one

UNIT-IV

1) Data Visualization: Basic Principles:

Why we visualize data? we visualize inf to meet very basic need- to tell a story. It's one of the most primitives forms of comm known to man having its origins in cave drawings even before written comm.

With the passing of time, we have found new ways to visualize inf. Today, we're familias with the basic chart types like line chart, bar chart, Pie chart etc. However they are more effective than bland tables, text & no's.

Def: Data visualization is viewed by many disciplines as a modern equivalent of visual comm. It involves the creation & study of the visual representation of data:

A primary goal of data visualization is to communicate inf clearly & efficiently via statistical graphics, plots & inf graphics. Numerical data may be encoded using dots, lines & bars to visualize communicate a quantitative msg.

Good data visualization takes the burden of effort off brain & puts it on the eyes. The principles of data visualization r

1) Simplify & show the data:

Just like an artist can capture the essence of an emotion with just a few lines, good data visualization captures the essence of data- without over simplifying.

We don't want a tool that gives us 19 more options after we decide we want a column graph. We want a tool that knows which visualization is appropriate & then creates it. Simple.

2) Provoke thought abt the subject at Hand:

Induce the viewer to think abt the substance rather than abt methodology, graphic design, the tech of graphic production or something else.

The author explains that the map makes a fantastic visualization medium bcoz we have no reason to question methodology. A map is recognizable, allows us to put a lot of data in a small space, & displaying the data within allows us to easily understand & compare as needed.

3) Avoid Distorting the Data:

It should go without saying that a great piece of data visualization should tell the story honestly. Pie graphs & especially

exploited 3D pie charts, are the favorite whipping boy of the na
viz geeks, often both of their distortion & lack of clarity. We

5) Encourage Eyes to Compare Data:

Though not necessary, interactivity makes comparing data in P
visualization particularly fun & engaging. Sometimes the best u
of a dataset is to present the viewer with the controls, letting
them uncover things on their own.

6) Reveal Data at Several levels of Detail:

Many ambitious datasets call for visualization that gracefully
handles the large, 30,000 foot figures way down to the super
granular, all while maintaining the proper spatial relations.
This allows the viewer to explore the data; he/she understands
the big figure quickly, but has the opportunity to pick out some
of the more details.

Purpose ■ Military □ Commercial ● Govt

2) Data Visualization Tools:

There r many great visualization tools available. Several fully
Packaged tools exists that largely operate from a graphical
interface, each having a range of capabilities. These include
Excel, SPSS, & Tableau. The most advanced tools often involve
writing code they R Package, D3 a visualization library for
JavaScript.

Some of data visualization tools are:

(i) D3.js: (Data Driven Documents) is the first name that come
to mind when we think of a Data Visualization slw. It uses
HTML, CSS to render some amazing charts & diagrams. If
u imagine any visualization, u can do it with D3. It is feature
Packed, interactivity rich & extremely beautiful. Most of all it's
free & open src.

(ii) Fusion charts: Fusion charts has probably the most exhaustive
Collection of charts & maps. With over 90+ chart types & 965 maps,
you'll find everything that u need right out of the box. It not
only supports modern browsers, but also older browsers
starting from IE6.

Fusion charts supports XML formats, & we can export
charts in PNG, JPEG, PDF.

(iii) Chart.js: It is a tiny Open src library that supports
six chart types: line, bar, radar, Polar, Pie & doughnut. But
the reason I like it is that sometimes that's all the charts

needs for a Project. If the application is big & complex, libraries like Google charts & Fusion charts makes sense, otherwise for small hobby Projects chart.js is perfect soln

i) Google charts: Google charts renders charts in HTML5 to provide cross-browser compatibility & cross platform portability to iphone & Android. It also includes VML for supporting older IE versions.

It offers a decent no of charts which covers the most commonly used chart types like bar, area, Pie & gauges. It is flexible & user friendly.

(v) High charts: High charts is another big player in the charting space. Like FusionCharts, it also offers a different package for stock charts called Highstock which is also feature rich. It allows exporting charts in PNG, JPG & PDF.

(vi) Leaflet: It is an open-source library developed for mobile friendly interactive maps. It is extremely light & has lots of features for making any kinds of maps.

vii) Dygraphs: It is an open src javascript charting library for handling huge data sets. It's fast, flexible & highly customizable.

Examples of Data Visualization tools inspiring Projects:

Data Visualization is the presentation of data in a pictorial or graphical format. It enables decision makers to see analytics presented visually, so they can grasp difficult concepts & identify new patterns

1) Statista: Statista is an online statistical portal. It provides access to data from market & opinion research institutions, as well as from business org's & govt Institutions.

2) Our world in Data: It is an online publication that shows how living conditions around the world r changing. It shares this info thru interactive data visualizations & research data.

3) Pew Research Center: It is a nonpartisan fact tank that informs the public abt the issues shaping our world. They conduct Public opinion polling, demographic research, content analysis & other data-driven research.

4. Every Satellite Orbiting Earth: This interactive graph, built a db from the Union of Concerned scientists, display the to -ies of the 1200 active satellites orbiting the earth. Each satelite is represented by a circular icon, color coded by Co & sized according to launch mass.

5. Renting vs Buying: It is an interactive data calculator tha offers a cost/Benefit analysis for prospective homebuyers. Along with this it help u to determine whether to rent or bu a home.

6. The Museum of the world: ~~The~~ when Google is involved, we should expect something incredible & innovative. The Museu of the world is vivid proof of that. The website invites the online audience to join the adventure thru history in a fascin -ting way. It resembles a speedy way that is enriched with interesting facts presented as colorful bubbles. There r several tracks that identify various continents.

7. Histography: As u may have guessed from the name, the project is dedicated to historical events. Everything is assemble in one timeline that feels a bit like a scatter plot chart. It traces history from the Bigbang to the present day. Each tiny black pixel is linked to a person, achievement / breakthrough that left thei indelible imprint/ humankind. U can also sort out data by categories that r displayed on the left sidebar / explore editorial stories.

8. History of Cars: This is another project on ocd list that focuses on history. This time, it reveals chronicles of events inherent to motoring world. Not only does it show the most iconic vehicles but also describes how the industry responded to innovations caused by the economic crisis.

The adventure begins with Benz Patent (filed in 1885) & ends with modern Driver free cars. The whole journey is reconstructed with the help of excellent illustrations.

9. Fans on the Move: It is a website that gets the most out of interactive features & modern techniques. Although the design is simple, its functionality is what really matters. Here u can discover how sports & music fans drift from one country to another in order to visit their favorite concerts & championships. Find out which event was the most popular & crowded, as well as observe the evolution of cross-borders ticket sales.

Exeersicise: Create Your own Visualization of a dataset: (3)

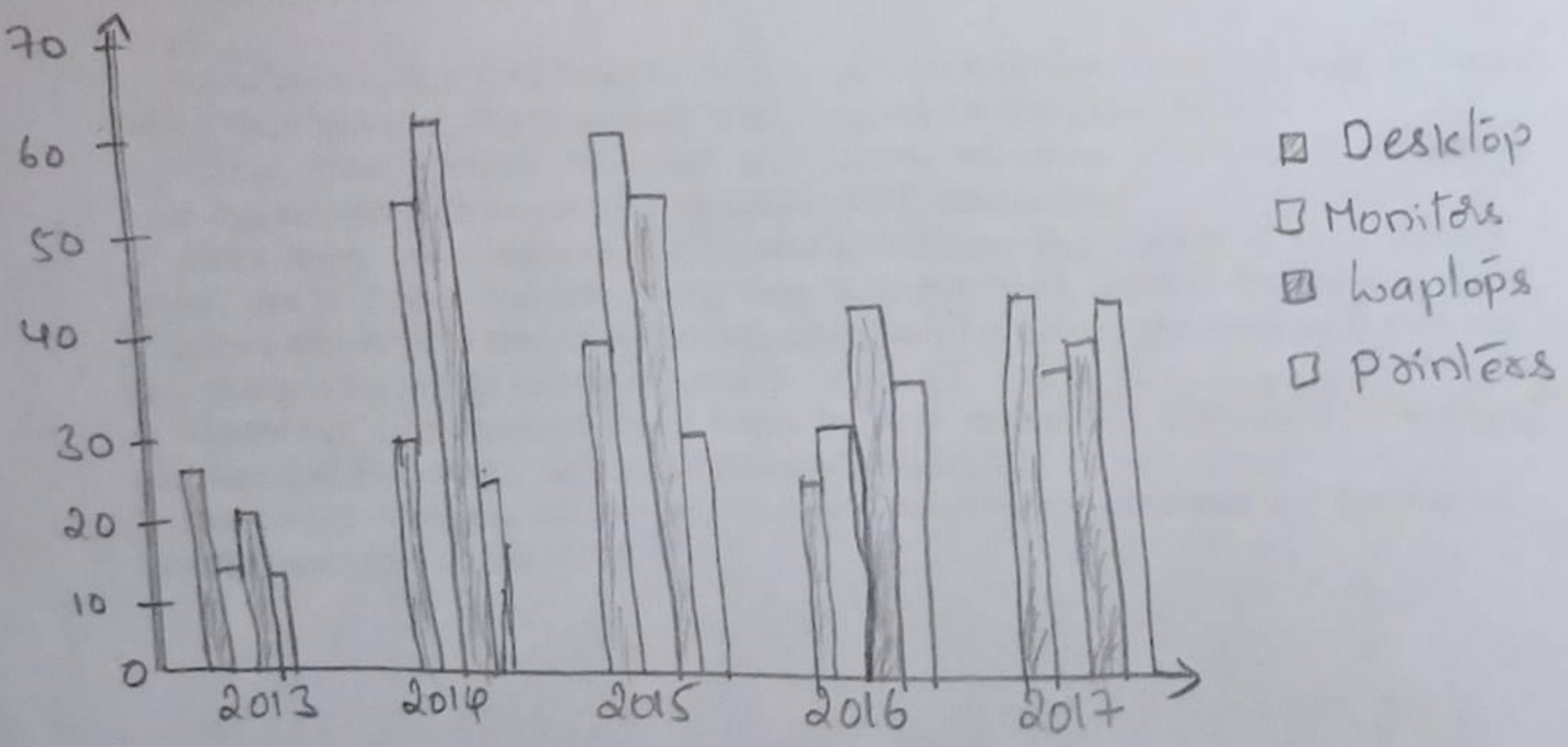
Graphs & charts are incredibly useful tools, & Excel makes it quickly & easy to add them to your spreadsheets inorder to tell a visual presentation, story etc., There are different Chart types in Excel they are: Pie, Column, Line, Bar, Area and Scatter charts

Steps:

1. Enter the data into Excel spreadsheet in table format. The data should have column headers, row headers & data in the middle to make the most of graph.

	2013	2014	2015	2016	2017
Desktop	25	30	40	24	45
monitors	12	54	65	33	35
Laptops	23	35	55	42	38
Printers	12	20	28	35	45

2. With the cursor, highlight the cells that contain the information that we want to appear in graph.
3. With the text selected, click Insert → Chart.
4. When the chart wizard comes up, select the perfect kind of graph depending on what information you have & how you want to present it. for eg, if you select column chart it looks as follows:



5. Different versions of Excel allow you to change the chart type, which appears after your chart is created.

6. Click on the arrow next to the chart type button & c
on whatever type of chart we'd like.
7. Type a chart title. If you wish to add a title for the
do so. Then click next.
8. Excel assumes you want the chart type placed
the worksheet. If u would like the chart placed in
new sheet, click the radio button, type a sheet name,
click finish.

Cambridge Analytica British data consultant
→ legal & ethical issues
facebook data scandal (2018)