

STAT 110: Practice Problem 11

Fall 2017

1. Myopia, or near-sightedness, typically develops during childhood years. Some studies have explored whether there is an association between development of myopia and the use of nightlights with infants. One study (Quinn, et al., 1999) interviewed parents of 479 children who were seen as outpatients in a university pediatric ophthalmology clinic. One of the questions asked whether the child typically slept with light in the room or in darkness before age 2. Based on the child's most recent eye examination, the children were also separated into two groups: near-sighted or not near-sighted. **The researchers hypothesize that sleeping with the room light on might cause near-sightedness.**

- a. What is the explanatory variable of interest?
- b. What is the response variable of interest?
- c. The data from this study are shown in the following table.

	Darkness	Light in Room	Total
Near-sighted	18	119	137
Not near-sighted	154	188	342
Total	172	307	479

Calculate the relevant proportions that will help the researchers investigate their hypothesis.

- d. Does there seem to be an association between whether a child is nearsighted and whether light is used in the child's room at night before the age of 2? Explain.
- e. Does this study provide convincing evidence that the room light is *causing* the children to develop near-sightedness? Explain why or why not. *Hint: Think about potential confounding variables and how this data was collected (i.e., is this an observational study or a designed experiment?).*