Summer 2018

ACE Students' Performance

Abdoul Kader Naze

Recommended Citation

Naze, Abdoul Kader, "ACE Students' Performance" (2018). *SCSU Data*. 5.
http://repository.stcloudstate.edu/scsu_data/5

ACE STUDENTS PERFORMANCE

Auto-Admits Vs Referred students

Abdoul Kader Naze

STAT 660

St. Cloud State University

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Introduction

ACE stands for Academic Collegiate Excellence and is a program for students who did not meet at first the St Cloud State University admission criteria. Being admitted to St Cloud State through the program will allow students to have access to academic and social support through their transition into university life. This program also has for goal to mold those students through a successful academic path.

The admission into ACE can be done either by Auto-Admission or by Referral to the program. In fact, students who are ACE Auto-Admits are required to have at least an ACT score of 21 or above and a GPA ranging from 2.50 to 2.74. In contrast, students who have been Referred to ACE should either have an ACT below 21 and a GPA ranging from 2.5 to 2.75 or they can have any ACT score and a GPA below 2.50 but above 2.00. They still have to score high enough on the four ACE questions (at least 16 out of 24) to be admitted into the program.

In addition, the ACE program offers focused learning communities and engaging specialized courses. All ACE students are required to be enrolled in some specific courses COLL 150 and COLL 110 during their first semester at St Cloud State University.

The main purpose of this analysis is to firstly compare auto admitted and referred students to the program by looking at their performance after they got accepted into the university. Since, Auto- Admitted students are known for performing better compared to Referred students, the ACE office is wondering whether this pattern will still be the same after their first year at St Cloud State. Secondly, we will try to assess the performance of the students by looking at their ACT scores.

Background

For this analysis, I will be looking at ACE students who started their academic year in fall 2017. Originally, my dataset contained data for future students applying for fall 2018 but since they haven't started yet, it is not necessary for me to include that in my analysis. Therefore, for the fall of 2017, approximately 301 students were admitted to the university through the ACE program comprised of 50 Auto- Admitted and 251 referred students.

Data were gathered from fall 2017 to the end of spring 2018 and variables like ACE cohort, High School GPA (HSGPA), grades (Coll110 and Coll150), Ethnicity, 20183 Enrolled, 20183 GPA, 20185 Enrolled, 20185 GPA, and cumulative GPA for both term and ACT score were recorded during this period. Various names were used for the variables such as 20183 and 20185 that respectively stand for the fall 2017 and spring 2018.

In addition, ACE cohort is a variable representing the type of student's admission into the ACE program, whether they were auto admitted (ACEA) or referred (ACEQ) to the program. Variables like 20183 and 20185 Enrolled are just showing whether the student was enrolled for each specific term. Those are categorical and dichotomous variables coded as YES when the student is enrolled and NO when he/she is not for each specific term. To assess the performance of the ACE students during their first year at St Cloud State, GPA for each term and the cumulative GPA were recorded for that purpose. I also have a categorical variable ethnicity present in the data to account for the race of students. For this variable, I will include a dummy variable called SOC that takes a value of 1 when student has other color and 0 when the student is white.

Variables like High school GPA and ACT score were used to show the performance of the students before they start at St Cloud State. Those variables are important for the analysis since students have been accepted to the program based on them. Also, the ACE office would like to see how well students are doing during their first year based on their ACT score too. Therefore, ACT score will be divided in three categories: ACT of 22 and above, ACT between 18-21 and finally ACT below 17.

Moreover, students can submit their application and get accepted into the program before the end of their high school year. Therefore, the decision is made based on the GPA they had at the time of the application. However, they are required to submit their final transcript later and, in our data, this is represented by High school GPA.

Figure 1. Repartition of ACE students by ACT and final high school GPA

Referred students have higher final high school GPA than Auto-Admits
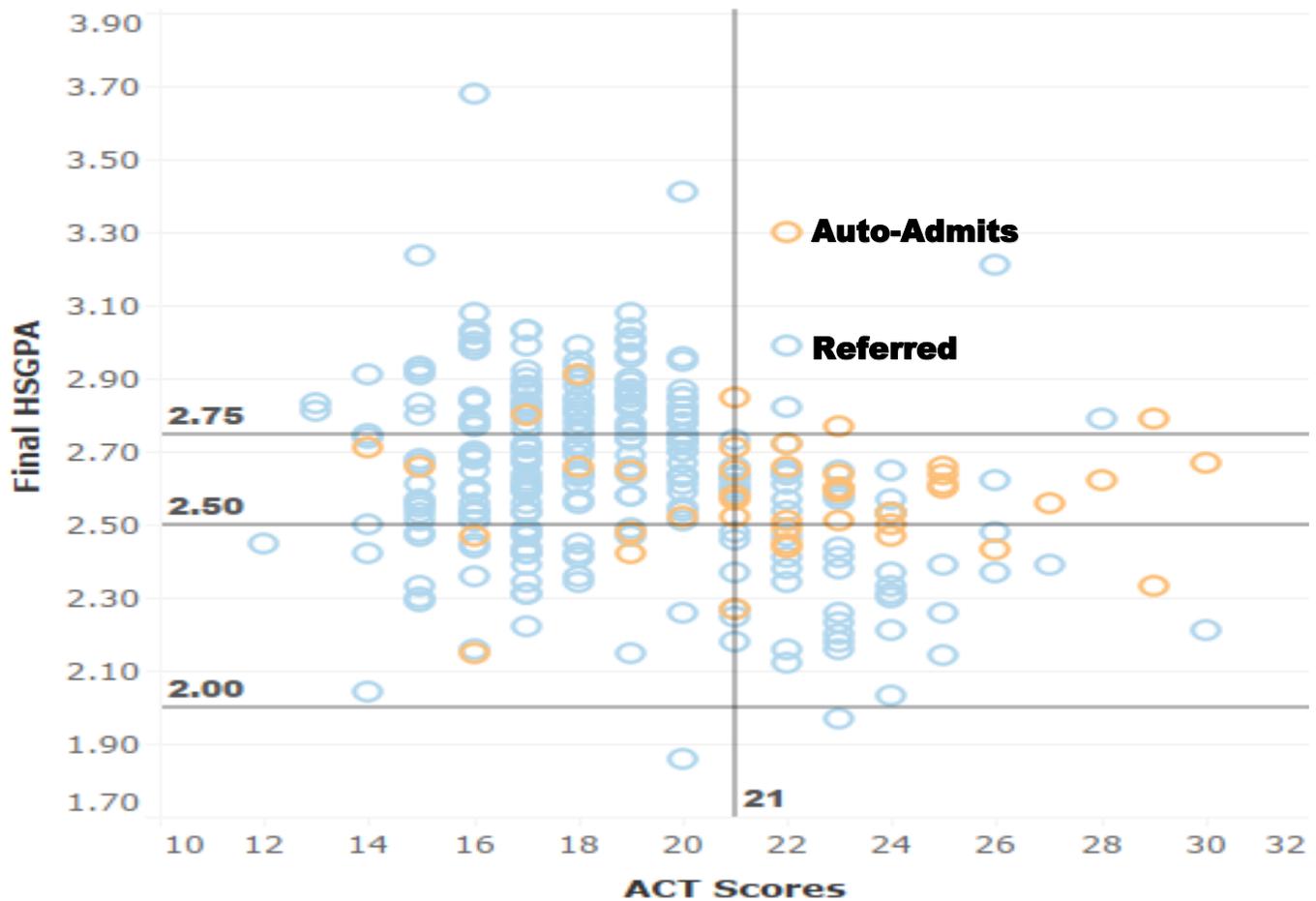
ACT Composite vs. Hs Gpa. Color shows details about ACE Cohort.

I noticed that for ACT of 21 or above and GPA between 2.50-2.75 we have more Auto-Admits (ACEA) than Referred students(ACEQ). While, when ACT is below 21 and GPA 2.50-2,75, the opposite is happening. Therefore, when students have an ACT of 21, they will be considered as Auto-Admits if their GPA is between 2.50 and 2.75. In contrast, they will be Referred to ACE if their GPA is below 2.50 and above 2.00. When ACT is below 21, we have more Referred students having their GPA higher than 2.75 but also for GPA ranging from 2.00-2.50. For higher ACT scores and a GPA of 21 or above both Auto-Admits and Referred students are equal.

Results

❖ Fall & Spring Analysis

To assess the performance of ACE students during their first year, I will look at their average GPA focusing more on their admission's type. For this purpose, I will exclude missing values since they do not contain any relevant information. Therefore, the table below is showing the count of students that were enrolled in fall & spring based on the type of their admission to the ACE program.

Table 1: Number of Auto-Admits and Referred students

	fall	spring
ACEA	50	39
ACEQ	251	205
Grand Total	301	244

As we can see in the table, there are more referred students enrolled in both term than Auto-Admits students.

In addition, after looking at the overall average GPA for the ACE students, I found that their final high school GPA, fall GPA and spring GPA were respectively 2.64, 2.25 and 2.10. Therefore, I went further to see the difference between Referred and Auto-Admits within those categories.

Figure 2. Comparison between Auto-Admitted and Referred students

Referred students have higher GPA than Auto-Admits

|	Auto-Admits	Referred
High School	2.60	2.64
Fall	1.99	2.30
Spring	1.73	2.16
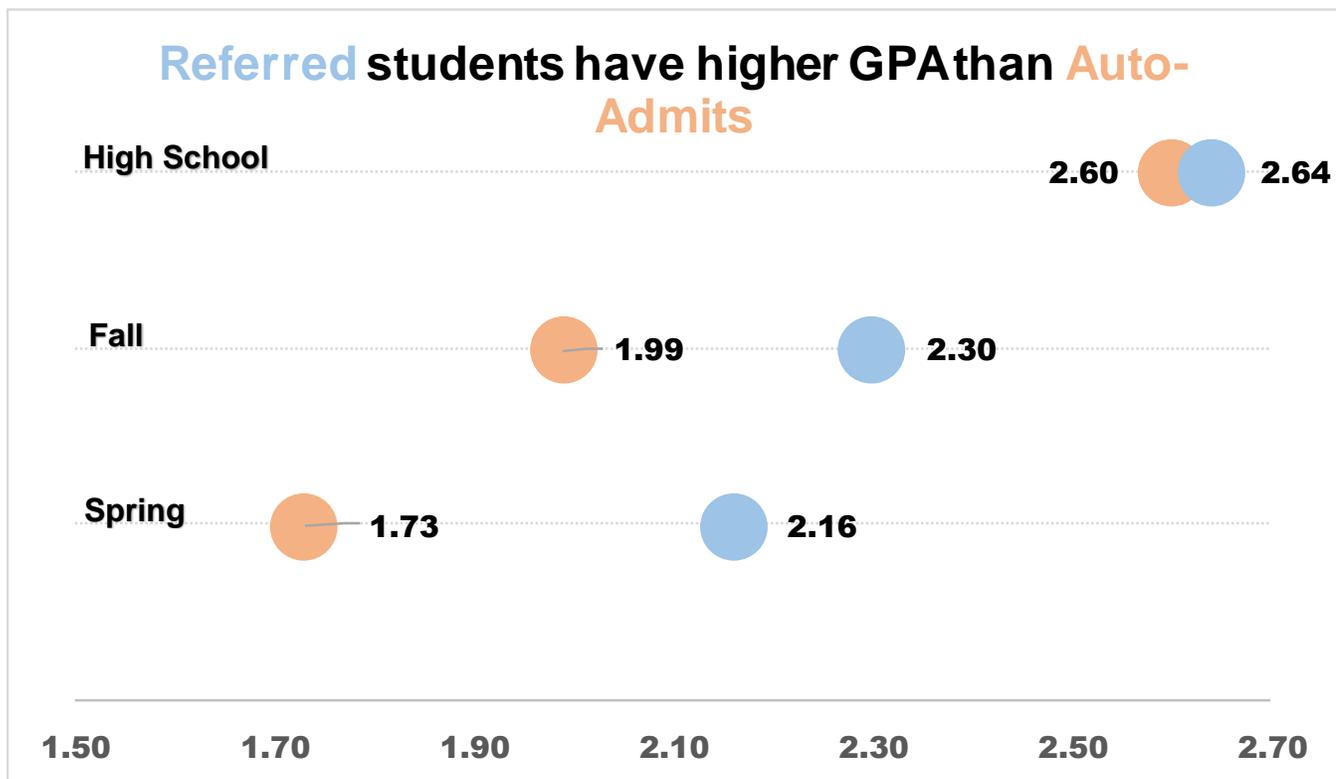
 The graph above is showing that Referred students outperform Auto-Admits in high school and in college and we clearly see that the gap widens as time goes on. For example, during the fall semester, referred students have on average a GPA of 2.30 compared to 1.99 for Auto-Admits.

As we can see, referred students are doing great in the overall compared to Auto-Admits and one might wonder whether there is any relationship between students' ACT scores and their GPA. Therefore, I tried to look at the correlation between GPA and ACT scores since students were still in high school and after their first year at St Cloud State University.

Figure 3. Correlation between final high school GPA and ACT score
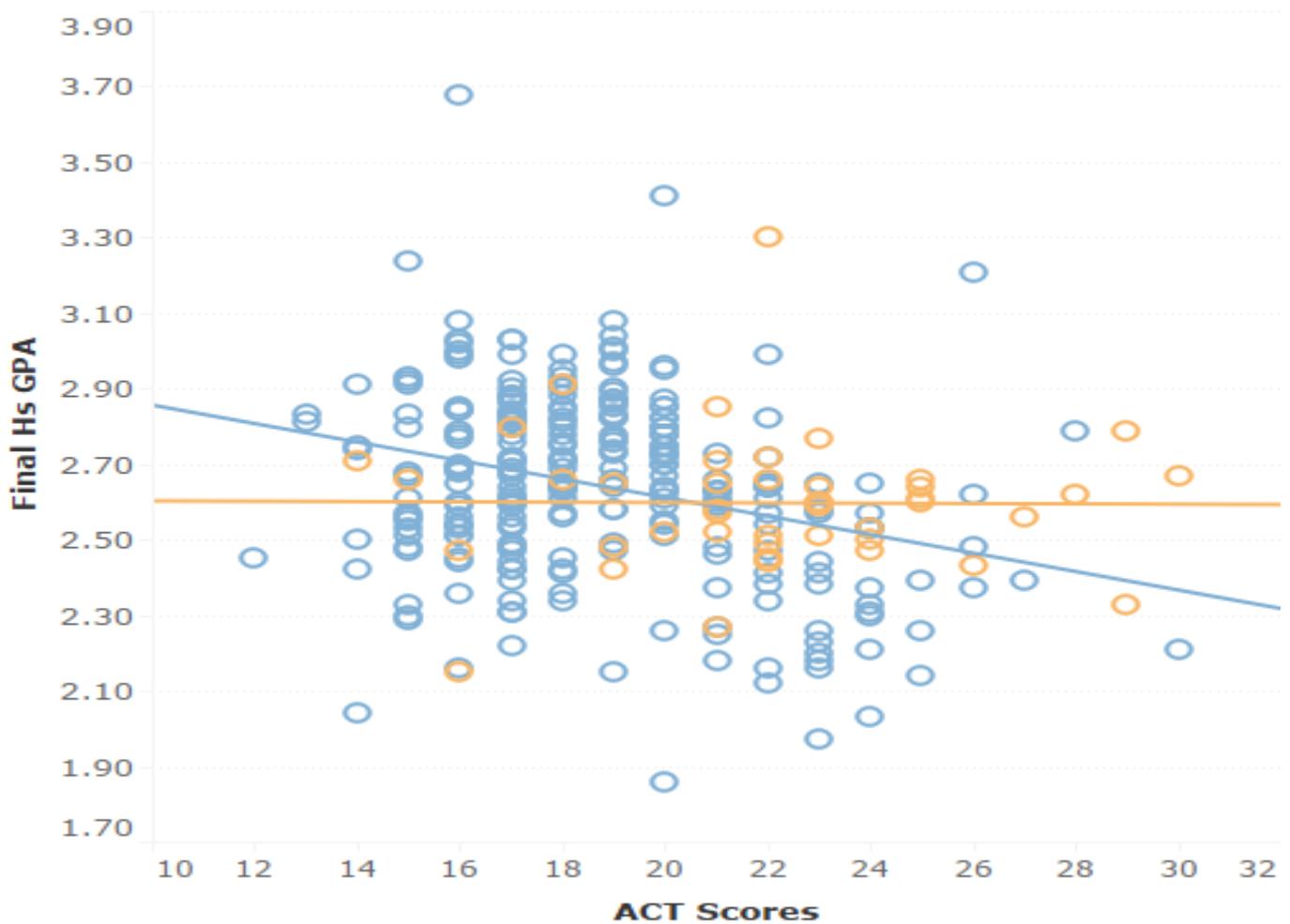
ACT Composite vs. Hs Gpa. Color shows details about ACE Cohort.

The scatter plot above is showing a negative relationship between GPA and ACT score meaning that when high school GPA is decreasing when the ACT score is getting higher. Also, I noticed that Auto-Admits are performing better than Referred students in high school and they even have higher GPAs when their ACT scores are increasing. For example, for ACT scores of 21 or more, Auto-Admits students have a mean GPA of 2.60 while Referred students only have 2.46.

Figure 4. Correlation between fall GPA and ACT score

Fall GPA for Referred students is higher accross all ACT scores
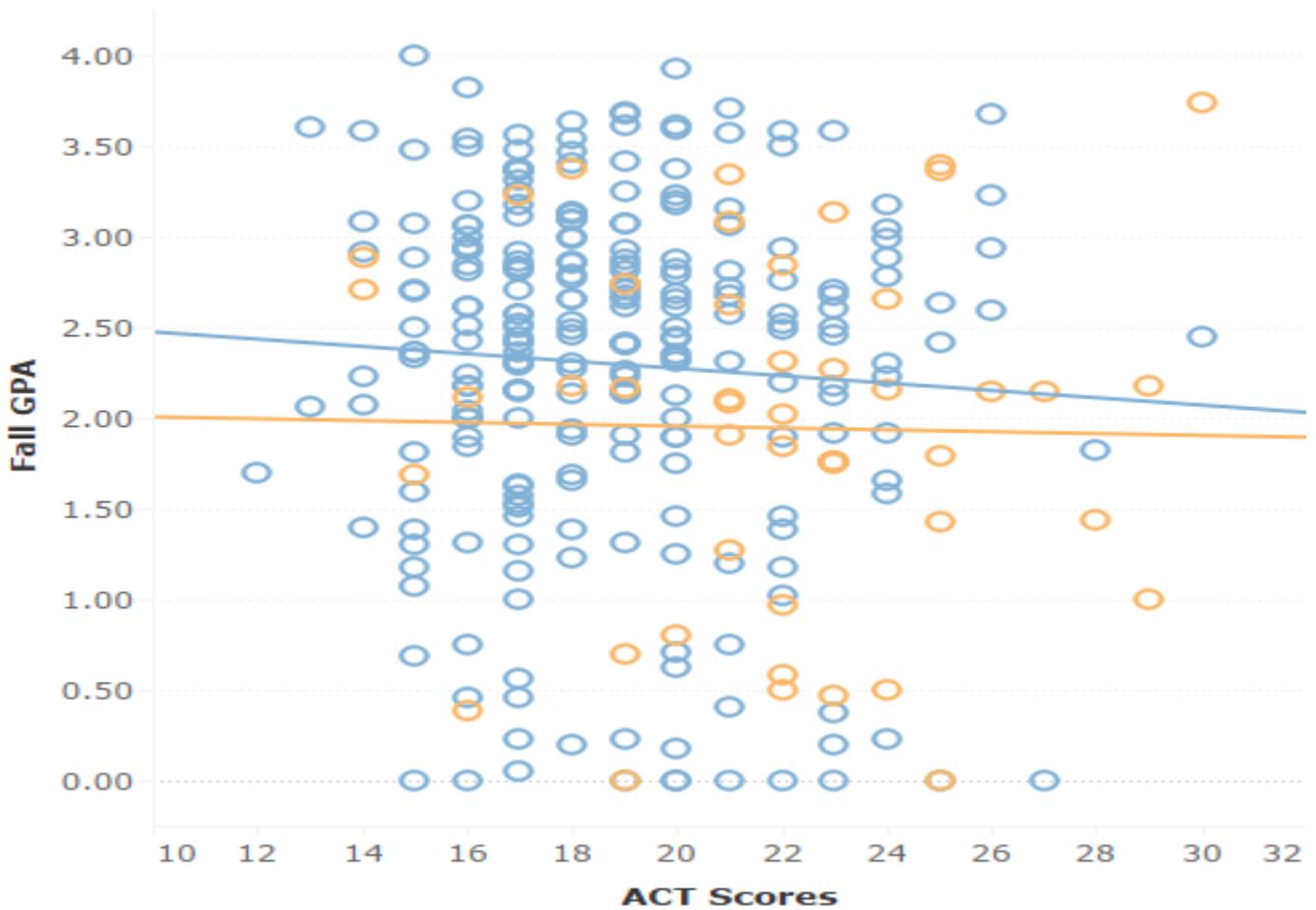
ACT Composite vs. 20183 Gpa. Color shows details about ACE Cohort.

There is a downward sloping trend in the above scatter plot. Therefore, I am suggesting that ACT has a little relationship with fall GPA because when ACT increases, we can observe a decrease in GPA. Within the two categories of ACE students, Referred students are performing better during the fall semester compared to Auto-Admits even when they have higher ACT scores. For ACT scores of 21 or more, the means for referred students are 2.14 versus 1.95 for Auto-Admits.

Figure 5. Correlation between spring GPA and ACT score

Spring GPA for Referred students is higher across all ACT scores
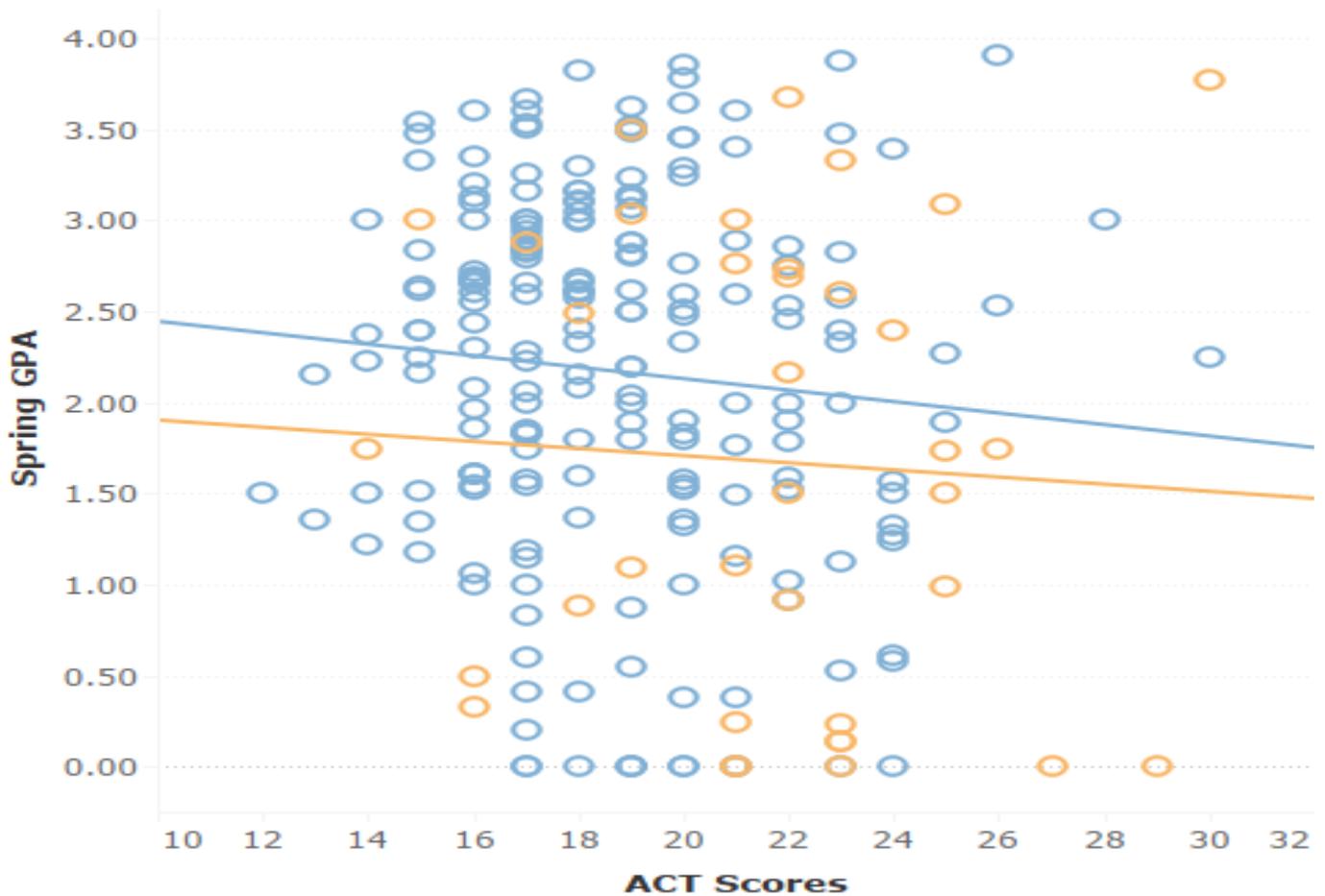
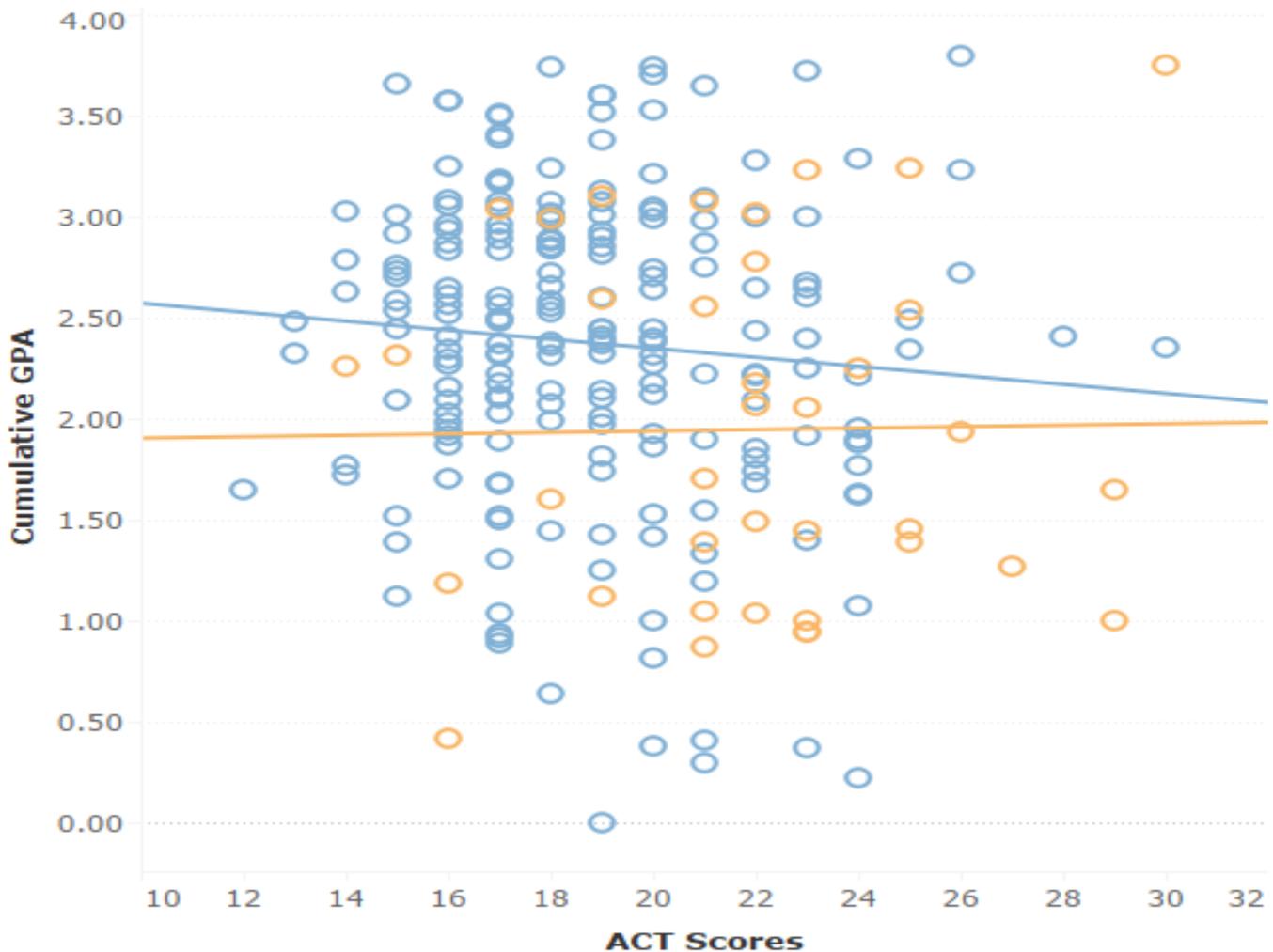ACT Composite vs. 20185 Gpa. Color shows details about ACE Cohort.

Similarly, to fall there is a negative relationship between spring GPA and ACT scores. When the ACT is increasing, the GPA is decreasing. Referred students have higher GPAs than Auto-Admits during the spring semester. For instance, when we looked at ACT scores of 21 or more, the means for referred students are 1.90 versus 1.57 for Auto-Admits.

Figure 6. Correlation between cumulative GPA and ACT score

Cumulative GPA for Referred students is higher across all ACT scores

ACT Composite vs. Cumulative GPA. Color shows details about ACE Cohort.

As we can expect, there is also a negative correlation between cumulative GPA and ACT scores. In fact, ACT scores have a little relationship with student's performance during their first year in St Cloud State University. In addition, when ACT scores are increasing, Referred students have higher GPAs than Auto-Admits. For ACT scores of 21 or more, the means for Referred students are 2.18 versus 1.91 for Auto-Admits.

❖ ACT score Analysis

In this section, we are interested in seeing the performance of the students according to their ACT score. We will be looking at their average GPA after they have been accepted to SCSU. Let's recall that a student will be directly admitted to the university whenever he/she is ranked in the top 50% of its high school class and has a cumulative GPA of 2.75 or above and has earned an ACT score of 21 at least or the student has at least a GPA of 3.00 and an ACT score of 21 at least. Students admitted into the university through the ACE auto-admission are required to have at least an ACT score of 21 and a high school GPA that ranges between 2.50 and 2.74. While students who have been admitted through the ACE referral should either have an ACT score below 21 and a high school GPA between 2.50 and 2.75 or they can have any ACT score and a GPA below 2.50 but above 2.00. Therefore, I divided their ACT score within three groups as follows: scores that are equal or below 17, between 18 and 21, finally above 22.

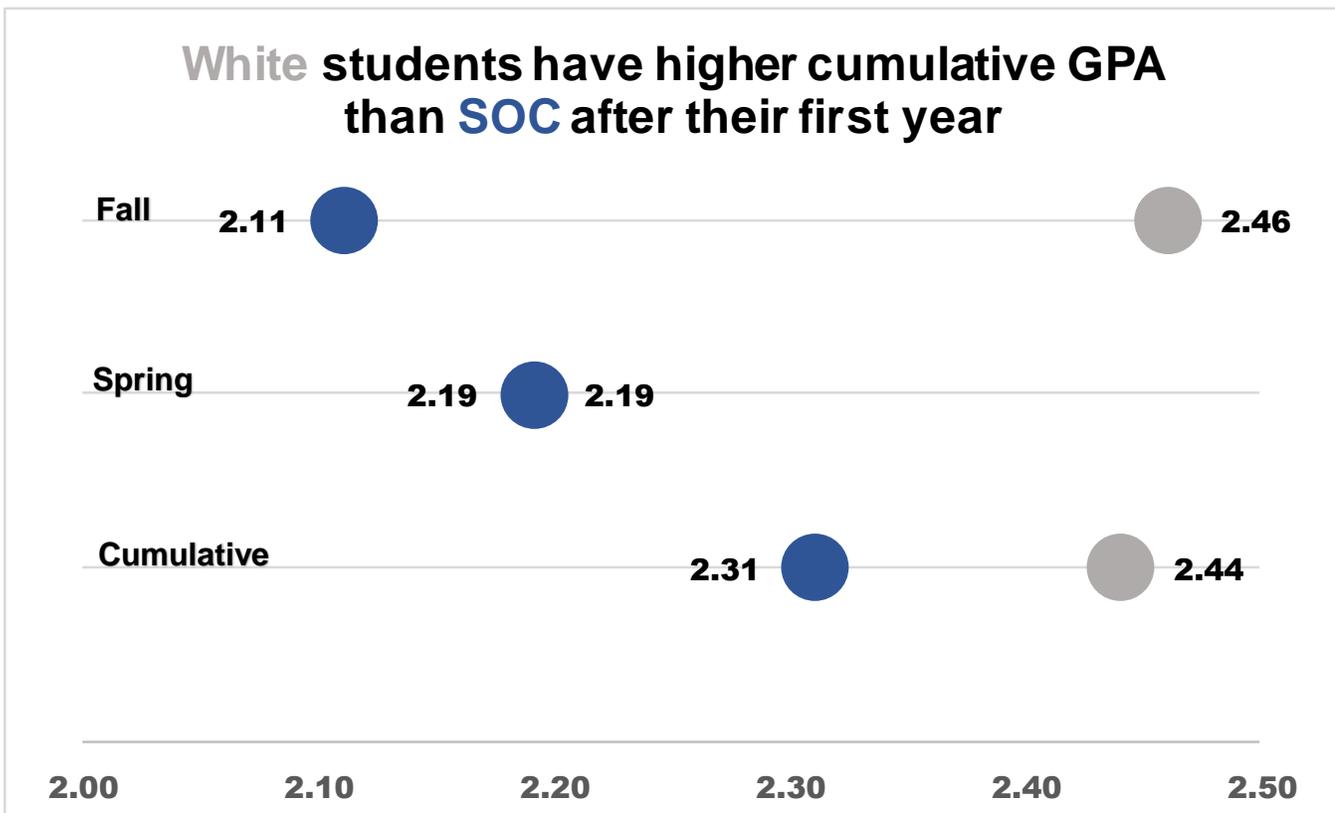Table 2. Number of students by ACT scores

ACT scores	Fall	Spring	Cumulative
22 and above	75	57	60
18-21	116	96	99
17 and Below	106	87	88
TOTAL	297	240	247

The number of students are decreasing from fall to spring since some of them were not enrolled for that semester. The cumulative column is representing the numbers of students having a cumulative GPA at the end. Among the three categories of ACT scores, we noticed that there are more students that were admitted with an ACT between 18- 21. Lastly, the total number of students by term do not match with the previous total number because I have 4 missing values for ACT scores.

1. ACT score equal or below 17

After being accepted into the university, students with an ACT score equal or under 17 have a fall GPA of 2.28 on average. When I look at the ethnicity of the students, I found that white students performed better than students of color (SOC) with respectively 2.46 and 2.11 of GPA. However, during the spring semester, there's a decrease in the overall GPA from 2.28 to 2.19 and white and SOC had the same average GPA (2.19). The cumulative GPA at the end of the first year was 2.38 on average with white students still performing better than SOC (2.44 versus 2.31).

Figure 7. Comparison between White and SOC performances by semester

White students have higher cumulative GPA than SOC after their first year

Fall   2.11   2.46

Spring   2.19   2.19

Cumulative   2.31   2.44

2.00   2.10   2.20   2.30   2.40   2.50

2. ACT score between 18 and 21

On average students with an ACT score between 18 and 21 have a fall GPA of 2.35. I found that on average students of colors have higher GPA than white during their first semester respectively 2.42 and 2.31. However, the average GPA decreases in the overall during the spring semester (2.16) and we noticed that white students start to perform better than SOC with a GPA of 2.23 versus 2.04. Therefore, the cumulative GPA for both term was around 2.36 and white students have higher cumulative GPA compared to SOC respectively 2.41 and 2.29.

Figure 8. Comparison between White and SOC performances by semester

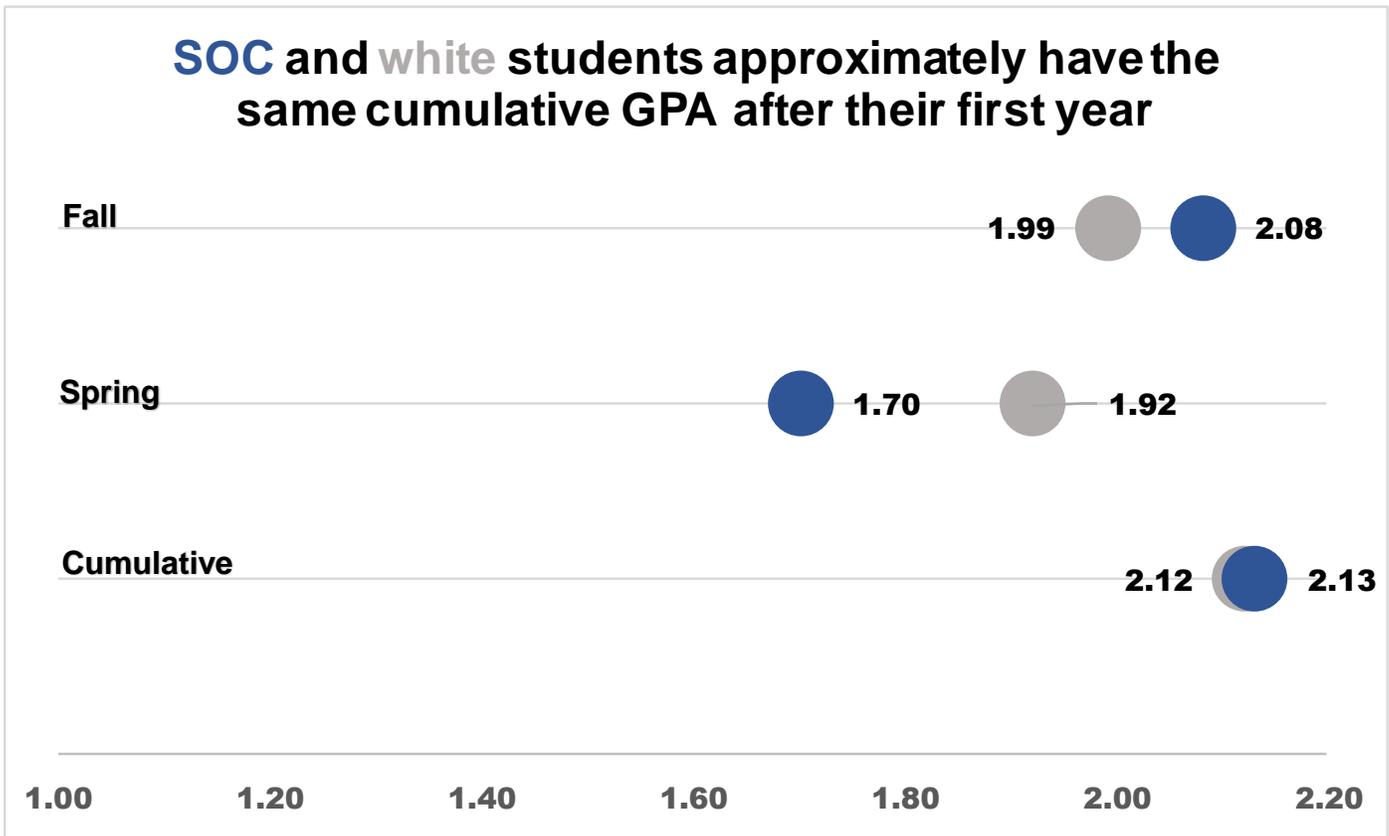White students have higher cumulative GPA than SOC after their first year
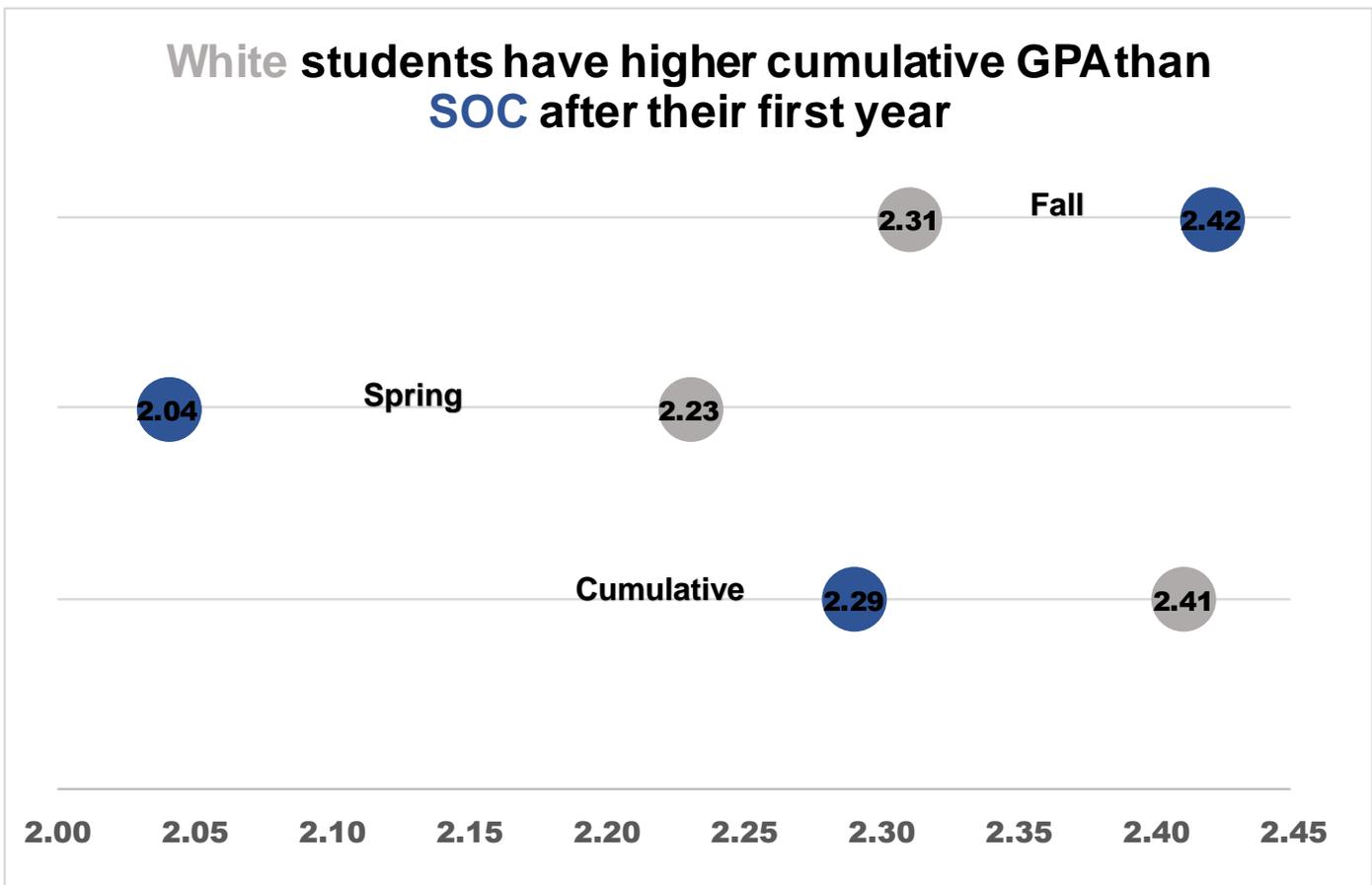
3. ACT score 22 and above

Compared to the others, students with ACT of 22 and above poorly perform during their first semester at St Cloud State University. On average, their fall GPA was around 2.02. Also, I noticed that students of colors performed better than white students with a GPA of 2.08 versus 1.99. The overall GPA of those students decrease to 1.85 during the spring semester. However, in this semester white students did better than students of color with a GPA of 1.92 versus 1.70.

Therefore, the Cumulative GPA for both fall & spring for those students was still lower (2.13) than other students with lower ACT score. Students of color have slightly higher cumulative GPA than white students respectively 2.13 and 2.12.

Figure 9. Comparison between White and SOC performances by semester

SOC and white students approximately have the same cumulative GPA after their first year

Fall	1.99	2.08
Spring	1.70	1.92
Cumulative	2.12	2.13

Conclusion

In this analysis, I found that Referred students are outperforming Auto-Admits in the overall. In fact, they are doing better in high school and even during their first year in SCSU compared to Auto-Admits students. In addition, when we look at a possible correlation between GPA and ACT scores, I am coming to the conclusion that ACT has a little relationship with future GPA, implying that when students score high in their ACT test, it does not mean that they will perform better in college.

A comparison of the students based on their ethnicity shows that white students are performing better than SOC for ACT scores of 17 or below and ACT scores between 18 and 21. However, for higher ACT scores like 22 and above, both categories approximately have the same cumulative GPA after their first year.

As recommendations, the ACE office might think about eliminating auto-admission and just considered all students as Referred to the program since Auto-Admits students don't perform well academically. However, eliminating auto-admission might cause them to lose some students, to avoid that from happening they might decide to decrease the band for Auto-admission to allow more referred students to get auto-admitted into the program.