II - Graphical Perception

. a visualization fails if the encoding fails

. Data + message $\xrightarrow{\text{Encoding}}$ visualization $\xrightarrow{\text{Decoding}}$ user

① Identification of essential perceptual tasks

→ The 10 Elementary Perceptual Tasks

1) Position in a common Scale:  Scatter plot / Dotplot
2) Position in non-aligned Scale  stacked bar chart
3) Length || Bar plot
4) Direction  connected Scatterplot / vector fieldplot
5) Angle ∨∠ pie chart / donut chart
6) Area ○ ◯ pie chart / Infographics / Bubble plot
7) Curvature  line plot (with differences) / Radial bar chart
8) Volume  no "typical" plot encode volume
9) Shading  choropleth Map (grayscale)
10) Color Saturing  choropleth map / Stacked bar plots Scatter plots

② Ranking

→ Rank on accuracy (accurate → less accurate)

1) Position in common Scale
2) Position in non-aligned Scales
3) Length / Direction / Angle
4) Area
5) Curvature / volume
6) Shading / Color Saturation

③ Redesigning Charts

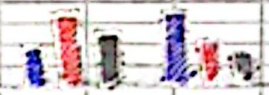
→ Redesigning Charts

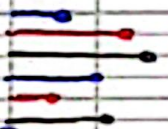
Ⓐ Pie Chart → Bar Chart → Lolipop Chart

angle (3), direction (3)
area (4)

length (3)
Position (Common Scale) (1)

position in common scale (1)





Ⓑ Stacked Bar Chart → Grouped Bar → Grouped Lolipop

length (3)
non-aligned position (2)

length (3)
aligned pos. (1)

aligned pos. (1)

Shaded Map → Framed rectangle chart on map

Shading (6)

non-aligned position (2)