My first notebook

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Activity uno

Advantage of R Markdown

Question 1:- Does the number of hours students study impact their grades?

Introduction   You can write your introduction here

Method (Hypothetical)   We conducted a survey in schools of Bangalore North Taluk to understand the impact of the number of hours of study on student final scores. Student's parents were interviewed during parent-teacher meetings (PTA) to collect data on number of hours the child. Further from the school records, we collected overall final grades. To assess the impact of study time and course taken on the overall grades, we fitted a linear regression model with the number of hours as the independent variable and number of courses enrolled in and marks are response variable;$(marks = \beta_1 * Number of course + \beta_2 * Hours study + \epsilon)$, where ϵ $N(0,1)$. All analyses were performed in R statistical software (@boud1989quantitative) R version 4.2.1 (2022-06-23 ucrt).

Results   A total of 100 student records were collected, with the number of courses students were enrolled in ranging between 3 and 8. Based on parents' interviews, on average, students studied for 4.08 hours per day (ranging from 0.1 to 7.96 per day). Further, the average mark scored was 3.01 in log scale, ranging from 1.72 to 4.01.

```
model <- lm(Marks~number_courses+time_study,data = student_marks)
anova_table <- anova(model)%>%as.data.frame()%>%round(3)
model_summary <- summary(model)
summary_table <- model_summary$coefficients%>%as.data.frame()%>%round(3)
rownames(summary_table) <- c("Intercept","Courses enrolled-in","Per day hours of study")
```

In our model, the number of courses(1,688.561,**_p<0.005_**) and study times (1,2629.841,**_p<0.005_**)were significant in explaining the student's grades in the final examination (**Table 1**). Overall, our model was able to explain 97.1% of the variation in the marks of students. With the increase in each course, the student average grades improved by 1.544(0.036). Similarly, each extra hour of study will increase the score by a factor of 0.093(0.006) (Table 2, Fig1)

```
##
## Attaching package: 'kableExtra'

## The following object is masked from 'package:dplyr':
##
##     group_rows
```

Table 1: Table1: Annova output of the model

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
number_courses	1	7.974	7.974	688.561	0
time_study	1	30.454	30.454	2629.841	0
Residuals	97	1.123	0.012	NA	NA

Table 2: Table2: model summary

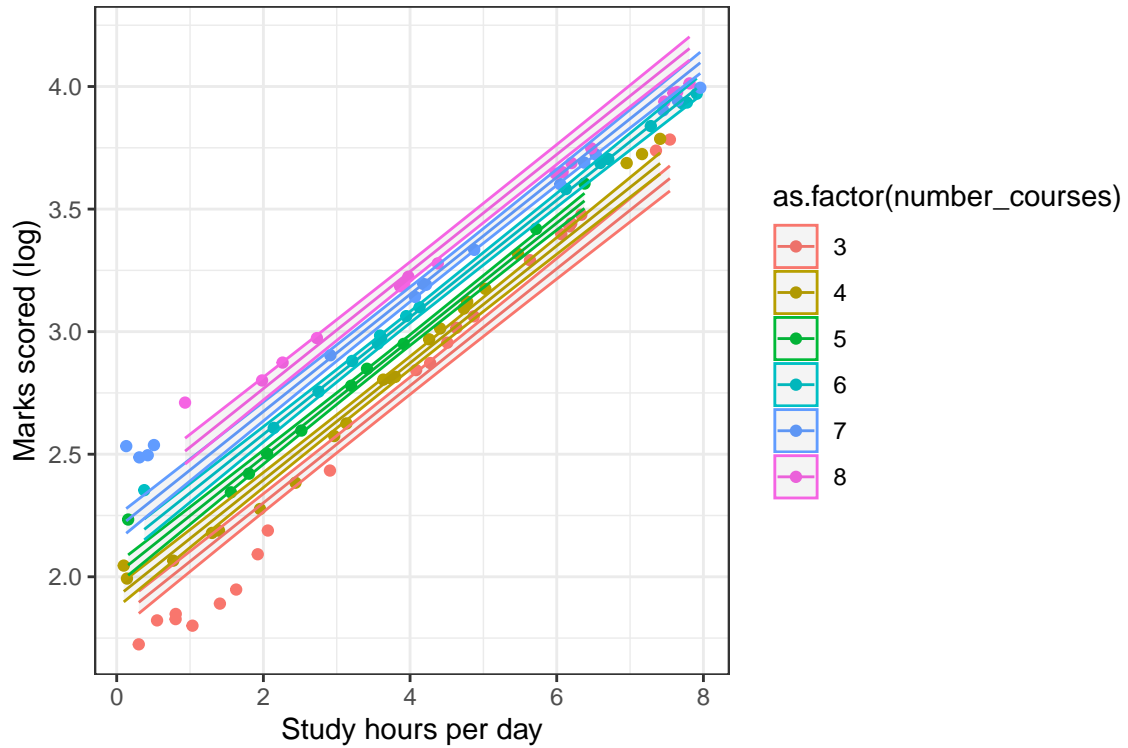|	Estimate	Std. Error	t value	Pr(>|t|)
Intercept	1.544	0.036	43.186	0
Courses enrolled-in	0.093	0.006	15.179	0
Per day hours of study	0.239	0.005	51.282	0

Figure 1: Student performace in relation to number of hours study and courses enrolled in

Discussion

1. Our study align with words of elder that with more study we can get good grades
2. It was surprising that several courses also increased the overall mark. This may be due to the following reasons

   - Generally, people who study more take more courses.
   - The average of many subjects compensates for few bad results.