

How to give a scientific presentation

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Note

This is **not** a scientific presentation

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What I say is the **truth**

(but not everyone will agree)

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This isn't a particularly good talk

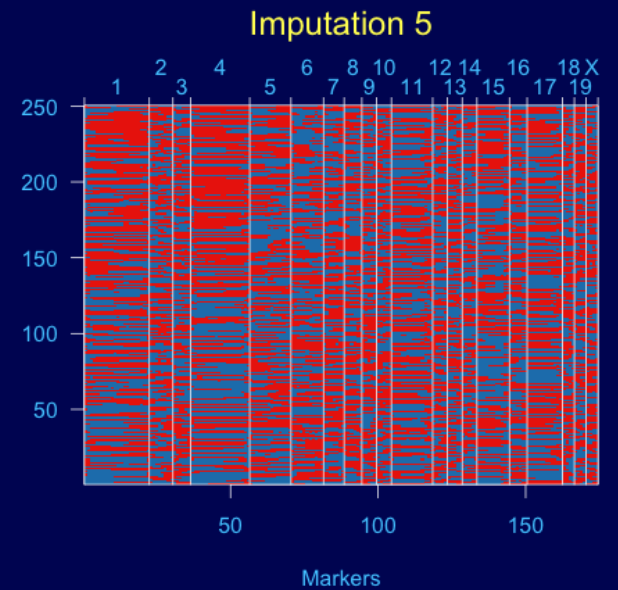
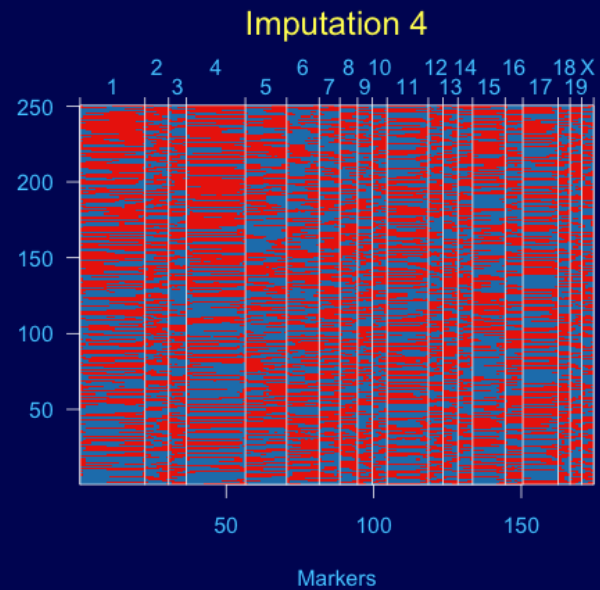
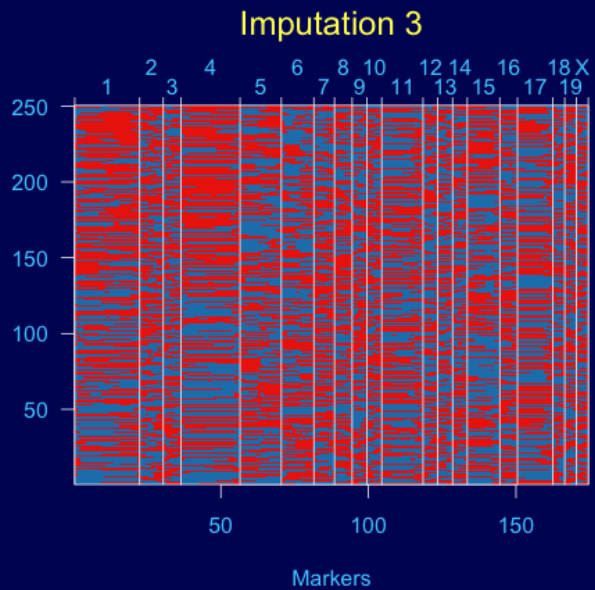
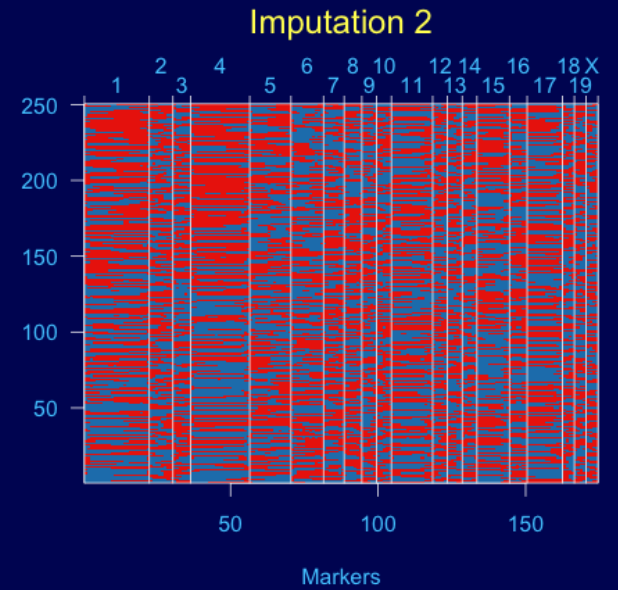
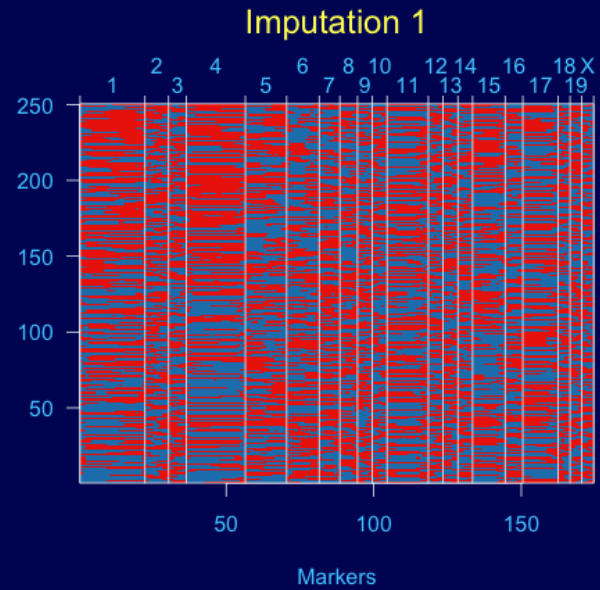
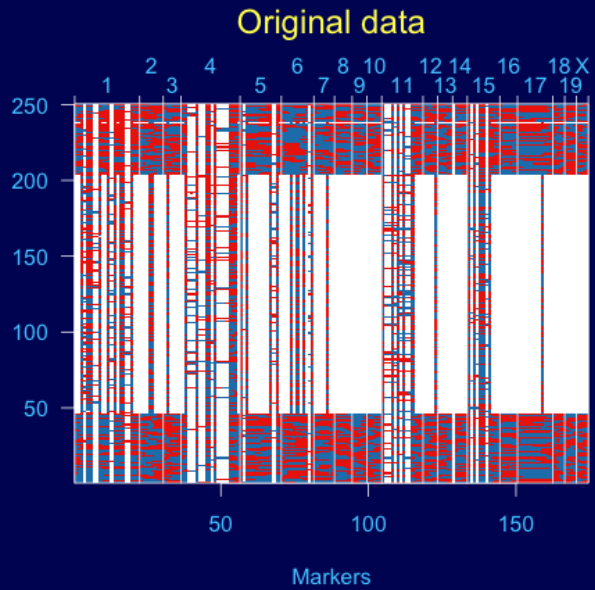
Why give a talk?

- You're compelled to
- For practice (eventually, you'll be doing it a lot)
- To get a job (an indication of teaching ability)
- To tell people stuff
- To become known
- To get people to read your papers

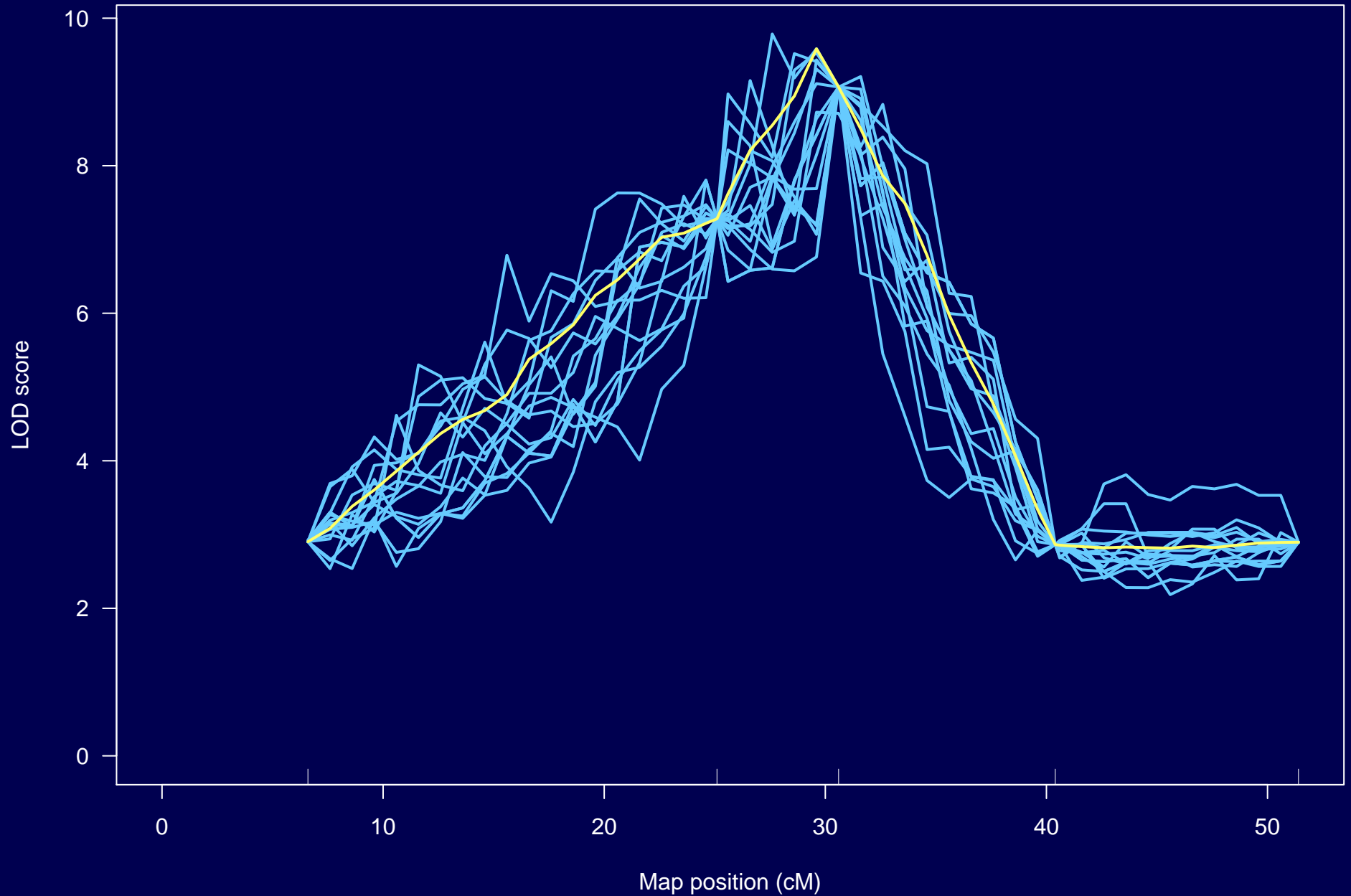
Basic principles

- Know your audience (don't overestimate them)
- Take it seriously (you're being judged)
- Keep things simple (have one or two key points)
- Tell a story
- There are lots of ways to be good (and bad)
- Know yourself (adopt another's style at great peril)
- Go to lots of talks and pay attention
- Images over text

Multiple imputations



Imputation LOD curves



More basic principles

- Humor can be good
- Start with an application
- Nobody wants to hear the technicalities
- Give a good summary at the end
- Pay attention to your environment
- Don't bullshit; admit ignorance
- Don't go over the time limit
- The content is key

Ways to annoy me

- Spend a lot of time on a useless outline slide
- Unlabeled graphs; unreadable or meaningless labels
- Use graphs/tables straight from a paper
- Use a serif font (e.g., Times)
- Include lots of unnecessary digits
- Include raw computer output
- Read the slides verbatim
- Cover everything you've ever done

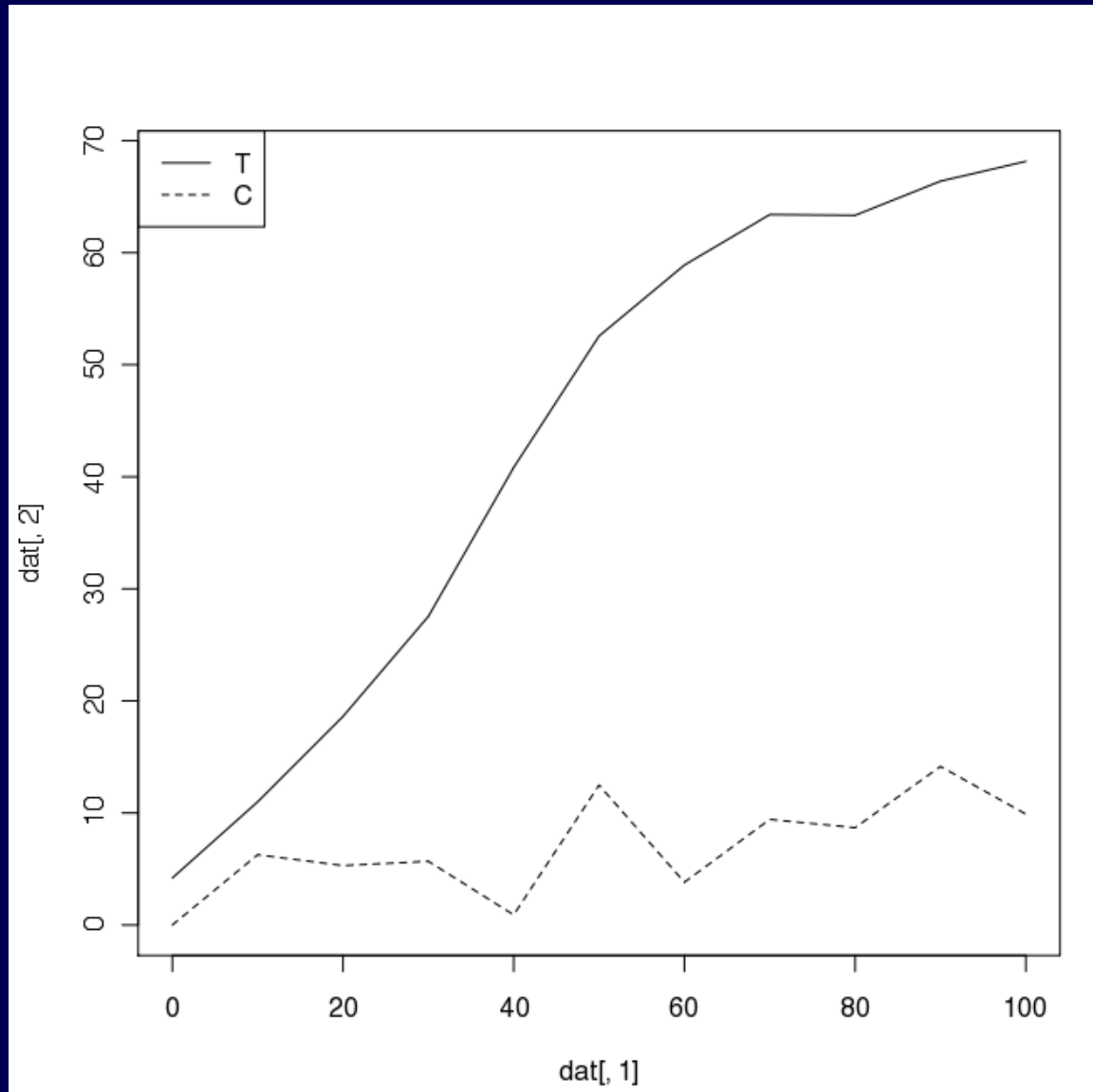
Outline

- Background
- New method
- Simulation results
- Application
- Conclusions/future directions

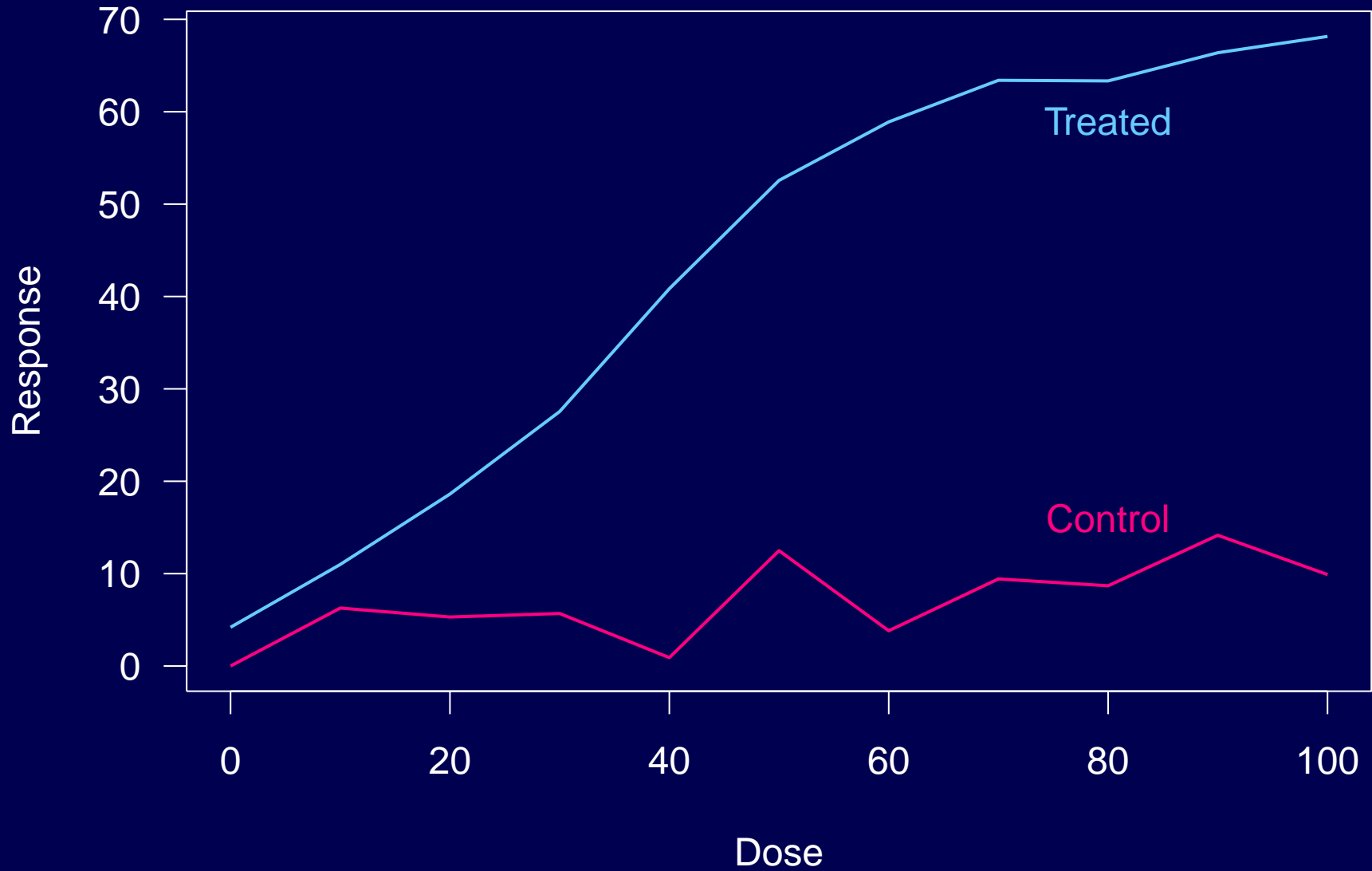
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A bad figure



A better figure



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A bad table

Table 5

Simulation results for using full data, CRs only, and proposed method under four missing mechanisms

Method	Bias ^a		Variance ^b		95% CI ^c	
	$(\hat{\beta}_W)$	$(\hat{\beta}_X)$	$(\hat{\beta}_W)$	$(\hat{\beta}_X)$	$(\hat{\beta}_W)$	$(\hat{\beta}_X)$
(M.1) $P(R = 1) = 0.66$						
Full	0.01346	0.02229	0.04008	0.03685	0.955	0.950
Comp	0.03062	-0.003561	0.1149	0.06732	0.960	0.955
Impu	0.01431	0.021	0.04088	0.05169	0.980	0.975
(M.2) logit $P(R = 1) = 2Y$						
Full	0.007908	-0.02116	0.03838	0.03624	0.975	0.925
Comp	0.01945	0.07096	0.107	0.06581	0.960	0.950
Impu	0.006966	0.01597	0.04227	0.05226	0.975	0.985
(M.3) logit $P(R = 1) = 2X$						
Full	0.007908	-0.02116	0.03838	0.03624	0.975	0.925
Comp	0.01225	0.0589	0.08856	0.06818	0.980	0.975
Impu	0.009563	-0.04699	0.03865	0.04923	0.985	0.970
(M.4) logit $P(R = 1) = X + Y$						
Full	0.01346	0.02229	0.04008	0.03685	0.955	0.950
Comp	0.02404	1.613	0.1102	0.08202	0.955	0.580
Impu	0.01814	0.08289	0.0578	0.06075	0.955	0.970

^aBias = $(\hat{\beta} - \beta_0)/\beta_0$.

^bSimulation variance.

^cConfidence interval using jackknife standard error.

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Computer output?!?

```
> anova(aov(x ~ factor(d) * factor(sex)))
```

```
Analysis of Variance Table
```

```
Response: x
```

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
factor(d)	4	203.661	50.915	49.3485	<2e-16	***
factor(sex)	1	2.199	2.199	2.1317	0.1478	
factor(d):factor(sex)	4	1.923	0.481	0.4660	0.7605	
Residuals	90	92.858	1.032			

```
---
```

```
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

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More ways to annoy me

- Skip the motivation
- Mumble
- Spend a lot of time discussing simulations
- Focus on your computer rather than the audience
- Use a noisy background
- Use a canned Powerpoint background
- Include your institution's logo on every slide
- Include other useless stuff on every slide

Yet more ways to annoy me

- Use gratuitous animations
- Flash your laser pointer around constantly
- Make extensive references to others' work
- Write full paragraphs
- Spend a lot of time on technical details
- Use complicated notation that's hard to remember
- Have lots of typos
- Reveal just a bit at a time

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Preparing the presentation

- What is the take-home message?
- What figures do you want to show?
- What background needs to be covered?
- Want a logical unfolding of the information
- Think carefully about the transitions

Slides

- Be consistent (colors, labels, layout)
- Polished, but not overly so
- Think carefully about colors (projector vs computer; color blindness)
- Use care regarding graphic type (jpeg/png vs pdf/ps)
- Design figures specifically for the talk
- Add more illustrations
- Know your slides (don't let them surprise you)

The text-free talk

- Can you do it with only pictures?
- Wordy slides seem more for the speaker than the audience
- Consider index cards (but don't drop them)

Practice

- Practice by giving talks (take every opportunity)
- Don't let practice kill your enthusiasm
- Think it through carefully (imagine what the audience is thinking)
- Focus on the transitions and the tricky bits
- Do you know how long it will take?
- “10 practice runs for one presentation” (Yikes!)
- Know what *you* need
- I usually have a good idea for my “opening”
- Videotape? (Not me!)

Delivery

- How to dress? (reflects your respect for the audience)
- Exude enthusiasm and confidence
- Move around
- Look at the screen, **with** the audience
- Explain fully or not at all
- Don't apologize
- Avoid getting yourself stuck; feel free to stop and summarize
- Relax; slow down; occasional silence is okay
- You want the audience to **care** and **understand**

Nervousness

- Expect to be nervous (always)
- Be prepared
- Know your audience
- Have something to drink on hand
- It's probably not noticeable
- Use two hands with the laser pointer
- It's okay to screw up now and then (I think)
- It's easier when you care about what you're talking about

The 10 or 15 min talk

- Think: what **is** the goal?
- Explain the problem, sketch the solution, give a few results
- 5 – 15 slides
- Simplify, simplify, simplify
- If possible, choose the topic to fit the time limit

PDF vs Powerpoint

- PDF always looks as expected
- Powerpoint can have terrible graph/font problems
- Powerpoint makes sharing slides easier
- Powerpoint can be easier to create
- Powerpoint: easier to have color and black/white versions
- Powerpoint's defaults are terrible

Q & A

- Listen
- Repeat the question
- Be gracious
- Admit ignorance
- “I’ll have to give that some thought...”
- “I’m glad for the suggestion...”
- “I’ve thought about that, but haven’t yet found a solution...”

Final thoughts

- You should be able to give a talk on your current work at a moment's notice
- Simulation results are almost always dreadfully boring
- Not every piece of work makes a good talk
- I always empty my pockets, just in case
- I like to have an index card with slide numbers
- Know your computer; adjust the screen/energy saver times

Resources

- M Alley (2002) The craft of scientific presentations: Critical steps to succeed and critical errors to avoid. Springer (Lots of fun stories about famous scientists)
- S Morgan, B Whitener (2006) Speaking about science: A manual for creating clear presentations. Cambridge University Press (A bit simplistic)
- RRH Anholt (2005) Dazzle 'em with style: The art of oral scientific presentation, 2nd edition. Academic Press (I didn't like it)
- PB Medawar (1979) Advice to a young scientist. BasicBooks
- RA Day, B Gastel (2006) How to write and publish a scientific paper, 6th edition. Greenwood Press
- PJ Feibelman (1993) A PhD is not enough! Addison Wesley

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