Ozone and fine particulate matter (PM2.5) emission trend (200-2014) and, Chronic Lower Respiratory disease mortality in Houston Galveston area, Texas

Niaz Morshed¹
¹Texas State University

Respiratory diseases mortality because of the short-term effect of air pollution exposure is evident from lots research findings. The United States has attempted considerable endeavors and speculations to improve air quality since the 1970s. Air pollution accounted for as much as 15 percent of the overall increase in life expectancy in the U.S. Ozone and fine particulate matter are believed to have close association with Chronic Lower Respiratory Diseases (CLRD). Though the national trend of air pollution is downwards this study intended to evaluate pollution scenario of Houston- Galveston area for two specific pollutants – ozone and particulate matter 2.5 (PM2.5). Study considered 15 years of time frame to observe the trend of pollution in thirteen counties. The study used surface interpolation method to extract unknown values for some counties because emission record stations were not well distributed in the study area. The overall trend for ozone coincide with national emission pattern except some sharp spike in the year 2003, 2005 and 2011. But, in the case of PM2.5 there was steady decreasing pattern throughout the time period apart from few dramatic change from the year 2000 to 2006. Although CLRD mortality may ascribe to multiple factors, the combine effect of ozone and long term exposure to PM2.5 might have caused the highest mortality rate from 2008 -2012 in Austin, Colorado and Liberty counties whereas Wharton, Matagorda and Chambers score slightly higher than the moderate level of mortality.