

# Visualization tools for network science

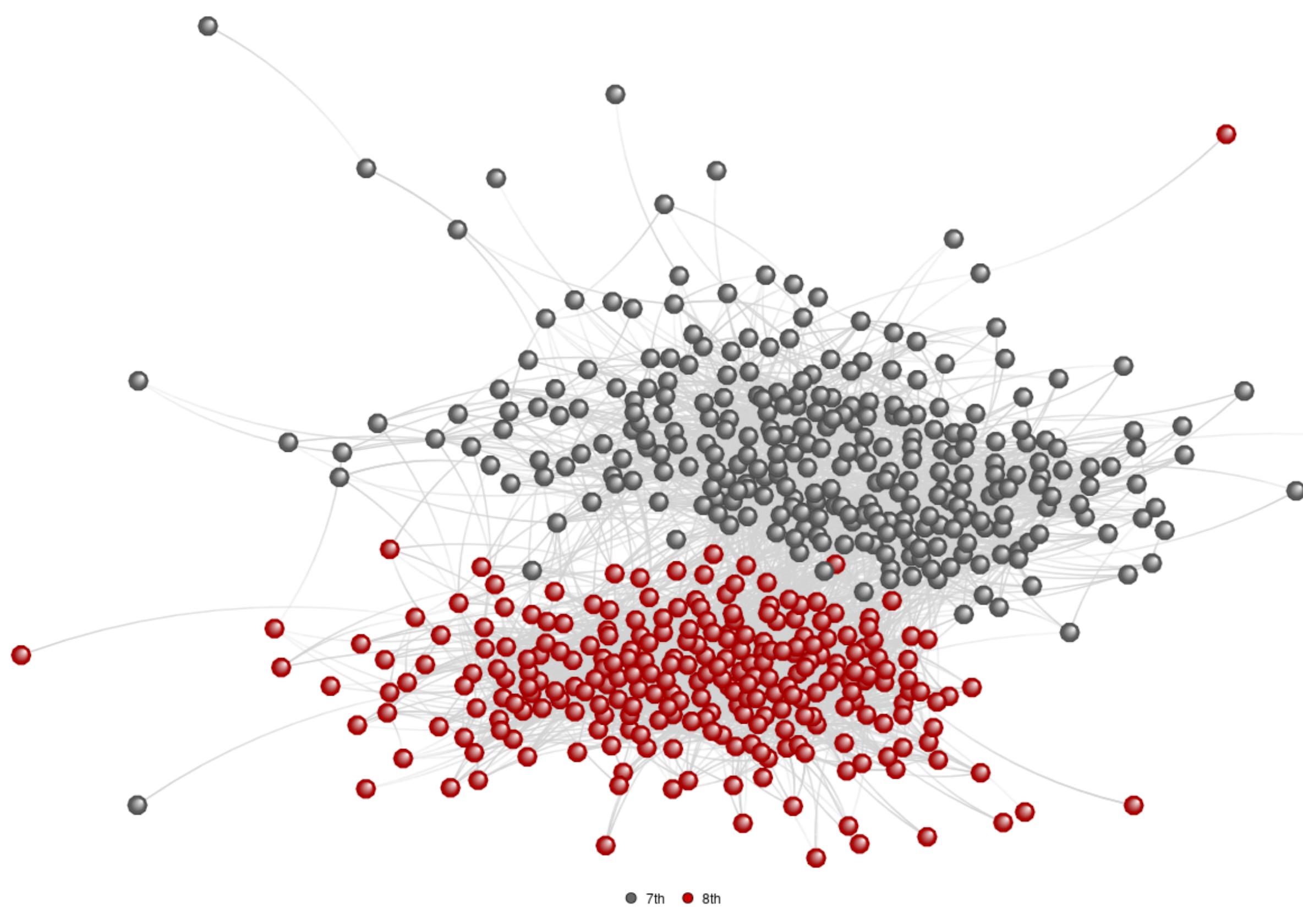
## Building beautiful graphs with *netplot*

Porter Bischoff<sup>1,2</sup> & George Vega Yon, Ph.D.<sup>1</sup>

### Network of middle school students

#### The data

- Influenza Spread in Middle School
- Split according to Gender, Grade, and Lunch Period
- Isolates were removed, ~5500 vertices



#### How we drew it

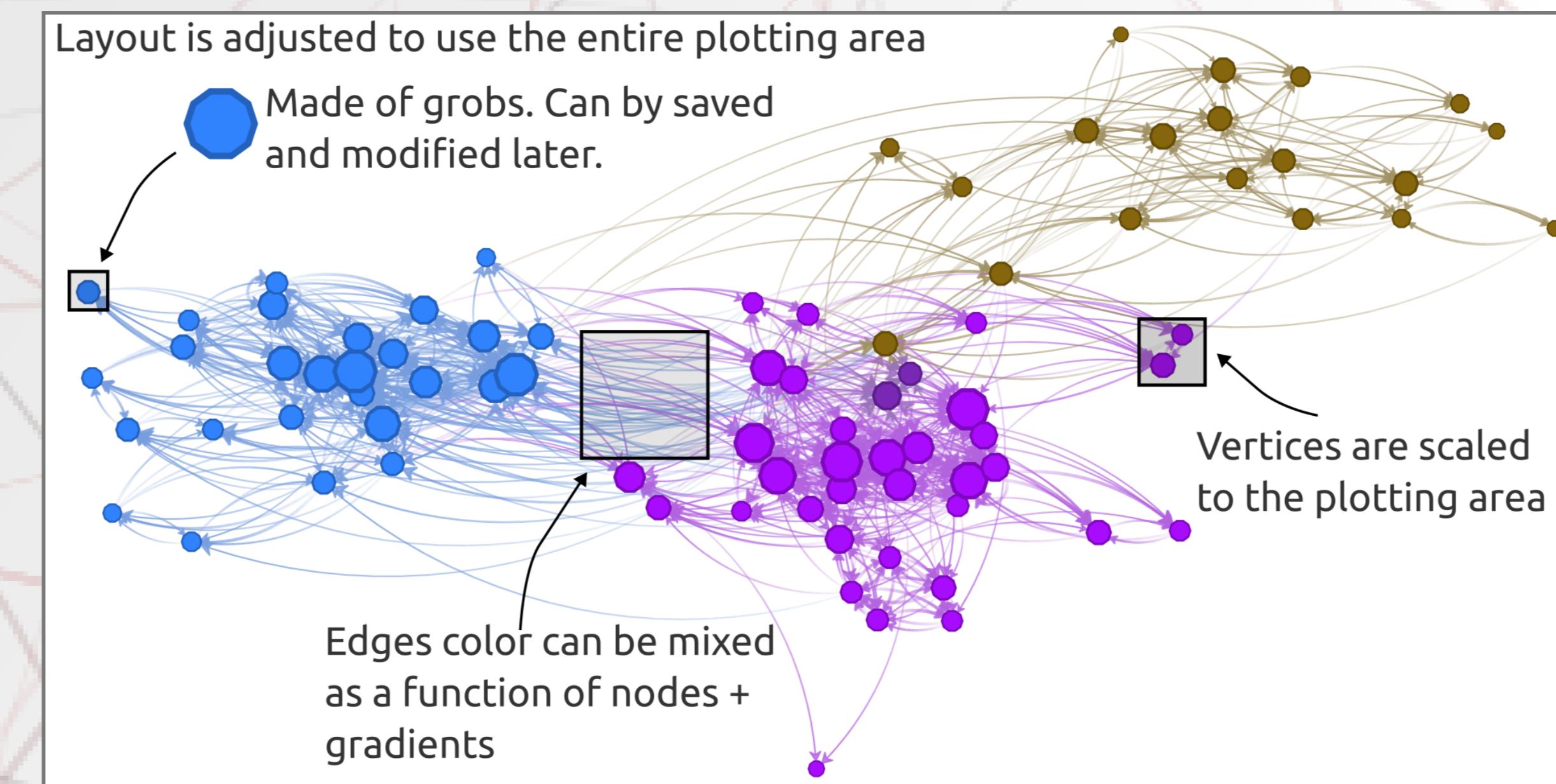
- Vertices are colored by grade (7th = Gray, 8th = Red)
- The Fruchterman-Reingold Algorithm layout was used
- Gradients (new feature in R) are used to color vertices.

#### Source

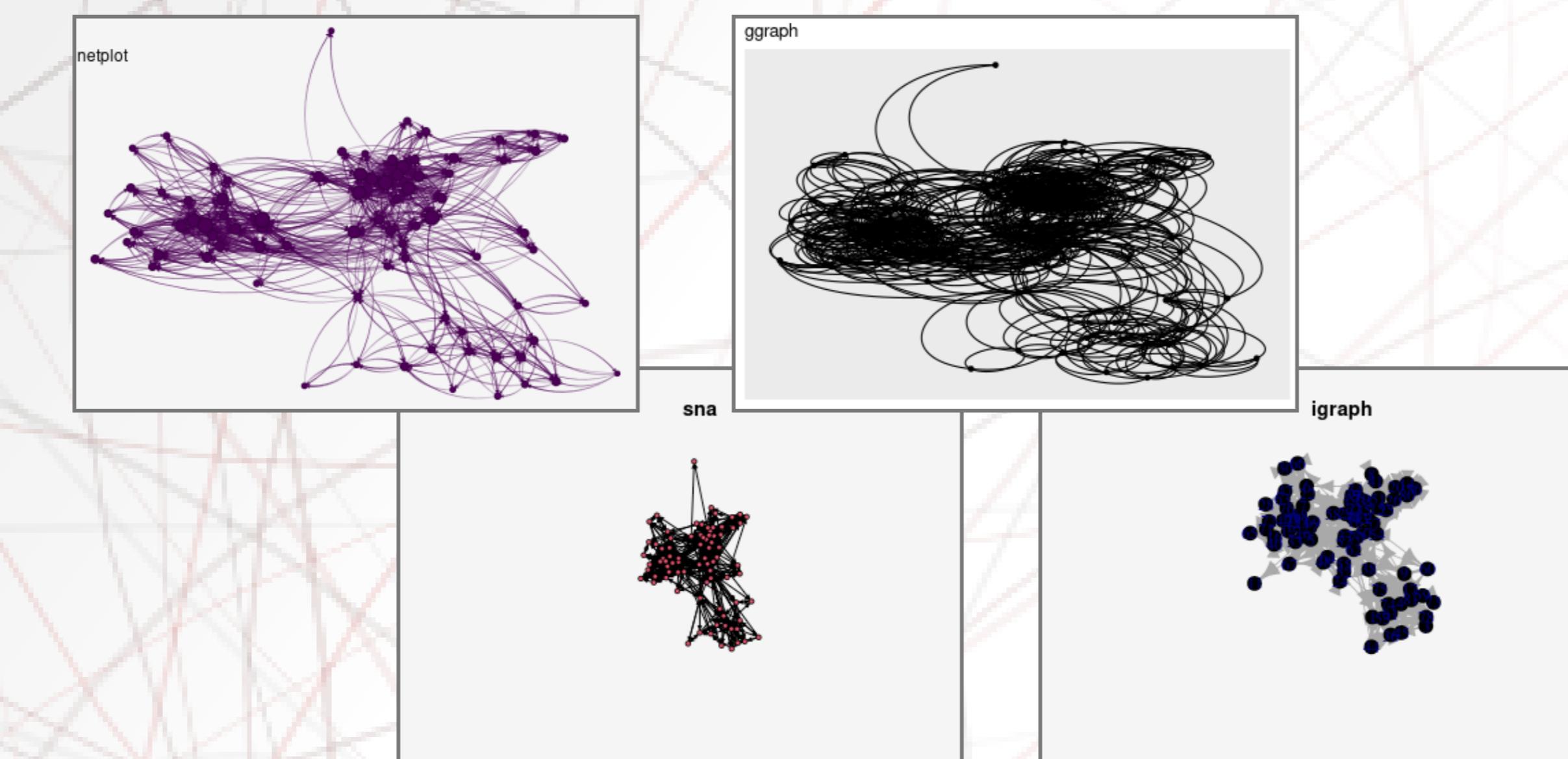
Leecaster, M., Toth, D. J. A., Pettey, W. B. P., Rainey, J. J., Gao, H., Uzicanin, A., & Samore, M. (2016). Estimates of Social Contact in a Middle School Based on Self-Report and Wireless Sensor Data. *PLOS ONE*, 11(4), e0153690. <https://doi.org/10.1371/journal.pone.0153690>

### Beautiful graph drawing in R

- 7233 downloads (as of July 27, 2023)
- Built on grid plotting system (as *ggplot2*).
- Provides out-of-the-box pretty figures.
- Key Features:

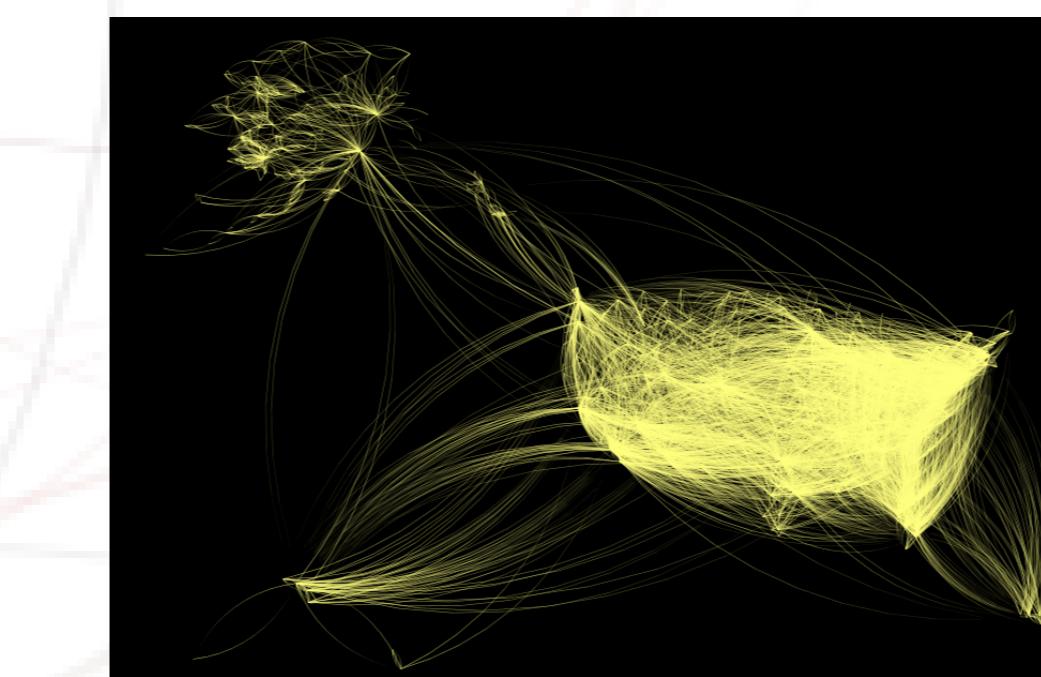


### Out of the box nice



### Future Plans

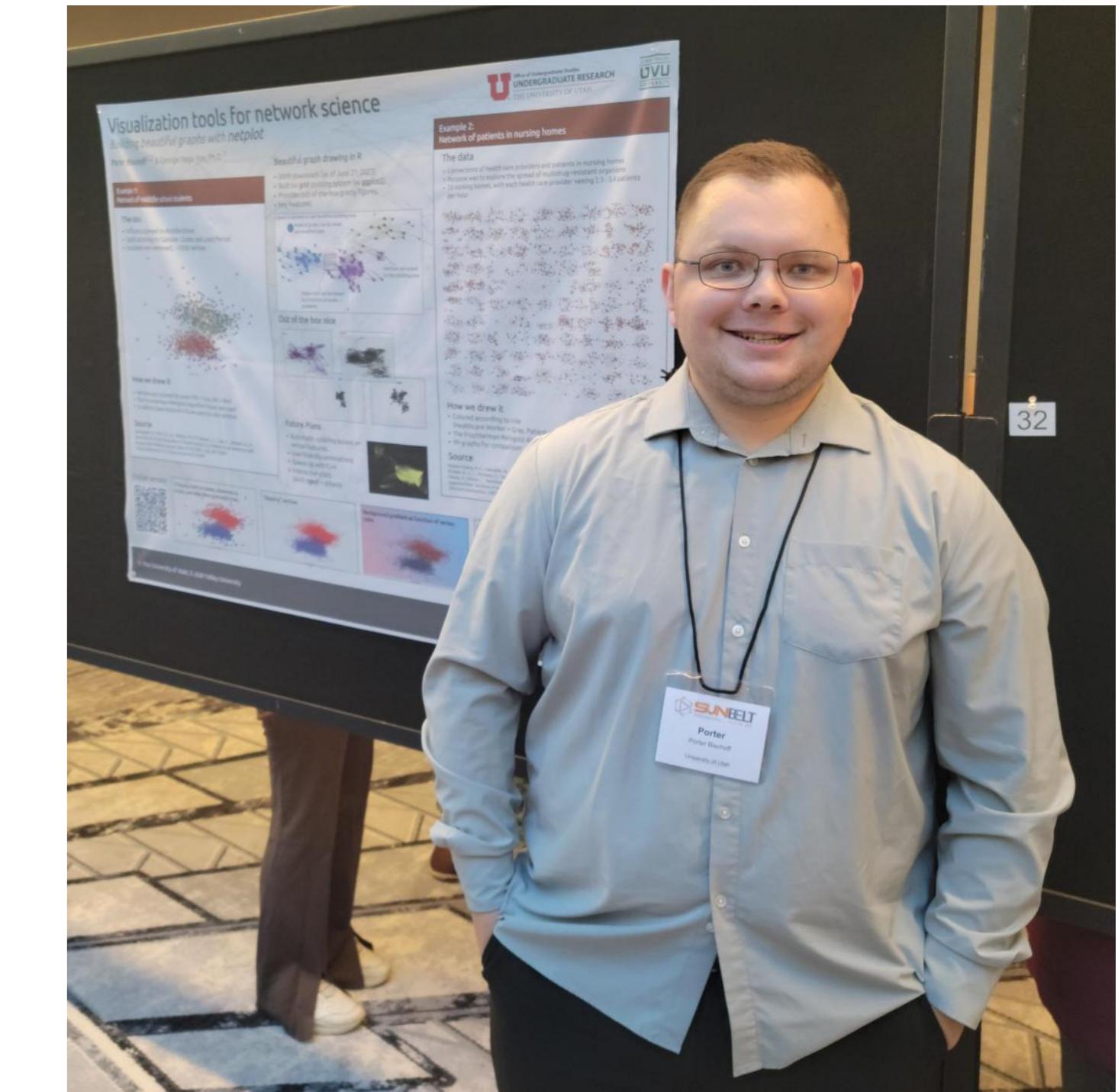
- Automatic coloring based on vertex features.
- User-friendly annotations
- Speed up with C++
- Interactive plots (with *rgexf* + others)



### INSNA SUNBELT Conference

#### Visualization tools for network science: Building beautiful graphs with `netplot`

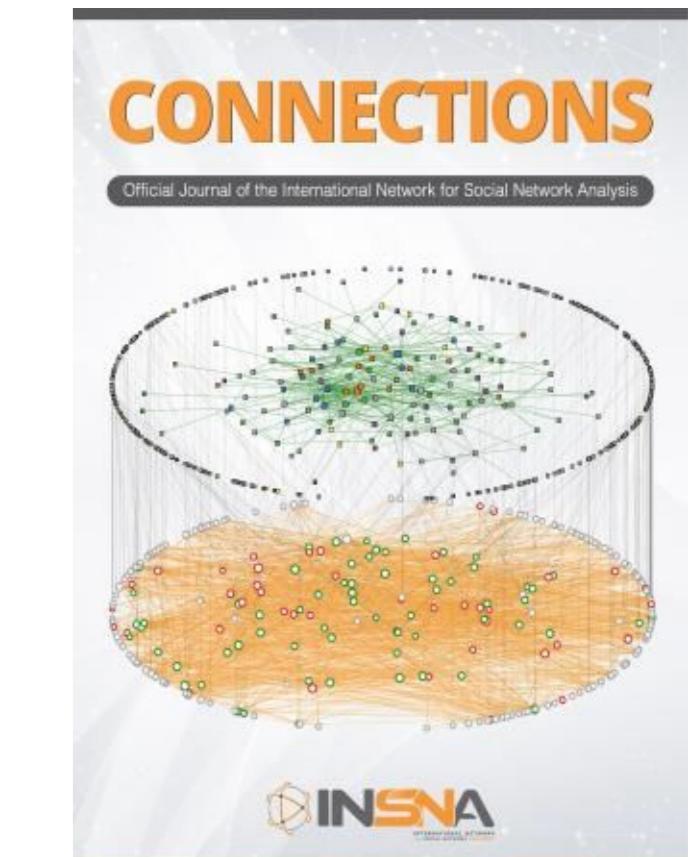
- International conference hosted in Portland, OR
- Presented poster
- Participated in workshops
- Networked with international experts in network science
- Implemented changes to package following feedback



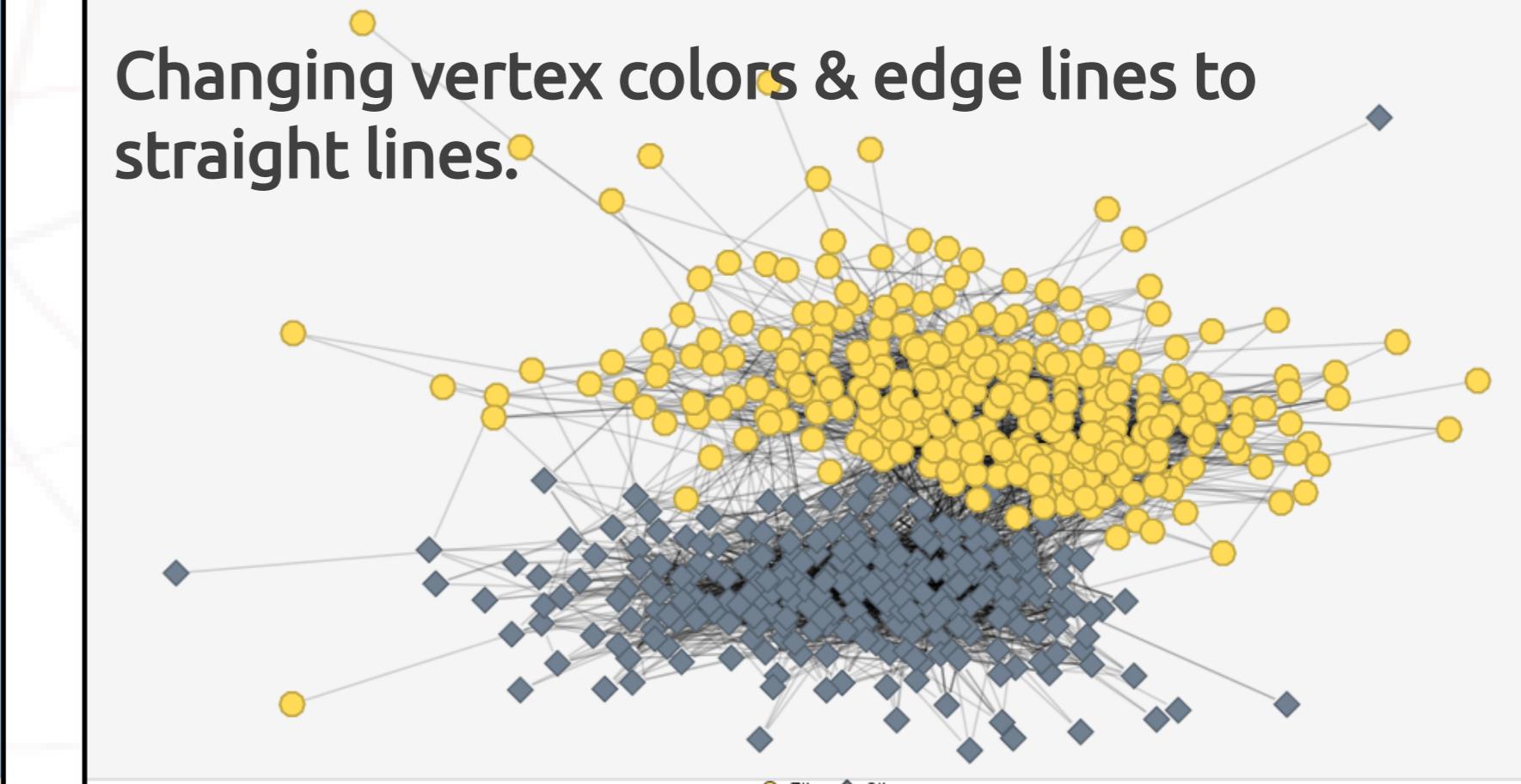
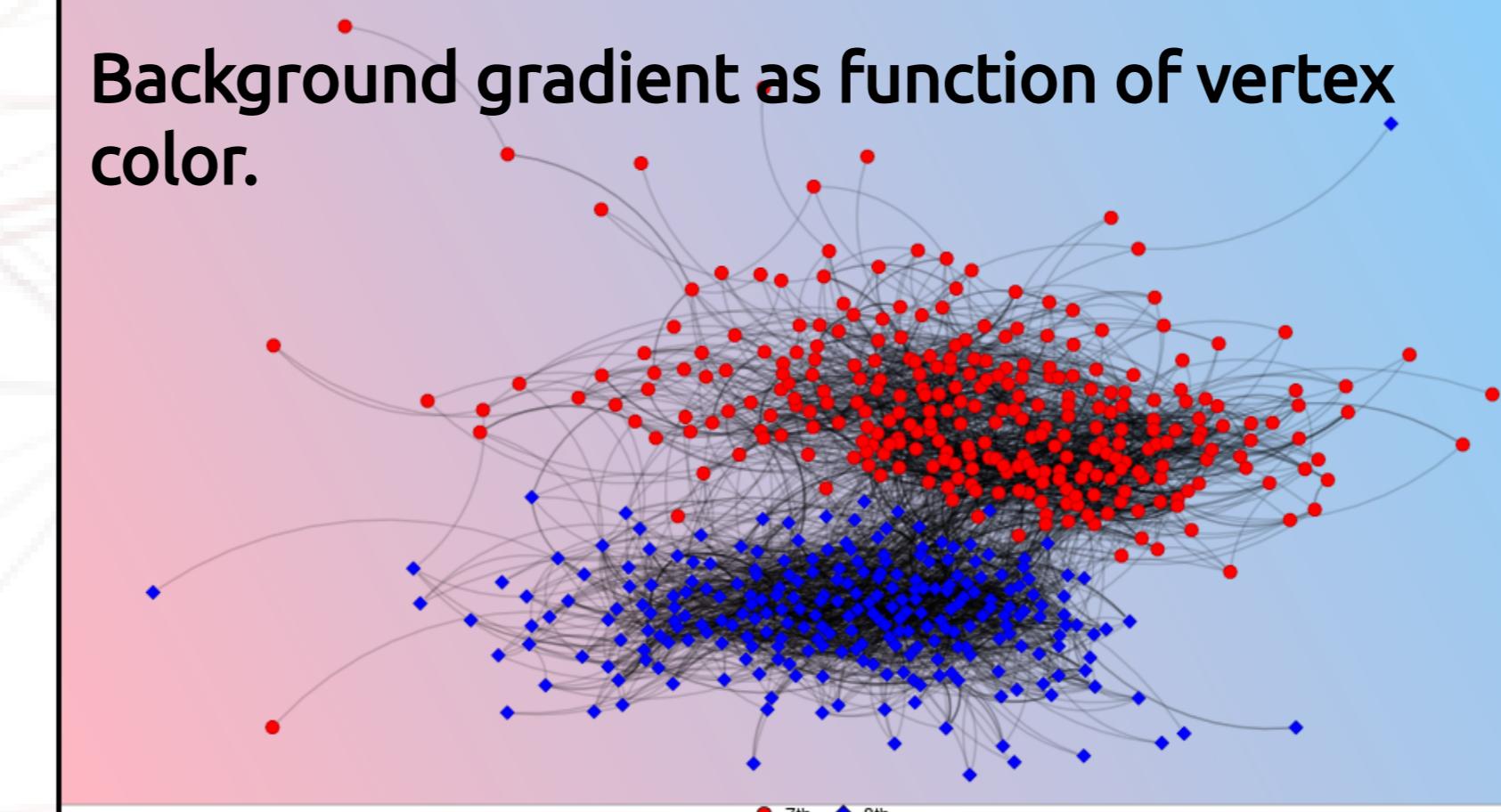
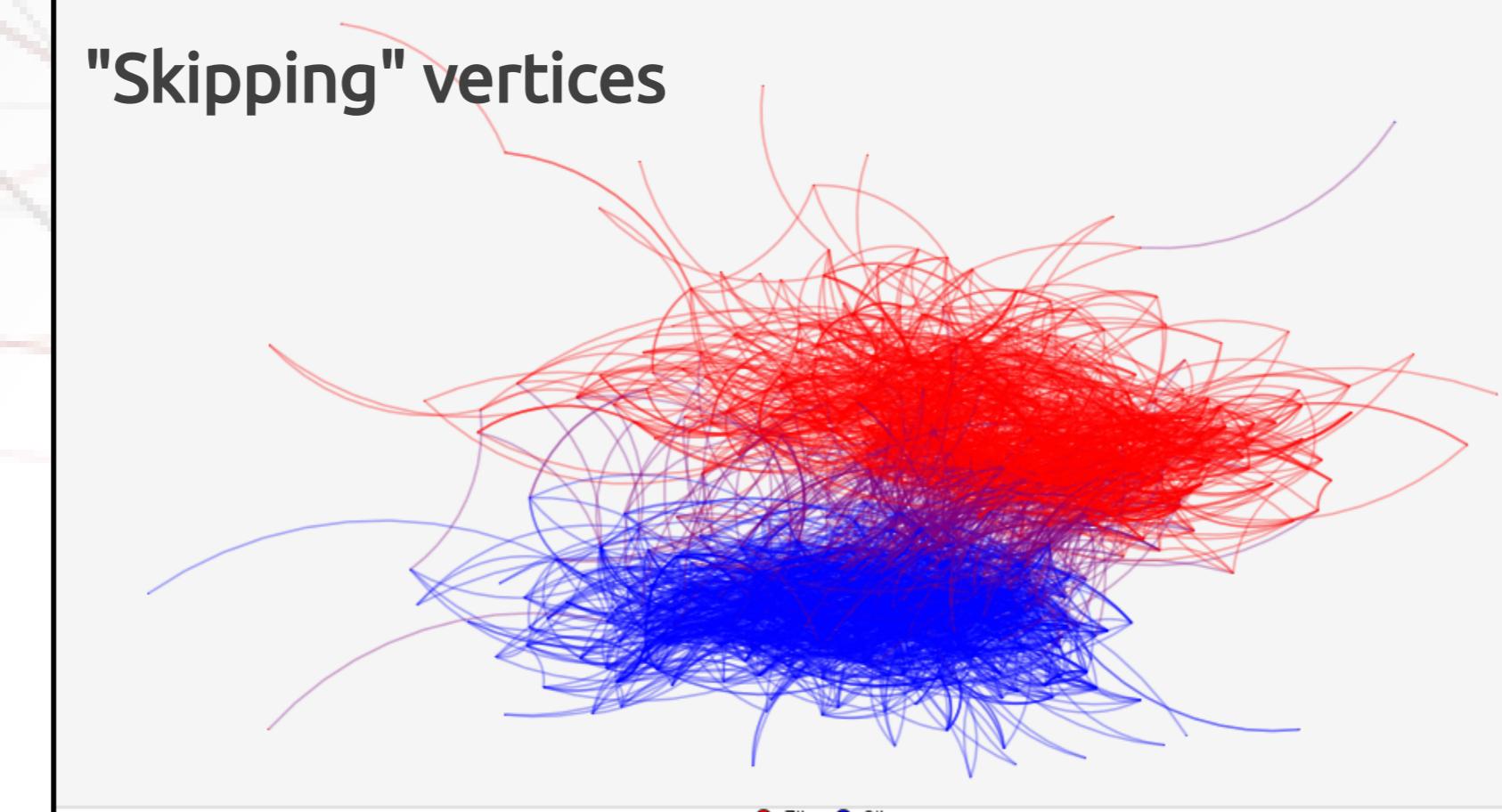
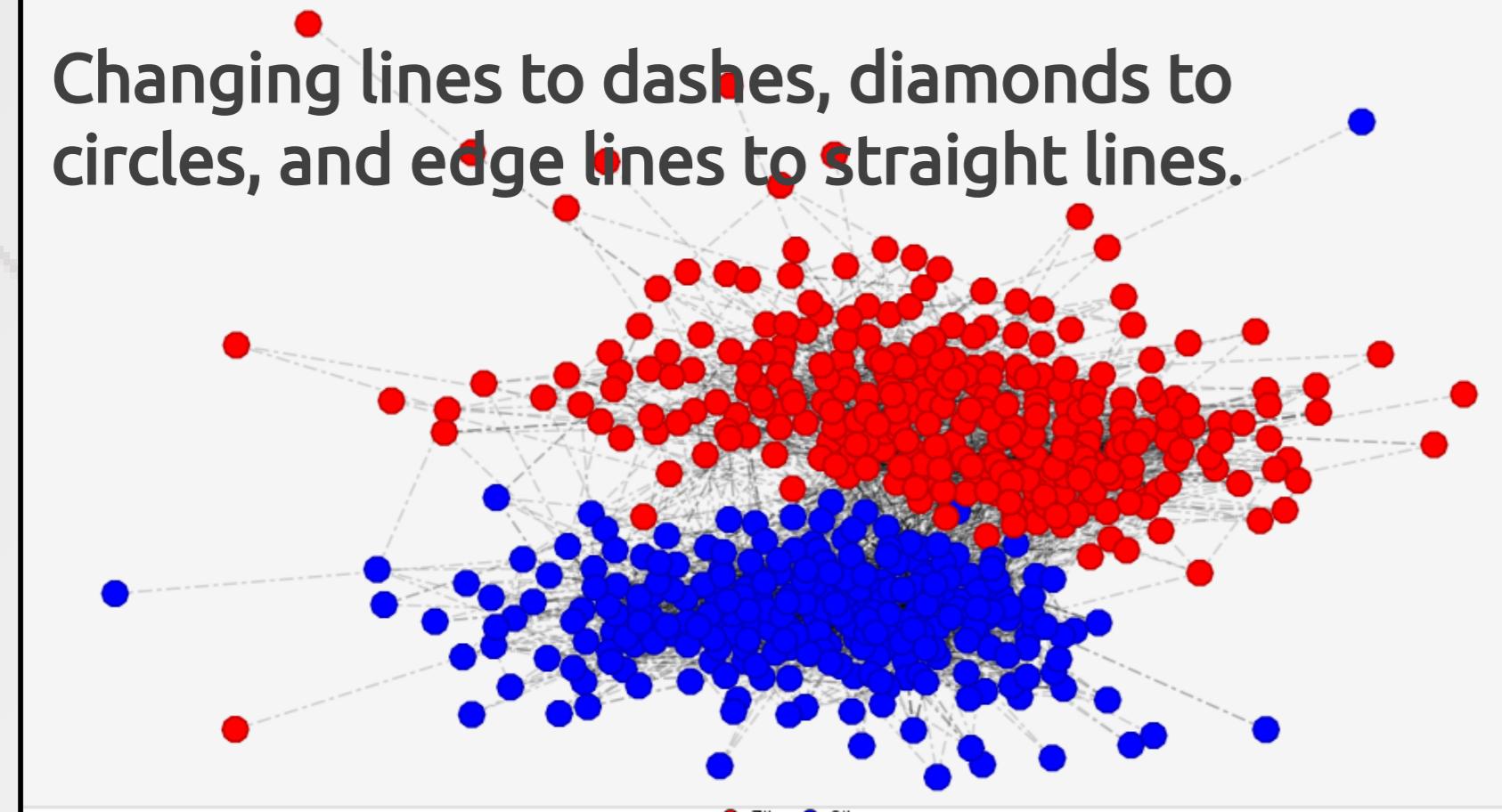
### Paper Writing

#### Network visualization in R using the netplot package

- *Connections* (ISSN 0226-1766)
  - International Network for Social Network Analysis (INSNA)
- Literature reviews
  - Graph visualization aspects
  - Layout algorithms
  - Other graphing options
  - Social network analysis
- Plots from SUNBELT Conference
  - How to use the package



### SUNBELT Poster



### About

