Metagenomic Data Visualization:
R Shiny and Other Resources

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Goals of Microbiome Visualization

- Dimension reduction: high to low
- Similarity or differences:
  - Composition
  - Sample/Experimental group
  - Changes over space/time/measure
  - Differential abundance (statistical)
- Simply communicate high dimensionality
- Static vs. Dynamic
Composition

- Stacked bar
- Heatmap
- D3.js: interactive
  - Circular
  - Phylogeny (unrooted)
  - Line charts
- Animated figures
- Other tools:
  - BURRITO (functional)
  - MetaViz
  - Tableau
Composition
Ordination

- Principal Components Analysis (PCA)
- Multi-dimensional Scaling (MDS)
- Non-metric Multi-dimensional Scaling (NMDS)
Changes Over Space/Time

- Animation (D3.js/Emperor)
- Time/measure/space plots
- Other tools: TIME
Changes Over Space/Time

A. Diversity and Richness

D (Female, 54 years)

E (Female, 34 years)

F (Female, 28 years)

B. Core taxa

1

2

3
Differential Abundance

- Volcano plots
- Multi-column bar graphs
- Multi-faceted ggplot graphs
R Shiny

- Code in R
- Interactive in web browser
- Manipulate data in real time
- Good for real-time data vis
- HTML/CSS-based