Longitudinal Data Analysis
Q1 - 2022

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Lesson 1 (9 September)

Effects:
- fixed
- random

Rules:
- When all possible factor levels for the factor are included (e.g. male/female) -> fixed
- When the included levels of a factor are a random draw of levels -> random
- When interest is in quantifying the mean differences between factor levels (e.g. drug comparison/contrast) -> fixed
- When the interest is in quantifying the variability between factor levels (variance components) -> random

Questions on fixed and random effects

- In a clinical trial on blood pressure reduction (hypertension treatment) the factor treatment is considered?
  - A. Fixed
  - B. Random
- In a clinical trial with longitudinal data, the factor individuals is considered?
  - A. Fixed
  - B. Random
- In a clinical trial with patients from different hospitals, the factor hospital is considered?
  - A. Fixed
  - B. Random

- **Crossed factors** (e.g. identical treatments in different hospitals)
- **Interaction effect** (e.g. treatments depend on the single hospital)

- **Nested factors**: (e.g. children are nested within schools). Here, there are no interactions. It is about the connection between 2 or more factors, not interactions or effects between them.

Goals of ANOVA:

- partition the total variability data (including a part for the variability that is unexplained by the factors (the so-called “residual”)) into a single structure (with interactions, ...) with the aim of understanding the effects of those interactions.

T-Test: semplification of the ANOVA model.