

**TITLE:** Use of Linked Data for Environmental Public Health Surveillance

**KEYWORD(s):** Surveillance, data linkage, asthma, ozone

**BACKGROUND:** New York is one of several states that have proposed developing a system to link hospitalization data to ambient air monitoring data. We linked modeled ozone levels to childhood asthma data as an example here since asthma has been shown to be associated with high ambient ozone levels.

**OBJECTIVE:** We demonstrate how linked environmental and public health datasets can be used as part of routine environmental public health surveillance.

**METHODS:** Childhood asthma hospitalizations in 2001 were geocoded to the patient's address. A four-kilometer grid for New York City and a twelve-kilometer grid for the rest of the state were developed to model ozone levels. Daily eight-hour maximum ozone measures were modeled for each grid cell. Information on asthma and ozone were then linked via the grid cells.

**RESULTS:** A number of surveillance functions can be carried out by the system. Air pollution and asthma hospitalizations can be tracked separately and jointly in both time and space. The system provides visual representations of patterns and trends in the data through the use of maps and graphs.

**CONCLUSIONS:** We have presented several descriptive functions of the system. In the future the system might be used as a tool to conduct etiologic research. This might include investigating the typical lag time between high ozone concentrations and increased asthma hospitalizations; determining what levels of ozone are associated with increased hospitalization rates; or assessing the cumulative exposure to ozone prior to the first onset of asthma in children.

**EVALUATION:** The system incorporates traditional disease surveillance methods and environmental exposure modeling, as well as new techniques to describe and visualize the linked datasets. The utility of such system for surveillance is clear from the functions demonstrated.

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