

# Dashboards in practice

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# Agenda

- Why dashboards
- Tech stack
- The good, the bad and the ugly
- Q&A

# Why dashboards

At-a-glance information like

- KPIs
- Charts
- Trends
- Comparison
- Context

Provide insight to make decisions  
and take action

Dashboards are often set up  
with a **user** in mind:

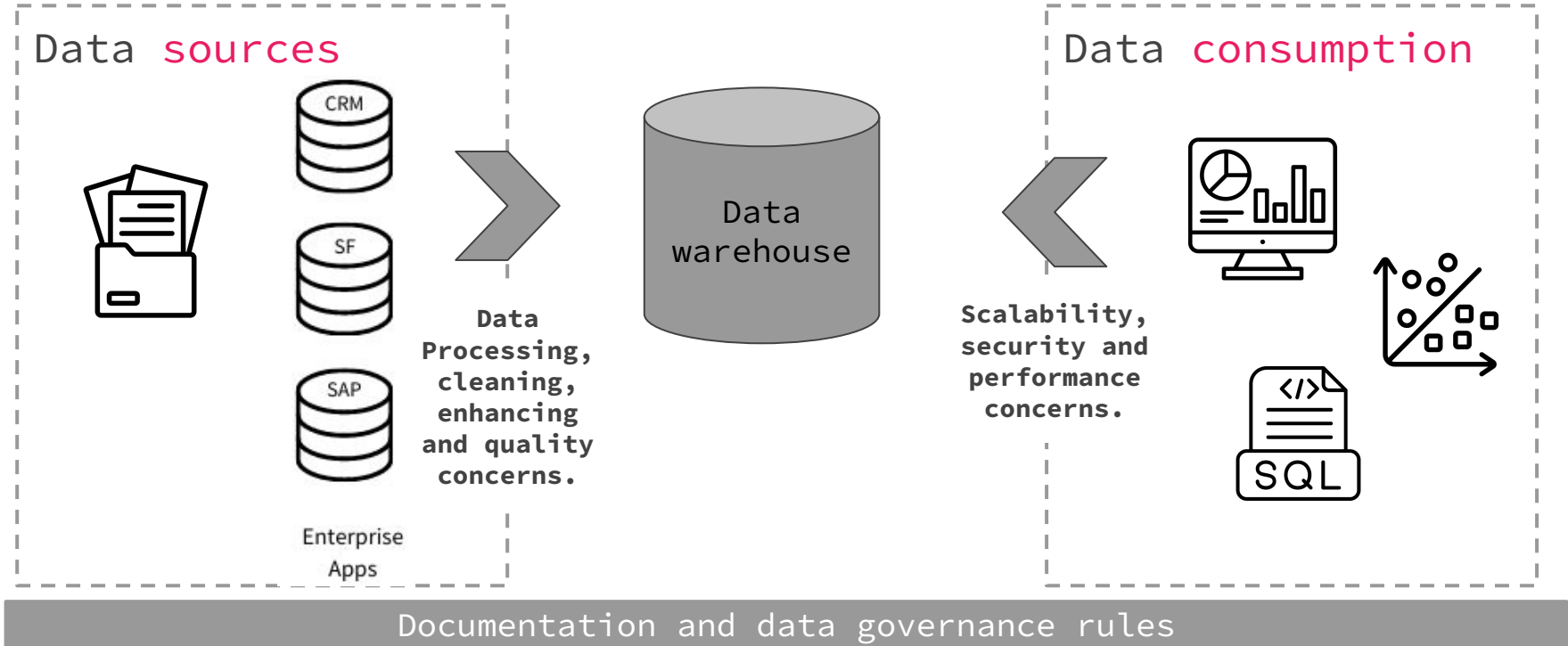
- Sales
- Marketing
- Inventory reports
- Finance reports

“If we want our message to be heard by those who live outside the walls of the research academy, we must speak plainly.”

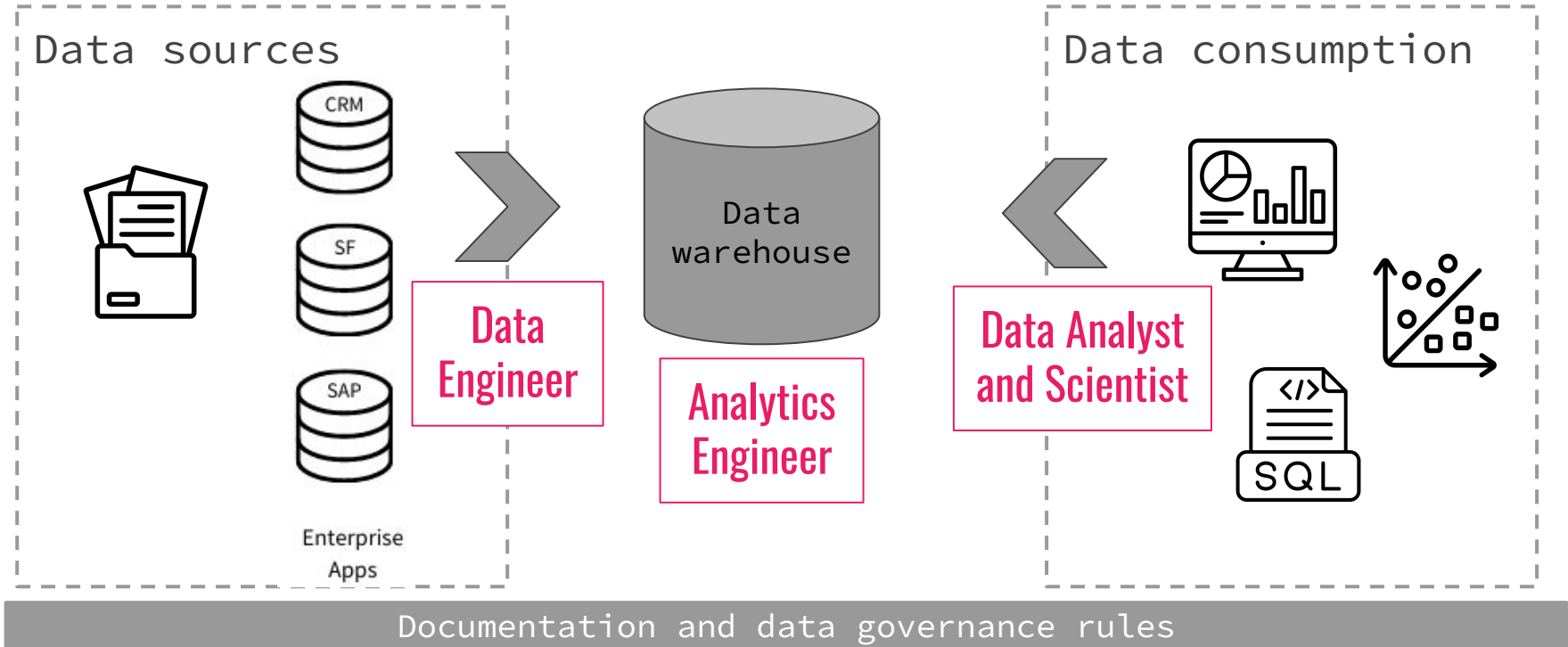
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Stephen Few, [Perceptual Edge](#)

# Tech stack - Environment

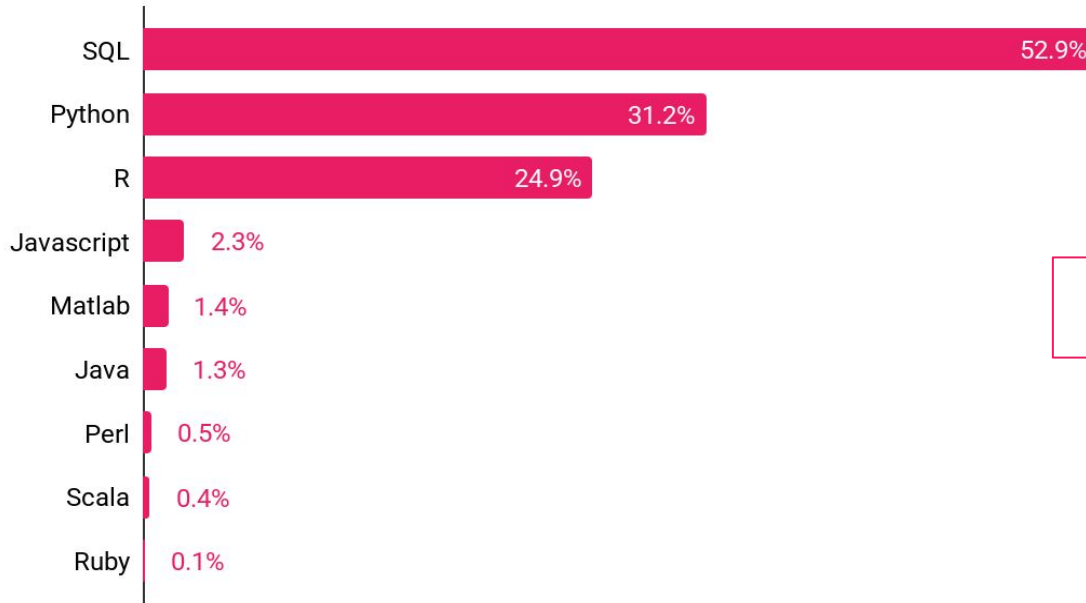


# Tech stack - Roles



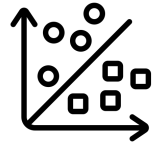
# Tech stack - Programming languages

Percentage of mentions in total job postings



Data consumption

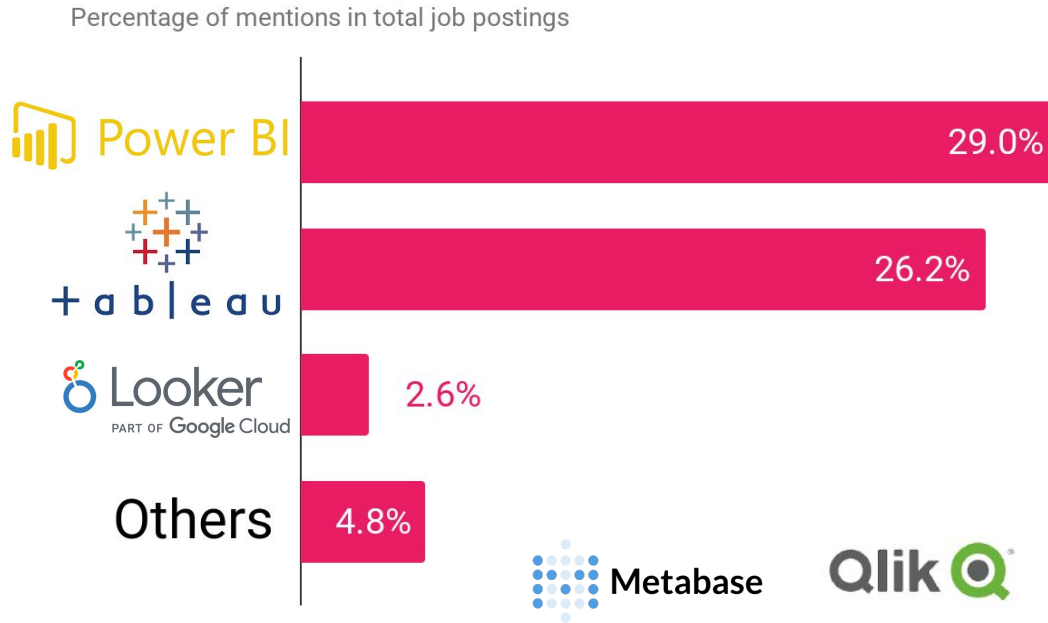
Data Analyst



Source: [The Data Analyst Job Market in 2024 \[Research on 1,000 Job Postings from Indeed USA\]](#)



# Tech stack - Dashboarding tools



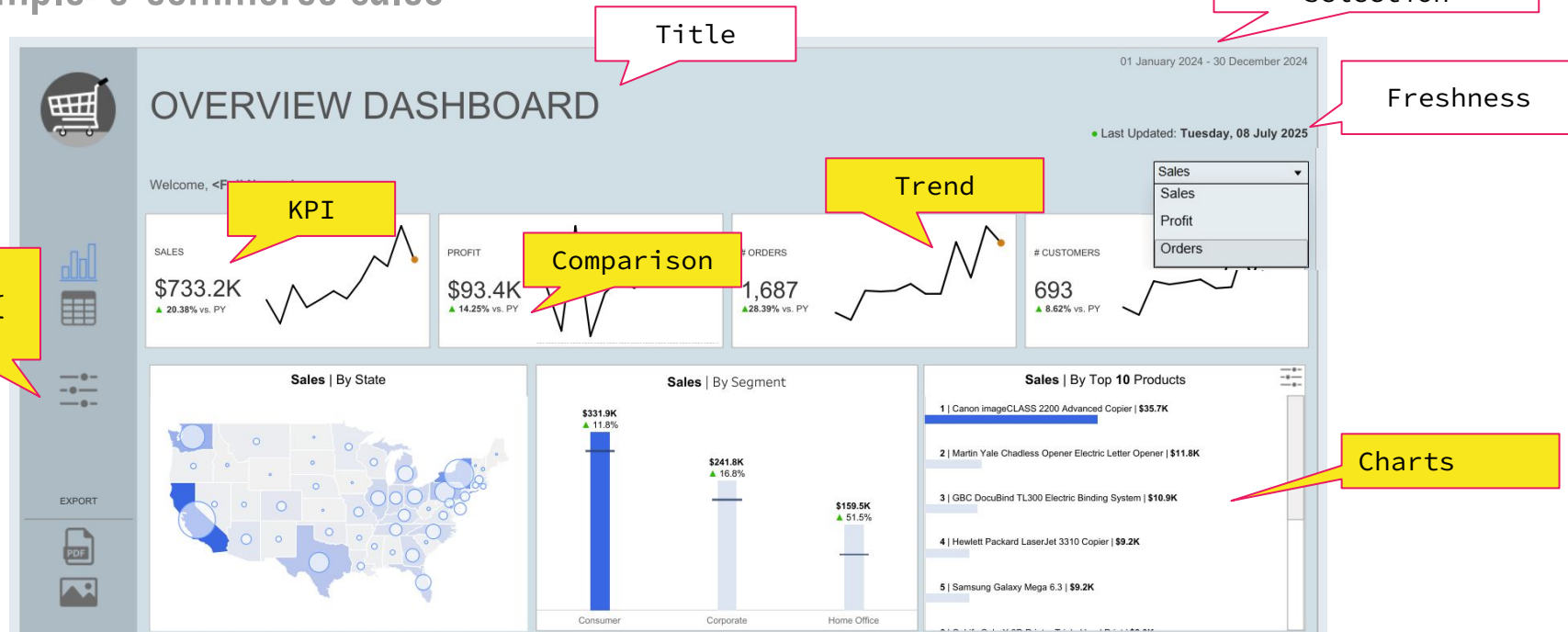
Data consumption



Data Analyst

# The good, the bad and the ugly

Example: e-commerce sales



[Link to Superstore Dashboard in Tableau Public](#)

# The good, the bad and the ugly

Example: Website monitor

## Website Analytics Dashboard

Visitors

890

Completed Transactions

394

Customer Lifetime Value

\$14.71K

Annual Recurring Revenue

\$100.04M

Qualified Leads

144

Customers

25

Total Revenue

\$240.36K

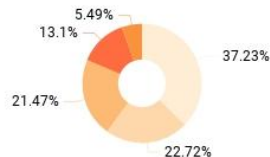
Leads

164

Avg. Order Value

\$577.84K

### Revenue by Traffic Source

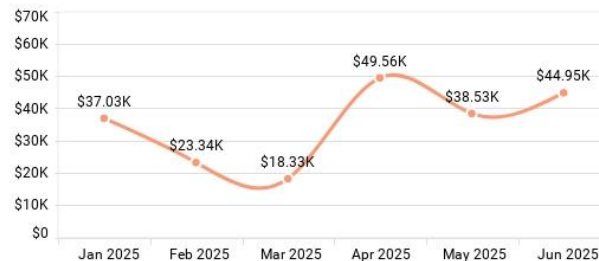


### Customer Churn Rate



### Average Revenue per User (ARPU)

Last 6 Months



### Recurring Revenue by Month

Last 6 Months



What is the insight, conclusion, bottomline ... ?

# The good, the bad and the ugly

## Example: FDA e-cigarettes study

**NYTS**  
2023

More than **2.1 million**  
youth currently use e-cigarettes,

with a decline in high school students currently using e-cigarettes in 2022-2023

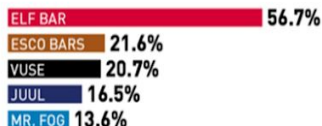
Among youth who reported current use of e-cigarettes:

More than **1 in 4**



use e-cigarettes daily

The most popular brands include disposable and cartridge-based products, and the most commonly reported products were:



Almost  
**9 out of 10**



use flavored e-cigarettes

<https://www.fda.gov/tobacco-products/youth-and-tobacco/results-annual-national-youth-tobacco-survey>

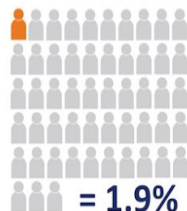
**NYTS**  
2023

More than **2.1 million/27 million**  
teens use e-cigarettes  $\geq$  once in the past 30 days (7.7%)

with a 61% decline in high school students currently using e-cigarettes in 2019-2023

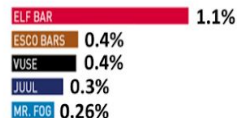
Daily use may imply dependence. Out of all 27 million middle and high school students:

More than **1 in 53**



= 1.9%

Daily use of the most commonly reported products was:



Among daily users  
**9 out of 10**



use 'flavored'  
e-cigarettes

= **1.7%** of teens  
(1 in 59)

Modified from the original FDA infographic to show exactly the exact same data, but with context and a focus on potentially problematic daily use

Trend

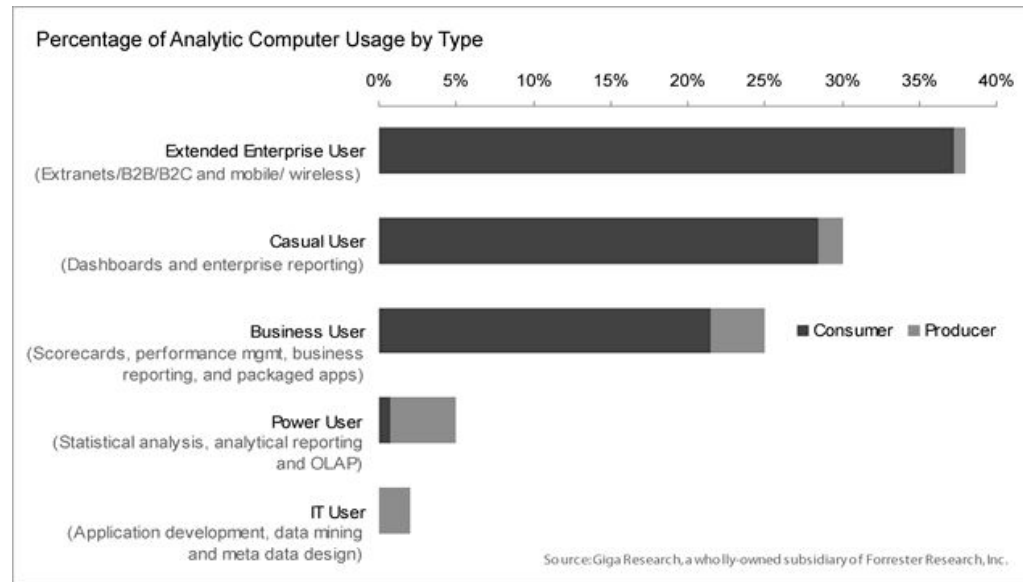
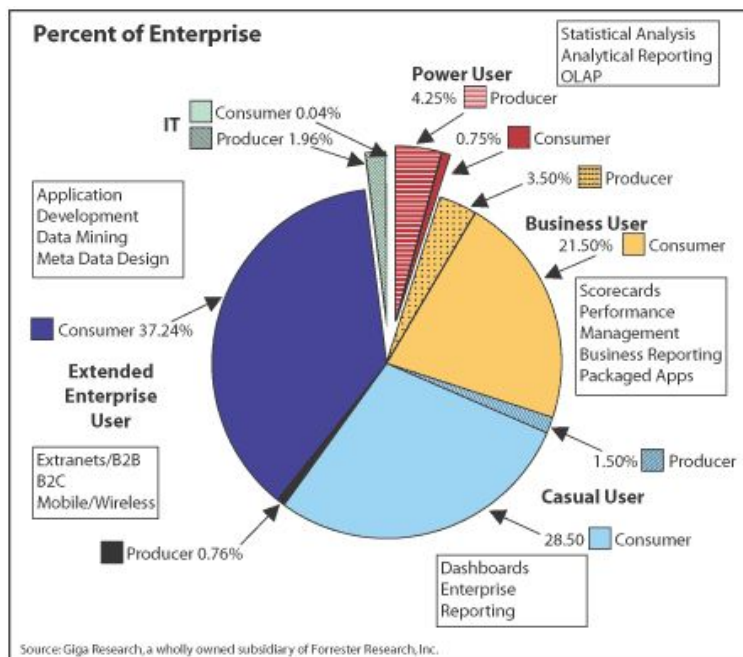
Context

Can you spot opportunities for improvement/hidden agendas?

Source: [Data Visualization Tips & Tricks: What Not To Do! - Occam's Razor by Avinash Kaushik](#)

# The good, the bad and the ugly

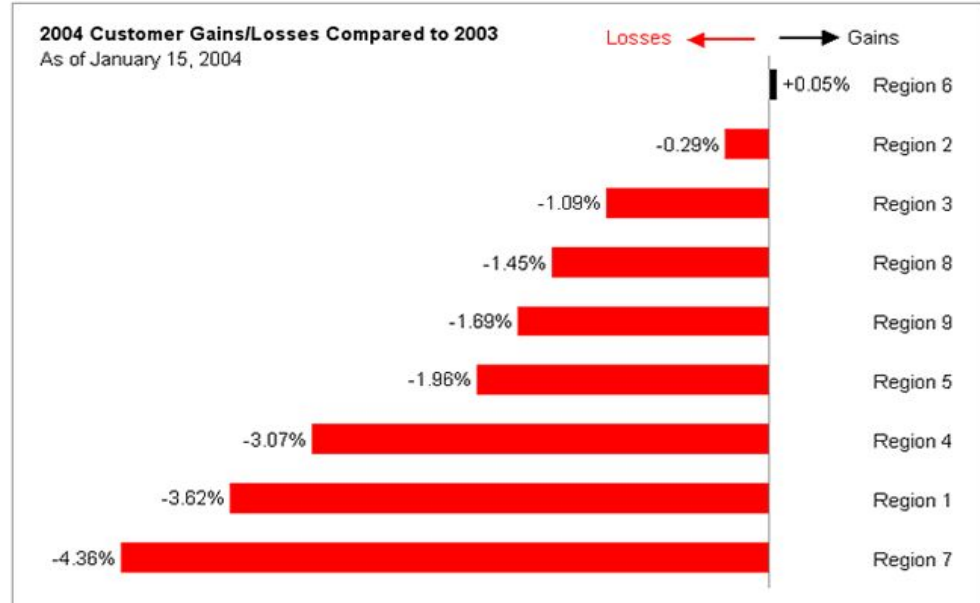
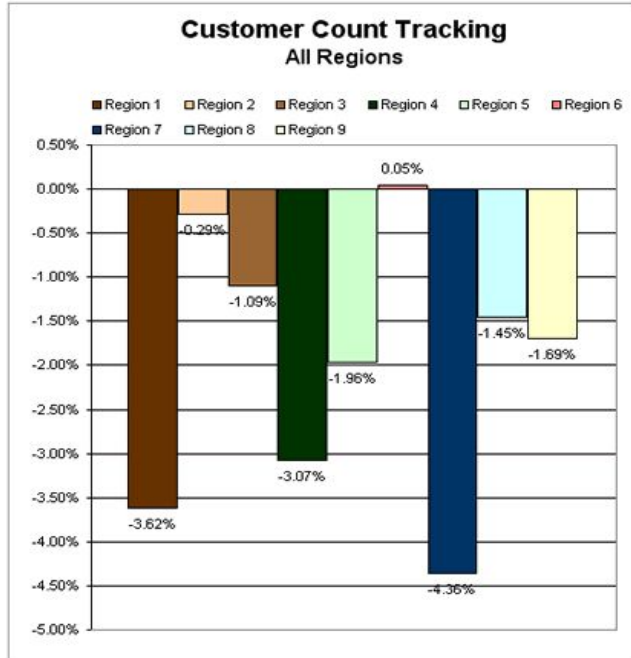
## Choosing the right chart type



Source: [Perceptual Edge](#)

# The good, the bad and the ugly

## Choosing the right chart type



Source: [Perceptual Edge](#)

# The good, the bad and the ugly

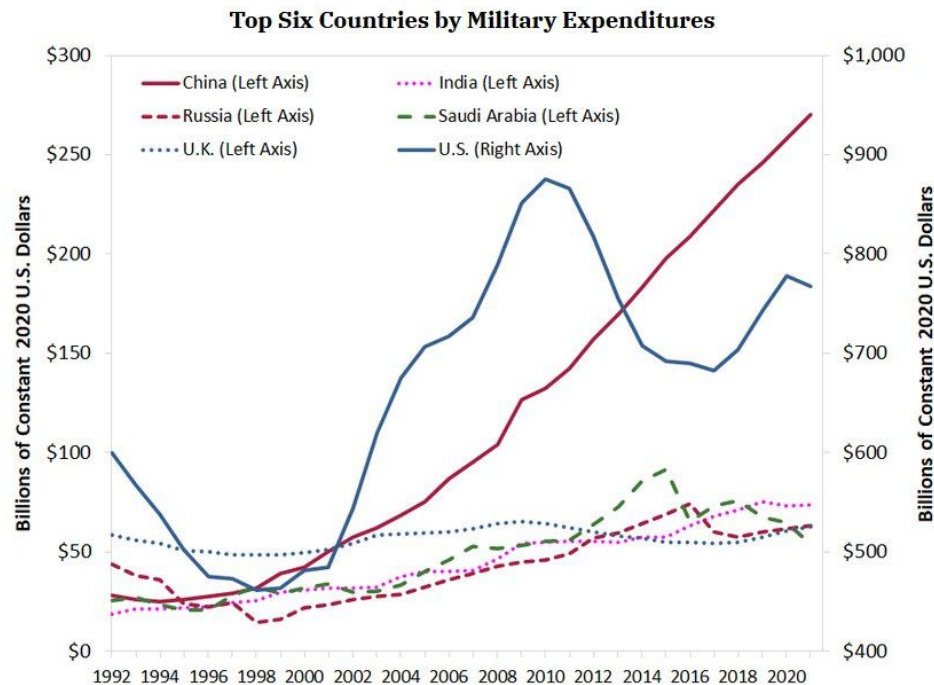
## Choosing the right chart type

The wrong chart can make trends harder to spot or even misrepresent the data.

- Bar charts for comparisons
- Line charts for trends over time
- Pie charts should be used sparingly, eg when showing parts of a whole and if 2 or max. 3 categories
- Scatter plots and heatmaps for correlations between two variables
- Maps for geographical insights

# The good, the bad and the ugly

## Avoid manipulation of axes



■ FEDERAL RESERVE BANK OF ST. LOUIS

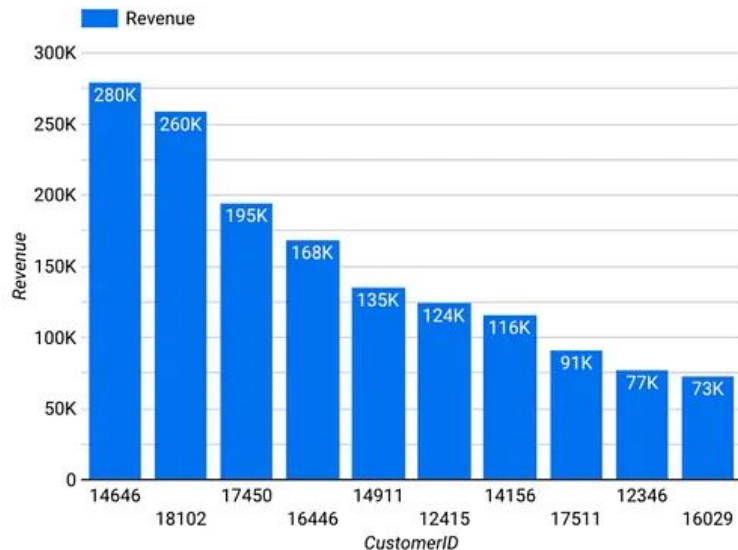
- Exaggerated differences
- Trends made to look worse or better



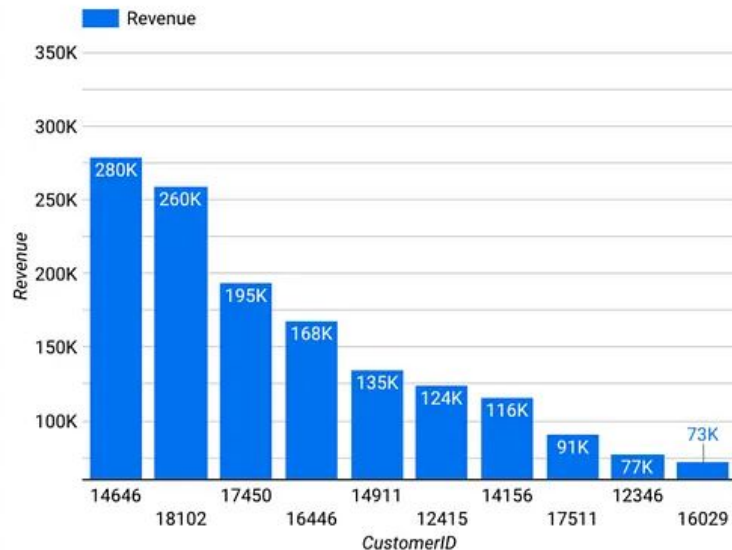
# The good, the bad and the ugly

Start axes at zero

Top 10 Customers by Revenue

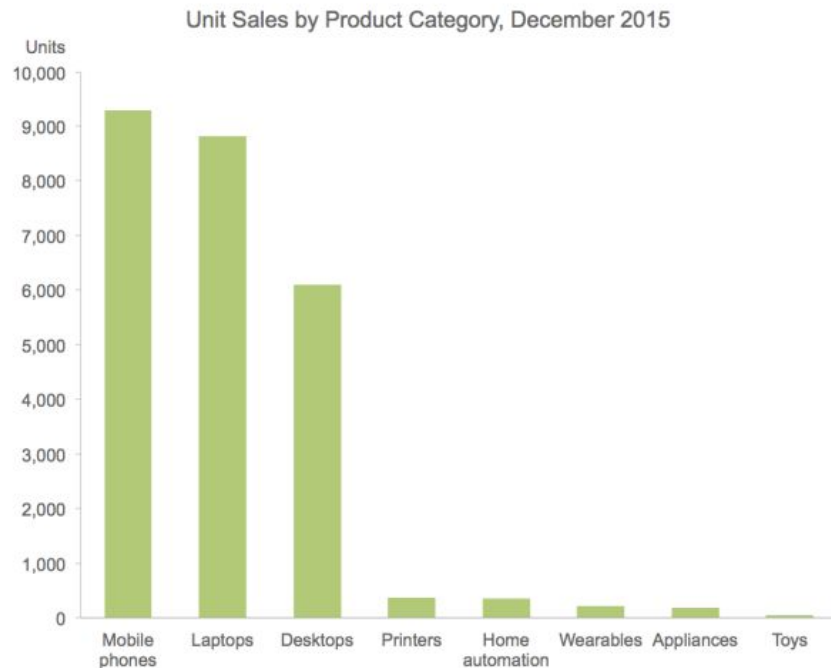


Top 10 Customers by Revenue



# The good, the bad and the ugly

Challenge: show wide-variation data

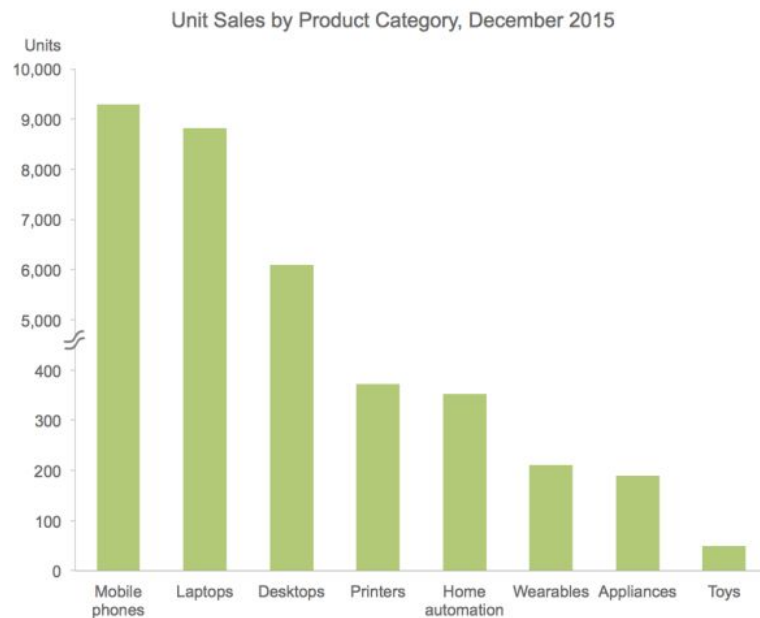
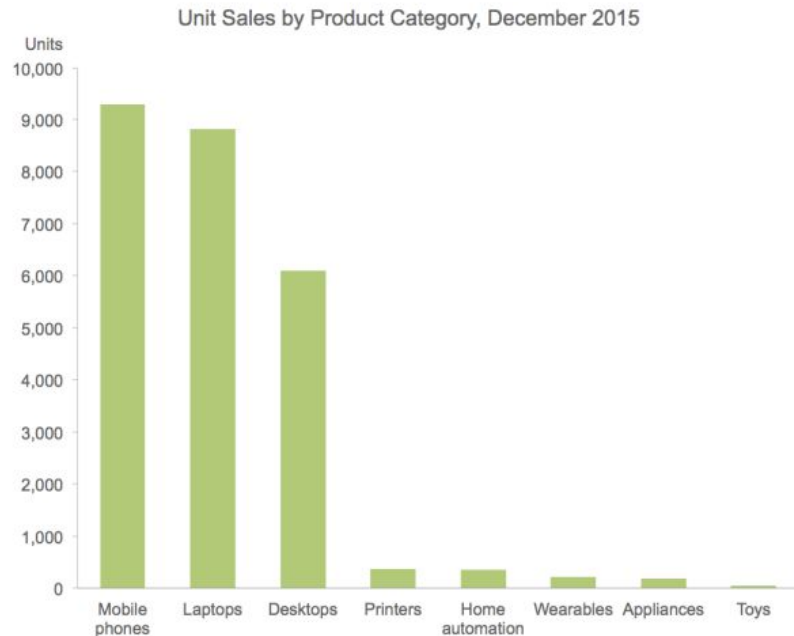


Source: [Visualizing Wide-Variation Data | Perceptual Edge](#)

# The good, the bad and the ugly

## Proposed solution 1: truncated axis

This solution defeats the most basic purpose of a bar graph

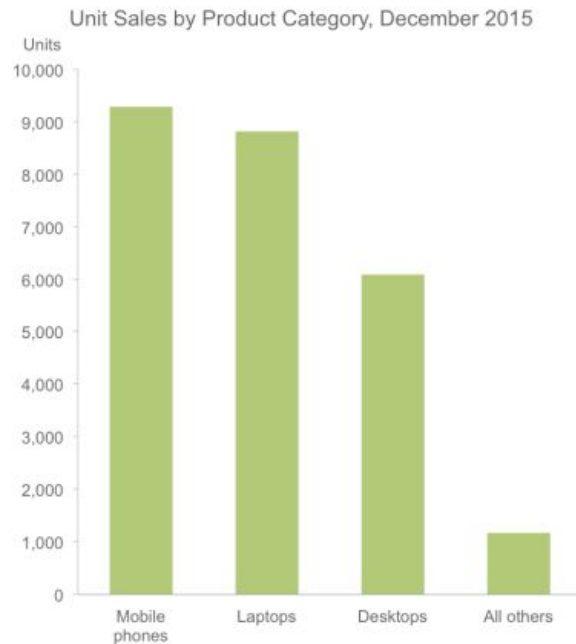
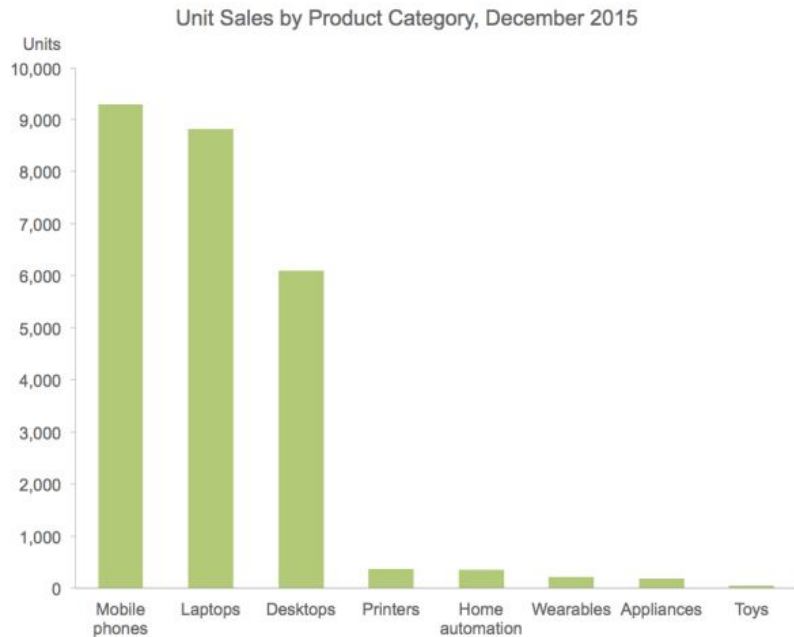


Source: [Visualizing Wide-Variation Data | Perceptual Edge](#)

# The good, the bad and the ugly

## Proposed solution 2: Keep only relevant data

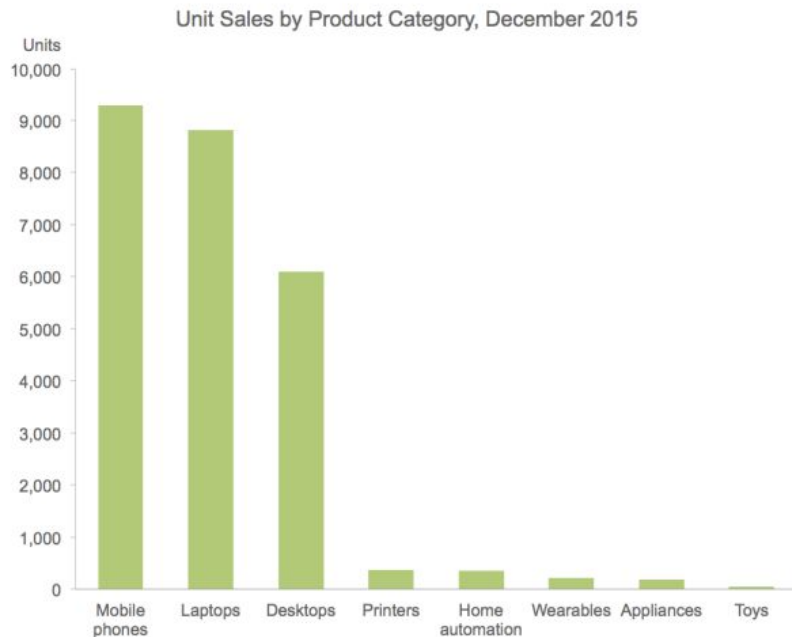
If the smaller categories are not important



Source: [Visualizing Wide-Variation Data | Perceptual Edge](#)

# The good, the bad and the ugly

## Proposed solution 3: Magnified inset graph



Source: [Visualizing Wide-Variation Data | Perceptual Edge](#)

# The good, the bad and the ugly

— — —

- Measure something meaningful
- Add relevant context
- Add useful trends and comparisons
- Quick time to insight
- Ensure the right set of actions are taken
- Less is more

- Avoid pie charts for 3+ categories
- Avoid manipulation of axes
- Do not show all the data you have, unless *\*all\** the data adds to the story
- Don't make things more complicated than they need to be

# The good, the bad and the ugly

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Use labels!

- Axis labels should specify units
- Use a title that summarizes the insight
- Legend should be simple and easy to follow
- When adding filters, let the filter name state what variable it's representing

# The good, the bad and the ugly

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Not every insight needs to be represented in data visualization

“The purchase likelihood for a product with five reviews is **270%** greater than a product with zero reviews.”

Spiegel Research Center, *How Online Reviews Influence Sales*



# Further resources

- [Data Visualization Tips & Tricks: What Not To Do! – Occam's Razor by Avinash Kaushik](#)
- [A collection of dataviz caveats by data-to-viz.com](#)
- [Perceptual Edge](#)

# Bonus

Interview process for  
Senior Data Analyst at  
DeepL in 2024

Live SQL coding

Live Python coding

Create two visualisations

- [https://lookerstudio.google.com/s/o2tF9uzj\\_-4](https://lookerstudio.google.com/s/o2tF9uzj_-4)
- <https://lookerstudio.google.com/s/pHk85bfH708>

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<https://www.datawrapper.de/blog/irish-times-chart-redesigned-olympics>

<https://www.data-to-viz.com/caveat/pie.html>

<https://medium.com/troopers-legacy/storytelling-com-dados-%C3%A9-tudo-sobre-highlights-3f5710bf743f>

<https://www.storytellingwithdata.com/podcast>



*Let's connect on* **LinkedIn**

# Thank you!

Questions?