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An Evaluation of Machine Learning Methods to Predict Ferritin from Clinical Laboratory Results and Demographics

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[Title]
HIB Capstone

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Abstract: As the amount of data generated by the clinical laboratory continues to increase, it is important to identify new methods to analyze it. Machine learning could be used as a tool to identify relationships that may otherwise get overlooked. This study expands on the work done by Luo et al. (1) to better understand classification methods that could be used to predict ferritin levels from common lab results and demographics. First, my study determines whether or not prediction accuracy is affected by a different sample group and a reduction of predictive variables than those used by Luo et al. (1). Second, multiple machine learning models are compared to determine if there is a difference between them. Logistic regression, decision tree, artificial neural network., and support vector machine learning models were created using R and R packages. Results showed that while these methods can predict abnormal ferritin levels accurately, further studies will need to be done to identify whether or not the level of accuracy is sufficient for the clinical environment.

[Abstract]