



ICAO

UNITING AVIATION

Module 3 Visualization

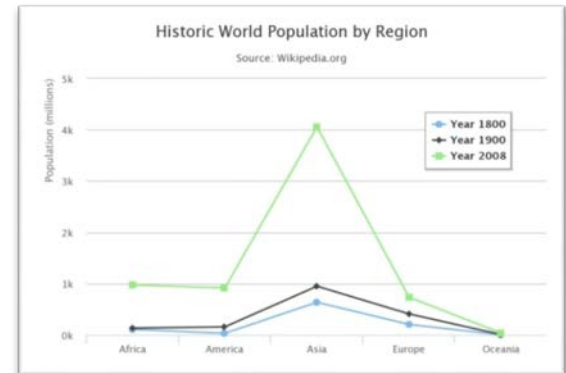
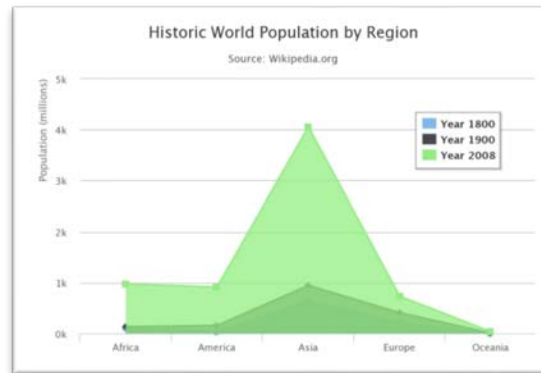
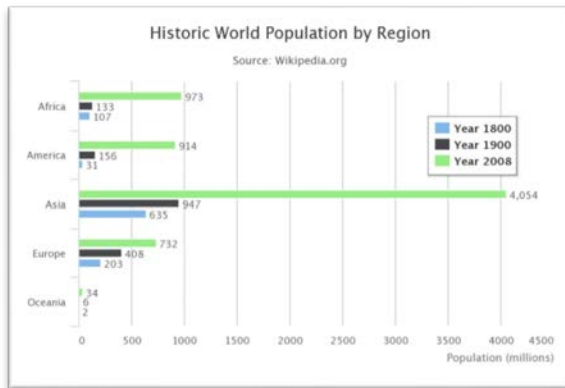
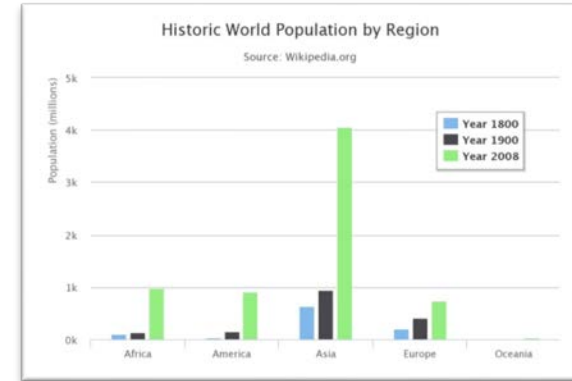


Reporting through Visualization

- **Data visualization involves the creation and study of the visual representation of data or metrics.**
- **Visualization technics include:**
 - Basic charts
 - Time series charts
 - Scatter plots
 - Bubble charts
 - Maps

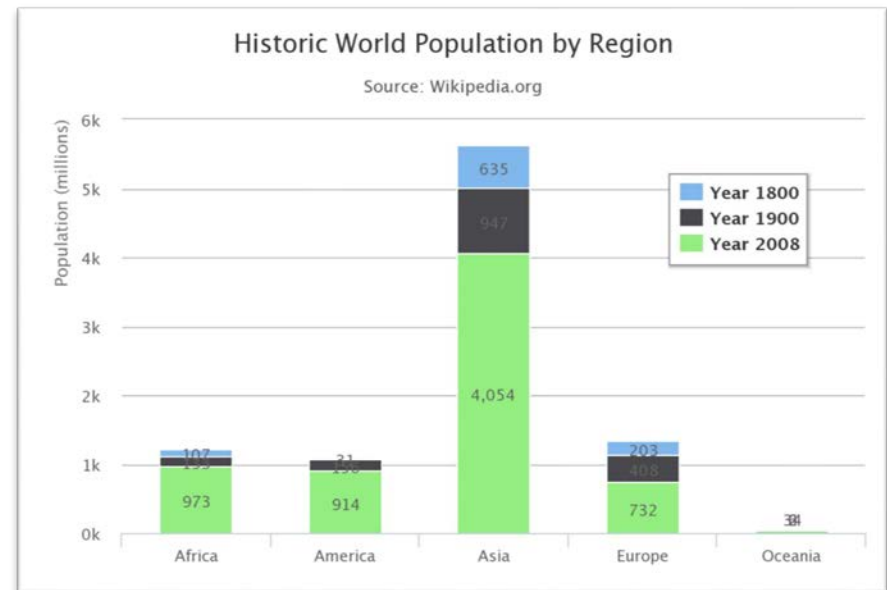
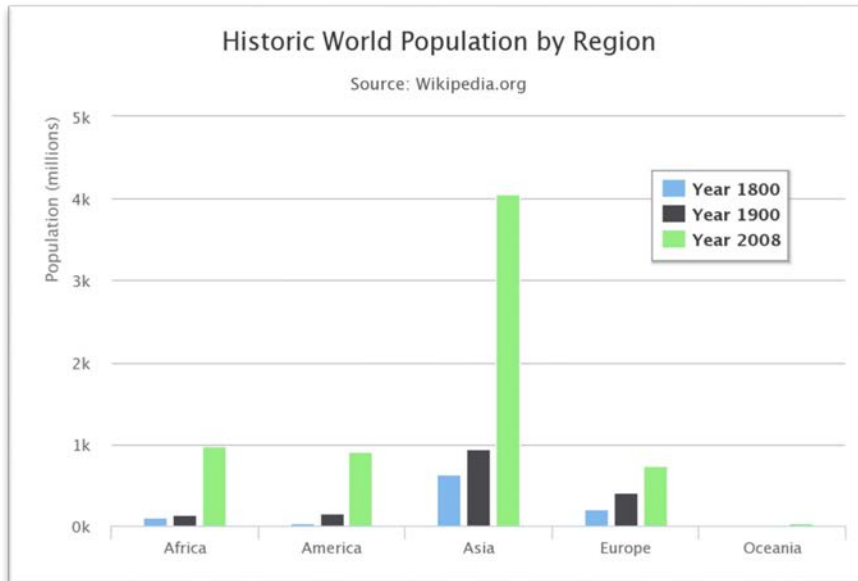
Basic Charts

- X Axis: Metrics titles
- Y Axis : Metrics values
- Line, bar, area or column charts are interchangeable.



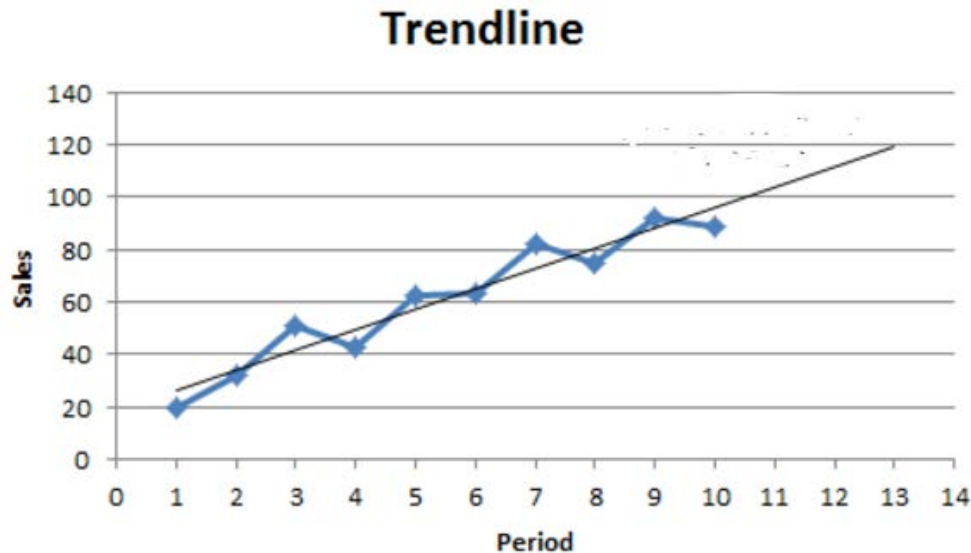
Stacking

- Stacking can be used when we need to add (calculate the sum of) the metrics.
- Stacking saves space, but is less clear.



Time Series

- Time series are a type of column or line chart.
- Time series charts can include trend lines.



Time Series



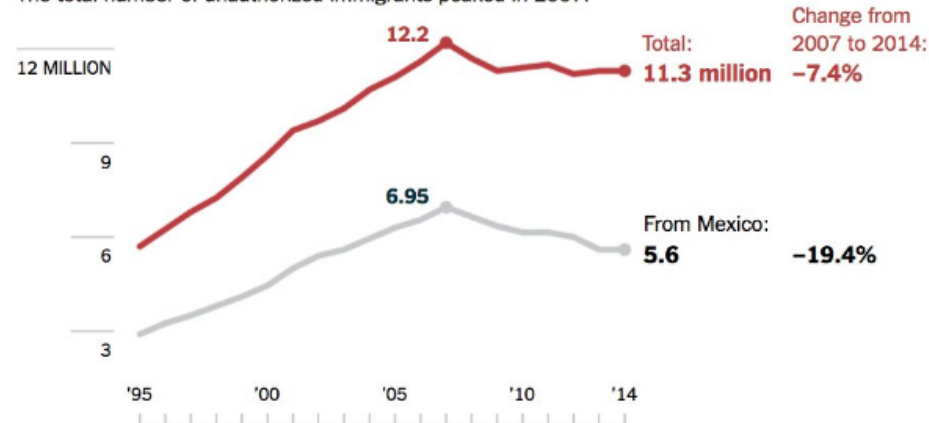
NYT Graphics @nytgraphics · Jan 4

2016 in Charts. (And Can Trump Deliver in 2017?)

[nytimes.com/2017/01/03/opi](https://www.nytimes.com/2017/01/03/opi) ...

Here Illegally: 900,000 Fewer

The total number of unauthorized immigrants peaked in 2007.



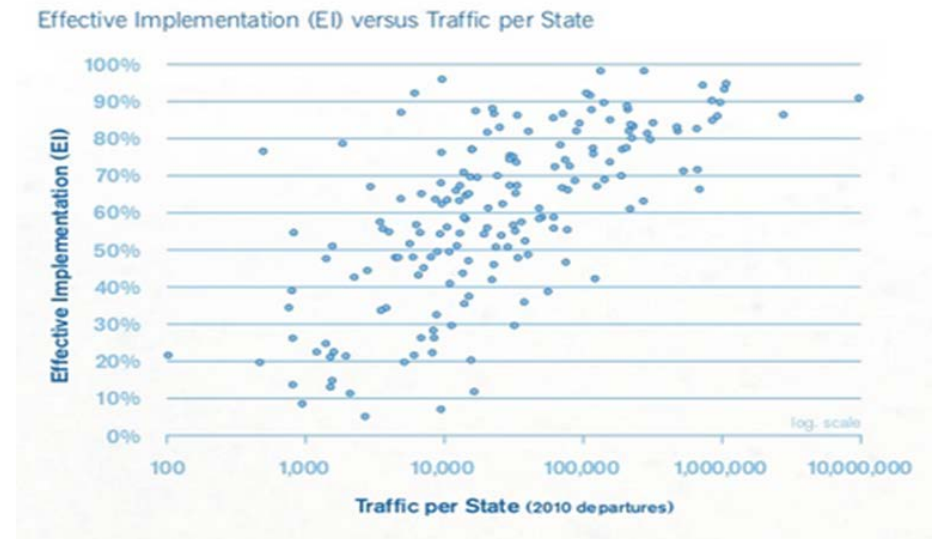
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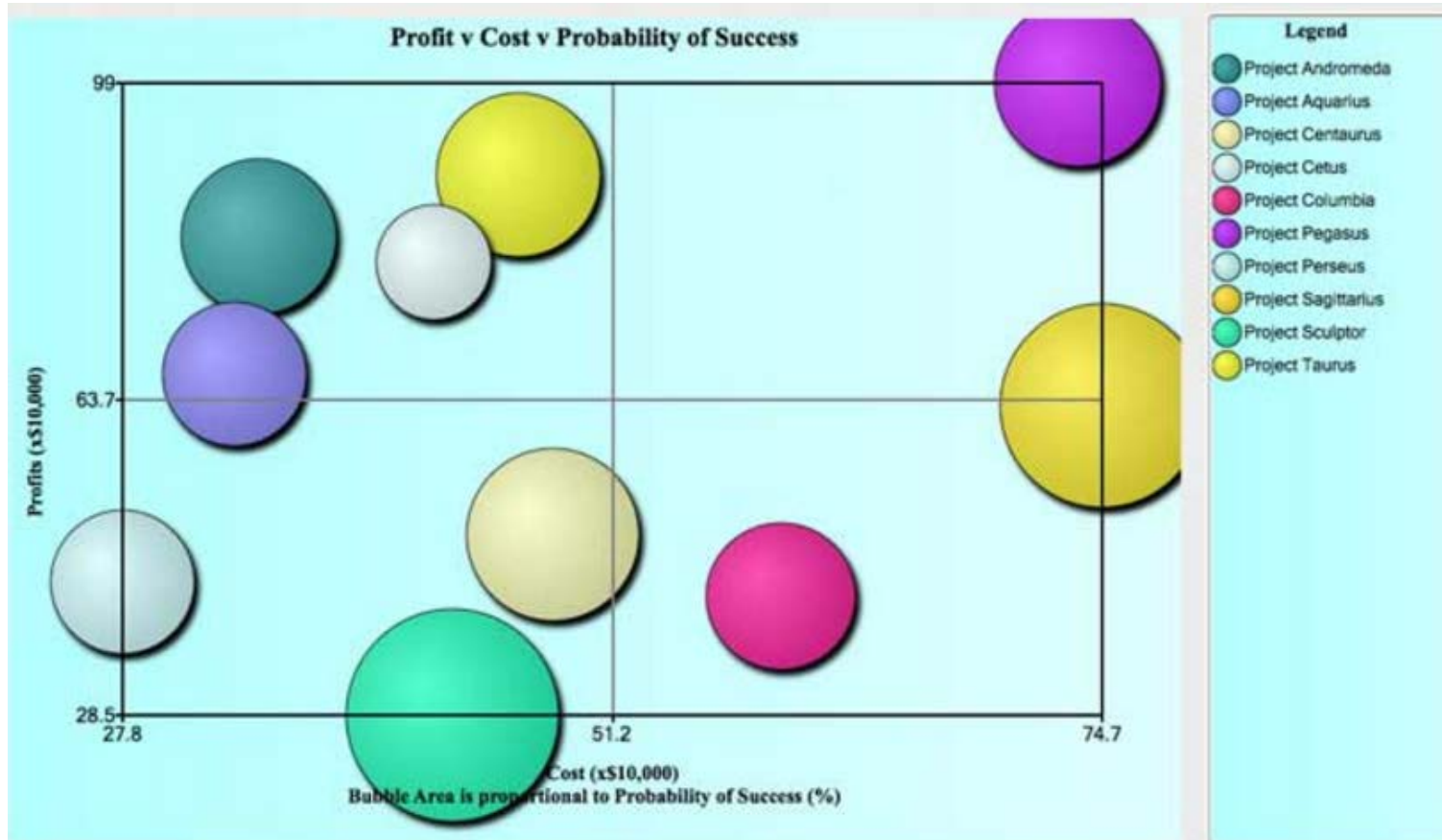
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Scatter Plots

- Scatterplots are 2 dimensional graphs, representing 2 metrics.
- Each dot represents a record.
- Scatter plots are useful for correlations, but may be difficult to use otherwise.



Bubble Charts



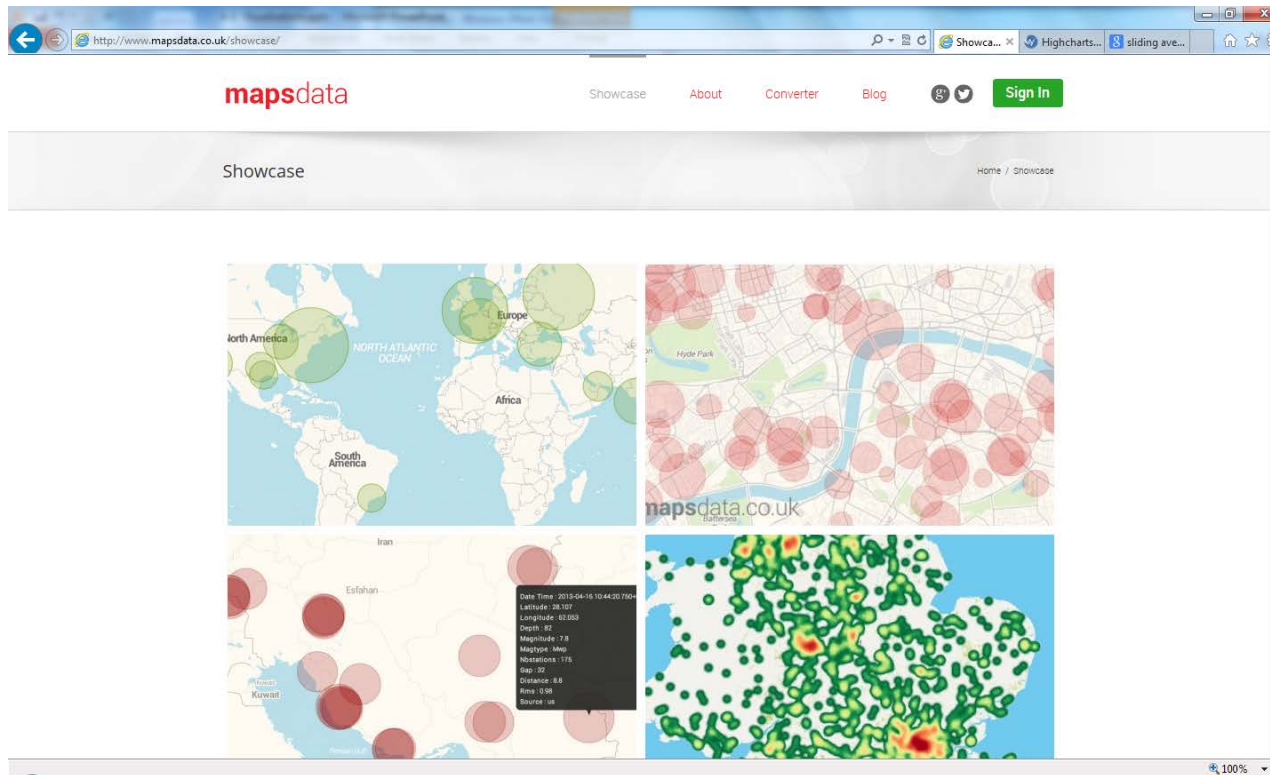


Bubble Charts

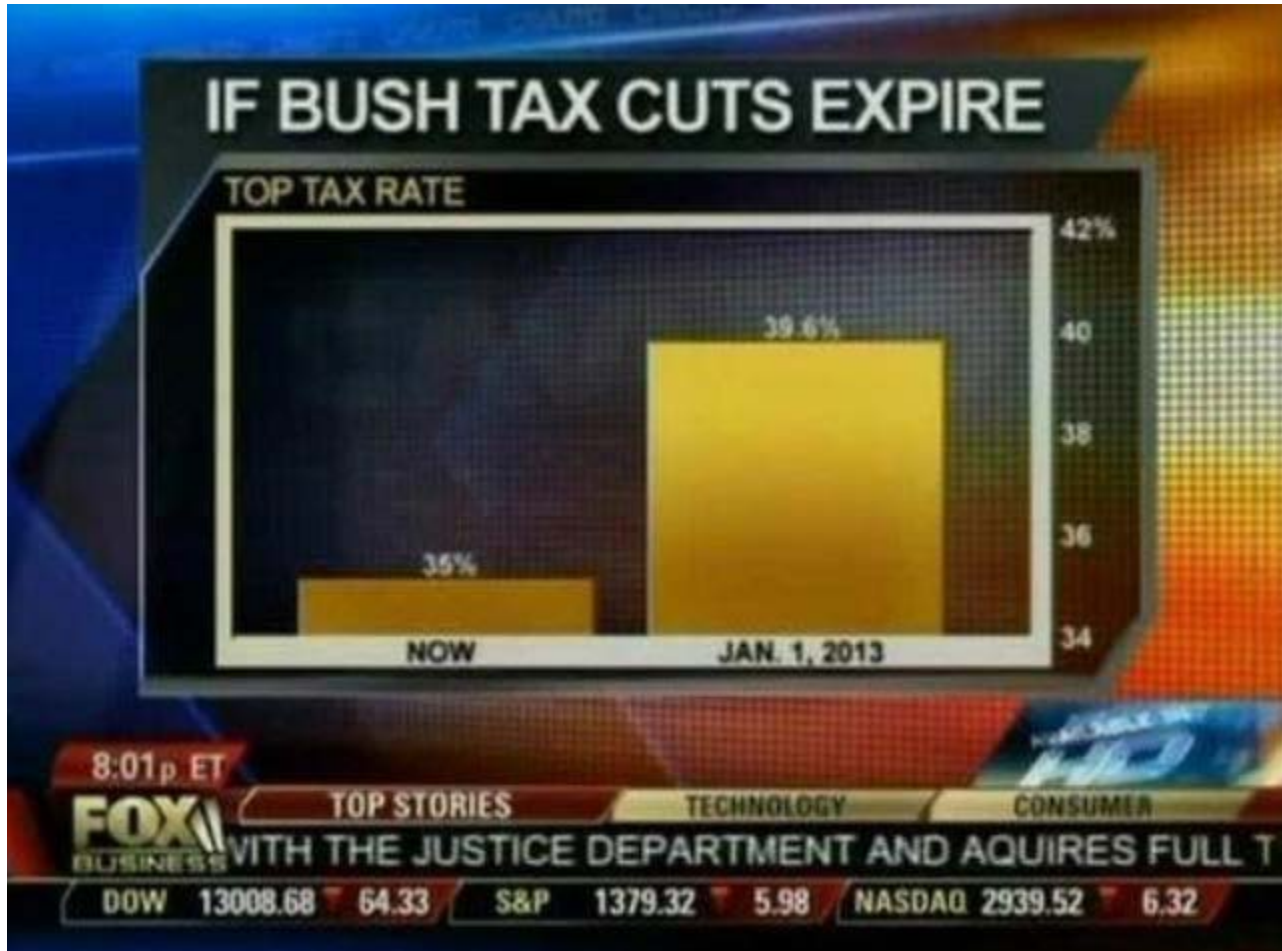
- **Bubble charts are extremely useful for comparing the relationships between data in 3 data dimensions: the X-axis data, the Y-axis data and data represented by the bubble size.**
- **Bubble charts are like XY scatter graphs, except that each point on the scatter graph has an additional data value associated with it that is represented by the size of a “bubble” centered around the XY point.**

Maps

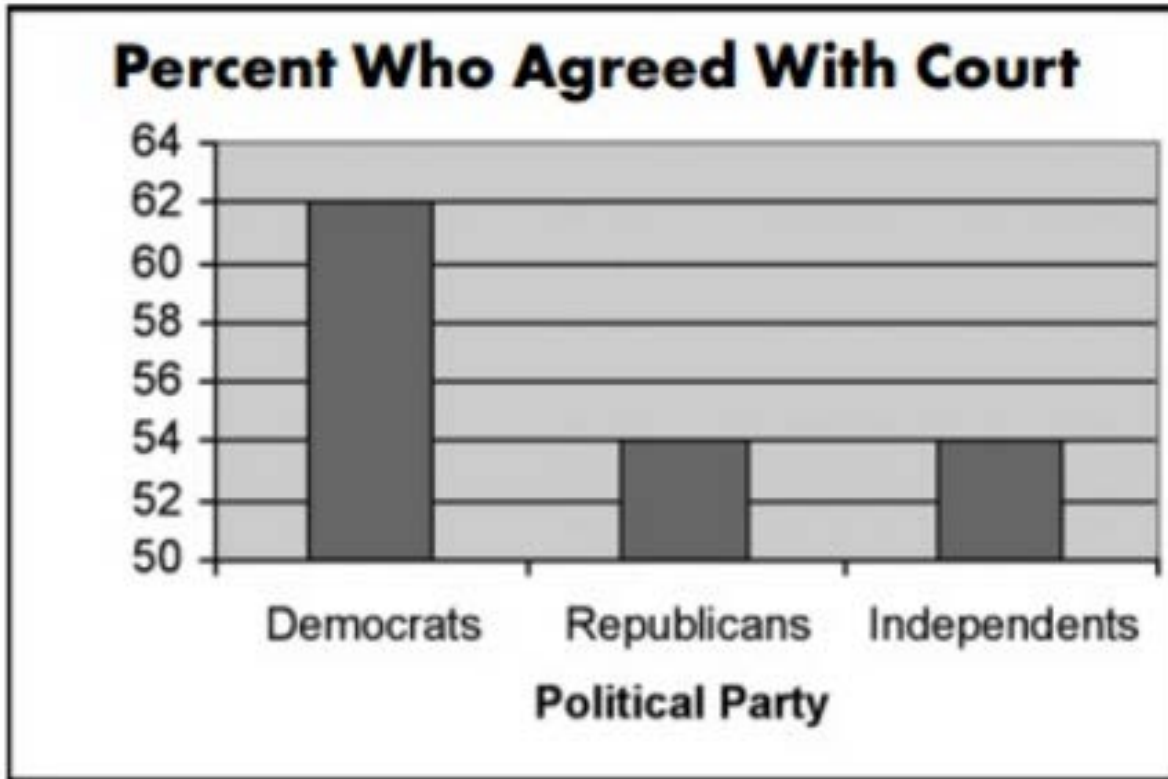
- Maps are powerful representations, if the data is geo-referenced.



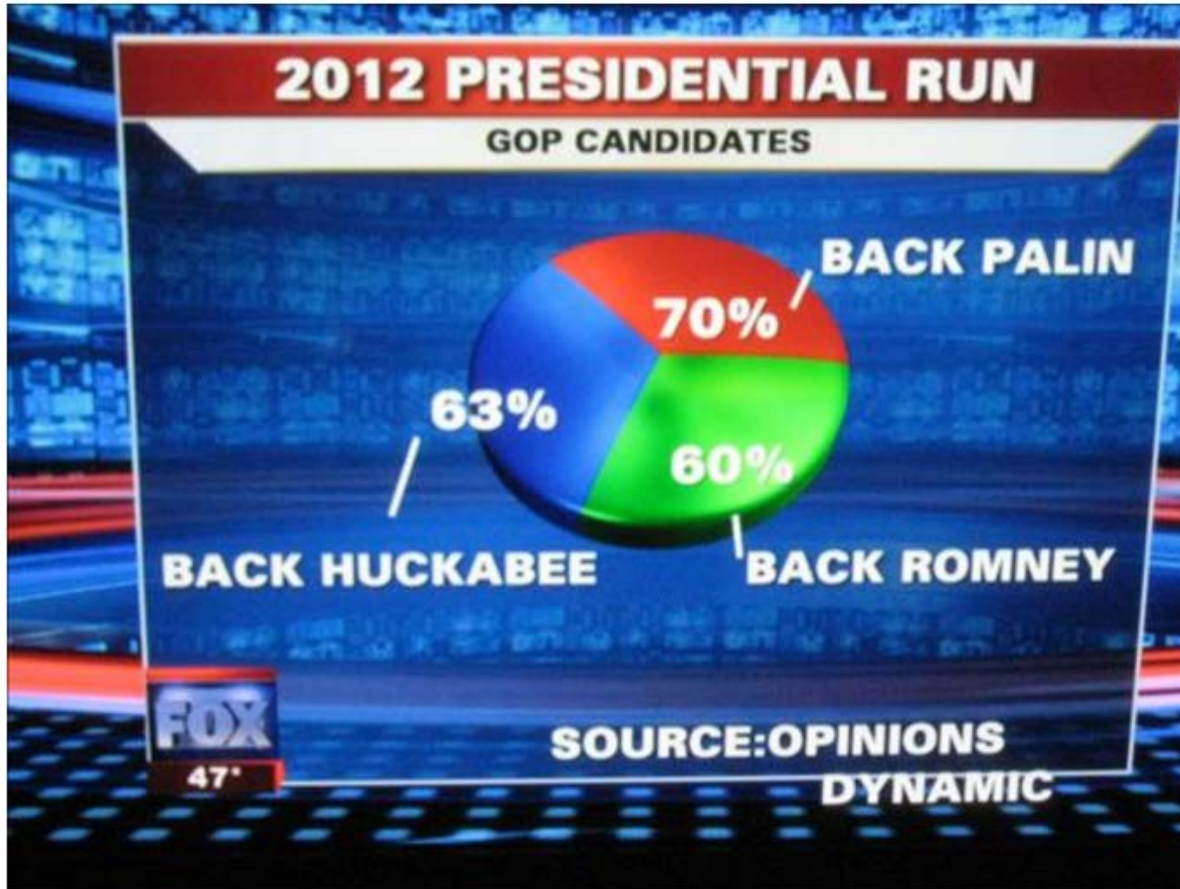
Misinterpretation



Misinterpretation

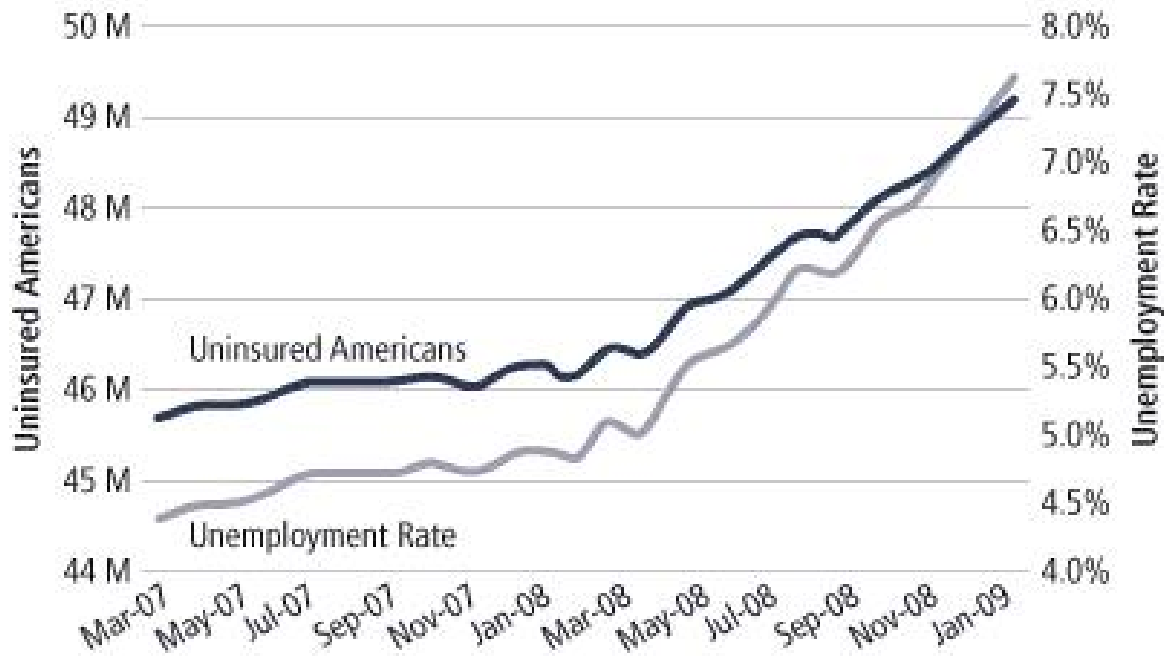


Misinterpretation

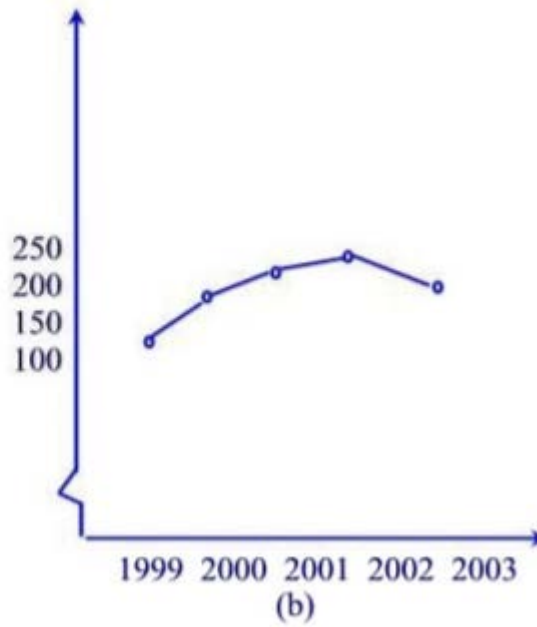
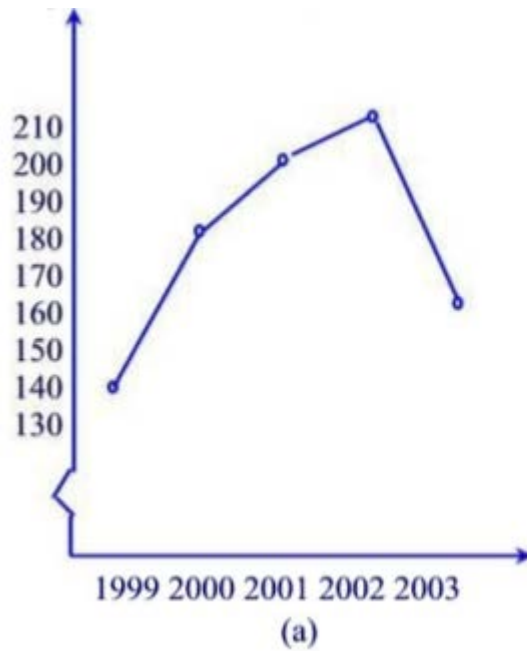


Misinterpretation

Job and Health Insurance Losses Accelerating
14,000 People Becoming Uninsured Every Day



Misinterpretation





A Few Rules

- **Do not use color as the only mean to encode a value (7% of the population is colour blind).**
- **Always provide a legend.**
- **Each graph, by itself, should provide all relevant information.**
- **Use only one unit per graph. Avoid multiple vertical axes.**
- **Always start your graph at 0.**
- **Avoid 3D graphics.**
- **Simple bar charts are easier to interpret than pie charts.**



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Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



THANK YOU