



**DATA 8**  
Fall 2016

# Lecture 20, October 10

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## Examples

Slides created by Ani Adhikari and John DeNero

# Announcements

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- Homework due Wed/Thu. We will post solutions promptly.
  - Midterm Friday, here, during lecture hour. Please arrive promptly and follow seating instructions.
  - Review textbook, homework, labs, project.
  - Additional prep materials are in Files section of bCourses.
  - My office hours tomorrow Tuesday 10/11: 1-2:30 instead of 10-11:30, in 413 Evans
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# Definition of $P$ -value

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The  $P$ -value is the chance,

- under the null hypothesis,
  - that the test statistic
  - is equal to the value that was observed in the data or is even further in the direction of the alternative.
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# Can a test's conclusion be wrong?

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**Yes.**

	<b>Null is true</b>	<b>Alternative is true</b>
<b>Test rejects the null</b>		
<b>Test doesn't reject the null</b>		

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# An error probability

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- The cutoff for the P-value is an error probability.
- If:
  - your **cutoff is 6%**
  - and the **null hypothesis happens to be true**
- then there is about a **6% chance** that **your test will reject the null hypothesis.**

(Demo)

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# Assess this statement

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“Statistical significance is an objective, unambiguous, universally accepted standard of scientific proof.

— Letter to *Nature*, 1994

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# Deflategate

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# Tom Brady Then

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# Tom Brady Now

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## Tom Brady on Deflategate: 'I've just moved on, man'

Adam Kurkjian Sunday, October 09, 2016



Boston Globe,  
Sunday 10/9/16

(Demo)

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