

## 8.4.1: Exercises

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1. When making inference about population proportions, which distribution is used to find critical values and P-values?
2. Patients and physicians often disagree in their assessment of pain intensity. Research<sup>20</sup> has shown that racial bias plays a large role in pain management. Researchers want to determine whether black patients with extremity fractures are less likely to receive emergency analgesics than similarly injured white patients. Researchers observe 127 black patients and 90 white patients at a particular emergency department with isolated long-bone fractures over a 40-month period. They then recorded analgesic administration. Of the black patients, 72 received analgesics, and of the white patients, 67 received analgesics. Compute a 99% confidence interval for the difference in the proportion of black and white patients who receive analgesics for pain in this emergency department. Show all steps of constructing a confidence interval.

3. Suppose you would like to know if there is a difference between how crime is depicted in the news and what crime looks like in reality. You find that in 148 news reports of crime, 54 involved a black suspect and a white victim. Of the 110 crime reports you randomly survey, only 18 truly involve a black suspect and a white victim. Is there a significant difference between the crime rates of black suspects with white victims depicted in the news and the crime rates of black suspects with white victims, at a 1% level of significance? Show all steps of conducting a hypothesis test.

## Reference

<sup>20</sup> Knox H. Todd, Christi Deaton, Anne P. D'Adamo, Leon Goe. Ethnicity and analgesic practice, *Annals of Emergency Medicine*, Volume 35, Issue 1, 2000, [https://doi.org/10.1016/S0196-0644\(00\)70099-0](https://doi.org/10.1016/S0196-0644(00)70099-0). (<https://www.sciencedirect.com/science/article/pii/S0196064400700990>)

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