

Data Visualization Design & Google Looker Studio

21 Mar 2024



Agenda

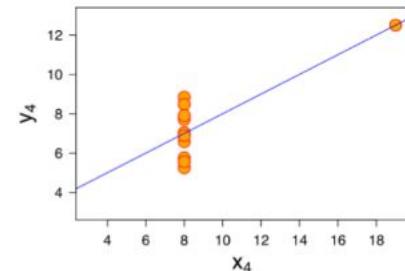
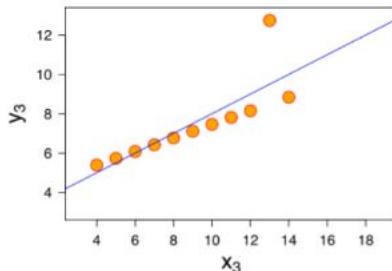
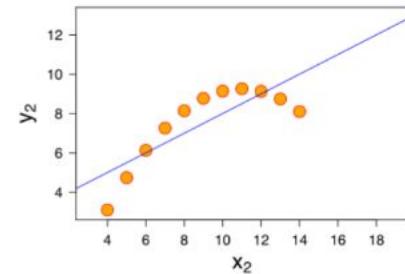
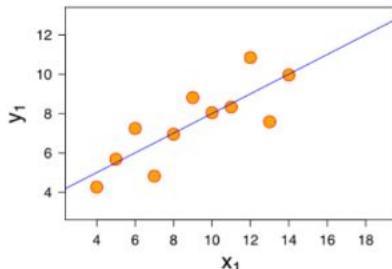
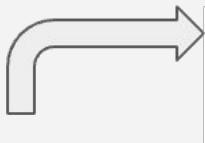
1. Data Visualization Design
2. Google Looker Studio

Data Visualization Design

Data Visualization

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

Sample data sets recreated from Anscombe, Francis J. (1973) Graphs in statistical analysis. American Statistician, 27, 17–21



Otak manusia dapat memproses informasi visual lebih cepat daripada teks. Visualisasi membantu memahami kompleksitas data dengan cepat.

Data Visualization Design Principle

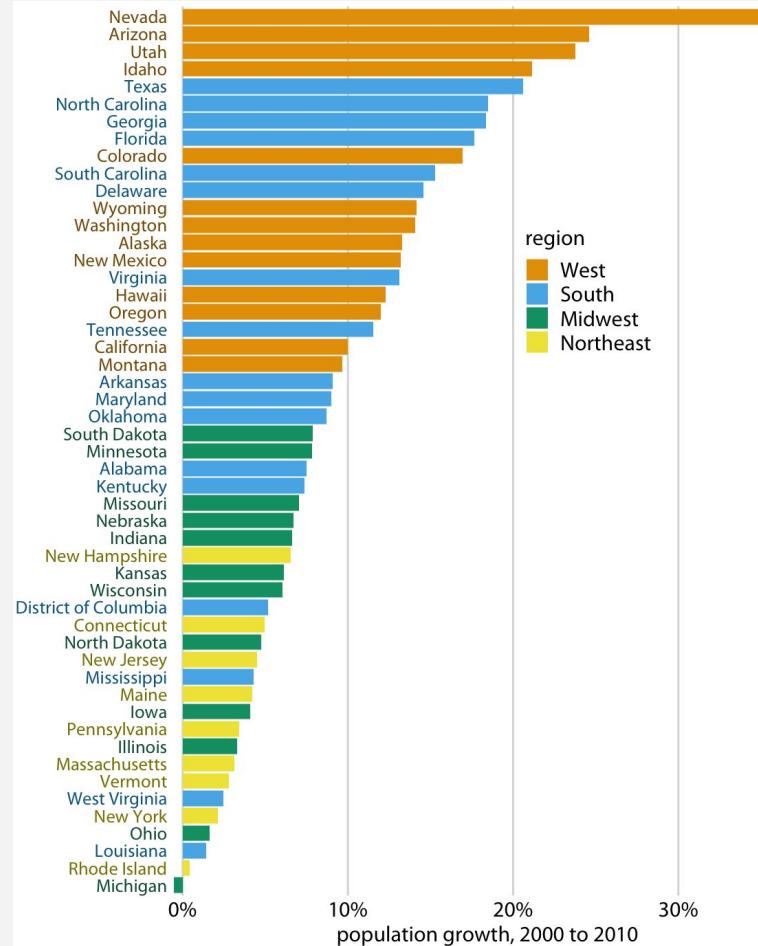
- **Menentukan Tujuan yang Jelas:** Fokus pada menjawab pertanyaan penting dan memberikan solusi untuk masalah nyata.
- **Mengenal Audiens:** Sesuaikan visualisasi dengan tingkat keahlian audiens, memudahkan pemahaman dan pemrosesan data.
- **Menggunakan Fitur Visual dengan Tepat:** Pilih jenis grafik yang tepat untuk menyajikan data secara intuitif dan akurat.

Data Visualization Design Principle

- **Membuat Visualisasi Data yang Inklusif:** Gunakan warna, pola, dan label yang kontras tinggi untuk memastikan visualisasi dapat diakses oleh semua orang, termasuk mereka dengan gangguan penglihatan.
- **Jangan Mendistorsi Data:** Hindari penggunaan visualisasi yang menyesatkan, sampaikan cerita data secara jujur dan jelas.
- **Menjaga Organisasi dan Koherensi:** Desain yang koheren dan terorganisir memudahkan interpretasi data, dengan mengutamakan hierarki informasi untuk memudahkan pengambilan keputusan tanpa menciptakan bias.

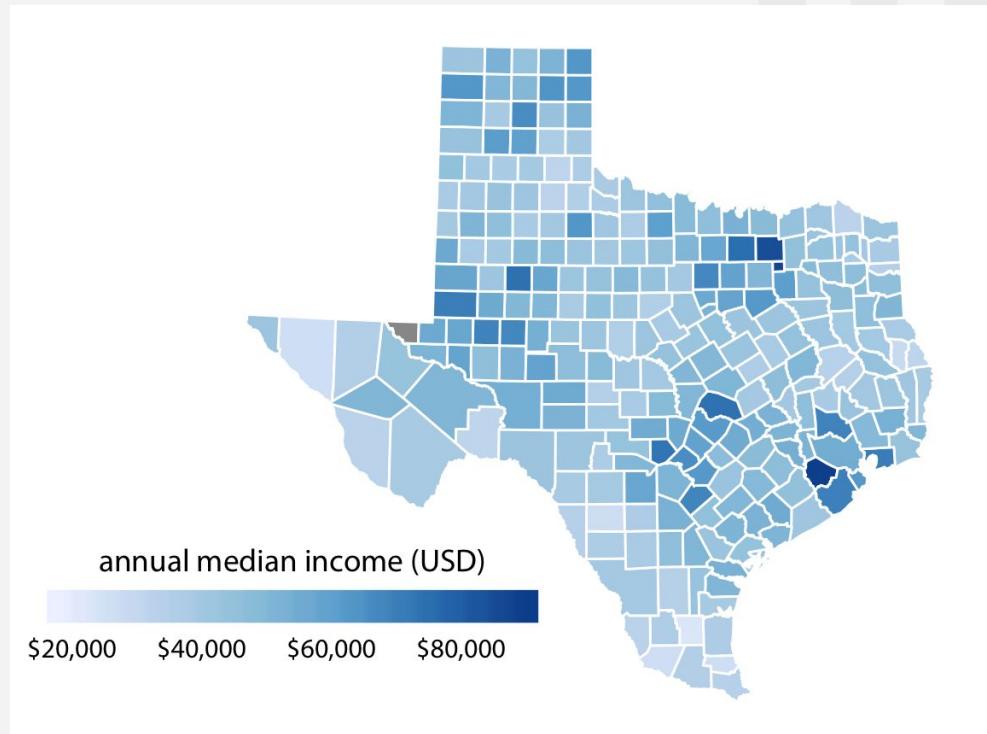
Color Scale

- Penggunaan warna sebagai pembeda



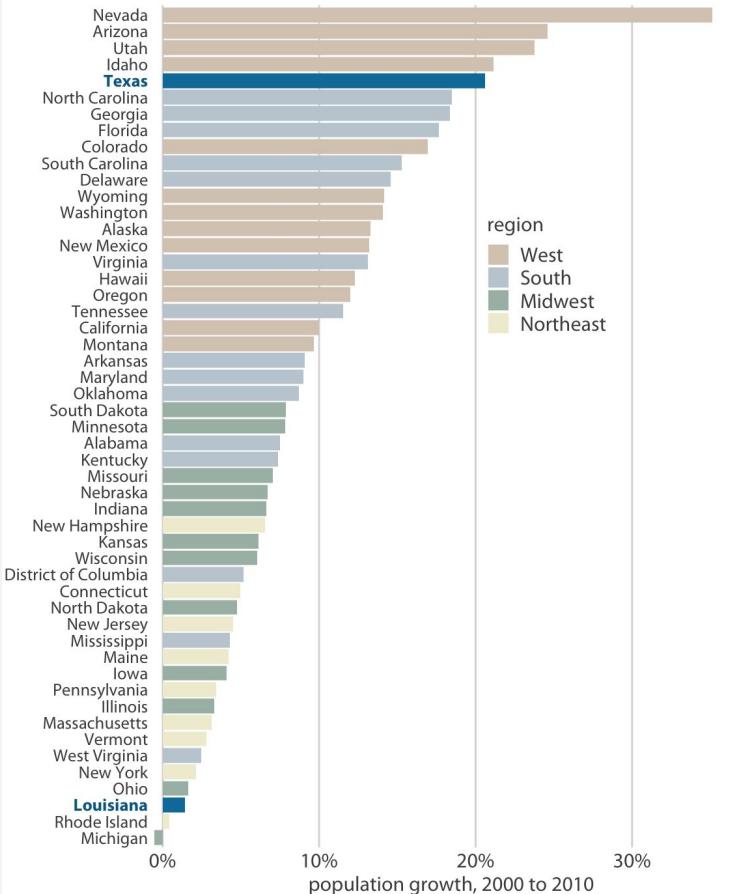
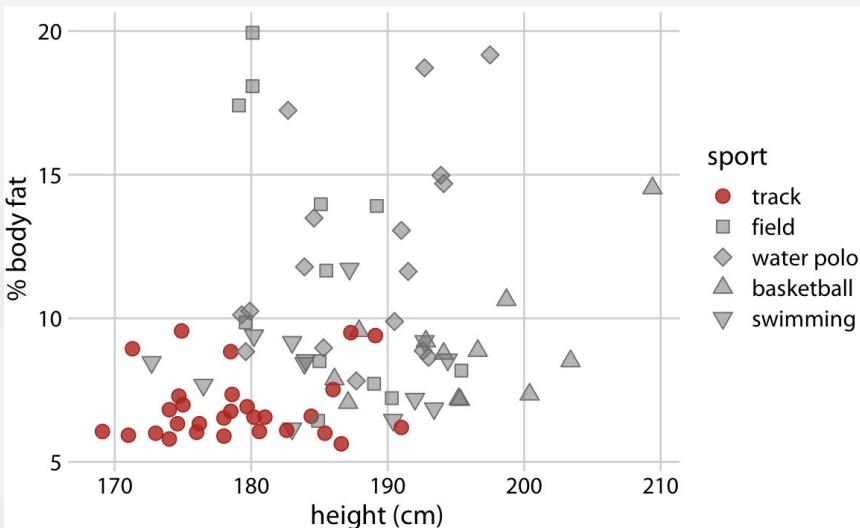
Color Scale

- Penggunaan warna sebagai representasi data



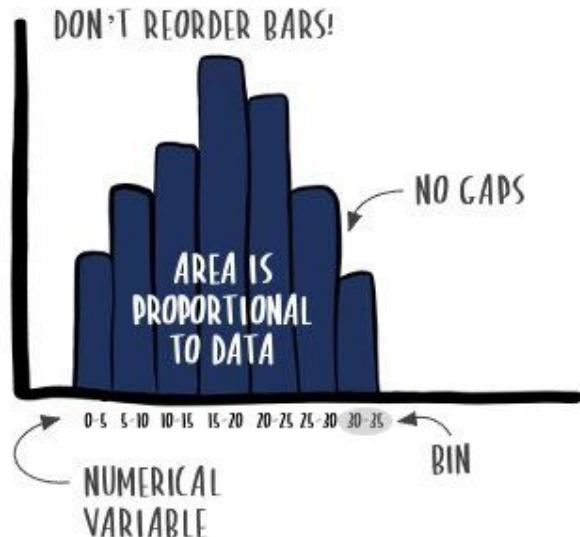
Color Scale

- Penggunaan warna sebagai highlight

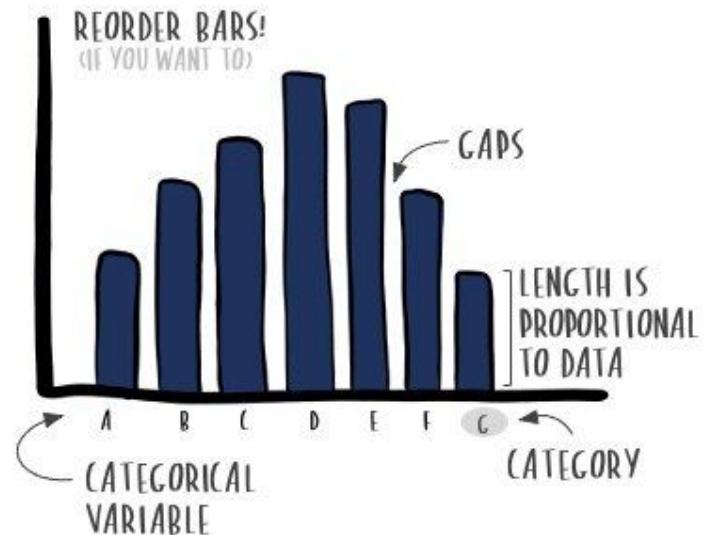


Memilih Visualisasi yang Tepat

This is a **histogram**...



This is a **bar chart**...

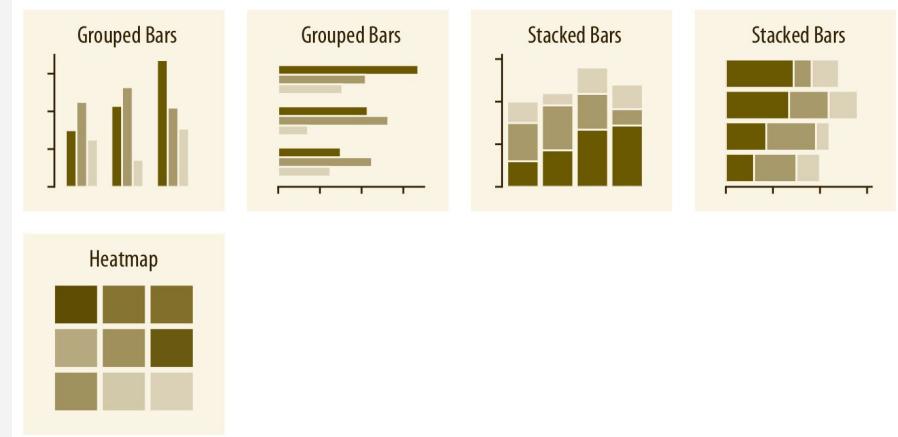


Visualizing Amounts

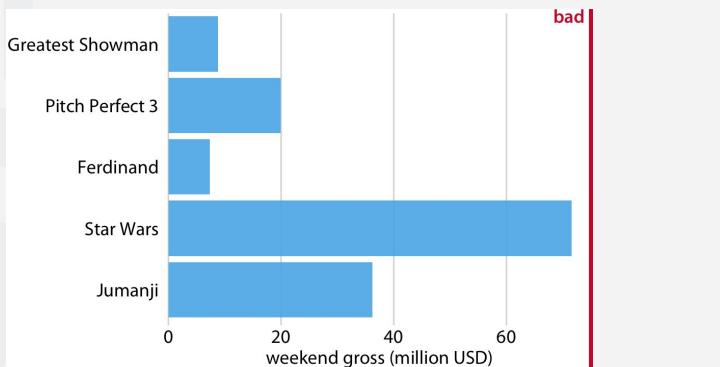
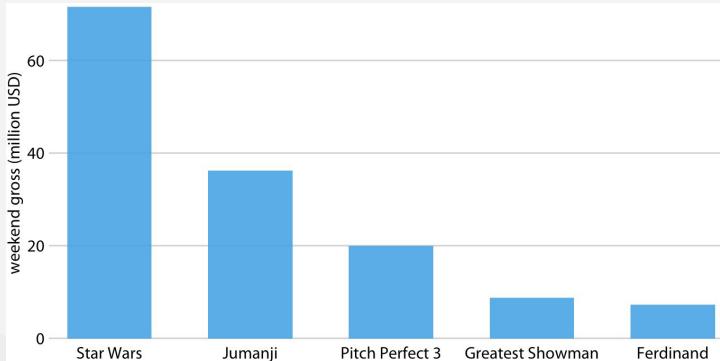
1 category



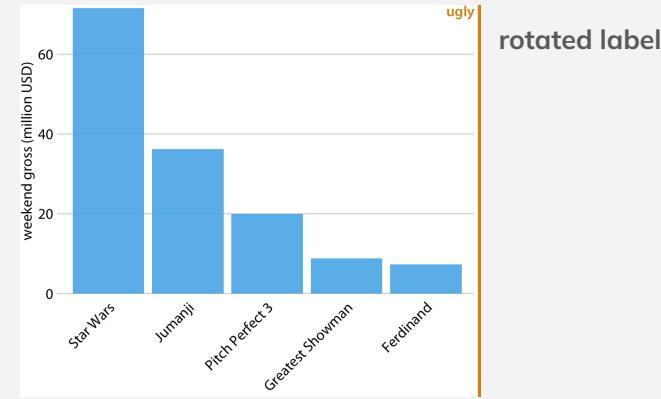
multiple categories



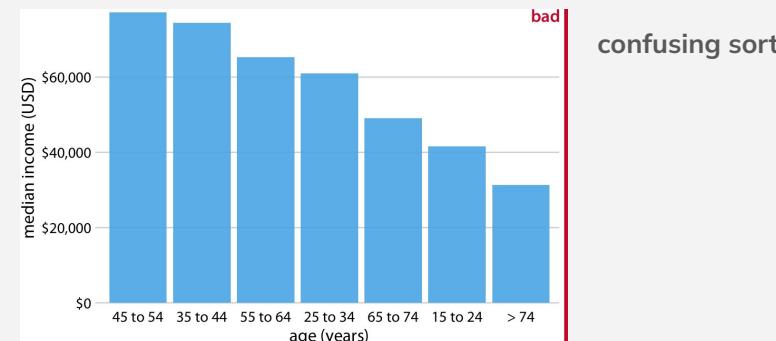
Visualizing Amounts



not sorted

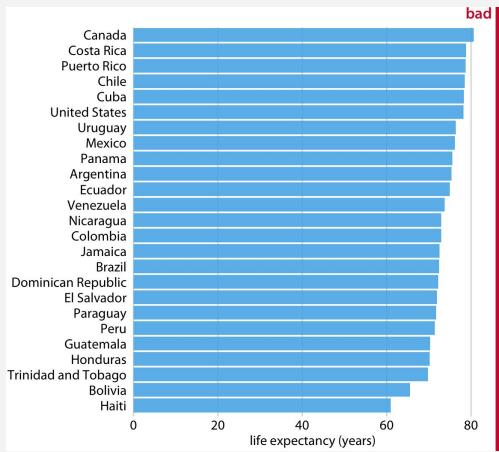
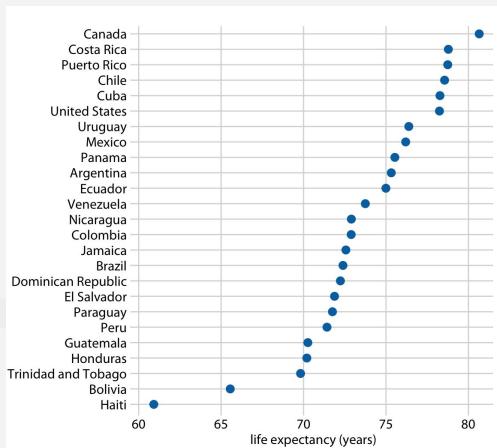


rotated label

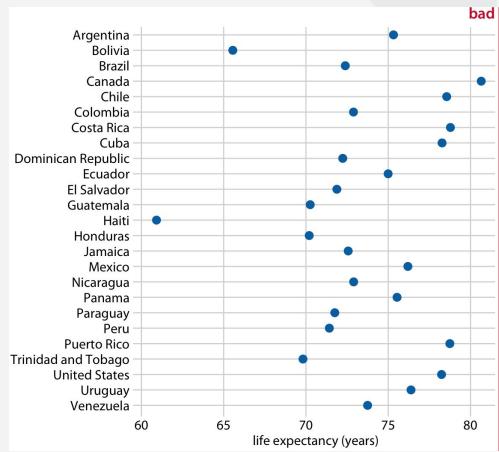


confusing sort

Visualizing Amounts

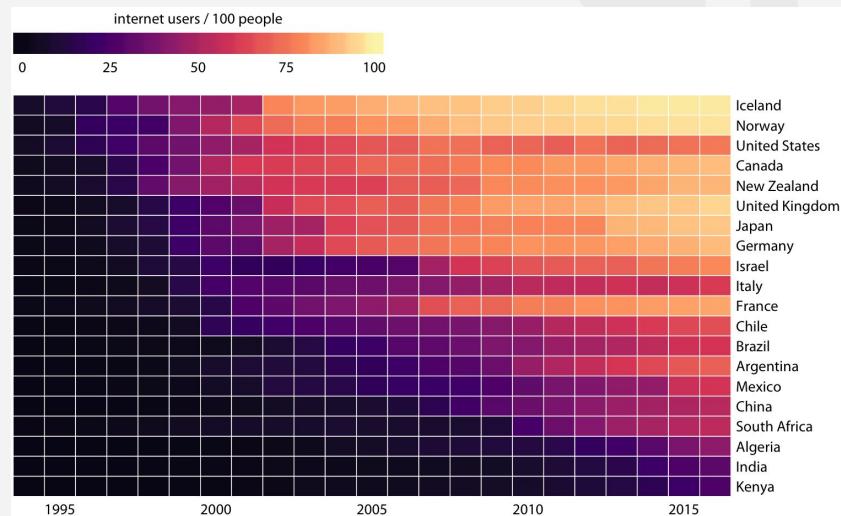
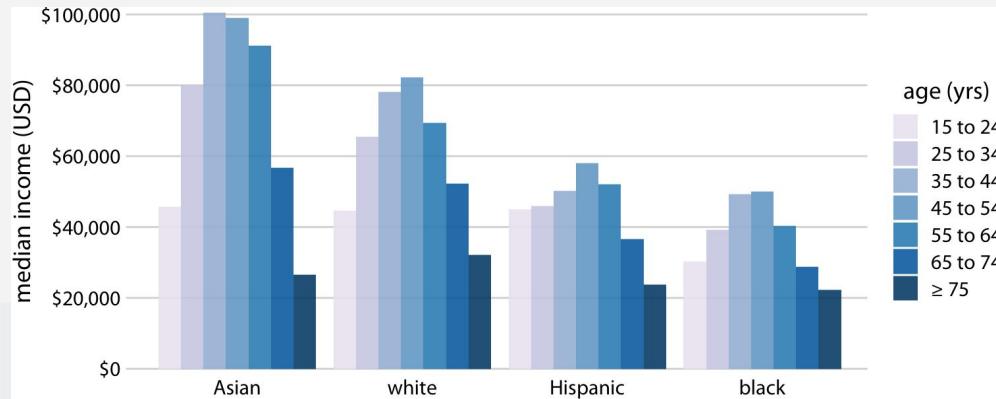


bar too long



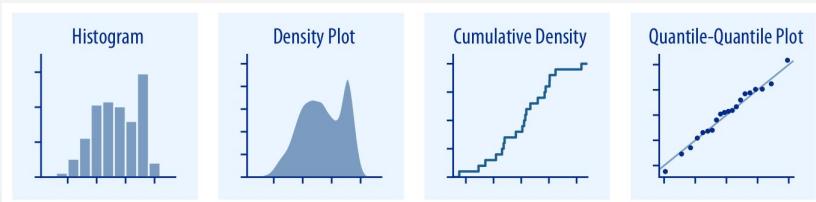
confusing sort

Visualizing Amounts

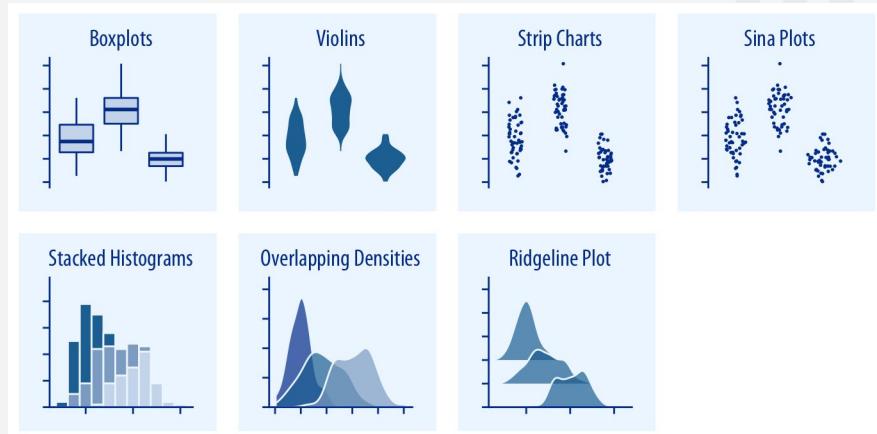


Visualizing Distributions

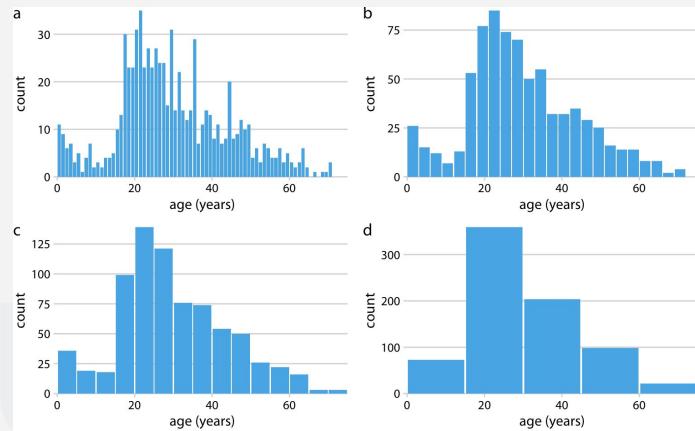
1 distributions



multiple distributions

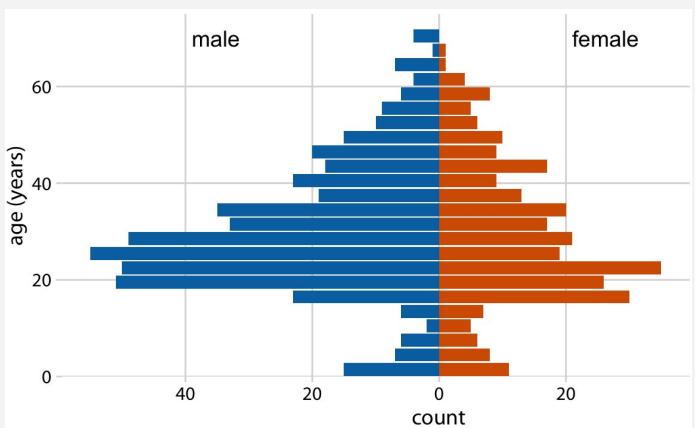
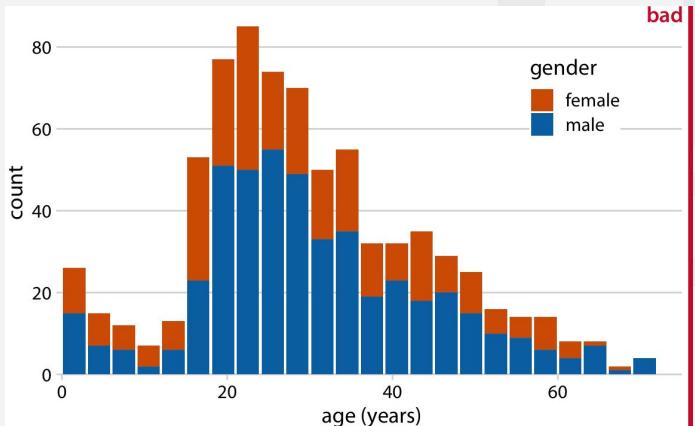


Visualizing Distributions



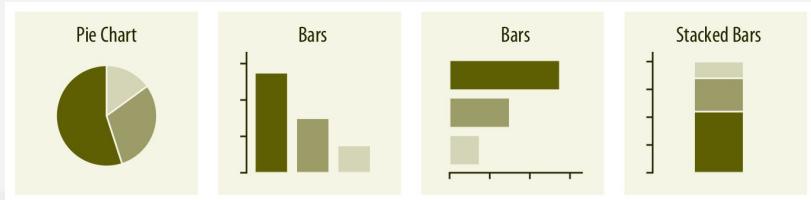
number of bins

hard to compare

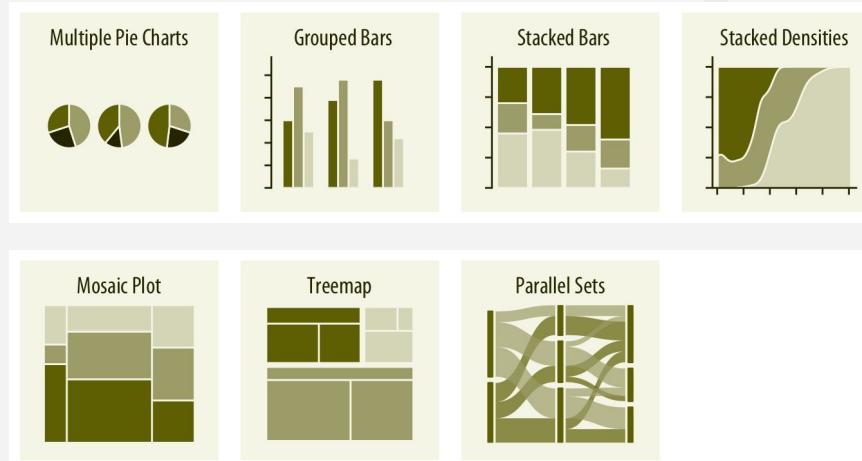


Visualizing Proportions

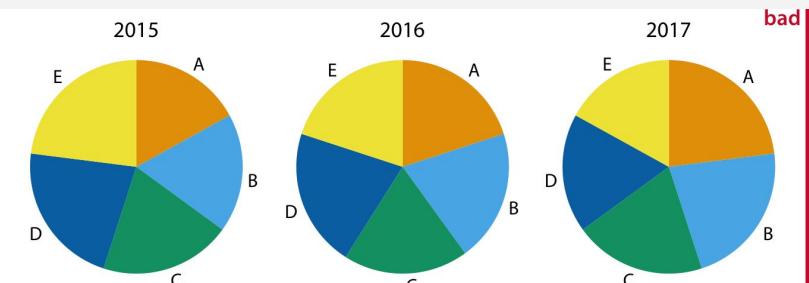
1 Proportions



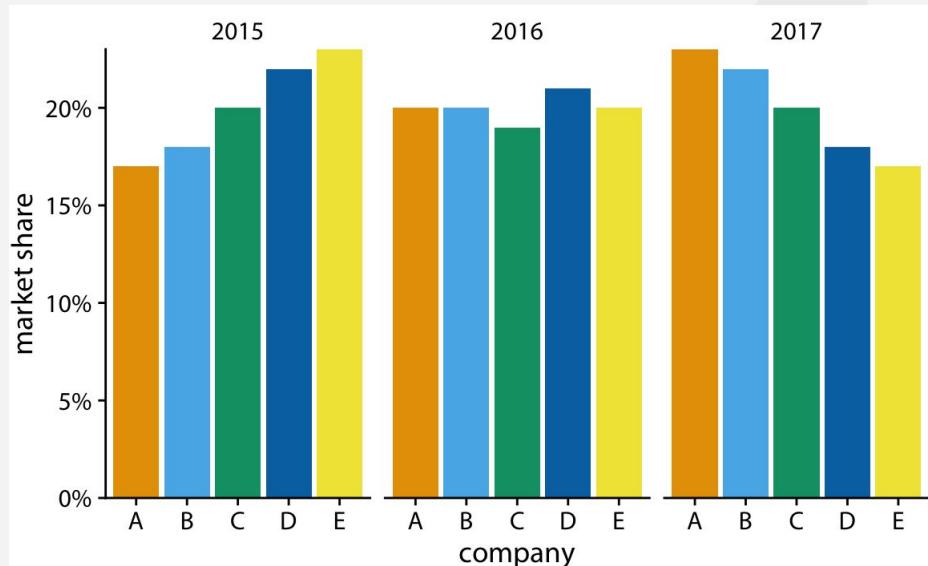
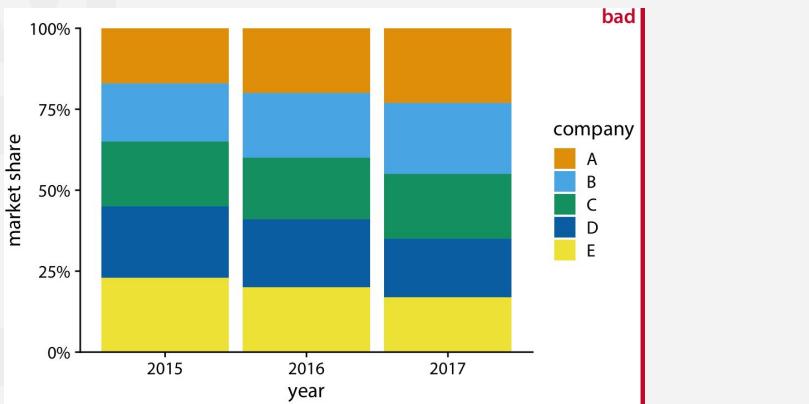
multiple Proportions



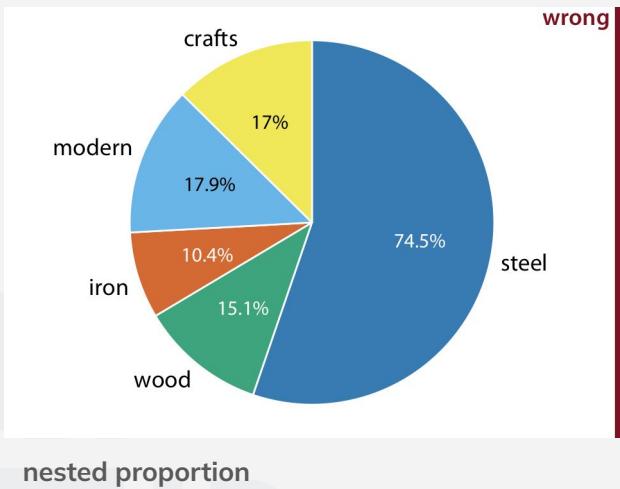
Visualizing Proportions



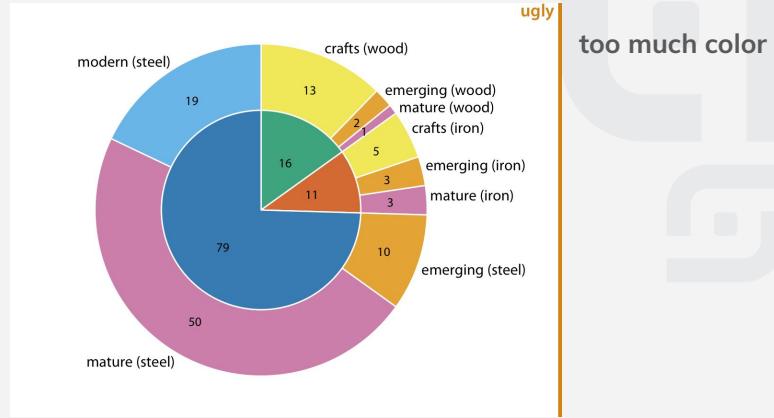
hard to compare



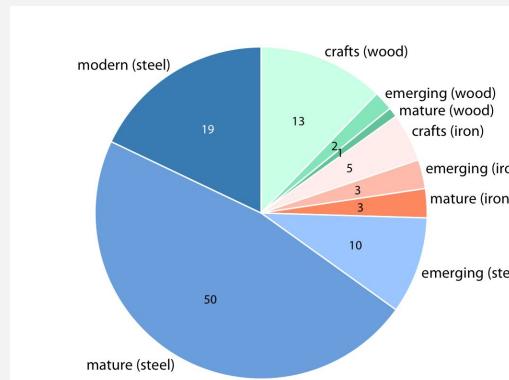
Visualizing Proportions



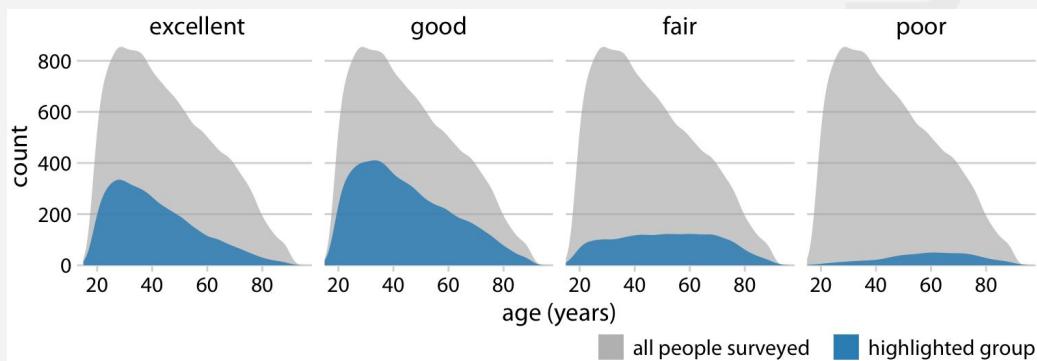
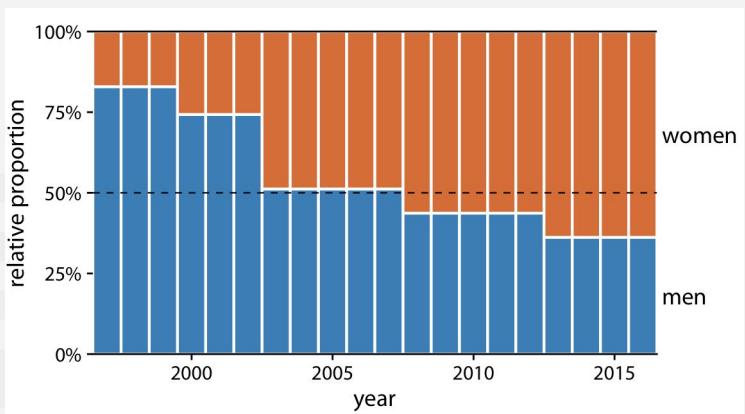
nested proportion



ugly
too much color

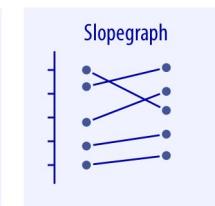
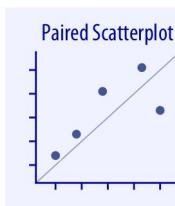
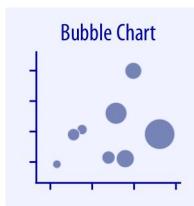
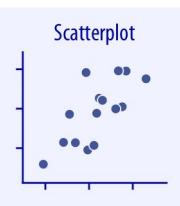


Visualizing Proportions

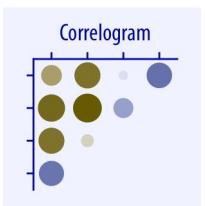
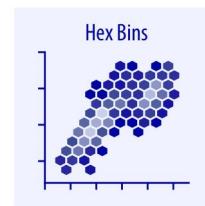
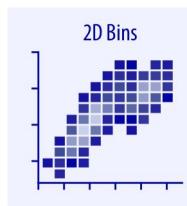
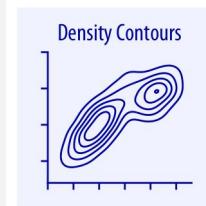


Visualizing x-y relationships

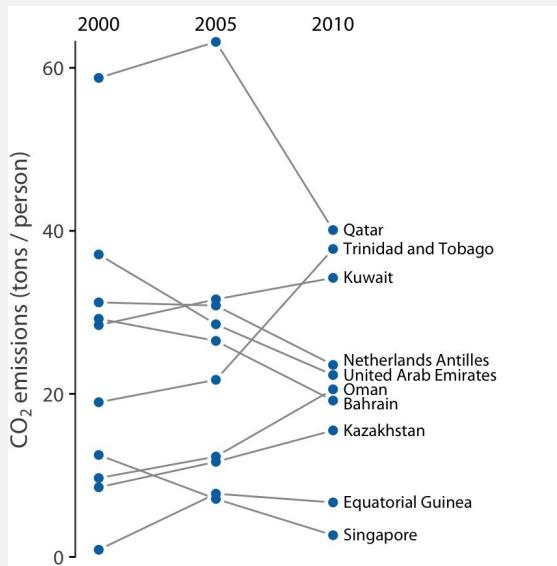
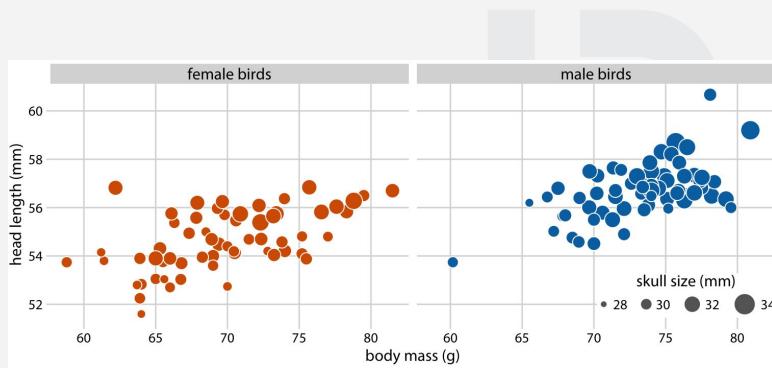
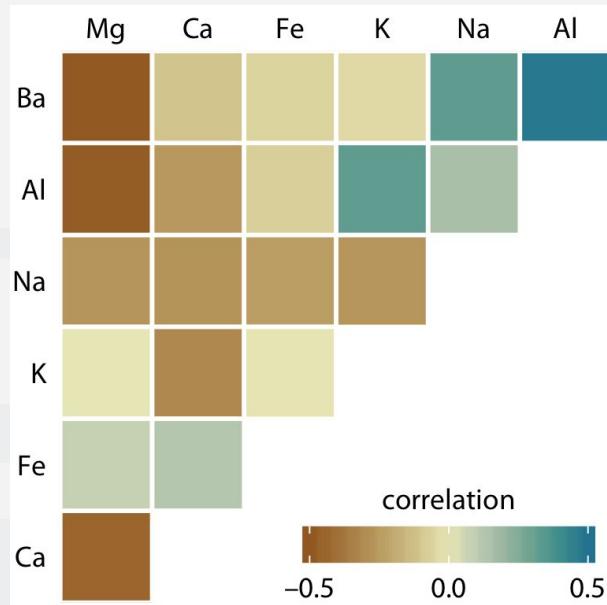
Small Data



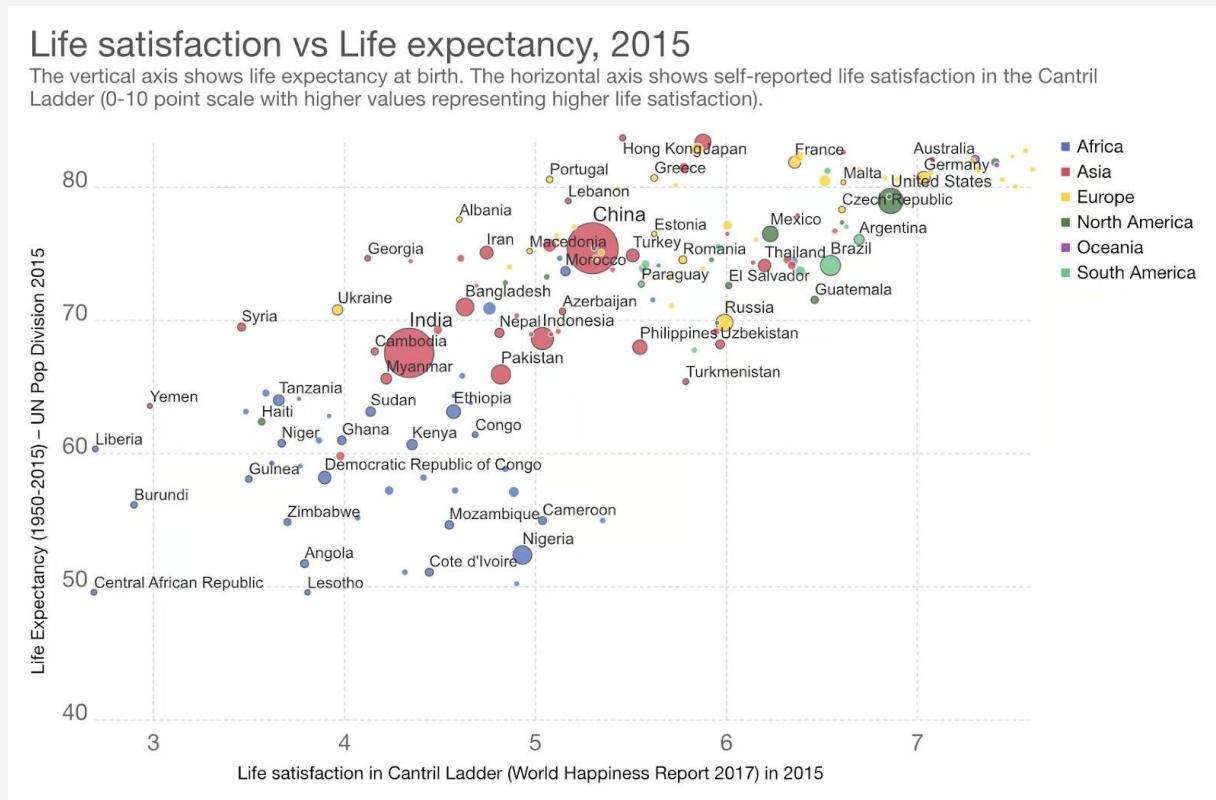
Large Data



Visualizing x-y relationships

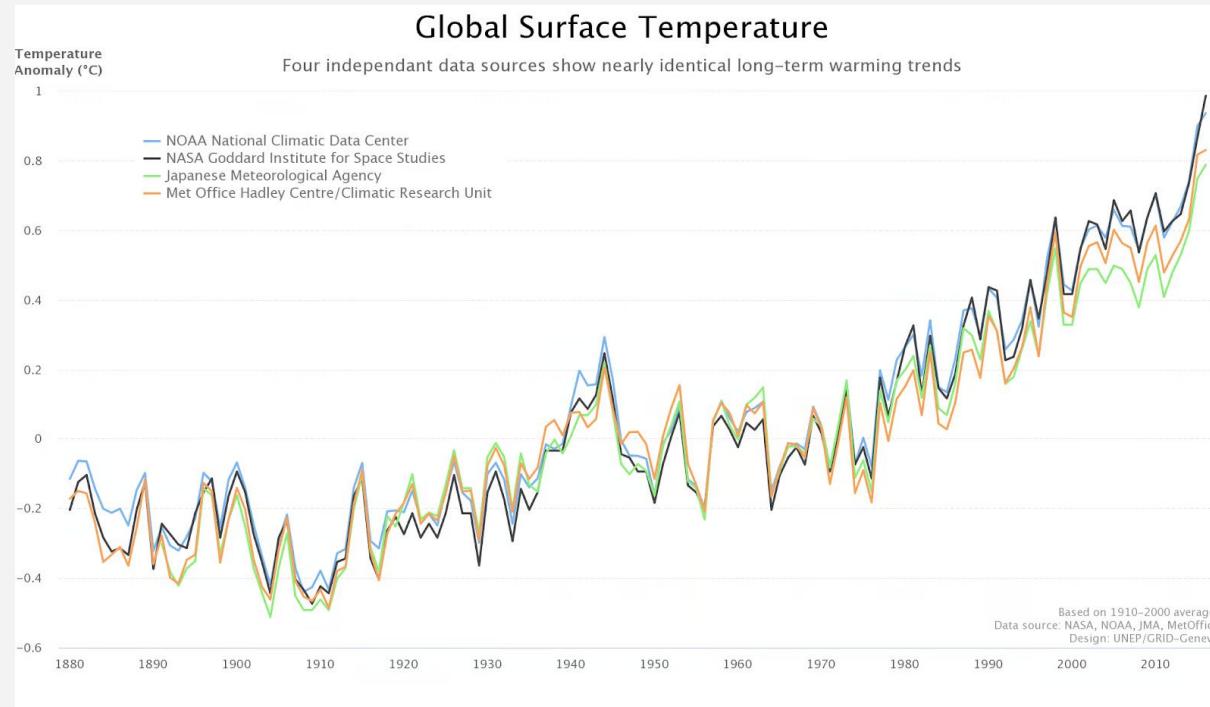


Visualizing x-y relationships

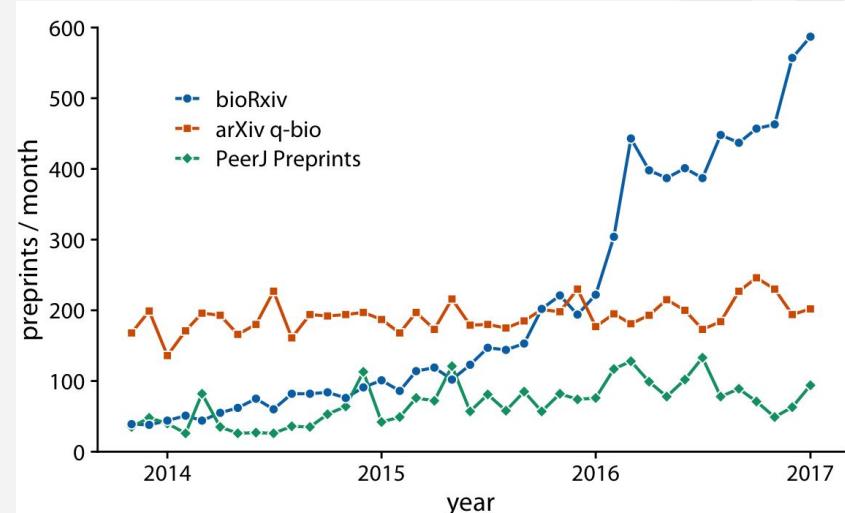
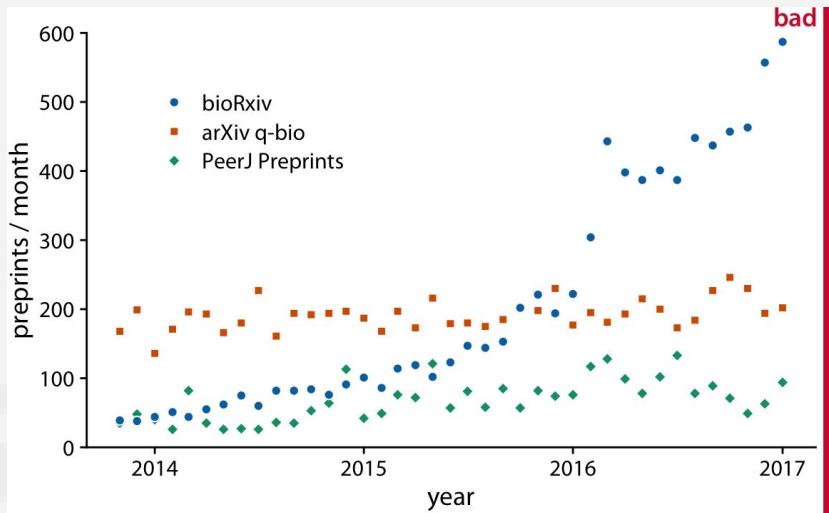


Visualizing Time Series & Trends

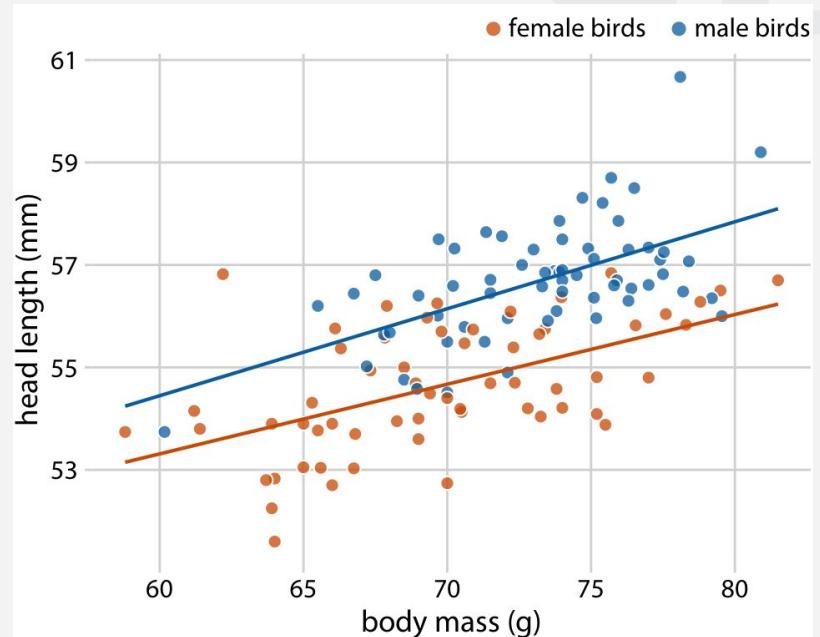
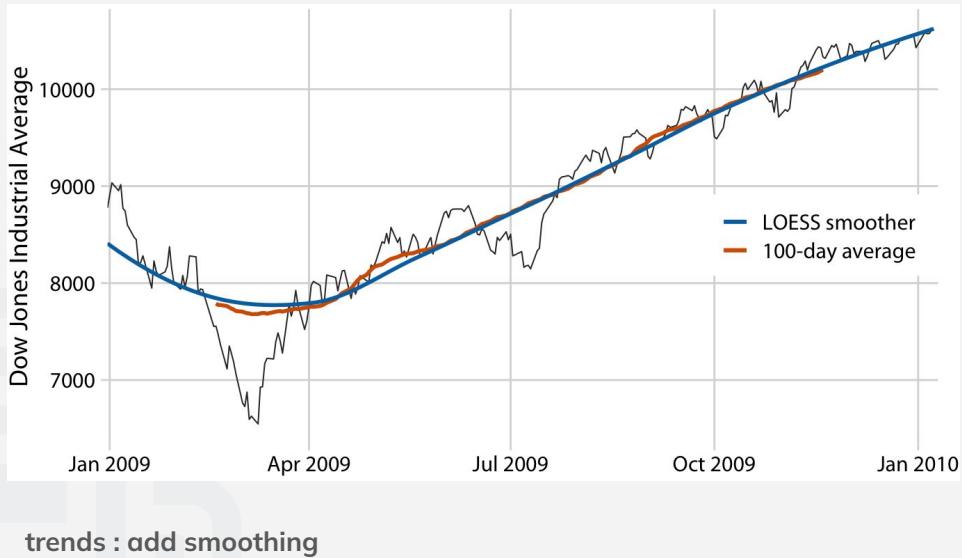
Line Chart



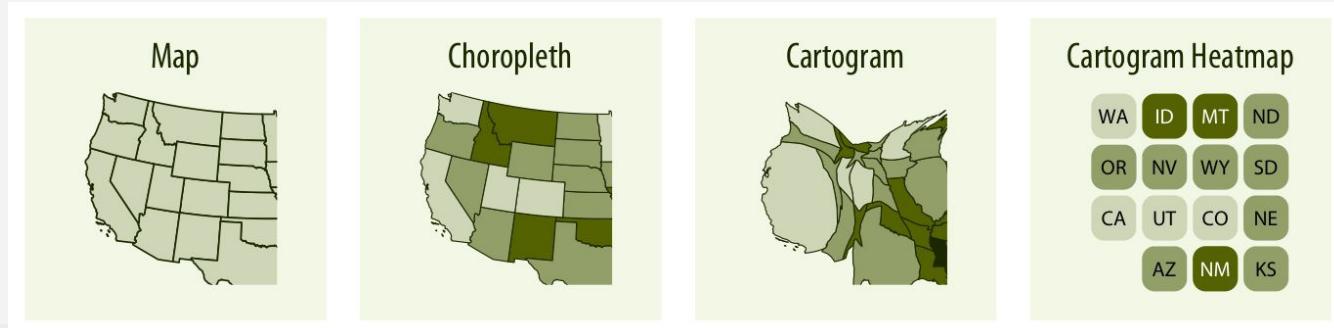
Visualizing Time Series & Trends



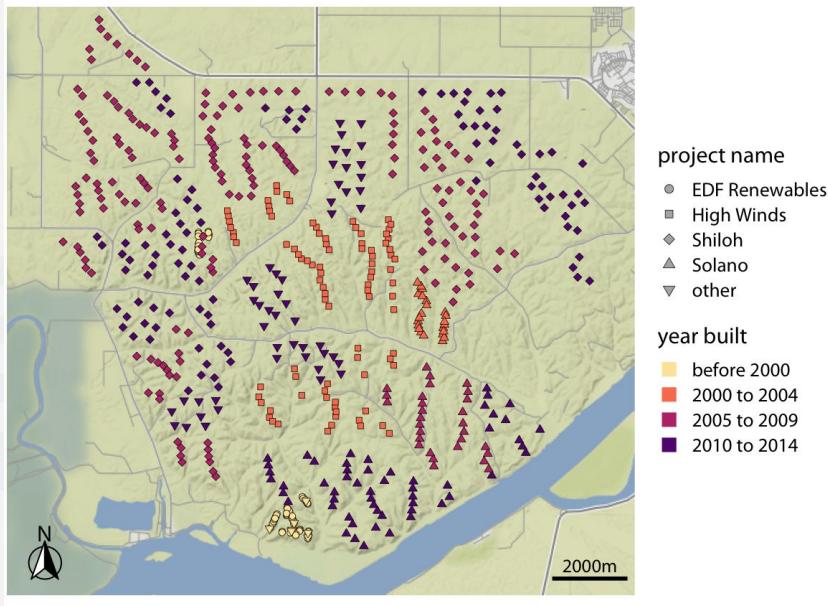
Visualizing Time Series & Trends



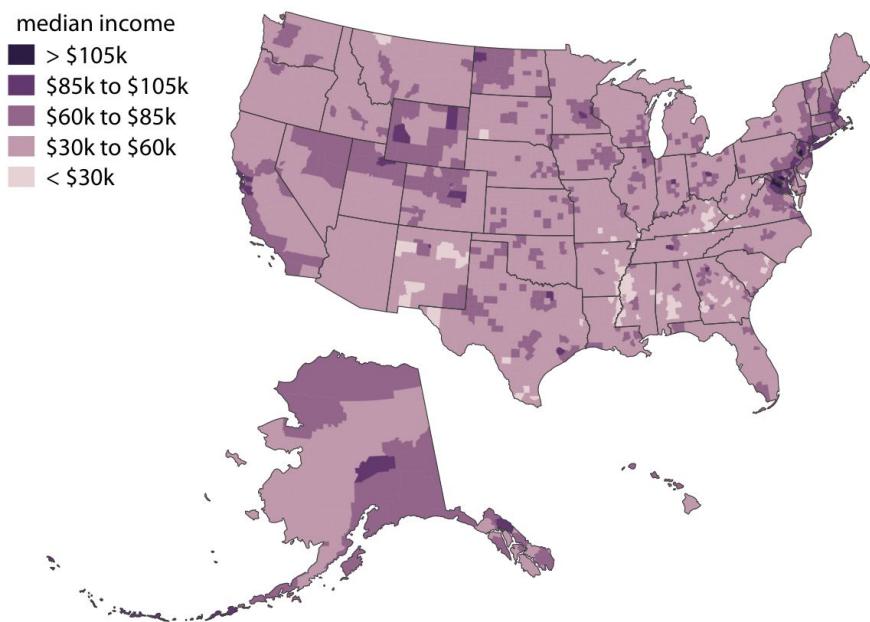
Visualizing Geospatial Data



Visualizing Geospatial Data



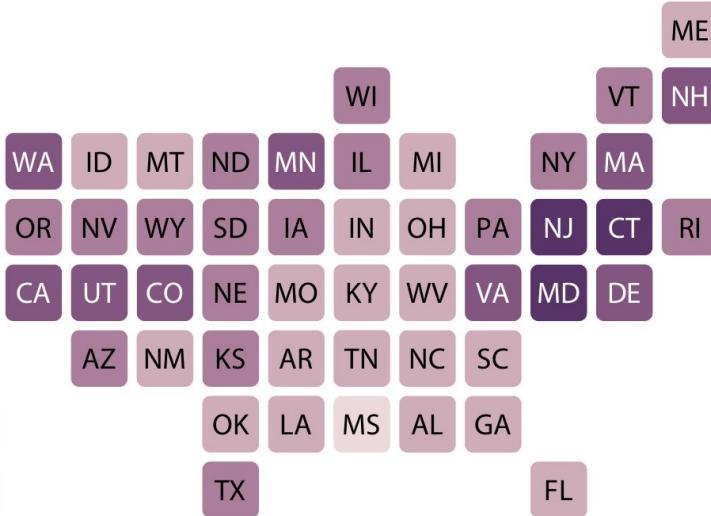
layer on top of map



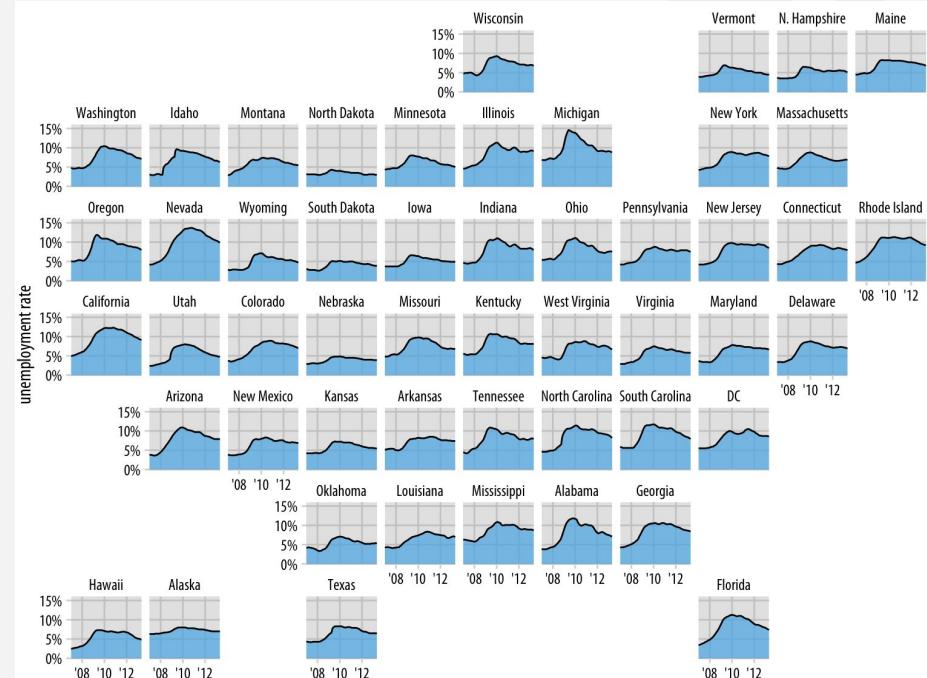
Visualizing Geospatial Data

median income

- > \$70k
- \$60k to \$70k
- \$50k to \$60k
- \$40k to \$50k
- < \$40k



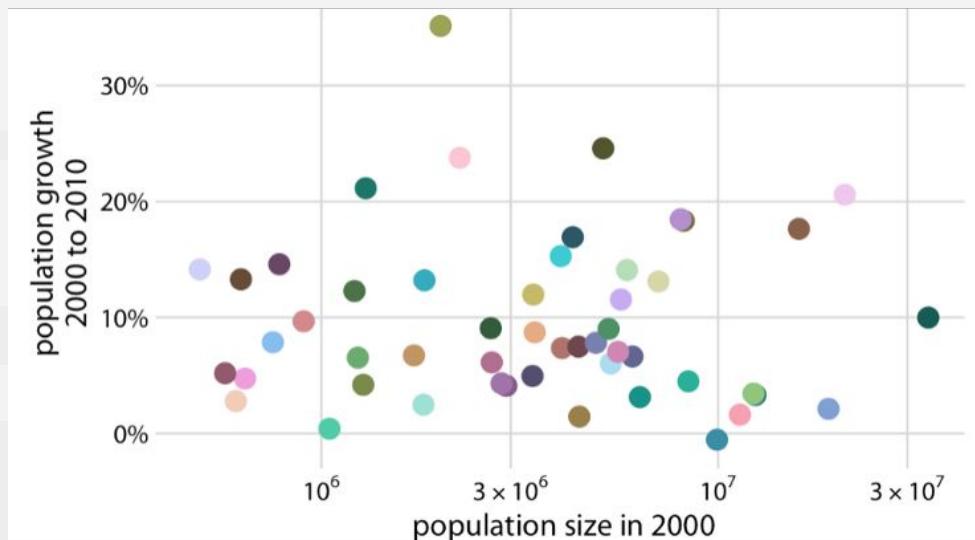
layer on top of map



Design Evaluation : Visual Inference

Visual yang mudah & cepat untuk dipahami

Bad Example

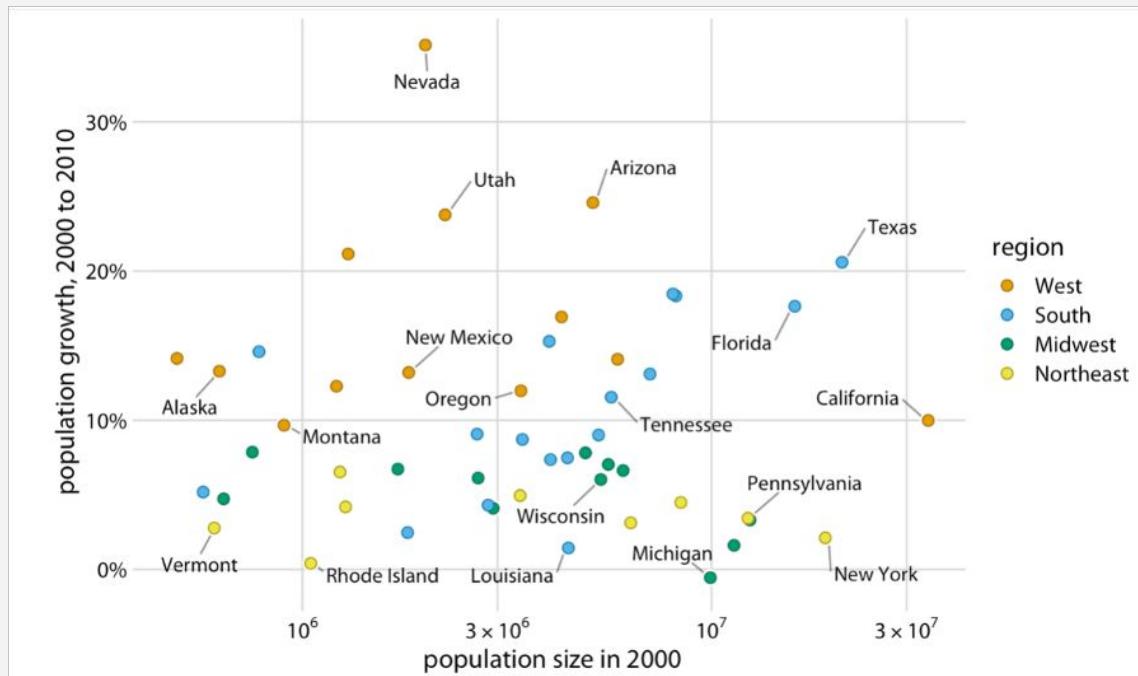


state		
Alabama	Kentucky	North Dakota
Alaska	Louisiana	Ohio
Arizona	Maine	Oklahoma
Arkansas	Maryland	Oregon
California	Massachusetts	Pennsylvania
Colorado	Michigan	Rhode Island
Connecticut	Minnesota	South Carolina
Delaware	Mississippi	South Dakota
District of Columbia	Missouri	Tennessee
Florida	Montana	Texas
Georgia	Nebraska	Utah
Hawaii	Nevada	Vermont
Idaho	New Hampshire	Virginia
Illinois	New Jersey	Washington
Indiana	New Mexico	West Virginia
Iowa	New York	Wisconsin
Kansas	North Carolina	Wyoming

Design Evaluation : Visual Inference

Visual yang mudah & cepat untuk dipahami

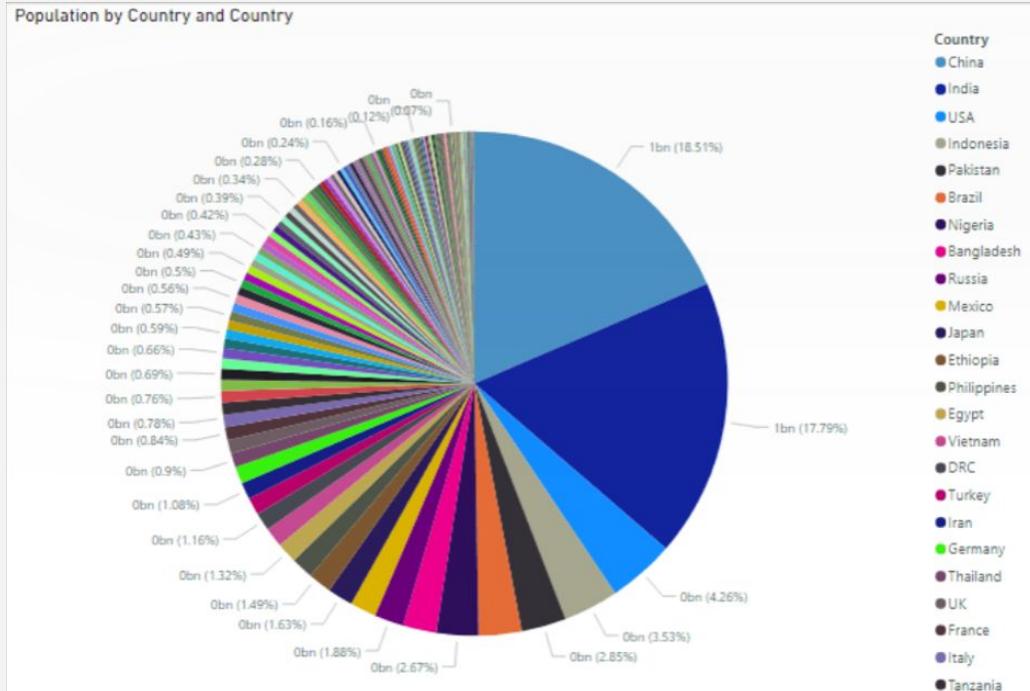
Good Example



Design Evaluation : Clarity

Secara efektif menyampaikan informasi

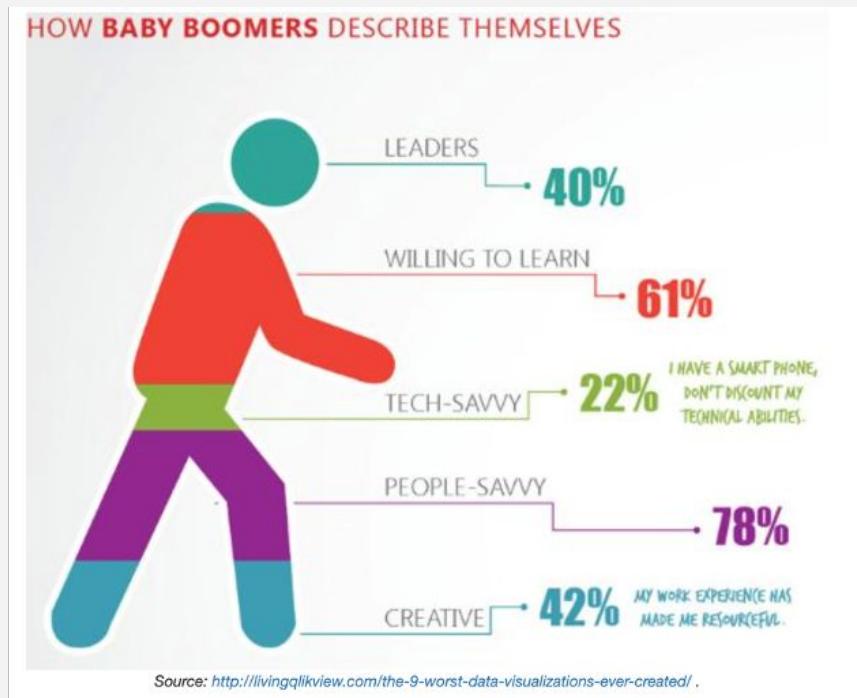
Bad Example



Design Evaluation : Accuracy

Menyampaikan data secara akurat

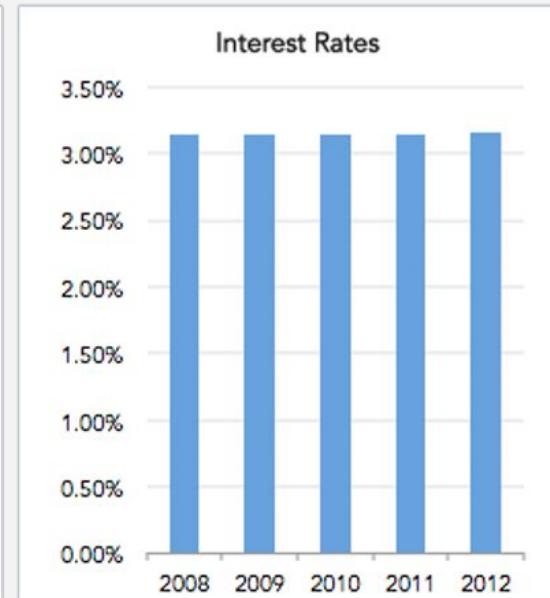
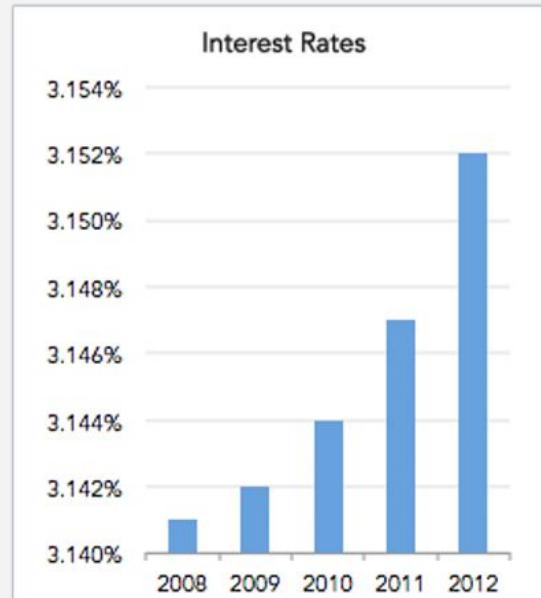
Bad Example



Design Evaluation : Formatting accuracy

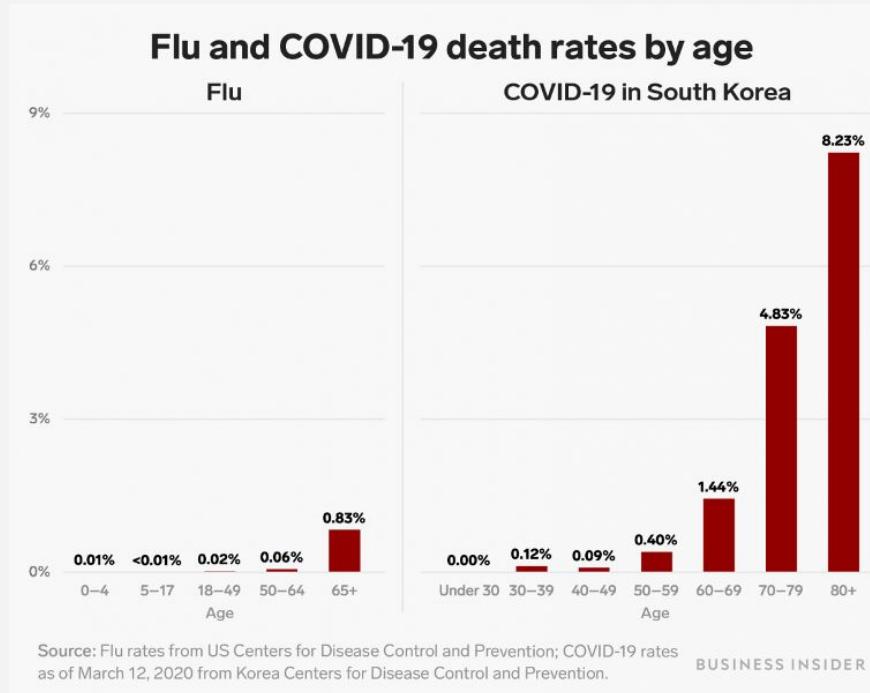
Konsistensi format, warna, dan tipografi

Same Data, Different Y-Axis



Design Evaluation : Annotation accuracy

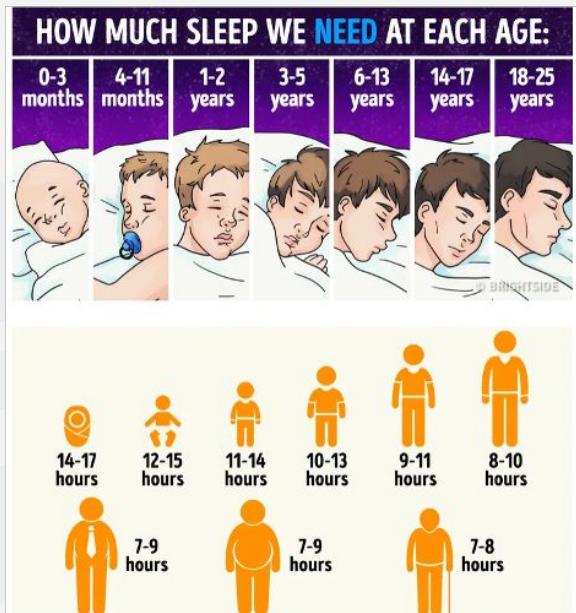
Konsistensi label, judul, legenda, dll



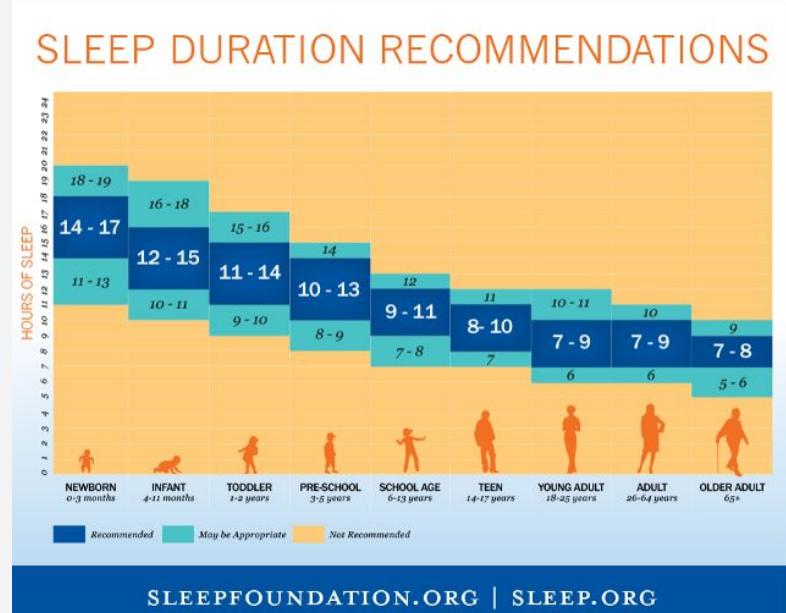
Design Evaluation : Relevancy

Kesesuaian dengan kebutuhan pengguna

Bad Example



Good Example





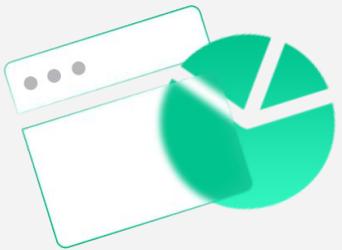
Looker Studio

Looker Studio

- Google Looker Studio, sebelumnya dikenal sebagai Google Data Studio, adalah **alat visualisasi data** dan pembuatan laporan yang fleksibel yang memungkinkan pengguna untuk mengubah data menjadi dashboard dan laporan yang informatif dan mudah dipahami.
- Sebagai bagian dari suite Google Cloud, Looker Studio menyediakan kemampuan untuk menghubungkan berbagai sumber data, baik itu dari produk Google seperti Google Analytics, Google Sheets, dan Google Ads, maupun dari sumber eksternal seperti SQL databases, dan kemudian memvisualisasikan informasi tersebut dengan cara yang lebih interaktif dan dinamis.

Looker Studio

- Akses: <https://lookerstudio.google.com/>
- Demo!



Terima Kasih

SIB Cycle 6 | 2024



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