



# First Generation Students: Summary of CSU Research

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A persistent and large percentage point difference in persistence and graduation rates exists for first generation students compared to their continuing generation peers. The purpose of this report is to compile CSU's research on first generation students to help inform the campus discussion on closing this success gap.

## Executive Summary

The overall difference in persistence and graduation for first generation students compared to continuing generation students is concerning for an institution with a mission oriented towards authentic access to higher education. This research overview indicates that there are programs and academic behaviors that are particularly beneficial for first generation students and areas on campus where first generation students have room to increase their success (as measured by engagement/learning/persistence). Considering that it only take an additional 11 first generation students to move this group's persistence or graduation rate by one percentage point these smaller programs/areas on campus have significant promise for assisting in closing the gap. A summary of the findings are as follows:

- ✚ Specific academic units have a greater representation of first generation students. Attention should be given to support units with a large number of first generation students that also have lower than expected graduation or persistence rates. A majority of departments in the College of Natural Sciences exhibit both these traits.
- ✚ First year academic behaviors are important indicators of graduation for first generation students. CSU should explore policy (including the placement exam) around math and composition to ensure that first generation students are completing these milestone courses within the first year.
- ✚ Several financial aid programs serve a majority of first generation students and appear to be an essential component for their success. First generation students that are not recipients of the programs with demonstrated effectiveness might benefit from support from other areas on campus.
- ✚ There is some correlational evidence of increasing levels of engagement on campus for first generation students. However, first generation students participate in undergraduate research at lower rates than continuing generation students and is an area for improvement on campus.
- ✚ Other than the Key learning community there is not evidence that any living/learning environments are particularly strong associations with persistence for first generation students. However, considering the differences by first generation status in social / cognitive constructs (as measured by Taking Stock) it is apparent that first generation students face more financial concerns and have more social adjustment barriers, which impacts their ability to persist.

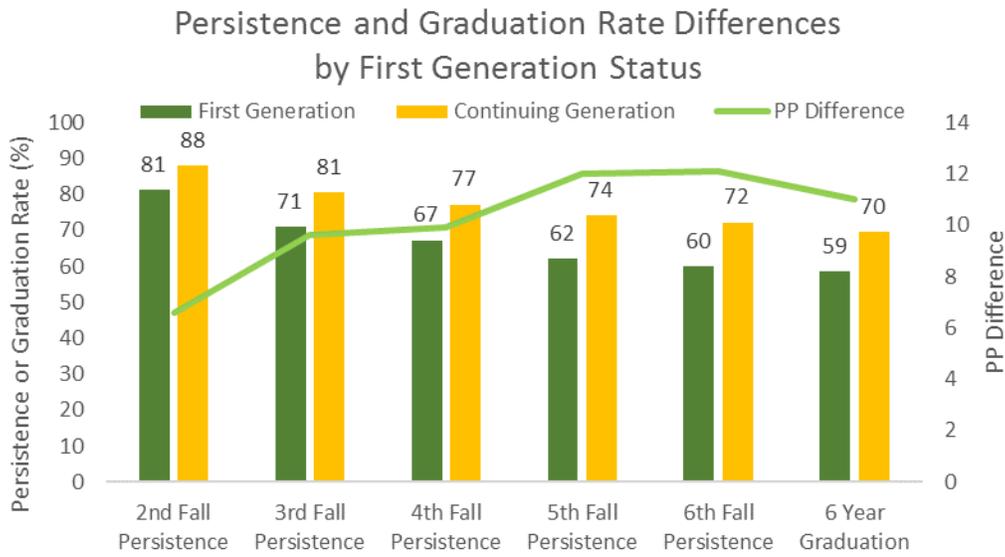
Finally, analyses done by IRP&E needs to continue to look for differential impacts/associations among the first generation population. This is necessary to insure that data informed policy is considering the possible interactions between policy and first generation status, which will help prevent policies that may negatively (and unintentionally) affect first generation students.



### Differences in Success Rates by First Generation Status

The graph below displays the persistence and graduation rates for first generation and continuing generation students from recent cohorts. The secondary y-axis displays the percentage point (PP) gap by first generation status.

Figure 1.



Rates are based on the most recent three first-time, full-time cohorts, which varies by outcome. For instance, 6 year graduation is based on FA10, FA09, and FA08.

First generation students have lower rates of persistence and graduation compared to continuing generation students. Additionally, the difference by first generation status tends to increase further along the undergraduate pathway. For instance, 81.3% of first generation and 87.9% of continuing generation students are retained to the second fall (6.6 PP difference). However, only 67.3% of first generation students are retained to their fourth fall compared to 77.2% of continuing generation (9.9 PP difference).

Overall at CSU, it takes about 45 students to change a persistence or graduation rate by one percentage point; therefore, it only takes 11 first generation students to increase (or decrease) the first generation persistence or graduation rate by a percentage point. This seems like a manageable number of students to work towards increasing persistence among each academic year; however, in aggregate the absolute number of additional students persisting is much more substantial. For instance, to close the fourth fall persistence rate there would need to be an additional 110 first generation students persisting to the fourth fall, which is a substantial change CSU’s persistence patterns. It is also important to note that if the fourth fall persistence rate gap by first generation status is closed this would increase the overall fourth fall persistence rate nearly three percentage points. This would have a substantial impact on another CSU goal of reaching 80% six-year graduation rate.

The remainder of this report is an annotated bibliography of studies completed by IRP&E that have relevant findings for understanding first generation student success on our campus.



## First Generation Gaps Persist Even After Controlling for Other Variables

A common response to the first generation gap displayed in Figure 1 is that first generation students have a multitude of other attributes that are also influencing their success. However, even after controlling for other demographic variables and prior academic preparation, first generation status has the largest difference in predicted success levels (as measured by freshmen retention and graduation rates) compared to the other variables examined in this report. For example, after controlling for a variety of demographic variables and CCHE index, first generation students have 36% lower odds of being retained and 30% lower odds of graduating in 6 years compared to their continuing generation peers. These lower odds result in a 5.4 PP difference in freshmen retention and a 7.6 PP difference in graduation rates for a first generation student compared to a continuing generation student who is identical in all other ways (residency, Pell recipient status, index, gender, and ethnicity). Similar to Figure 1, the magnitude of the association between first generation status and lower levels of success increases farther down the undergraduate pathway. Here is a [link](#) to full study.

## Specific Academic Units Attract First Generation Students

IRP&E conducts a bi-annual study that compares the predicted graduation and persistence rates of departments to the observed rates in order to describe academic areas on campus that are doing better or worse than expected. The appendix of this report ([link](#)) displays the proportion of college/department cohorts that are first generation. First generation students are overrepresented in the college of Agricultural Sciences (Agricultural and Resource Economics and Animal Sciences), Health and Human Sciences (Human Development and Family Studies, School of Social Work, and Health and Exercise Science), Liberal Arts (Anthropology, Sociology, and Political Science), and Natural Sciences (Psychology, Biology, and Biochemistry & Molecular Biology). The departments of Agricultural & Resource Economics, Health and Exercise Science, Anthropology, Political Science, and all departments in the College of Natural Sciences have lower than expected second fall persistence rates. It should be noted that this study did not look for differential associations by first generation status; therefore, we are not stating that first generation students do worse in these departments just that these departments are home to a large number of first generation students and the persistence rates (for all students) are low. Thus, increasing persistence in these departments could influence the overall success of first generation students due to the larger representation of first generation students in these units.

## Academic Behaviors are Associated with First Generation Student Success

CSU completed a study that focused on identifying first year student behaviors that are strongly associated with graduation. The intent of this report is to highlight behaviors in the first year that are early indicators of attrition; therefore, identifying students in need of intervention. This analysis showed that completing math, composition and 30 credits within the first year are strongly associated with graduation. Additionally, this report looked at the models by demographic group to see if any interaction exists between the first year academic behaviors and first generation status. Among first generation students, the associations between completing 30 credits in the first year as well as math and composition in the first year are considerably stronger for first generation students compared to the overall population. This indicates that these first year behaviors are a stronger predictor of graduation for first generation students compared to their continuing generation peers. Here is a [link](#) to the full study.

Considering the empirical evidence linking math completion in the first year with student success, IRP&E completed a study ([link](#)) that focused on the gaps in math achievement by first generation status. First generation students are considerably less likely to place into college algebra after taking the Math Placement



Exam (MPE) and are less likely to complete their AUCC math requirements within the first even after controlling for CCHE index score. Additionally, as recorded on the MP, there is no difference in the self-reported hours that first generation students spend studying for the MPE compared to continuing generation peers. This is also in-line with the Taking Stock results that show first generation students have much lower confidence in the math abilities (after controlling for index) compared to continuing generation students. These results suggest the gaps in first-year math success (which is an important predictor of persistence) for first generation students compared to continuing generation students may be the result of something besides academic preparation and time spent studying and could be possibly impacted by small changes in communication about the MPE or first year math expectations.

In August of 2016 IRP&E explored differences in course performance by delivery type (in-person/ online) and demographic attribute. Results from this study ([link](#)) did not indicate that first generation students are worse off by taking a course online compared to in-person. However, results do indicate that there is large variation in the difference in performance across delivery type by specific course. Therefore, this study concludes that first generation students should not be deterred from taking a course online if it is better for their schedules, but academic units should pay attention if there are specific courses offered within their unit that have a disproportionate success rate for online sections of a course compared to in-person sections.

## **Financial Aid Programs have a Strong Association with First Generation Student Success**

Each year IRP&E describes the retention to 2<sup>nd</sup> and 3<sup>rd</sup> fall by Expected Family Contribution (EFC) within the context of a major institutional financial aid program (CTC award) that provides substantial grant aid for low and middle-income students. This study indicates low-income students who receive the CTC award have higher rates of persistence compared to low-income students that do not receive the award. This remains true when the analysis is limited to first generation students. However, it is important to note that about 47% of resident, first generation students receive the CTC award compared to only 22% of all resident students. These findings suggest that adequate financial aid is a necessary component for low-income students to persist. This statement holds true when the analysis is limited to only the first generation population. However, it is important to note that a much larger proportion of first generation students receive the CTC award making this commitment even more important for first generation students' persistence overall. Here is the [link](#) to the full report.

Several scholarship programs that intentionally serve mostly first generation students have strong assessment results in terms of increasing recipients' persistence and graduation. Over 70% of Puksta Scholars are first generation and these scholars have very high graduation rates (report [link](#)). Similarly, nearly 80% of Reisher Scholars are first generation and their persistence and graduation rates are much higher than would be expected (report [link](#)). Asset students are part of another institutional program associated with high levels of demonstrated effectiveness. This program provides substantial need-based financial aid (comparable to the CTC award) to undocumented students that are eligible for in-state tuition. Asset students, 90% of which are first generation, have notably higher persistence rates ([link](#)). Additionally, the First Generation Award scholarship program has very strong persistence rates; although, no formal report to link. These financial aid programs increase graduation and persistence for all students, but have a disproportionate impact on CSU's first generation student success since the programs serve predominantly first generation students.

The Taking Stock survey indicates that first generation students say they have much more financial concerns and report being more likely to look for wage labor during their time at CSU. These self-reported survey measures



collaborate with the results that show the importance of adequate grant or scholarship awards for first generation students.

## First Generation Student Engagement

National research on first generation student participation in high impact activities suggest that this group is less likely to engage in these high impact activities compared to their continuing generation peers; however, at CSU this is dependent on the type of high impact activity.

CSU's 2016 NSSE data on high impact practices is available on an IR Interactive page ([link](#)) and allows users to view the NSSE results by a variety of CSU internal variables, including first generation status. First-year, first generation students participate in learning communities (29%) and service learning course work (59%) at higher rates compared to their continuing generation peers (22% participate in learning communities and 49% do service learning course work). However, first generation seniors participate in research with faculty members (22%) and study abroad (13%) at lower rates than their continuing generation peers. These 2016 results are consistent with the 2012 results ([link](#)). In 2012, 50% of first generation, first-year students indicated that they have done or plan to do research with faculty member, but only 22% of first generation seniors have completed research with a faculty member. Similarly, 55% of first generation first-year students indicate that they plan to do study abroad but only 10% of first generation seniors actually do study abroad. Over these two NSSE administrations, CSU sees a trend where first generation first year students expect to be able to do research with a faculty member, but then are unable to operationalize this experience by their senior year. However, CSU appears to have made service-learning course work and learning communities' very accessible to first generation students as evidenced by their higher rates of participation in the 2016 NSSE data. It is important to note that the service learning results hold across first-generation status even when the data is limited to non-learning community (non-Key) students. For instance, 51% of first generation, first-year students not in a learning community report doing service learning compared to only 46% of continuing generation, first-year students not in a learning community (55% and 51%; respectively for seniors).

National research on student engagement (as measured by the NSSE constructs) indicates that first generation students typically have lower levels of engagement compared to their continuing generation peers; however, this is not consistent with students at CSU. In CSU's 2012 NSSE data, there are no differences in engagement benchmarks for first-year or senior first generation students compared to their continuing generation peers (regardless of learning community participation). However, in the 2016 data first generation, first-year students score higher than the continuing generation first year students on two engagement indicators (Discussions with Diverse Others and Student-Faculty Interactions). First generation seniors also score higher compared to their continuing generation peers on the same two engagement indicators as well as the Learning Strategies indicator. These higher mean scores for first generation students do not persist (but remain equivalent to continuing generation students) if the data is limited to only non-learning community students. These results suggest engagement for first generation students does not lag behind engagement for continuing generation students and that engagement is increasing among first generation students that participate in a learning community between 2012 and 2016. Please note the links for student engagement are the same as the links for high impact practices.

Each year TILT completes annual reports on the tutoring and study group programs ([link](#)). The smaller number of participants in these programs do not allowed analyses to be split by first generation status; however, representation of first generation students is assessed. In the most recent report, there are roughly similar percentages of first generation students who participated in tutoring programs (26%) compared to non-participants (24%), which is an increase from the prior year. If this trend continues this also suggests that engagement for first generation students is increasing.



## First Generation Co-Curricular Experiences

Learning communities are a high impact activity that are a possible tool for increasing the success of first generation students. The appendix of the 2016 Learning Community annual report ([link](#)) focuses on differences in first generation gaps by learning community status. At CSU, first generation students are well represented among learning communities; however, this is mostly due to the Key Learning community. When first generation representation is explored across the different types of learning community (Key, Honors and all other learning communities), it is evident that first generation students are underrepresented in most learning communities other than Key. Additionally, the gaps in freshman retention by first generation status in all learning communities besides Key are not consistently smaller compared to the first generation gap among non-learning community students. However, the Key learning community appears to be an effective learning community for increasing first generation persistence and graduation ([link](#)). Nearly 40% of Key Learning community students are first generation and the positive impact of participating in the Key Learning community on second fall persistence and 6 year graduation is even stronger for first generation students.

Residence life requested a follow-up study for their 2015 annual report, which focused on student success differences across demographic groups by residence hall status ([link](#)). First generation students are underrepresented among first-time students that live in the residence halls, but first generation students are overrepresented among sophomores that live in the residence halls. Results show that the first generation gap in second fall persistence is 8 PP for residence hall students compared to 7 PP for commuter students. The first generation gap in third fall persistence is 6 percentage points for students that live in the residence halls their second year and 3 PP for students that live off-campus their second year. These results suggest that living in a residence hall is not associated with first generation student success; however, the Taking Stock survey provides evidence that first generation students face many additional barriers that the annual report data does not account for. For instance, first generation students reported higher financial concerns and homesickness/family concerns on average compared to the continuing generation student population. Approximately forty-one percent of first generation students are the primary person who manages their finances, while only sixteen percent of continuing generation students are the primary manager of their finances. This discrepancy is noteworthy since students who are primary managers of their finances have significantly lower first term GPAs than students who are not primary managers.

The Honor's program is interested in increasing the proportion of first generation students in their program (only about 12% of Honors students from the FA13 through FA15 freshman cohorts are first generation) and requested a report ([link](#)) to explore the success of different demographic groups. The gaps by first generation status for second fall persistence as well as four, five, and six year graduation rates are smaller for Honors students compared to non-Honors students.

## Conclusions

CSU is committed to decreasing the first generation gap in persistence and graduation; however, to make substantial changes in persistence patterns for first generation students the cumulative impact from many small changes is needed. Only 11 students make a one percentage point change in first generation student persistence rates; however, to close the 10 percentage point CSU needs to change the persistence patterns of over 100 first generation students, which is not a small undertaking. An important element of this work is to continue to review CSU's data by first generation status to ensure that programming and policy changes are having the intended impact.