

```
1 library(stationery)
2 ## If theme directory does not have required
   images or TeX files
3 ## we need to retrieve them and put them in
   "theme" directory.
4 logos <- c(logo = "logo.pdf",
5             logomini = "logomini.png")
6 texfiles <- c("guidePreambleSweavel.tex",
7               "mlm.bib")
8 getFiles(logos, pkg = "stationery")
getFiles(texfiles, pkg = "stationery")
```

# Skeleton rmd2pdf-slides-sweave

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# Outline

- 1 About slides
- 2 R Code chunks
  - Displaying R code and output
  - More Frame Options



# Outline

## 1 About slides

## 2 R Code chunks

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# This is a default style we created

- The theme settings are in the preamble. No external dependency on a theme file needed.
- Once we saw how simple a Beamer theme is—just a designation theme types for the outer edges and inner content—we understood that it is quite easy to put that in the preamble.
- Our preferred theme uses the *right* shades of blue along with:

## Key elements in our theme

```
1 \useoutertheme{infoclines}
2 \useinnertheme{rounded}
3 \setbeamertemplate{blocks}[default]
```

- The outer theme is a conservative use of screen real estate (narrow top boxes)
- The inner theme gives the jazzy 3-D bullets



# This is a default style we created ...

- We don't want the rounded alert boxes, however, so we have blocks set to the default box style.
- As the Beamer documentation makes clear, there are just a few of these outer and inner themes that can be “mixed-and-matched” to suit the author's taste.



# This is a default style we selected

- This document is formatted to create 16:9 resolution slides.
- To alter that, change document setting options.
- Citations use natbib with apacite (McCullagh & Nelder, 1989)
- A slide with not options is fine, except if you need to include R code chunks or listings objects. In that case, “containsverbatim” will be necessary



# Outline

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# Listings class is used to display code chunks

- R code chunks are displayed with LaTeX listings, a highly customizable class for code displays.
- We use 2 types of listings, one for R code input and one for R output. By default, the output listings use smaller font to fit more output within the page, but that is adjustable, either on a
  - document wide basis
  - per-code chunk basis



# Code chunks require "containsverbatim" frame

- Please name all chunks. Here is a chunk named `dat10`

```
1 x <- rnorm(100)
2 mean(x)
```

```
1 [1] 0.2451972
```

- An example of `inline lm(y ~ x, data = dat)` . That's in an environment `"\code{lm(y ~ x, data = dat)}"`
- By marking text as `"\code"`, a color box will be created that uses the same color scheme as the R input box. This is a visual gimmick, two environments colored to be similar.



# Did you notice: no line numbers on code chunk in previous?

- The margins are adjustable, see preamble for example.
- Note the line numbers are NOT obscured if code chunk “nested” inside the item.

```
1  x <- rnorm(100)
2  mean(x)
```

```
1  [1] 0.04523311
```

Code chunk previous slide is so close to edge that numbering is not visible if margins are very small.

- If margins are made any smaller, the numbers indexing code lines are “off the edge”



# Slide with "allowframebreaks" can spill onto several slides

Some filler that causes the spill onto another slide. Note confusing equation labels

- onefile

$$1 \times 1 \qquad (1)$$

- two

$$2 \times 1$$

- three

$$3 \times 1 \qquad (2)$$

- four

$$4 \times 1$$



# Slide with "allowframebreaks" can spill onto several slides ...

- five

$$5 \times 1$$

- six

$$6 \times 1$$

- seven

$$7 \times 1$$



# Both "allowframebreaks" and "containsverbatim" accomodate large R output

```
1 example(lm)
```

```
1 lm require(graphics)
2
3 lm ## Annette Dobson (1990) "An Introduction to Generalized Linear
4     Models".
5 lm ## Page 9: Plant Weight Data.
6 lm ctl <- c(4.17,5.58,5.18,6.11,4.50,4.61,5.17,4.53,5.33,5.14)
7
8 lm trt <- c(4.81,4.17,4.41,3.59,5.87,3.83,6.03,4.89,4.32,4.69)
9
10 lm group <- gl(2, 10, 20, labels = c("Ctl","Trt"))
11
12 lm weight <- c(ctl, trt)
13
14 lm lm.D9 <- lm(weight ~ group)
15
16 lm lm.D90 <- lm(weight ~ group - 1) # omitting intercept
17
18 lm ## No test:
19 lm ##D anova(lm.D9)
20 lm ##D summary(lm.D90)
```



# Both "allowframebreaks" and "containsverbatim" accomodate large R output ...

```
20 lm ## End(No test)
21 lm opar <- par(mfrow = c(2,2), oma = c(0, 0, 1.1, 0))
22
23 lm plot(lm.D9, las = 1)          # Residuals, Fitted, ...
24
25 lm par(opar)
26
27 lm ## Don't show:
28 lm ## model frame :
29 lm stopifnot(identical(lm(weight ~ group, method = "model.frame"),
30 lm                               model.frame(lm.D9)))
31
32 lm ## End(Don't show)
33 lm ### less simple examples in "See Also" above
34 lm
35 lm
36 lm
```



# Using "allowframebreaks" and "containsverbatim"

- I usually use both "allowframebreaks" and "containsverbatim" on most slides.
- "allowframebreaks" is now harmless. It has no effect in current configuration unless there are actually 2 or more slides worth of material
- However, containsverbatim is not harmless. It will break use of beamer overlay features, or one-at-a-time revelation of enumerated lists.





## 2 Columns

- Total width of page is 12cm
- Author can set each column at 6cm

### A Block Can be Nested

This is inside the content area of the block

- In LyX, I find it tricky to use the GUI tool for slides (in general)
- Columns often seem difficult, but I still use GUI because I don't want to write out lots of code
- But I do manually write Frames in LyX because I don't enjoy the GUI style these days.



# References

McCullagh, P. & Nelder, J. A. (1989). *Generalized Linear Models, Second Edition*. Boca Raton: Chapman and Hall/CRC, 2 edition edition.



# Session

```
1 sessionInfo()
```

```
1 R version 3.4.3 (2017-11-30)
2 Platform: x86_64-pc-linux-gnu (64-bit)
3 Running under: Ubuntu 17.10
4
5 Matrix products: default
6 BLAS: /usr/lib/x86_64-linux-gnu/blas/libblas.so.3.7.1
7 LAPACK: /usr/lib/x86_64-linux-gnu/lapack/liblapack.so.3.7.1
8
9 locale:
10  [1] LC_CTYPE=en_US.UTF-8      LC_NUMERIC=C
11  [3] LC_TIME=en_US.UTF-8      LC_COLLATE=en_US.UTF-8
12  [5] LC_MONETARY=en_US.UTF-8  LC_MESSAGES=en_US.UTF-8
13  [7] LC_PAPER=en_US.UTF-8     LC_NAME=C
14  [9] LC_ADDRESS=C             LC_TELEPHONE=C
15  [11] LC_MEASUREMENT=en_US.UTF-8 LC_IDENTIFICATION=C
16
17 attached base packages:
18 [1] stats      graphics  grDevices  utils      datasets  base
19
20 other attached packages:
21 [1] stationery_0.61
22
```



# Session ...

```
loaded via a namespace (and not attached):
[1] Rcpp_0.12.15      quadprog_1.5-5    rprojroot_1.3-2
[4] digest_0.6.15     plyr_1.8.4         backports_1.1.2
[7] xtable_1.8-2      magrittr_1.5       stats4_3.4.3
[10] evaluate_0.10.1   stringi_1.1.6      pbivnorm_0.6.0
[13] openxlsx_4.0.17   rmarkdown_1.8      tools_3.4.3
[16] stringr_1.2.0     foreign_0.8-69     kutils_1.34
[19] compiler_3.4.3    mnormt_1.5-5       htmltools_0.3.6
[22] knitr_1.19        lavaan_0.5-23.1097 methods_3.4.3
```

