

# Retention by Expected Family Contribution (EFC)

6/15/16

This report investigates 2nd Fall and 3rd Fall retention rates by Expected Family Contribution (EFC) for recent full-time, first-time (FTFT) freshman cohorts. This report serves as an update to, and extension of, [prior retention by EFC reports](#) that focused on 2<sup>nd</sup> Fall Retention as the sole dependent variable. Sub-groups of interest including First Generation students, minority ethnicity students, and Colorado residents are analyzed in addition to the cohort population.

## Executive Summary

- ✚ Across the FA10-FA14 cohorts there is a positive association between EFC and both 2<sup>nd</sup> Fall and 3<sup>rd</sup> Fall retention.
  - Low income students persist at rates lower than the overall cohort rate.
  - Middle income students persist at rates that are similar to the overall cohort rate.
  - Upper income students persist at rates that exceed the overall cohort rate.
  
- ✚ Low and middle income students make up nearly 70% of the most recent cohort, and thus retention rates among these groups significantly impact CSU's overall retention rate.
  - The distribution of students at each income range has remained relatively stable across the FA11-FA14 freshman cohorts.
  - Since FA11, the proportion of upper income/non-filing students has increased slightly but steadily.
  - Since FA11, the proportion of low income students has decreased slightly but steadily.
  
- ✚ There is a positive association between CTC receipt and retention.
  - Low-income students who receive half- or full-CTC support persist at rates that are about +10 to +15 percentage points (PP) higher than low-income students who receive no CTC support.
  - This effect is present across 2<sup>nd</sup> and 3<sup>rd</sup> Fall retention measures, and across the studied First Generation and minority ethnicity subgroups.
  
- ✚ In the most recent cohorts, CTC recipients' 2<sup>nd</sup> Fall retention (+2.6 PP) and 3<sup>rd</sup> Fall retention (+2.7 PP) have both improved substantially compared to prior cohort retention rates for these groups. This finding suggests that recent CTC-related policy adjustments may have resulted in improved support among these students.
  
- ✚ First Generation CTC recipients persist to the 2<sup>nd</sup> Fall at a rate that is +7.1 PP greater than the overall First Generation 2<sup>nd</sup> Fall retention rate, and similar to the cohort 2<sup>nd</sup> Fall retention rate of 86.6%.
  - This advantage attenuates when analyzing 3<sup>rd</sup> Fall retention, wherein First Generation CTC recipients retain at a rate +3.8 PP above the First Gen 3<sup>rd</sup> Fall rate and -3.6 PP lower than the cohort rate.
  
- ✚ In the most recent cohorts, minority students who file for financial aid retain to both the 2<sup>nd</sup> Fall and 3<sup>rd</sup> Fall semesters at rates that are slightly greater than non-filer minority students.
  - This finding suggests that some non-filing minority students may be more likely to persist if they filed financial aid documentation.

## Longitudinal Trends

Throughout this report, students are categorized into groups based on their income and EFC. Broadly speaking, freshmen can be categorized into one of four groups:

- ✚ **CTC income eligible** includes all students who have an EFC and adjusted gross income (AGI) that renders them eligible for CTC award (full or half), and also includes ASSET students regardless of whether they have an EFC or AGI on record. Not all students in this group received the CTC for a variety of reasons, including nonresident status, residents with need met by other grants/scholarships or veteran’s benefits, and students who did not meet other financial aid deadlines or verification criteria.
- ✚ **Middle income** includes students that are above CTC income eligibility but could be eligible for some types of need-based aid (EFC between \$15,000 and \$55,000).
- ✚ **Upper income** includes students who are generally not eligible for need based aid (EFC > \$55,000).
- ✚ **Non-filers** includes students who did not file a FAFSA. The income level for non-filers is unknown; however, without completing the FAFSA these students are not eligible for need based aid.

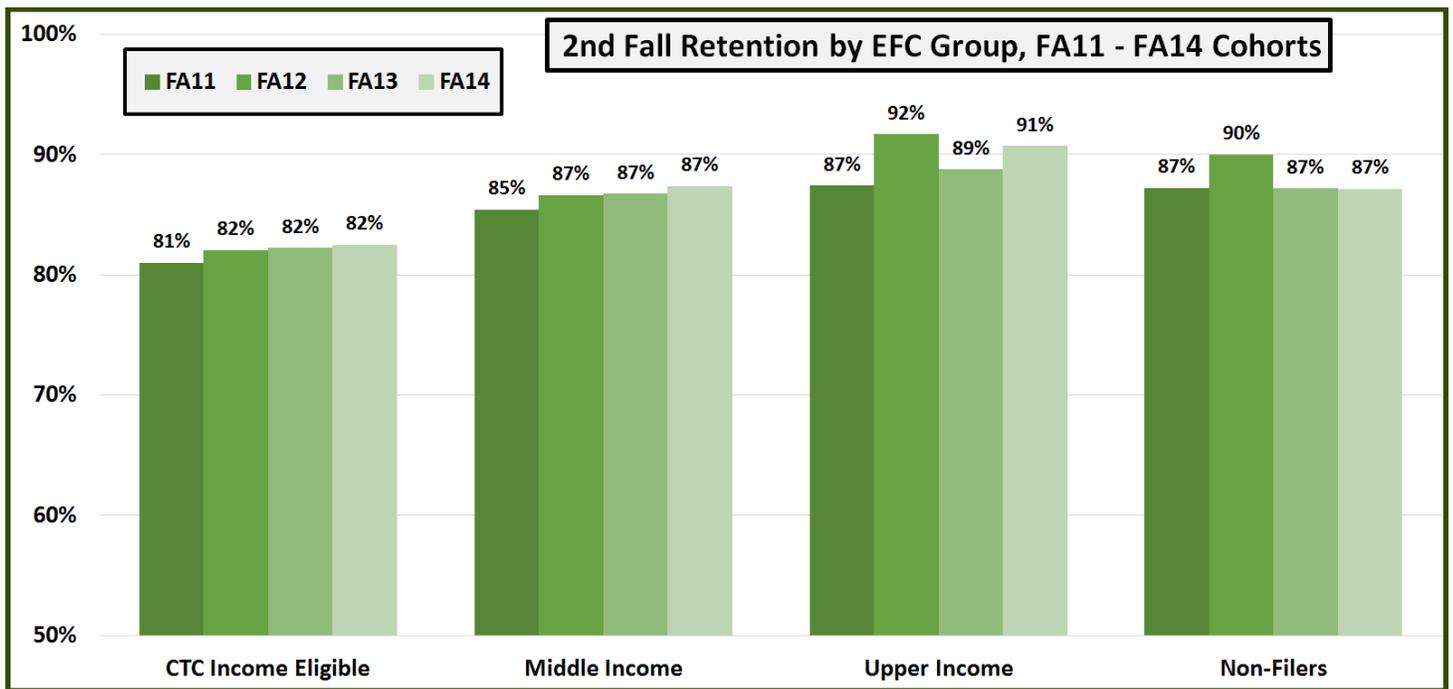


Figure 1. 2<sup>nd</sup> Fall Retention by broad EFC group.

Figure 1 above shows FTFT 2nd Fall Retention rates for the FA11-FA14 cohorts, by broad EFC group. For the CTC Income Eligible, Middle Income, and Upper Income groups we observe a trend of increasing 2nd Fall retention since the CTC program was initiated in FA11. Among Non-Filers, 2nd Fall retention has roughly held steady across the studied years.

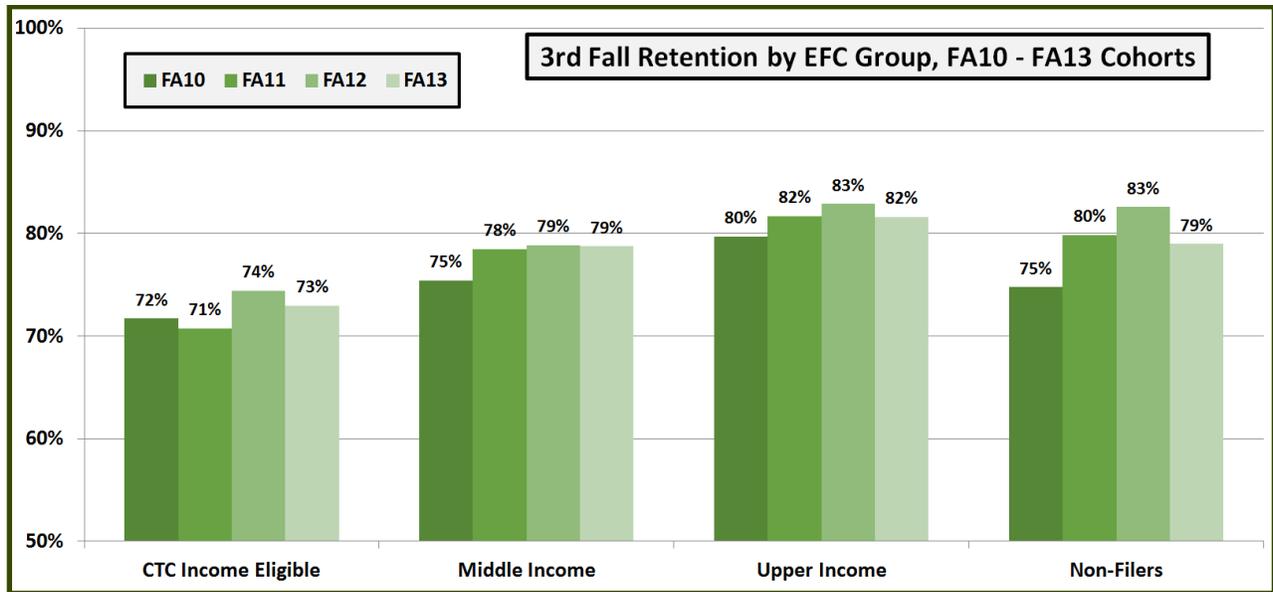


Figure 2. 3<sup>rd</sup> Fall Retention by broad EFC group.

Figure 2 shows 3<sup>rd</sup> Fall retention by broad EFC group, for the FA10-FA13 freshmen cohorts; note that the semesters of study are offset by one year for 3<sup>rd</sup> Fall retention analysis compared to 2<sup>nd</sup> Fall retention analysis. Similar to our observations on 2<sup>nd</sup> Fall retention, we observe that 3<sup>rd</sup> Fall retention has generally increased across groups, though there is less consistency in the upward trend for this measure.

### Income Distribution by Cohort

Observing the distribution of students at various EFC levels is important for assessing the impact of low and middle income students' retention on the overall population, and for assessing changes in income distribution over time. In Figure 3 the low income "CTC Income Eligible" group is split into students who did, and did not, receive CTC support.

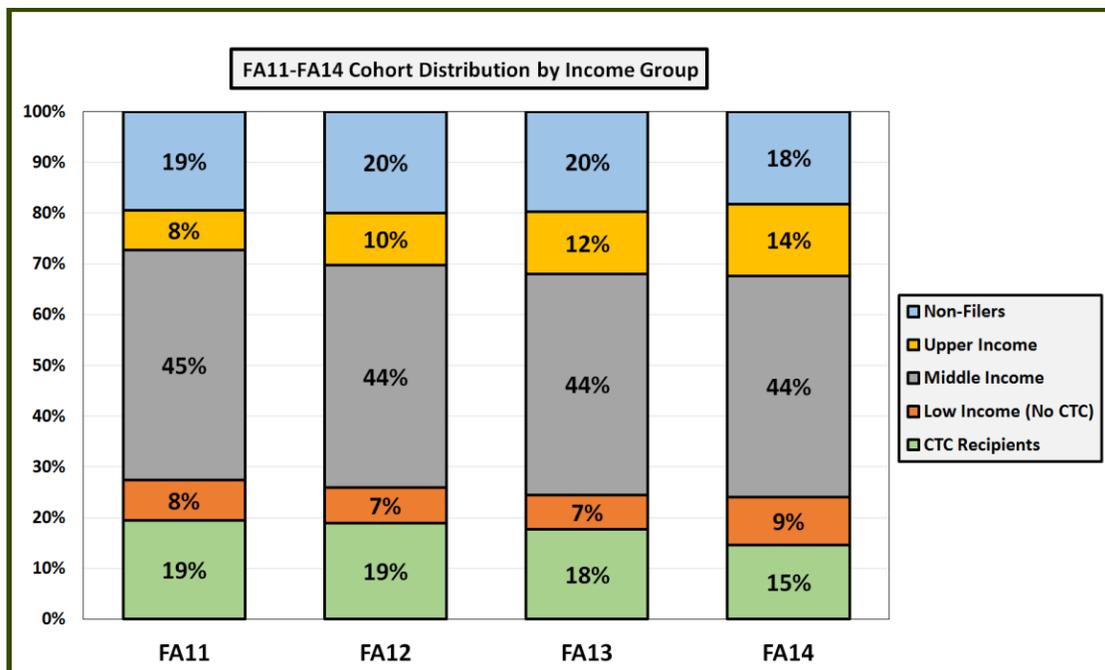


Figure 3. Income Distribution by Cohort and broad EFC Group.

Overall, in Figure 3 we observe subtle but stable changes in the proportion of students falling into each EFC group over time. The proportion of combined upper-income and non-filers, representing the presumed highest income group, has increased from 27% in FA11 to 32% in FA14. This increase has been driven by an increase in upper income FAFSA filers from 8% to 14%; the proportion of non-filers has remain roughly unchanged over the studied time frame.

On the other hand, the proportion of low-income CTC eligible students in the cohort population has been slowly declining over the studied time frame, from a combined 27% of the FA11 cohort to 24% of the FA14 cohort. This trend has been driven by a decrease in low income CTC recipients, although it remains to be seen whether the drop from the 18%-19% proportions seen in prior semesters to 15% in FA14 represents a one-year blip or a longer-term trend.

Despite these noticeable but small changes in composition over time, the overall distribution of freshmen by EFC group has remained relatively static over the studied time frame. For each cohort, about a quarter of students are low income and around 45% of students are middle income. From a big-picture perspective, it is important to note that about 70% of recent freshman cohorts are low or middle income. The performance of these low and middle income students thus has a substantial impact on CSU's overall retention rate.

### FA11- FA14 Financial Aid Recipient Groups

The broad EFC groups used thus far in the report can be further broken down into more specific sub-groups. Looking into student performance at a more focused level allows us to identify effects that exist within specific students groups and to determine whether there is notable variability within the broader EFC groupings. The aid recipient groups used in more detailed analyses are as follows:

- ✚ **Full CTC** includes the lowest income students who are Pell eligible and received the CTC award;
- ✚ **Pell/No CTC** includes the lowest income students who have a Pell eligible EFC but did not get a CTC award;
- ✚ **Half CTC** includes students who are above Pell eligibility but have an AGI that is below Colorado's median household income (\$57,000) and received the CTC award;
- ✚ **Low Income/No CTC** includes students who did not receive the CTC award but have an EFC and AGI that are equivalent to the Half CTC group;
- ✚ **No CTC** includes students who carry a CTC eligible EFC (less than \$15,000), but with a Family AGI that is above \$57,000 and thus renders them ineligible for CTC;
- ✚ The remaining EFC groups are grouped into ranges by \$10,000 bracket;
- ✚ **Non-Filers** are kept as a separate group because their income level is unknown. In ideal circumstances (in which students apply for aid efficiently), this group should contain students with no genuine nor self-perceived need for any financial assistance.

## FA14 Cohort 2nd Fall Retention by EFC Aid Group

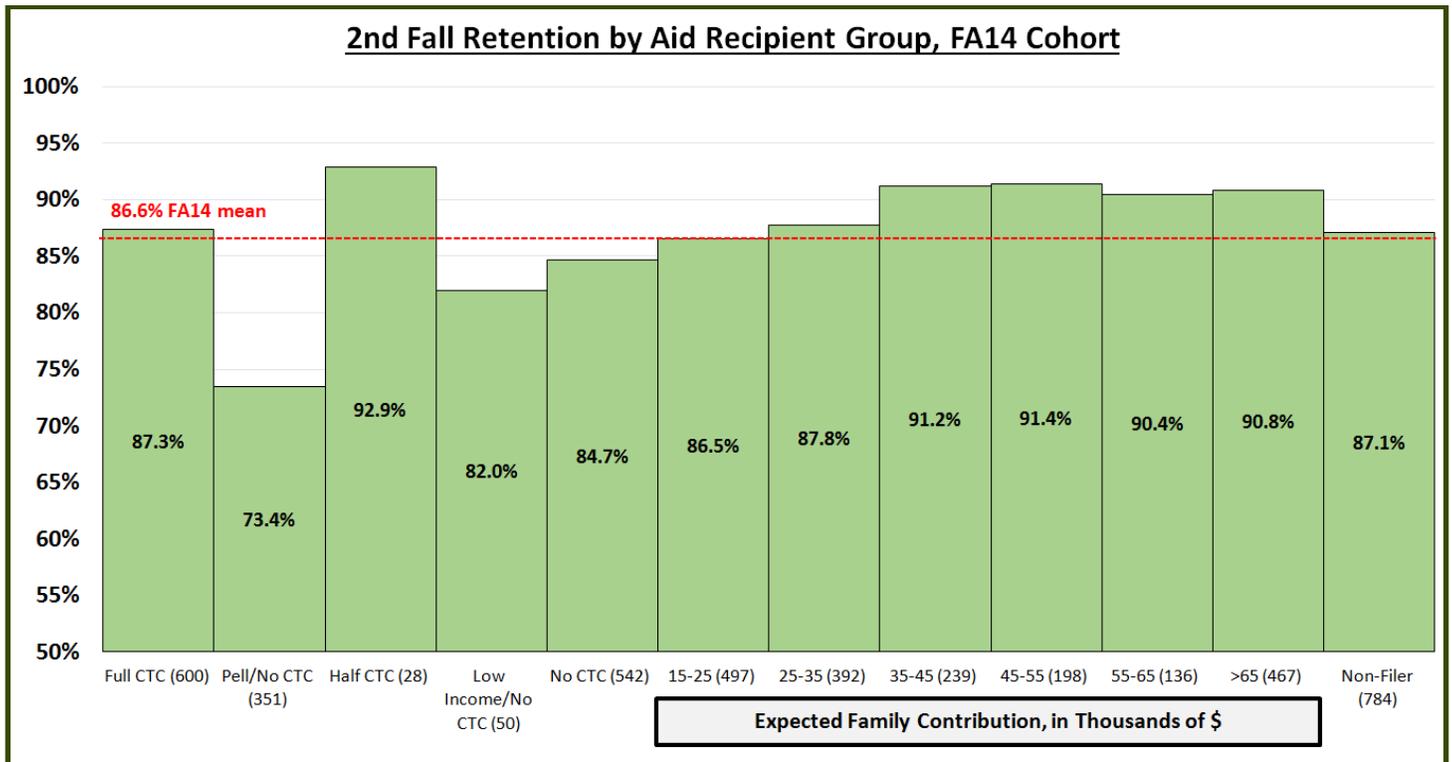


Figure 4. 2<sup>nd</sup> Fall Retention by Aid Recipient Group, FA14 Cohort

2nd fall retention rates for the FA14 cohort are broken out in Figure 4 across each of the 12 aid groups, with low income groups on the left and higher income groups on the right of the chart. The FA14 cohort overall 2nd fall retention of 86.6% is provided for reference. Note that the Half CTC and Low Income/No CTC groups represent a very small N in this and later analyses, and any effects observed for those groups should be interpreted with extreme caution.

Overall, FA14 Full CTC students retain to the 2<sup>nd</sup> Fall at slightly higher rates than average; by contrast, the two larger sample size non-CTC low-EFC groups (Pell/No CTC, No CTC) both show decrements in 2<sup>nd</sup> Fall retention compared to the average freshman. For students in the middle income groups (\$15k to \$55k), we observe that students at the lower middle-income bound perform close to the mean while the remaining middle income students perform about one to four percentage points above the mean value. It may be surprising that non-filers display 2<sup>nd</sup> Fall retention that is only slightly above the cohort mean, and substantially less than the middle-to-high EFC groups. This finding suggests that a proportion of students in the non-filer group would likely benefit from filing for financial aid.

## FA13 Cohort 3rd Fall Retention by EFC Aid Group

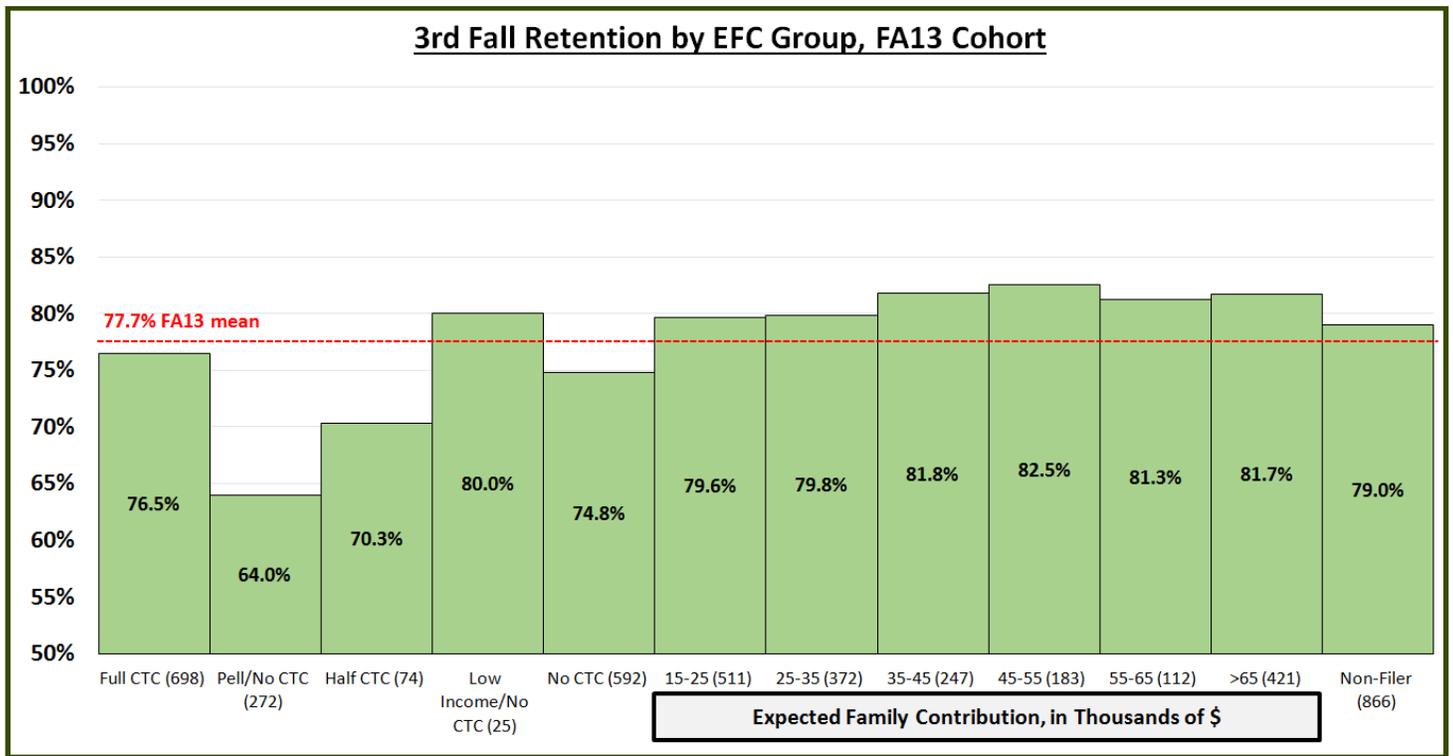


Figure 5. 3<sup>rd</sup> Fall Retention by Aid Recipient Group, FA13 Cohort

Figure 5 displays 3<sup>rd</sup> Fall retention by EFC group for the FA13 FTFT freshmen cohort, which represents the most recent cohort for which 3<sup>rd</sup> Fall retention data is currently available. The red line represents the FA13 cohort mean 3<sup>rd</sup> Fall retention rate of 77.7%.

For 3<sup>rd</sup> Fall retention, we observe that Full CTC students retain at a higher rate than students in the other low-EFC non-CTC groups (excepting the Low Income/No CTC group, N=25). While the Full CTC retention rate is slightly above the cohort mean when investigating 2<sup>nd</sup> Fall retention, for 3<sup>rd</sup> Fall retention we observe that the Full CTC group falls slightly below the FA13 cohort retention rate.

3<sup>rd</sup> Fall retention rates are substantially above the mean for each of the middle and high income bands from \$15k through \$65k+. Similar to the observed pattern in the 2<sup>nd</sup> Fall analysis, the non-filer group again exhibits greater 3<sup>rd</sup> Fall retention than the cohort mean yet lesser retention than middle-income and upper-income students who filed for financial aid.

## Recent Changes in Retention by EFC Aid Group

This portion of the analysis seeks to evaluate whether there have been by-aid recipient group changes in 2<sup>nd</sup> Fall and 3<sup>rd</sup> Fall retention for the most recently studied cohorts. Figure 6 below displays the percentage point change in 2<sup>nd</sup> Fall retention rate for the FA14 cohort compared to the overall retention rates for the FA11-FA13 cohorts.

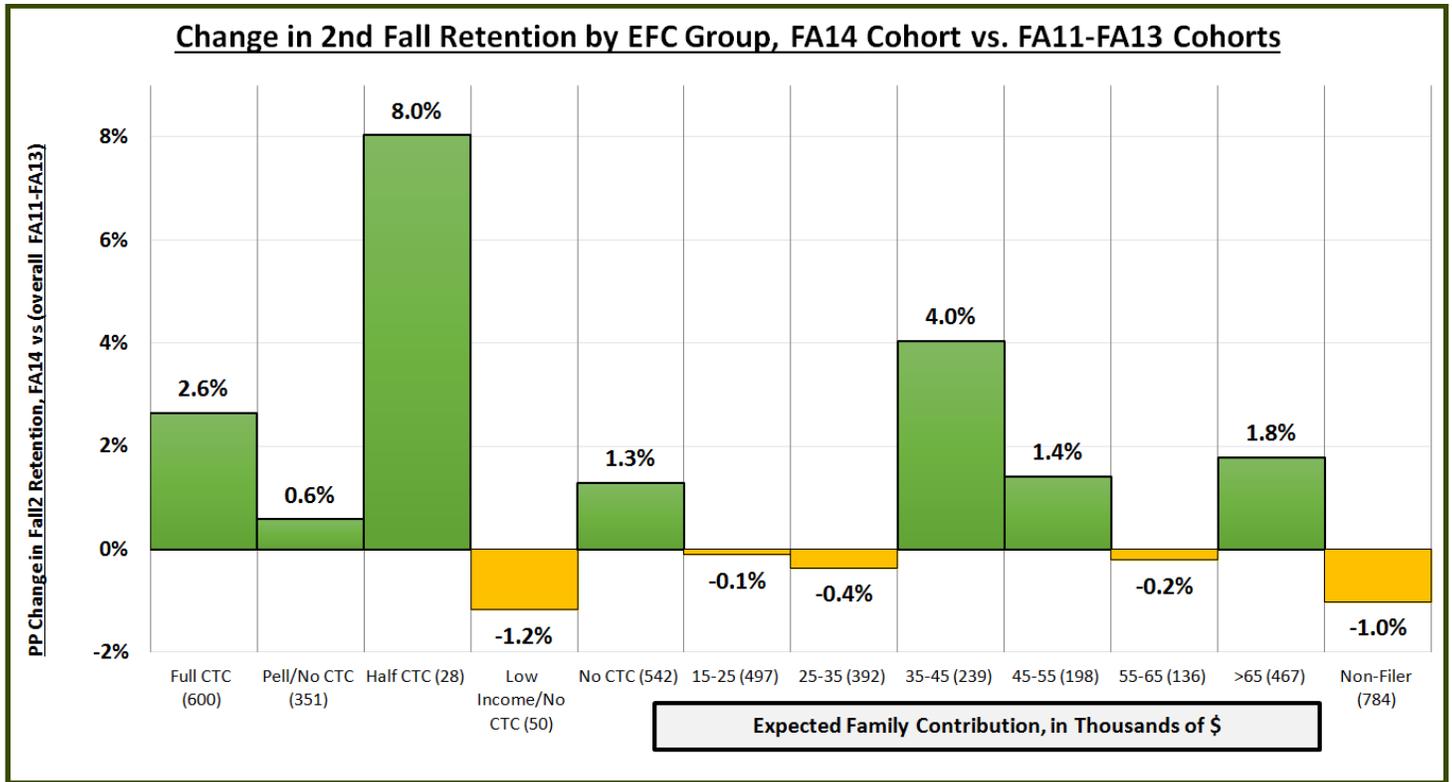


Figure 6. Change in 2<sup>nd</sup> Fall Retention by EFC Aid Group, FA14 vs. FA11-FA13

Before assessing changes observed in Figure 6, note that the Half CTC group includes only 28 students in FA14 and thus the directionally large change in observed retention is unlikely to be valid or meaningful. This chart provides insight into which specific aid groups have seen recent relative advantages in retention, possibly as a result in global changes to the structural relationship between EFC and retention or as a result of change in CSU aid policies.

Overall, we observe that each of the low-EFC groups with N over 50, including the Full CTC group, has shown improved 2<sup>nd</sup> Fall retention in FA14 relative to FA11-FA13. This finding provides evidence that recent changes in aid policy have improved short-term retention among the highest need students.

The first decrement that we observe is in the \$15-\$25k and \$25k-\$35k EFC ranges, which represent students just outside the standard EFC level for need aid. Retention among these students appears to be flat for the FA14 cohort vs. prior cohorts, which is striking in comparison to the strong 2<sup>nd</sup> fall retention gains shown by slightly wealthier students in the 35k to 55k ranges. This pattern of flat non-improvement is also seen among the FA14 55k-65k group, though the most wealthy aid filers at 65k+ do display a pattern of improved retention in the most recent cohort.

The slight drop in 2<sup>nd</sup> Fall retention among FA14 vs. FA11-FA13 non-filers is surprising when observed in conjunction with the lesser proportions of non filers in FA14 compared to prior cohorts (18% vs. ~20%). The decrease in 2<sup>nd</sup> Fall retention rate suggests that either more aid-needy students are failing to file, retention rates are simply dropping among students from the most wealthy families, or a combination of both.

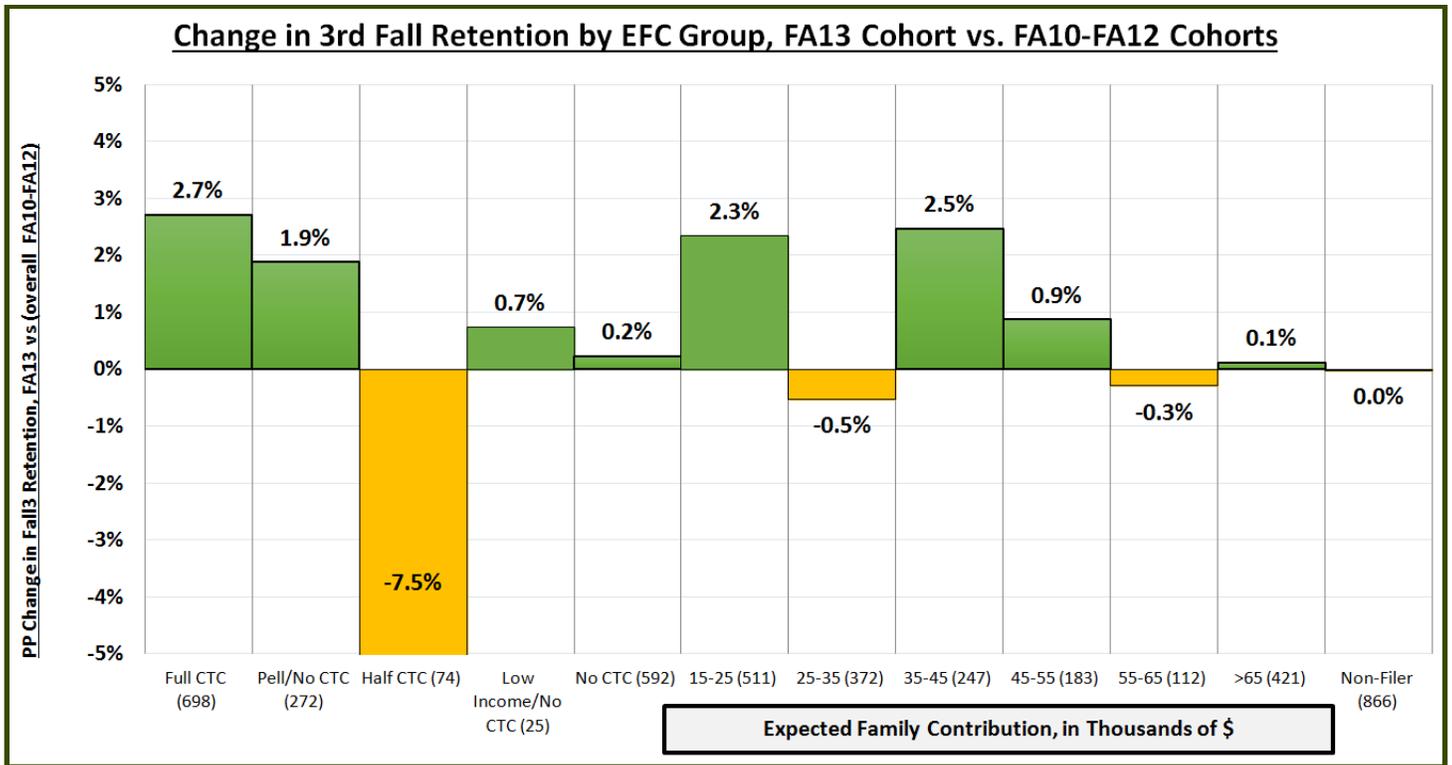


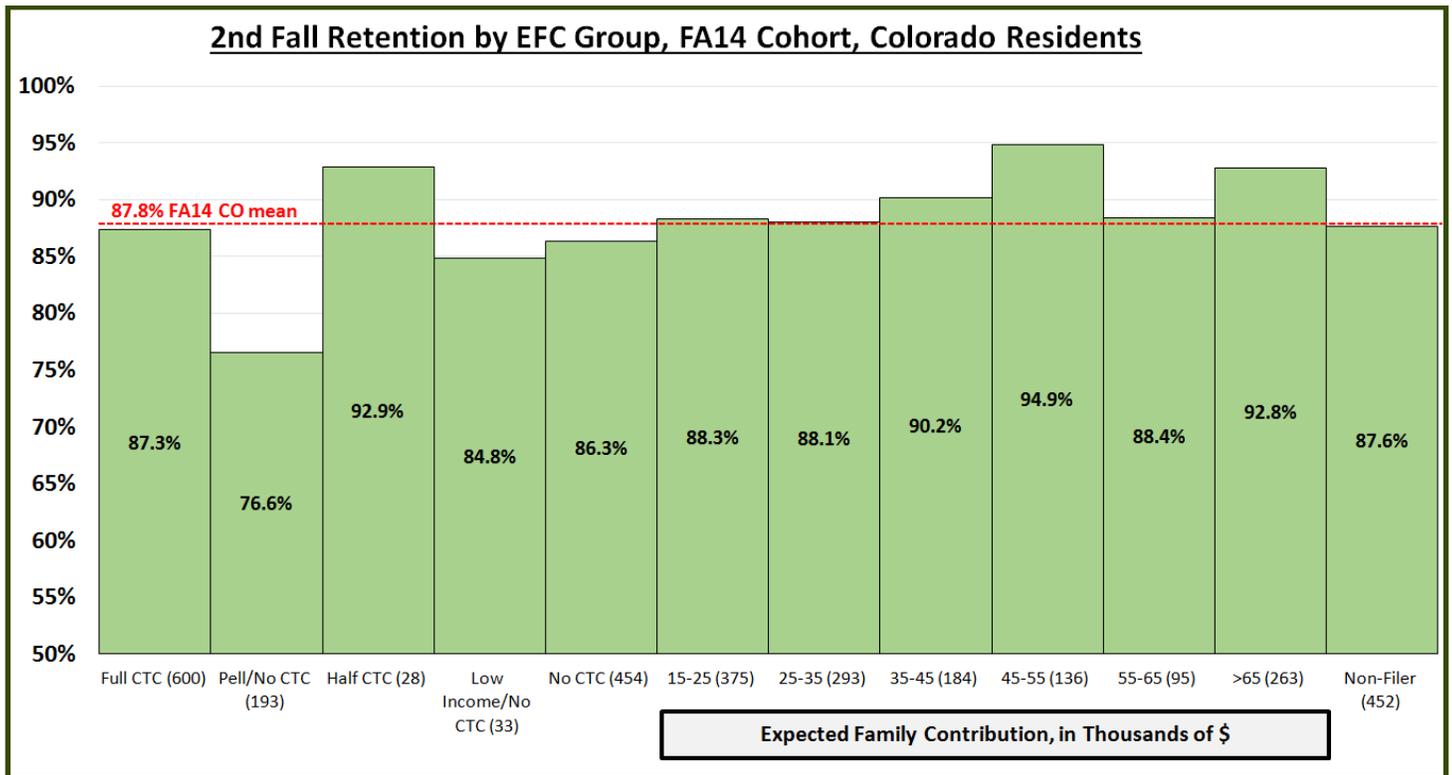
Figure 7. Change in 3rd Fall Retention by EFC Aid Group, FA13 vs. FA10-FA12

Figure 7 displays a similar analysis comparing 3<sup>rd</sup> Fall retention rates for the most recently-assessable FA13 cohort versus the prior FA10-FA12 cohorts. Once again, the Half CTC and Low Income/No CTC groups each represent a small N of students and thus single-year variation must be interpreted with extreme caution.

Similar to the 2<sup>nd</sup> Fall study, we observe that 3<sup>rd</sup> Fall retention rates among the neediest students in the recent FA13 cohort have increased substantially compared to the FA10-FA12 cohorts. Unlike the 2<sup>nd</sup> Fall study, we observe different patterns of retention change among middle income students. We observe 3<sup>rd</sup> Fall retention gains for the FA13 cohort in the \$15-\$25k, \$35-\$45k, and \$45-\$55k EFC ranges but no evidence of improved retention at the \$25k-\$35k range.

Patterns of 3<sup>rd</sup> Fall retention among higher-income members of the FA13 cohort are consistent with prior cohorts. We observe essentially flat performance for the FA13 group at EFCs greater than \$55k and for non-filers, suggesting that longer-term retention rates for these groups have been largely unchanged by recent policy adjustments or structural factors.

## Colorado Resident Retention, by Aid Group



**Figure 8. 2<sup>nd</sup> Fall Retention by EFC Aid Group, Colorado Residents**

Figure 8 displays 2<sup>nd</sup> Fall retention by EFC Aid Group for FA14 Colorado residents only. Filtering to Colorado residents, we still observe substantial differences in retention between low income CTC recipients and low income and Pell students with no CTC. We also observe that each EFC band \$15k and higher experiences a rate of 2<sup>nd</sup> Fall persistence that is above the FA14 Colorado mean. Retention is particularly strong among high-income aid filers. Surprisingly, Colorado resident non-filers retain to 2<sup>nd</sup> Fall at a rate that is within 1 PP of the resident mean of 87.8%.

Assessing retention to the 3<sup>rd</sup> Fall among Colorado residents paints a slightly different picture (Figure 9). On measures of 3<sup>rd</sup> Fall retention, CTC recipients still outperform other lower-income groups, but the CTC group's persistence advantage drops to under 10 PP. Unlike the 2<sup>nd</sup> Fall study, CTC recipients persist to 3<sup>rd</sup> Fall at a lower rate than both the Colorado resident rate of 79.1% and the cohort rate of 77.7%. Retention to 3<sup>rd</sup> fall remains above both the cohort and resident means for students falling in middle income and high income EFCs. Despite the relatively low retention rates to 2<sup>nd</sup> Fall observed among FA14 cohort resident non-filers, non-filer residents in the FA13 cohort retain to 3<sup>rd</sup> fall at rates above both the resident and cohort means.

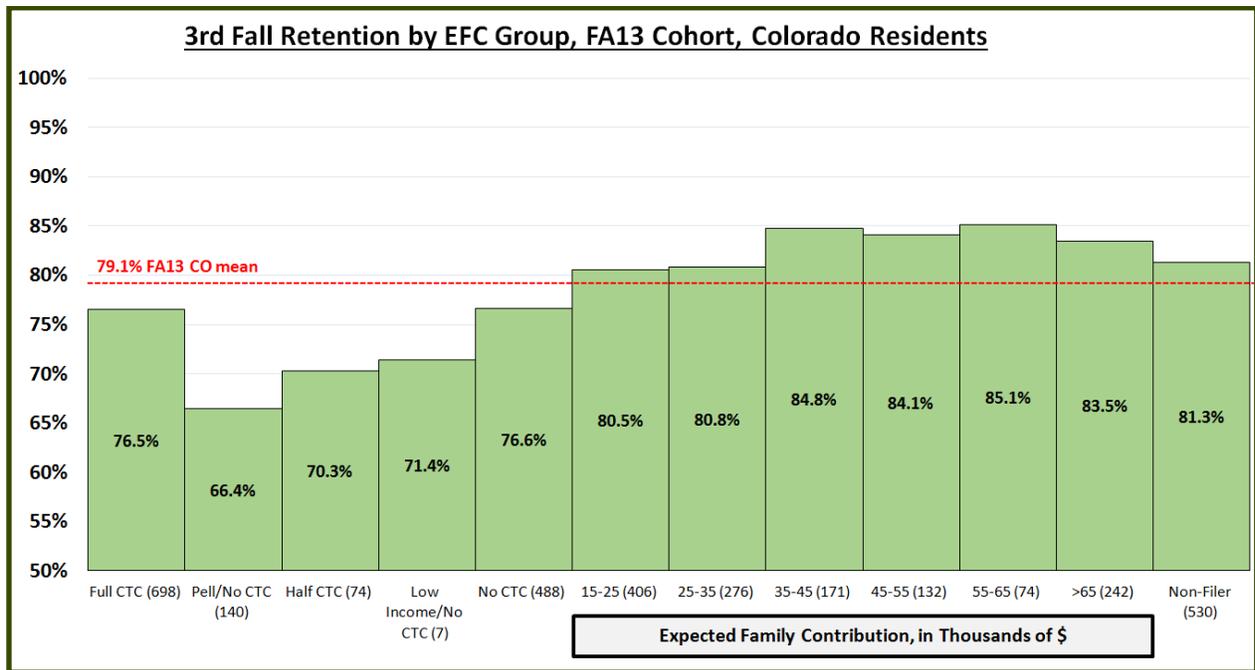


Figure 9. 3<sup>rd</sup> Fall Retention by EFC Aid Group, Colorado Residents

### First Generation Student Retention, by EFC Group and Aid Group

First generation students are among the most at-risk students for attrition, at each level of prior student achievement and preparation. This sub-analysis investigates 2<sup>nd</sup> and 3<sup>rd</sup> Fall retention rates for First Generation students across EFC and Financial Aid groupings. Figure 10 displays 2<sup>nd</sup> Fall retention for FA14 first generation cohort students, by aid group, while Figure 11 collapses these rates into the broader EFC groups for sample size reasons.

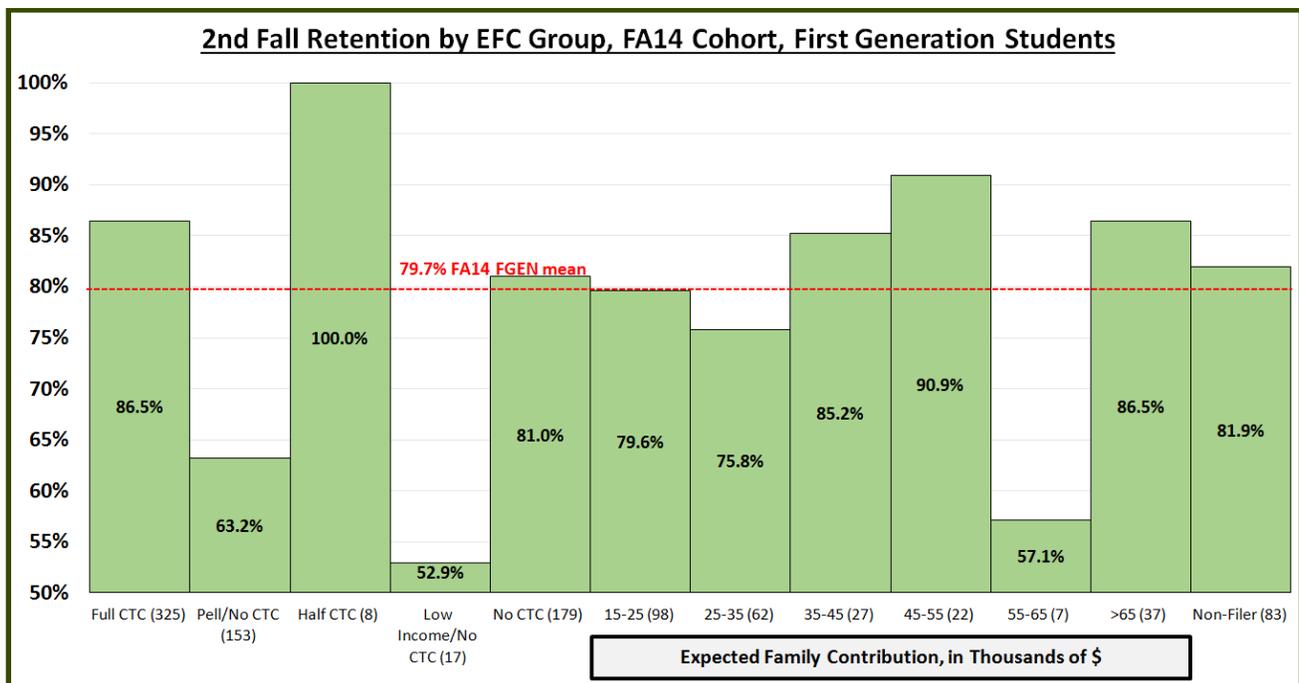


Figure 10. First Generation 2<sup>nd</sup> Fall Retention, by EFC Aid Group

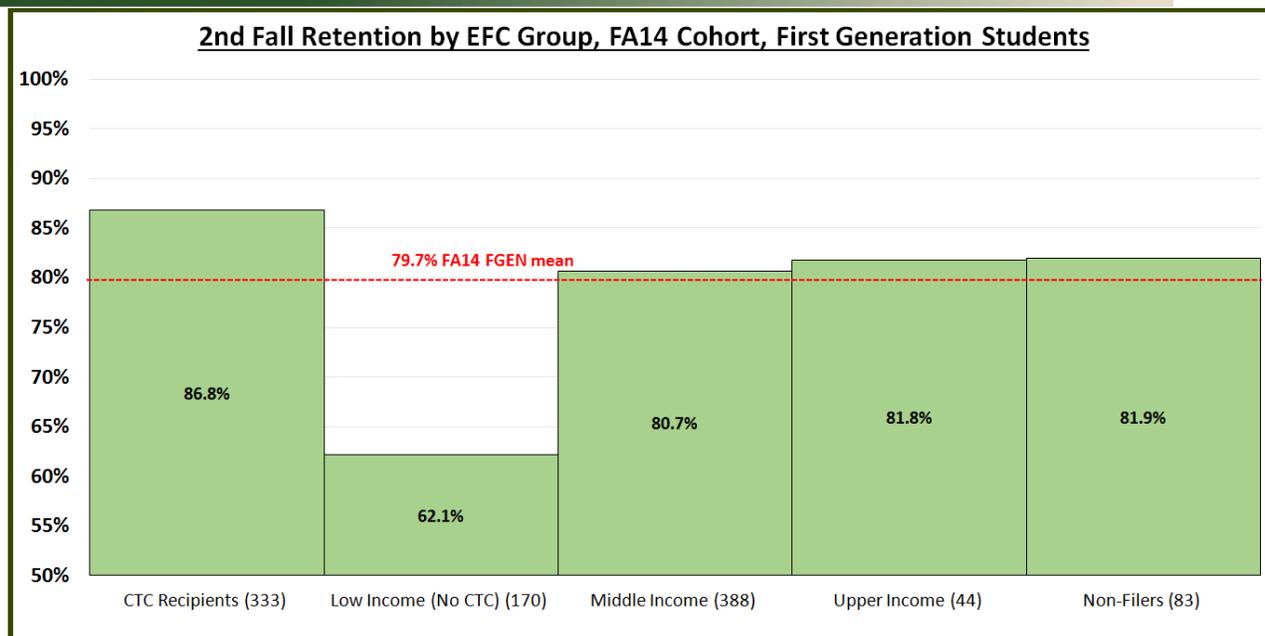


Figure 11. FA14 First Generation 2<sup>nd</sup> Fall Retention, by broad EFC Group

Before analyzing Figure 10 it is critical to consider the sample size in the lower N groups such as Low Income/No CTC (N=17) and EFC \$55-65k (N=7). Similar to the full cohort 2<sup>nd</sup> Fall retention analysis, we observe that low-income Full CTC students substantially outperform individuals in the other lowest-income groups. For the FA14 cohort, First Gen Full CTC students retain to 2<sup>nd</sup> Fall at a much higher rate than the first generation rate of 79.7% and is nearly equivalent to the FA14 full cohort rate of 86.6%. On the other hand, among middle income and upper income First Gen cohort students we observe 2<sup>nd</sup> Fall retention that is only slightly above the FA14 FGEN mean and is well below the FA14 cohort mean of 86.6%. It appears that membership in a middle or upper income group does little to insulate First Gen freshmen from attriting at higher rates than financially comparable non-First Gen students. This effect is exacerbated among low income First Gen students who do not receive CTC support, who demonstrate very low rates of 2<sup>nd</sup> Fall retention at 62.1%.

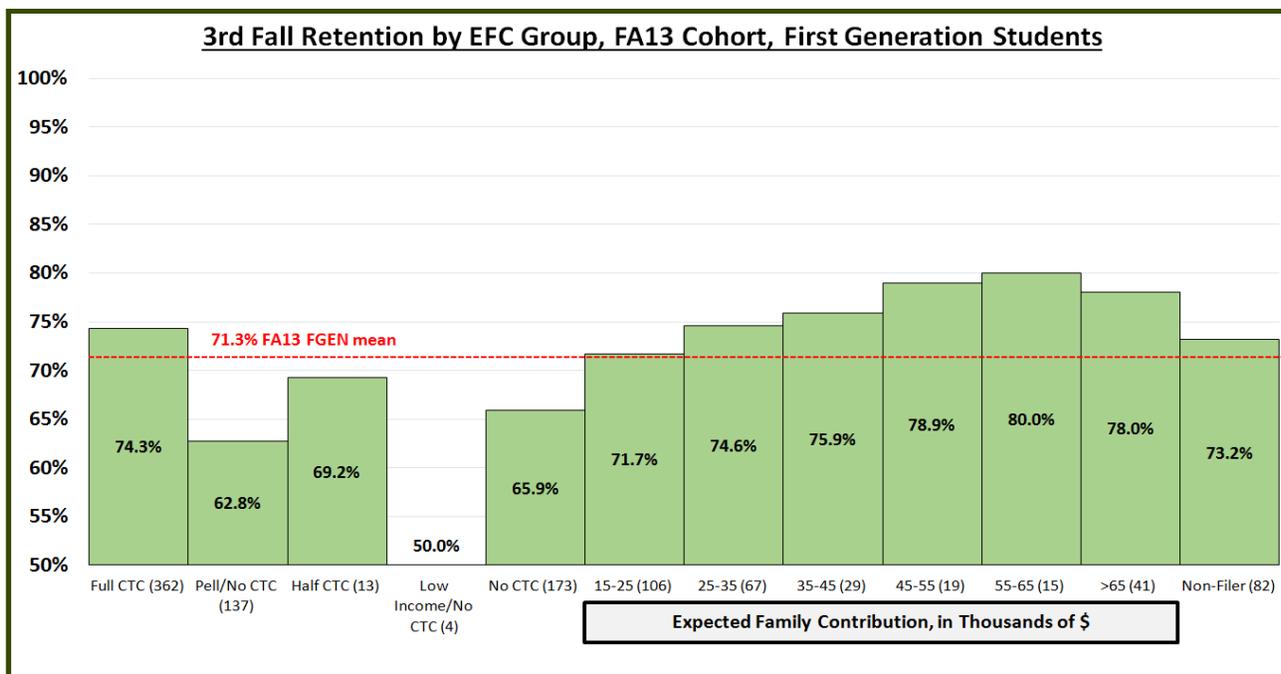
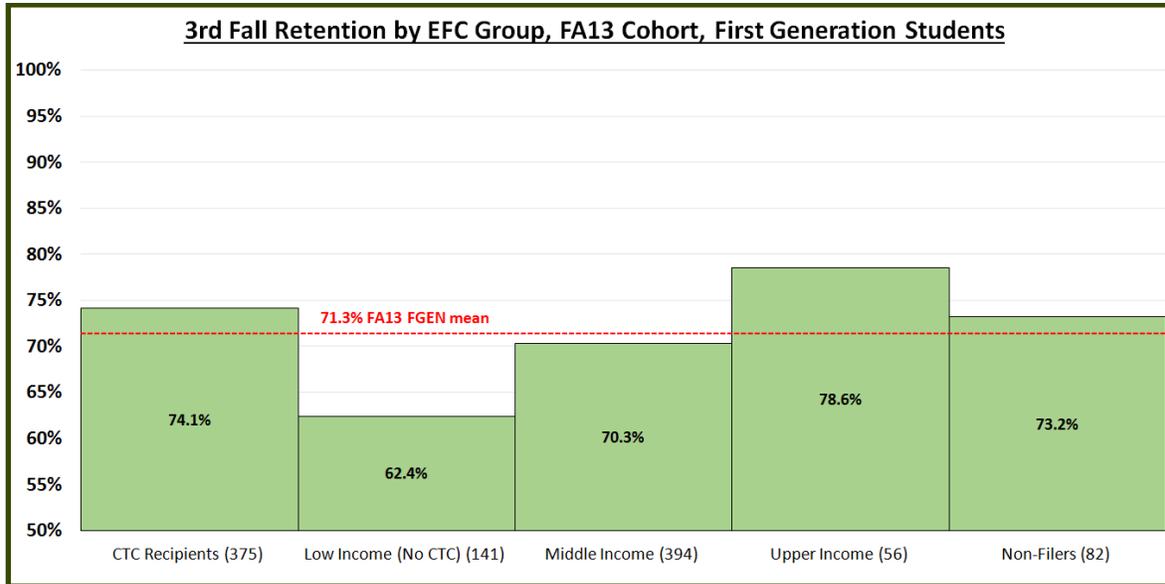


Figure 12. FA13 First Gen 3<sup>rd</sup> Fall Retention, by EFC Aid Group



**Figure 13. FA13 First Gen 3<sup>rd</sup> Fall Retention, by broad EFC group**

3<sup>rd</sup> Fall retention is also of interest for assessing First Generation student retention across EFC (see Figures 12 & 13). As with 2<sup>nd</sup> Fall retention, low-income First Gen students who received CTC support retain to the 3<sup>rd</sup> Fall semester in substantially greater proportions than non-CTC low-income students, 74.1% versus 62.4%. However, the First Gen CTC recipient 3<sup>rd</sup> Fall retention rate falls below the cohort mean of 77.7%, whereas First Gen CTC recipients retained to the 2<sup>nd</sup> semester nearly at the cohort mean of 86.6%. This finding may suggest that some of the retention benefits provided by the CTC program degrade across the first and second years of study, or the effect may be an artifact of unexplained variance between different reference cohorts (FA14 for 2<sup>nd</sup> Fall retention, FA13 for 3<sup>rd</sup> Fall retention).

Another point of interest is the difference in 3<sup>rd</sup> Fall retention observed for upper income First Gen students compared to middle income and non-filers. Whereas all three of these groups retain to the 2<sup>nd</sup> Fall at similar rates in the FA14 First Gen analysis, upper income filers in the 3<sup>rd</sup> Fall analysis show improved retention compared to middle income and non-filers. These differing relationships tentatively suggest that financial sensitivity may increase for middle-income and non-filing First Gen students over time, an effect not currently observed among upper income First Gen aid filers.

## Minority Student Retention, by EFC Group and Aid Group

2<sup>nd</sup> and 3<sup>rd</sup> Fall retention among minority students (students with an IPEDs ethnicity designation other than “White” or “Unknown”) are also studied across EFC groups (see Figures 14 and 15). Overall, FA14 minority students demonstrate 2<sup>nd</sup> Fall retention that is slightly lower than the FA14 cohort mean (84.4% versus 86.6%).

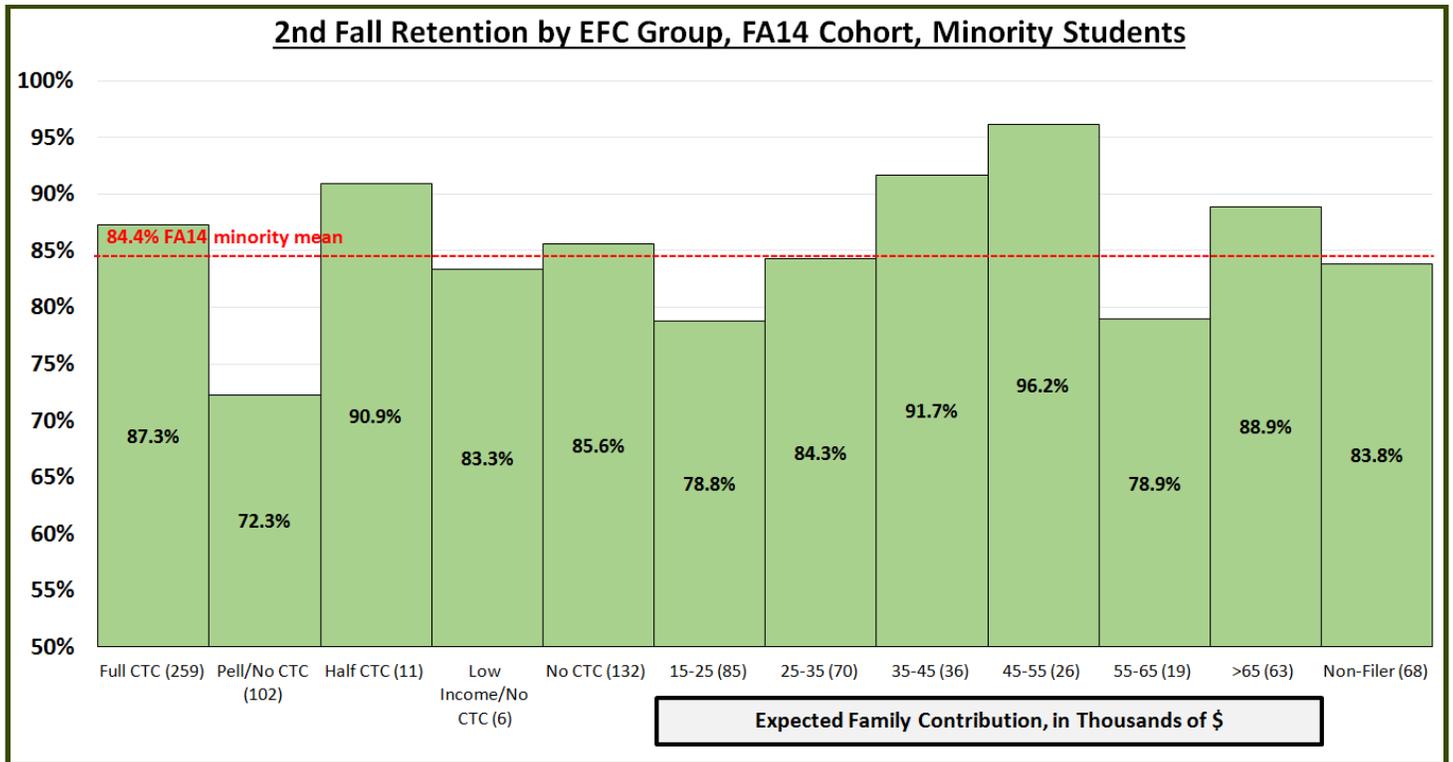


Figure 14. FA14 Minority Student 2<sup>nd</sup> Fall Retention, by EFC Aid Group

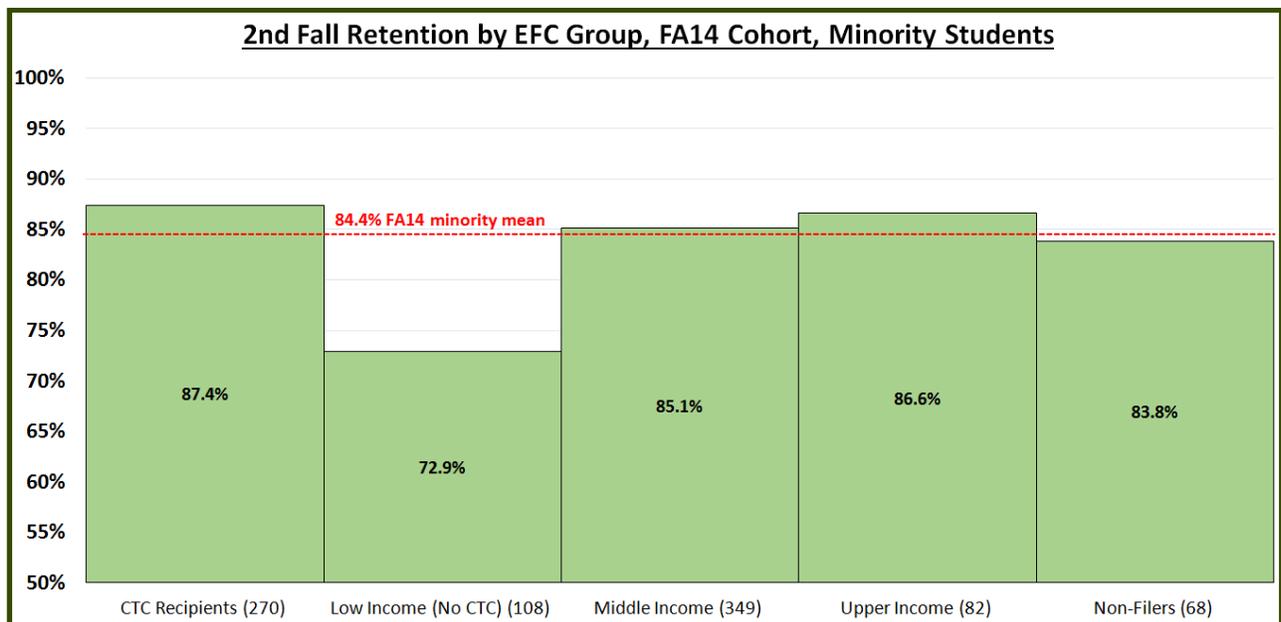
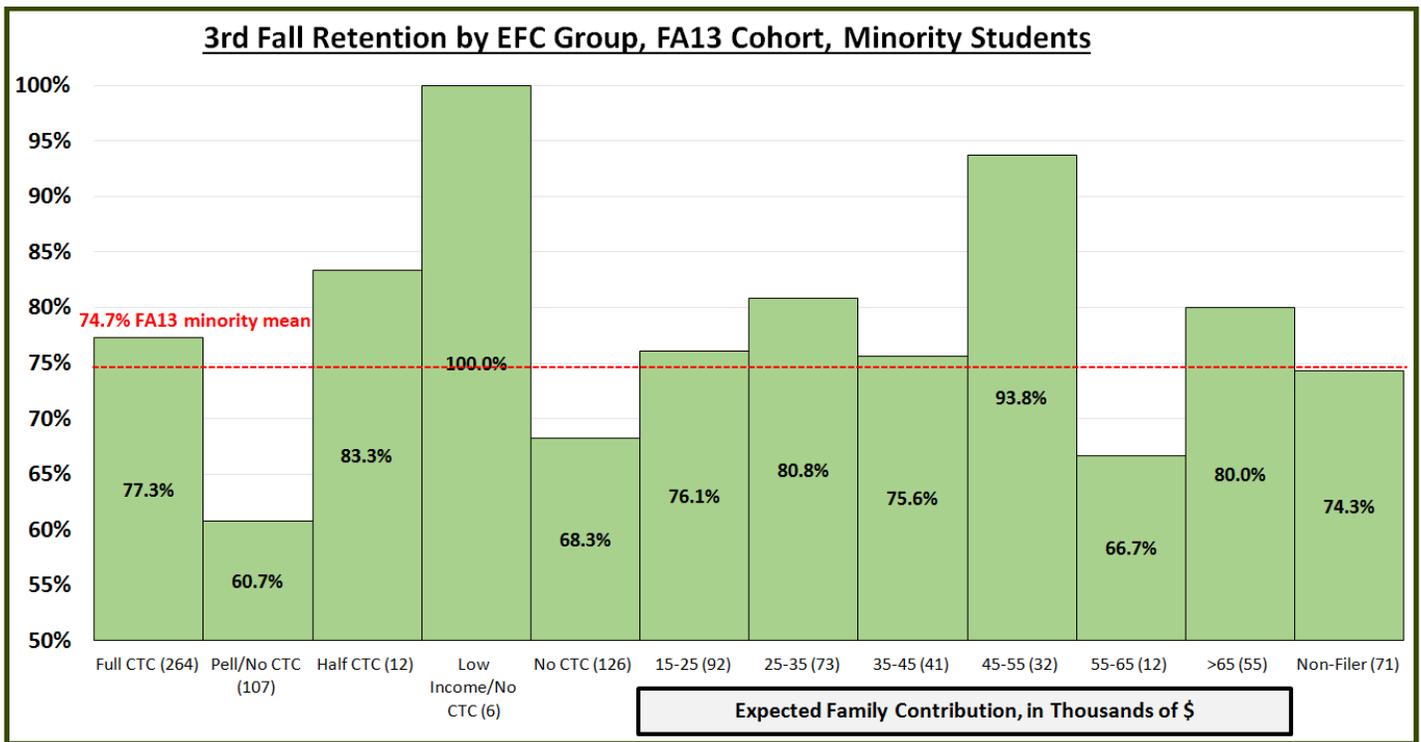


Figure 15. FA14 Minority Student 2<sup>nd</sup> Fall Retention, by broad EFC Group

Similar to previous analyses, low-income CTC recipients retain to the 2<sup>nd</sup> Fall at rates similar to the cohort mean whereas low-income students who receive no CTC demonstrate much lower retention rates. Middle income and upper income minority students display rates that are both within two PP of the cohort mean of 86.6%. Although the sample of non-filers is relatively small, it may be of interest that FA14 minority non-filers persist to 2<sup>nd</sup> Fall at rates lower than the minority student mean. This finding suggests that some of these students may have benefitted from filing for aid. Analysis of minority student 3<sup>rd</sup> Fall retention in the FA13 cohort yields a similar pattern of results (see Figures 16 and 17). Minority CTC recipients retain to 3<sup>rd</sup> Fall at rates close to the cohort mean of 77.7%, while low income non-CTC recipients retain to 3<sup>rd</sup> fall at a rate that is nearly 15 percentage points lower. Again, upper income minority students retain to 3<sup>rd</sup> Fall at rates similar to the cohort mean, while middle income minority students retain within 2 percentage points of the mean. FA13 minority non-filers also retain at a rate that is lower than FA13 minority students who filed for financial aid. The consistency of this finding across 2<sup>nd</sup> and 3<sup>rd</sup> Fall retention strengthens the hypothesis that some minority non-filers at CSU probably would be better served by filing financial aid documents.



**Figure 16. FA13 Minority Student 3<sup>rd</sup> Fall Retention, by EFC Aid Group**

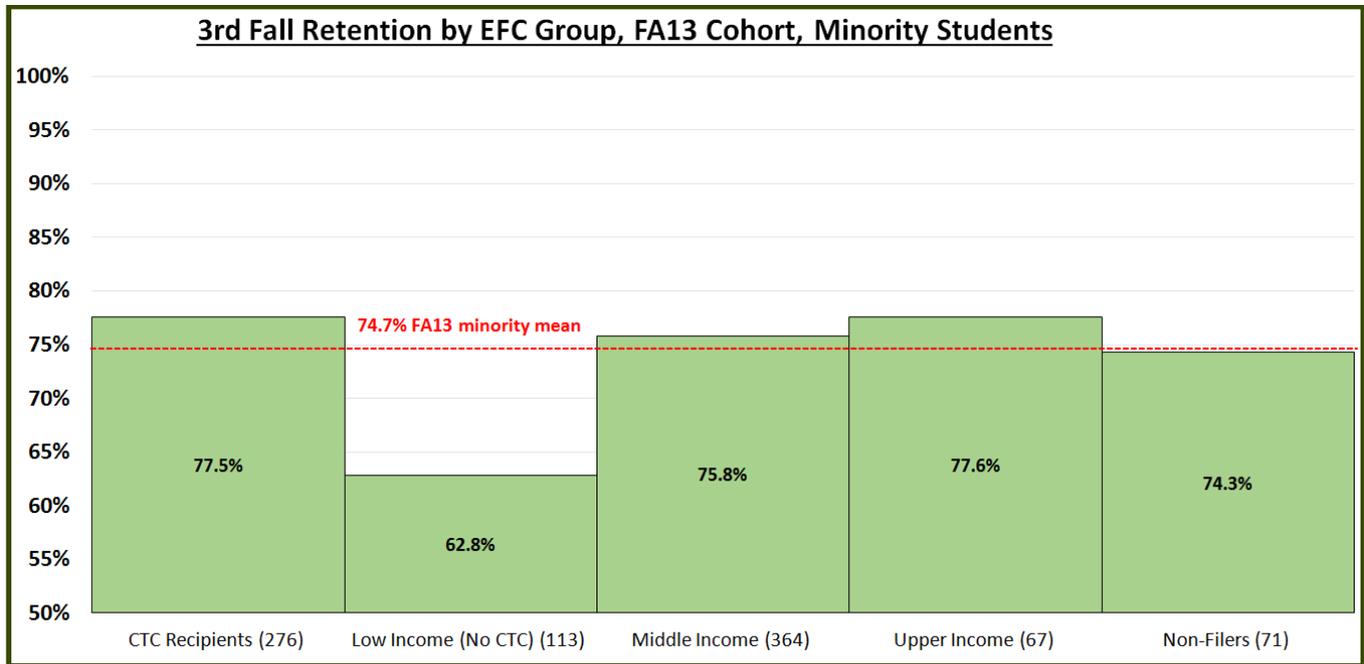


Figure 17. FA13 Minority Student 3<sup>rd</sup> Fall Retention, by broad EFC Group

## Conclusions

Household income, as measured by EFC, is positively associated with both 2<sup>nd</sup> Fall and 3<sup>rd</sup> Fall retention. Students from lower income families persist at a lower rate compared to students from higher income families. However, receipt of CTC is associated with a substantial increase in retention for students at eligible incomes. Across analyses, 2<sup>nd</sup> and 3<sup>rd</sup> Fall retention rates stand about 12 to 14 percentage points higher for low-income students who received CTC compared to low-income students who received no CTC award. These effects of CTC receipt hold strong when studying either the overall cohort or when isolating First Generation and minority subpopulations.

Among minority students, it is notable that non-filers demonstrate lower 2<sup>nd</sup> Fall and 3<sup>rd</sup> Fall retention than students who apply for financial aid. This finding warrants further investigation, and tentatively suggests that a portion of non-filing minority students would have their odds of retention improved by filing for financial aid.

Overall, the proportion of students who fall into the broad low income group has decreased slightly but steadily since FA10, the proportion who fall into the broad higher income and non-filer groups has increased slightly since FA10, and the proportion of middle income students has remained steady. Just under 70% of the FA14 FTFT freshmen cohort falls into the low income or middle income groups, which highlights the continued importance of optimizing student aid policies to enhance retention among these groups and thus enhance CSU's overall retention performance.