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SOCIOL 728

**Labs 3a and 3b Notes**

**Lab 3a**

* Already familiar with R and RStudio

**Lab 3b**

* igraph
  + create network from matrix: graph\_from\_adjacency\_matrix
  + map node attributes: set\_vertex\_attr
  + edgelist: sender/receiver, no isolates
  + create igraph using edgelist: graph\_from\_data\_frame
    - can add class attributes as vertices
  + can plot with plot(graph): good for identifying isolates
  + get attributes back out of igraph object: vertex\_attr
  + get edge attribute: edge\_attr
* network
  + create network: network(x, directed, vertex.attr)
  + adding attr one at a time: set.vertex.attribute
  + can also use edgelist to construct network by passing in edgelist for x
  + extract matrix: as.matrix
  + extract vertex attributes: get.vertex.attribute
  + check node order: get.vertex.attribute
  + adding edge attributes: set.edge.attribute
  + extract edge attr: get.edge.attribute
* intergraph: move between igraph and network
* key network measures
  + degree: outdegree (sent from), indegree (receive)
  + density: total num edges/total edges possible
  + walks: sequence of nodes and edges connecting i to j
  + paths: sequence of nodes and edges starting with one node and ending with another, can’t visit same node twice
  + closeness: inv distance (inf->0), 0 unreachable, 1 directly connected, includes unreachable nodes
  + reachability: i can reach j through any path, dist<inf
  + diameter: longest distance between any 2 nodes
    - take all shortest then calculate longest among that set
    - max distance of nodes that can reach each other