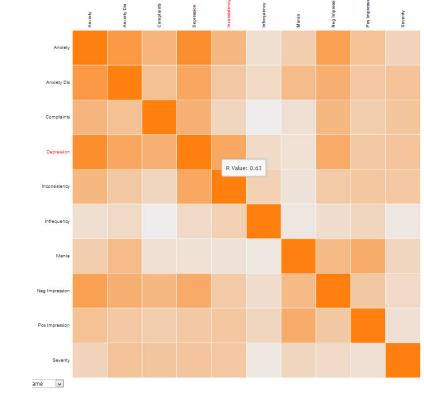


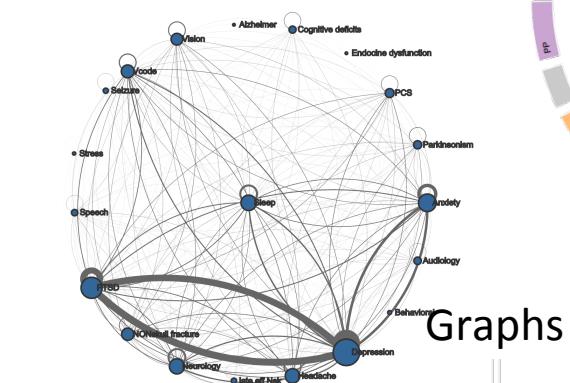


# Module #2c: **Basic Visualization Techniques – Part II**

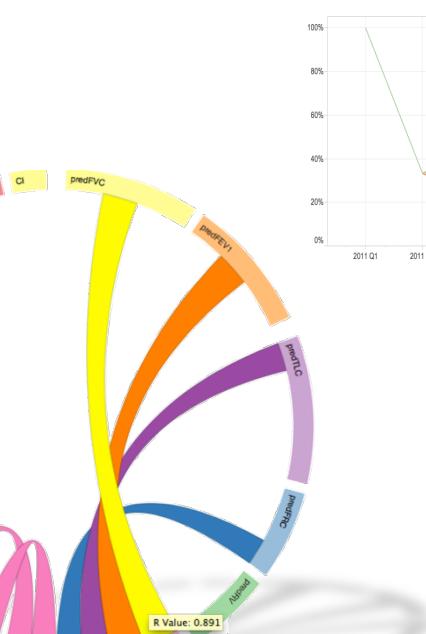
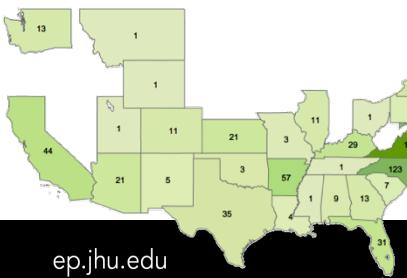
# Popular Visualization Techniques



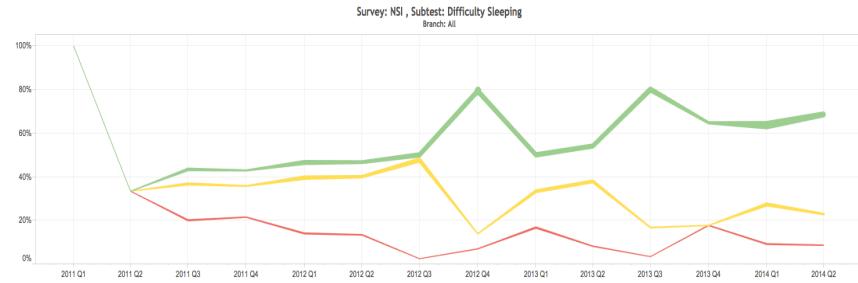
Tables



Graphs



Radial / Circular



Lines



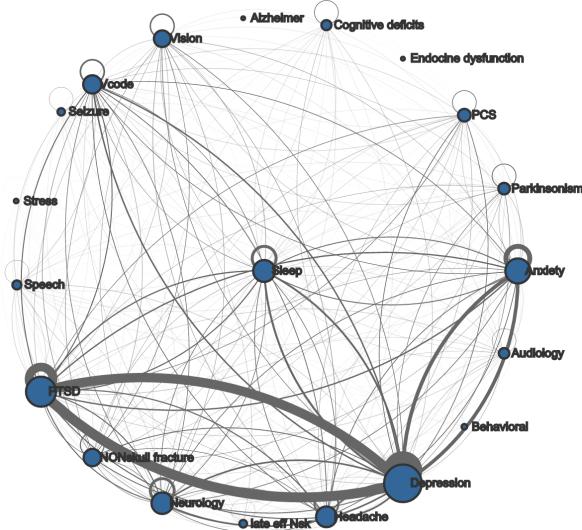
Scatter / Bubbles



Hierarchical / Treemaps



# Graph & Network Diagrams





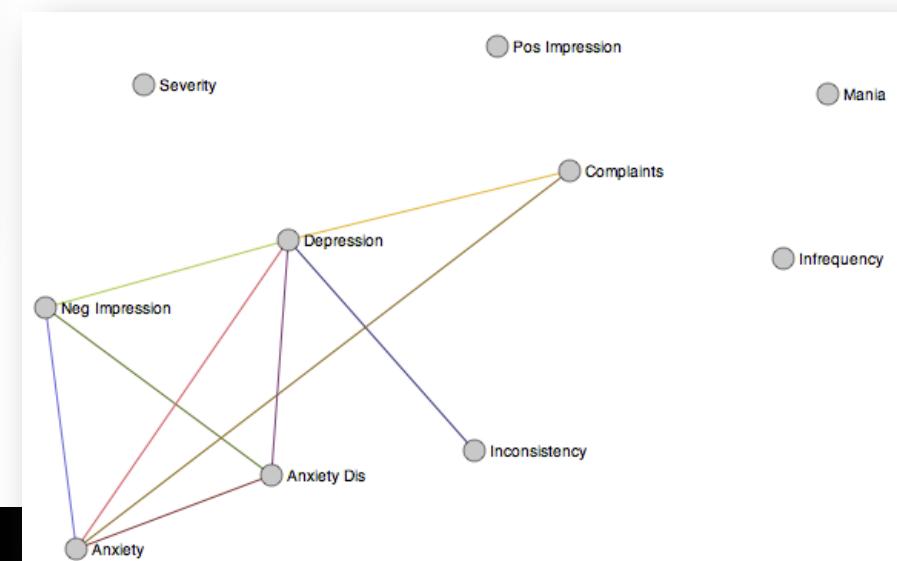
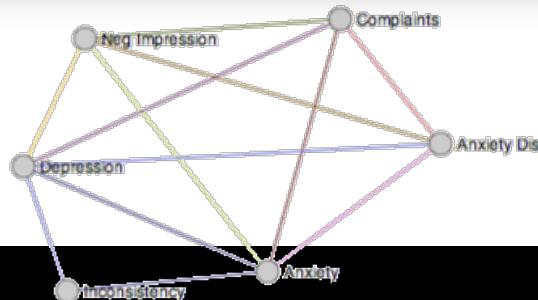
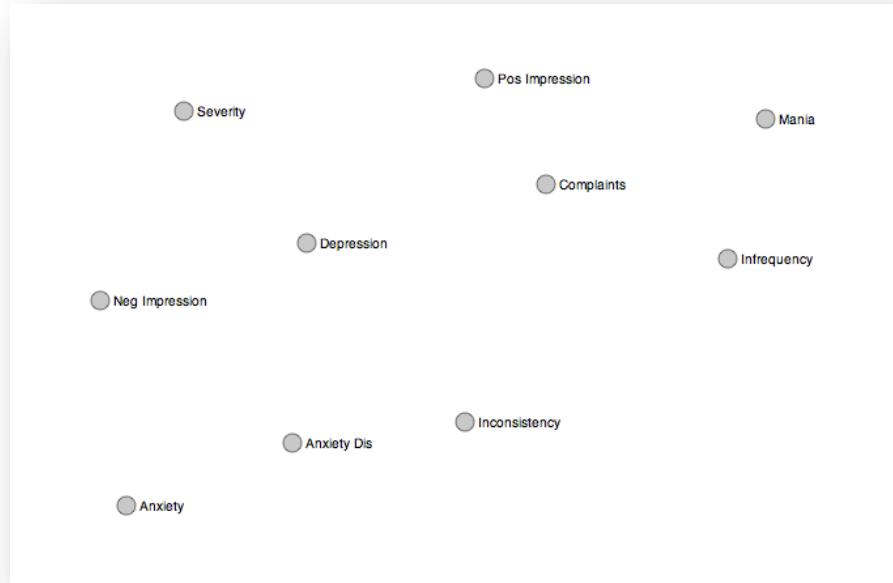
# Graph-based visualizations

- Technique where attributes are represented as nodes and associations between attributes represented by lines / edges
- **Pros:**
  - Excellent to explore topology
  - Analysis of trajectories and paths
  - Analysis of clusters
- **Cons:**
  - spatial position: not always meaningful
  - proximity between nodes: not always meani

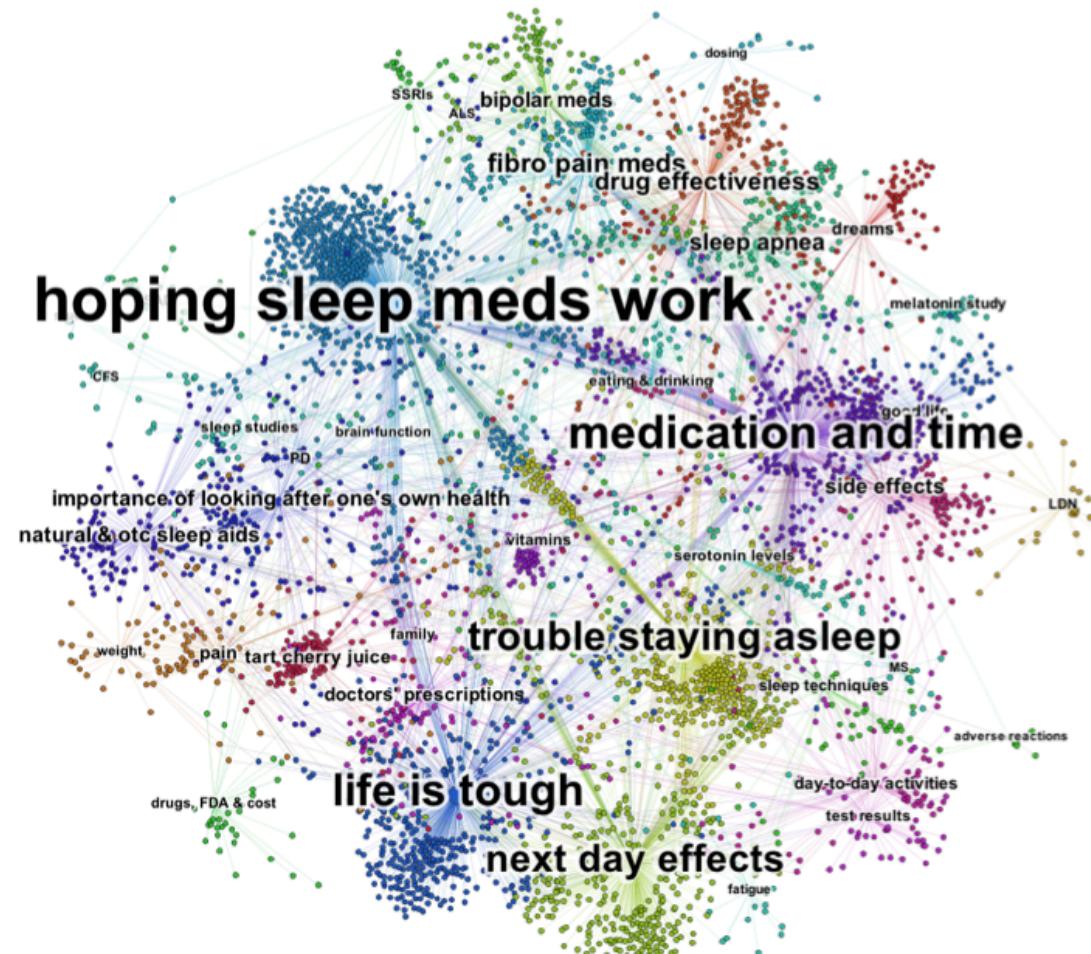


# Graph-based visualization

- Create a “graph” of variables.
  1. Automatically connect them based on specific value (e.g. correlations)
  2. Move them around to clear “clusters”

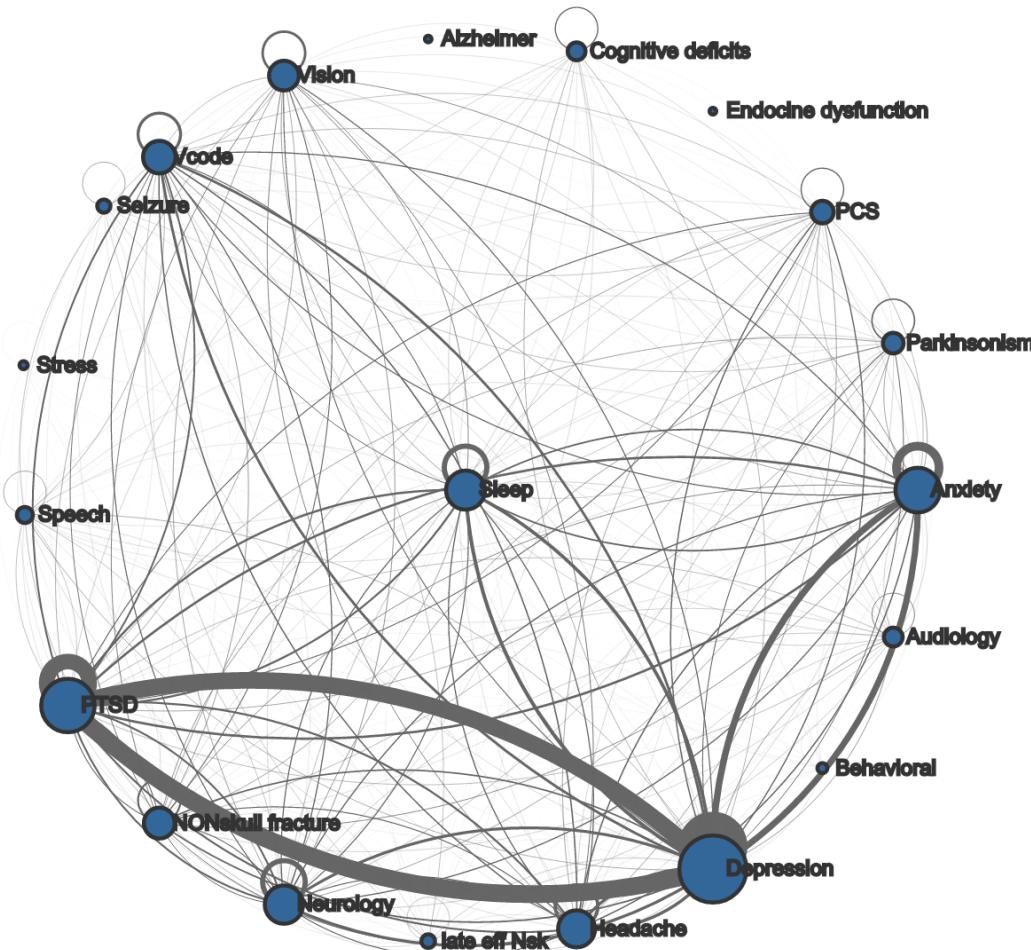


# Graph-based visualization



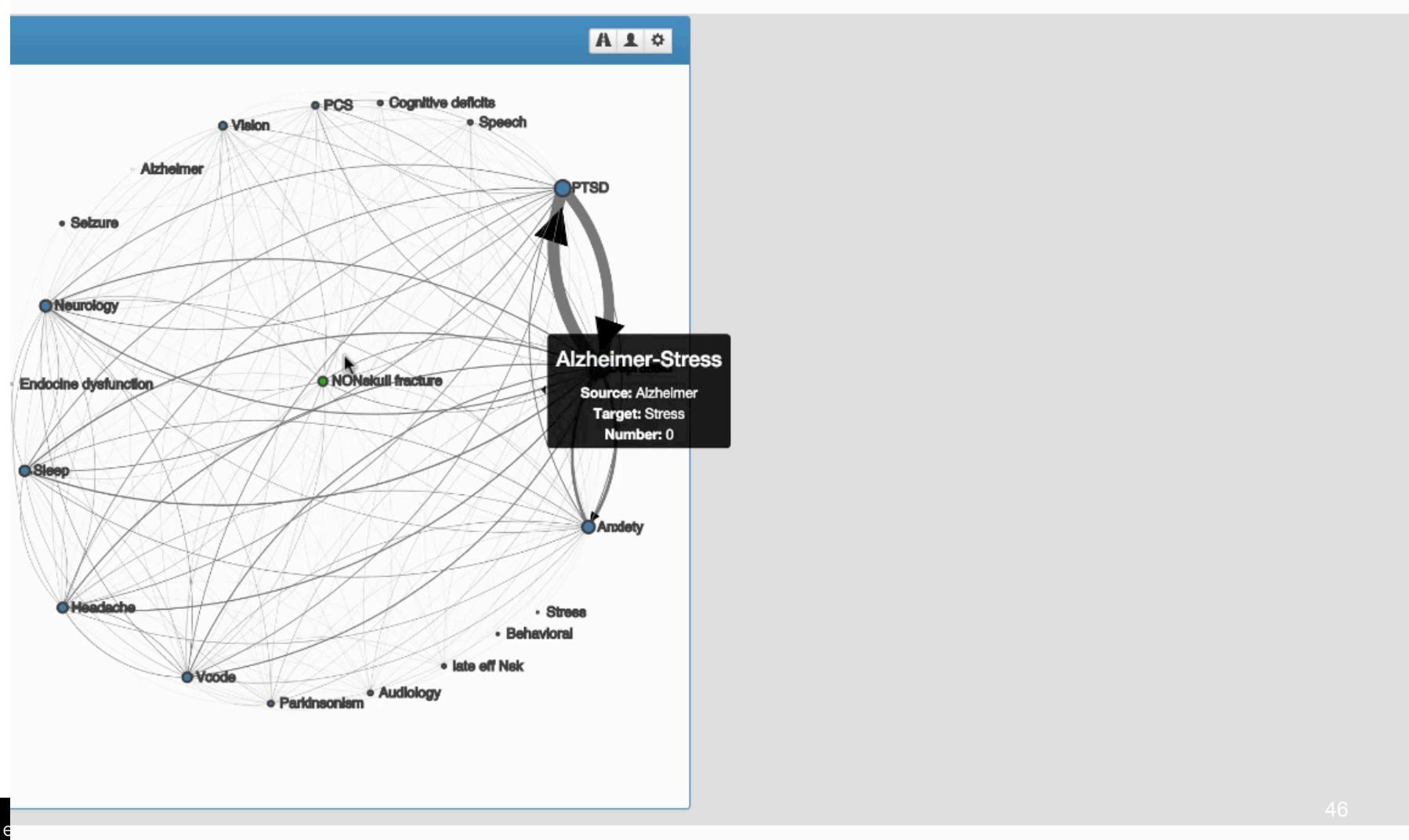
A. Chen et al. Topic Modeling and Network Visualization to Explore Patient Experiences, VAHC 2013

# Graph-based to explore clinical trajectories



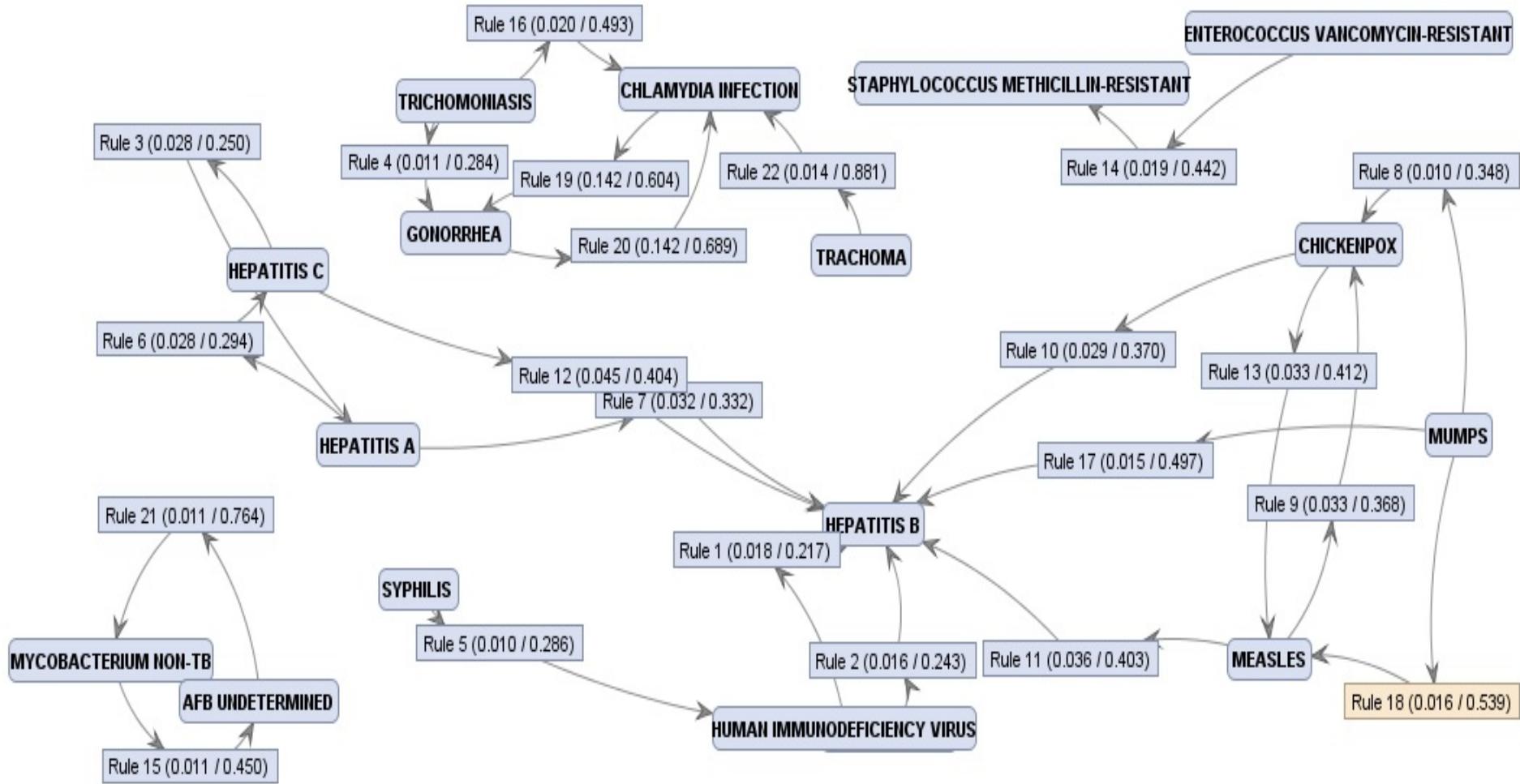


# Graph-based to explore clinical trajectories



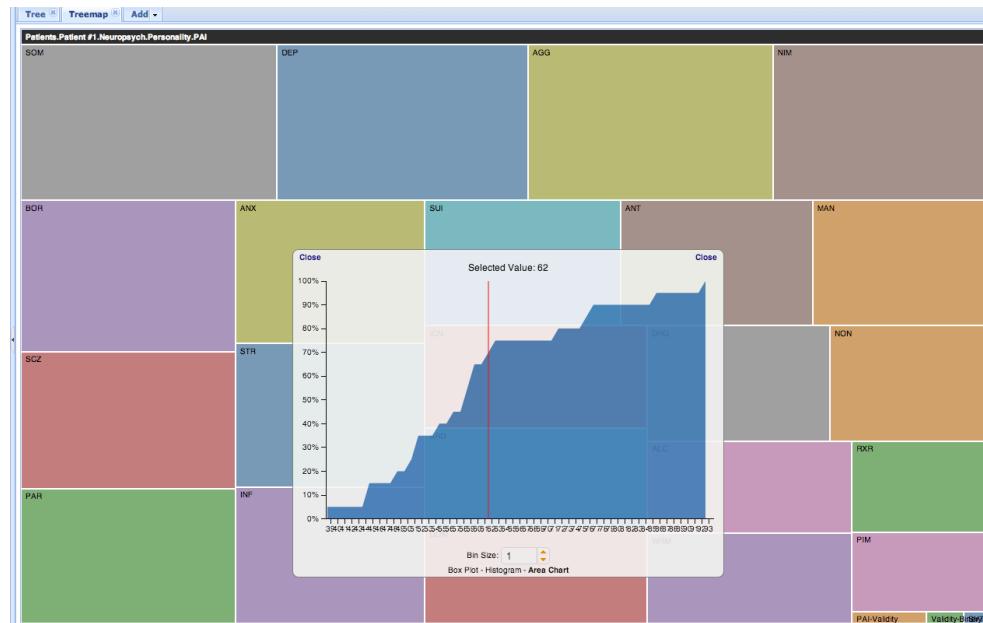
# Graph-based visualization and analytics

Co-occurrence pattern and derived the association rules between diseases.





# Hierarchies and Trees





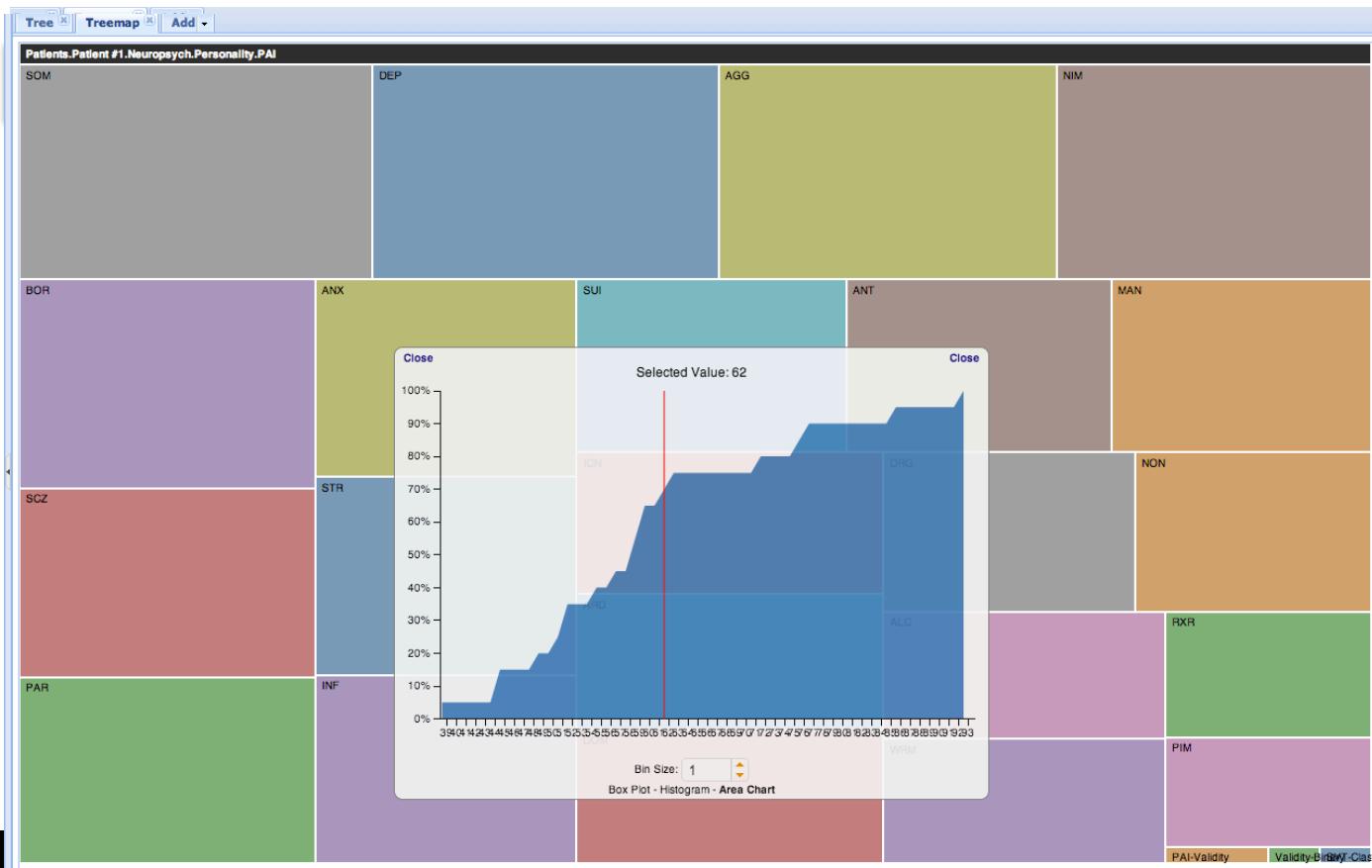
# Hierarchical Data and Treemap

- **Data**
  - Hierarchical
  - 1 quantitative attribute at leaf nodes
- **Pros**
  - query attribute at leaf nodes
  - Size encodes quantitative attributes
- **Scalability**
  - Millions of leaf nodes

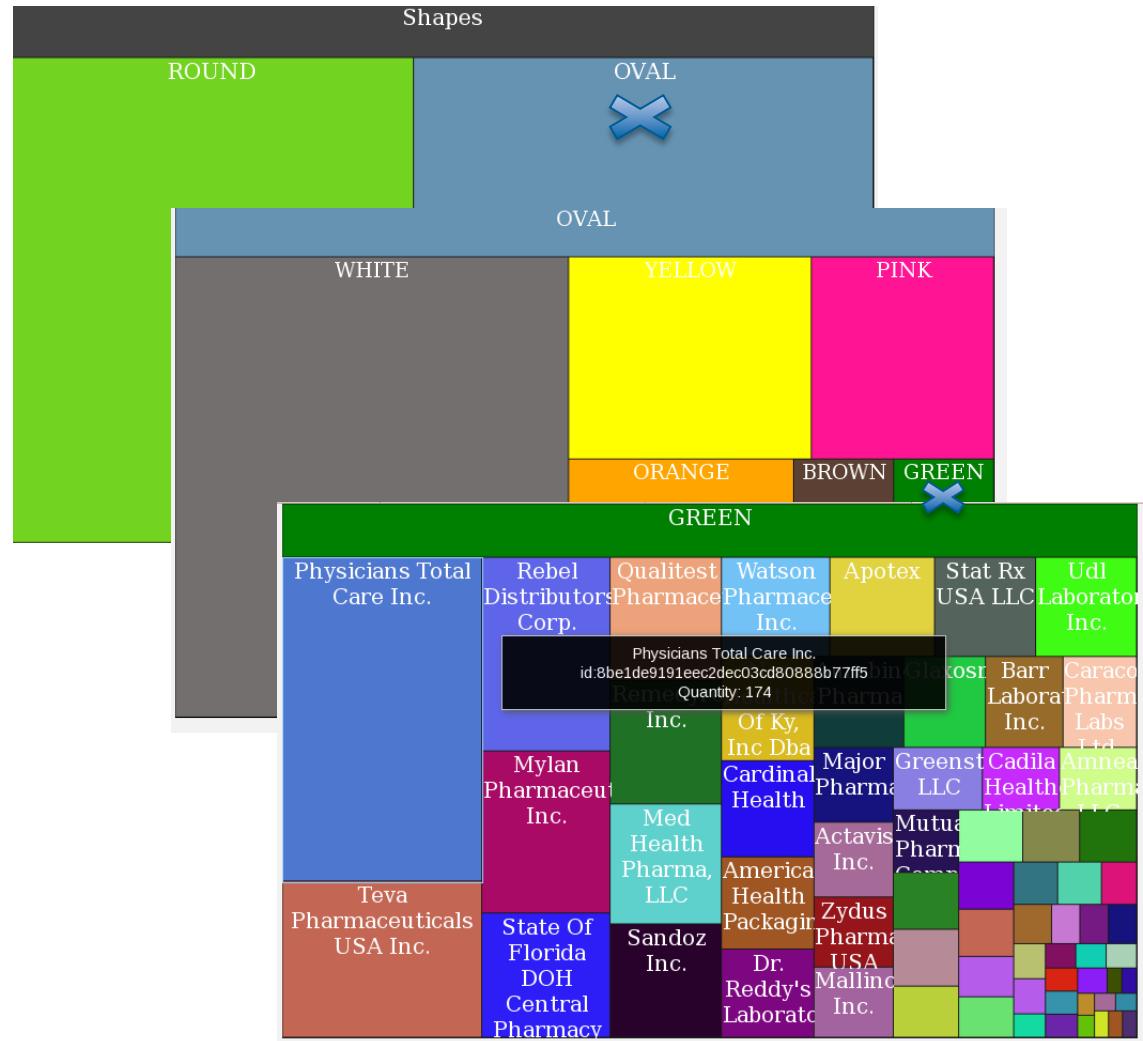


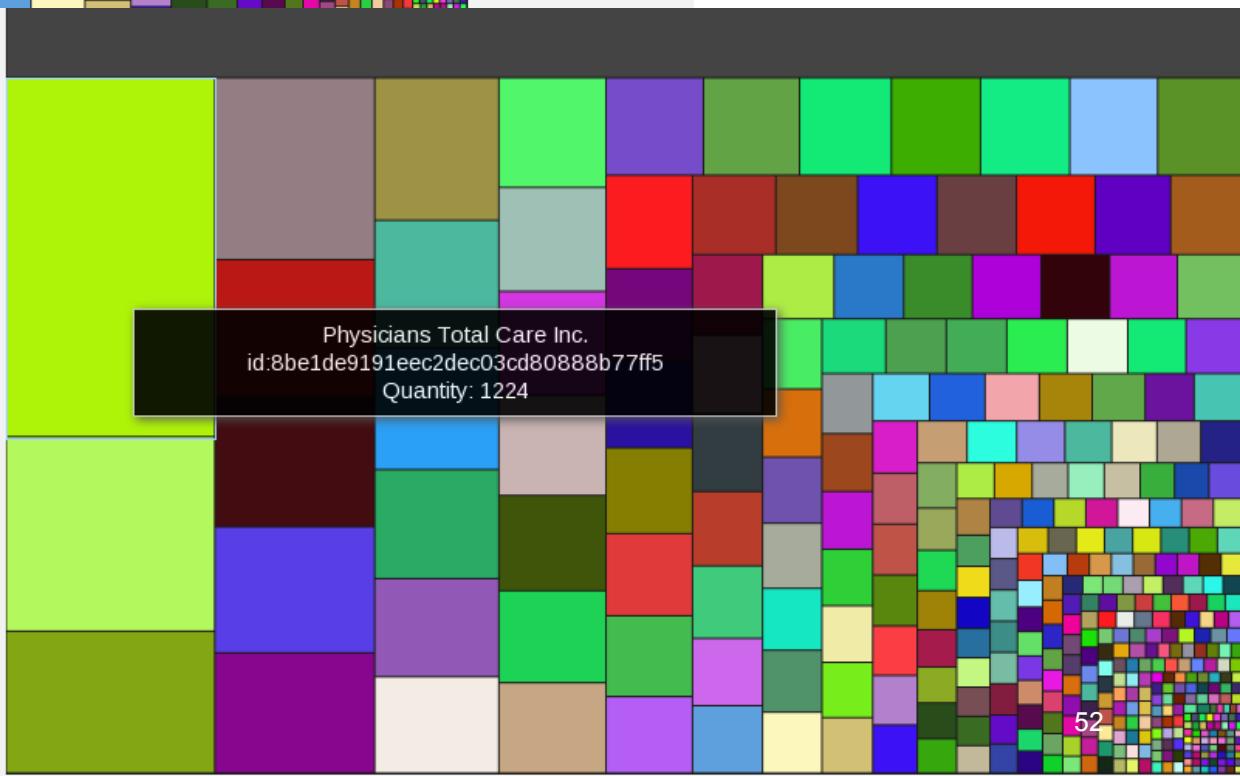
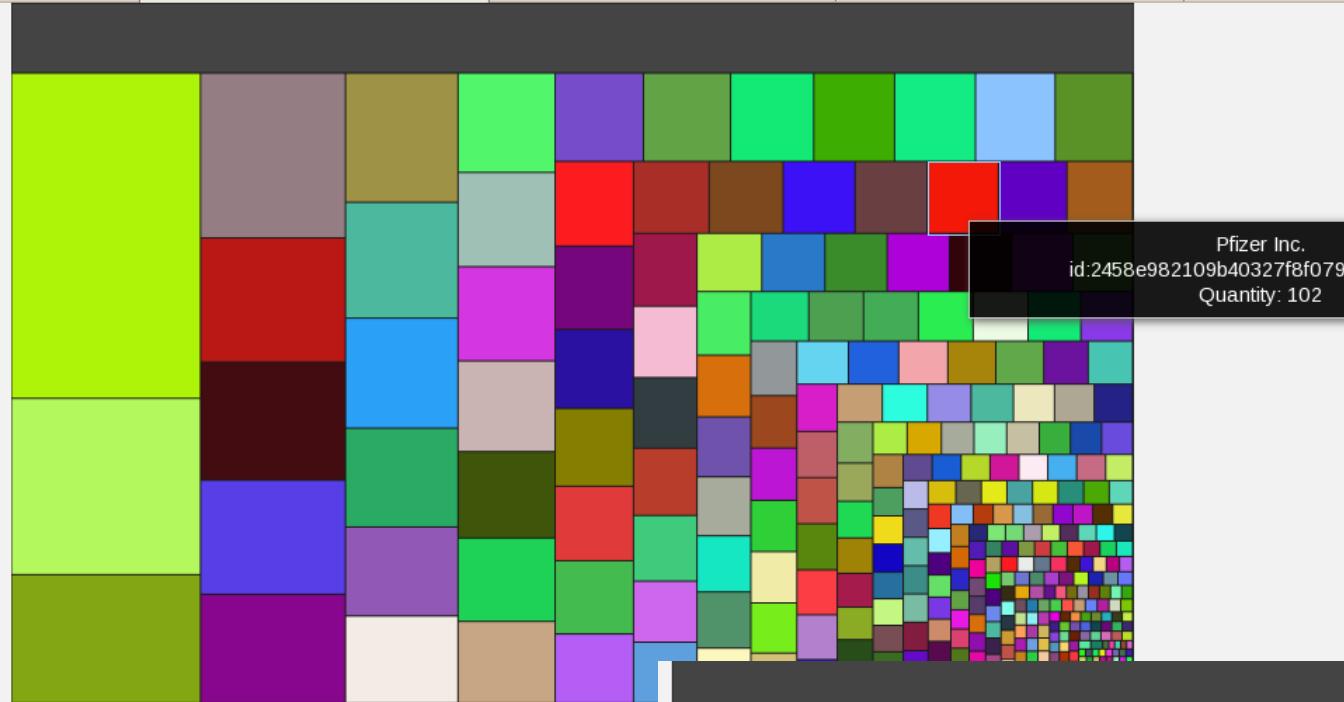
# Treemap

- Given N patients:
  - Display in a grid
  - Size of each individual box is proportionate to the size of the data



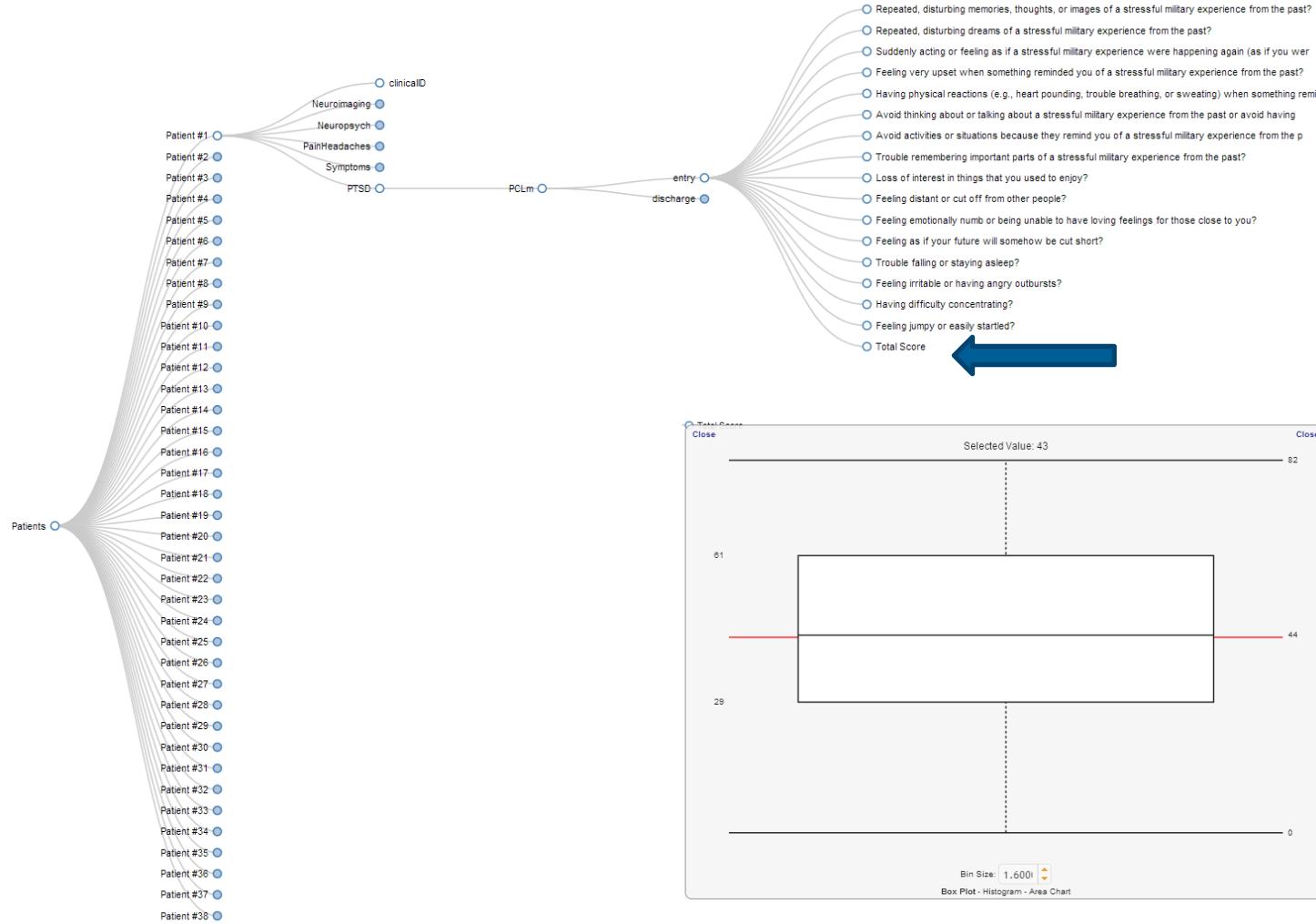
# Importance of Data Visualization





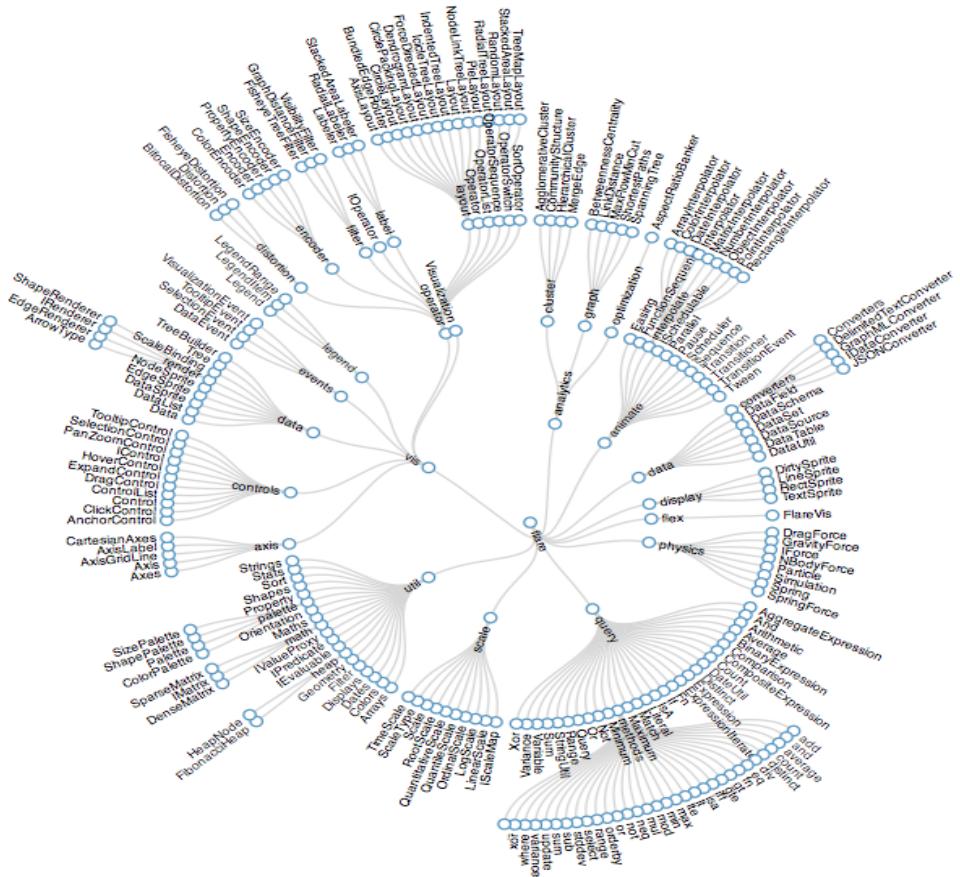


# Tree Chart



# Radial Linked tree chart

- Data
  - Hierarchical
- Pros:
  - Understand topology
  - Follow paths
- Scalability
  - 1K - 10K nodes



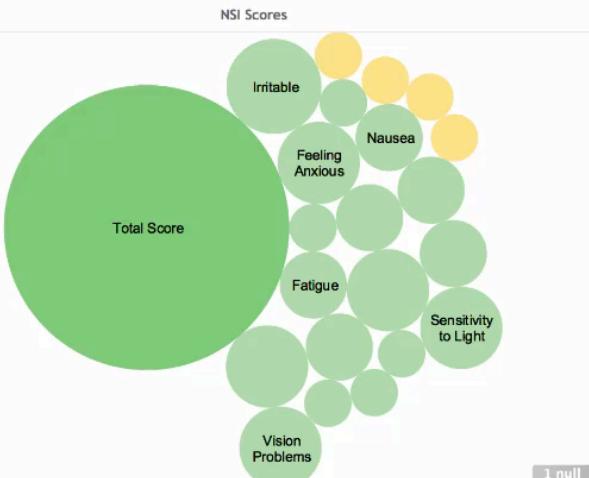
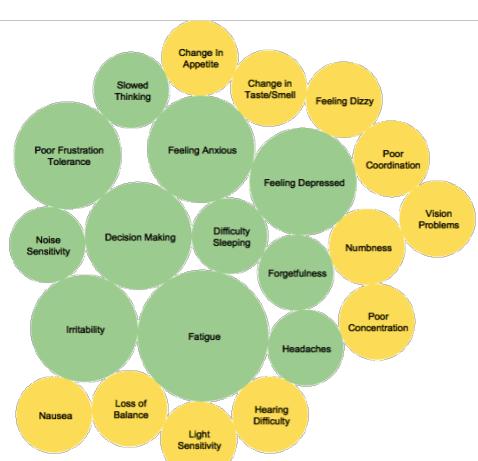
<http://mbostock.github.com/d3/ex/tree.html>



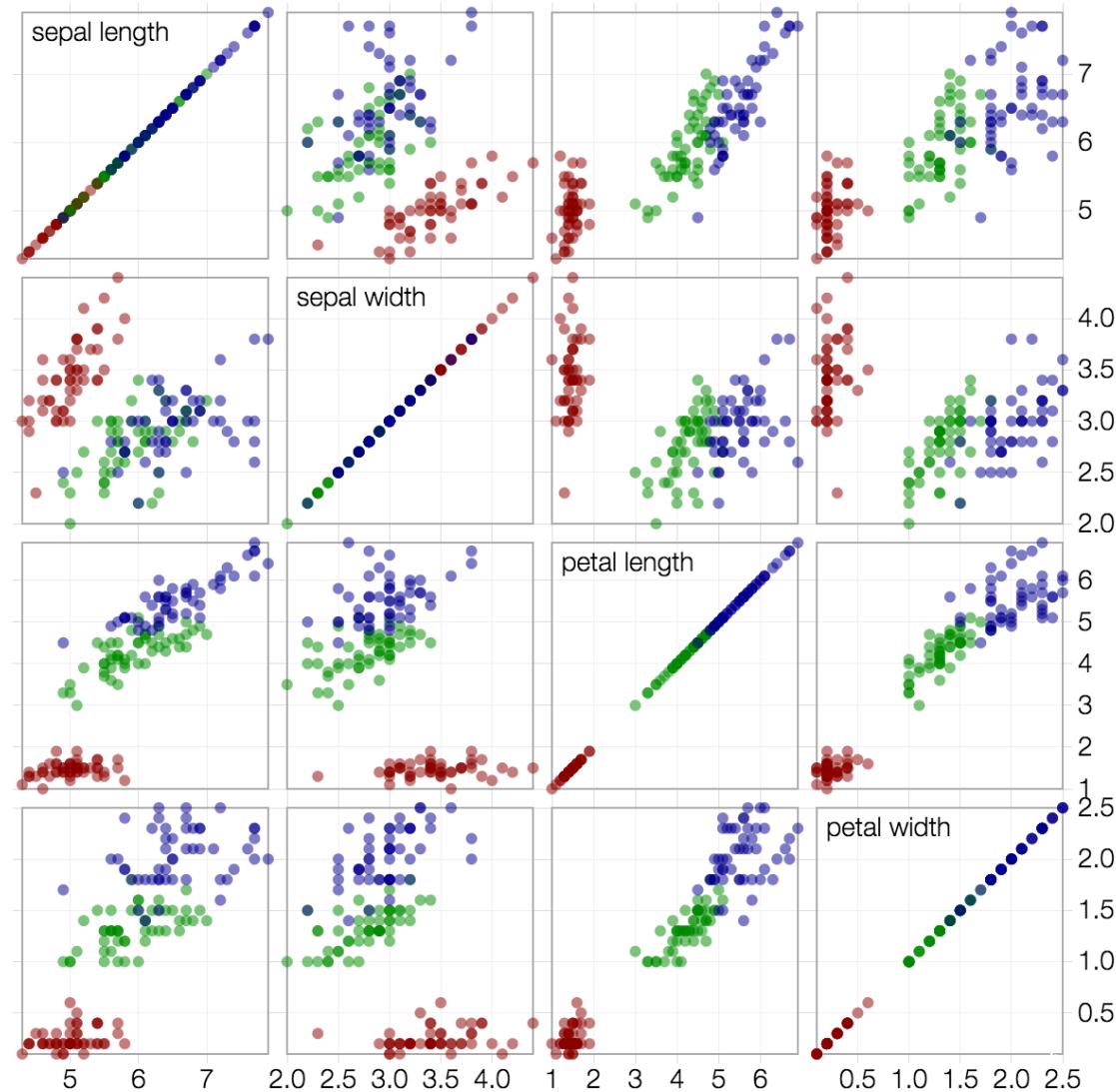
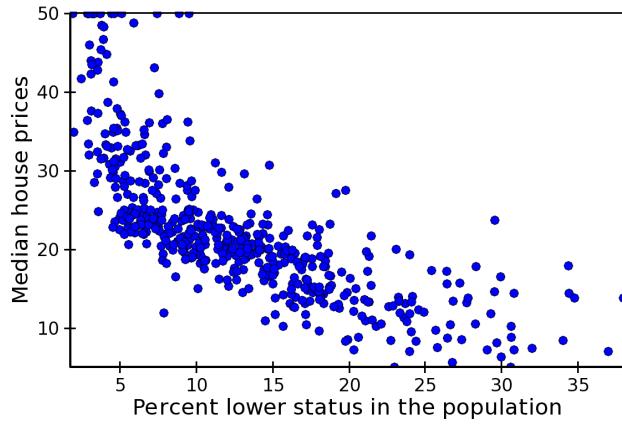
# Others Visualization Techniques

# Bubble chart

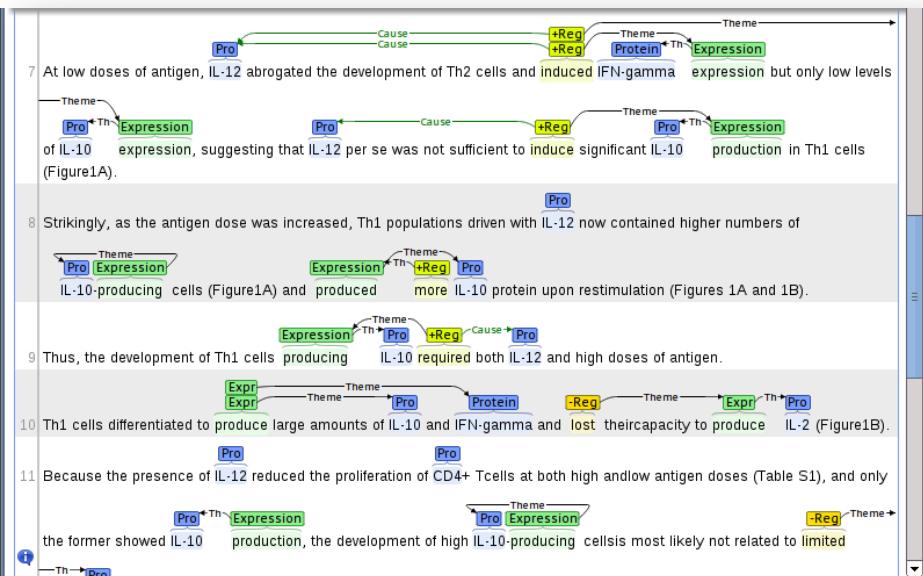
- A bubble chart is a variation of a scatter plot in which data points are replaced by bubbles.
- It encodes additional values within the size of the glyph (e.g. circle / bubble).



# Scatter Plot Matrices



# Visualization and Text analysis



## Patient History Cloud

Choose a patient history:

2010 - Patient History ▾

Minimum Frequency:

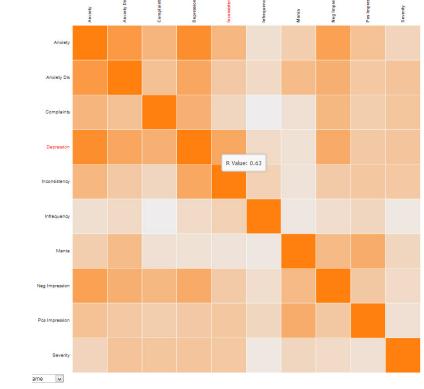
Maximum Number of Words:

Patient History:

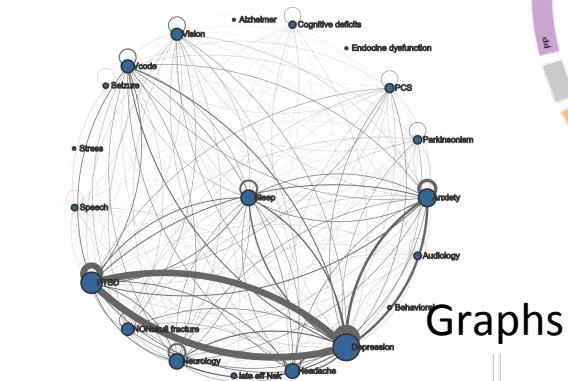
Patient History Cloud      Trending      Vanishing      Clustering      Singular



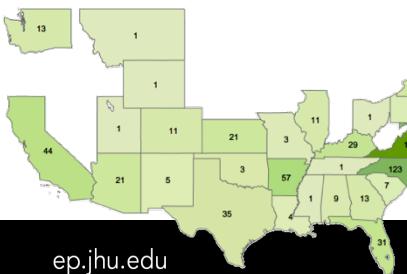
# Popular Visualization Techniques



Tables



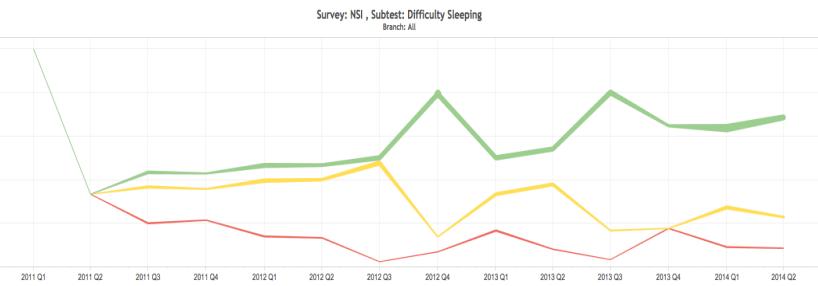
Graphs



ep.jhu.edu



Radial / Circular



Lines

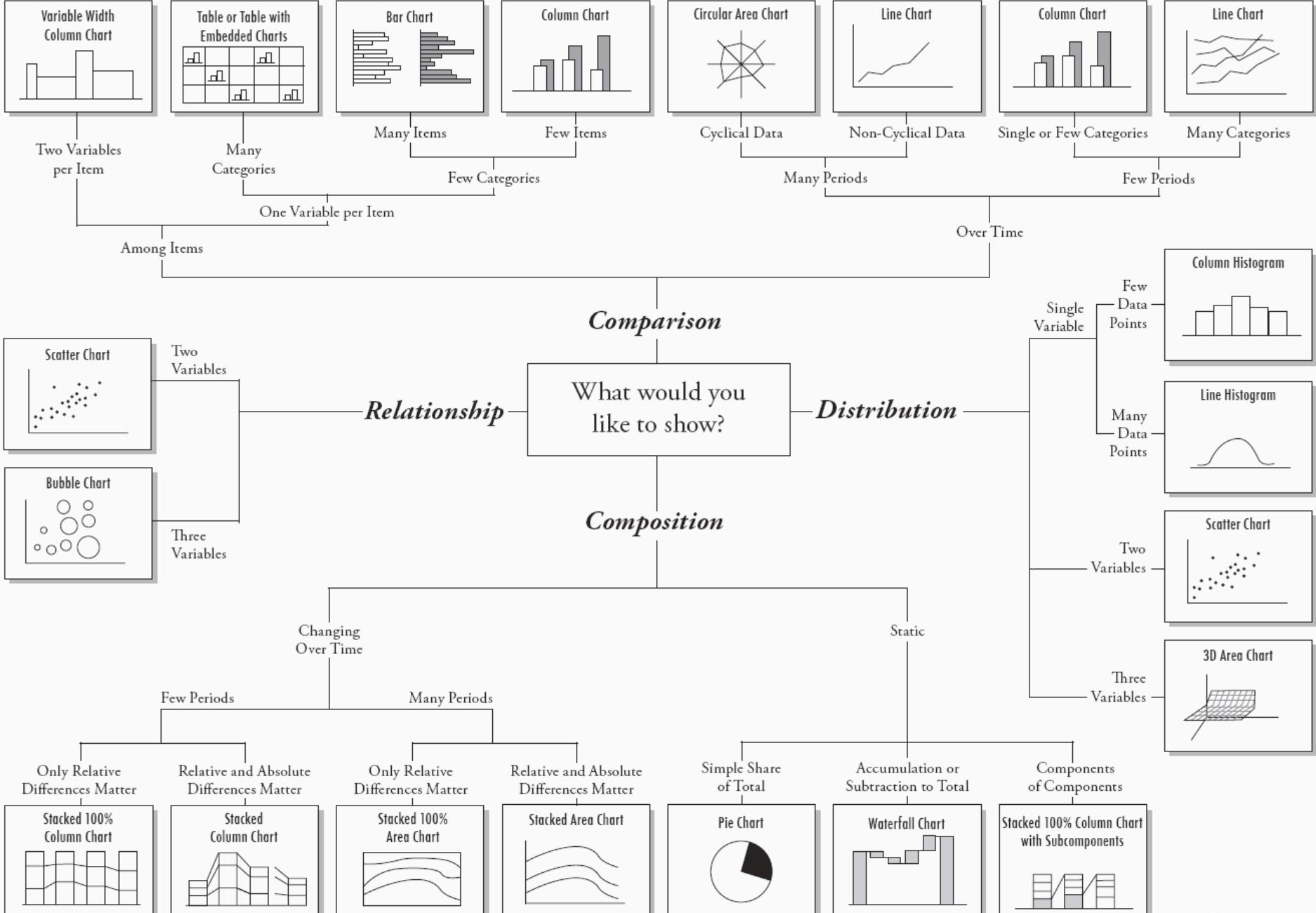


Scatter / Bubbles



# Where do we start?







# Conclusion

- There are different data types that are important to consider
- Describe the pros/cons of some of the basic visualization techniques
- Discuss how basic visualization techniques can be extended to incorporate multiple variables



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