Analysis of regression is a method that could be used to explain the influence of some predictor variables into the response. Parametric regression analysis was the most popular method, but in its application, it requires some assumption that often to be unfulfilled. Those cases occur when the connection between the predictor and the response is unknown, from which the shape of regression curve didn’t follow any pattern. It was then suggested to use nonparametric method. But when only some of the pattern is known, one could use the mix of those two methods, called semiparametric regression. Spline is one of the most desirable nonparametric regression models to use, because it could give a good special statistical and visual interpretation. Spline could also handle smooth data and function, or whom which have fluctuated behavior in some particular sub intervals. This paper aims to build the model percentage of grains consumption expenditure in Central Java Province, using semiparametric spline regression. Best models are chosen based on which, who has the minimum GCV score of its knots points. The result shows that there were 3 variables significantly influencing percentage of grains consumption expenditure in Central Java Province, namely; monthly revenue per capita, percentage of vegetables consumption expenditure and percentage of tubers consumption expenditure. There is 88.03 percent of grain consumption expenditure variability explained by the models, with MSE score of 1.911.

**Keyword:** GCV, Grains Consumption, knot, semiparametric regression, spline
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