

Paper Category:	Prevention and Public Health
Paper Title: (Arial Font; 14 Pt Size)	Precision Prediction of Frailty using Six Models of Machine Learning in Kaohsiung City Cohort
Abstract Body: (Arial Font; 12Pt Size)	<ul style="list-style-type: none"> • Background • Objectives • Method • Results • Discussions and Conclusions
<p>Precision Prediction of Frailty using Six Models of Machine Learning in Kaohsiung City Cohort</p> <p>Chen-Cheng Yang¹, Cheng-Hong Yang², Chih-Hsien Wu³, Po-Hung Chen³, Hung-Yi Chuang⁴</p> <ol style="list-style-type: none"> 1. Department of Occupational and Environmental Medicine, Kaohsiung Municipal Siaogang Hospital, Kaohsiung Medical University, Kaohsiung City, Taiwan 2. Department of Information Management, Tainan University of Technology, Tainan City, Taiwan 3. Department of Electronic Engineering, National Kaohsiung University of Science and Technology, Kaohsiung City, Taiwan 4. Department of Public Health and Environmental Medicine, Kaohsiung Medical University, Kaohsiung City, Taiwan <ul style="list-style-type: none"> • Background As the population gradually tends to be middle-aged and older, frailty has become an important health issue. • Objectives The purpose of this study is to use six machine learning (ML) models to accurately predict the frailty status by two frailty assessment models, the Fatigue, Resistance, Ambulation, Illness and Loss of Weight Index, and the Study of Osteoporotic Fracture (SOF) Index in Kaohsiung City Cohort. • Method Kaohsiung Medical University and Kaohsiung Municipal Siaogang Hospital have established a frailty assessment integrated database and data collection platform. Frailty assessment questionnaire data from 2020 to 2022, totally 684 participants in Kaohsiung City Cohort, including basic demographic information, living habits, disease history, medication, education level, religion belief, living environment, FRAIL index, as well as SOF index. • Results Compared with other five ML models (K Nearest Neighbor (KNN), Naive Bayes (NB), Random Forest (RF), Gradient Boosting Decision Tree (GBDT), Extreme Gradient Boosting (XGBoost)), CatBoost model obtained the lowest error in predicting FRIAL index and SOF index, with an average AUC of 0.68. • Discussions and Conclusions Constructing an accurate frailty assessment prediction model can provide government and long-term care institutions with frailty assessment formulation. 	

If there are early prediction measures for frail in elder, there is an opportunity to improve the frailty situation, prevent or delay the occurrence of diseases such as disability or sarcopenia, and plan to improve the quality of health care for elderly people in the future.

Date of Submission: July 27, 2023

Total number of words: 234

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