Cannlytics

Cannabis Data Science

Meetup

March 31, 2021

The 10 Commandments of Forecasting

Silvia, J, Iqbal, A, et. al (2014), 'Economic and Business Forecasting'.
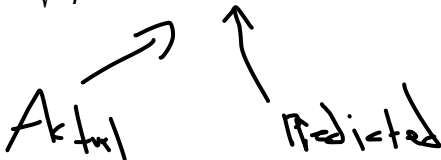
1. Know what you are forecasting.
2. Understand the purpose of forecasting.
3. Acknowledge the cost of the forecast error.
4. Rationalize the forecast horizon.
5. Understand the choice of variables.

6. Rationalize the forecasting model used.
7. Know how to present the results.
8. Know how to decipher the forecast results.
9. Use recursive methods.
10. Understand that forecasting models evolve over time.

The out-of-sample root mean square error (RMSE) can
quantify forecast error.

$$RMSE = \sqrt{\frac{1}{T}\Sigma(Y_{t+1} - \hat{Y}_{t+1})^2}$$

Aktual

Predicted

1. Know what you are forecasting

- Forecast sales and total plants grown in Colorado in 2021.

2. Understand the purpose of forecasting

- Get better expectations for the size of the Colorado cannabis industry in 2021.

3. Acknowledge the cost of the forecast error.

- Overstating growth may lead to foolhardy decisions, where as understating growth may leave money on the table.

4. Rationalize the forecast horizon

- Forecasting a series for 2021 is a long, yet informative horizon. A shorter time frame may be less informative and a longer time frame may yield unreliable forecasts.

5. Understand the choice of variables.

- Historic plant totals and cannabis sales in Colorado from January 2014 through June 2020 will be used, utilizing all of the available data under the principle to never throw away data.

6. Rationalize the forecasting model used.

- A atheoretical forecasting approach, Box-Jenkins methodology, will be utilized.

AR(p) process:

$$y_t = \alpha + \beta_1 y_{t-1} + \beta_2 y_{t-2} + ... + \beta_p y_{t-p} + \epsilon_t$$

MA(q) process:

$$y_t = \theta + \gamma_1 \epsilon_{t-1} + \gamma_2 \epsilon_{t-2} + ... + \gamma_q \epsilon_{t-q} + \epsilon_t$$

$$ARMA(p, q)$$

7. Know how to present the results.

- Always show the data (in this case in a figure).

8. Know how to decipher the forecast results.

- Look for seasonality, etc.

9. Use recursive methods.

- When future data is released, calculate the RMSE for actual forecasts and create new forecasts.

10. Understand that forecasting models evolve over time.

- See if better forecasting models predict better.

Thank you for coming.