



Can you hear me now? An innovative low-cost lab to introduce hearing and statistics

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Abstract

This lab is a low-cost method to introduce students to hearing physiology and hearing loss. While we conduct it as a stand-alone lab, it could be shortened to a classroom activity to introduce either topic. To complete this lab, students only need to have ear buds/headphones, a laptop, Microsoft Excel, and internet access, which most college students can access quickly. This lab has also been conducted remotely making it incredibly flexible.

Students first propose various causes of hearing loss that they may or may not have been exposed to during their life. They also determine if what they are proposing will allow effective statistical analysis. Each student then measures their hearing loss by determining the highest frequency they are able to hear. Common exposures students select are concerts, ear infections, air travel, contact sports, and use of q-tips in the ears. Each student group then explores whether exposure to that event may contribute to hearing loss by sorting the data for their selected variable, calculating descriptive statistics, and running the correct t-test. This mechanism of collecting data is something that may be applicable to a wide range of labs, allowing students to explore one data set in very different ways. The variety of exposures students put forth allows the instructor to discuss many ways hearing can be damaged, and what happens when hearing is damaged. Overall, this lab is a fun and interesting way to introduce hearing physiology while using statistical analysis.

Keywords: Physiology, Hearing, Low-cost, demonstration, statistics

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