

Discussiones Mathematicae
Probability and Statistics 29 (2009) 69-90
doi:10.7151/dmps.1108

STATISTICAL ANALYSIS OF DIABETES MELLITUS

HILMAR DRYGAS

Universität Kassel
Fachbereich 17 Mathematik/Informatik
Heinrich-Plett-Straße 40, D-34132 Kassel
e-mail: drygas@mathematik.uni-kassel.de

Abstract

This paper deals with an application of regression analysis to the regulation of the blood-sugar under diabetes mellitus. Section 2 gives a description of Gram-Schmidt orthogonalization, while Section 3 discusses the difference between Gauss-Markov estimation and Least Squares Estimation. Section 4 is devoted to the statistical analysis of the blood-sugar during the night. The response change of blood-sugar is explained by three variables: time, food and physical activity ("Bewegung"). At the beginning of the section it is shown that the proposed method was very successful in 2007.

Keywords: Gram-Schmidt orthogonalization, regression model, Gauss-Markov theorem, least squares, diabetes mellitus, glucosis, antidiabetica.

2000 Mathematics Subject Classification: 62J05.

REFERENCES

- [1] H. Drygas, *The coordinate-free approach to Gauss-Markov estimation*, Lecture notes in Operations Research and Mathematical Systems, Springer-Verlag Berlin-Heidelberg-New York 1970.

- [2] H. Drygas, *QR-decomposition from the statistical point of view*, Recent Advances in Linear Models and Related Areas, Essays in Honour of Helge Toutenburg, Shalabh and Heumann (Eds) p. 293–311, Physica-Verlag, Springer, Heidelberg 2008.
- [3] L. Schmetterer, *Einführung in die Mathematische Statistik, 2. Auflage*, Springer-Verlag Wien-New York 1966.
- [4] S. Debasis and S.R. Jammalamadaka, *Linear Models, An integrated approach*, World Scientific, New Jersey-London-Singapore-Hong Kong 2003.

Received 4 May 2009
Revised 22 August 2009