

Practice Problems 3D

For #1-30, fill out the following table and write the formal conclusion. A “Low” P-value means that the P-value was lower than the significance level while a “High” P-value means that the P-value was higher than the significance level.

	Claim	P-value	Evidence (Yes or No)	Formal Hypothesis Test Conclusion
1.	H_0	Low		
2.	H_A	High		
3.	H_A	High		
4.	H_0	Low		
5.	H_0	High		
6.	H_A	High		
7.	H_A	Low		
8.	H_0	High		
9.	H_0	Low		
10.	H_A	Low		
11.	H_A	High		
12.	H_0	High		
13.	H_0	Low		
14.	H_A	High		
15.	H_A	Low		
16.	H_0	Low		
17.	H_0	High		
18.	H_A	Low		
19.	H_A	High		
20.	H_0	Low		
21.	H_0	Low		
22.	H_A	High		
23.	H_A	High		
24.	H_0	High		
25.	H_0	Low		
26.	H_A	Low		
27.	H_A	High		
28.	H_0	Low		
29.	H_0	High		
30.	H_A	Low		

31. The hospital claims that less than 4% of people who received the medication showed symptoms of side effects. Use a 1% significance level. (P-value = 0.0027)

Ho: $p \geq 0.04$

Ha: $p < 0.04$ (Claim)

- Should we reject or fail to reject the null hypothesis? Explain why.
- Do we have statistical evidence for our conclusion? Explain why.
- Write the formal hypothesis test conclusion sentence addressing the claim and evidence.
- Explain your conclusion in non-statistics, easy to understand language.



32. We think that the population mean average height of women is at most 63.5 inches.
Use a 5% significance level. (P-value = 0.1843)

Ho: $\mu \leq 63.5$ inches (Claim)

Ha: $\mu > 63.5$ inches

- Should we reject or fail to reject the null hypothesis? Explain why.
- Do we have statistical evidence for our conclusion? Explain why.
- Write the formal hypothesis test conclusion sentence addressing the claim and evidence.
- Explain your conclusion in non-statistics, easy to understand language.

33. Latest polls suggest that the candidate should receive about 54% of the vote.
Use a 10% significance level. (P-value = 0.0711)

Ho: $p = 0.54$ (Claim)

Ha: $p \neq 0.54$

- Should we reject or fail to reject the null hypothesis? Explain why.
- Do we have statistical evidence for our conclusion? Explain why.
- Write the formal hypothesis test conclusion sentence addressing the claim and evidence.
- Explain your conclusion in non-statistics, easy to understand language.

34. The population mean average weight of electrically powered car weighs is more than 2000 pounds. Use a 5% significance level. (P-value = 0.2682)

Ho: $\mu \leq 2000$ pounds

Ha: $\mu > 2000$ pounds (Claim)

- Should we reject or fail to reject the null hypothesis? Explain why.
- Do we have statistical evidence for our conclusion? Explain why.
- Write the formal hypothesis test conclusion sentence addressing the claim and evidence.
- Explain your conclusion in non-statistics, easy to understand language.

35. The medication Toprol is showing real promise in treating migraines. At least 50% of all patients taking Toprol have seen an improvement in their migraine symptoms.
Use a 1% significance level. (P-value = 0.0086)

Ho: $p \geq 0.5$ (Claim)

Ha: $p < 0.5$

- Should we reject or fail to reject the null hypothesis? Explain why.
- Do we have statistical evidence for our conclusion? Explain why.
- Write the formal hypothesis test conclusion sentence addressing the claim and evidence.
- Explain your conclusion in non-statistics, easy to understand language.



36. The population mean average cholesterol for men is different from the population mean average cholesterol for women. Use a 5% significance level. (P-value = 0.0391)

Ho: $\mu_1 = \mu_2$

Ha: $\mu_1 \neq \mu_2$ (Claim)

- a) Should we reject or fail to reject the null hypothesis? Explain why.
- b) Do we have statistical evidence for our conclusion? Explain why.
- c) Write the formal hypothesis test conclusion sentence addressing the claim and evidence.
- d) Explain your conclusion in non-statistics, easy to understand language.

37. In this state, the population percentage of people that will vote for the democratic candidate will be higher than the percentage of people that will vote for the republican candidate. Use a 10% significance level. (P-value = 0.3144)

Ho: $p_1 \leq p_2$

Ha: $p_1 > p_2$ (Claim)

- a) Should we reject or fail to reject the null hypothesis? Explain why.
 - b) Do we have statistical evidence for our conclusion? Explain why.
 - c) Write the formal hypothesis test conclusion sentence addressing the claim and evidence.
 - d) Explain your conclusion in non-statistics, easy to understand language.
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