Latex: Presentations Using Beamer and Tikz

Biometry 789-02

Emily Kistner-Griffin

April 16, 2014

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA

Outline

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Outline

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Outline

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA

Outline

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Outline

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

What is Beamer?

- Beamer is a LaTeX document class for producing slides created by Til Tantau at the University of Leubeck
- Original version from 2003
- Makes creating PDF presentations with bells and whistles straightforward
- A guide to help you get started can be found: `http://www.math.umbc.edu/~rouben/beamer/quickstart.html`
- You have learned `\documentclass{article}`
- Today we are discussing `\documentclass{beamer}`

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Beamer: Advantages

- Unlike PowerPoint (particularly when using Equation Editor or importing figures), presentation will appear the same regardless of computer (MAC, PC)
- Once you learn basic LaTeX commands, you can create presentations with varying layouts etc
- Creates an automatic table of contents with clickable links (see header)
- Themes allow changing appearance of the presentation
- Inclusion of overlays and dynamic effects

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Beamer: Advantages

- If you are writing your dissertation in LaTeX it is easy to cut and paste code to make conference/defense presentations or vice versa
- Useful templates available with the Beamer download:

  `C:\Program Files\MikTex 2.9\doc\latex\beamer\solutions\`
- A 247 page user guide is also available in the same folder:

  `C:\Program Files\MikTex 2.9\doc\latex\beamer\doc\beameruserguide.pdf`

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Beamer: Templates

- Let's try a template
- Open template from class website and copy into WinEdt
- Select tab "Tex" and PDF and PDFtexify
- Nice elements not available in PowerPoint - table of contents, links to sections and subsections, etc

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA

Beamer: Themes

- Beamer document class allows the user to select one of many themes to specify appearance
- This lecture uses the theme Darmstadt
- Many other themes are available: default, Boadilla, Madrid, Pittsburgh, Rochester, Copenhagen, Warsaw, Singapore, Malmoe, etc

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA

Colors

To change the colors of the presentation you need to change `\usecolortheme{default}` in the preamble (before you begin the document)

Color Options

albatross crane beetle dove fly seagull wolverine beaver

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Title Page

- Very easy to change `\title`, `\subtitle`, `\author`, `\institute`, `\date in template`
- Notice [short paper title] for shorter titles, dates etc that display throughout presentation
- Notice % for commenting code

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Frames

- Each slide is coded as a frame: `\begin{frame}` and `end{frame}`
- Can also code as `\frame{ ... }`
- Notice how `\titlepage` and `\tableofcontents` are specified
- Sometimes I use the `[pausesections]` option after `\tableofcontents`
- Specify titles on each slide with `\frametitle{}` or with `\begin{frame}{TITLE}`
- Notice I can get rid of headers and footers with the frame option `[plain]`

Sections and Subsections

- To create a section: `\section{TITLE}`
- Notice my sections in the header: Introduction to Beamer, The Basics, etc
- Also determines entries in the table of contents
- Section and subsection commands are given *outside* of frames!

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Environments: Definitions

- If you want to define something, specify `\begin{definition}` and `\end{definition}`:

Definition

π is a mathematical constant that is the ratio of a circle's circumference to it's diameter.

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Environments: Theorems, Lemmas, Proofs, Corollaries, Examples

- If you want to highlight an example, specify `\begin{example}` and `\end{example}`:

Example

PDF for the Cauchy Distribution

$$f(x) = \frac{1}{\pi(1 + x^2)}$$

Generic Environments: Block

- If you want to highlight any text, specify `\begin{block}{TITLE}` and `\end{block}`:

PDF for the Cauchy Distribution

$$f(x) = \frac{1}{\pi(1 + x^2)}$$

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Frame Layout

Column 1 can be specified with `\begin{columns}` and `\column{.5\textwidth}`

Column 2 specified by with `\column{.5\textwidth}` and `\end{columns}`

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA

Overlays

- I use bullets on most slides with: `\begin{itemize}` and `\end{itemize}`

Overlays

- I use bullets on most slides with: `\begin{itemize}` and `\end{itemize}`
- Each bullet is specified with: `\item`

Overlays

- I use bullets on most slides with: `\begin{itemize}` and `\end{itemize}`
- Each bullet is specified with: `\item`
- Then add `\pause` after each item

Overlays

- I use bullets on most slides with: `\begin{itemize}` and `\end{itemize}`
- Each bullet is specified with: `\item`
- Then add `\pause` after each item
- This allows showing each bullet incrementally

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Overlays

1. You can also enumerate with: `\begin{enumerate}` and `\end{enumerate}`

Overlays

1. You can also enumerate with: `\begin{enumerate}` and `\end{enumerate}`
2. Each number is specified with: `\item`

Overlays

1. You can also enumerate with: `\begin{enumerate}` and `\end{enumerate}`
2. Each number is specified with: `\item`
3. Then add `\pause` after each item

Overlays

1. You can also enumerate with: `\begin{enumerate}` and `\end{enumerate}`
2. Each number is specified with: `\item`
3. Then add `\pause` after each item
4. This allows showing each number incrementally

Getting Complicated: Overlays

- Show only the 1st item with `\item<1->`

- and last item with `\item<1->`!

Getting Complicated: Overlays

- Show only the 1st item with `\item<1->`
- Then add each additional item by specifying `\item<2->`

- and last item with `\item<1->`!

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Getting Complicated: Overlays

- Show only the 1st item with `\item<1->`
- Then add each additional item by specifying `\item<2->`
- Then add each item with with `\item<3->`

- and last item with `\item<1->`!

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Getting Complicated: Overlays

- Show only the 1st item with `\item<1->`
- Then add each additional item by specifying `\item<2->`
- Then add each item with with `\item<3->`
- You don't need `\pause` just specify the order in the `<>`
- and last item with `\item<1->`!

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Getting Complicated: Overlays without Itemizing

Without bullets use *uncover*

Getting Complicated: Overlays without Itemizing

Without bullets use *uncover* instead of *item*.

Getting Complicated: Overlays without Itemizing

Without bullets use *uncover* instead of *item*. Or you can use *only* instead of *item*.

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Getting Complicated: Overlays without Itemizing

Without bullets use *uncover* instead of *item*. Or you can use *only* instead of *item*. You still need to specify on which slide the text should appear.

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA

Getting Complicated: Overlays without Itemizing

Without bullets use *uncover* instead of *item*. Or you can use *only* instead of *item*. You still need to specify on which slide the text should appear. But this is less readable.

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA

Getting Complicated: More Overlays

- Highlight only on some slides
- For example only highlight this slide 2
- To do this use `\alert<2>{}`

Getting Complicated: More Overlays

- Highlight only on some slides
- For example only highlight this slide 2
- To do this use `\alert<2>{}`

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Getting Complicated: More Overlays

- Instead of highlighting you can change the colors of items
- For example make green and blue bullets
- To do this use `\color<2>{green}` or `\color<2>{blue}`

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

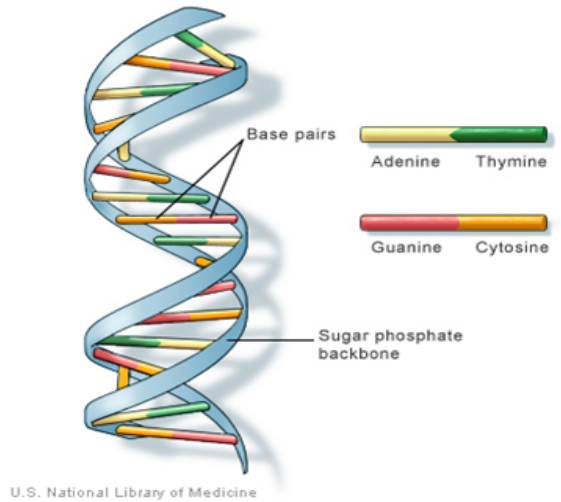
Getting Complicated: More Overlays

- Instead of highlighting you can change the colors of items
- For example make green and blue bullets
- To do this use `\color<2>{green}` or `\color<2>{blue}`

MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Graphics

Let's add an image with code:
`\includegraphics[height]{filename}`



MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA

Hyperlinks

Let's add an hyperlink with code:
`\url{http://people.musc.edu/~elg26/teaching/...}`

http://people.musc.edu/~elg26/teaching/statcomputing.2012/statcomputingI.2012.htm

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA

Handouts

- Sometimes it's nice to provide handouts for your presentation
- Need to change the document class option to `documentclass[handout]{beamer}`
- You also probably want to save paper by printing multiple slides/page

```
\usepackage{pgfpages}
\pgfpagesuselayout{4 on 1}
[landscape,letterpaper,border shrink=2.5mm]
```

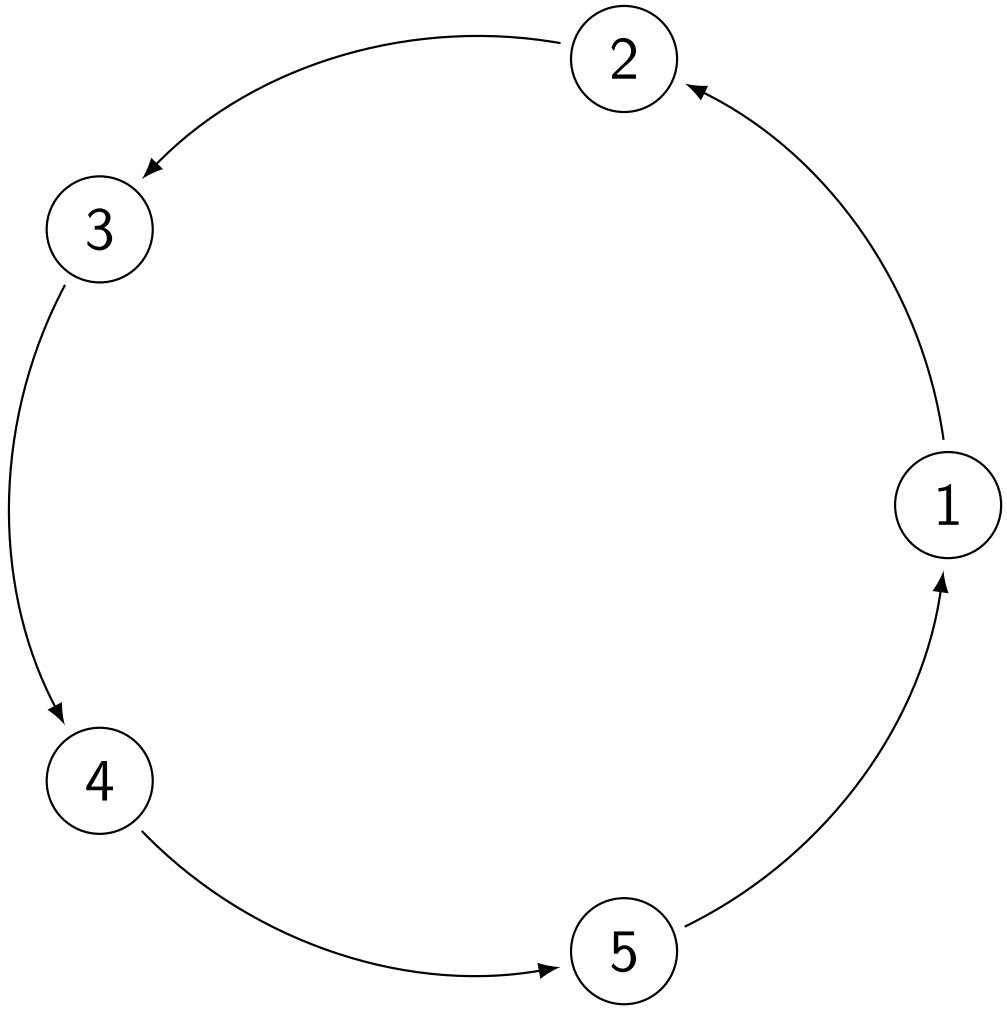
MUSC MEDICAL UNIVERSITY of SOUTH CAROLINA

Drawing in Beamer

- You can even draw in Beamer!
- Need to add the tikz package `\usepackage{tikz}`
- To start drawing `\begin{tikzpicture}` and you know how to end the picture
- You need to end tikz commands with ;

devilish

More Realistically



Questions?

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA