

**COMPARISON OF SIMULTANEOUSLY NONPARAMETRIC REGRESSION BASED ON SPLINE AND FOURIER SERIES ESTIMATOR RELATED SOCIAL AID DISTRIBUTION IN INDONESIA**

<b>Publons ID</b>	(not set)
<b>Wos ID</b>	WOS:001203489900022
<b>Doi</b>	10.28919/cmbn/7545
<b>Title</b>	COMPARISON OF SIMULTANEOUSLY NONPARAMETRIC REGRESSION BASED ON SPLINE AND FOURIER SERIES ESTIMATOR RELATED SOCIAL AID DISTRIBUTION IN INDONESIA
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<b>Publish Date</b>	2022
<b>Journal Name</b>	COMMUNICATIONS IN MATHEMATICAL BIOLOGY AND NEUROSCIENCE
<b>Citation</b>	
<b>Abstract</b>	<p>Several estimators in the nonparametric regression approach that are often used are the Spline estimator and the Fourier series. Both estimators have high flexibility and can adapt to the local nature of the data effectively. This study applies these two methods to compare the best performance of the formed model. The data used in this study are multi-response data in the form of types of government assistance and multi-predictor data in the form of factors that are thought to affect the distribution of aid receipts in the community. This research is important to optimize the distribution of welfare assistance in Indonesia, especially during the Coronavirus Disease-19 (Covid-19) pandemic. By using the Generalized Cross-Validation (GCV) criteria for the parsimony model, the estimator chosen to predict the distribution of welfare assistance in Indonesia is the Fourier series estimator with cosine and sine bases. The goodness of the nonparametric regression model with the Fourier series estimator can be seen from the minimum GCV value generated with one oscillation parameter, which is 1.483961, with a Mean Square Error (MSE) of 2.1257374, and R-2 of 0.923143. The prediction results are expected to be the government's recommendation for the restoration of community welfare through equitable distribution of aid to support the achievement of the Sustainable Development Goals (SDGs).</p>
<b>Publish Type</b>	Journal
<b>Publish Year</b>	2022
<b>Page Begin</b>	(not set)
<b>Page End</b>	(not set)
<b>Issn</b>	2052-2541
<b>Eissn</b>	
<b>Url</b>	<a href="https://www.webofscience.com/wos/woscc/full-record/WOS:001203489900022">https://www.webofscience.com/wos/woscc/full-record/WOS:001203489900022</a>
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