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#LifeKoKaroLift

PG Diploma in ML

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Course : PG Diploma in ML

Lecture On : Live Session on Data Story Telling

Instructor : Arihant Jain

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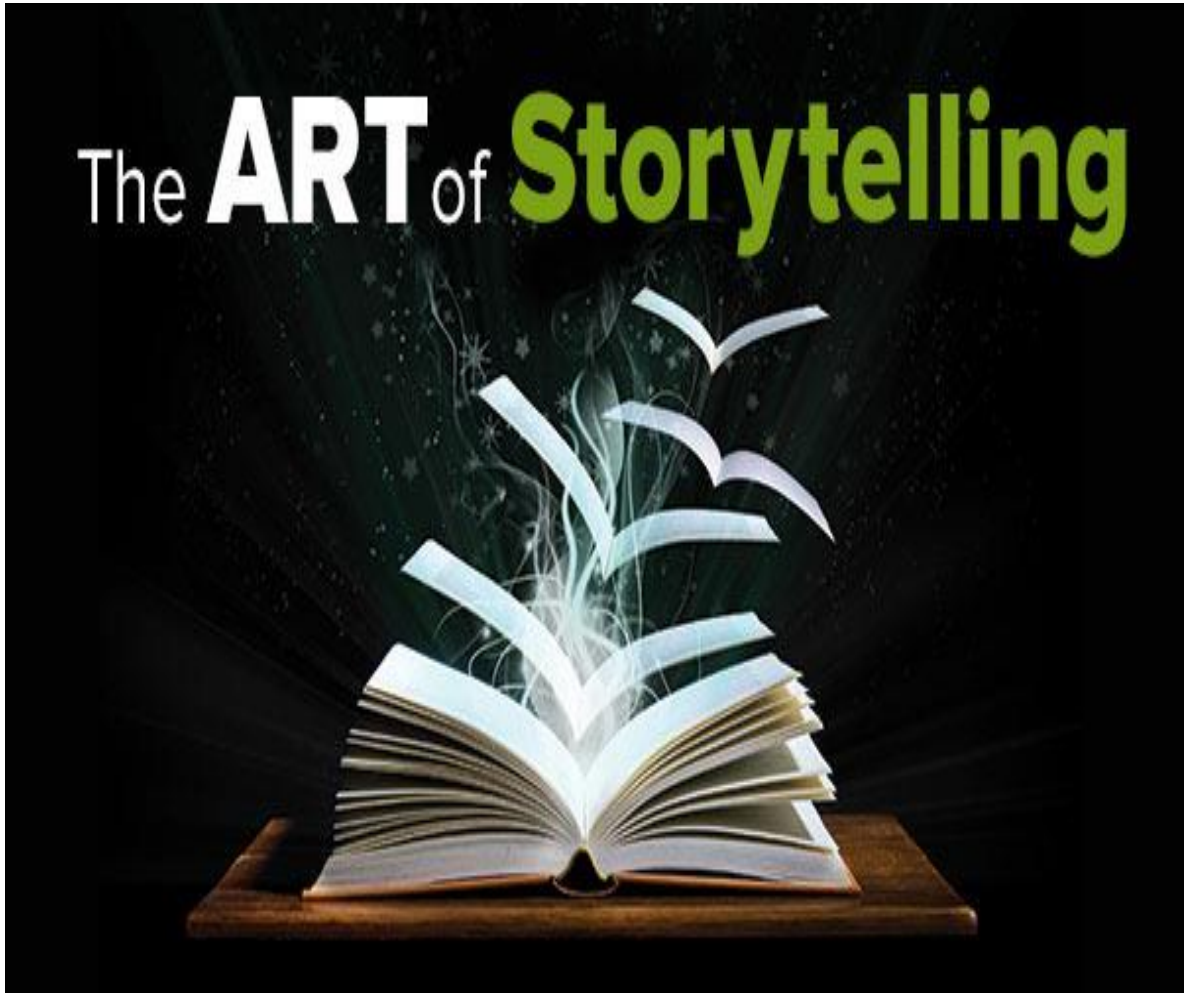

Instructor-led live session on data storytelling

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About Me

I am working as **Lead Data Scientist** at ZestMoney with Close to 6+ years of experience in Data Science, Deep Learning, predictive Modelling, Machine Learning & Optimization. I worked for building Machine Learning / Deep Learning models in Retail, Credit Risk ,Marketing ,Collection ,Customer Service & Digital across Banking ,Digital, Industrial IOT & Telecom domain. I have worked with companies Genpact , RBL Bank , GE & Vodafone in Past , using Data Science & Analytics to drive different impact business use cases.

I am passionate about solving business problems through data science**. I believe every number has a story to tell. Being a data scientist it's my job and passion to decode that story.** I enjoy applying and optimizing classical machine learning algorithms, NLP, and Bayesian design strategy to solve real-world problems.

Arihant Jain

https://www.linkedin.com/in/arihantjain15/

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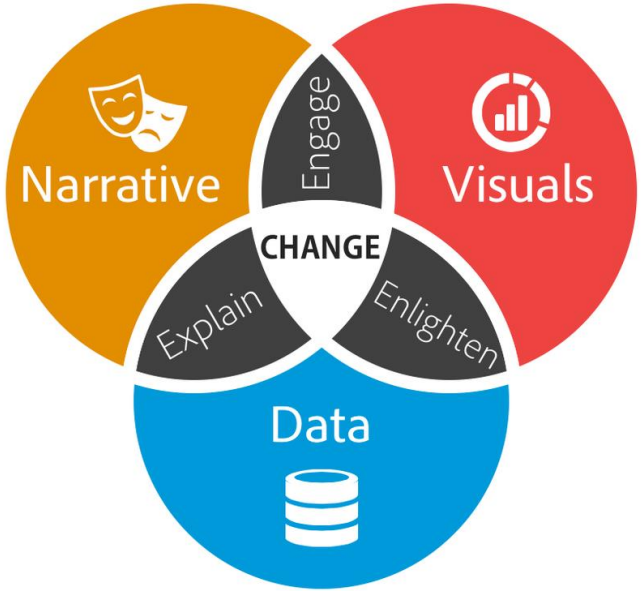
Agenda

- What is Storytelling ?
- Why Storytelling is essential
- Different Methods to create stories
- Types of dataset & appropriate charts
- Storytelling during Predictive Model building
- Best Practices of Storytelling
- Demonstration
- Q & A

What is Data Storytelling?

Data visualization expert **Stephen Few** said, “Numbers have an important story to tell. They rely on you to give them a clear and convincing voice”

Data storytelling is a structured approach for communicating data insights, and it involves a combination of three key elements: ***data***, ***visuals***, and ***narrative***.

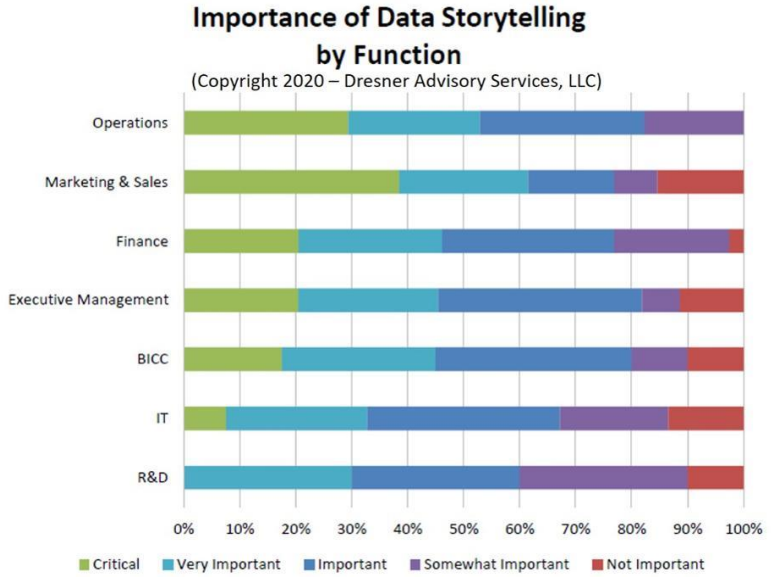


Why Storytelling is essential ?

Memorability- A study by Stanford professor Chip Heath found 63% could remember stories, but only 5% could remember a single statistic. *People hear statistics, but they feel stories*

Persuasiveness

Engagement



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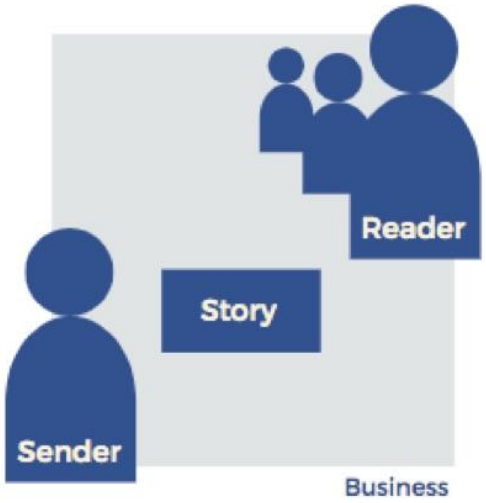
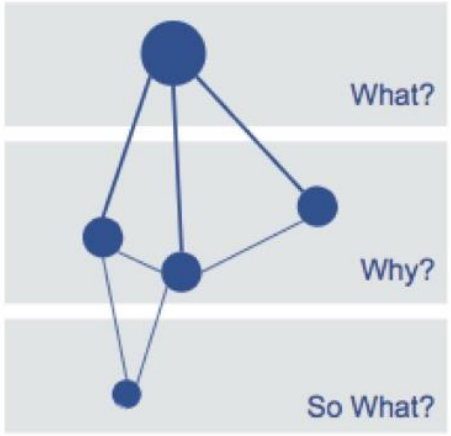
Flow of Storytelling

Context



Narrative



Effective Visuals

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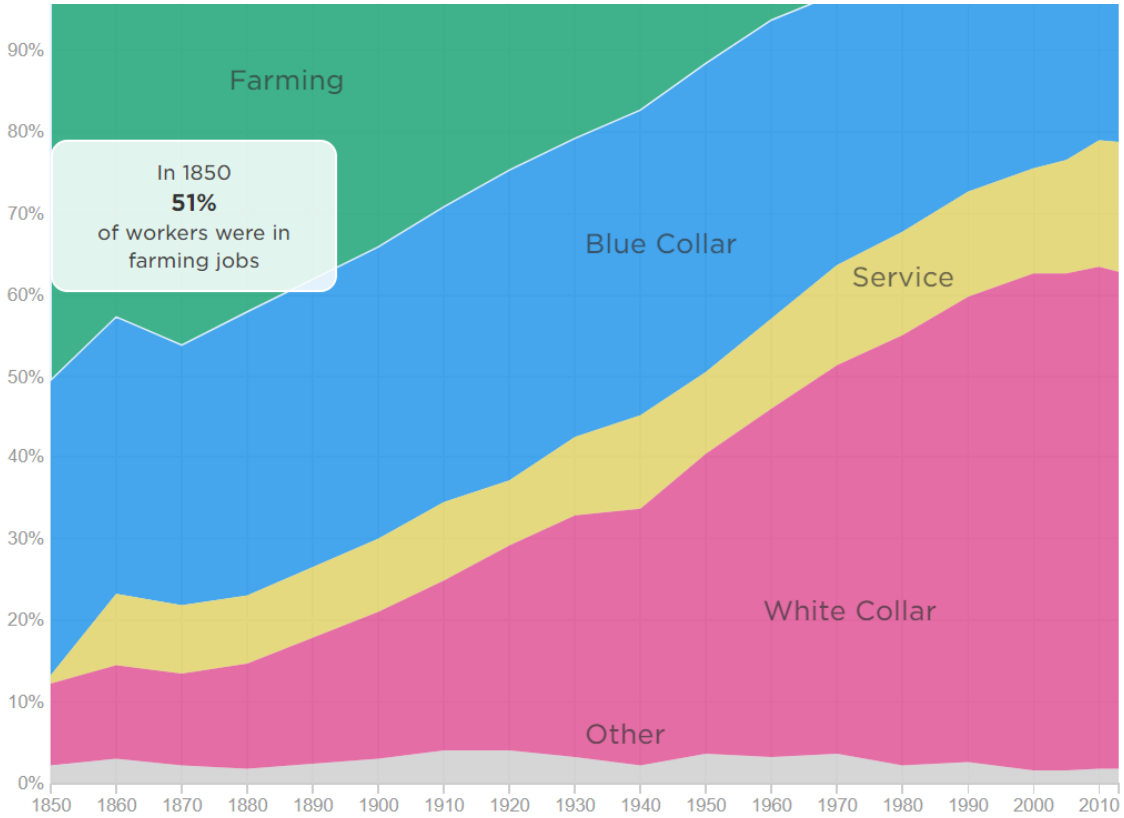
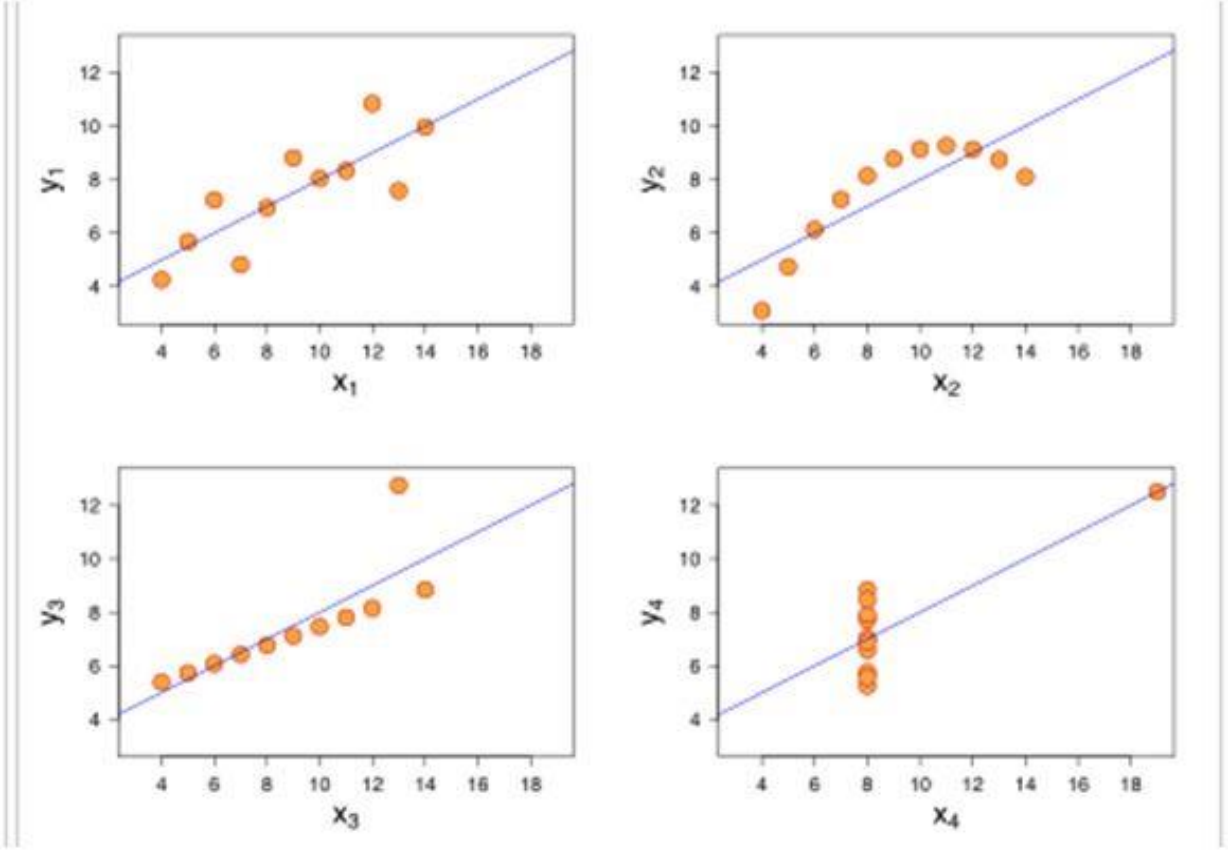


How Machines Destroy (And Create!) Jobs

Anscombe's quartet

I		II		III		IV	
x	y	x	y	x	y	x	y
10.0	8.04	10.0	9.14	10.0	7.46	8.0	6.58
8.0	6.95	8.0	8.14	8.0	6.77	8.0	5.76
13.0	7.58	13.0	8.74	13.0	12.74	8.0	7.71
9.0	8.81	9.0	8.77	9.0	7.11	8.0	8.84
11.0	8.33	11.0	9.26	11.0	7.81	8.0	8.47
14.0	9.96	14.0	8.10	14.0	8.84	8.0	7.04
6.0	7.24	6.0	6.13	6.0	6.08	8.0	5.25
4.0	4.26	4.0	3.10	4.0	5.39	19.0	12.50
12.0	10.84	12.0	9.13	12.0	8.15	8.0	5.56
7.0	4.82	7.0	7.26	7.0	6.42	8.0	7.91
5.0	5.68	5.0	4.74	5.0	5.73	8.0	6.89


y1
x1
y2
x2
y3
x3
y4
x4
4
6
8
10
12
14
16
18

How Seattle Residents determine housing. In one simple graph, they clearly communicate three variables: neighborhood, amenity, and scale.

GRAPH LEGEND

- Remainder of Seattle
- Eastside
- South King County
- Snohomish
- Central Seattle

NOTE*

Walkability: Walkable neighorhood and being near local activities
Space and separation: Having space and separation from others
Commute: Within 30-minute commute to work
Change in family size: Change in family size or marital/partner status

Source: Puget Sound Regional Council

Step Wise Plan for Story Telling

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1. Begin with a question
2. End with the Insight
3. Tell Smart Story
4. Use Visuals to support
5. Know your Audience and cater your story accordingly

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Different Methods to create stories

1.Begin with Pen-Paper Approach

- Scripting down your ideas and flow before you start structuring your story is very essential to your final product

Aristotle's classic five-point plan that helps deliver strong impacts is:

- Deliver a story or statement that arouses the audience's interest.
- Pose a problem or question that has to be solved or answered.
- Offer a solution to the problem you raised.
- Describe specific benefits for adopting the course of action set forth in your solution.
- State a call to action.

2.Dig deeper to identify the sole purpose of your story

- Identify closely, what the idea of your story is. Ask yourself, “What am I really giving with this story?” It’s never the story alone, but what the story can do to make decision making better. What you’re displaying is the idea of a better decision making or analytics.

3.Design a Road Map

- Create a list of all the key points you want your audience to know about your story, visual, or analysis.
- Categorize the list until you are left with only three major message points. This group of three will provide the verbal road map for your story.
- Under each of your three key messages, add supporting evidence to enhance the narrative. These could include some or all of the following: personal stories, facts, examples, analogies etc.

Types of Data and Suitable Charts

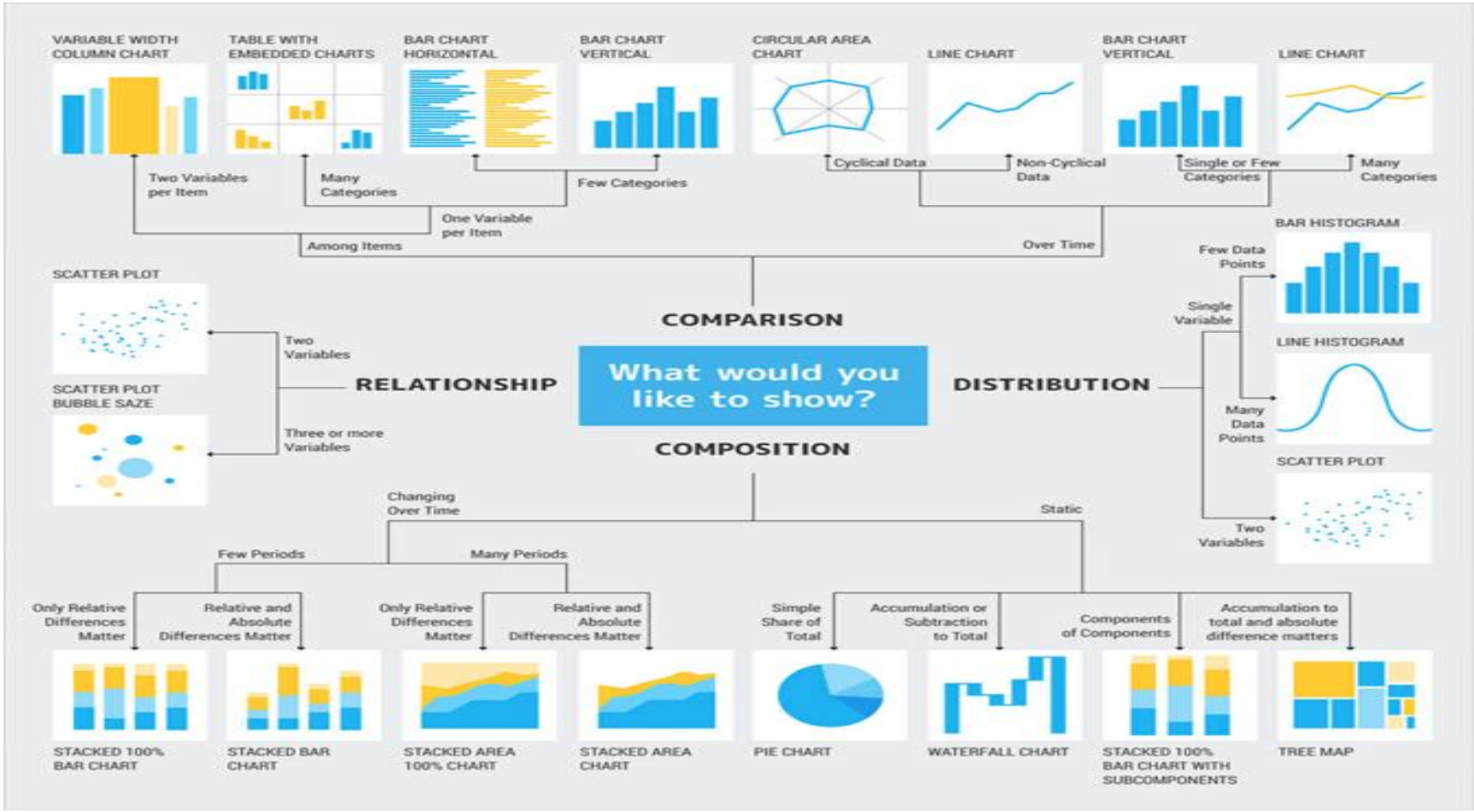
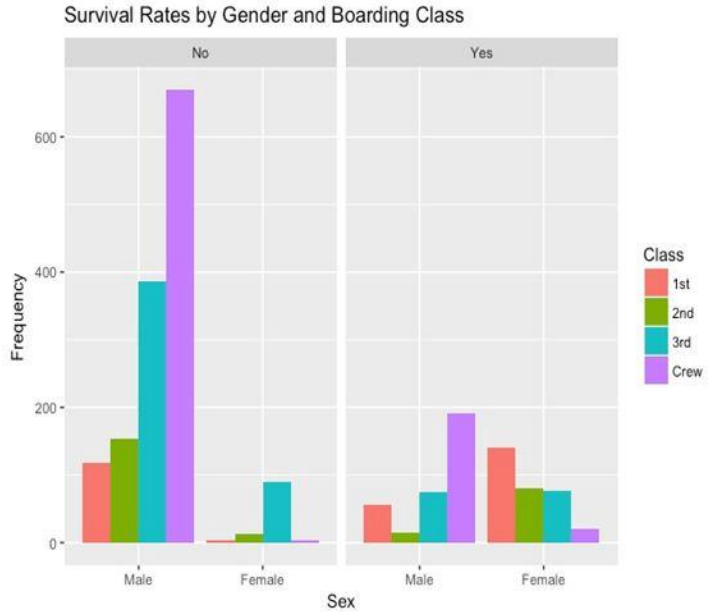


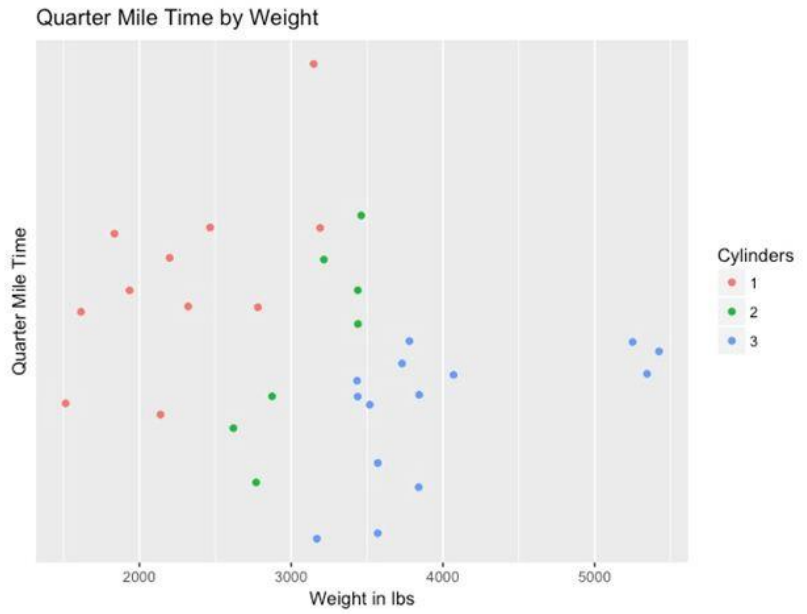
Image Source – Crazy Egg

1. Textual Data

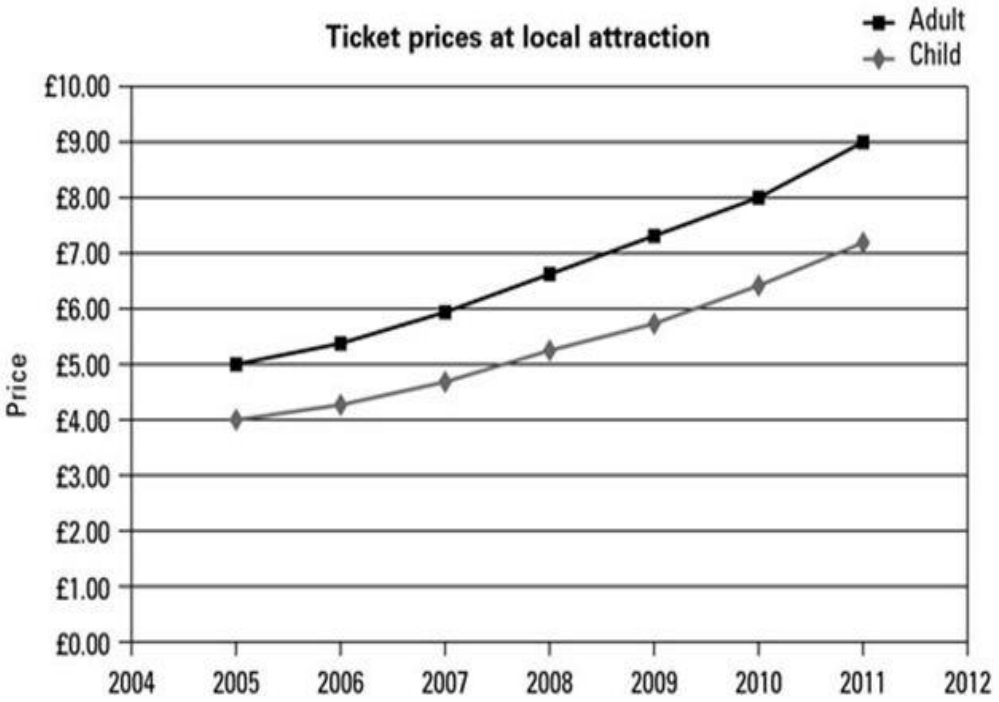
- One of the best-suited visualizations for textual data is the WordCloud. The wordcloud brings the more frequent ones to the center and enlarges them, giving us a clear picture of what the general idea of the text depicts.

2. Dataset consist of Continuous & Categorial Data





3. Numerical Dataset



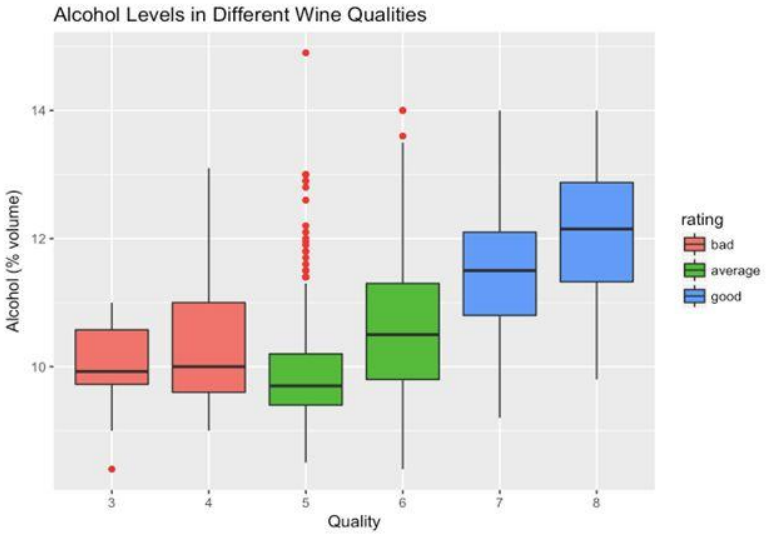
4. Time Series Dataset

5. Geospatial Dataset

Storytelling during the steps of predictive modeling

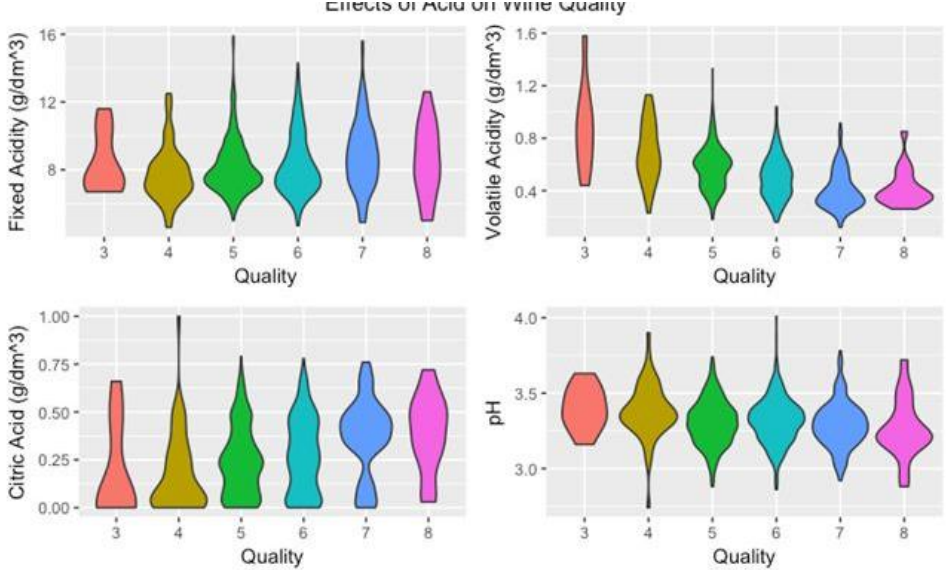
1. Data Exploration

Let’s consider a dataset on Wine Quality

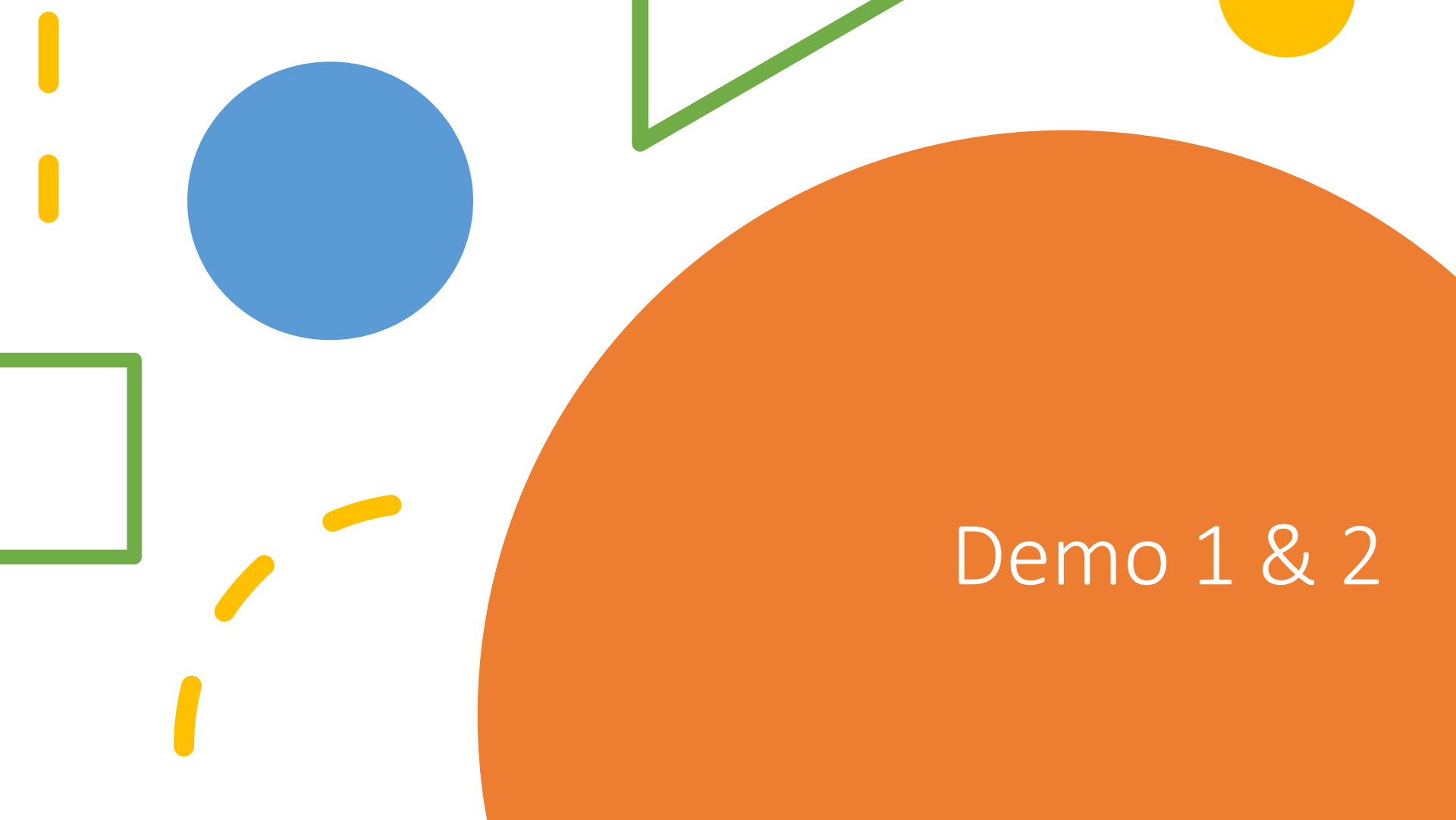



```
bs. of  15 variables:
 : int  1 2 3 4 5 6 7 8 9 10 ...
 : num  7.4 7.8 7.8 11.2 7.4 7.4 7.9 7.3 7.8 7.5 ...
 : num  0.7 0.88 0.76 0.28 0.7 0.66 0.6 0.65 0.58 0.5 ...
 : num  0 0 0.04 0.56 0 0 0.06 0 0.02 0.36 ...
 : num  1.9 2.6 2.3 1.9 1.9 1.8 1.6 1.2 2 6.1 ...
 : num  0.076 0.098 0.092 0.075 0.076 0.075 0.069 0.065 0.073 0.071
 : num  11 25 15 17 11 13 15 15 9 17 ...
e: num  34 67 54 60 34 40 59 21 18 102 ...
 : num  0.998 0.997 0.997 0.998 0.998 ...
 : num  3.51 3.2 3.26 3.16 3.51 3.51 3.3 3.39 3.36 3.35 ...
 : num  0.56 0.68 0.65 0.58 0.56 0.56 0.46 0.47 0.57 0.8 ...
 : num  9.4 9.8 9.8 9.8 9.4 9.4 9.4 10 9.5 10.5 ...
 : Ord.factor w/ 6 levels "3"<"4"<"5"<"6"<..: 3 3 3 4 3 3 3 5 5 3 .
 : Ord.factor w/ 3 levels "bad"<"average"<..: 2 2 2 2 2 2 2 3 3 2 .
 : num  8.1 8.68 8.6 12.04 8.1 ...
```

Data Exploration



- Next, would you wonder how acid contents in your wine affect its quality?


Demo 1 & 2

Best Practices for Story Telling

- Always **label your axes and give the heading** of your plot.
- Use **legends** where necessary.
- Use **colors that are lighter** on the eye and in proportion.
- **Avoid adding unnecessary detail** to your visualization like backgrounds or themes that don't allow good readability.
- **Only a point can be used** to simultaneously encode two quantitative values based on a horizontal and
- **Never use points** for visualization if you are doing time series encoding.

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Thank You!