



PYTHON & R PROJECT

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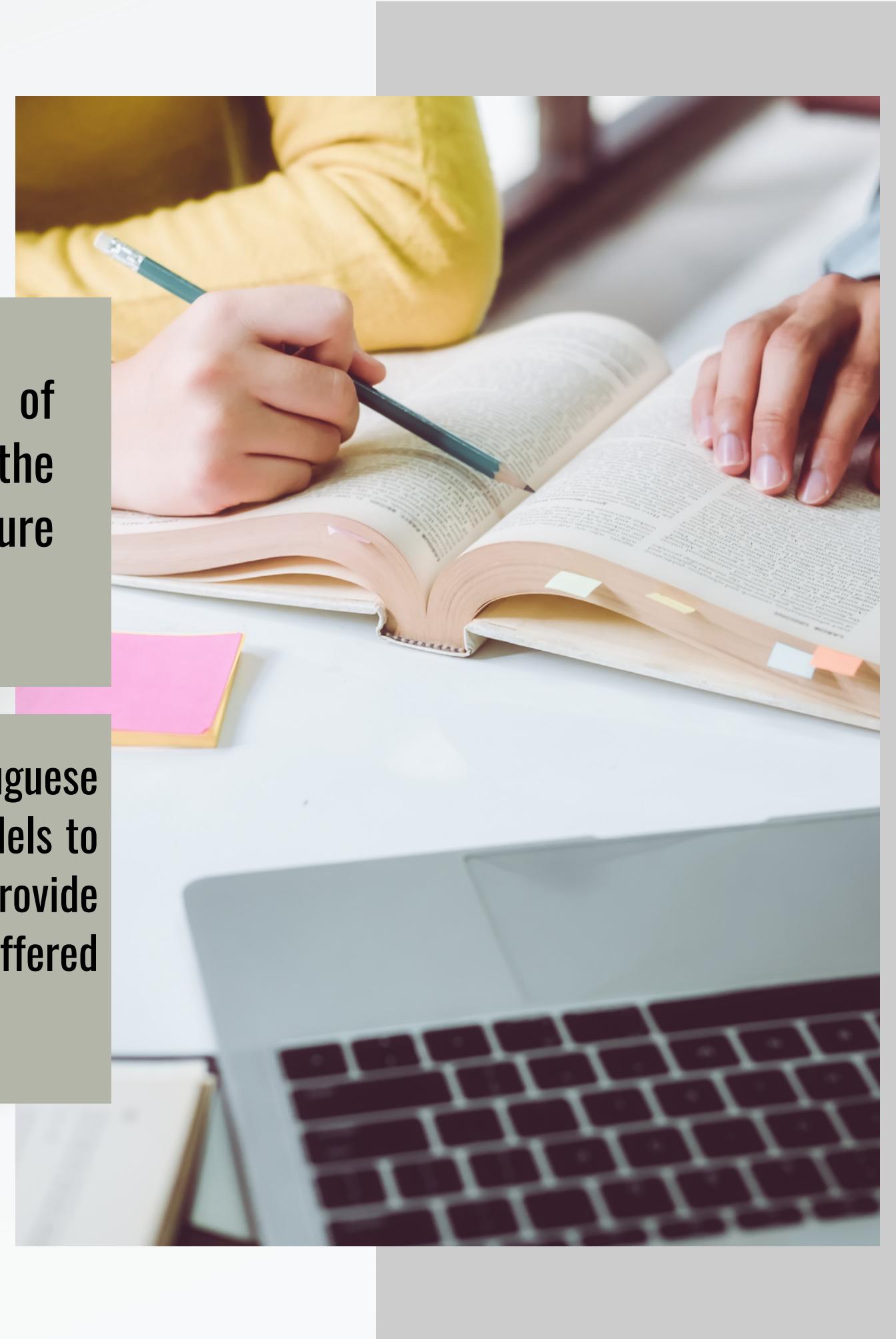
OUR AIM



The dataset "student-mat.csv" contains the final scores of students at the end of a mathematics program, and the how the variables described in this dataset could influence the future results of these students.



The study focuses on evaluating student performance in two Portuguese high schools. We utilize exploratory data analysis and predictive models to understand and forecast academic achievement. The goal is to provide actionable insights to improve the quality of educational services offered by the department.



OUR DATASET



SOCIAL ASPECT

The social aspect significantly shapes student performance. Peer relationships, interactions, and social support are expected to impact learning outcomes.



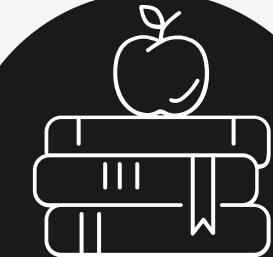
INDIVIDUAL ASPECT

Student health status, motivation in attending class, studying, and continuing to higher education may affect academic performance.



FAMILY BACKGROUND

Parental education influences support, impacting student opportunities. Resource-rich homes aid learning. Socioeconomic status affects resource access, posing challenges.

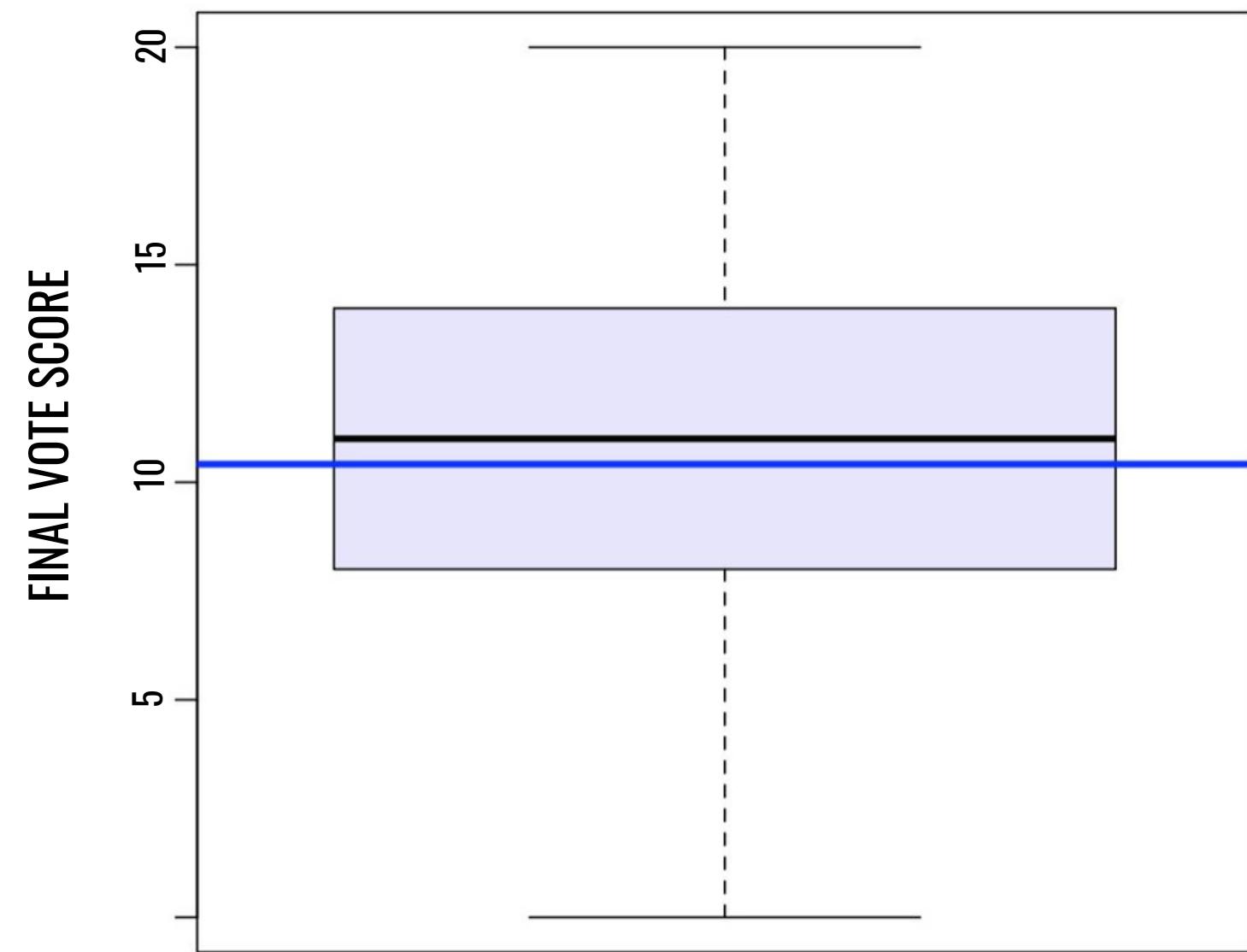


SCHOOL ASPECT

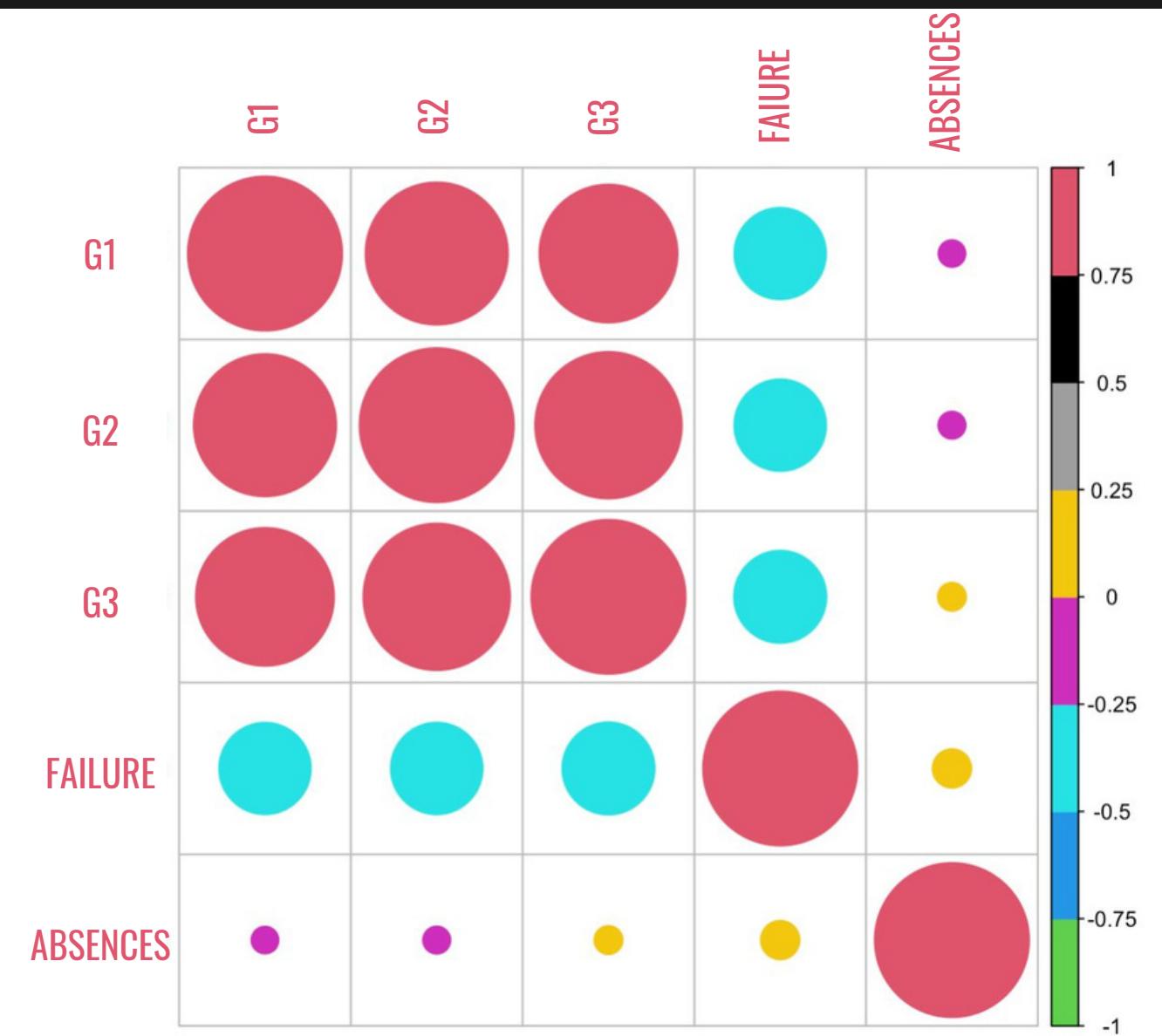
Supportive, skilled, adaptable teachers and school administrators foster effective environments. Access to resources within the school may enhance student learning.

EDA

BOXPLOT OF FINAL VOTE SCORES

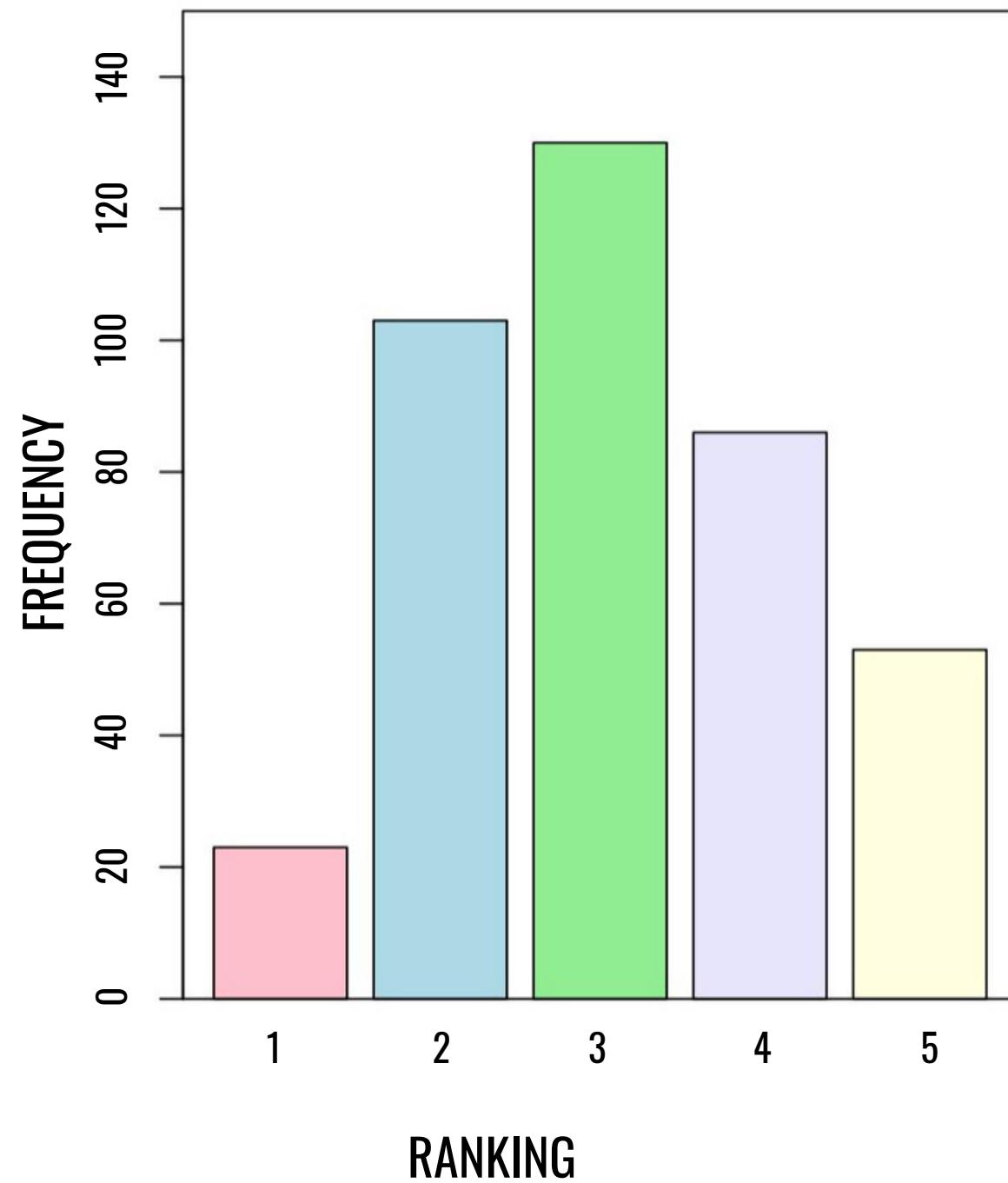


HEATMAP - STUDY OF CORRELATION

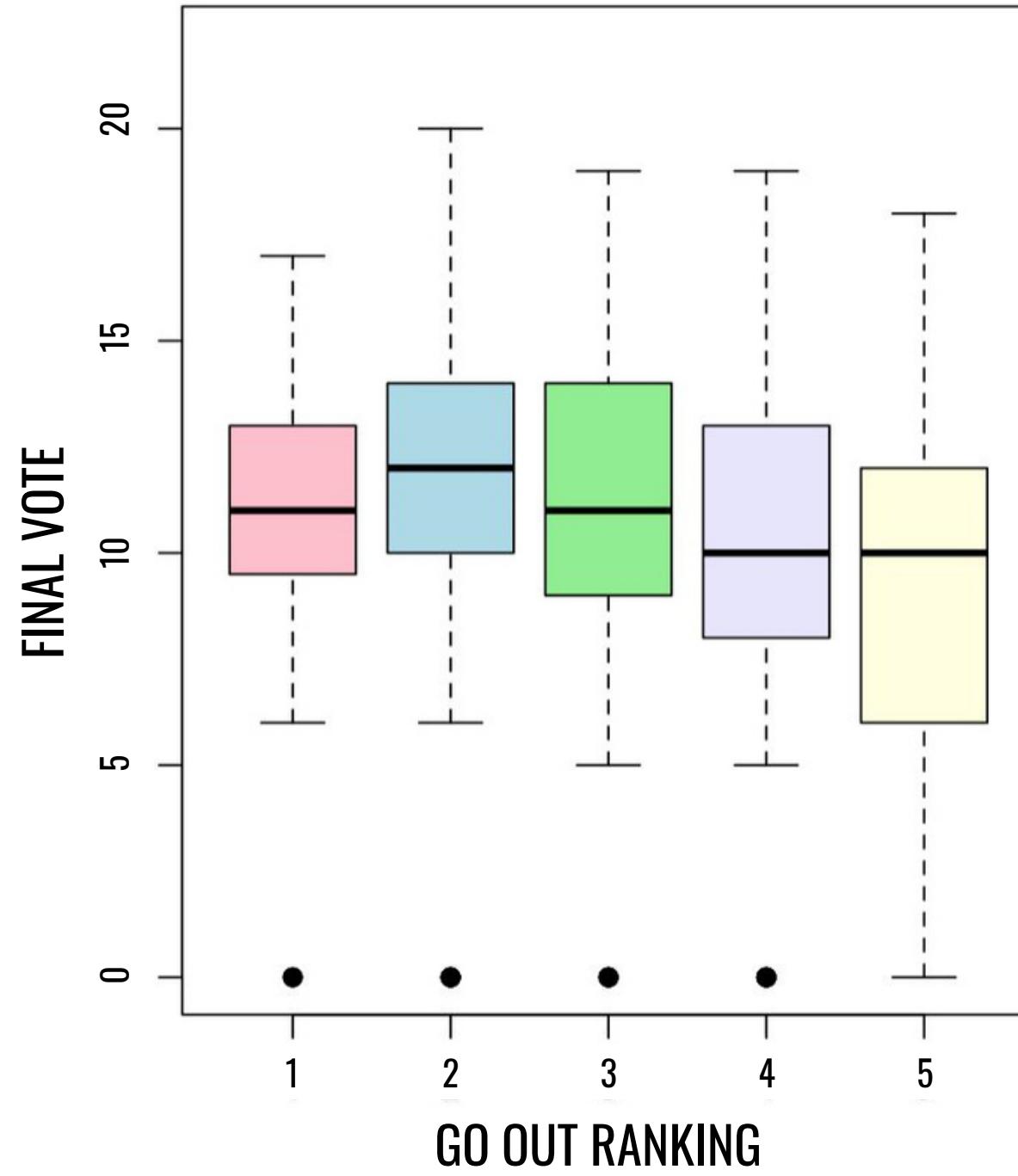


EDA

GOING OUT WITH FRIENDS



G3 SCORE VS GO OUT RANKING



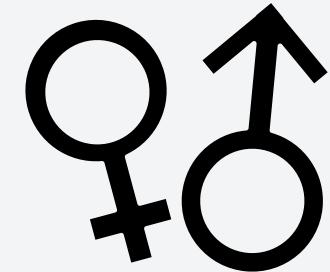
GO DEEP IN THE

4 CATEGORIES

INDIVIDUAL ASPECTS

The variables

The variables describe individual aspects of students including gender, age, desire to continue with their studies and so on.



Gender



Age



Higher



Traveltime

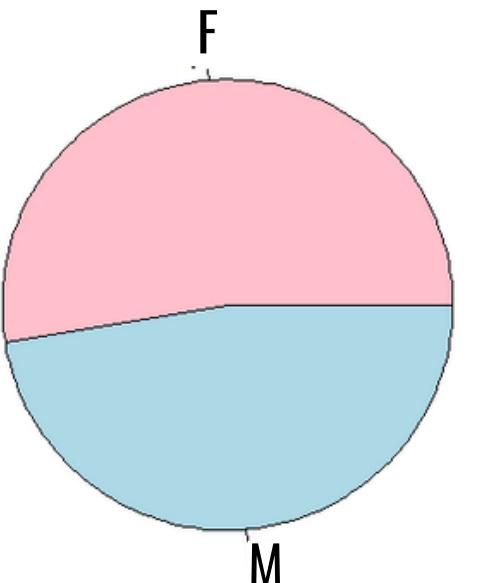


Studytime

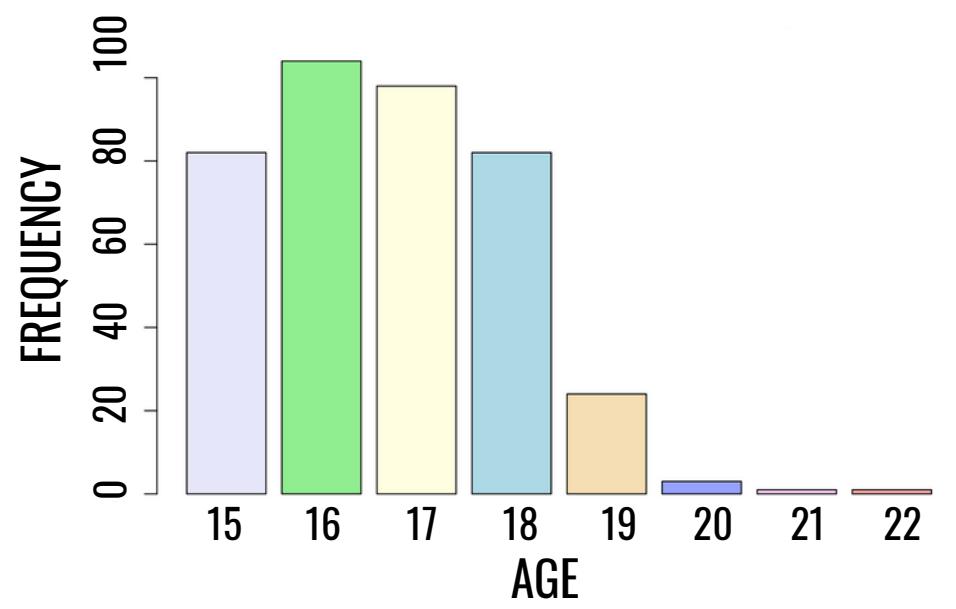


Reason

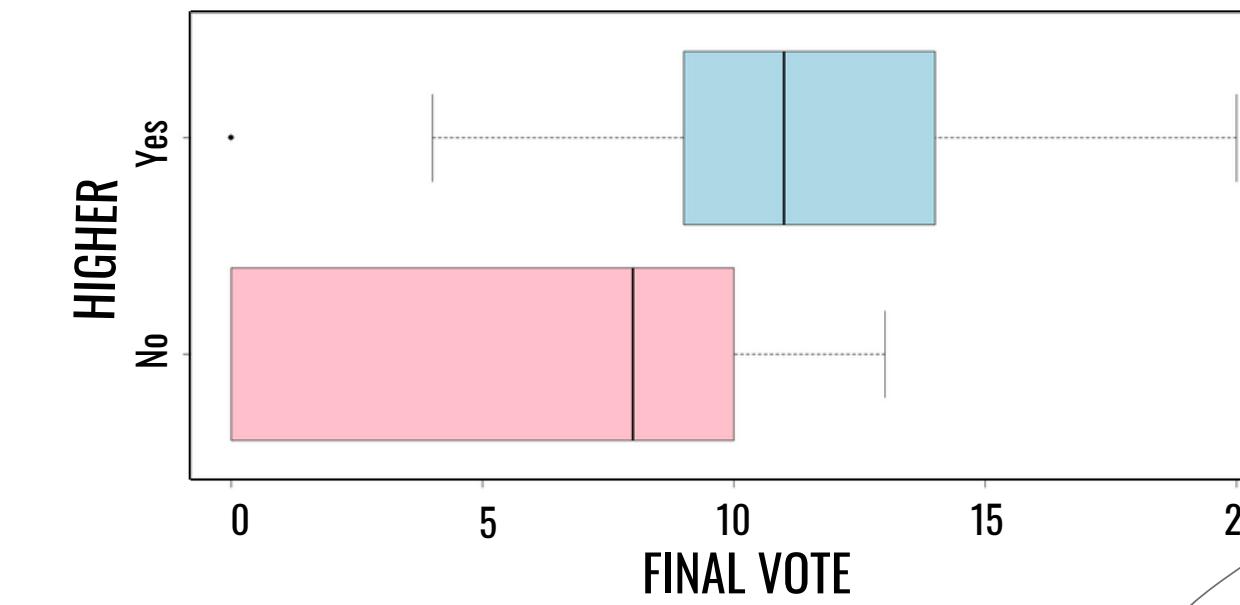
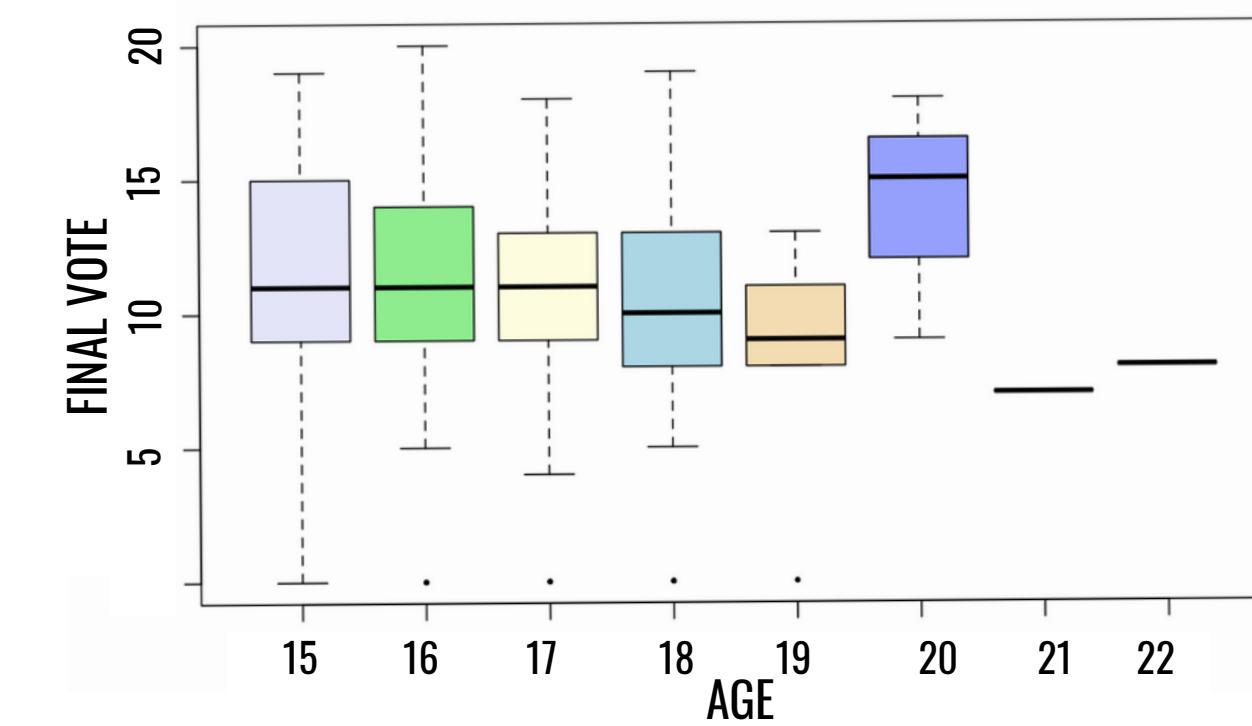
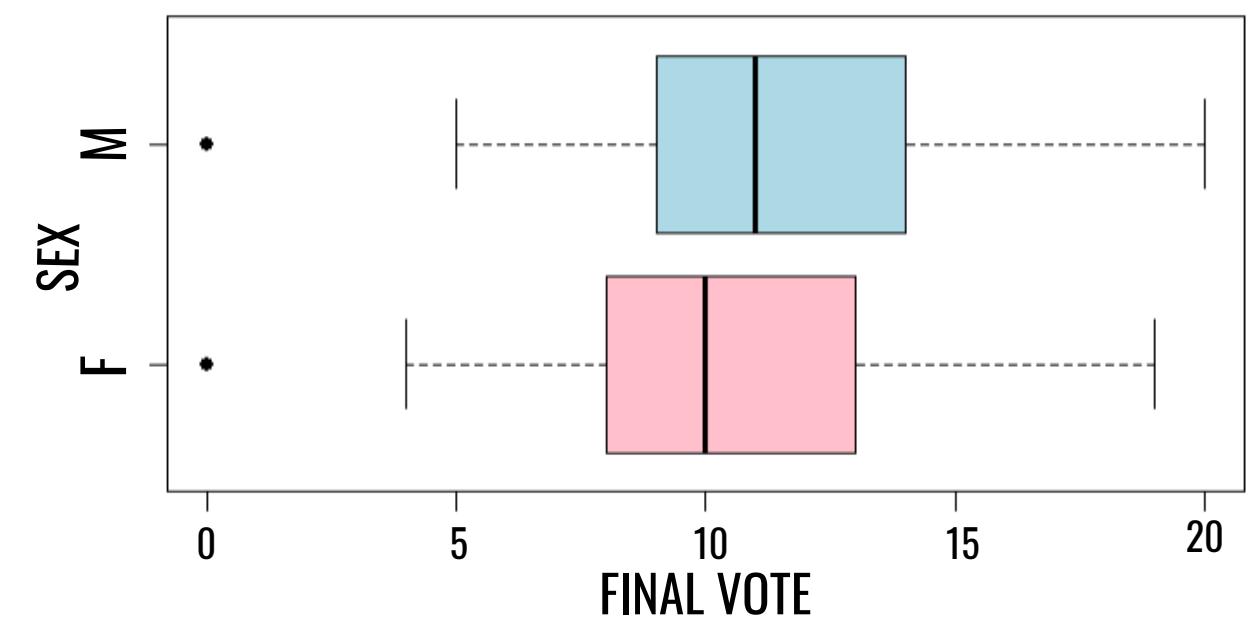
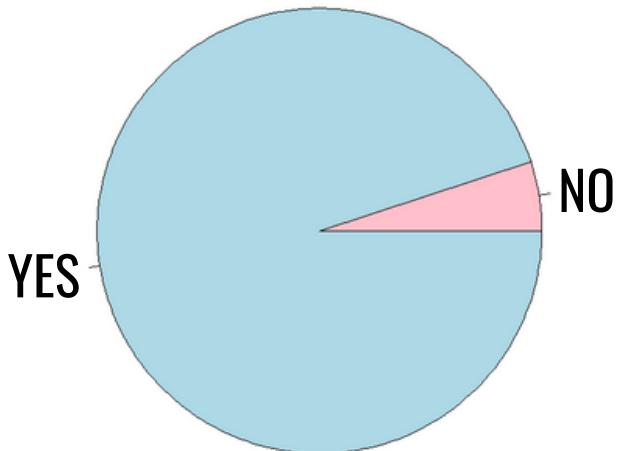
Gender



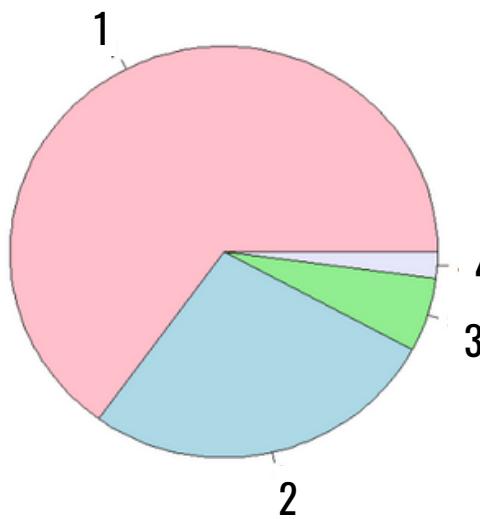
Age



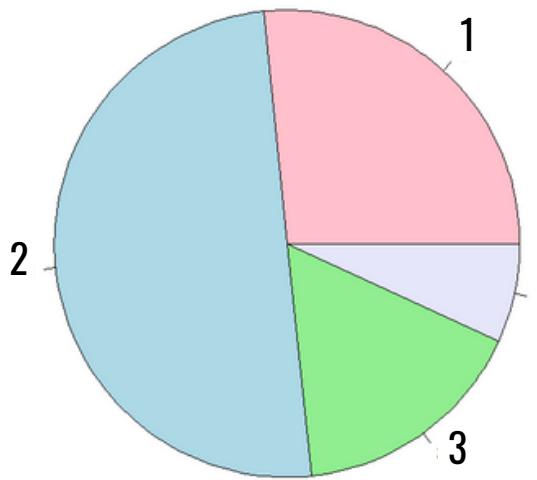
Higher



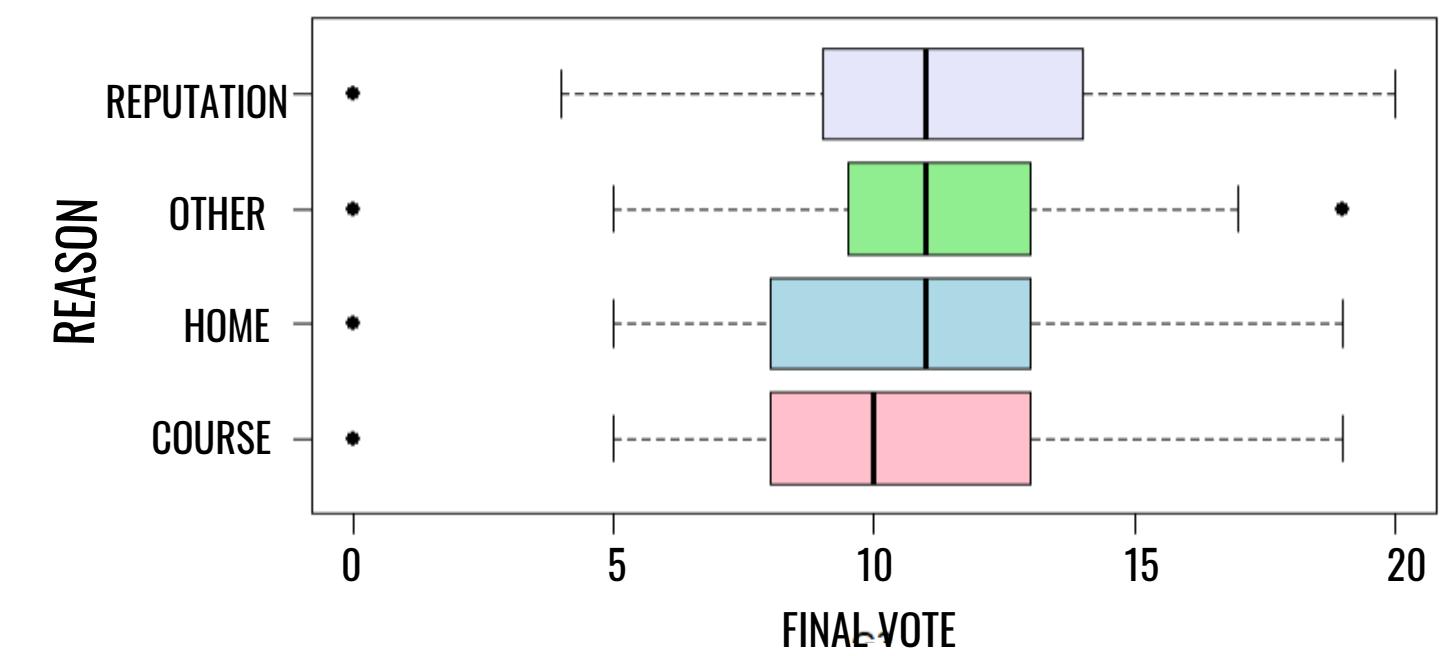
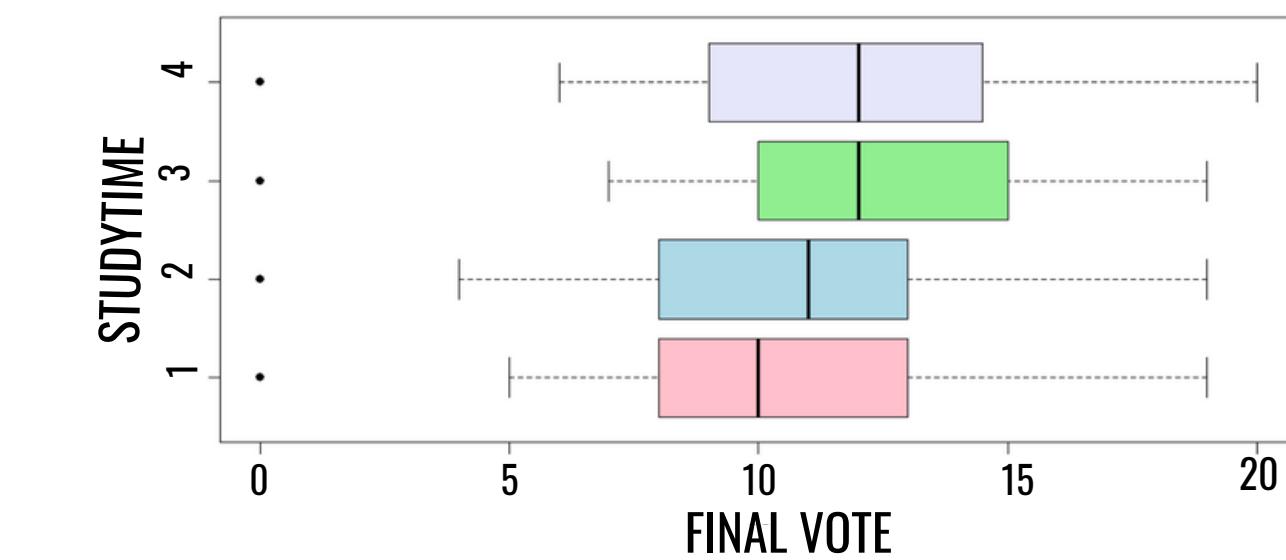
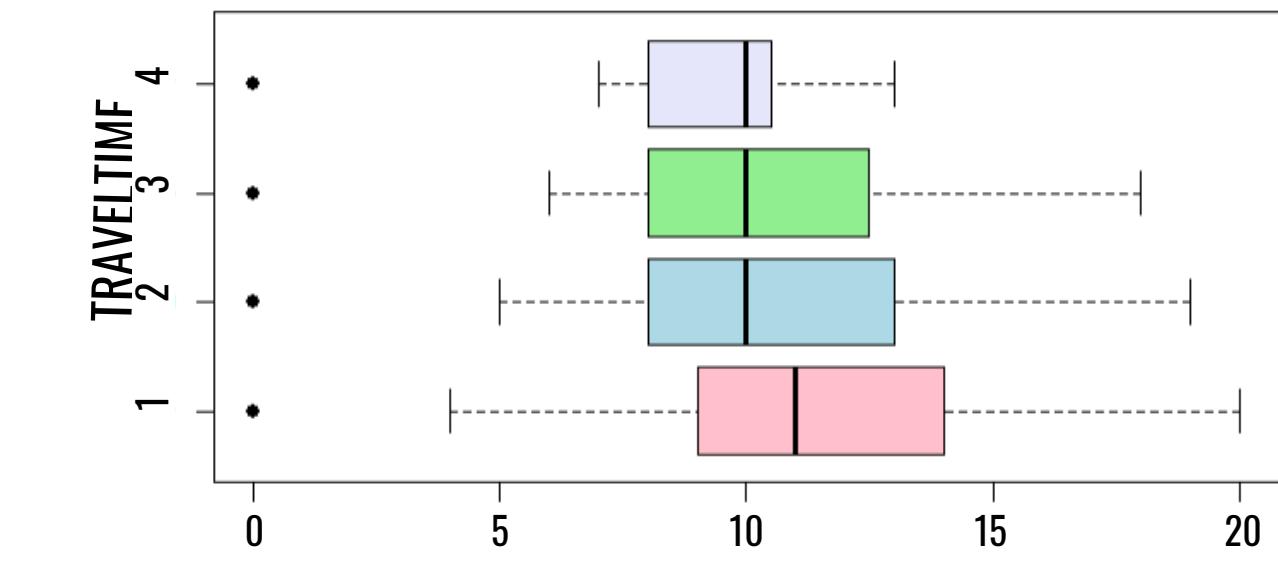
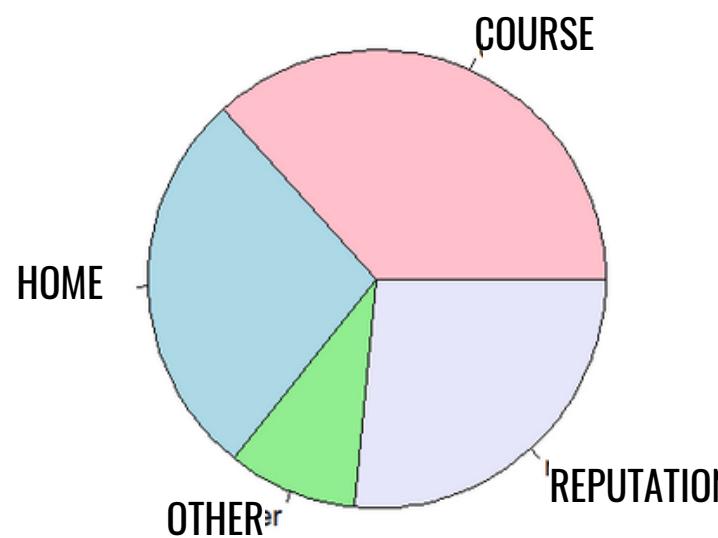
Traveltime



Studytime



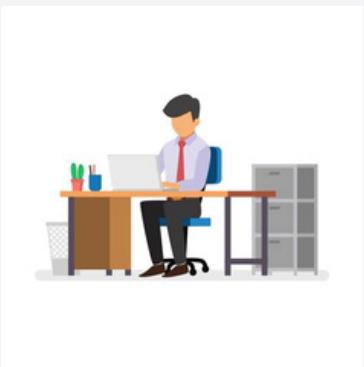
Reason



FAMILY BACKGROUND

THE VARIABLES

The variables describe fundamental characteristics related to the family background. Family occupational status, the relationship with parents, family structure, and other factors related to the family unit are considered.



MJOB



FAMSIZE



MEDU/FEDU



FAMSUP



FJOB



INTERNET

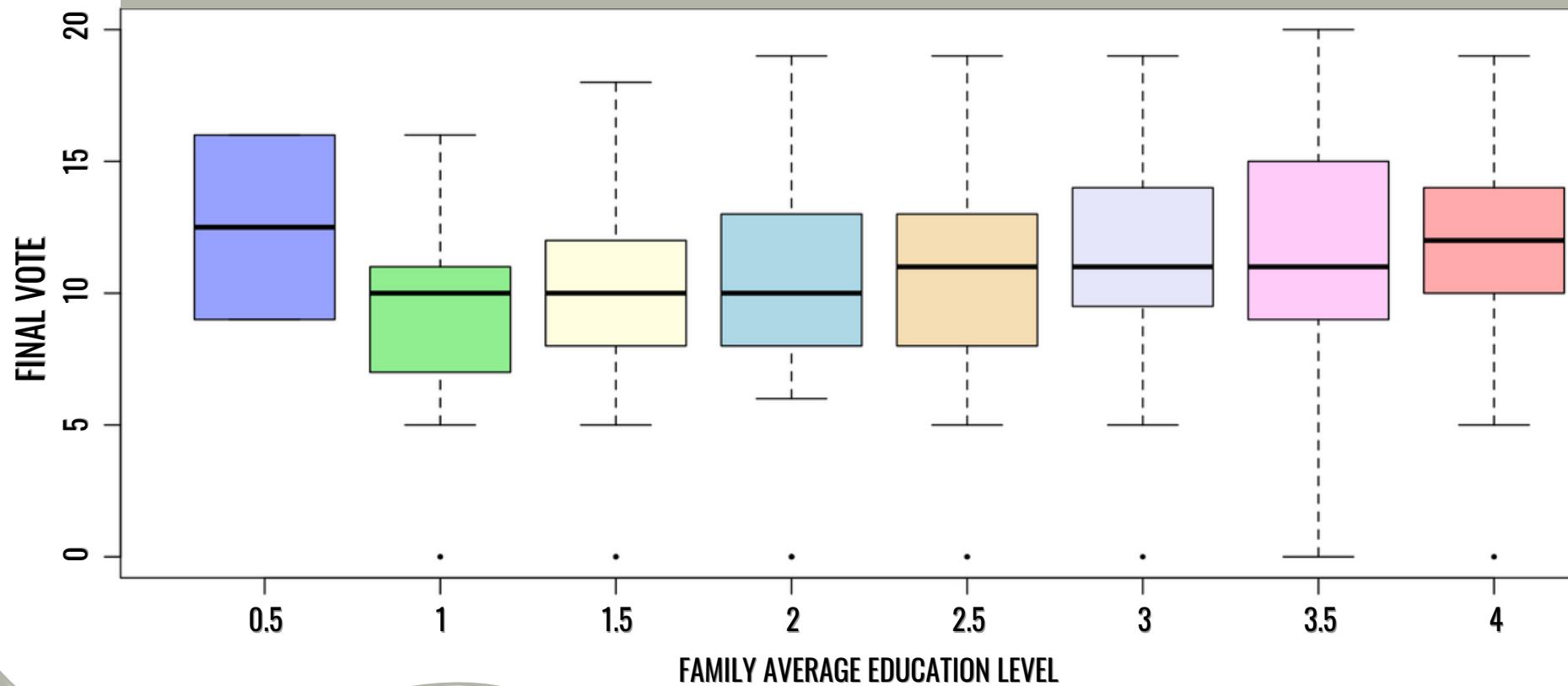


FAMREL

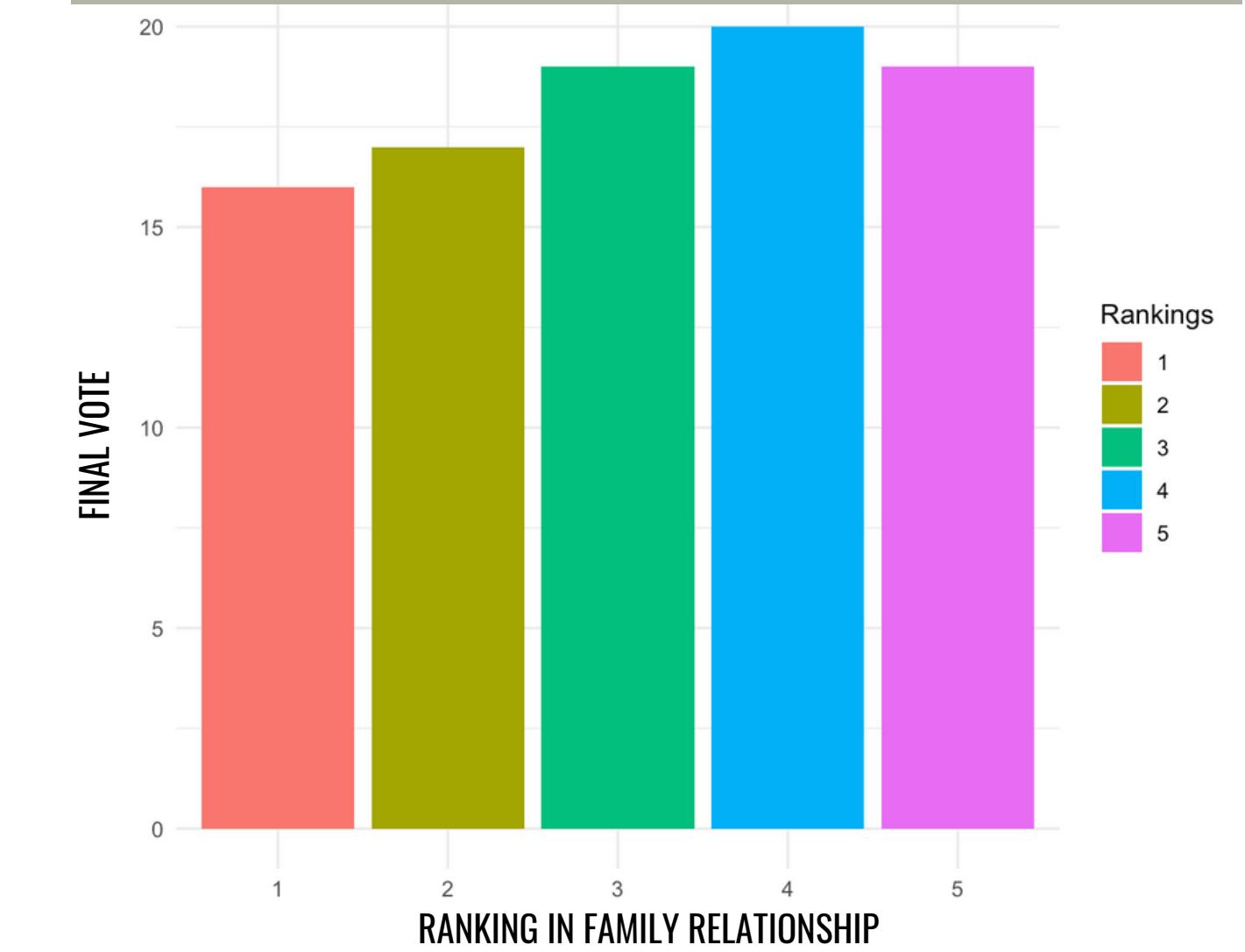


ADDRESS

FINAL VOTE VS EDUCATION LEVEL OF THE FAMILY



FINAL VOTE BY QUALITY OF FAMILY RELATIONSHIP



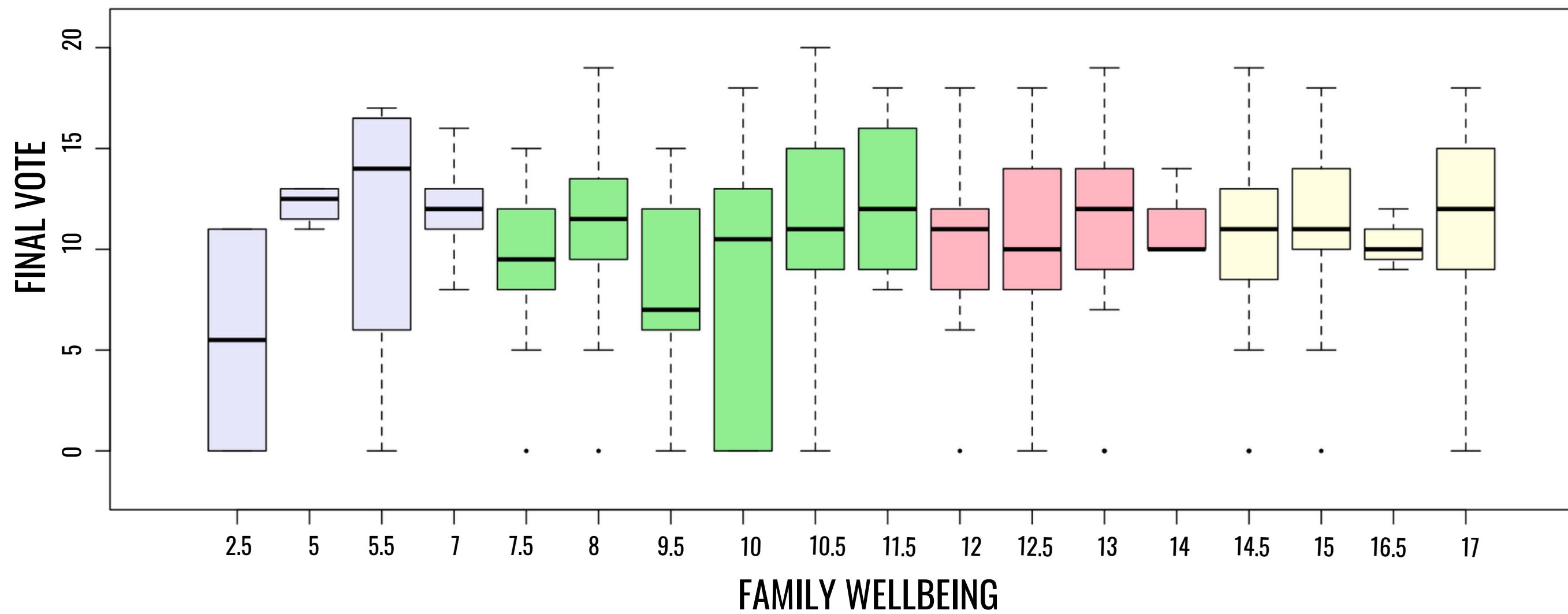
IN DEPTH WITH PARENT JOB

MOTHER'S JOB	FATHER'S JOB						SUM
		AT HOME	HEALTH	OTHER	SERVICES	TEACHER	
	AT HOME	1.8	0.5	8.4	3.8	0.5	14.9
	HEALTH	0.0	1.5	4.3	2.5	0.3	8.6
	OTHER	1.3	0.5	26.3	6.1	1.5	35.7
	SERVICES	1.5	1.0	10.6	10.9	2.0	26.1
	TEACHER	0.5	1.0	5.3	4.8	3.0	14.7
	SUM	5.1	4.6	54.9	28.1	7.3	100.0

FAMILY BACKGROUND

FAMILY WELLBEING

The "family wellbeing" indicator provides an overall framework for the quality of family life, helping to assess how a student's life in a safe and supportive environment influences their overall performance



SOCIAL ASPECT

THE VARIABLES

The variables describe student attributes in relation to social behaviors, including categorical, ordered variables of the students' free time and how often they spend time with friends, alcohol consumption, and relationship status.



ROMANTIC



GOOUT



WALC



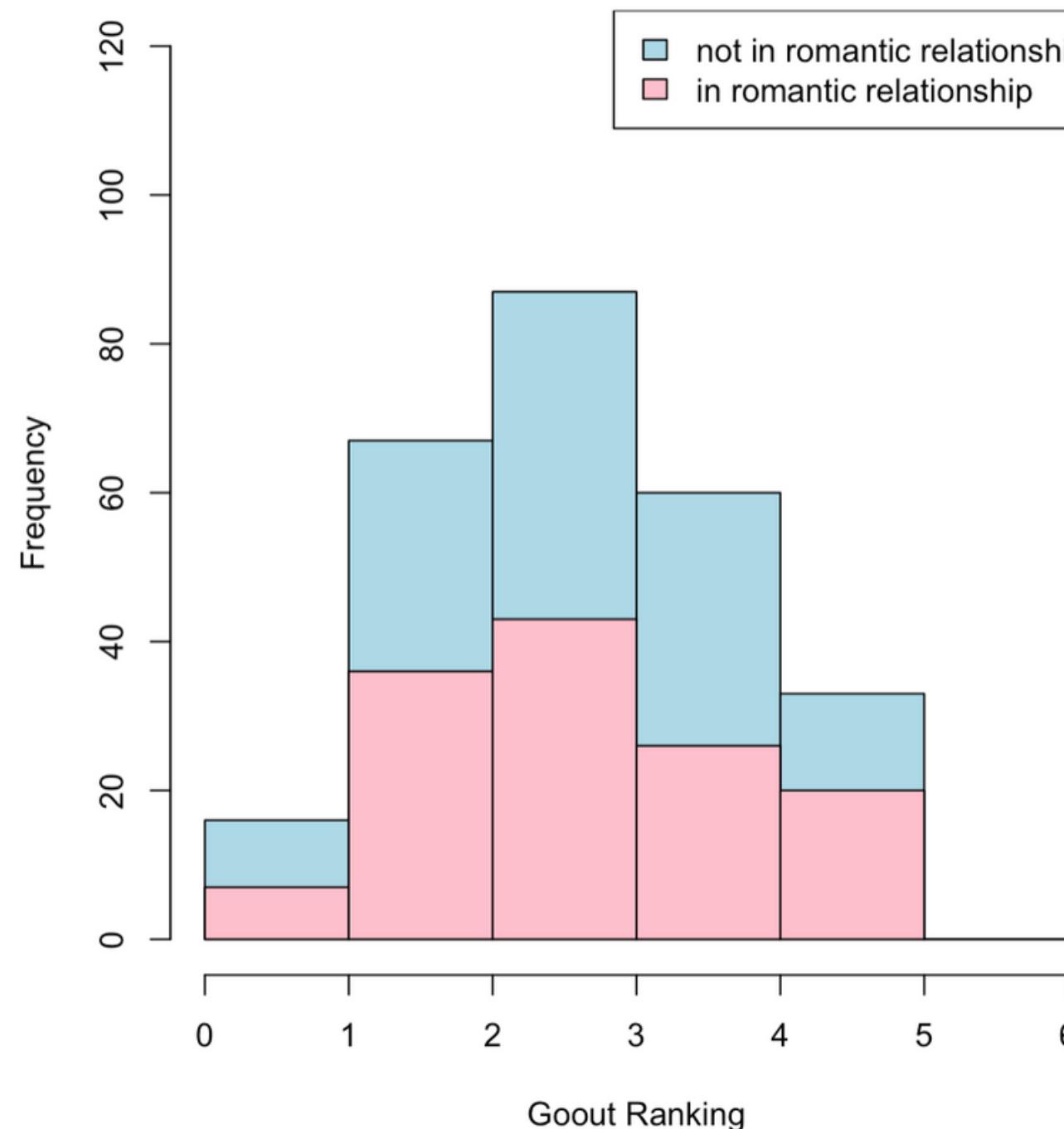
FREETIME



DALC

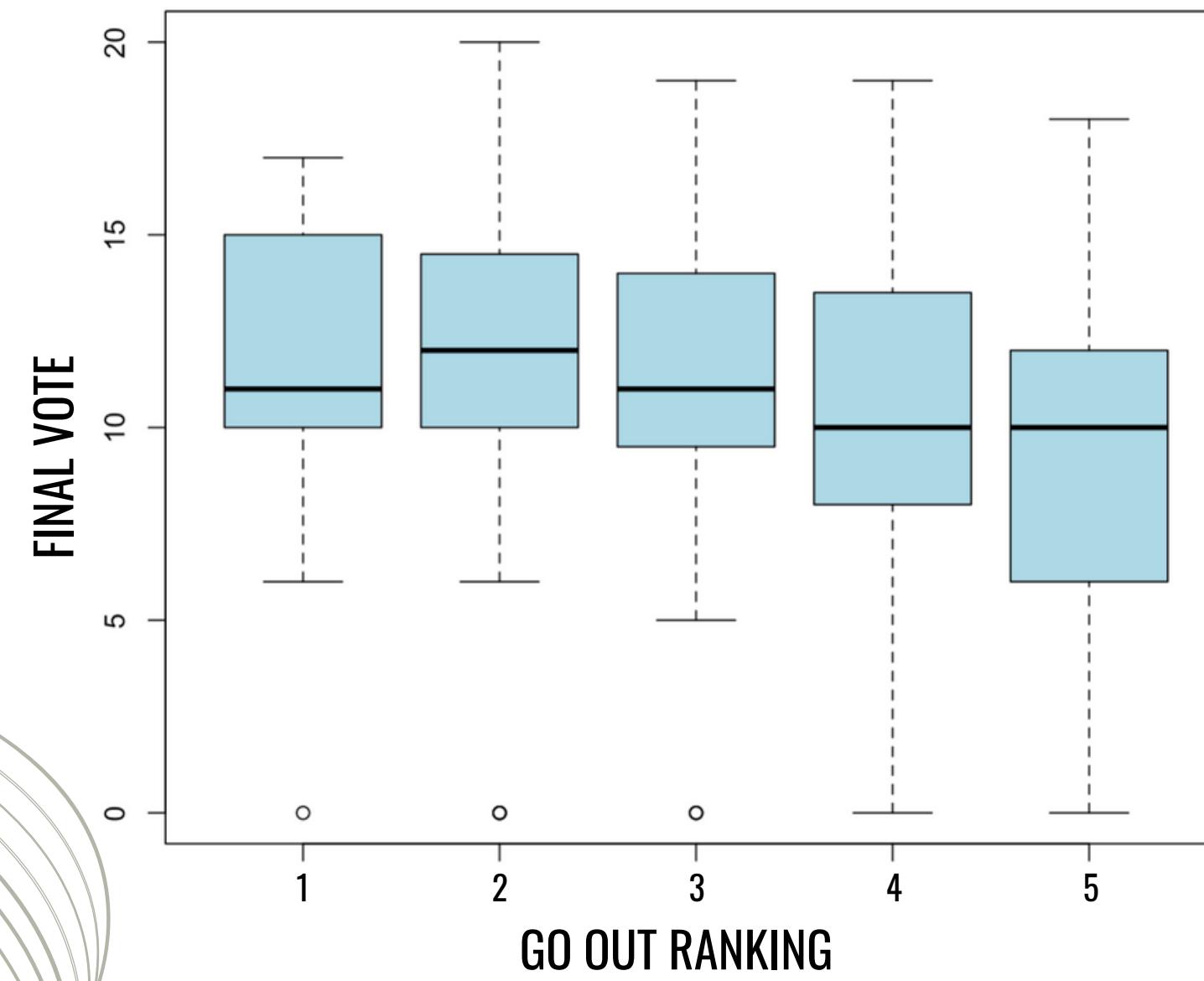
SOCIAL ASPECTS

Romantic relationship and going out



Wilcoxon rank sum exact test
data: goout_romantic_no and go_out_romantic_yes
W=19, pvalue=0.222

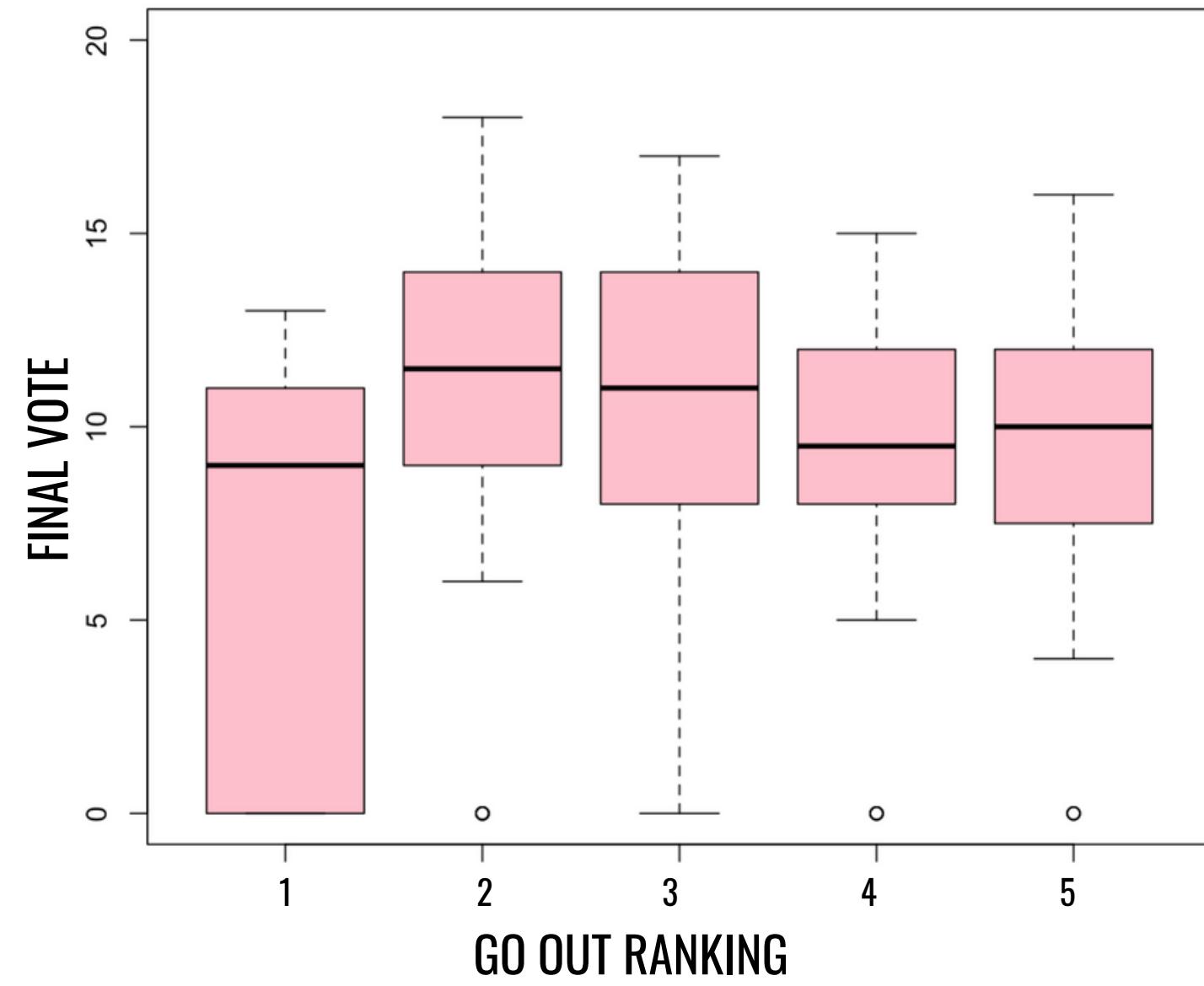
G3 score vs Ranking of going out with friends: not in relationships



GO_OUT_NO
1
2
3
4
5

FINAL VOTE
11.4375
11.5075
11.3678
10.1
9.12121

G3 score vs Ranking of going out with friends: in relationships



GO_OUT_YES	FINAL VOTE
1	6.28571
2	10.6111
3	10.1395
4	8.61538
5	8.9

SCHOOL ASPECTS

The variables describe the school aspects, it contains a detailed description of the individual education from the school attended to past failures, the educational context and reflects challenges and personal growth, extra-activities and educational support shows commitment and passion.



SCHOOL



FAILURES



SCHOOLSUP



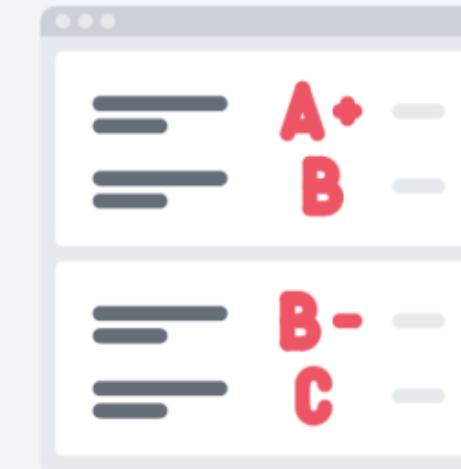
PAID



ACTIVITIES



NURSERY



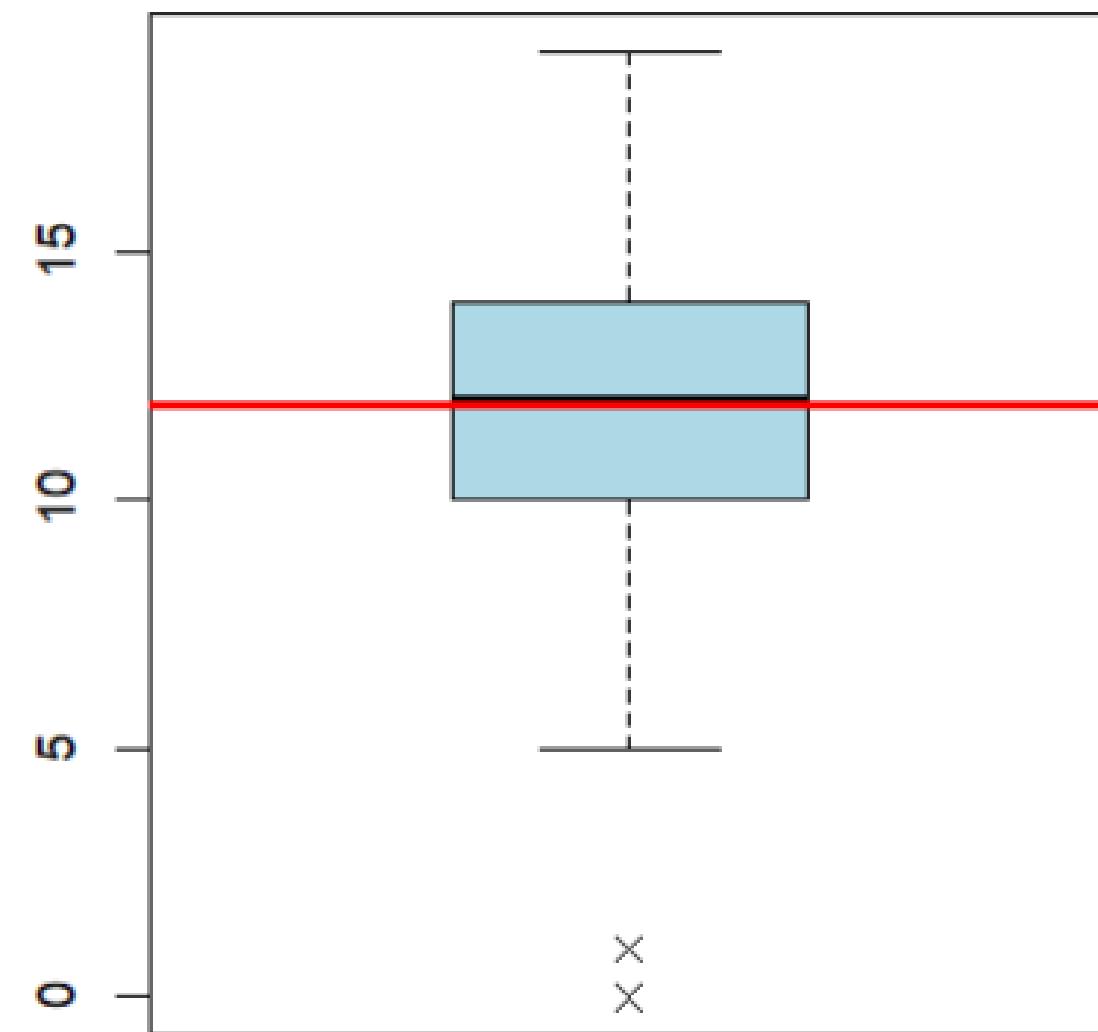
G1, G2



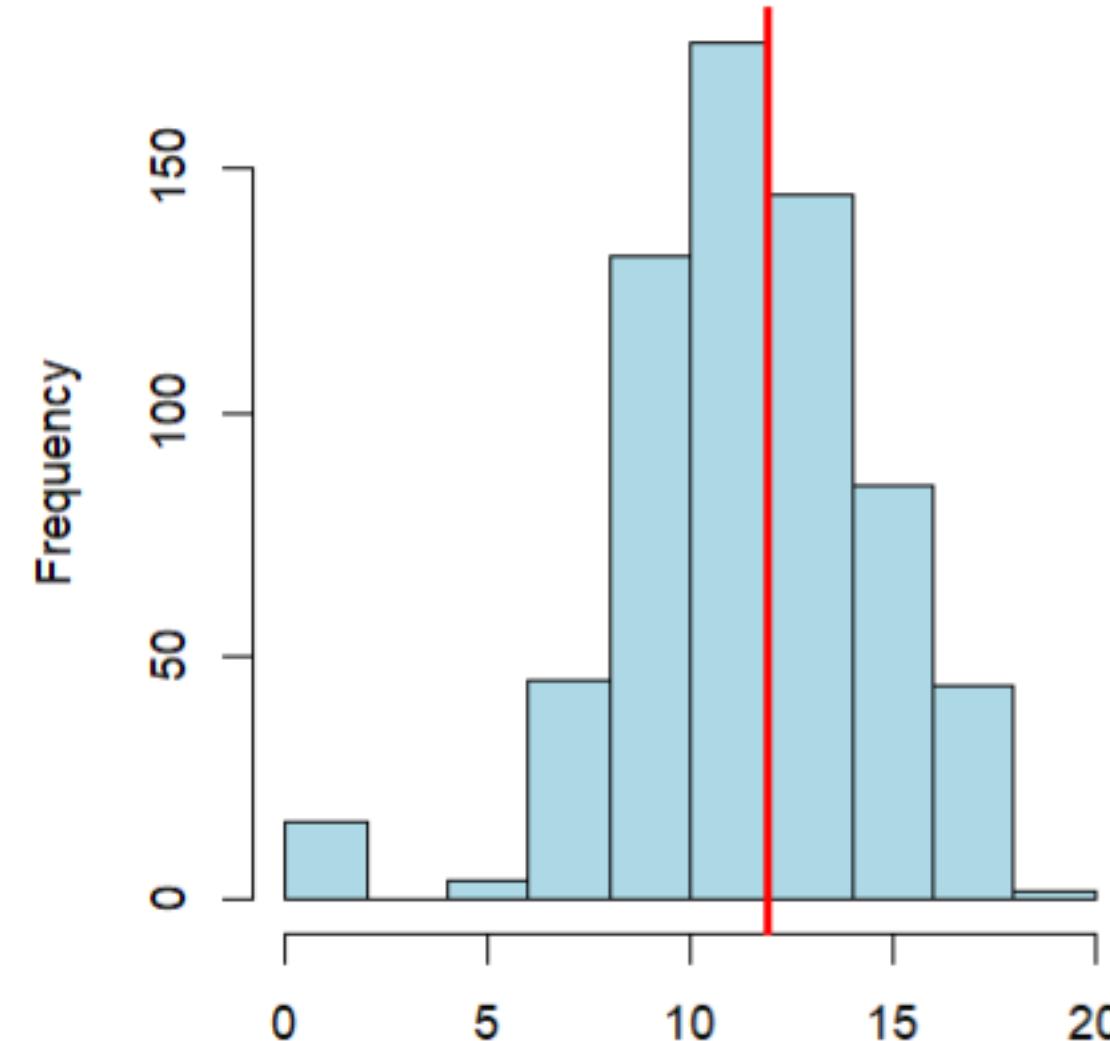
G3

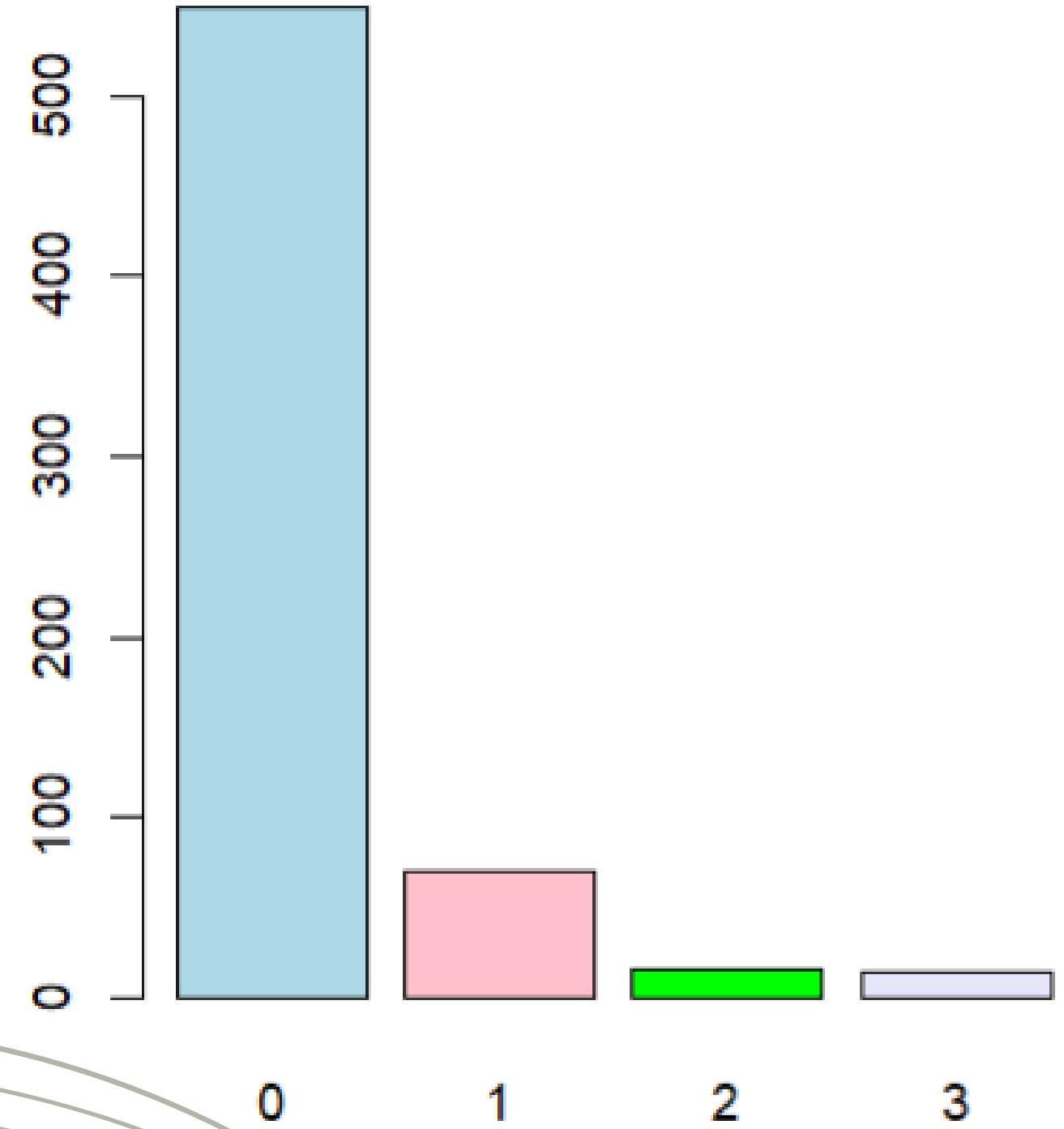
SCHOOL ASPECTS

Boxplot of score in final vote

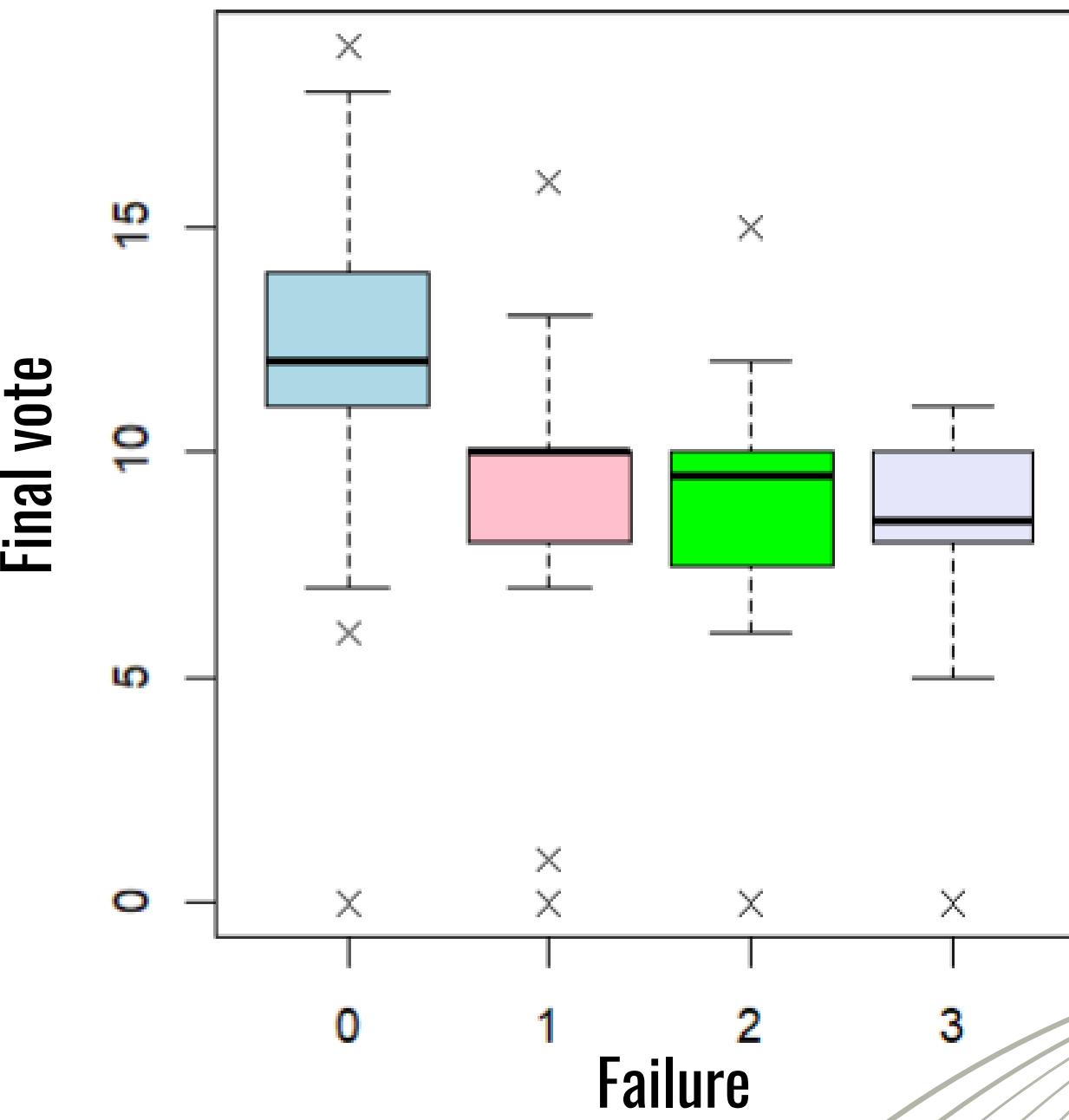


Histogram of score in final vote





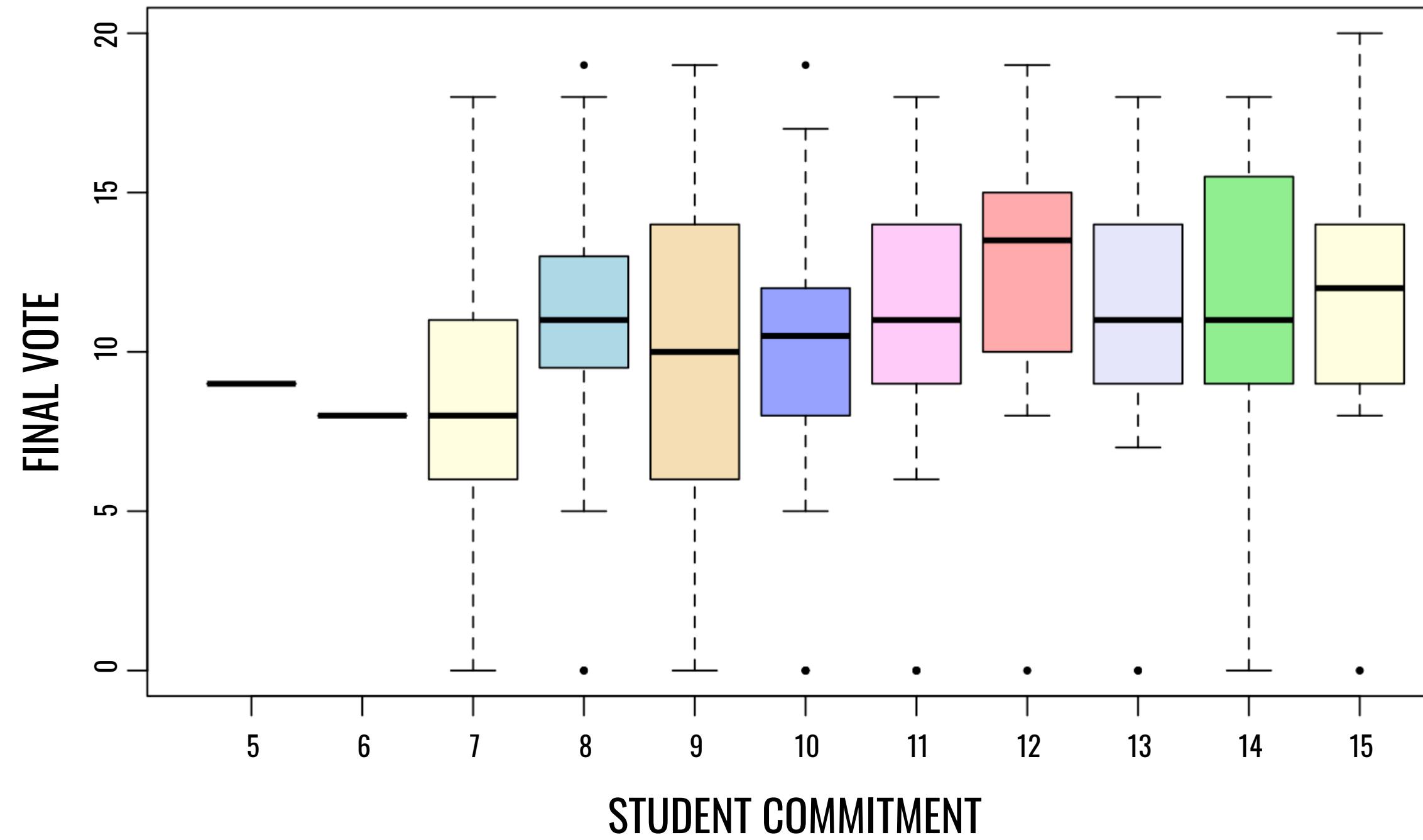
Boxplot of score in final vote by failure



SCHOOL ASPECTS

STUDENT COMMITMENT

The student commitment variable is the dedication that the student invests in their academic career and combines factors such as study time and extracurricular activities.



MODEL

FINAL VOTE = 5.46 + 0.46 FAMILY_EDU + 0.24 STUDENT_COMMITMENT

	ESTIMATE	STD.ERROR	T VALUE	P VALUE
INTERCEPT	5.4622	1.3399	4.077	<0.05
FAMILY_EDU	0.4609	0.1148	4.014	<0.05
STUDENT_COMMITMENT	0.2421	0.1169	2.071	0.039

SUGGESTIONS

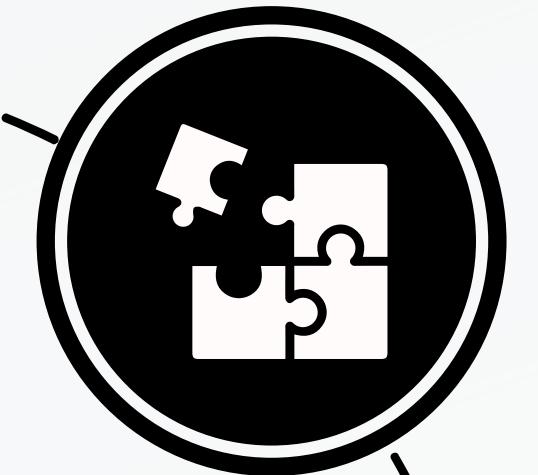
Family suggestion

Strong parental involvement fosters a conducive learning environment, where parental education and occupation act as cornerstones for educational aspirations.



School suggestion

Incorporating tutoring and extracurricular activities, whether paid or unpaid, significantly enhances students' academic performance. Strategically increasing these opportunities can yield substantial improvements in student outcomes.



**THANKS FOR
WATCHING**

