

Model Development Phase Template

Date	21 JUNE 2025
Team ID	SWTID1749896042
Project Title	Unemployed Insurance Beneficiary Forecasting
Maximum Marks	6 Marks

Model Selection Report

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

NOTE-

We have displayed accuracy only for the Prophet model because it provided the best performance among all tested models based on evaluation metrics (MAE, RMSE, R^2). Highlighting its accuracy emphasizes its effectiveness for forecasting unemployment insurance beneficiaries in this project.

Model	Description	Hyperparameters	Performance Metric (e.g., Accuracy, F1 Score)
ARIMA	Captures trends and autocorrelation in beneficiary counts; suitable for short-term forecasting of non-seasonal patterns.	-	Accuracy score = NA
SARIMA	Enhances ARIMA with seasonal components; effective in modeling monthly seasonality in unemployment claims.	-	Accuracy score = NA
AutoReg	Predicts future beneficiary counts using past values; simple and fast for identifying short-term dependencies.	-	Accuracy score = NA
VAR	Models interactions between beneficiaries and benefit amounts; captures multivariate dynamics for policy impact analysis.	-	Accuracy score = NA
Prophet	Facebook's model for forecasting trends and seasonal changes; excels at capturing yearly fluctuations in beneficiary data with minimal tuning.	-	Accuracy score = 95%