

Asthma and Air Quality in Bethlehem

Elizabeth Roth

Department of Political Science



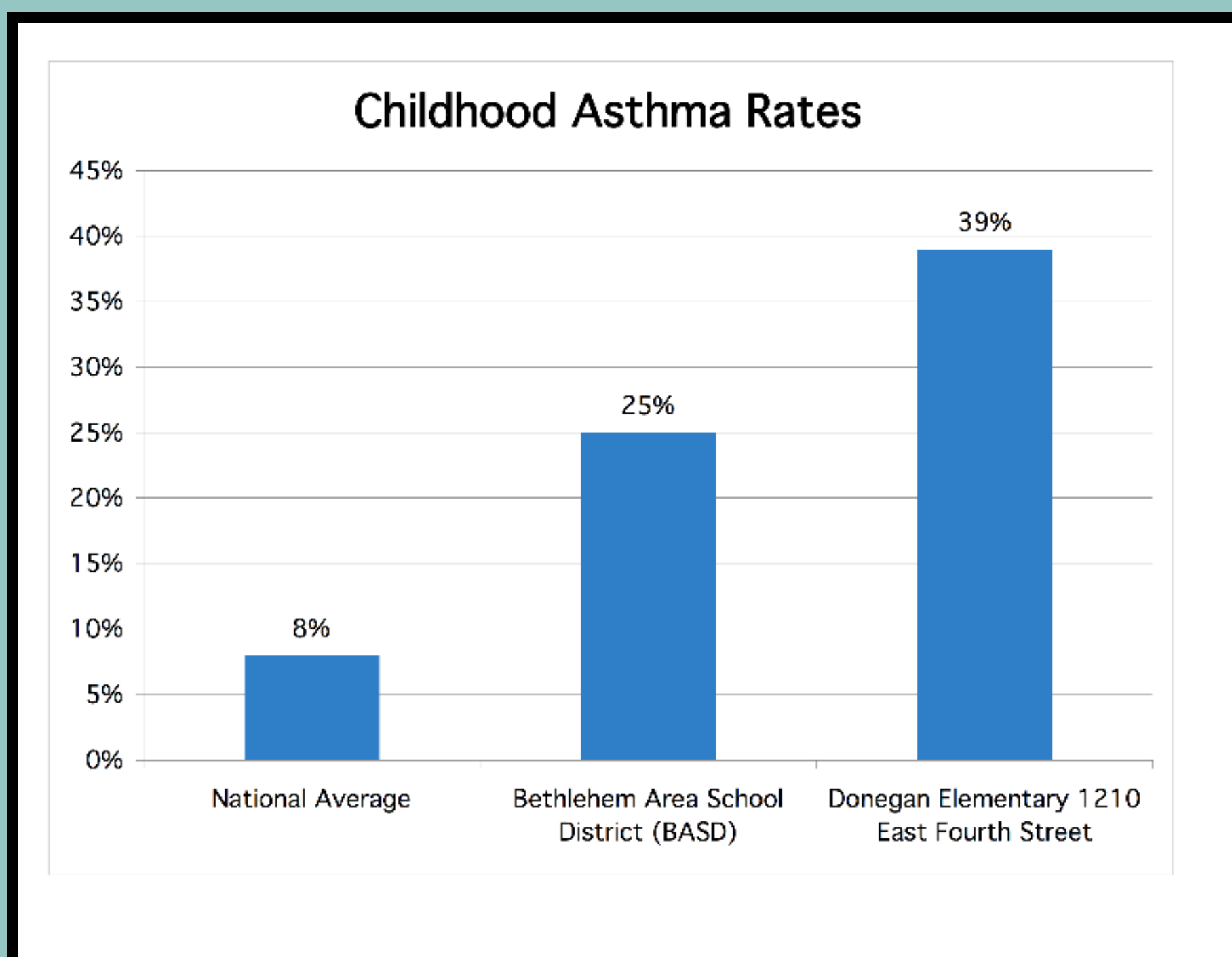
Every day in America...

40,000 people miss school or work
 30,000 people have an asthma attack
 5,000 people visit the emergency room
 1,000 people are admitted to the hospital and
 11 people die due to **asthma**.

Why does reducing the incidence of asthma in Bethlehem require a reduction in vehicular air pollution?

Goals

- To better understand the effects of air pollution on children with asthma in Bethlehem by collecting more comprehensive data about environmental triggers in a new section of the health bureau home visit survey



Northampton County is **out of compliance** with the 2008 ozone standard and the 2006 fine particulate matter standard as set by the EPA

In 2008, the ozone standard was lowered from .08 parts per million (ppm) to .075 ppm, even though scientists argue that this level is still unhealthy.

The standard for fine particulate matter is currently set at 35 µg/m³.

Section 4: Outside the Home

- How does the child get to and from school?
 walk
 school bus
 car ride
 other
- How many days of school did the child miss in the last month due to asthma?
- What time(s) of the day is the child outside most frequently?
 Morning _____
 Midday _____
 Afternoon _____
 Evening _____
 Late evening _____
- What are the child's most frequent outdoor activities? Please also list location.

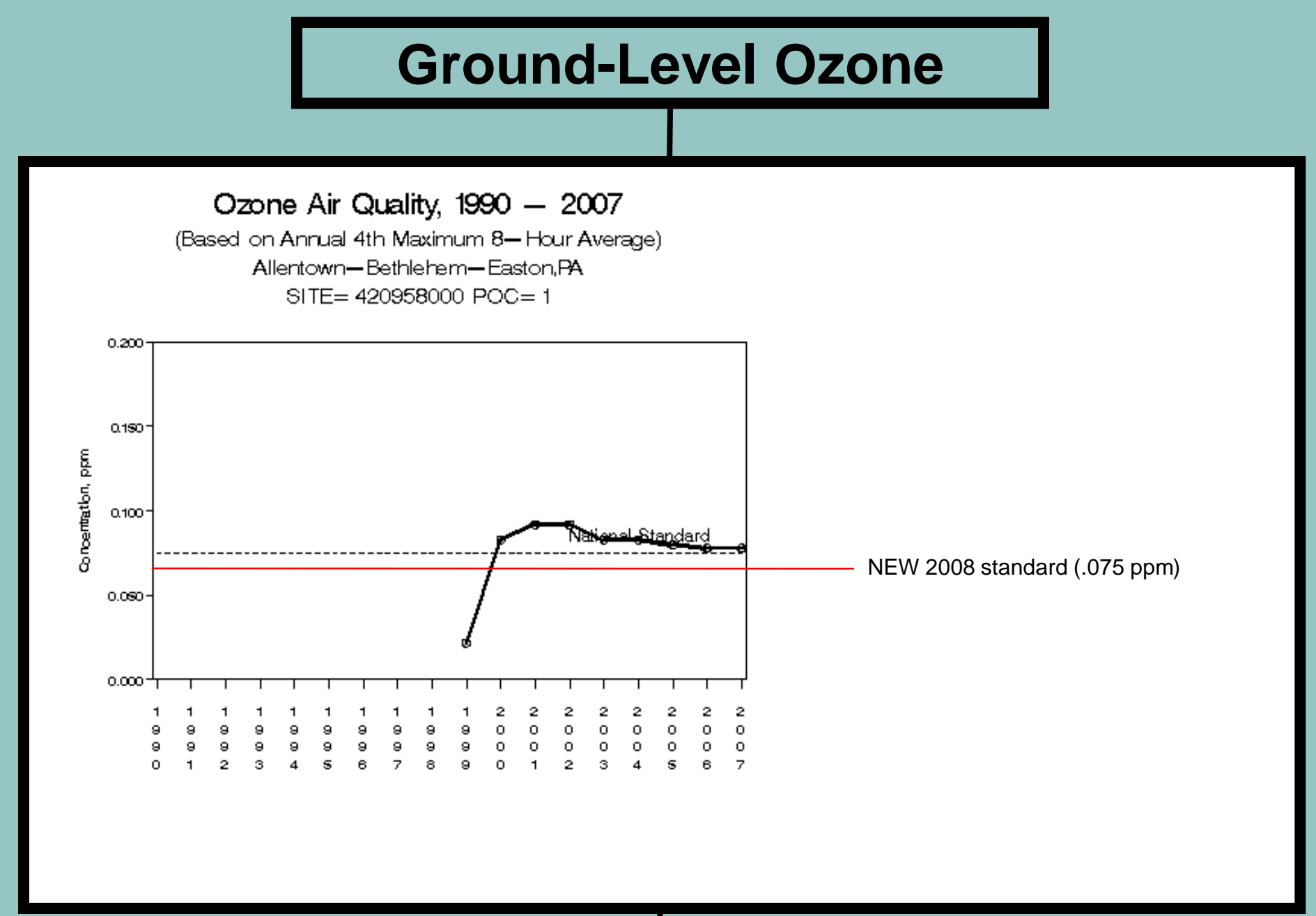
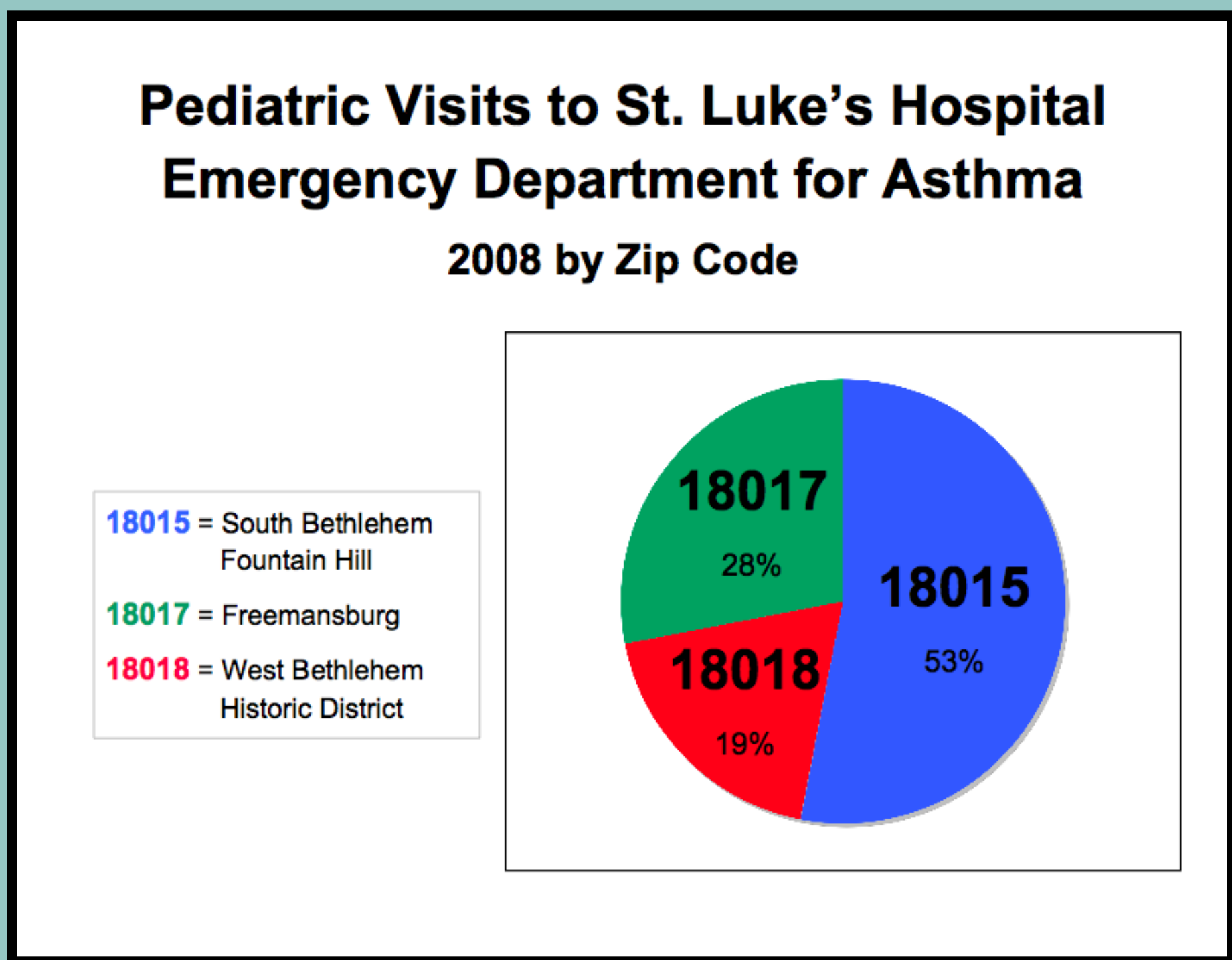
ACTIVITY	LOCATION

- Are there reasons why you might discourage the child from playing outside?
- Is there a particular time of the day when the child's asthma symptoms seem worse?
 No _____ Yes _____ when? _____ Morning _____ Afternoon _____ Evening _____
- Are you aware of high ozone days in the summer?
 No _____ Yes _____
 Ozone action days, ozone levels, and RCN channel 12/website discussed?
- For how many years has the child been at your current address?
- In what locations has the child previously lived? For how long?

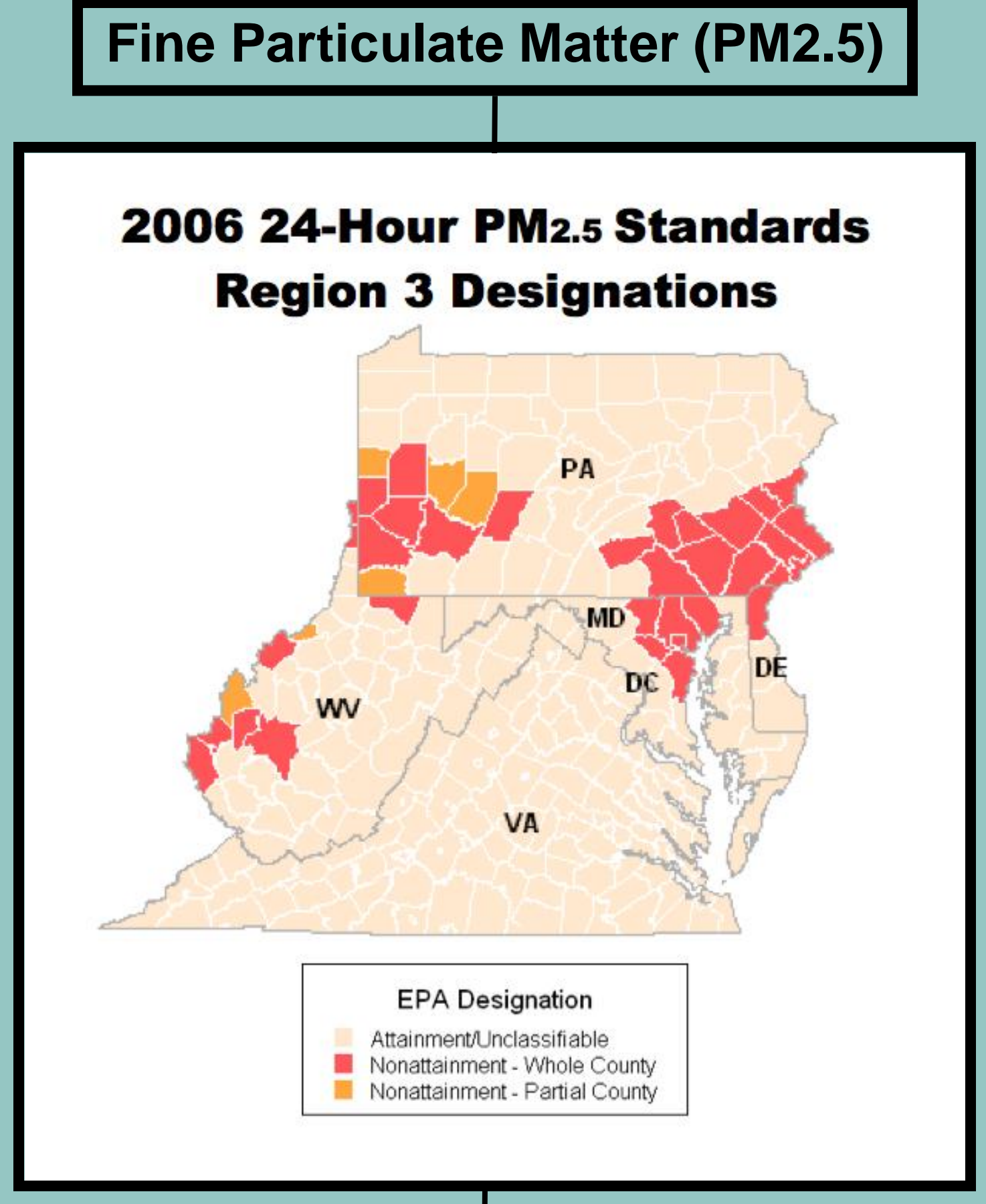
LOCATION	YEARS

- Was there a noticeable difference in the child's asthma symptoms in these different locations?
 No
 Yes
 Where were asthma symptoms most noticeable?

 Where were the asthma symptoms least noticeable?



- Formation occurs when air pollutants react chemically in the presence of sunlight
- Motor vehicle exhaust is a main contributor
- Hampers breathing, irritates the respiratory system, and may cause permanent lung damage
- Most dangerous to children, the elderly, and people with chronic lung conditions such as asthma
- This sensitive population must limit physical activity when ozone levels are high—"Ozone Action Days"



- Fine particles accumulate in the respiratory system
- Present primarily in diesel exhaust
- Associated with decreased lung function and increased respiratory symptoms and disease
- Both a trigger and a cause of asthma
- Most dangerous to children, because they breathe in twice the amount of air per pound of body weight as adults

- To create a digital, interactive map that serves as a compelling visual of localized asthma and its possible air pollution triggers by plotting:
 - Residences of ED patients, schools, neighborhood centers, and parks
 - High Traffic Volume
 - Bus routes and stops
 - Stationary sources of pollution
 - Localized PM_{2.5} readings from a portable air quality monitor



The proposed map is currently being developed and is not yet available.

Here is a layered sketch depicting some of the variables.

July 2008 Daily ozone levels during one work week

