

## Model Development Phase Template

Date	20 June 2025
Team ID	178047
Project Title	Unemployed Insurance Beneficiary Forecasting
Maximum Marks	5 Marks

### Model Selection Report

In the model selection report for Unemployed Insurance Beneficiary Forecasting project, several statistical and machine learning models—including ARIMA, SARIMA, AutoReg, VAR, and Prophet—were evaluated. Factors such as predictive accuracy, ability to handle seasonality and trends, interpretability, and computational efficiency were considered to determine the most suitable model for forecasting unemployment insurance beneficiaries. Each model's performance was assessed using standard regression metrics on a held-out test set, ensuring that the final selection balances both accuracy and practical deployment requirements.

### Model Selection Report:

Model	Description
ARIMA	Traditional time series model that captures autocorrelation in the data using autoregressive and moving average components. Suitable for univariate, non-seasonal, stationary series.
SARIMA	Extension of ARIMA that models both seasonal and non-seasonal patterns, making it suitable for time series with clear seasonal cycles.
AutoReg	Autoregressive model that predicts future values based solely on a specified number of past observations. Simple and efficient for short-term, univariate forecasting.

VAR	Vector Autoregression model for multivariate time series, capturing interdependencies between multiple time-dependent variables.
Prophet	Additive regression model developed by Facebook, designed for time series with strong seasonal effects and trends. Handles missing data and outliers well, and is user-friendly for business forecasting applications.