Computational Statistics

Report 5 – 1st Semester 2019/2020 Deadline: 2/01/2020

The attached data consist of 14 variables on 390 subjects who were interviewed in a study to understand the prevalence of obesity, diabetes, and other cardiovascular risk factors in central Virginia for African Americans. One of the objectives of the study of these data was to investigate the relationship between the glycosolated hemoglobin and the associated set of the observed risk factors. Notice that i) glycosolated hemoglobin (outcome) > 7.0 is usually taken as a positive diagnosis of diabetes, ii) gamma or other positive variable distribution may be appropriate for the regression model, iii) if there is nothing in a cell below, that means NA (not available) observation.

Variable and description
ID: Subject Identification
CHOL: Total Cholesterol
SGLU: Stabilized Glucose
HDL: High Density Lipoprotein
GHB: Glycosolated Hemoglobin LOCATION
AGE (years)
GENDER
HHT: height (inches)
WHT: weight (pounds)
FRAME
SBP: First Systolic Blood Pressure
DSP: First Diastolic Blood Pressure
W: waist (inches)
H: hip (inches)

Perform a thorough Bayesian statistical analysis of the data, using MCMC methods, in particular select a suitable generalized linear model and interpret the associated results concerning the objectives of the underlying study.

Data file: Trabalho5_EC.txt

References: Schorling JB, Roach J, Siegel M, Baturka N, Hunt DE, Guterbock TM, Stewart HL (1997). A trial of church-based smoking cessation interventions for rural African Americans. Preventive Medicine, 26, 92-101. Willems JP, Saunders JT, DE Hunt, JB Schorling (1997). Prevalence of coronary heart disease risk factors among rural blacks: A community-based study. Southern Medical Journal, 90, 814-820.