

# STAT 451 - Visualizing Data - Autumn 2025

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## Lab 8: Network data

### Load R packages

```
library(igraph)

## 
## Attaching package: 'igraph'

## The following objects are masked from 'package:stats':
## 
##     decompose, spectrum

## The following object is masked from 'package:base':
## 
##     union

library(tidyverse)

## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr     1.1.4      v readr     2.1.5
## vforcats    1.0.0      v stringr   1.5.1
## v ggplot2   3.5.2      v tibble    3.3.0
## v lubridate 1.9.4      v tidyr    1.3.1
## v purrr     1.1.0

## -- Conflicts ----- tidyverse_conflicts() --
## x lubridate::%--%()    masks igraph::%--%()
## x dplyr::as_data_frame() masks tibble::as_data_frame(), igraph::as_data_frame()
## x purrr::compose()     masks igraph::compose()
## x tidyrr::crossing()   masks igraph::crossing()
## x dplyr::filter()     masks stats::filter()
## x dplyr::lag()         masks stats::lag()
## x purrr::simplify()   masks igraph::simplify()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

### Load the data

Biggest US airports

```
airports <- c("ATL", "DFW", "DEN", "ORD", "LAX", "JFK", "LAS", "MCO", "MIA",
             "CLT", "SEA", "PHX", "EWR", "SFO", "IAH", "BOS", "FLL", "MSP",
             "LGA", "DTW")
```

Flights data set

```
flights <- read_csv("../data/routes.csv")

## Rows: 67663 Columns: 9
## -- Column specification -----
## Delimiter: ","
## chr (8): airline, airline ID, source airport, source airport id, destination...
## dbl (1): stops
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.

flights <- flights %>%
  filter(`source airport` %in% airports, `destination airport` %in% airports) %>%
  group_by(`source airport`, `destination airport`) %>% summarise(count=n())

## `summarise()` has grouped output by 'source airport'. You can override using
## the `.groups` argument.
```

Create a network using the airports and the number of flights from and to each airport as edges and vertices.

Make a plot of the network.