INF385T

DATA STORYTELLING

WEDNESDAYS, 3:00-6:00 PM

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include course # in subject

online office hours:
Mondays 4-6 & by appt

Online through Canvas
Unique #27725

CONTENTS

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 cognitive psychology, user experience, data journalism, 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.

LEARNING OBJECTIVES

- Effectively do exploratory and explanatory data analysis
- Craft thoughtfully selected charts and charts that illuminate the data
- Design an enlightening, interactive dashboard for a targeted audience
- Implement core concepts of usability and accessibility
- Apply the basics of clean layout and graphic 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

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 complete 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 take on any optional challenges in assignments and also suggest further modifications so they can be appropriately stimulating for your skill level. *Allons-y!*[i]

COURSE MATERIALS

Hardware and software

The software packages we will use are freely available for students. Instructions for obtaining Tableau Desktop and Tableau Prep activation keys will be provided to you during the semester. You can download and install Microsoft Office through the university's Office 365 portal. Your device should meet the minimum requirements to run Tableau Desktop. If you are concerned about this at the beginning of the semester, you can download and install the program with the 2-week free trial (or Tableau Public, the free version of Tableau Desktop) to see if it runs on your machine.

You will have access to the desktop machines and the software required for the course via the iSchool computer lab even if you do not have a laptop. Please note that the computer lab permits no food or drinks other than water in spill-proof containers.

Other supplies

A normal semester involves a number of small group activities and low-fidelity prototyping. I will supply basic materials for these activities, but consider having a notebook and pencil if you prefer your own materials. If it becomes necessary to meet remotely, please be prepared with the following:

- A functioning webcam and mic
- A Sharpie marker (or alternative that will clearly be visible if you draw with it and hold the drawing up to your webcam)
- A pack of markers (something like this is fine)

- Paper for drawing (a lined notebook is fine)

Book to purchase

This is a basic graphic design book that explains important design concepts well. It will be a necessary resource when revising your work or when providing feedback to your peers. Used copies are fine.

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

Books and readings provided to you

Our main textbook for the course is *Storytelling with Data* by Cole Nussbaumer Knaflic. We'll also be reading works from other experts in the field of data visualization, from classics like Edward Tufte to contemporary experts in academia and industry. They were carefully selected to complement the other course content, and it is expected that you will complete all readings for this course. The following will comprise most of our readings and are 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.
https://search.lib.utexas.edu/permalink/01UTAU_INST/171befj/alma991057996053606011

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

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

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.
https://search.lib.utexas.edu/permalink/01UTAU_INST/171befj/alma991057997829306011

Yau, N. (2013). *Data points: visualization that means something*. Hoboken, NJ: Wiley.
https://search.lib.utexas.edu/permalink/01UTAU_INST/171befj/alma991057933631806011

ASSIGNMENTS

Several highlighted course assignments are described below in roughly chronological order. More details will be provided in class and on Canvas. All instructions, assignments, readings, and other essential info will be on our course Canvas site.

Visualization blog post (2.5% of final grade): Examining the works of others is a great way to develop your eye and build your own skillset. Write a post on Canvas about a data presentation you have found (350ish words). Dissect the visualization, addressing what data are being shown (and if the source is cited), who you think the audience is, the goals of the work, and why/why not the data presentation is effective.

Data diary created by Shashank Jain in Fall 2019 that shows the time he spent on various activities in a week

Data diary (12.5% of final grade): This assignment addresses two important elements: that data surrounds us, and that storytelling with data is as much of an art as it is a science. Before we dive into best practices, we'll address the fun, creativity, beauty, and silliness that's instrumental to the field. Research and gather data about yourself on a topic of your choice and keep a data diary in Excel 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. Build a data presentation to showcase what you've collected. Do not use Excel or Tableau to produce your final deliverable.

Excel and Tableau assignments (22.5% of final grade): A series of short analytical assignments designed to complement and reinforce the tutorials and hands-on work done in class. Specifics will be available on Canvas for each assignment.

Data diary created by Ssu-Ting "Angie" Wang in Fall 2019 that illustrates the liquids she consumed in a week

Midterm project (20% of final grade): Build a polished data visualization based on a topic of your choice using a dataset of your choice. Feedback on your classmates' dashboards will be part of your grade. The point of this assignment is two-fold: to provide a low-stakes opportunity to build a data visualization about something you're really excited about and to focus on good written presentation skills.

Iron Viz dashboard (5% of final grade): You've seen Iron Chef, right? This is the same thing except with data! During this timed in-class activity, you will create a Tableau dashboard based on a dataset you've never seen before and publish your dashboard.

Final project summary, deliverables and presentation (25% of final grade): This culminating project is a hands-on experience to design, prototype, and develop a complex example of a data visualization dashboard with storytelling elements that will be an asset to your professional portfolio. Your project must have a clear and specific audience and should be developed in collaboration with an organization of your choice. The final project includes the data presentation, associated documentation, and a presentation to the class. Your formal written feedback on a peer's draft will also be included in your grade.

GRADING

Here's how to do your best on course assignments:
- **Well before the deadline**, read the assignment instructions in detail. Make note of anything that sounds particularly challenging. Reach out to me if you need clarity about the assignment **at least a day** before the assignment is due.
- If you have questions while you work, do some research. For software-related questions, Googling often yields helpful results. The Tableau user community is fantastic and quite thorough— if you are having trouble doing something, someone else has almost certainly run into the same issue. If you exhaust both of these options, reach out to a study buddy, post on Chatter, or reach out to me directly at least a day before the assignment is due.
- Before you hand in your work, **read the instructions again** to make sure you have completed everything.
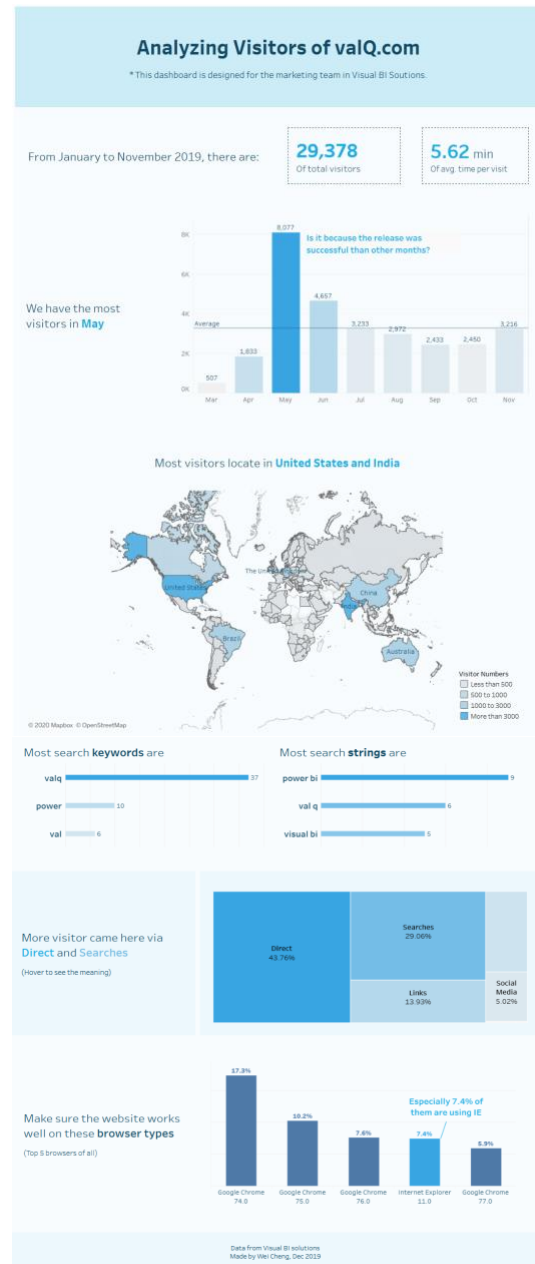
Final project created by Wei Chang in Fall 2019 that analyzes visitor traffic for a website

Here are the primary things I will look for when I grade:
- Did you make thoughtful design choices, putting the best practices from class and from our readings to use?
- Did you complete all components of the exercise per my instructions?

This is how your final grade will be reported:

A = 93-100
A- = 90-92
B+ = 87-89
B = 83-86
B- = 80-82
C+ = 77-79
C = 73-76
C- = 70-72
D+ = 67-69
D = 63-66
D- = 60-62
F= 0-59

OTHER COURSE POLICIES

Be excellent to each other[ii]: 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. Stay home when you're sick.

Help one another: If you see someone struggling, consider helping them. I also highly recommend you select a study buddy in the course. In addition to sharing notes if either of you miss a class, having a peer with whom you can discuss ideas and go to for help is invaluable. You also bring your unique experiences to this course, and I encourage you to share that perspective with the class. **HOWEVER**, the help you extend to others, including your study buddy, should not extend to providing answers to them— give them the opportunity to learn. For example, if a peer comes to you for help on a tricky Tableau issue, you're welcome to help them debug or strategize, but sharing your working solution with them is inappropriate.

Don't plagiarize: It is a rare thing for a work to be truly original— we're often inspired by the creations of others. And that's okay! But if your work draws from someone else's work in any way, including visual inspiration or code, cite it. Code can be cited inline by adding comments (two // for Tableau). The URL and the retrieval date are sufficient, but more details can be added if needed. All of your work should also differ substantially from your inspirations, including

ASSIGNMENT POLICIES

- 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 should represent your individual effort, I encourage you to see the feedback of your peers.

- If something occurs and you need an extension on an assignment or another accommodation, **talk to me as soon as possible**. I will be MUCH more accommodating. Because of the nature of some assignments, I may not be able to make exceptions without notice. I may direct you to work through Student Emergency Services.

- Previously graded assignments cannot be resubmitted with edits and corrections for a higher grade unless we discuss it in advance of your resubmission. If you resubmit an assignment outside of the specified window or without my explicit invitation, it may not be graded.

- Late assignments will be docked for each day delayed. I work fulltime in addition to teaching this class. When you turn something late, this means I need to find additional time in my schedule to grade. I cannot guarantee that late assignments will be graded in a timely fashion.

any tutorials, templates, images, and any content from Tableau Public. Please consult me if you have questions, including how to alter a design or technique from the original. Any instances of plagiarism will be taken very seriously, including but not limited to you receiving a zero for the assignment and being reported to the Office of Student Conduct.

Leverage Artificial Intelligence thoughtfully and carefully (if at all): AI is a remarkable tool for many things, including learning software. However, its answers can be incomplete, out-of-date, and/or biased. AI should be used with caution and be properly attributed. If you use AI for any written assignments, you should include a citation in your Canvas submission along with the prompt(s) used to generate the response. Failing to properly cite AI constitute a violation of UT Austin's Institutional Rules on academic integrity.

If you procrastinate, make it structured procrastination: You will get more out of this course, especially peer feedback opportunities, if you get an early start on your dashboard projects. Read more about John Perry's structured procrastination in his essay "How to Procrastinate and Still Get Things Done."

I'm here to help you: Take advantage of it by requesting office hours to talk through any aspect of the course you don't understand or if you have questions about a grade. Tableau is deceptively complicated, and you shouldn't feel embarrassed if you don't understand something immediately. Note that I may not be able to respond if you email me hours before an assignment is due, so the sooner the better.

Communicate with me: Sending a message to me via Canvas is the fastest and most reliable way to reach me. Please include the course number (INF385T) in the subject line. Allow a 24-hour window for responses. Send an image or gif of a squirrel via Canvas before the final project is due for extra credit. You are responsible for ensuring that the primary email address you have recorded with the university is the one you will check for course communications because that is the email address that Canvas uses. Note that I will not monitor responses to your Canvas assignment submissions.

Emergency situations: If you need attendance waivers or assignment extensions because of an emergency, please reach out to Student Emergency Services. The Office of Student Emergency Services exists to support students with issues that impact their well-being and academics, including natural disasters, medical issues, mental health concerns, family emergencies, and more. They can act as an interface between you and me so private or sensitive information is not disclosed to me. You can reach out to them by phone at 512-471-5017 or email at studentemergency@austin.utexas.edu. Both phone and email are monitored Monday through Friday from 8 AM to 5 PM.

Adopt an attitude that feedback is always welcome: Give thoughtful constructive criticism to your peers and be prepared to receive it too. This goes for me as well. A short email to say, "I really liked that activity" or "I didn't get that lecture at all—it needed more examples" is very helpful for me. I'll request feedback from you on the course mid-way through the semester, but please don't wait if something crosses your mind.

Attendance & participation: Attendance and participation will be tracked occasionally through in-class activities and assignments. While I may not take attendance every class, please be aware that a substantial portion of course content includes hands-on labs and activities. As a result, missing classes and not participating in activities can impact your performance and result in a lower grade in addition to the portion of your grade directly based on attendance. The students who do not do well in this course and do not get much out of it are the students who do not attend class. It's your responsibility to look on Canvas and/or check in with your classmates for notes and assignments

you missed. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence. By UT Austin policy, you must notify me of your pending absence for a religious holy day as far in advance as possible of the date of observance. That said, I recognize there are many other legitimate and personal reasons one might be unable to come to class on a particular day, and I do not want you to come to class when you are sick. Everyone will get 2 freebies independent of absences related to religious holy days where the lowest 2 grades associated with tracked attendance are dropped. If you use your freebies, it's your responsibility to work through Student Emergency Services for additional absences not relayed to religious holy days.

Names and personal pronoun preference: Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name, unless they have added a "preferred name" with the Gender and Sexuality Center, which you can do so here. I will gladly honor your request to address you by a name that is different from what appears on the official roster, and by the gender pronouns you use (she/he/they/ze, etc). Please advise me of any changes early in the semester so that I may make appropriate updates to my records. Visit this site for instructions on how to add your pronouns to Canvas.

UNIVERSITY POLICIES AND RESOURCES

Recordings: Class recordings are reserved only for students in this class for educational purposes and are protected under FERPA. The recordings should not be shared outside the class in any form. Violation of this restriction by a student could lead to Student Misconduct proceedings.

Sharing of course materials is prohibited: No materials used in this class, including, but not limited to, lecture hand-outs, videos, assessments (quizzes, exams, papers, projects, homework assignments), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class without explicit, written permission of the instructor. Unauthorized sharing of materials promotes cheating. It is a violation of the University's Student Honor Code and an act of academic dishonesty. The University is well aware of the sites used for sharing materials, and any materials found on such sites that are associated with a specific student, or any suspected unauthorized sharing of materials, will be reported to Student Conduct and Academic Integrity in the Office of the Dean of Students. These reports can result in sanctions, including failure of the course.

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.

Counseling and Mental Health Center (CMHC): Students who are struggling for any reason and who believe that it might impact their performance in the course are urged to reach out to Bryce Moffett if they feel comfortable. This will allow her to provide any resources or accommodations that she can. If immediate mental health assistance is needed, call the Counseling and Mental Health Center (CMHC) at 512-471-3515 or you may also contact Bryce Moffett, LCSW (iSchool CARE counselor) at 512-232-4449. Bryce's office is located in FAC18S and she holds drop in Office Hours on Wednesday from 2-3pm. For urgent mental health concerns, please contact the CMHC 24/7 Crisis Line at 512-471-2255.

Services with students with disabilities: The university is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Services for Students with Disabilities (SSD). Please refer to [SSD's website](#) for contact and more information. If you are already registered with SSD, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations and needs in this course.

Academic integrity: Students who violate University rules on academic misconduct are subject to the student conduct process. A student found responsible for academic misconduct may be assigned both a status sanction and a grade impact for the course. The grade impact could range from a zero on the assignment in question up to a failing grade in the course. A status sanction can include a written warning, probation, deferred suspension or dismissal from the University. To learn more about academic integrity standards, tips for avoiding a potential academic misconduct violation, and the overall conduct process, please visit the 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 [here](#).

Title IX reporting: Title IX is a federal law that protects against sex and gender-based discrimination, sexual harassment, sexual assault, sexual misconduct, dating/domestic violence and stalking at federally funded educational institutions. UT Austin is committed to fostering a learning and working environment free from discrimination in all its forms. When sexual misconduct occurs in our community, the university can:
1. Intervene to prevent harmful behavior from continuing or escalating.
2. Provide support and remedies to students and employees who have experienced harm or have become involved in a Title IX investigation.
3. Investigate and discipline violations of the university's relevant policies.

Faculty members and certain staff members are considered "Responsible Employees" or "Mandatory Reporters," which means that they are required to report violations of Title IX to the Title IX Coordinator. **I am a Responsible Employee and must report any Title IX-related incidents** that are disclosed in writing, discussion, or one-on-one. Before talking with me or with any faculty or staff member about a Title IX-related incident, be sure to ask whether they are a responsible employee. If you want to speak with someone for support or remedies without making an official report to the university, email advocate@austin.utexas.edu For more information about reporting options and resources, visit the Title IX Office or email titleix@austin.utexas.edu.

ACKNOWLEDGEMENTS

We would like to acknowledge that we are meeting on Indigenous land. Moreover, we would like to acknowledge and pay our respects to the Carrizo & Comecrudo, Coahuiltecan, Caddo, Tonkawa, Comanche, Lipan Apache, Alabama-Coushatta, Kickapoo, Tigua Pueblo, and all the American Indian

and Indigenous Peoples and communities who have been or have become a part of these lands and territories in Texas, here on Turtle Island.

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

COURSE SCHEDULE

Week# Date	Topic	Guiding question	Readings to be done before class	Optional self-paced training recommendations	In-class activity	Due before class
1 1/17	Intro	What is data visualization, and how do our eyes and mind work together to perceive information?	Meeks, E. (2018). What charts do. https://medium.com/nightingale/what-charts-do-48ed96f70a74? Read Knaflic, C. (2015). Chapter 1: the importance of context. *Storytelling with data*. Hoboken, NJ: Wiley. Pain, E. (2016, March 21). How to (seriously) read a scientific paper. Science. https://www.sciencemag.org/careers/2016/03/how-seriously-read-scientific-paper Healey, C. & Enns, J. (2012). Attention and visual memory in visualization and computer graphics. *IEEE transactions on visualization and computer graphics 18:7*. https://www.csc2.ncsu.edu/faculty/healey/download/tvcg.12a.pdf		Visualize 2 numbers Excel tutorial: basics	
2 1/24	Simple statistics and exploratory analysis	How do we approach an unfamiliar dataset?	Yau, N. (2013). Chapter 1: understanding data. *Data points: visualization that means something*. Hoboken, NJ. Broman, K.W. & Woo, K.H. (2017). Data organization in spreadsheets. *The American statistician 72*. doi: 10.1080/00031305.2017.1375989 Tufte, E. R. (2001). Graphical excellence. *The Visual display of quantitative information.* Cheshire, CT: Graphics Press, 13-51. Start thinking about your data diary		WTFcsv Excel tutorial: tables and charts	Numbers introduction Excel exercise #1 Plagiarism quiz
3 1/31	Charts and tables	How do we choose a good chart type?	Knaflic, C. (2015). Chapter 2: choosing an effective visual. *Storytelling with data*. Hoboken, NJ: Wiley. Cleveland, W., & McGill, R. (1984). Graphical Perception: Theory, Experimentation, and Application to the Development of Graphical	Tableau Fundamentals: – Connect to and Customize Data – Work with Multiple Data Sources – Share Your Work	Tableau tutorial: introduction + publishing	Visualization blog post Excel exercise #2 Record your name

Week# Date	Topic	Guiding question	Readings to be done before class	Optional self-paced training recommendations	In-class activity	Due before class
			Methods. *Journal of the American Statistical Association*, 79(387), 531-554. doi:10.2307/2288400 Few, S. (2012). "Table design." *Show me the numbers: designing tables and graphs to enlighten*. Burlingame, CA: Analytics Press. Kosara, R. (2016). An illustrated tour of the pie chart study results. https://eagereyes.org/blog/2016/an-illustrated-tour-of-the-pie-chart-study-results Start thinking about topics and datasets for your midterm project			
4 2/7	Audience and context	Who are we designing for, and how can we use that information to make our work better?	Makulec, A. (2018). Heritage -> health. *2018 Tapestry PechaKucha*. https://www.youtube.com/watch?v=-aAhzgBjQX0 Peck, E., Ayuso, S.E., & El-Etr, O. (2019). Data is personal: attitudes and perfections of data visualization in rural Pennsylvania. *Proceedings of the 2019 CHI conference on human factors in computing systems*. doi: 10.1145/3290605.3300474 Tufte, E. R. (2001). Sources of graphical integrity and sophistication. *The Visual display of quantitative information.* Cheshire, CT: Graphics Press, 79-90.	Tableau Fundamentals: Create Calculated Fields	Remix a viz Tableau tutorial: filters, calculated fields	Data diary Tableau exercise #1
5 2/14	Fonts, color, and other elements of design	How can we make our charts and dashboards polished, professional, and usable?	Knaflic, C. (2015). Chapter 4: focus your audience's attention, Chapter 5: think like a designer, & Chapter 6: dissecting visual models. *Storytelling with data*. Hoboken, NJ: Wiley. Cawthon, N. & Moere, A. V. (2007). The effect of aesthetic on the usability of data visualization. *2007 11th International Conference Information Visualization (IV '07)*. doi: 10.1109/IV.2007.147 Williams, R. (2015). Chapters 2-6. The Non-designer's design book. San Francisco, CA: Peachpit Press.	Tableau Fundamentals: – Create Dashboards and Stories Tableau Desktop II: Intermediate – Using Parameters to Control Data in the View –	Branding activity Tableau tutorial: fonts, colors, dashboards, parameters	Tableau exercise #2 Provide a summary of your midterm project data topic on Canvas

Week# Date	Topic	Guiding question	Readings to be done before class	Optional self-paced training recommendations	In-class activity	Due before class
			Skim UT Austin branding guidelines: https://utexas.app.box.com/v/brandcampaign/file/218170563404			
6 2/21	Feedback	How can we best give and receive feedback?	Knaflic, C. (2015). Chapter 7: lessons in storytelling. *Storytelling with data*. Hoboken, NJ: Wiley. Skim: 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. *Better presentations: a guide for scholars, researchers, and wonks*. New York, NY: Columbia University Press.	Tableau Fundamentals: – Organize Data and Create Filters	Tableau tutorial: groups, sets, dual axis charts	Midterm project prototype
7 2/28	Explanatory analysis	How do we turn data into a story?	Andrews, R.J. (2019). Chapter 17: Imagination to image & Chapter 18: focus attention. *Info we trust*. Hoboken, NJ: Wiley. Gastineau, D. (2019). How to use storytelling conventions to create better visualizations. Nightingale. https://medium.com/nightingale/how-to-use-storytelling-conventions-to-create-better-visualizations-45177ae517ba Setlur, V., et al. (2023). Heuristics for supporting cooperative dashboard design." IEEE Transactions on Visualization and Computer Graphics. https://doi.org/10.1109/tvcg.2023.3327158 Rosling, H. (2010). 200 years in 4 minutes. https://www.youtube.com/watch?v=Z8t4k0Q8e8Y	Tableau Fundamentals: – Map Data Geographically	Tableau tutorial: maps, custom shapes, dashboard improvements	Tableau #3 Peer feedback on midterm project prototype
8 3/6	Working with clients	How can we establish ourselves as good collaborators and guide a project toward success?	Minto, B. (2009). Chapters 1, 2, & 3. *Pyramid Principle*. Harlow, Essex: Pearson Education.	Tableau Fundamentals: – Use Quick Table Calculations to Analyze Data	Tableau tutorial: table calculations	Midterm project due
9 3/13	Spring break	No class				

Week# Date	Topic	Guiding question	Readings to be done before class	Optional self-paced training recommendations	In-class activity	Due before class
10 3/20	SQL	How can we start working with data from databases?	Radiolab (2022). NULL [podcast episode]. https://radiolab.org/episodes/null (also available through your favorite podcast app)		SQL tutorial: basic queries	Tableau #4
11 3/27	How to pick a tool	With so many options available, how do we choose the right tool for the job?	Rost, L.C. (2016). What I learned recreating one chart using 24 tools. https://source.opennews.org/articles/what-i-learned-recreating-one-chart-using-24-tools/ Skim Gartner Magic Quadrant for Analysis and Business Intelligence Platforms: https://www.gartner.com/doc/reprints?id=1-68720FP&ct=190213&st=sb	Tableau Prep Builder: – Connect to and Configure Your Data – Cleaning Data with One-Click Operations – Combining Data with Joins – Generating Output	Tableau tutorial: Tableau Prep	Provide a summary of your final project data topic on Canvas Tableau exercise #5
12 4/3	Ethics, cognitive bias, and 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?	Chalabi, M. (2017). "Making sense of too much data." https://www.ted.com/talks/mona_chalabi_3_ways_to_spot_a_bad_statistic?referrer=playlist-making_sense_of_too_much_data Jerven, M. (2013). "Facts, assumptions, and controversy: lessons from the datasets." *Poor numbers: how we are misled by African development statistics and what to do about it*. https://search.lib.utexas.edu/permalink/01UTAU_INST/171befj/alma991057975280306011 D'Ignazio, C. (2015). What would feminist data visualization look like? https://civic.mit.edu/2015/12/01/feminist-data-visualization/ Kong, H., Liu, Z., & Karahalios, K. Frames and slants in titles of visualizations on controversial topics. *Proceedings of the 2018 CHI conference on human factors in computing systems.* doi: 10.1145/3173574.3174012			The Moth Storytelling
13 4/10	Advanced Tableau	Can I do this in Tableau? (Maybe)	Sarikaya, S. et al. (2018). What do we talk about when we talk about dashboards? *IEEE transactions on visualization and computer graphics 25:1*. doi: 10.1109/TVCG.2018.2864903	Desktop II: Intermediate: – Using Level of Detail Expressions	Tableau tutorial: set actions, parameter actions, regular expressions	Final project prototype and draft documentation due

Week# Date	Topic	Guiding question	Readings to be done before class	Optional self-paced training recommendations	In-class activity	Due before class
			Read Wexler, S. et al. (2017). Chapters 8, 10, 20. *Big book of dashboards*. Hoboken, NJ: Wiley. doi: 10.1002/9781119283089			
14 4/17	Data journalism	How do data journalists think about data stories?			Tableau tutorial: mobile development	
15 4/24	Iron viz	How do we keep getting better?	Ellis, S.E. & Leek, J.T. (2017). How to share data for collaboration. *The American statistician*, 72, 53-57. doi: 10.1080/00031305.2017.1375987 Knaflic, C. (2015). Chapter 8: pulling it all together, Chapter 9: case studies, .Chapter 10: final thoughts. *Storytelling with data*. Hoboken, NJ: Wiley. Meeks, E. (2018). Tapestry keynote: Third wave data visualization. https://www.youtube.com/watch?v=itChfcTx7ao		Iron Viz	Peer feedback on final project
16 5/1	Talks, course evals, and wrap up	No class	Final presentations, course evaluations, and wrap up.			Project & documentation

RECOMMENDATIONS FOR ADDITIONAL READING

This class of course only scratches the surface of data analysis and visualization. In addition to seeking out additional iSchool courses to build your data skills, consider the following resources. (This list is not exhaustive— if you encounter others you find useful, please share them with me!)

TABLEAU BLOGS AND RESOURCES

makeovermonday.co.uk

workout-wednesday.com

ryansleeper.com

vizwiz.com

dataplusscience.com

datarevelations.com

BLOGS AND OTHER WEBSITES

storytellingwithdata.com

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

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.

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

Sleeper, R. (2020). *Innovative Tableau*. Sebastopol, CA: O'Reilly Media.

Sleeper, R. (2020). *Practical Tableau*. Sebastopol, CA: O'Reilly Media.

Sleeper, R. (2021). *Tableau Desktop pocket reference: essential features, syntax, data*. Sebastopol, CA: O'Reilly Media.

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.

Ethics and numeric literacy

Cairo, A. (2019). *How charts lie*. W.W. New York, NY: Norton & Company.

Criado-Perez, Caroline. (2019). *Invisible women: data bias in a world designed for men*. New York, NY: Abrams Press.

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.

History

Battle-Baptiste, W. & Rusert, B. (2018). *W.E.B. Du Bois's data portraits visualizing Black America: the color line at the turn of the twentieth century*. Hudson, NY: Princeton Architectural Press.

Rendgen, S. (2018). *The Minard system: the complete statistical graphics of Charles-Joseph Minard*. Hudson, NY: Princeton Architectural Press.

PODCASTS

Data Viz Today

Datastori.es

Storytellingwithdata.com/podcast

99% Invisible

PolicyViz

ORGANIZATIONS

Data Visualization Society

Institute of Electrical and Electronics Engineers (IEEE)

Association for Computing Machinery (ACM)

CONFERENCES

Tableau Conference

IEEE Vis

Malofiej

Tapestry Conference (currently on hiatus)

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i Davies, R. (Writer) & Hawes, J. (Producer). (2005). The Christmas invasion [*Doctor Who*]. London, United Kingdom: BBC One.

ii Herek, S. (Director). (1989). *Bill & Ted's Excellent Adventure* [Motion picture]. United States: Orion Pictures.