# Tips for Presenting Your Work

*by Dianne Cook*

**Abstract**  With the international R user conference, useR! 2011, approaching, many participants may be contemplating how to put their thoughts together for presentation. This paper provides some suggestions for giving presentations and making posters.

## Some background

Just after completing a practice of the talk I planned to give about my PhD research in several upcoming academic job interviews, my advisor, Andreas Buja, sat me down, and completely re-drafted my talk! I had produced what I had seen many times presented by numerous speakers in weekly seminars at Rutgers University, slide after slide of details. Andreas explained that while this might be appropriate for a paper it is not the best approach for a talk. We laid out the key problem that my work addressed, and then put in a slide that simply said "*Stay tuned....*" The next few slides addressed the methodology, and the key answers to the problem came near the end of the talk.

The "*Stay tuned*" sticks with me.

Although, today this phrase might be something of a cliché, overused by the electronic media to keep your attention through another barrage of advertising, the effect is useful to re-create. What did this phrase do for the talk at the time? It allowed it to build interest in the topic early, and let the audience know they would be rewarded later. The middle of the talk also showed a VHS video of high-dimensional data being explored using various tours – computers that could display videos were not so portable in 1993! (That video is now available in Flash format at http://stat-graphics.org/movies/grand-tour.html.)

## Key pointers

The web sites Schoeberl & Toon (2011) and van Marle (2007) have some useful tips on giving scientific presentations. Here are a few collected from my experiences.

- If your audience remembers and takes away one thing your talk is a success. What is this going to be for your talk?

- Make a plan, map out the start, with motivation, middle and finish. Sketch out the slides, and what you want to communicate with each slide.

- Avoid slide after slide of bullet points (the Powerpoint syndrome), or slide after slide of equations.

- Establish your credentials. For a traditional audience this might be a few equations, and the key parts to a proof. For the statistical computing and computational statistics audience show some code fragments – ones that may be particularly elegant, or illustrate the critical pieces. (Some colleagues and I have occasionally jested that watching programmer program might be more interesting than listening to some talks. This is only partially in jest because watching seasoned programmers tackling a computational problem can be very insightful.)

- Draw the audience in with *convention*, a usual format, style of slides, font, .... Familiarity is in-groupness, shows the audience that they are like you, that you are bringing them with you, and that you can be trusted.
  *Keep the audience's attention, and curiosity, by breaking the rules. Do something unexpected, too.*

- Use pictures, that is, plots (of data). BUT, BUT, please don't say "You can see from the picture that ...." without helping interpret with something like "because the points follow a curved pattern". That is, explain the pattern in the graphical elements of the plot that allows one to make the analytical leap.

- Use pictures, or, cartoons, to help explain concepts.

- Use pictures, for visual stimulation. Not because they "are devices for showing the obvious to the ignorant" or to "prevent the dullards in the audience from falling asleep" (Tufte, 1990) but because graphics are beautiful. Plots evoke creativity.

- Tell a story.

## Practicalities

Many statisticians use LaTeX, with Beamer style, to make the slides for their talk. This is convenient for equations, and makes elegant, beautifully typeset slides. It has a lot of flexibility to make colored text, different fonts, navigation strips, including figures and even animations or movies. My preference, however, is to use keynote on the Mac. It provides a lot more flexibility in the formatting, the ability to use wild fonts, such as my own handwriting, and seamless incorporation of movies and animations. To include equations I have a generic 'tmp.tex' file on

my computer with all the equations that I have ever used, and I cut and paste these out of the pdf from Preview. Keynote maintains the quality of the equations, and images, through resizing, unlike Powerpoint. It also, like TEX, keeps figures in separate files, actually the 'slides.key' might look like a file but is really a directory.

Just out of graduate school I would meticulously write down every word that I wanted to say in association with the talk. I would practice, and practice, and practice, then throw the notes away to actually give the talk. I still occasionally do this. Why? With a limited time frame, and under the glare of my colleagues, making language precise helps get the message across, which is respectful of the audience. Making the notes makes the language precise, but giving the talk without notes lends spontaneity.

Check the equipment. How does your font and the graphics appear from the back of the room? Does your computer work with the projector? Or does the provided computer have the software that you need for your presentation?

How do you choose colors? The **colorspace** (Ihaka, Murrell, Hornik & Zeileis, 2011) package in R provides are reasonable selection of color palettes for plots, more specifically applied to statistical graphics than Cynthia Brewer's map work in the **RColorBrewer** package (Neuwirth, 2011). Several web sites (Etre, 2011; Dougherty & Wade, 2011) provide tools to help color blind proof your work.

Robbins (2006) is a basic guide to good graphics. The R package ggplot2 (Wickham, 2009) has elegant and cognitively perceptive plot defaults.

## Not a talk, a poster!

Slides from a 2007 Joint Statistical Meetings Introductory Overview Lecture (Cook, 2007) give guidelines for constructing a poster. Posters allow the presenter to engage the audience in small group individualized discussion. But in order to engage a small audience you need to attract the attention of passers-by. Designing your poster with a visual focal point that can be seen from several feet away will draw people to your work.

Some of the key recommendations in this lecture are:

- Plan the layout and flow of the poster.

- As with a talk, decide on the main message, and determine who is your audience.

- Choose your color scheme, keeping in mind color blindness limitations, readability, and avoid color combinations that have subliminal meanings, e.g. red, yellow and black of the German flag.

- Choose your text size and font. Titles should be about 100pt font, headings 50pt and text in the body at least 25pt. Avoid all capitals.

- Data plots make good focal points. A contextual image can help the visitors grasp the context of the data quickly, and provide people with something familiar to draw their attention. Good quality graphics are important, generated by R software for example.

- A movie, or audio recording, can help draw the attention of passers-by. These should not be substitutes for engaging the audience in discussion.

Remember that there are lots of bad examples of posters at Statistics meetings. The excuse of "this is how everyone else does their poster" is not a reasonable justification for perpetuating poor scholarship. Each generation is held to higher and higher standards as we develop our understanding about good practices. Excellent advice on producing posters can be found at the web site by Cape Higher Education Consortium (2011). Also the web site by Purrington (2011) has some useful discussion about designing scientific posters. The Data Expo competitions (ASA, 2011) run in conjunction with the Joint Statistical Meetings often have examples of good posters, and examples of previous useR! posters can be found via http://www.r-project.org/conferences.html.

## Responsible audience?

Occasionally, well maybe, more than occasionally, I hear some members of our profession extolling the virtues of a talk – but it is clear they didn't have a clue what the talk was about. There is a responsibility of the audience to **not** be impressed because they are snowballed by a speaker. The audience has a right to expect the speaker to make the work clear, and easier to understand, and to do some of the work of deciphering the material for them.

## Last words

Be mindful, that giving a talk in front of peers is a privilege – not many people in this world have the opportunity to speak their mind and be listened to, particularly in a prominent setting such as useR!.

Many people enthuse about a TED talk (Rosling, 2006). I've recently been pointed to another by Chris Wild (2009) which is a marvellous statistical presentation.

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