completion



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## ABOUT THE ERDC

The research presented here uses data from the Education Research and Data Center, located in the Washington Office of Financial Management. ERDC works with partner agencies to conduct powerful analyses of learning that can help inform the decisionmaking of Washington legislators, parents, and education providers. ERDC's data system is a statewide longitudinal data system that includes de-identified data about people's preschool, educational and workforce experiences.

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## Introduction

Students who pursue post-secondary study often face choices between public or private, technical or academic, two-year or four-year institutions. Making information more easily accessible and more transparent regarding differences in student outcomes, attendance costs, financial aid, and other supports can help inform student decisions. This study advances that goal by highlighting differences between students who transfer to a 4-year institution from a 2-year institution to complete a bachelor's degree and students who directly enter a 4-year institution. The primary questions addressed by this study are: What characteristics of direct entry students facilitate successful completion of a baccalaureate degree and how are direct entry students different from transfer students on these characteristics? How do the characteristics related to degree completion for direct entry students differ from those that facilitate completion for transfer students?

## Study Sample

The sample used for this study is drawn from students enrolled during the fall quarter / semester of 2009 in any of the Washington public 2-year or 4-year institutions. To be included in the sample, students at a 2-year institution had to have transferred to a 4-year institution with 40 or more credits before earning their first baccalaureate degree. All students enrolled at a 4-year institution during the fall quarter / semester of 2009 who had not earned a baccalaureate degree previously or attended a 2-year institution for anything other than pre-college courses were included. This study is the second in a series of studies addressing aspects of the transfer process. The sample used for this study differs from that of the first study in that the fall quarter / semester used for the enrollment criterion was changed from 2006 for the first study to 2009 for the second study. This was done because data needed for the 4-year students were not available for students enrolled earlier.

All analyses conducted for the first study were performed on the new sample, and similar results were obtained. Sample demographics and distributional characteristics of the variables were also similar. There is a 17 percent overlap of students who are in both samples; in other words, 17 percent of the students in the first sample are also included in the new sample.

Table A1 provides summary statistics that describe the demographic profile of this sample. The sample is comprised predominantly of white students under the age of 20, and is fairly evenly split between males and females, with just slightly more females enrolled than males, particularly in the direct entry group. The age breakdown for the direct entry students shows that nearly all the students are under the age of 20 (98 percent), compared to just two-thirds of the transfer students (67 percent).

## Main Findings

**(1) The factors most strongly associated with graduation for direct entry students in this sample were first year cumulative GPA, total credits earned, and the percentage of credits dropped, failed, or withdrawn from.**

This finding is consistent with trends identified in the literature demonstrating that GPA measures, attendance patterns, and indicators of academic performance are associated with a higher likelihood of graduation (Gershenfeld, Hood, & Zahn, 2015; Ishitani & McKittrick, 2010; Whalen, Saunders, & Shelley, 2009). In the current study sample, higher cumulative GPAs at the end of the first quarter and the first year of enrollment for all students were associated with higher rates of graduation. First quarter GPA was, however, more strongly associated with graduation for transfer students compared to direct entry students. Table 1 presents the correlations of student performance indicators with graduation status for direct entry students versus transfer students.

Table 1: Correlations of student performance variables with graduation status, by student type.

|                         | Direct Entry | Transfer |
|-------------------------|--------------|----------|
| 1 <sup>st</sup> qtr GPA | .13          | .25      |
| 1 <sup>st</sup> Yr. GPA | .37          | .26      |
| DWF rate                | -.50         | -.29     |
| Tot Qtrs Enrolled       | .17          | .41      |
| Total Credits Earned    | .29          | .26      |

\*All correlations significant at  $p > .01$

Total number of credits earned overall and total number of quarters enrolled were also associated positively with graduation. The strength of these associations is similar for direct entry students and transfer students for total number of credits earned overall, but for total number of quarters enrolled the association is stronger for transfer students versus direct entry students.

The factor with the overall strongest association with graduation status for both student groups is the percentage of courses that were dropped, failed, or withdrawn from. The higher this rate, the less likely the student will graduate. The effect is stronger, however, for direct entry students.

In addition, disaggregation of the sample groups shows that graduating students in both groups tend to be under the age of 20 and attending full-time. Students of Asian background graduate in higher proportions than students from other race groups, and females graduate at a slightly higher rate than males. Comparison by student type on demographic characteristics and attendance patterns are presented in Figures 1-3.

Figure 1. Percent graduating by race.

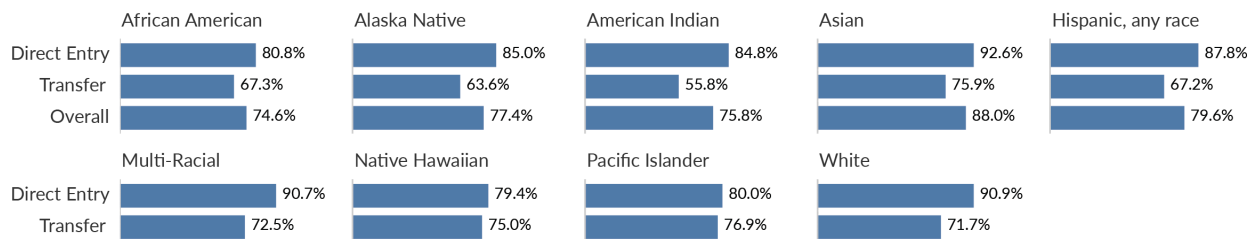


Figure 2. Percent graduating by age group.

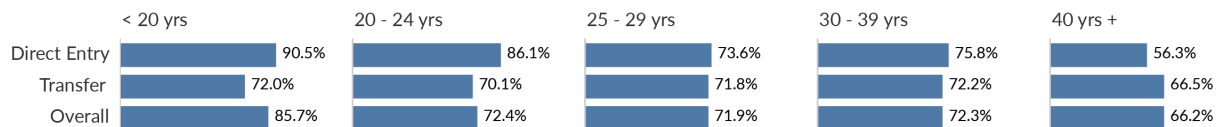
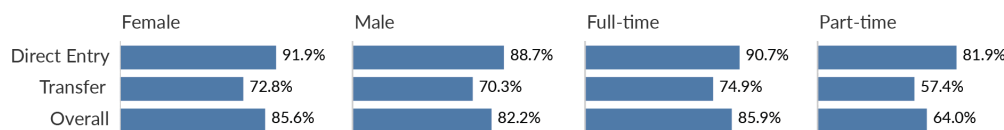


Figure 2. Percent graduating by gender and FT-PT status.



The significance of mean differences between direct entry students and transfer students on selected demographic and student performance measures are presented in Table 2.

Table 2: Mean differences of Transfer Students from Direct Entry students on student performance measures.

|                         | Direct Entry $\mu$ | Transf $\mu$ | Mean Difference | t       |
|-------------------------|--------------------|--------------|-----------------|---------|
| 1 <sup>st</sup> qtr GPA | 3.11               | 3.08         | -.04            | -4.69   |
| 1 <sup>st</sup> Yr. GPA | 3.21               | 3.13         | -.08            | -17.47  |
| DWF rate                | 5.93               | 11.58        | 5.65            | 35.20   |
| Tot Qtrs Enrolled       | 12.7               | 7.2          | -5.5            | -174.02 |
| Total Credits Earned    | 171.27             | 193.22       | 21.95           | 41.64   |

\*All results significant at  $p > .01$

**(2) Low income students in both student groups were less likely to graduate than their peers from higher economic backgrounds; graduation rates were not affected by receipt of a PELL grant. A higher percentage of transfer students than direct entry student receive some form of financial aid, and total aid amounts are higher for direct entry students than for transfer students.**

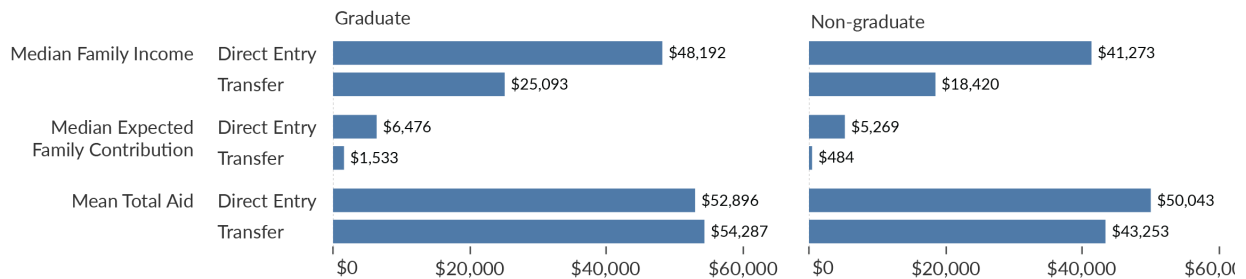
Previous research has demonstrated that students from higher SES backgrounds are more likely to graduate than lower income students, and do so with lower student loan debt (Alon, 2005; Hossler, Ziskin, Gross, Kim, & Cekic, 2009).

In the current sample, higher income students in both groups were more likely to graduate, less likely to receive a PELL grant, and received very similar levels of overall financial aid. One striking difference between the direct entry students and transfer students is the higher median family income of the direct entry students, and subsequently the higher expected family contribution in the financial aid formula. Figures 4 and 5 illustrate these profiles.

Figure 4. Percent graduating by income group.



Figure 5. Median family income, median EFC, and mean total aid of graduates vs. non-graduates.



While the overall total aid amounts received by the two student groups are similar, the percentage of grant funds versus loan funds for each group is higher for the transfer students than the direct entry students, reflecting the economic disparity between these two groups. Table 3 displays the mean levels of total loan versus grant aid levels for direct entry versus transfer students, by graduation status.

These results appear to run contrary to those reported in the literature regarding who accumulates more loan debt; students from higher socioeconomic backgrounds in the current sample tend to have higher percentages of their overall aid total attributed to loans. It is unknown whether previous researchers included in their sample those students who applied for financial aid but were either ineligible for aid, or turned down aid that was offered. For analyses in the current study regarding financial aid factors, the sample was restricted to only those students who received financial aid of any type.

Table 3: Mean grant versus loan aid for direct entry versus transfer students, by graduation status

|                | Direct Entry |            |              |            | Transfer  |            |              |            |
|----------------|--------------|------------|--------------|------------|-----------|------------|--------------|------------|
|                | Graduates    | % of Total | Non-Graduate | % of Total | Graduates | % of Total | Non-Graduate | % of Total |
| Mean Loan Aid  | 23,318       | 44         | 22,655       | 45         | 21,457    | 40         | 17,781       | 41         |
| Mean Grant Aid | 29,131       | 55         | 26,026       | 52         | 31,935    | 59         | 24,802       | 57         |
| Mean Total     | 48,192       |            | 41,273       |            | 54,287    |            | 43,253       |            |

## Pathways to Graduation

A CART analysis was conducted to explore in more detail differences between direct entry and transfer students and their progress towards a baccalaureate degree. CART stands for Classification and Regression Tree and is a non-parametric methodology that is used to determine the relative importance of variables in identifying homogenous groups in a system. The intention in the present study for this analysis is not to provide statistical probabilities of degree completion, but rather to suggest constellations of characteristics that, when taken together for a particular group of students, enhances or detracts from the likelihood a student will graduate.

While percentages are cited for the probability of graduation, these are contextual markers only, provided to lend a point of reference from which to understand the impact of a given set of characteristics. It is the differences in the patterns of importance of the relevant variables between these two types of students and the magnitude of the differences in their impact that are of the most interest.

### CART analysis variables

Based on the findings previously described, the variables used for the CART analysis were those that were found to have some level of correlation with the outcome of graduation. Variables that describe the accumulation of a student's educational journey (e.g., cumulative GPA, total quarters enrolled, total credits earned) were excluded from the analysis as these elements are naturally correlated with success (higher GPA, more quarters of enrollment and more credits earned lead to success) and are reflective of the persistence necessary to complete a degree. These variables translate to a backwards look over time, and this particular analysis aims to identify the critical turning points encountered along the path towards graduation and which events or characteristics are most influential in determining eventual completion of the baccalaureate degree.

### Direct Entry Students

The most influential variable for these students in guiding their path towards graduation is their performance in their first year of college, as reflected by their GPA. **Those students with a first year cumulative GPA of 2.54 or better** had a 93 percent likelihood of graduating with their baccalaureate degree. Students earning a GPA lower than this threshold saw their graduation probability drop to 42 percent. First year GPA showed a progressive negative influence on graduation probability as it declined, with students at or under a 2.22 GPA having an 18 percent chance of graduating, and those students under the 2.0 mark with less than a four percent likelihood of graduating.

DWF rate (drop, withdrawal, or failure) is the next most influential variable in the decision tree and appears to mediate the effect of first year GPA. Students in the higher than 2.54 first year GPA group who were able to keep their DWF rate below seven percent showed the best chances for graduation, with a low DWF rate boosting their

probability up to 96 percent. The lower GPA students also benefited from a low DWF rate in varying combinations of first year GPA level and DWF rate, with the range of probabilities extending from seven to 79 percent.

Of particular interest is the **group of students whose GPA is below 2.54, but higher than 2.22**, and who also have a DWF rate that is between 20 and 28 percent. For these students, accumulating more than 37 credits in the first year boosts their chance of graduation to 64 percent if they do not accept any financial aid; financial aid recipients in this group see a drop in their graduation probability to 55 percent if they have a total sum of aid received that is greater than \$33,723; less than this amount negatively affects the graduation probability further. This suggests there may be a threshold of spending where the receipt of financial aid becomes a benefit to students in completing their baccalaureate degree. This threshold may be different for students with different combinations of prevailing factors. Also, while total aid received appears to have an influence on outcomes, PELL eligibility does not appear as a factor.

For the higher GPA students whose DWF rate is over seven percent, credit accumulation in the first year becomes an important factor. The optimal number of credits to accumulate in that first year appears to be somewhere between 32 and 38 credits; this leads to a probability of graduation for these students of 84 percent. Race does not play a large role in the tree, but when it does come into play, the pattern that emerges reflects higher probabilities for students of Asian and African American backgrounds. White students do not appear to fare as well as these.

## CTC Transfer Students

For students who transfer in from a 2-year institution, the first variable of importance to whether they will graduate or not is the number of credits they accumulated during their first year of enrollment at the 2-year institution they began their educational journey at. **Accumulating more than 28 credits in the first year** of college enrollment gives them an 81 percent probability of completing a 4-year degree. If they do well that first year (first-year GPA greater than 3.16) and keep their DWF rate at or below six percent, they can see that probability increase to 89 percent. Being eligible for a PELL grant tempers this result to 86 percent, but not being eligible for a PELL grant increases it slightly to 92 percent.

A lower first year GPA brings the probability of graduation down to 53 percent, but this can be tempered by a first quarter GPA that is over 2.16 and first quarter credits earned of more than 14. Students in this group show a graduation probability of 85 percent if they are from a higher SES background (expected family contribution (EFC) greater than \$2477), but that probability moves to 74 percent with a lower EFC and total aid received of no more than \$19,708.

Students who have a DWF rate higher than six percent show a 72 percent probability of graduating, and that probability increases slightly to 77 percent when credits accumulated in the first year are greater than 38. This further increases if the amount of total aid received is less than \$2843 and the first year GPA is greater than 3.02. For students who have received more than \$2843 in total aid, the probability moves to 78 percent if the first quarter GPA was at least 3.45.

**Students who did not accumulate at least 28 credits in their first year** have a graduation probability of 55 percent, which increases to 64 percent if the first year GPA is above 2.66.



Further increases can be accessed by full-time students who maintain a DWF rate at or less than ten percent, and accumulate at least 19 credits in their first year, with no more than 15 of these credits earned in their first quarter. For students fitting this profile, the probability of graduation jumps to 82 percent. The probability of graduation for part-time students rests at 75 percent if they earn at least 21 credits in the first year and maintain a DWF rate at or below 5 percent.

Students earning fewer credits in their first year who earn a first-year GPA of at least 2.0 have a graduation probability of 50 percent if they earn at least ten credits in the first year. Asians in this group have a higher probability of graduation at 68 percent, and the probability for all other racial groups rests at 62 percent if they have received financial aid in an amount equal to or greater than \$33,388.

Students with lower first year GPAs, lower first-year credit accumulations, and lower amounts of aid received show graduation probabilities ranging from two to 40 percent, depending on the combination of variables involved. Age and gender did not appear to have any effect on graduation probabilities for the transfer students.

## Conclusions

The overall message illustrated by the CART analysis is that early performance indicators, e.g., first-year GPA for direct entry students and first-year credit accumulation for transfer students, appear to be the most influential set of indicators of future success. DWF rate was also shown to be an important sign of a student's potential success for both groups.

The finding that early credit accumulation seems to be more important to the success of transfer students than for direct entry students suggests there may be system-level factors at play that merit a deeper exploration. Inherent in the nature of the transfer process is the reality that the more credits that are transferred upon entrance to a 4-year institution, the fewer credits that are left to be earned in order to graduate. In contrast, direct entry students are free to focus on performance over a longer period of time towards the end goal of graduation rather than the interim goal of a certain level of credit accumulation to achieve successful transfer. A comparison of transfer students and direct entry students on measures of institutional credits earned and total enrolled quarters does not reveal any significant differences. However, comparison of GPAs for the junior year between groups (junior year is assumed to be the first year after transfer for the transfer students) does show a significant difference, with direct entry students showing a higher year-specific mean cumulative GPA (3.13 vs. 2.99). Comparison of final cumulative GPA shows this difference persists through to graduation (3.10 vs. 3.04).

While the descriptive analyses point towards the value of financial support for transfer students in completing a degree, the CART analysis provides context for additional variables and reveals an interesting facet of the impact of financial aid that warrants future investigation. For both the transfer and direct entry students, it is clear that students who come from a robust socio-economic background are most likely to experience success in multiple areas. However, if a student comes from a lower-income

family, the risk of non-completion is higher, but that risk might possibly be ameliorated by receiving a PELL grant. Due to the high numbers of PELL eligible students in the 2-year institutions, there is an association between PELL eligibility and degree completion. The boost in completion this may provide, however, is not enough to erase *all* risks of lower-income status; PELL-eligible students are still less likely to complete their degree than more affluent peers.

Further, for both transfer and direct entry students, evidence suggests there are optimal thresholds of financial investment required by the student to maintain progress and achieve degree completion, and the extent to which financial aid assists a student in meeting that level of investment is key to the impact financial aid makes. While an impoverished economic standing represents risk, the probability of graduation can be increased to levels nearly comparable to their more advantaged peers through the support offered by financial aid, *provided the aid reaches a certain threshold relative to the student's overall required investment*. This aspect of financial aid is a prime candidate for future research efforts.

Previous analyses have documented the positive effect of youth on transfer and degree completion; however, in the context of the other variables presented in the CART analysis, age displayed a lesser impact than expected. This may be due in part to the high percentage of students under the age of 20 in the sample, thus limiting variability. Other demographic variables, e.g., race and gender also did not display meaningful impacts when considered in the context of other variables.

In sum, there do not appear to be significant differences between students who transfer from 2-year institutions and direct entry students *once the transfer students have transferred*. The primary differences between these two groups of students with respect to degree completion are seen at the beginning of their educational careers. What happens for each group in the first quarter and first year is what appears to matter most. For transfer students, this is credit accumulation and DWF record; for direct entry students, this is course performance and DWF record. Policy implications for each group will differ somewhat according to these specific results.

## Appendix

### Tables

Table A1. Demographics of sample

| Race             | Transfer Students |      | Direct Entry Students |      | Totals |      |
|------------------|-------------------|------|-----------------------|------|--------|------|
|                  | #                 | %    | #                     | %    | #      | %    |
| African American | 547               | 3.8% | 653                   | 2.4% | 1200   | 2.9% |
| Alaskan Native   | 11                | 0.1% | 21                    | 0.1% | 32     | 0.1% |
| American Indian  | 120               | 0.8% | 264                   | 1.0% | 384    | 0.9% |

| Race             | Transfer Students |       | Direct Entry Students |       | Totals |       |
|------------------|-------------------|-------|-----------------------|-------|--------|-------|
|                  | #                 | %     | #                     | %     | #      | %     |
| Asian            | 1402              | 9.9%  | 3764                  | 13.7% | 5166   | 12.4% |
| Hispanic         | 1230              | 8.7%  | 1846                  | 6.7%  | 3076   | 7.4%  |
| Multi-racial     | 680               | 4.8%  | 1247                  | 4.5%  | 1927   | 4.6%  |
| Native Hawaiian  | 36                | 0.3%  | 97                    | 0.4%  | 133    | 0.3%  |
| Pacific Islander | 39                | 0.3%  | 25                    | 0.1%  | 64     | 0.2%  |
| White            | 9097              | 64.0% | 18448                 | 67.2% | 27545  | 66.1% |
| Other            | *                 | *     | *                     | *     | *      | *     |
| Not Reported     | 774               | 5.4%  | 1087                  | 4.0%  | 1861   | 4.5%  |
| Age Group        |                   |       |                       |       |        |       |
| < 20             | 9517              | 66.9% | 27009                 | 98.4% | 36526  | 87.7% |
| 20 - 24          | 1910              | 13.4% | 327                   | 1.2%  | 2237   | 5.4%  |
| 25 - 29          | 1180              | 8.3%  | 59                    | 0.2%  | 1239   | 3.0%  |
| 30 - 39          | 1063              | 7.5%  | 40                    | 0.1%  | 1103   | 2.6%  |
| 40 <             | 546               | 3.8%  | 17                    | 0.1%  | 563    | 1.4%  |
| Gender           |                   |       |                       |       |        |       |
| Male             | 6969              | 49.0% | 12766                 | 46.5% | 19735  | 47.4% |
| Female           | 7221              | 50.8% | 14682                 | 53.5% | 21903  | 52.6% |
| Unknown          | *                 | *     | *                     | *     | *      | *     |

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