

# Generalized definition of the statistical population design

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## ABSTRACT

Our work was stimulated by the paper of Mentré et al (Biometrika, 1997) which introduces the definition of a population statistical design for a population of individuals consisting of several groups. In their definition each individual within a group follows the same design, the number of observations to be taken for the individual in a given group is fixed but is different for individuals in different groups.

We also have all individuals within one group following the same design. However, we generalize their definition by allowing the individual designs to have the same number of design support points as well as the same number of observations as those in other groups. Of course, the designs for the different groups must be distinct. This relaxation leads to non-unique solutions for optimum designs for parameter estimation. This non-uniqueness has the advantage that it gives room for tailoring optimum designs to various practical situations, making it sensible to use some additional information an experimenter may have.

We show, using a one-compartment PK model as an example, how we can obtain various optimum population designs when different kinds of initial information are available or various constraints on the form of design are imposed.