Unit 1: Introduction to data
4. Review of Unit 1

Sta 101 - Fall 2015

Duke University, Department of Statistical Science

Dr. Çetinkaya-Rundel   Slides posted at *http://bit.ly/sta101_f15*

► TBA

Race and death-penalty sentences in Florida murder cases

A 1991 study by Radelet and Pierce on race and death-penalty (DP) sentences gives the following table:

Defendant's race	DP	No DP	Total	% DP
Caucasian	53	430	483	
African American	15	176	191	
Total	68	606	674	

Who is more likely to get the death penalty?

Adapted from Subsection 2.3.2 of A. Agresti (2002), Categorical Data Analysis, 2nd ed., and

http://math.stackexchange.com/questions/83756/examples-of-simpsons-paradox.

Another look

Same data, taking into consideration victim's race:

Victim's race	Defendant's race	DP	No DP	Total	% DP
Caucasian	Caucasian	53	414	467	
Caucasian	African American	11	37	48	
African American	Caucasian	0	16	16	
African American	African American	4	139	143	
Total		68	606	674	

Who is more likely to get the death penalty?

► People of one race are more likely to murder others of the same race, murdering a Caucasian is more likely to result in the death penalty, and there are more Caucasian defendants than African American defendants in the sample.

► Controlling for the victim's race reveals more insights into the data, and changes the direction of the relationship between race and death penalty.

► This phenomenon is called *Simpson's Paradox*: An association, or a comparison, that holds when we compare two groups can disappear or even be reversed when the original groups are broken down into smaller groups according to some other feature (a confounding/lurking variable).

4

Application exercise: 1.2 Scientific studies in the press

See the course website for instructions.

5

Application exercise: 1.3 Histogram to boxplot

See the course website for instructions.

6

Application exercise: 1.4 Randomization testing

See the course website for instructions.

7