*Abstract*—This paper discusses the use of K-Means clustering method in finding an estimate of the velocity-density function in the traffic flow model. Two clusters will be obtained using K- Means clustering process, which are jammed and light cluster. These two clusters will have different velocity-density func- tions based on clustering result. Here, velocity-density function is obtained from linear regression of each data cluster. For measuring the velocity-density function, then this paper will provide the value of RMSE and R-Squared. The results show that RMSE is 2.3396 and R-squared is 0.3591 when no cluster is implemented in numerical simulation. Meanwhile, for the light cluster, the RMSE is found 1.1795 and R-squared 0.1388. Moreover, for the jammed cluster, RMSE is 0.8723 and R-squared is 0.1357. Finally, the process of identifying traffic conditions in the numerical simulation is done by computing Euclidean distance from centroid of clusters.

*Keyword* : Simulation, clustering, RMSE, traffic, K-Means