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Title: Design of Accelerated Longitudinal Studies

Abstract: Longitudinal studies are often used to investigate age-related developmental change, and these studies can be characterised by the distribution of recruitment ages. A single cohort design takes a group of individuals at the same initial age and follows them over time. An unstructured multiple cohort design takes all eligible individuals from the recruitment source, leading to a spread of different baseline ages in the study group. An accelerated longitudinal design (ALD) is a more structured multiple cohort design that takes multiple single cohorts, each one starting at a different age.

The main advantage of an ALD is its ability to span the age range of interest in a shorter period of time than would be possible with a single cohort longitudinal design. An additional advantage of a shorter study is that it should be less affected by dropout. One potential disadvantage of an ALD is the possible existence of a cohort effect, that is, a systematic difference between people born at different times.

Design of an accelerated longitudinal study requires consideration of a number of parameters. Specific to this type of study are the number of cohorts and the extent of overlap between cohorts, whereas common to any longitudinal study, the frequency and timing of measurements also needs to be set. Varying these parameters may produce a large collection of candidate designs, so the question of how to choose the best design arises. In addition, there may be constraints on the study with respect to duration, number of participants, number of measurements, or costs.

This talk will consider criteria for choosing amongst designs, and evaluate the effect of varying design parameters against these criteria.