Scoping Review Protocol: Statistical Models for Longitudinal Data

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Table of contents

1 Background

Longitudinal studies are frequently used in the health sciences (biomedical research, epidemiology, public health, among others) as they allow to examine how the temporal effect of a treatment or intervention. Despite their benefits, longitudinal studies present challenges with regard to data missingness, increased financial costs, and the different statistical methodologies that can be used to analyze them[1,2].

However, there analysis of longitudinal data can be complex as study design, missing data, and are factors that need to be considered in order to use a statistical analysis that is congruent with the experimental design and the limitations from the data itself.

2 field

good number to start between 5-10k

rationales for the methods used

how many papers use each method, or improved method

software, why people use what they use

reasons for why people use the same methods

3 Objective

This study aims to report the different statistical models used in the health sciences to analyze longitudinal data, in order to present anunderstand the rationale for the choices used by the majority of researchers. In this way, the use of such models can be contextualized and the implications of such choices can be analyzed.

checking how many people check for model assumptions and how this impacts the results they report

4 Review Question

5 Databases

6 Search Terms

7 Criteria

7.1 Inclusion Criteria

- methods paper see new methods developed
- application

7.2 Exclusion Criteria

7.3 Additional Resources

7.4 Comparison (?)

8 Data Extraction

8.1 Data Synthesis Strategy

8.2 References

1. Caruana EJ, Roman M, Hernández-Sánchez J, Solli P. Longitudinal studies. *Journal of Thoracic Disease*. 2015;7(11):E537-40.
2. Mundo AI, Tipton JR, Muldoon TJ. Generalized additive models to analyze nonlinear trends in biomedical longitudinal data using r: Beyond repeated measures ANOVA and linear mixed models. *Statistics in Medicine*. Published online July 2022.