Data Visualization

Fall 2018

Imani Palmer

Github: https://github.com/inp2/Data-Viz-Fall2018

Classroom: https://classroom.github.com/classrooms/41658328-lis-590-data-visualization-fall-2018

Slack: datavizuiucfall2018.slack.com

Schedule

Week 1 (Aug 27th - Aug 31st): Introduction, syllabus, examples of visualization, and installation of packages (jupyter notebook, & python)

Week 2 (Sept 3rd - Sept 7th): Dealing with Data

Week 3 (Sept 10th - Sept 11th): Basic Principles of Data Visualization

Week 4 (Sept 17th - Sept 21st): Simple Plotting: Quantitative Plots

Week 5 (Sept 24th - Sept 28th): Binning Filtering, Smoothing, Multiplots, Histograms, & Distributions

Week 6 (Oct 1st - Oct 5th): Images: color theory, colormaps, generating visualizations of images and image-like quantities

Week 7 (Oct 8th - Oct 12th): Geospatial visualizations

Week 8 (Oct 15th - Oct 19th): Synthesizing multiple datasets

Week 9 (Oct 22nd - Oct 26th): Software ecosystem around visualization

Week 10 (Oct 29th - Nov 2nd): Network visualization

Week 11 (Nov 5th - Nov 9th): Statistical visualization

Week 12 (Nov 12th - Nov 16th): Interactive visualizations

Week 13 (Nov 19th - Nov 23rd): Thanksgiving Break

Week 14: (Nov 26th - Nov 30th): Advanced visualizations

Week 15: (Dec 4th - Dec 7th): Group presentations

Overview

1. What are the components of an effective visualization of quantitative data?
2. What tools and ecosystems are available for visualizing data?
3. What systems can be put in place to generate visualizations rapidly and with high-fidelity representation?

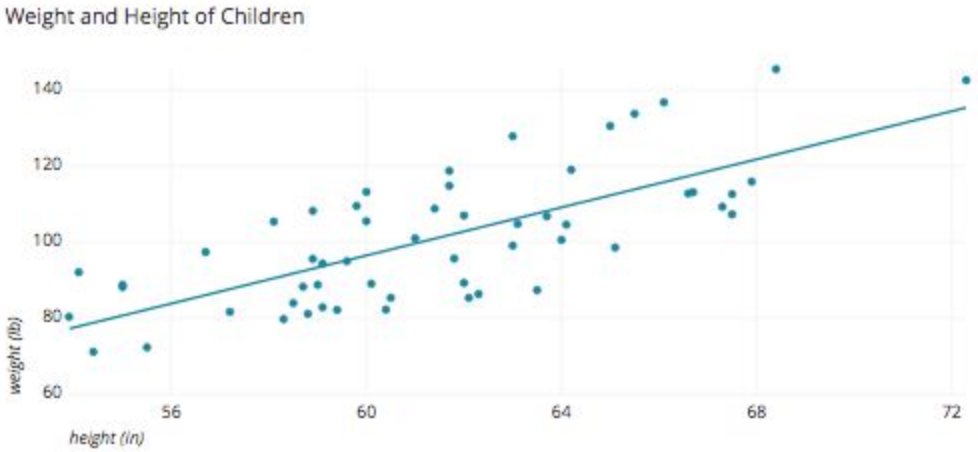
Overview

- Students will be able to communicate information and data through visual representation
- Students will be able to examine a visualization and understand how it can be improved upon
- Students will have facility with the commonplace tools used for visualization, and a deeper understanding of where those tools have shortcomings

Grading

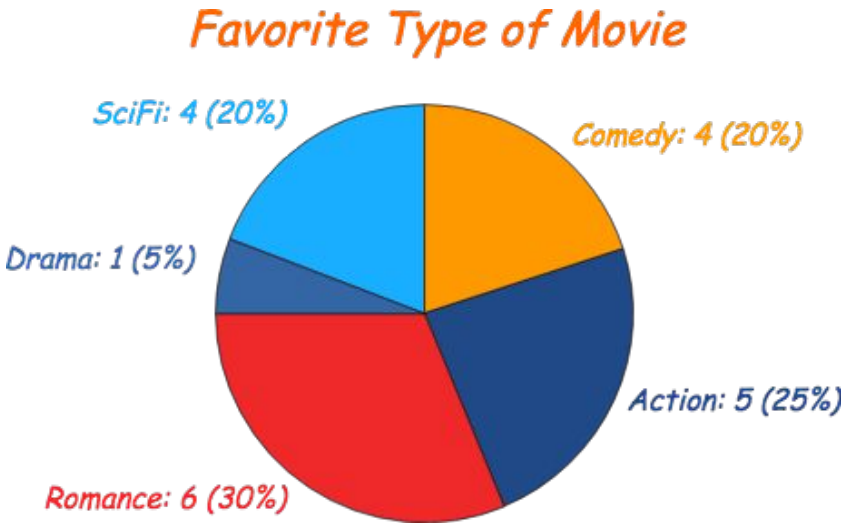
- Assignments worth 60%
- Final project worth 40%

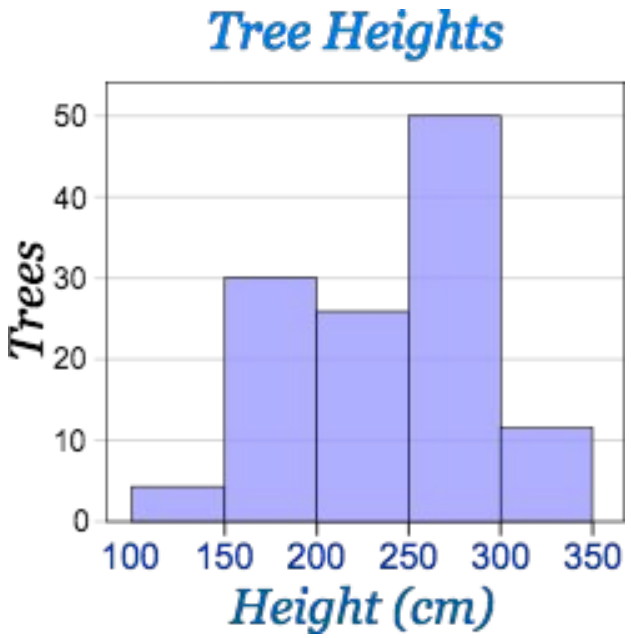
Visualizations



Scatter Plot

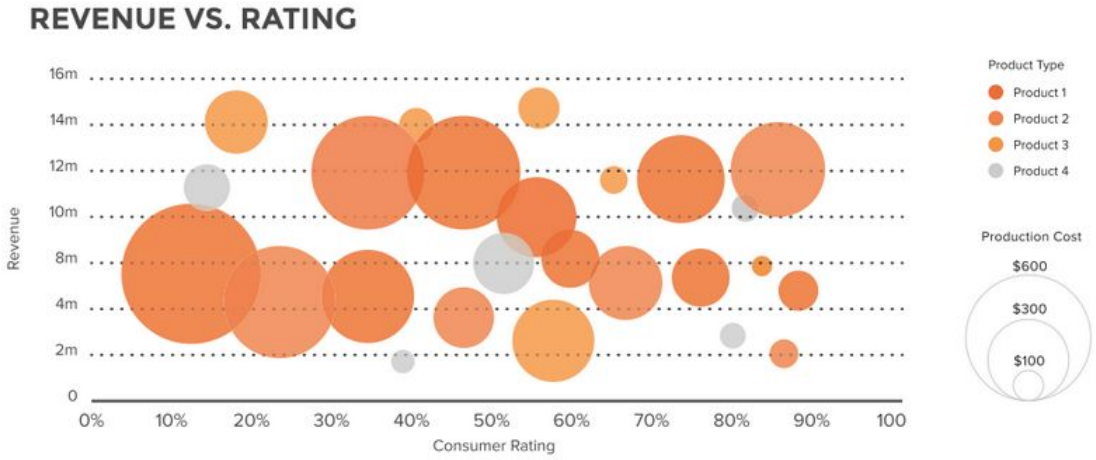
Pie Chart

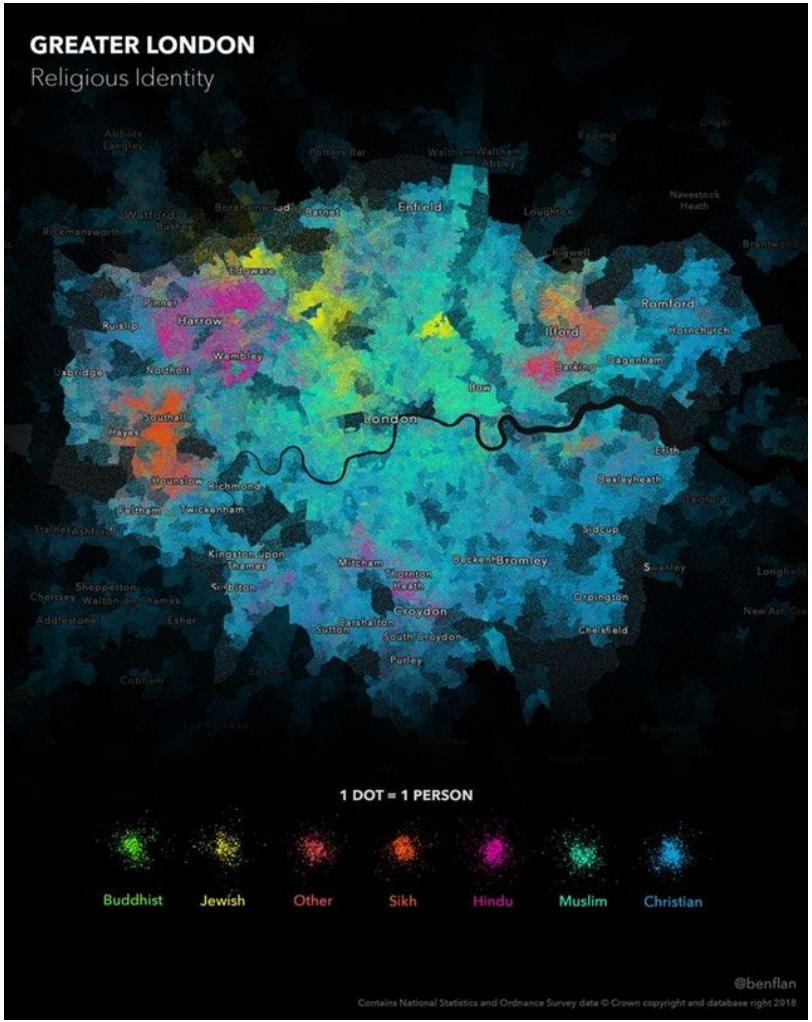


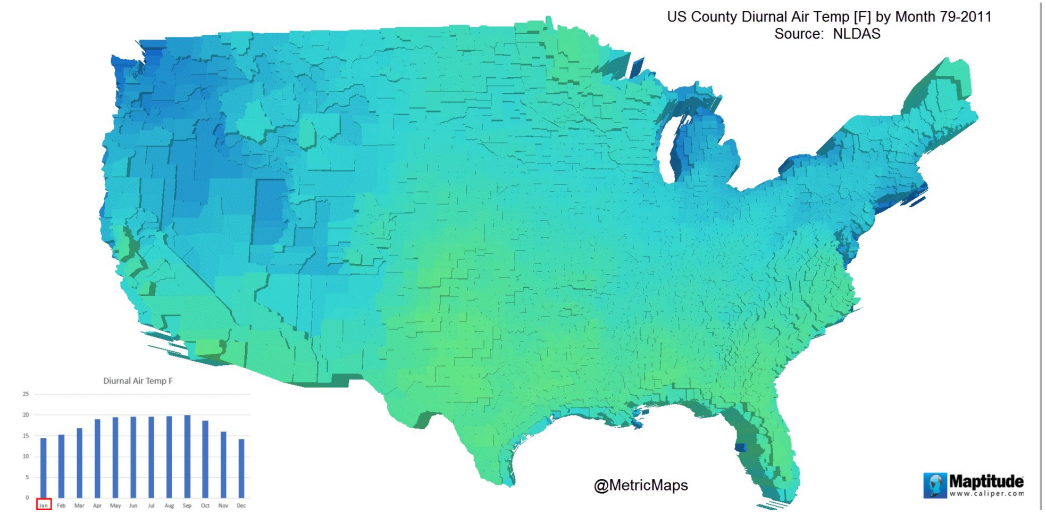


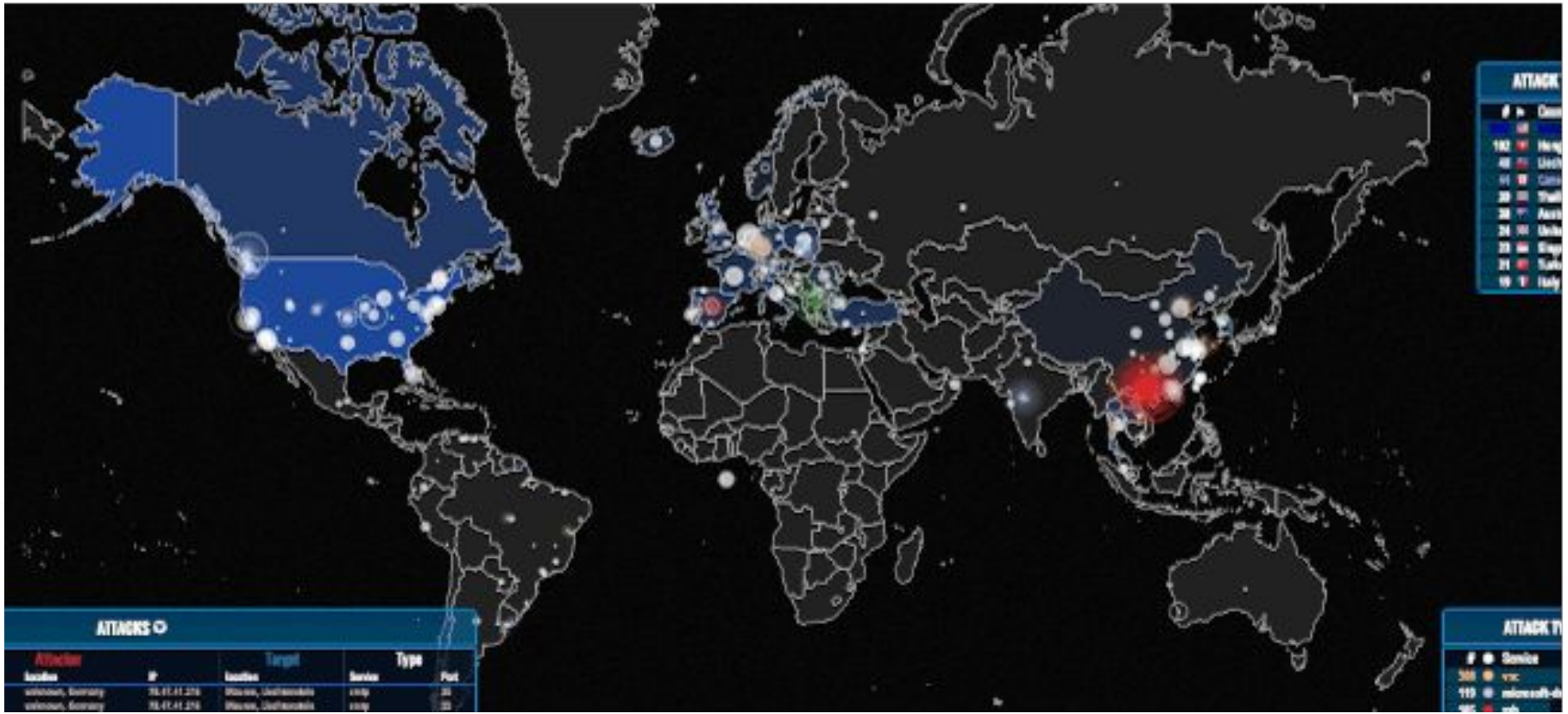
Histogram

Bubble Chart




GREATER LONDON
Religious Identity
1 DOT = 1 PERSON
Buddhist
Jewish
Other
Sikh
Hindu
Muslim
Christian
@benflan
Contains National Statistics and Ordnance Survey data © Crown copyright and database right 2018


US County Diurnal Air Temp [F] by Month 79-2011
Source: NLDAS
Diurnal Air Temp F
@MetricMaps
Maptitude


ATTACK
ATTACKS
Attacker
Target
Type
Location
IP
Location
Service
Port
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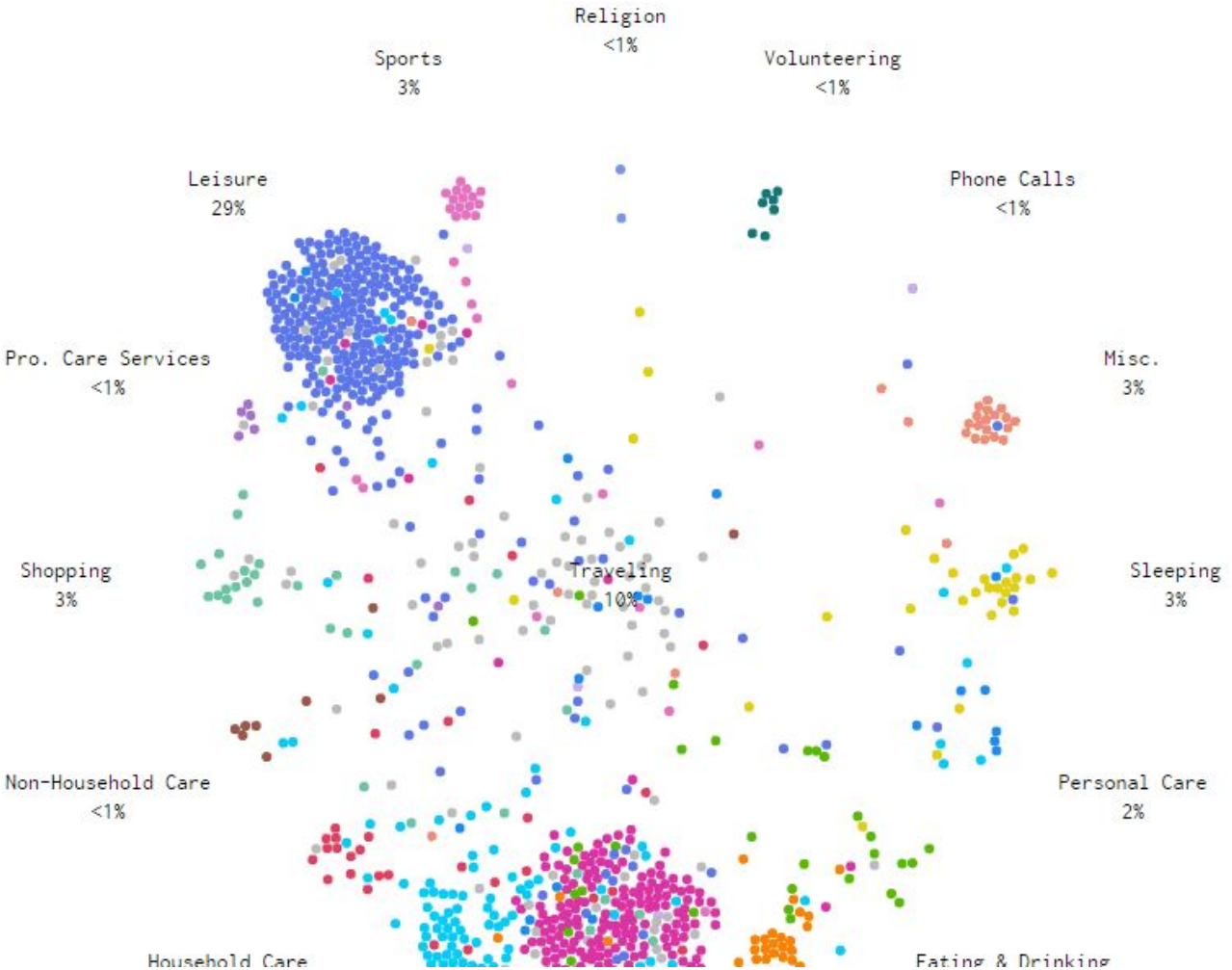
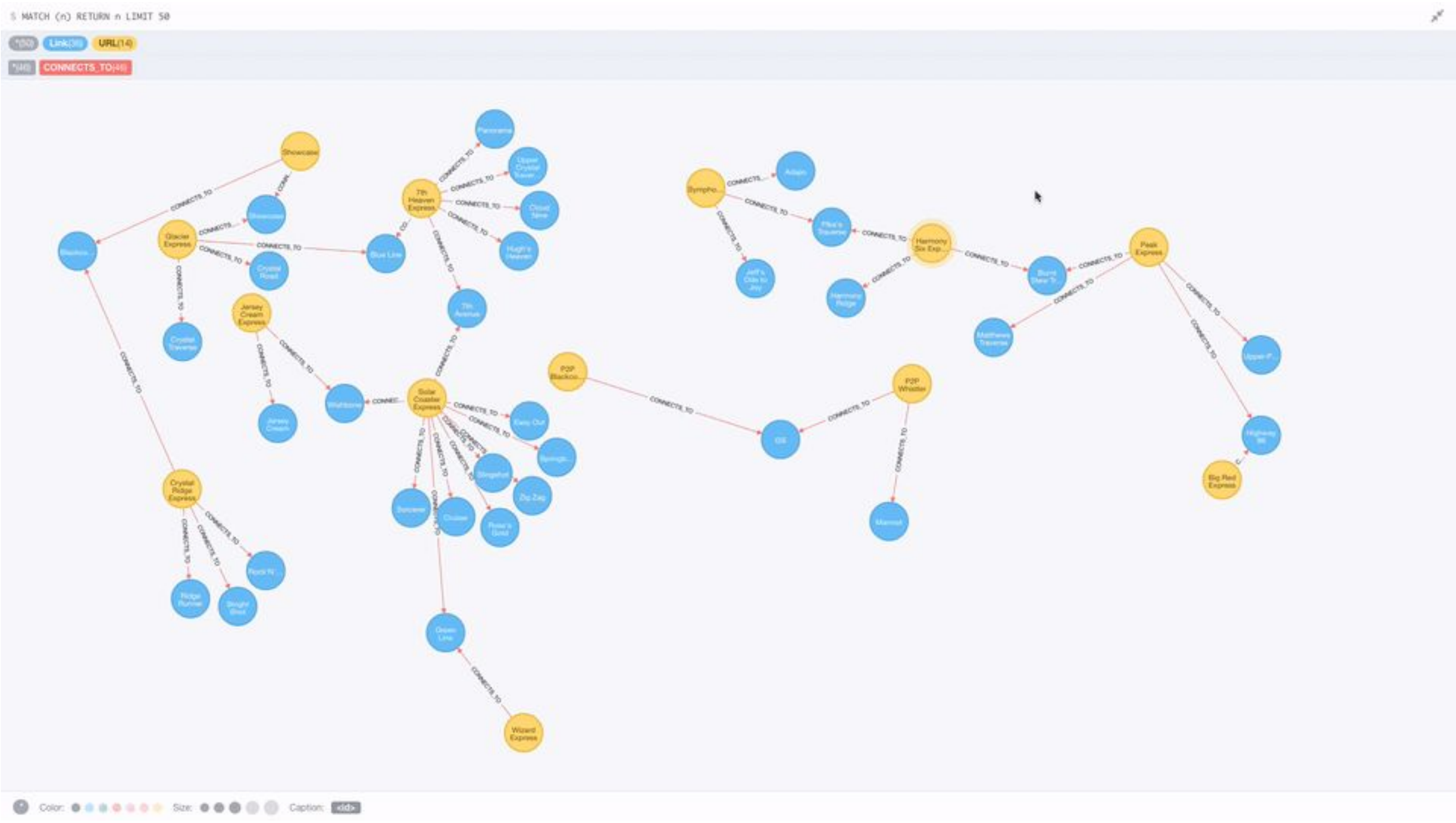
Service

3:36pm

SLOW | MEDIUM | FAST

Coffee break? Again, at the top of the hour, you see a shift in activity.





$ MATCH (n) RETURN n LIMIT 50
Link
URL
CONNECTS_TO
Showcase
Glacier Express
7th Heaven Express
Jersey Cream Express
Solar Coaster Express
Crystal Ridge Express
Wizard Express
P2P Blackco...
P2P Whistler
Sympho...
Harmony Six Exp...
Peak Express
Big Red Express
CONNECTS_TO
Color:
Size:
Caption:
<id>

Visualize Data Jeopardy

Introduction to Github & Github Classroom

- Github Classroom:
  - https://classroom.github.com/classrooms/41658328-lis-590-data-visualization-fall-2018
- Signing up for Github Classroom
  - Sign up for a Github account if you do not already have one
- Tutorial for those new to github
  - https://guides.github.com/activities/hello-world/

Introduction to Python and/or R

- Install Python and/or R
- Tutorials
  - https://www.codecademy.com/learn/learn-python
  - https://onlinecourses.science.psu.edu/statprogram/tutorials/statistical-software/r
- Write your first program using python and/or R

Homework Assignment 0

- Submit a computer program (any program) to Github Classroom
  - Due date on Github Classroom