Basic Charts
Text Tables- Put measure values in color shelf and then change the text type to square type(this will help us conver text table to highlight tabel). then create different legends for each measure and adjust the color as per preference.This feature was introduced in version 10.2
Create legends for each measure.
1) you plot profit against subcategory(subcatgory in rowshelf and profit in column shelf), then go to show me panel and select text table
2)then simply drag my sales measure onto the canvas, profit ratio , numberof records, discount
3)drag measure values onto color shelf, change my text type in marks card to square type
4)then right click on measure values and create different legends for each measure and adjust color as per choice

Highlight Table vs Text Table
Highlight table -you can use only 1 measure(profit)
Text Table- you can use more than 1 measure(profit, sales, number of records, profit ratio)
Whenver we want to make use of 1 measure , please use highlight table
if there are more than 1 measure, then we can use text table
1)you plot profit against subcategory(subcategory is in row shelf and profit in column shelf)
2)By default tableau will show me a bar graph , then go to show me panel and select highlight table
3) you can add a new dimension called date to see the profit is varying over time

Bar charts- categorical comoparison, quick comparative analysis, most popular graph
go to mark shelf, labels , turn on labels, always show labels
1) plot profit vs subcategory(profit will be row shelf , subcategory in column shelf)
2)tableau will autoamtically display bar graph, you can freely change the color by going to marks card
3)you can click on show mark lables to see all the values for profit
4) if you want to highlight any particular value, you can do this by right clicking on the specific bar , got to mark labels , check always show

stacked bar-if i want to understand the mode of shipment for differet subcategories , i can make use of stacked bar chart
difficult to read when margin difference is ver very less
within year i want to achieve which category is better
1) plot profit vs order date (profit will be row shelf and order date will be in column shelf)
2) i want to check for profits across different categories, simply drop category dimension onto color shelf
3)you can clikc on show mark labels to know what profit is being contributed by different categories
4)if you also want to show sales , we can drop sales on the marks card

Side by side chart(connect to sample superstore dataset)
1)plot profit vs category ,then you also bring orderdate
2) then you go to show me panel and then you click on side by side chart, tableau will display it automatically
3)you dont want the color on your date, remove date form color shelf , add your catgeory to color shelf
4)you can rearrange your fields like date should brought before you category
5) you can simply add text lables to understand the profits for different categories over time
Date hierarchies are automatically created by Tbaleau

Line Graphs-Discrete line chart , Continuous line chart
difference between discrete line chart and continuous line chart is color (discrete is blue in color , continuous is green in color)
by default it is discrete line chart, Year is blue in color -discrete, year is green in color -continuous
dicrete chart- will give consolidated view, continuous line chart will give a more detailed view
1) plot profit vs order date
2)go to show me panel and select discrete line graph
3) alternatively you can select continuos line graph

4) without going to show me panel , i can simply right clik on my order date and look at 2 date shelfs(first shelf will tell us about discrete , 2nd shelf will tell us about continuous)
5)you can simply click on add lable to understand the profit values with respect to each year
6) you can also drill down to quarter level and month level based on our requirement

Dual axis- dual lines and dual combination
Dual axis line chart-
1)plot profit vs order date
2)drag sales next to profit onto row shelf
3)create dual axis by right clicking on sales , then go down to dual axis
4) synchronize the axis by clicking on right y axis(left y axis should be similar to right y axis)
5) you can add text to know profit and sales values over time

Dual axis combination chart
1)plot profit vs order date
2)drag sales next to profit onto row shelf
3) create dual axis by right clicking on sales , then go down and select dual axis
4) synchronize the axis by clicking on right y axis (left y axis should be similar to right y axis)
5) i can go ahead and change my sales graph to a bar chart
6) add text lables to your line graph and bar graph for clarity

Pie chart- part to whole analysis(connect to sample superstore)
1)select profit and region (put profit on row shelf and region on column shelf)
2)go to show me panel and then click on pie chart
3)adjust the pie chart to fit the entire screen(entire view)
4)drag profits onto my lable shelf,drag regions onto my lable shelf
5)i want to see % values for profits, i will put profit in my marks card
6)create a calculated field on profits by right clicking and selecting from quick table calculation
7)select % of total from quick table calculation
8)drag the calculated profit field onto my label shelf
9)remove the profit text field from the marks card

Heat maps -only 2 measures (we can control the size and color)
1) select profit and sub category , then go to show me panel and select heat maps
2)then if we want to see the profits for sub category over time, add date to my column shelf
3)then add sales to my color shelf
4)my objective is to control size with respect to sales and control profit with respect to color
5)darg profit field in marks card to color shelf
6)then bring sales field onto my size shelf in marks card
this will ensure that my sales is being controlled by size and profits are being controlled by color

just quick relative comparison , you can use heat maps
size is denoting sales, color is denoting profit

Tree maps- come in handy when we want to represent alot of data points in a hierarchial fashion
2 measures (one for size and one for color)
we can contro size of rectangle and color of recgtangle with help of 2 measures
how many rectangles will be controlled by dimensions
you can add and subtract rectangles by adding country,state and city
1)select profit and sub category
2) go to show me panel and then click on tree maps
3)i am getting negative values in my dataset , so i will solve this problem by putting profit field in color shelf of my marks card
4)then i bring my sales field on to my size shelf of marks card
5)i will bring country dimension onto my label shelf of marks card
6) i will bring my sate and city onto my label shelf of marks card

we cannot have a rectangle with negative area, that is why tableau is showing 3 missing values -negative profits

Area chart - we have discrete and continuous
when do we go for area chart , when we want a line chart as well as the break up
it is basically a combination of a line chart and satcked bar chart
total profit is sumof all parts
1) select profit and category , this will not help me , why because i need atleast one date mesaure to draw my area chart,drag date measure onto my column shelf
2)go to show me panel and then clik on area chart
3)add text to your area chart for better understanding

circle view, dot plot - alternative to bar chart
dot plot
1) i will select profit and sub category and then go to my show me panel , selct bar graph by default
2) go to your marks card and select circle to get your dot plot
Circle plot or circle view

1) i will selct profit and sub category and then go to my show me panel and select bar graph by default
2) go to your marks card and select shape to get your circle view or circle plot

sorting- from axis and pane
if you have multiple measures, tableau will consider the first measure to sort the values
tool bar is anyways there
For example you can take sales and subcategory
1) tool bar sorting (use tool bar on top)
2) sorting from axis (use x axis to sort subcategories)
3) sorting from color panel(We have added category to column shelf and then place category on color shelf). then use color panel to sort categories
4) sorting from field (i can select sales here). You can right click on your subcatgeory and select sort by field. then you can select sales in descending or ascending order.
5) sort from your y axis. you can simply drag and drop from the axis.
sorting can be done by second measure also , you can simply goto your subcategory , right click on it and select sort by field and select profit .
all we have to do is selct that measure , go to my tool bar and select sort by ascending or descending

Filtering- Dimension
1)General- manual filtering
2)Wildcard- setup string conditions (end with s paper and storage are gone-exclude option)
3)Condition- based on some measure value (profit >0) or profit<0
4)Top -we can use this option to select top 5 or 10 customers

Filtering -Dates
1) Years- You can filter by number of years
2) you can filter by number of quarters
3) you can filter by range of dates
4) you can filter by start date and end date
5) you can filter by refrence dates

select sub category vs profit ans then add region on column shelf
then filter based on customer names starting with A

measure filters-range of dates

Filter -Measures, hierarchial
Measure filter is very similar to your date filter
Measure filter means - dropping a measure on the filter shelf. select based on data aggregation(sum is our aggregation here)
1)Drag profit on row shelf
2)Drag month(continuous)on column shelf(my capsule of profit should be in green color , this means it is continuous data type)
You can decide the filter based on range of values , atleast value , atmost value, special (ignore null value- check non null values)

Hierarchial filter also called as cascading filters - came up in 2018.1 version
either first create hierarchy(this feature introduced in 2018.1) or select only relevant values
Tableau public also has hierarchial filter, so please try at home
Examples of hierarchies (location & product)
product-category and sub category
1)Give end user the control
2)this is only possible when there is a parent child relationship
Steps to hierarchial Filter (after 2018.1 version)
1)I have to create a product hierarchy(category and sub category)
2)Drag profit onto my canvas
3)Drag category and sub category on my canvas
4)you put category and subcategory on filter shelf
5)you right click on both category and sub category and select show filter
6)for better visualization , we drag category to the top of sub category card on the right side

Steps to create my hierarchial filter(before 2018.1 version)
1) drag profit onto my canvas
2)drag catgeory and sub category on my canvas
3)you put category and sub category on filter shelf and select show filter
4)for better visualisation , we drag category to top of sub category card
5)from the sub category card , select only relevant values

Grouping- Groups from marks or groups from headers
Groups can be created for dimensions and measures
Group from marks
Marks-Datapoints
Directly from the canvas , from bar graph you can select a group by selecting the hairclip icon
they are strictly static (if suppose in my next quarter , my fasteners will go into negative profits from less profits, then manually i will have to edit my group and drag fasteners from less profits to losses)
Group from headers (select from axis , one consolidated value will be displayed)
when you want to bring similar members in one group (for example profit<0)
it will not disturb rest of the members

Sets it is similar to a filter
top 5 customers example
concept of set is similar to venn diagrams
window for set is similar to filter , except wildcard will be missing
will show members by default present in the advantage over filters is that , we can see members within the set and also outside the set
set is dynamic (let us say there is change in database, it will automatically change for top7 customers), this is where it is different from groups
once you create a set , you can reuse it in a different worksheet
1) Create a set , instead of a filter

2) find out top 10 customers from my list, so create a set on my customer name
3)drag the set created by you onto the filter shelf
4)select both in and out categories from your set to see the concept of set
5)if you want to improve visualization of the chart , please add your set to the color shelf on marks card

Create bottom 10 list
1) drag profit on my canvas
2)drag customer name onto my canvas
3)create a set on customer name , i want to see bottom 10 customers
4)drag your bottom set on to my filter shelf
5)right click on my bottom 10 set and select show me in and out
6)for better visualisation add bottom 7 set to your color shelf

question : can i show both my top 10 customers and bottom 10 customers on the same chart?
1) with the above created sets(top 10 and bottom 10) drag them onto your filter shelf
2) i wont be able to see any visualization on my canvas?
As both are unique filters , we wont be able to see any visualization on my canvas
this is where we use the concept of combined sets will come , our job is to combine both top 10 and bottom 10
top 10=A
bottom 10=B
we do AUB (A union B)
How do i do a combination set
1) I first create my top 10 customer set
2) I then create my bottom 10 customer set
3) i then have to create a combined set (i want to include both my top 10 customers and bottom 10 customers in my canvas)
4) i will select AUB to combine both my sets
5)then i darg the combined set onto my filter shelf
6)For better visualization add profit onto your color shelf

Take example of scatter plot
1)take shipping cost vs profit
give order id on detail shelf of marks card
then my questions is i want to show order only whose discount is > 10%
also i want to see only orders with negative profits (profit<0)
we want to see orders with positive profits and discount>10%
A={1,2,3,4}
B={2,3}
AUB={1,2,3,4}
AintersectionB={2,3}
A-B={1,4}(Values which are present in only A and not B)
B-A={}(values in present in B and not in A)

Parameters- they are dynamic values which can replace constants with the variable or user input
Parameters can be used from filter shelf
they can be used with reference lines
they can be used in calculated fields
parametrs can be used with sets
same question : we have to look at top 5 customers, we are hard coding the value of 5 when your using the filter on customer name
we want to give end user flexibility

Drag profit on to your canvas and then put your customer name on column shelf

you create a parameter by putting your customer name in filter shelf
Then go to top tab in your filter and select from field create new parameter
Give a suitable name to your parameter for clarity
1) we can select all values
2) we can select list of values(show it as single value list)
3) we can select range of values(but make sure you select slider for quick filter on the right hand slide for clarity)
specific position options are not there, like 30 35 etc

Parametr control
1)We can control 2 sheets with the help of using a common parameter across 2 sheets(that is if i make changes to 1 sheet , the other sheet gets automatically controlled)
2)If we want to maintain independence between sheets, please use two different paramters for 2 different sheets

Bump chart
It is a line chart where the rank changes based on time line
connect to global superstore
rank of markets will change with time (for example sales across these markets with time)
steps
put order date onto column shelf
sales onto row field
Market into colors shelf
right click on sales and select quick table calculation and rank and then select compute using market
then change sales type to dicrete and change chart type in marks card to line

Butterfly chart
connect to coffe chain dataset
put state on rows
put profit and budget profit onto columns
click on axis of profit and selct reverse
create calculated field with name zeroaxisand enter value 0
drop this zeroaxis between profit and budget profit
click on zeroaxis pil and bring state onto text field
change the chart type to text
lets hide state headers, and drag your profit on color shelf and budget profit onto color shelf

Reference lines
1) simply go to axis and click on add reference line, this will help us draw a line
Reference lines, bands, distribution can be used based on the business logic, they are usely used for benchmarking

Forecasting-Predicting futre trends, estimating future trends given the past (Historic) Data
Time series
use historic data -2015, 2016, 2017, 2018
connect to sample store for this exercise
Ex: Business was established 4 years ago , what will be my profit in 2019 of superstore , given historic data
You can predict sales, profit,
1) create time series chart or line chart (x axis shoudld be time)
by default it is exponential smoothing- more importance is given to 2018 and least weightage is given to 2015
EX : profit(2019)= 0.8*profit(2018)+ 0.6*profit(2017)+...(tableau will take care of the weights)
You can ignore the last month or inlcude it based on business logic
confidence interval (we cannot be 100% perfect) so we go for 95% confidence level(there is 95% chance)

Scatter plot - Correlation analysis
1)It will comment on the direction of relationship
2)strength of the relationship
Linear trend line- equation of straight line(y=mx+c), y here is profit(it should always be on y axis)
x here is sales (it should always be on x axis)y= f(x), profit= f(sales), Rsquare 0.22, it is not a great model, i converted my model from linear to power , R square improved to 0.78
c is y intercept
p value <0.05 is allowed, confidence level is 95%

what will be output when given input is provided
Ex: what will be theweight gained given calories consumed
Ex: what will be the profit given sales is 100k
wind speed vs power output

Gantt chart -list of events against a timeline
connect to build a house dataset
1) bring category on my row shelf
2) bring my start date on column shelf
3)then right click on date and arrange it as per exact value
4) i have to put my duration on my size shelf
5) then i can color my chart based on category
6) i have to goto my category and arrange the order based on field (start date) and select minimum value
Tableau will give us a gannt chart

Histogram
use coffee chain data
Objective: to perform distributive analysis
1 measure is enough(sales is enough or profit is enough)
Drag sales onto row shelf.Tableau will create by default sales bin with specificsize(34.3)
if we want to manually change the bin size then , go to sales measure and click on create bin(with size 60)
drag this newly created bin onto my canvas ,Then if we want to convert the resultant figure into histogram , increase bar size or change sales bin to discrete data type
bins can be created only on measures

Box and whisker plot- distribution analysis on data

use sample superstore
divide data into 4 quartiles
Business Problem: discount being offered across different regions and segments
5 point chart(min value , max value, median, q1 and q3)
q1 is known as lower hinge(lower quartile)
q3 is known as upper hinge(upper quartile)
from minimum to upper hinge 75 percentile of data is concentrated
from minimum to lower hinge 25 percentile of data is concentrated
box will contain 50% of data distribution- it is nothing but peak in the data(middle 50% of data)
any outliers will be outside of box and whiskers
lenght of whiskers -data within 1.5times the interquartile range
interquartile range(iqr) =q3-q1
length of upper whisker= q3+1.5*iqr (>=this value will be an outlier)
length of lower lower whisker= q1-1.5*iqr

Bullet graph- strictly 2 measures (select profit vs budgeted profit)
1)connect to your coffee chain database
2)Drag profit and budget profit onto canvas and select bullett graph
3)Blue bar is my budget profit (258,760), actual profit will be my reference line (259,543)
4) Overall result is - Actual profit > budget profit(this is good result), If i dig deeper and do a market analysis , i can say that my southern region the worst performing region and my east region was very good.
5)60% of target , 80% of target can also be seen in my bullett graph for reference

Bubble chart- control size and color
negative profit cannot be represented with negative area
there use profit on color shelf, and sales on size as sales cannot be negative
number of bubbles will be determined by sub categorie elements
1) Drag profit onto row shelf
2) Drag subcategory onto column shelf
3) Goto show me panle and select packed bubbles
4)Drag your profit onto your color shelf
5)Drag your sales onto your size shelf

Word Cloud
Select State and Sales as dimension and measure
Goto show me panel and select tree map
select text in place of automatic from marks shelf
word cloud is ready

Bar in bar chart
put subcategory in columns and sales in row shelf
drag profit and put it on canvas secondary y axis
go to all and then select bar graph from marks shelf
then reduce the size of profit pill and sort it based on profit or sales

Rounded Bar chart
Put subcategory on rows sales on columns
create 0 field in column shelf
put that 0 field on x axis, then select line chart from marks field
put measure names on path
then edit axis and set fixed at 0

goto label and select show mark labels and deselct end of line

Maps
Geographic field -will be identified with the help of a globe icon
Geographic field could be country , state, city etc

if we want plot our geographic data, simply drag country , state city on my canvas

Geographic Roles
1)it is associated region , city , state etc, zip codes(for india postal codes were added in version 10, Airports came up in version 10 of tableau).
2)They are all recognized on the basis of latitudes and longitudes. they are stored in tableau repository in documents, we can create new geographic roles and also from existing ones , and also we can create new ones
3)we can also convert a geographica role into non-geographic role , we can simply plot airports on a map if your dataset has airports
4)also it recognizes area codes in USA (CBSA.MSA) -core based satistical area/ metropolitran statistical area
similary we have county , congressional district levels in USA

*be careful of cities (memphis in egypt or memphis in Tenesse in USA), therefore provide parent information like which country, which state and then followed by which city , otherwise it will provide error called ambiguity

Drag country onto shelf for tableau to understand which country you are talking about(when you drag the country , automatically latitude and ,longitude are placed respectively in column and row shelf)

Symbol maps
Tableau by default will create symbol maps
Tableau using a dot wich is a filled in circle is called your symbol map
we can contol both size and color that is 2 measures (i can control size with help of sales and color with help of profits)
Ex:You can make use of a pie chart if you want to know at catgeory level(furtniture, office supplies , technology)
if you want to know also about profit , you can do it (combined maps)

Combined maps
1)drag country and state on the shelf
2)increase the circle size
3)drag sales onto size shelf in marks card
4)drag category onto color shelf in marks card, change the chart type to pie
5)then if we want to creat a combine map to include profits , then drag latitude and put it on row shelf
6)convert your graph on top by removing sales and adding profits to color shelf , after that replace the type of chart with filled map
7)once you have the filled map , combine both the maps with the help of dual axis

Filled Maps
1)simply go to show me panel and select filled maps or i can do the same thing from marks card
2)Maximum we can show only 1 measure on filled map(that is because we can control only paramter which is color)
3)Tableau doesnot give a filled map for city geographic level

Editing unrecognized locations
connect to global superstore
If there is ambiguity , try to enter latitude and longitude
Take care of spelling mistakes(Bengaluru, if you bangalore)

Layers
1)By default it will show country border ,state borders, lakes etc.
2)If you wnat more layers , go to map options and select layers, then you are free to choose from the available layers
3)Depending on the zoom level of map some layers will be active and inactive

click on zoom level , max 16 levels of zoom you have
4)we can also add data layers, specific to usa(population , per capita income)
ex: population layer
5)At any point in time ,we can show one data layer

*These maps are coming form Openstreet map contributors

WMS-Web map services
1) drag country , state onto your canvas
2) go to background maps , then select manage maps , inside manage maps select the url
3)save it in the form export it -it will take you to tableau repository under map sources folder
4)you can simply import it if you want to use it on any of your maps

Polygon maps
if the region is neither a country or city , a nonstandard region that you want to define for your requirement enclose it or shade that region or enclose it use polygon maps
1)polygon maps cannot be created with generated values of latitude and longitude(that is fields present in internal tableau database)
therefore, latitude and longitude should be present in your underlying database
2)also name of th place shpould be present
3)each place or region should have unique id
4)how should i define the order depends on point order
5)every dot in the map has a point order, point order tells tableau the sequence in which dots should be connected to give a meaningful structure
Use National Parks UK polygon dataset
Steps:
1)Drag latitude and longitude
2)Bring park name on detail shelf
3)change mark type to polygon
4)provide information such as polygon id on detail
5)provide point id on path shelf of marks card
6)bring park name onto color shelf

Custom coding
Ex Region , i want to make it a geographic role
create geographic role from states (this feature has come up in version 10)
1)First, you have to make a hierarchy, let us call this hierarchy as location
2)right click on region , go to create from states, then automatically you can see the globe icon next to region
3)Drag country onto detail shelf followed by Region
4) Add state to detail shelf and color it with region
3)if you want you can add profit on label shelf

http://ows.terrestris.de/osm/service

Arbitary formatting- manual go to quick filter and change colors
Drawback -this gets applied to all the charts wherever you apply order date

Conditional formatting or data spotlighting
Use calculated fields
if sum(sales) >600k say it is very good sales
ex2: coffee chain
drag product type and product on row shelf (check how data is distributed)
then drag sales and product on column shelf
CASE [product type]

Ex3:
connected to global superstore dataset
there are different markets in global superstore, how they are faring with respect to sales, can they match the target ?
whcih countries performing well or under performing
drag markets onto row shelf to understand
well establieshe markets: asia pacific , europe and usaca
emerging markets-africa and latam

ATTR is attribute function, general purpose it will return * if it has more than 1 value, it will return expression if it has 1 value or unique value
ATTR is aggregation for non numeric data or dimensions, tableau will not mix disaggregate and aggregate functions
so wrap it in your ATTR,

ATTR Function
1)bring city and state to row shelf, observe apple valley is present in 2 states
2)change STATE to attribute to see the * and then drag and drop your ATTR state on your filter and select *

calculated fields
sales across different years,all the calculations will be at level of detail
look at diff in sales,if you see a triangle , it is a quick table calculations, direction is important
by default all calcluations happen table across, you can also select table down or a comnbination
then you can also select pane across , pane down and combination
pane is nothing but my year(2015, 2016, 2017 , 2018)
we can also calculte for other measures such as % of total sales etc.

Drag your sales and sub category on canvas
goto show me panel and select text table, add order date onto canvas
then put 4 to 5 sales on marks card
then click on measure values and add to sheet
then create quick table calculation and drag and drop from marks card to measure to measure value shelf

Conditional formatting
Sales Vs OrderDate

```
if SUM([Sales])>100000 THEN "Goodsales"
ELSEIF SUM([Sales])<50000 THEN "Badsales"
ELSE  "Averagesales"
END
```

Case Statement

Coffee chain dataset

```
CASE ([Product Type])
    WHEN "Coffee" THEN "Coffee"
    WHEN "Espresso" THEN "Coffee"
    WHEN "Herbal Tea" THEN "Tea"
else "Tea"
END
```

Grouping based on condition

```
if SUM([Profit])<0 THEN "Losses"
ELSEIF SUM([Profit])>0 AND SUM([Profit])<10000 THEN "Avgprofit"
ELSE "Highprofits"
END
```

Worldmap
Globalsuperstore
Parameter with maps
1. Create one parameter on sales like emergingthreshold
2. Create one more parameter on sales like threshold

```
IF (ATTR([Market]) = "Africa" AND SUM([Sales]) > [Emerging Threshold]) THEN "Well Performing"
ELSEIF (ATTR([Market]) = "LATAM" AND SUM([Sales]) > [Emerging Threshold]) THEN "Well Performing"
ELSEIF (ATTR([Market]) = "US" AND SUM([Sales]) > [Threshold]) THEN "Well Performing"
ELSEIF (ATTR([Market]) = "EU" AND SUM([Sales]) > [Threshold]) THEN "Well Performing"
ELSEIF (ATTR([Market]) = "APAC" AND SUM([Sales]) > [Threshold]) THEN "Well Performing"
ELSEIF (ATTR([Market]) = "EMEA" AND SUM([Sales]) > [Threshold]) THEN "Well Performing"
ELSEIF (ATTR([Market]) = "CANADA" AND SUM([Sales]) > [Threshold]) THEN "Well Performing"
ELSE "Under Performing"
END
```

LOD(Level of Detail)
table scope Fixed LOD
Drag sub category and sales(avg) onto canvas
then create a calculated field using fixed LOD (Fixed:Avg(sales))
then drag fixed LOD onto detail and create a reference line using fixed LOD
Drag category onto canvas and select pane wise refrence line to see the dfifference
fixed LOD will not get influenced by any other measures or dimensions

Dimension LOD
i want to look at region level of detail, no matter what dimensions i bring , i want to look only at region level of sales data
make a calculated field on region , therefore any other dimensions will, not impact region
drag region onto canvas followed by state
then create calculated field on fixed region sum of sales
then drag Dimesnion LOD onto canvas to see the difference
Dimesnion LOD cannot impact our calculations
{ FIXED [Region]: SUM([Sales])}

Include LOD
It will influence the canvas
chart will be at higher level of detail and calculation will be at granular level compared to level of detail on chart
let us say chart has 2 dimensions , using Include LOD we are inlcuding another dimension, therfore calculation will be at 3 rd level of detail on chart
EXample
get me the avg sales across different states(row shelf) and sub categories(column shelf)
next , i dont want state to be there and also i wnat the average of average sales
i want to obtain average of average sales without having state on row shelf, i want only subcategory and not state but i want at state level of detail

Exclude LOD
opposite of include LOD
you can exclude any dimensions that you dont want

Waterfall chart
waterfall chart- whether dimesnion will positively contribute towards a given measure or not (is it taking the profit up or down)
it will give us information on contribution
1)drag profit on row shelf and sub category on column shelf
3)create a negative profit field, add this field onto size shelf and bring profit onto color shelf
4) go to analysis and add show row totals
5) Use profit on canavas(row shelf) and then create a calculated filed on running total
6)Go to marks field and convert chart type to gantt chart
7)always calculate your waterfall chart on running total

Fixed LOD

1. Sales --- Text
2. Category -- Rows

Doble click on Fixed LOD

Drag Category onto Filters , show filter , check options

{ Fixed : Sum(Sales) }

Second Fixed LOD

1.Subcategory --- Column
2. Sales --- Rows ---- AVG(Sales)

Calculated field : { Fixed : AVG(Sales) }
bring this LOd on to detail

Then Create reference line using this fixed lod
Calculted field Fixed LOD will not change compare with other reference lines

Dimension LOD

1. Region,State ---- Rows

Calculate field : { Fixed Region : Sum(Sales) }
Drag this LOD onto canvas .. ABC
Sales onto Canvas

Include LOD

1. Subcategory --- Column
2. State ---- Row
3. Sales -- Text --- Avg
Totals --- Column Grand Total
Total --- Total using average

Take another sheet.
Sales -- Row -- avg
Subcategory -- Column
{ Include [State] : Avg(Sales) }
Drop this LOd onto Rows -- avg

Exclude LOD

1. Region , Category --- Rows
2. Sales ---- Column

I dont want to see region level data
i want to see LOD w.r.t Country with same visualization

{ Exclude [Region] : Sum(Sales) }
Bring this LOD to Column
Change Color and add Text

---- Context Filter
----- Joins
---- Story
----- Data Blending

Dashboards-put worksheets together and make it interactive
worksheets are nothing but our building blocks
next to yourk work sheet icon , you will find your dasboard icon , same thing can be also accesses from dashboard icon
whwn you click on dashboard icon , new dashboard will be created ,on left hand side you can find device preview , below which all the worksheets that you have created and also objects

Goto shipping dashboard click on hide and unhide sheets, we have running total of shipping costs , shipping cost
Understand different sheets , what is there in every row and shelf , what is the chart trying to convey
Then simply darg and drop every work sheet onto dashboard (you will notice by default it is tiled) let drop it below map , then bring running total shipping costs

1) Always a follow a zig zag patterns when arranging worksheets in dashboards
2) Dont use too many worksheets on your dashboards, beacuse information could be confusing (maximum 4)
3) Once a worksheet is placed in dashboard , you can look at size options on the left hand side, whichever worksheet you are including in the dashboard , you can identify it with blue icon and all the controls cab be seen on the chart
you can change the fixed size to laptop browser to see the changes(you can use fixed size if you can know beforehand what device he is using)
If we dont know the end device, we can select automatic so tableau will automatically adjust (our focus at the end of the day is to get rid of scroll bars)
Another sizing option what we have is range , but it is hardly used

you have 3 types of sizing options
1)fixed(when you know the end device)
2)automatic(when you dont know the end device)
3)range(range is rarely used)

Device preview- if you know the device before hand , you can simply select the device in which you want to view your dashboard
device preview has few options such as desktop, tablet, phone

Nxt concept: Objects
Image: whenever we want to add the logo of the company
if you want image object use floating instead of tiled, when i select floating , all my images will be floating around in my worksheet
with floating you can go to layout and change x and y dimensions to increase or decrease the size of the image
let su say , i want to publish a web page or a blank object
we can also do a floating blank object(becasue it is floating , you can adjust the width etc)
only way to add a line between charts is use floating blank object in dashboard
containers-vertical and horizontal
this is how we build a dashboard in tableau

Filters- one way of making interactive dashboards
If you had already applied a filter on the underlying worksheet it will appear
we can create filter based on single work sheet or can make it global , right click and selct apply to all work sheets to make it global
you can also apply to selected work sheets , if you see a barrel icon , filter is being apllied to all the worksheets
even the title of the woksheet can be made dynamic
also, you can see the filter icon on the worksheet , turn it on to see the difference, every data point in the chart will act as filter

dashboard interactive actions
goto dashboard and click on actions
there are three types of actions that can be added , filter action , highlight action and gotourl

Then there is something called goto sheet icon (it will take you to the underlying worksheet)
filteraction-menu function should be used to trigger filter action
highlightaction-hover function should be used to trigger highlight action (just to highlight the result and dim down the rest)
urlaction -select function should be used to trigger url action
we said leave filter, it will show the filtered data
for story we can create on book icon- list of all worksheets and dashboards just like in powerpint, arraniging slides in a sequence

Donut charts
it is a combination of pie chart and circle plot, create a pie and on top of it put a circle
we need dual axis(2 entries on row or column)
create one calculated field (constant for example)(constant here is with value 0)
put 2 constant onthe canvas shelf
go to marks card of first constant shelf(bring region to color shelf and look at profit)
bring profit onto size shelf
go to marks card and change the chart type to pie
go to second marks card and change the chart type to circle, also change the color to white
then simply goto row shelf and select constant pill and say dual axis
if you want to magnify the image ctrl+shift+B

Animation charts- use world indicators database
put life expectancy male on rows
put helath exp/capita on columns
darg region onto color shelf and put year in pages
it will give u slider , you can slide up and down your data or use animation or play controls

funnel chart (top is known as head and bototm is known as neck part)
connect to sample super store
bring sales on to rows field
bring segment into colors part
use sales onto size shelf

advance funnel chart
connect to sample superstore
based on ship mode and sum of sales
drop ship mode onto columns and drop sales onto rows
you have to take the transpose of the bar chart and then you have to convert the chart type into area chart and sort it by descending order
in case if you want to complete your other half , you have to create a calculated field with negative sales adn then drop it before sales on column shelf
to add information , you can simply drag sales onto your label shelf

Integration with R (it started in version 8.1)
this feature not available on tableau public
it happens through calculated fields
we have to see if there is any package in R, only packages which can be called through calculated fields can be used in Tableau
R should be ready to accept connection with Tableau , this is also important for us
1)install package called Rserve
2)invoke that package Rserve
3) start Rserve (Rserve())
bydefault rserve will run on 6311 port)
there 4 scripts in tableau that you can use to communicate with R (SCRIPT_BOOL, SCRIPT_INT, SCRIPT_REAL and SCRIPT_STR)
Calculated Field(Expected Profit)

```
SCRIPT_REAL("
fit <- lm(.arg1 ~ .arg2 + .arg3)
fit$fitted
"
,
SUM ([Profit]),AVG([Quantity]),AVG([Discount])
)
```

Start R
1)How to install R
2) there is a package in R called R serve- this package will help r to communicate with external services
there are different packages in r , we have to call that package and perform some anaylsis on the data which is present in tableau
3)open tableau and connect to r serve from within tableau
4)connect to datasource(sample superstore) in tableau and build our visualisations
5) we will use calculated fields(expected profit) to communicate with r

functions which start script you can use in your calculated fields

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