What to Expect When You Are Learning Data Visualization

A Textual Analysis of Course Syllabi

IEEE ProComm 2020
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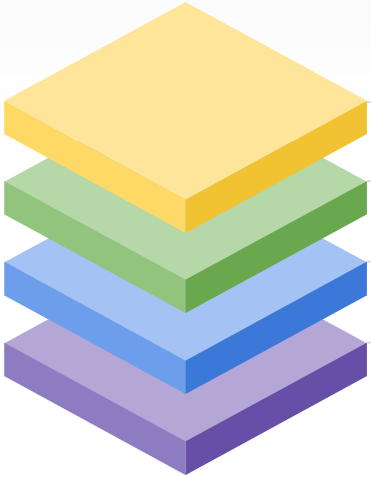
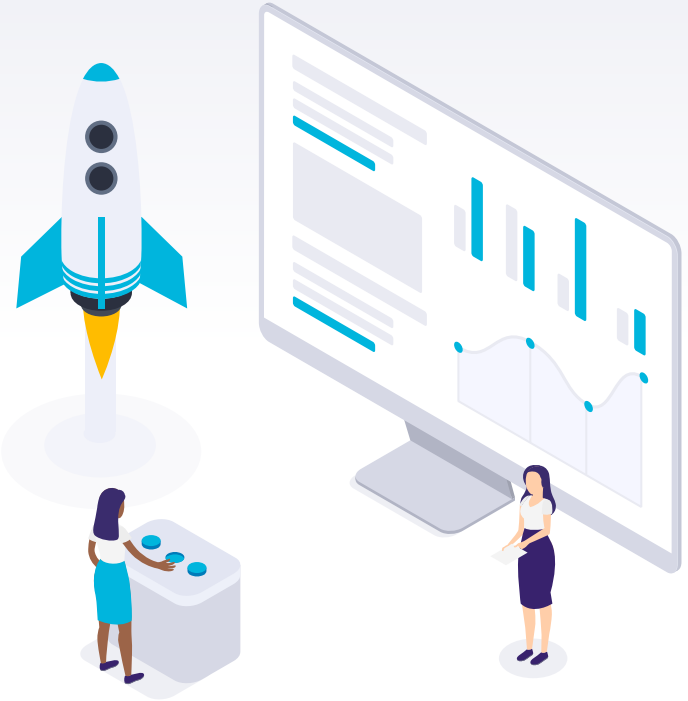
Outline

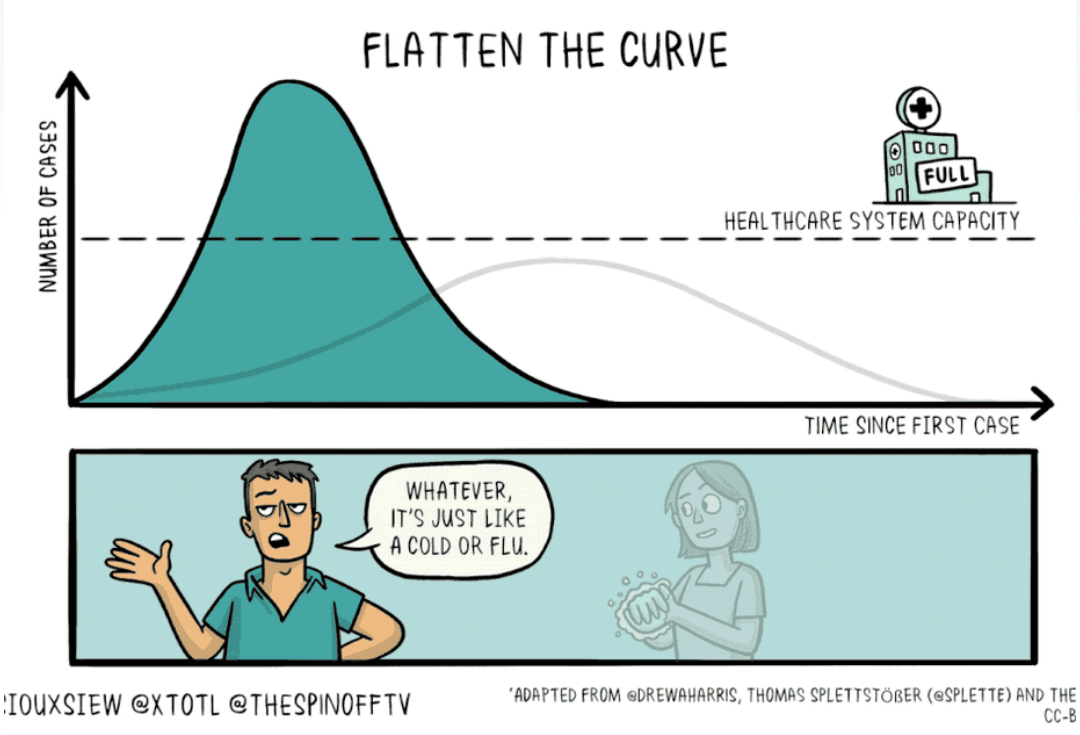


- Why do I study DataViz syllabi?
- How do I collect data for analysis?
- What are the focuses of DataViz courses?
- What are the implications?

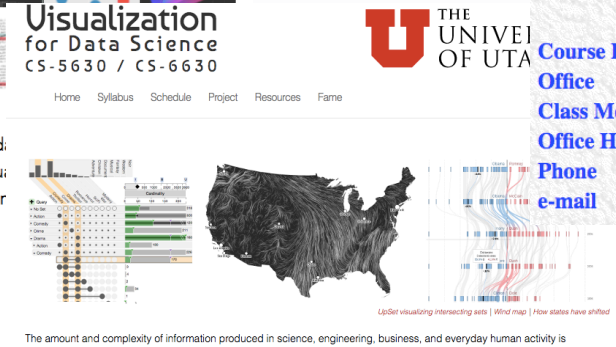
1 Background

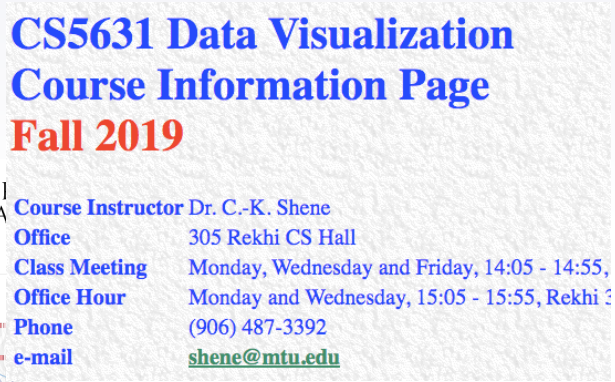


Increased use of DataViz



DataViz courses in HigherEd



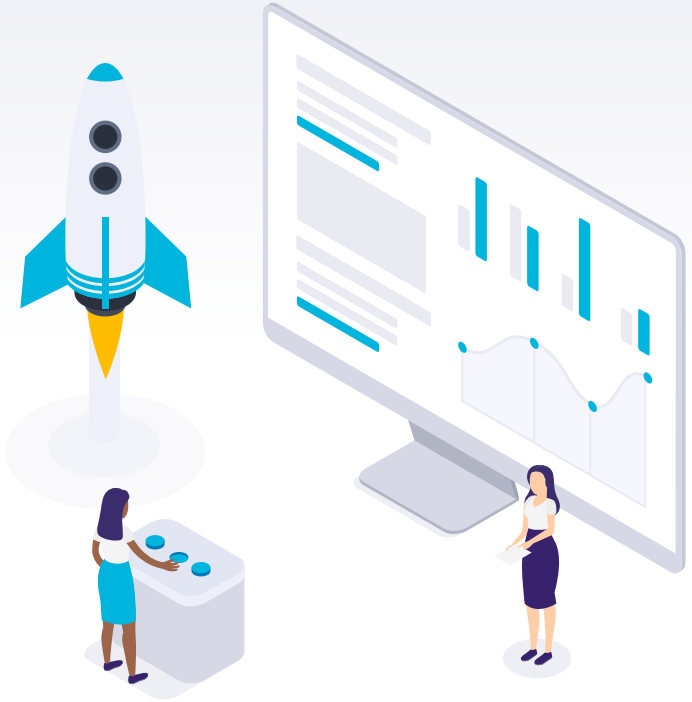


- Research gap: less effort has been made to investigate the current pedagogical practices; course syllabi as a stable genre

Research questions

- What are the concentrations of data visualization courses?
- What are the limitations of current pedagogical approaches to data visualization?

2 Method



Data collection

- **Data**: introductory DataViz course syllabi (N = 20)
- **Source**: course websites
- **Level**: graduate
- **Time**: Spring 2015 to Winter 2020
- **Location**: U.S.
- **Disciplinary distribution**: 90% in STEM

Data analysis

Corpus #1

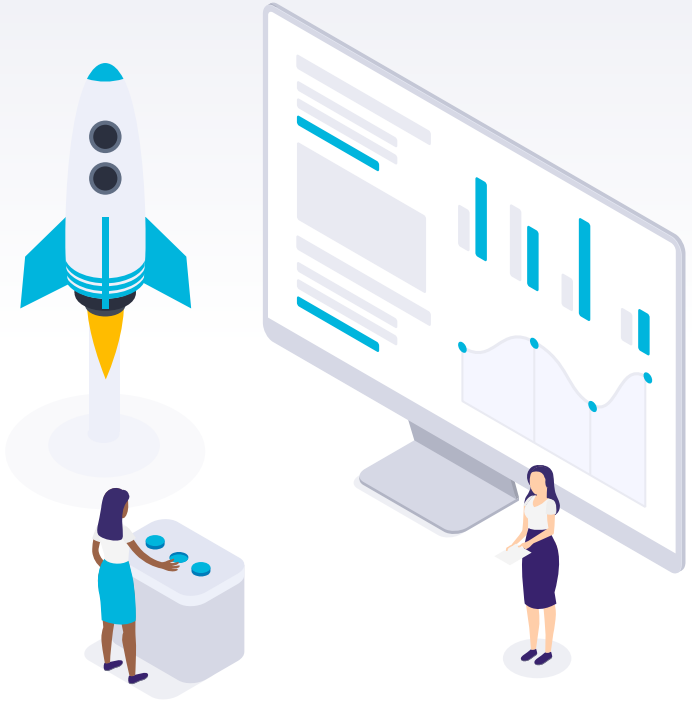
- Course descriptions & student learning outcomes
- Tool: AntConc
  - Word list
  - Collocation of “visualization”

Corpus #2

- Weekly topics
- Iterative reading and categorization

3

Results



Results from corpus #1

Top 10 most frequent words

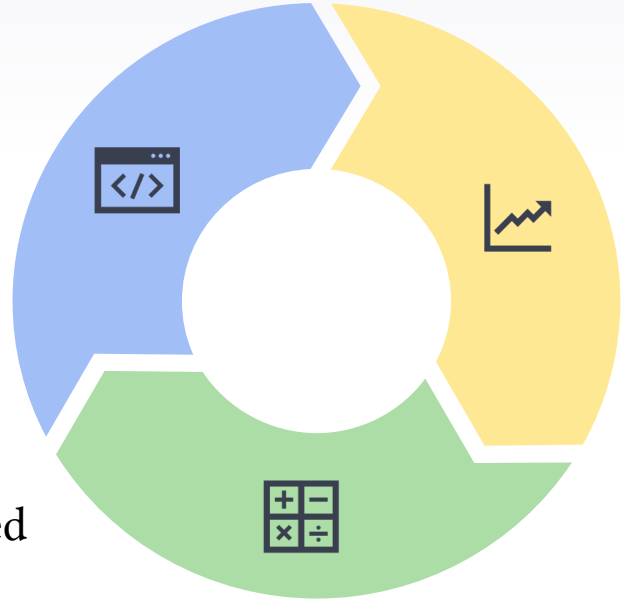
- design (n=35)
- techniques (n=29)
- effective (n=27)
- principles (n=21)
- analysis (n=19)
- understand (n=16)
- create (n=15)
- interactive (n=15)
- tools (n=14)
- methods (n=13)

Top 10 collocates of “visualization”

- systems
- evaluate
- methods
- information
- understand
- tools
- techniques
- design
- how
- effective

Results from corpus #2

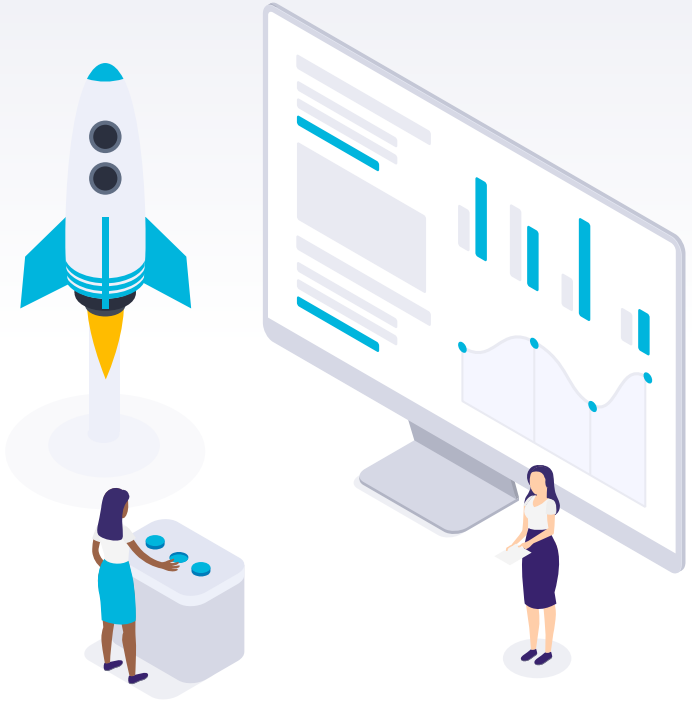
Tools/programming languages



Types of visualizations

Methods/skills involved in processing data

4 Discussion



DataViz Courses

- Focus on hands-on experience in visualization production
- Rarely devote time to the *context*, *ethics*, and *soft skills* involved in the process

How can TPC illuminate DataViz instruction?

- Humanistic rationale
- Human-centered design
- Context awareness
- Ethics

> The factors in visualization consumption and production processes that affect engagement [...] include factors which extend beyond textual and technical matters, such as class, gender, race, age, location, political outlook, and education of audience members.

(Kennedy & Engebretsen, *Data Visualization in Society*, 2020, p.25)

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THANKS!

Any questions?

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