



Sales Forecast Analytics

DATA SCIENCE PRODEGREE PROJECT

ABSTRACT

In this project, you will analyze and forecast sales of pesticides for a domestic pesticide manufacturing company (ABC Manufacturing) and analyze variables that impact the sales of the product. This will enable the pesticide company to manage the production to meet growth/slowdown in sales as per your sales forecast.

Pesticides Market Outlook

Chemical control of pests is a common practice in agriculture. There are more than a thousand pesticides of both chemical and biological nature, used around the world to minimize crop losses. Agriculture in developing countries suffers most because of high incidence of various pests. Although chemical pesticides are well known for their effectiveness, their impact on soil and environment, and presence of residue in food products are a matter of concern. Other issues relate to structure of pesticide industry and the regulations for registration and quality assessment.

While there are numerous factors affecting sale trends of pesticide, including and not limited to, socio-political factors such as changes in regulation, population growth, rising incomes of population, weather condition, etc.; you will be specifically analyzing the impact of rainfall on the Pesticide consumption trend.

(Optional): You can use external data such as rainfall, GDP, population, etc. and create dummy variables to enhance the accuracy of the forecasting model.

Overview of the problem

You have one file:

State Level Sales Data: containing sales data by various Pesticide manufacturing companies. This data is available on state and district level for years 2014-18.

Data and Problem Details

Objective: You have to build data model for the following:

- Conduct state wise trend analysis of the given sales

- To identify other reasons if they are influencing Pesticide sales
- To provide state wise forecast of Pesticide sales for ABC Manufacturing

Steps to be followed (tentative time required):

- 1) Understand the problem and objective (1 hour)
- 2) Understand the data and develop some business sense. (4-5 hours)
- 3) EDA (if you think is required in this case). (5-6 Hours)
- 4) Data Cleaning and preparation (4-5 Hours)
- 5) Feature engineering (4-5 Hours)
- 6) Model Building (try various techniques and at the end justify why you chose a technique over others) (3-4 hours)
- 7) Testing and Cross-validation (3-4 hours)
- 8) Final results, recommendations and plots/visualizations. (4-5 hours)
- 9) BONUS: Any other insights or recommendations that you can give from the data which will help the business. (Subjective)

Preparing the deck: 6-7 hours

[Actual time might vary from person to person and step to step, this is just indicative]

The final solution should be in form of a deck showing all the steps above. It will be judged on the following criteria:

- 1) How well have you adhered to the modelling process discipline?
- 2) Do your results make business sense, how have you used business intuition to take decisions during the modelling exercise, including but not limited to the following:
 - Deciding segmentation (if you choose to have segmentation)
 - EDA, Feature engineering
 - Choosing variables to be put in models
 - Deciding a cut-off

3) Performance of your model on test data

- Precision
- Recall
- AUC
- Any other metric you can find from your experience or literature.

4) Estimated monetary impact of your solution (Use the data and your model results and try to come up with a monetary figure that the company can expect to save if they use your model, in business problems it is of a lot of importance since it helps the management take decisions).

Grading system

The project and presentation will be assessed & graded on completion. Details on this will be provided separately.