

## ACOUSTIC SITUATION AWARENESS AND ITS EFFECTS ON PEDESTRIAN SAFETY WITHIN A VIRTUAL ENVIRONMENT

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### ABSTRACT

Personal Listening Devices (PLD), or closed/open earphones are growing in popularity at a rapid pace with new technological advances being made in pass-through technology, and bone conduction earphones. Studies have shown that the student population between the ages of 18 and 25 have the highest rate of pedestrian accidents. Earphones keep users entertained conveniently but at the same time block environmental sounds, and consequently degrades their acoustic situation awareness (ASA). Street crossings require pedestrians to be vigilant towards approaching vehicles and its failure can lead to life-threatening accidents. Unsignalized streets on sprawling rural college campuses pose a threat to PLD wearers. This research conducted an observational study through video recording capturing pedestrians crossing streets while using PLDs. Observations were performed at multiple sites on campus, followed by a survey and focus groups to further understand street-crossing decision making. Moving forward, the researchers plan to recreate critical street crossing scenarios within a virtual environment that mimics real-world locations and test for degradation of acoustic situation awareness (ASA) through the use of closed-ear and open-ear conduction systems. Findings of this study will provide ways to improve ASA for PLD wearers while also developing design guidelines for effective vehicle-to-pedestrian (V2P) communication modalities.

