Introduction to Data Analytics & Visual Analytics

INTRODUCTION TO TABLEAU

- In 2025 the world's data is expected to reach 175 ZB.
- Within these data are huge, unparalleled opportunities for human advancement. But to turn opportunities into reality, people need the power of data at their fingertips.
- Tableau is helping People Do Exactly This.

Tableau Helps People See and Understand Data

How Big is Big?

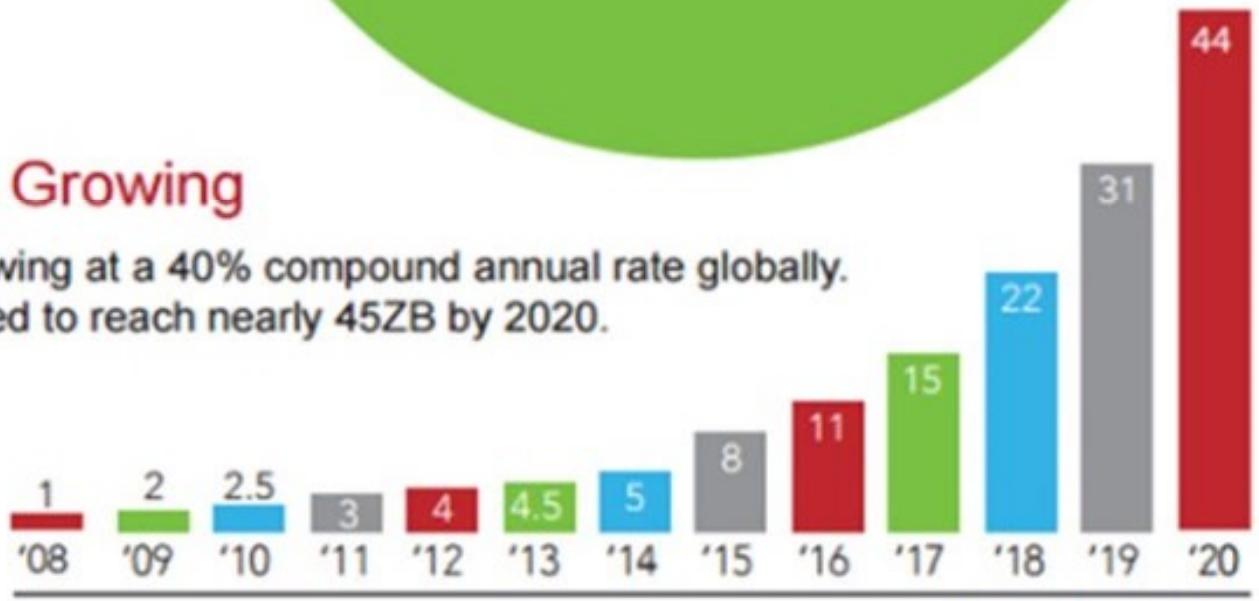
1,000 gigabytes =
1 terabyte

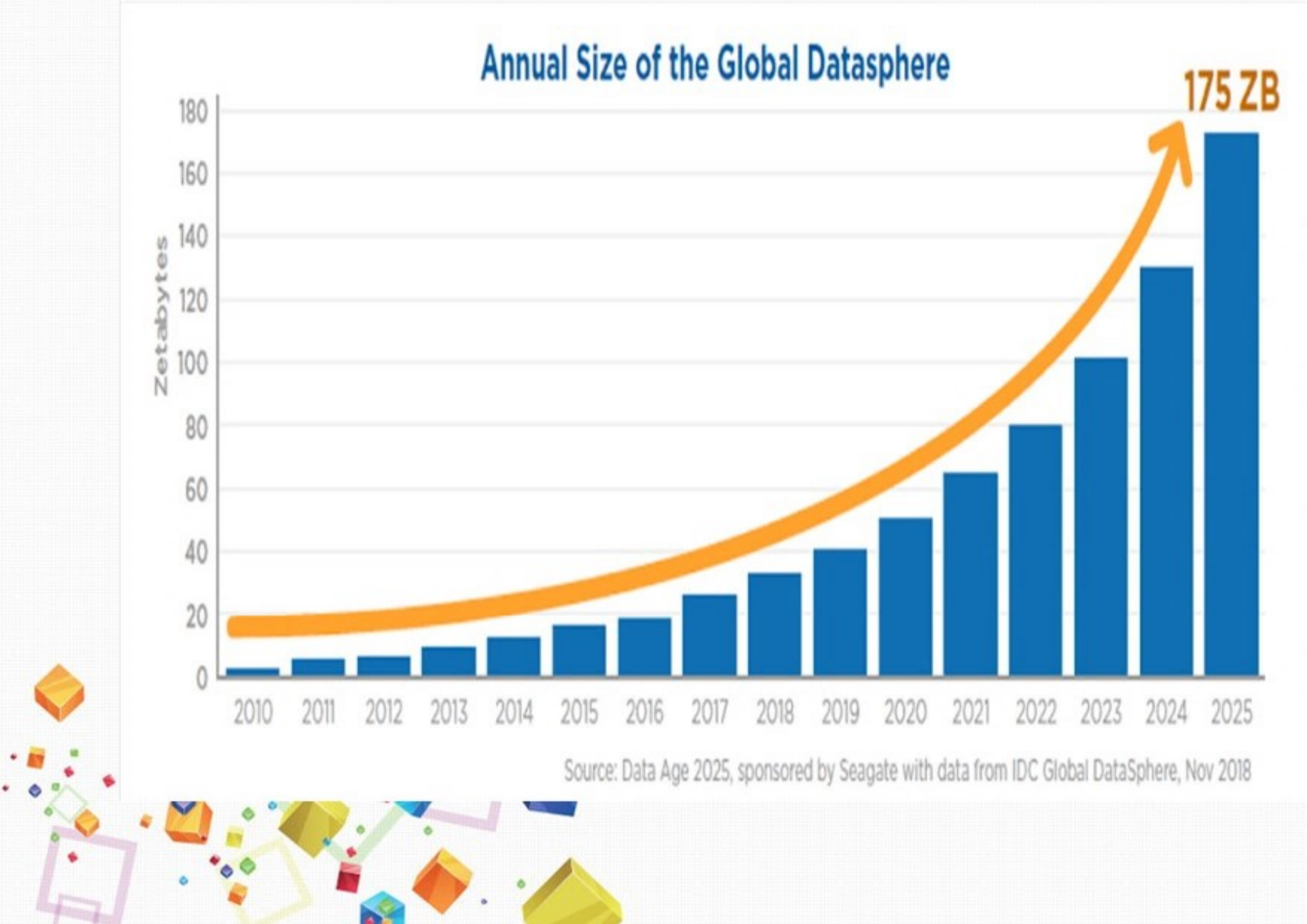
1 million terabytes =
1 exabyte

1 billion terabytes =
1 zettabyte

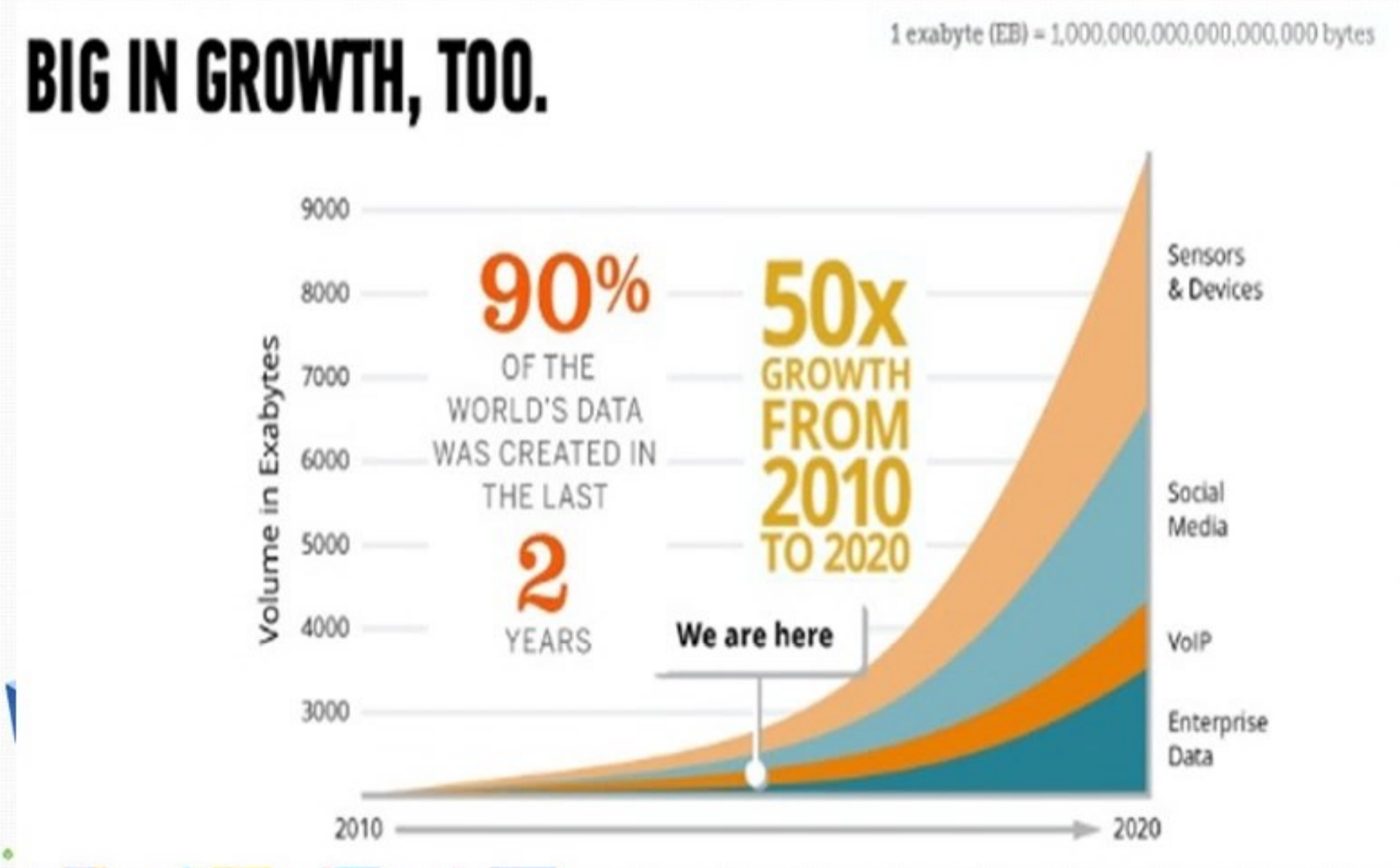
And It's Growing

Data is growing at a 40% compound annual rate globally.
It is expected to reach nearly 45ZB by 2020.




Annual Size of the Global Datasphere
175 ZB
Zetabytes
180
160
140
120
100
80
60
40
20
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Source: Data Age 2025, sponsored by Seagate with data from IDC Global DataSphere, Nov 2018

WHERE IS DATA COMING FROM?



What is TABLEAU

- Tableau is a business intelligence software that allows anyone to easily connect to data, then visualize and create interactive, sharable dashboards.
- It's easy enough that even a non technical user can learn it, but powerful enough to satisfy even the most complex analytical problems.
- Securely sharing your findings with others only takes seconds.
- Tableau is BI software that you can trust to actually deliver answers to the people that need them.

What is Visual Analytics And Why ?

"Visual analytics is the representation and presentation of data that exploits our visual perception abilities in order to amplify cognition."

- Andy Kirk, author of "Data Visualization: a successful design process"

Please Count The Total 9 in the below data set !

3	3	0	3	0	1	8	7	6	8	2	1	4	0	3	8	3	7	7	2	0	5	2	3	2	7	0	2	0
7	1	4	6	0	2	1	3	2	7	6	0	2	5	6	3	2	5	7	6	3	3	0	2	0	3	0	7	2
8	7	5	7	2	8	3	8	7	7	8	2	0	7	7	5	2	3	1	1	5	6	3	8	4	7	8	2	0
0	5	0	5	1	6	1	7	5	6	8	0	4	4	6	7	4	7	1	4	0	0	8	4	4	3	0	3	2
2	4	3	1	3	5	4	9	5	0	7	6	0	7	4	3	1	8	2	7	3	4	6	0	2	4	8	2	3
8	6	2	2	6	5	4	6	7	0	7	6	0	0	3	9	0	2	4	7	1	7	2	3	3	5	8	7	0
0	8	4	5	1	3	1	7	6	4	5	4	1	2	4	5	3	3	5	4	9	6	7	7	6	3	4	2	5
4	7	7	0	2	2	0	1	1	7	7	7	0	2	6	6	4	7	5	8	6	1	4	3	7	8	5	4	6
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5	5	0	3	5	3	5	3	8	3	2	3	8	2	3	1	6	2	7	2	4	6	3	6	4	4	3	2	5
4	4	0	2	1	7	2	4	4	7	4	1	9	2	4	5	2	5	0	4	0	0	5	3	6	3	3	6	7
7	4	6	6	8	7	5	7	9	2	0	2	8	8	8	8	3	2	4	2	6	4	0	4	6	3	7	2	1
0	1	7	1	5	9	1	4	2	8	7	3	7	1	4	5	1	8	7	8	0	5	1	7	0	5	8	8	1
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2	1	1	7	7	2	0	0	1	8	7	0	2	9	0	2	8	5	7	8	4	6	0	6	5	0	7	1	2
0	5	2	4	1	5	3	3	1	5	5	1	4	0	1	6	4	3	3	9	8	8	3	4	6	8	4	8	6
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1	0	2	2	7	6	3	3	0	8	8	0	3	1	8	8	1	2	1	7	5	2	9	3	5	8	3	2	5

Please Count Now !

3	3	0	3	0	1	8	7	6	8	2	1	4	0	3	8	3	7	7	2	0	5	2	3	2	7	0	2	0
7	1	4	6	0	2	1	3	2	7	6	0	2	5	6	3	2	5	7	6	3	3	0	2	0	3	0	7	2
8	7	5	7	2	8	3	8	7	7	8	2	0	7	7	5	2	3	1	1	5	6	3	8	4	7	8	2	0
0	5	0	5	1	6	1	7	5	6	8	0	4	4	6	7	4	7	1	4	0	0	8	4	4	3	0	3	2
2	4	3	1	3	5	4	**9**	5	0	7	6	0	7	4	3	1	8	2	7	3	4	6	0	2	4	8	2	3
8	6	2	2	6	5	4	6	7	0	7	6	0	0	3	**9**	0	2	4	7	1	7	2	3	3	5	8	7	0
0	8	4	5	1	3	1	7	6	4	5	4	1	2	4	5	3	3	5	4	**9**	6	7	7	6	3	4	2	5
4	7	7	0	2	2	0	1	1	7	7	7	0	2	6	6	4	7	5	8	6	1	4	3	7	8	5	4	6
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2	8	5	2	1	2	8	7	7	6	2	5	6	2	6	4	1	5	1	6	1	2	1	1	0	5	6	4	0
2	1	1	7	7	2	0	0	1	8	7	0	2	**9**	0	2	8	5	7	8	4	6	0	6	5	0	7	1	2
0	5	2	4	1	5	3	3	1	5	5	1	4	0	1	6	4	3	3	**9**	8	8	3	4	6	8	4	8	6
7	3	7	5	2	4	0	2	7	6	3	8	5	5	4	5	8	8	7	5	5	6	5	6	7	**9**	7	7	4
0	3	2	8	1	4	4	6	0	8	2	3	0	1	3	4	6	2	0	5	7	7	3	6	1	8	7	3	5
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1	0	2	2	7	6	3	3	0	8	8	0	3	1	8	8	1	2	1	7	5	2	**9**	3	5	8	3	2	5

Human Perception & Cognition

Humans Are Slow at Mental Math

24
X 86

Using Pen & Paper

We're Faster When We Use the Pen

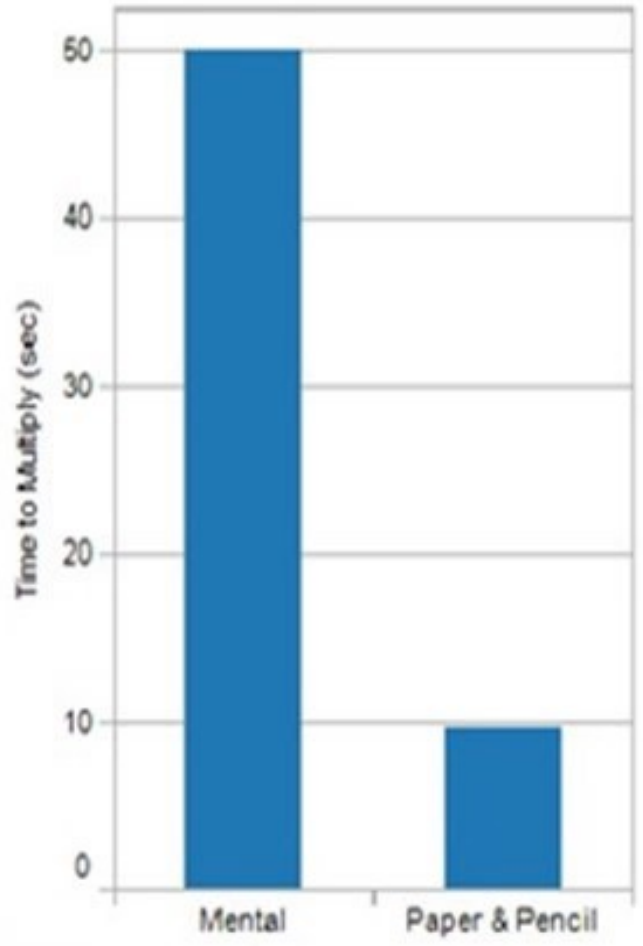
24

X 86

144

1920

2064

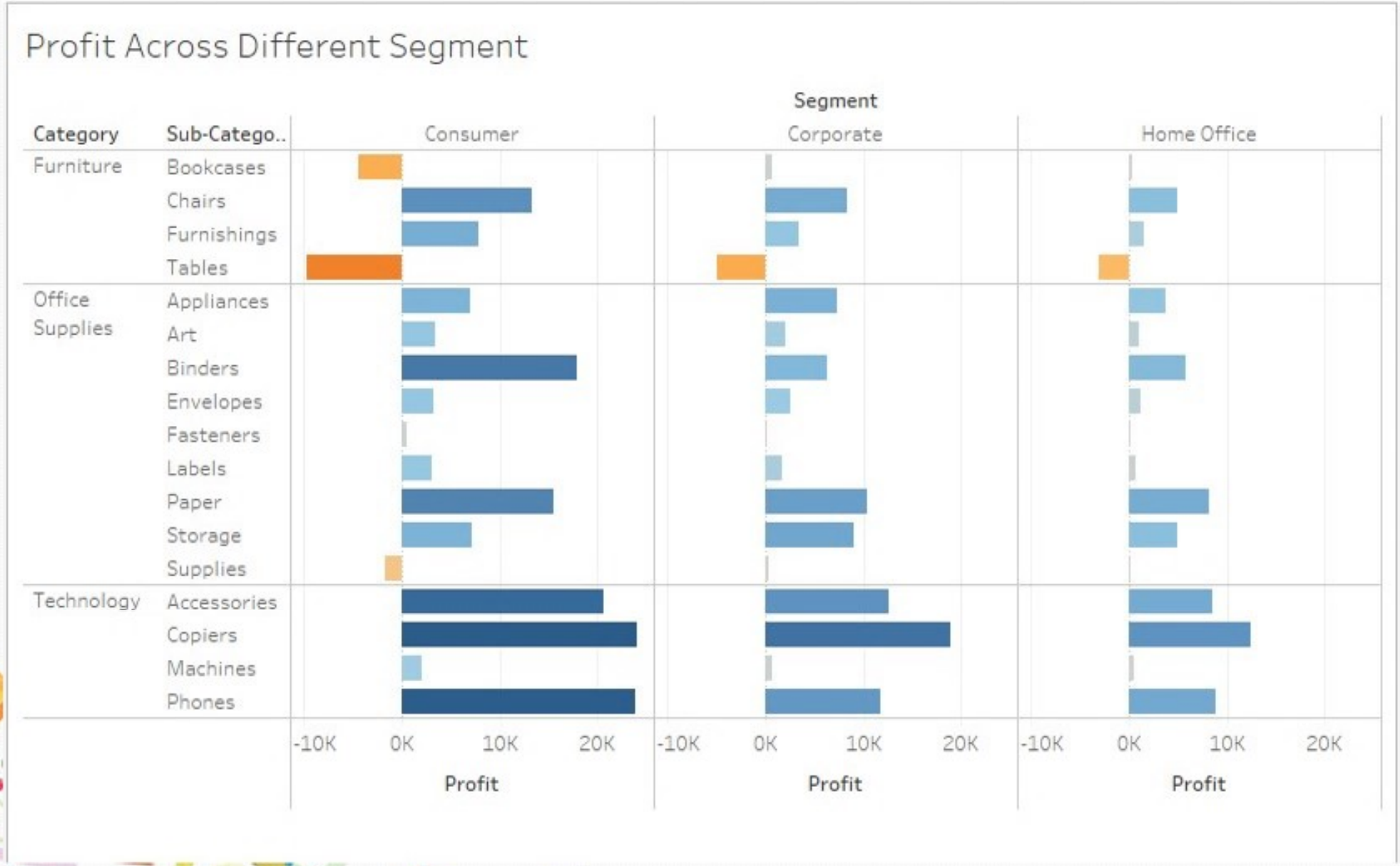


We're Much Faster When We Can "See" Data

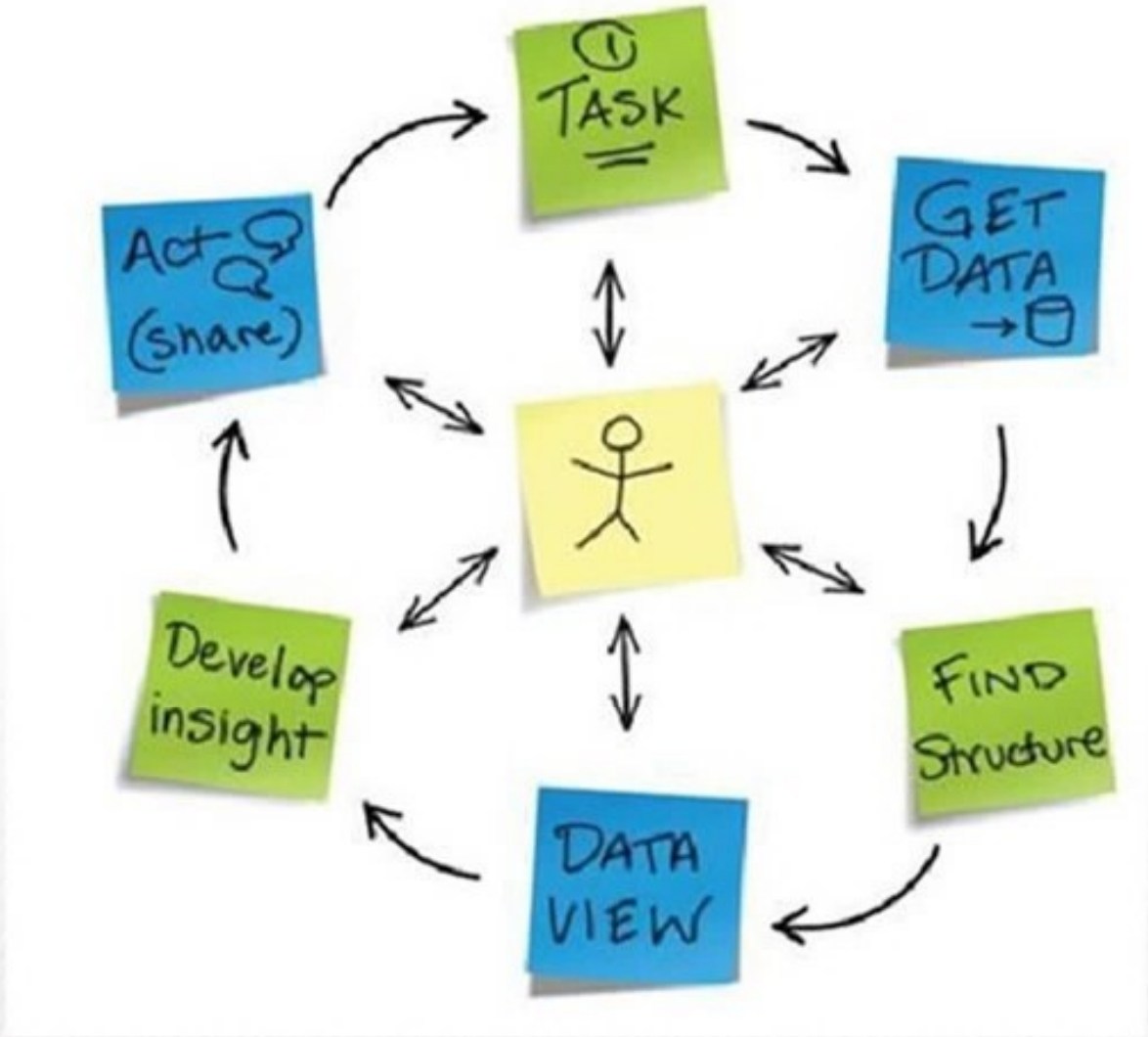
Profit

		Segment		
Category	Sub-Catego..	Consum..	Corpora..	Home Office
Furniture	Bookcases	-4,436	638	325
	Chairs	13,235	8,345	5,010
	Furnishings	7,919	3,508	1,632
	Tables	-9,728	-4,906	-3,091
Office Supplies	Appliances	6,982	7,430	3,726
	Art	3,454	2,005	1,069
	Binders	17,996	6,377	5,849
	Envelopes	3,264	2,571	1,129
	Fasteners	577	252	121
	Labels	3,076	1,761	709
	Paper	15,535	10,362	8,157
	Storage	7,104	9,131	5,044
	Supplies	-1,658	339	130
Technology	Accessories	20,736	12,707	8,493
	Copiers	24,084	18,990	12,544
	Machines	2,141	703	541
	Phones	23,837	11,766	8,912

We're Much Faster When We Can "See" Data



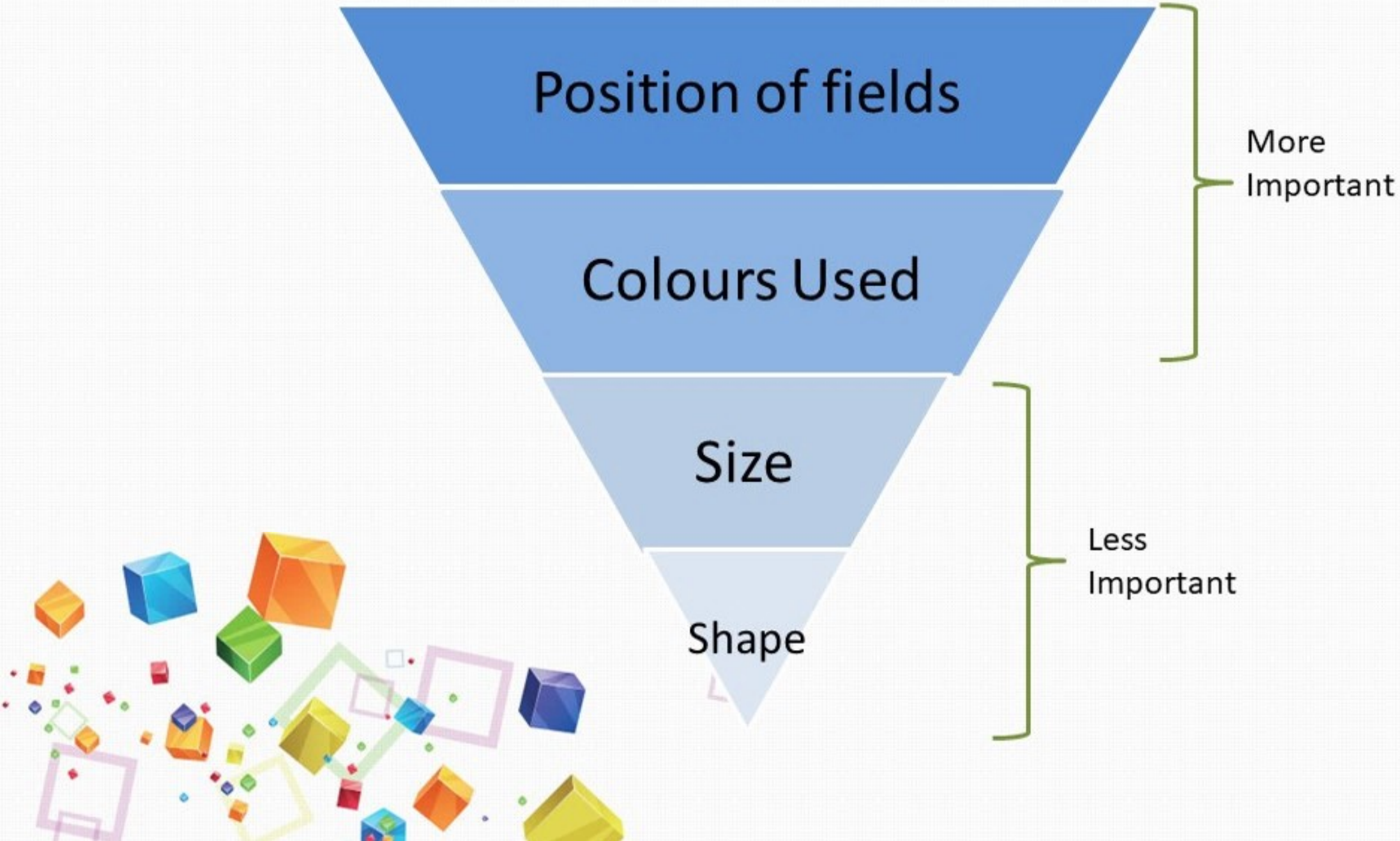
The Cycle of Visual Analysis



Visualization Best Practices

- Representing data for humans
- Color
- Maps
- Creating dashboards

How do Human like their Data



How to arrange your Data

Time:
on X Axis

Location:
on Map

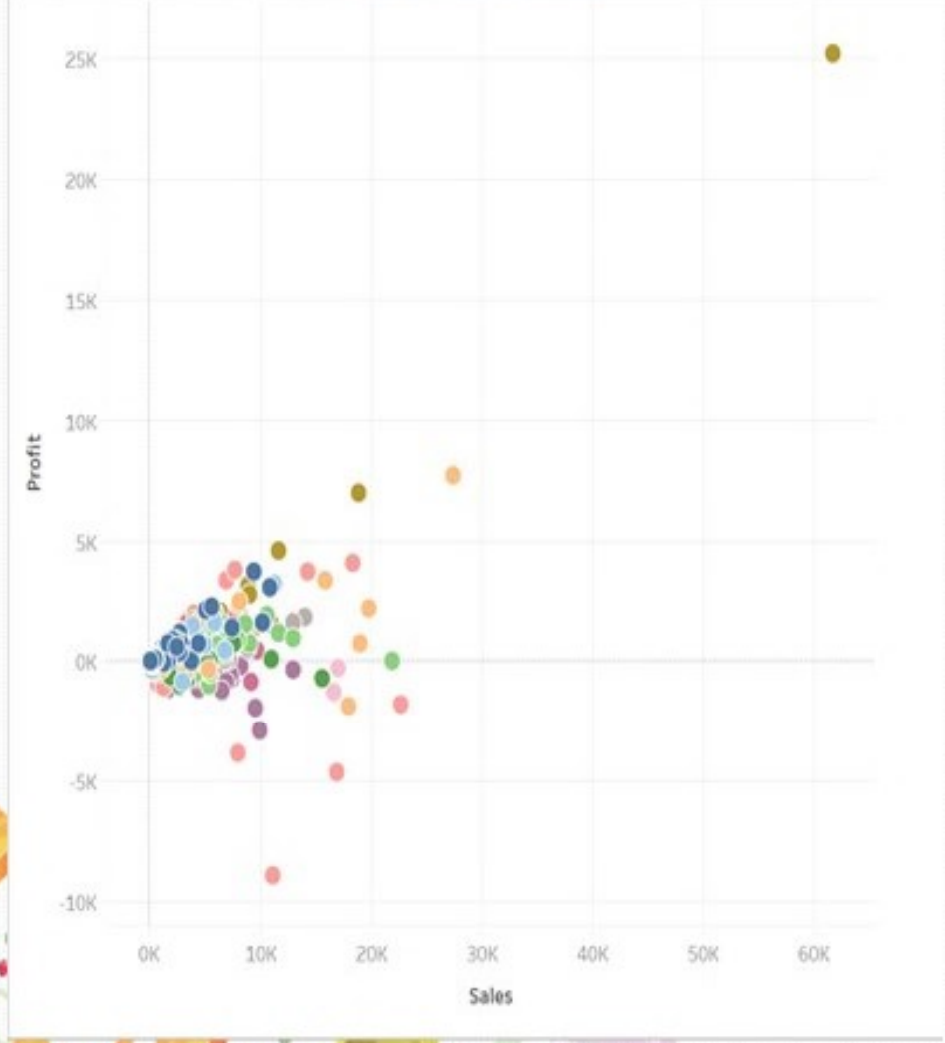
Comparison:
Bars

Exploring Relation:
Scatterplot

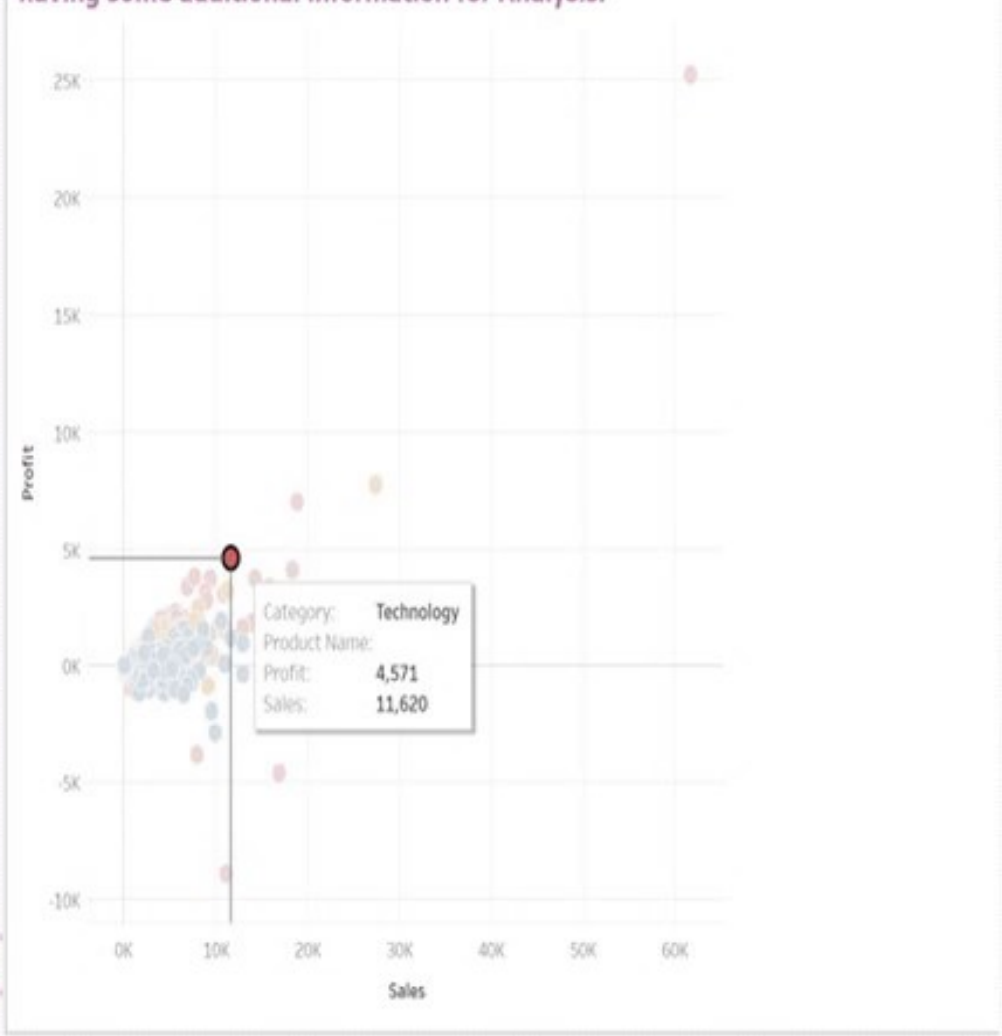
Relative
Proporstion:
Tree Map

How to Use Colours in Visualizations

Viz with so many colours is not Helpfull.
Humans can only identify 8 colours together.



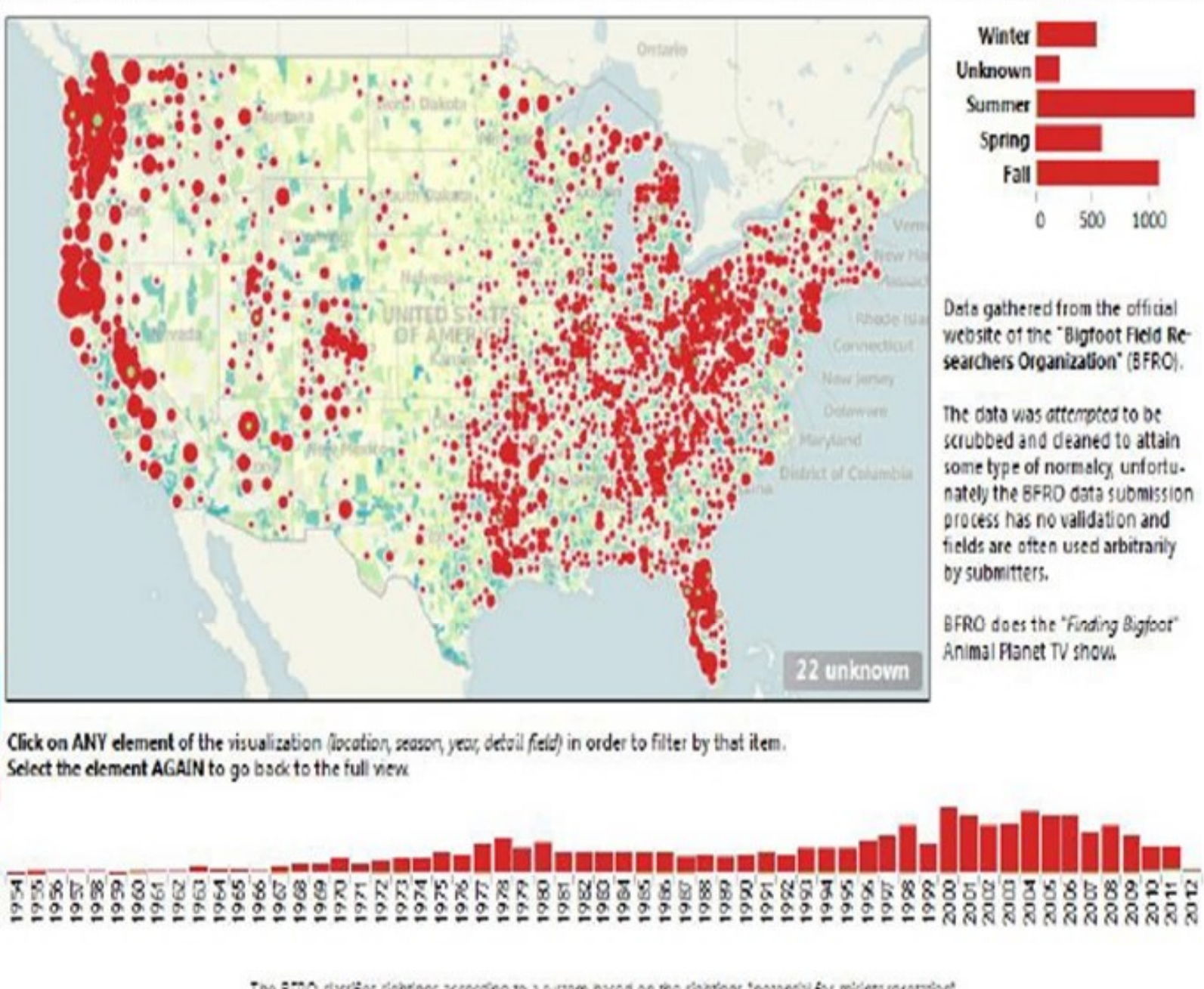
Viz like this is more Clear &
having some additional information for Analysis.



Dashboards

- These bring Multiple visualizations together and gives the end user an end to end analysis.

Dashboards with a lot of information is not good. It becomes confusing for the end user. The below pic dashboard having a lot of info is very confusing.



Quick check list for the dashboard

- Most Important view goes on top / top left of the Dashboard.
- All the Legends used should be with the viz that they are being used in.
- Use 7 views or fewer in a single Dashboard. Have a Landing page in the Dashboard and drill down one by one.
- Have proper interactivity and filters in the Dashboard for better analysis and knowledge.
- Take care of the performance of the workbook from the very start.