

Title: Soundscapy – a new analysis and visualisation method for representing the range of soundscape perceptions

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Type of proposal: Demonstration of visualisation software package

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Abstract:

Background: Soundscape studies of urban spaces have gained increased prominence in the last decade, resulting in the ISO 12913 standard series on soundscape. While this series provides validated measures and metrics and a needed level of consistency, the methods provided often reflect a tacit acceptance of the notion of an ‘idealised’ or consistent listener. In particular, the analysis methods delivered in Part 3 of ISO 12913 struggle to allow any representation of the variation in people’s perception of urban soundscapes.

Aims: There is no single perceptual outcome of a soundscape: it will always include some randomness and diversity inherent in human perception and this should be reflected in how we present soundscape assessments. This variation should be considered as a distribution of soundscape perception. The method presented here aims to reflect the collective perception of a soundscape, without reducing it to a single average soundscape value. The array of potential responses to an environment is a crucial factor in assessing the successful design of a space and represents the reality of perception.

Main contribution: Towards this collective perception approach, we have developed an open-source Python package to assist with the analysis and visualisation of soundscape assessments, called Soundscapy. With it, we propose a new method of soundscape presentation which inherently considers the natural randomness in soundscape perception. As a tool, this probabilistic representation of soundscape assessments considers the range of perceptions to any given environment and provides a strong visual tool to communicate about soundscapes.

Practical requirements: Soundscapy requires only two things: (1) the soundscape survey data you wish to analyse, collected according to the ISO 12913:2 circumplex and (2) a moderate knowledge and comfort with Python (particularly Pandas and Matplotlib). Given these, Soundscapy can produce attractive visualisations of soundscape data to communicate both the quality of a soundscape and the diversity of listener’s experiences.