

Clinical Reading Questions #2

HST 190: Introduction to Biostatistics

These discussion questions are based on Altamirano et al. (2020).

1. Identify the main research question of the study.
2. Who are the subjects in this study, and how many are included?
3. How were subjects recruited? What effect might that have on the results? (possibility of bias, generalizability of results, etc.)
4. According to the paper, “the sensitivity of the patient-collected specimens was 100%, and the specificity was 95%.” What do each of these numbers mean in this context, and how were they calculated? (Hint: sensitivity and specificity compare test results to ‘true’ disease status. How are each of these defined in this paper?)
5. A reader is curious about the conditional probability of having a cough at initial visit among asthmatic subjects in this study. Does the paper give us enough information to determine this quantity? If so, calculate it, otherwise indicate what is missing and how you would.

$$\mathbb{P}(\text{Cough} \mid \text{Asthma}) = \frac{\mathbb{P}(\text{Cough} \cap \text{Asthma})}{\mathbb{P}(\text{Asthma})} = \frac{???}{0.10}$$

6. Researchers may also be interested in understanding the relationship between time since symptom onset and probability of COVID-19 detection among confirmed cases. How might we use exploratory data analysis to investigate this question using the results in this paper?
7. What do the researchers conclude about the use of patient-collected test swabs compared to physician-collected swabs? Do you find these conclusions reasonable?

References

Altamirano, Jonathan, Prasanthi Govindarajan, Andra L Blomkalns, Lauren E Kushner, Bryan Andrew Stevens, Benjamin A Pinsky, and Yvonne Maldonado. 2020. “Assessment of Sensitivity and Specificity of Patient-Collected Lower Nasal Specimens for Severe Acute Respiratory Syndrome Coronavirus 2 Testing.” *JAMA Network Open* 3 (6): e2012005. <https://doi.org/10.1001/jamanetworkopen.2020.12005>.