Group 3:
Econ Enthusiasts

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Data Summary

Overview: The rising popularity of statistics as a potential profession led a team of professors to create CourseKata, an online platform that has worked to introduce and teach statistics to college and high school students. When making CourseKata their team was heavily interested in both teaching students, but also understanding and improving students' interactions with online textbooks. In this analysis, we chose to study the correlation between student engagement and their chapter performance and proficiency. If students were to engage with the videos, text, and practice problems, then their end-of-chapter (EOC) scores would improve. We hoped to understand how students interpreted their struggles and how they would react in the end.

Analysis: To best understand student's proficiency, we first viewed the average scores per end of chapter of students in different courses: College/Advanced Statistics and Data Science$_1$, College/Statistics and Data Science$_2$, High School/Advanced Statistics and Data Science$_3$. We studied data from chapters one through twelve and found that all classes started off strong at percentages at 0.85_1, 0.78_2, 0.71_3 during chapter one. However, the students struggled throughout the course and their score decreased throughout the chapters. At the end, the classes averaged percentages of End of Chapter questions was 0.58, 0.56, 0.47. Overall, this means that students were failing to understand and retain information by the end of the chapter. Additionally, through the data found in Checkpoints_EOC we were able to discover the number of users and their average engagement throughout the Statistics course. By the end of the course 73.51_1, 71.37_2, 81.58_3 percent of students were no longer engaging with the end of chapter reviews. We used three strategies to measure student engagement throughout the course. Our first strategy looked at the viewer retention for the course videos in chapters four and five. However, after analyzing the data we concluded that there was no correlation between viewer rate and scores. This is because media engagement as the predictor is not statistically significant, thereby Our second strategy examined the relationship between progression through the course, and failure to engage in the beginning of the chapter self-reported diagnostic checks. We found a small fluctuation between chapters 2 and 9, before seeing a steady increase, with the highest jump in the last chapter. This supports our finding that as material for and beyond chapter 9 got harder, the number of students course disengagement increased. Finally, we studied students' performance based on the number of practice problems they completed. We chose to control the chapter number since it has already been demonstrated that the chapter number is negatively correlated with student performance. Additionally, we found a strong negative correlation between the number of attempted problems and percentage of correct responses. Therefore, we controlled the number of attempted problems to isolate the correlation between student completion of distinct practice problems and their overall performance. We found that a one unit increase in potential questions is associated with a .0040101 increase in the percentage of correct questions when controlled for chapter number and number of attempted questions.

Conclusion: Our findings suggest that an increase in student engagement is associated with an increase in performance. Additionally, we find that students' course engagement decreases as they progress through the course modules. We suggest further investigation into avenues to retain student engagement with significant focus on the latter chapters. Our findings also support a move toward increasing practice problems for students.