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Minimax D-optimal designs for the logistic model. (English) Zbl 1060.62545
Biometrics 56, No. 4, 1263-1267 (2000).

Summary: We propose an algorithm for constructing minimax D-optimal designs for the logistic model when only the ranges of the values for both parameters are assumed known. Properties of these designs are studied and compared with optimal Bayesian designs and *R. R. Sitter's* [*Biometrics*, 48, 1145–1155 (1992)] minimax D-optimal kk -designs. Examples of minimax D-optimal designs are presented for the logistic and power logistic models, including a dose-response design for rheumatoid arthritis patients.

MSC:

62K05 Optimal statistical designs

62P10 Applications of statistics to biology and medical sciences; meta analysis

Cited in **23** Documents

Keywords:

approximate designs; computer algorithm; D-optimality; efficiency; information matrix; power logistic model

Full Text: [DOI](#)

References:

- [1] Brown, Planning a quantal assay of potency, *Biometrics* 22 pp 322– (1966) · [doi:10.2307/2528522](#)
- [2] Burges, Microbial Control of Insects and Mites pp 591– (1971)
- [3] Chaloner, Optimal Bayesian design applied to logistic regression experiments, *Journal of Statistical Planning and Inference* 21 pp 191– (1989) · [Zbl 0666.62073](#) · [doi:10.1016/0378-3758\(89\)90004-9](#)
- [4] Chernoff, Locally optimal designs for estimating parameters, *Annals of Mathematical Statistics* 24 pp 586– (1953) · [Zbl 0053.10504](#) · [doi:10.1214/aoms/1177728915](#)
- [5] Fedorov, Convex design theory, *Mathematische Operationsforschung und Statistik* 11 pp 403– (1980) · [Zbl 0471.62075](#)
- [6] Gaudard, Efficient designs for estimation in the power logistic quantal response model, *Statistica Sinica* 3 pp 233– (1993) · [Zbl 0823.62087](#)
- [7] Heise, Optimal designs for bivariate logistic regression, *Biometrics* 52 pp 613– (1996) · [Zbl 0925.62328](#) · [doi:10.2307/2532900](#)
- [8] King, J. 1996 Minimax optimal designs Ph.D. dissertation School of Public Health, Department of Biostatistics, University of California
- [9] Minkin, Likelihood-based experimental design for estimation of ED50, *Biometrics* 55 pp 1030– (1999) · [Zbl 1059.62679](#) · [doi:10.1111/j.0006-341X.1999.01030.x](#)
- [10] Silvey, Optimal Design (1980) · [doi:10.1007/978-94-009-5912-5](#)
- [11] Sitter, Robust designs for binary data, *Biometrics* 48 pp 1145– (1992) · [Zbl 0760.62013](#) · [doi:10.2307/2532705](#)
- [12] Strijbosch, Limiting dilution assays: Experimental design and statistical analysis, *Journal of Immunological Methods* 97 pp 133– (1987) · [doi:10.1016/0022-1759\(87\)90115-3](#)
- [13] Wong, A unified approach to the construction of minimax designs, *Biometrika* 79 pp 611– (1992) · [Zbl 0762.62019](#) · [doi:10.1093/biomet/79.3.611](#)
- [14] Zeng, Dual objective Bayesian optimal designs for a dose-ranging study using ACR responder index, *Drug Information Journal* 34 pp 421– (2000)

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