

De Anza College Office of Institutional Research and Planning

To: Puente Program Coordinators

From: Mallory Newell, De Anza Researcher
Oded Gurantz, Consultant

Date: 6/28/2017

Subject: Puente Participation on Students' Academic Outcomes – Spring 2017

This analysis compares the characteristics of students who participated in Puente courses to non-Puente students and compares their longer-term academic outcomes including persistence, units taken, GPA, and remedial course sequence completion. A Puente student was identified as a student who enrolled in a Puente section in their first or second term of their first year of enrollment.¹ Since the Puente program enrolls predominantly Latino/a students who are between the ages of 18-21 in their first semester, the comparison group was similarly aged Latino/a students who were enrolled at De Anza for at least two terms but never took a Puente course section. Students enrolled in Puente sections between 2012-13 and 2015-16 were included. A multiple regression analysis was used to control for potentially confounding background characteristics.² The analysis included 105 Puente students and 6,251 non-Puente students.

Within our ongoing equity work, it is important to understand differences in outcomes for students within a particular program compared to those not enrolled in the program as well as differences among students within the program. This information may help the college improve the program as well as transfer particular aspects of the program that are working for a particular group to other programs in order to provide the greatest benefit to students.

Important highlights include:

Puente students are more likely to be younger, first-generation college students, Latino/a, and almost all Puente students completed the following matriculation activities: placement exam, orientation, and apply for financial aid, but not all Puente students completed an education plan.

Academic Outcomes - English: Puente participants performed better in English coursework than non-Puente students and were much more likely to take EWRT211 than EWRT200 and to complete the English sequence if they started in basic skills. Puente students were:

- 11 percentage points more likely to take any English course and 16 percentage points more likely to pass any English course
- 24 percentage points more likely to pass EWRT1A or higher if they started in either EWRT200 or EWRT211, and they passed EWRT1A in 1.8 fewer terms

¹ Roughly 80% of all students enrolled in Puente courses did so in their first or second term. The remaining 20% are classified as Puente "outliers" and are not used in the main analyses.

² Multiple analytic methods were explored including propensity score matching and coarsened exact matching techniques, but all results were essentially identical. For simplicity of presentation only results from the multiple regression analysis were included.

Important highlights continued:

Academic Outcomes – Math: Puente participants also performed better in Math coursework, though the results were not as large as the English results, as they were:

- 8 percentage points more likely to pass Math 210 or 212
- 10 percentage points more likely to pass Math 114 or 217
- 8 percentage points more likely to pass Math 10 or higher

Sub-Group Differences - Gender: In a number of areas, females appear to benefit more from Puente participation than males. Compared to males, females who participated in Puente:

- Persisted to the 2nd year and beyond at a higher rate
- Earned 1.8 more units and took 2.2 more degree or transfer applicable courses
- Puente females were 14 percentage points more likely to pass Math 114/217 than non-Puente females
- Puente male students exhibited stronger course outcomes in English than Puente females but Puente females exhibited stronger course outcomes in math than Puente males

Descriptive Analysis of Puente and Non-Puente Participants

Table 1 examines demographic and initial academic differences between Puente and non-Puente participants. The first two columns provide descriptive statistics (general information about the student), the third column provides the difference between the two groups, and the last column contains an asterisk if the difference between Puente and non-Puente participants is statistically different from zero (that the difference between the variables can be attributed to something other than random chance).

Student Demographics

- Puente students are more likely to be younger, a first-generation college student (64% vs. 26%), and almost all Puente students identify as Latino/a (96.9%).
- There are no statistically significant differences in the likelihood that Puente students are more likely to be female or low-income than non-Puente students.

Enrollment Characteristics

- Puente students were more likely to list their academic goal as transfer (96% vs. 63%).
- Puente students were much more likely to be first-time students (69% vs. 26%), rather than continuing, returning, or transfer students.

Within their first term of attending De Anza, Puente students:

- Took more courses (2.6 vs. 2.3 courses) but almost no Puente students took any classes online (1% vs. 25%)

- Had a term GPA that was statistically higher than non-Puente students (3.5 vs. 3.1)
- Were more likely to have completed a number of key matriculation activities, including: took a placement exam (95% vs. 46%); attended orientation (92% vs. 38%); applied for financial aid (95% vs. 52%).
 - The one area where Puente students did not have full participation was having completed an education plan, though they were still significantly more likely to have done so than non-Puente students (61% vs. 29%).

Table I. Descriptive Statistics, Puente vs. Non-Puente students

	Puente	Non-Puente	Difference	
Sample Size	130	52,502		
Demographics				
Age	18.5	25.2	-6.6	*
Asian	0.0%	47.2%	-47.2%	*
Black	0.8%	4.6%	-3.8%	
Latino/a	96.9%	24.4%	72.5%	*
White	0.8%	21.6%	-20.8%	*
Female	56.2%	49.1%	7.1%	
Low-income	16.9%	21.6%	-4.7%	
Highest Ed. Level: HS/Equivalent	98.5%	74.7%	23.8%	*
First-generation	63.8%	25.7%	38.1%	*
Enrollment Characteristics				
<i>Academic Goal</i>				
Degree	1.5%	7.4%	-5.9%	
Transfer	96.2%	63.4%	32.8%	*
Other (incl. Certificate)	2.3%	29.1%	-26.8%	*
<i>Student Type</i>				
Continuing	13.1%	25.4%	-12.3%	*
Transfer	18.5%	31.5%	-13.0%	*
First-time	68.5%	26.1%	42.4%	*
Returning	0.0%	16.7%	-16.7%	*
<i>First-Term Outcomes</i>				
GPA	3.5	3.1	0.4	*
No GPA available	1.5%	10.2%	-8.7%	*
Number of Courses Taken	2.6	2.3	0.3	*
Took Placement Test	94.6%	46.0%	48.6%	*
Attended Orientation	92.3%	38.1%	54.2%	*
Applied for Financial Aid	95.4%	51.8%	43.6%	*
Completed an Education Plan	60.8%	29.2%	31.6%	*
Took an Online Course	0.8%	25.1%	-24.3%	*

Column 1 describes Puente students who enrolled in the program within their first or second term from initial enrollment. Column 2 includes all non-Puente students who were enrolled at De Anza for at least two terms. Column 3 shows differences between Puente and non-Puente students, with a test of statistical significance between these groups in column 4, where an asterisk (*) indicates a p-value of less than 0.01.

Academic Outcomes

Puente students generally exhibit stronger academic outcomes than non-Puente students. All results are based on regression analysis that controls for differences in background demographic and first-term enrollment characteristics (controls for differences in student's background and enrollment characteristics to make them as similar as possible).³ Baseline values are reported for non-Puente students to compare Puente students to.

Table 2 shows the regression-adjusted differences in student persistence, units and courses taken, GPA and success rate, and various basic skills course outcomes:

- On average, Puente students attend 0.8 more terms (baseline=6.2), attempt and earn 20 and 14 more units, respectively (baseline=66 units attempted and 43 units earned, and take 5.2 more courses (baseline=17). The additional courses taken by Puente students were degree or transfer applicable opposed to basic skills or vocational courses.
- Puente participation did not have an impact on overall course success rates (baseline = 60%), as it was not statistically significant.
- Puente students' average GPA was slightly lower by 0.2 points (baseline=2.1). One possibility is their increased persistence led them to take more difficult courses over time.
- Puente participants performed significantly better in English coursework, as they were:
 - 11 percentage points more likely to take any English course (baseline=69%)
 - 16 percentage points more likely to pass any English course (baseline=55%)
 - Much less likely to take EWRT200 than EWRT211 (-13 percentage points) and 28 percentage point more likely to pass EWRT211 (baseline=35%)
 - Much more likely to take EWRT1A or higher (25 percentage point increase from a baseline of 51%) and more likely to pass EWRT1A or higher (27 percentage point increase from a baseline of 43%)
 - More likely to complete the English course sequence if they started in basic skills; 24 percentage points more likely to pass EWRT1A or higher if they started in either EWRT200 or EWRT211 (baseline=48%), and they passed EWRT1A in 1.8 fewer terms (baseline=4.8)
- Puente participants performed better in Math coursework as well, as they were:
 - More likely to pass Math 210/212 (8 percentage points increase from a baseline of 35%), and Math 114/217 (10 percentage point increase from a baseline of 29%) and Math10 or higher (8 percentage point increase from a baseline of 27%)
- Puente students who started in basic skills math classes waited slightly longer to take a college-level math course (1.1 term increase over a baseline of 5.6 terms), but there were no

³ The regression model includes the following demographic controls: age, ethnicity, gender, low-income status, first-generation status, parent education level, individual variables for their first term of enrollment, academic goal (transfer, degree, or other), and student type (first-time, continuing, returning, transfer). Academic controls are all based on a student's first enrolled term, and include: GPA, whether GPA was missing (to include students who might have taken courses pass/no pass), the number of courses taken, whether a student participated in the matriculation process (placement exam, orientation, financial aid application, and education plan), and whether they took a course online.

statistically significant differences in time to passing college-level math (0.5 term increase over a baseline of 6.3 terms).

Table 2. Impact of Puente Participation on Student Outcomes

	Baseline value for non- Puente students	Impact of Puente participation	
<i>Persistence</i>			
Persisted to 2nd year	77.9%	4.1%	
Persisted beyond 2nd year	92.0%	1.1%	
<i>Course-Taking</i>			
Number of terms attended	6.2	0.8	*
Number of units attempted	66.0	20.0	*
Number of units earned	42.8	13.9	*
Number of courses taken	16.8	5.2	*
Number of courses taken: Degree/Transfer	12.4	5.2	*
Number of courses taken: Vocational	2.4	-0.2	
Number of courses taken: Basic Skills	2.0	0.2	
<i>Course Performance</i>			
Success rate	59.6%	-4.4%	
GPA	2.07	-0.19	*
<i>Math and English Remediation</i>			
<u>English Courses</u>			
Took English	68.5%	11.4%	*
Passed English	55.2%	15.5%	*
Took EWRT200	11.9%	-13.2%	*
Took EWRT211	43.2%	24.0%	*
Took EWRT1A or higher	51.1%	24.5%	*
Passed EWRT200	9.6%	-11.8%	*
Passed EWRT211	35.2%	28.3%	*
Passed EWRT1A or higher	42.7%	26.5%	*
Took EWRT1A or higher if started in 200 or 211	56.3%	19.8%	*
Passed EWRT1A or higher if started in 200 or 211	47.8%	23.5%	*
Terms to Taking EWRT1A or higher if started below	4.6	-1.6	*
Terms to Passing EWRT1A or higher if started below	4.8	-1.8	*
<u>Math Courses</u>			
Took Math	77.3%	1.3%	
Passed Math	56.7%	-0.6%	
Took Math210 or 212	48.6%	10.3%	*
Took Math114 or 217	39.8%	11.4%	*
Took Math10 or higher	37.4%	7.0%	
Passed Math210 or 212	34.7%	8.2%	
Passed Math114 or 217	28.6%	10.3%	*
Passed Math10 or higher	27.4%	8.3%	*
Took Math10 or higher if started in 200/211 or 114/217	36.7%	6.3%	
Passed Math10 or higher if started in 200/211 or 114/217	26.5%	9.7%	*
Terms to Taking Math10 or higher if started below	5.6	1.1	*
Terms to Passing Math10 or higher if started below	6.3	0.5	

Column 1 shows baseline values from non-Puente students, column 2 provides the academic outcomes of Puente student who enrolled in the program within their first or second term from initial enrollment, compared to demographically and academically similar non-Puente students. Column 3 shows a test of statistical significance from zero, where an asterisk (*) indicates a p-value of less than 0.01. Column 4.

Outcomes: Subgroup Differences

Table 3 replicates the outcome results from Table 2, but does so separately by key subgroups of interest: males and females and low- and high-income students. In general, all groups of students appear to benefit from Puente participation, though individual results vary.

Gender:

- In a number of areas females appear to benefit more from Puente participation than males. Compared to males, females who participated in Puente:
 - Persisted to the 2nd year and beyond at a higher rate
 - Earned 1.8 more units, and took 2.2 more degree or transfer applicable courses
 - However, female students had lower course success rates (-7%) and a cumulative GPA (0.02) than non-Puente females as well as compared to Puente males. It may be that the additional units taken by females were in more challenging courses, leading to lower course performance.
- Puente females were 14 percentage points more likely to pass Math 210/212 and Math 114/217 than non-Puente females.
- Puente male students exhibited stronger course outcomes in English courses than Puente females but Puente females exhibited stronger course outcomes in math than Puente males.

Income:

- There were few large differences between low- and high-income students who participated in Puente. The largest differences was course-taking where high-income Puente students earned 15 additional units compared to high-income non-Puente students.
 - In contrast, low-income Puente students earned 7 additional units compared to low-income non-Puente students, though not statistically significant.
- There were no consistent patterns for English and Math course taking between low and high-income students.

Table 3. Impact of Puentes Participation on Student Outcomes, by Subgroups

	Female		Male		Low-income	High-income
<i>Persistence</i>						
Persisted to 2nd year	4.2%		3.6%		-1.0%	5.3%
Persisted beyond 2nd year	1.6%		0.8%		1.6%	1.2%
<i>Course-Taking</i>						
Number of terms attended	0.9	*	0.6		0.5	0.9 *
Number of units attempted	23.8	*	15.0	*	12.9	21.2 *
Number of units earned	14.6	*	12.8	*	7.0	15.0 *
Number of courses taken	5.9	*	4.1	*	3.3	5.5 *
Number of courses taken: Degree/Transfer	6.1	*	3.9	*	2.9	5.5 *
Number of courses taken: Vocational	-0.4		-0.1		0.3	-0.3
Number of courses taken: Basic Skills	0.2		0.3		0.1	0.2
<i>Course Performance</i>						
Success rate	-6.7%	*	-0.7%		-5.5%	-4.0%
GPA	-0.2	*	-0.1		-0.1	-0.2 *
<i>Math and English Remediation</i>						
<u>English Courses</u>						
Took English	10.1%		13.3%	*	18.2%	10.2% *
Passed English	11.0%		21.5%	*	15.1%	15.6% *
Took EWRT200	-15.1%	*	-10.4%	*	-9.3%	-14.1% *
Took EWRT211	21.8%	*	26.2%	*	19.6%	24.5% *
Took EWRT1A or higher	22.0%	*	27.9%	*	29.4%	* 23.7% *
Passed EWRT200	-13.9%	*	-8.7%	*	-7.1%	-12.7% *
Passed EWRT211	26.3%	*	30.4%	*	26.7%	* 28.2% *
Passed EWRT1A or higher	22.5%	*	31.3%	*	24.8%	* 26.7% *
Took EWRT1A or higher if started in 200 or 211	17.1%	*	22.9%	*	20.3%	20.1% *
Passed EWRT1A or higher if started in 200 or 211	19.8%	*	27.3%	*	21.3%	24.0% *
Terms to Taking EWRT1A or higher if started below	-1.8	*	-1.4	*	-1.6	-1.6 *
Terms to Passing EWRT1A or higher if started below	-1.9	*	-1.7	*	-1.5	-1.9 *

Table 3. Impact of Puente Participation on Student Outcomes, by Subgroups - Continued

	Female	Male	Low- income	High- income
<u>Math Courses</u>				
Took Math	1.8%	0.2%	-5.3%	2.3%
Passed Math	2.2%	-4.9%	5.3%	-1.7%
Took Math210 or 212	12.5% *	7.0%	10.7%	9.7%
Took Math114 or 217	13.4% *	8.8%	11.2%	11.1% *
Took Math10 or higher	10.2%	2.5%	10.6%	6.4%
Passed Math210 or 212	14.1% *	0.0%	14.5%	6.8%
Passed Math114 or 217	13.7% *	5.1%	-2.4%	12.7% *
Passed Math10 or higher	10.8%	4.8%	11.1%	7.6%
Took Math10 or higher if started in 200/211 or 114/217	7.3%	4.2%	13.9%	5.3%
Passed Math10 or higher if started in 200/211 or 114/217	10.0%	8.8%	11.7%	9.3%
Terms to Taking Math10 or higher if started below	1.5 *	0.3	2.9 *	0.8
Terms to Passing Math10 or higher if started below	0.9	-0.1	2.4	0.3

Each column provides the academic outcomes of Puente students who enrolled in the program within their first or second term from initial enrollment, compared to demographically and academically similar non-Puente students. Asterisks (*) indicate that a test of statistical significance from zero has high likelihood, with a p-value of less than 0.01.