

Slides are on blog.

Visualization Techniques (A Fast-Forward)

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Outline

- 1. 1D, 2D, 3D
- 2. Multivariate
- 3. Sets
- 4. Trees & Networks
- 5. Temporal
- 6. Geographical
- 7. Spatio-temporal

Anscombs quartett



Property	Value
Mean of x	9
Sample variance of x	11
Mean of y	7.50
Sample variance of y	4.125
Correlation between x and y	0.816
Linear regression line	y = 3.00 + 0.500x
Coefficient of determination of the linear regression	0.67













Visualization Literacy

- 1) the ability to confidently **use** a given data visualization,
- 2) to **translate** questions specified in the data domain into visual queries in the visual domain, as well as
- 3) **interpreting** visual patterns in the visual domain as properties in the data domain

1d-Distributions

Data Set (Samples)

1	А	В
1	Last Name	Sales
2	Smith	\$16,753.00
3	Johnson	\$14,808.00
4	Williams	\$10,644.00
5	Jones	\$1,390.00
6	Brown	\$4,865.00
7	Williams	\$12,438.00
8	Johnson	\$9,339.00
9	Smith	\$18,919.00
10	Jones	\$9,213.00
11	Jones	\$7,433.00
12	Brown	\$3,255.00
13	Williams	\$14,867.00
14	Williams	\$19,302.00
15	Smith	\$9,698.00
16		

Distributions



Distributions — Stem and Leaf Plots

Stem	Leaf
0	5
1	6, 7
2	8, 3, 6
3	4, 5, 9, 5, 5, 8, 5
4	7, 7, 7, 8
5	5,4
6	0

Distributions-Histogram



Histogram Binnings



https://www.wolfram.com/mathematica/new-in-8/statistical-visualization/specify-bin-sizes-for-histograms.html

Descriptive Statistics (Mean, Mode, Median)



Descriptive Statistics



Mode: Most frequent value in data

Median: splits samples in two equally sized sets (50:50)

Mean: average value

Descriptive Statistics



Skewness



Time, Years

Standard deviation



Standard deviation



Comparing distributions



Plotting Distributions





Box plots



Swarm plots





Bar plots (bar charts)

Violin plots





Reading box plots



Swarm + box plots



Ridge plots

model/clipped_delta 1474140402



http://www.sthda.com/english/articles/32-r-graphics-essentials/133-plot-one-variable-frequency-graph-density-distr ibution-and-more/

Bar plots + Error bars



Alternatives



Error Bars in Line Charts





Line Charts vs. Bar Charts?



https://online-behavior.com/analytics/data-visualization

