

## Writing Talks & Using Beamer

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## Goals

What are we trying to do?

- Academic/scientific presentation
- Results of data analysis
- Policy/management recommendations
- Teaching or lecture
- Nobel Prize acceptance speech

## Audience

Ed Tufte says that most important rule of speaking is:

**Respect your audience!**

Who are they?

Why are they here?

What do they need to learn from you?

How much background do they have?

What do they expect to get?

What questions might they ask?

What will they learn from other presenters?

## Audience continued

### Law of Audience Ignorance

Someone important in the audience always knows less than you think that everyone should know.

The audience always wants to know “What’s in it for me?”

**You must address audience objectives or the talk will fail.**

## How much time do you have?

- Assume everyone is busy
- No need to tell everything you know
- About one slide/overhead per minute

## Organize

Approach the talk logically:

- 1 Determine the objective/goal of talk
- 2 Analyze the audience; you say different things to scientists, juries or bus drivers.
- 3 Identify takeaway message; build presentation around it
- 4 Organize your information; match content and structure to audience and objective
- 5 Choose a look for presentation

## Things to know

You must:

Never speed up!

You must:

Know your subject matter!

You must:

Know your limitations!

You must:

Never blame the audience!

## Structure of a basic talk

This works most of the time

Tell them what you are going to say,  
then say it,  
then tell them what you said.

Or ...

Get their attention, let them have it, then drive it home.

- 1 Set up (opening)
- 2 Say it (body)
- 3 Repeat and conclude (summary)

Repetition not a vice.

## Set up

- Announce your topic clearly and state objective
- Using an outline of the talk is often recommended, but I don't do it.
- Outline should be understandable by itself
- Don't need abstract
- Let audience know importance and why they should care

## At the start: The Introduction

The most memorable parts are beginning and end; make them work for you.

Introductions can benefit from:

- Personal anecdotes
- Visual imagery
- Quotes
- Facts
- Questions
- Challenge

## At the end: The summary

- Summarize and refer back to opener
- Link with key points/ideas
- Be ready for questions

## Structure of Case Study talks

You may decide to vary the order of some of these elements in any talk, and you don't need all of them for every talk.

- 1 Introduce the problem. For the class, this should be short because everyone has seen the case study. Generally, it needs to engage the audience.
- 2 Key takeaway message
- 3 Objectives
- 4 What you did: Models and Methodology (brief!)
- 5 Findings and implications
- 6 Recommendations

## Technical talk

Five things listener wants to know

- 1 What is problem and why is it a problem
- 2 What has been done about it before
- 3 What is presenter doing about it
- 4 What is added value of presenter's approach
- 5 Where do we go from here
- 6 ... bibliographies, extra material for use with questions can be helpful

## Back to School

- Grammar
- Spelling
- Emphasis
- Repetition
- Examples

Practice! Practice! Practice! (and get feedback)

## Stage Presence

You should be

- 1 Positive, confident, enthusiastic
- 2 Facing the audience; make eye contact
- 3 **Speak slowly**
- 4 **Using a microphone is not a sign of personal weakness!**
- 5 Be careful with laser pointers, hold them steady
- 6 Use humor wisely
- 7 Try to involve the audience
- 8 Use short simple phrases with no filler words like "Note that" or "It is obvious that"

## Meetings

- Check location of room.
- Arrive early
- Meet session chair
- Stay whole session
- Understand equipment: computers, projectors, microphones

## Chairing a session

At meetings, four to six similar presentations are grouped together into a single session, with a “chairperson” who runs the session. As chair, you should

- Arrive early and meet all the speakers
- Understand equipment: computers, projectors, microphones
- Begin on time, with a *brief* welcome and introduction of the topic
- Introduce each speaker briefly, but try to do more than just name and affiliation.
- Thank each speaker before introducing the next one.
- After all speakers, if time permits, ask for audience questions and moderate.
- End on time. Have the audience thank all speakers with applause.

## Preparing your talk

Apart from classroom teaching, using computer presentations is almost universal.

PowerPoint and pdf-using-L<sup>A</sup>T<sub>E</sub>X:

- Can look quite good
- Can use hi-res graphics, animations, etc.
- Often easy to make handouts

But

- Still not universal
- High failure rate
- Preparation time
- Tendency for medium to be message

## Tufte's dissent

PowerPoint is a competent slide manager and projector. But rather than supplementing a presentation, it has become a substitute for it.

The presentation needs

- Content
- Simple, logical structure
- Appropriate detail
- Appropriate emphasis

Does not need fancy animations, transitions, etc.

## PowerPoint

- Ubiquitous
- Large user base
- Stinks at mathematics, but. . .
- Extremely easy to use if no mathematics
- PowerPoint cost money, but free versions exist

Check <http://www.norvig.com/Gettysburg/>

- Available on most platforms
- Great at math
- Great flexibility
- Mostly academic user base
- **Harder to use beyond basics than PowerPoint**
- **beamer**, and other, packages designed to create talks
- Great flexibility (also bad)
- Multimedia much harder

These slides were prepared with the Beamer package in L<sup>A</sup>T<sub>E</sub>X.

- 1 L<sup>A</sup>T<sub>E</sub>X file `mystuff.tex` on class webpage
- 2 Fill `mystuff.tex` with Beamer commands
- 3 `pdflatex mystuff.tex` on Linux produces `mystuff.pdf`
- 4 Use `evince`, `okular`, or another pdf viewer

Links to user manual and other useful documents are on the class web page, including advice for Windows.

## Beamer, top information

```
\documentclass{beamer}

\usepackage{wasysym,graphicx,pgfpages}
\usetheme{Boadilla}

\title{Oral Presentation}
\author{Ima G. Student}
\date{January 22, 2008}
% (see man colors on Linux for list of colors)
\definecolor{maroon}{rgb}{.6902,.1882,.3765}
\definecolor{sienna}{rgb}{.53,.31,.16}
\definecolor{gold}{rgb}{1,.84314,.0000}
\setbeamercolor{frametitle}{fg=maroon,bg=gold}
\usecolortheme[named=maroon]{structure}
```

## Beamer title and table of contents

```
\begin{document}

\frame{\titlepage}           %create titlepage

\frame{\tableofcontents} %create table of contents page

\section{Name of first section in table of contents}
```

Entries in the table of contents are generated by `\section{}` commands

## Beamer example, continued

```
\begin{frame}
\frametitle{This is the frame title}

\begin{block}{This is a block title}
This is the block content.
\end{block}

\pause
This appears after the pause:
\[
E(y|x) = \beta_0 + \beta_1x
\]

\alert{This is an alert in the alert color.}
\end{frame}
```

## This is the frame title

This is a block title  
This is the block content

This appears after the pause:

$$E(y|x) = \beta_0 + \beta_1x$$

This is an alert in the alert color.

## Frames with computer output:

Use `verbatim` for computer output.  
This requires making the frame `containsverbatim`.

```
\begin{frame}[containsverbatim]
\frametitle{Some computer output}
This has computer output:
\begin{verbatim}
Coefficients:
      Estimate Std. Error t value Pr(>|t|)
(Intercept)  90.9609    37.3532   2.435  0.0289 *
Pressure      0.7650     0.6608   1.158  0.2664
Lpres         0.6649     0.3859   1.723  0.1069
\end{verbatim}
\end{frame}
```

## Some computer output

This has computer output:

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	90.9609	37.3532	2.435	0.0289 *
Pressure	0.7650	0.6608	1.158	0.2664
Lpres	0.6649	0.3859	1.723	0.1069

- Use `itemize`, `description`, and `enumerate` environments.
- To include graphics, save as pdf or png (or others), and use, for example
 

```
\includegraphics[width=.8\textwidth]{mypic.pdf}
```
- You can create pdf graphics in R using the `pdf()` device:
 

```
> pdf("mypic.pdf")
> plot(Y~X,dataframe)
> dev.off()
```

You can use Beamer and Sweave at the same time to use R output in your presentation.

- 1 Name your main file `myfile.Rnw` rather than `myfile.tex`
- 2 Create `.tex` file with R CMD Sweave `myfile.Rnw` or the `Sweave.sh` script, found at <http://cran.r-project.org/contrib/extra/scripts/>
- 3 Create `.pdf` file with `pdflatex myfile.tex`
- 4 View the resulting `.pdf` file with a pdf viewer.
- 5 Links to Sweave documentation on class website

```
\<<echo=TRUE>>=
library(alr3)
data(forbes)
m1 <- lm(Lpres~Temp,forbes)
summary(m1)$coef
\@
```

Produces this:

```
> library(alr3)
> data(forbes)
> m1 <- lm(Lpres ~ Temp, forbes)
> summary(m1)$coef
```

```
              Estimate Std. Error  t value    Pr(>|t|)
(Intercept) -42.1377793  3.34019890 -12.61535 2.175977e-09
Temp          0.8954937  0.01645176  54.43147 1.186078e-18
```

The `xtable` package outputs data in  $\LaTeX$  format:

```
| <<echo=FALSE,results=tex>>=
| library(xtable)
| xtable(summary(m1)$coef)
| @
```

Produces:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-42.14	3.34	-12.62	0.00
Temp	0.90	0.02	54.43	0.00



## Draw graphics

Name the section of output, for example:

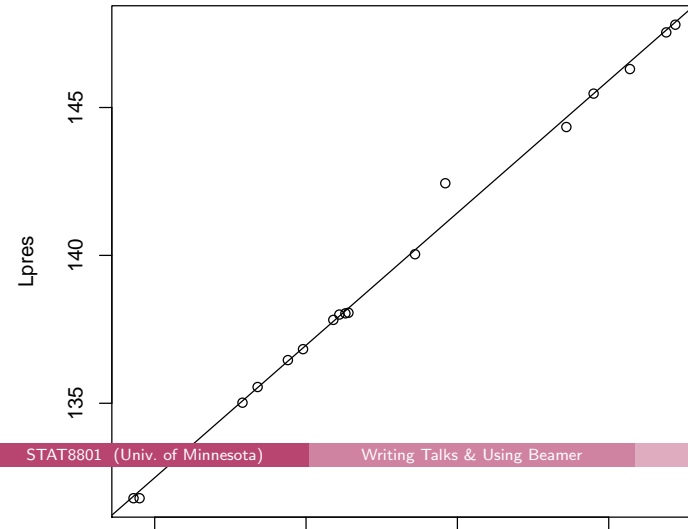
```
\<<one,echo=TRUE,fig=TRUE,include=TRUE>>=  
plot(Lpres~Temp,forbes)  
abline(m1)  
\@
```

creates a file called `mystuff1-one.pdf` because `fig=TRUE`, and then automatically prints it in the presentation because `include=TRUE`.

alertHint: When using `lattice` graphics, you must use a command like `print(xyplot(Lpres~Temp,data=forbes))`

## Draw a graph automatically

```
> plot(Lpres ~ Temp, forbes)  
> abline(m1)
```



## Draw a graph but you size it

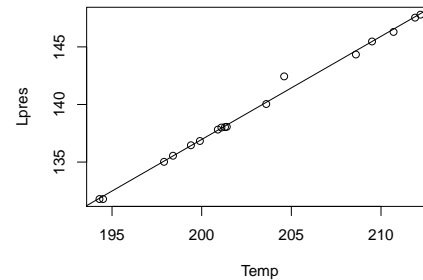
```
\<<two,echo=FALSE,height=4,width=5,fig=TRUE,include=FALSE>>=  
plot(Lpres~Temp,forbes)  
abline(m1)  
\@
```

```
\vspace{-.5in}
```

```
\includegraphics[width=0.5\textwidth]{beamer-two.pdf}
```

Can also use `nogin` option to `documentclass` so that size is equal to actual size, not 80% of width.

## Create a graph, but you size it



## Advice

- Imitate other Beamer files when making first presentation.
- Many pictures, short phrases
- Simple styles/options are generally better
- Be consistent (don't *keep changing*)
- Beware of gratuitous use of color; some people can't see colors

## More advice

- Have full references available.
- Your name, the date, and contact info should be included
- Graphs need axis labels and *need to be discussed*
- Keep math to a minimum
- Tabled data should be relevant and properly laid out

The beginning of the beamer manual is a good reference for structuring your beamer document.

## Evaluation should always be constructive

"Begin your criticism with a compliment. Remember this fellow has a lot of time invested in this enterprise, and if you are going to get him to change what he is doing, you need to convince him that you are on his side."

—Mosteller, Tukey and Cochran, *Statistical Problems of the Kinsey Report*

## Be careful with words:

### Not so good...

Your talk was total rubbish.

### Better...

I got lost as soon as you started the technical discussion. I couldn't follow what you were doing.

### Even better...

When you set up your model, I could not follow the notation that was used. It would have helped me if you...

## Big Picture and Details

### The Big Picture matters!

- 1 Were important elements of the talk missing?
- 2 Could you summarize what you were told in the talk?
- 3 Was it interesting?

### Details matter!

- 1 Couldn't hear?
- 2 Bad notation?
- 3 Poor English?
- 4 And so on.