Scientific Presentations

Strategies for engaging and Effective Communication

Beatriz Sousa

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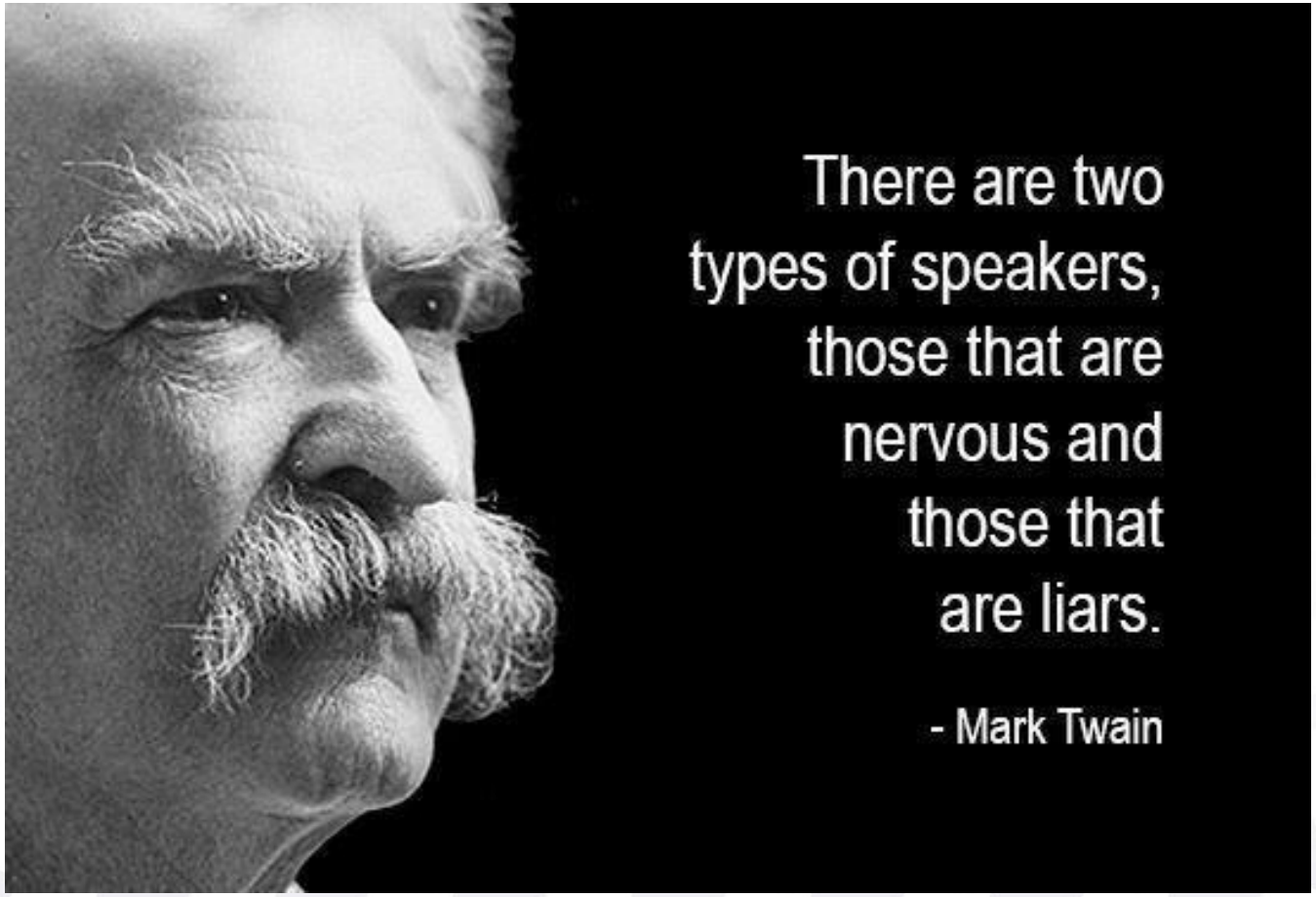
Goals for today

- Overcome nervousness and become more confident
- Plan presentation with audience and message in mind
- Learn how to structure your presentation
- Find the right level of detail
- Reference your sources
- Learn how to prepare and train for a presentation
- Engage audience and maintain their attention
- Handle difficult questions effectively

Overcoming Nervousness

- Acknowledge and understand your fear: **it's completely normal!**
- Preparation is key: the better you prepare, the more confident you'll feel
- Practice: in front of your colleagues, friends… Or record yourself
- Don't Forget to breathe: deep breaths before and during
- Remember why you're there: you want your audience to learn something, not to become the next viral TED Speaker



Group therapy moment

- Think of the worst thing that could happen during your presentation and write it down.

- Can we think of strategies to handle these situations?

Planning your presentation

1. Know your audience: background, expectations, level of expertise

2. Define your goal: Informing? Persuading? Training?

3. Think of your message: 3-5 key points

4. Structure your content: clear beginning, middle, and end

Know your crowd

- Divide into pairs
  - Group 1 – High School Students
  - Group 2 – Experts in your field

- How would you adjust your presentation according to your audience? (tone, detail, examples)

Structuring your Presentation

- Deconstruct your content
- Construct a logical flow of concepts
- Insert visualization, interaction and activities

Structuring your Presentation

Introduction

- Grab attention
- Why it matters
- Roadmap

Main Body

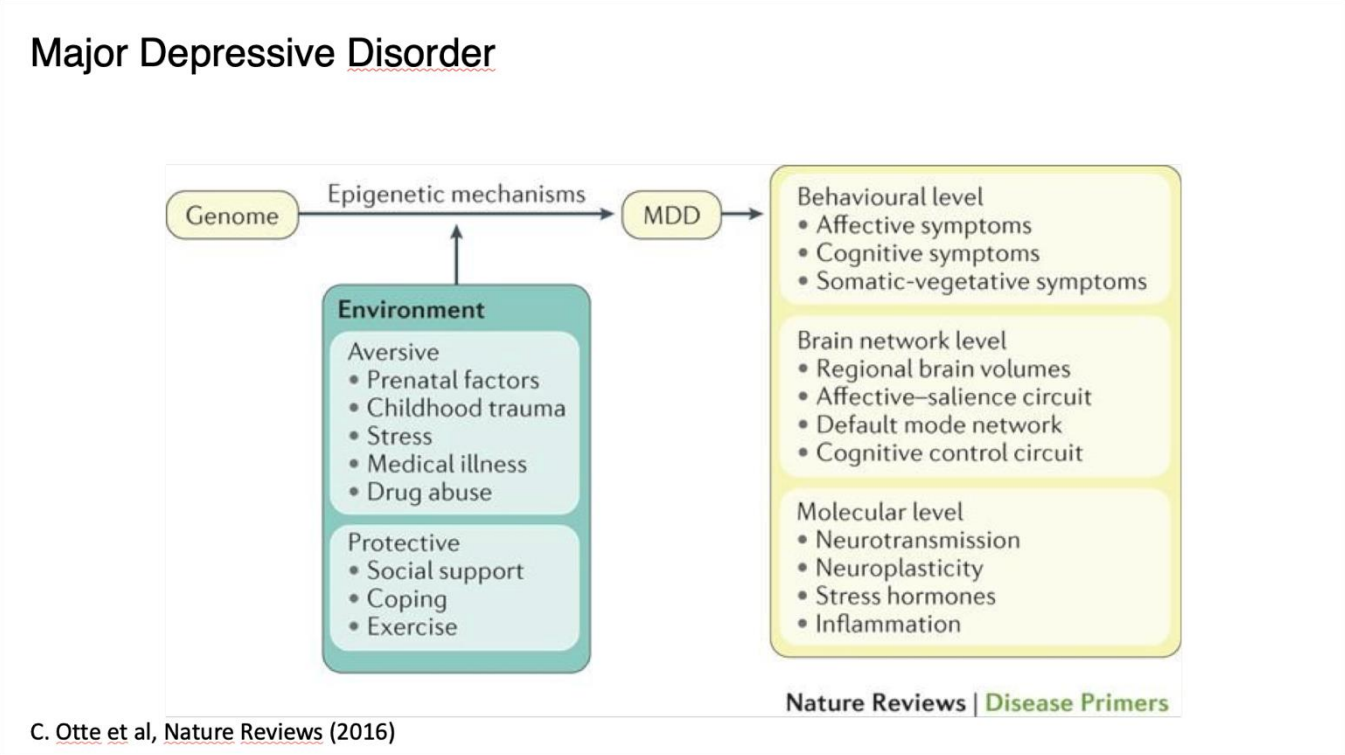
- Present key points with supporting evidence
- Use clear transitions

Conclusion

- Summarise main takeaways

How to design you presentation

- Keep your slides simple and visually appealing: each slide as a single message unit
  - Explicitly state that single message on the slide



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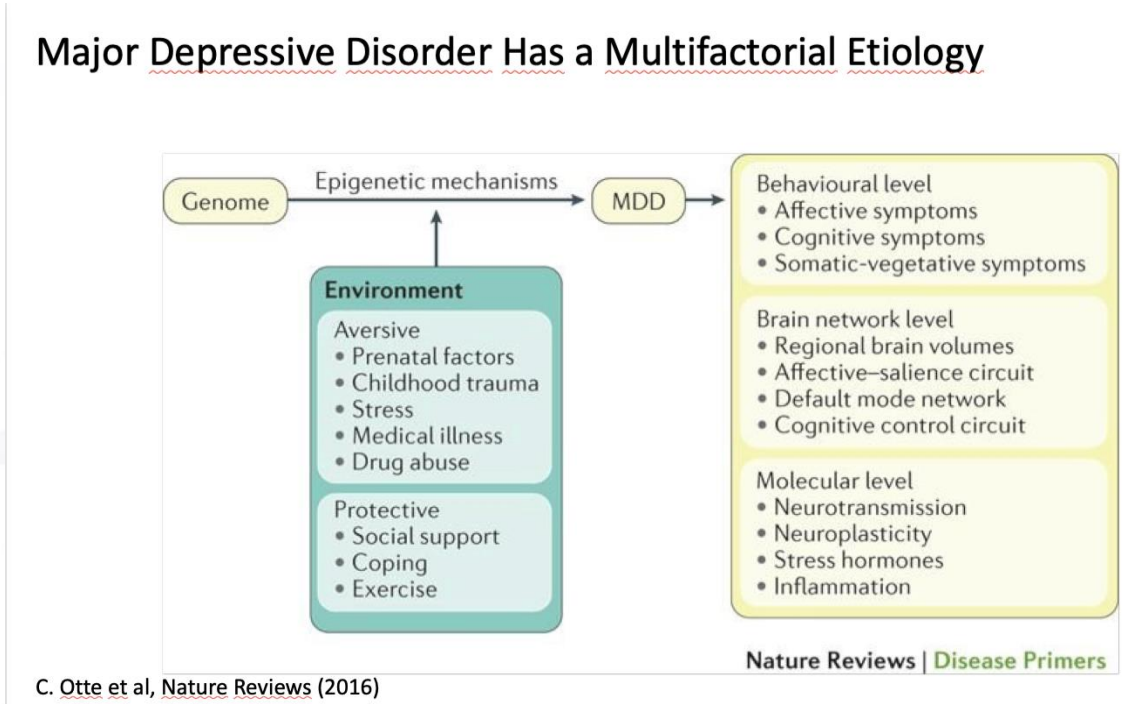

C. Otte et al, Nature Reviews (2016)

Now we understand that the slide is about the etiology of MDD and it's multifactorial causes

Audience knows what to take away

How to design you presentation

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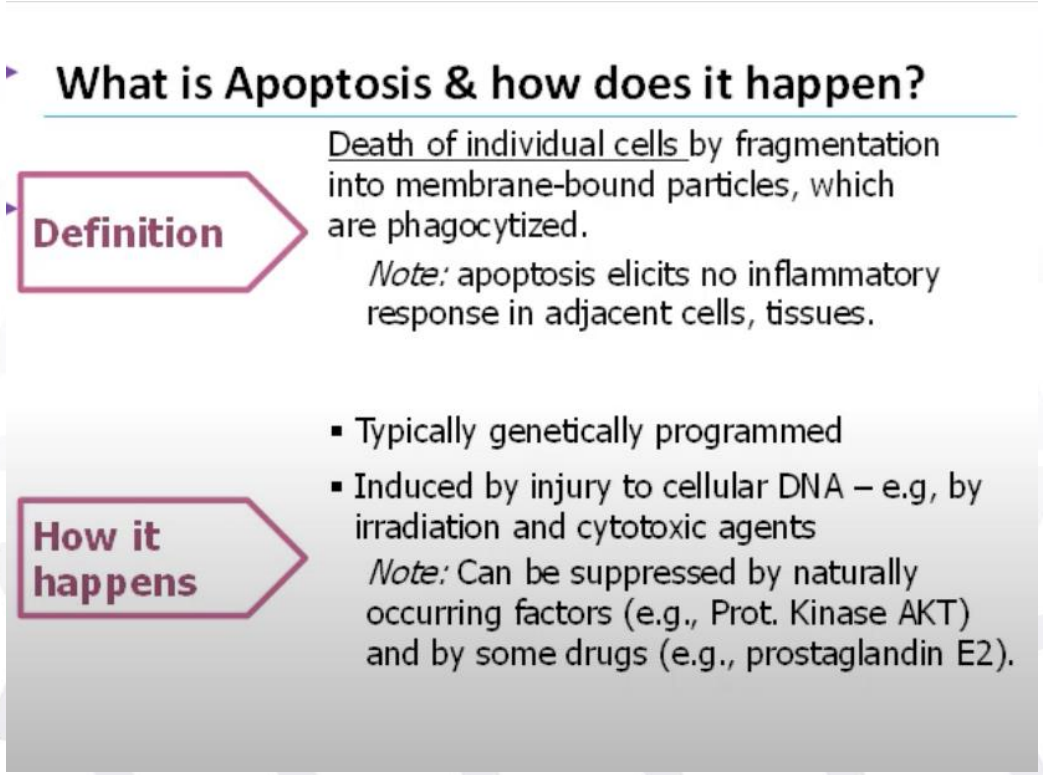
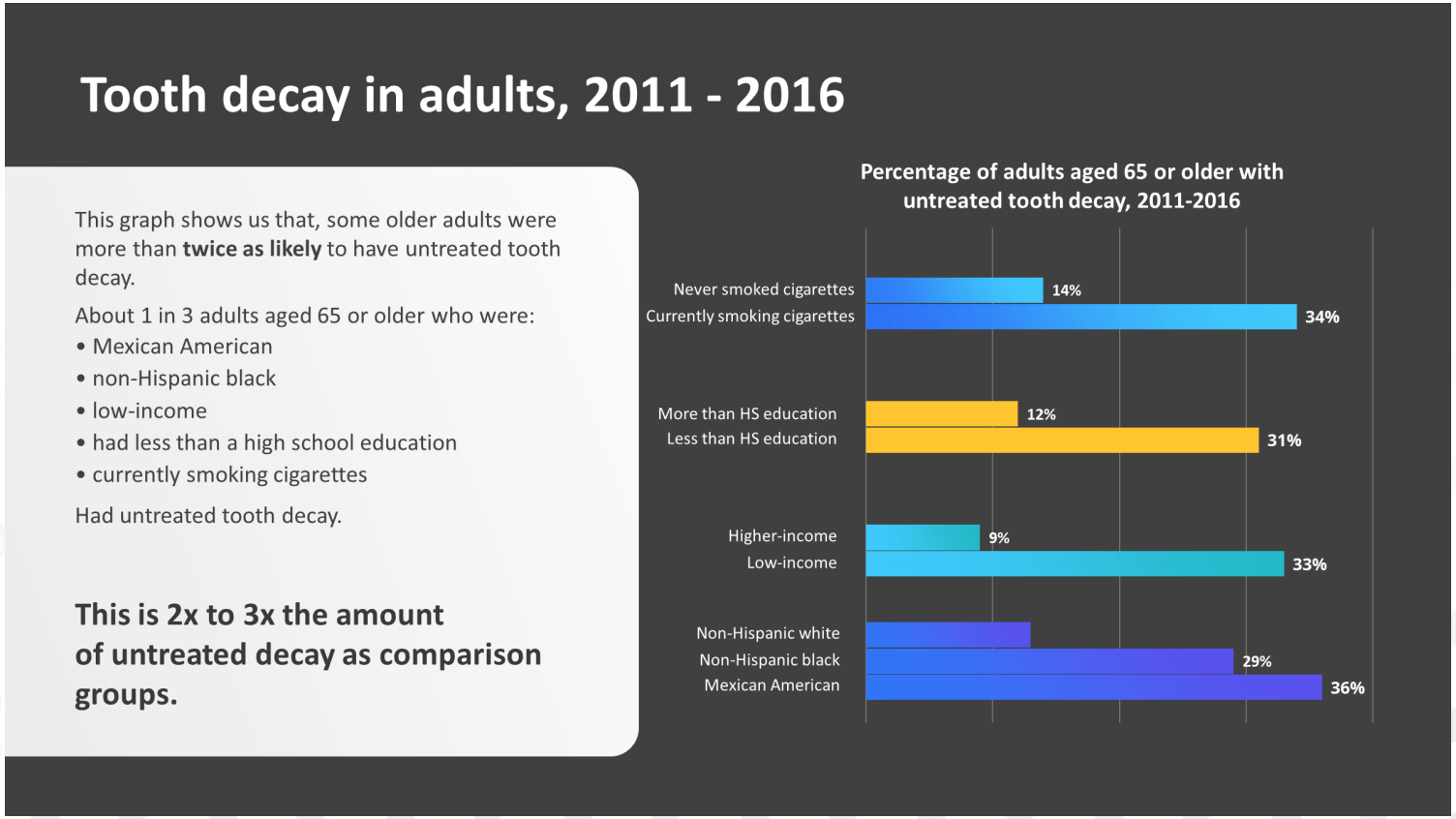


If you have 2 different topics, label each one clearly

CLIMB, Northwestern University
https://www.northwestern.edu/climb/resources/oral-communication-skills/designing-PowerPoint-slides.html

How to design you presentation

- Avoid too much text: When your audience reads, they don't hear you



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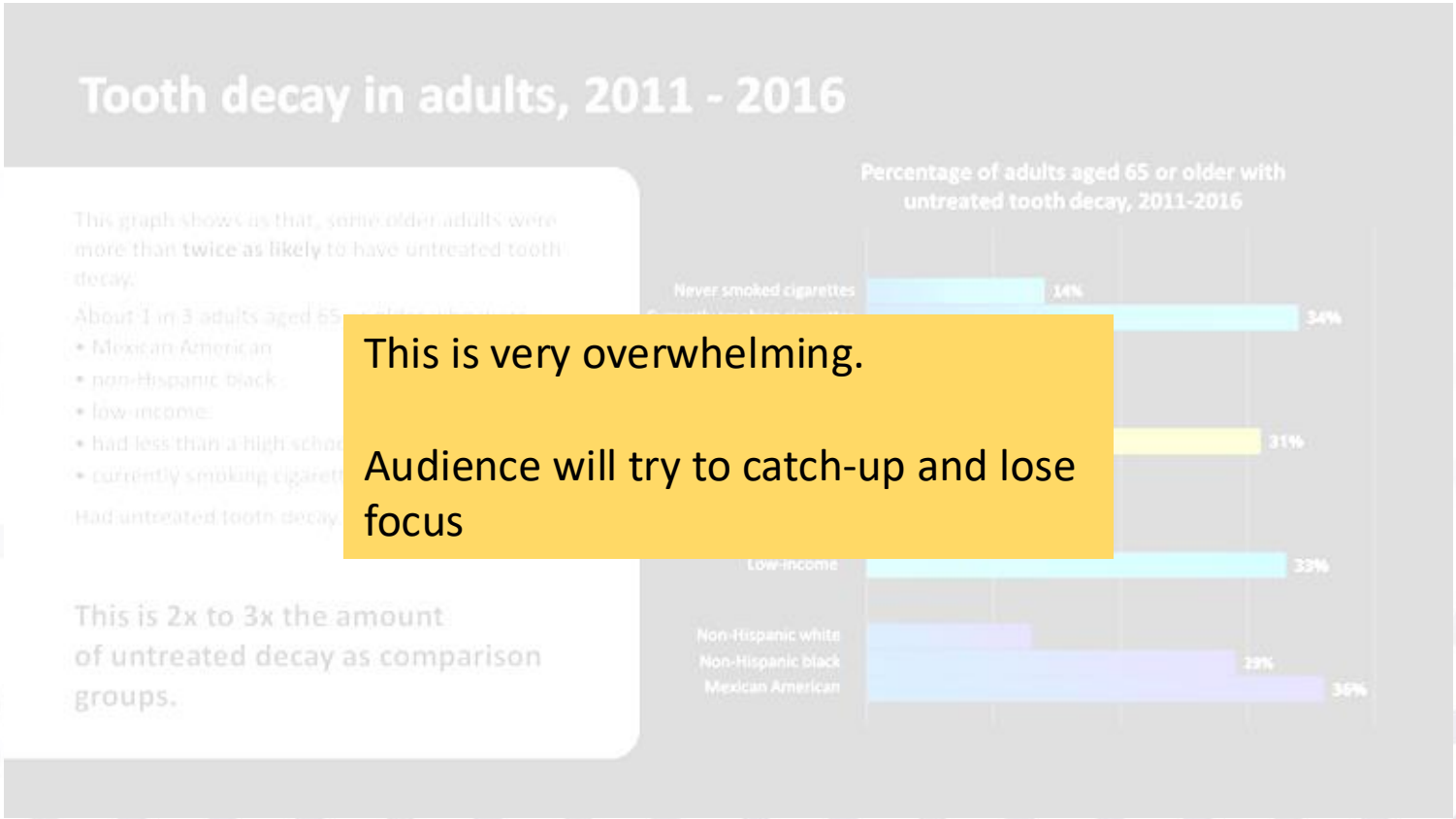
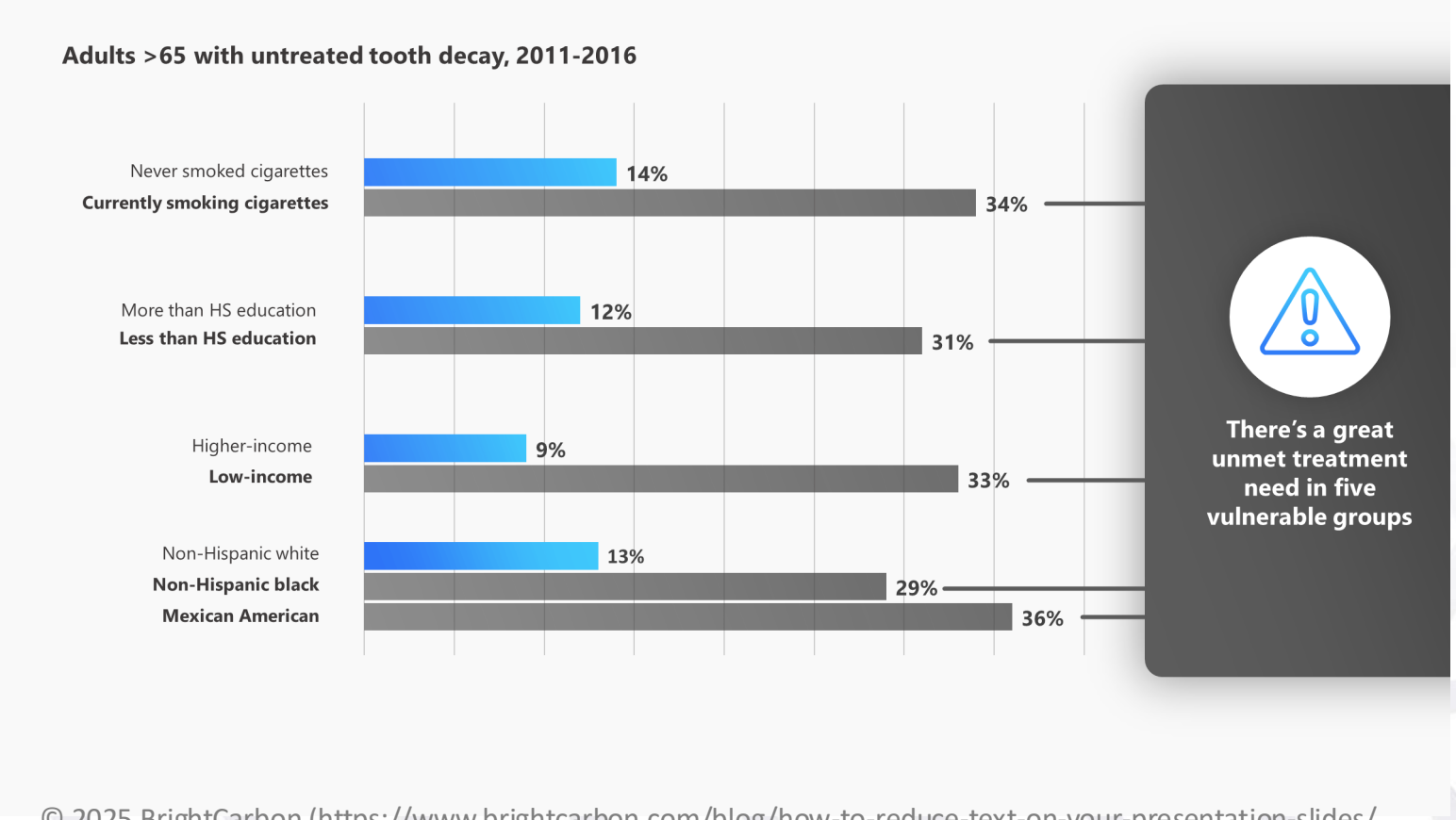


How to design you presentation

- Avoid too much text: When your audience reads, they don’t hear you

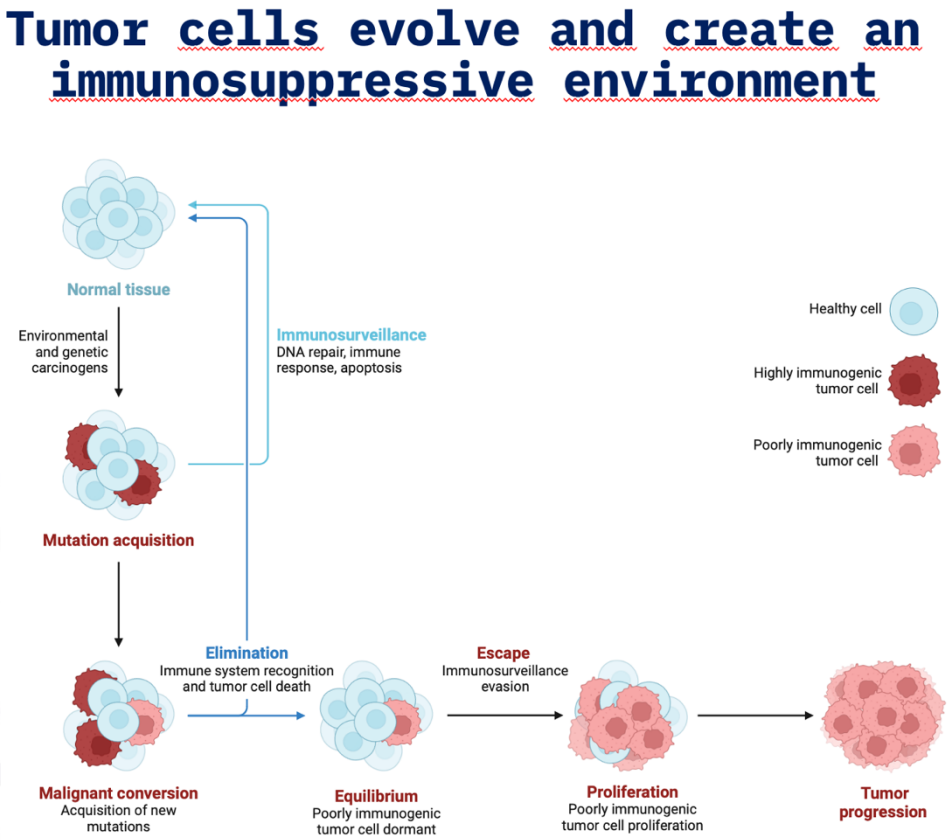


Remove unnecessary details

Move any text that describes what’s being shown visually to notes. Say it, don’t write it

How to design you presentation

- Use simple diagrams



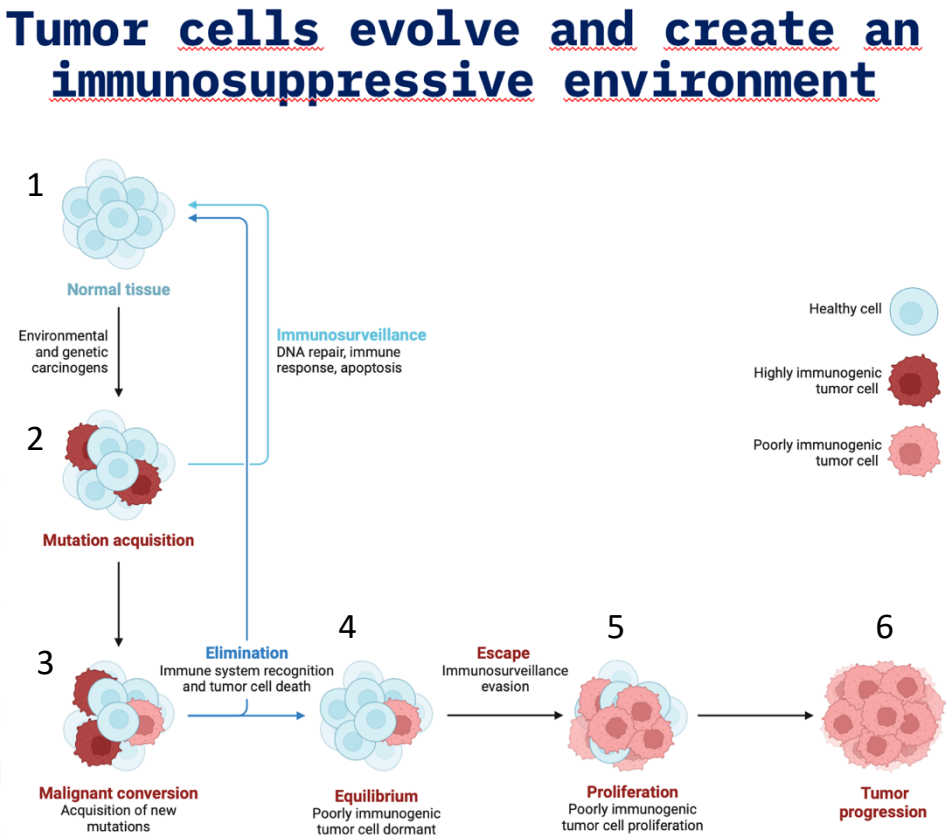
Title states message

Diagram simplifies complex biological process

Raquel Romão e Sofia Torres (2024)

How to design you presentation

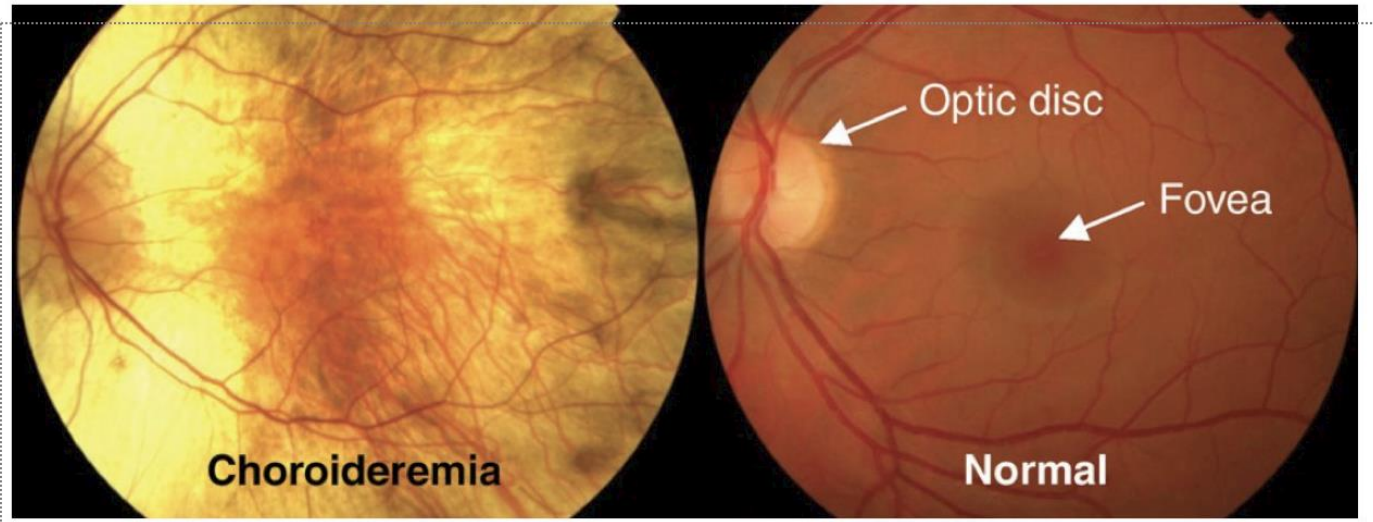
- Signal steps in biological processes



How to design you presentation

- Annotate key biological structures

Retinal Photographs show differences between healthy vs Choroideremia patients



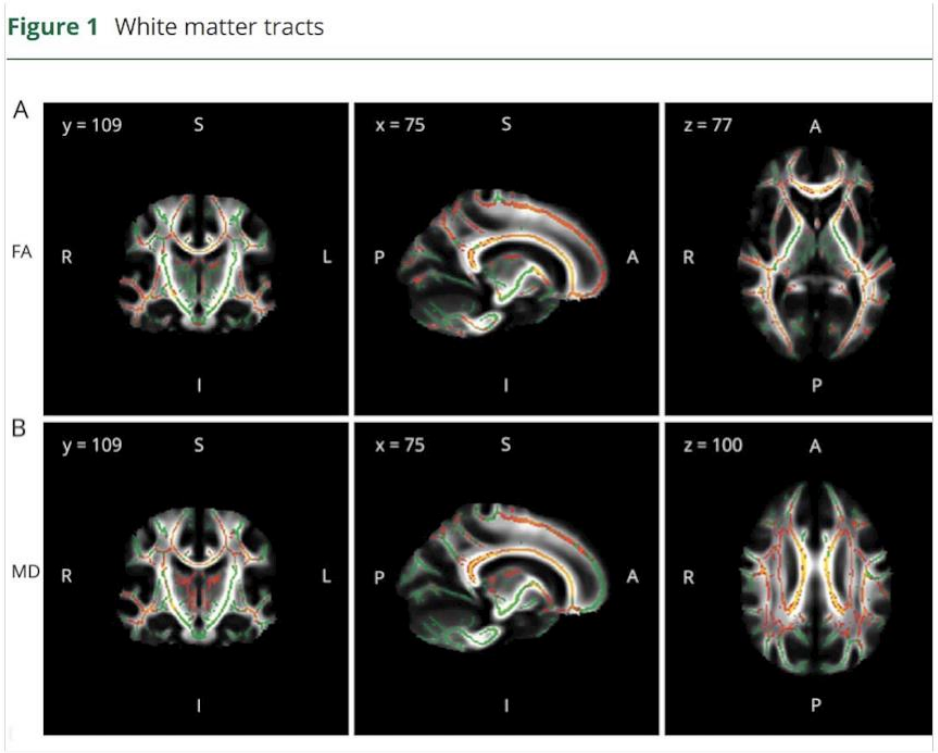
Barnard A.R. et al., 2015

How to design you presentation

- Annotate tables and graphs

Results – Figure 1

- MS patients - widespread abnormalities throughout the WM skeleton in both hemispheres defined by significant FA decrease or MD increase



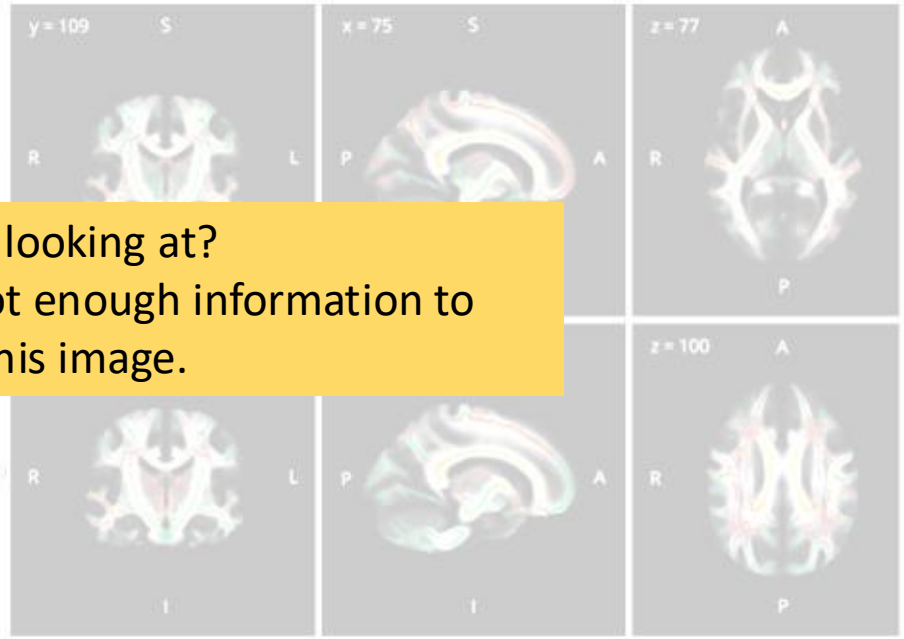
gradient of significance level red < yellow

How to design you presentation

- Annotate tables and graphs

Results – Figure 1

- MS patients - widespread abnormalities throughout WM skeleton in both hemispheres defined by significant FA decrease and increase



What am I looking at?
There is not enough information to interpret this image.

gradient of significance level red < yellow

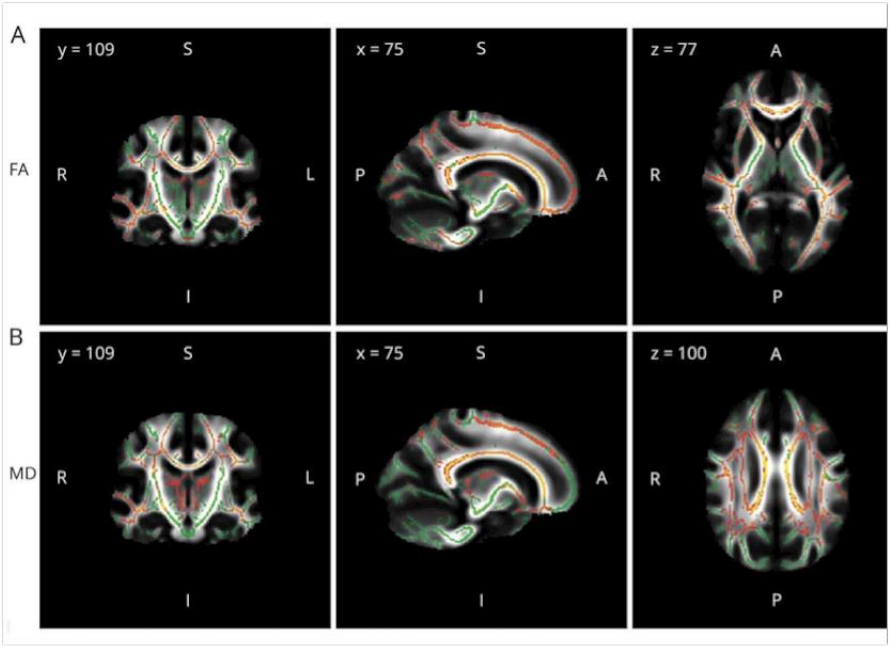
How to design you presentation

- Annotate tables and graphs

MS patients exhibit widespread abnormalities throughout the white matter skeleton in both hemispheres

White matter tracts with significant fractional anisotropy (FA) reduction in patients with multiple sclerosis relative to healthy controls.

White matter tracts with significant mean diffusivity (MD) increase in patients with multiple sclerosis relative to healthy controls.



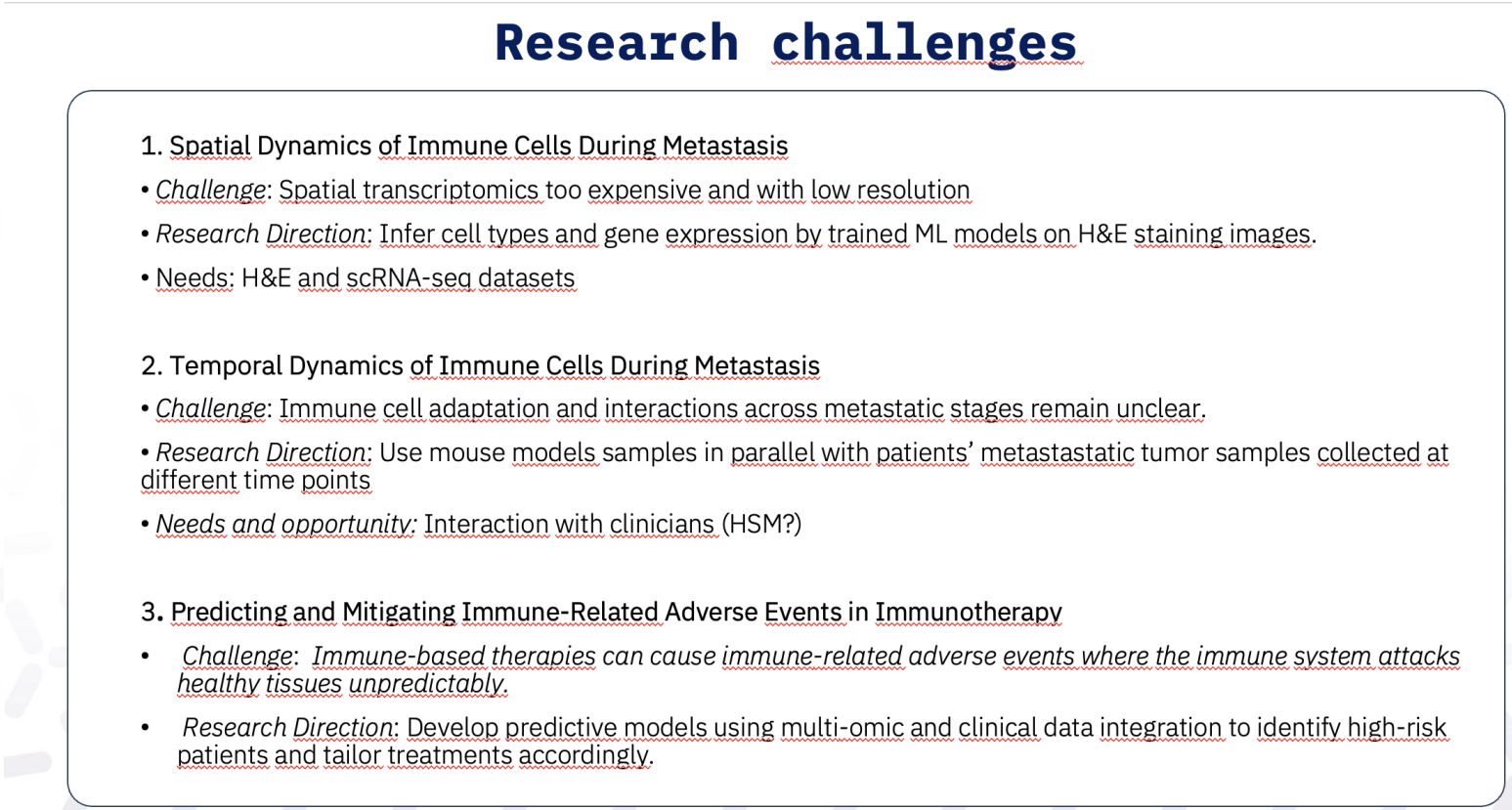
Significant regions displayed in red/yellow (gradient of significance level red < yellow).

Title states the message

Caption gives enough information to understand image

How to design you presentation

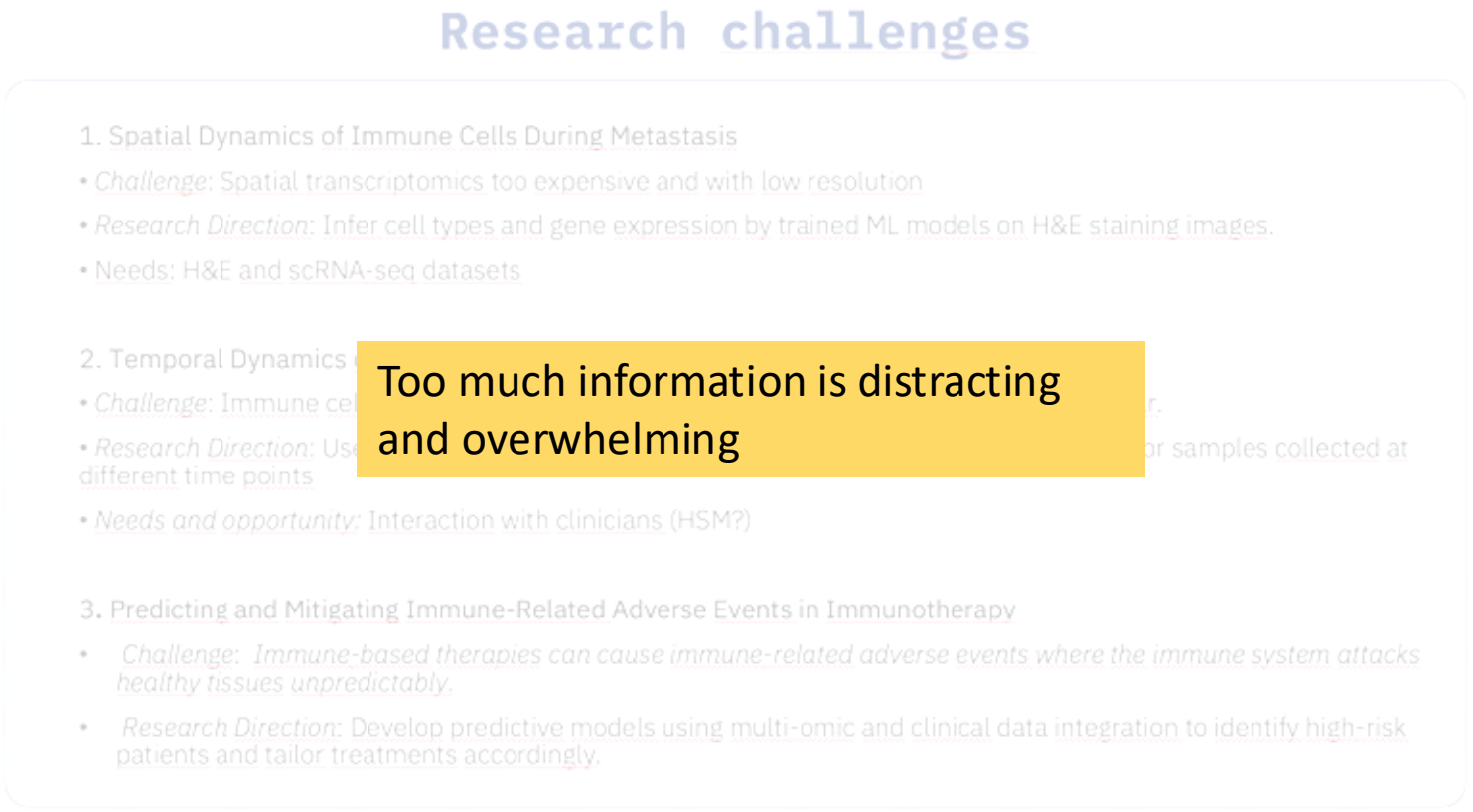
- Use builds to break up information



Raquel Romão e Sofia Torres (2024)

How to design you presentation

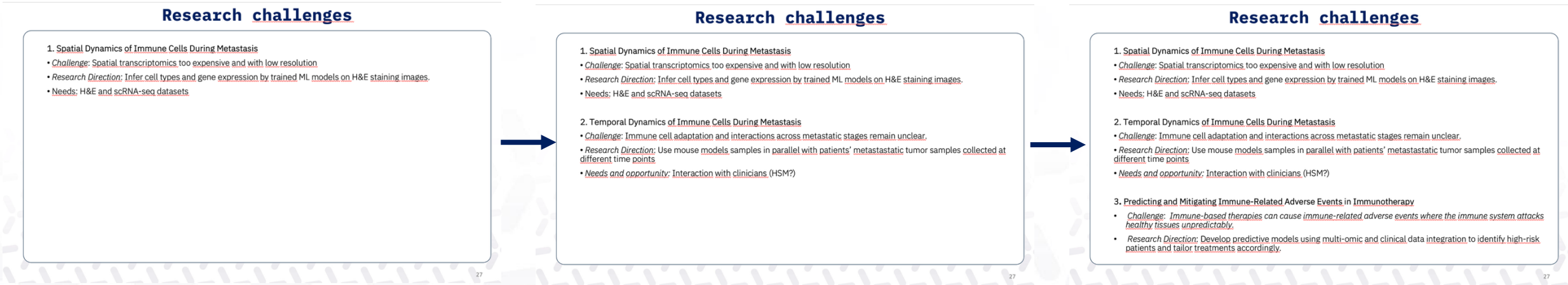
- Use builds to break up information



Too much information is distracting and overwhelming

How to design you presentation

- Use builds to break up information



Adapted from Raquel Romão e Sofia Torres (2024)

Makes it easier for audience to follow along and focus on each challenge

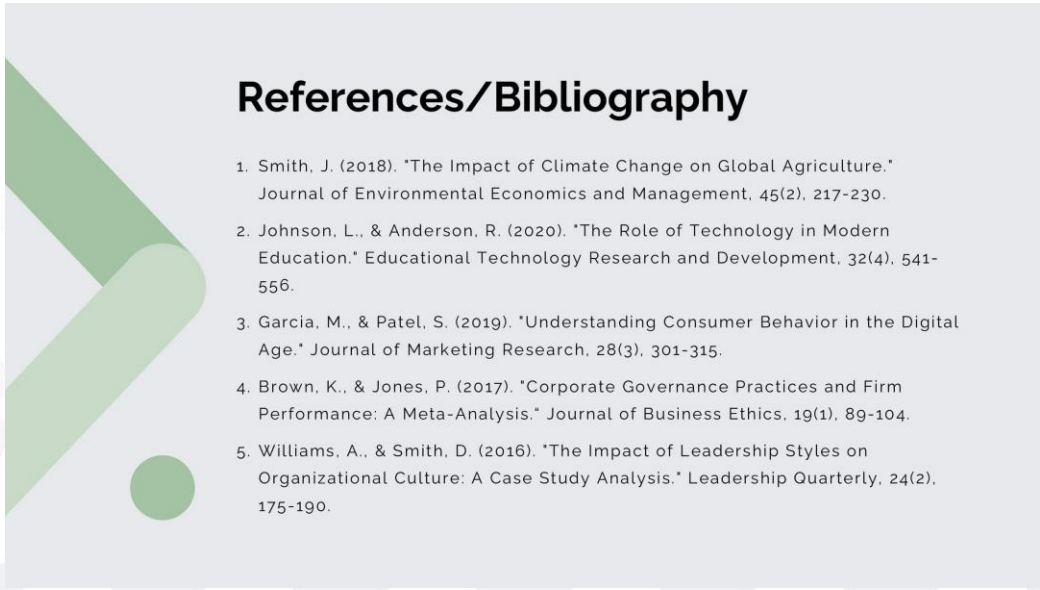
The Devil is in the Details – How much is too much?

- Remember your audience: What do they want to know?
- Simplify complex data and concepts: use charts, graphs, and clear explanations
- Check for understanding and adapt: gauge audience reactions and adapt on the spot if you must

Referencing your sources

- Cite key studies, but don’t overload slides with text

In-text citations and reference list at the end



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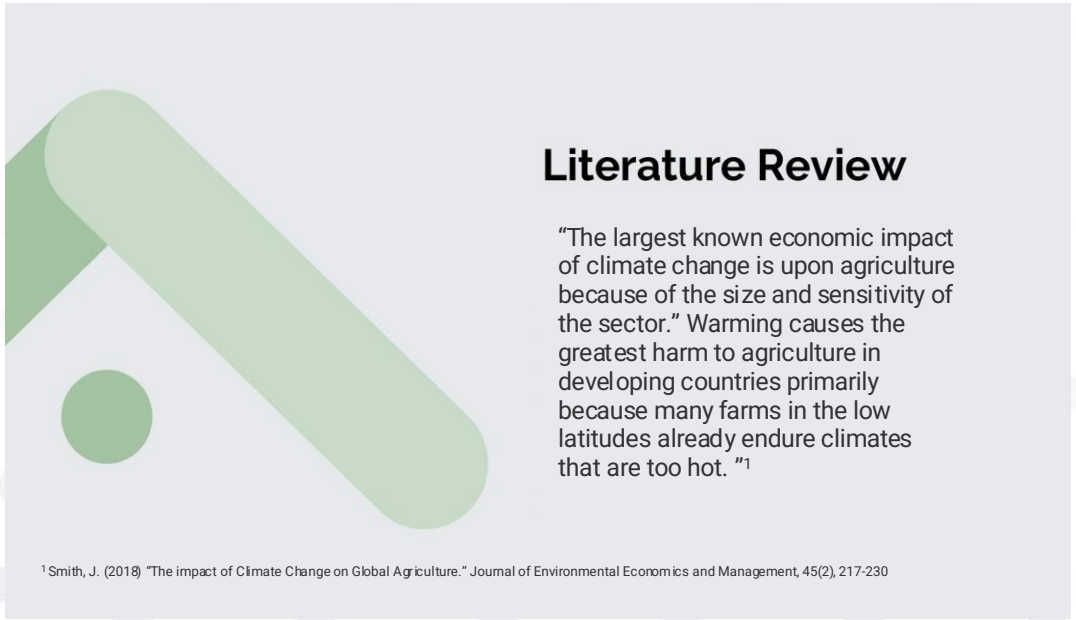
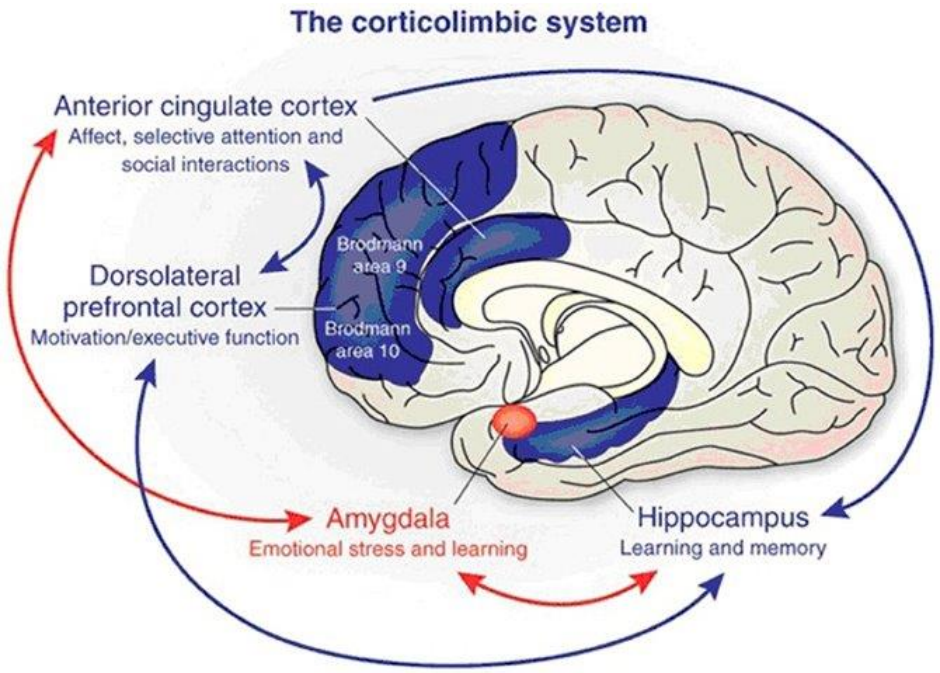
In-text citations footnotes

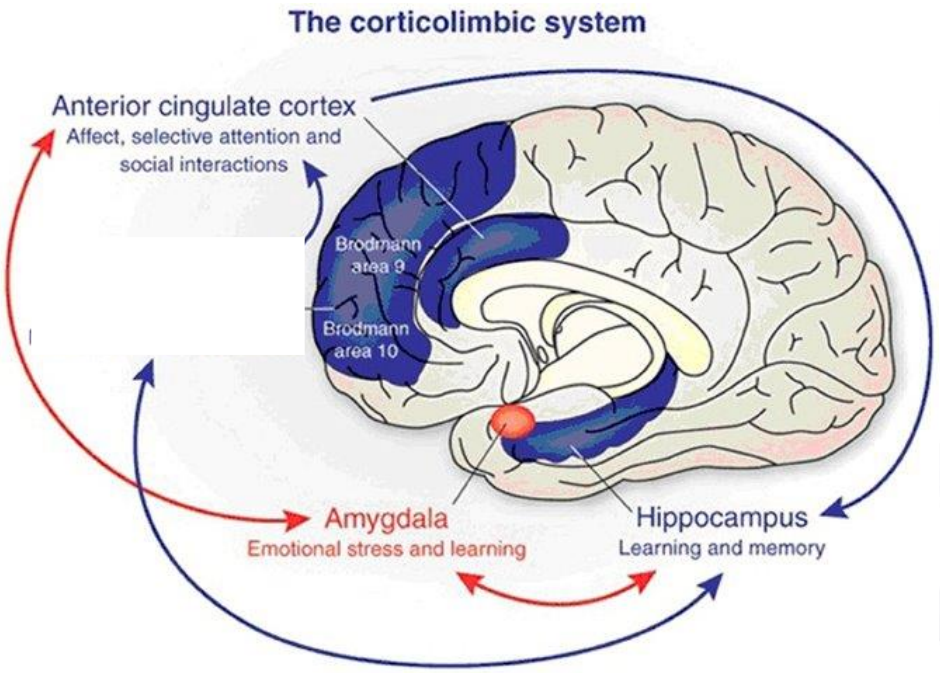


Referencing your sources

- Images should have references too (unless it's copyright free)



G. Leisman et al, Frontiers in Integrative Neuroscience (2012)



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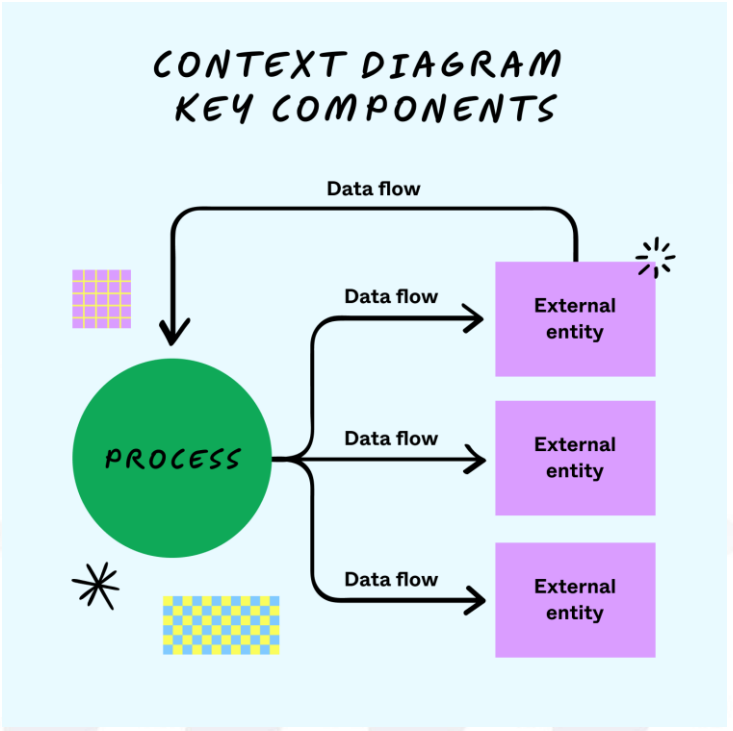
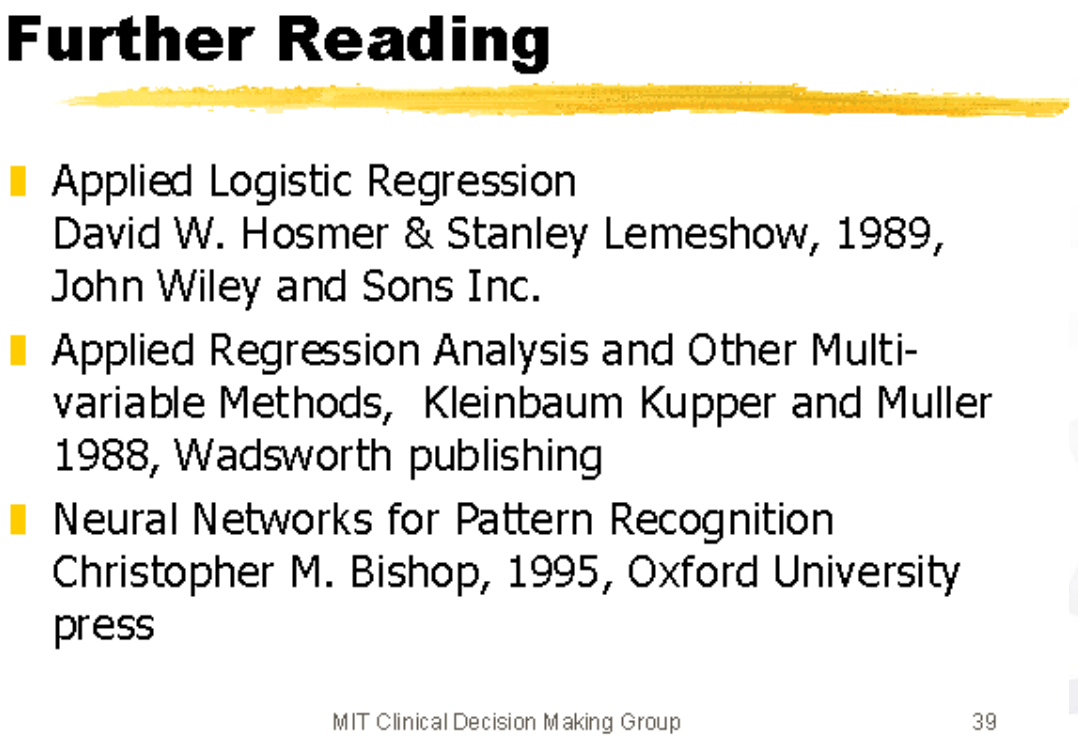
Castle Stalker © Andrea Mucelli, CC BY-NC-SA 2.0



Figma, *"Context Diagram Key Components"* https://www.figma.com/resource-library/context-diagram/

Referencing your sources

- Use Further Reading slide IF necessary



MIT, https://groups.csail.mit.edu/medg/hamish/medcomp3/sld039.htm

Scripts

Pros	Cons
• Useful for highly technical talks • Ensure you stick to the time	• Can make you sound robotic • If you forget a word, you will forget everything

Scripts

Best approach

Use key points rather than memorizing a whole text

Delivery

“I suspect that whatever cannot be said clearly is probably not being thought clearly either”

Peter Singer in Ethics in the Real World: 82 Brief Essays on Things That Matter" (2016)

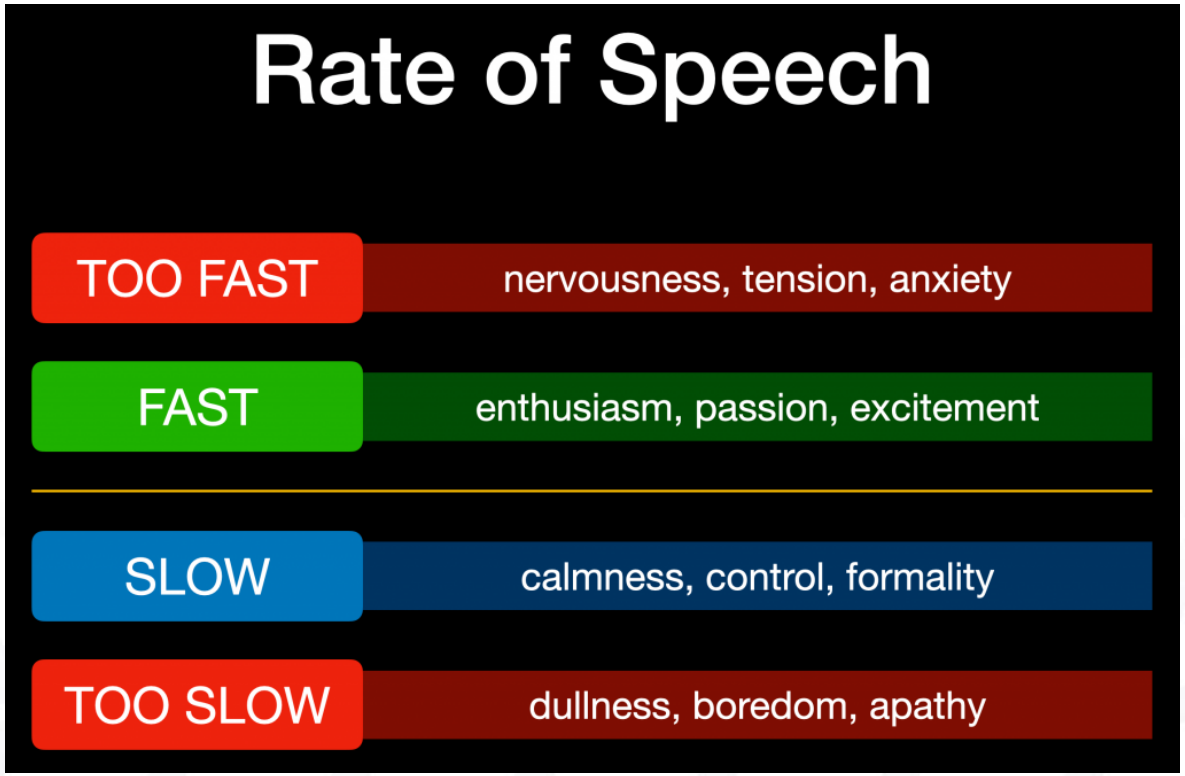
Delivery - Body language

- Maintain regular eye contact;
- Move around
- Make sure your audience sees your face as much as possible

Amy Marcopulos, The Lowell, https://thelowell.org/8472/opinions/practice-makes-perfect-overcoming-my-fear-of-public-speaking/#

Delivery – Tone and Speed

- Vary your volume and speed to emphasize most important points
- Make sure your audience can hear you, but also don't yell
- DO NOT speak too fast (breathe)

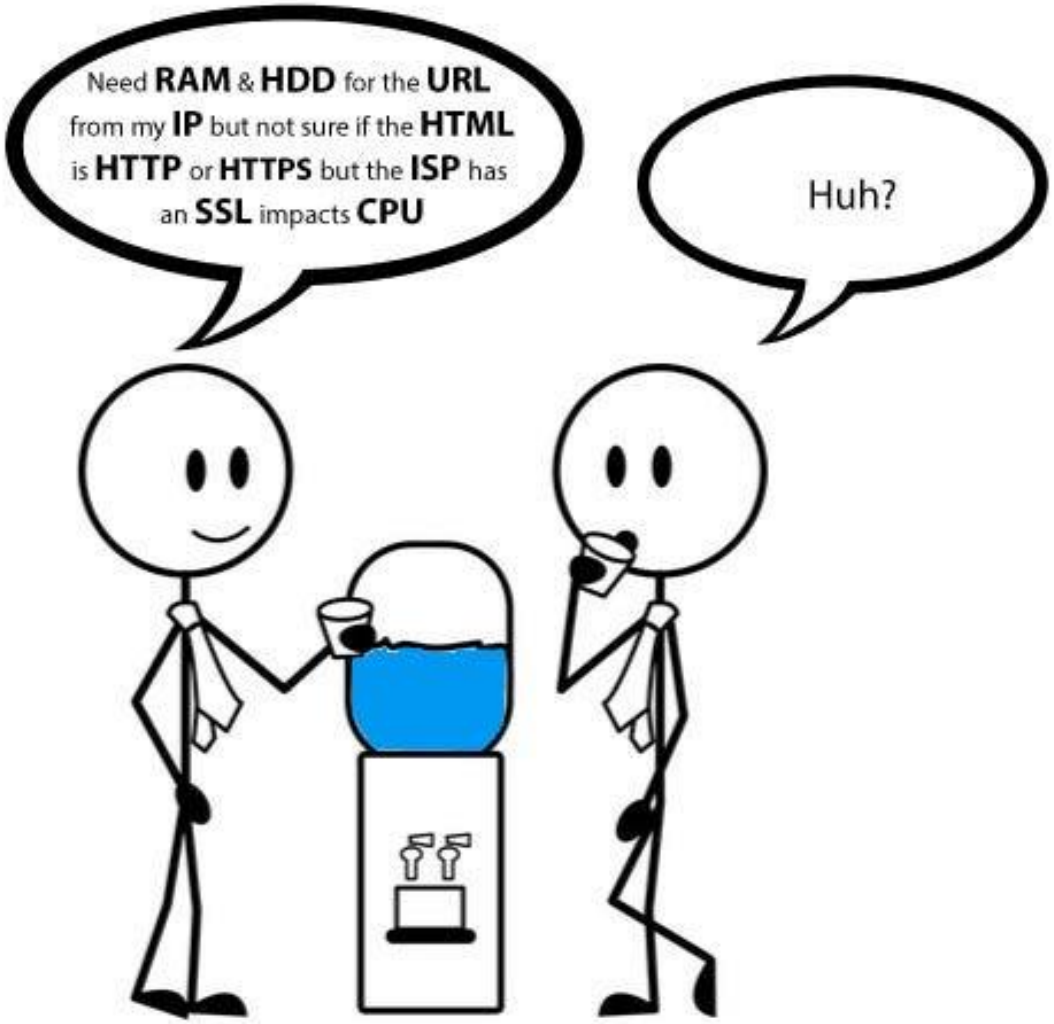


Claudio Sennhauser, https://sennhauser.com/rate-of-speech/

Delivery - Language

For Experts:

- Use **technical terms**, but only when necessary
- Assume **background knowledge**
- Focus on **novelty, evidence, and accuracy**

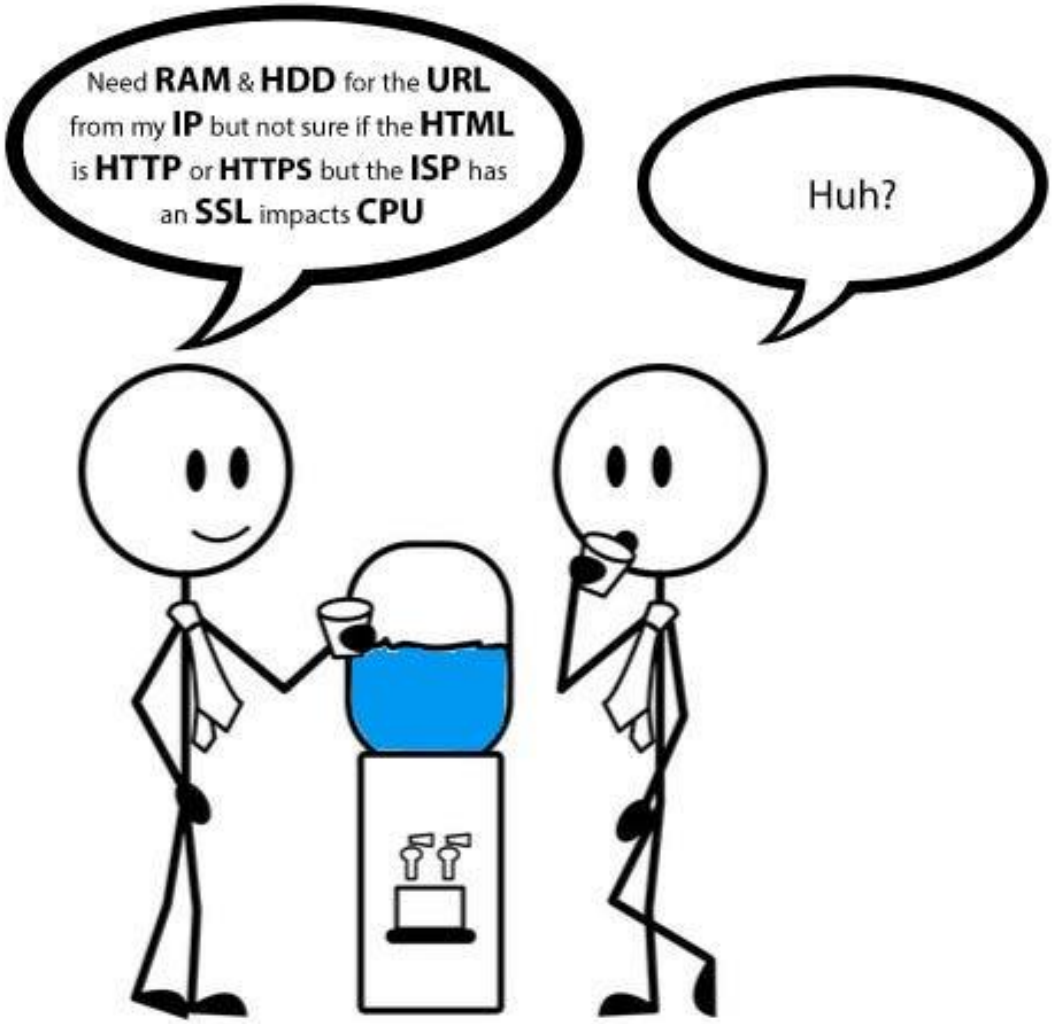


Viraj Wickramasinghe, https://medium.com/@vjanuradhawick/why-do-you-need-to-speak-in-technical-jargon-bbe7fc7b34e2

Delivery - Language

For Non-Specialists:

- Simplify jargon or replace with everyday language
- Use **analogies and exemples**
- Define key terms clearly **(but don’t over-explain everything)**

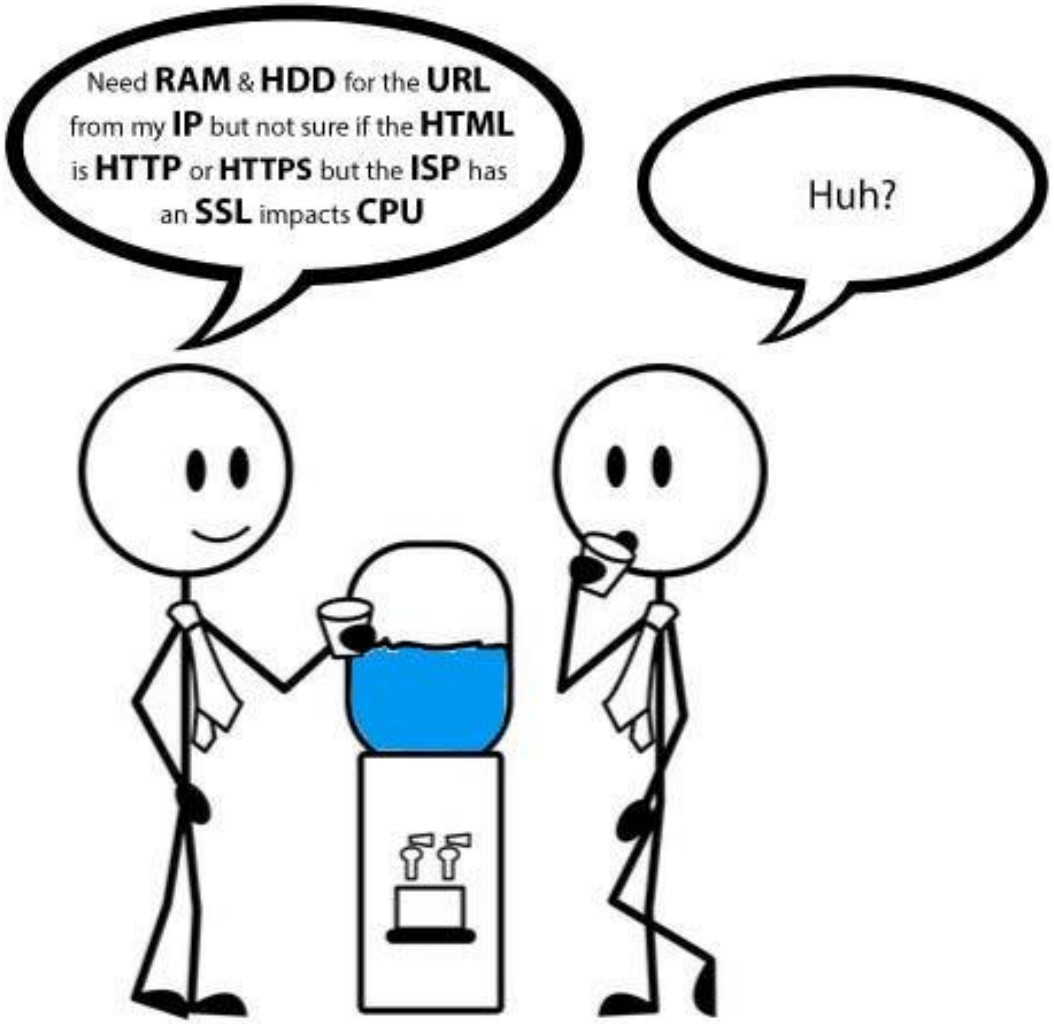


Viraj Wickramasinghe, https://medium.com/@vjanuradhawick/why-do-you-need-to-speak-in-technical-jargon-bbe7fc7b34e2

Delivery - Language

For Mixed Audiences:

- Start with **simpler explanations**, then add depth
- Use **visuals** to bridge knowledge gaps
- Allow for **questions** to gauge understanding



Viraj Wickramasinghe, https://medium.com/@vjanuradhawick/why-do-you-need-to-speak-in-technical-jargon-bbe7fc7b34e2

Handling difficult questions

- Prepare in advance:
  - know what you're talking about!
  - Anticipate possible questions
- Stay calm and remember your 3 main points

Handling difficult questions

- Take a moment before answering: “Let me consider the best way to answer that”
- If you are unsure, be honest: That would be interesting to find out, but I don’t know the answer. Thank you for raising the question.” OR “Off the top of my head…”
- When you disagree with the question: “It seems we think differently. Maybe we can talk more later.”

Final Exercise

- Prepare presentation based on your poster (or improve retreat presentation)
- Deliver 10 min presentation
- Answer questions from your audience

Thank you!