# User Testing

Overview

One of our activities included testing our Boom Positioning System Unity demo with some volunteers. Though the exact target user might be more experienced in the field of booming, this simplified version of the task provides an insight as to how intuitive and how useful our auditory interface could prove to be.

We asked each of our participants to first play with the system so that they become familiar with the commands. The "game" was set up so that each round is 30 seconds long and each volunteer had time up until then to accrue points for that round. The goal of the game is to hold the mic as close to the subject as possible without actually breaking the line of the camera field, and the scoring system is just increasing based on the inverse of the distance from the object. Each volunteer tried the game at least 3 times with each mode: with and without our auditory interface. We refrained from explaining the mechanics of the auditory interface other than that it was supposed to assist them in their play. We then recorded the score for each round.

Our data for these tests are as follows:

Kaie		Kimberly		Sam	
Without	With	Without	With	Without	With
2.58	3.06	3.21	17.89	4.35	5.42
3.53	4.2	12.9	12.26	14.97	19.32
7.4	13.93	5.42	31.89	17.27	18.84
Leanne		Noah		Nikola	
Without	With	Without	With	Without	With
11.79	18.9	7.75	20.83	8.72	12.38
7.27	13.51	6.16	8.47	6.01	12.78
12.32	11.97	9.03	15.94	4.04	15.58

Without Interface and With Interface
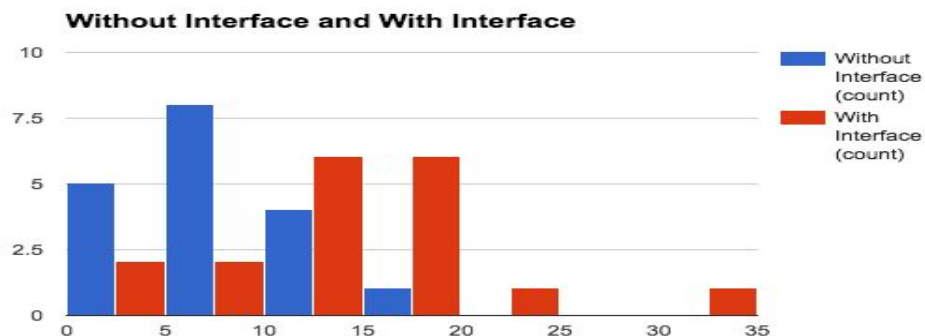
We can then generate the above histogram from this data:

Short Analysis

From the interlaced histogram, it's clear to see that the mode of the trials with the auditory interface is larger than that of those without the audio interface. There were clear outliers to either side, but even the most talented individuals didn't break the score of 20 often.

Feedback and Addressal

A lot of the feedback we got from the individuals was about zone 2. For our Unity demo, we could not find a good way to calculate the distance from the camera frustum, resulting in us "cheating" by making zones. Essentially, these are multiple layers of cameras with widening fields of view to determine whether or not the boom was in frame. Zone 2 was the layer right before camera field of view. Many volunteers found zone 2 to be too narrow -- they wanted to know whether they were going to cross by a bigger margin. Even though the demo takes a different approach at the audio feedback, it can still be a valid consideration for our system. After all, the zones are basically discretized versions of the continuous function we want for our distance. A bigger zone two would mean increasing the general intensity of the sound feedback (amplitude and pitch) when it's closer to the camera's frustum. We addressed this in the demo by making zone 3 wider.

Another criticism we tried to address was how invasive the sound was. We were told that the sounds were a lot more distracting than they were helpful in some occasions. Distraction is something we definitely cannot afford in this system as its purpose is to afford our users awareness. We addressed this item by lowering the pitch and amplitude at each zone, leaving only the camera zone's original sound feedback.