Office of
Research & Planning

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Research Briefs from the Office of Research & Planning
The Relationship between Student Success and Participation in the 2011-2012 Crafton Hills College San Manuel Student Success Partnership Program

Purpose

The purpose of this brief is to illustrate the relationship between the services received by the San Manuel students in the 2011 – 2012 academic year and their completion, success, and retention rates to help inform the continued development of the San Manuel program and services provided to students.

Summary of Findings

San Manuel Student Characteristics

- 875 students participated in the San Manuel Program
- 49% were Hispanic or Native American
- 6% participated in a Learning Community (LC)
- 65% received tutoring services in the Tutoring Center
- 65% completed a Student Education Plan (SEP)
- 88% received counseling services

Findings

- San Manuel Students were statistically significantly and substantially more likely to be retained from fall to spring (83%) than Non-San Manuel students (69%)
- The Tutoring Center Cohort of San Manuel students were statistically significantly more likely to successfully complete their courses (77%) than the Non-San Manuel students in the Tutoring Center comparison group (71%)
- The Tutoring Center Cohort of San Manuel Students were statistically significantly and substantially more likely to be retained from fall to spring (86%) than the Non-San Manuel students in the Tutoring Center comparison group (72%)
- The Counseling Cohort of San Manuel Students were statistically significantly and substantially more likely to be retained from fall to spring (83%) than the Non-San Manuel students in the counseling comparison group (69%)

Findings by Ethnicity

- African American San Manuel Students were statistically significantly and substantially more likely to successfully complete their courses (75%) than African American Non-San Manuel students (68%)
- African American San Manuel Students were statistically significantly and substantially more likely to be retained from fall to spring (84%) than African American Non-San Manuel students (65%)
- Hispanic and Native American San Manuel Students combined were statistically significantly and substantially more likely to be retained from fall to spring (82%) than Hispanic and Native American Non-San Manuel students (68%)

Predictors of Completion, Student Success and Retention from Fall to Spring

- 100% of San Manuel students who participated in a learning community and who were 19 years old or younger or 50 years old or older completed (formally retention) their courses
- The best predictor of course success was utilizing the Tutoring Center services 11 or more times (approximately five times each semester)
- If students had not used the services provided by the Tutoring Center, they were statistically significantly more likely to successfully complete a course if they saw a counselor 10 or more times (approximately five times each semester)
- The best predictor of retention from fall to spring was seeing a counselor 9 or more times (approximately four to five times each semester)

Methodology

Counseling Cohort. In order to qualify for the San Manuel counseling program, students needed to be enrolled in one of the following developmental reading, English, or math courses: READ-925 (Introduction to Reading), READ-956 (Intermediate Reading), READ-078 (Advanced Reading), ENGL-914 (Basic English Skills), ENGL-015 (Preparation for College Writing), MATH-942 (Arithmetic), MATH-952 (Pre-Algebra), or MATH-090 (Elementary Algebra). In addition, students had to be economically disadvantaged by qualifying for BOGWA or B. Students receive a BOGWA (Board of Governors Waiver) if they are receiving one of the following types of public assistance: AFDC/TANF (Temporary Assistance to Need Families), SSI (Supplemental Security Income), or General Assistance. Students receiving a BOGWB have an income equal to 150% of the federal poverty guidelines. **In order to measure the effectiveness of the San Manuel program, San Manuel students were compared to students who were enrolled in the same sections and who were BOGWA or B eligible.** A database of students who participated in the San Manuel Counseling program was provided by the Dean of Counseling and Matriculation.

Tutoring Center Cohort. In addition, students could also qualify for the San Manuel Program if they attended the Tutoring Center in the Fall 2011 or Spring 2012 semester and placed into at least one developmental level course. Developmental courses include any English, math, or reading course that is not transferable to a four-year university. San Manuel students were flagged as either being primarily Tutoring Center students or Counseling students, depending on how they qualified for the San Manuel program.

All of the information from both cohorts was merged on Term and Student ID into a grades database that was retrieved from the college's MIS system. Twenty-six of the 499 students (5%) were excluded from the merge because these students did not earn a grade on record (GOR) in either Fall 2011 or Spring 2012.

Comparison Cohorts. The comparison cohorts for each group were different because having the same comparison group for each cohort would not have been as methodologically sound. Students in the Counseling Cohort needed to have qualified for financial aid; whereas, students in the Tutoring Center Cohort needed to have been placed into a developmental course. Accordingly, the comparison group for the Counseling Cohort had to have qualified for financial aid and be enrolled in the same sections as students in the Counseling Cohort. Students in the Tutoring Center comparison group had to have placed into a developmental course and be enrolled in the same section as students in the Tutoring Center Cohort. If a student was identified as being in the comparison group and was already identified as a San Manuel student for the Counseling or Tutoring Cohort, then they were excluded from the study.

Definitions. The number of **GOR** refers to one of the following grades and is also the number of students enrolled at census: A, B, C, D, F, P (CR), NP (NC), I, or W. **Completion** (formally

retention) rate refers to the number of students who completed the course with a grade of A, B, C, D, F, P (CR), NP (NC), or I divided by the number of GOR. **Success** rate is the number of A, B, C, or P grades divided by the number of GOR. Fall to Spring Retention (formally persistence) rate refers to the percent of students who earned a GOR in the fall semester and who also earned a GOR record in the following spring semester. **Developmental courses** include any English, reading, or math course that is not transferable to a four-year institution.

A student was identified as having completed a Student Education Plan (SEP) if they met with a counselor from May 26th, 2011 to May 24th, 2012, had a location code of "C_COUNSEL," a reason code of "SEP", and an "Attend_Flag" code of "Y". Moreover, according to the Dean of Student Services, Counseling, and Matriculation (SSCM), any student in EOPS and the SAN Manuel program received an SEP. In addition, a database identifying which students received an SEP was also provided by the Dean of SSCM.

In order to be counted as meeting with a counselor a student had to have an "Attend_Flag" code of "Y" and a location code of "C_COUNSEL" or "C_EOPS" from May 26th, 2011 to May 24th, 2012.

Learning community students were identified from a list of learning communities offered in Fall 2011 and Spring 2012 that was provided by the Dean of Math, English, Reading, and Instructional Support.

The **p-value** represents the probability that the difference in success, completion, and retention rate is due to chance. A p-value less than .05 indicates that the difference is less likely to occur randomly in the population (i.e. statistically significant). It is important to keep in mind that when interpreting statistical significance statistically significant differences can occur even when the difference between two groups is very small (Serlin & Lapsley, 1985). Accordingly, it is also important to not only look at statistical significance, but to also examine how large the difference is between the comparison groups, and to consider the size of the difference in order for it to be meaningful. Therefore, the results presented here also include an effect size.

The **effect size** statistic is used in meta-analyses. A meta-analysis uses quantitative techniques to summarize the findings from a number of studies on a particular topic to determine the average effect of a given technique (Marzano, Pickering, and Pollock, 2001; Marzano, Marzano, and Pickering, 2003). One method of interpreting effect size was developed by Jacob Cohen (Marzano et al.). Jacob Cohen defined "small," "medium," and "large" effect sizes (Rosenthal and Rosnow, 1984). He explained that an effect size of .20 can be considered small, an effect size of .50 can be considered medium, and an effect size of .80 can be considered large (Marzano et al., and Rosenthal and Rosnow, 1984). Equally important, if the lower end of the effect size confidence interval (CI) is above .20 it indicates that there is a 95% probability that the program or characteristic has a meaningful impact on the outcome. As mentioned previously, the number of students in each group does not influence Effect Size; whereas, when statistical significance is calculated, the number of students in each group does influence the significance level (i.e. "p" value being lower than .05).

Segmentation Modeling. A useful statistical model in identifying predictors of student success outcomes with different types of variables is the classification and regression tree (CART) modeling. This statistical application is useful in situations where the overall goal is to divide a population into segments that differ with respect to a designated criterion (Borges & Cherpitel, 2001; Hannover & Kordy2005). In short, CART modeling affords researchers the opportunity to examine the interaction and impact of a large number of

distinct categorical predictor variables (e.g., gender, ethnicity, age, financial aid, number of tutoring contacts, number of counseling contacts, EOPS student, Student Education Plan, and Learning Community participant) on a categorical dependent variable (e.g., achieved student success outcome/did not achieve student success outcome) (Strobl, Malley, & Tutz, 2009). CART modeling initially identifies the best predictor variable, conducting a splitting algorithm that further identifies additional statistically significant predictor variables and splits these variables into smaller subgroups (SPSS, 2001; Strobl et al.). CART modeling merges categories of a predictor variable that are not significantly different. This merging, combined with the splitting algorithm, ensures that cases in the same segment are homogeneous with respect to the segmentation criterion, while cases in different segments tend to be heterogeneous with respect to the segmentation criterion.

As it relates to the current studies, segmentation modeling has a number of distinct advantages over other statistical methods traditionally used to examine categorical data (e.g., chi-square, regression analysis, etc.). Utilizing segmentation modeling, **researchers can easily determine whether specific aspects of numerous categorical predictor variables interact to provide a more accurate identification of sub-populations relative to the dependent variable identified in each study (e.g., African American male students might be more likely to successfully complete their courses if they receive tutoring than female African American students)** (Hannover & Kordy, 2005). Additionally, since segmentation modeling evaluates all of the values of each potential predictor variable for statistically significant differences, **it can be assumed that variables that are not included in the final model do not differ in respect to the dependent variable (e.g., if ethnicity does not load as a predictor of course success, it can be assumed that ethnicity is not a predictor variable and statistically significant differences do not exist by ethnic group in regard to predicting course success)**. Finally, segmentation modeling can be displayed in an easy-to-visualize decision tree, producing results that are easier to interpret and more user-friendly than traditional exploratory statistical methods.

For each of the three student success outcomes (i.e. completion, success, and retention from fall to spring), the tables on the following page identifies:

1. The dichotomous dependent variables (i.e. completion, success, and retention).
2. The independent variables employed.

Table 1: Study Matrix of Variables Incorporated in Each Study.

Dependent Variable	Independent Variables		
	Demographics	Student Services Strategies	Instructional Strategies
Completion (Formally Retention)	Gender (F/M)	Financial Aid (Received BOGA or B)	Learning Community (Yes/No)
Course Success	Ethnicity (Asian, African American, Hispanic, Native American, and Caucasian)	EOPS Student (Yes, No)	Total Number of Tutoring visits in Fall 2011 and Spring 2012
Retention (Formally Persistence)	Age Range (<= 19, 20-24, 25-29, 30-34, 35-39, 40-49, >= 50)	Total Number of Counseling visits in Fall 2011 and Spring 2012	
		Student Education Plan (Yes, No)	

Sample. In Fall 2011 and Spring 2012 875 students participated in the San Manuel Program which included counseling, EOPS, tutoring services, and learning communities. Referring to Table 2, 499 students participated in the Counseling Cohort and 538 participated in the Tutoring Cohort. In addition, 58% of the students were female, 47% were Hispanic or Native American, and 75% were 24 years old or younger. Equally important, 65% of the students participating in the San Manuel Program completed a Student Education Plan, 2% participated in a learning community, 65% received tutoring services, and 88% participated in counseling.

Table 2: Percent and Number of San Manuel Students by Gender, Ethnicity, Age, Participating in a Learning Community (LC), and Receiving Tutoring in the Tutoring Center.

Student Characteristics		Counseling Cohort		Tutoring Center Cohort		Unduplicated Total	
		N = 499	%	N = 538	%	N = 875	%
Gender	Female	316	63.3	292	54.3	510	58.3
	Male	183	36.7	244	45.4	363	41.5
	Unknown	0	0.0	2	0.4	2	0.2
Ethnicity	Asian	30	6.0	39	7.2	60	6.9
	African American	54	10.8	47	8.7	85	9.7
	Hispanic	248	49.7	246	45.7	405	46.3
	Native American	8	1.6	17	3.2	21	2.4
	Caucasian	159	31.9	181	33.6	296	33.8
	Unknown	0	0.0	8	1.5	8	0.9
Age	19 or younger	203	40.7	263	48.9	393	44.9
	20-24	135	27.1	164	30.5	262	29.9
	25-29	61	12.2	43	8.0	86	9.8
	30-34	41	8.2	20	3.7	48	5.5
	35-39	18	3.6	12	2.2	25	2.9
	40-49	26	5.2	25	4.6	41	4.7
	50 and above	15	3.0	11	2.0	20	2.3
Learning Community	No	490	98.2	524	97.4	854	97.6
	Yes	9	1.8	14	2.6	21	2.4
Tutoring Center	No	426	85.4	0	0.0	311	35.5
	Yes	73	14.6	538	100.0	564	64.5
Student Education Plan	No	38	7.6	297	55.2	307	35.1
	Yes	461	92.4	241	44.8	568	64.9
Counseling	No	35	7.0	100	18.6	108	12.3
	Yes	464	93.0	438	81.4	767	87.7

Findings. Table 3 illustrates the percent of San Manuel and Non-San Manuel Students who completed their courses, successfully completed their courses, and who were retained from fall to spring by Counseling and Tutoring Cohorts. Students in the Counseling San Manuel Cohort were statistically significantly ($p < .001$) and substantially (ES = .31) more likely to be retained from fall to spring (83%) than Non-San Manuel students (69%). Conversely, students in the Counseling Cohort were statistically significantly ($p = .010$) less likely to successfully complete their courses (69%) than Non-San Manuel students (72%).

Students in the Tutoring Cohort were statistically significantly more likely to complete their courses, successfully complete their courses, and to be retained from fall to spring than Non-San Manuel students. Specifically, students in the Tutoring San Manuel Cohort were statistically significantly ($p = .001$) more likely to complete their courses (92%) than Non-

San Manuel students (90%). In addition, students in the Tutoring San Manuel Cohort were statistically significantly ($p < .001$) more likely to successfully complete their courses (77%) than Non-San Manuel students (71%). Students were in the Tutoring San Manuel Cohort were also statistically significantly ($p < .001$) and substantially (ES = .33) more likely to be retained from fall to spring (86%) than Non-San Manuel students (72%).

Table 3: Success, Completion, Fall to Spring Retention, and Effect Size (ES), 95% Confidence Intervals, and P-Values for all San Manuel Students by Cohort and Non-San Manuel Students Enrolled in the Same Sections for Fall 2011 and Spring 2012.

Outcomes	Non-San Manuel Students			San Manuel Students			Effect Size & 95% CI Lower & Upper ES			P-Value
	#	N	%	#	N	%	ES	Lower	Upper	
Counseling Cohort										
Completion (Formally Retention)	7,627	8,641	88.3	2,320	2,627	88.3	0.00	-0.04	0.05	.946
Success	6,194	8,641	71.7	1,814	2,627	69.1	-0.06	-0.10	-0.01	.010
Fall to Spring Retention (Formally Persistence)	990	1,442	68.7	292	353	82.7	0.31	0.20	0.43	< .001
Tutoring Center Cohort										
Completion (Formally Retention)	7,426	8,284	89.6	1,867	2,027	92.1	0.08	0.03	0.13	.001
Success	5,894	8,284	71.1	1,553	2,027	76.6	0.12	0.07	0.17	< .001
Fall to Spring Retention (Formally Persistence)	1,083	1,515	71.5	374	437	85.6	0.33	0.22	0.43	<. 001
All San Manuel Students										
Completion (Formally Retention)	11,902	13,409	88.8	3,722	4,142	89.9	0.04	0.00	0.07	.048
Success	9,608	13,409	71.7	2,989	4,142	72.2	0.01	-0.02	0.05	.524
Fall to Spring Retention (Formally Persistence)	1,609	2,341	68.7	567	681	83.3	0.33	0.24	0.41	< .001

Note. San Manuel Students who are BOGWA and B eligible were compared to Non-San Manuel Students enrolled in the same sections who were also BOGWA and B eligible.

Tables 4 – 6 illustrate the percent of all San Manuel and Non-San Manuel Students who completed their courses, successfully completed their courses, and who were retained by ethnicity. Referring to Table 4, San Manuel students do not appear to differ statistically significantly or substantially when examining the completion rate by ethnicity. On the other hand, referring to Table 5, both Asian (83%) and African American (75%) San Manuel Students were statistically significantly ($p < .01$) more likely to successfully complete their courses than Asian (72%) and African American (68%) non-San Manuel students. At the same time, Native American San Manuel students were statistically significantly less likely to successfully complete their courses than Non-San Manuel students. However, there are only 21 students in the San Manuel cohort who were Native American. Table 6 illustrates the results for the retention rate from fall to spring by ethnicity. The results indicate that

Asian (81%), African American (84%), Hispanic and Native American students combined (82%), and Caucasian (85%) San Manuel Students were statistically significantly ($p < .05$) and substantially ES >= .24) more likely to be retained from fall to spring than Non-San Manuel students who were Asian (64%), African American (65%), Hispanic and Native American students combined (68%), and Caucasian (70%).

Table 4: *Completion Rate*, and Effect Size (ES), 95% Confidence Intervals, and P-Values for all San Manuel Students and the Comparison Group for Fall 2011 and Spring 2012 by Ethnicity.

Ethnicity	Not a San Manuel Student				San Manuel Student				Effect Size & 95% CI Lower & Upper ES			P-Value
	Did Not Successfully Complete Course		Successfully Completed Course		Did Not Successfully Complete Course		Successfully Completed Course					
	#	%	#	%	#	%	#	%	ES	Lower	Upper	
Asian	73	10.0	655	90.0	19	7.2	246	92.8	0.10	-0.04	0.24	.170
African American	106	11.9	784	88.1	44	9.8	403	90.2	0.07	-0.05	0.18	.259
Hispanic	612	11.7	4633	88.3	212	10.6	1788	89.4	0.03	-0.02	0.09	.200
Native American	43	13.2	282	86.8	17	16.8	84	83.2	-0.10	-0.33	0.12	.365
Caucasian	660	10.8	5448	89.2	126	9.7	1179	90.3	0.04	-0.02	0.10	.221
Missing	13	11.5	100	88.5	2	8.3	22	91.7	0.10	-0.34	0.54	.654

Table 5: *Success Rate*, and Effect Size (the Comparison Group Non-San Manuel Students Enrolled in the Same Sections for Fall 2011 and Spring 2012 by Ethnicity.

Ethnicity	Comparison Group				San Manuel Student				Effect Size & 95% CI Lower & Upper ES			P-Value
	Did not Complete Course		Completed Course		Did not Complete Course		Completed Course					
	#	%	#	%	#	%	#	%	ES	Lower	Upper	
Asian	204	28.0	524	72.0	46	17.4	219	82.6	0.25	0.11	0.39	.001
African American	288	32.4	602	67.6	113	25.3	334	74.7	0.15	0.04	0.27	.008
Hispanic	1647	31.4	3598	68.6	600	30.0	1400	70.0	0.03	-0.02	0.08	.249
Native American	97	29.8	228	70.2	46	45.5	55	54.5	-0.34	-0.56	-0.11	.006
Caucasian	1538	25.2	4570	74.8	341	26.1	964	73.9	-0.02	-0.08	0.04	.474
Missing	27	23.9	86	76.1	7	29.2	17	70.8	-0.12	-0.56	0.32	.590

Table 6: *Fall to Spring Retention Rate*, and Effect Size (ES), 95% Confidence Intervals, and P-Values for all San Manuel Students and the Comparison Group for Fall 2011 and Spring 2012 by Ethnicity.

Ethnicity	Not a San Manuel Student				San Manuel Student				Effect Size & 95% CI Lower & Upper ES			
	Was Not Retained from Fall to Spring		Retained from Fall to Spring		Was Not Retained from Fall to Spring		Retained from Fall to Spring					
	#	%	#	%	#	%	#	%	ES	Lower	Upper	P-Value
Asian	48	36.1	85	63.9	8	18.6	35	81.4	0.38	0.03	0.72	.032
African American	58	35.2	107	64.8	11	16.4	56	83.6	0.42	0.13	0.70	.005
Hispanic	287	31.6	621	68.4	54	17.5	254	82.5	0.32	0.19	0.45	< .001
Native American	17	30.9	38	69.1	3	20.0	12	80.0	0.24	-0.34	0.81	.414
Hispanic / Native American Combined	304	31.6	659	68.4	57	17.6	266	82.4	0.31	0.19	0.44	< .001
Caucasian	318	30.0	742	70.0	36	14.9	205	85.1	0.34	0.20	0.48	< .001
Missing	4	20.0	16	80.0	2	28.6	5	71.4	-0.20	-1.06	0.67	.654

Figures 1 – 3 illustrate the best predictors of completion, course success, and retention from fall to spring for San Manuel students only. In examining the decision tree in Figure 1, Node 0 indicates that among 4,142 enrollments in Fall 2011 and Spring 2012 by San Manuel students, 90% of the enrollments were completed by San Manuel students. Examining the various demographic, student services, and instructional strategies identified in Table 1, age was the primary predictor of the completion rate (i.e. formally retention rate). Students who were 19 years old or younger or 50 years old or older had a 93% completion rate (Node 3). In addition, if the students who were 19 years old or younger or 50 years old or older participated in a learning community, their completion rate was 100% (Node 9). Conversely, all of the other age groups (Nodes 1 and 2) had a completion rate that was lower than the overall completion rate of 90%. Namely, a San Manuel student who was 20-24 or 30-34 years old had a completion rate of 89% (Node 1). Their completion rate did not increase if they were an EOPS student (Node 4) unless they saw a counselor 10 or more times, or five or more times a semester (Node 12). Similarly, a San Manuel student who was 25-29, 35-39, or 40-49 years old had a completion rate of 84% (Node 2). Their completion rate did not increase if they were an EOPS student (Node 6) unless they saw a counselor 11 or more times, or five or more times a semester (Nodes 15 and 16).

In examining the decision tree in Figure 2, Node 0 indicates that among 4,142 enrollments in Fall 2011 and Spring 2012 by San Manuel students, 72% of the enrollments were successfully completed by San Manuel students. Examining the various demographic, student services, and instructional strategies identified in Table 1, accessing tutoring was the primary predictor of success rate. Students who accessed tutoring services 1 – 10 times had a 75% success rate (Node 2) or 11 or more times had an 83% success rate (Node 3). Accordingly, students who access tutoring services approximately five or more times each semester can increase their course success rate from 72% to 83%. In addition, Native American students who only accessed tutoring services one to ten times only had a success rate of 57%; indicating that for these students they need to access tutoring services at least five to six times a semester. Conversely, if a student did not use tutoring services their success rate decreased from 72% to 68% (Node 1). Students who did not use tutoring services and saw a counselor 5 or more times a semester increased their success rate to 76% (Node 7). However, if these students were Native American or Hispanic their success rate was only 70%; indicating, that seeing a counselor for students who had not utilized tutoring services was not an effective strategy in increasing the success rate for Hispanic and Native American students.

In examining the decision tree in Figure 3, Node 0 indicates that among the 681 San Manuel students who earned a grade on record (GOR) in Fall 2011, 83% earned a GOR in Spring 2012. Examining the various demographic, student services, and instructional strategies identified in Table 1, the number of times a student saw a counselor was the primary predictor of retention from fall to spring. Students who saw a counselor 7 – 11 times had a 96% retention rate (Node 2) and students who saw a counselor 13 or more times had a 100% success rate (Node 3). Accordingly, students who see a counselor approximately three or more times each semester can increase their retention rate from 83% to 96% or higher. Conversely, if a student did not see a counselor their retention rate decreased from 83% to 77% (Node 1). However, if these students were EOPS students their success rate was only 51%; indicating, that receiving EOPS services was not an effective strategy for San Manuel students who had not seen a counselor at least once.

Figure 1: Classification Regression Tree Illustrating the Best Predictors of Completion (Formally Retention).

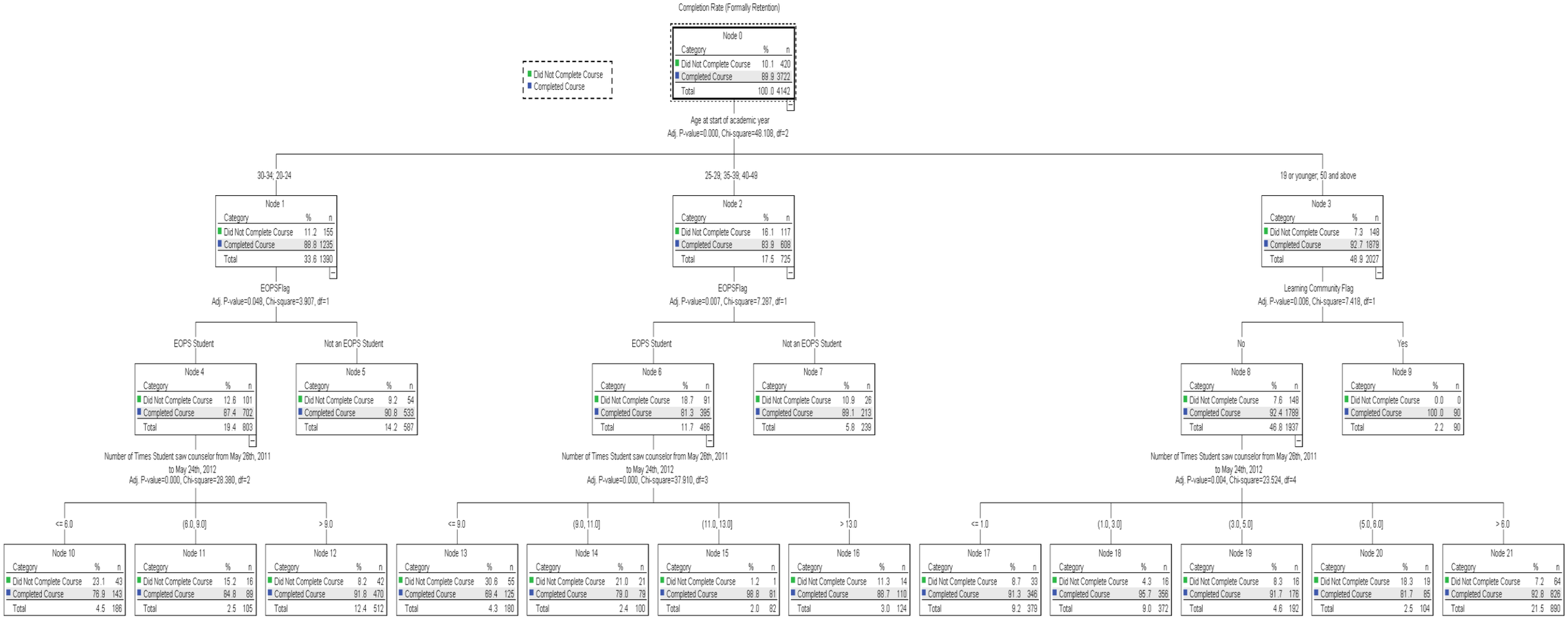


Figure 2: Classification Regression Tree Illustrating the Best Predictors of Course Success.

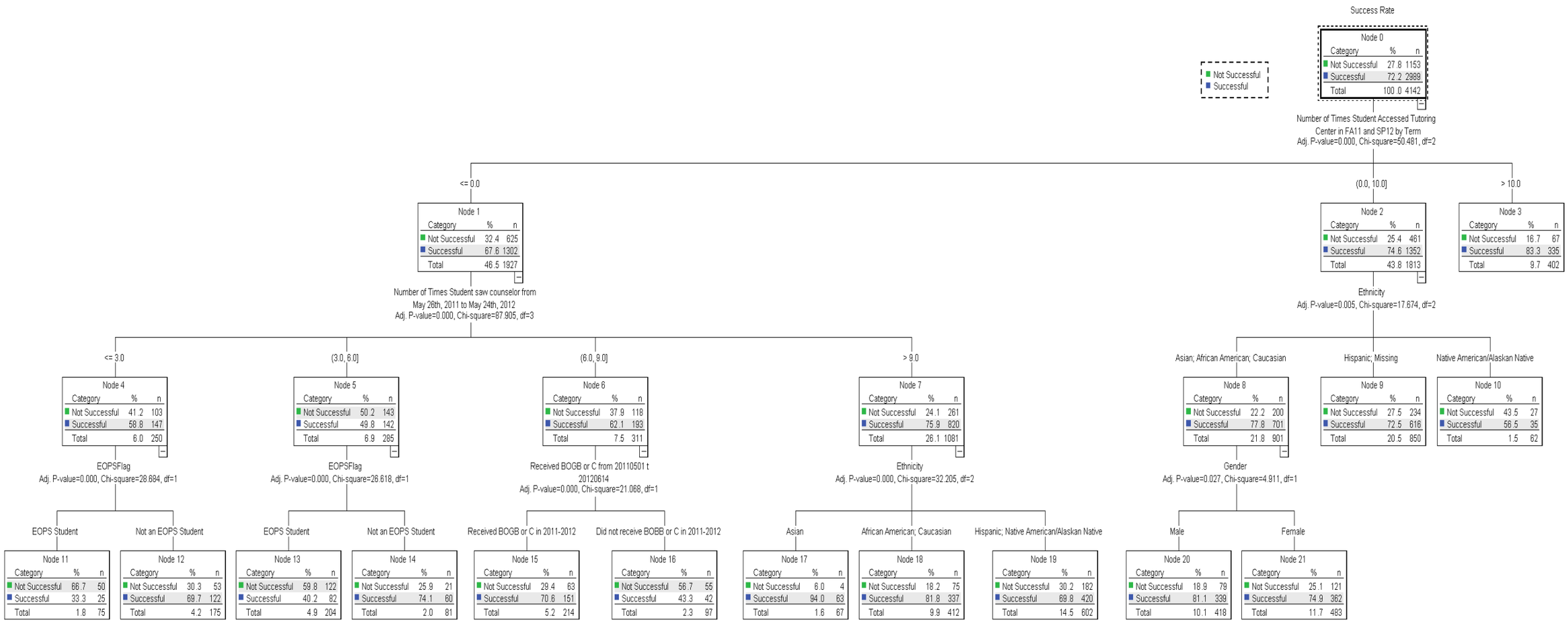
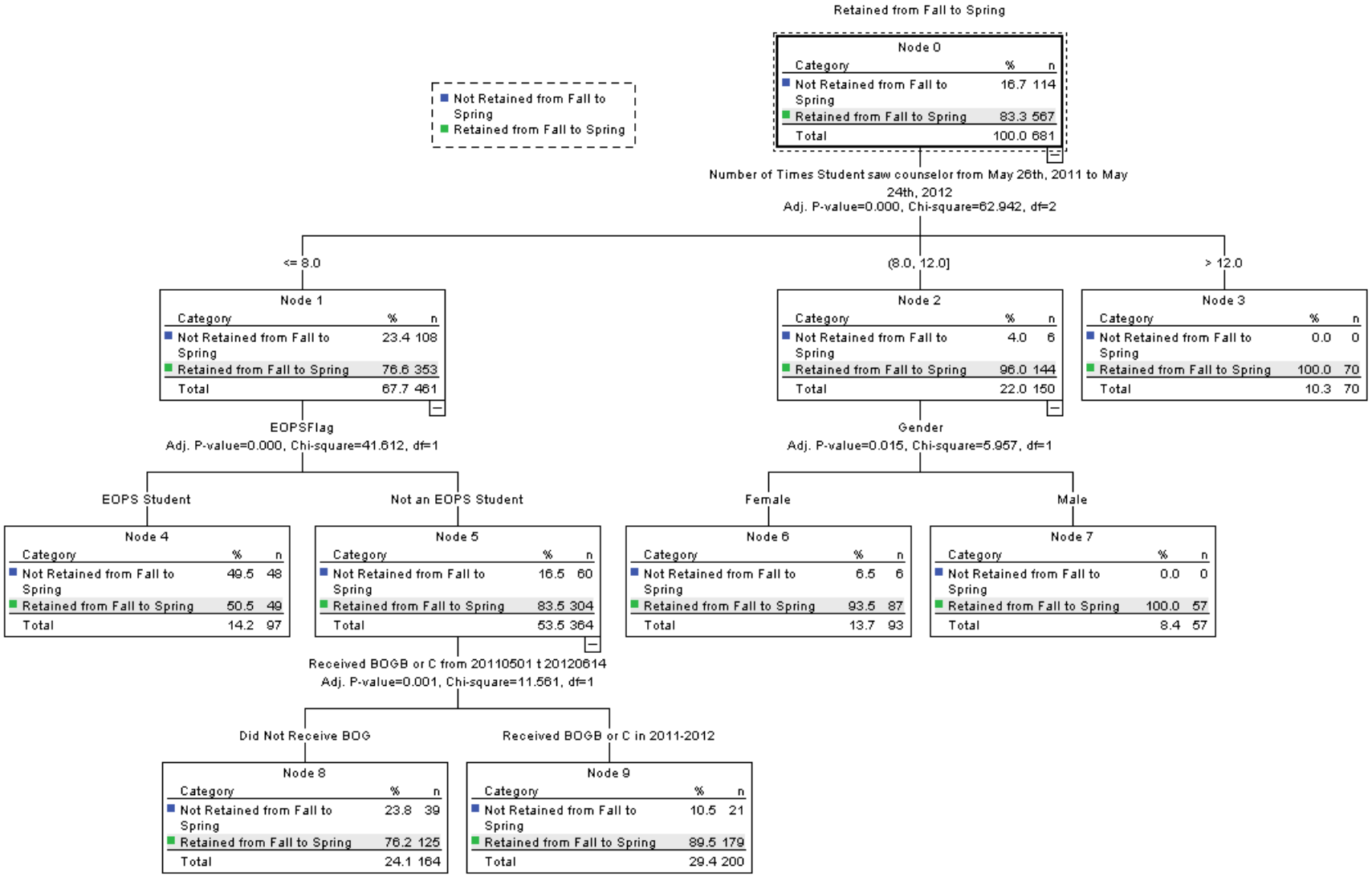


Figure 3: Classification Regression Tree Illustrating the Best Predictors of Fall to Spring Retention (Formally Persistence).



Discussion

The data indicate that when compared to the Non-San Manuel comparison group, students in the Counseling Cohort are more likely to be retained from fall to spring. In addition, students in the Tutoring Cohort are more likely to complete their courses, successfully complete their courses, and be retained from fall to spring. However, being in the Counseling Cohort appears to be related to a lower success rate for San Manuel (69%) than Non-San Manuel students (72%). The difference is not that large and the 95% Effect Size Confidence Intervals suggests the possibility that there may not be a difference in success between the two groups. Additionally, when looking at the combined San Manuel cohort, Native American San Manuel students (55%) have a substantially lower success rate than Non-San Manuel Native American students (70%). This could be due to the low number of Native American San Manuel students. There were only 21 Native American students being served by the San Manuel program.

In order to help identify the most effect services for San Manuel students, Classification Regression Trees (CRT) were used to identify the best predictors of completion, success, and retention. CRTs were used to identify strategies that might be effective for students with lower success rates. The best predictor for course success was tutoring and the best predictor for retention from fall to spring was counseling. The following discussion focuses on course success, since the findings with course success were more mixed than the others. First, the data indicate that attending tutoring services at least once in Fall 2011 or Spring 2012 increases the likelihood of success. However, this was not true for Native American San Manuel students who utilized tutoring services less than five times a semester; suggesting that Native American students need to strongly be encouraged to utilize tutoring services at least 5-6 times a semester. Equally important, if a student did not utilize tutoring at all in Fall 2011 or Spring 2012, they were more likely to successfully complete their courses if they saw a counselor 10 or more times in a year or five or more times a semester. Seeing a counselor 9 or less times in the year was not an effective strategy for increasing course success. Why do students need to see a counselor 10 times, but not 4, 5, or 9 times? Future research will continue to provide evidence to help inform the development of the most effective strategies for Crafton Hills College students. **For instance, the type of counseling contact (i.e. counselor, workshop, etc.) and whether the counseling was with EOPS or with a general counselor may be related to course success and will be examined in next year's study.** Some of the most common reasons why students saw a counselor were identified as other (28%), registration information (9%), transfer, SEP (7%, included in this study), graduation information (5%), prerequisite/exempt information (5%), and EOPS workshops (4%). In addition, further research will explore if the time period a student accesses counseling services helps to predict student success. Namely, whether or not a student accesses counseling services prior to or during a term in which they are enrolled.

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