Nowcasting Made Available
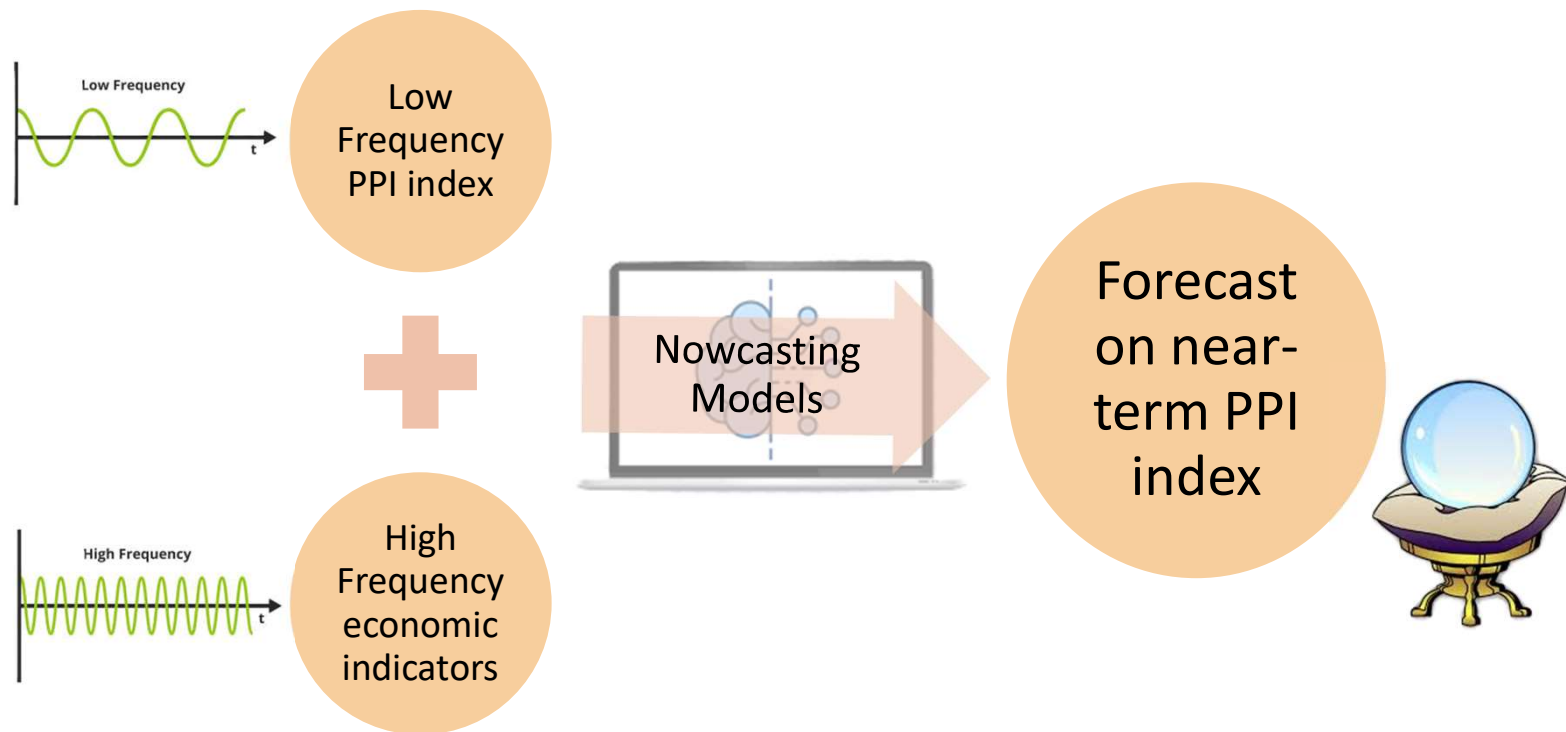## Application For Private Residential Property Price Index Nowcasting

USER GUIDE

LAST UPDATED: 31 MAR 2024

What is Nowcasting?

Low Frequency PPI index

High Frequency economic indicators

Nowcasting Models

Forecast on near-term PPI index

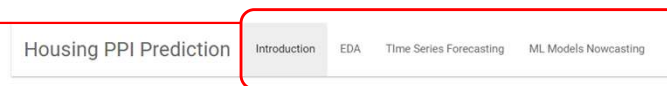# Overview

The application contains the following modules / tabs:

❖ Introduction (Landing page)

❖ EDA

❖ Time Series Forecasting

❖ ML Models Nowcasting

Each of the above modules will be elaborated in subsequent sections.

Landing Page – Introduction

This is the first screen that users will be shown with upon initialization of the application.

Use this to navigate between different modules offered by the application

Brief description of different modules offered by the application

Click this button to access the user guide

EDA – Line Trend (Line Plot)

This sub-module provides the user with the functionality to view the time series trend lines, and allows for input parameters to customise the plot *(Access by EDA > Trend > Line Trend)*

Step 1: Select frequency of time series

Step 2: Select category of time series

Step 3: Select time series variable to plot

Step 4: Select to plot either original values or differential values

Step 5: Select start and end year by using slider bar

Step 6: Select start and end quarter of time series

Output: Time series plot according to selected inputs

EDA –
Line Trend (Boxplot Trend)

This sub-module provides the user with the functionality to view the time series boxplot trend lines, and allows for input parameters to customise the plot *(Access by EDA > Trend > Boxplot Trend)*
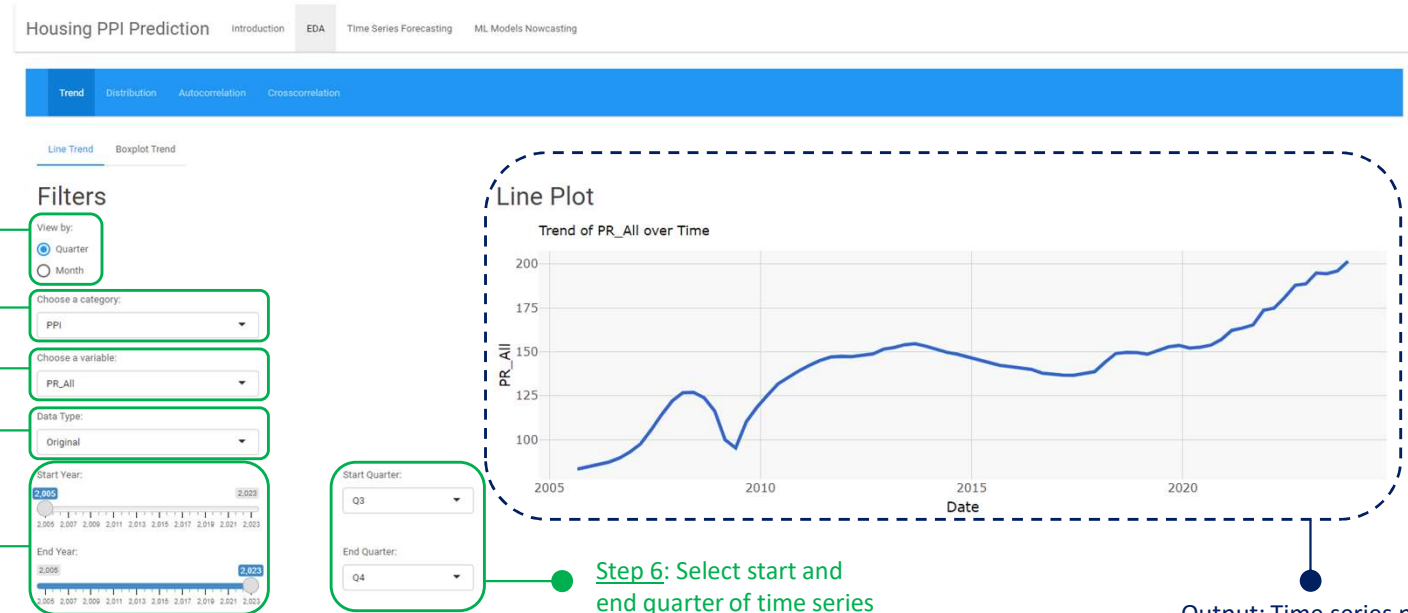

Step 1: Select frequency of time series

Step 2: Select category of time series

Step 3: Select time series variable to plot

Step 4: Select to plot either original values or differential values

Output: Time series boxplot plot according to selected inputs

EDA – Distribution

This sub-module provides the user with the functionality to view the frequency distribution of the time series variables *(Access by EDA > Distribution)*

Step 1: Select category of time series

Step 2: Select time series variable to plot

Step 3: Select start and end year by using slider bar

Output: Histogram of selected variable according to selected inputs

EDA – Autocorrelation

This sub-module provides the user with the functionality to view the autocorrelation of the time series variables
(Access by EDA > Autocorrelation)

Step 1: Select category of time series

Step 2: Select time series variable to plot

Step 3: Select either None, Log or Square Root transformation

Step 4: Select maximum lags using slider

Step 5: Select confidence level to be used

Step 6: Select differencing order

Output: ACF and PACF plots according to selected inputs

EDA – Crosscorrelation

This sub-module provides the user with the functionality to view the cross-correlation of the time series variables
(Access by EDA > Crosscorrelation)

Step 2: Select the correlation coefficient type
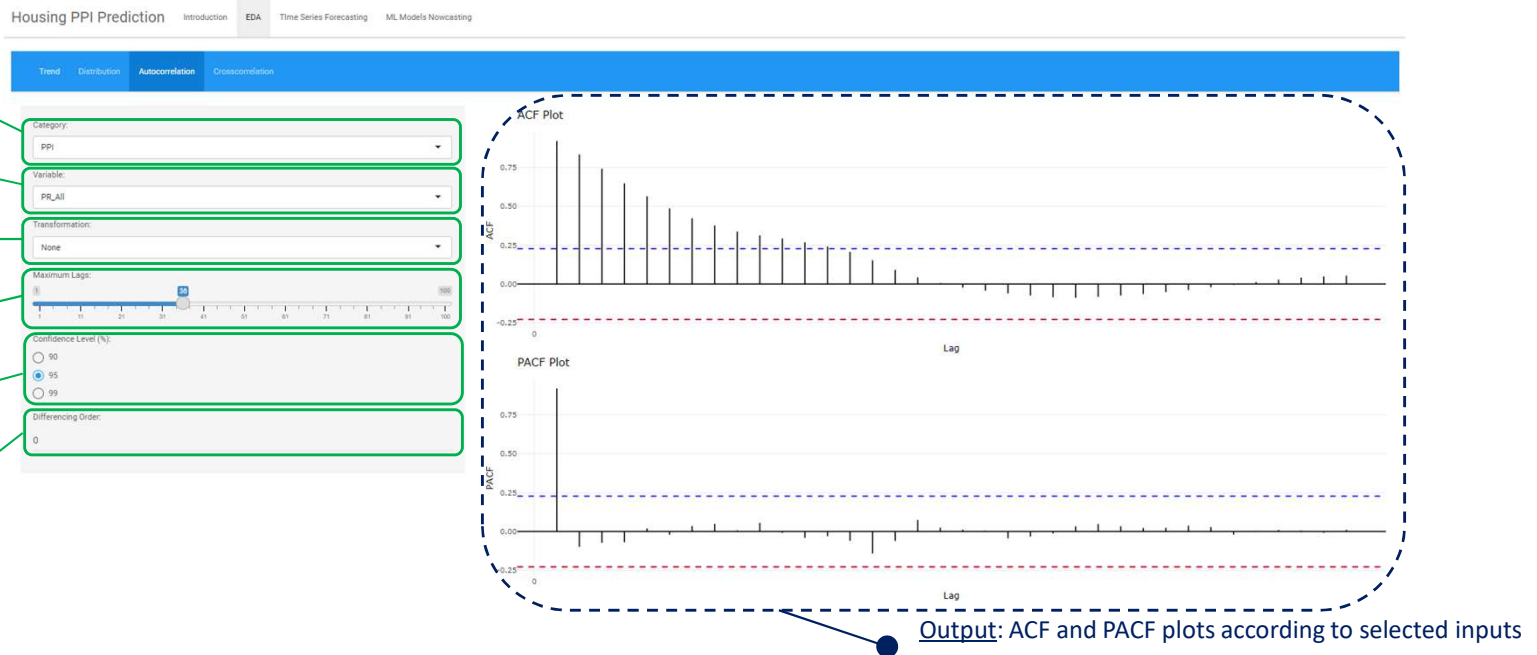
Step 3: Select either None, Log or Square Root transformation

Step 1: Select variables to include in the correlation analysis using the checkboxes

Output: Correlation matrix plot according to selected inputs
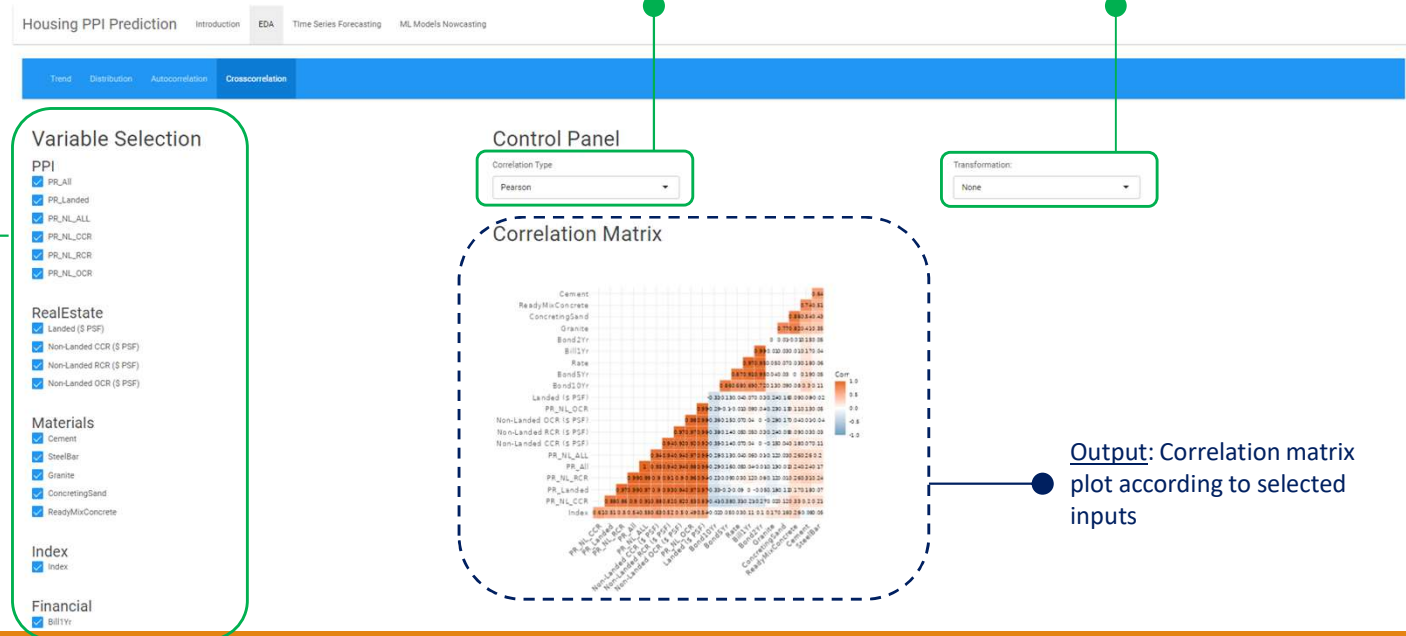
Time Series Forecasting – Multiple models

This sub-module provides the user with the functionality to perform analysis using time series forecasting models
(Access by Time Series Forecasting)

Model Selection: Select forecast model to use with selected parameters

Step 1: Select time series to forecast

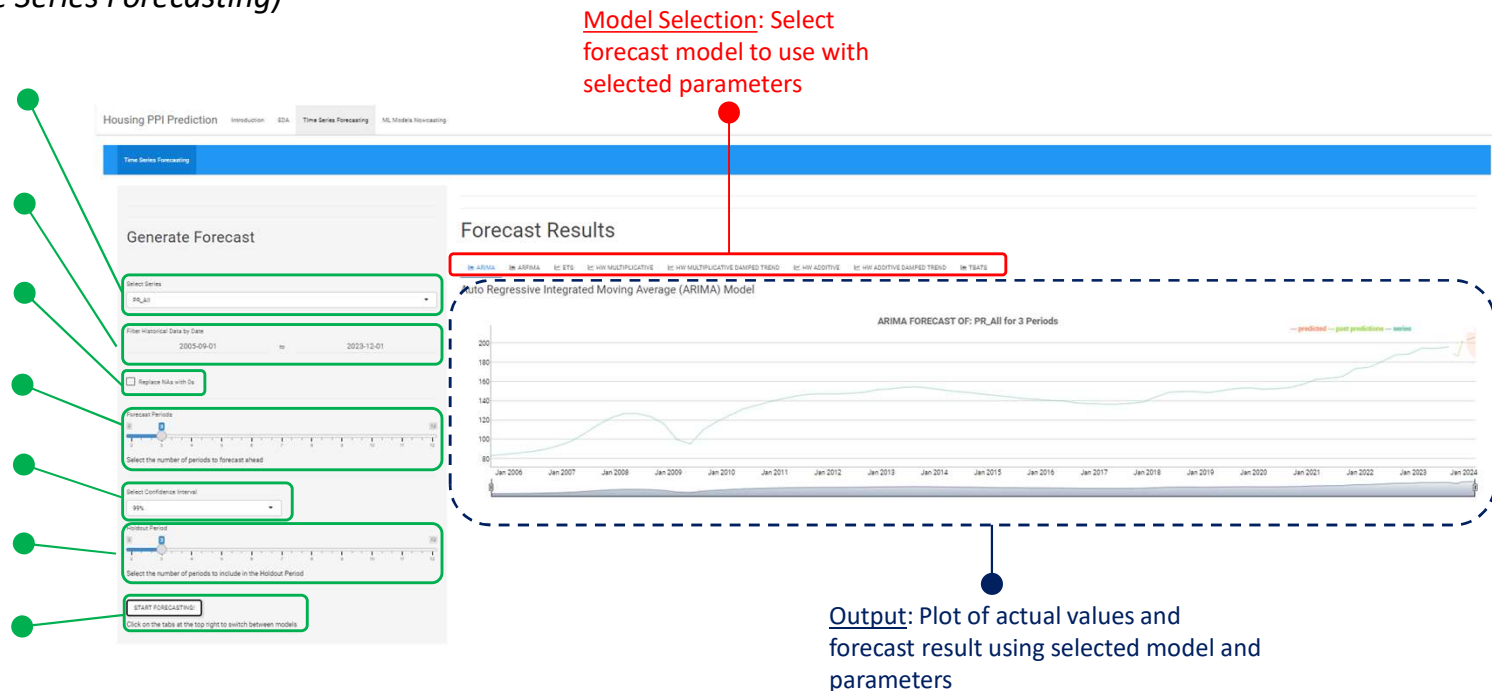**Step 2:** Filter specific time periods if needed

Step 3: Decide if replace missing values by 0

Step 4: Select number of periods to forecast using slider

Step 5: Select confidence interval

Step 6: Select holdout period using slider

Step 7: Click to start forecasring

Output: Plot of actual values and forecast result using selected model and parameters

ML Models Nowcasting – Prophet Model

This sub-module provides the user with the functionality to perform analysis using Prophet model for nowcasting
(Access by ML Models Nowcasting > Prophet Model)

Step 4: Select seasonality mode of Prophet model

Step 5: Select growth modelling mode of Prophet model

Step 1: Select the year to start nowcast from

Step 2: Select time series to nowcast

Step 3: Select variables to use in dropdown list

Output Selection: Toggle between outputs

Output: Plot of actual values and nowcast result using selected model and parameters

Step 6: Select yearly seasonality mode

Step 7: Select confidence interval using slider

Step 8: Click to start nowcasting

Output: Error values of trained model

ML Models Nowcasting – Random Forest Model

This sub-module provides the user with the functionality to perform analysis using Random Forest model for nowcasting *(Access by ML Models Nowcasting > Random Forest Model)*

Step 4: Select number of trees using slider

Step 5: Select number of variables using slider

Step 1: Select the year to start nowcast from

Step 2: Select time series to nowcast

Step 3: Select variables to use in dropdown list

Output Selection: Toggle between outputs

Output: Plot of actual values and nowcast result using selected model and parameters

Step 6: Select max size of terminal nodes using slider

Step 7: Select confidence interval using slider

Step 8: Click to start nowcasting

Output: Error values of trained model

ML Models Nowcasting –
XG Boost Model

This sub-module provides the user with the functionality to perform analysis using XG Boost model for nowcasting
(Access by ML Models Nowcasting > XG Boost Model)

Step 1: Select the year to start nowcast from

Step 2: Select time series to nowcast

Step 3: Select variables to use in dropdown list

Step 4: Select number of trees using slider

Step 5: Select learning rate using slider

Output Selection: Toggle between outputs

Output: Plot of actual values and nowcast result using selected model and parameters

Step 6: Select number of min observations using slider

Step 7: Select fraction of observations using slider

Step 8: Select number of variables for each tree using slider

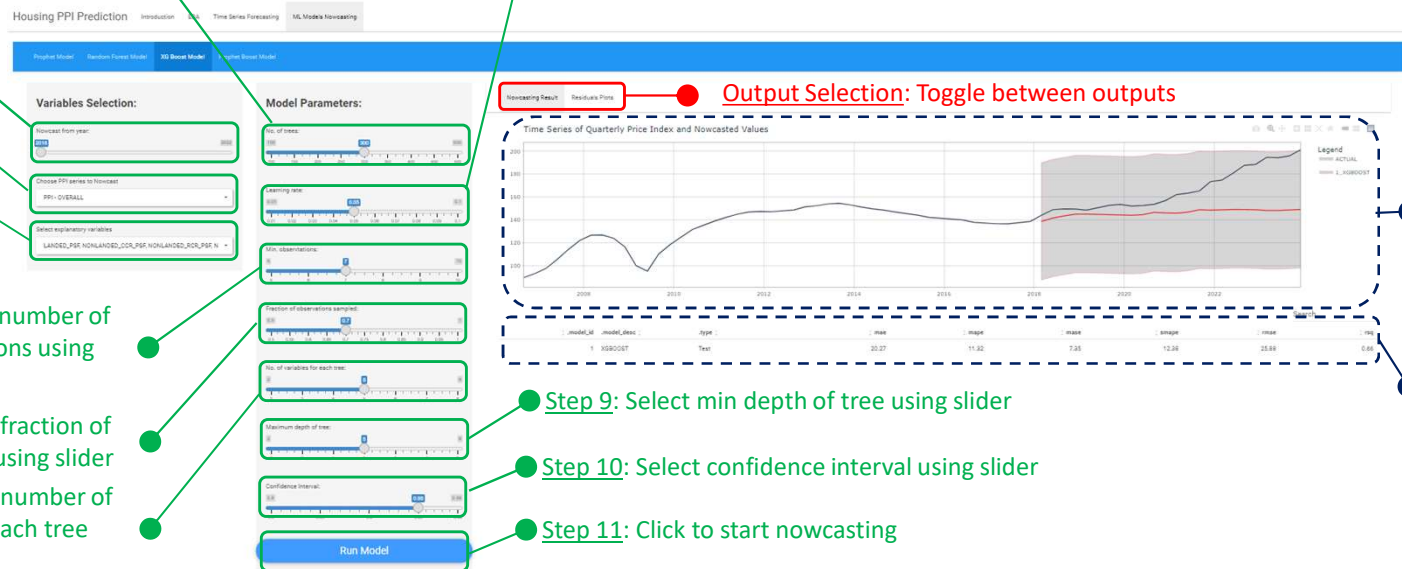Step 9: Select min depth of tree using slider

Step 10: Select confidence interval using slider

Step 11: Click to start nowcasting

Output: Error values of trained model

ML Models Nowcasting – Prophet Boost Model

This sub-module provides the user with the functionality to perform analysis using Prophet Boost model for nowcasting *(Access by ML Models Nowcasting > Prophet Boost Model)*

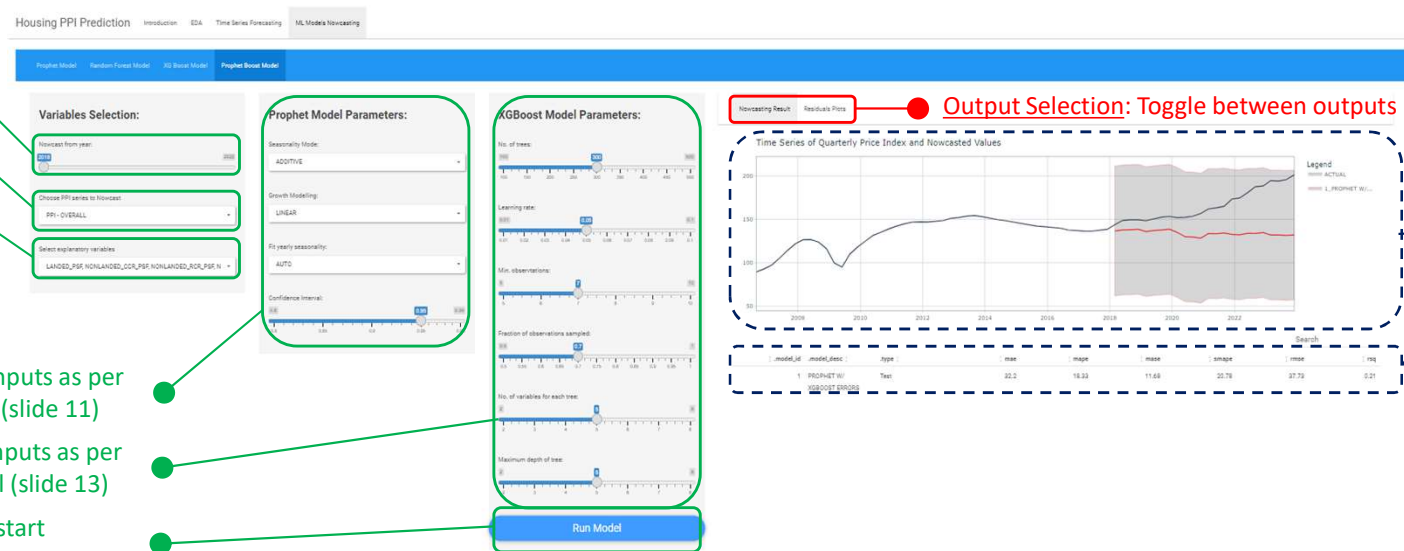**Step 1**: Select the year to start nowcast from

Step 2: Select time series to nowcast

Step 3: Select variables to use in dropdown list

Step 4: Select inputs as per Prophet model (slide 11)

Step 5: Select inputs as per XG Boost model (slide 13)

Step 6: Click to start nowcasting

Output Selection: Toggle between outputs

Output: Plot of actual values and nowcast result using selected model and parameters

Output: Error values of trained model

Have Fun Forecasting & Nowcasting!!