Title: Air Quality Personal Exposure Modeling for Translational Research

Quantifying exposure at a personal level is a requirement for understanding biological pathways influenced by the environment. This process requires sensors that measure general and particular environmental pollutants for different physical, chemical, and biological species to quantify exposures and their effects on human health. Current approaches for measurement of air quality does not have sufficient resolution to accommodate individuals’ locations and movements over time. Placing sensors on a large scale is costly and challenging because of the device and deployment costs. In addition, low cost sensors also tend to have accuracy and data completeness issues. A computational model could fill gaps and sparseness in measurements and characterizes uncertainties to generate high-resolution spatio-temporal profiles of exposure. Personal Exposure Models generate individual-level exposures for particular environmental species by utilizing spatio-temporal variations of individual’s locations, behaviors, biology, and pollutant distribution profiles. We discuss a generalized framework for air quality personal exposure modeling in this presentation.

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Layperson sentences:

1. This work describes how mathematically and computationally generated can be a substitute and be used for air quality health research.