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Balanced incomplete blocks versus optimal planes. (Blocs incomplets équilibrés versus plans optimaux.) (French. English summary) [Zbl 1441.62203](#)

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Summary: In the organization of an experimental design, if the number of studied treatments is greater than the size of a block, the experimenter classically use a balanced incomplete block design (B.I.B.). When the latter does not exist for the studied configuration number of blocks/number of treatments/number of treatments per block, the experimenter may prefer to use a B.I.B. which configuration is close to the studied one, in order to profit from the remarkable properties of such designs. By doing this, he gives up potentially available data. On the other hand, the experimenter may wish to build the design by strictly respecting the studied configuration, in order to take into account of all the potentially available data, even if it means to degrade to balance of the design. These two approaches are first compared on the basis of two examples where the design to be built can be obtained in a simple way by enlarging a B.I.B. The presented examples show that it is preferable, from an efficiency point of view, to respect the initial configuration, rather than to use a B.I.B. For more complex configurations, the designs can be built using an algorithm for the construction of optimal designs. Simulations obtained for a large number of configurations show that, even if they do not offer the remarkable balance of a B.I.B., optimal designs always have an efficiency comparable to that of these reference designs.

MSC:

[62K10](#) Statistical block designs

Keywords:

[balanced incomplete block design](#); [optimal design](#); [efficiency](#)

Software:

[SAS](#)

Full Text: [Link](#)

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