# NSF RET 2018 Project 4

## Goals and Objectives

In this project, the overarching goal is to understand spatial and temporal variation of air pollution at the neighborhood scale. Here, we will focus on the Camp Washington Neighborhood, approximately two miles west of UC. The project will entail three major objectives:

* design of a sampling plan to collect air pollution data (challenge based learning portion of RET Project 4)
* field campaign to collect data
* data analysis and visualization

## Methods and Laboratory Facilities

This project requires minimal laboratory work. Air pollution data will be gathered using real-time portable air pollution monitors and sensors. Training will be provided using all equipment, including operation, data collection and analysis. The monitors are housed in the Rhodes 716 Laboratory. The field site will be the Camp Washington Neighborhood as well as the Southwesth Ohio Air Quality Agency’s Near-Road site (also located in Camp Washington). Other field locations to test the instruments will be the UC campus and adjacent neighborhoods.

## Reference papers (three)

The following papers will provide a reference for the type of study we will conduct

(Apte et al. 2017; Betancourt et al. 2017; Kheirbek et al. 2014).

Apte, J. S., Messier, K. P., Gani, S., Brauer, M., Kirchstetter, T. W., Lunden, M. M., Marshall, J. D., Portier, C. J., Vermeulen, R. C. H., and Hamburg, S. P. (2017). "High-Resolution Air Pollution Mapping with Google Street View Cars: Exploiting Big Data." *Environmental Science & Technology*, 51(12), 6999-7008.

Betancourt, R. M., Galvis, B., Balachandran, S., Ramos-Bonilla, J. P., Sarmiento, O. L., Gallo-Murcia, S. M., and Contreras, Y. (2017). "Exposure to fine particulate, black carbon, and particle number concentration in transportation microenvironments." *Atmospheric Environment*, 157, 135-145.

Kheirbek, I., Ito, K., Neitzel, R., Kim, J., Johnson, S., Ross, Z., Eisl, H., and Matte, T. (2014). "Spatial Variation in Environmental Noise and Air Pollution in New York City." *Journal of Urban Health-Bulletin of the New York Academy of Medicine*, 91(3), 415-431.