2022

INVENTORY TRACKING AND ANALYSIS IN MS EXCEL

EXCEL AND EXCEL VBA FOR BUSINESS MANAGEMENT

EMMANUEL MASINDI

INVENTORY TRACKING AND ANALYSIS IN MS EXCEL

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ABSTRACT

The objective of this exercise is to build a simple inventory tracking and analysis (ITA) tool through Excel and Excel VBA that can be used to establish effective management strategies of a business's inventory. Excel is a useful data wrangling tool and due to its ease of use, it still is the most popular data analysis software. Any business that can effectively use Excel and its functionalities can enhance their ability to draw more insights from their data.

The ITA tool will be designed to perform the following:

- Calculate a business's latest inventory figures
- Visualize the change of inventory value and item quantities over time
- Calculate and visualize the weekly consumption rates of each item
- Calculate the Cost of Goods Sold (COGS) and track this over time.

While building this Excel tool, we plan to ensure that we maximize both its ease of use and its overall value in managing a business's inventory.

BACKGROUND

INVENTORY

We model this ITA tool to track a restaurant's inventory. Below is the list of items to be tracked together with their respective costs:

CODE	**PRODUCT**	**COST** (R)
W101	Full Chicken	60.00
W102	Ribeye Steak	153.50
W103	Fillet Steak	120.50
W104	Ribs	112.50
W105	Salmon	255.50
W106	Loaf Bread	10.22
W107	Olive Oil	56.52
W108	Butter	50.50
W109	Veg Combo	185.65
W110	Wine	240.99
W111	Bottled Water	10.00
W112	500ml Coke	10.00
W113	Milk	14.50

Table 1: Inventory items

The above table will be on the first sheet titled 'INVENTORY LIST' and it will detail the current inventory of the restaurant.

The second sheet titled 'INVENTORY – IN & OUT SCH' will detail the movement of items in the restaurant. The movement of items in the restaurant can be as follows:

- Sale – the sale of an item
- Consumption – the usage of an item
- Receipt – the procurement of an item
- Recon – miscellaneous usage or procurement of an item.

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Below we detail how a user would go about inserting a line item to register the movement of an item in the restaurant.

DATE	TYPE	CODE	PRODUCT	COST	QTY	VALUE
1-Oct-22	Recon	W101	Full Chicken	60.00	20	1200.00
1-Oct-22	Recon	W103	Fillet Steak	120.50	20	2410.00
1-Oct-22	Recon	W104	Ribs	112.50	20	2250.00
1-Oct-22	Recon	W105	Salmon	255.50	20	5110.00
1-Oct-22	Recon	W108	Butter	50.50	20	1010.00
1-Oct-22	Recon	W109	Veg Combo	185.65	20	3713.00
1-Oct-22	Recon	W110	Wine	240.99	21	5060.79
1-Oct-22	Recon	W113	Milk	14.50	20	290.00
1-Oct-22	Recon	W106	Loaf Bread	10.22	30	306.60
1-Oct-22	Recon	W107	Olive Oil	56.52	10	565.20
1-Oct-22	Recon	W102	Ribeye Steak	153.50	15	2302.50
1-Oct-22	Recon	W112	500ml Coke	10.00	80	800.00
1-Oct-22	Recon	W111	Bottled Water	10.00	80	800.00
1-Oct-22	Sale	W101	Full Chicken	60.00	(5)	300.00
1-Oct-22	Sale	W102	Ribeye Steak	153.50	(10)	1535.00
1-Oct-22	Sale	W103	Fillet Steak	120.50	(7)	843.50
1-Oct-22	Sale	W104	Ribs	112.50	(8)	900.00
1-Oct-22	Sale	W105	Salmon	255.50	(1)	255.50
1-Oct-22	Consumption	W106	Loaf Bread	10.22	(5)	51.10
1-Oct-22	Consumption	W107	Olive Oil	56.52	(1)	56.52
1-Oct-22	Consumption	W108	Butter	50.50	(5)	252.50
1-Oct-22	Consumption	W109	Veg Combo	185.65	(5)	928.25
1-Oct-22	Sale	W110	Wine	240.99	(2)	481.98
1-Oct-22	Sale	W111	Bottled Water	10.00	(10)	100.00
1-Oct-22	Sale	W112	500ml Coke	10.00	(10)	100.00
1-Oct-22	Consumption	W113	Milk	14.50	(2)	29.00
3-Oct-22	Sale	W101	Full Chicken	60.00	(2)	120.00
3-Oct-22	Sale	W102	Ribeye Steak	153.50	(2)	307.00
3-Oct-22	Sale	W103	Fillet Steak	120.50	(3)	361.50
3-Oct-22	Sale	W104	Ribs	112.50	(2)	225.00
3-Oct-22	Sale	W105	Salmon	255.50	(1)	255.50
3-Oct-22	Consumption	W106	Loaf Bread	10.22	(2)	20.44

Table 2: In and Out Capturing Schedule

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ANALYSIS

INVENTORY STATUS

The inventory is tracked by plotting the cumulative figures of each item over a period of time. The type of plot is an area chart and each chart is plotted based on pivot table values calculated from the INVENTORY – IN & OUT SCH sheet containing the movement of items.

A VBA macro was coded by recording an instance of the user refreshing the pivot tables containing the data to include any new update from the INVENTORY – IN & OUT SCH sheet. The user only needs to press the button the top left of the sheet to run the macro.

Below is a plot of item quantities over time.

ITEM

UPDATE DATES

DATE

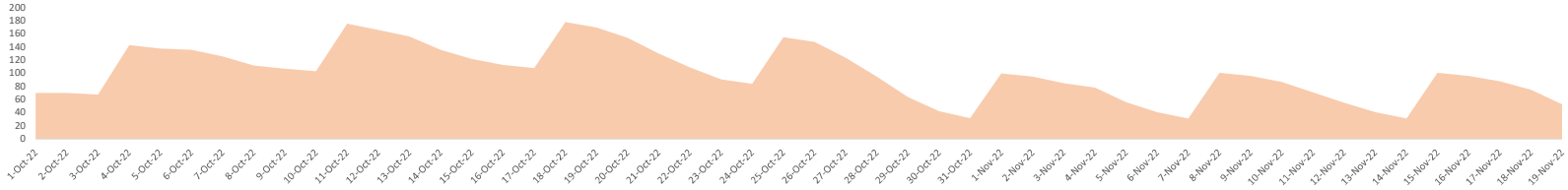
Oct - Nov 2022

MONTHS

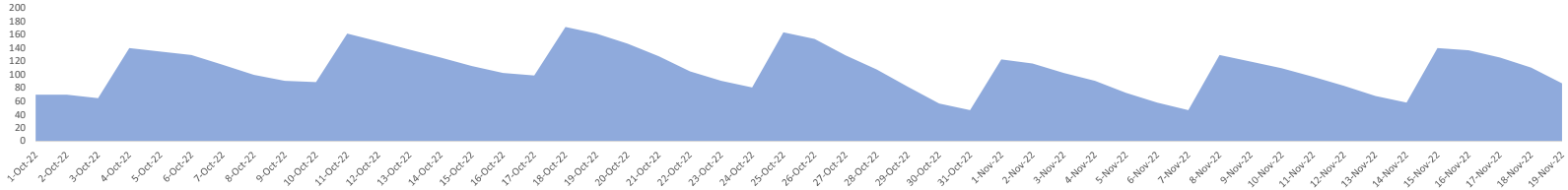
2022

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

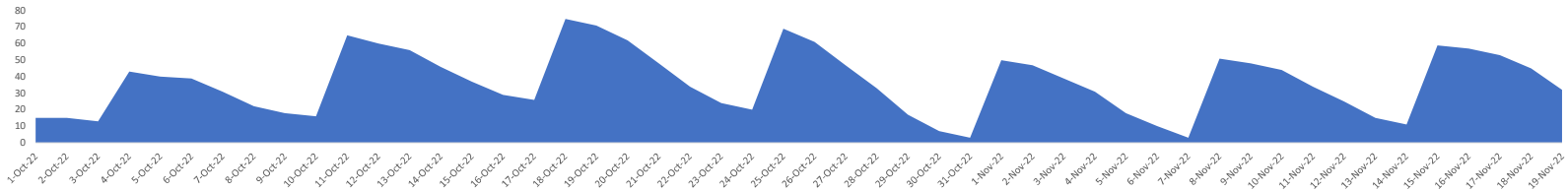
500ml Coke



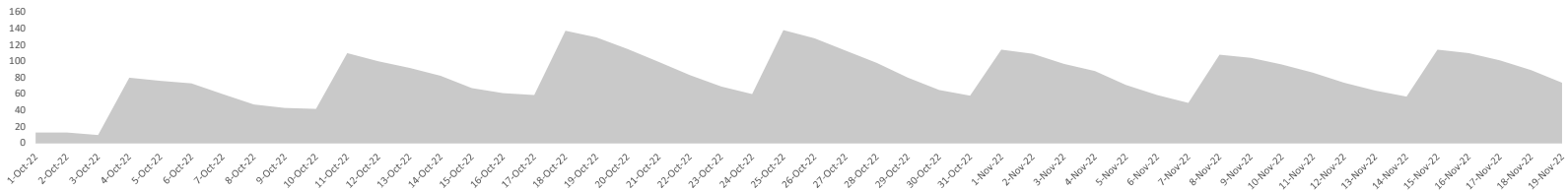
Bottled Water



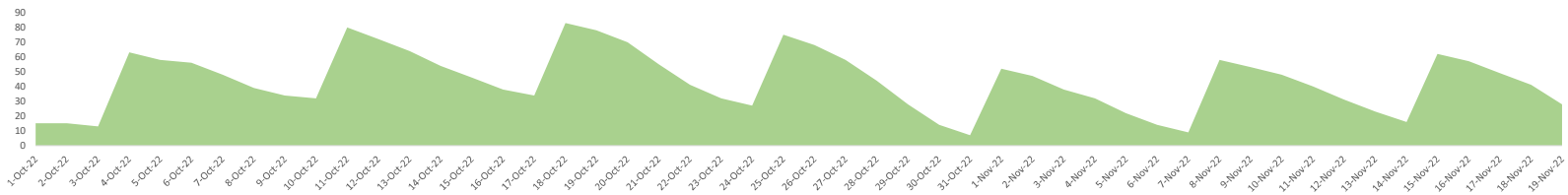
Butter



Fillet Steak



Full Chicken



ITEM

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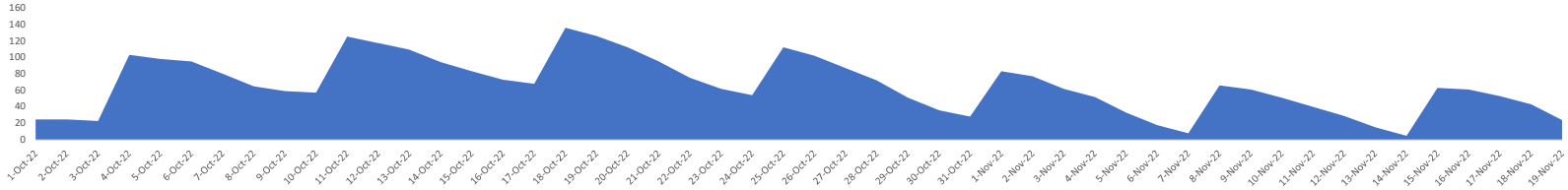
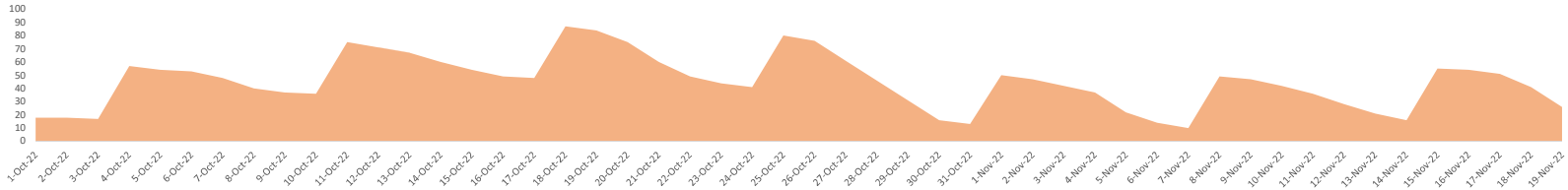
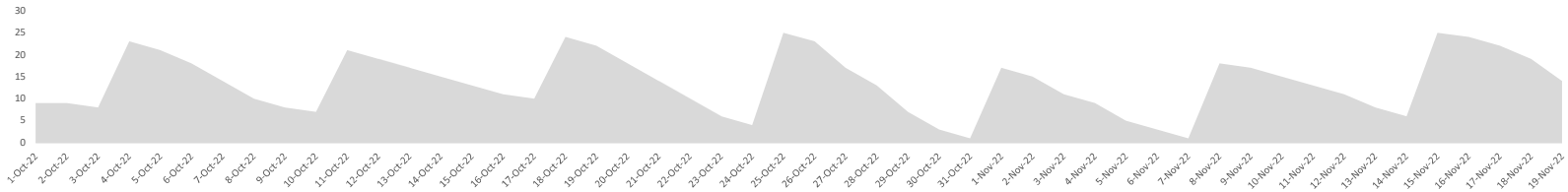
Loaf Bread



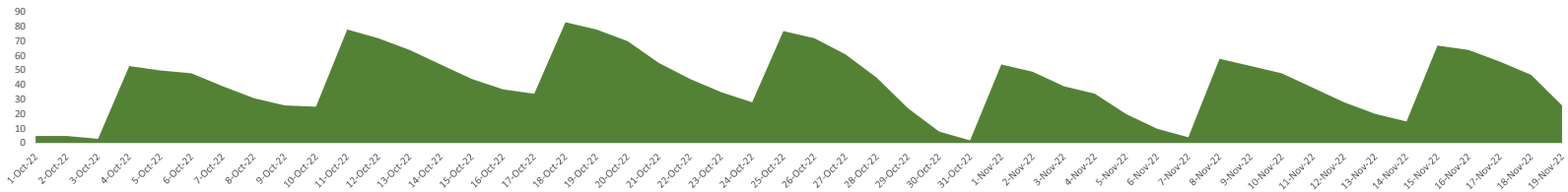
Milk



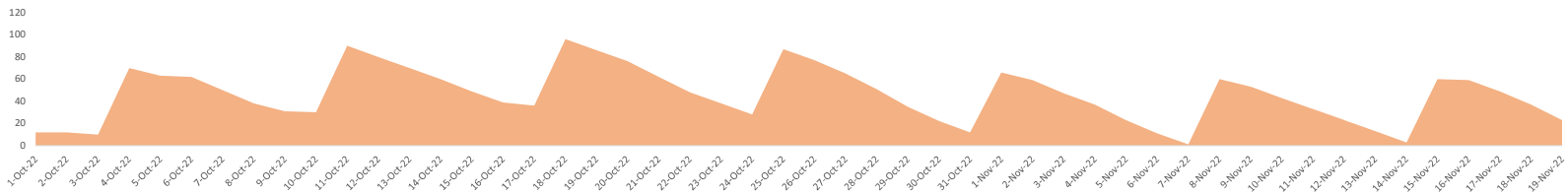
Olive Oil



Ribeye Steak



Ribs



ITEM

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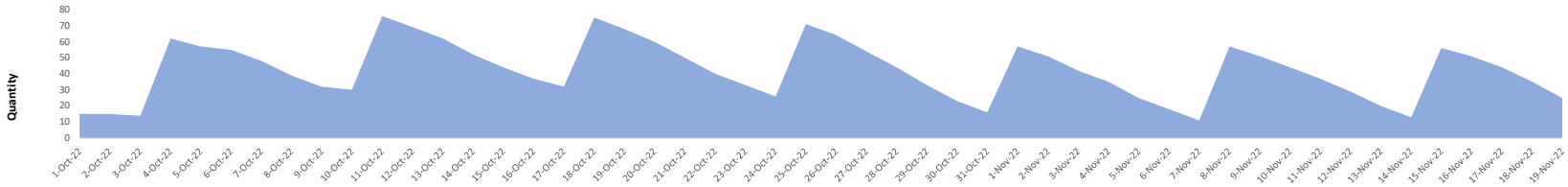
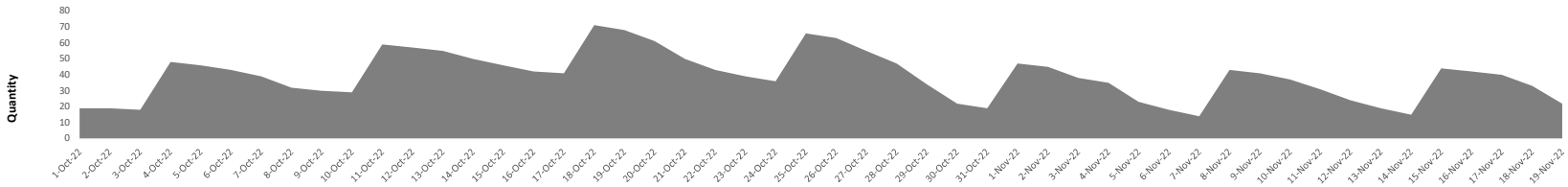
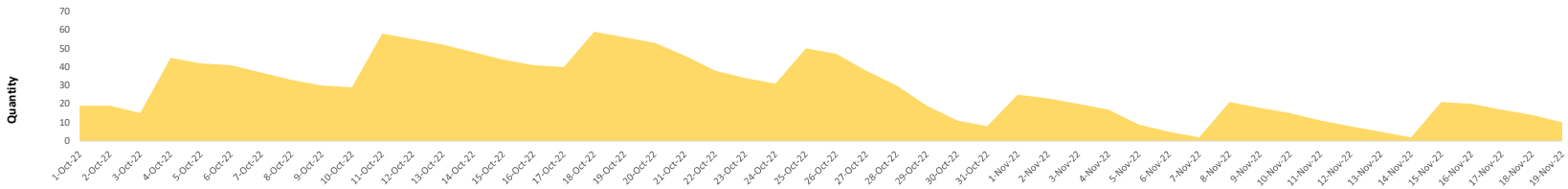
Veg Combo



Salmon



Wine



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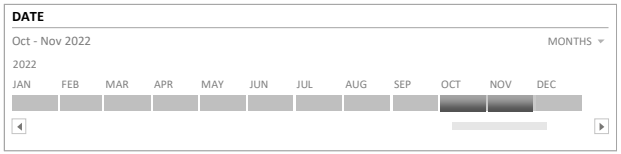
INVENTORY DASHBOARD

The main dashboard breaking down the inventory schedule is compiled on the sheet 'INVENTORY_DASHBOARD' and there, we summarize the Inventory value, the Cost of Goods Sold (COGS) and the Weekly Consumption Rate. The data is generated by using pivot tables and in the case of weekly consumptions, engineered using VBA code to transform and extract data from the pivot tables. Again, we use buttons and Macros as a user interface to update the visualization should the need arise.

The visualizations can provide great value to business aiming to have an insight in the Cost of Goods Sold for each day of work and the general flow of value out of a business inventory over time. A business can use this data to develop strategies to minimize the value of items in the inventory in order to minimize losses from spoilage and theft.

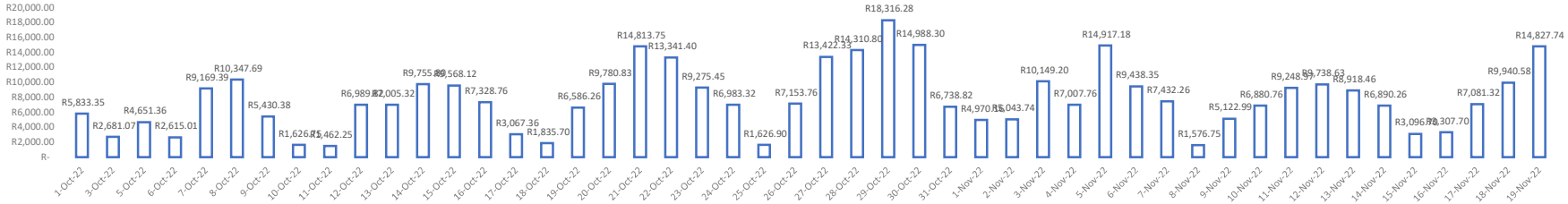
The Weekly Consumption Rates are plotted in the form of boxplots and they aim to give a business key insights into the distribution of the number of units sold, consumed or lost in a business in the space of a week. This is again plotted to give businesses an idea into the number of units of items they may need to procure weekly to avoid running out of inventory.

INVENTORY VALUE	COST OF GOODS SOLD
R 34,277.21	R 372,295.84

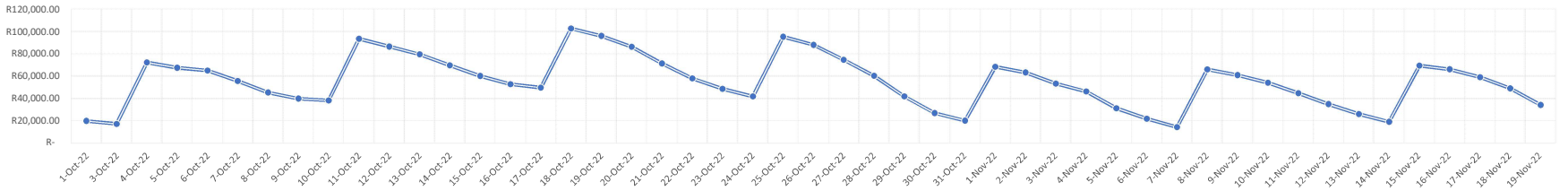
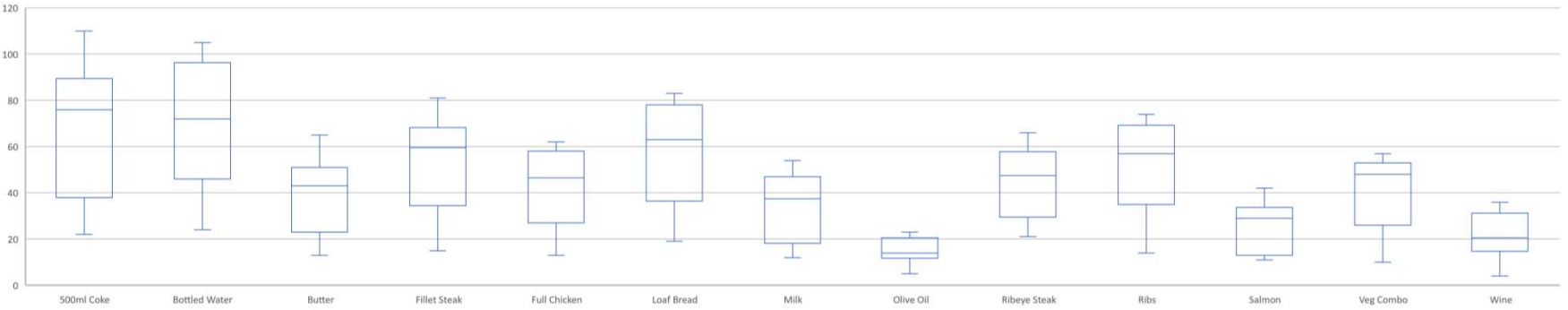


UPDATE DASHBOARD DATA

COGS



INVENTORY VALUE



WEEKLY CONSUMPTION RATE BOX PLOTS