



Financial Need Impact on Yield and Persistence

Analysis of Institutional Data

Catalog No. 63ALCRR1110
November 2010

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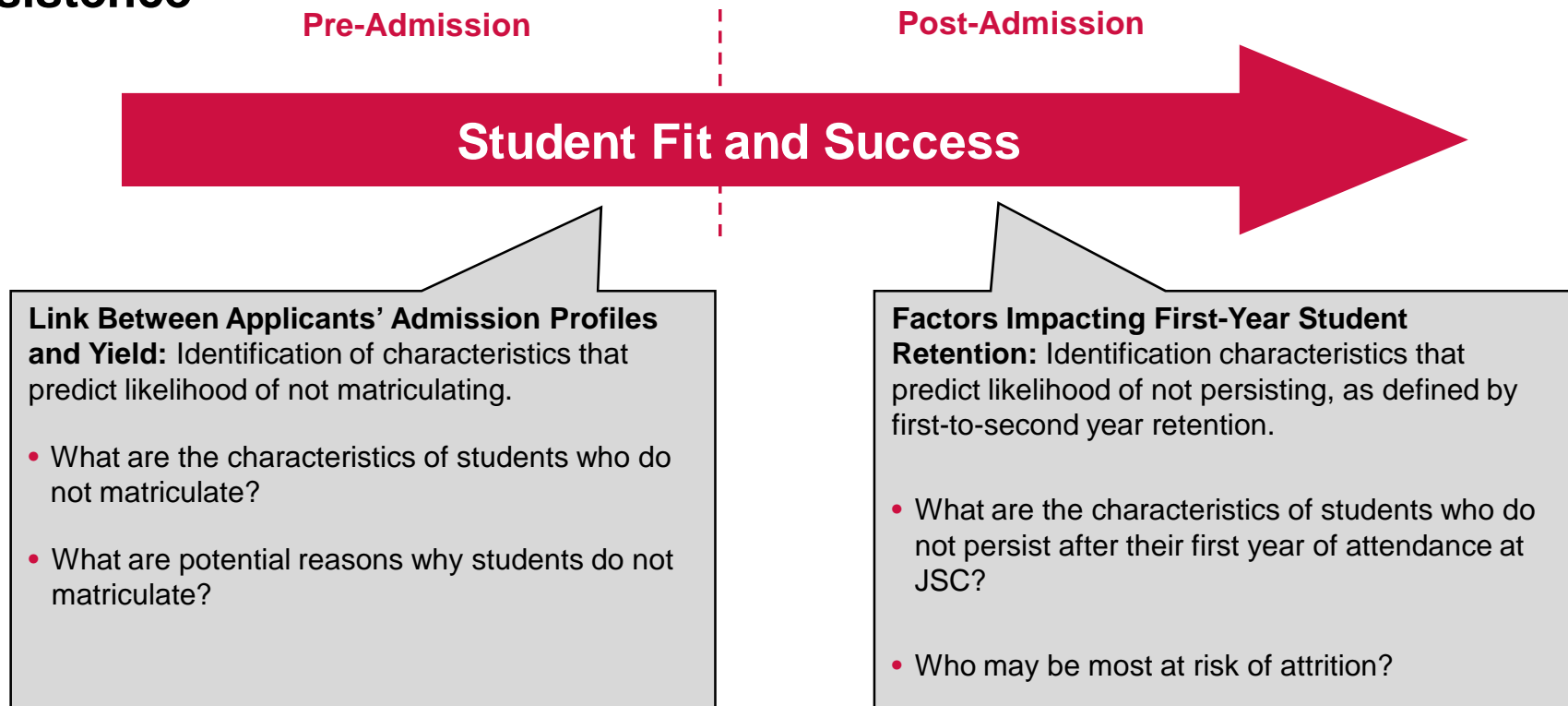
Research Findings

• <i>Yield</i>	15
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• <i>Persistence</i>	30
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Appendix	44
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Johnson State College (JSC) Is Interested In Understanding Whether or Not Financial Status Has An Impact on Enrollment Yield and Student Persistence



This report identifies various characteristics that predict likelihood to enroll and stay at JSC, controlling for the given variables. There are other characteristics that have an impact on yield and persistence that are not included in these models.

Eduventures Approached This Research Investigation Using the Following Methodology

Phase I Develop Research Objective	Phase II Identify Research Questions	Phase III Retrieve and Analyze Data	Phase IV Report Results and Recommendations
<ul style="list-style-type: none"> • Objectives: To identify characteristics that predict likelihood of not matriculating • To identify characteristics that predict likelihood of not persisting, as defined by first-to-second year retention 	<ul style="list-style-type: none"> • What are the characteristics of students who do not matriculate? • What are the characteristics of students who do not persist after their first year of attendance at JSC? • Based on available data, what are potential reasons <u>why</u> students do not matriculate and <u>who</u> may be most at risk of attrition? 	<ul style="list-style-type: none"> • Merge various institutional data files for applicants and students from 2007-2009. Conduct various descriptive statistical tests (t-tests, z-tests) and logistic regression to determine characteristics and likelihood to not yield/persist. 	<ul style="list-style-type: none"> ✓ Financial need has an impact on the likelihood on yield, where students who did not apply for financial aid are least likely to enroll. ✓ Other demographics, such as high school GPA, admit index, residency, involvement interest, etc. also have an impact on an applicant's decision to enroll at JSC. ✓ EFC and financial need are not significant predictors of a student persisting; in this model, only Fall College GPA has an impact on the likelihood of a student being retained. ✓ In previous, Eduventures research, financial influences on persistence typically reveal themselves later on (e.g. second-to-third year retention)

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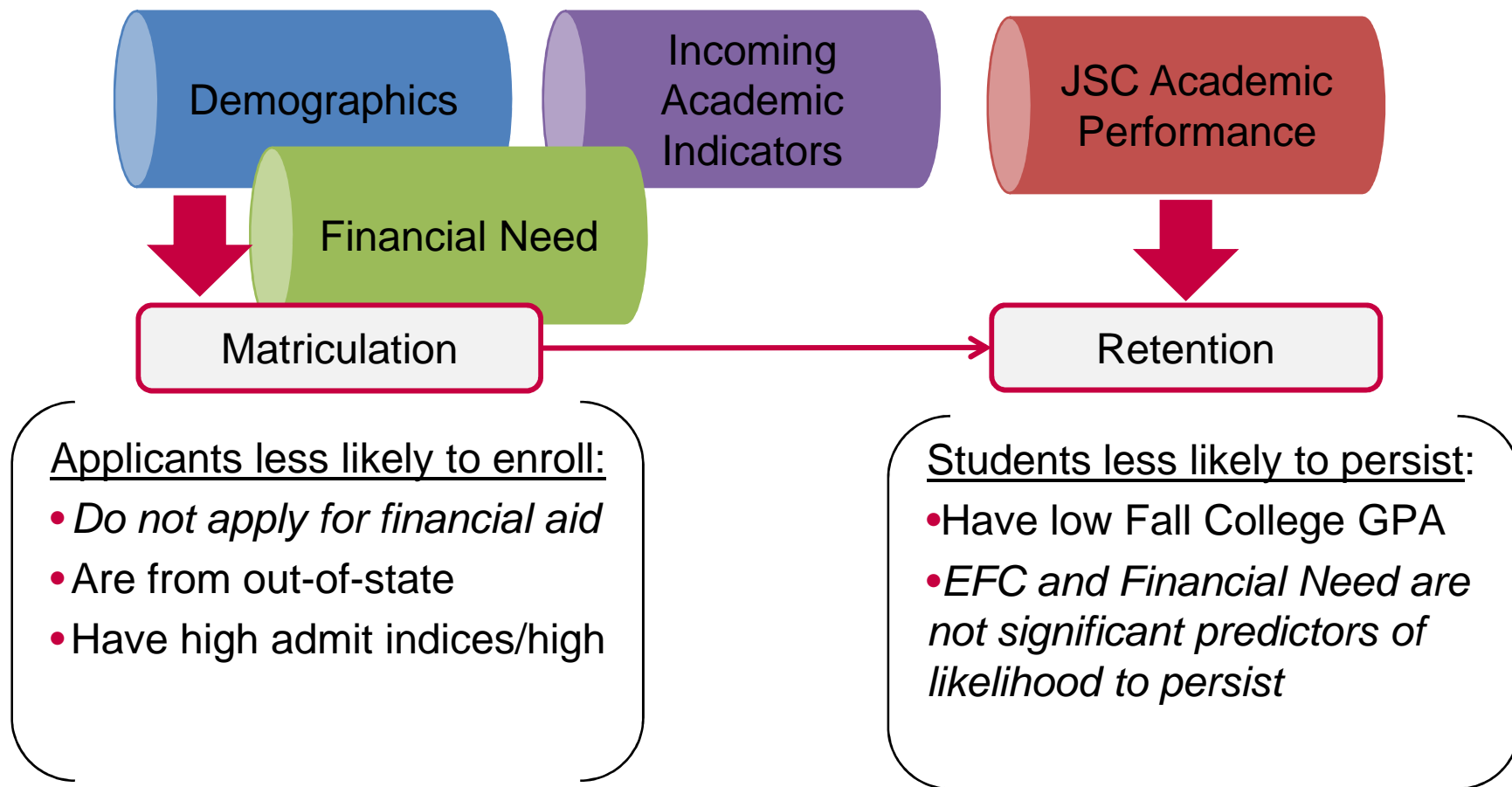
Research Findings

• *Yield* **15**

• *Persistence* **30**

Appendix **44**

Financial Need and EFC Have an Impact on an Applicant's Decision to Enroll at JSC but Do Not Have an Effect on Retention



Lack of financial need plays a major role in an applicant's decision to enroll at JSC. However, once the applicant matriculates, financial need no longer has as significant impact on retention.

Several Liberal Arts, Science, Business and Fine Arts Programs Are Under Performing With Respect to Yield and Retention Rate

Average Yield Versus Retention Rate By Program

Yield Rate	+	<u>Retention Improvement</u> <ul style="list-style-type: none"> • Associate • Creative Writing • Undecided 	<u>High-Performers</u> <ul style="list-style-type: none"> • Art • Elementary Education • English • History • Mathematics • Music • Musical Theater • Outdoor Education • Studio Arts • Wellness & Alternate Medicine 	
	-	<u>Under-Performers</u> <ul style="list-style-type: none"> • Anthropology • Biology • Business • Health Science • Hospitality • Journalism • Liberal Studies • Psychology • Theater & Drama 	<u>Yield Improvement</u> <ul style="list-style-type: none"> • Environmental Science • Political Science 	
		-	65% Retention Rate	+

Examine these underperforming programs to gain a better understanding of why these students are less likely to stay at JSC.

Involvement Interest and Low Admit Index/High School GPA Also Lower the Likelihood That a Student Will Enroll and Be Retained

Students with slightly lower admit indices and high school GPAs enroll at JSC. However, these same students are the ones most likely to not be retained for a second year.

- Implement an early warning system that marks students with lower academic skill as at-risk, and introduce intrusive advising for these students

Applicants who express interest in being involved are less likely to attend JSC.

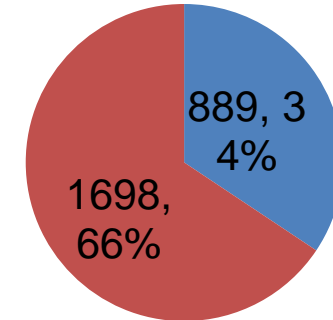
- Student perception of “involvement” is not clearly understood
 - Conduct research to gauge students’ definition of involvement and perception of opportunities to be involved at JSC
 - Conduct a survey with non-enrolled students or students who indicated that they are not interested in involvement to understand why
- Investigate how involvement is being marketed
 - What is the message behind involvement?
 - Are students not enrolling because there are competing institutions with similar programs?

Applicants who Did Not Enroll Were More Likely to Be Out-of-State, Non-First Generation Students With a Smaller Amount of Unmet Need

	Did Not Enroll	Enrolled
<i>Demographics</i>		
First Generation	47%	55%
In-State	41%	66%
<i>Engagement</i>		
Interested in Being Involved	65%	60%
<i>Finances</i>		
Tuition Waiver	0%	2%
Median EFC	\$8,204	\$5,827
Median Unmet Need	-\$4,522	\$12,414
Median Cost of Attendance	\$25,280	\$18,971

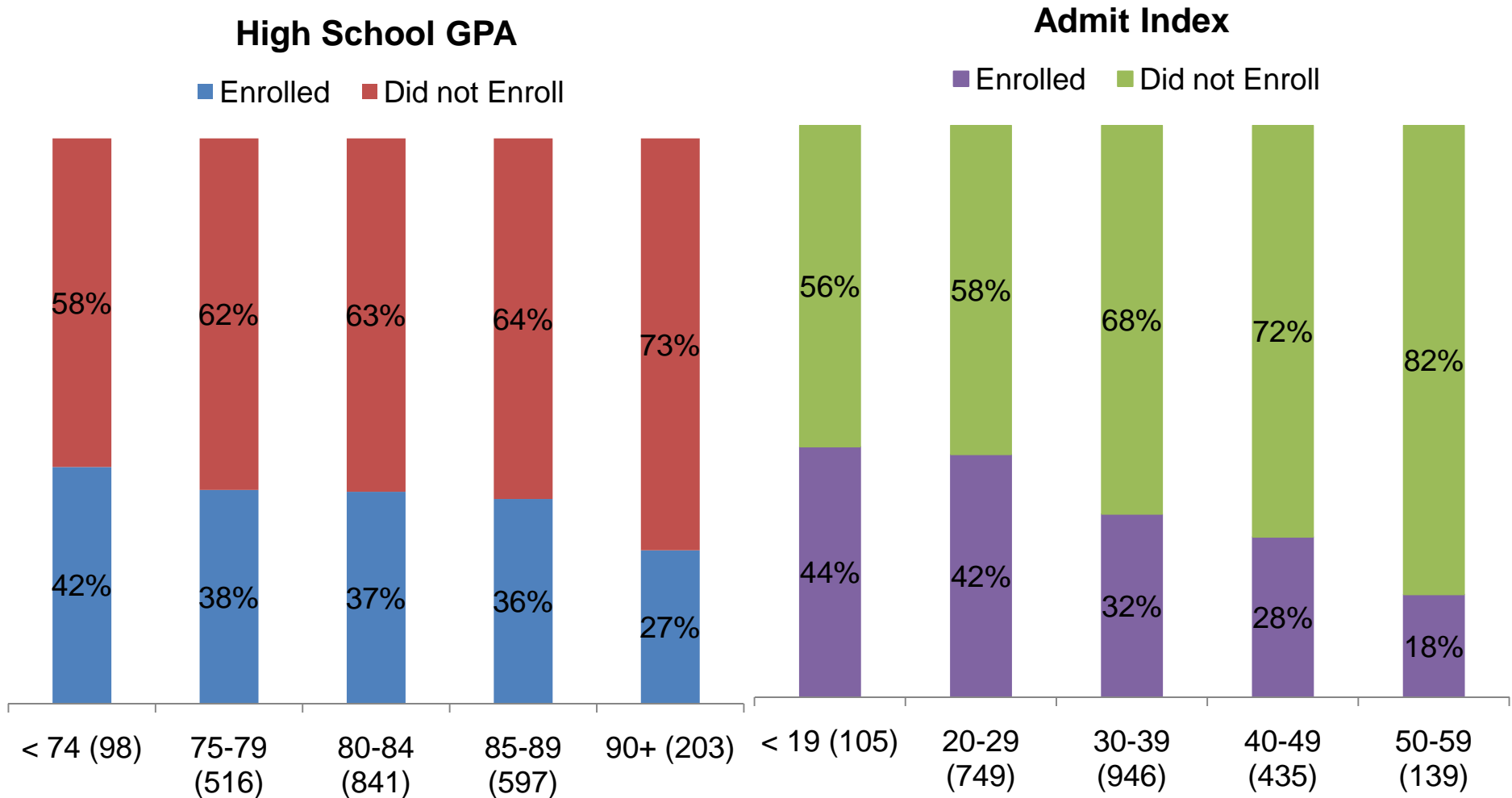
Applicants (N=2587)

■ Enrolled ■ Did not Enroll



If these funds were from unused merit aid, adopt a strategy of incremental quality improvement

Consider Putting Early Warning Systems in Place and Planning More Intensive Advising For Students Who Perform Lower Academically in High School, As These Students Are the Most Likely to Attend JSC, But Not Be Retained

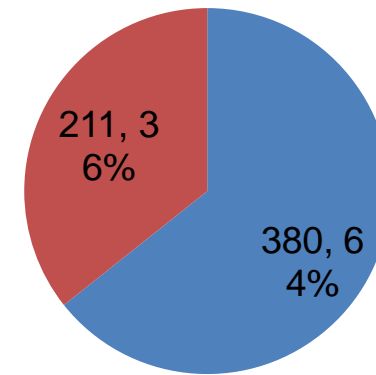


Persistence at JSC Is Dominated By Underprepared Students Underperforming at JSC

	Did not Persist	Persisted
<i>Demographics</i>		
First Generation	56%	52%
In-State	59%	66%
<i>Engagement</i>		
Interested in Being Involved	59%	58%
<i>Finances</i>		
Waived Tuition	1%	3%
Median EFC	\$5,646	\$5,855
Median Unmet Need	\$11,745	\$12,186
Median Cost of Attendance	\$18,133	\$18,133

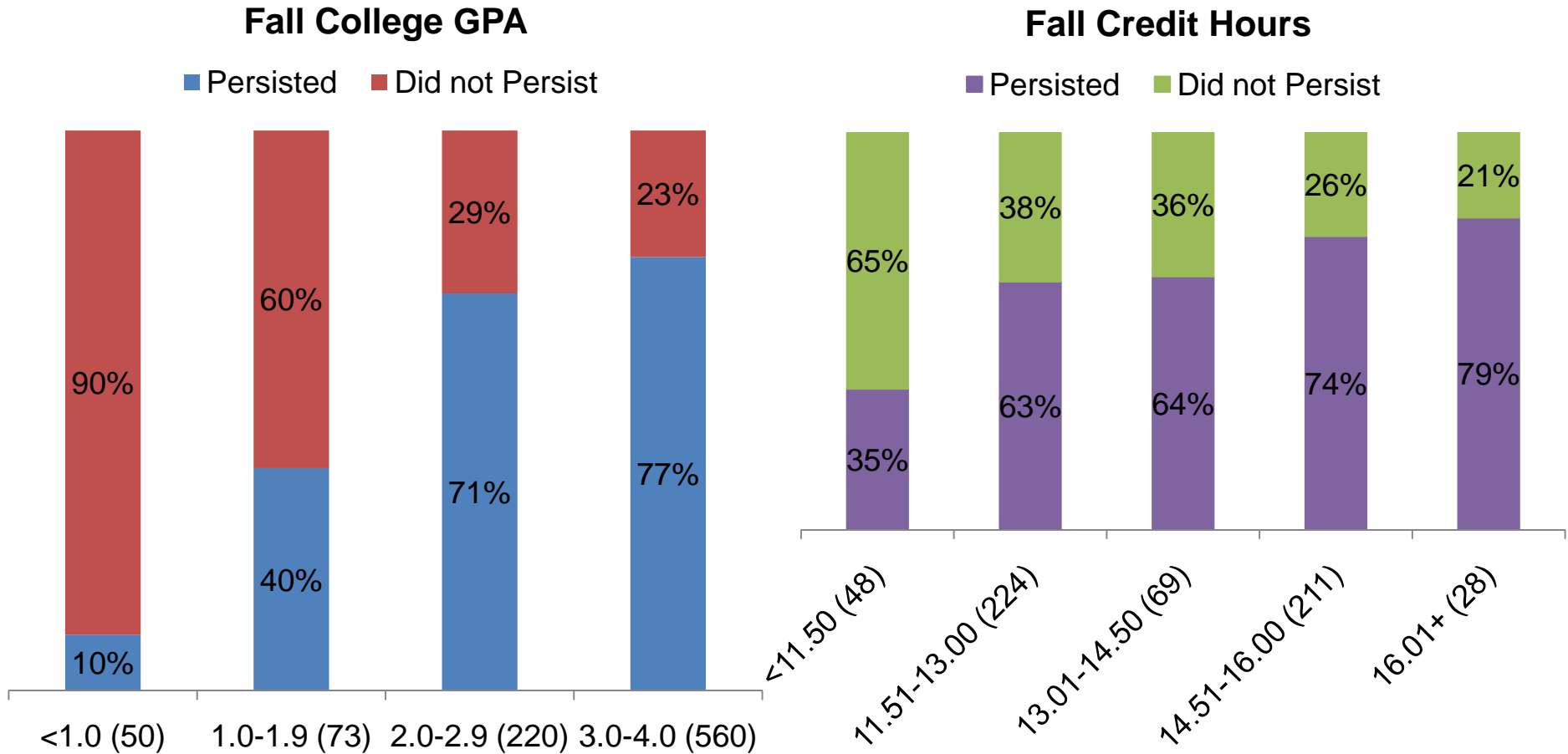
Students (N=591)

■ Persisted ■ Did not Persist



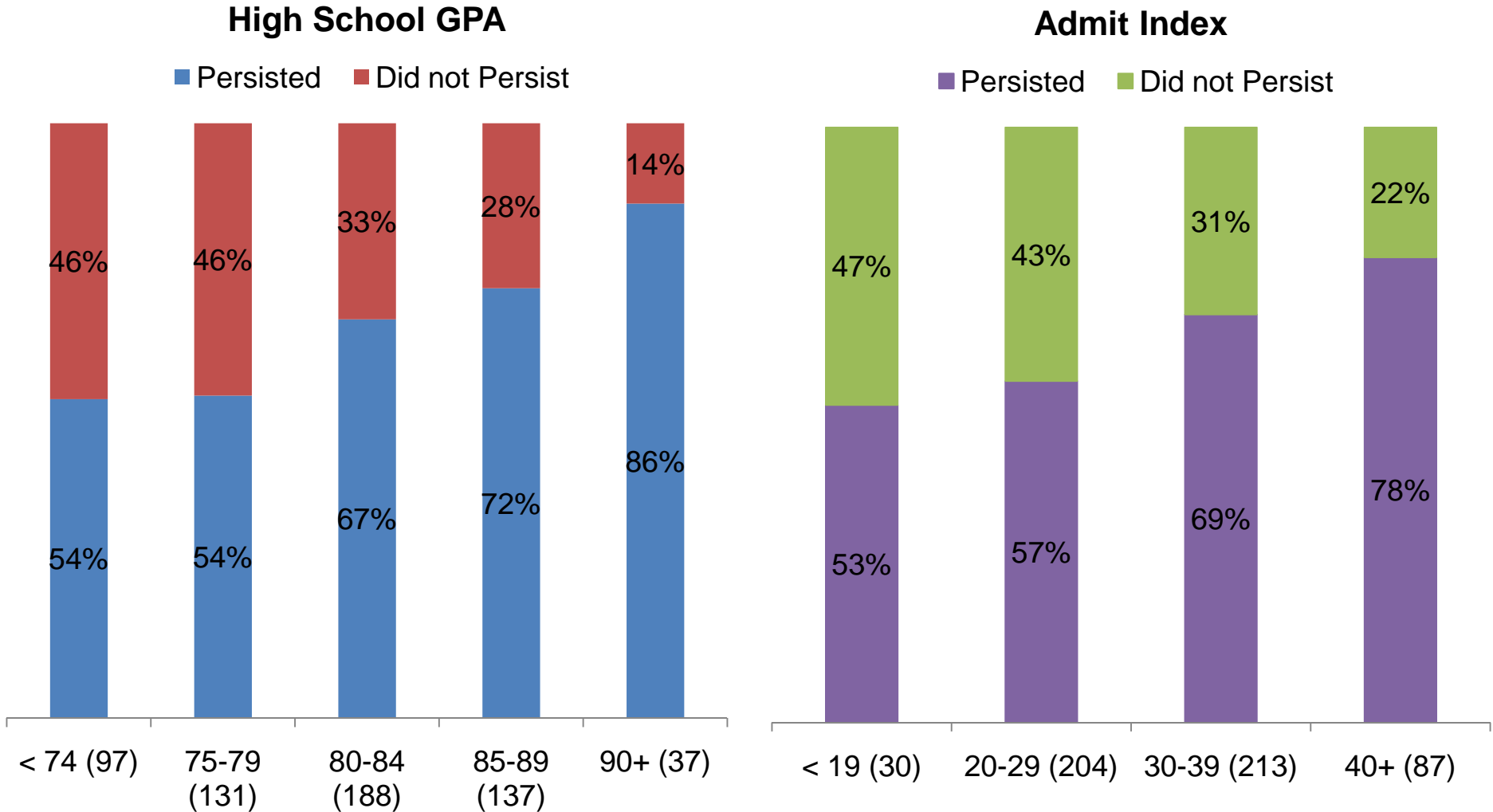
Persistence Rates		
Fall GPA	High School GPA	
	Less than 80	80 or above
Less than 3.0	47.8%	62.1%
3.0 or above	70.7%	79.9%

Persistence Was Strongly Correlated With Low Fall GPA; Non-Persisters Were Also Likely to Have Completed a Lower Number of Fall Credit Hours



Conduct survey or do post hoc research on where the students went when they left – did they transfer and if so to where? Did they drop out?

Applicants With Higher Incoming GPAs Tend to Persist at JSC



There Are Several Key Challenges and Associated Recommendations That Resulted From This Study

	Problem	Solution
Enrollment	<ul style="list-style-type: none">•Not enrolling high quality students•Students that had the means to attend JSC chose not to	<ul style="list-style-type: none">•Create an environment that support high quality students<ul style="list-style-type: none">•Provide adequate information about available majors and programs•Show evidence of strong learning outcomes•Message this environment correctly
Retention	<ul style="list-style-type: none">•Almost purely, academic difficulty•Students with extreme unmet need were less likely to persist	<ul style="list-style-type: none">•Identify at-risk students<ul style="list-style-type: none">•Only look at the admit index and target the bottom 20%•Intervene with these students<ul style="list-style-type: none">•Develop intrusive advising•Get faculty involved to monitor attendance, progress, and other indicators•Involve major stakeholders (e.g. advisors, ResLife, etc.)

Examine the effect of financial unmet need on second-to-third year retention and later to have a deeper understanding the longitudinal impact on retention.

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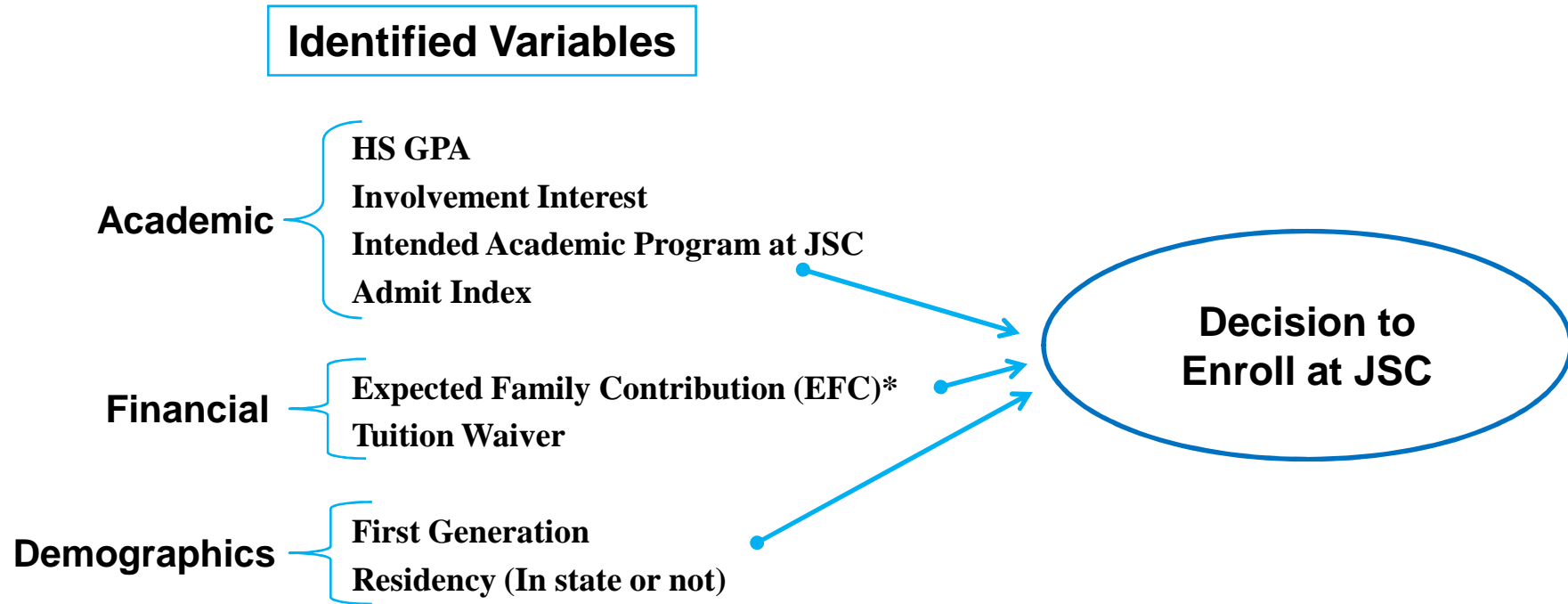
Research Findings

• *Yield* **15**

• *Persistence* **30**

Appendix **44**

Eight Variables Were Included in the Model to Predict the Likelihood of Enrolling at JSC



Small sample size and a limited number of input variables may limit the model's predictive validity.

*EFC was used instead of financial unmet need to control for those students who did not apply for financial need, or did not receive any.

First Generation and Tuition Waiver Do Not Have Any Impact on the Decision to Enroll at JSC

Variable
First Generation
Residency
Admit Index
High School GPA
Involvement Interest
Intended Academic Program at JSC
Tuition Waiver
EFC



- Only First Generation and Tuition Waiver do not add to the predictive validity of the model
- All other variables are significant in predicting likelihood of enrolling at JSC

Students Who Have Little Financial Need Are Less Likely to Enroll at JSC

- Students with greater means are less likely to attend JSC

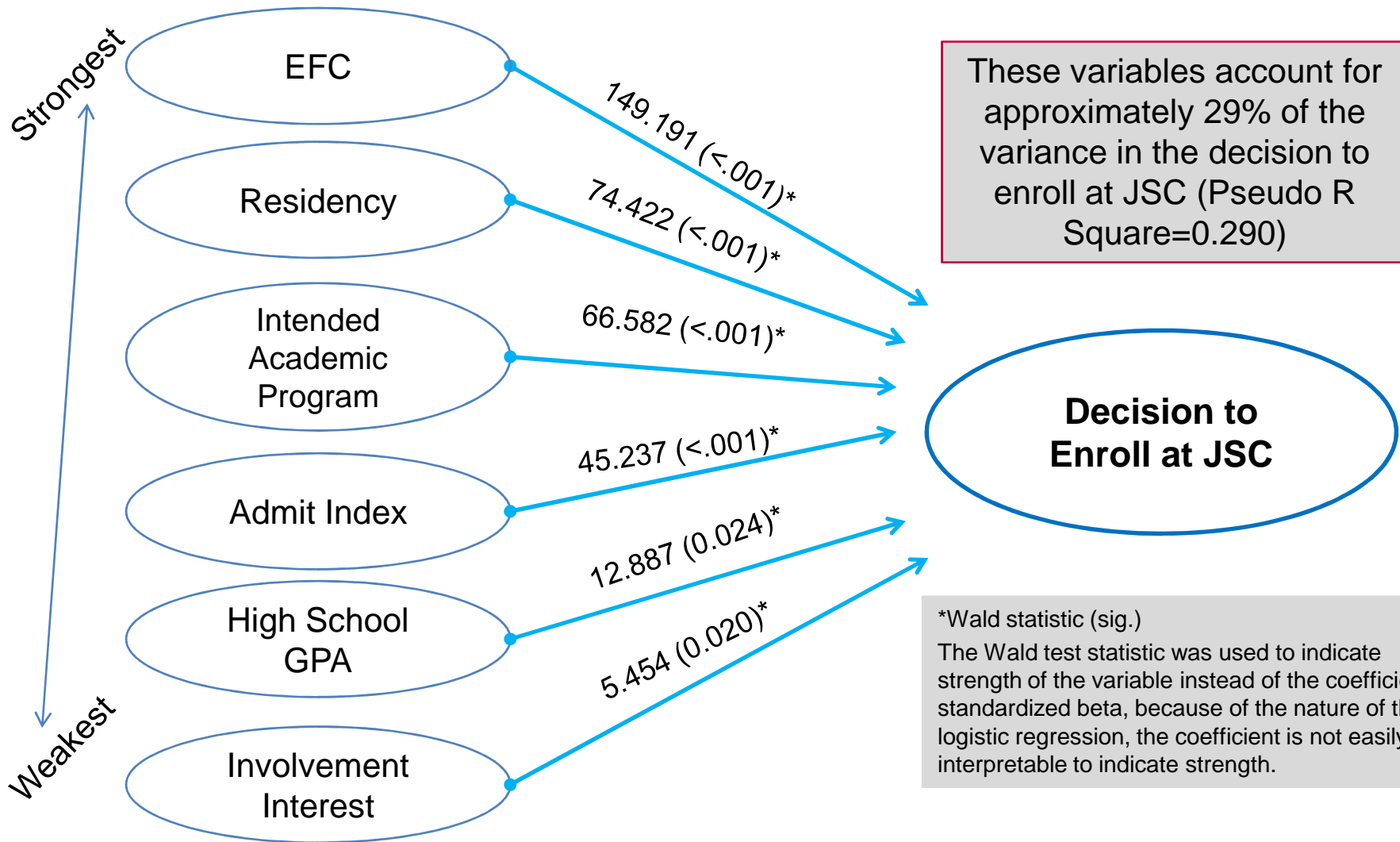
Students Who Performed More Poorly Academically in High School Are More Likely to Enroll at JSC

- The largest group to enroll at JSC are students with admit indexes between 20-29 (39% of enrolled cohorts).
- The largest group to not enroll at JSC are those student with admit indexes between 30-39 (41% of not-enrolled cohorts).

Certain Programs Are Under-Performers With Respect to Percent of Students Who Yield

- Liberal Studies, Theatre & Drama, and Anthropology, in particular, have the lowest yield rate across all intended academic programs for applicants with 20%, 21%, and 21% yield rates, respectively.

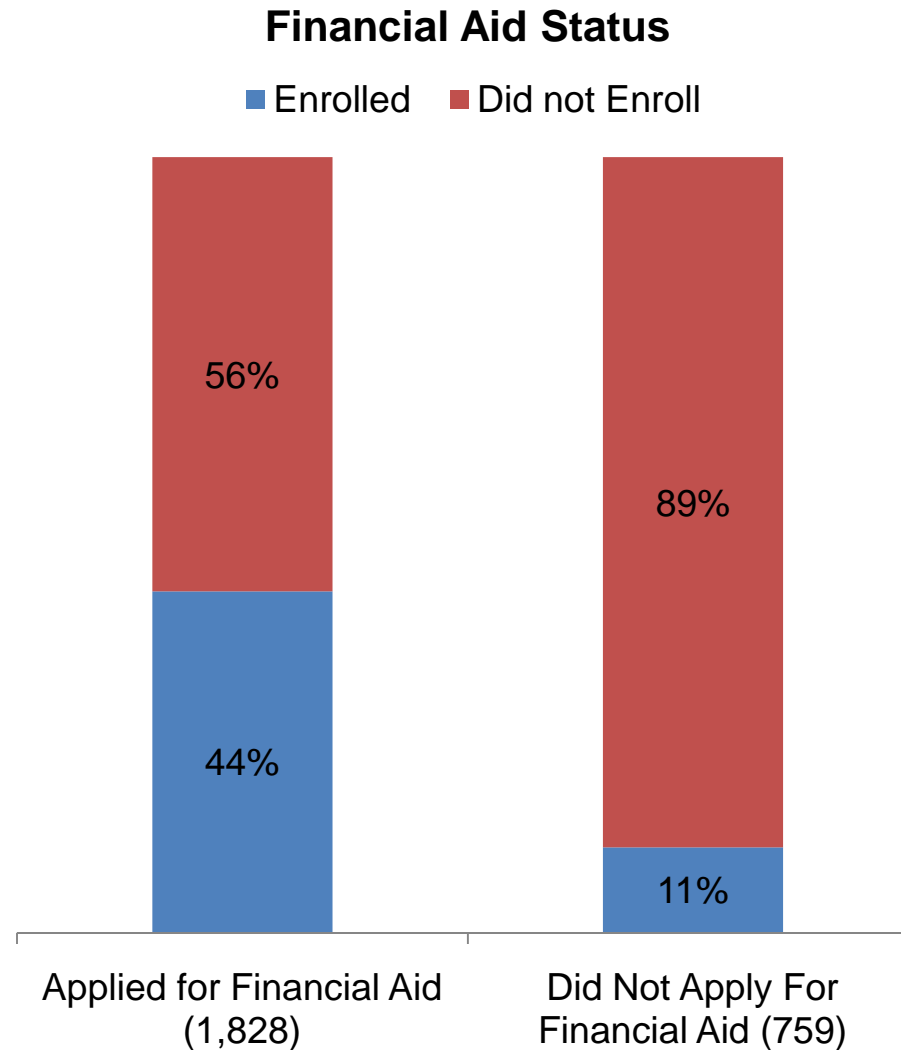
EFC, Residency, Intended Academic Program, and Admit Index Are All Strong Predictors of the Likelihood to Enroll at JSC



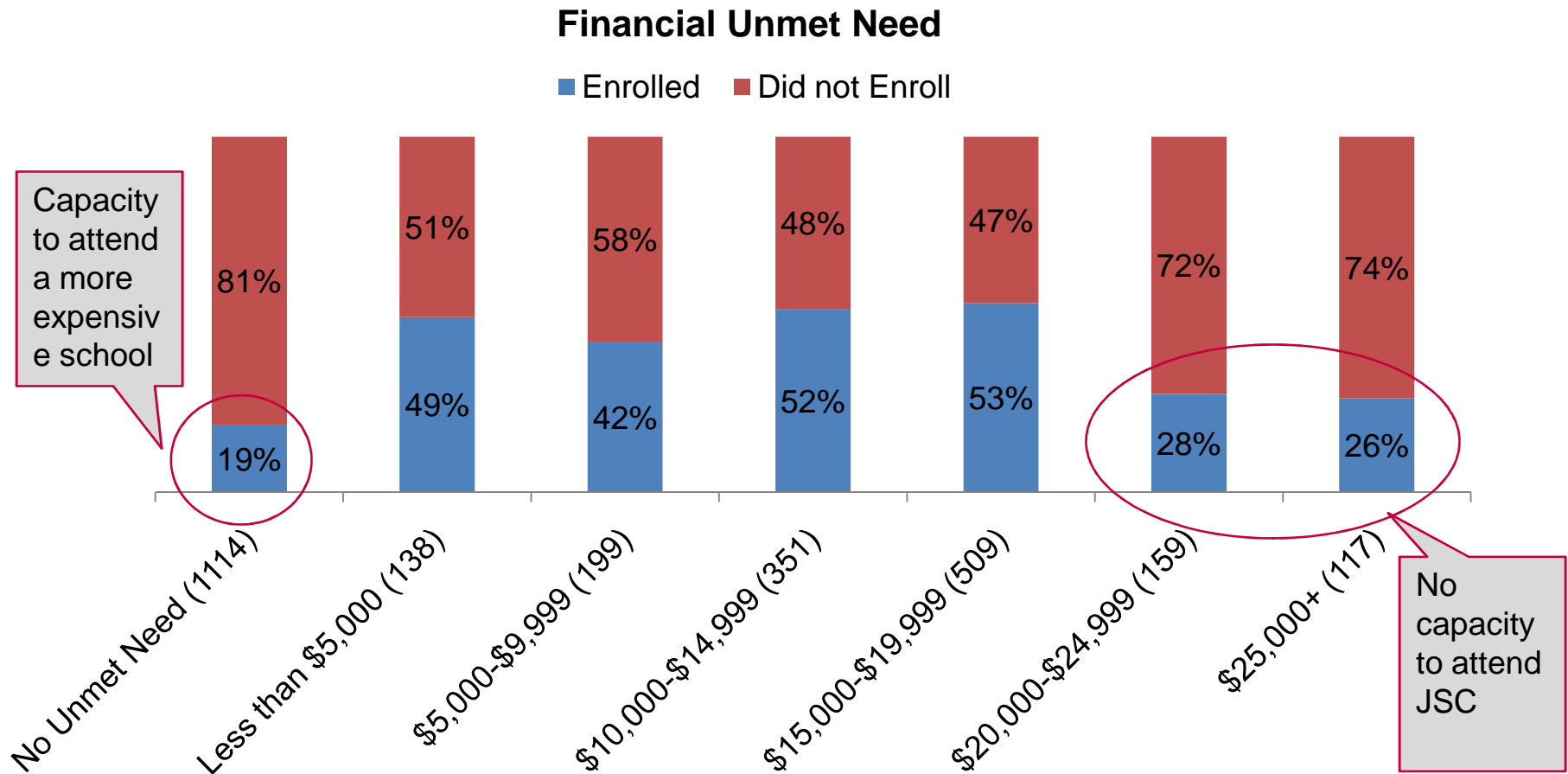
EFC, Intended Academic Program, Involvement Interest and Admit Index Have Important Impacts on the Decision to Enroll at JSC

- **Although EFC has an effect on the decision to enroll at JSC, the major impacting factor is whether or not the applicant submitted a FAFSA:** Applicants who do not apply for financial aid and those who can contribute \$50,000+ are significantly* less likely to enroll at JSC than applicants who can contribute nothing.
- **Certain academic programs yield strongly while others have weak yield:** Associate, English, Outdoor Education applicants are significantly more likely than Undecided applicants to enroll at JSC; whereas Liberal Studies and Health Studies applicants are significantly less likely to enroll than Undecided applicants.
- **Applicants who indicate interest in involvement and who have higher admit indices are less likely to enroll at JSC than their counterparts:** Applicants with an admit index greater than 30 are significantly less likely to enroll compared to applicants with an index less than 20.

There Is a Significant Correlation Between Financial Aid Status and Decision to Enroll at JSC, Where Applicants who Did Not Apply For Financial Aid Typically Do Not Enroll

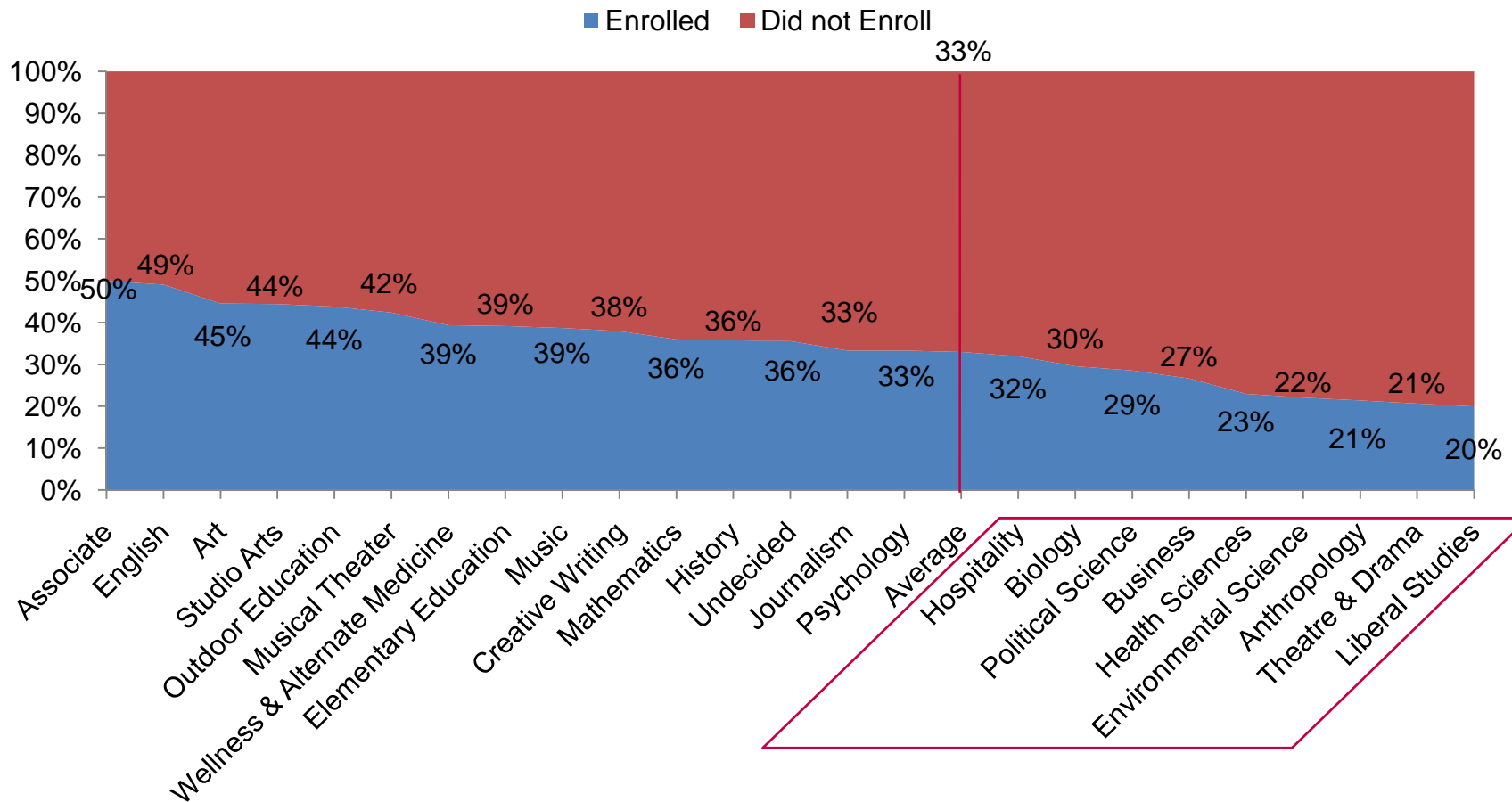


Non-Enrollers Fall Into Two Bands – Those With Capacity to Attend a More Expensive School and Those With No Capacity to Attend JSC



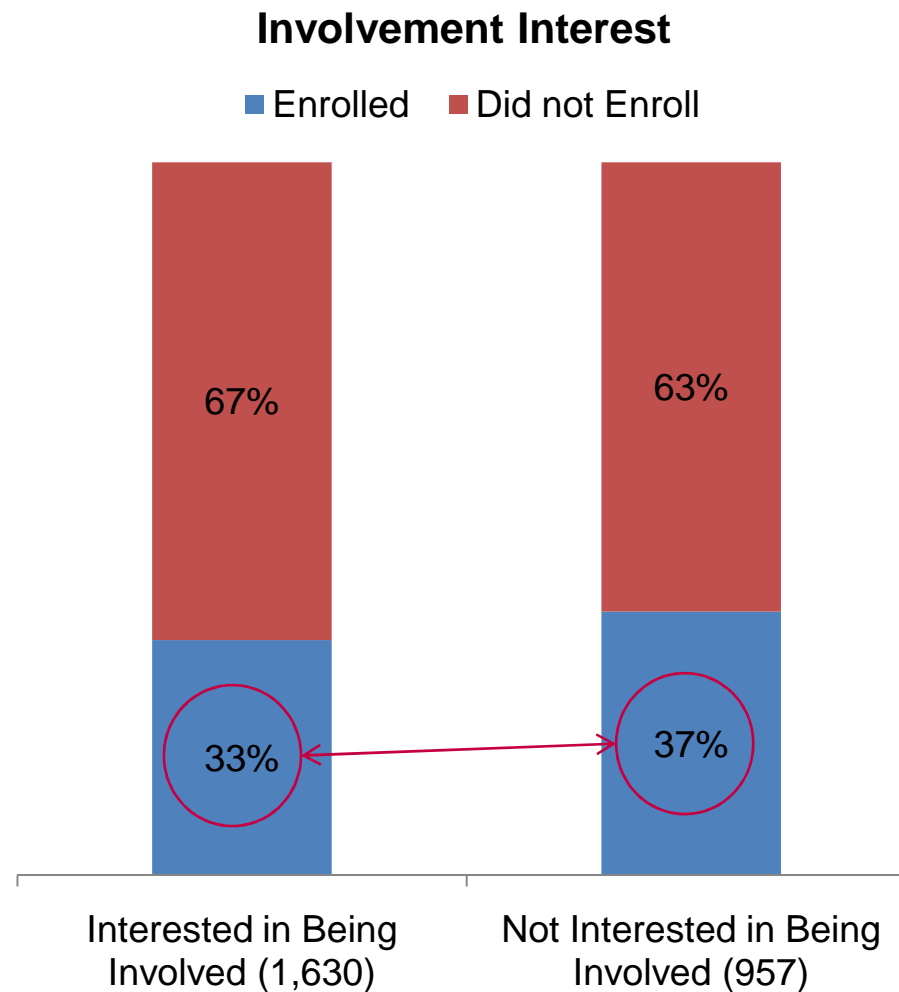
Associate, English, Musical Theater, Outdoor Education, and Studio Arts Applicants Yield More Strongly Than Other Intended Academic Programs

Intended Academic Program, Percent Enrolled



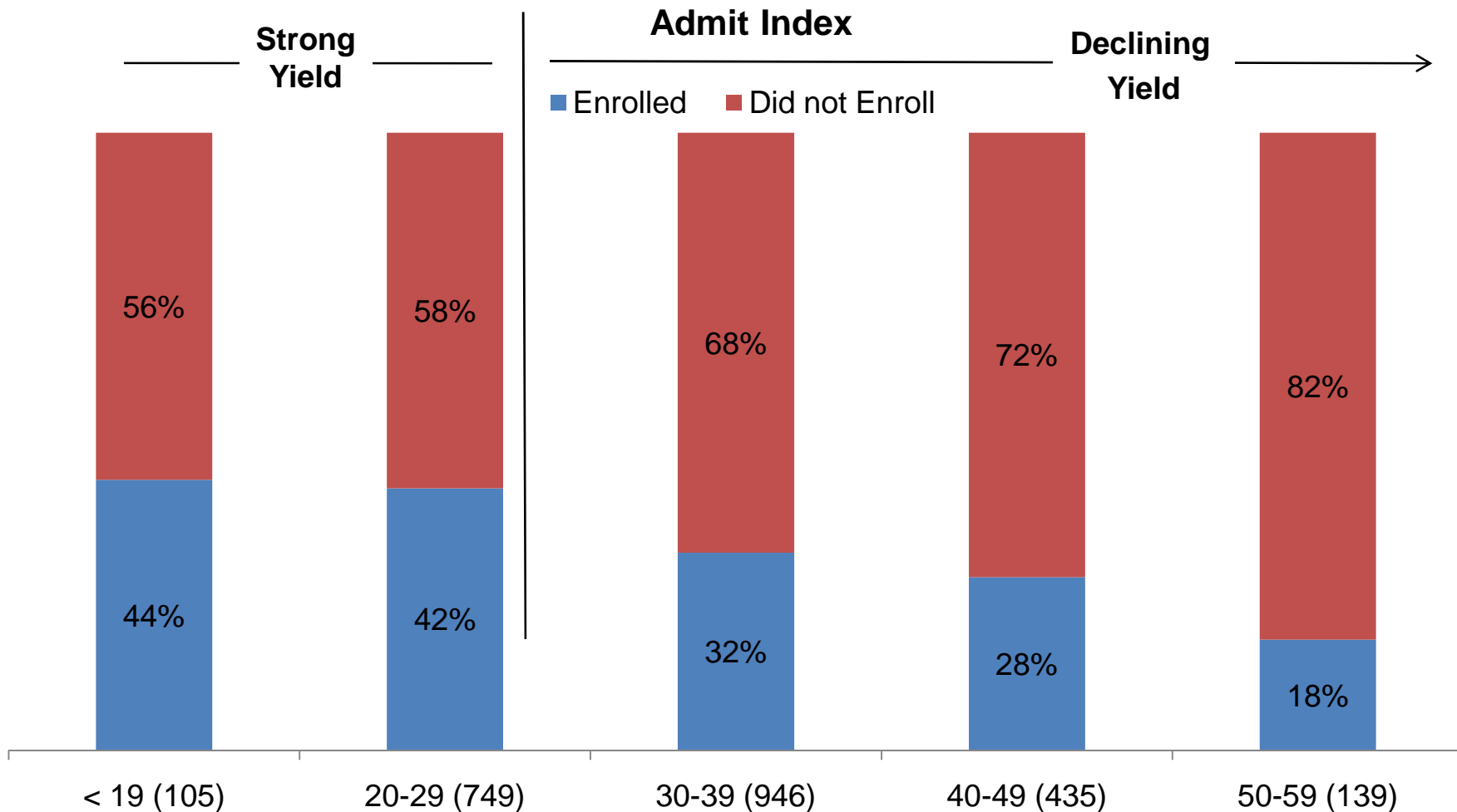
On the other hand, Anthropology, Liberal Studies, Theatre & Drama, Environmental Science and Health Science had a low yield rate.

Yield Was Lower For Students Who Expressed Interest in Being Involved at JSC



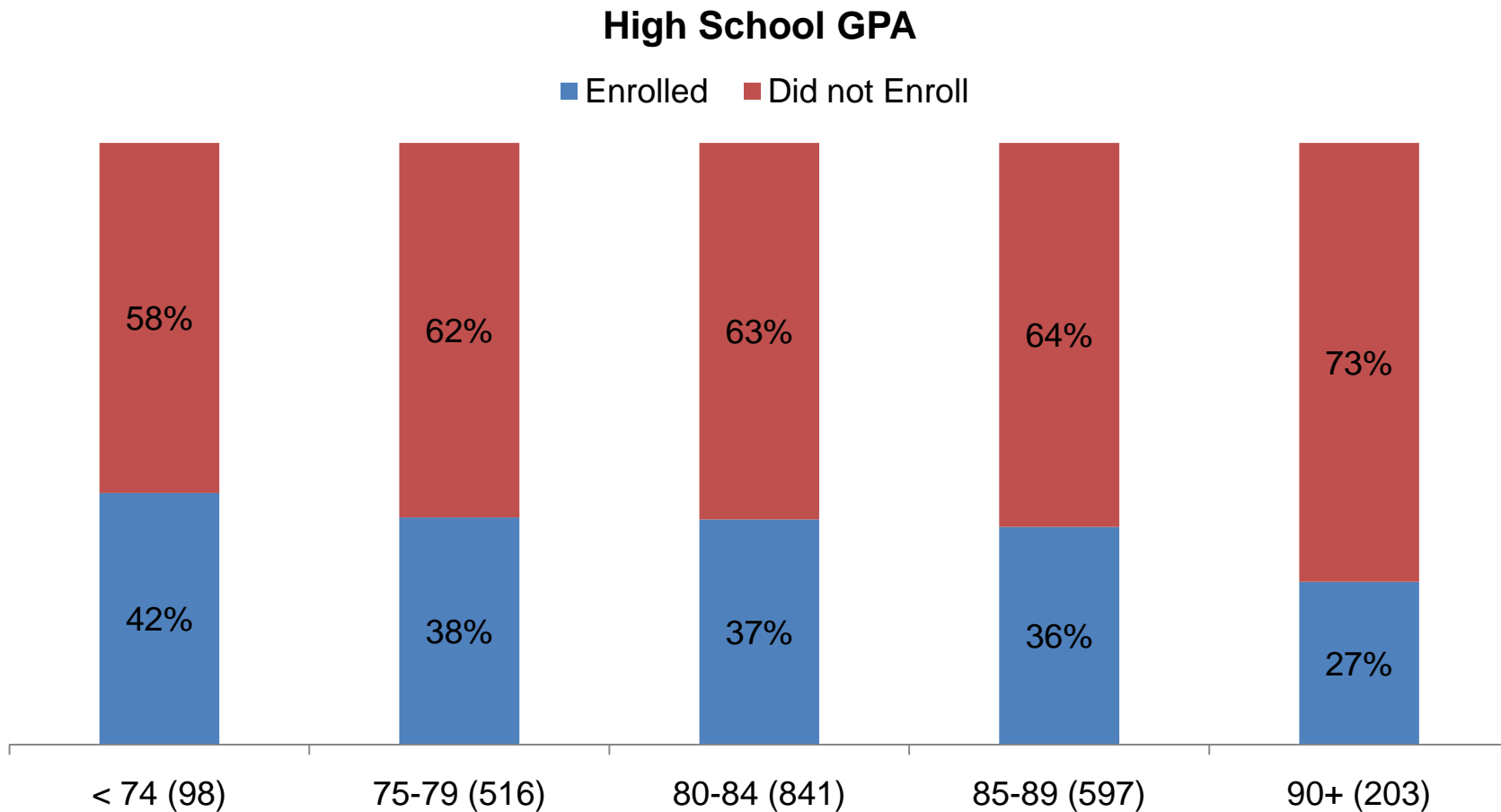
Investigate how you are marketing involvement at JSC

Yield Begins to Decline Sharply At an Admit Index of 30-39 or Above



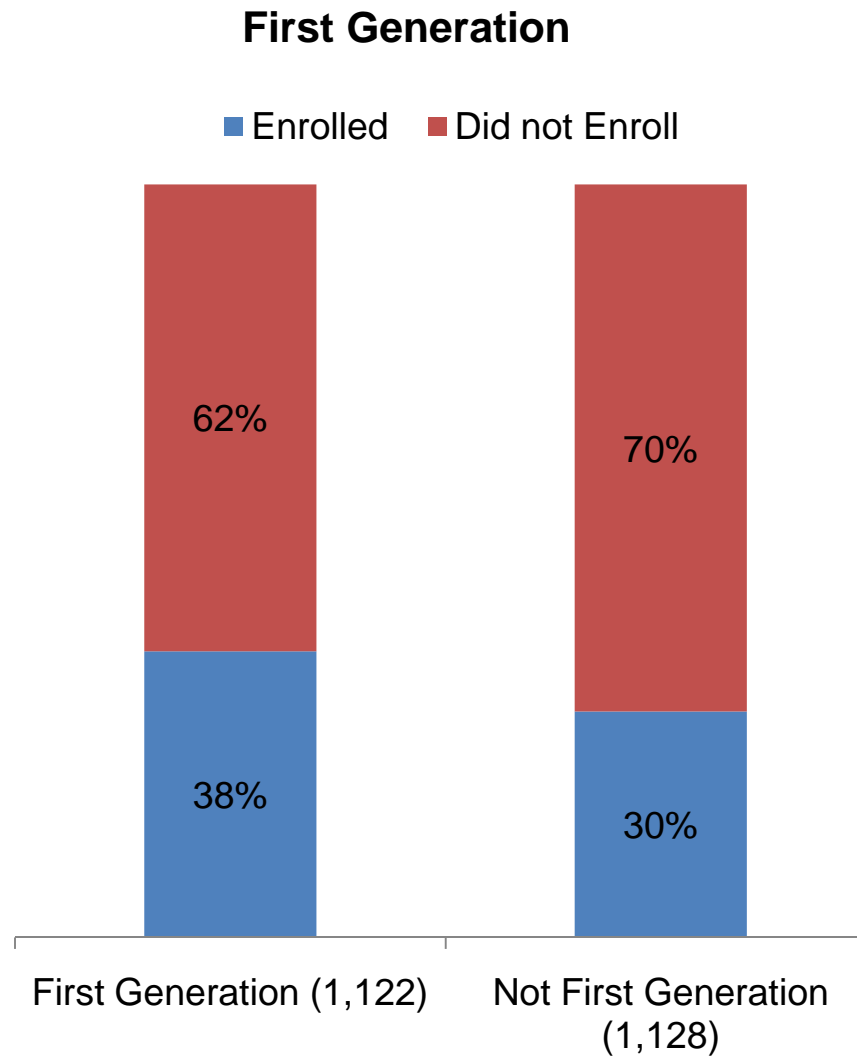
Investigate recruitment techniques – are there recruitment strategies for augmenting higher skill student enrollments? Is there an honors program available at JSC – and if so, how is it being marketed?

High School GPA Shows the Same Trend as the Admit Index



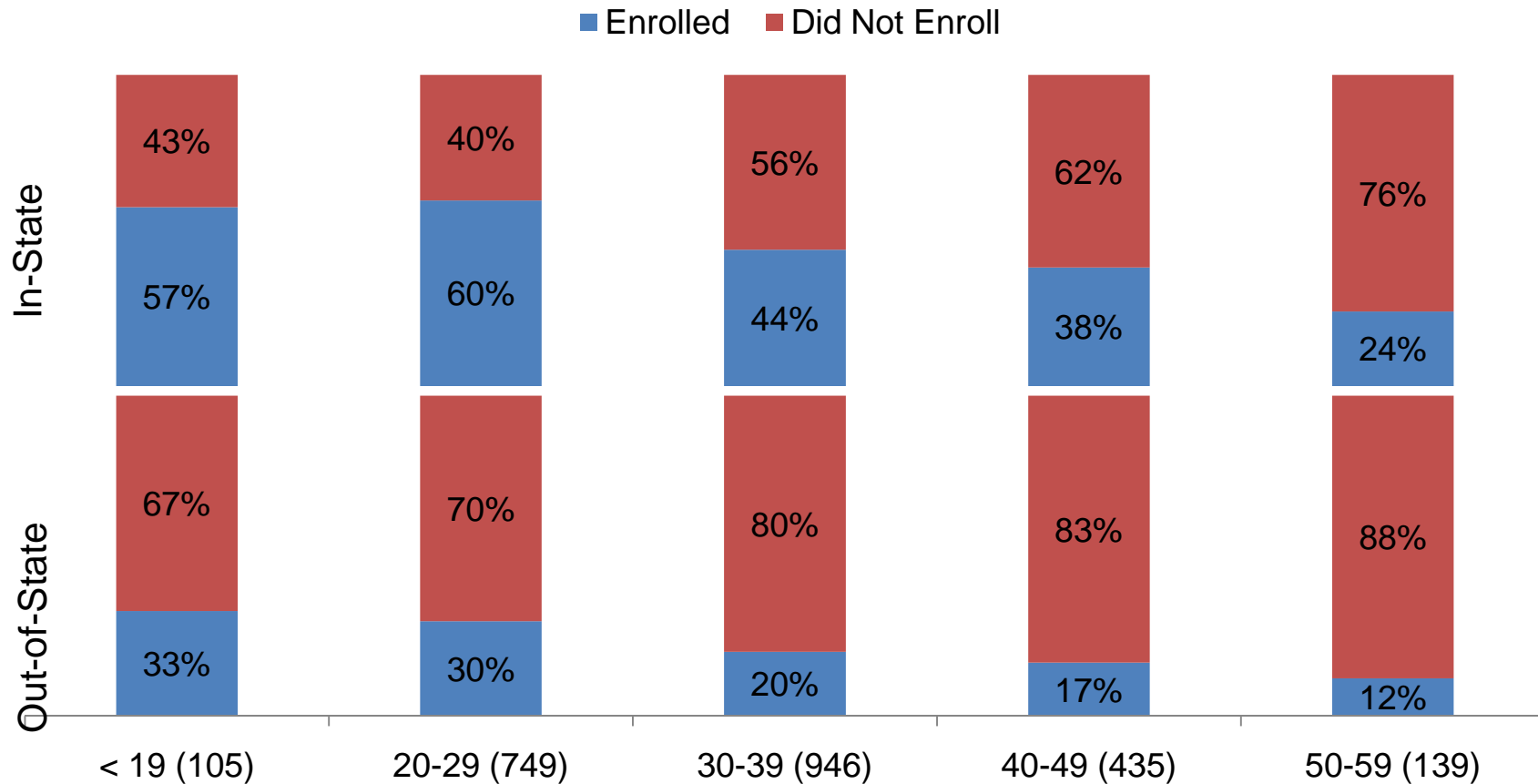
In addition to recruitment strategies, investigate how JSC is branding itself, as this will have an impact on the types of students who apply and then attend. Assess whether there are merit scholarships available for high achieving students.

First Generation Applicants Enrolled More Frequently Than Non-First Generation Applicants



For Both In-State and Out-of-State, Applicants With High Admit Index Yielded Less Frequently

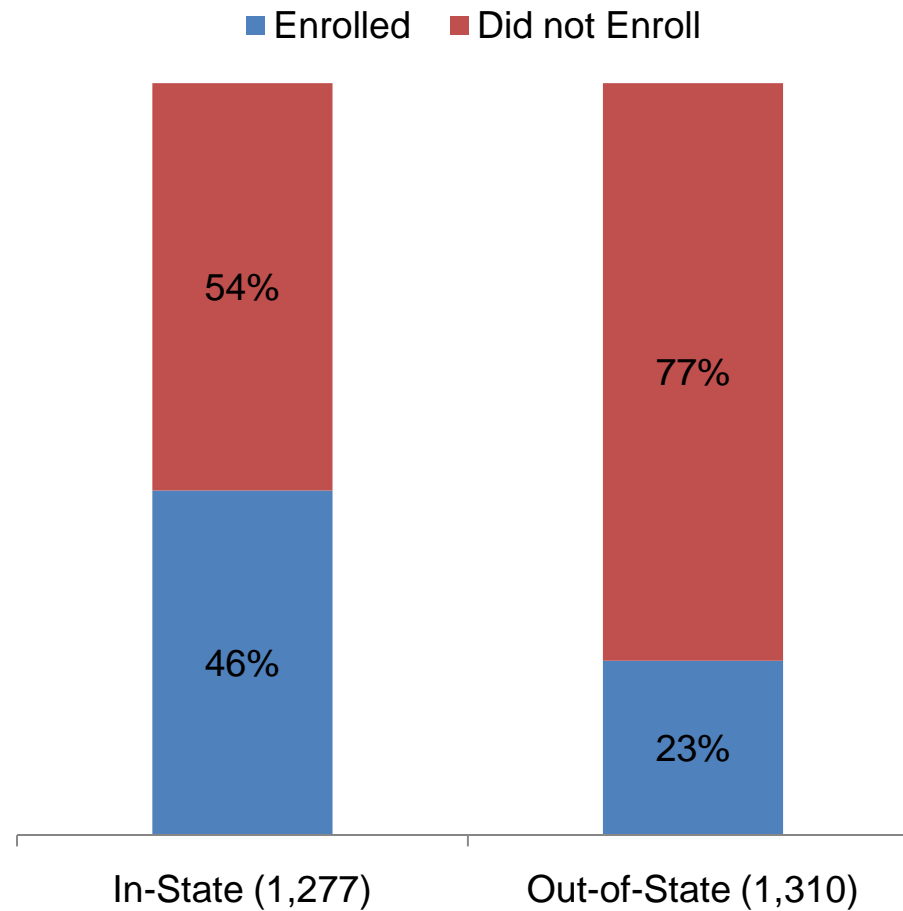
Admit Index, By Residency and Yield



In general, out-of-state yield was far lower than in-state yield.

Students who Enrolled Were Typically In-State, Even Though the Majority of Applicants Were Out-of-State

Residency



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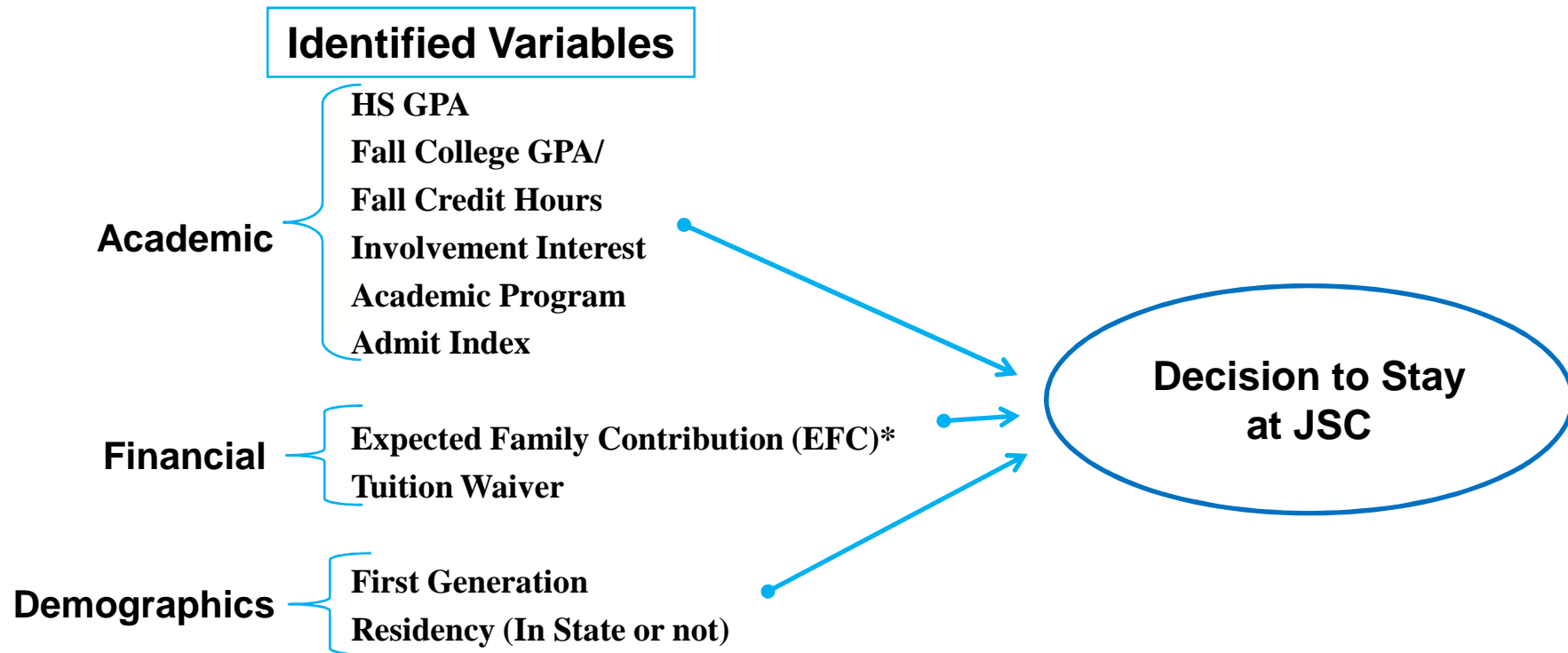
Research Findings

• *Yield* **15**

• *Persistence* **30**

Appendix **44**

Ten Variables Are Included in the Model to Predict the Likelihood to Persist From Fall-to-Fall at JSC



Small sample size and a limited number of input variables may limit the model's predictive validity.

*EFC was used instead of financial unmet need to control for those students who did not apply for financial need, or did not receive any.

First Semester GPA Is the Best Predictor of Likelihood to Stay at JSC from Fall-to-Fall, Controlling for the Rest of the Variables

Variable
First Generation
Residency
Admit Index
High School GPA
Involvement Interest
Fall College GPA
Fall Credit Hours
Intended Academic Program at JSC
Tuition Waiver
EFC



- Fall College GPA is the only significant predictor of a student's likelihood to persist from Fall-to-Fall
- All other variables do not add to the predictive validity of the model

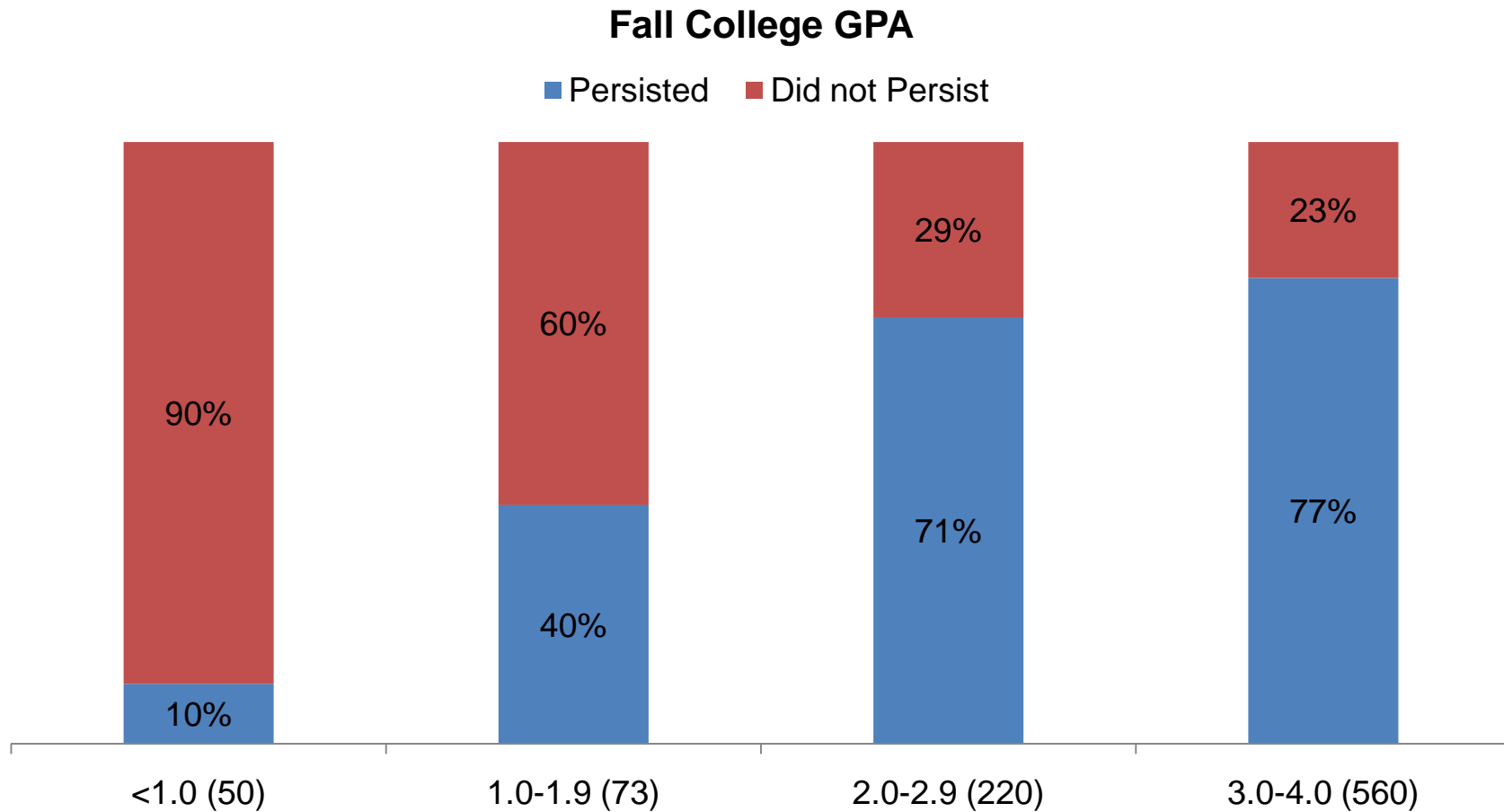
Financial Need Does Not Have an Impact* on a Student's Likelihood to Persist

- Although students who have an EFC between \$20-29K are more likely to persist than students who can contribute nothing; in the regression model, EFC does not predict a student's likelihood to persist
- Conversely, students with lower GPA are significantly less likely to persist. Statistically, students with a fall GPA greater than a 2.0 are more likely to persist than those with lower than a 2.0
- However, the majority of non-persisters had a decent GPA (>2.0) and were enrolled full-time; JSC should investigate where these students are going when they leave
 - Social environment and other factors not available in this dataset may be the cause

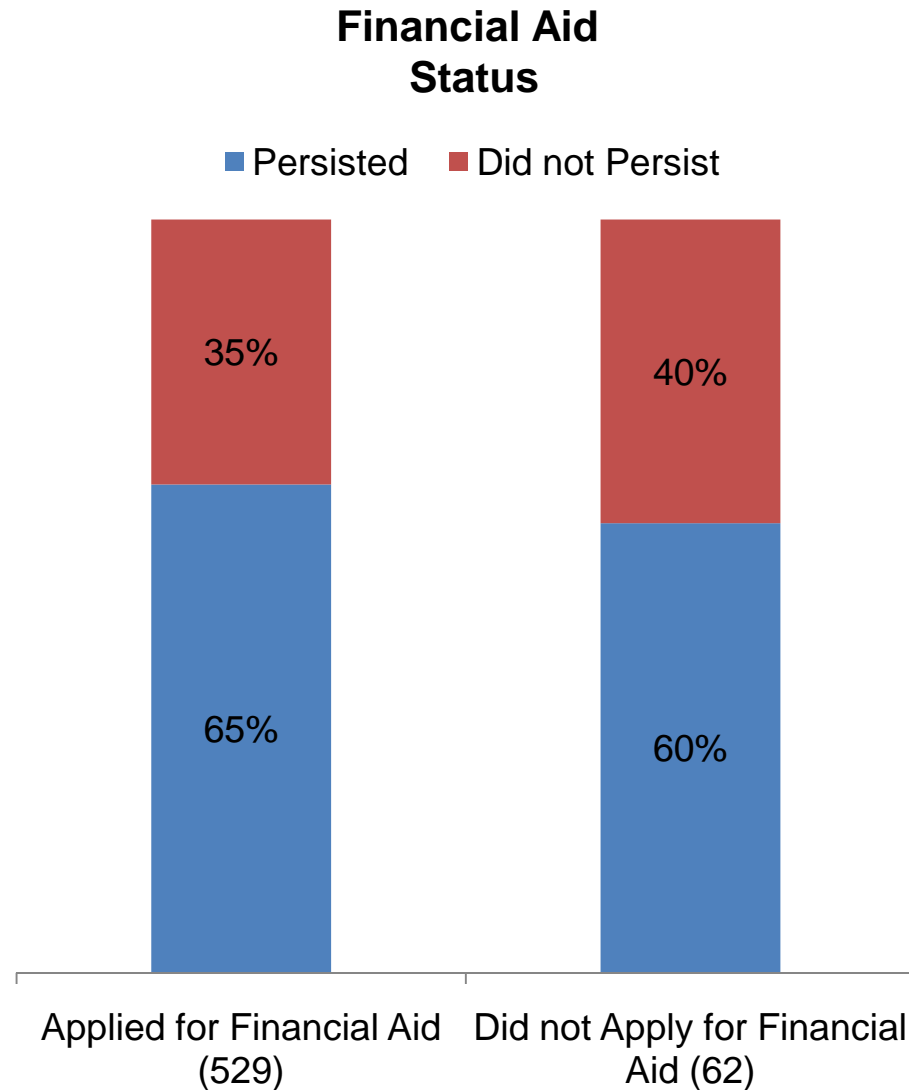
Certain Programs Are Under-Performers With Respect to Retention Rate

- Biology, Psychology and Journalism, in particular, are the biggest under-performers

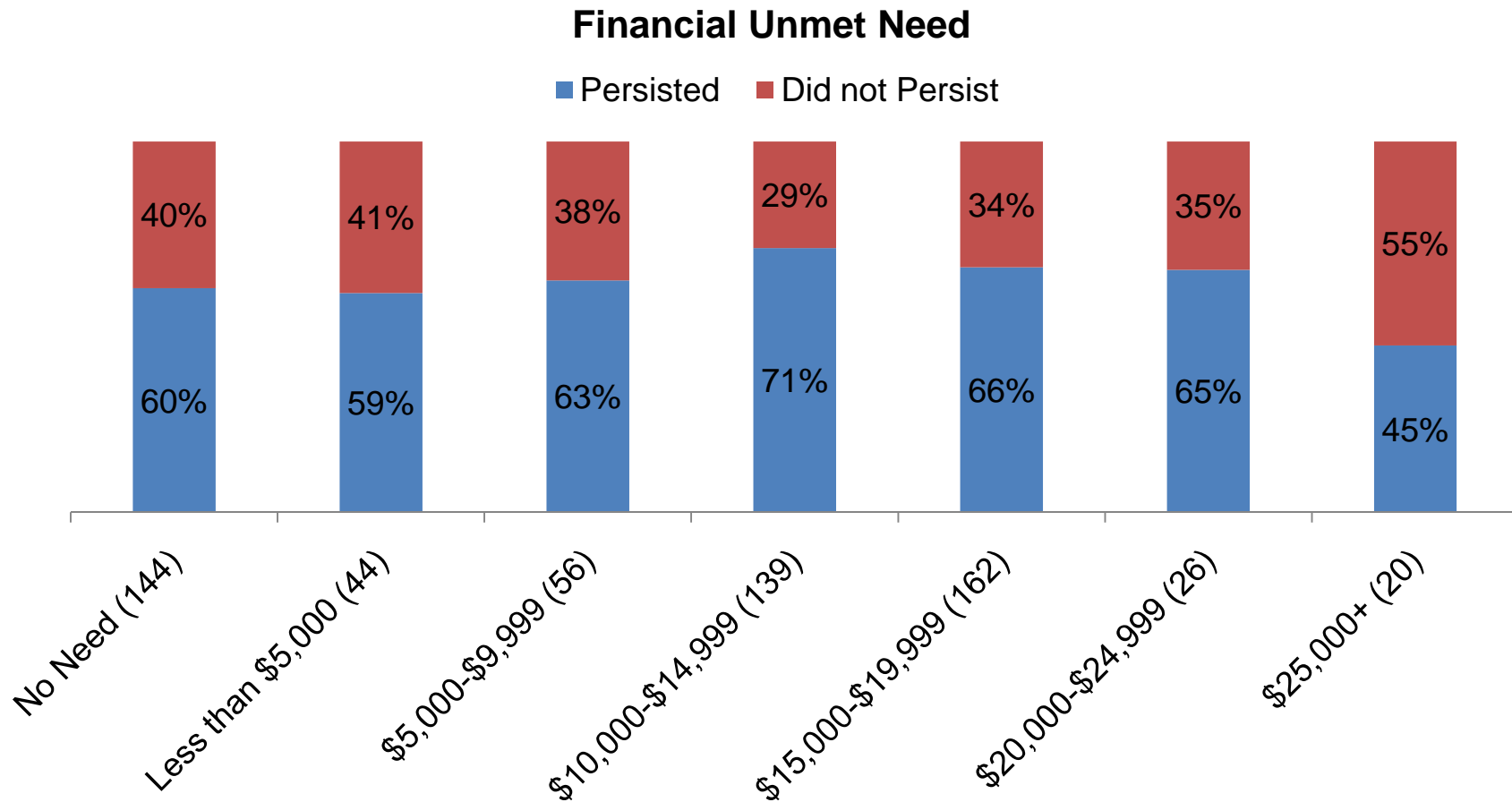
Students With Low Fall GPAs Persisted Less Than Students With Decent Fall GPAs



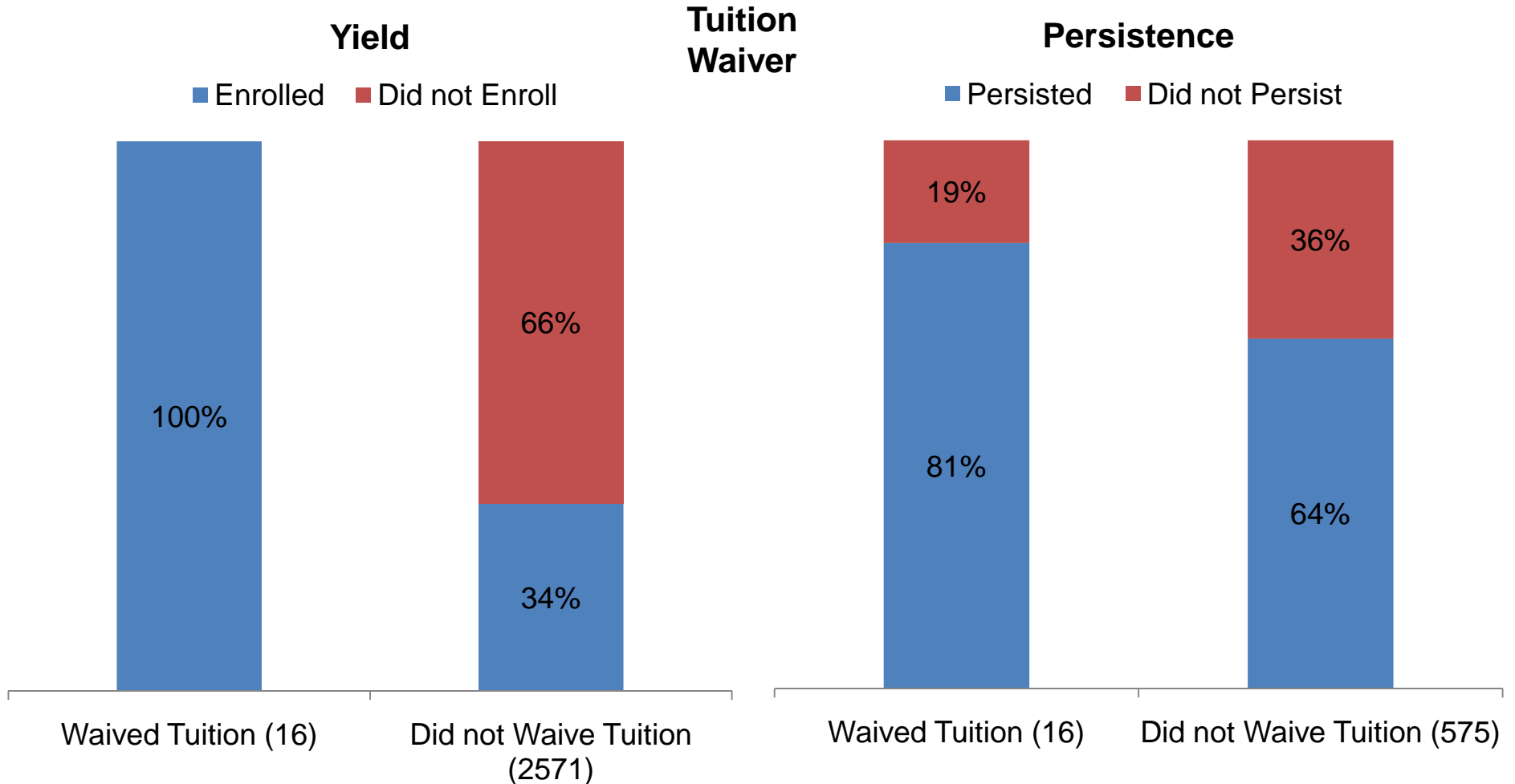
Students who Did Not Apply For Financial Aid Were Slightly Less Likely to Persist



For the Most Part, Persistence Did Not Vary By Level of Unmet Need; However, Students With Extreme Unmet Need Were Less Likely to Persist

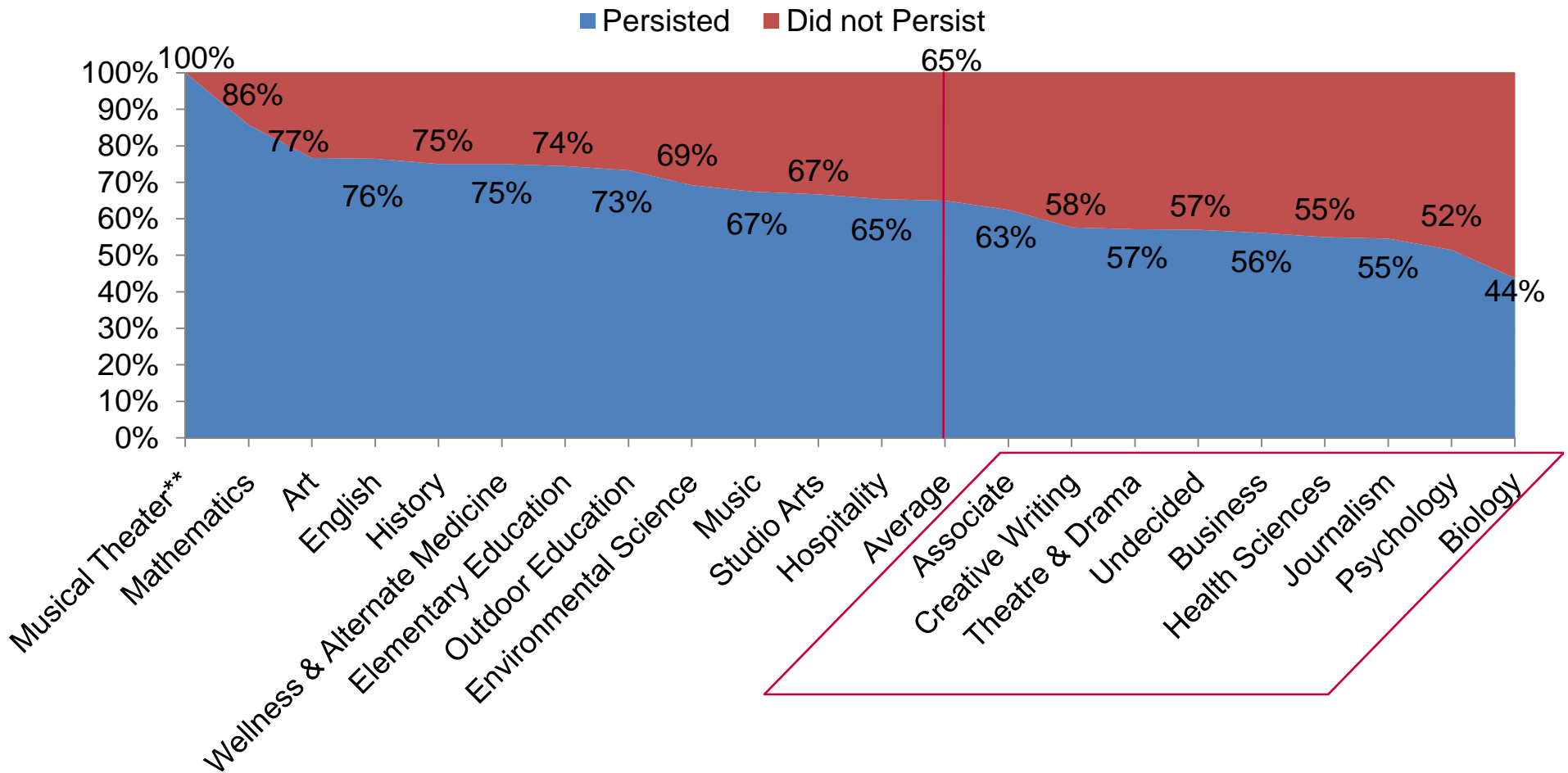


Students That Received a Tuition Waiver Were Much More Likely to Enroll and Then Persist at JSC

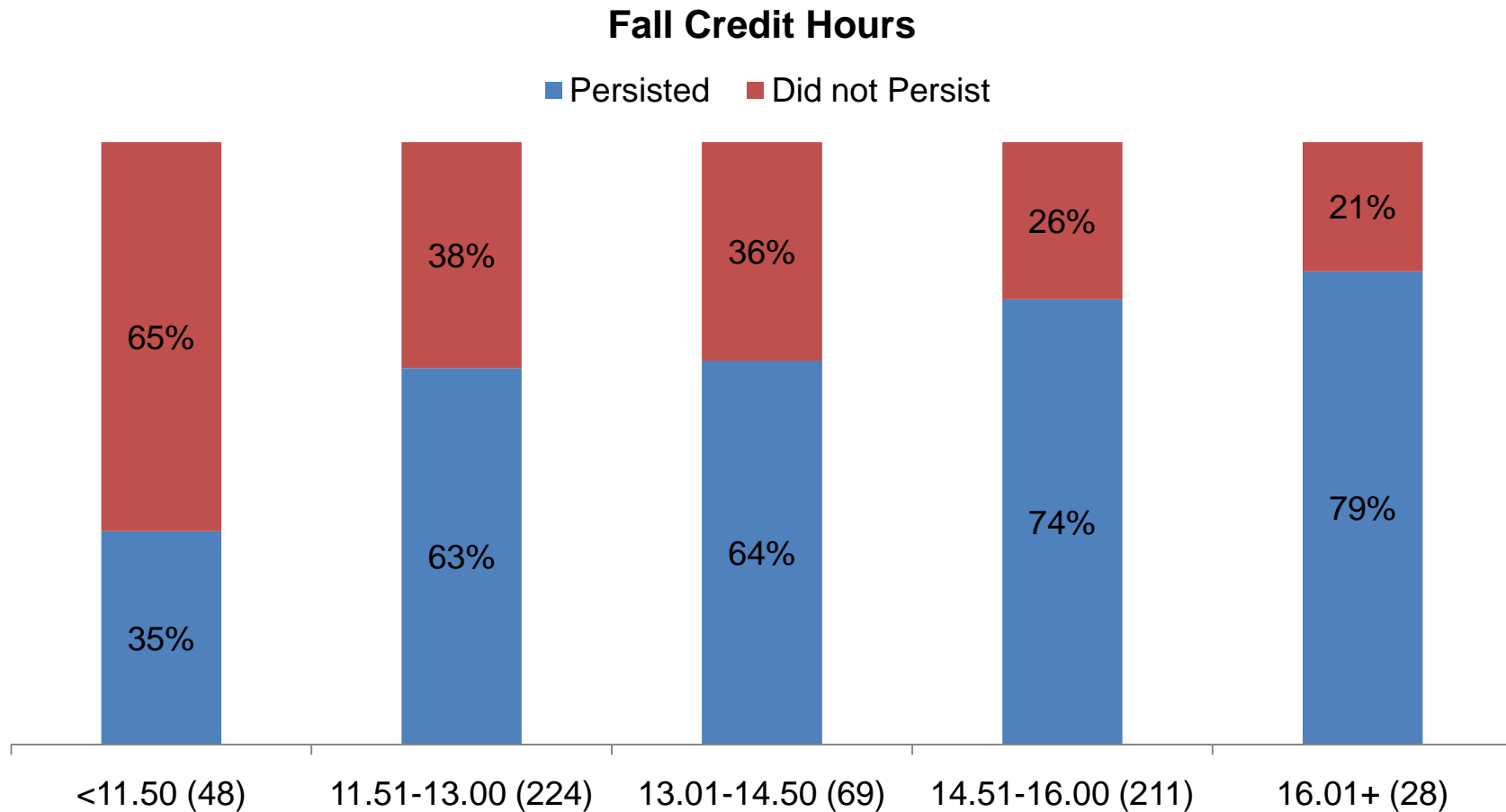


Certain Academic Programs Have Lower Persistence Rates and Further Study Should be Undertaken to Understand Why

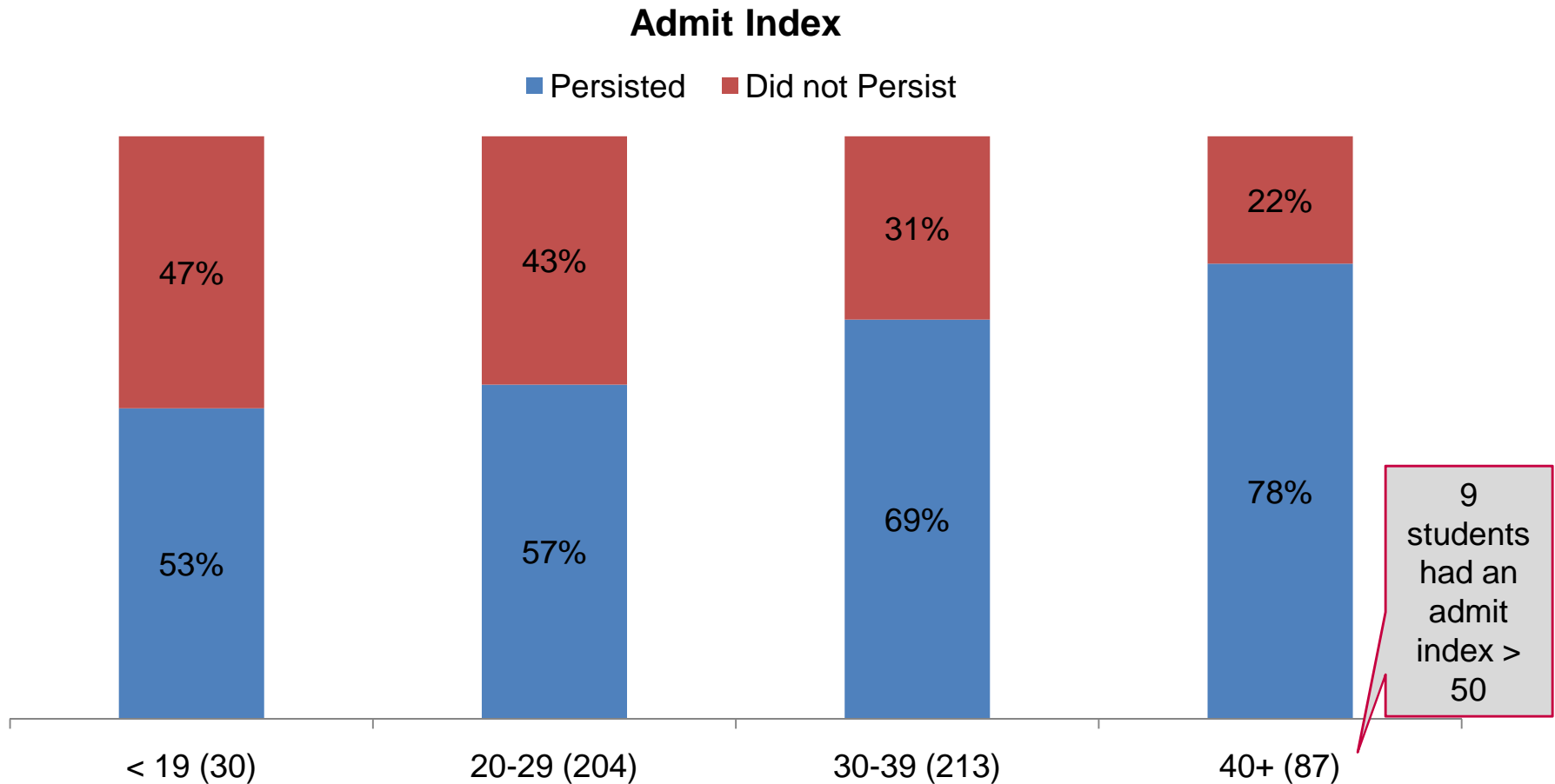
Intended Academic Program*, Percent Persisted



Part-Time Students or Students Taking Fewer Classes Were Less Likely to Persist

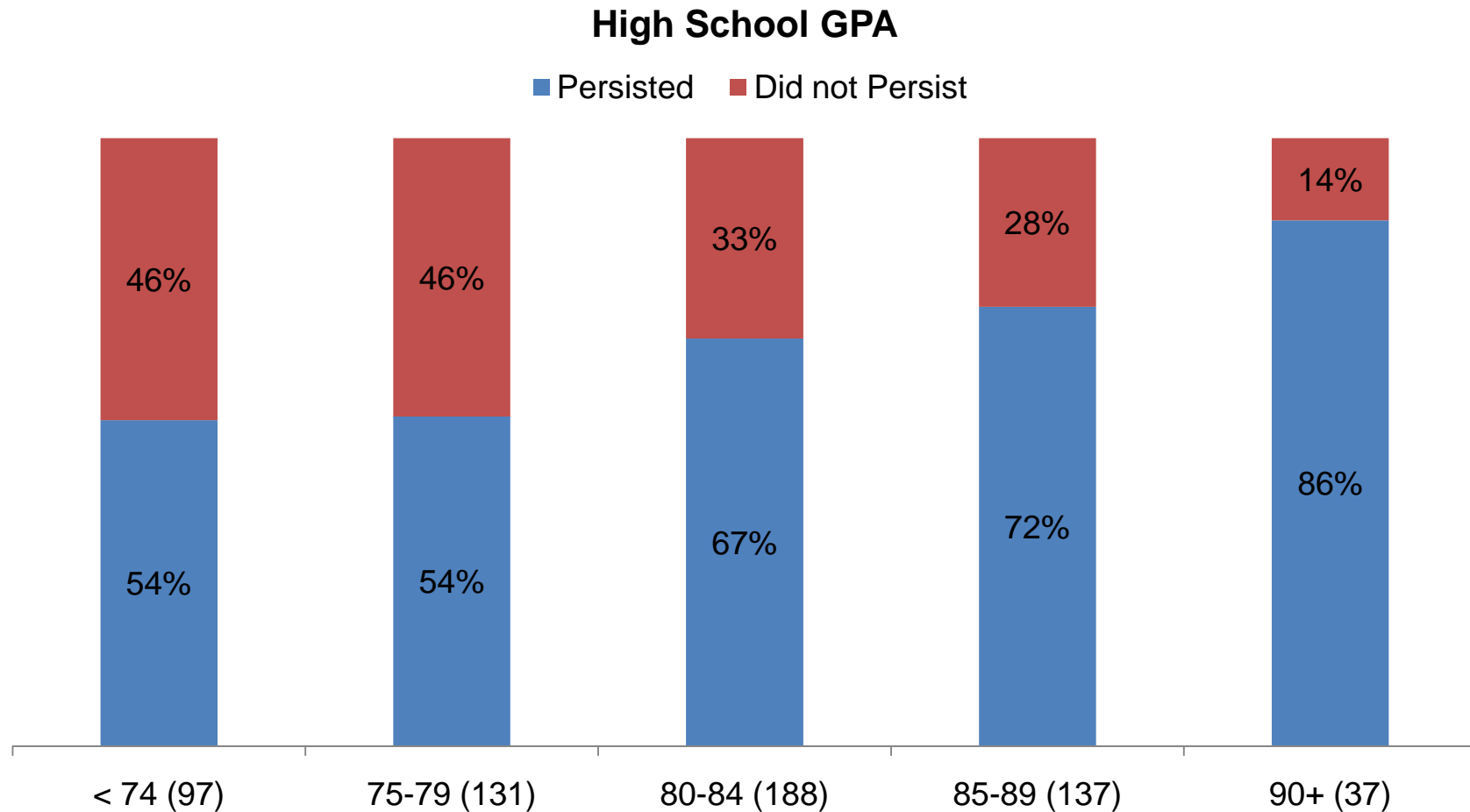


Students With a Lower Admit Index Typically Did Not Persist From Fall-to-Fall at JSC



Even though the highest percentage of enrolled students were those with an index between 20-29, this group had the highest percentage of students not persist for a second year.

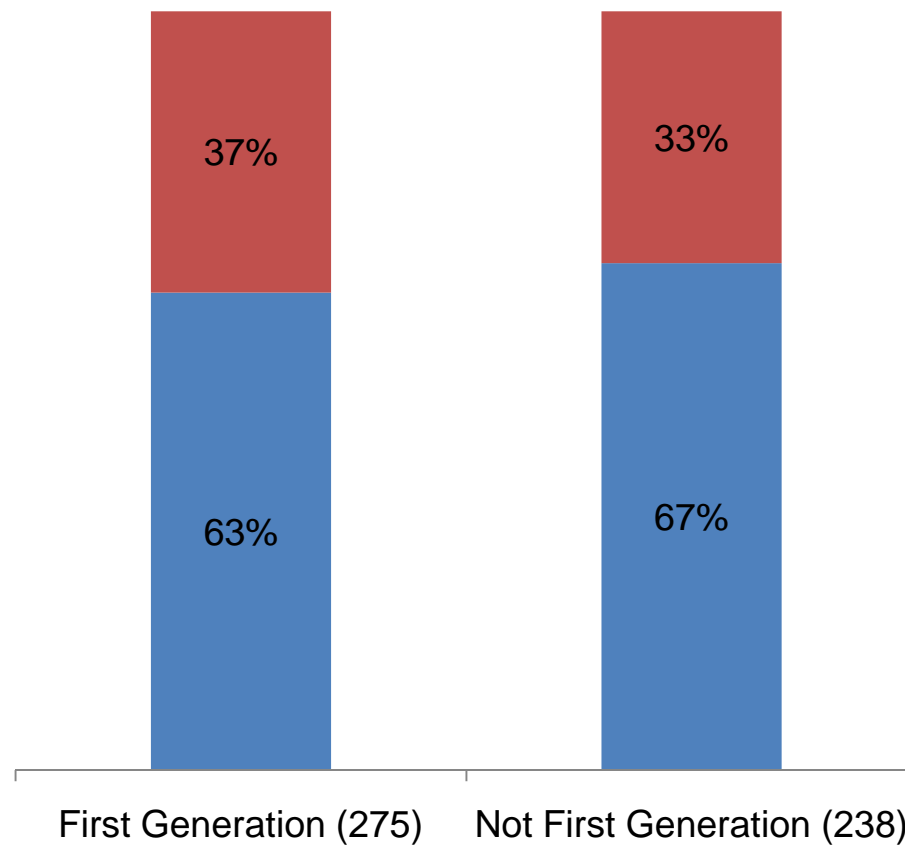
The Positive Correlation Between High School GPA and Fall College GPA Indicates That Students Who Perform Well Academically in High School Are More Likely to Succeed at JSC and Persist



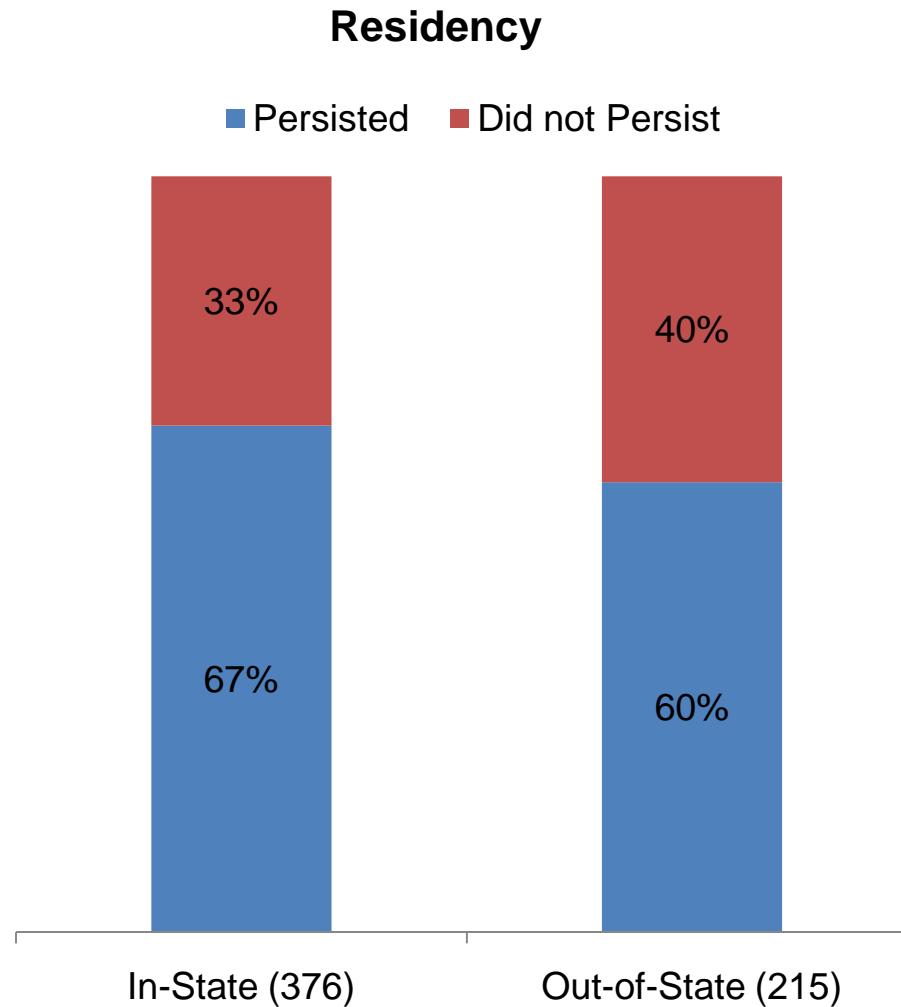
First Generation Students Enrolled More Than Non-First Generation, But These Students Were Less Likely to Persist

First Generation

■ Persisted ■ Did not Persist



Out-of-State Students Were Less Likely to Persist, Just as They Were Less Likely to Enroll



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A More In-Depth Look at Logistic Regression and Odds Ratio

- **Logistic Regression:** Statistical analysis that uses continuous and categorical predictor variables to predict the probability of: a student matriculating, a student persisting from fall-to-fall. This analysis also identifies the data points that are most significant in predicting this probability.
 - The coefficient estimates of the logistic regression represent marginal effects of a change in each explanatory variable holding all other variables constant. They describe the increase or decrease in probability of giving with respect to the average individual or reference group. Variables with dashed lines are the reference group for each category.

HS GPA	Odds Ratio
<75	---
75-79	.687

- For example, here we see that students with a high school GPA between 75-79 are 0.687 times the odds* (e.g. are less likely) of enrolling at JSC than applicants with a high school GPA less than 75. An odds ratio greater than 1 indicates that the group is more likely to enroll/persist than the reference group.
- **Odds Ratio:** Ratio of the odds of an event occurring in one group to the odds of it occurring in another group (e.g. the ratio of odds of male student to the odds of female student yielding); where the odds represents the relative likelihood that the event will happen compared to the relative likelihood that the event will not happen (donation versus not). Odds are commonly expressed as ratios, e.g. 2:1, the odds are 2 to 1 that student X will yield.

Logistic Regression Output for Enrollment Model

- At a Glance**
- Observations: 1,862
 - Pseudo R2: 0.295
 - Indicator Variable Sets: Jointly significant at the 95% level of confidence

EFC	Odds Ratio (OR) [†]
No Contribution	----
Less than \$10,000	.922
\$10,000-\$19,999	.966
\$20,000-\$29,999	.634
\$30,000-\$39,999	.717
\$40,000-\$49,999	1.039
\$50,000+	.424*
Did not receive aid	.842
Did not apply for financial aid	.137***

Other	OR
First Generation	.966
In-State Applicants	3.070***
Interested in Being Involved	0.759*

HS GPA	OR
<75	---
75-79	.687
80-84	.759
85-89	.872
90-94	.758
95+	10.954**

Admit Index	OR
<20	---
20-29	1.066
30-39	.517*
40-49	.339**
50-59	.181***
60+	.188

Intended Academic Program	OR
Undecided	---
Liberal Studies	.170*
Health Sciences	.474*
Political Science	.575
Environmental Science	.642
Anthropology	.649
Business	.727
Psychology	.803
Theatre & Drama	.871
Elementary Education	.960
Music	1.052
Biology	1.110
Studio Arts	1.138
History	1.344
Journalism	1.382
Hospitality	1.462
Wellness & Alternate Medicine	1.528
Mathematics	1.534
Art	1.586
Creative Writing	1.754
English	2.193*
Musical Theater	2.800*
Outdoor Education	3.068***
Associate	4.162**

*p<.05, **p<.01, ***p<.001 †See Appendix A for a detailed description of Odds Ratio

Logistic Regression Output for Persistence Model

- At a Glance**
- Observations: 439
 - Pseudo R2: 0.348
 - Indicator Variable Sets: Only Fall GPA is jointly significant at the 95% level of confidence

Other	Odds Ratio (OR)
First Generation	0.674
In-State Applicants	1.711
Interested in Being Involved	0.700
Waived Tuition	1.750

EFC [†]	OR
No Contribution	----
Less than \$10,000	0.605
\$10,000-\$19,999	1.053
\$20,000-\$29,999	0.248*
\$30,000-\$39,999	0.996
\$40,000-\$49,999	0.508
\$50,000+	1.154
Did not apply for financial aid	0.517

Admit Index [†]	OR
<20	---
20-29	1.438
30-39	1.749
40-49	1.187
50-59	.805

Fall Credit Hours	OR
< 11.5	---
11.51-13.00	1.899
13.01-14.50	.904
14.51-16.00	1.738
16.01+	.631

HSGPA	OR
<75	---
75-79	1.262
80-84	.862
85-89	1.007
90-94	4.524
95+	1.632

Fall GPA	OR
< 1.0	0.058**
1.0-1.9	---
2.0-2.9	3.799***
3.0-4.0	5.145***

*p<.05, **p<.01, ***p<.001

Intended Academic Program [†]	OR
Undecided	---
Anthropology	0.811
Theatre & Drama	1.186
Journalism	1.212
English	1.249
Hospitality	1.367
Studio Arts	1.369
Environmental Science	1.373
Associate	1.383
Psychology	1.633
Elementary Education	2.156
Business	2.323
Mathematics	2.604
Music	2.670
Biology	2.823
Wellness & Alternate Medicine	3.349
Health Sciences	3.370
Creative Writing	3.664
Art	3.872
History	5.990
Outdoor Education	6.577**

[†] Due to low sample sizes, certain categories were excluded from the model. See appendix for complete list of excluded categories

Certain Categories Had to be Excluded From the Model Predicting Retention

Due to small sample sizes, inclusion of these categories led to unstable analyses:

- *EFC*: “Did not Receive Aid”
- *Academic Program*: “Liberal Studies”; “Musical Theater”; “Political Science”
- *Admit Index*: “60+”