

Examining College Readiness, Aspirations, and Matriculation in 14 Arizona School Districts

LESSONS LEARNED AND POLICY IMPLICATIONS



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ABOUT HELIOS EDUCATION FOUNDATION

Helios Education Foundation is dedicated to creating opportunities for individuals in Arizona and Florida to achieve a postsecondary education. Our work is driven by our four fundamental beliefs in Community, Equity, Investment, and Partnership, and we invest in initiatives across the full education continuum.

In Arizona, where Latino students comprise the largest percentage of the K–12 public school population, the Foundation is implementing its Arizona Latino Student Success initiative focused on preparing all students — especially first–generation, low–income, and minority students — for success. Through our Florida Regional Student Success Initiative, Helios is helping first–generation, low–income, and minority students from the state’s large population centers in Miami, Orlando and Tampa achieve a postsecondary education.

Since 2006, the Foundation has invested over \$187 million in education programs and initiatives in both states. To learn more about our efforts, visit us online at www.helios.org.

Dear Colleague,

Helios Education Foundation is dedicated to creating opportunities for individuals in Arizona and Florida to achieve a postsecondary education. Our work is driven by our four fundamental beliefs in Community, Equity, Investment, and Partnership, and we invest in initiatives across the full education continuum.

This policy brief entitled *Examining College Readiness, Aspirations, and Matriculation in 14 Arizona School Districts* presents a sobering picture of the challenges we face as a state in shrinking the academic achievement gaps that exist between our Latino students and their White peers and in improving postsecondary attainment rates among Latino students. More importantly, this brief points to the policies and practices that can help us overcome those challenges.

As Arizona strives to remain competitive in today’s global economy, it’s important for all of us to understand the barriers — at home, in school, and in the community — that prevent students from graduating on time and from pursuing, persisting, and completing a postsecondary education. The demand for qualified employees across many industries in Arizona is growing, but those jobs are increasingly requiring education beyond a high school diploma.

In collaboration with our research partners at Arizona State University, Helios is identifying some of the reasons students don’t pursue a postsecondary education and highlighting the policies, practices, and investments that can set students in a more positive direction.

Latino students aspire to earn college degrees, but our research on enrollment rates for students in 14 Arizona school districts shows that only about half of them attend a postsecondary institution the first year after graduation. Latino students are not as academically prepared for college as their White peers, and they have an average ACT score of 16.6, which is significantly less than that of White students. You’ll also read, however, that when students receive the academic support they need, they are more likely to attend college, including four–year institutions.

We believe that education changes lives and strengthens communities. This process starts by increasing students’ and their families’ knowledge about how to apply to college, which institutions they should consider, and the availability of mentoring and other support programs to help students succeed.

At Helios, we are committed to ensuring that every individual in Arizona and Florida achieves a postsecondary education. Reaching this goal of seeing that every student receives a high–quality education and is set on a path toward college and a career will require both advocacy and action. We hope you will be inspired by this report and work in partnership with us to expand educational opportunities for Latino students. Arizona’s economic development as well as the development and success of our children and youth depend on it.

Sincerely,



Vince Roig
Founding Chairman
Helios Education Foundation

Vince Roig



Paul J. Luna
President & CEO
Helios Education Foundation

Paul J. Luna



EXECUTIVE SUMMARY

The goal of this policy brief is to examine college readiness, aspirations, and matriculation of students in 14 Arizona school districts. As a whole, Arizona students have high postsecondary aspirations. Yet, despite these aspirations only about half attend a postsecondary institution the first year after graduation. We use this brief to make the case that in order for Arizona to successfully compete in a growing global economy, its policy leaders must take action to improve postsecondary attainment.

Our research highlights the important fact that Latino students have low postsecondary attainment rates, especially when compared to non-Latino White students. For example, only 20 percent of Arizona Latinos hold an associate degree or higher compared with 40 percent of White Arizonans. At the same time, Latinos are the fastest growing demographic in the state. Currently, 31 percent of the state population is Latino, however population estimates indicate that Latinos will be the majority by 2030.

Our research also revealed that not only do Latino students have lower postsecondary attainment rates, they are also graduating high school much less prepared for college or careers. Overall, Latinos had an average ACT composite score of 16.6, while non-Latino Whites scored a 20. Further analysis revealed that when looking at achievement by quartiles, nearly 60 percent of Latinos scored in the bottom quartile, well below the standards set by ACT for determining college and career readiness. Given Arizona's population growth and shifting demographics our analysis of college readiness raises some serious concerns.

For Latinos with higher academic achievement, we see positive trends. Overall, as academic achievement increases postsecondary attainment rates increase, as well as the percent of students attending a four-year college. This is especially true for higher achieving Latinos. For Latinos scoring a composite score of 26 or higher, we see no difference in four-year college attendance rates when compared to White students. Nor do we see a difference in the selectivity of the colleges they attend.

Despite these findings our data showed that “mid-level achieving” Latinos (those with a 19–24 ACT composite score) tend to attend community colleges at higher rates than their White counterparts. This finding suggests that we need greater focus and action to help these students matriculate into four-year colleges, especially when considering the important role postsecondary education will play in future economic development.

The goal of this report is to inspire a call to action among Arizona policymakers so that we can chart a course to economic prosperity by ensuring that **EVERY** student, regardless of gender, race, ethnicity or zip code, has the opportunity to receive high-quality education that will prepare him or her for college and career. The results of this report shows that we need to do more to ensure Latino student success if we hope to accomplish this goal.

We offer several recommendations across the education spectrum that would improve college outcomes for all students:

- **College knowing and going information can provide more access.** In Arizona, many of our students, especially Latino students would be first-generation college students. Often times, these students are not given the sufficient guidance or support to help them navigate the college application and going process. A number of counseling and summer-melt programs have shown promise in improving college going rates.

- **Increases in state financial aid for students.** One major way to increase both the proportion of students entering postsecondary education and their persistence is to offer more opportunities for scholarships and grants. These types of support help offset the cost for postsecondary attendance, while at the same time they promote a commitment to increases in postsecondary attainment. State financial support can take many forms. For example, they can be awarded based upon financial need, merit or even to promote equity by improving diversity. Oftentimes renewal of this type of aid is tied to academic performance, a mechanism which has shown promising results for improving postsecondary persistence and completion.
- **Support, mentoring, and guidance is important to increasing persistence and completion.** Once students make it to college, they often need additional supports to help them stay in college. Mentoring programs often help students feel like they are part of a community, especially when they are not at home. Additionally, programs that offer additional support and guidance can help keep students on track or provide support if they began to struggle.

Background/Introduction

Helios Education Foundation is dedicated to creating opportunities for individuals in Arizona and Florida to achieve a postsecondary education. Our work is driven by our four fundamental beliefs in Community, Equity, Investment and Partnership, and we invest in initiatives across the full education continuum. Ultimately, the goal is to ensure that every student graduates from high school ready for college and career, and goes on to complete a high-quality postsecondary degree or certificate.

One effort that exemplifies these principles is Helios’ College Knowing & Going Initiative.¹ Created from the evolution of Helios’s Arizona ACT District Choice State Testing (ACT DCST) Program, which provided ACT testing at no cost to students in 14 Arizona school districts, College Knowing & Going aims to increase the proportion of students, from the selected districts, who are ready for and who complete postsecondary education.²

The initiative operates in 18 districts (14 of which participated in the ACT DCST program) and is supported

¹As part of this initiative Helios Education Foundation invested \$5.1 million over four years.

²For more information on the Arizona ACT DCST Program see “Building a College-Going Culture by Increasing Access to the ACT,” located at [www.helios.org/Media/Default/Documents/Education Briefs/Building a College-Going Culture by Increasing Access to the ACT.pdf](http://www.helios.org/Media/Default/Documents/Education%20Briefs/Building%20a%20College-Going%20Culture%20by%20Increasing%20Access%20to%20the%20ACT.pdf)

³Payment for the cost of examinations is covered through cost-sharing agreements between Helios and the 18 districts.

by four partner organizations: Arizona College Access Network, College Success Arizona, Metropolitan Education Commission, and Northern Arizona College Resource Center. Building off the foundational component of ACT DCST (ACT Testing for all juniors), College Knowing & Going has evolved to include the following components, which are supported by our partner organizations:

- ACT College Entrance Examination testing for **ALL** juniors (originally the core of ACT DCST Program);³
- ACT prep support and follow-up;
- Support for completion of the Free Application for Federal Student Aid (FAFSA);
- Support for increasing the percentage of postsecondary applications;
- Support for effectively using Arizona’s Education and Career Action Plan (ECAP); and
- Additional support in training for counselors, connection to community resources and partners, and access to data.

In addition to the programmatic aspects of College Knowing & Going, Helios has committed resources to carry out a specific set of research activities in partnership with Arizona State University and NORC at the University of Chicago. While the bulk of that research focuses on examining the impacts of the initiative, we are also interested in understanding how well previous cohorts of students were prepared for postsecondary education and if and where they matriculated to college. These initial questions raised additional, important questions and were the impetus for this study.

This brief, authored by researchers at Helios and Arizona State University, examines college readiness, aspirations and matriculation of students who took the ACT test as part of Helios’ AZ DCST Program in the Spring of 2014.

Additionally, we examine the extent to which ethnicity and academic ability were related to college matriculation. We hope that policy leaders and educational experts will use the findings from this brief to inform conversations that promote strategies and interventions designed to increase the overall postsecondary attainment of all of Arizonans.

TABLE 1 Participating College Knowing & Going Districts with Junior Class Size and College Going Rates (2014-2015)		
District	Junior Class Size	College Going Rate (%)
Chandler Unified School District	3,211	65.4
Flagstaff Unified School District	724	55.2
Florence Unified School District	627	51.0
Flowing Wells Unified School District	403	45.8
Glendale Union High School District	3,570	52.6
Globe Unified School District	153	54.4
Higley Unified School District	790	56.2
Lake Havasu Unified School District	451	54.0
Nogales Unified School District	398	58.3
Peoria Unified School District	3,073	63.7
Phoenix Union High School District	6,286	44.1
Round Valley Unified School District	96	60.2
Sunnyside Unified School District	973	45.0
Tolleson Union High School District	2616	46.4
Tucson Unified School District	3344	50.1
Vail Unified School District	901	51.3
Winslow Unified School District	162	55.3
Yuma Union High School District	2594	69.0
TOTAL	30,372	
Number and percent of public school students tested as part of Helios	30,372/78,439 (38.7%)	

The problem

The state of Arizona is at a critical juncture in its economic future. Currently, 38 percent of Arizona’s population holds an associate’s degree or higher. Yet, according to the Georgetown Public Policy Institute, by 2020 more than **68 percent** of Arizona jobs will require at least some minimal level of postsecondary education. These figures

indicate that Arizona’s economic prosperity and future viability are dependent upon two different but related priorities. First, as a state, Arizona must better prepare students across the education continuum for college and career. Second, Arizona’s state leaders must increase postsecondary access, persistence⁴, and completion through a combination of financial assistance (for postsecondary institutions and students), career planning, and other policies aimed at supporting students once they enroll.

Achieving these priorities will not be an easy task. One major challenge facing the state in accomplishing these goals is the low postsecondary attainment rate for Latinos. Figure 1 shows that 40 percent of Whites in Arizona have an Associate’s degree or higher, while only 20 percent of Latinos fall into this same category. At the same time the Latino population is the fastest-growing demographic in Arizona, with some estimates suggesting that, by the year 2030, Latinos will be a majority. Given population estimates, the rates of postsecondary attainment among Arizona’s Latino population is directly tied to the state’s future economic needs and should be a focus of policy leaders in Arizona.

In this policy brief, we analyze the extent to which students are academically prepared, aspire to go to college, and matriculate to college. Given the fact that Latinos and non-Latino Whites comprise a large majority of the state’s population, we summarize our findings by comparing these two groups. This brief is broken up into four parts. First, we examine academic ability by asking the question: What does the ACT tell us about the college and career readiness of Arizona’s students? Second, we examine the college-going aspirations of Arizona’s students. Third, we examine the extent to which student aspirations were actualized (went to college) in the first-year post high school graduation. In particular, our analysis examines the extent to which students actually enrolled in college and how enrollment was moderated by academic ability and ethnicity. Finally, we outline a specific set of recommendations to address the goal of improving Arizona’s postsecondary attainment rate.

⁴Persistence rate is typically defined as the percentage of students who return to college at any institution for their second year.

FIGURE 1

Postsecondary Attainment Rate Comparisons Nationally vs. Arizona

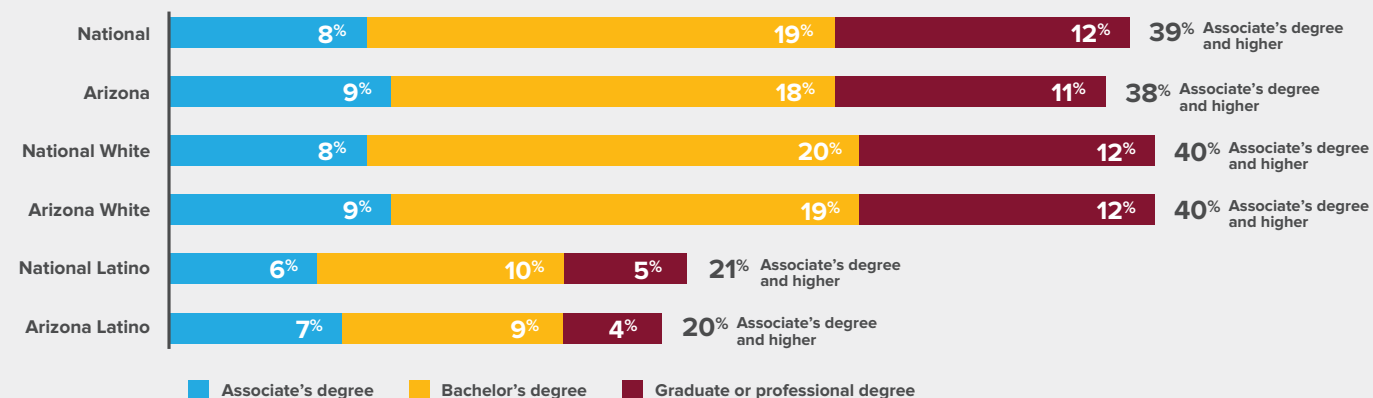
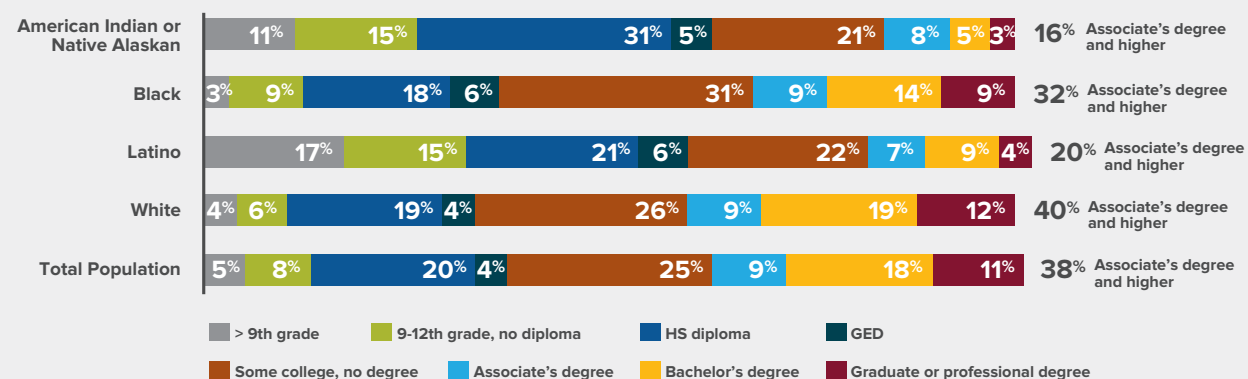


FIGURE 1A

2015 Arizona Postsecondary Attainment Rates by Race/Ethnicity

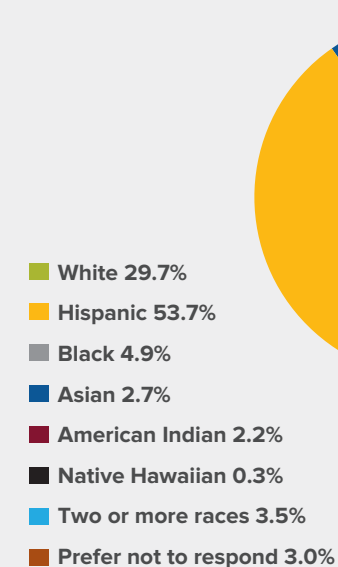


Data and Methods

The data for this study were gleaned from four sources. First, our student population included every student from 14 Arizona public school districts that participated in the 2014 cohort of AZ DCST Program. Under this program all high school juniors were eligible to take the ACT college entrance examination free of charge in the Spring of their junior year. Second, we matched those students with National Student Clearinghouse data to determine if they went to a postsecondary institution and where. Third, for school-level variables (e.g., free and reduced lunch status, percent Hispanic, etc.), we used the Common Core of Data. Fourth, we used data from the Barron's college selectivity index to measure the selectivity of the institutions students were attending. A description of our methods is described in Appendix A.

FIGURE 2

Ethnic/Racial Breakdowns of Students Arizona DCST Program 2014 Cohort



Our work yielded 19,311 student records. As Figure 2 shows, Latinos make up the majority of the student population at 53.7 percent. This is followed by Whites at 29.7 percent and Blacks at 4.9 percent. Given that more than 83 percent of the student population for this study was either Latino or non-Latino White, we present the data in one of two ways to be more useful for the reader. In some cases, we present the data as Latinos compared to non-Latinos. However, in most cases, we follow the practices in extant literature and compare Latinos to non-Latino Whites.

What does the ACT tell us about the college and career readiness of Arizona's students?

Economic forecasts for Arizona show a growing demand in jobs across many fields, but especially those requiring at least some postsecondary education after high school. In order for Arizona to maximize its ability to meet those demands it must prepare its students to be ready for postsecondary education upon graduation.

Currently, Arizona measures college and career readiness through the state's new assessment test, AzMERIT. Unlike the ACT college entrance examination that students complete in one sitting, AzMERIT assessments at the high-school level occur at the end of specific courses (ELA⁵ 9, ELA 10, ELA 11, Algebra I, Geometry, and Algebra II). Unfortunately, using the new state assessment as a measure of college and career readiness creates a number of challenges. First, for purposes of this study, AzMERIT was not in place in 2014. At that time, Arizona required all students to take and pass AIMS; however it only assessed a minimum level of basic skills. Second, because AzMERIT is specific to Arizona, it makes it more difficult to measure the state's college readiness in comparison to other states. Third, given that the AzMERIT is new, it does not afford any past comparisons. In contrast, the ACT college entrance examination provides for both longer term and other state and national comparisons.

ACT sets college readiness based on a cutoff score for each of its four core subject areas. ACT has set the English cutoff score at 18 or higher; mathematics and reading at 22 or higher; and science at a 23 or higher. ACT then provides a composite score for each student. While the composite score on its own does not signify a student is fully college and career ready, a composite score of 22 or higher is a good indication.

⁵English Language Arts



Out of the 19,311 student records in our study, 9,952 identified themselves as Latino, while 9,359 students identified themselves as non-Latino. The average composite score for students participating under the ACT DCST program was a 17.9. Comparatively, the average or mean ACT composite for the overall state was 19.9, while the national average was 21.0.⁶

The analysis conducted by researchers at Helios, Arizona State University, and NORC at the University of Chicago identified some very real differences in the achievement of the two biggest ethnic/racial groups. As Figures 3 and 4 show, we see statistically significant differences in the achievement of Whites and Latinos. The average ACT composite score for Whites was a 20, while the average for Latinos was a 16.6. Additionally, the distribution of the Latino scores tend to be shifted to the left with nearly two-thirds of the composite scores falling in the range of 10–18. In contrast, only 35 percent of Whites scored in the same range.

FIGURE 3

Distribution of ACT Score Composites for White Non-Latinos Under ACT DCST Juniors (2014)

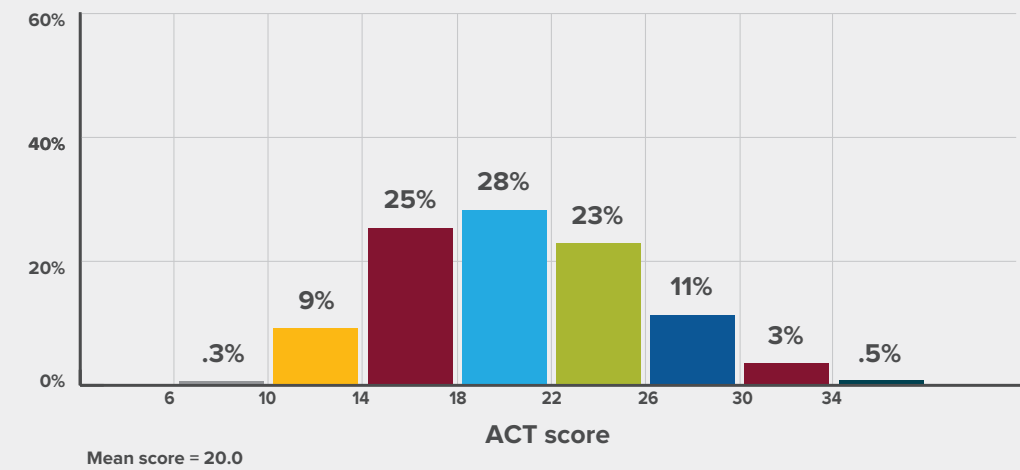
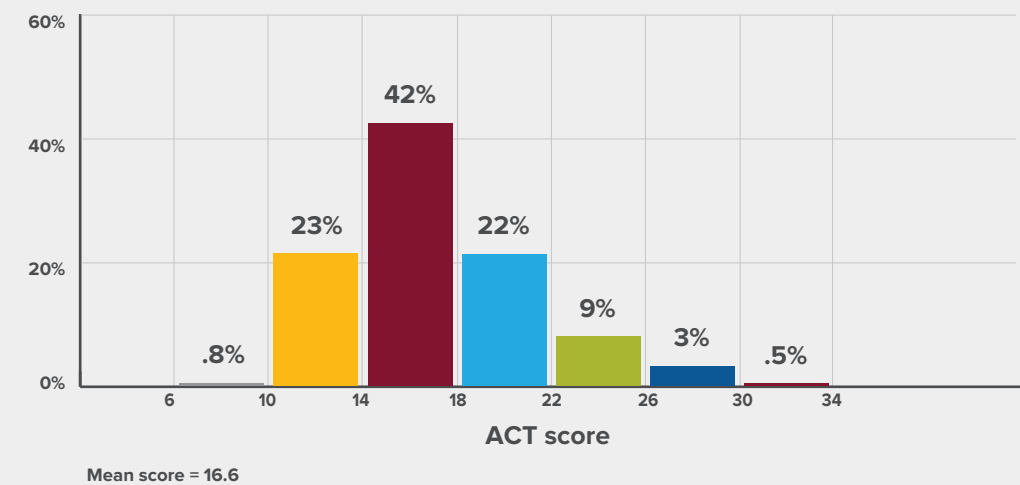


FIGURE 4

Distribution of ACT Score Composites for Latinos Under ACT DCST Juniors (2014)



⁶Here we caution the reader that the populations for both the overall state and national average are different. First, the Arizona state mean does not account for all students given that Arizona doesn't require all juniors or graduates to take the ACT. So the state's average is naturally higher as most other students volunteered to take it, while the ACT DCST Program tested all juniors. The same applies with the national average. Some states require all students to take the ACT, others may have programs similar to ACT DCST, while others only have volunteers.

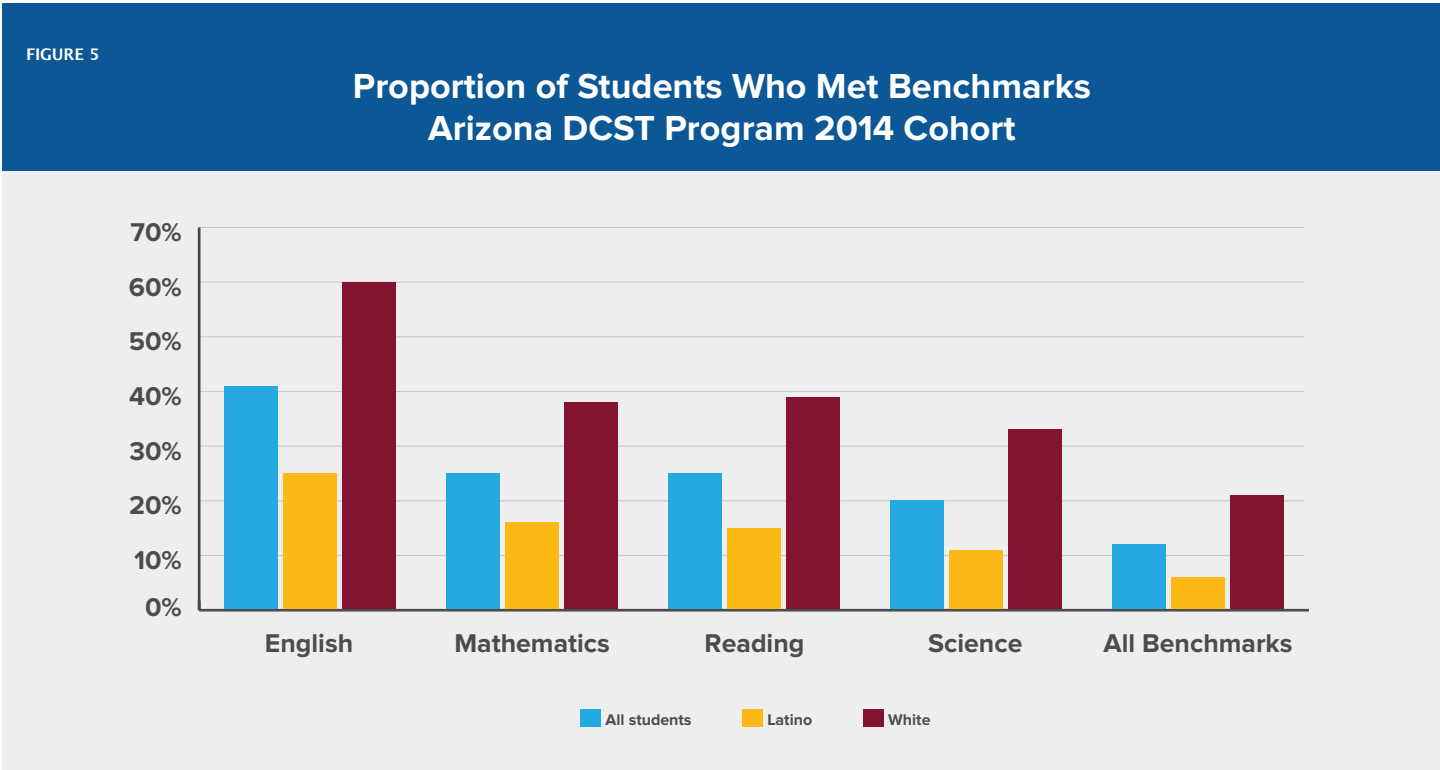
Although mean scores and distributions are useful to show differences, they often don't make it clear as to how dramatic differences are. To provide additional perspective, researchers analyzed how the ACT composite scores were distributed by percentile rank, comparing Latinos to non-Latinos. As Table 3 shows, there are big differences. Fifty-five percent of Arizona Latinos scored between a 0–16

which would put them in the 24th percentile or below. In our upper quartile (26–36) only 3 percent of Latinos demonstrated this level of mastery. In contrast, 33 percent of Arizona non-Latinos scored between 0–16, while 13 percent scored a 26–36. This demonstrates large and concerning differences in the college and career readiness of non-Latinos and Latinos on these exams.

TABLE 3 Distributions of ACT Composite Scores by Quartiles Comparing Latinos to Non-Latinos, Arizona DCST Program 2014 Cohort				
Students	0–16 (24th % and below)	17–20 (30th–50th %)	21–25 (56th–79th %)	26–36 (83rd % and above)
Latinos (9,952)	5,477 (55%)	2,666 (27%)	1,270 (13%)	347 (3%)
Non-Latinos (9,359)	3,060 (33%)	2,512 (27%)	2,467 (26%)	1,226 (13%)

Another way to examine achievement on the ACT is to look at whether students met the college and career readiness benchmarks by subject. Figure 5 shows the proportion of all students who met the benchmarks for each and all subject(s). Overall, only about 12 percent of students met all four benchmarks on the ACT (roughly 2,400 students). Comparisons between White and

Latinos show large statistically significant differences on all subjects. More than half of the White students (60 percent) met the English benchmark compared to 28 percent for Latinos. Because English and reading comprehension are such an integral part of the test a low score in these areas may impact performance on the rest of the assessment.



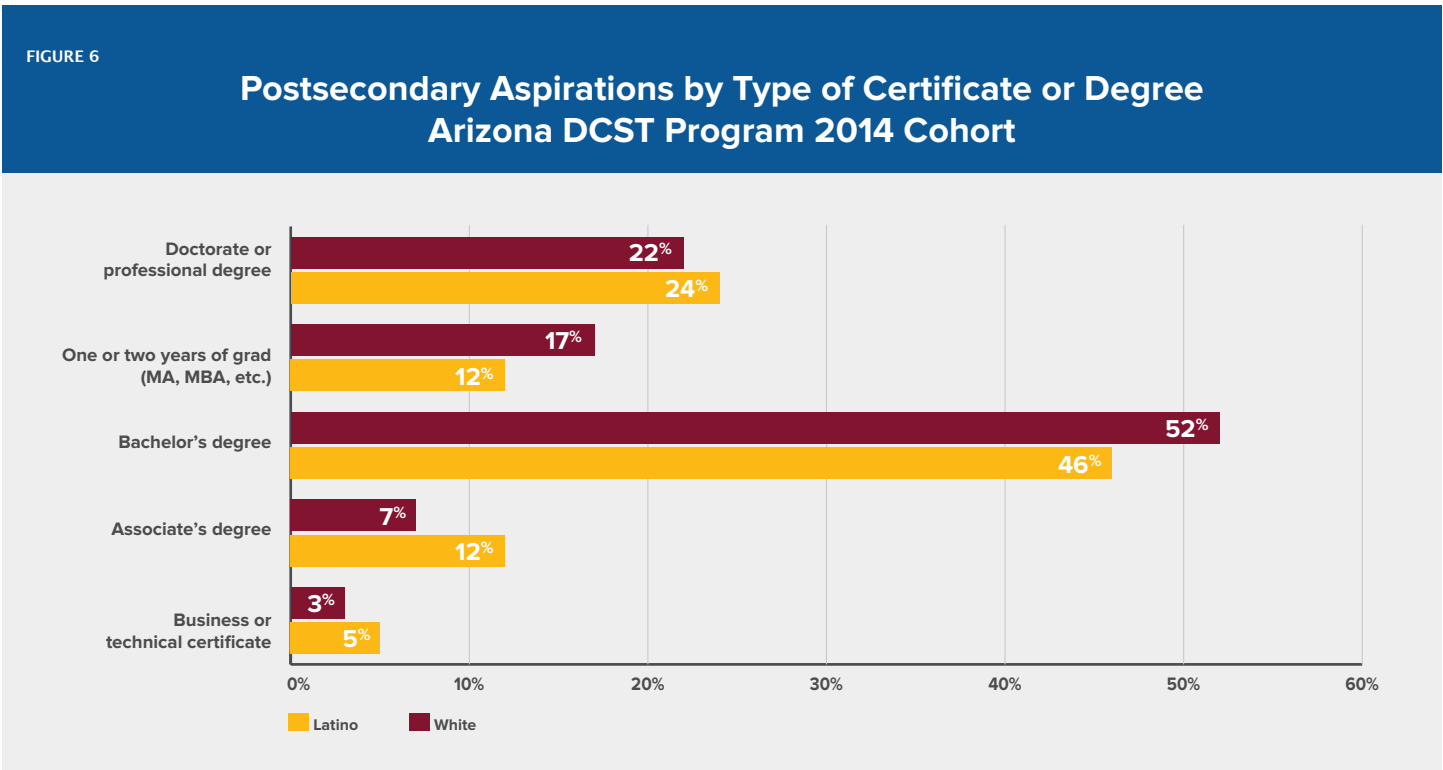
Given population growth and shifting demographics our analysis of college readiness in 14 Arizona districts (which represent more than 30 percent of the state's public school juniors) raises some serious concerns. As a state, Arizona has to ask itself whether we are producing the next generation of workers that can meet the skill sets needed for economic job growth. Unfortunately, for our fastest-growing population (Latinos) our analysis indicates that we are not doing so.

What are the postsecondary aspirations of students in Arizona?

Aspirations can also be a key indicator of whether a student plans to attend postsecondary education. Because Arizona Latinos had lower rates of attainment, we analyzed

the post-secondary aspirations of them compared to their non-Latino white counterparts. Using data from the ACT we examined whether there were differences between Latinos and non-Latino Whites in: (1) the highest level of education they expected to complete; (2) where they were having their ACT scores sent; and (3) the type of university (competitiveness) their scores were being sent to.

Across the 14 districts, most student expected to earn a four-year college degree or more. Comparing non-Latino Whites and Latinos, we see that Whites have slightly (very small) higher expectations than Latinos. However, a larger proportion of Latinos indicated that they expected to receive a doctorate or professional degree. For more detailed distributions see Figure 6.



Students in our sample also had high aspirations to attend a four-year college. Of our 19,311 students, 80 percent sent their scores to a four-year college and indicated that a four-year college was their first choice. However, when comparing where students had their scores sent and the types of institutions⁷, we see that Latinos had slightly

higher educational aspirations. As Figure 7 shows, nearly 82 percent of Latinos selected a four-year college as their first choice compared with 78 percent of non-Latino Whites. Nearly twice as many Latino students selected a two-year college as their first choice, while nearly seven percent more non-Latino Whites indicated no college.

FIGURE 7

Aspirational Type of College Institutions for Students from the Arizona DCST Program 2014 Cohort

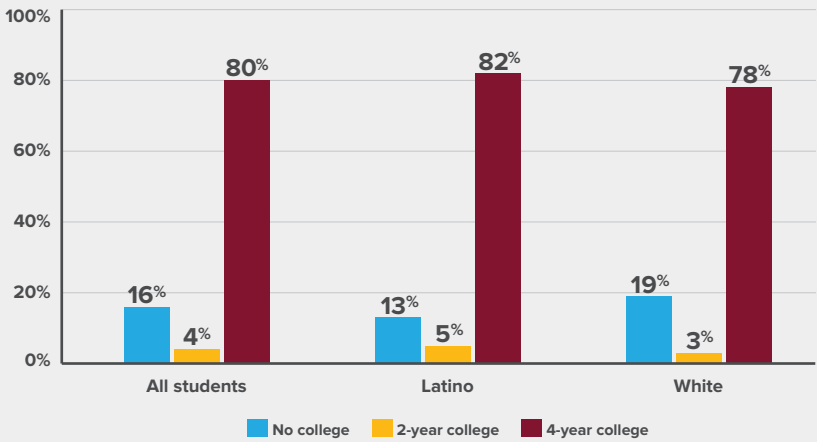
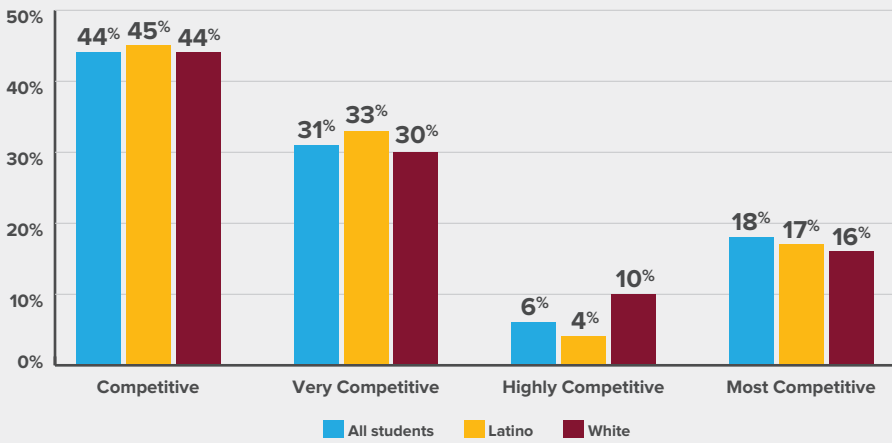


FIGURE 8

Proportion of Students Who Sent Scores to Four-Year Institutions by Barron's Competitive Ranking, Arizona DCST Program 2014 Cohort



Our final analysis in this section examined whether there were differences in the competitiveness or selectivity of four-year colleges that students were sending their ACT scores. To carry out this analysis we used Barron's Profiles of American Colleges, which categorizes schools into one of seven categories: non-competitive, system school, less competitive, competitive, very competitive, highly competitive, and most competitive. Our analysis indicates that there were no statistical differences in the competitive nature of the institutions to which students sent their scores. As Figure 8 shows, of the students who sent their scores to a four-year institution, 44 percent sent them to a competitive school (e.g., Arizona State University), 31 percent to a very competitive school (e.g., University of Arizona), 6 percent to a highly competitive school (e.g., Brigham Young University), and 18 percent to the most competitive schools (e.g., Stanford University).

Overall, our analysis shows little difference in the aspirations of Latino and non-Latino White students in Arizona. Both Latinos non-Latino Whites had high expectations for the type and level of degree they expected to complete. A slightly higher percentage of Latino students expected to earn an Associate's degree; however, a larger proportion of Latinos selected a four-year institution as their first choice school. For those students sending their scores to four-year institutions, we identified no differences in the competitiveness or selectivity of the school.

What can we learn about students' postsecondary choices after high school?

Our early analysis identified two clear points. First, regardless of race and ethnicity the students in this study had high postsecondary aspirations. The vast majority wanted to go to college and earn a bachelor's degree or higher. Second, despite these high aspirations to go to college, high proportions of students were not prepared for college or careers based on the ACT benchmarks. This was especially so for Latinos, where more than half of the students scored in the bottom quartile of all test takers nationally.

In this section we analyze the extent to which students "actualized" their aspirations and went to college in the year following their expected high school graduation. In particular, we examine the relationship between ethnicity and academic ability and college-going rate. Additionally, for those students who went to a four-year college, we examine the relationship between ethnicity and the competitiveness of the institution selected.

In reality, almost half of all students did not attend college their first year after high school. As Figure 9 shows, 48 percent of students did not go to college, 28 percent went to a two-year college, and 23 percent attended a four-year college. As the reader can see from Figure 9, non-Latino White students tended to go to a four-year college at a much higher rate. Nearly twice the percentage of non-Latino White students (31 percent) went to a four-year college compared to Latino students (17 percent). Percentagewise Latinos tended to go to two-year colleges.

⁷By type we are comparing two-year colleges to four-year colleges.

FIGURE 9

Proportion of Students Who Attended College First Year After Expected Graduation, Arizona DCST Program 2014 Cohort

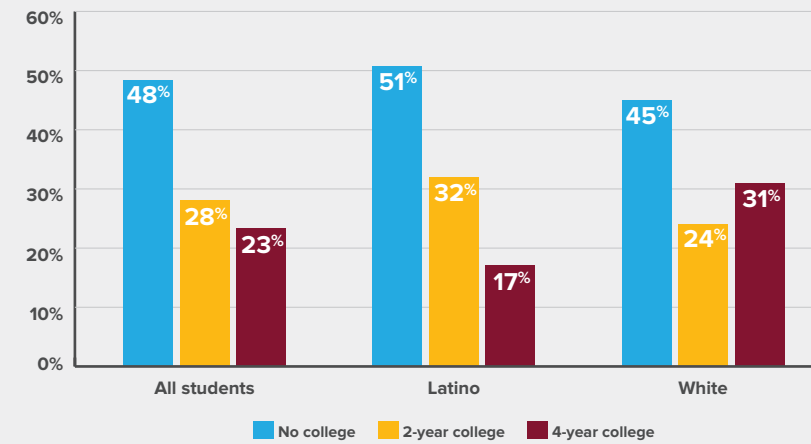


FIGURE 10

Proportion of Students Who Attended Four-Year College by Barron's Competitiveness Ranking, Arizona DCST Program 2014 Cohort

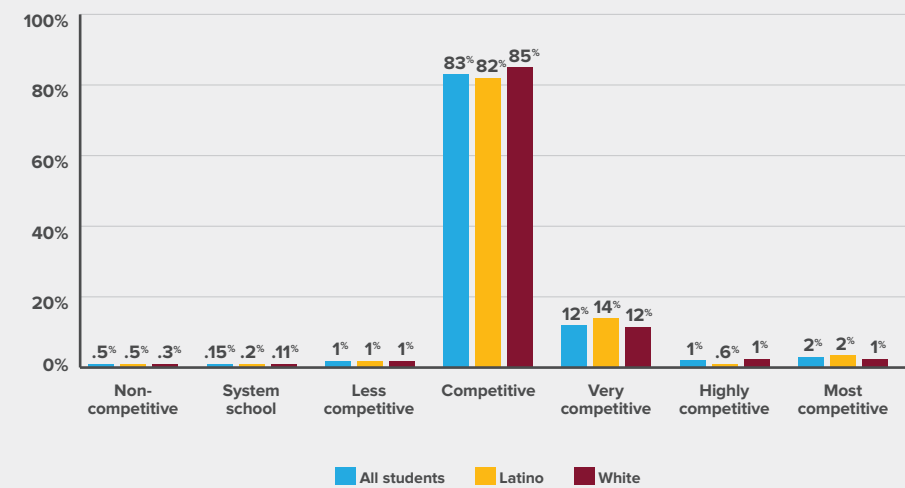
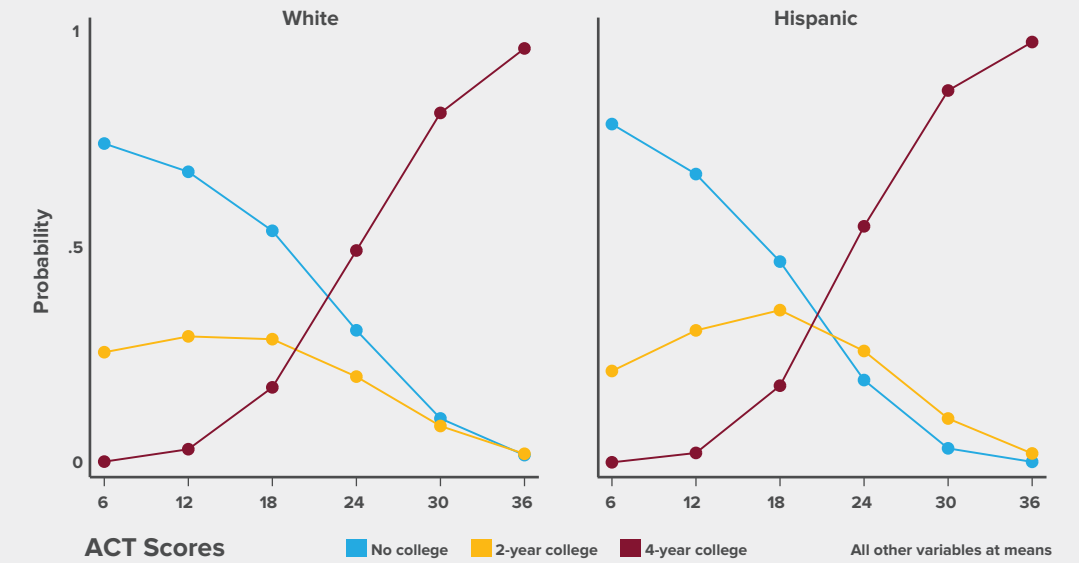


FIGURE 11

Predicted Probabilities of College Type by ACT Score and Ethnicity Arizona DCST Program 2014 Cohort



Thirty-two percent of Latinos went to a two-year college compared to 24 percent of non-Latino White students. For both Latino and non-Latino White students, we see that nearly half did not attend college the first year after their expected graduation.

For students who went to a four-year college, the competitiveness or selectivity of the institution selected was analyzed. Here we observed no real differences between Latino and non-Latino White students. As Figure 10 shows 83 percent of all students went to a competitive four-year college and 12 percent went to a very competitive four-year college. We found no statistical difference in this metric between Latino and non-Latino White students, which we confirmed in multiple statistical models. The reader should note, however, that nearly twice the percentage of non-Latino Whites went to a four-year college compared to Latinos. Furthermore, unlike many other states, Arizona does not have many in-state private elite colleges. We believe that this is one reason we did not observe differences in the selectivity or competitiveness of the institutions, which research nationally has found.

Knowing if and where students went to college we then examined the extent to which ethnicity/race were moderated by academic ability. Under this analysis, our goal was to understand if and how academic achievement (ACT composite score) impacted where students actually went to college. Figure 11 shows the probability plots of “not going to college”, “going to a two-year college” and “going to a four-year college” for Latino or White students.

As expected, in most instances, as a student's ACT score increased so did the likelihood of that student attending a four-year school. Similarly, the lower an ACT score, the more likely they were to not attend college. As the plot shows and our statistical models confirmed, higher-achieving Latinos (here we used a composite score of a 26) go to four-year colleges at the same rate as Whites. The only difference we did detect in our analysis was for what we call the “mid-level achieving students.” For those students who scored between a 19–24 we observed that Latinos were statistically more likely to go to two-year colleges than Whites. This is important as students scoring in this range have scores that would indicate that they could be successful without much remediation.

Overall, our analysis shows that higher achieving Latinos and non-Latino Whites go to four-year colleges at the same rate. Furthermore, our analysis also shows that there are no differences in the competitiveness of the institutions they chose. Mid-level achieving Latinos (composite score of 19–24), however are much more likely to go to two-year colleges than Whites.

Conclusion

This study sought to examine the postsecondary matriculation of students by ethnic background moderated by academic achievement. Additionally, we sought to examine how ethnic background and academic achievement influence decisions on the competitiveness of the college attended. Our current findings show that many Latino students are not well-prepared for postsecondary education based on the ACT. Additionally, we found that when Latinos do attend college that they are more likely to attend a two-year or community college as opposed to a four-year college. However, as academic achievement increases (as measured by ACT), we see significant positive effects for Latinos, especially for four-year colleges.

In contrast to some studies, our work shows that as academic achievement increases, undermatching by Latino students fade, meaning that as Latinos score higher on the ACT they go to four-year colleges or universities. While it is true that Latino students attend four-year colleges at a lower rate, we detected no significant differences in the competitiveness of the schools that they chose to attend when compared with non-Latino students. This finding implies that (at least in the Arizona context) higher achieving Latinos students are finding their way to four-year colleges at the same rate as their White counterparts when they have the academic ability.

As seen throughout this brief, the major challenge for policy makers is twofold. First, Latinos on average scored much lower on the ACT college entrance examination. This illustrates that more work needs to be done across the education spectrum to prepare all students for college. Second, our results show that “mid-level achieving” Latinos are often not making it to four-year colleges. This finding suggests that we need greater focus and action to help these students matriculate into four-year colleges, especially when considering the important role postsecondary education will play in future economic development.

As with most studies, there were several limitations that should be acknowledged. First, our analysis relies on only one cohort of data. The students in this sample all took the ACT test in the Spring of 2014 and would have been

eligible for admission to college in the Fall of 2015. Our goal is to compare these findings with future cohorts of students. Second, while we observed no significant undermatching by Latino students, we are cognizant that this may be impacted by the Arizona college system. In our sample, most students stayed in state, and in Arizona there is a lack of “highly competitive” or “most competitive” colleges and universities.

Recommendations

This research has highlighted the need for key strategies to improve college outcomes for all students. We recommend increased commitment and focus in the following three areas:

- **College knowing and going information can provide more access.** In Arizona, many of our students, especially Latino students would be first-generation college students. Often times, these students are not given the sufficient guidance or support to help them navigate the college application and going process. A number of counseling and summer-melt programs have shown promise in improving college-going rates.
- **Increases in state financial aid for students.** One major way to increase both the proportion of students entering postsecondary education and their persistence is to offer more opportunities for scholarships and grants. These types of support help offset the cost for postsecondary attendance, while at the same time they promote a commitment to increases in postsecondary attainment. State financial support can take many forms. For example, they can be awarded based upon financial need, merit or even to promote equity by improving diversity. Oftentimes renewal of this type of aid is tied to academic performance, a mechanism which has shown promising results for improving postsecondary persistence and completion.
- **Support, mentoring, and guidance is important to increasing persistence and completion.** Once students make it to college, they often need additional supports to help them stay in college. Mentoring programs often help students feel like they are part of a community, especially when they are not at home. Additionally, programs that offer additional support and guidance can help keep students on track or provide support if they began to struggle.

APPENDIX A

File Creation and Merging

This study utilized data from 14 Arizona public school districts from, all of which participated in the AZ DCST Program. We captured demographic and ACT data for all students in these districts who were juniors in the Spring of 2014. This yielded 19,311 cases.

We then matched our student-level records with National Student Clearinghouse data that we collected in the Spring of 2016. We waited to the Spring of 2016 so that students would have had the opportunity to enroll in either the Fall semester of 2015 or the Winter semester of 2016. Once matched, we then classified the National Student Clearinghouse data into three distinct categories: “no college”, “two-year school” or “four-year school”. Following this procedure, we merged Barron’s college selectivity rankings for those students who attended a four-year school. Finally, we merged school-level covariates (e.g., percent Hispanic and percent free and reduced lunch) taken from the Common Core of Data with the file.

Statistical Procedures

The analysis estimates two models. We utilized a multinomial probit to examine college matriculation as a function of ethnicity and controls. Given the complex decision structure associated with the type of college students attend, we did not want to assert an order to “no college,” two-year, or four-year schools. For example, some students who are eligible for 4-year schools may choose a two-year alternative due to financial considerations. Therefore, we used an un-ordered multinomial procedure for this analysis, which examines the joint likelihood of attending (or not) each type of school.

The multinomial probit model is a latent variable model where the probabilities of each of the m alternative outcomes are considered to be a function of a continuous latent variable.

$$Y^m = X\beta_m + \epsilon_m$$

where

$$\epsilon \sim N(0, \Sigma)$$

The categorical results are then determined by the predicted Y^m values

$$Y_i = \begin{cases} 1 & \text{if } Y^1 > Y^2, Y^3 \dots > Y^m \\ 2 & \text{if } Y^2 > Y^1, Y^3 \dots > Y^m \\ \dots \\ m & \text{otherwise} \end{cases}$$

Thus, each categorical outcome has its own vector of slopes, β_m . Additionally, the probability of each categorical outcome is the $X\beta$ matrix result entered into the normal cumulative distribution function $\Phi(.)$ that produces a probability,

$$\Pr(Y = m | X) = \Phi(X\beta_m)$$

To examine whether students who were attending four-year schools were undermatched, we employed a zero-inflated ordered probit (Harris and Zhao 2007) to model the likelihood of attending a four-year school ($\Pr(R = 1)$) and, considering that, the magnitude of Barron’s college selectivity ranking, Y . The zero-inflated ordered probit model fits two sets of coefficients, the first modeling the prevalence of a nonzero outcome with

$$R = X\beta + \epsilon, \text{ where the probability is noted as}$$

$$\Pr(R = 1 | X) = \Phi(X\beta)$$

And conditional on $R = 1$, another set of coefficients are estimated with cutpoints μ where

$$Y = Z\gamma + \zeta$$

And

$$Y_i = \begin{cases} 0 & \text{if } Y \leq 0 \\ j & \text{if } \mu_{j-1} < Y \leq \mu_j \\ \dots \\ J & \text{if } \mu_{J-1} < Y \end{cases}$$

Thus, there are two vectors of coefficients, one that predicts the presence of a non-zero value, β , and another that predicts the effect of the covariates for moving through the categories, γ .



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