The data for this study was directly extracted using the Yahoo Finance library through the `quantmod` package, ensuring access to accurate and up-to-date information on the DOW Jones Industrial Average (DJI). To facilitate the simplicity of the analysis, we transformed the raw data into a tsibble, and address the missing values to maintain data integrity. Also, we ensure that the data is stationary in the time series for requisite of some methods we used for reliable analysis.

The initial phase of modeling involved the implementation of a benchmark model, which included naive, mean, and drift methods. We used this model as our base and following this model, we used ARIMA and Neural networks models to explore more on the dataset.

When the ARIMA model was applied, with an initial identification of ARIMA(0,1,0) as the best fit. To ensure the robustness of this choice, we did an exploration of alternative ARIMA configurations and came to a conclusion that ARIMA(0,1,0) is the best fit ARIMA model. Since the best fit ARIMA model has no average moving or mean average components we did not use this method for further investigation.

Next, we studied Neural Network (NN) model to capture intricate relationships within the DJI data. We analyzed the residuals of the NN model to confirm their adherence to white noise and a normal distribution, validating the model's appropriateness for the dataset.

Furthermore, we used accuracy metrics to compare these forecasting models based on the Root Mean Squared Error (RMSE). Notably, the MEAN model exhibited the smallest RMSE among the considered methods. Additionally, we used all the methods for forecasting to visualize for any reduced uncertainty or any unusual patterns, to compare with the MEAN model. However, the forecasting phase revealed that, despite its lower RMSE, the NAIVE model demonstrated a more favorable predictive pattern with reduced uncertainty compared to the MEAN model.

Ultimately, based on a comprehensive evaluation, the NAIVE model emerged as the most suitable and accurate method for forecasting DOW Jones Industrial Average movements, outperforming other models in the study.