Engineering Core

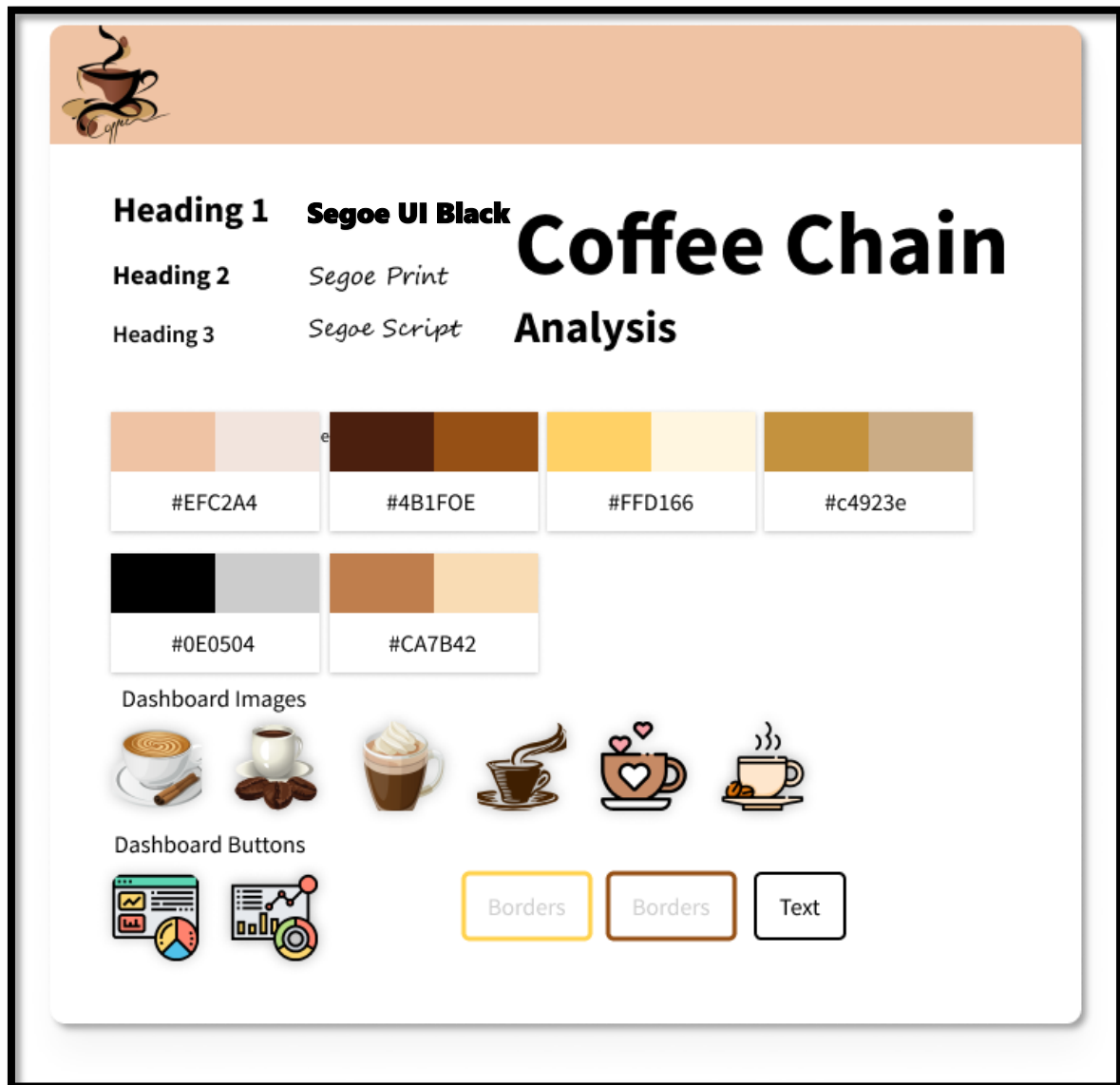## Course Project: Coffee Chain Analysis

EN6001

G7

Course Project

Sheikh Muhammed Tadeeb (AU19B1014)

❖ **Problem-Statement:**

Analysis of Coffee Chain dataset based on various requirements and thereby creating Visualization's in form of dashboards.

❖ **Style Guide:**

❖ **Brand-logo:**

## ❖ Visualization's:

1) For S1, S2, S3 I needed data from factTable as well as Location so I inner joined the two Tables along Area code.

2) Wherever year was acting as filter I choose "Apply ON Selected Sheets".

3) Reduced the size of tooltip for better readability.

4) Manually Edited dollar and percent sign in tooltip.

1. S1: Market-wise Sales for Selected Year – Show % of Sale to Total Sale in tooltip. Show divergent color based on profit.

Solution:
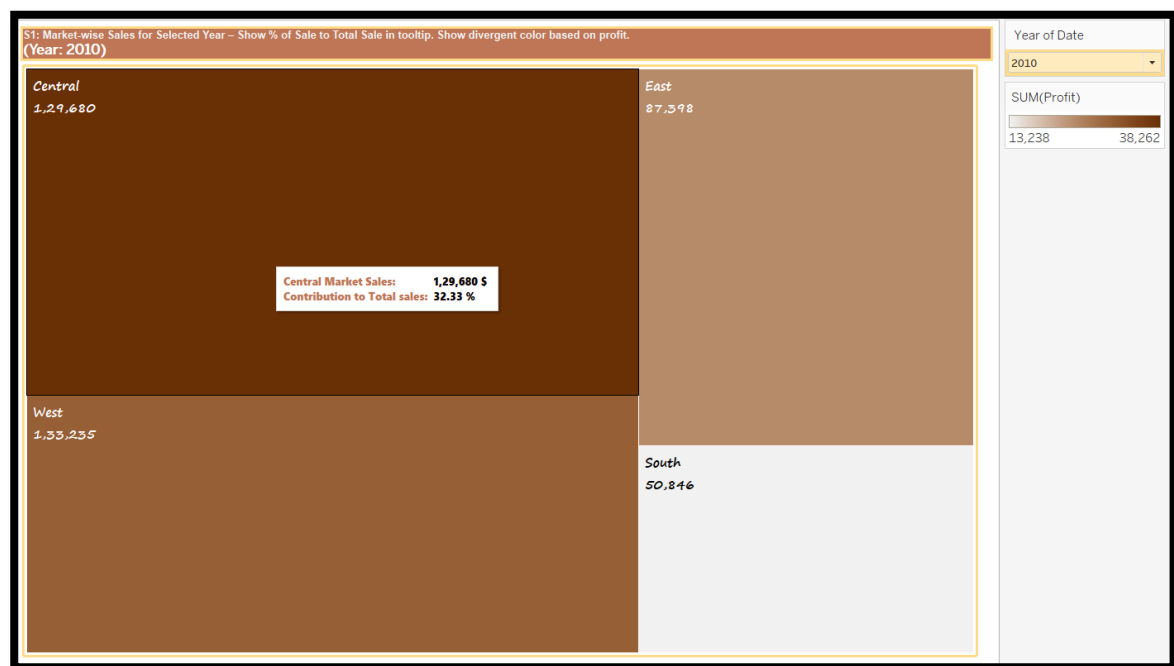
Process Followed:

➢ I changed date datatype from string to date by right clicking on it.

➢ Added year filter to "Add to context".

➢ Percentage is calculated along "market" in "edit table calculations".

➢ I edited the tooltip to make it easy and simple as: -

> *<Market> sale: <SUM(Sales)>*
>
> *Contribution to total sales: <AGG(S1_%SalesToTotalSales)> %*

➢ To show divergent color I added profit to Color palette.

2. **S2: Market Size-wise top 5 States by Sales Selected Year – Show % of Margin to Sales and % Profit to Sales.**

==**Solution:**==

==**Process Followed:**==

➢ As we need top 5 states by sales, I added table calculation on sales as RANK -> descending -> Unique and selected States in specific dimension. and then added this to filter from 1 to 5.

➢ Added year filter to "Add to context".

➢ Added Custom Shapes (Coffee Mugs) and changed their size & shapes.

3. S3: State-wise Sales for Selected Year. Show states contributing to 80% of Total profit as Green and Remaining as Orange.
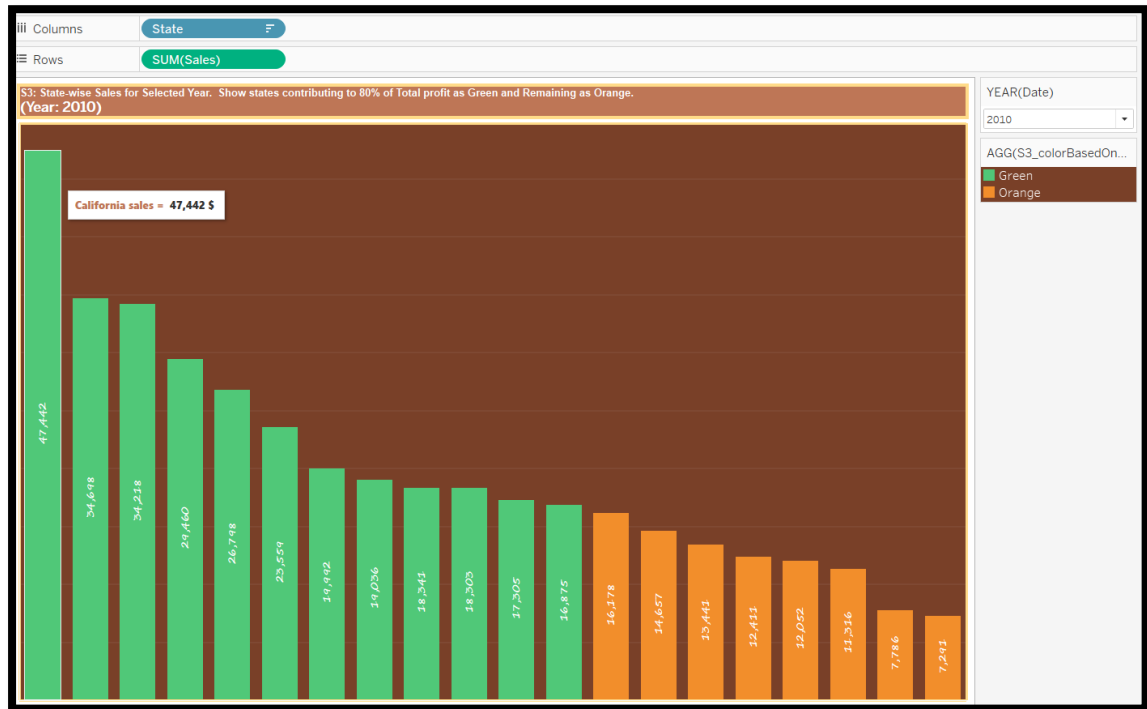
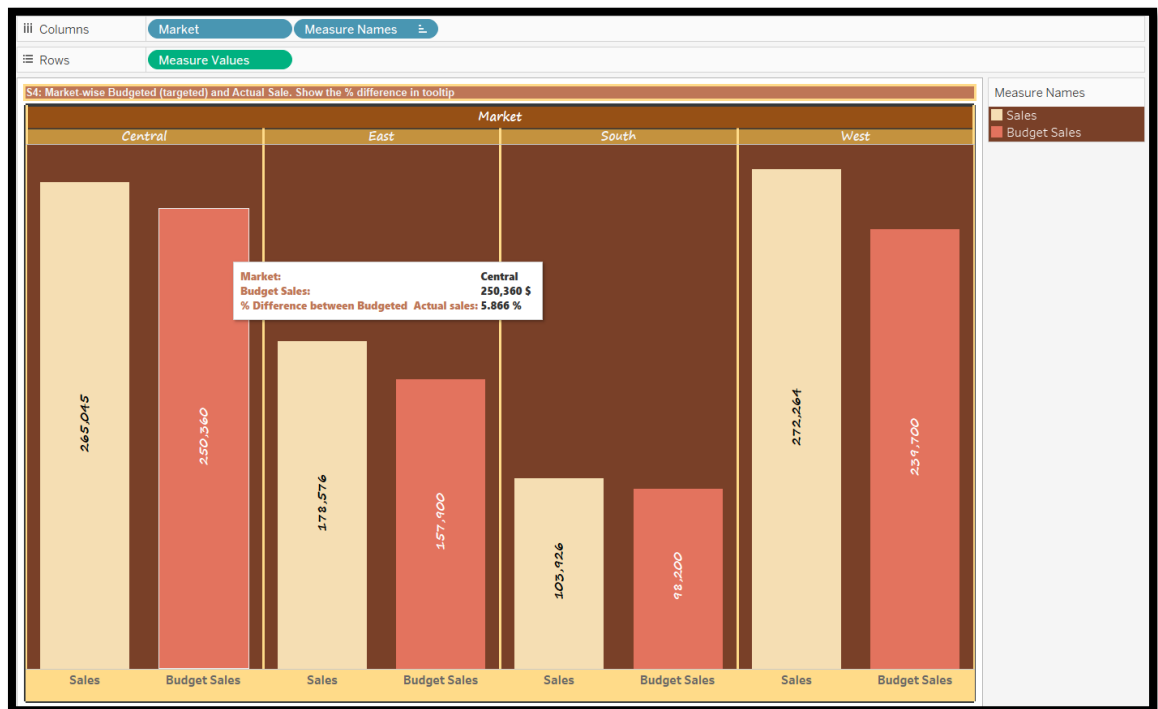➢ Added year filter to "Add to context".

➢ For finding states contribution to 80% of total profit, i created a calculated field and used the code: -

```
IF RUNNING_SUM(SUM([Profit])) <= 0.8 *
TOTAL(SUM([Profit])) THEN "Green"
ELSE "Orange"
END
```

4. **S4: Market-wise Budgeted (targeted) and Actual Sale. Show the % difference in tooltip.**

➤ I have shown them side by side because user should see the comparison clearly

➤ To show the percentage difference i made a calculated field and use the code: -

```
(
(SUM([Sales]) - SUM ([Budget Sales])) / SUM ([Budget Sales])
) * 100
```

➤ Removed grid lines from rows and thickened the section lines for better visibility.

5. **S5: Product-wise, Month-wise Sale for Selected Year. Display the product name at the end of the line.**
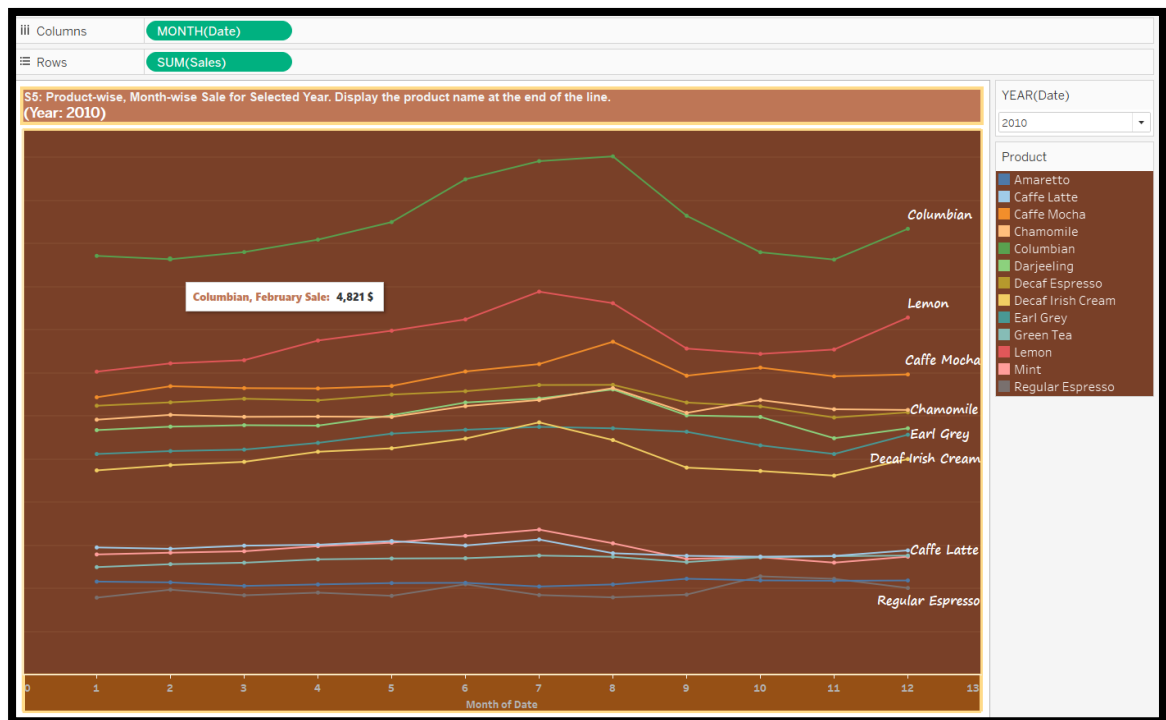
Process Followed:

> ➢ To display product name at the end of line, I dropped the product name in Label.

> ➢ Reduced the opacity of grid lines (rows) for better visibility.

> ➢ Choose trend lines graph because it was mentioned in the question.

6. **S6: Drill through from S1 and show Top n States by Sale for Selected Year and Market.**

I choose bar graph over bubble or block/tree graph as We need to see top states and bar graph depicts the descending/ascending order in best way.
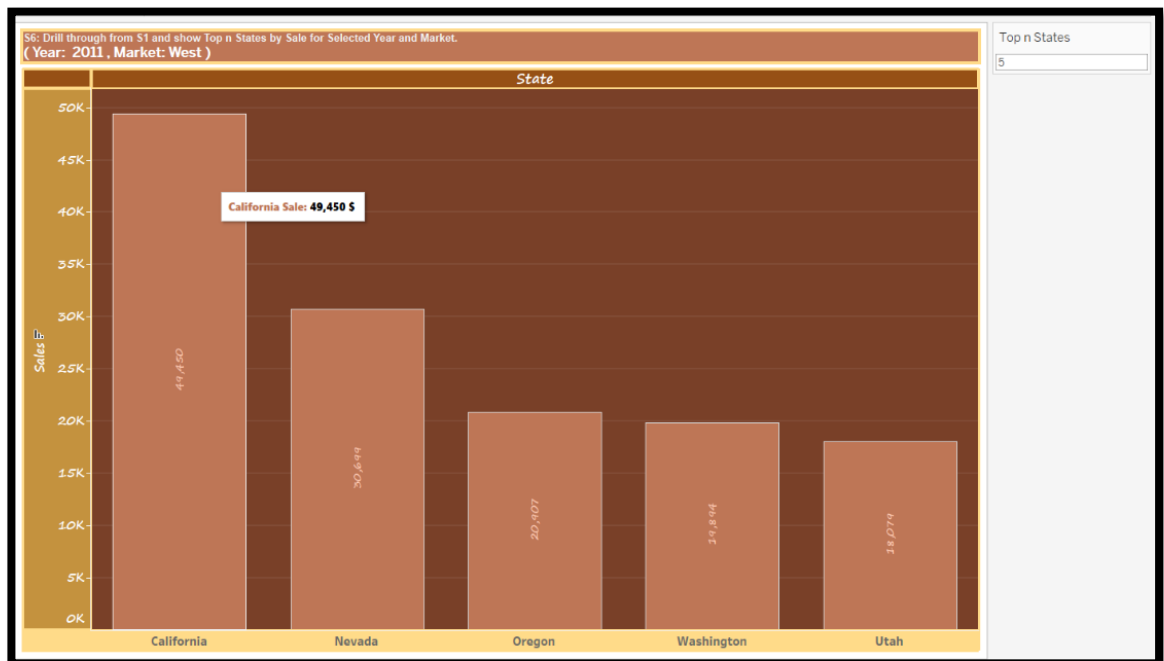
This could be done in 2 ways: -

➢ Way 1)

1. First, I created a parameter so that user can define value for top n states.
2. Then I filtered states in "top" field by passing parameter as "top n states".
3. Manually transformed he tooltip.

➢ Way 2)

1. First, I created a parameter so that user can define value for top n states.
2. I created a set of states with "top field" as top n states by sum of sales.
3. Manually transformed he tooltip.

7. **S7: Drill through from S2 and show Top n Area Code by Sale for Selected Year and Market Size.**
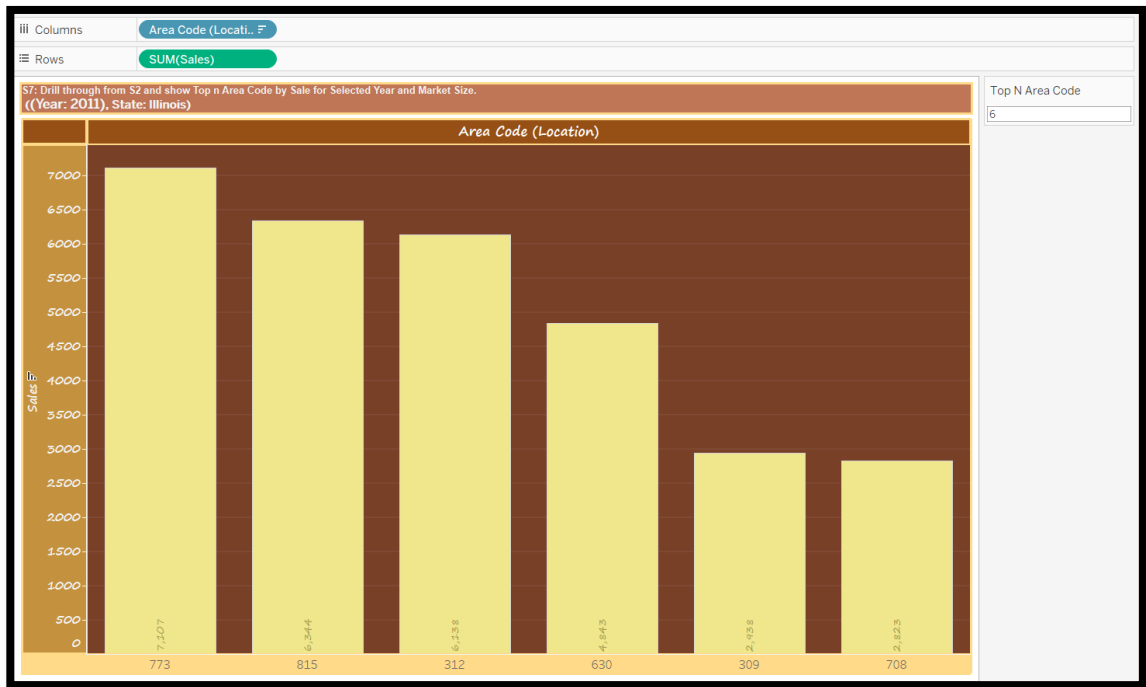
Process Followed:

This can also be done in two ways similar to what we did in s6. Here instead of market we have market size.

8. **S8: Drill through from S1 and show Average Sale per State. Show states with sale 30% higher than the average as green, states with sale 20% lower than average as red and rest as yellow.**

Solution:
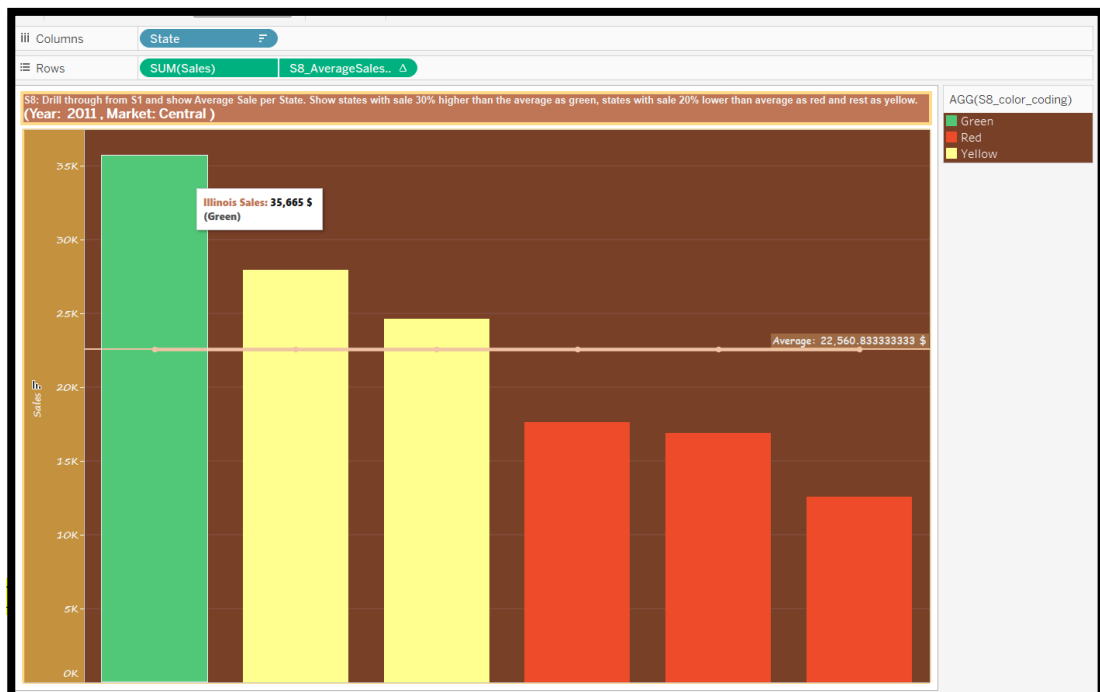
This could be done in 2 ways:

➢ **1st way)**

> We can make a calculated field with code:- window_avg(SUM(Sales)). This would give us average sales per state.

➢ **2nd way)** We can add a reference line with average as parameter.

9. **S9: Drill through from S3 and show month-wise Sale. Show month on month % change in sale and profit in tooltip along with profit.**
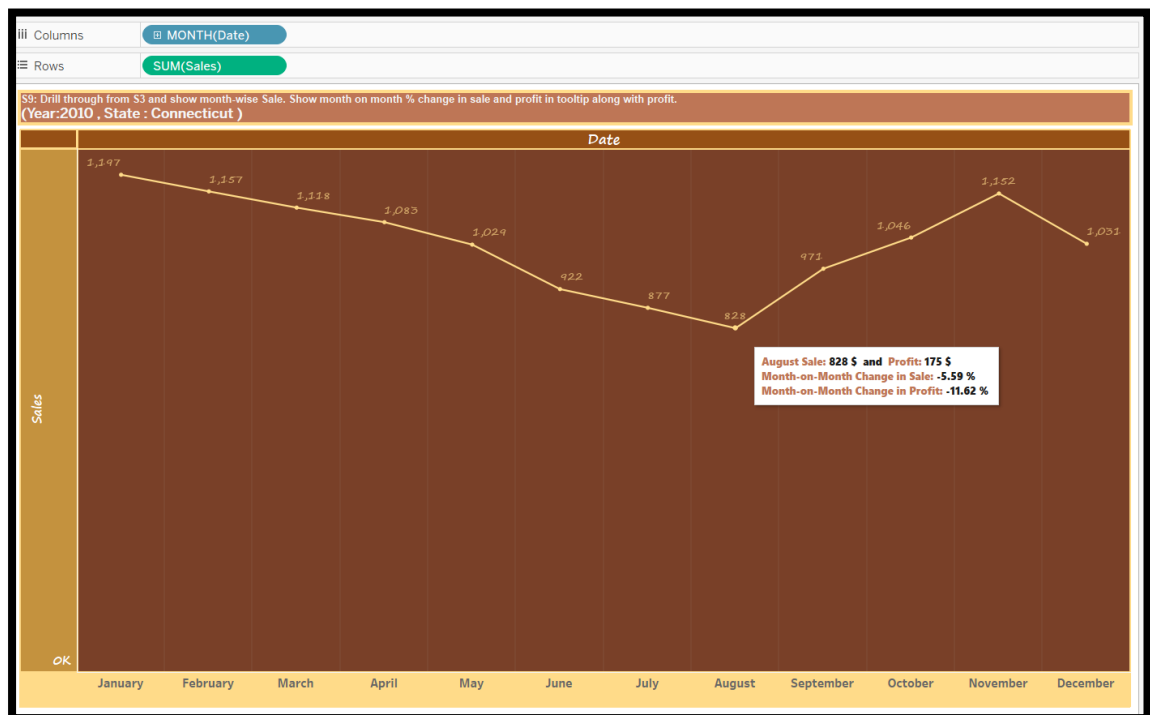
This could also be done in two ways: -

➢ **1st way)** We can create a calculated field with following code: -

For Profit:

```
ZN (

(

SUM([Profit]) - WINDOW_SUM(SUM([Profit]), -1, -1)

)

/

WINDOW_SUM(SUM([Profit]), -1, -1) * 100

)
```

For sales: -

```
ZN (

(SUM([Sales]) - WINDOW_SUM(SUM([Sales]), -1, -1) )

/

WINDOW_SUM(SUM([Sales]), -1, -1) * 100

)
```

➢ **2nd Way)**

We can go in "Edit table calculations" and do "Percent Difference from" on specific dimension i.e., Month of date. On sales as well as profit.
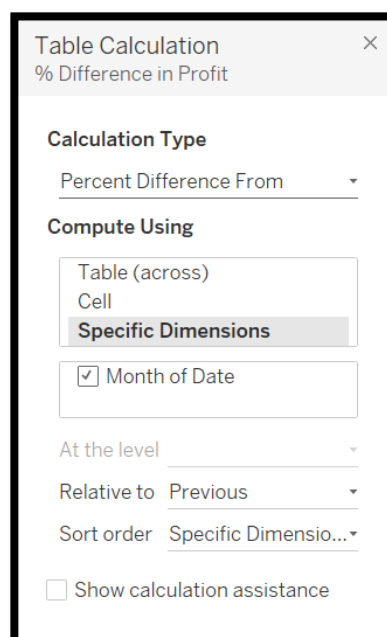
10. S10: Drill through from S8 and show Top n products by Sales.
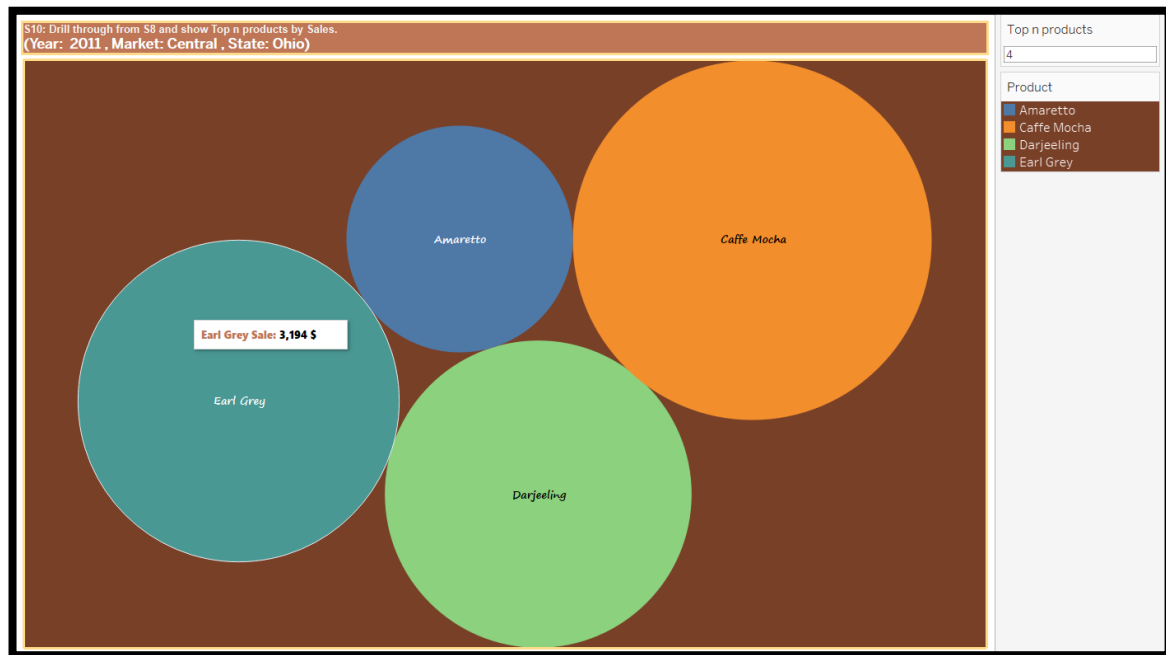
1. First, I created a parameter so that user can define value for top n states.

2. I created a set of states with "top field" as top n states by sum of sales.

❖ User-Interface Features: -

1. **Aesthetics & Minimalist design:** All the graph color and fonts along with tooltip is designed as per the style guide prepared for coffee chain in the beginning.

2. **Visibility of system status:** Whenever user hovers on some graph or button the user gets to know because of change in color shades.

3. **Match Between System & Real World:** Dashboards depicts coffee chain dashboard of real world.

4. **Consistency and standard:** All font and color shades across all the graph and dashboard are consistent.

5. **Flexibility and efficiency of use:** All the buttons have proper labels so the user could easily rectify their functions.

6. **Error Prevention:** All the graph headers have filtered parameters. Example:-

❖ **Dashboard Design:**

For designing the dashboards, I divide the whole dashboard in 12 columns grids as we do in bootstrap, this helps me in placing the graph very quickly and efficiently.

12-Grid format of Dashboard

Dashboard-1 (s1, s5, s6, s8, s10)

Coffee Chain Analysis

Click for Dashboard-2

Year of Date
2010

S1: Market-wise Sales for Selected Year – Show % of Sale to Total Sale in tooltip. Show divergent color based on profit.
(Year: 2010)

Central	East
1,29,680	87,398
West	South
1,33,235	50,846

S10: Drill through from S8 and show Top n products by Sales.
(Year: 2011 , Market: Central , State: Ohio)

Top n products
4

- Amaretto
- Caffe Mocha
- Earl Grey
- Darjeeling

S5: Product-wise, Month-wise Sale for Selected Year. Display the product name at the end of the line.
(Year: 2010)

- Columbian
- Lemon
- Caffe Mocha
- Decaf Irish Cream
- Caffe Latte
- Regular Espresso

Month of Date

S6: Drill through from S1 and show Top n States by Sale for Selected Year and Market.
(Year: 2011 , Market: West)

State

Top n States
5

California	Nevada	Oregon	Washington	Utah
49,450	30,699	20,907	19,894	18,079

S8: Drill through from S1 and show Average Sale per State. Show states with sale 30% higher than the average as green, states with sale 20% lower than average as red and rest as yellow.
(Year: 2011 , Market: Central)

Average: 22,560.833333333 $

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Dashboard-2 (s2, s3, s4, s7, s9)

Coffee Chain Analysis

Click for Dashboard-1

Year of Date
2010

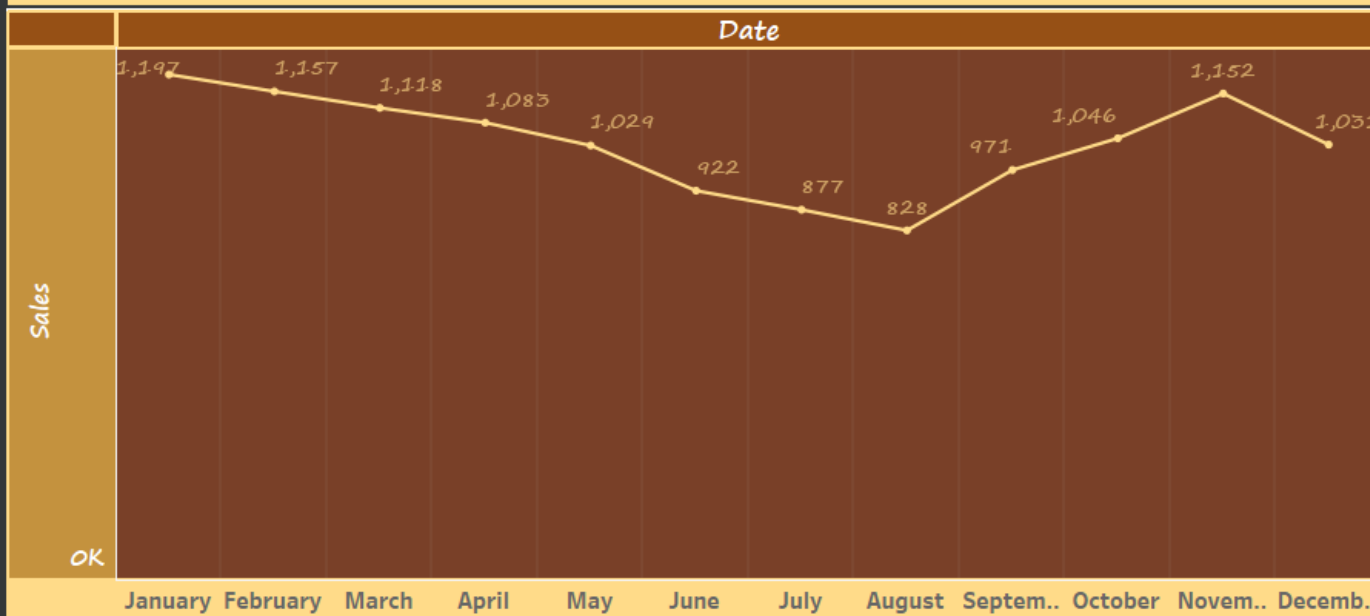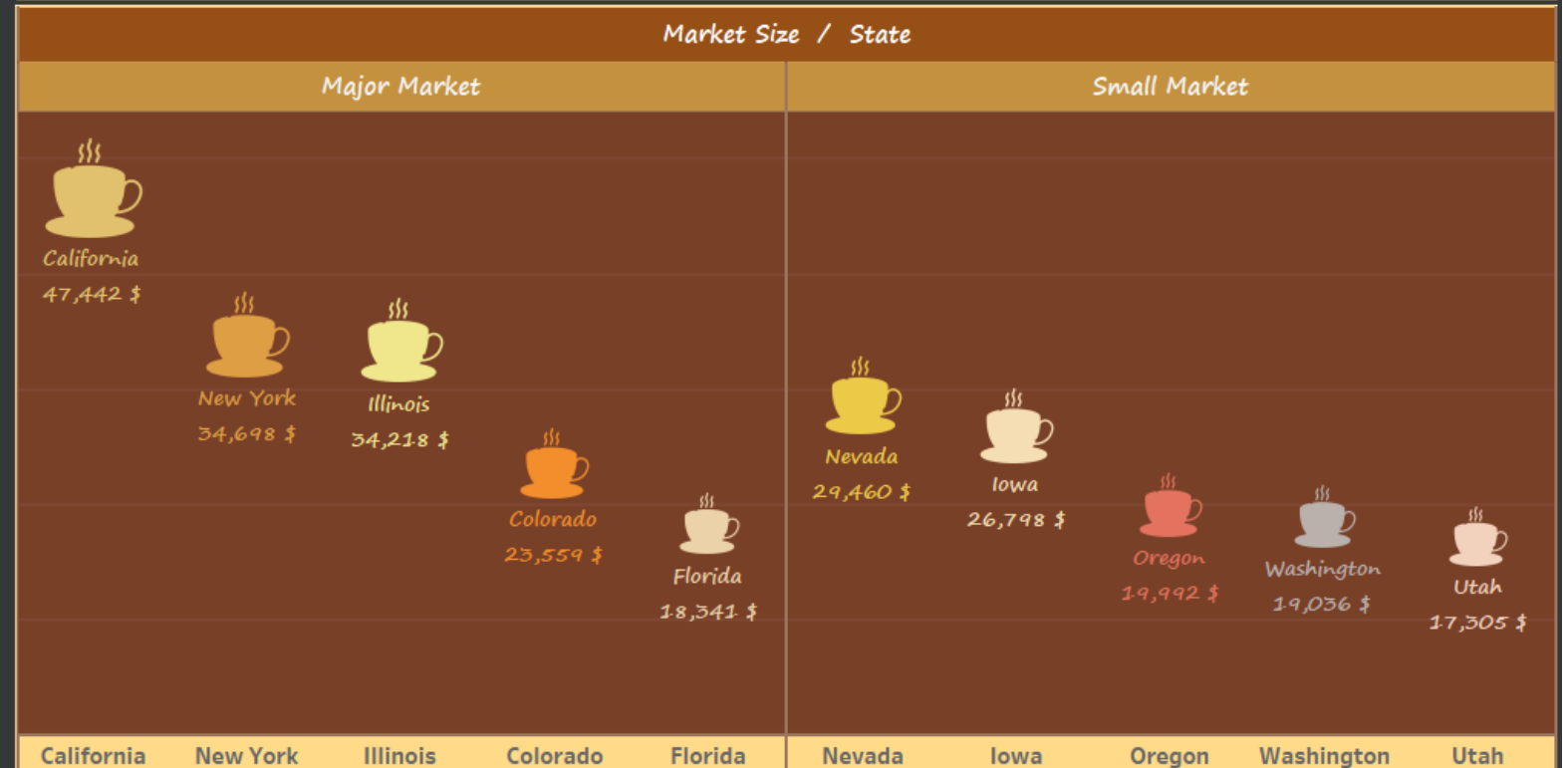**S3: State-wise Sales for Selected Year. Show states contributing to 80% of Total profit as Green and Remaining as Orange.**
(Year: 2010)

Value
47,442
34,698
34,218
29,460
26,798
23,559
19,992
19,036
18,341
18,303
17,305
16,875
16,178
14,657
13,441
12,411
12,052
11,316
7,786
7,291

S2: Market Size-wise top 5 States by Sales Selected Year – Show % of Margin to Sales and % Profit to Sales.
(Year: 2010)

Market Size / State

Major Market	Small Market

California — 47,442 $
New York — 34,698 $
Illinois — 34,218 $
Colorado — 23,559 $
Florida — 18,341 $

Nevada — 29,460 $
Iowa — 26,798 $
Oregon — 19,992 $
Washington — 19,036 $
Utah — 17,305 $

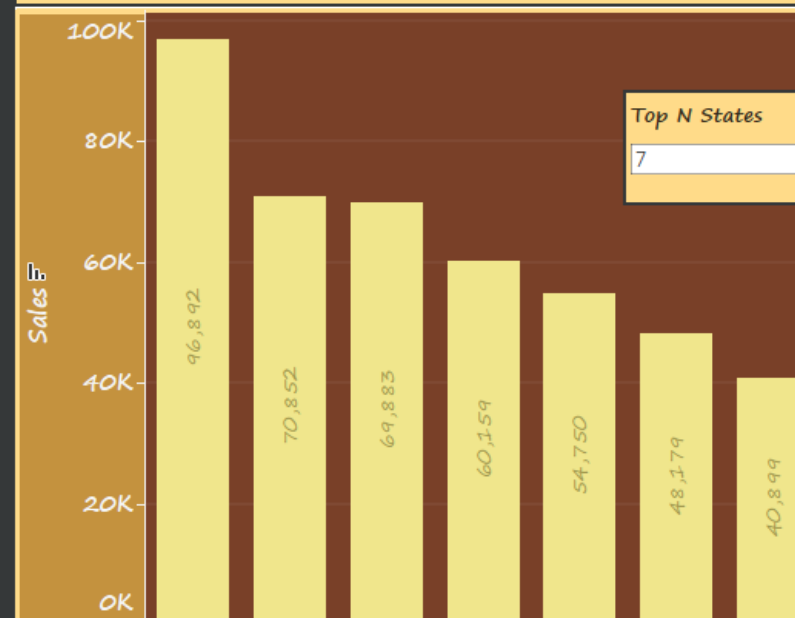| California	New York	Illinois	Colorado	Florida	Nevada	Iowa	Oregon	Washington	Utah

S9: Drill through from S3 and show month-wise Sale. Show month on month % change in sale and profit in tooltip along with profit.
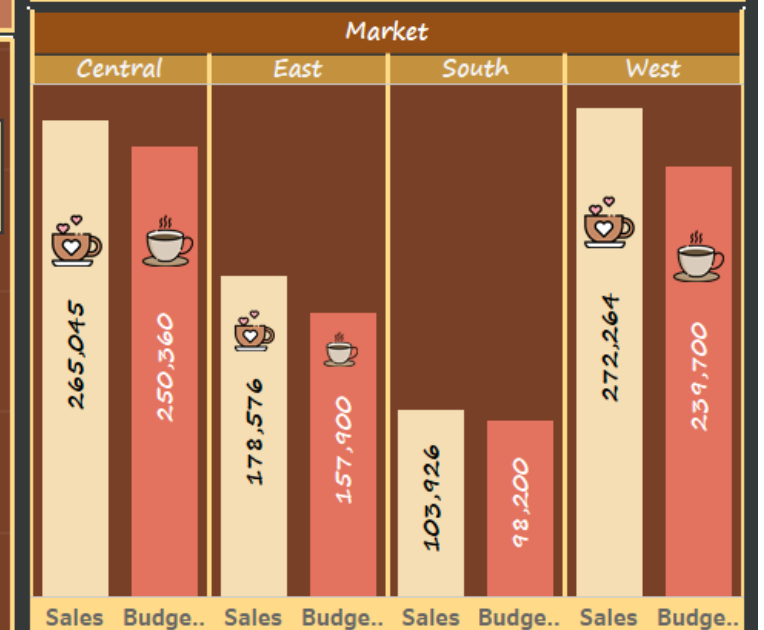**(Year:2010 , State : Connecticut)**

Date

Sales

Month	Value
January	1,197
February	1,157
March	1,118
April	1,083
May	1,029
June	922
July	877
August	828
September	971
October	1,046
November	1,152
December	1,031

0K

January February March April May June July August Septem.. October Novem.. Decemb..

S7: Drill through from S2 and show Top n States by Sale for Selected Year and Market Size.
(State: California, Colorado, Illinois and 4 more)

Sales

100K
80K
60K
40K
20K
0K

Value
96,892
70,852
69,883
60,159
54,750
48,179
40,899

Top N States
7

S4: Market-wise Budgeted (targeted) and Actual Sale. Show the % difference in tooltip

Market

Central	East	South	West
Sales: 265,045	Sales: 178,576	Sales: 105,926	Sales: 272,264
Budge..: 250,360	Budge..: 157,900	Budge..: 98,200	Budge..: 239,700

0K

Sales	Budge..	Sales	Budge..	Sales	Budge..	Sales	Budge..

❖ Dashboard Actions:

❖ Inference:

In order to start data mining and visualization, first, we need a business understanding of the data given to us.

1. Data Understanding: ThefactTable datasheet that we exported from Access lists all of the sales transaction. Each transaction shows us the area code or transaction location. The Location datasheet tells us the area code for each state. It also tells us what market each area code is located and its market size. This area code field joins the two sets of data giving us more information to analyze in order to find the profitability issues of the coffee house chain.

2. Secondly, we need to know the questions that need to be answered in order to see if any products are creating profits or losses.

3. Are there any products underperforming?

4. Tableau performs actions on your view in a very specific order; this is called the Order of Operations. Filters are executed in the following order:

   1. Extract filters.

   2. Data source filters.

   3. Context filters.

   4. Filters on dimensions (whether on the Filters shelf or in filter cards in the view)

   5. Filters on measures (whether on the Filters shelf or in filter cards in the view).

5. Tableau is a powerful and fastest growing data visualization tool used in the Business Intelligence Industry. It helps in simplifying raw data in a very easily understandable format. Tableau helps create the data that can be understood by professionals at any level in an organization. It also allows non-technical users to create customized dashboards. Data analysis is very fast with Tableau tool and the visualizations created are in the form of dashboards and worksheets. Following are the main uses and applications of Tableau:

   1. Business Intelligence
   2. Data Visualization
   3. Data Collaboration
   4. Data Blending
   5. Real-time data analysis
   6. Query translation into visualization
   7. To import large size of data
   8. To create no-code data queries
   9. To manage large size metadata

6. Filtering is an essential part of analysing data.