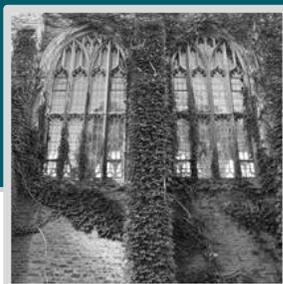


Financial Aid Leveraging Analysis

Prepared for Clarion University of Pennsylvania

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In the following report, Hanover Research examines the impact of financial aid packages on undergraduate student enrollment decisions at Clarion University at Pennsylvania. More specifically, we examine how the various components of a financial aid package impact the probability of students accepting their offer of admission. Separate analyses are carried out for first time undergraduate and transfer applicants.

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EXECUTIVE SUMMARY AND KEY FINDINGS

INTRODUCTION

In this report, Hanover Research examines the impact of financial aid packages on student enrollment decisions at Clarion University of Pennsylvania. More specifically, we investigate how financial aid offered to accepted applicants influences the probability of the student accepting an offer of admission. For this analysis, we only considered accepted applicants in 2012-13¹ who intend to earn a degree in an undergraduate program at Clarion. Since the effects of financial aid packages on freshman students (first time undergraduates) are likely different from the effect of financial aid packages on transfer students, we analyzed the two groups of applicants separately. Furthermore, for each of these types of applicants (freshman applicants and transfer applicants), we examined the effect of financial aid on students who are residents of Pennsylvania (PA) separately from those residing outside the state.

KEY FINDINGS

FRESHMAN STUDENTS

- **Among the various components of financial aid packages, the amount of subsidized loans has the strongest impact on the probability of PA residents enrolling as freshman students at Clarion.** For PA residents, a one percentage point increase in the proportion of tuition and mandatory fees covered by subsidized loans leads to an increase in the probability of student enrollment of 0.007. Subsidized loans have no statistically significant impact on the enrollment decisions of non-PA residents.
- **Unsubsidized loans have a positive impact on students' enrollment decisions, for applicants residing in PA as well as for those residing outside PA.** For students residing in PA with a reported Expected Family Contribution (EFC), the amount of unsubsidized loans has a non-linear relationship with the probability of enrollment. Unsubsidized loans may cover up to 82 percent of the tuition and mandatory fees without negatively impacting students' decision to enroll as a freshman undergraduate. Any increase in unsubsidized loans beyond that is likely to lead to a fall in the probability of the student enrolling at Clarion. For PA residents with and without reported EFC, and non-resident PA applicants, unsubsidized loan coverage has a positive but linear effect on the probability of freshman enrollment.
- **The amount of grant aid (Pell grants, SEOG grants, and PHEAA grants) has a small but significant effect on PA residents' decision to enroll at Clarion as a freshman.** However, for non-PA resident applicants, the effect is only true for those students who have a reported EFC.

¹ Students in 2013-14 were excluded due to insufficient data. Further details on this are provided in Section I.

- **An increase in EFC is associated with an increase in the probability of a student deciding to accept Clarion’s offer of admission.** For PA residents, an increase in the EFC of \$1,000 is expected to increase the probability of the student enrolling by 0.008. The impact is similar for non-resident applicants (an increase in probability of enrolling by 0.01 for a \$1,000 increase in EFC).

Table 1 below summarizes the impact of the financial aid components on freshman enrollment.

Table 1: Impact of Various Financial Aid Components on Freshman Enrollment

FINANCIAL AID COMPONENTS	ALL PA RESIDENTS	PA RESIDENTS WITH REPORTED EFC	ALL NON-PA RESIDENTS	NON-PA RESIDENTS WITH REPORTED EFC
Grant Aid	Positive and linear impact	Positive and linear impact	No effect	Positive and linear impact
Subsidized Loans	Positive and linear impact	Positive and linear impact	No effect	No effect
Unsubsidized Loans	Positive and linear impact	Positive and non-linear impact	Positive and linear impact	Positive and linear impact
EFC	-	Positive and linear impact	-	Positive and linear impact

TRANSFER STUDENTS (PA RESIDENTS ONLY)

- **For PA residents, the amount of grant aid (Pell Grants, SEOG grants, and PHEAA grants) has a positive impact on the decision to transfer to Clarion.** A one percentage point increase in the proportion of tuition and mandatory fees covered by grant aid is associated with an increase in the probability of transfer enrollment by 0.002.
- **Subsidized loans have a positive impact on accepted students’ decision to transfer to Clarion.** For all PA residents, a one percentage point increase in the proportion of tuition and mandatory fees covered by subsidized loans leads to an increase in the probability of transfer enrollment by 0.006. The effect is approximately half as strong for PA transfer applicants who have a reported EFC.
- **The amount of unsubsidized loans has a non-linear relationship with the probability of transfer enrollment for PA residents who have a reported EFC.** The probability of enrollment increases until 89 percent of the tuition and mandatory fees are covered by unsubsidized loans. Further increases in unsubsidized loans reduce the probability of transfer enrollment. For all applicants in general (with and without reported EFC), unsubsidized loans have a linear and positive impact on the probability of transfer enrollment.
- **There is no measurable impact of EFC on students’ decision to transfer to Clarion.**

Table 2 on the following page summarizes the impact of financial aid components on transfer enrollment.

Table 2: Impact of Various Financial Aid Components on Transfer Enrollment

FINANCIAL AID COMPONENTS	ALL PA RESIDENTS	PA RESIDENTS WITH REPORTED EFC
Grant Aid	Positive and linear impact	Positive and linear impact
Subsidized Loans	Positive and linear impact	Positive and linear impact
Unsubsidized Loans	Positive and linear impact	Positive and non-linear impact
EFC	-	No effect

SECTION I: METHODOLOGY

In this section, Hanover Research provides an overview of the data and methodology used to examine the impact of financial aid packages on student enrollment decisions. The datasets provided to Hanover by Clarion include demographic, academic, and financial aid information for 8,611 students who applied to a program at Clarion between 2012-13 and 2013-14. Demographic data include applicants' gender, ethnicity, state of residency, intended living arrangement, and athlete status, while academic information includes Clarion's decision on the application as well as the applicants' SAT and ACT scores and high school GPA and rank. In terms of financial aid data, the dataset includes the amount of grants, scholarships, and loans offered to students. It further includes the tuition and mandatory fees that the applicant is expected to pay. For some students, the Expected Family Contribution from the Student Aid Report is included.

REGRESSION ANALYSIS

To examine the impact of financial aid packages on the probability of enrollment, the report uses multivariate linear regression analysis. In our models, the dependent variable indicates whether or not an accepted applicant enrolled at Clarion, while demographic, academic, and financial characteristics of these applicants are included as controls. In addition to showing the impact of financial aid packages on accepted students' decision to enroll at Clarion, these models also indicate other factors that strongly predict student enrollment. Our models only take into account accepted freshman and transfer undergraduate applicants who intend to earn a degree² at Clarion.

We estimated separate models based on the type of students: freshman or transfer students. For each of these students, we also estimated separate models for students identified as PA residents and students who are not PA residents.³ The table below shows the six different types of models that we included in this analysis. Our models can be differentiated by the type of students they examine and the residency status of the student. For each of these types of models, we included two variations: one with Expected Family Contribution (EFC) and one without the EFC variable. Students who did not apply for aid do not have a reported EFC, which results in a significant number of observations being dropped when this variable is included in the analysis. Since the applicants being excluded are likely systematically different from the non-excluded students (since applicants who do not apply for financial aid are likely to be financially better off than those who do apply for aid), these exclusions have the potential to bias our estimates of the effect of financial aid on students' probability of enrollment. Thus, we decided to include both variations in our models.

² Excludes non-degree seeking applicants.

³ We could not estimate models for transfer applicants who are not PA residents due to the small number of applicants who met these criteria.

Figure 1.1: Different Types of Models

MODELS	TYPE OF STUDENTS	RESIDENCY	EXPECTED FAMILY CONTRIBUTION
Model 1	Freshman	PA	Yes
Model 2	Freshman	PA	No
Model 3	Freshman	Non-PA	Yes
Model 4	Freshman	Non-PA	No
Model 5	Transfer	PA	Yes
Model 6	Transfer	PA	No

For each of our regression models, we provide coefficient estimates, as well as an indication of which coefficients proved statistically significant. The coefficients of our models reveal how much we expect the probability of the enrollment dependent variable to change when the independent variable increases by one unit, holding all of the other independent variables in the model constant. In this context, the coefficients capture the change in the likelihood of enrolling at Clarion, depending on the model estimated.⁴

Our linear probability models account for the dichotomous nature of the dependent variable. Dichotomous variables assume one of two values; in the context of the present analysis, we assign a value of 1 to our dependent variable in cases where the student enrolls at Clarion and a value of 0 if they do not enroll. Robust standard errors (included in the results within parenthesis) were used in order to correct for heteroskedasticity. Lastly, when presenting our results, we also include the R-squared value, which reveals the percentage of variation in the dependent variable accounted for by the model.

DATA

In addition to providing us with the dataset that contains all the applications in the years 2012-13 and 2013-14, Clarion also provided us with a list of enrolled students in each of the two years. Accepted applicants who were matched in the enrolled student datasets were identified as students who chose to enroll at Clarion; others are considered as not choosing to enroll at Clarion. For each of these enrolled and not enrolled students, our dataset included demographic, academic, and financial aid information.

DEPENDENT (OUTCOME) VARIABLE

As discussed previously, our dependent variable indicates whether an accepted applicant enrolled at Clarion. In the tables below, we provide descriptive statistics on our dependent variables. Figure 1.2 shows that Clarion had 1,357 and 1,393 incoming new undergraduate students (including only freshman and transfer students) in 2012 and 2013 respectively. In total, 2,750 students were identified as enrolled students, and 1,600 accepted applicants chose not to enroll at Clarion. Irregularities identified within these students were dropped

⁴ For SAT scores, our model shows the effect of a 10 point change, while for Expected Family Contribution, the model indicates the effect of a \$1,000 change.

(irregularities included students whose admission date was before the application date). Furthermore, for enrolled students, we only considered those students whose starting term matched their intended starting term,⁵ resulting in a total of 91 students being dropped. This left our final dataset with 2,659 enrolled students and 1,600 students who did not enroll.

Figure 1.2: Number of Freshman and Transfer Students by Year

APPLICATION YEAR	2012 NEW STUDENTS	2013 NEW STUDENTS	TOTAL ENROLLED	DID NOT ENROLL
2012-13	1,349	14	1,363	771
2013-14	8	1,379	1,387	829
Total	1,357	1,393	2,750	1,600
Drop	70	21	91	0
Total	1,287	1,372	2,659	1,600

For our analysis, we only examine the impact of financial aid packages on degree seeking undergraduate students. Thus, we dropped any students who did not intend to earn a bachelor's degree or who were identified as non-degree seeking students. Figure 1.3 indicates that, after these restrictions, a total of 2,386 students enrolled, while 1,255 students did not enroll.

Figure 1.3: Enrollment by Year

APPLICATION YEAR	TOTAL ENROLLED	DID NOT ENROLL
2012-13	1,188	551
2013-14	1,198	704
Total	2,386	1,255

Figures 1.4 and 1.5 below show the breakdown of the enrolled and not enrolled students by freshman and transfer status. We also include the breakdown by students' Pennsylvania (PA) residency status. A majority of the students are freshmen and PA residents.

Figure 1.4: Freshman and Transfer Enrollment by Year

APPLICATION YEAR	FRESHMAN		TRANSFER	
	ENROLLED	NOT ENROLLED	ENROLLED	NOT ENROLLED
2012-13	951	436	237	115
2013-14	975	590	223	114
Total	1,926	1,026	460	229

⁵ Some students had almost a year gap between their application and admission date. These students missed their intended starting term and deferred to a later semester. In order to maintain consistency within our dataset, we only considered students whose intended starting term in the application matched their actual starting term at Clarion.

Figure 1.5: PA and Non-PA Enrollment by Year

APPLICATION YEAR	PA STUDENTS		NON-PA STUDENTS	
	ENROLLED	NOT ENROLLED	ENROLLED	NOT ENROLLED
2012-13	1,104	469	84	91
2013-14	1,073	580	125	124
Total	2,177	1,049	209	215

INDEPENDENT VARIABLES

In Figures 1.6 through 1.9, we provide descriptive statistics for each of the variables used in our models. Before estimating our final models, we examined several models with various combinations of independent variables. In our preliminary models, we included squared terms for the academic and financial aid variables to examine the non-linear effect of these on the probability of student enrollment. The list of variables that we included in our final models is presented in Figure 1.6 below.

Figure 1.6: Independent Variables

INDEPENDENT VARIABLES	SUMMARY	VARIABLE TYPE
Gender	Gender of students: (1) Male and (0) Female	Categorical
Ethnicity	Ethnicity of students selected from four ethnic categories: Black, Multiracial, White, and Others	Categorical
HS GPA	High School GPA of students	Continuous
SAT	Combined SAT scores in Math and Critical Reading. This also includes converted ACT scores.	Continuous
On campus/off campus	Whether applicant intend to live on campus or off campus: (1) On campus and (0) off campus	Categorical
Athlete	Whether students is an athlete: (1) Athlete and (0) Not an athlete	Categorical
Grant Aid Coverage	Percentage of tuition and mandatory fees covered by grant aid. Grant aid includes Pell Grants, SEOG Grants and PHEAA Grants.	Continuous
Subsidized loan coverage	Percentage of tuition and mandatory fees covered by subsidized loans.	Continuous
Unsubsidized loan coverage	Percentage of tuition and mandatory fees covered by unsubsidized loans.	Continuous
Unsubsidized loan coverage squared	The square of the percentage of tuition and mandatory fees covered by unsubsidized loans.	Continuous
Expected Family Contribution	Expected Family Contribution of the students in thousands of dollars.	Continuous

Figure 1.7 shows the descriptive statistics of the demographic variables that were used in our models. The gender ratio of students remained more or less similar between the two years. In terms of ethnicity,⁶ a majority of the students are White, while approximately a fifth of the accepted students who decided not to enroll at Clarion are Black. The table further shows that a vast majority of the students intend to live off campus and are not athletes.

Figure 1.7: Independent Variables - Demographics

GENDER	2012-13		2013-14	
	ENROLLED	NOT ENROLLED	ENROLLED	NOT ENROLLED
Female	59.7% (n=709)	58.8% (n=324)	60.2% (n=721)	61.8% (n=435)
Male	40.3% (n=479)	41.2% (n=227)	39.8% (n=477)	38.2% (n=269)
ETHNICITY				
Black	6.6% (n=79)	23.2% (n=128)	8.8% (n=106)	20.9% (n=147)
Multiracial	3.2% (n=38)	5.6% (n=31)	6.3% (n=75)	4.4% (n=31)
Other	2.9% (n=34)	6.4% (n=35)	3.9% (n=47)	5.1% (n=36)
White	87.3% (n=1037)	64.8% (n=357)	81% (n=970)	69.6% (n=490)
ON CAMPUS/ OFF CAMPUS				
On campus	15.4% (n=183)	7.8% (n=43)	16.1% (n=193)	5.4% (n=38)
Off campus	84.6% (n=1005)	92.2% (n=508)	83.9% (n=1005)	94.6% (n=666)
ATHLETE				
Yes	3.7% (n=44)	0% (n=0)	2.6% (n=31)	0% (n=0)
No	96.3% (n=1144)	100% (n=551)	97.4% (n=1167)	100% (n=704)

Figure 1.8 shows the applicants' high school GPA and SAT scores. The SAT scores show the combined scores in Math and Critical Reading. Several students reported ACT scores instead of SAT scores. For these students, we converted the ACT scores to equivalent SAT scores based on the concordance table released by ACT and College Board.⁷ In terms of academic performance, enrolled students have better academic record compared to students who did not enroll.

Figure 1.8: Independent Variables – Academic

HS GPA	ENROLLED	NOT ENROLLED
2012-13	2.58 (n=1188)	1.98 (n=551)
2013-14	2.63 (n=1198)	1.95 (n=704)
SAT		
2012-13	963.17 (n=1052)	871.88 (n=463)
2013-14	948.86 (n=1198)	915.17 (n=704)

⁶ Others include American Indians, Asians, Hispanic, Pacific Islanders, and other minority groups.

⁷ Compare ACT & SAT Scores. <http://www.act.org/solutions/college-career-readiness/compare-act-sat/>

Figure 1.9 summarizes students' expected tuition, financial aid offers, and expected family contribution. We present the tuition and mandatory fees together as these are fixed costs for all the students. Of all the students who did not enroll in 2013-14, expected tuition and mandatory fees are available for only four students. This excludes a considerable number of students who chose not to enroll at Clarion in 2013-14. **As a result, our models exclude all 2013-14 students.** Since tuition and mandatory fees are missing for a considerable number of students, including them may bias our sample, since we would have approximately 1,198 enrolled students from 2013-14, but only four non-enrolled students. Nevertheless, we include the descriptive statistics for the 2013-14 dataset in this section.

The grant aid includes Pell grants, SEOG grants, and PHEAA grants (only offered to PA residents) received by students. In our models, we include the percentage of tuition and mandatory fees covered by the grants and loans. Please note that since we excluded other fees such as room and board and supplies, it is possible for the total aid and loans to be higher than the tuition and mandatory fees. The EFC is included in our models in thousands of dollars.

Figure 1.9: Independent Variables – Financial (Annual)

TUITION AND MANDATORY FEES	ENROLLED	NOT ENROLLED
2012-13	\$8774.03 (n=1188)	\$9110.29 (n=551)
2013-14	\$9078.13 (n=1198)	\$2006.2 (n=4) ⁸
GRANT AID ⁹		
2012-13	\$2741.06 (n=1188)	\$288.62 (n=551)
2013-14	\$2605.55 (n=1198)	\$0 (n=704) ¹⁰
SUBSIDIZED LOANS		
2012-13	\$2199.66 (n=1188)	\$144.68 (n=551)
2013-14	\$1608.76 (n=1198)	\$9.84 (n=704) ¹⁰
UNSUBSIDIZED LOANS		
2012-13	\$2380.69 (n=1188)	\$156.4 (n=551)
2013-14	\$1774.01 (n=1198)	\$5.63 (n=704) ¹⁰
EXPECTED FAMILY CONTRIBUTION		
2012-13	\$12860.32 (n=902)	\$10056.29 (n=188)
2013-14	\$13084.56 (n=866)	\$13675.64 (n=236)

⁸ Tuition and mandatory fees are available for only four students in 2013-14.

⁹ Grant aid includes Pell grants, SEOG grants, and PHEAA grants.

¹⁰ Limited amounts of grant aid, subsidized, and unsubsidized loan are available for non-enrolled students in 2013-14.

SECTION II: RESULTS AND ANALYSIS

This section presents the results of multivariate analyses investigating the impact of financial aid packages on undergraduate enrollment. For each dependent variable and model, the results presented in the figures below display regression coefficients for each independent variable and, where applicable, asterisks indicating the level of statistical significance. Regression coefficients in the figures below can be interpreted as the change in the probability of enrolling at Clarion due to a one unit change in the independent variable. Please note that for grant aid coverage, subsidized loan coverage, and unsubsidized loan coverage, the one unit increase refers to a percentage point increase in these variables (for instance, the effect on the probability of enrolling at Clarion of a one percentage point increase in the grant aid coverage). For SAT scores, the coefficients indicate the effect of a 10 point change in the score, while the coefficient for the EFC shows the effect of a \$1,000 change. Please note that our models include only 2012-13 data. Students in the 2013-14 dataset were excluded from the analysis due to missing tuition and mandatory fees for non-enrolled students.

EFFECT OF FINANCIAL AID PACKAGE ON STUDENT ENROLLMENT

In this study, we concentrate on the impact of financial aid on freshman and transfer students separately. We also exclude non-degree seeking students, as their responses to financial aid packages are likely different from those of students entering as freshmen. For both the freshman and transfer students, we examined the effect of financial aid packages on PA resident and non-resident students separately.

FRESHMAN STUDENTS

We estimated four models with freshman enrollment as our dependent variable. Our primary independent variables of interest are grant aid coverage, subsidized loan coverage, and unsubsidized loan coverage. The aforementioned components of financial aid packages are included as a percentage of the expected tuition and mandatory fees that the student is expected to pay, had he/she been enrolled. Other financial data include students' EFC, which is included in thousands of dollars. Results from our regression models for freshman enrollment are presented in Figure 2.1. The following is a summary of the impact of the different components of financial aid packages on freshman enrollment:

- **Grant Aid Coverage:** In general, the percentage of tuition and mandatory fees covered by grants and scholarships has a positive and significant impact on the probability that freshman applicants will enroll. However, it must be noted that no impact is observed when all non-resident PA students (both those with and without EFC data available) are considered. For PA residents (regardless of whether the model is restricted to applicants with EFC data) and for non-PA residents with EFC data, the probability of enrolling at Clarion as a freshman increases with higher coverage of tuition and mandatory fees by grant aid.

- **Subsidized Loan Coverage:** The percentage of tuition and mandatory fees covered by subsidized loans has a positive and significant impact on the probability of PA residents enrolling as freshman students at Clarion. An increase in subsidized loan coverage by one percentage point is likely to increase the probability of a PA resident enrolling at Clarion by 0.007. In fact, among all the components of the financial aid package, subsidized loans have the strongest impact on the probability of freshman enrollment for PA residents.

However, subsidized loan coverage has no significant effect on the probability of accepted students who are not PA residents enrolling at Clarion as freshman undergraduates. No effect is observed either for students who have a reported EFC in their Student Aid Report or for those who do not.

- **Unsubsidized Loan Coverage:** There is a non-linear relationship between the probability of a PA resident with a reported EFC enrolling at Clarion and the amount of tuition and mandatory fees covered by unsubsidized loans. The probability of enrollment increases up to a certain point beyond which an increase in the unsubsidized loans reduces the probability of students enrolling at Clarion. For students who are PA residents and have a reported EFC, the probability of enrollment increases until 82 percent of their tuition and mandatory fees are covered by unsubsidized loans. However, for all PA residents in general, unsubsidized loans have a linear and positive relationship with the probability of enrolling at Clarion.

In terms of accepted students who are not residents of PA, the amount of unsubsidized loans has a linear, positive, and significant impact on the probability of enrolling as a freshman. For all non-PA resident students, a one percentage point increase in the amount of unsubsidized loan coverage is associated with an increase of 0.009 in the probability of enrolling at Clarion. The effect is slightly weaker when only students with a reported EFC are considered (increase in the probability by 0.005).

- **Expected Family Contribution:** There is a positive and significant impact of EFC on the probability of students enrolling at Clarion. For PA applicants, an increase in the EFC by \$1,000 is expected to increase the probability of enrolling by 0.008. The effect is slightly stronger for non-PA residents, with an increase in the EFC by \$1,000 increasing the probability of enrollment by 0.01.

Demographic and Academic Characteristics: In addition to the aforementioned components of the financial aid package, accepted students' demographics and academic backgrounds also have some impact on the probability of enrolling at Clarion. For instance, PA residents with high SAT scores, any applicants with strong high school GPAs, or applicants who are athletes have a higher probability of enrolling as freshman undergraduates at Clarion, compared to their respective counterparts. In terms of ethnicity, White students who are significantly more likely

to enroll compared to any other ethnic groups among PA residents. However, PA residents who plan to live on-campus are less likely to eventually enroll at Clarion than those who plan to live off-campus.

Figure 2.1: Regression Results – Freshman Enrollment

VARIABLES	PA RESIDENTS		NON-PA RESIDENTS	
	MODEL 1 WITH EFC	MODEL 2	MODEL 3 WITH EFC	MODEL 4
Male [Reference Group = Female]	-0.0218	-0.0027	-0.0758	-0.027
	(0.0218)	(0.0201)	(0.1187)	(0.1034)
Black [Reference Group = White]	-0.1001*	-0.2519***	-0.1372	-0.177*
	(0.0531)	(0.0422)	(0.1206)	(0.0934)
Multiracial [Reference Group = White]	-0.0675	-0.1771***	0.1231	0.0909
	(0.0421)	(0.0441)	(0.1155)	(0.231)
Other [Reference Group = White]	-0.1297	-0.1508**	0.3029**	-0.0865
	(0.085)	(0.065)	(0.1429)	(0.1861)
SAT Score (per 10 points)	0.0038***	0.007***	0.0091*	0.0061
	(0.0008)	(0.0007)	(0.0051)	(0.0038)
High School GPA	0.012	0.0198**	-0.0003	0.0635**
	(0.0084)	(0.0076)	(0.0303)	(0.0263)
On Campus [Reference Group = off campus]	-0.0981**	-0.112***		
	(0.0321)	(0.0303)		
Athlete [Reference Group = Not an athlete]	0.0943**	0.2161***	0.2513***	0.3951***
	(0.0358)	(0.0471)	(0.0757)	(0.0934)
Grant Aid Coverage	0.0023***	0.0015***	0.0098**	0.004
	(0.0004)	(0.0003)	(0.0032)	(0.005)
Subsidized Loan Coverage	0.0073***	0.0069***	0.0065	0.0045
	(0.0007)	(0.0007)	(0.0045)	(0.0048)
Unsubsidized Loan Coverage	0.0052***	0.003**	0.005**	0.0091**
	(0.0005)	(0.0013)	(0.0022)	(0.0031)
Unsubsidized Loan Coverage squared	-0.00003***			
	(0.000002)			
Expected Family Contribution (per \$1,000)	0.0082***		0.0101**	
	(0.0015)		(0.0035)	
Intercept	0.1495	-0.0882	-0.4728	-0.3107
	(0.0932)	(0.0768)	(0.4757)	(0.3695)
R-squared	0.3635	0.4188	0.4407	0.3493
Number of observations	833	1,253	56	95

Coefficients estimated using Ordinary Least Squares with a linear regression model, with robust standard errors in parentheses. Statistical significance indicator using asterisk next to the coefficients, with * = significant at 10%, ** = significant at 5%, and *** = significant at 1%.

TRANSFER STUDENTS (PA RESIDENTS ONLY)

For transfer applicants, we only estimated models with PA residents. We did not have sufficient data to estimate models for non-PA residents. The models include the same independent variables that were included in Models 1 through 4. Results from our regression models for transfer enrollment are presented in Figure 2.2. The following is a summary of the impact of the different components of financial aid packages:

- **Grant Aid Coverage:** The amount of grant aid awarded to PA resident transfer applicants has a positive and significant impact on their likelihood of enrolling at Clarion. For all PA residents, a one percentage point increase in the percentage of tuition and mandatory fees covered by grant aid is associated with an increase in the probability of enrolling at Clarion by 0.0016.
- **Subsidized Loan Coverage:** For all transfer applicants residing in PA, a one percentage point increase in the proportion of tuition and mandatory fees covered by subsidized loans is expected to lead to an increase in the probability of enrolling by 0.006. For PA residents with a reported EFC, the effect is slightly weaker (increases probability of enrollment by 0.003).
- **Unsubsidized Loan Coverage:** There is a non-linear relationship between the probability of a PA resident with a reported EFC enrolling as a transfer student at Clarion and the amount of tuition and mandatory fees covered by unsubsidized loans. The probability of transfer enrollment increases up to a certain point, beyond which an increase in the unsubsidized loans reduces the probability of students enrolling at Clarion. For students who are PA residents and have a reported EFC, the probability of transfer enrollment increases until 89 percent of their tuition and mandatory fees are covered by unsubsidized loans.

However, for all PA residents in general, unsubsidized loans have a linear and positive relationship with the probability of a transfer enrollment at Clarion. A one percentage point increase in the amount of unsubsidized loan coverage is expected to lead to the probability of these students enrolling as a transfer student at Clarion increasing by 0.004.

- **Expected Family Contribution:** The EFC reported on a transfer student's Student Aid Report does not have any significant impact on their probability of enrolling at Clarion.
- **Demographic and Academic Characteristics:** Further analysis of Models 5 and 6 indicates that some demographic and academic characteristics of PA resident transfer applicants influence their probability of enrolling at Clarion. Female applicants (regardless of whether we limit the analysis to students with a reported EFC) are less likely to enroll as transfer students compared to male applicants residing in PA. There is also a slightly higher probability of applicants who are

categorized as ‘multiracial’ or ‘other’ in terms of ethnicity to enroll as transfer students compared to White students, when limiting the analysis to those students with a reported EFC. Applicants (with or without reported EFC) with higher SAT scores and applicants who are athletes (only with reported EFC) also have a significantly higher probability of enrolling at Clarion.

Figure 2.2: Regression Results – Transfer Enrollment

VARIABLES	PA RESIDENTS	
	MODEL 5 WITH EFC	MODEL 6
Male [Reference Group = Female]	-0.0212	0.1239**
	(0.06)	(0.0561)
Black [Reference Group = White]	-0.0639	-0.0942
	(0.0941)	(0.0703)
Multiracial [Reference Group = White]	0.2164*	0.0246
	(0.1253)	(0.1604)
Other [Reference Group = White]	0.1425*	0.0465
	(0.0794)	(0.0912)
SAT Score (per 10 points)	0.0009	0.0045**
	(0.0013)	(0.0017)
High School GPA	0.0122	0.0189
	(0.025)	(0.0232)
On Campus [Reference Group = off campus]	-0.0672	-0.0277
	(0.0879)	(0.0837)
Athlete [Reference Group = Not an athlete]	0.18*	0.0049
	(0.0976)	(0.1933)
Grant Aid Coverage (per 1%)	0.0018*	0.0016**
	(0.0011)	(0.0005)
Subsidized Loan Coverage	0.003**	0.006***
	(0.0013)	(0.0011)
Unsubsidized loan Coverage	0.005**	0.0044***
	(0.0019)	(0.0007)
Unsubsidized Loan Coverage squared	-0.00003*	
	(0.00002)	
Expected Family Contribution (per \$1,000)	0.0029	
	(0.0051)	
Intercept	0.5949**	-0.0162
	(0.1969)	(0.1855)
R-squared	0.1438	0.4066
Number of observations	101	152

Coefficients estimated using Ordinary Least Squares with a linear regression model, with robust standard errors in parentheses. Statistical significance indicator using asterisk next to the coefficients, with * = significant at 10%, ** = significant at 5%, and *** = significant at 1%.

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