**Impact of External Factors on Student Exam Performance**

1. **Introduction**

Education plays a crucial role in socialization, social integration, social control, and economic development (Nickerson, 2024). However, a student's performance, knowledge, and development are often determined by test scores. Studies show that high-stake tests increase the amount of cortisol in the body, which affects performance. Students with disadvantaged backgrounds experience the highest change in cortisol levels during these times (Tatter, 2019).

Performance in academia can be influenced by many internal and external factors, and some of those factors may go unnoticed. Identifying an association between internal/external factors and a student's performance on exams could help to further transform and improve the education system.

1. **Objectives**

The main goal for this project is to find associations between internal/external factors, expected amounts of cortisol, and a student’s performance on exams. The secondary goal for this project is to find if a student’s exam scores are independent of each other. Knowing the relationship between performance in different subjects could further help prove an association.

1. **Methodology**

The first step could be to filter/regroup the data. For example, creating new data frames based on ethnicity group, parent’s education, or if they receive free or reduced lunch. This allows us to create strata that can be easily visualized and compared against groups. Box plots will be generated to analyze and compare median scores and outliers across the stratum and histograms will be used to analyze data density and show any skew. Conclusions will be drawn from data visualization and simulation might be needed if new observations are desired. The data set, published by Jakki Seshapanpu, was acquired from Kaggle. RStudio will be used to analyze data, generate figures, induce simulation, and form conclusions.

1. **Expected Outcomes**

After initial data submission and proposal, data will be cleaned, organized, and summarized, the data will be explored and thoroughly analyzed, a final report will be submitted, a structured .zip file will be created, and a final presentation of results will be given. This project will be considered successful if there is enough evidence to confidently establish an association between the variables.

1. **Challenges and Limitations**

The data being used is randomly generated, which may limit the credibility and application of results. Prior studies have shown relationships, but proving an association may be difficult.

1. **Conclusion**

Skills taught and learned in primary education are essential for shaping future generations, and while student's home-lives cannot directly be changed by the education system, their aspirations and goals can. Providing suitable resources and pedagogies for students based on their needs and backgrounds may encourage students to view school as an opportunity for growth, as it should be, rather than a burden or a waste of time.

**VII. Works Cited**

Nickerson, Charlotte. “Functionalist Perspective on Education.” *Simply Psychology*, 13 Feb. 2024, [www.simplypsychology.org/functionalist-perspective-education.html#:~:text=Functionalists%20view%20education%20as%20a%20system%20that%20fulfills,and%20equips%20individuals%20with%20workforce%20skills%20%28economic%20development%29](#:~:text=Functionalists%20view%20education%20as%20a%20system%20that%20fulfills,and%20equips%20individuals%20with%20workforce%20skills%20%28economic%20development%29).

Tatter, Grace. “Tests and Stress Bias.” *Harvard Graduate School of Education*, 12 Feb. 2019, www.gse.harvard.edu/ideas/usable-knowledge/19/02/tests-and-stress-bias.