**Effects of Air Quality on Asthma Risk**

New York City | Team #45

Data

* Environmental data
  + New York State Dept of Health hosts DEC Measurement Data and AirNow which allows access through an API. Includes daily measurements of the most common/harmful pollutants. <https://www.health.ny.gov/statistics/environmental/public_health_tracking/environmental/air.htm>
  + Citywide raster files of annual average predicted surface for nitrogen dioxide (NO2), fine particulate matter (PM2.5), black carbon (BC), and nitric oxide (NO); summer average for ozone (O3) and winter average for sulfur dioxide (SO2). We will use this data to visualize which parts of NYC have higher amounts of pollutants and to see how this relates to asthma prevalence throughout the city. <https://data.cityofnewyork.us/Environment/NYCCAS-Air-Pollution-Rasters/q68s-8qxv>
  + NYC air quality data showing measures of fine particulate matter and nitrogen dioxide. Data includes mean values of fine particulate matter and nitrogen dioxide for 2009-2018. Data is organized by UHF42 and UHF34 neighborhoods. This data is important for seeing variance in pollutants in different neighborhoods and comparing to asthma rates in those neighborhoods. Can be joined with Ozone and asthma data sets for regression analysis. <https://data.cityofnewyork.us/Environment/Air-Quality/c3uy-2p5r>
  + NYC Environment and Health Data Portal: Ozone data based on UHF neighborhood to describe air pollution. Data shows mean yearly (2009 - 2018) levels and 10th percentile and 90th percentile. High levels of ground-level ozone can be harmful to humans. <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2027,719b87,122,Summarize>
  + Air Quality index report including annual summary with maximum AQI values and the count of days in each AQI category. This website is a tool that can be used to search air quality by year and geographic area. Displays a summary by year <https://www.epa.gov/outdoor-air-quality-data/air-quality-index-report>

Asthma Prevelance

* The number of adults in New York City with asthma in the past 12 months. This data set is organized by borough and also by individual neighborhoods and subsections of each borough. This dataset is important because we are interested in how this will correlate to asthma risk factors, particularly air pollution and road infrastructure.
  + <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=18,4466a0,11,Summarize>
* The number of children with asthma in New York City. This dataset is important because in addition to the asthma data for adults, we will see how this correlates to location, air pollution and road infrastructure. The datasets below are from the same source and have the same format, but are distinguished by subgroups of children
  + Public school 5-14 yrs
    - <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2147,4466a0,11,Summarize>
  + Public school 5-14 yrs with persistent asthma
    - <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2149,4466a0,11,Summarize>
  + Children Ever Diagnosed with asthma (0-13 yrs)
    - <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2392,4466a0,11,Summarize>
* Asthma emergency room visits for adults and children. This is important because in addition to the number of children and adults with asthma, we will be able to see if this information correlates to air pollution, road infrastrucutre, and also location
  + Adults
    - <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2380,4466a0,11,Summarize>
  + Children 0-4 yrs
    - <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2048,4466a0,11,Summarize>
  + Children 5-17 years
    - <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2379,4466a0,11,Summarize>
  + Children 0-4 yrs by small area neighborhood (NTA)
    - <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2378,4466a0,11,Summarize>
  + Children 5-17 yrs by small area neighborhood (NTA)
    - <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2383,4466a0,11,Summarize>
* Data sets on the officially defined asthma risk factors (smoking, etc)- SDOH: health behaviours
  + Smoking datasets give details on the percentages of adult smokers and those exposed to secondhand smoke, broken down by neighborhoods and from 2002-2017. Smoking has been identified as an environmental factor that contributes to developing asthma.
  + <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2338,4466a0,3,Summarize>
  + <https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2019,4466a0,3,Summarize>
* Protected Classes (Marcos) - SDOH: social and community context
  + Using Federal and local census information to prevent any bias with our study and results ([Census Bureau Data](https://www.census.gov/data.html))

-This can add another level of understanding if there are any bias or discrimination taking place with the research

-Results = we can see what population and demographic in each neighborhood and see if there are any discrepancy with asthma and air pollution data

* Road infrastructure (Marcos) - SDOH: built environment
  + Google maps/TomTom have traffic API’s that have real-time traffic data and potentially historical traffic/congestion data (behind paywall)

([The Traffic Data Viewer (TDV)](https://www.dot.ny.gov/tdv), [Traffic Data Viewer](https://gisportalny.dot.ny.gov/portalny/apps/webappviewer/index.html?id=28537cbc8b5941e19cf8e959b16797b4), [GIS For Racial Equity](https://gis-for-racialequity.hub.arcgis.com/#data-racialequity), [Health, Racial & Economic Equity Data Viewer](https://www.arcgis.com/home/group.html?id=bc127bacdef949f59f06fc6dda0994c0&view=grid#content), [Racial Equity Data](https://racialequity.maps.arcgis.com/home/group.html?id=f8399b70fa04461c892c1b1710083d16&view=grid#content))

-This can be insightful as we can see the effects of traffic on air quality along with impact in temperatures with geographies like tree density, road, and highways

-Results= of this could lead to influencing future development to counteract these problems as well as a highlight if there are and inequalities

* Data set on the prevalence of mold within homes (Hevander) - SDOH: housing
  + Estimated number of adults reporting damp spots or mold in at least one room in their building, excluding the bathroom, in the past 30 days.

Data tabulates mold counts citywide, by borough, and by neighborhood

Source: New York City Community Health Survey (CHS)

This data set is useful in determining strong correlated factors for asthma.

<https://a816-dohbesp.nyc.gov/IndicatorPublic/VisualizationData.aspx?id=2101,719b87,36,Summarize>

* Community Health Survey: Annual survey of adult New Yorkers to provide neighborhood, borough and citywide estimates on a range of chronic diseases and behavioral risk factors. For analysis against asthma rates by area (Sina) - SDOH: health behaviours
  + <https://www1.nyc.gov/site/doh/data/data-sets/community-health-survey-public-use-data.page>
* [Physical Activity and Transit Survey](https://www1.nyc.gov/site/doh/data/data-sets/physical-activity-and-transit-survey.page). Survey of adults conducted in 2010-2011 about physical activity, active transportation and health. For analysis against asthma rates by area (Sina)
  + <https://www1.nyc.gov/site/doh/data/data-sets/physical-activity-and-transit-survey-public-use-data.page>
* Index Crimes by County and Agency. Previous research has shown association between violent crime and increased ED utilization rates for children with asthma (Sina) - SDOH: Physical environment / safety
  + <https://data.ny.gov/Public-Safety/Index-Crimes-by-County-and-Agency-Beginning-1990/ca8h-8gjq/data>
* US Census Bureau data - DEMOGRAPHIC CHARACTERISTICS FOR OCCUPIED HOUSING UNITS for analysis against asthma rates by area (Sina) - SDOH: housing
  + <https://data.census.gov/cedsci/table?q=demographic%20new%20york&tid=ACSST1Y2019.S2502>
* Food Service Establishment Map: Last Inspection - ?possible? dataset to measure Food Insecurity and Nutrition in NY and its relationship to asthma rates by area (Sina)
  + <https://health.data.ny.gov/Health/Food-Service-Establishment-Map-Last-Inspection/qd6f-nmcs>