BUSA 523

Marketing and Business Analytics
A&M-COMMERCE

Data Viz

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Data Visualization

“Picture is worth a ***thousand words*”**

expresses the **importance of data**

identify **insights** and **patterns**

increase **understandability**

Communicate - *clearly, effectively*

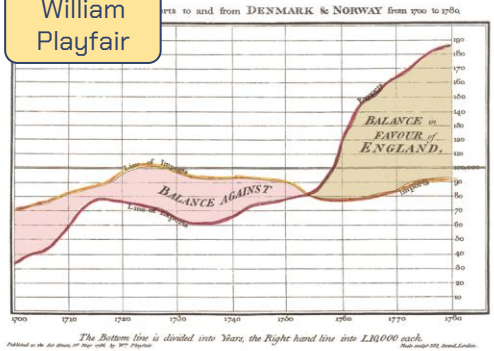
Why is data/information viz ***powerful?***

- informative
- efficient
- appealing
- interactive

Data Visualization: History

Time	Phase
1700-1799	Graphic Forms
1800-1850	Beginnings of Modern Graphics
1850–1900	The Golden Age of Statistical Graphics
1900-1950	The Modern Dark Ages
1950–1975	Rebirth of Data Visualization
1975–present	High-D, Interactive and Dynamic Data Visualization

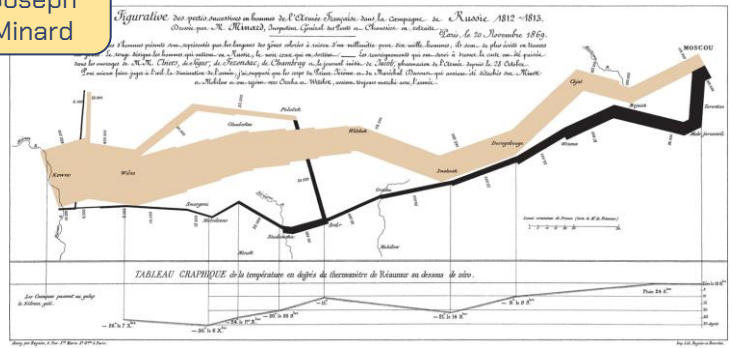
William Playfair

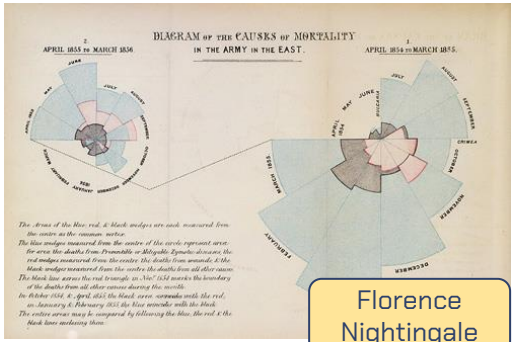


https://medium.com/@Infogram/key-figures-in-the-history-of-data-visualization-30486681844c

https://priceonomics.com/when-did-charts-become-popular/

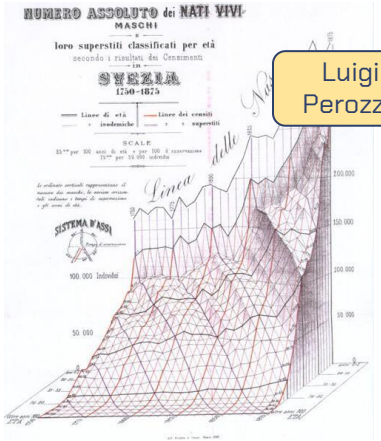
Charles Joseph Minard





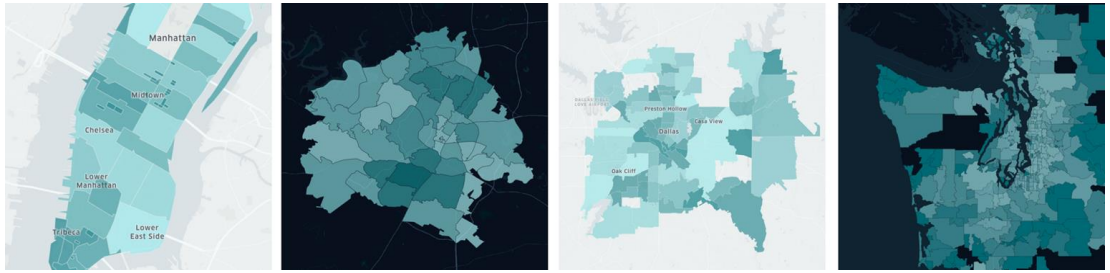
Florence Nightingale

Luigi Perozzo



Data Visualization - industry example

Uber - *data-driven maps*



Understanding **user demand**

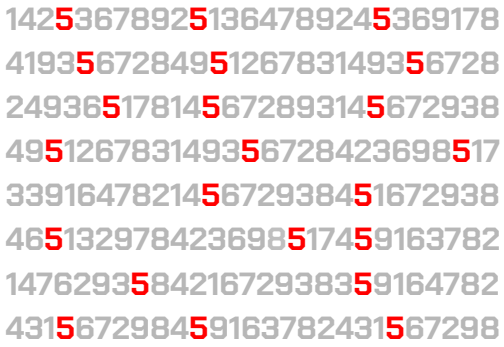
Challenges: *tools*, *scale* & *data*

https://medium.com/uber-design/crafting-data-driven-maps-b0835b620554

Data Visualization - importance

142536789251364789245369178
419356728495126783149356728
245369178145672893145672938
495126783149356728423698517
359164782145672938451672938
465132978423698517459163782
145762938451672938359164782
431567298459163782431567298

How many 5's are there in this data?

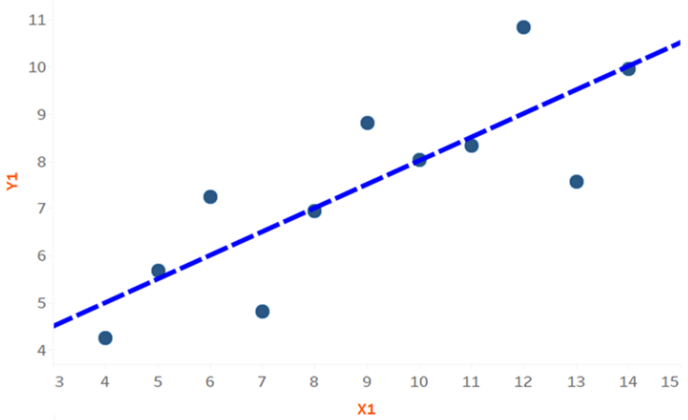


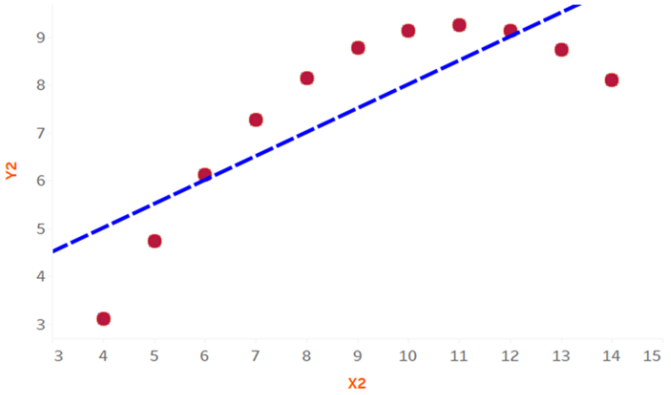
Anscombe Quartet

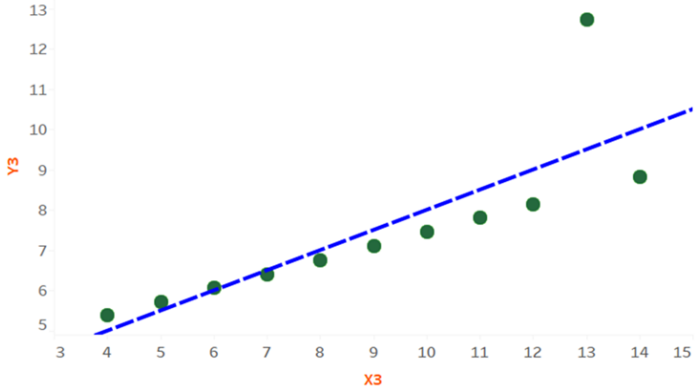
Observation	x1	y1	x2	y2	x3	y3	x4	y4
1	10	8.04	10	9.14	10	7.46	8	6.58
2	8	6.95	8	8.14	8	6.77	8	5.76
3	13	7.58	13	8.74	13	12.74	8	7.71
4	9	8.81	9	8.77	9	7.11	8	8.84
5	11	8.33	11	9.26	11	7.81	8	8.47
6	14	9.96	14	8.1	14	8.84	8	7.04
7	6	7.24	6	6.13	6	6.08	8	5.25
8	4	4.26	4	3.1	4	5.39	19	12.5
9	12	10.84	12	9.13	12	8.15	8	5.56
10	7	4.82	7	7.26	7	6.42	8	7.91
11	5	5.68	5	4.74	5	5.73	8	6.89

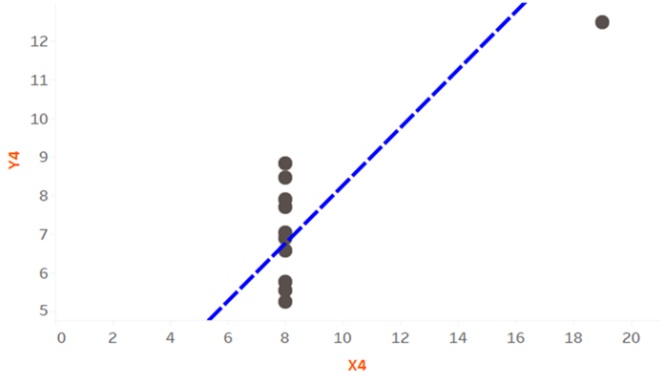
Summary Statistics								
N	11	11	11	11	11	11	11	11
mean	9	7.5	9	7.50091	9	7.5	9	7.5
SD	3.16	1.94	3.16	1.94	3.16	1.94	3.16	1.94

Anscombe Quartet





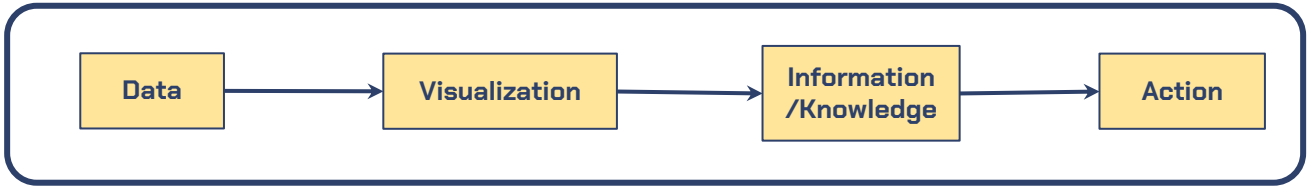




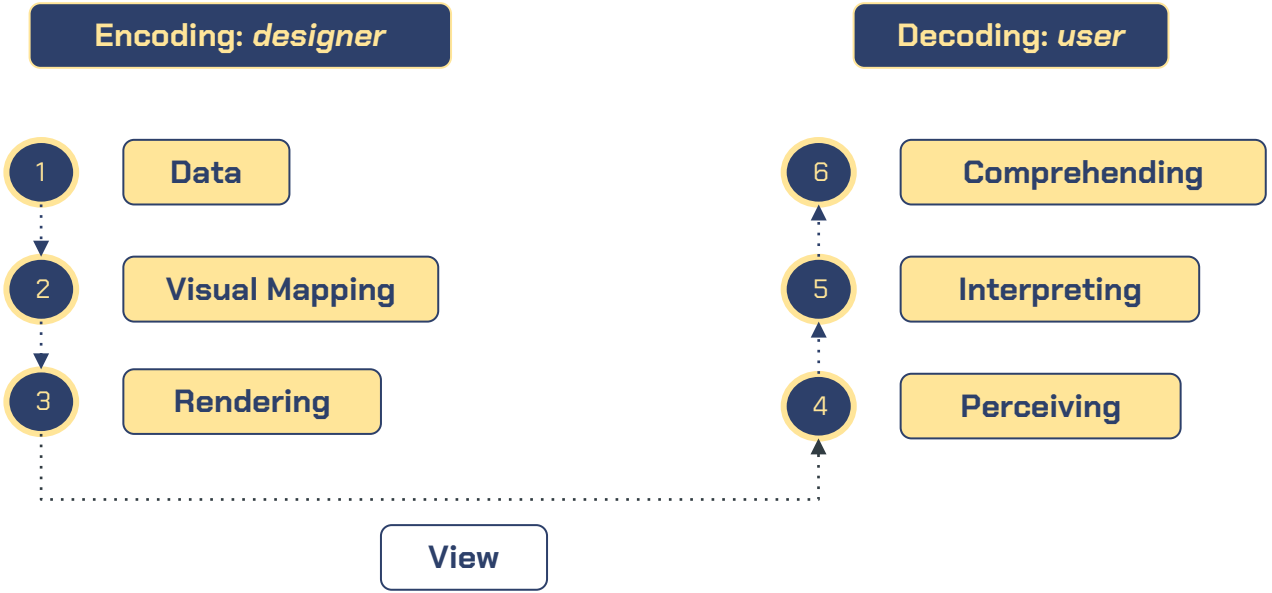
Data Visualization concepts & process

"The use of computer-supported, interactive, visual representations of abstract data to amplify cognition" - *Stuart Card*

“..an accessible way to see and understand trends, outliers, and patterns in data." - *Tableau*



Data Visualization process



Data

Data = *Information* → Text, Images, Videos, Signals, etc..

- **Problem identification → Data**
- **Data collection can be challenging**

Date	Cases	Deaths
3/27/2020	18,591	522
3/28/2020	22,164	713
3/29/2020	16,127	555
3/30/2020	22,154	707
3/31/2020	26,381	1,079
4/1/2020	32,318	1,276
4/2/2020	32,346	1,511
4/3/2020	32,396	1,420
4/4/2020	32,337	1,606
4/5/2020	29,354	1,618

Visual Mapping

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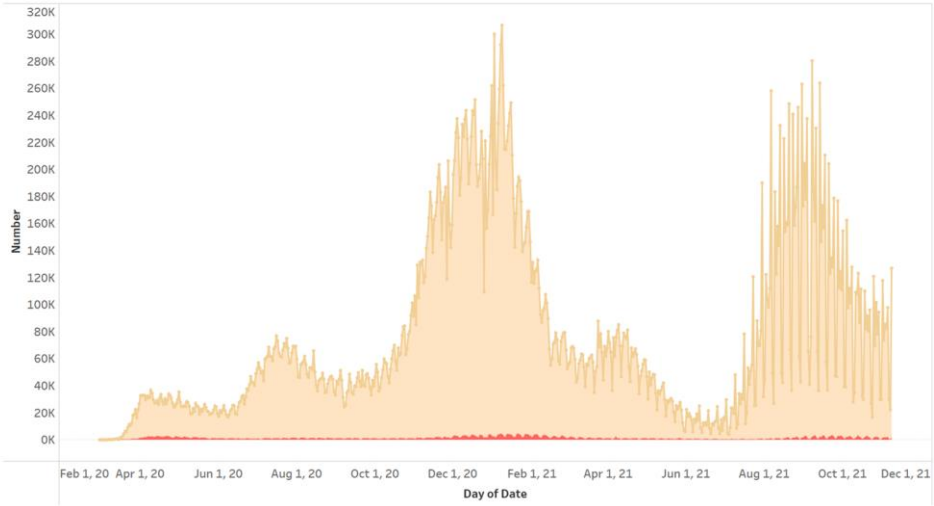
Data

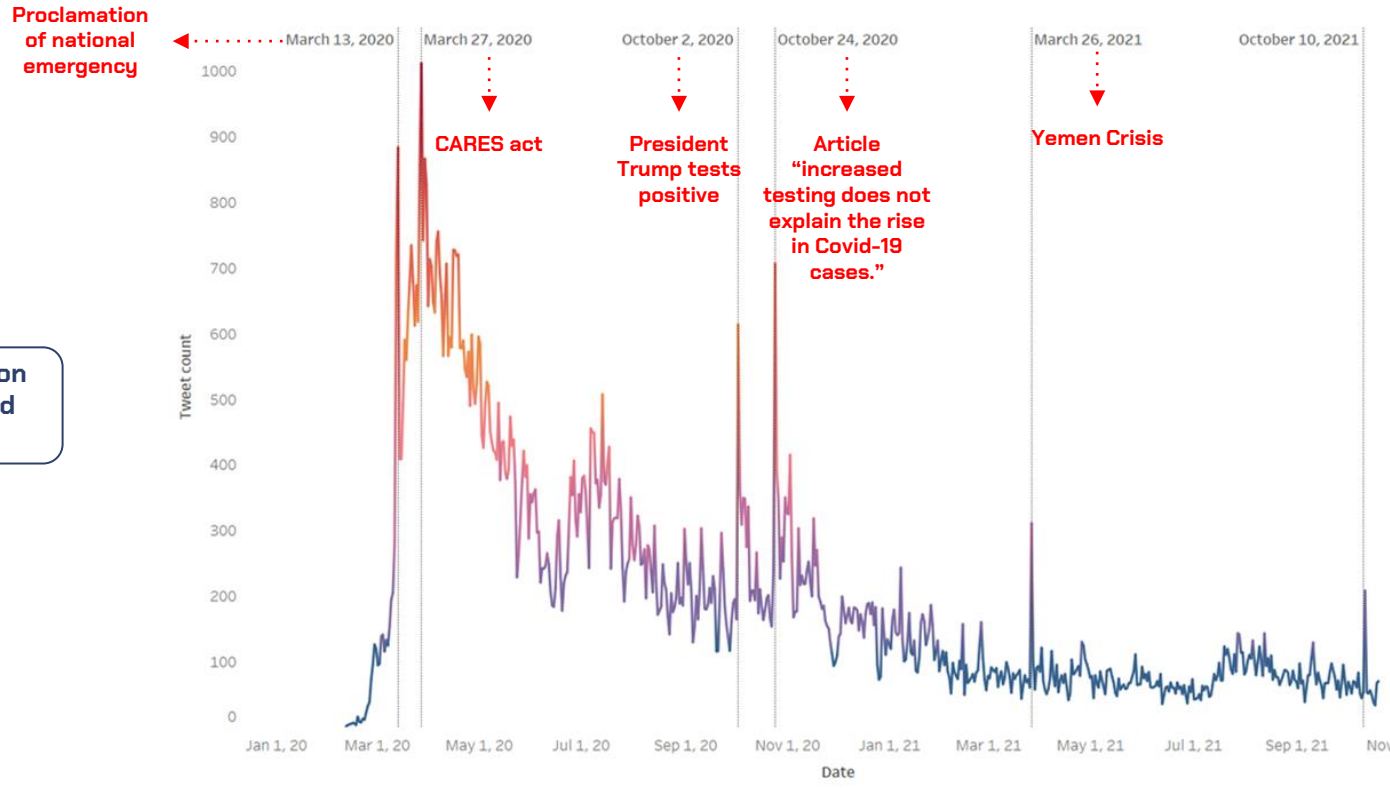


Visual Representation

Type of variables, encoding

Rendering

Visualization design and medium



Decoding

Perceiving

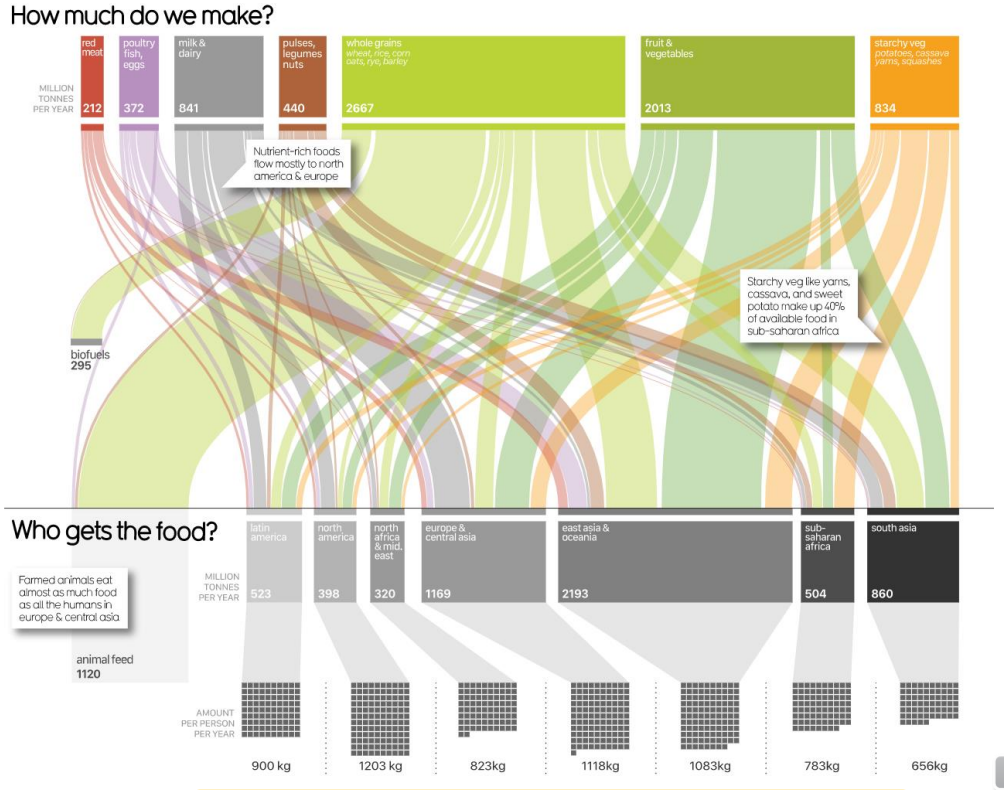
- Variables
- Key immediate observations

Interpreting

- Meaning - *Colors, sizes*
- Patterns

Comprehending

- Actions
- Learnings
- Verification



https://informationisbeautiful.net/visualizations/global-food-supply-where-does-all-the-worlds-food-go/

Blogs

Blog	Link
Storytelling with Data	http://www.storytellingwithdata.com/
Information is Beautiful	https://informationisbeautiful.net/
Visualizing Data	http://www.visualisingdata.com/
Junk Charts	http://junkcharts.typepad.com/
The Pudding	https://pudding.cool/
The Atlas	https://www.theatlas.com/
Graphic Detail	https://www.economist.com/blogs/graphicdetail
Tableau Blog	https://www.tableau.com/about/blog
Michael Sandberg's Data Visualization Blog	https://datavizblog.com/
Beautiful Data Blog	http://beautifuldata.net/

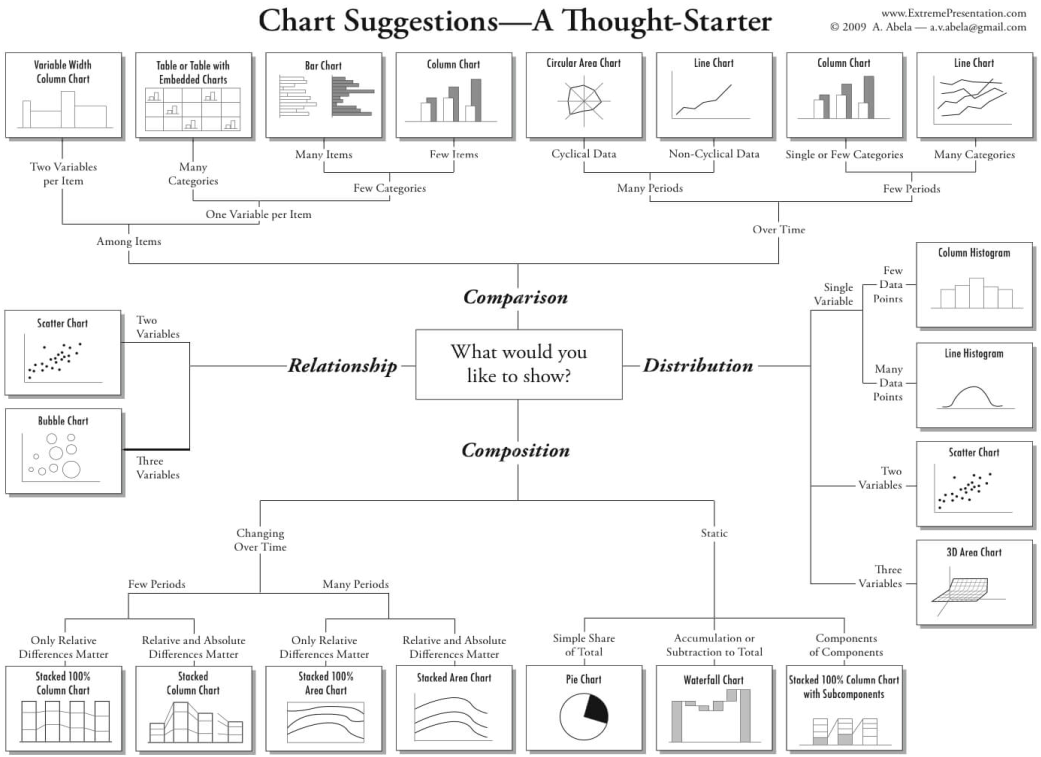
Podcasts

Podcast	Description	Link
Policy Viz	The host of the podcast chats with guests primarily about data visualization, open data, big data, and technology to help people communicate data better. Episodes are all 20 minutes or shorter, and it's mostly the guests speaking, not the host.	https://policyviz.com/podcast/
Tableau Wanna Be Podcast	The hosts are respected and passionate members of the Tableau community. The podcast is about all things related to Tableau, including interviews with other members of the Tableau community, Tableau employees, and in-depth discussions about visual analytics.	https://soundcloud.com/tableau-wannabe-podcast
What's The Point	It talks about the many different ways data affect our lives, with interviewing people from many different walks of life (for example, astronomy, publishing, web tracking). It's a short show each time, and the guests are the stars.	https://fivethirtyeight.com/tag/whats-the-point/
Data Stories	This long-running podcast is about data visualisation in general and has consistently drawn in some very high-calibre guests. Each episode is about an hour, which suits longer commutes.	http://datastori.es/
Storytelling with Data	This podcast is an additional resource to the Storytelling with Data blog, which covers topics related to data storytelling, better presentations, and all things data viz.	http://www.storytellingwithdata.com/podcast

Links

https://datavizcatalogue.com.
http://flowingdata.com/
http://www.improving-visualisation.org/
https://www.census.gov/dataviz/
http://beautifuldata.net/
https://datavizblog.com/
https://www.census.gov/dataviz/
https://www.fema.gov/data-visualization
http://beautifuldata.net/
http://www.improving-visualisation.org/
https://datavizblog.com/
https://www.census.gov/dataviz/
https://www.fema.gov/data-visualization
http://www.dashboardinsight.com/news/news-articles/the-history-of-data-visualization.aspx
https://medium.com/@Infogram/study-asks-how-deceptive-are-deceptive-visualizations-8ff52fd81239
https://www.datapine.com/blog/misleading-data-visualization-examples/
http://www.datavis.ca/papers/hbook.pdf
https://www.idashboards.com/blog/2017/07/26/data-visualization-and-the-9-fundamental-design-principles/
https://doi.org/10.1287/inte.2017.0916
https://www.forbes.com/sites/bernardmarr/2017/07/20/the-7-best-data-visualization-tools-in-2017/#3a12b8ea6c30
https://datavizcatalogue.com

Selecting a visualization



Thank you

Any questions?