Environmental Public Health Tracking In New York State

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- **EPHT Background & History**

- **NYS EPHT**

- **Public Health Actions**

- **Partnerships and Collaborations**

- **Future Directions**

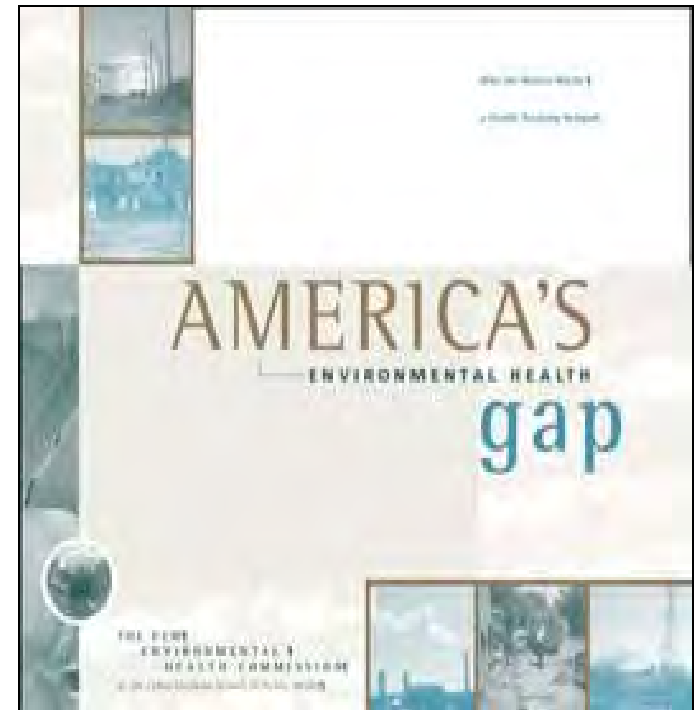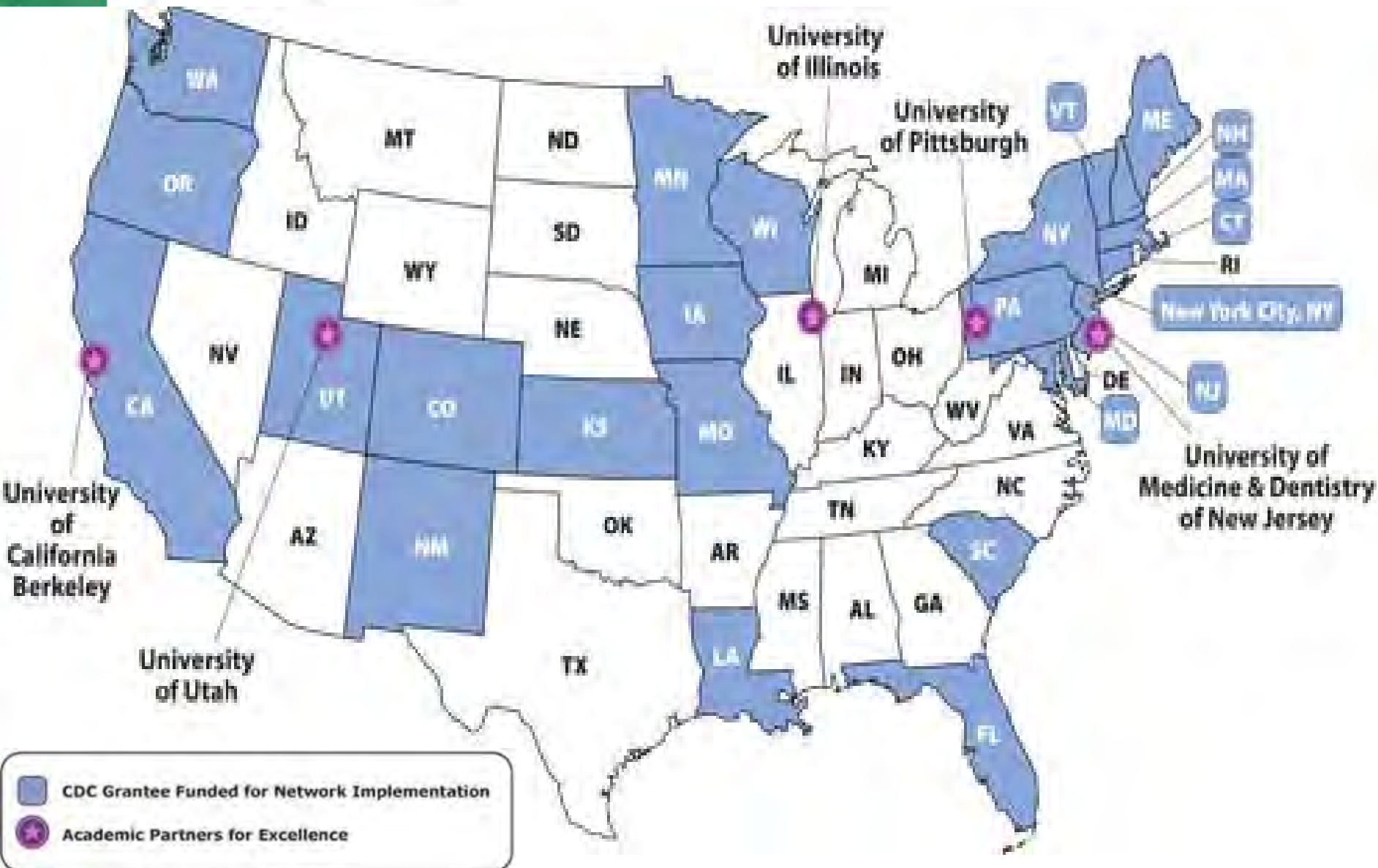# EPHT Background and History

What is EPHT?

- The ongoing collection, integration, analysis, and interpretation of data about environmental hazards, exposure to environmental hazards, and human health effects potentially related to exposure to environmental hazards.

- A tracking network must effectively disseminate information learned from these data to guide public health action.

History

- In 2000, the Pew Environmental Health Commission detailed an "environmental health gap," a lack of basic information needed to document links between environmental hazards and chronic disease.

Current EPHT grantees

University of Illinois

University of Pittsburgh

University of California Berkeley

University of Utah

University of Medicine & Dentistry of New Jersey

New York City, NY

CDC Grantee Funded for Network Implementation

Academic Partners for Excellence

NYS EPHT

EPHT in NYS

- Original funding in 2002 as capacity building/demonstration project

- Continuing funding in 2006 with primary objective to build/implement NYS EPHTN and provide data to assist in building national network

- Continuing funding in 2011 to enhance sustainability of the NYS EPHTN

EPHT in NYS

- Maintaining EPHT portals and providing NCDMs to CDC
  - 3-tiered system

- Enhancing surveillance capacity
  - Improving reporting
  - Analysis tools
  - Data linkage and visualization

- Collaborating with partners
  - Academic partners of excellence
  - Other grantees, federal/state agencies, etc.

NYS EPHT 3-tiered system

	Features	Access	Purpose
Tier 1	• Individual level data • Statistical tools • Mapping tools	Researchers and project staff in CEH	Research and Surveillance
Tier 2	• Finer geographic resolution at sub-county level • Data query tools • Query based data displays including map and charts	Role based access to public health professionals Access determined by program areas/data owners	Surveillance
Tier 3	• County level data and display • Simple data queries, maps, charts, and tables • Public health message	Open access	Outreach

Data and Tools ↑

Background Information and Outreach ↓

NYS EPHT Portal

Available at: https://apps.health.ny.gov/statistics/environmental/public_health_tracking/tracker/

Key Datasets

- Health Outcome: Vital Records, Hospital Discharge/ED Data, Disease Registries
  - Other
    - Medicaid?
    - Newborn Screening?
    - School Health/Early Intervention Programs?

- Exposure: Childhood blood lead
  - Other
    - Biomonitoring?
    - Heavy metals registry?

- Hazard: Ambient air pollution, drinking water quality (community water systems), radon, hazardous releases

- Other: BRFSS

Enhancing Surveillance Capacity

Enhancing Surveillance Capacity: Improved Reporting

Completeness of Reporting

**Prevalence* of selected major birth defects in New York State**
(Birth years: 2002-2004)

Birth defect Category	NY City	Upstate NY	NYS	NBDPN	95% CI Range
Central nervous system defects					
Anencephalus	0.4	0.4	0.4	2.5	2.3-2.7
Spina bifida without anencephalus	1.8	2.1	1.9	3.7	3.4-3.9
Encephalocele	0.3	0.7	0.5	0.9	0.8-1.0
Eye defects					
Anophthalmia/ microphthalmia	0.6	0.7	0.6	2.1	1.9-2.3
Cardiovascular defects					
Common truncus	0.9	0.3	0.6	0.8	0.7-0.9
Transposition of great arteries	4.0	4.9	4.5	4.7	4.5-5.0
Tetralogy of Fallot	4.7	4.7	4.7	3.9	3.8-4.2
Endocardial cushion defect	3.0	2.9	2.9	4.4	4.1-4.6
Hypoplastic left heart syndrome	2.2	2.6	2.4	2.4	2.2-2.6
Orofacial defects					
Cleft palate without cleft lip	4.5	6.4	5.5	6.4	6.1-6.7
Cleft lip with and without cleft palate	5.3	8.5	6.9	10.5	10.1-10.9
Gastrointestinal defects					
Esophageal atresia/ tracheosophageal fistula	2.4	2.3	2.3	2.4	2.2-2.6
Rectal and large intestinal atresia/stenosis	4.2	4.7	4.5	4.8	4.5-5.1
Musculoskeletal defects					
Reduction deformity, upper limbs	1.3	2.2	1.8	3.8	3.5-4.0
Reduction deformity, lower limbs	0.7	1.1	0.9	1.9	1.7-2.1
Gastroschisis	1.5	2.2	1.9	3.7	3.5-4.0
Omphalocele	1.1	1.5	1.3	2.1	1.9-2.3
Diaphragmatic hernia	1.5	1.9	1.7	2.9	2.7-3.1
Chromosomal defects					
Trisomy 13	0.8	0.8	0.8	1.3	1.2-1.5
Down syndrome(trisomy 21)	11.3	13.2	12.3	13.7	13.2-14.1
Trisomy 18	1.0	1.2	1.1	2.4	2.2-2.6

*- Prevalence (number of defects per 10,000 live birth)

Bold prevalences are within the range of the 11 active registries
Boxed prevalences are equal to or greater than the lower limit of the 95% CI range

Timeliness of Reporting
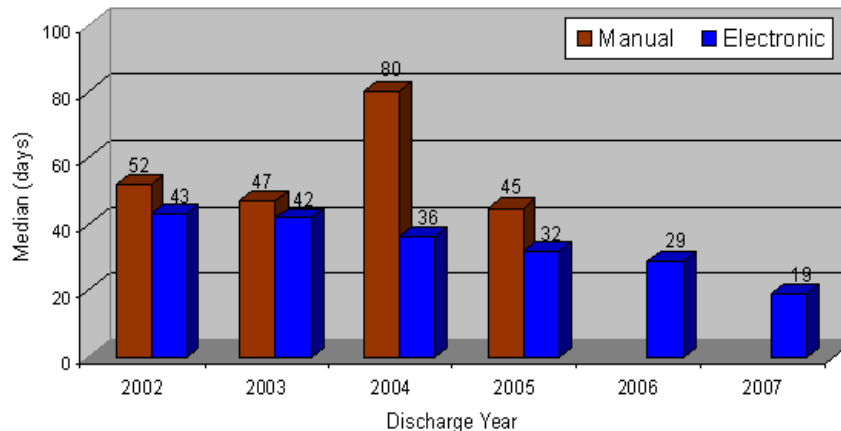
Accuracy of Reporting

Table 2. The number of cases and the percent of unspecified codes for the selected birth defect category by case reporting systems, paper-based (manual) and web-based (HPN) reporting

| Selected birth defect category	BPA codes (unspecified BPA codes)	Total	Cases with unspecified codes N	%	% of cases with unspecified codes by reporting system Manual	HPN	p-value
Other specified anomalies of heart	746.8, 746.9 (746.880, 746.900, 746.990)	1,228	329	26.8	32.9	17.6	<0.001
Other specified anomalies of pulmonary artery	747.3 (747.380, 747.390)	2,179	68	3.1	3.7	2.5	<0.05
Other obstructive defects of renal palvis/ureter	753.2 (753.290)	4,299	353	8.2	12.7	3.5	<0.001
Total selected cases		7,706	750	9.7			

Enhancing Surveillance Capacity: Analysis Tools

- Increasing demand to produce local community health maps and detect unusual patterns of disease.

- Risk of disclosure of confidential information when showing small area data.

- Rates of disease can be unreliable due to small numbers.

- Staff developed Geographic Aggregation Tool

Enhancing Surveillance Capacity: Geographic Aggregation Tool

- Merges small areas with neighboring areas to provide more stable rates of disease and/or protect confidentiality.

- User decides how much aggregation is needed.
  - Based on cases and/or underlying population
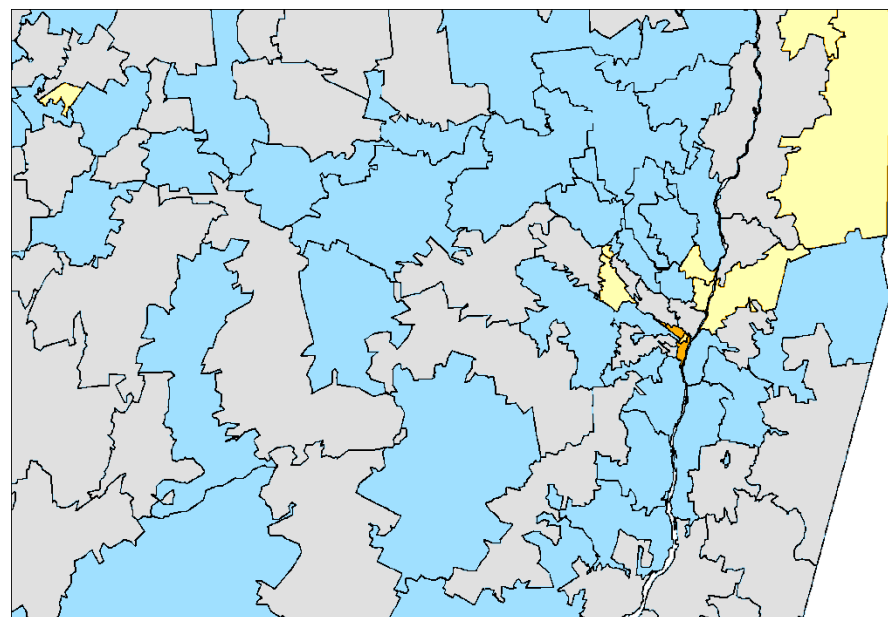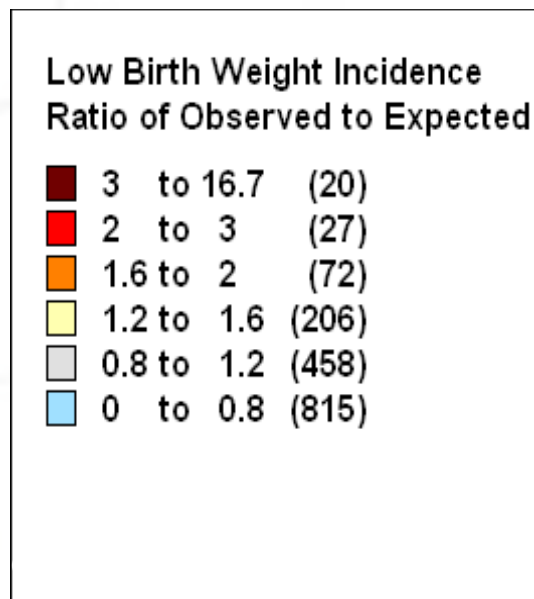 - Example 250 births and at least 3 low birth weight births

**For further information on the tool contact
Thomas Talbot at tot01@health.state.ny.us**

Thematic map showing ZIP Codes shaded by 3-yr. LBW Incidence Ratios
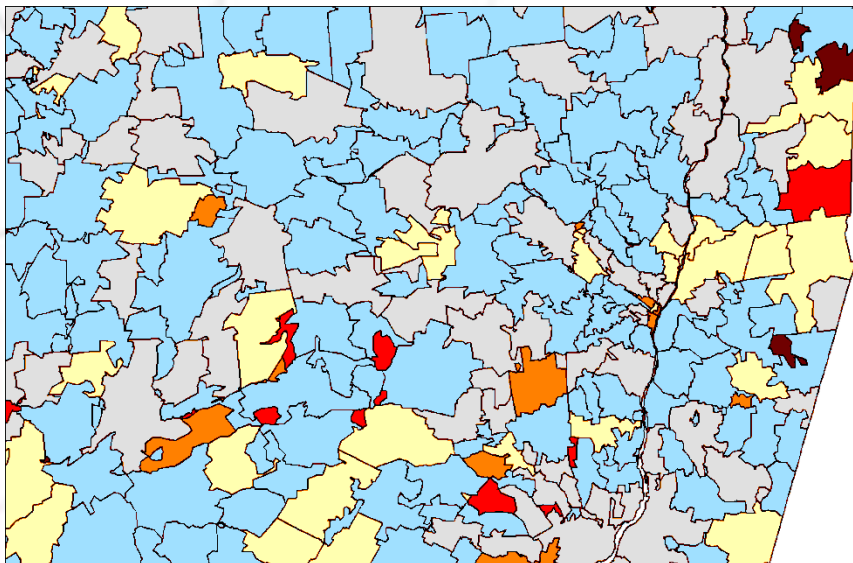
Geographic Aggregation Tool: Results

Thematic map of 3-yr. LBW Incidence Ratios after aggregation to 250 births per ZIP Code Group

Low Birth Weight Incidence Ratio of Observed to Expected

■	3 to 16.7	(20)
■	2 to 3	(27)
■	1.6 to 2	(72)
■	1.2 to 1.6	(206)
■	0.8 to 1.2	(458)
■	0 to 0.8	(815)

Enhancing Surveillance Capacity: Data Linkage and Visualization

Available at: http://www.health.ny.gov/statistics/cancer/environmental_facilities/mapping/

Public Health Actions
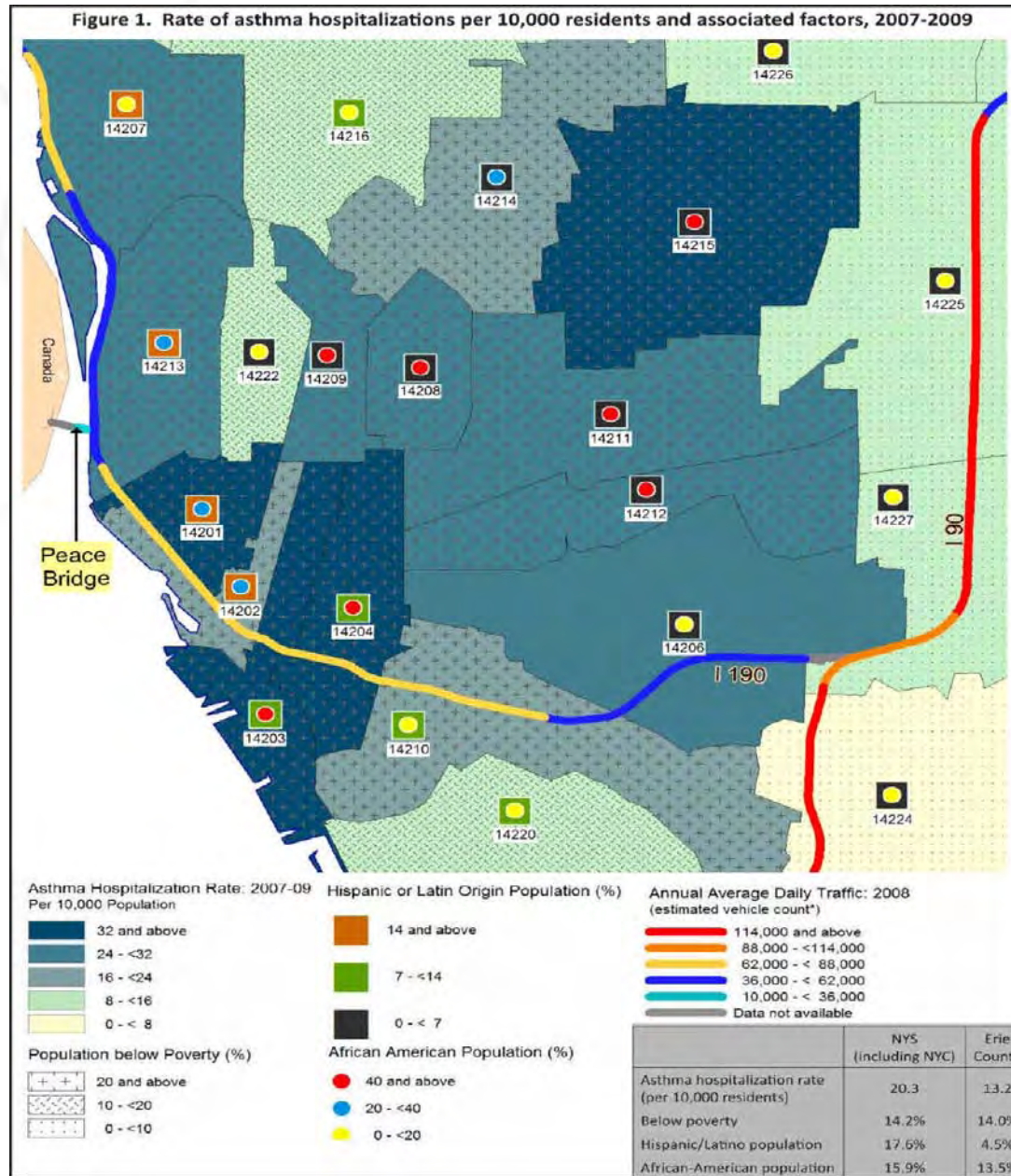
Public Health Actions: Peace Bridge

Legend:
- Zip Code 14213
- New York State
- Upstate New York
- Erie County

Table. Asthma hospitalization rates in 14213 and surrounding ZIPs compared to Erie, Upstate NYS, and all NYS.

ZIP Code	Hospitalizations			Rate per 10,000 population		
	2000-2003	2004-2006	2007-2009	2000-2003	2004-2006	2007-2009
14201	161	133	132	30.5	34.2	35.5
14202	17	25	21	11.1	20.7	17.8
14207	193	171	186	21.0	25.2	28.1
14213	253	219	220	22.5	26.6	28.3
14222	43	41	38	8.3	10.7	10.2

NYS	167,543	120,385	117,567	21.9	20.7	20.1
Upstate NYS	52,683	41042	40,339	11.9	12.3	12.1
Erie County	4,159	3,707	3,613	11.0	13.4	13.2

Public Health Actions: Peace Bridge

Figure 1. Rate of asthma hospitalizations per 10,000 residents and associated factors, 2007-2009

Public Health Action: Potential health effects associated with coal-fired power plant

Figure 2. Map of ZIP Codes selected for the higher, moderate and lower potential exposure study areas.
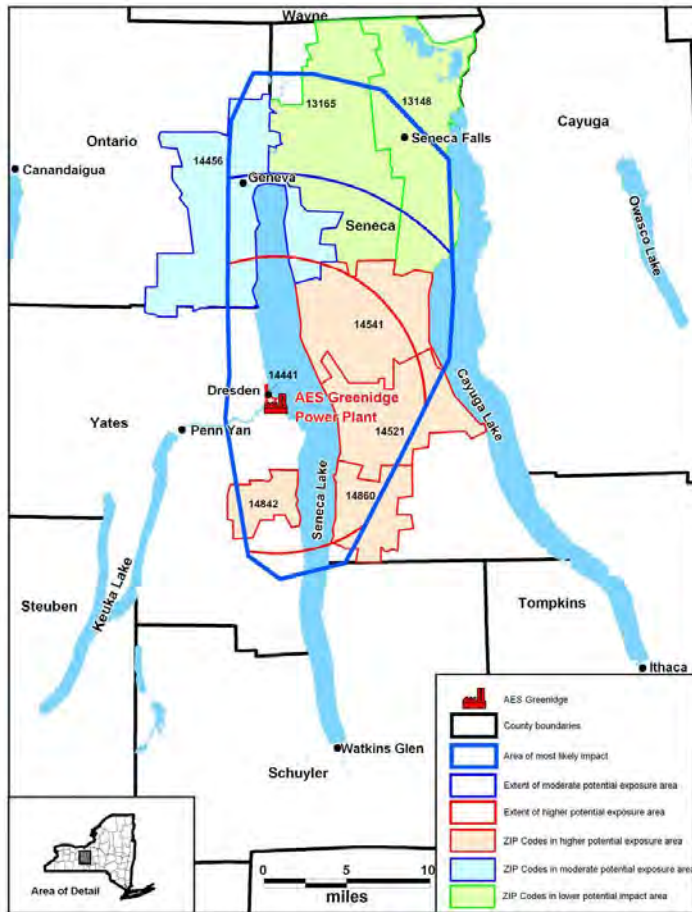

Table. Respiratory hospital admissions for 1986-2005, combining all study areas (ZIP codes 14441, 14842, 14860, 14521, 14541, 14456, 13165 and 13148).

Primary Diagnosis	O/E Standardized Rate Ratio	Lower 95%CI	Upper 95% CI	Hospitalization Discharge Rate in Study Area*	Hospitalization Discharge Rate in Reference Area*
Acute Bronchitis	0.74	0.69	0.78	111.3	153.0
Asthma	0.59	0.55	0.63	92.8	156.0
COPD (Total)	0.87	0.83	0.91	189.4	217.0
Chronic bronchitis	0.80	0.75	0.84	126.4	157.4
Emphysema	0.49	0.38	0.62	6.5	13.2
COPD (NOS)	1.21	1.12	1.31	56.5	46.4

*Average annual age-adjusted hospitalization discharge rate per 100,000 persons

Public Health Action: Assessing impacts of law changes

- CO poisoning is an EPHT health outcome indicator
- NYS amended existing CO law in 2010

Percent of New York residents who report having a CO alarm

?

Source: NYS BRFSS weighted data
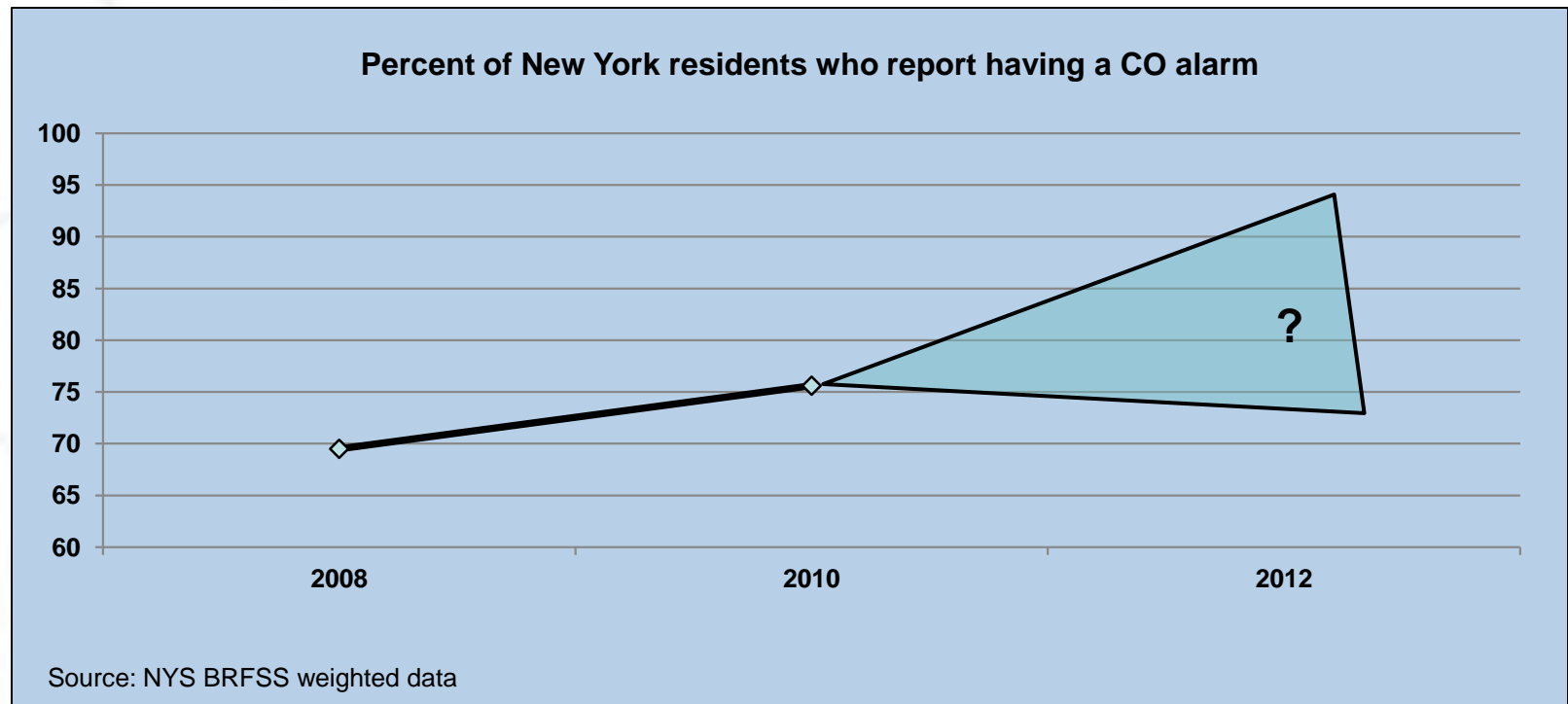
Partnerships and Collaborations

Collaborations

- EPA, NASA, Battelle, Cal-Berkeley, and other states collaborating on project to link air pollution models with cardiorespiratory health outcomes

- NYSDOH and other state health departments study of air pollution and oral clefts

- EPA, Wisconsin DOH, Maine DOH project to link modeled and measured air pollution data with health outcomes

- UNJMD and NYS project to study air pollution and birth outcomes

- Emory University and NYS project to develop estimates of the local health impacts of air pollution

Future Directions

- More community level data

- Enhanced data linkage and visualization

- Improved tools to enhance EH surveillance activities

The End