

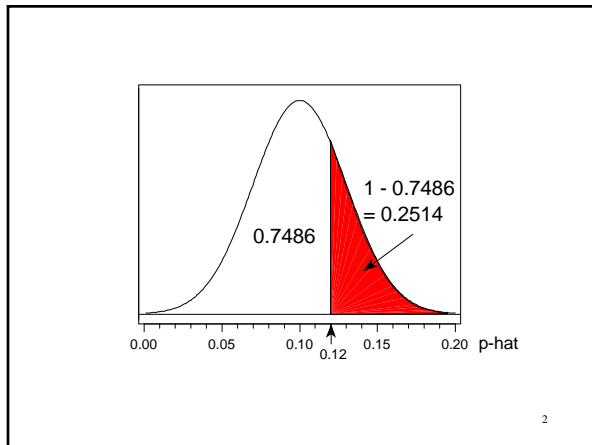
Stat 101 – Lecture 27

Use Table Z

z	0.05	0.06	0.07
0.05			
0.06			
0.07			

↓
→ **0.7486**

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Interpretation

- Getting a sample proportion of 0.12 or more will happen about 25% (P-value = 0.25) of the time when taking a random sample of 100 from a population whose population proportion is $p = 0.10$.

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Interpretation

- Getting a value of the sample proportion of 0.12 is consistent with random sampling from a population with population proportion $p = 0.10$.
- This sample result does not contradict the null hypothesis. The P-value is not small, therefore fail to reject H_0 .

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Interpretation

- Even though the sample proportion, 0.12, is larger than the hypothesized population proportion, 0.10, it is not large enough for us to believe that the population proportion is greater than 0.10. There is not convincing evidence $p > 0.10$.

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Conclusion

- Based on this sample, the law firm should not pursue the class action lawsuit because the population proportion of defective cars could be only 10%.

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Test of Hypothesis

- Step 1: State your null and alternative hypotheses.

– $H_0: p = p_0$

– $H_A: p > p_0$

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Test of Hypothesis

- Step 2: Check conditions

– Random sampling condition

– 10% condition

– Success/Failure condition

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Test of Hypothesis

- Step 3: Calculate the test statistic value and convert it into a P-value.

$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1 - p_0)}{n}}}$$

– Use Table Z.

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Test of Hypothesis

- Step 4: Use the P-value to reach a decision.
 - If the P-value is small, then reject H_0 .
 - If the P-value is not small, fail to reject H_0 .

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Test of Hypothesis

- Step 5: State your conclusion in the context of the problem.
 - What does rejecting, or failing to reject, H_0 mean in the context of the problem.

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Alternatives

- $H_0: p = p_0$
 - $H_A: p < p_0$, P-value = $\Pr < z$
 - $H_A: p > p_0$, P-value = $\Pr > z$
 - $H_A: p \neq p_0$, P-value = $\Pr > |z|$

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