

INF385T

THURSDAYS, 3-6 PM

ANDREA CATO

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include course # in subject

office hours by appt

UTA 6.430

UTA 1.210A

Computer Lab Teaching Room

Unique #27274

DATA STORYTELLING

WHO NEEDS TO TELL STORIES WITH DATA?

Data storytelling is more than sharing data—at its most simple, it's about designing charts and tables that make sense to the people who will be using them and help those people make better, faster decisions.

While making a chart is as easy as a few clicks, doing it well requires much more. There is a science to how our eyes and minds process information as well as an art to making good graphic design choices. This comes together in an effective data presentation when the work is readable, usable, and above all actionable—not just aesthetically pleasing (though we'll certainly address that too).

As information professionals, we are well-positioned to understand and design for the needs of our users, to interrogate our data sources thoughtfully, and to ask future-thinking questions. This course will also draw on elements from data journalism, cognitive psychology, user experience, graphic design, business, and more. This multidisciplinary approach will take us on a grand tour that will touch on many aspects of data analysis and will serve as an excellent introduction to other data-oriented courses in the iSchool master's program.

Why should you take this course? Whether you're interested in a career in libraries, archives, UX, information architecture, information security, or another field, you will need to analyze data and tell stories with data. You might have ticketing data to share, usage logs to query, or collection management decisions to make. Throughout your career, you will make recommendations to your colleagues and management using data, and you will want to present a compelling case. Whether or not this is the only data-centric class you take in your time at the iSchool, I hope you will gain skills that will serve you well in the rest of your professional career.

There are no prerequisites for this course other than curiosity, the ability to work independently, and the desire to build your professional toolkit. No programming experience is required. If you are a relative novice with data analysis and visualization, that's perfect! If you're experienced with data viz best practices but eager to build your expertise in communicating better, that works too, but I encourage you to suggest modifications for assignments so they can be appropriately challenging for your skill level. *Allons-y!*

LEARNING OBJECTIVES

- Effectively do exploratory and explanatory data analysis
- Craft thoughtfully selected tables and charts that illuminate the data
- Design an enlightening, interactive dashboard
- Implement core concepts of usability and accessibility
- Apply the basics of clean layout and design
- Express creative thinking by producing an innovative data representation
- Learn the basics of working with clients in a professional setting
- Build foundational skills for presenting to an audience
- Work with various data analysis and visualization tools (specifically Excel and Tableau) and pick the best tool for the job
- Explore foundational and new theory behind data storytelling and visualization, and then implement these as best practices

COURSE MATERIALS

Hardware and software

We're meeting in the computer lab, so you'll have access to the desktop machines and the software required for the course. If you would prefer to bring your own laptop, some of the software packages we will use are freely (or cheaply) available for students. Please note that all software may not work well in Macs, so you may still need the desktop machines.

Please note that the computer lab permits no food or drinks other than water in spill-proof containers.

Optional book to purchase

This is an introductory graphic design book that will be helpful for design concepts and revising your work. Used copies are fine.

(optional) Williams, R. (2015). *The Non-Designer's Design Book*, Fourth Edition. San Francisco, CA: Peachpit Press. ~\$35

Books provided for you

Available through links on Canvas and through UT Libraries. See the course schedule for a full list of readings.

Knaflic, C. N. (2015). *Storytelling with data: a data visualization guide for business professionals*. Hoboken, NJ: Wiley. Retrieved from <https://catalog.lib.utexas.edu/record=b9177455~S4>

Schwabish, J. (2017). *Better presentations: a guide for scholars, researchers, and wonks*. New York, NY: Columbia

University Press. Retrieved from <https://catalog.lib.utexas.edu/record=b9378068~S4>

Tufte, E. R. (2001). *The visual display of quantitative information, 2nd edition*. Cheshire, CT: Graphics Press.

Wexler, S. et al. (2017). *Big book of dashboards*. Hoboken, NJ: Wiley. Retrieved from <https://catalog.lib.utexas.edu/record=b9385047~S4>

Yau, N. (2013). *Data points: visualization that means something*. Hoboken, NJ: Wiley. Retrieved from <https://catalog.lib.utexas.edu/record=b8271254~S4>

COURSE ASSIGNMENTS

Brief descriptions of course assignments appear below. More details will be provided in class and on Canvas.

Discussion questions (10% of final grade): prior to each class, post 3 thought-provoking questions on Canvas about the upcoming class's readings. These questions should be designed to encourage discussion. These are due at 10 AM the day of class. A thread for each class's questions is available on Canvas.

Excel and Tableau assignments (30% of final grade): a series of short analytical assignments designed to complement and reinforce the hands-on work done in class. Specifics will be available for each assignment.

Visualization blog posts (5% of final grade): write a post on Canvas about a data presentation you encountered (350ish words). Address what data are being shown, who you think the audience is, the goals of the data presentation, and why/why not the data presentation is effective.

Data diary (10% of final grade): research and gather data about yourself on a topic of your choice and keep a data diary for a week. Examples include the music you listen to, your phone app use, how much time you spend on coursework, how much media you consume and what kinds, etc.

The Moth story exercise (5% of final grade): complete a short assignment to explore good storytelling from The Moth.

Summary of data project (5% of final grade): post a summary of your data project on Canvas (~300 words) that addresses what the data say and why you want to tell this story.

Short speech (5% of final grade): give a short verbal presentation (3-5 minutes) to the class on a topic of your choice.

ABOUT ASSIGNMENTS

- Unless otherwise specified, turn in assignments through Canvas.
- There will be no group projects. You'll do plenty of these at the iSchool, and I want everyone to have a chance to develop all of the skills in the course.
- While these assignments will solely represent your individual effort, I encourage you to see the advice and feedback of your peers.
- I am available in class and for appointments to offer feedback but will not provide feedback on draft items sent by email.
- Previously submitted assignments cannot be resubmitted with edits and corrections for a higher grade.
- Late assignments will be docked a third of a letter grade for each late day (A+ becomes an A, B becomes B-, etc.)

#makeovermonday dashboard (5% of final grade): create a Tableau dashboard based on #makeovermonday, publish to Tableau Public, and share a link to your Tableau Public dashboard via Canvas. Dashboards will be graded based on alignment to best visualization principles discussed in class.

Data project deliverables and presentation (25% of final grade): submission of your final data visualization project and associated documentation along with a presentation to the class. Your formal written feedback on a peer's draft will also be included in your grade.

CREDIT

This course and all its trappings owe a substantial debt to Dr. Diane Bailey. Dr. Bailey formulated Presenting Information, this course's predecessor.

COURSE POLICIES

Be excellent to each other: Treat others as you would like to be treated. Give presenters and your classmates your full attention. Be courteous and thoughtful with your feedback. Limit computer/phone use to course-related activities.

Steal like an artist but cite your sources: To be clear, this is not an endorsement of plagiarism but instead acknowledgement that that it is a rare thing for a work to be truly original—we're often inspired by the creations of others. If your work draws from someone else's work in any way, cite it.

Communicating with me: Email is the most reliable way to reach me. Please include the course number (INF385T) in the subject line. Allow a 24-hour window for responses.

Attendance: While I will not take attendance, please be aware that a substantial portion of course content includes hands-on labs and activities. As a result, missing classes can impact your performance. It's your responsibility to look on Canvas and/or check in with your classmates for notes and assignments you missed.

Preferred names and pronouns: I will gladly address you by your preferred name and pronouns. Please let me know early in the semester so I can make changes to my records.

UNIVERSITY POLICIES

Religious holy days: A student who misses classes or other required activities, including examinations, for the observance of a religious holy day should inform the instructor as far in advance of the absence as possible, so that arrangements can be made to complete an assignment within a reasonable time after the absence.

Students with disabilities: Please notify your instructor of any modification/adaptation you may require to accommodate a disability-related need. You may find out more information on the Services for Students with Disabilities website: <http://diversity.utexas.edu/disability/> and/or <http://diversity.utexas.edu/disability/how-to-register-with-ssd/>

Policy on scholastic dishonesty: Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. For further information, please visit the Office of Student Conduct and Academic Integrity website at <http://deanofstudents.utexas.edu/conduct/>.

Use of e-mail for official correspondence to students: All students should be familiar with the University's official e-mail student notification policy. It is the student's responsibility to keep the University informed as to changes in his or her e-mail address. Students are expected to check e-mail on a frequent and regular basis in order to stay current with University-related communications, recognizing that certain communications may be time-critical. The complete text of this policy and instructions for updating your e-mail address are available at <http://www.utexas.edu/its/policies/emailnotify.html>.

University of Texas honor code: "As A Student Of The University Of Texas At Austin, I Shall Abide By The Core Values Of The University And Uphold Academic Integrity."

TENTATIVE COURSE SCHEDULE

Class # Date	Topic	Guiding question	Readings and other work to be done before class	Due
1 8/29	Intro	What is data visualization, and how do our eyes and mind work together to perceive information?	<p>Meeks, E. (2018). What charts do. Retrieved from https://medium.com/nightingale/what-charts-do-48ed96f70a74?</p> <p>Healey, C. & Enns, J. (2012). Attention and visual memory in visualization and computer graphics. <i>IEEE transactions on visualization and computer graphics</i> 18:7. Retrieved from https://www.csc2.ncsu.edu/faculty/healey/download/tvcg.12a.pdf</p>	
2 9/5	Exploratory analysis	How do we approach an unfamiliar dataset?	<p>Yau, N. (2013). Chapter 1: understanding data. <i>Data points: visualization that means something</i>. Hoboken, NJ.</p> <p>Tufte, E. R. (2001). Graphical excellence. <i>The Visual display of quantitative information</i>. Cheshire, CT: Graphics Press, 13-51.</p> <p>Broman, K.W. & Woo, K.H. (2017). Data organization in spreadsheets. <i>The American statistician</i> 72. doi: 10.1080/00031305.2017.1375989</p> <p>Start thinking about your data diary</p>	Visualization blog post #1
3 9/12	Audience and context	Who are we designing for?	<p>Read Knaflic, C. (2015). Chapter 1: the importance of context. <i>Storytelling with data</i>. Hoboken, NJ: Wiley.</p> <p>Makulec, A. (2018). Heritage -> health. <i>2018 Tapestry PechaKucha</i>. Retrieved from https://www.youtube.com/watch?v=-aAhzgBjQX0</p> <p>Tufte, E. R. (2001). Sources of graphical integrity and sophistication. <i>The Visual display of quantitative information</i>. Cheshire, CT: Graphics Press, 79-90.</p> <p>Peck, E., Ayuso, S.E., & El-Etr, O. (2019). Data is personal: attitudes and perceptions of data visualization in rural Pennsylvania. <i>Proceedings of the 2019 CHI conference on human factors in computing systems</i>. doi: 10.1145/3290605.3300474</p>	Visualization blog post #2 Excel exercise #1
4 9/19	Ethics, cognitive bias, and	How do we choose a good chart type?	<p>Read Cairo, A. (2014). "Ethical infographics." Retrieved from http://www.thefunctionalart.com/2014/06/infographics-data-and-visualization.html</p>	Data diary

Class # Date	Topic	Guiding question	Readings and other work to be done before class	Due
	objectivity of data analysis and visualization	Are data sets objective? How can people lie (intentionally or not) with data? How can we be honest communicators?	<p>D'Ignazio, C. (2015). What would feminist data visualization look like? Retrieved from https://civic.mit.edu/2015/12/01/feminist-data-visualization/</p> <p>Kong, H., Liu, Z., & Karahalios, K. Frames and slants in titles of visualizations on controversial topics. <i>Proceedings of the 2018 CHI conference on human factors in computing systems</i>. doi: 10.1145/3173574.3174012</p> <p>Chalabi, M. (2017). "Making sense of too much data." Retrieved from https://www.ted.com/talks/mona_chalabi_3_ways_to_spot_a_bad_statistic?referrer=playlist-making_sense_of_too_much_data</p>	
5 9/26	Charts	How do we choose a good chart type?	<p>Read Knaflic, C. (2015). Chapter 2: choosing an effective visual. <i>Storytelling with data</i>. Hoboken, NJ: Wiley.</p> <p>Cleveland, W., & McGill, R. (1984). Graphical Perception: Theory, Experimentation, and Application to the Development of Graphical Methods. <i>Journal of the American Statistical Association</i>, 79(387), 531-554. doi:10.2307/2288400</p> <p>Kosara, R. (2016). An illustrated tour of the pie chart study results. Retrieved from https://eagereyes.org/blog/2016/an-illustrated-tour-of-the-pie-chart-study-results</p> <p>Start thinking about data sources for your project.</p>	Excel exercise #2
6 10/3	Explanatory analysis	How do I turn data into a story?	<p>Read Knaflic, C. (2015). Chapter 4: focus your audience's attention. <i>Storytelling with data</i>. Hoboken, NJ: Wiley.</p> <p>Callahan, S. (2016). The role of stories in data storytelling. Retrieved from http://www.anecdote.com/2016/08/stories-data-storytelling/</p> <p>Andrews, R.J. (2019). Chapter 17: Imagination to image & Chapter 18: focus attention. <i>Info we trust</i>. Hoboken, NJ: Wiley.</p>	Excel exercise #3 The Moth story exercise

Class # Date	Topic	Guiding question	Readings and other work to be done before class	Due
			<p>Gastineau, D. (2019). How to use storytelling conventions to create better visualizations. Nightingale. Retrieved from https://medium.com/nightingale/how-to-use-storytelling-conventions-to-create-better-visualizations-45177ae517ba</p> <p>Investigate supplemental data sources for your project</p>	
7 10/10	Presenting and doing it well	How do I plan a talk to deliver information well?	Schwabish, J. (2017). Chapter 1: designing your presentation, Chapter 4: the text slide, Chapter 6: the image slide, Chapter 7: the scaffolding slides, Chapter 8: presenting, Chapter 9: technical nitty-gritty. <i>Better presentations: a guide for scholars, researchers, and works</i> . New York, NY: Columbia University Press.	Tableau exercise #1
8 10/17	Fonts, colors, accessibility	How can we make our charts and dashboards look polished and professional?	<p>Read Knaflic, C. (2015). Chapter 5: think like a designer & Chapter 6: dissecting visual models. <i>Storytelling with data</i>. Hoboken, NJ: Wiley.</p> <p>Cawthon, N. & Moere, A. V. (2007). The effect of aesthetic on the usability of data visualization. <i>2007 11th International Conference Information Visualization (IV '07)</i>. doi: 10.1109/IV.2007.147</p> <p>Skim UT Austin branding guidelines: https://utexas.app.box.com/v/brandcampaign/file/218170563404</p> <p>Prepare to give a trial run for your 3-5 minute technical intro with your peers.</p>	Tableau exercise #2
9 10/24	Usability	How can we make the products we design meet the needs of the people who will use them?	<p>Goodwin, K. (2009). "Understanding the business." Designing for the digital age. Hoboken, NJ: Wiley. Retrieved from https://catalog.lib.utexas.edu/record=b9326544~S29</p> <p>Pages 1-37 from Goodwin, K. (2009). "Understanding potential users and customers." Designing for the digital age. Hoboken, NJ: Wiley. Retrieved from https://catalog.lib.utexas.edu/record=b9326544~S29</p> <p>Goodwin, K. (2009). "Evaluating your design." Designing for the digital age. Hoboken, NJ: Wiley. Retrieved from https://catalog.lib.utexas.edu/record=b9326544~S29</p>	Provide a summary of your data topic on Canvas

Class # Date	Topic	Guiding question	Readings and other work to be done before class	Due
10 10/31	How to pick a tool	With so many options available, how do we choose the right tool for the job?	<p>Read Knaflic, C. (2015). Chapter 9: case studies. <i>Storytelling with data</i>. Hoboken, NJ: Wiley.</p> <p>Rost, L.C. (2016). What I learned recreating one chart using 24 tools. Retrieved from https://source.opennews.org/articles/what-i-learned-recreating-one-chart-using-24-tools/</p> <p>Read Gartner Magic Quadrant for Analysis and Business Intelligence Platforms: https://www.gartner.com/doc/reprints?id=1-68720FP&ct=190213&st=sb</p>	Short presentation due
10 11/7	Working with clients	How can we establish ourselves as good collaborators and guide a project toward success?	<p>Read Knaflic, C. (2015). Chapter 7: lessons in storytelling. <i>Storytelling with data</i>. Hoboken, NJ: Wiley.</p> <p>Sarikaya, S. et al. (2018). What do we talk about when we talk about dashboards? <i>IEEE transactions on visualization and computer graphics</i> 25:1. doi: 10.1109/TVCG.2018.2864903</p> <p>Read Wexler, S. et al. (2017). Chapters 8, 10, 20. <i>Big book of dashboards</i>. Hoboken, NJ: Wiley. doi: 10.1002/9781119283089</p>	Tableau assignment #3
11 11/14	No class			Draft project due
12 11/21	Makeover Monday	How do I keep getting better?	<p>Read Knaflic, C. (2015). Chapter 10: final thoughts. <i>Storytelling with data</i>. Hoboken, NJ: Wiley.</p> <p>Meeks, E. (2018). Tapestry keynote: Third wave data visualization. Retrieved from https://www.youtube.com/watch?v=itChfcTx7ao</p>	Review assigned peer's draft and provide feedback
13 11/28	No class, T-day break		<p>Ellis, S.E. & Leek, J.T. (2017). How to share data for collaboration. <i>The American statistician</i>, 72, 53-57. doi: 10.1080/00031305.2017.1375987</p> <p>Practice your presentation for at least 1 hour, including at least 1 run-through with an audience</p>	
14 12/5	Talks, course evals, and wrap up		Continue practicing your presentation	Documentation & slide deck

RECOMMENDATIONS FOR ADDITIONAL READING

This class of course only scratches the surface of data and data storytelling. In addition to seeking out additional iSchool courses to build your data skills, consider the following resources.

BOOKS

Practical

Berinato, S. (2016). *Good charts: the HBR guide to making smarter, more persuasive data visualizations*. Brighton, MA: Harvard Business Review Press.

Cairo, A. (2016). *The functional art: an introduction to information graphics and visualization*. San Francisco, CA: New Riders.

Cairo, A. (2016). *The truthful art: data, charts, and maps for communication*. San Francisco, CA: New Riders.

Few, S. (2013). *Information dashboard design*. El Dorado Hills, CA: Analytics Press.

Few, S. (2004). *Show me the numbers: designing tables and graphs to enlighten*. El Dorado Hills, CA: Analytics Press.

Kriebel, A. & Murray, E. (2018). *#MakeoverMonday*. Hoboken, NJ: Wiley.

Beautiful

Andrews, R.J. (2019). *Info we trust*. Hoboken, NJ: Wiley.

Lupi, G. & Prosavec, S. (2016). *Dear data*. New York, NY: Princeton Architectural Press.

McCandless, D. (2010). *Information is beautiful*. New York, NY: HarperCollins Publishers.

McCandless, D. (2010). *Knowledge is beautiful*. New York, NY: HarperCollins Publishers.

Numeric literacy

Huff, D. (1954). *How to lie with statistics*. W.W. New York, NY: Norton & Company.

Paulos, J.A. (2013). *A mathematician reads the newspaper*. New York, NY: Basic Books.

Rosling, H. (2018). *Factfulness: ten reason we're wrong about the world—and why things are better than you think*. New York, NY: Flatiron Books.

BLOGS AND OTHER WEBSITES

datastori.es

economist.com/graphic-detail

junkcharts.typepad.com

pudding.cool

storytellingwithdata.com

visualizingdata.com

flowingdata.com

Informationisbeautiful.net

makeovermonday.co.uk

reddit.com/r/DataIsUgly

theatlas.com

viz.WTF