Multi-tiered experiments
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Experiments that involve multiple randomizations [Brien and Bailey (2006) Multiple randomizations (with discussion). Journal of the Royal Statistical Society, Series B, 68, 571-609.] are termed multitiered. Two-phase, and multiphase, experiments are an important group of multitiered experiments that are widely applicable, including to agriculture, food processing, industrial, medical and microarray experiments. Also, some grazing, plant, superimposed, human interaction and multistage reprocessing experiments are multitiered.

At the outset the difference between multitiered designs and standard textbook designs, almost all of which are two-tiered, will be discussed. An overview will be provided of the use of the different types of multiple randomizations in designs for multitiered experiments and of the evaluation of the properties of such designs, principally the confounding entailed. The concepts and methods required to do this will be introduced in the simpler and more familiar context of standard textbook designs. Techniques for analysing the results of multitiered experiments will be suggested. A wide range of examples of multitiered experiments will be presented.