Estimation of Nonparametric Binary Logistic Regression Model with Local Likelihood Logit Estimation Method (Case Study of Diabetes Mellitus Patients at Surabaya Hajj General Hospital)

Publons ID	40012974
Wos ID	WOS:000598439000032
Doi	10.1063/5.0025807
Title	Estimation of Nonparametric Binary Logistic Regression Model with Local Likelihood Logit Estimation Method (Case Study of Diabetes Mellitus Patients at Surabaya Hajj General Hospital)
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Publish Date	2020
Journal Name	SYMPOSIUM ON BIOMATHEMATICS 2019 (SYMOMATH 2019)
Citation	1
Abstract	The nonparametric binary logistic model assumes that the logit function is a linear function in the parameter, where the parameter depends on arbitrary fixed point. This study discusses the estimation of a nonparametric binary logistic regression model using the local likelihood logit estimation method. This method assumes that the log likelihood logit function depends on the multivariate kernel weighting. The parameter estimation of a nonparametric binary logistic regression model is obtained by maximizing the log likelihood logit function. The parameter estimation result are implicit, so to estimate it started with determining the optimal bandwidth value based on the maximum Cross Validation value. Furthermore, the optimal bandwidth value is used to estimate parameters using the multivariate Newton-Raphson algorithm until converging iterations are obtained. The parameter estimation process is done by creating a program in OSS-R software. This study also discusses the application of parametric and nonparametric binary logistic regression models in the case study of Type II Diabetes Mellitus patients at the Surabaya Hajj General Hospital. The modeling results show that the classification accuracy value of the parametric and nonparametric binary logistic regression models is 80.2% and 100% for the cut of value of 0.5.
Publish Type	Book in series
Publish Year	2020
Page Begin	(not set)
Page End	(not set)
Issn	0094-243X
Eissn	
Url	https://www.webofscience.com/wos/woscc/full-record/WOS:000598439000032
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