Information Visualization Tables

Tackling tables
- homogeneity
  - same data type? same scales?
- need different approaches based on scale
  - how many attributes!
  - up to ~50 tractable with direct visual encoding
  - thousands need transformations / analytical methods
- how many items?
  - up to ~1K tractable with direct visual encoding
  - >> 10,000 need analytical methods

How many records?
- ~1000 – “just” visual is fine
- >> 10,000 – need analytical methods

Focus on Tables

Exercise: Sketch 2 ways to visualize each table
- socrative: answer when done

4 Keys
- Value in cell
- Cell
- Multidimensional Table
- Grid of positions

Geometry (Spatial)
- Position
- Dataset Types
- Attributes (columns)
- Items (rows)
- Cell containing value

Networks
- Link
- Node (item)

Trees
- Fields (Continuous)
- Volume
- Spatial

Some keys: Categorical regions
- regions: contiguous bounded areas distinct from each other
  - using space to separate (proximity)
  - following expressiveness principle for categorical attributes
  - use ordered attribute to order and align regions

Idiom: bar chart
- one key, one value
  - axes
    - 1 level, 1 quadrant
  - marks: lines
    - channels
    - length to express quant value
    - spatial regions one per mark
    - separated horizontally aligned vertically
    - ordered by quant value
    - by label (alphabetical), by length (data-driven)
  - task
    - compare, looking values
    - scalability
    - dozens to hundreds of levels for key

Idiom: scatterplot
- 0 Keys: Express values (magnitudes)
- express values
  - quantitative attributes
  - no keys, only values
  - axes
    - 2-quant attributes
    - mark points
    - channels
    - hours vs. vs position
    - tasks
    - real trends, outliers, distribution, correlation, clusters
    - scalability
    - hundreds of items

Scatterplots: Encoding more channels
- additional channels for point marks
  - color
  - size (bubbleplot)
  - square root since area grows quadratically; radius is misleading
  - shape

0 Keys: Express values (magnitudes)

Exercise: Sketch 2 ways to visualize each table

Focus on Tables

Tasks and techniques
- Magnitude
- Distribution
- Deviation
- Correlation
- Ranking
- Part to whole
- Change over Time

Keys and values
- key
  - independent attribute
  - used as unique index to look up items
- simple tables: 1 key
- multidimensional tables: multiple keys
- value
  - dependent: attribute, value of cell
  - classify arrangements by key count
  - ~0, 1, 2, many...

Table
- Analytic Component
- Express Values
- 0 Keys
- scatterplot
- bar chart
- trees
- multidimensional tables
- 3 Keys
- Many Keys
- List
- Recursive Division
- Volume
- Matrix
- Rectilinear
- Parallel
- Radial
• Express Values
  • Separate, Order, Align Regions
  • Dense
  • Space-Filling

Layout density

• Dense
• Space-Filling

Upcoming
• DJ videos to watch this week
  – Making a Bar Chart with D3 and SVG (30 min)
• Quiz 3, due by Fri Jan 24, 8am
• Programming Exercise 1, due Wed Jan 29

Credits
• Visualization Analysis and Design (Ch 7)
• Alex Lox & Miriah Meyer: http://dataviscourse.net/
• Ben Jones, UW/Tableau