

Geospatial Visualization of the World Trade Center Health Registry Exposure and Health Data

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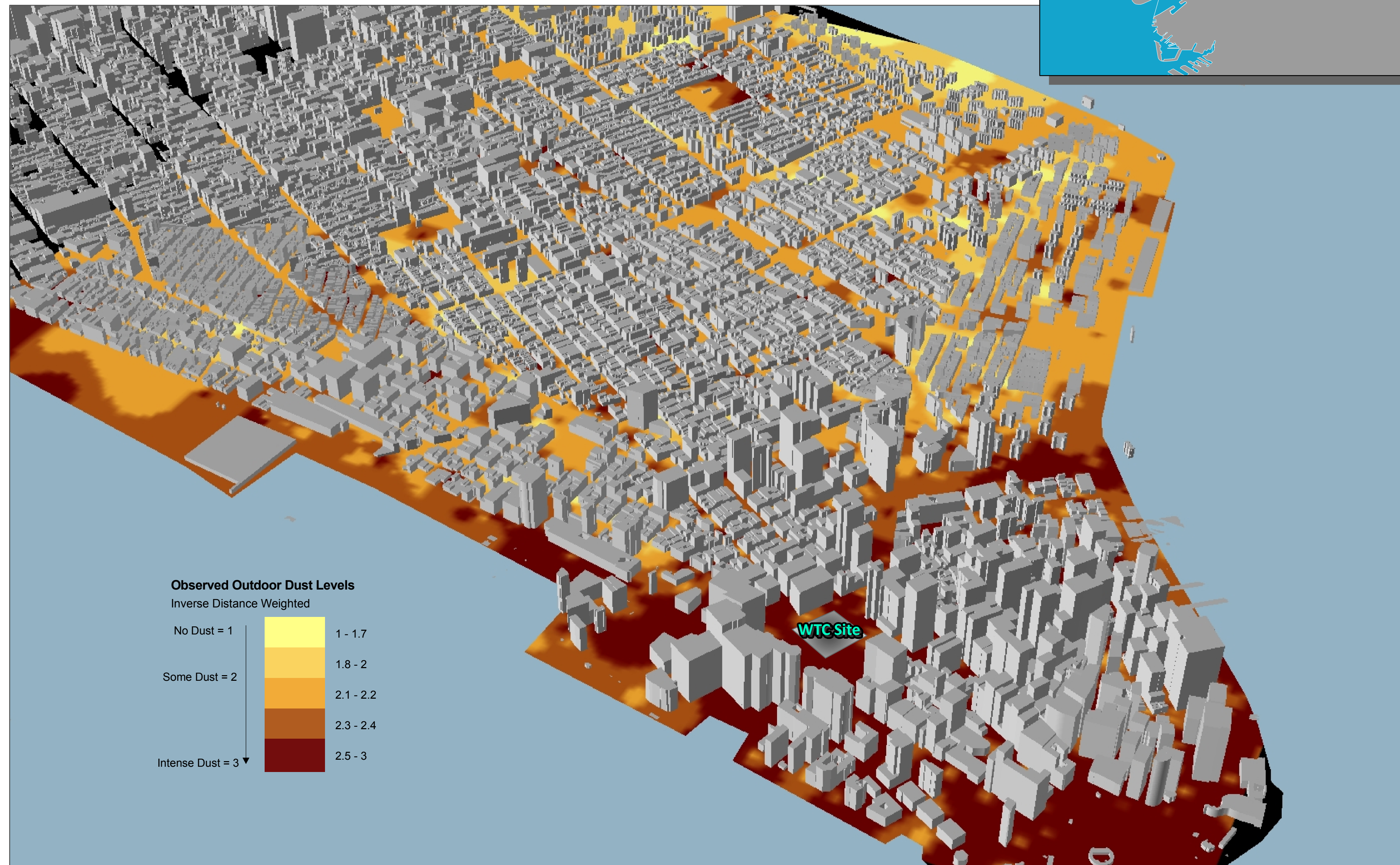
Overview

Following the Sept. 11, 2001 attacks on the World Trade Center (WTC) in Lower Manhattan, the Agency for Toxic Substances and Disease Registry (ATSDR) partnered with the New York City Department of Health and Mental Hygiene (NYCDOHMH) to develop the WTC Health Registry (WTCHR). WTCHR is a cohort study of responders survivors and is the largest effort in the United States to monitor health after a disaster. This poster presents the results from both WTCHR Wave 1 (09/2003 – 11/2004) and Wave 2 (11/2006 – 12/2007) surveys.

We mapped exposures and health outcomes of WTCHR resident enrollees in Lower Manhattan. Outcomes of interest were respiratory symptoms (persistent shortness of breath, persistent wheezing, persistent chronic cough, persistent upper respiratory symptoms) and respiratory diseases (asthma, chronic bronchitis and emphysema) first diagnosed after 9/11 and present at Wave 2. Accordingly, the exposures we explored include those that would aggravate respiratory disorders, e.g. heavy or light coating of dust in the home, broken windows, presence of debris, or damage to home or furnishings.

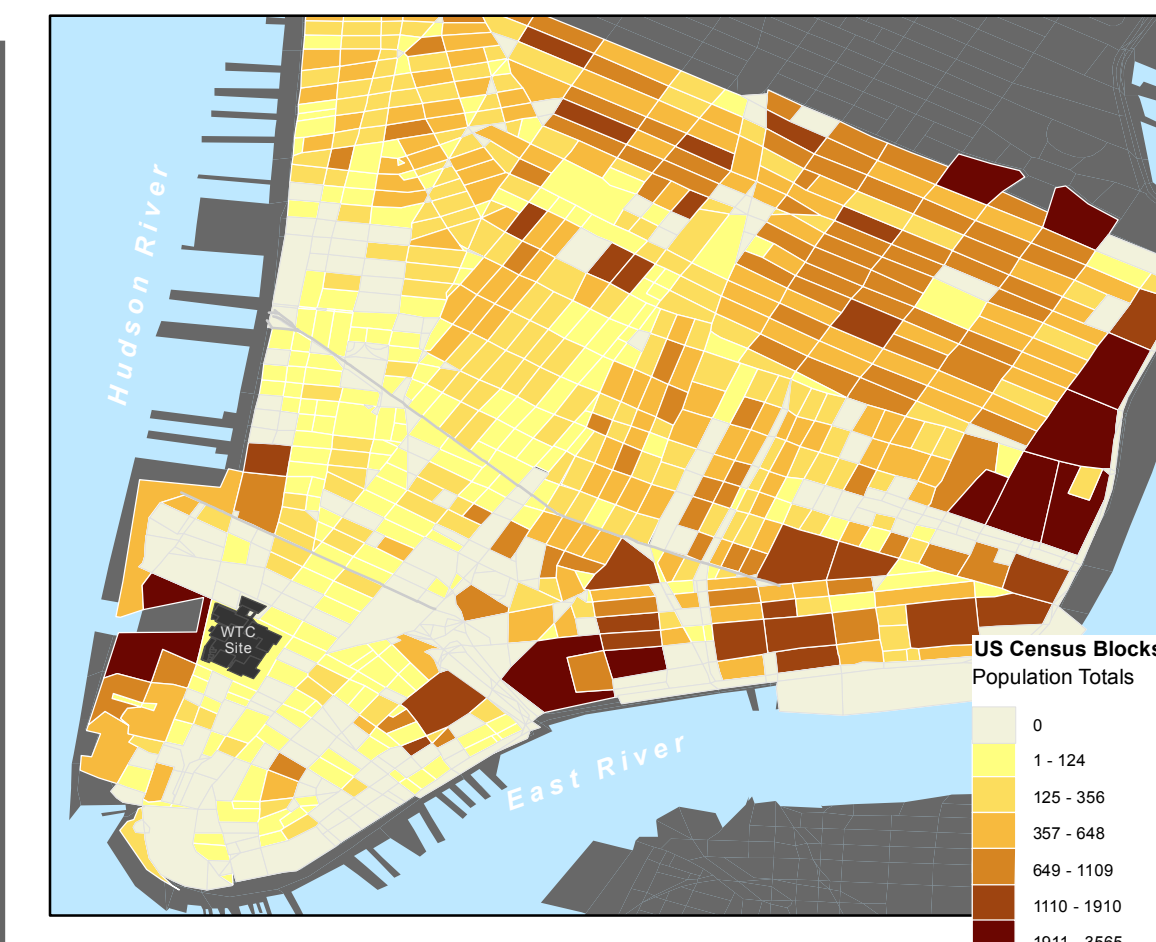
Additionally we examined resident cleaning practices upon returning to their homes (clean ventilation ducts, clean with a damp cloth/sponge/mop, used HEPA vacuum to clean, and dusted or swept without water) as well as any replacement of home belongings (replace carpet or rugs, replace furniture, replace drapes/blinds/curtains, and replaced air conditioners).

The map below shows an Inverse Distance Weighted (IDW) interpolation of recorded observations of outdoor dust intensity on Sept. 11, 2001. Respondents were asked if they were outdoors after the towers' collapse to report their location and their description of the dust intensity (1=none, 2=some or 3=heavy) at that location. These values were used in the IDW model to denote the intensity of the dust throughout lower Manhattan. A 3D representation of the building footprints contextualizes the reach of the impact of the disaster in the city.

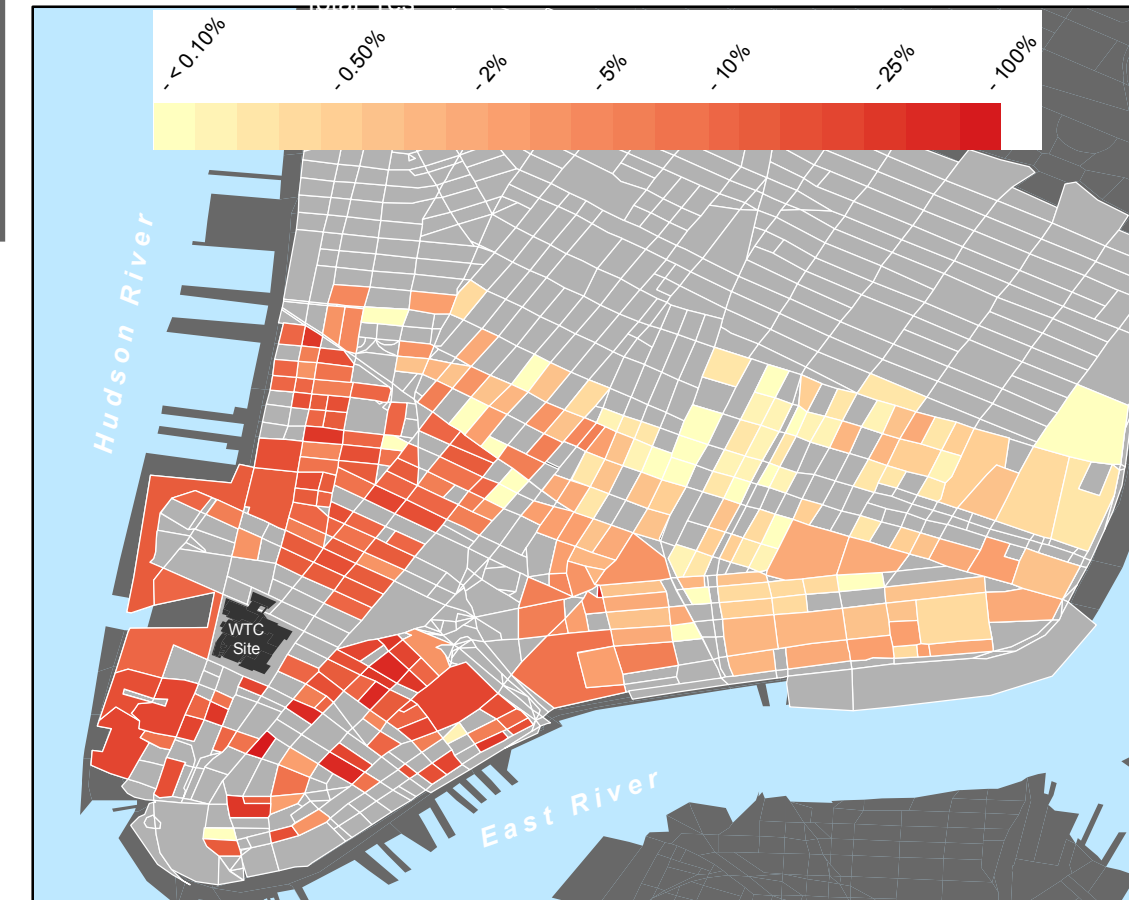
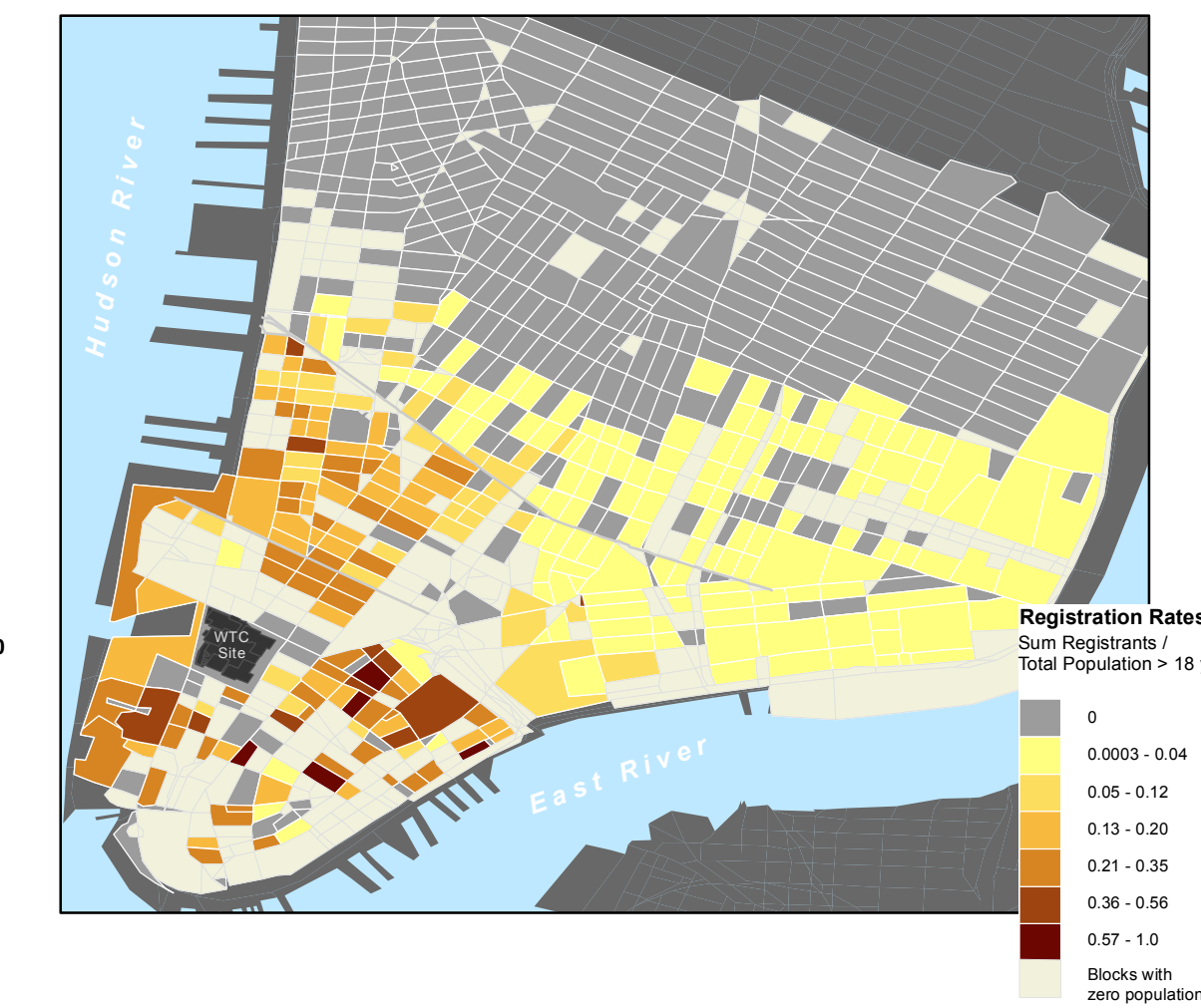


U.S. Census Blocks 2000 Total Population >= 18 yrs

The WTCHR was launched on September 3, 2003 and continued with an extensive outreach campaign ending on September 31, 2004. Almost 72,000 persons enrolled in the WTCHR, making it the largest active data collection registry in the United States to date. Resident enrollment required primary residence in lower Manhattan south of Canal Street on September 11, 2001. Registrants were limited to adults 18 years of age or older.



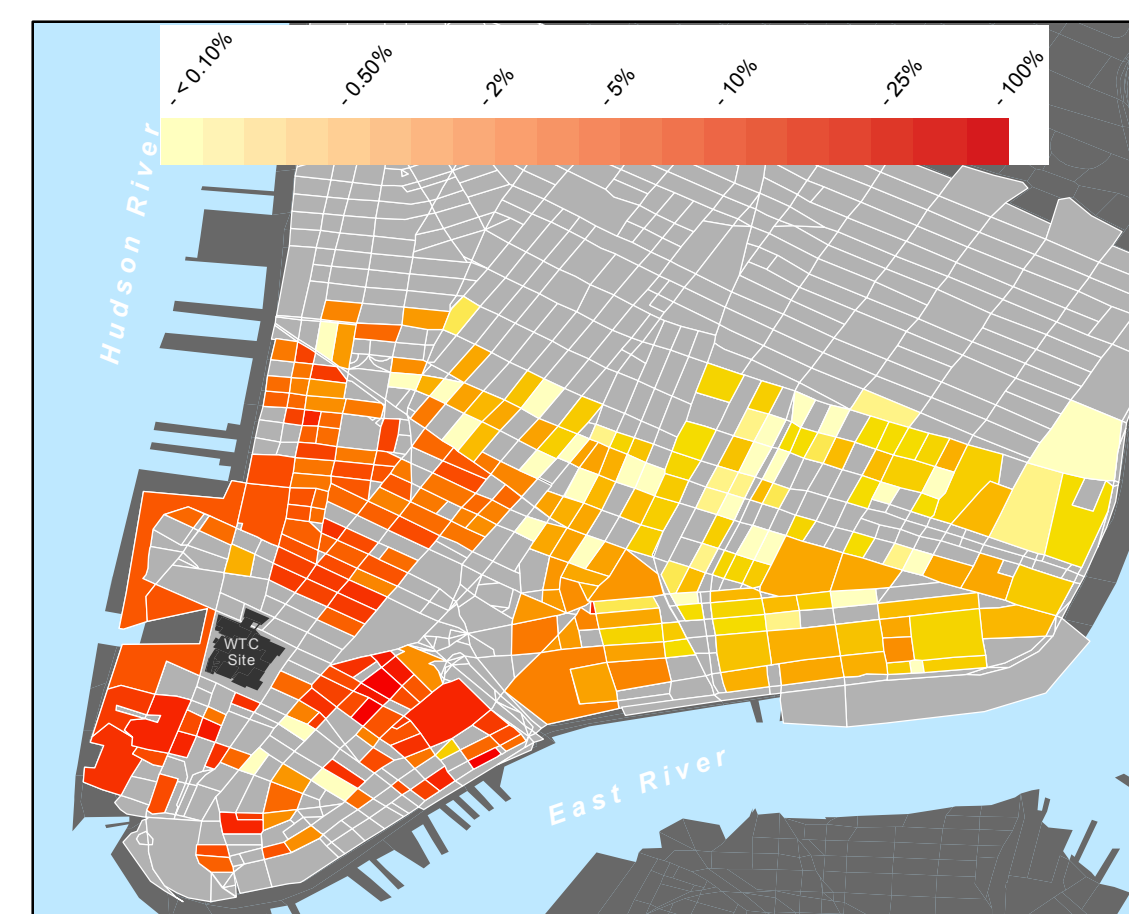
Registry Response Rate # Respondents/Total Pop >= 18 yrs



Registrant Response Chronic Respiratory Illnesses*

Respiratory symptoms and diseases have been associated in WTCHR enrollees who experienced high levels of dust in their homes. In some cases these conditions have persisted through both Wave 1 and Wave 2 of the registry and may translate into elevated medical expenditures and lower quality of life. Respiratory variables include:

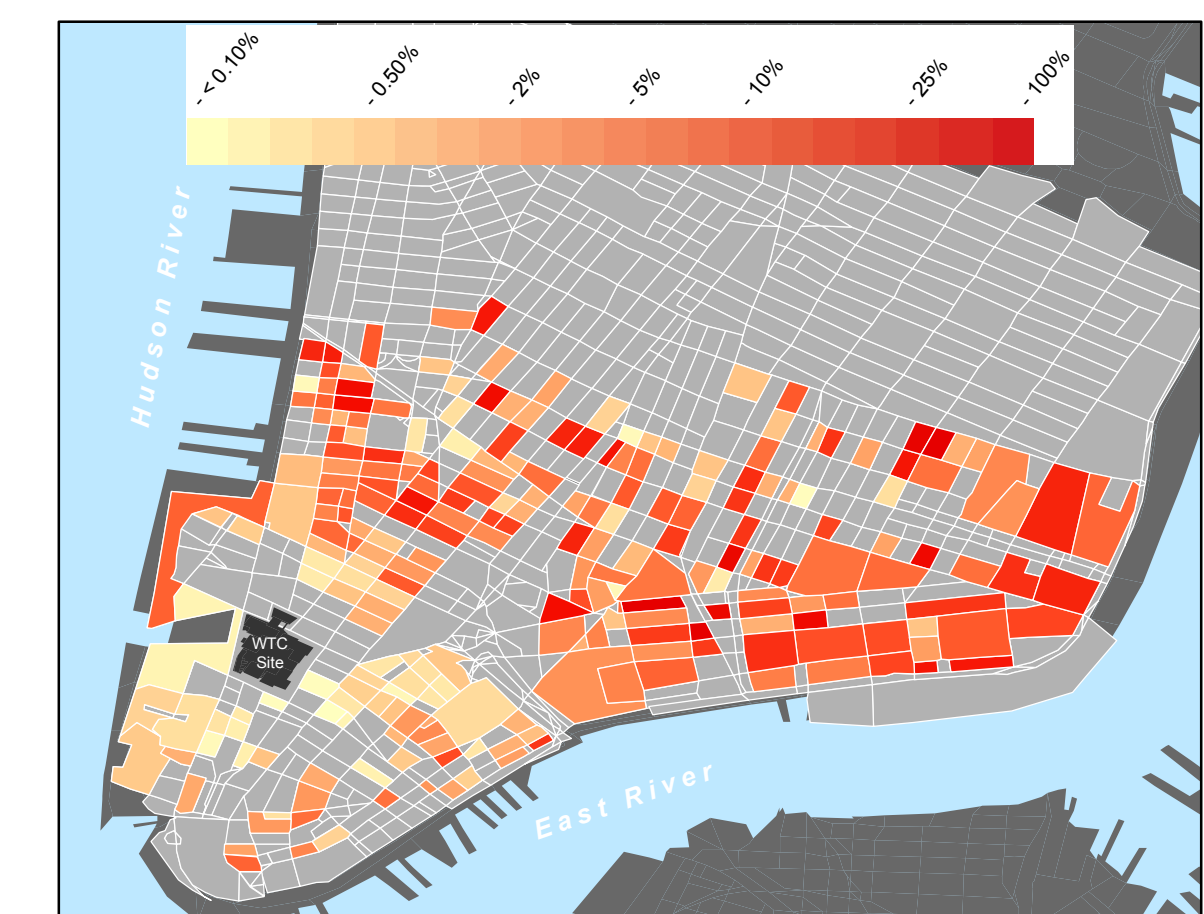
- Asthma
- Wheezing
- Shortness of Breath
- Chronic Cough
- Upper Respiratory
- COPD



Registrant Response Exposures to Dust and Damages*

Thousands of residents living in Lower Manhattan on Sept. 11, 2001 sustained some type of damage to their homes. WTCHR collected responses addressing the type of damages received:

- Fine coating of dust on surfaces
- Heavy coating of dust on surfaces (so you couldn't see what was underneath)
- Broken window(s)
- Damage to home or furnishings
- Debris from the disaster was present



Registrant Response Cleaning and Replacing*

For those residents who did experience dust and damages to their homes, their methods of cleaning and/or replacing items were recorded:

- Cleaned ventilation ducts
- Cleaned with damp cloth/sponge/mop
- Used HEPA vacuum to clean
- Dusted or swept without water
- Replaced carpet or rugs
- Replaced furniture
- Replaced drapes/blinds/curtains
- Replaced air conditioners

* Individual responses were aggregated to the Census Block. If a respondent "Yes" to any of the listed variables, the value was recorded as =1. If the respondent "No" to all of the listed variables, the value was recorded as =0.



Centers for Disease Control and Prevention
Agency for Toxic Substances and Disease Registry

References and Data Sources: 1.RTI International, New York City Department of Health and Mental Hygiene, and the Agency for Toxic Substances and Disease Registry. World Trade Center Health Registry: Data File User's Manual. Paul Pulliam, Lisa Thalji, Laura DiGrande, Megan Perrin, Deborah Walker, Melissa Dolan, Suzanne Triplett, Elizabeth Deane, Eric Peele, Robert Brackbill. New York, New York: April 2006. 2. U.S. Census, 2000.

