Multivariate statistics: Assignment 1

Team B: **Kendall Brown** *stnumber* **Raïsa Carmen** *s0204278*
Stefan Velev *stnumber* **Adhithya Unni Narayanan** *stnumber*
Audrey-Justine Towo Kamga *stnumber*

Abstract

1 Introduction and data exploration

This report assesses hearing thresholds for a sample of 546 healthy male volunteers. The subjects were 52 years old on average at the start of the study and are followed for an average of 7.57 years. The hearing threshold is measured, on average, every 1.59 years. Table 1 describes the demographics in more detail. Normally, each ear is measured at each visit but this only happened in 93.22% of all visits. The left (right) ear was tested in 96.72% (96.5%) of all visits.

Figure 1 shows the trends in the hearing threshold for all volunteers over time.

Describe the data, and use graphical techniques to explore the mean structure, the variance structure and the correlation structure. Summarize your conclusions. What are the implications with respect to statistical modeling ?

Table 1: Demographics for all respondents

Age at the beginning of the study	
min	17.20
max	87.00
median	54.10
mean (sd)	51.99 $\pm$ 18.70
Years of follow-up	
min	0.00
max	22.40
median	6.30
mean (sd)	7.57 $\pm$ 6.30
Number of visits	
min	1
max	15
median	3.00
mean (sd)	4.19 $\pm$ 2.88

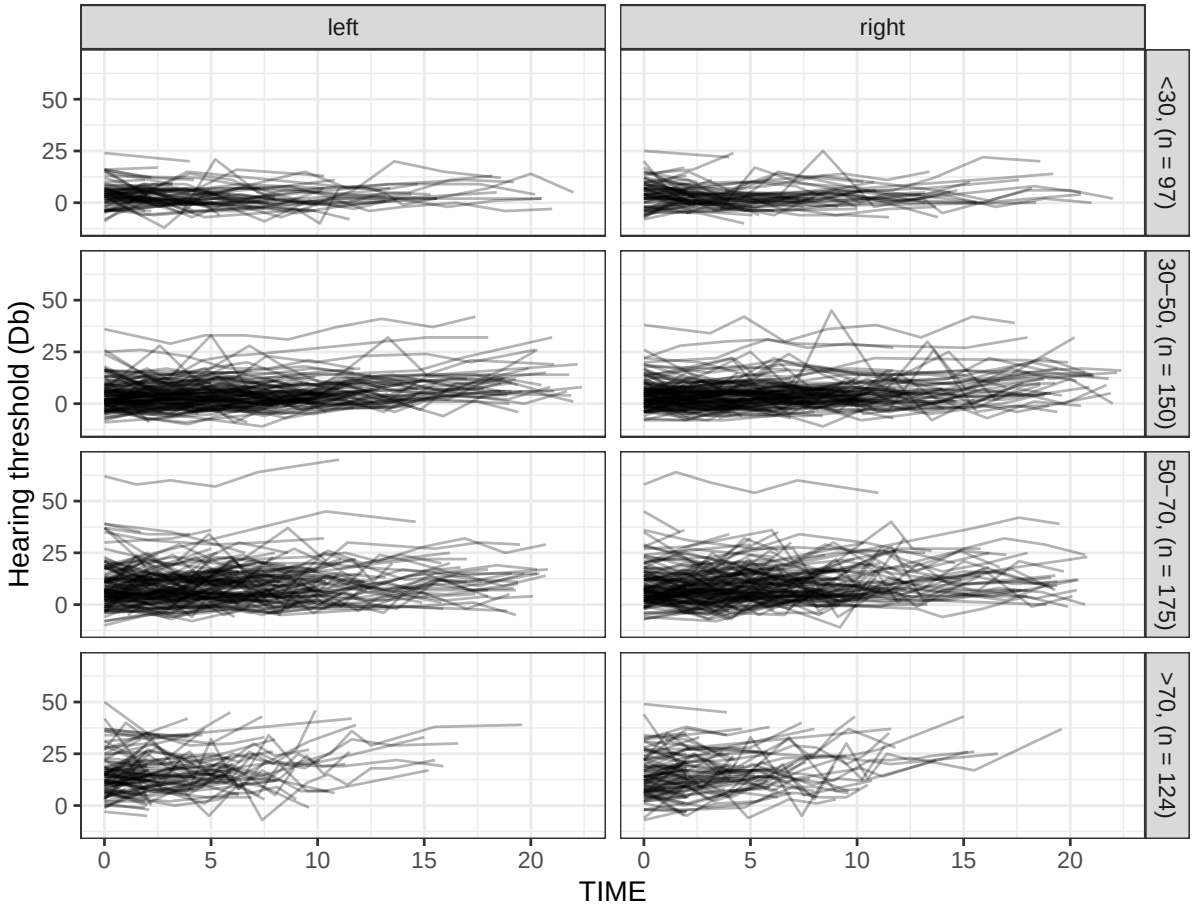

Figure 1: Hearing threshold over time, divided by left and right ear and by age group at the start of the study

2 Methodology

All analysis was carried out with the statistical software R. All scripts are freely available at this git repository.

3 Results

4 Discussion and conclusion

4.1 further research

5 Bibliography