

AN EXPLORATION OF THE EFFECT OF AIR POLLUTANTS EMITTED FROM POWER PLANTS ON MATERNAL OUTCOMES THROUGH ARCGIS MAPPING

Kyla Earles
Health Science Department | Atlanta, GA

INTRODUCTION

THERE HAVE BEEN VERY FEW RESEARCH STUDIES ON THE LINK BETWEEN PROXIMITY TO POWER PLANTS AND ADVERSE BIRTH OUTCOMES. DUE TO THIS GAP IN RESEARCH, THE PRESENT STUDY WILL EXAMINE THE RELATIONSHIP BETWEEN MATERNAL MORTALITY AND ADVERSE INFANT OUTCOMES IN CORRELATION TO LIVING CONDITIONS. DATA WILL BE OBTAINED USING THE ARCGIS GEOGRAPHICAL DATA MAPPING SYSTEM. USING THIS SYSTEM, THE FOLLOWING VARIABLES WILL BE APPLIED: PROXIMITY TO POWER PLANT, AGE, RACE/ETHNICITY, AND PRE-EXISTING CONDITIONS. FOLLOWING THIS INFORMATION, THIS RESEARCH WILL OUTLINE THE METHODOLOGY, DATA, AND DATA ANALYZATION UTILIZED TO PERFORM THIS STUDY.

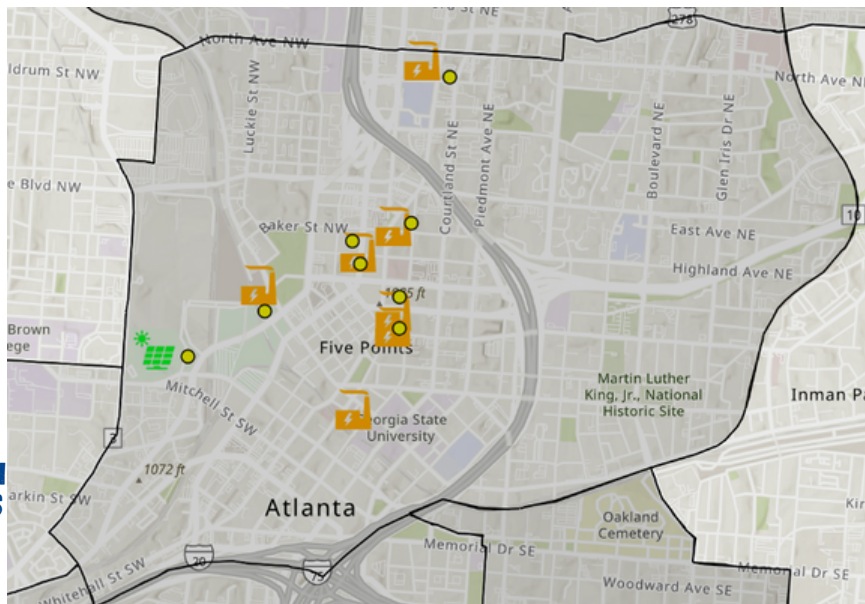
METHODS

DATA WERE COLLECTED USING THE ONLINE ANALYTICAL STATISTICAL INFORMATION SYSTEM (OASIS) MATERNAL CHILD HEALTH BIRTH MAPPING TOOL, ACCESSING THE GEORGIA DEPARTMENT OF PUBLIC HEALTH'S DATA WAREHOUSE. THE DATA WAS MAPPED AND LAYERED USING THE ARCGIS MAPPING SYSTEM TO DISPLAY THE RESIDENTIAL PROXIMITY OF POWER PLANTS TO EACH BIRTH WITHIN FULTON COUNTY BETWEEN THE YEARS 2017 AND 2021.

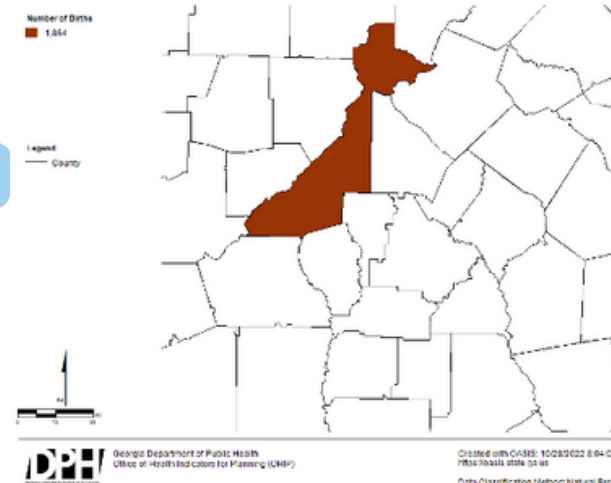
RESULTS

THE TRI-LAYERED MAP REVEALED EIGHT POWER PLANTS IN THE FULTON COUNTY ATLANTA AREA. THESE POWER PLANTS WERE IN VERY CLOSE PROXIMITY WITHIN THE CENTRAL ATLANTA AREA. THE TOTAL NUMBER OF BIRTHS IN THE ATLANTA AREA FROM 2015-2019 WAS 1,301. ONE HUNDRED FORTY-THREE OF THESE BIRTHS WERE LOW BIRTHWEIGHT BIRTHS (LESS THAN 2500 GRAMS), AND 154 OF THE BIRTHS WERE PREMATURE BIRTHS (LESS THAN 37 WEEKS). DATA FROM THE OASIS TOOL FOUND 1,864 BIRTHS, UNDER SIMILAR CONDITIONS, FROM 2017-2021.

ARCGIS MAP LAYERED BY NUMBER OF PRE-TERM AND LOW WEIGHT BIRTHS IN ATLANTA WITH POWER PLANTS IN ATLANTA AND POWER PLANT WATTAGES.



NUMBER OF BIRTHS BY COUNTY OF RESIDENCE, FULTON COUNTY, PRETERM, BIRTHWEIGHT 1,500-2,499 GRAMS, 2017-2021.



DISCUSSION & CONCLUSIONS

ALL EIGHT PLANTS FOUND HAD VERY LOW WATTAGES, INDICATING THAT THEIR FINE PARTICULATE MATTER EMISSIONS WAS ALSO VERY LOW. THE RESEARCH CONDUCTED DISPLAYED NO CORRELATION BETWEEN ADVERSE MATERNAL HEALTH OUTCOMES AND PROXIMITY TO POWER PLANTS WITHIN ATLANTA. HOWEVER, FUTURE RESEARCH CAN BE CONDUCTED TO EXPLORE THE RELATIONSHIP BETWEEN LARGER POWER PLANTS IN GEORGIA AND THE EFFECT THEIR POLLUTANT EMISSIONS HAS ON MATERNAL OUTCOMES IN NEIGHBORING COUNTIES.