

Developing People Analytics Dashboard in Python

Data Science Series
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Instructor at Algoritma Data Science School 2021

Tech Stack Python, R, SQL Deep Learning, Plotly, Dash App, Flask, GCP

Master of Physics, Universitas Gadjah Mada in 2020



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- 1. Python Programming Basics
- Data Visualization using Plotly Express
- 3. Building People Analytics Dashboard with Dash Plotly

Training Objective









Data Visualization is one of the way to storytelling with data.

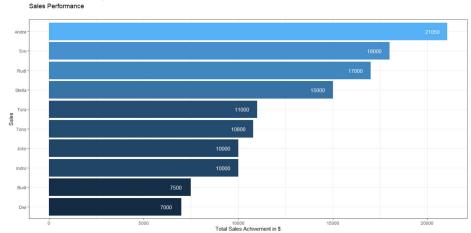
Would you rather presented with this table?

	Name <chr></chr>	Sales_Achievement_in_USD <dbl></dbl>
9	Andre	21050
10	Tim	18000
7	Rudi	17000
6	Stella	15000
2	Tora	11000
8	Tono	10800
1	Joko	10000
5	Indro	10000
3	Budi	7500
4	Dwi	7000

1-10 of 10 rows

OR

Would you rather presented with this bar plot?





Why Visualization?

Do you find anything from table down below?

Employee	Entry Test Score (0-100)	Sales Performance in USD
Employee 1	40	10000
Employee 2	55	14000
Employee 3	70	34000
Employee 4	84	45000
Employee 5	66	17400
Employee 6	42	9800
Employee 7	51	48000
Employee 8	80	51000
Employee 9	53	17000
Employee 10	87	53500
Employee 11	90	50000
Employee 12	77	32000
Employee 13	74	30000
Employee 14	60	19000
Employee 15	48	14000
Employee 16	64	22500
Employee 17	80	13500
Employee 18	50	16700
Employee 19	64	18500
Employee 20	70	31100



Why Visualization?



Visualization help the audience and yourself to understand the data!

Goal of Visualization



Exploratory

- To explore data
- to analyze data

px.

Explanatory

- To communicate the data
- to *present* data

plotly Package

Goal of Visualization



Data Visualization Basic Principles





Basic Principles

Follow flow of visualization



Before you start down the path of data visualization, there are a couple of questions that you should be able to concisely answer:

- 1. Who is your audience?
- 2. What do you need them to know or do?

Data Visualization:

Basic Principles

Which chart type should I use?

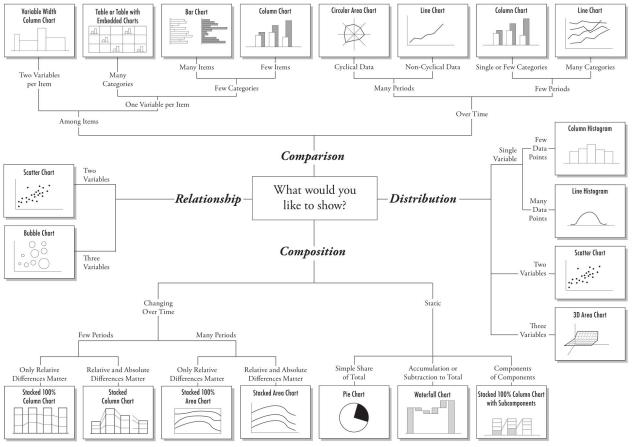
This is a frequently asked question, and the best answer is:

Experiment with different charts, to see which works best to liberate the story in your data.

Although it is far from comprehensive, and makes some specific chart suggestions that I would not personally endorse, this "chart of charts" provides a useful framework by providing four answers to the question:

"What would you like to show?"

Chart Suggestions—A Thought-Starter



Use chart furniture to minimize chart junk & highlight the story

A title for the chart

And a subtitle, telling us some more about what it shows.

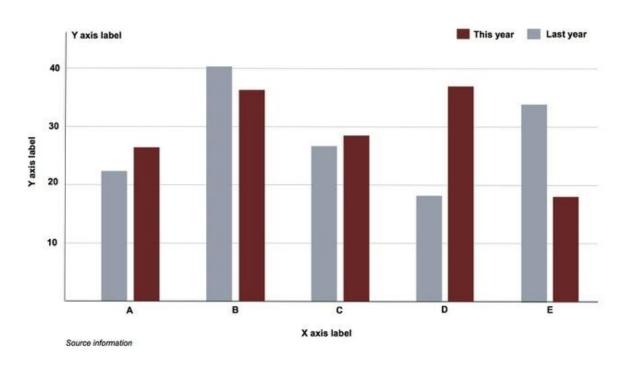


Chart Furniture

Title and subtitle: These provide context for the chart.

Coordinate system: For most charts, this is provided by the horizontal and vertical axes, giving a cartesian system defined by X and Y coordinates.

Scale: Labeled tick marks and grid lines can help your audience read data values.

Labels: Think about other labels that may be necessary to explain the message of your graphic.

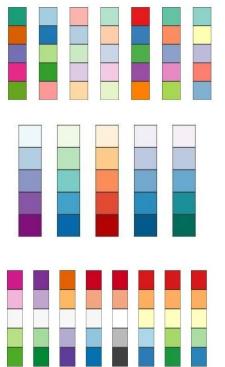
Legend: If you use color or shape to encode data, you will often need a legend to explain this encoding.

Source information: Usually given as a footnote. Don't forget this!

Use color effectively

When encoding data with color, take care to fit the color scheme to your data, and the story you're aiming to tell.

- For categorical data, you usually want to use "qualitative" color schemes, where the aim is to pick colors that will be maximally distinctive
- For continuous data, it usually makes sense to use increasing intensity to indicate larger values. These are called "sequential" color schemes
- For data that has positive and negative values, or which highlights deviation from a central value, you should use a "diverging" color scheme, which will have two colors reasonably well separated, and cycle through a neutral color in the middle





Dashboard



Visual display of the most important information needed to achieve on or more objectives which fits entirely on a single screen so it can be monitored

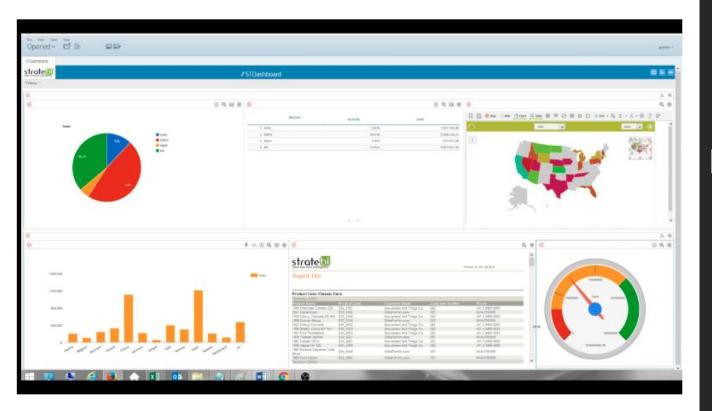
What is Dashboard?



- 1. Displays summary data graphically
- 2. Provides highlights of your business
- 3. Represents one or more business
- 4. Provides an at-a-glance summary

Dashboard Essentials

Tiny and spaced





Bad Dashboard Design

3D & Raw Data: What for?





Bad Dashboard Design

To many colours, no data visualization





Bad Dashboard Design









Bad Dashboard

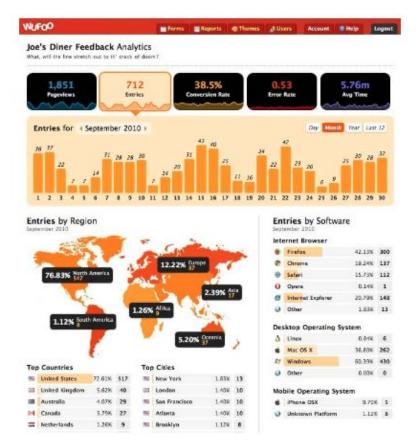
Wave Dashboard





Good Dashboard Design

Wufoo Dashboard





Good Dashboard Design

Web Analytics Dashboard





Good Dashboard Design

- 1. Dash Plotly
- 2. Dash Core Component
- 3. Dash HTML Component
- 4. Dash Bootstrap Component
- 5. Styling CSS
- Bootstrap 5 Cheatsheet
- 7. Bootstrap 5 Documentation
- 8. Add CSS and JS
- Multipage Dash



Reference Dashboard