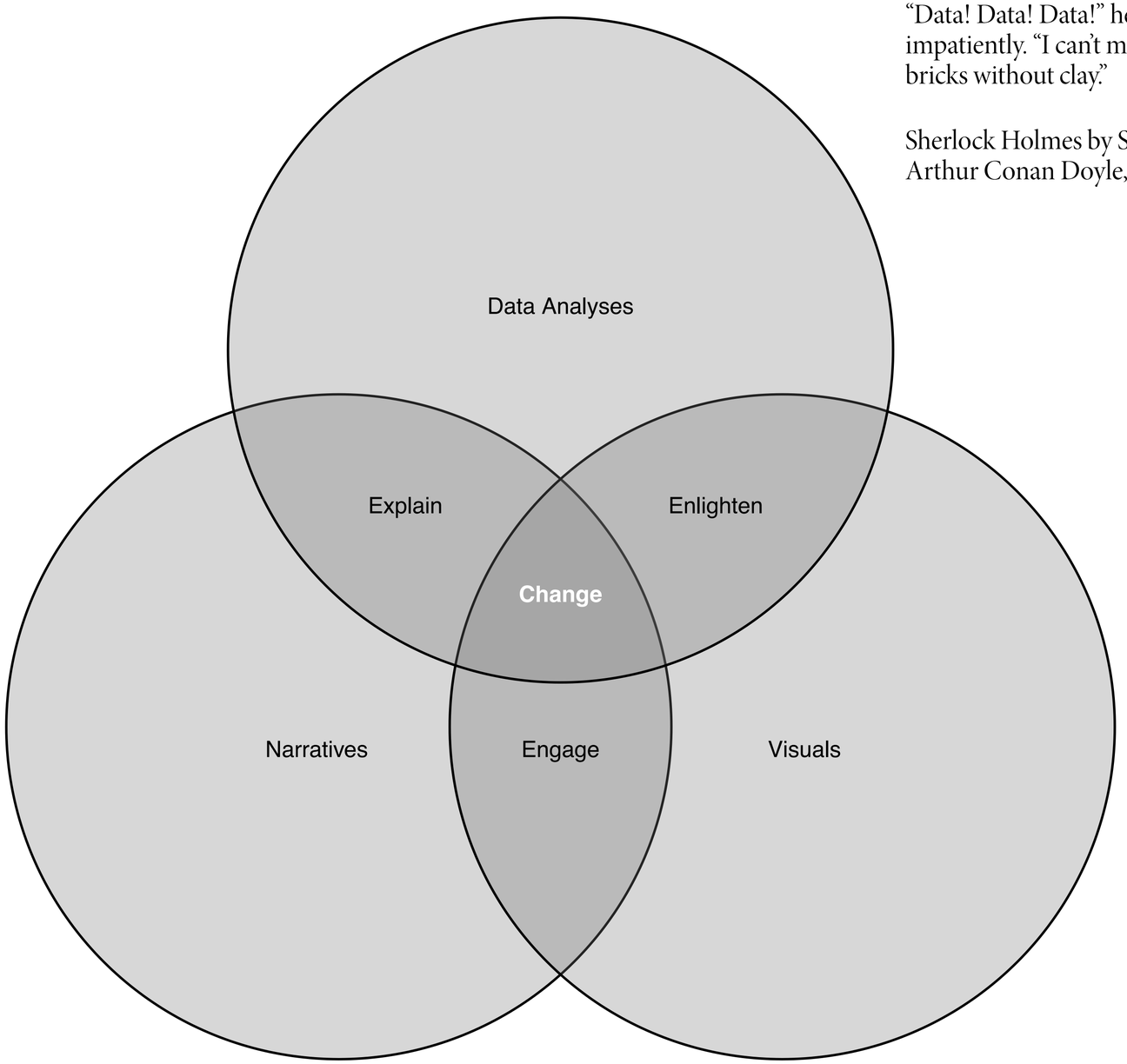
Storytelling with data

12 | Processes of user-centered, content design: *critiquing* and *pair-wise prototyping*

course overview, learn to drive change using data visuals and narrative

"Data! Data! Data!" he cried impatiently. "I can't make bricks without clay."

Sherlock Holmes by Sir Arthur Conan Doyle, *author*



No one ever made a decision because of a number. They need a story.

Daniel Kahneman, *psychologist, behavioral economist, and author*

The greatest value of a picture is when it forces us to notice what we never expected to see.

John W Tukey, *mathematician*

general course deliverable timeline

Individual Work

For learning data visualization
and written narrative techniques

Group work

For building graphics and narrative
into interactive communications

Sept 30	Oct 14	Oct 28	Nov 18	Nov 18	Dec 11	Dec 13
Homework 1 graphics 10%	Homework 2 graphics 10%	Homework 3 writing 10%	Homework 4 graphics 10%	Proposal 15%	Interactive Communication 20%	Multimodal communication 15%
Participation 10%						

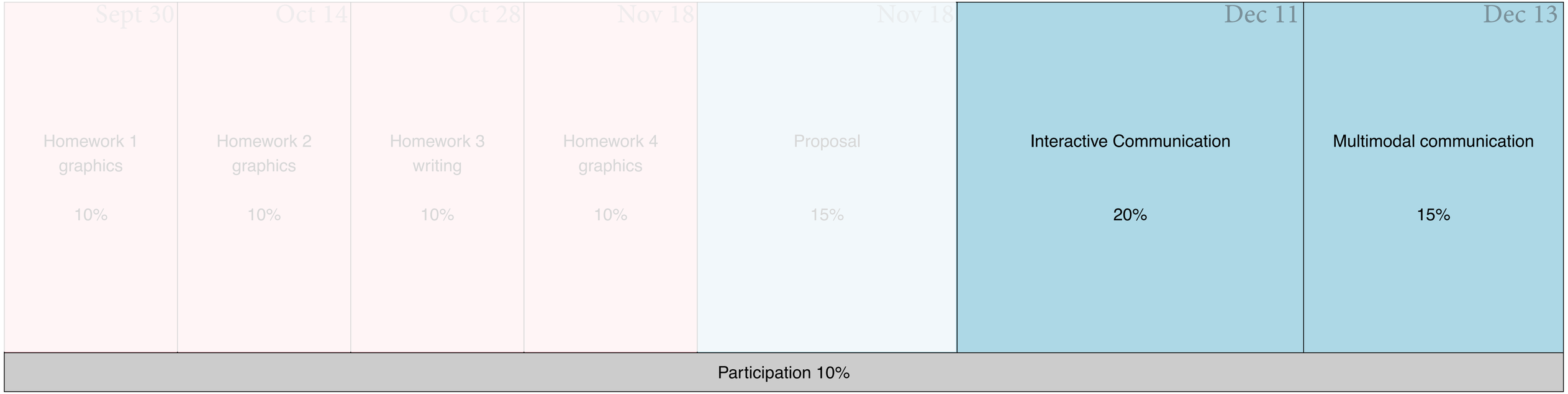
next deliverables, group interactive & multimodal communications

Individual Work

For learning data visualization
and written narrative techniques

Group work

For building graphics and narrative
into interactive communications



how to be an *active learner* in this discussion

An active learner asks questions, considers alternatives, questions assumptions, and even questions the trustworthiness of the author or speaker. **An active learner tries to generalize specific examples, and devise specific examples for generalities**.

An active learner doesn't passively sponge up information — that doesn't work! — but uses the readings and lecturer's argument as a springboard for critical thought and deep understanding.

a framework for critiquing data-driven, visual narratives

Establish the purpose of the critique

When reviewing someone else's document, center yourself on the **purpose that was agreed upon**, such as clarity, accuracy, or correctness. Should this purpose be multiple, **review one aspect at a time, focusing on content first**.

Offer alternative solutions

In your comments—help, don't judge. A critique must serve the goal. Simply pointing to problems is not enough. The critic must **state an alternative solution** in a way that is clear and complete enough to provide a basis for improvement.

Be objective, well-reasoned

Typos are usually more conspicuous than reasoning flaws, but also less important. Each statement should be **objective**, delivered in **neutral language**, and backed up by **theoretical reasoning** or **empirical evidence**.

Structure the review

First, provide a **global assessment**, to place further comments in proper perspective. As a rule, point out the **weaknesses**, to prompt improvements, but also the **strengths**, to increase the authors' willingness to revise the document and to learn.

criticism for data-driven visual narratives, **using theory and experiment, identify issues *and* suggest solutions**

Get Specific

Audience? | Does the information graphic seem designed to communicate with an *identified* or *particular* audience? If so, who?

Purpose? | Do you see a purpose? If so, is it trying to inform, entertain, or *persuade the audience to act*? Something else?

Encoding, decoding? | What data are encoded? How? Any issues of perception in decoding? Most important measures encoded with most accurately decoded *visual channels* and their *attributes*?

Comparison or change? | Does the information graphic show *comparisons* or *change*? Would other *context* help with *meaning*?

Narrative? | Does it use *messages*, stated first, within a narrative? If so, what structure? An *arc*? With *examples*? *Metaphors*?

Color, coherency? | Is color used? If so, for what purposes are its hue, chroma, or luminance used? How might other uses help?

Hierarchy, annotation? | Does it layer information as a hierarchy? If so, how does that hierarchy separate information? Are data encodings explained? If so, how?

Layering, layout? | How is the information organized? Can a grid, negative space, or Gestalt principles — *proximity*, *similarity*, *enclosure*, *closure*, *continuity*, *connection* — help simplify or focus attention?

Credibility, transparency? | Are data sources identified, explained? Limitations, issues, exceptions discussed?

Learning to *see* — let's critique

criticism for visual communications, example — a basic critique of Scarr's *Hazy days*

Audience?

Purpose?

Data encodings, decodings?

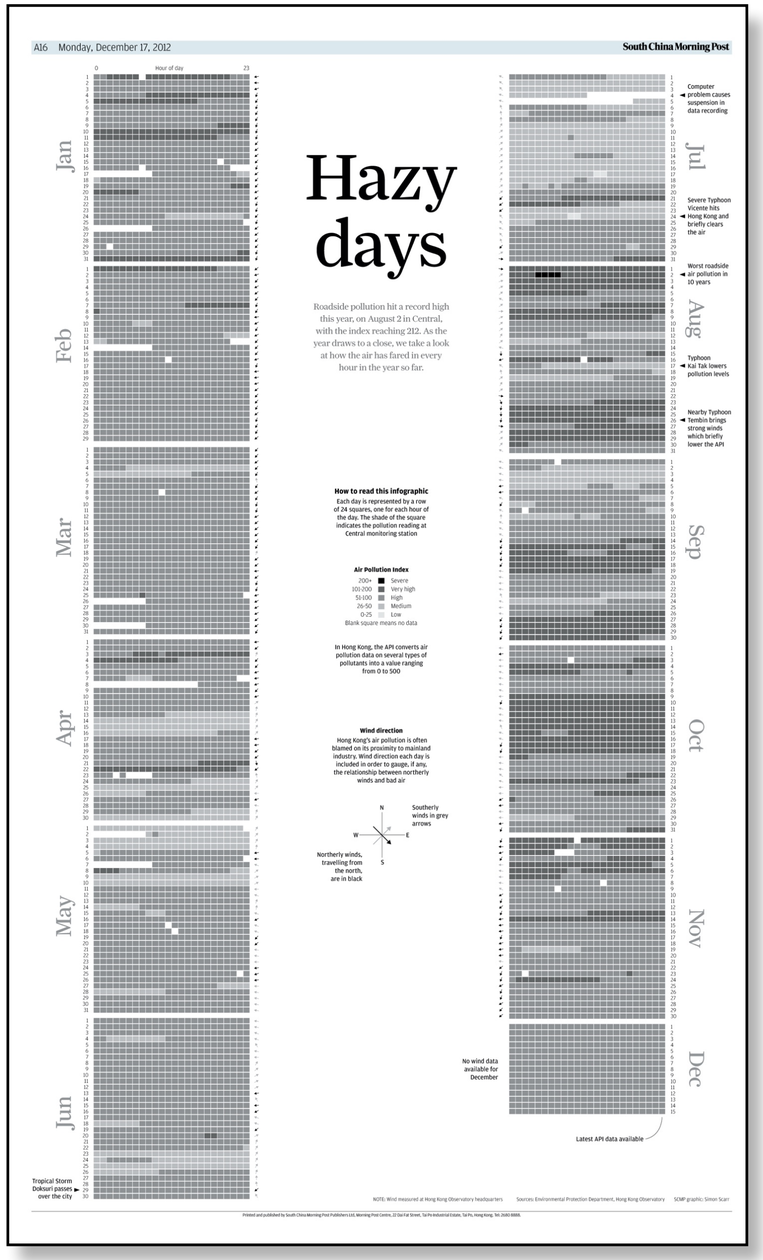
Comparison or change?

Narrative?

Color, coherency?

Hierarchy, layering, layout?

Credibility, transparency?



Scarr, Simon. "Hazy days" South China Morning Post, December 17, 2012, sec. Infographics. https://multimedia.scmp.com/culture/article/SCMP-printed-graphics-memory/lonelyGraphics/201212A230.html.

criticism for visual communications, example — a basic critique of Spencer's *Explorable Differences* . . .

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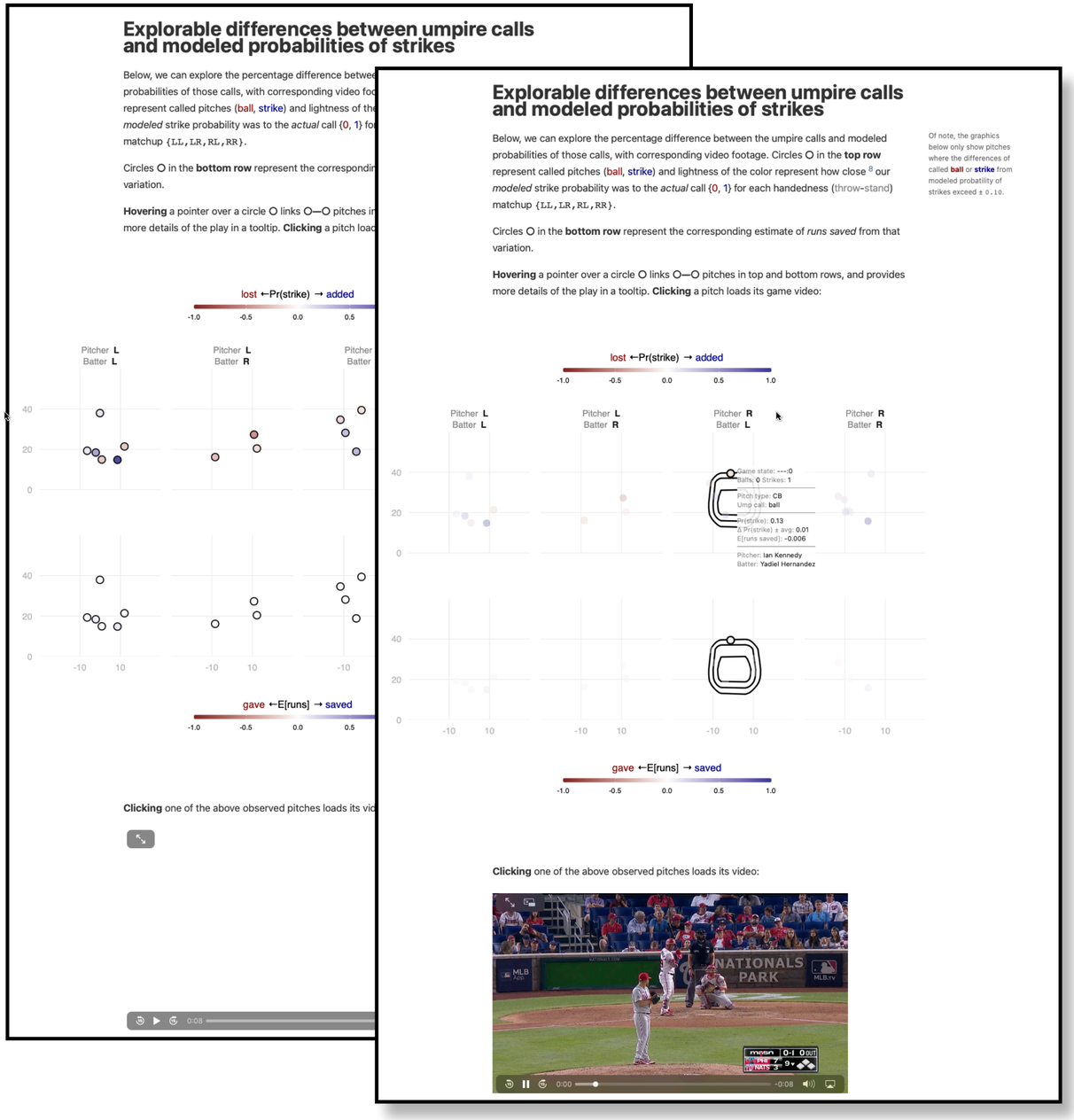
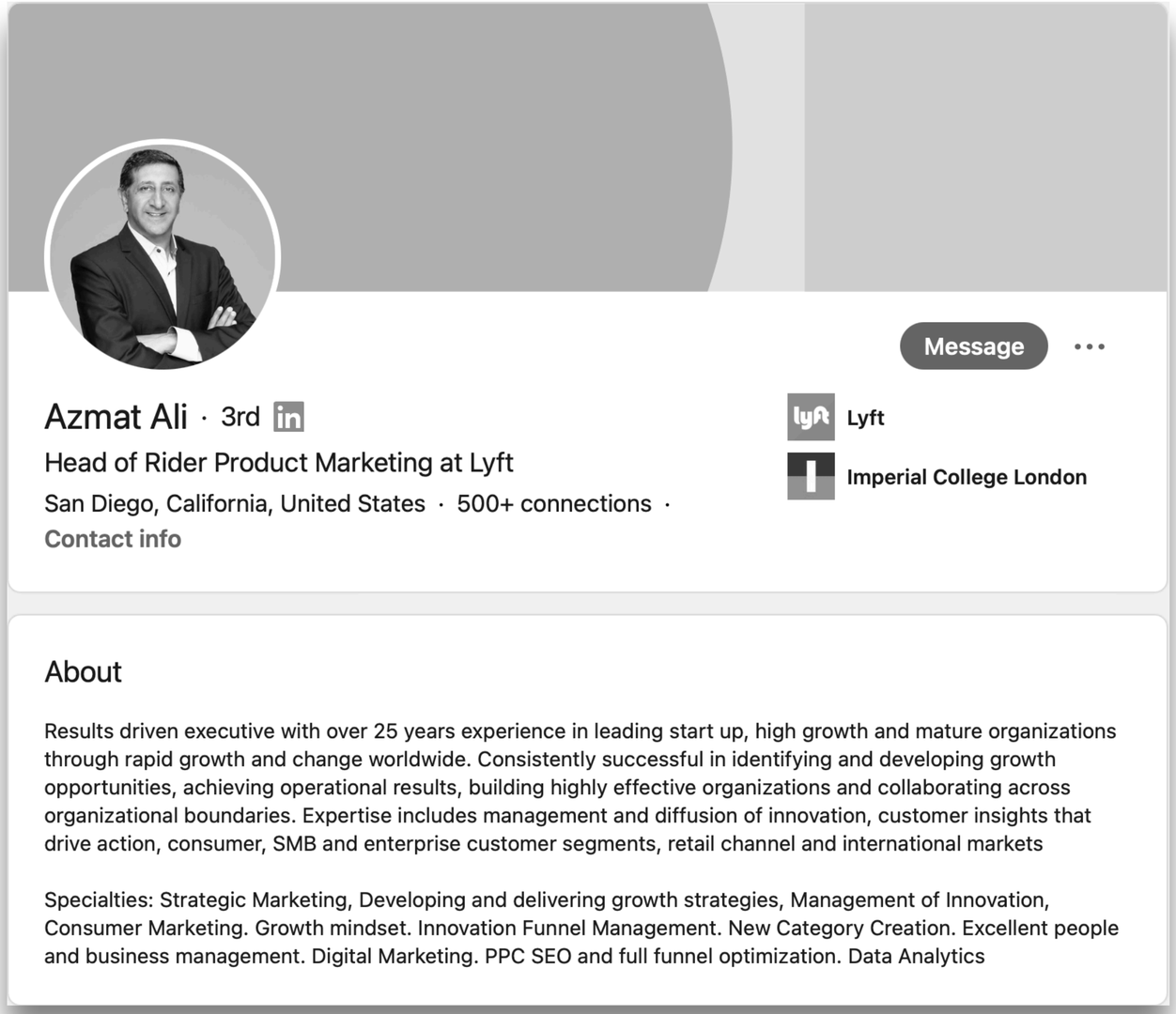


criticism for visual communications, class example — the audience, CMO of Lyft (including CitiBike)



Azmat Ali · 3rd

Head of Rider Product Marketing at Lyft

San Diego, California, United States · 500+ connections · Contact info

Message

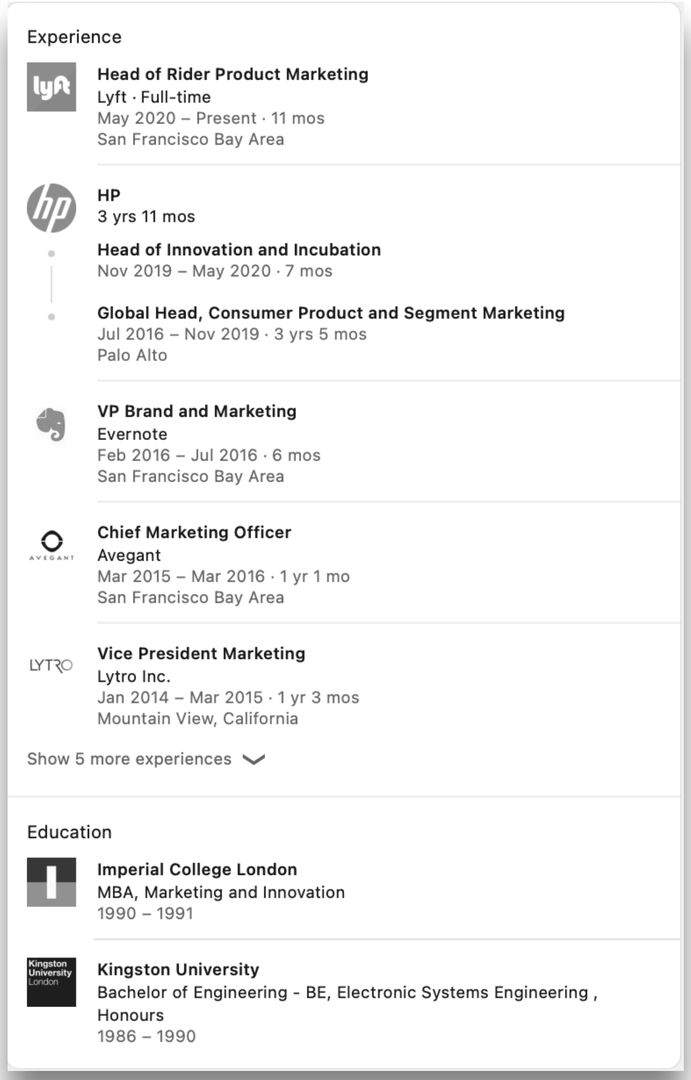
Lyft

Imperial College London

About

Results driven executive with over 25 years experience in leading start up, high growth and mature organizations through rapid growth and change worldwide. Consistently successful in identifying and developing growth opportunities, achieving operational results, building highly effective organizations and collaborating across organizational boundaries. Expertise includes management and diffusion of innovation, customer insights that drive action, consumer, SMB and enterprise customer segments, retail channel and international markets

Specialties: Strategic Marketing, Developing and delivering growth strategies, Management of Innovation, Consumer Marketing. Growth mindset. Innovation Funnel Management. New Category Creation. Excellent people and business management. Digital Marketing. PPC SEO and full funnel optimization. Data Analytics



Experience

Head of Rider Product Marketing
Lyft · Full-time
May 2020 – Present · 11 mos
San Francisco Bay Area

HP
3 yrs 11 mos

Head of Innovation and Incubation
Nov 2019 – May 2020 · 7 mos

Global Head, Consumer Product and Segment Marketing
Jul 2016 – Nov 2019 · 3 yrs 5 mos
Palo Alto

VP Brand and Marketing
Evernote
Feb 2016 – Jul 2016 · 6 mos
San Francisco Bay Area

Chief Marketing Officer
Avegant
Mar 2015 – Mar 2016 · 1 yr 1 mo
San Francisco Bay Area

Vice President Marketing
Lytro Inc.
Jan 2014 – Mar 2015 · 1 yr 3 mos
Mountain View, California

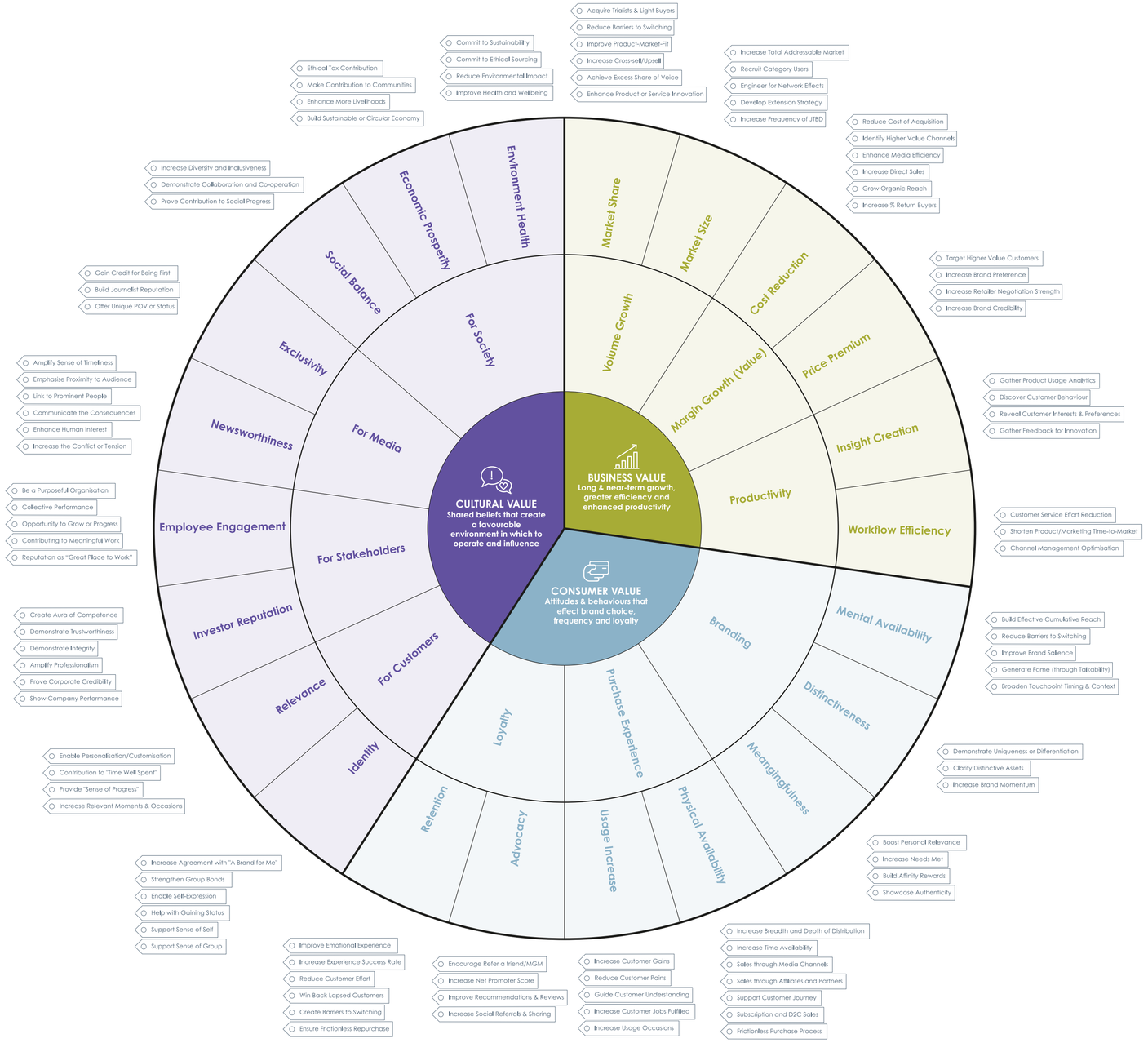
Show 5 more experiences

Education

Imperial College London
MBA, Marketing and Innovation
1990 – 1991

Kingston University
Bachelor of Engineering - BE, Electronic Systems Engineering , Honours
1986 – 1990

criticism for visual communications, class example — the audience's responsibilities



— Carr, David J. *What Value Do You Create? Marketings 3 Types of Value*. 2019.

Audience?

Purpose?

Data encodings, decodings?

Comparison or change?

Narrative?

Color, coherency?

Hierarchy, layering, layout?

Credibility, transparency?

Explore conditions of January, CitiBike ridership for segmentation and targeting.

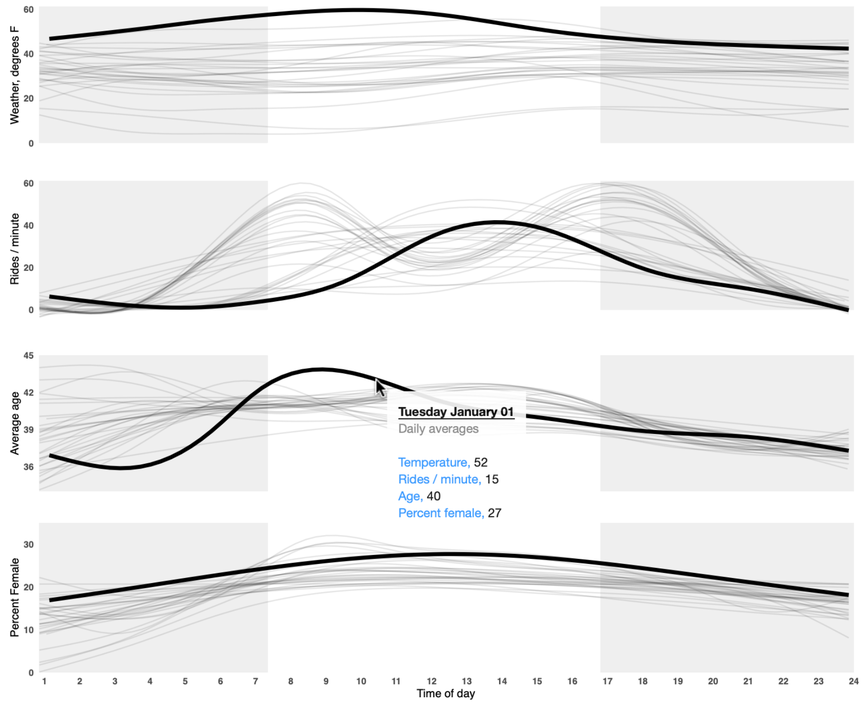
How to explore : **Hovering** over any line will link the four variables — *weather*, *rides per minute*, *average age*, and *percent female* — and identify the *date* and *weekday* selected. **Quick takes :** The morning and evening weekday peak commutes stand out from weekends, of course. But more interestingly, on New Year's Day, our warmest of the month, you'll find a significant swing in average age as night became morning; were our younger commuters out late, sleeping in? Below are ***smoothed functions*** of the data.

Do rider **attributes** correlate with lower usage? Are we missing key target audiences?

Are there better **temperatures** for us to trigger marketing messages to encourage rides?

How can we **segment** our audience to find opportunities for increasing ridership?

Are there better **times of day** for us to trigger marketing messages to encourage rides?



The lines show cubic splines, smoothing variation of each variable over the day. Sources: NYC Open Data, The Open Bus project, and Weather Underground. 2019 January 1-31. Design and code by Scott Spencer. 2021 March 31.

criticism for data-driven, visual narratives, practicing critiques — goals for *your* data-driven, interactive communication

Audience?

Your group's Chief Marketing Officer. And plan for a mixed audience.

Purpose?

Decide on your purpose; be specific. *E.g.*, Advertising? Public relations? Investor interest? Get your audience's attention, help them understand, and be able to act on your message's purpose.

Data encodings, decodings?

Encode your data, statistics, and modelling estimates using best practices we've discussed. Data encodings should directly support your main messages.

Comparison or change?

Encode data to elicit comparisons or change; layer in contextual data to impart meaning.

Narrative?

Think about your narrative arc, and how unexpected change or an information gap drives your narrative forward. Do you use explainers or labels and mini paragraphs on your data graphics to help your audience?

Color, coherency?

Purposefully use color for encodings and linking data encodings to textual narrative.

Hierarchy, layering, layout?

Your titles, headers, mini-paragraphs, and text should use messages, not just information. Use best practices in typography (*size*, *bold*, *color*, *spacing*, etc) and grid alignment to focus your audience on your messages.

Credibility, transparency?

Cite your sources, briefly mention any important elements of your analysis. Consider whether you need to explain any limitations or exceptions.

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user and job stories

user and job stories, require *research*, helps you to *be specific* on structuring communications

As a [person in a particular role]

I want to [perform an action or find something out]

So I can [achieve my goal of …]

When [there's a particular situation]

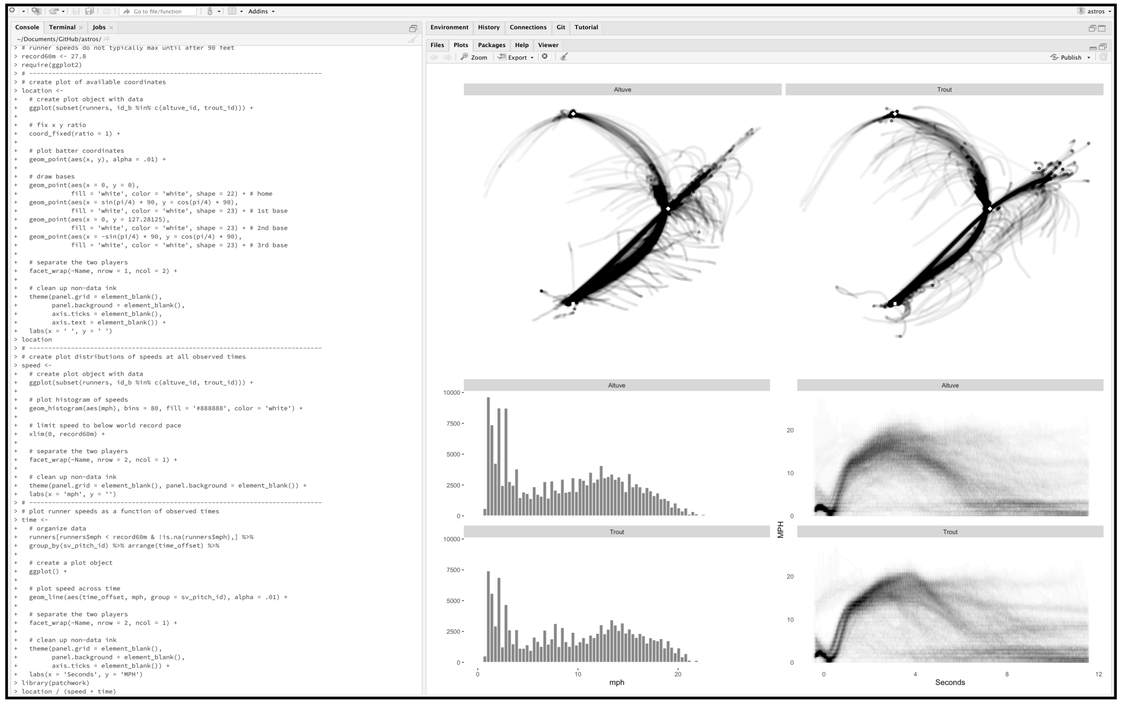
I want to [perform an action or find something out]

So I can [achieve my goal of …]

prototyping

Mike Bostock : "*design is a search problem*"

prototyping, benefits of *code* prototyping — depend on creator's *proficiency* and *speed* in coding



Nadieh Bremer's sketch tools

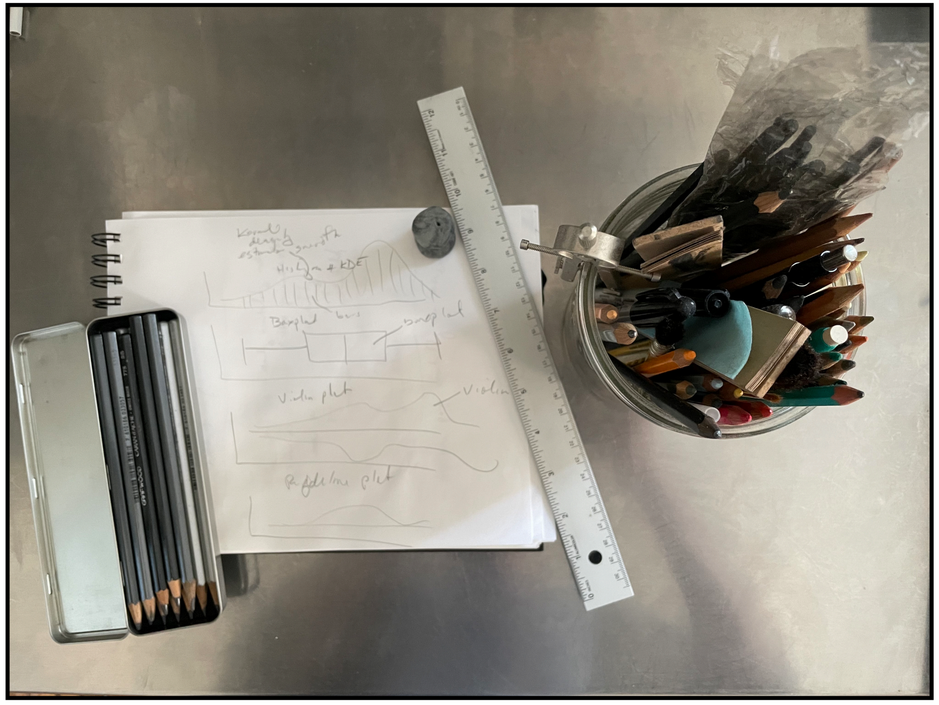
Pen & Paper : Just about as simple as it gets. There's **little that beats getting your ideas out in the open than plain pen and paper**. We **often sketch out our initial thoughts on paper** (or the "digital" paper of our tablets). Nadieh basically always has a small pocket notebook and pen within her reach, even when outside, so she can start a brainstorming session wherever she might be. Shirley used a sketchbook until she got an iPad Pro mid-way through Data Sketches.

— Bremer & Wu, 2021

iPad & Apple Pencil : A stand-in for the conventional "paper and pen," the introduction of high precision tablets, drawing tools, and apps makes it easy to take a "sketch" to the next level. We can undo an action, easily switch between colors and pen types and work with multiple layers, while still having the **ease of drawing with our hands** (as opposed to code).

— Bremer & Wu, 2021

Shirley Wu's sketch tools



Yep, me too.

pairwise prototyping your (interactive) communications

pairwise prototyping, first *audience-purpose-affordances*, then *divergent sketching*

A ***shares interactive*** communication with **B.** A does ***not*** describe or explain.

B *thinks out loud*, answering: whether and how the communication reveals its audience, purpose, and interactive affordances for exploring.

A ***listens*** and takes notes: this is an opportunity to learn outside perspective on the communication.

pen & paper : A shows B raw data. Together, start ***sketching divergent ideas*** of alternative structures to show and explore in the data.

Then switch. Use half the time for each interactive. Pair-wise prototyping is challenging, but hopefully fun.

The reward. The pair with the most divergent sketches wins … the most divergent sketches.

pairwise prototyping, our class workshopping version — first *audience-purpose-affordances*, then *divergent sketching*

Group A

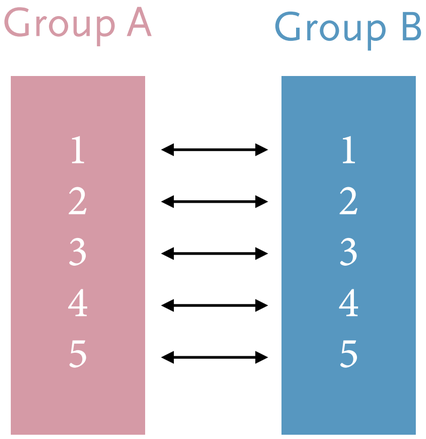
1
2
3
4
5

preparation 30

Group B

1
2
3
4
5

pairwise prototyping
15 + 5 + 15



Group A

1
2
3
4
5

debrief 30

Group B

1
2
3
4
5

Were you an *active learner* today?

Resources — stay curious

References

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course evaluations — improving *your* program

course feedback, why? — your thoughtful words *help me help you*!

Definitely, again, I want to use what you write to ***advocate for you*** and give you more of the type of guidance you found helped you.

I listen, learning what works, and keep updating my teaching material — *examples, visuals, code, textbook* — of which I ***give you future access***.

Let's use this time to be thoughtful, and keep improving our alma mater — ***I welcome you as a Columbian, too***!

This message is from a mailing list. Unsubscribe

Dear Faculty,

At the end of each semester, students are asked to complete course evaluations, which ask them questions about their opinions regarding the course and course design and of the instructional effectiveness of the Instructor of Record, the Course Associate, and the Teaching Assistant. The course evaluations serve the following purposes:

- Helping program directors and administrators identify courses that need to be updated or revised in order to be more professionally relevant to students.
- Providing feedback on the structure of a program's curriculum and identifying gaps in course offerings.
- Giving instructors feedback on instructional practices that are particularly helpful to students.
- Gathering suggestions from students on how instructors can better serve the needs of their students.
- Providing evidence of instructors' excellence in teaching and student support.

However, in order for course evaluations to be useful, students need to feel comfortable responding to them and giving open, honest feedback, and need to feel as though their input is valued. As the Instructor of Record of your course, you can have a huge impact in the quality and quantity of responses by explaining the purpose of course evaluations to your students, highlighting their importance, and providing time in class for students to participate.

All SPS Instructors of Record are expected to set aside at least 15 minutes of class time during the course evaluations window (April 12-25) to allow students to complete the evaluations.

Please review the attached document, which provides information about what the course evaluations are, how they are administered, and what happens with the results.

If you have any questions, please contact Zach Kornhauser, Senior Director of Assessment and Faculty Development, at zk2124@columbia.edu.

Thank you,

Erik

Please ***don't forget Laura***, she worked tirelessly with me as a team — ***we both love helping you learn*** — to give you the best guidance we can!

Yes! I can use what you write that you found helpful to ***ask Columbia to let me give you more*** of what helped you in your future classes.

supplemental

additional critique practice

Audience?

Purpose?

Data encodings, decodings?

Comparison or change?

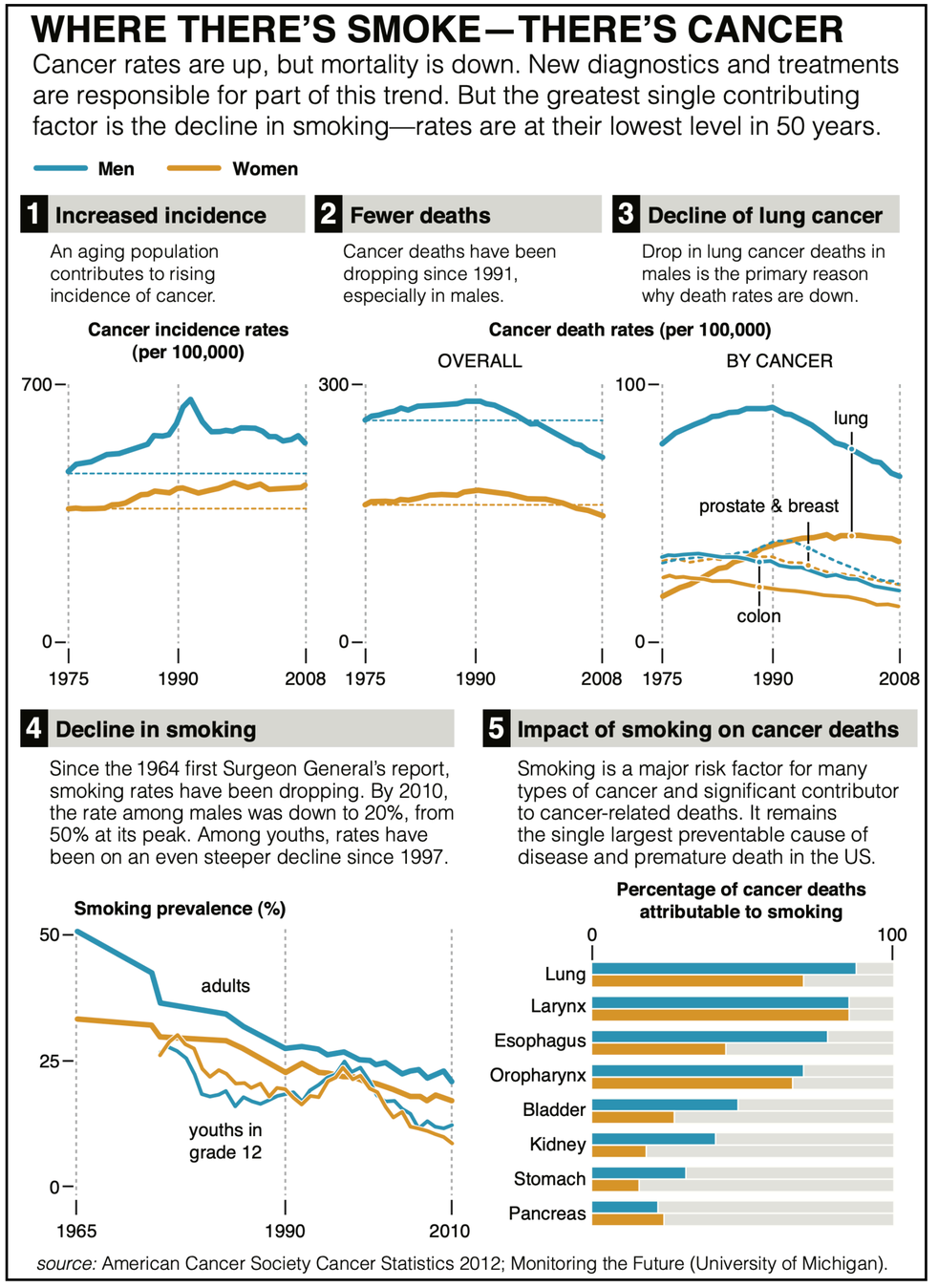
Narrative?

Color, coherency?

Hierarchy, layering, layout?

Credibility, transparency?

Krzywinski, Martin, and Alberto Cairo. "Storytelling." Nature Publishing Group 10, no. 8 (August 2013): 687–687.



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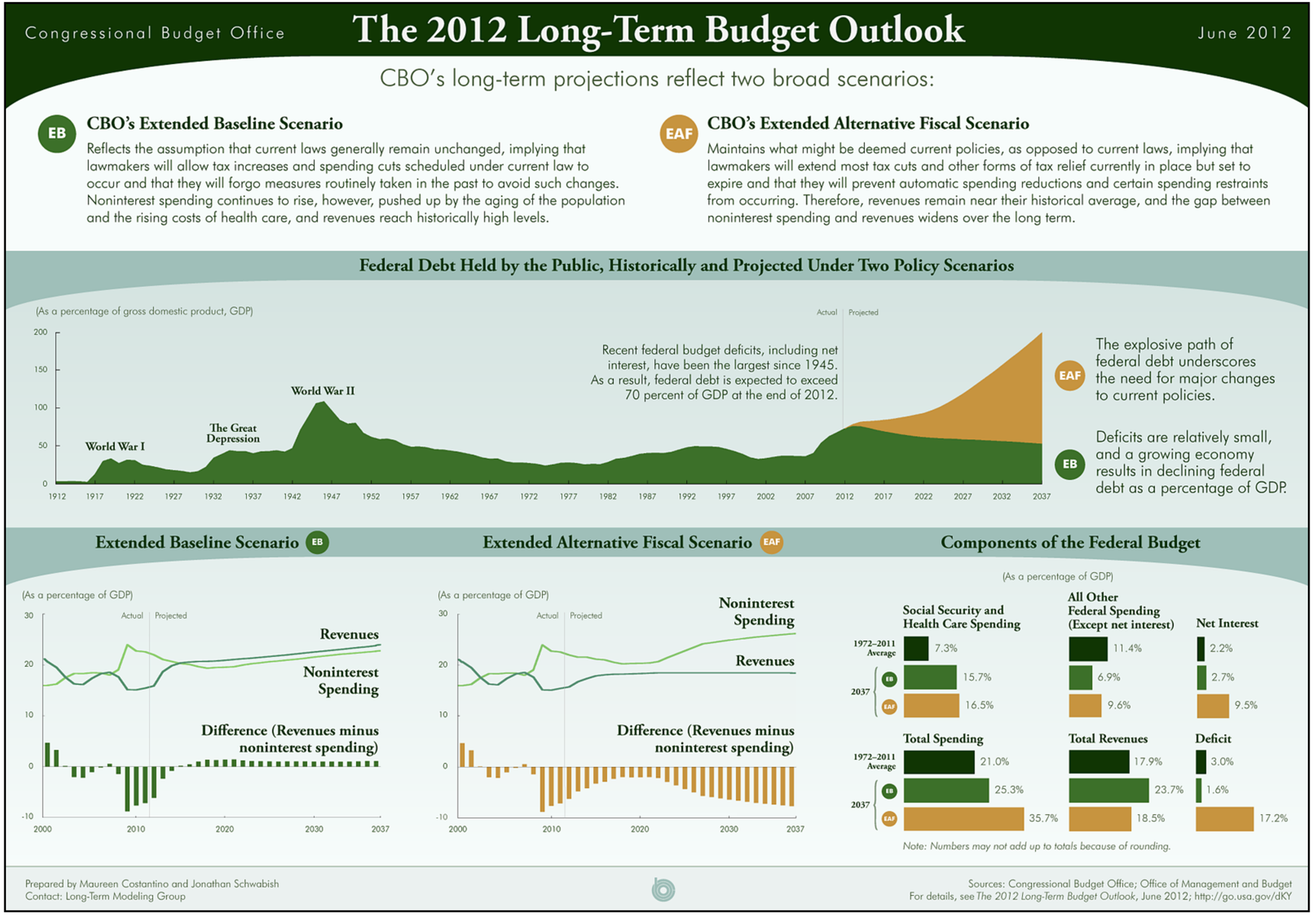
Schwabish, Jonathan, Maureen Costantino. "The 2012 Long-Term Budget Outlook: Infographic." *Congressional Budget Office*, June 5, 2012. https://www.cbo.gov/publication/43289.



criticism for visual communications, **practicing critiques**

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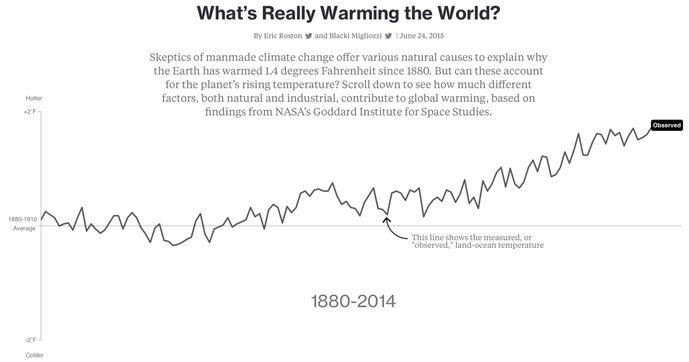
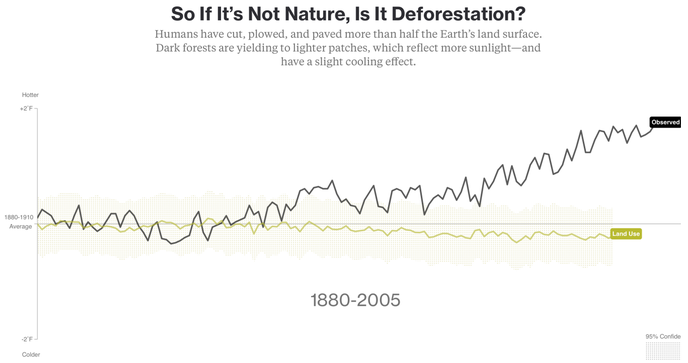
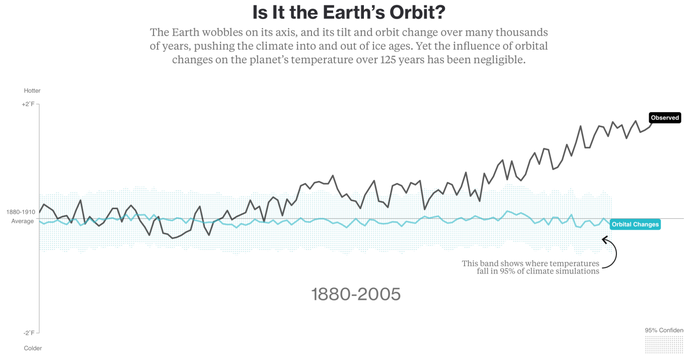
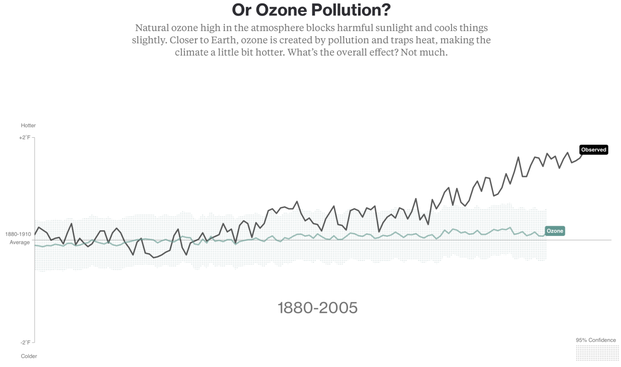
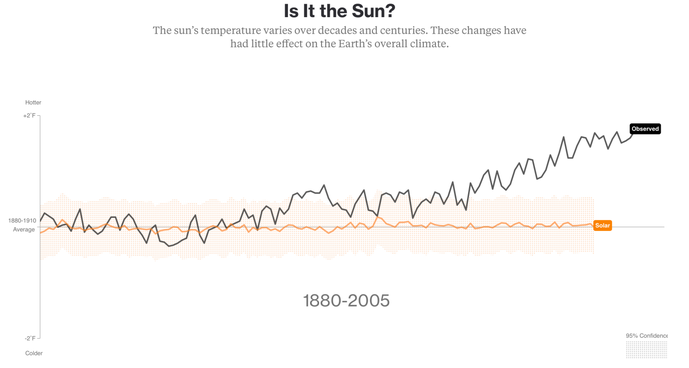
Roston, Eric, and Blacki Migliozzi. "What's Really Warming the World?" Bloomberg, June 24, 2015, Businessweek edition. https://www.bloomberg.com/graphics/2015-whats-warming-the-world/.

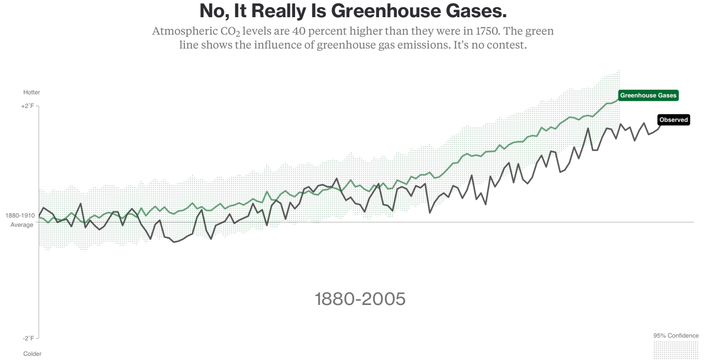












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Spencer, Scott. *Ride Against the Flow*. 2019. Kantar IIB Awards. https://www.informationisbeautifulawards.com/showcase/4367-ride-against-the-flow.