

Exposure to air pollution, in addition to worsening symptoms for chronic conditions like asthma, has been shown to reduce birthweight. Temporary pollution reductions in Beijing for the 2008 Olympic games showed air pollution particularly impacted birthweights if exposure occurred in the *eighth* month of pregnancy. Third-trimester effects from ambient air pollution have been shown to be higher in Hispanic and African American populations. Among all populations, pollutant exposure during the entire pregnancy led to the most extreme effects (Darrow, et al, 2011). While effects of air pollution exposure are most extreme during late term pregnancy, studies have shown that exposure to air pollution during pregnancy at any point is associated with decreases in birthweights among full term births and increases risk of a baby being born with a low birthweight (Averett, 2015).

For my final project, I would like to look at the effect of air pollution on health outcomes. To accomplish this I would be acquiring data from pollution monitoring sites from the NERC using the [openair](#) package on cran. As for what health outcomes, there are two possibilities. First, I can merge the air pollution data with natality data I have from the National Center of Health Statistics (that has already endured some mutation and change within r) measuring fetal and maternal outcomes in the U.S. in the last ten years. If this is not acceptable, I can also acquire health data from the [WHO](#) on most countries using the WHO cran package or from [healthdata.gov](#) using the 'rHealthDataGov' package.

In either case, datasets will need to be merged based on location (county vs city, etc) and time period, which means that datasets will need to be transformed to match. Additionally, I'm sure variables in the health and air packages will need to be transformed into usable and

translatable versions. Once datasets are merged and things are transformed, I will use machine learning to determine which health outcomes are most affected by air pollution, and for what groups are the effects most significant.