



## ReadMe: Visual Analytics Based Inventory Replenishment

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Thank you for participating in the Visual Analytics Based Inventory Replenishment competition!  
This document will give background information on the files available and the delivery expectations.

**If you have any questions, please reach out on the Hackathon Hotline Discord channel.**

### General Item Data:

- All the data provided is related to one item (Article / SKU)
- The items are sold in bags.
- Bags are transported on pallets of approximately 16 sq. ft.
- 50 bags will be stacked on one pallet.
- 2 pallets can be stacked. Thus, 16 sq. ft. space can be used to store 100 bags.

### Stores Data:

- The data for 20 store is provided for analysis and prediction.
- The store numbers are fictitious and are numbered 1-20.

### Side Lot Images:

- Images showing the side lots of 20 stores are provided.
- The right bottom corner of each picture shows the scale.

### Sales Data (Excel file, Sales Data sheet)

- Historic sales data (since 2016) for all 20 stores, organized by day for the item, has been provided.
- TIME\_DIM\_KEY – Indicates sales date in YYYYMMDD format.
- SALES\_UNITS – Indicates the number of bags of the item sold on each day for each store.
  - Sales are treated +ve and Returns are treated -ve.
  - This column will have net sales units.
  - -ve indicates that day there were more returns than the sales.

### Weather Data (Excel file, Climatology Day, Forecast Day, and History Day sheets)

- The weather data for all 20 store locations is available in 3 sheets contained in the excel file.
- CLIMATOLOGY\_DAY – This is a general 366-day weather data.
  - DOY\_STD indicates day of the year – 1 indicates January 1<sup>st</sup>.

- This can be used for a one-year general forecast.
- FORECAST\_DAY – Indicates a 15 – 16 days weather forecast.
- HISTORY\_DAY – Indicates historic weather data.

#### Challenge Details:

##### Compute available space for the item:

- Compute square footage available in the side lot using image analysis.
- Assume 50% of the available square footage will be available for the item.
- Using the production information provided, compute how many bags can be accommodated based on the available square footage.

##### Sales Forecast Prediction:

- Predict the next 14-day sales forecast based on the sales and weather data provided.

##### Recommend Order Units:

- Assume that the store has the next 4 days of forecasted sales on hand.
- Compute order units (number of bags) as 14-day sales forecast, minus on hand items, and cap the order units based on the side lot square footage available.

**Good Luck!**