Chart Type Report

Derin Savasan

- Line Graph
- Stacked Area Graph

Line Graph

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- Visualises quantitative data points along a continuous dimension connected by a line to show trends

Continuous dimension is usually time

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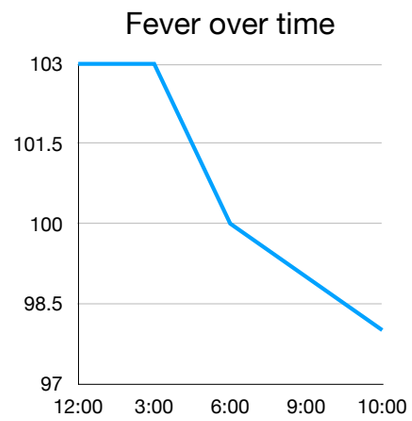
- **X-axis**: continuous variable (time/hour)
- **Y-axis**: quantitative measure (fever/°F)
- Data points connected sequentially



Line Graph

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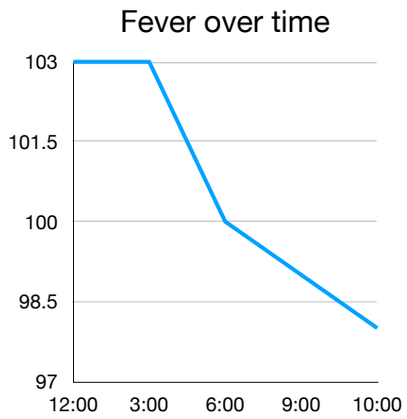
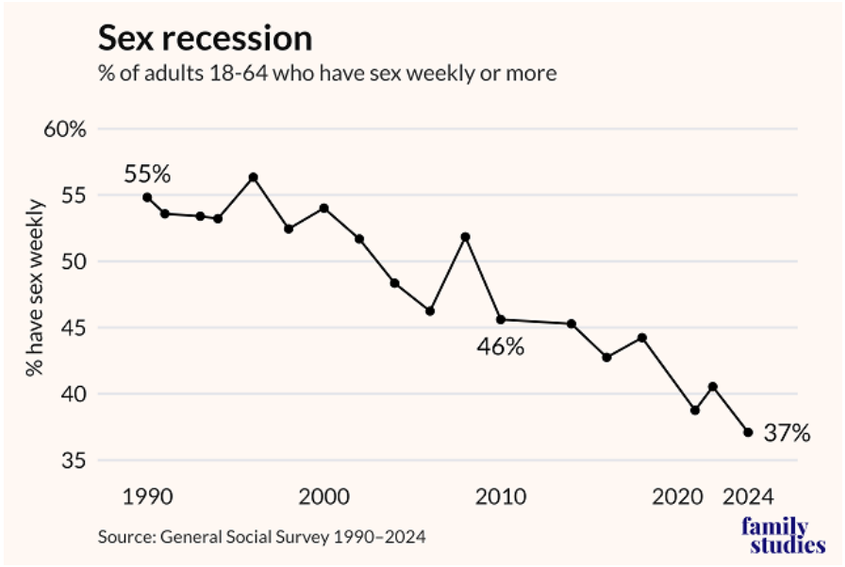
- **X-axis**: continuous variable (time/hour)
- **Y-axis**: quantitative measure (fever/°F)
- Data points connected sequentially
- Reveal patterns of change, continuity, and direction



Direction can be upward, downward or cyclical



Recent WSJ article
Americans are having record low amounts of sex
Even less than during Covid
Only 37% of adult Americans have sex weekly

https://ifstudies.org/blog/the-sex-recession-the-share-of-americans-having-regular-sex-keeps-dropping

Pros

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- Best for **time-series data** (e.g., GDP over the years, temperature across months)

Trend analysis

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- Captures **continuous, sequential relationships**
  - Slope (rate of change)

Slope almost always tells us something

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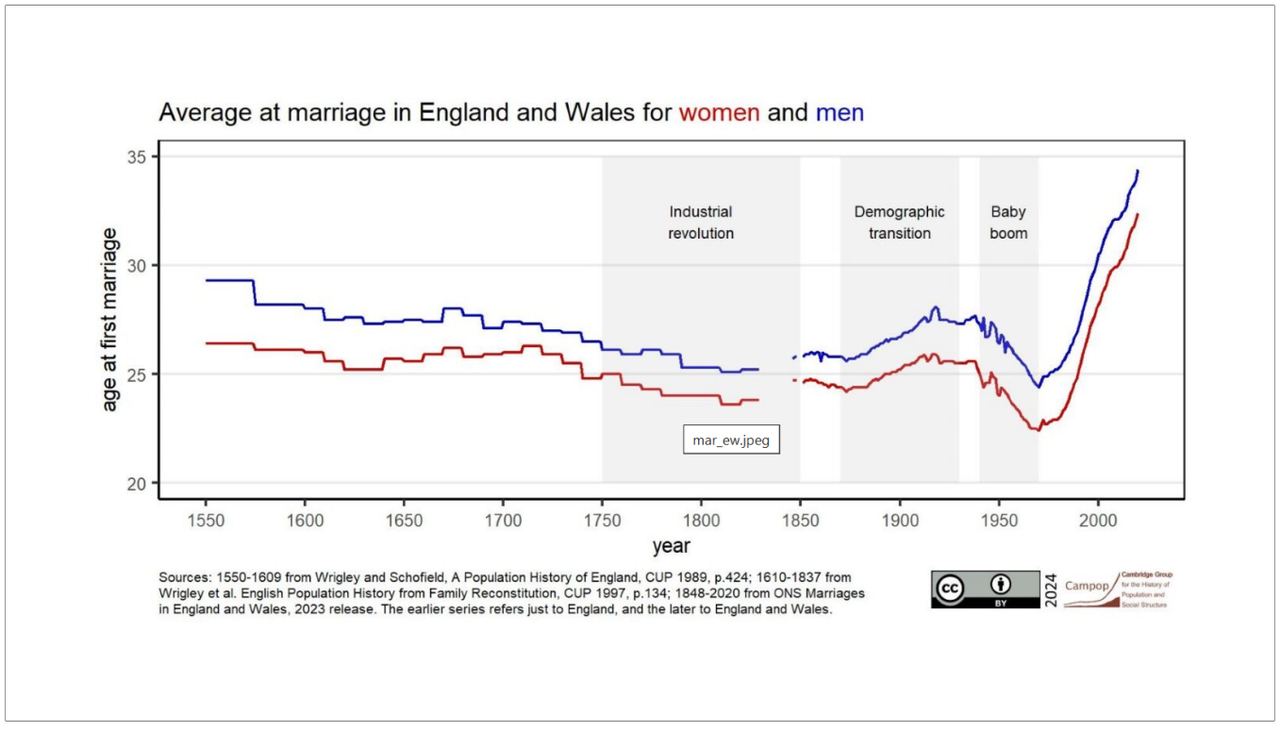
Multiple series allows easy comparison



https://www.campop.geog.cam.ac.uk/blog/2024/07/11/what-age-did-people-marry/

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- Captures **continuous, sequential relationships**
  - Slope (rate of change)
- Can handle multiple series (e.g., different countries GDPs)
- Intuitive, universal comprehension

Cons

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- Overplotting

Multiple series may lead to clutter

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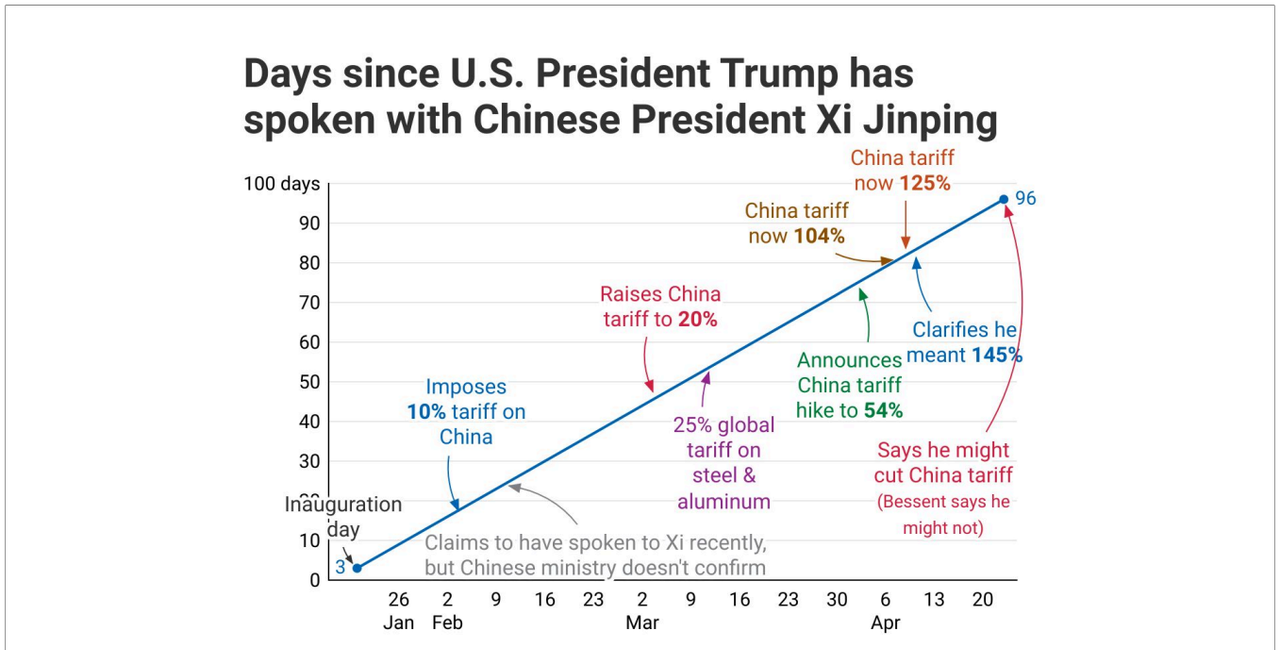
- **Implicit interpolation**: sometimes suggest continuity even when data are discrete/nominal

Poor for categorical or unordered data (misleading)



Every 4 weeks in America, a month passes??
As time passes, the amount of time that has passed increases????
x and y axis are both the same
Clever joke from a clever economist

https://x.com/JustinWolfers/status/1915113436360442186

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- May conceal volatility with overly smooth lines (best fit line)

Related Methods

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- vs. Bar Chart: bar for discrete quantities, line for continuity

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- vs. Scatterplot: scatter for individual points, line for continuity

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- vs. **Area Graph**:
  - line = abstract path
  - area = visual mass (adds emphasis on cumulative magnitude)

- Line Graph
- Stacked Area Graph

Stacked Area Graph

https://www.theguardian.com/world/2024/mar/06/people-in-england-facing-food-poisoning-russian-roulette-as-illnesses-soar

Stacked Area Graph

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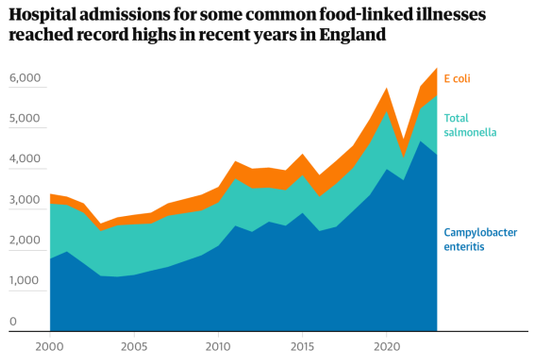

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Stacked Area Graph

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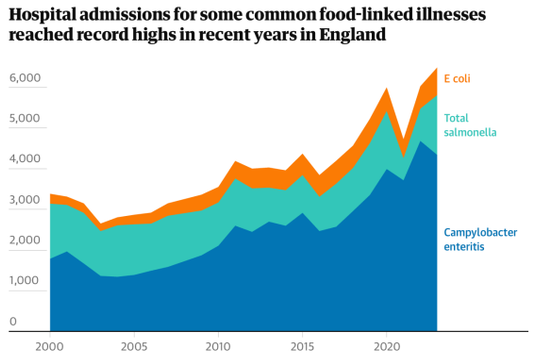
- Shows both total trend and contribution of subcategories over time



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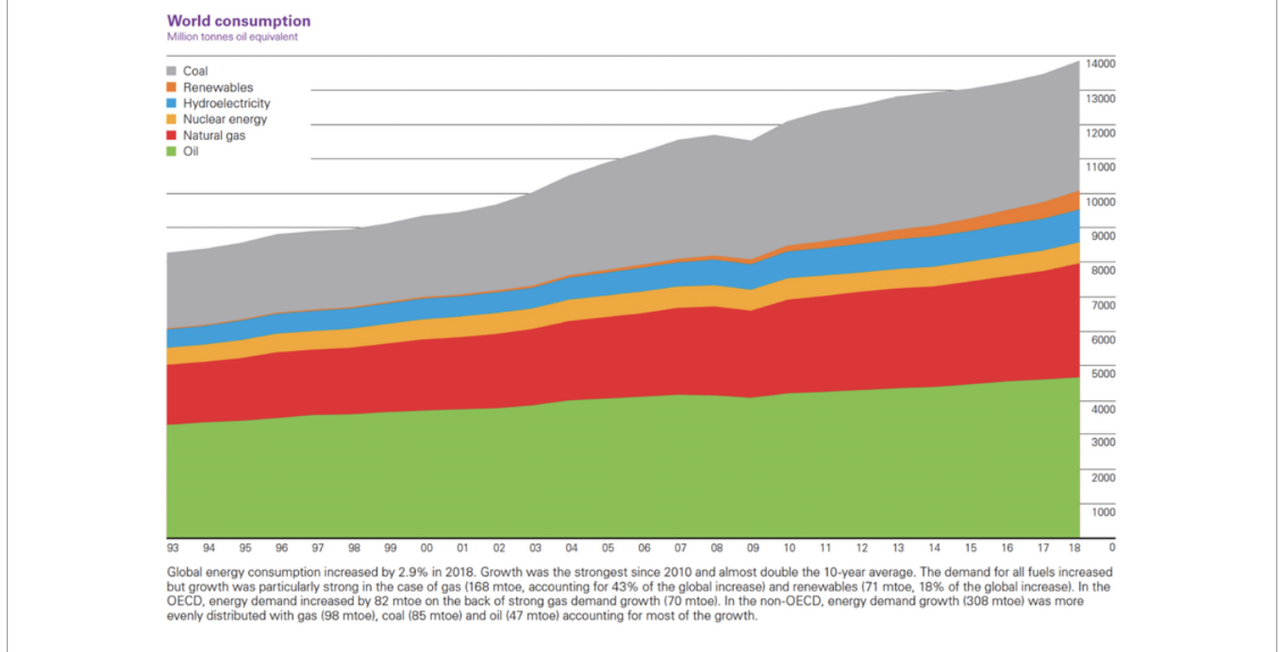
  - And when total and composition matter equally



Global energy consumption increased by 2.9% in 2018. Growth was the strongest since 2010 and almost double the 10-year average. The demand for all fuels increased but growth was particularly strong in the case of gas (168 mtoe, accounting for 43% of the global increase) and renewables (71 mtoe, 18% of the global increase). In the OECD, energy demand increased by 82 mtoe on the back of strong gas demand growth (70 mtoe). In the non-OECD, energy demand growth (308 mtoe) was more evenly distributed with gas (98 mtoe), coal (85 mtoe) and oil (47 mtoe) accounting for most of the growth.

https://www.researchgate.net/publication/351504351_Evaluation_of_Smart_Energy_Management_Systems_and_Novel_UV-Oriented_Solution_for_Integration_Resilience_Inclusiveness_and_Sustainability

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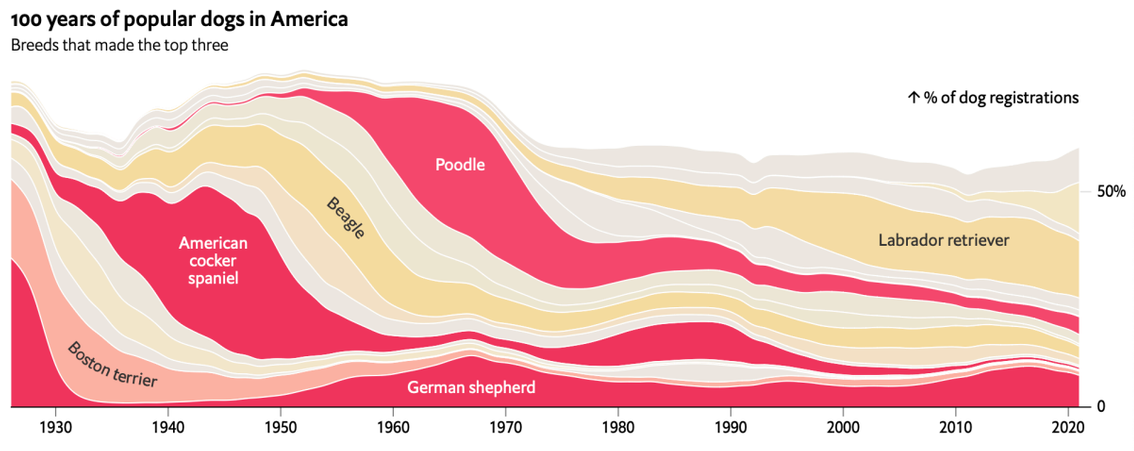
- Strong for storytelling (e.g., “see how renewables grew within total energy”)



https://web.archive.org/web/20221220163914/https://www.economist.com/interactive/christmas-specials/2022/12/20/what-makes-certain-dogs-popular-in-certain-countries

Fun example by Olivia Vane
Interactive
Shows trends
Uppermost stack is a golden retriever

https://www.oliviavane.co.uk/dogs

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- Area exaggerates perception

When something fills more space, we feel stronger cognitive weight

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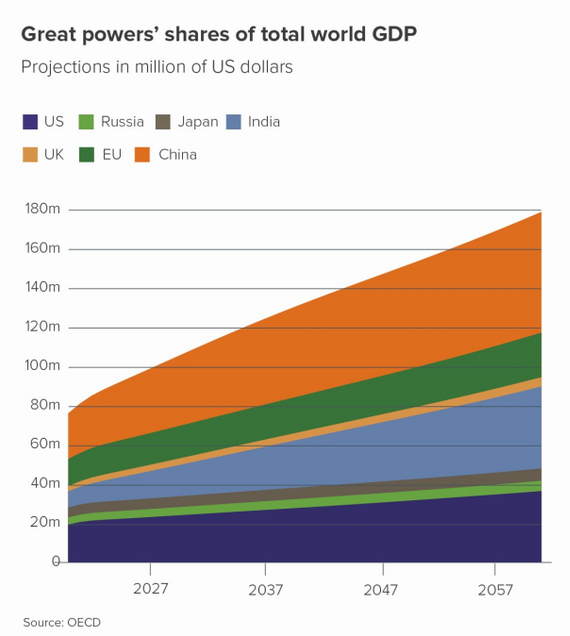
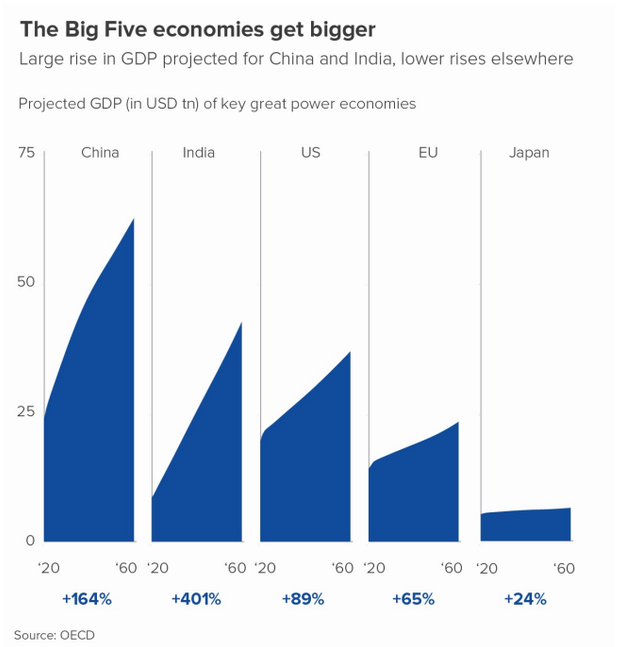
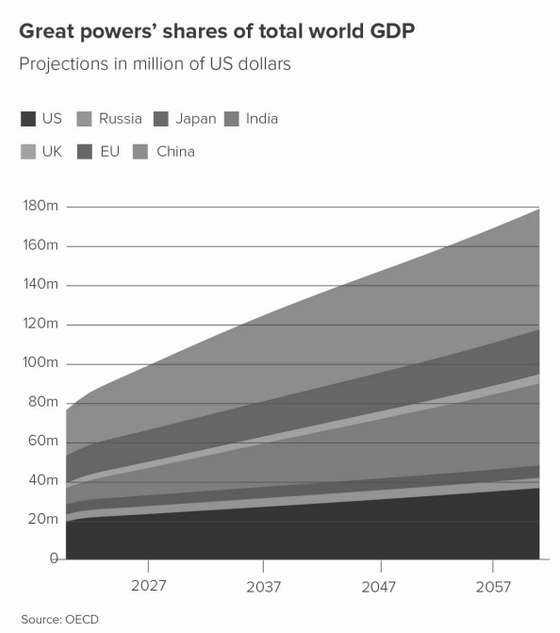


Rainbow soup
Tells multiple stories all at once
    change in total
    changing composition of that total
    the changing total of each individual country
Hard to read
    How much did Russia or India or any of the middle values change?
    Not clear that China's GDP almost tripled between 2020 and 2060
Visually ambiguous
    Are the wedges stacked on top of each other?
    Or is the China wedge behind the others like the tallest mountain in a mountain range?





Instead use small multiples

More on: https://www.addtwodigital.com/add-two-blog/2024/2/23/rule-41-avoid-area-charts

Related Methods

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- vs. Line Graph: emphasis on composition and cumulative total

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- vs. Streamgraph:
  - Organic baseline for smoother aesthetics
  - Sacrifices precise readability

Streamgraph = aesthetic cousin

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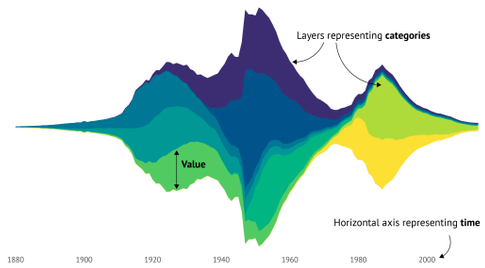

Streamgraph = aesthetic cousin

https://www.datylon.com/blog/stream-graph-deep-dive

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- vs. Streamgraph:
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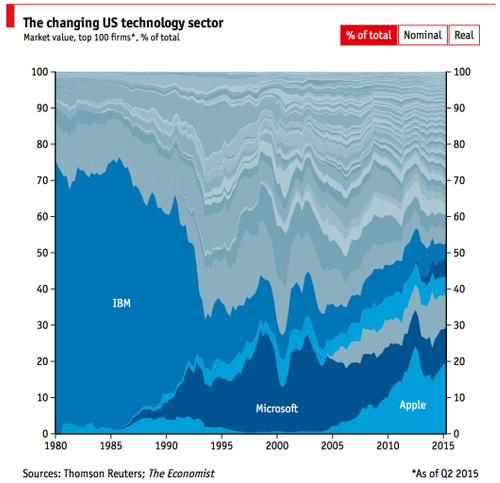
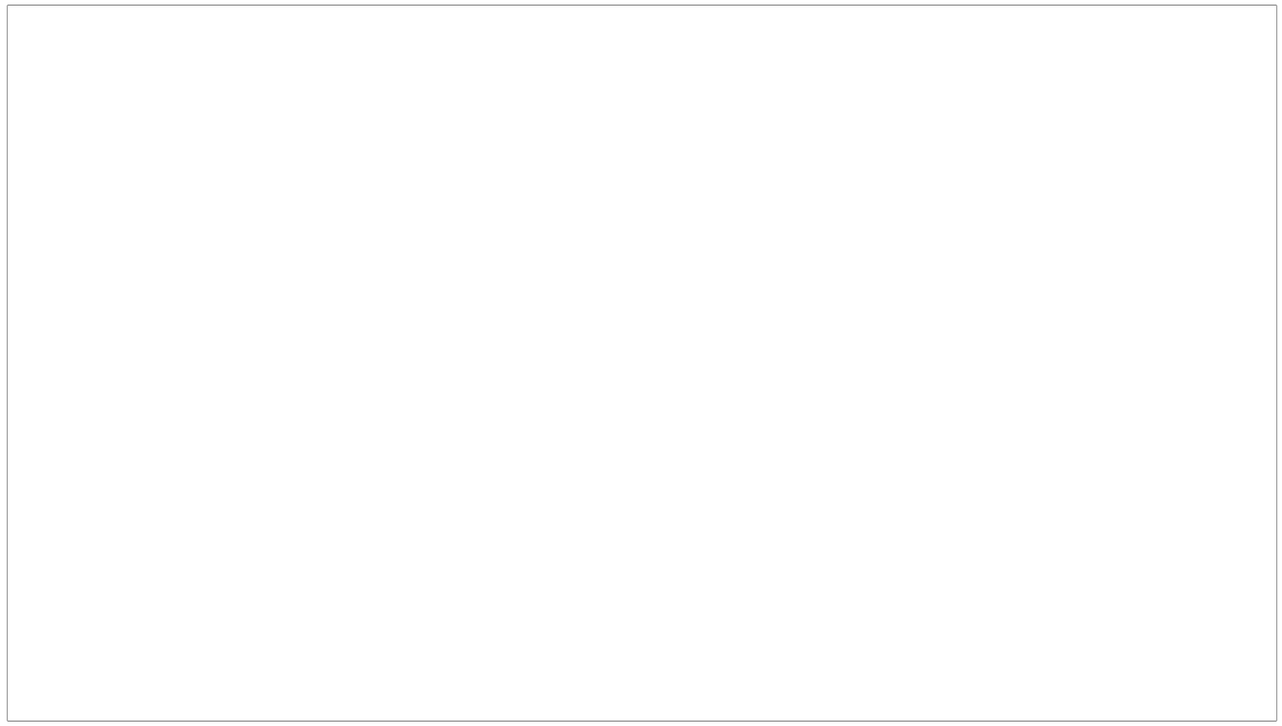
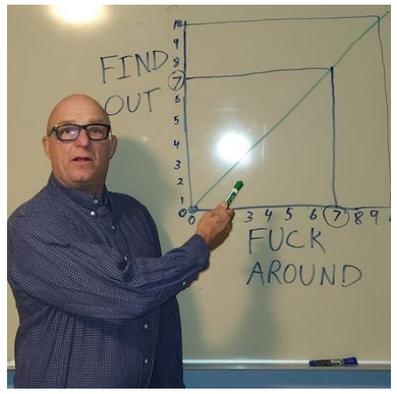
  - Sacrifices precise readability
- vs. **100% Stacked Area Graph**: shifts focus from absolute to proportion
  - Better for relative shares



Shifting market share in the tech sector
Quick shrinkage of IBM in the 90s, Microsoft reign soon after, and the Apple surge mid 00s

https://flowingdata.com/2015/07/31/technology-sector-share-of-market-over-time/




FIND
OUT
FUCK
AROUND