How To Talk for 15mins (in 75mins)

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STAT/BIOST 572

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Outline

- Your talks, and why they're useful
- Planning your talk
- Making slides, and graphs
- Giving your talk

Many other resources are on the class site.

Note: I'll give *some* essentials, but most of this material is just advice. Aim to acquire out a presentation style that works for you.

Your talks

In 572, you'll give two or three talks;

1. **Brief overview:** (15+5 mins) What the paper does, the problem it addresses, and how the papers fits into the literature
2. **Update:** (15+5 mins) [Optional but recommended] What you've figured out, what you still need to do
3. **Final:** (25+5 mins) Full summary of the paper, and your critique

Giving a talk *forces* you to 'make sense' of the material; in your own mind, and the audience's.

For short talks you must figure out and give the 'essence' of the material. Detailed knowledge is required to find the essence, but details should *not* be the focus of your talk.

Know your audience

Before *you* start planning, think about *us*;

- We know 570s material, pretty much
- We know **little** about 'your' problem
- We have **no idea** about 'your' method

You know the paper, we don't – using what **we** know already, tell us why the paper is worth reading; communicate the paper, convince us, inform us.

Particularly for Talk 1, concentrate on telling us the essence of the paper, not every last detail.

Planning

Planning is essential, for effective communication;

0. Very broadly, what's your talk about?
1. Why should **anybody** care about this topic?
2. What 1 or (max) 2 ideas will you communicate to **us**?
3. Why should **we** care about them?
4. Why *do* these ideas matter more broadly (reprise)?

When planning, think about **the audience**, not yourself.

In 15 mins, you have little time to explain the big ideas – but *plenty* of time to lose the audience. Planning will help you be efficient.

Planning

Planning is essential, for effective communication;

0. Once upon a time...
1. ... there was a terrible problem
2. A brave method came along
3. After a battle, they lived happily ever after (maybe!)
4. And the moral of the story is...

Tell this story! Staying aware of a narrative helps you plan – it helps the audience, too.

Use your *huge* experience of well-planned stories...

Planning

A well-planned story I think you know or would recognize;
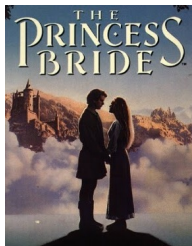
The carefully-planned structure means plot developments make sense – and motivates us to stick around for the (happy) ending.

Planning: Part 0 – setup

Once upon a time

- Tell us who you are
- Briefly, set the scene; "I want to tell you..."
- ... a.k.a. getting the audience to shut up
- Give the paper's title, author

This will take under a minute, in any of your talks.

'Overview' slides are **not** recommended for 15 min talks; given the title slide we *know* what's coming. (In e.g. 1hr seminars, overviews may be more useful.)

Planning: Part 1 – motivation

There was a terrible problem

- Broadly, what is the method's goal? (e.g. estimation of a smooth function, regression with measurement errors)
- What piece of the puzzle is missing? (e.g. Bayesian reference prior, computational ease, a well-behaved confidence interval)

Tell us about these, assuming we've seen 570 and 571 *but not more than that*. It is okay to borrow from e.g. 570s course notes, or elsewhere – with (brief) attribution.

Probably, this part will take 3-5 minutes, in Talk 1.

Planning: Part 2 – substance

A brave method came along

- What does your paper propose? Finding a good way to tell us is critical
- Concentrate on its main features, not e.g. regularity conditions. Connect your explanation to 570s material (or earlier) when possible
- Tell us how it fits in the literature, e.g. *new* Bayesian measurement error methods add prior information to *existing* likelihood-based measurement error methods

This is a big chunk of Talk 1, and Talk 2.

Planning: Part 3 – evaluation

After a battle, they lived happily ever after (maybe!)

- Briefly, is the method valid and/or justified?
- Show it working (or not) in an example
- Show it working (or not) in simulations; where it's bound to work well, and where it's being tested a bit harder
- Compare it to existing methods, again in 'friendly' and 'unfriendly' setups
- Perhaps compare methods' computational needs

Expect to do this at length in Talk 2 and Talk 3.

Planning: Part 4 – conclusion

And the moral of the story is...

- 'Remind' us what you were talking about
- Sum up what you found; briefly re-state the pros and cons – with minimal technicalities
- The End. Thank you. Questions?

Even more concisely;

> *Tell 'em what you're gonna say,*
> *tell 'em,*
> *tell 'em **again**,*
> *and then tell 'em what you said*

Making slides

After planning your story – i.e. *already knowing* most of what you'll say in parts 0/1/2/3/4, make slides to accompany your 15min narrative.
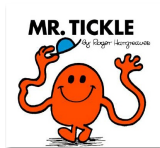
Mr. Tickle and the dragon stood beside Little Miss Splendid's swimming pool.

"It is too cold today to swim in Little Miss Splendid's pool," said Mr. Tickle. "Do you think you could do anything about that?"

The dragon thought for a moment.

Then he took a deep breath and breathed out through his nostrils. Flames licked across the surface of the swimming pool. In no time at all the pool was steaming.

Your story   Your slide

Making slides: principles

Principles for short-talk slides; (not the same as for lecture notes)

- Keep bullets short – just the 'essence', **not** paragraphs
- Simple, readable, big fonts – `beamer` defaults are fine
- 15mins $\approx$ 10 slides – a few more, if picture-heavy
- Black text, white background. Fuss over color (and gimmicks) only when you *must*
- Try for short, familiar math; we haven't seen it before
- 'Does it help?' **not** 'Does it look cool?'

Be aware that, at first, *almost everyone* puts **far too much material** into talks, and has **far too much text** on slides.

Making slides: software

LaTeX is preferred; the beamer class is easy to use, and can give nice PDF results, including formulae. And as you wrote 571 in LaTeX, you are 'up' the non-trivial learning curve.

- Beamer example on the class site – many others available. As with LaTeX, make a file of commands including \begin{frame}...\end{frame}, and process it with e.g. LaTeX, or PCTeX, LyX, MiKTeX
- I omit title/section junk – see the example. Page numbers help questioners, and maybe you, but the date and your name etc *are not important*
- 'Revealing' your bullet points line-by-line distracts you, and can also annoy the audience
- Ask around! It's fine to cannibalize files, e.g. mine. Deriving 'pretty' TeX code for one slide is a waste of time

Making slides: software

Power corrupts.
Absolute power corrupts absolutely

Baron John Acton (1834–1902) Historian and Moralist

Power corrupts.
PowerPoint corrupts absolutely

Edward Tufte (1942–) Graphics Guru and Statistician

- PowerPoint math takes ages, and transfers badly between systems. It can also look ugly, and 'amateur'
- Defaults are for sales, not science
- Way too-tempting gimmicks

Making slides: software
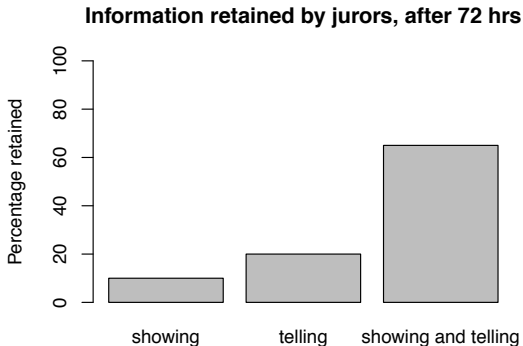
Tufte claims "PowerPoint is evil";
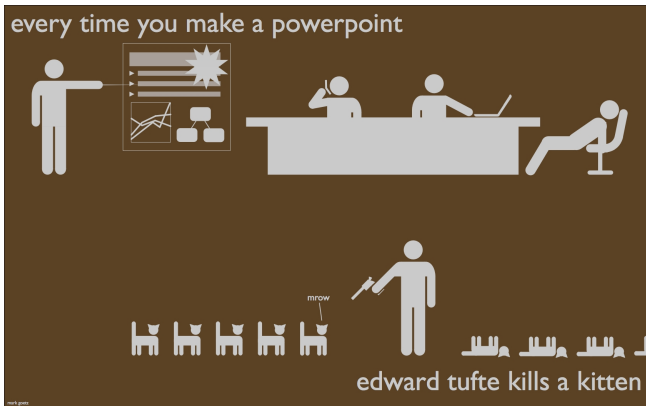
... I do use it for *some* jobs; it *is* flexible, and quick.

Making graphs

Some advice *so* important it merits a ridiculous fontsize;

Use graphics to help you communicate

Information retained by jurors, after 72 hrs

...from the 'Weiss-McGrath report' on technical speaking.

Making graphs

Tables are for *reference*. To refer your audience to the 2nd decimal place of confidence intervals produced by 9 methods, put this in your slides; (Gelman et al 2002)

| Method	$\widehat{OR}$	95% Interval
UC	0.94	0.75–1.17
RC	0.78	0.33–1.80
ML-WICI	0.65	0.18–2.44
ML-WGCI	0.65	0.22–1.99
ML-PLCI	0.65	0.00–2.13
ML-RbCI	0.65	0.13–3.22
GEEa*-RBCI	0.71	0.21–2.38
GEEb-RbCI	0.69	0.15–3.10
GEEc-RbCI	0.69	0.19–2.44

Making graphs

The exact numbers are very unlikely to be of interest. When you want to make comparisons (i.e. always!) **use a graph**;
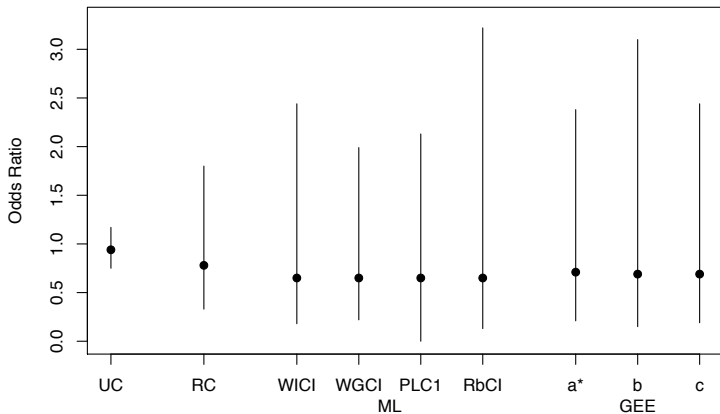
Here, grouping orients the audience to similarities/differences.

Making graphs

Comparing (estimated) standard errors is typically easier if the y-axis depicts the β scale;
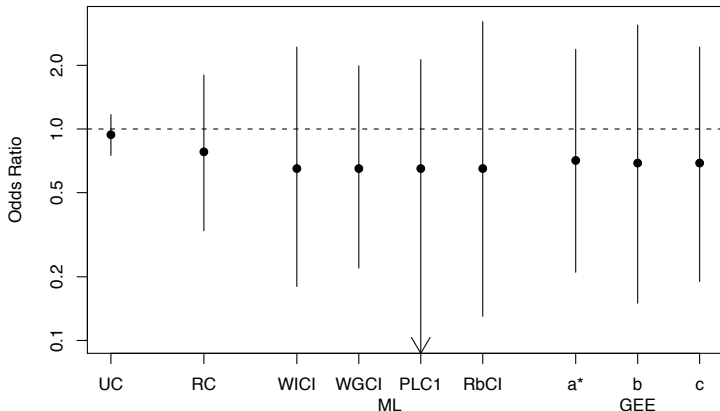
Zeros require some care – but nothing 'deep'.

Making graphs

R makes graphing easy – see my R course, or similar material.
The class site contains background material on how to make a
useful graph; Biostat students saw this last summer.

Some key points;

- Your plot must be legible, to be useful. Use R's defaults,
  for a graph around 6×4 inches e.g.
  `pdf("mygraph.pdf", w=6, h=4)`.
- *Always* label the axes, *almost always* give a legend
- Use color sparingly; make its purpose clear
- Minimize unnecessary ink ('chartjunk')

Making graphs: for what purpose?

Making good graphs is not artistry, or experience, or 'magic';

- What point do **you** want to get across? – typically, what comparison do **you** want to illustrate?
- Pick a graph that helps **the audience** make that comparison
- Aim for 1, maybe 2 graphs on a slide (with legends). You should 'talk through' all graphs – this takes time

Just as with regression, the 'right thing to do' depends on your pre-specified goal. If you get stuck, thinking about your goal will be *far* more helpful than ploughing through help pages for plot(), par() etc.

Making graphs: for what purpose?

Some familiar types of plot – seen in 533/570/571 notes;

- Scatterplots, for association between Y and X – maybe Z, color coded. Lines indicate 'underlying function', such as power, or fitted mean
- Coplots, for association between Y and X given Z and maybe Z_2
- QQ plots, for comparing distributions; talk about the shift, spread, heavy tails, light tails etc
- Parallel coordinate plots, for high-dimensional structures
- Barplots/boxplots, for counts/spread in several categories (boxplots work badly with very non-Normal 'spread')
- Hexagonal binning, or similar, for massive datasets

Making graphs: time-saving tips

Tips for when graphing software *is* the issue;

- Millions of data points/lines = huge PDF files. Consider `png()` for lineart or `jpeg()` for 'photos'
- Both R and LaTeX think you forgot whitespace. So set up skinny borders in R with `par(mar=c(b,l,t,r))`, and/or use e.g. `\vspace{-0.3in}` in LaTeX
- `plot(... asp=1)` if $y = x$ must be at $45°$
- http://addictedtor.free.fr/graphiques can be a helpful source of coded examples
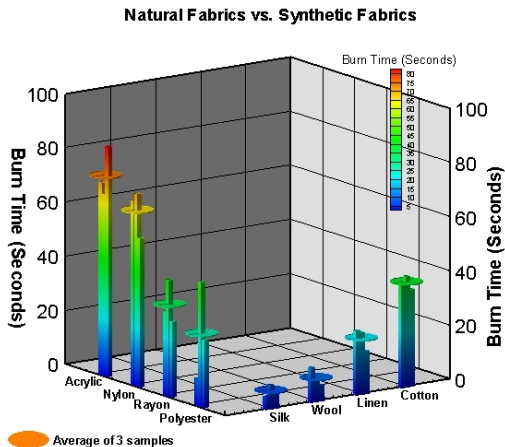- **Stay away** from outdated .dvi, .ps and .eps formats

If all else fails, make a PNG or JPEG and crop/edit it 'by hand'

Making graphs: terrible ones
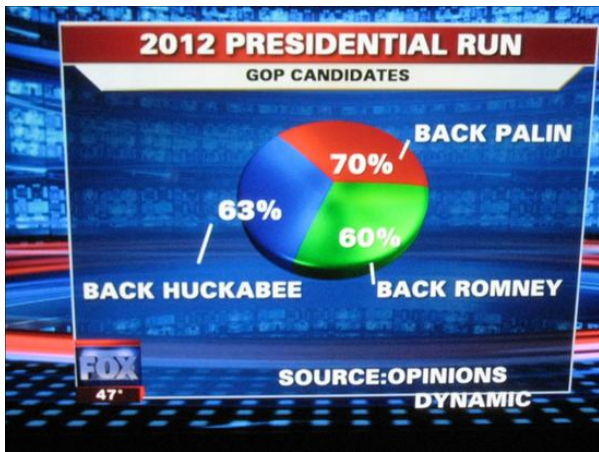
'Fair and Balanced' *and* brain-dead. Avoid this.

Making graphs: terrible ones

Natural Fabrics vs. Synthetic Fabrics

Spiffy new 3D plot in GAUSS – it'd take *ages* to be *so* bad in R

Making graphs: terrible ones
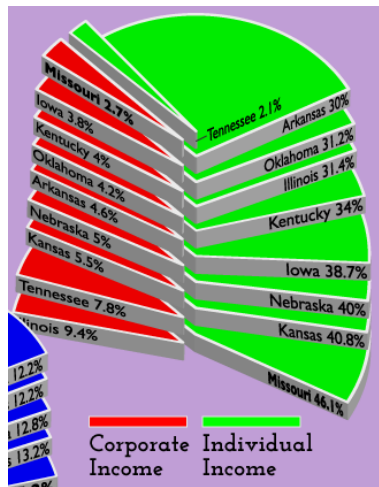
… from the St Louis Beacon

I collect terrible plots; all contributions *not made by you* are gratefully accepted

Making tables... if you must

Readers read from left to right. So display tables as e.g.

β	Coverage	Med Dev'n
1	0.95	16.0
1.5	0.94	11.8
2	0.80	11.5
7	0.56	8.1

not

β	1	1.5	2	7
Coverage	0.95	0.94	0.80	0.56
Median Deviation	16.0	11.8	11.5	8.1

- Context on the left, results on the right
- Use one line, or none. R's xtable package is junk-o-philic
- Readers can take in about 2 decimal places **only**

Delivery

Another favorite activity of Mr Tickle's fans (right)

Keeping the audience engaged works *much* like it did in grade school

Delivery

If you're not enthusiastic, *we* won't be either

- $\Rightarrow$ find a reason to be enthusiastic
- Don't just read a script, or your slides – reading out your slide before commenting on it is also not recommended
- Do say *something* about every picture/bullet/formula – but maybe not much
- Slides exist to remind **you** why you made them, so you can then tell us – enthusiastically
- You won't enthuse if you've lost the plot – so practice, practice, practice

Delivery: elocution 101

While **standing facing the audience** speak **loudly** and **clearly** – to a (notional) person at the back of the room

- Slow down; you'll be easier to follow & 'digest'
- 'Inflating' your mouth improves enunciation (try it!)
- New to this? Get a friend to stand 100ft away; push from the belly – not the throat
- Practice pronouncing everything; how *do* you say Čebyšev? heteroskedasticity-consistent? sensitivity & specificity? … even just 'statistics' beats some speakers
- Fading away at the end of sentences is a very common problem. Slow down, and remember to breathe. Pauses are okay!

Delivery: elocution 101

Most North Americans can be heard easily. For others, it can be tricky, due to accent and 'timbre'. Repeat after me;

I'll never join you! Nooooo!

Mark Hamill, playing Luke Skywalker
The Empire Strikes Back (1980)

It sounds nasal, bratty, and bright – but clear. Now try this;

Luke, **I** *am your father*

James Earl Jones – classic 'dark' timbre

Voices have differing overtones; find out if you sound 'fuzzy'

Delivery: nerves

It is normal to be nervous – even for experienced people. If nerves are getting in the way;

- Slow down
- Memorize your first few sentences – only – to ease yourself into the talk
- Aim to go through what your slide says, then re-iterate its first point (*cf* sports interviews)
- Keep on-topic; this is the material you prepared. In particular, do not make glib comments
- Keep a printed, annotated copy of your slides (e.g. 4-per-page); **glance** at it to jog your memory
- Bring a bottle of water, if you are prone to drying out

Delivery: ums and ers

Phrases like 'um', 'ah', 'er', and 'so...' are *spurious spacers*. In conversation, they politely indicate that you want to keep speaking – and also give you some time to think. In your talks, it's fine to *um* and *er* a little. But done several times a slide, it can annoy the audience, and may create a bad impression.

Famously, in 2009 Caroline Kennedy (right) had to abandon plans to be a Senator when she *y'know*-ed 139 times in one short interview – including 30 *y'know*s in one 2.5min period.

Also, people (understandably) *um* and *er* more when speaking a second language. Try brief pauses instead, or just speaking a little slower than usual.

Delivery: timing

You have **only** 15 mins. This is not long;

- Practice, practice, practice
- Glance at the clock, $\sim$ once per slide. On your notes, write the duration of parts 0/1/2/3/4
- If time is getting short, **do not accelerate**. Acknowledge you are skipping less-essential material, but don't skimp on your conclusions
- Attempts to go over 15mins will be in vain!
- Preparing for a 15min talk is **much harder** than for an hour's lecture – or a whole course

Delivery: on 'a greater enemy of truth than lies'

- Avoid BSing. Aim to inform, not to impress
- Not having a clue is **very obvious**. Practice[3], again
- Tough question? "I haven't thought about that, but..."
- Impenetrable question? "Do you mean/Are you asking..."
- Obvious stalling/sycophancy? "That's a good question..."

Delivery: laser pointers

These hold a bizarre fascination for some;

- Use accurately, and sparingly
- Talk to the audience, not the slide
- Avoid using the mouse as a pointer, when possible

Delivery: appraisal

While giving your talk, and answering questions, you will be fully occupied. But afterwards, to see how it went...

- The instructor(s) will give brief feedback, on delivery *and* content

- Ask around! Comments from peers should also motivate you. In return please offer candid (but polite) assessments of other student talks

- Watch a recording. Get a friend to record your talk, or ask the instructors to do this – well in advance. Watching yourself speak is very useful, but also very humbling

Summary

- Plan what you will say
- Stick to the plan! Makes slides/graphs which are relevant
- Tell us a story – and talk like you care about the story
- Think about what the *audience* will get (or not get) from your talk
- Practice, practice, practice – and learn from others. No-one *has* to be a bad speaker

See the class site for more information;

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http://courses.washington.edu/biost572
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