

Chi Square Practice Problems

1. A researcher is interested in examining the effects of a new drug on pain reports. A total of 90 participants are randomly assigned to one of three conditions (control/drug/placebo) and asked at the end of one week of treatment whether they are experiencing arthritis pain (yes/no). The results are presented below.

condition	pain report	
	No pain	pain
control	6	24
drug	20	10
placebo	8	22

- a. Conduct a chi-square test of independence on the data and report whether condition is significantly related to pain report. Test at $\alpha = .05$. Report results in APA format.
- b. Calculate the effect size.
- c. What is the probability someone is in pain, given they are in the control group? What is the probability someone is in pain, given they are in the drug group?

2. The same researcher is interested in whether gender may be related to pain reports. For the same sample as question 1, he examines the relation between pain reports and gender and presents the findings below.

gender	pain report	
	No pain	Pain
Male	22	24
Female	12	32

- a. Conduct a chi-square test of independence on the data and report whether gender is significantly related to pain report. Test at $\alpha = .05$. Report results in APA format.
- b. Calculate the effect size.
- c. What is the probability someone is in pain, given they are male? What is the probability someone is in pain, given they are female?

3. The researcher for this same study wants to show that the sample he collected is representative of the population in that community (Fresno, CA). He therefore compares the ethnicity of his sample to that of the population in Fresno CA, based on the most recent census data. Here are the results from the census data: 1% Native American, 15% African American, 25% Hispanic, 50% Caucasian, 6% Asian American, 4% other. Compare those percentages to that of his sample of 90 participants. Using a chi-square goodness of fit test, does his sample differ significantly from that of the population of Fresno? Report your findings in APA format for your test at $\alpha = .05$.

ethnicity	N
Native American	2
African American	16
Latino/Hispanic	22
Caucasian	32
Asian American	12
other	6