Academic Report on Analysis of RAA Programme Impact on Academic Performance

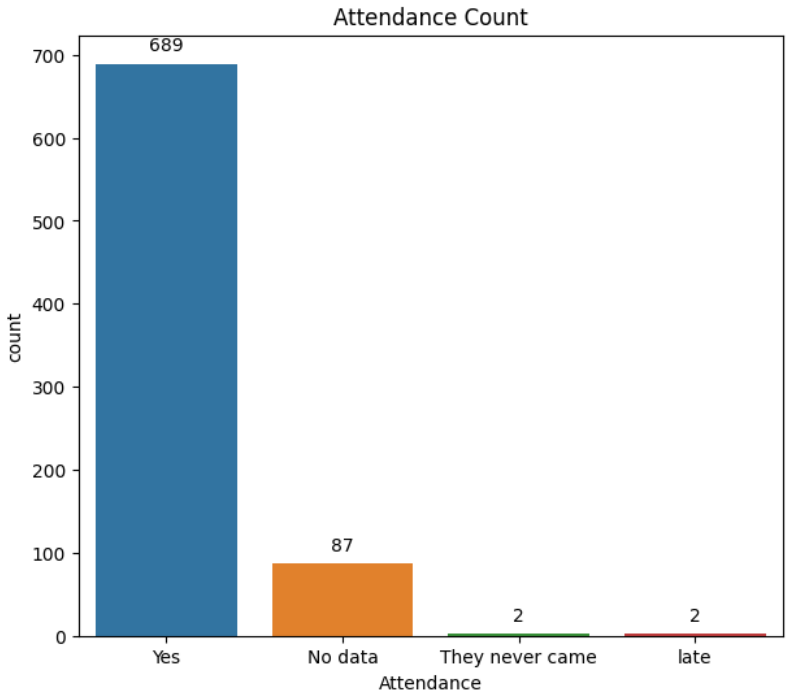
Introduction

The purpose of this report is to analyze the impact of the RAA Programme on the academic performance of students at the University of the Witwatersrand. The analysis includes comparing the academic performance of students who attended the programme with those who did not, as well as examining the influence of attendance frequency on academic outcomes.

Findings

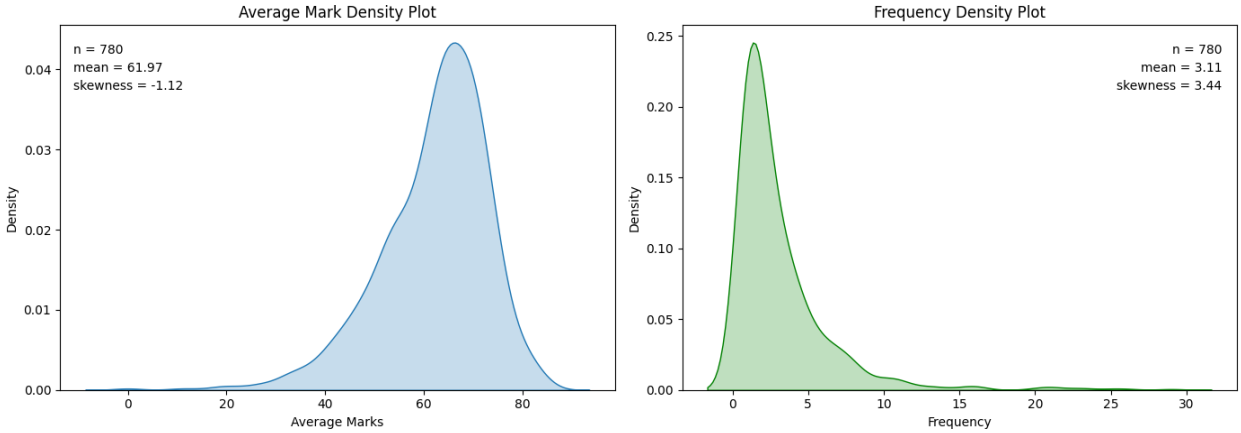
Dataset Overview

The dataset used in this analysis consisted of 780 entries, which corresponded to registered students at the University of the Witwatersrand. Among these entries, 689 students were recorded to have attended at least one session of the RAA Programme punctually. However, 2 students were noted as never attending, while 2 others were recorded as being late to sessions. Additionally, data for 87 participants were missing from the dataset, which was accounted for during the analysis process.

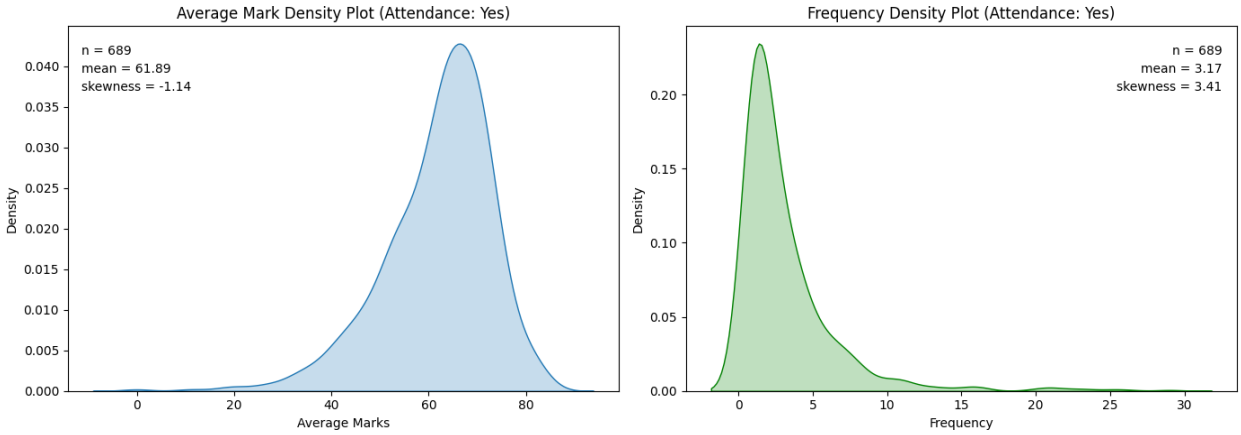


In terms of the mean and standard deviation, the analysis revealed that among all 780 students, the average number of attendance sessions was 3.11, with a standard deviation of 3.36. Furthermore,

the average marks attained by students in their academic performance at the end of the year exhibited a mean of 61.97, accompanied by a standard deviation of 10.92. Regarding skewness, the distribution of attendance sessions showed a skewness of 3.44, indicating a right-skewed distribution. Conversely, the skewness observed in the average marks was -1.12, suggesting a left-skewed distribution. These statistical measures provided insights into the distribution patterns of attendance and academic performance among the student cohort.



Upon conducting a filtered analysis focusing solely on attendees of the RAA Programme, it was found that the mean attendance stood at 3.17 sessions, with a skewness of 3.14. Additionally, the average mark mean for this subset of students was calculated to be 61.89, exhibiting a skewness of -1.14. These findings shed light on the attendance patterns and academic performance among the students who actively participated in the programme, offering a more nuanced understanding of their engagement and achievements within the context of the study.

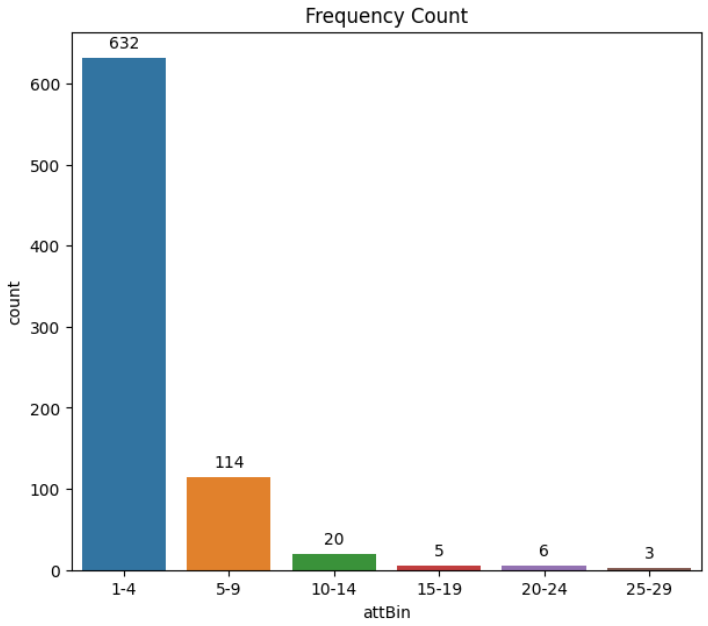


The results of the t-test, which compared the mean performance of attendees and non-attendees of the RAA Programme, indicated no statistically significant difference. The calculated t-statistic was -0.1421, with a corresponding p-value of 0.8870. This finding suggests that there is insufficient

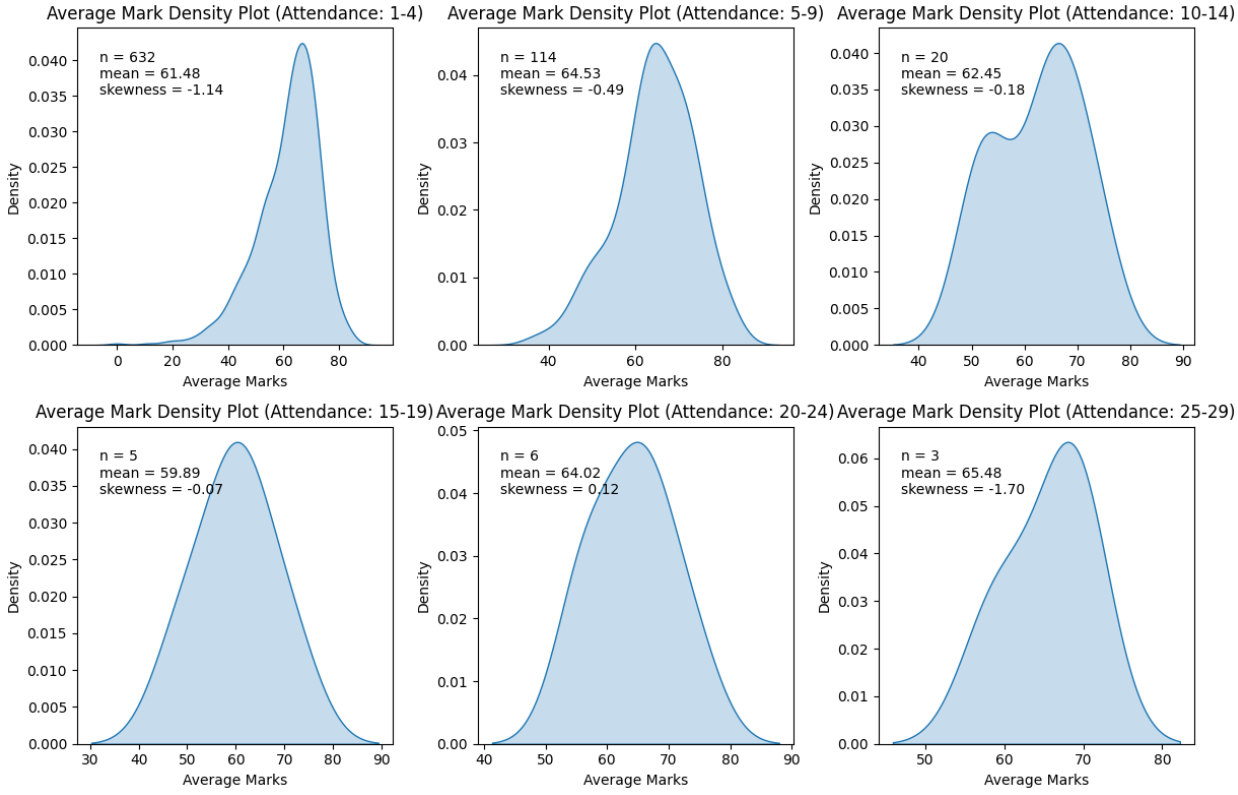
evidence to reject the null hypothesis, implying that there is no substantial disparity in academic performance between students who attended the programme and those who did not.

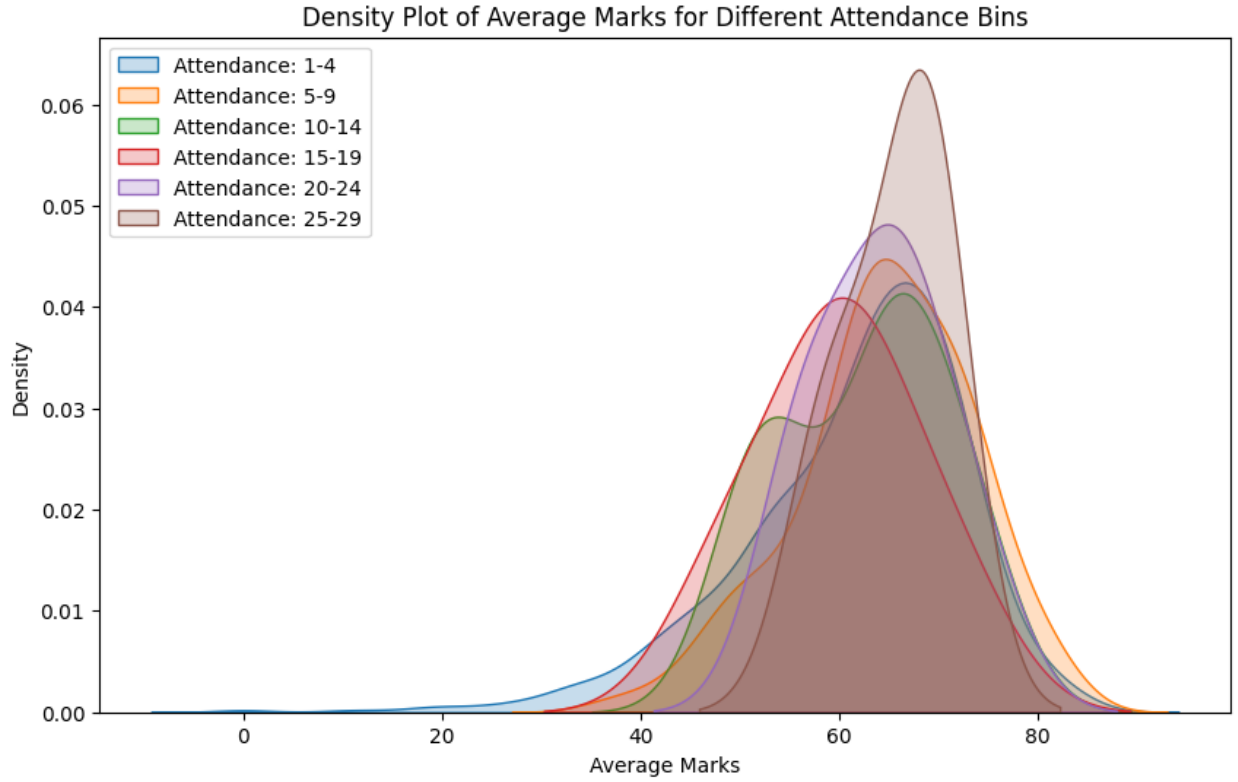
Grouped Analysis

For the grouped analysis, attendees of the RAA Programme were categorized into bins based on their attendance frequency. These bins included ranges of attendance sessions: '1-4', '5-9', '10-14', '15-19', '20-24', and '25-29'. This segmentation allowed for a more detailed examination of how varying levels of attendance might correlate with academic performance outcomes.



In the analysis, density plots were utilized to visually represent the distribution of academic performance within each attendance bin. These density plots were examined both individually for each attendance bin and collectively to discern any observable differences in performance across attendance frequencies. By employing density plots, we aimed to gain insights into the relationship between attendance patterns and academic achievements among the students participating in the RAA Programme.

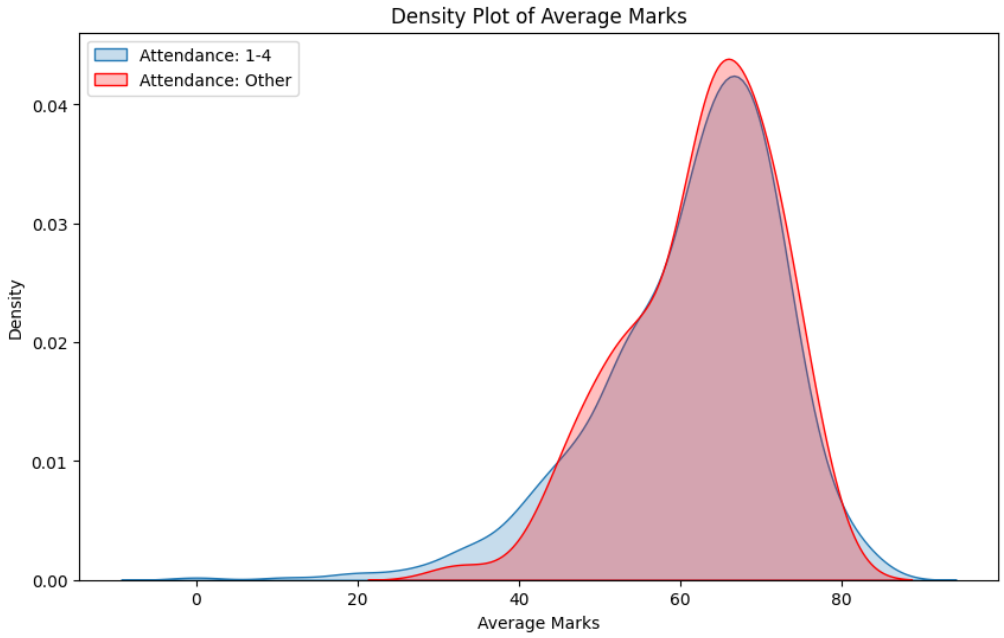

Average Mark Density Plot (Attendance: 1-4)
n = 632
mean = 61.48
skewness = -1.14
Average Mark Density Plot (Attendance: 5-9)
n = 114
mean = 64.53
skewness = -0.49
Average Mark Density Plot (Attendance: 10-14)
n = 20
mean = 62.45
skewness = -0.18
Average Mark Density Plot (Attendance: 15-19)
n = 5
mean = 59.89
skewness = -0.07
Average Mark Density Plot (Attendance: 20-24)
n = 6
mean = 64.02
skewness = 0.12
Average Mark Density Plot (Attendance: 25-29)
n = 3
mean = 65.48
skewness = -1.70
Density
Average Marks


Density Plot of Average Marks for Different Attendance Bins
Attendance: 1-4
Attendance: 5-9
Attendance: 10-14
Attendance: 15-19
Attendance: 20-24
Attendance: 25-29
Density
Average Marks

The results of the ANOVA test revealed that there was insufficient evidence to reject the null hypothesis, indicating no significant difference in academic performance across the attendance bins. The calculated F-statistic was 1.67, with a corresponding p-value of 0.14. This outcome suggests that variations in attendance frequency among students did not have a statistically significant impact on their academic performance, as measured by the end-of-year marks.

Comparison with Non-Attendees

An analysis comparing students attending 1-4 sessions with non-attendees revealed no statistically significant difference in average marks. The calculated p-value was 0.369, indicating that there was insufficient evidence to reject the null hypothesis. This finding suggests that students who attended 1-4 sessions of the RAA Programme did not demonstrate a significant disparity in academic performance compared to those who did not attend any sessions.



Conclusion

Overall, the analysis suggests that attendance at the RAA Programme may not significantly impact academic performance at the University of the Witwatersrand. Further research and a longitudinal study may provide deeper insights into the relationship between programme attendance and academic outcomes.

Note: Results are based on the data available and assumptions made during analysis. Further exploration may be warranted for comprehensive understanding.