Urban soundscapes, digital health and environmental perception: the case of SensingWalk

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This presentation explores an approach to urban soundscape analysis that brings together digital health, urban planning, and environmental perception. The focus of this approach is the generation of multimodal datasets based on diverse environmental, physiological, and psychological parameters of real-life experiences in urban spaces to tackle complex challenges of environmental factors such as air quality and urban diversity. Through the discussion of SensingWalk, a participatory geolocated citizen science experience in Potsdam, Germany, part of the DivAirCity H2020 project, we investigate urban soundscape analysis based on acoustic diversity indices in relation to environmental, physiological and psychological data. During the SensingWalk, participants equipped with mobile phones, wearable sensors and an online application followed a predetermined path selected for its diverse environmental features, including variations in traffic volume, presence of green spaces and level of commercial activity. Participants responded to an in-app questionnaire about their perception of the built environment, environmental conditions, diversity and air quality. The SensingWalk path involved designated stops carefully chosen to encompass a range of environmental conditions and to allow participants to rest and evaluate their mood and surroundings. The resting points provided participants with an opportunity to adapt to their environment and ensure a state of balance in the collection of the physiological data rather than an immediate response to a change in surroundings. Participants shared audio-visual recordings of their experience at each location via the application. Furthermore, field recordings undertaken during the SensingWalk with omnidirectional microphones were analysed by calculating the acoustic diversity of the areas visited. A comparison of the soundscape analysis, the listening and sensory experience with the vital parameters, air quality, mood, restorative and audio-visual data collected showed a strong connection of healthy vital signs and places with blue-green areas (up to 0.35 Spearman’s correlation coefficient).