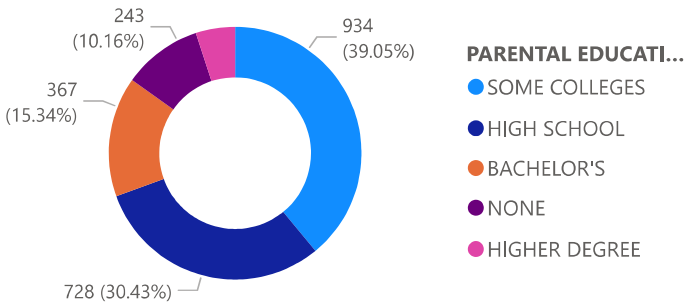
STUDENT PERFORMANCE ANALYSIS

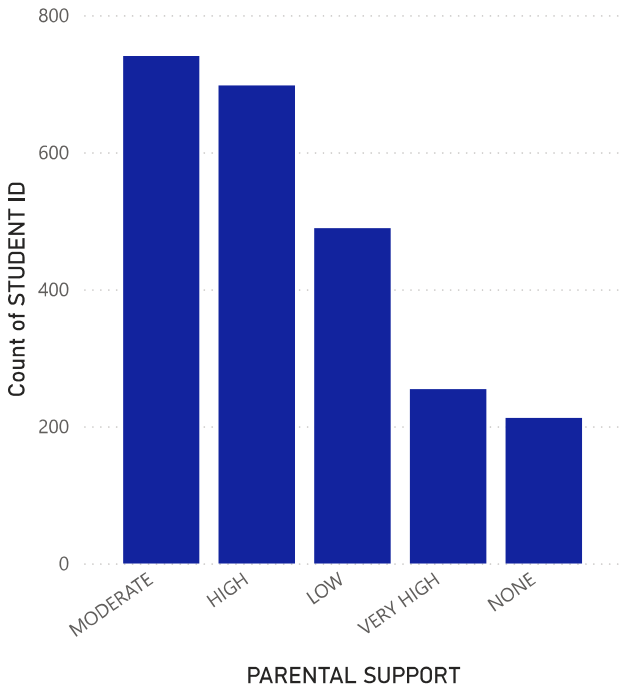
ETHNICITY	total student
4	2.392K

GENDER		AGE				ETHNICITY				EXTRACURRICULAR	
F...	M..	15	16	17	18	AFR...	ASI...	CAU...	OTH...	NO	YES

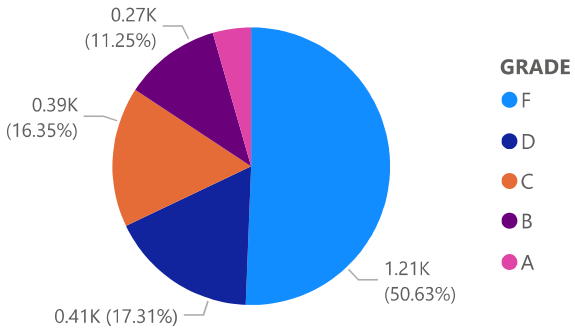
STUDENT'S PARENTAL EDUCATION LEVEL



STUDENT BY PARENTAL INVOLVMENT



STUDENT BY GRADE GRADE



STUDENT PERFORMANCE ANALYSIS

ETHNICITY
4

total student
2.392K

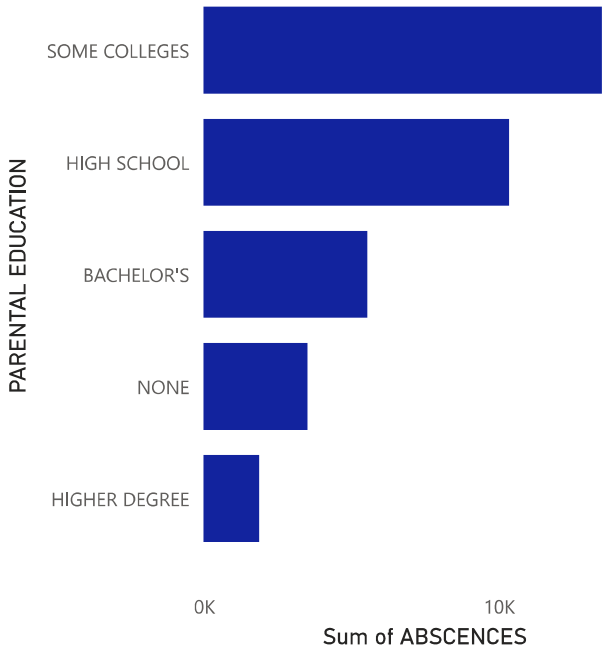
GENDER
F... M..

AGE
15 16 17 18

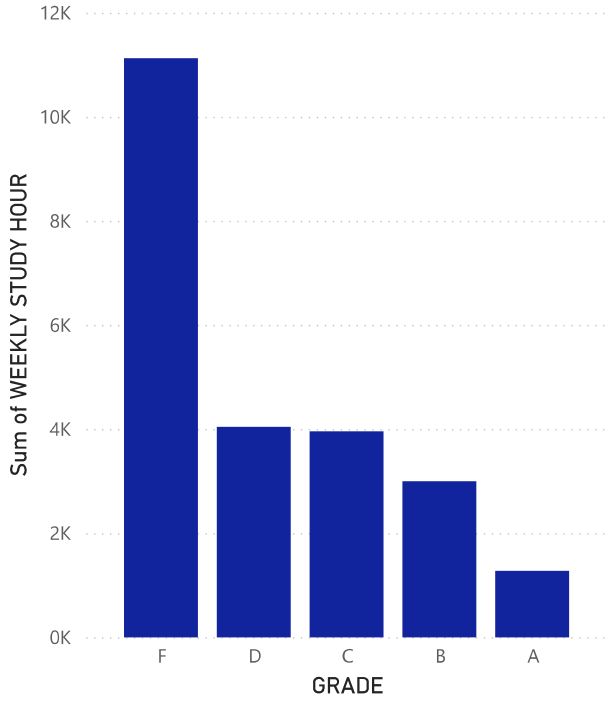
ETHNICITY
AFR... ASI... CAU... OTH...

EXTRACURRICULAR
NO YES

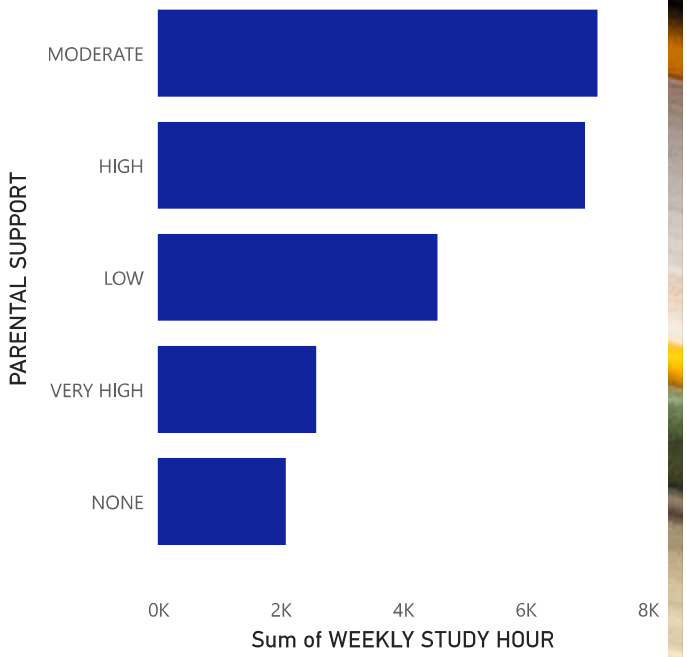
ABSCENTES BY PARENTAL EDUCATION



WEEKLY STUDY HOUR TO GRADE



WEEKLY STUDY HOUR BY PARENTAL SUPPORT



STUDENT PERFORMANCE ANALYSIS REPORT

1.0 INTRODUCTION

This report provides a comprehensive analysis of a dataset on 2,392 high school students, detailing their demographics, study habits, parental involvement, extracurricular activities, and academic performance.

1.1 ABOUT THE DATA/DATA COLLECTION

It is a secondary data source and it is structured. The data contains a table in csv files. It contains 2392 rows and 13 columns. The dataset was downloaded from kaggle website on 17th of August 2024 by Oluwaseun Peter Olugbodi for academic research purpose only. The analysis to be carried out is to answer the following questions;

1. How does the ethnicity of students correlate with their Grade?
2. What is the impact of parental education on students' Grade?
3. How does weekly study time influence students' Grade?
4. What is the relationship between the number of absences and parental education?
5. Is there a significant difference in GPA between male and female students?
6. To what extent does age influence students' academic success?
7. What is the effect of extracurricular participation on students' Grade Class?

2.0 METHODOLOGIES AND TOOLS

The tools used are Power Query Editor for data cleaning and Microsoft Power BI for analysis.

2.1 DATA CLEANING AND TRANSFORMATION

The following are the different cleaning procedures;

- Column formatting
- Removal of empty columns
- Renaming of Column
- Conditional replacement of Colum values for standardization (Parental support, Grade, Extracurricular activity, Parental Education level, Gender and Ethnicity)

3.0 EXPLORATORY DATA ANALYSIS (EDA) AND INSIGHT

Power BI visualization tools deployed to ensure that the analysis could be understood and questions could be answered. The following questions below were analyses, and insights
for each.

1. How does the ethnicity of students correlate with their Grade?

Asian students have the highest percentage achieving Grade A (5.74%), indicating stronger top-level academic performance, while Caucasian students have the lowest (3.89%) and the highest percentage in Grade F (52.36%), and suggesting more academic struggles. African American and "Other" students show more balanced distributions, but both still have a significant portion in Grade F (48.68% and 47.3%, respectively). The "Other" group also has the highest percentage in Grade B (17.16%), indicating moderate performance. Overall, while Asian students slightly outperform others at the top, all groups face considerable academic challenges, particularly in the lower grades.

2. What is the impact of parental education on students' Grade?

Parental education significantly influences student grades. Students whose parents hold higher degrees are the least likely to earn lower grades (5.27%), highlighting a positive correlation between higher parental education and better academic performance. In contrast, students with parents who have no formal education are more likely to struggle academically, as reflected by their higher percentage in lower grades (11.97%). Those with parents holding a Bachelor's degree fall in the middle (15.21%), while students whose parents only completed high school or some college have higher incidences of lower grades (29.61% and 37.93%, respectively). This trend suggests that higher parental education tends o enhance academic outcomes for students

.3. How does weekly study time influence students' Grade?

The bar chart shows that students who achieved lower grades (F and D) tend to have accumulated more total study hours, suggesting that these students may require more time to understand the material or that their study methods are less effective. In contrast, students who earned higher grades (A and B)have significantly fewer total study hours, which might indicate more efficient study habits, a better understanding of the material, or greater prior knowledge

4. What is the relationship between the number of absences and parental education?

The stacked bar chart illustrates that higher parental education is associated with fewer student absences. Parents with a higher education degree have the fewest total absences (1,875), suggesting that students with highly educated parents may have better attendance, possibly due to higher parental emphasis on the importance of education and consistent school attendance. Lower parental education correlates with more student absences. The highest number of absences is seen among students whose parents have some college education (13,499) and high school education (10,352). This may indicate that these students face more challenges in maintaining regular school attendance. However, Students with parents who have no formal education recorded 3,514 absences, which, suggests that parent with no formal education are now more informed on the importance of education which reflected a significant impact their children attendance in school.

5. Is there a significant difference in GPA between male and female students?

The pie chart illustrate that a higher percentage of male students (4.98%) achieved Grade A compared to female students (4.01%) and also, slightly higher percentage of female students (51.47%) received Grade F compared to male students (49.74%). However, these differences are relatively small, suggesting that gender may have a slight impact on grade distribution, it is not a strongly significant factor.

6. To what extent does age influence students' academic success?

The pie chart graph shows the percentage of students earning grade A is slightly higher at age 16 (4.89%) and lower at age 17 (4.09%), with other ages falling in between. Grade B percentages are relatively consistent across ages, with 16-year-olds performing slightly better (12.14%) and 17-year-olds performing slightly worse (10.22%). While the percentage of students receiving an F grade is slightly lower at age 17 (47.87%) compared to other age groups (ranging from 51.11% to 51.77%), indicating a slight improvement in performance at this age. Although there are some variations in performance by age, the differences are not stark, suggesting that age may have some impact, it is not the sole determinant of academic success.

7. What is the effect of extracurricular participation on students' Grade Class?

The percentage of students earning top grades (A) is significantly higher among those who participate in extracurricular activities (6.00%) compared to those who do not (3.33%). This indicates that extracurricular participation might enhance academic performance, leading to higher grades. Students who participate in extracurricular activities have a lower percentage of failing grades (47.76%) compared to those who do not participate (52.41%). This suggests that extracurricular involvement may be associated with a reduced risk of academic failure

4.0 Conclusion and recommendation

To enhance academic outcomes, it is crucial to address the diverse factors that influence student performance. By implementing targeted support for ethnic groups facing challenges, promoting parental involvement and education, improving study habits, and encouraging extracurricular participation, schools can create a more supportive and effective learning environment. Additionally, addressing attendance issues and providing tailored support across different age groups and genders will help ensure that all students have the opportunity to succeed academically. These combined efforts will contribute to reducing academic disparities and fostering overall student success.