Miscellaneous Topics

Tyson S. Barrett

Summer 2017

Utah State University

Introduction

Loops

RMarkdown

Finding Relevant Packages

Modeling Summary

Final Quiz

Closing Remarks

Introduction

Good Quote

"All the cool kids use R."

— Anonymous

Introduction

We need to cover a few additional topics, as well as review some topics:

1. Loops (More Concrete Examples)
2. RMarkdown
3. Finding Relevant Packages
4. Modeling Summary
5. Final Quiz

Loops

Loops

This is a very important tool to use in data cleaning.

Example: You have `999` as a placeholder throughout your data. How can you quickly change those to `NA`?

Loops

Here's one way:

```
library(furniture)
df[] <- lapply(df, washer, 999)
```

And another:

```
df[] <- lapply(df, function(x) ifelse(x == 999, NA, x))
```

Note: the `[]` after the `df` forces `lapply()` to keep it in a data.frame :)

Loops

Another example: You need to recode the 5th, 10th, and 20th through 30th variables. How can you do that with a loop?

Loops

Here's one way:

```
library(forcats)
df[, c(5,10,20:30)] <- lapply(df[, c(5,10,20:30)], fct_recode, 1
```

And another:

```
library(forcats)
for (i in c(5,10,20:30)){
  df[, i] = fct_recode(df[, i], 1 = "5", 2 = "4", 4 = "2", 5 = "
}
```

RMarkdown

RMarkdown

So much to do! But focus on the basics :)

1. The key to the whole thing is that you can use regular text and `R` code together.
2. The `R chunks` are very flexible so that you usually can get the results to look the way you want.
3. Markdown is a markup language but is not a WYSIWYG.[1] But, you can always knit to see how it is looking.
4. Practice with it. Try things out.

[1] What You See Is What You Get

RMarkdown

The text can be any text you would normally put in a document.

Code chunks can be any functioning `R` code.

Check out the following links for more information:

1. RStudio and RMarkdown
2. Nice Youtube Tutorial
3. Other Nice, More Indepth Tutorial

Finding Relevant Packages

Finding Relevant Packages

Much of this results from two things:

1. Experience: you find packages that you like and trust over time
2. Google: The top results in Google are often good ones (at least well used).

Finding Cronbach's Alpha

Example of finding a package for cronbach's alpha.

Modeling Summary

Modeling Summary

I wanted to provide you with a quick summary of packages and functions needed for different model types.

Model	Package	Function
T-Test		t.test()
ANOVA		aov()
Linear		lm()
Logistic		glm() with 'binomial'
Poisson		glm() with 'poisson'
GEE	gee or geepack	gee() or geeglm()
Mixed Effects (MLM)	lme4	lmer()
SEM	lavaan	sem() or cfa()

Final Quiz

Final Quiz

Let's see if you are comfortable with the following scenarios/lines of code.

1. Data Manipulation

You want to do three things:

1. Create a binary depression variable based on the level of the continuous depression variable (above a value of 10),
2. Filter out those that have no depression (level 0 of the new depression variable),
3. Find the mean, sd, and range of the productivity variable by sex.

2. Reshape That

Your data is in wide format. It is a longitudinal data set, with two observations per individual. What steps do you take to reshape it into long format?

3. Visualize It

Your data is again in wide format. It is longitudinal, with two observations per individual.

You want to create:

1. A scatterplot comparing mental aptitude and productivity at time one,
2. A line graph showing the means of productivity by sex at each time point,
3. Someone sends you the following code and you want to know what it does.

```
ggplot(df, aes(x = Sex, y = Productivity, color = Sex)) +
  geom_boxplot() +
  scale_color_manual(values = c("red", "not_red")) +
  theme(legend.position = "bottom")
```

4. Strut Yo' Stuff (i.e. Modeling)

If you have repeated measures data, what format does you data need to be in to analyze it with either RM-ANOVA or Mixed Effects?

5. RMarkdown

How do you create a new `rmarkdown` file?

In `rmarkdown` how can you insert inline r syntax?

Closing Remarks

Thanks!

Thanks for participating. I hope this was a great start for you in using R throughout your careers.

Let me know if I can help in the future with R or stat related things.