Example: opportunity cost

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Jo Hardin
Instructor

The study

- Control group (75 students) presented with two options:
  - (A) Buy this entertaining video

  - (B) Not buy this entertaining video

- Treatment group (75 students) presented with slightly modified option (B):
  - (A) Buy this entertaining video

  - (B) Not buy this entertaining video. Keep the $14.99 for other purchases

[1] Frederick S, Novemsky N, Wang J, Dhar R, Nowlis S. 2009. Opportunity Cost Neglect. Journal of Consumer Research

State the hypotheses

- H_0: Reminding students will have no impact on their spending decisions

- H_A: Reminding students will reduce the chance they continue with a purchase

[1] Frederick S, Novemsky N, Wang J, Dhar R, Nowlis S. 2009. Opportunity Cost Neglect. Journal of Consumer Research

The data

	Buy DVD	Not buy DVD	Total
Control group	56	19	75
Treatment group	41	34	75
Total	97	53	150

56/75 = 0.7467

41/75 = 0.5467

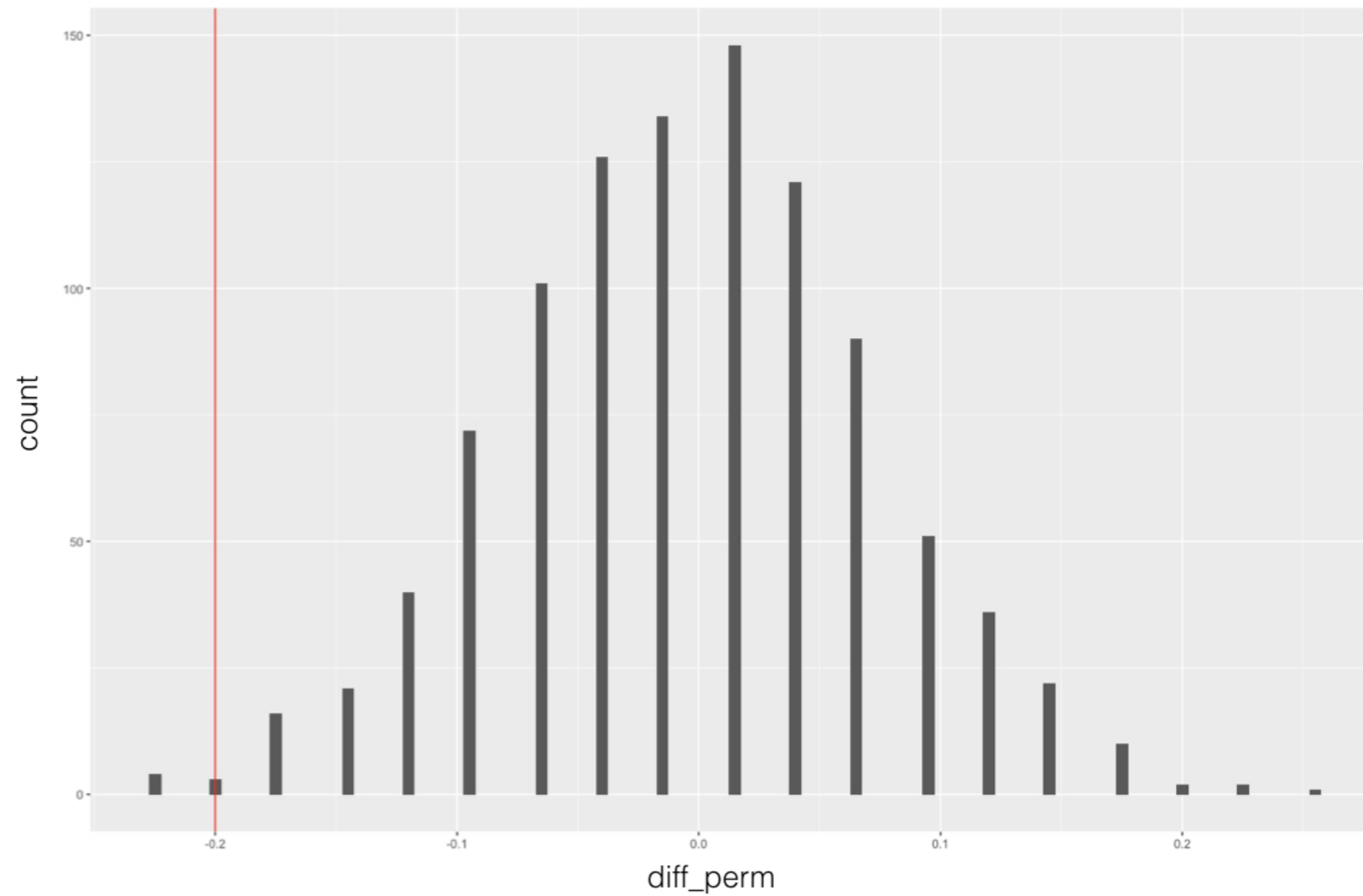# Let's practice!

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Errors and their consequences

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Opportunity cost conclusion

Errors in hypothesis testing

Test Conclusion

	Do not reject H_0	Reject H_0 in favor of H_A
H_0 true		Type I error
H_A true	Type II error	

Truth

Errors in hypothesis testing

Test Conclusion

	Do not reject H_0	Reject H_0 in favor of H_A
H_0 true		Type I error
H_A true	Type II error	

Truth

Errors in hypothesis testing

Test Conclusion

Truth	Do not reject H_0	Reject H_0 in favor of H_A
H_0 true		Type I error
H_A true	Type II error	

Errors in hypothesis testing

Test Conclusion

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Truth

datacamp

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Errors in hypothesis testing

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Errors in hypothesis testing

Errors in US judicial system

Let's practice!

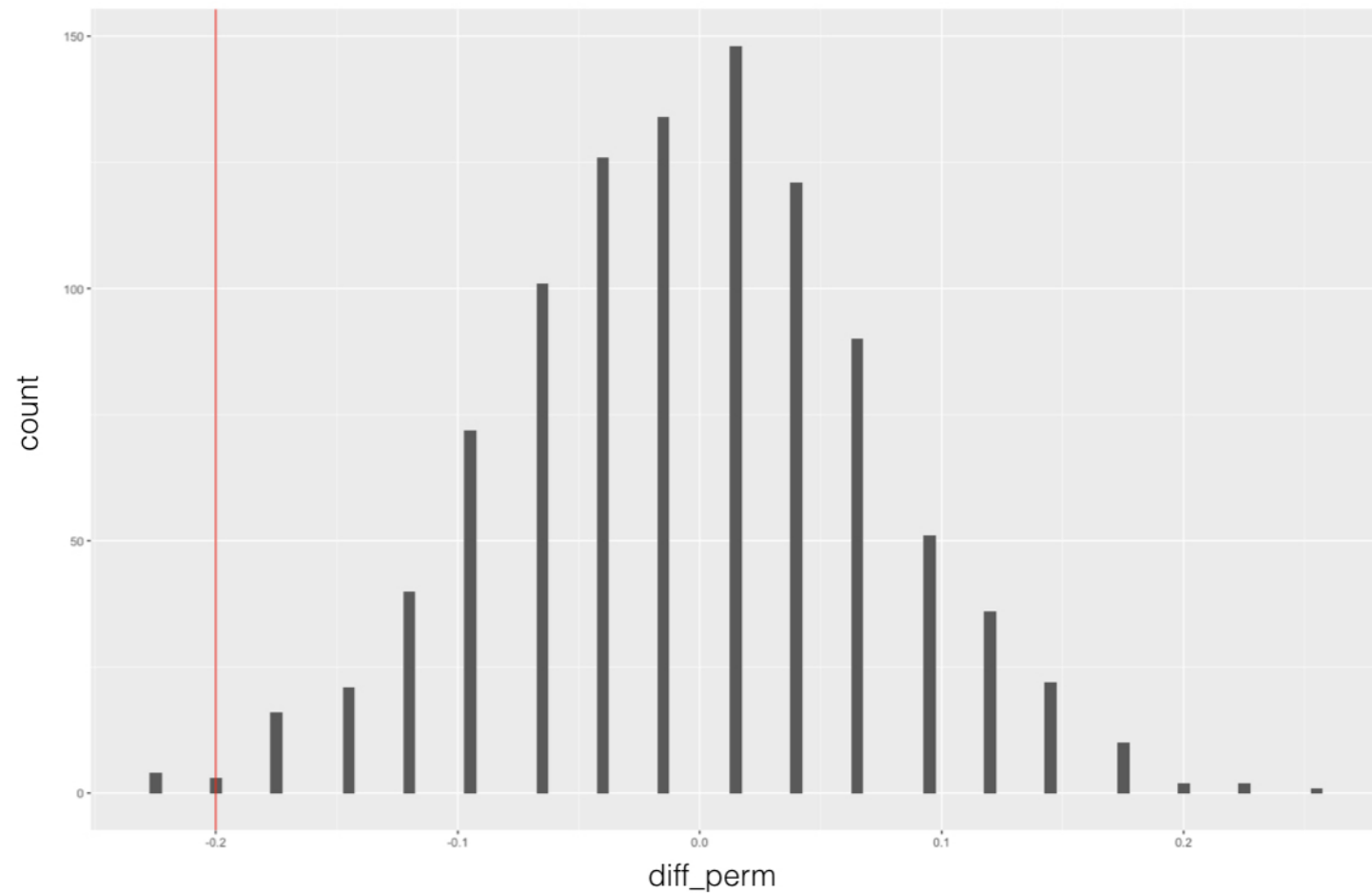FOUNDATIONS OF INFERENCE

Summary of opportunity costs

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Significance


```r
# Calculate the p-value
opp_perm %>%
    summarize(pvalue =
        mean(stat <= diff_orig))
```

```
# A tibble: 1 × 1
  pvalue
   <dbl>
1  0.007
```

Causation

- Study was randomized (i.e. individuals were randomly assigned the choices)

- Nothing systematically different about participants in treatment and control groups

- Therefore, any difference in buying rates is **due to the options given** (i.e. being reminded to save)

Random sample

- 150 individuals in the sample were not randomly sampled from all people

- In order to generalize, we need more information about the students and who they represent

Let's practice!

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