Data Visualization

itsmecevi.github.io
widyaanalytic.com

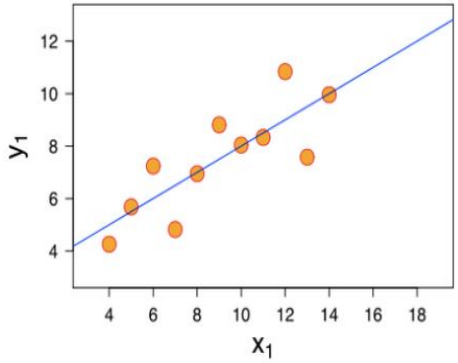
Outline…

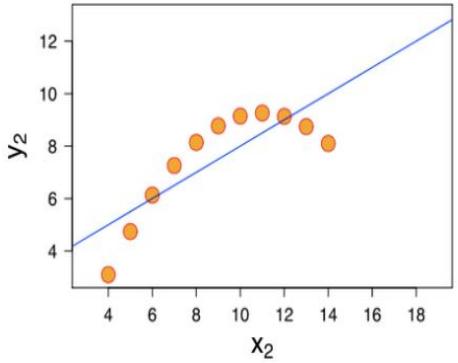
- Konsep utama data visualization (information design)
- Data visualization (data terstruktur & tidak terstruktur)
- Use Case Effective Charts
- Dashboard & KPI (Key Performance Indicators), & Ad Hoc Reporting

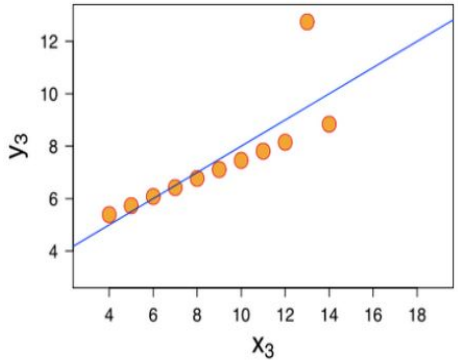
Information Design…

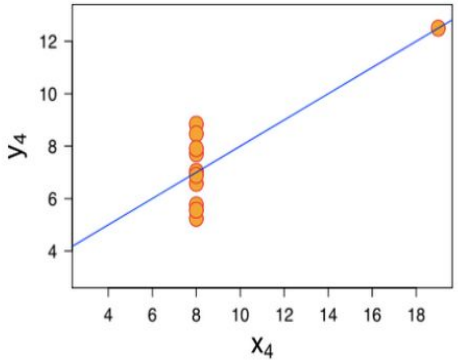
Are you able to see any patterns, relations?

x_1	y_1	x_2	y_2	x_3	y_3	x_4	y_4
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









Information Design Goals…

- Data Exploration — find the unknown (trends, outliers, patterns)
- Data Analysis — check hypothese
- Presentation — communicate and disseminate (share function-> data journalism)
- Confirmatory Analysis - to confirm our understanding and analysis of the data

Information Design…

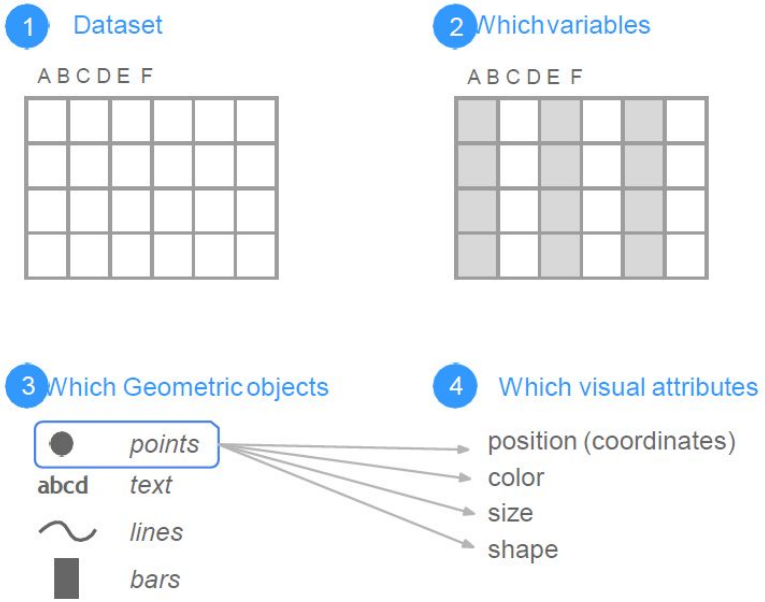
People are 30 times more likely to absorb high-quality infographics than plain text.

97% information will deem to be accurate and truthful with data visualization

90% of the information transmitted to the brain is visual

Data visualization strategy will provide an ROI of $13.01 back on every dollar spent.

Information Design…



Information Design…

Mapping
Fundamentals

Information Design…

Geometric Objects
(primitives)

Points

Lines

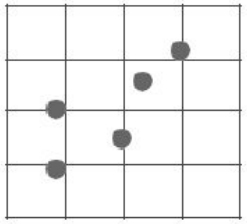
Bars

2D Areas / Polygons

Information Design…

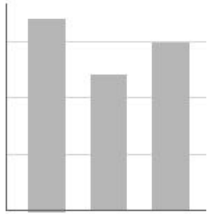
Example of Graphs with Geometric Objects

Points: e.g. scatterplot



Lines: e.g. timeline

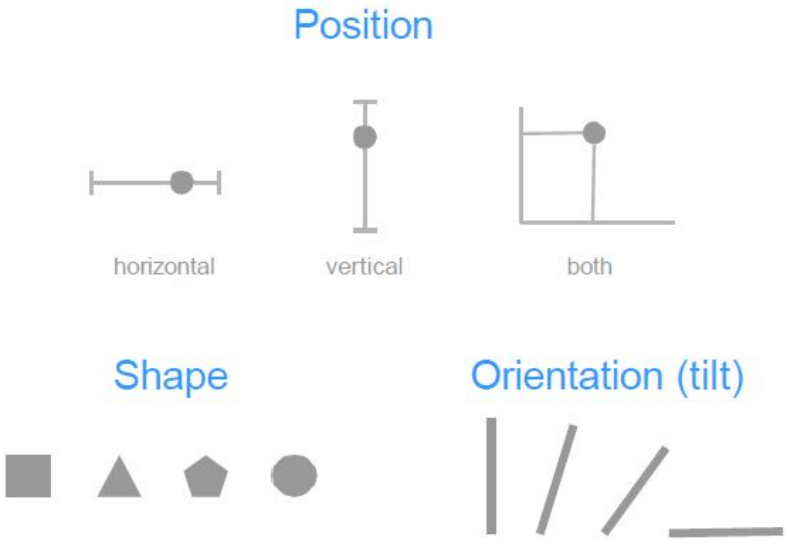
Bars: e.g. bar chart



2D-areas / Polygons: e.g. densities

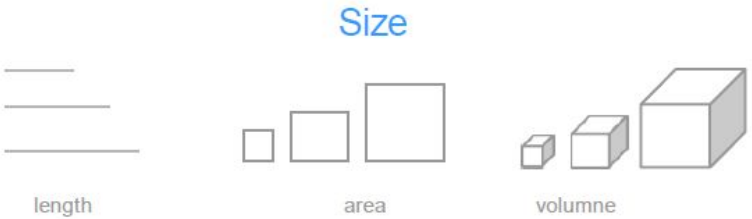
Information Design…

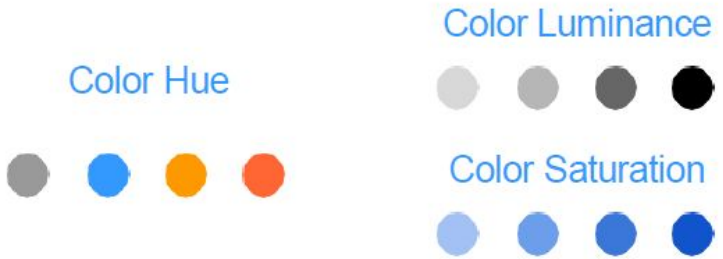
Visual Attributes



Information Design…

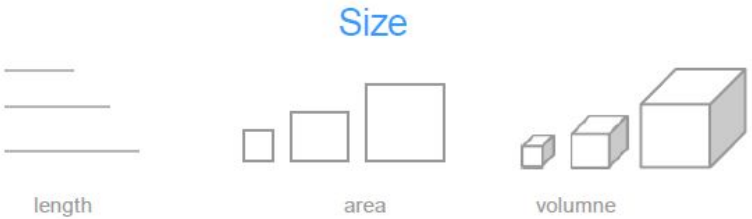
Visual Attributes

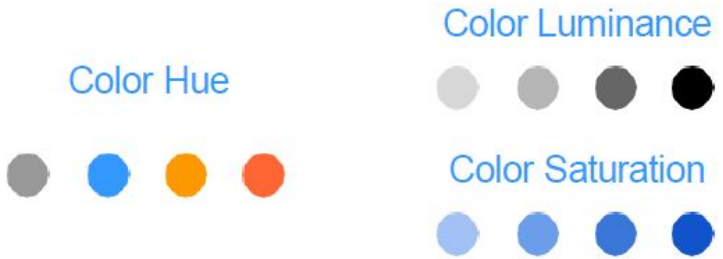




Information Design…

Visual Attributes





Information Design…
Colorology…

https://itsmecevi.github.io/colorology/

https://color.adobe.com/de/create/color-wheel/

http://colorschemedesigner.com/csd-3.5/

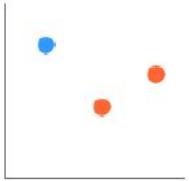
http://colorschemedesigner.com/csd-3.5/

Information Design…

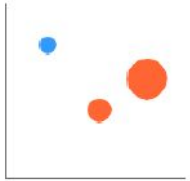
Examples of Visual Attributes

Vertical position

Vertical position
Horizontal position



Vertical position
Horizontal position
Color hue



Vertical position
Horizontal position
Color hue
Size (area)

Information Design…

- Part-to-whole analysis
- Ranking analysis
- Deviation analysis
- Times series (trends in time)
- Distribution analysis
- Correlation analysis
- Multivariate analysis

Information Design…
Visual References…

https://github.com/itsmecevi/visualreferences/blob/master/VisualReferences-SQLBI.pdf

Use Case Effective Chart...

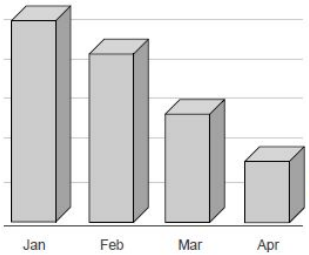
1. Bar Chart
2. Line Chart
3. Typography

1. Bar Chart…

No need for 3D Effect

don't

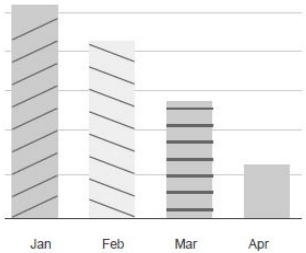
Don't use 3-dimensional bars:
- it adds no information
- it is hard to guess where the top is



Avoid distracting shades

don't

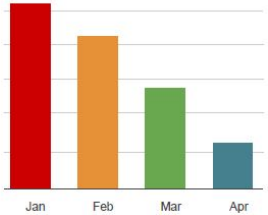
Don't use multiple distracting shades



Different colors for the same type of data?

don't

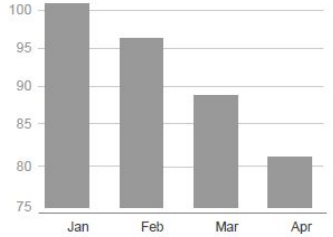
Don't use multiple colors to represent the same kind of data



Truncated Baseline

don't

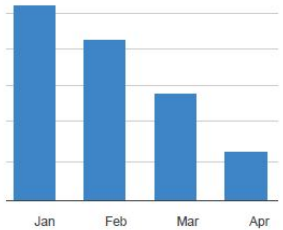
Don't truncate baseline of bar charts



Same color for the same type of data

do

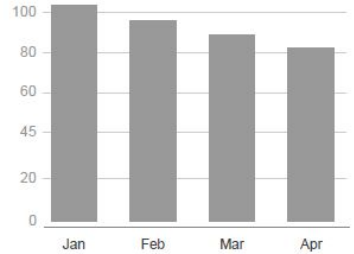
Use the same color to represent the same variable



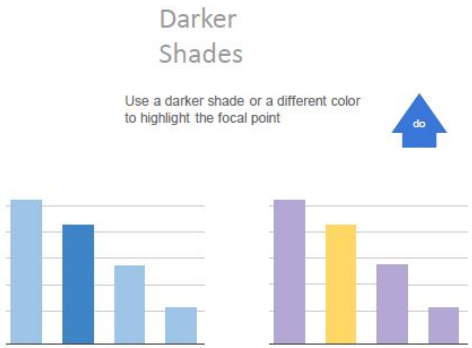
Zero Baseline

do

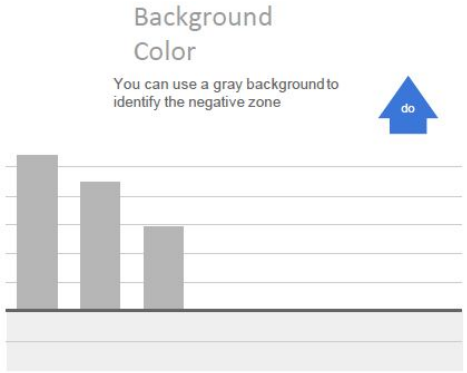
Always start at the zero baseline
No exceptions!

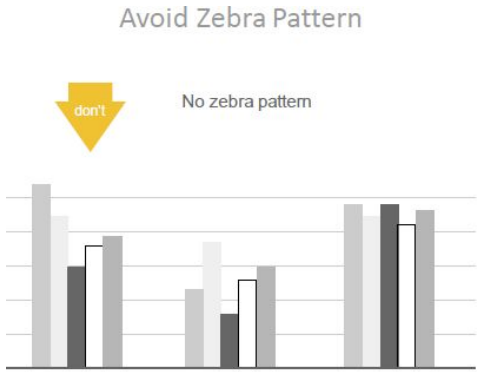


1. Bar Chart...


Darker Shades
Use a darker shade or a different color to highlight the focal point
do


Contrasting Color
You can use contrasting colors to depict negative values
do


Background Color
You can use a gray background to identify the negative zone
do

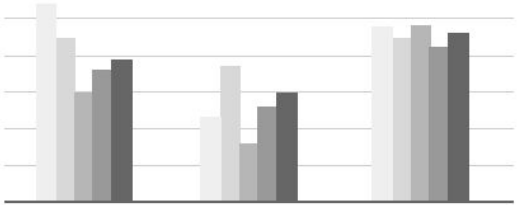

Avoid Zebra Pattern
don't
No zebra pattern

1. Bar Chart…

Sequential Shades

From lightest to darkest

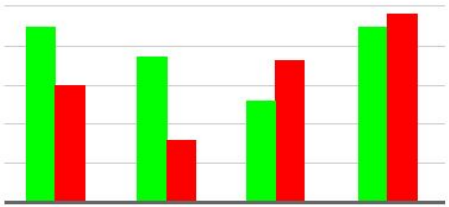
do



Using Complementary Colors?

don't

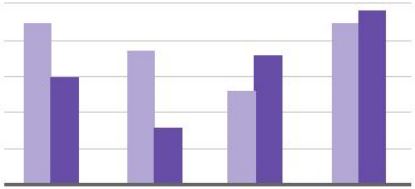
Be careful with the selection of colors: When working with two colors avoid complementary (opposite) colors



Using Different Shades

It's better to use different shades of the same color

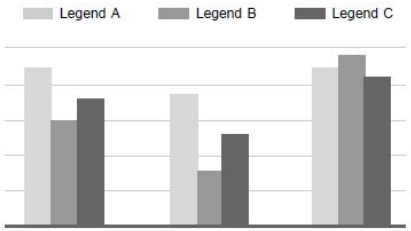
do



Using Legends

Add legends in the right sequence

do

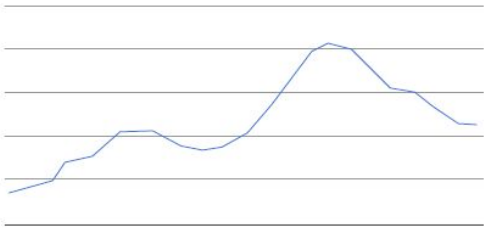


2. Line Chart…

Width of Lines

don't

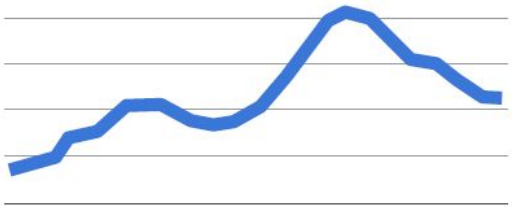
lines too thin are hard to read



Line Width

don't

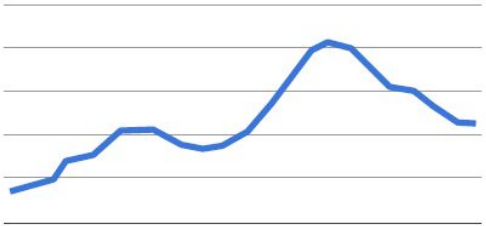
too thick lines may hide some details



Line Width

look for "an OK" thickness

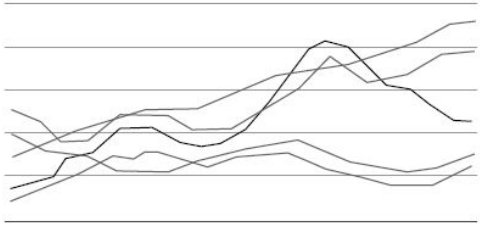
do



Avoid Spaghetti Lines

don't

Avoid spaghetti lines:
Don't differentiate each line trying all types of dashed lines

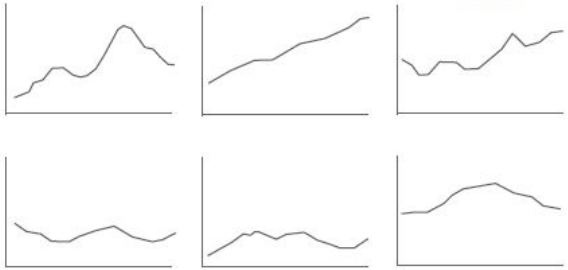


2. Line Chart…

Facetting

Better comparisons with panel of charts

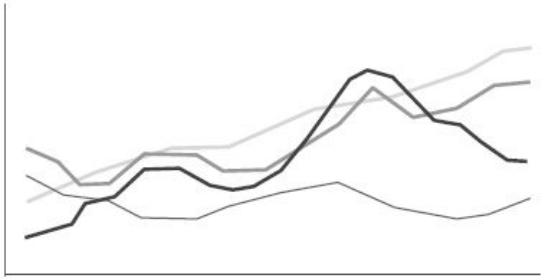
do



Dark Intensities

Four or fewer lines is better with different dark intensities

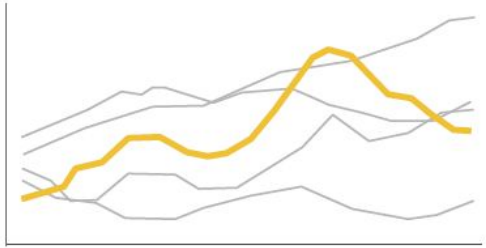
do



Dark Intensities

Use bright to dark colors to emphasize the important line

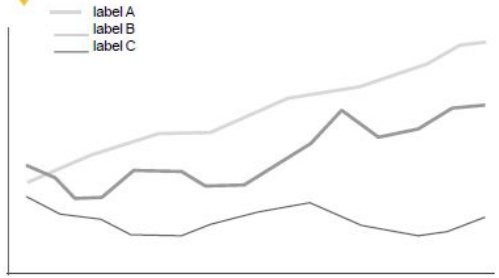
do



Avoid Long-distance Labeling

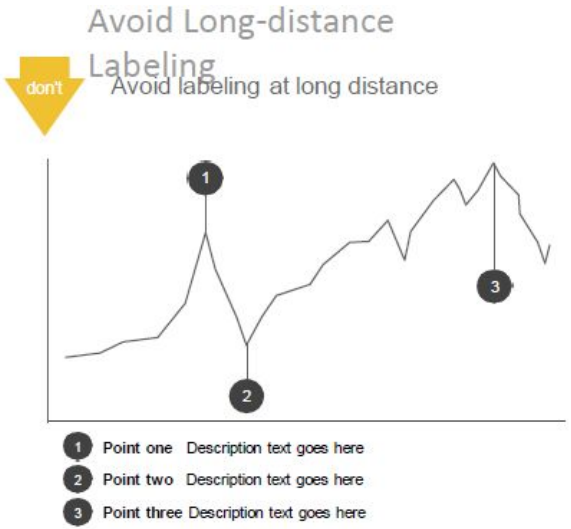
don't

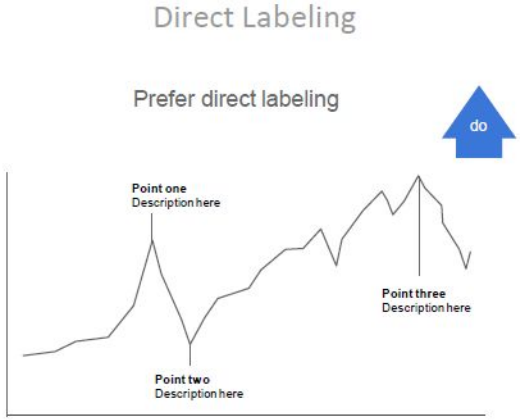
Avoid labeling at long distance



2. Line Chart…


Direct Labeling
Label the lines directly
do
label A
label B
label C


Avoid Long-distance Labeling
don't
Avoid labeling at long distance
1
2
3
1 Point one Description text goes here
2 Point two Description text goes here
3 Point three Description text goes here


Direct Labeling
Prefer direct labeling
do
Point one
Description here
Point two
Description here
Point three
Description here

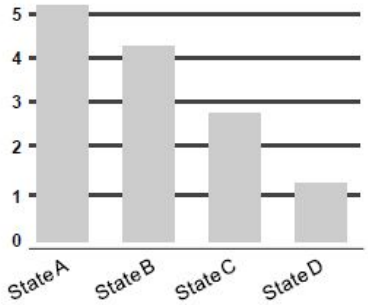
3. Typography…

Oppressing typography

don't

HEADLINE OF THE CHART

A brief description that outlines what the data shows

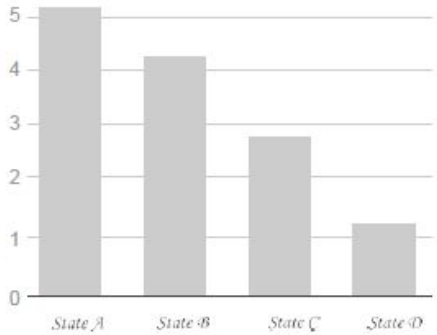


Avoid highly stylized typography

don't

HEADLINE OF THE CHART

A brief description that outlines what the data shows

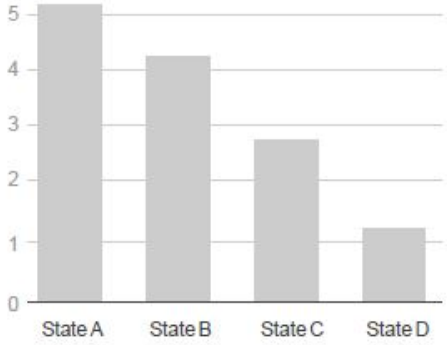


Simple typography

HEADLINE OF THE CHART

A brief description that outlines what the data shows

do

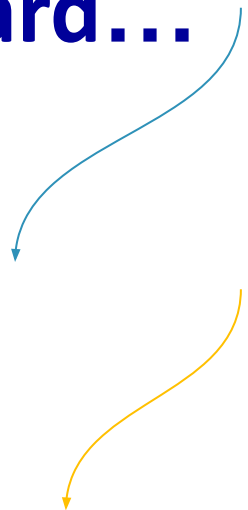


Dashboard vs KPI vs Ad Hoc…

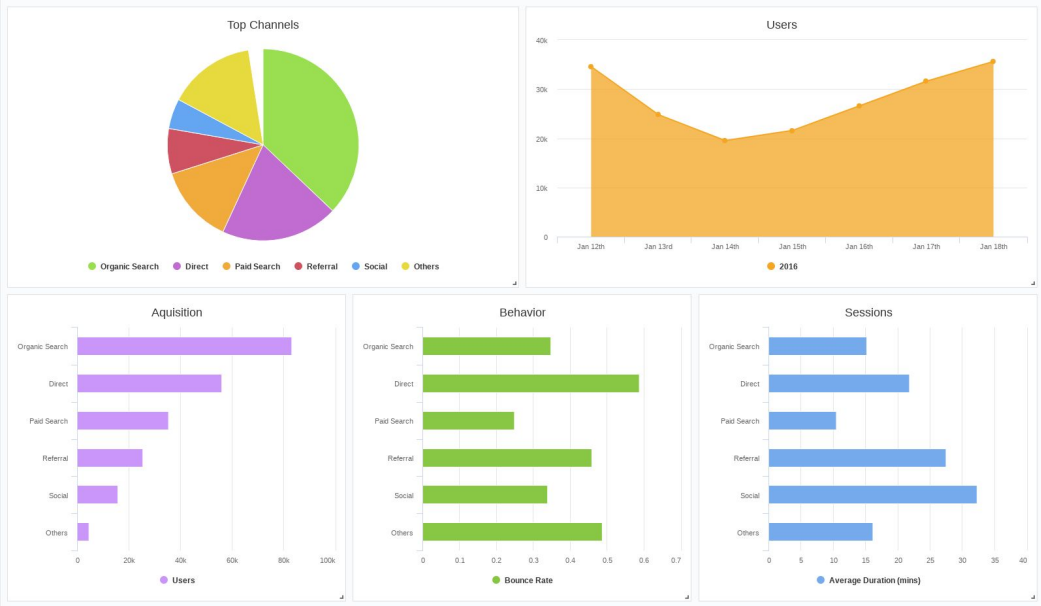
Dashboard…

KPI…

Ad hoc…



Dashboard Example...



Dashboard: Kumpulan chart yang disatukan dalam satu kanvas atau satu visualisasi

KPI Example…

KPI adalah sebuah dashboard yang mempunyai nilai lebih dengan penyertaan bentuk narasi dalam sebuah proses bisnis. Narasi tersebut bisa dikategorikan sesuai industri, bisnis model, departemen, bahkan sesuai goals…

Ad-Hoc Example-> Business Intelligence…

Perbedaan KPI dan Ad Hoc terletak pada proses pengambilan data, jika KPI adalah definisi secara umum, sedangkan Ad-Hoc mendalami grafik secara proses alur data atau Business Intelligence

Dashboard: Pie Chart
KPI: Sales Growth dengan Pie Chart
Ad-Hoc: Definisi sales pada tiap business model berbeda, apakah per satuan produk/jasa, atau apakah per subschribe.

Belajar Mandiri...

Dengan bantuan Referensi Visual yang ada di halaman 16. Sebutkanlah chart apa yang bisa dikategorikan ke dalam kelompok visualisasi di bawah ini:

- Part-to-whole analysis
- Ranking analysis
- Deviation analysis
- Times series (trends in time)
- Distribution analysis
- Correlation analysis
- Multivariate analysis

Contoh: Line Charts untuk Time Series atau Tren

Q&A
Thanks

Referensi

https://trello.com/b/fCiyw9I4/references