Information Visualization

Intro, *Time Series Exercise*

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http://www.cs.ubc.ca/~tmm/courses/547-20

Welcome!

This week

- async read
  - VAD Chapter 1
  - Course Logistics
- async discuss
  - self-intros (light load this week)
- sync (now!)
  - logistics Q&A
  - scholar strike, in brief
  - time series exercise
    - small groups via zoom breakout
    - technology pilot, first time for online version of class!

Course Logistics Q&A

Scholar Strike

Scholar Strike

- speaking out
  - against police brutality
  - in support of Black Lives Matter
- inclusion, diversity, equity, & ethics
  - in this course
    - respectful and inclusive learning setting
  - in field of visualization
    - diversity and inclusion for participation within field
    - visualization as mechanism to inform and promote change
    - ethics of data use

Readings and resources

- Data Visualization Society & Nightingale Journal
  - Resources, including Data Sources for Analysis of Racial Bias
    https://www.datavisualizationsociety.com/resources
  - 6-part article series on pioneering work of W.E.B. duBois
    https://medium.com/nightingale/w-e-b-du-bois-staggering-data-visualizations-are-as-powerful-today-as-they-were-in-1900-64752c472ae4
- Data Feminism book
  - data science and data ethics, informed by intersectional feminism
  - https://datafeminism.io/
- Designing for People initiative (dfp.ubc.ca) events (videos coming soon)
  - ethics in tech & data use seminar yesterday
    https://dfp.ubc.ca/news-and-events/events/three-lessons-towards-ethical-tech-research-ethics-ethics-education-and
  - two EDI workshops https://dfp.ubc.ca/news-and-events/events/edi-workshop

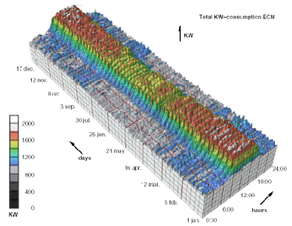
Exercise: Time Series

Now: In-class design exercise, in small groups

- Five time-series scenarios
  - 1: every 5 min, duration 1 year, 1 thing: building occupancy rates
  - 2: every 5 min, 1 year, 2 things: currency values (2 exchange rate)
  - 3: several years and several things: every 5 min, 5 years, 10 currencies
  - 4: many things: every 5 min, 1 year, CPU load across 1000 machines
  - 5: several parameters, many things: every 5 min, 1 year, 10 params on 1000 machines
- Small-group exercise: 20-25 min
  - one group per Zoom breakout (4 people/group)
  - brainstorm possible visual encodings & interactions for your assigned scenario
  - document in your group's googledoc w/ text & sketch images
- Reportback: 30-40 min
  - flip through googledocs, sometimes questions for group spokesperson
- Design space examples/discussion: 15-20 min

Case 1: 3D Approach (Not Recommended)

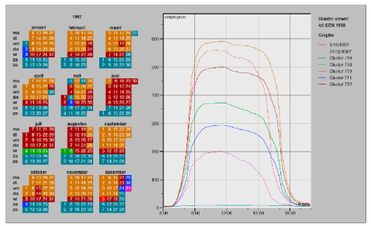
- extruded curves: detailed comparisons impossible



[Cluster and Calendar based Visualization of Time Series Data. van Wijk and van Selow, Proc. InfoVis 99.]

Case 1: Cluster-Calendar Solution

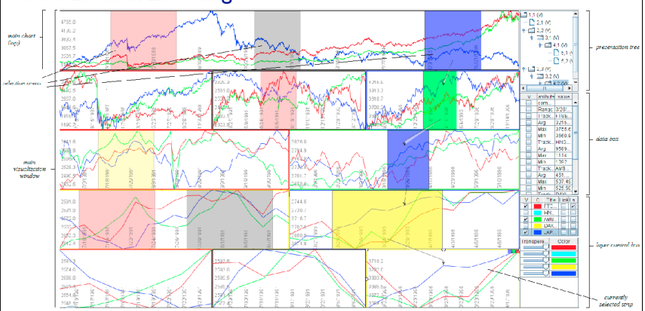
- derived data: cluster hierarchy
- juxtapose multiple views: calendar, superimposed 2D curves



[Cluster and Calendar based Visualization of Time Series Data. van Wijk and van Selow, Proc. InfoVis 99.]

Case 2: Stack Zooming

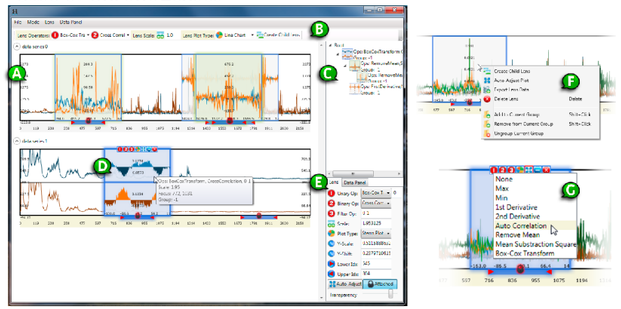
https://youtu.be/dK0De4XPm5Y



[Stack Zooming for Multi-Focus Interaction in Time-Series Data Visualization. Javed and Elmqvist. Proc PacificVis 2010, p 33-40.]

Case 3: ChronoLenses

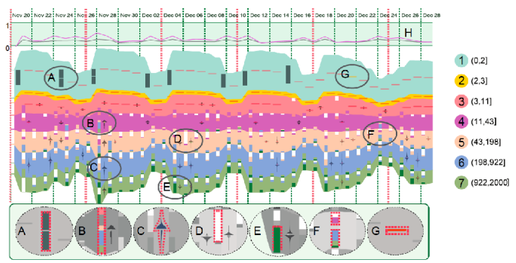
https://youtu.be/k7pl8ikczqk



[Exploratory Analysis of Time-Series with ChronoLenses. Zhao, Chevalier, Pietriga, and Balakrishnan. IEEE TVCG 17(12):2422-2431 (Proc. InfoVis 2011).]

Case 4: RankExplorer

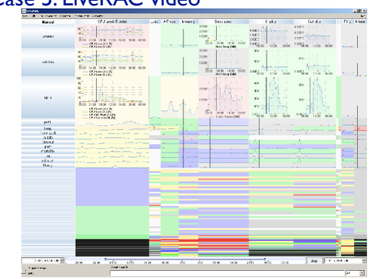
https://youtu.be/rdgn1qcZ2A4



[RankExplorer: Visualization of Ranking Changes in Large Time Series Data. Shi, Cui, Liu, Xu, Chen and Qu. IEEE TVCG 12(18):2669-2678 (Proc. InfoVis 2012)]

Case 5: LiveRAC video

http://youtu.be/ld0c3H0VSkw



[LiveRAC - Interactive Visual Exploration of System Management Time-Series Data. McLachlan, Munzner, Koutsofios, and North. Proc. Conf. on Human Factors in Computing Systems (CHI) 2008, pp 1483-1492.]

Next Time

- to read
  - VAD book, Ch 2: What: Data Abstraction
  - VAD book, Ch 3: Why: Task Abstraction
  - paper: Nested Model