

US EPA ARCHIVE DOCUMENT

Local Human Environmental Exposure Surveillance as a Policy Lever: Mercury And Pesticide Exposures In New York City

EPA Symposium on Disproportionate Environmental Impacts

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- Biomonitoring by New York City
 - Some key findings that have driven policy changes
 - Policy changes following NYC's biomonitoring
 - A framework for why policy actors are influenced by biomonitoring
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Environmental Biomonitoring by NYC



- Modeled after CDC's National HANES
 - Population-based sampling of non-institutionalized NYC residents aged 20+ years
 - Samples collected June – December, 2004
 - Combination of interview and physical exam (blood and urine samples from 1811 participants)
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Subjects of Environmental Biomonitoring

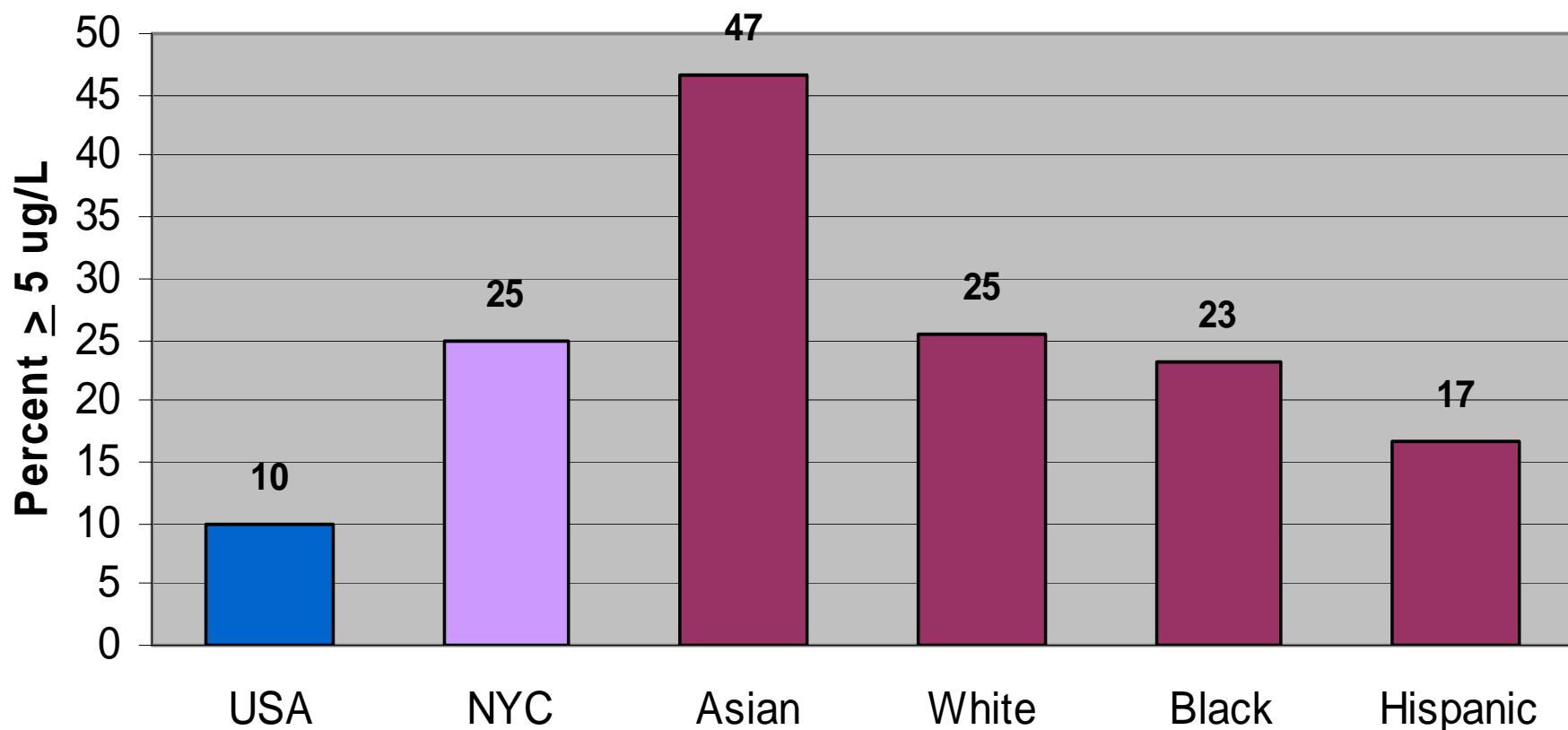
- Metals
 - Lead
 - Cadmium
 - Mercury (Organic and Inorganic)
 - Cotinine
 - Pesticides
 - Organophosphate metabolites
 - Pyrethroid metabolites
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Key Finding: Inorganic Mercury Exposure Among Women is Highest for a Subset of New Yorkers Born in the Dominican Republic

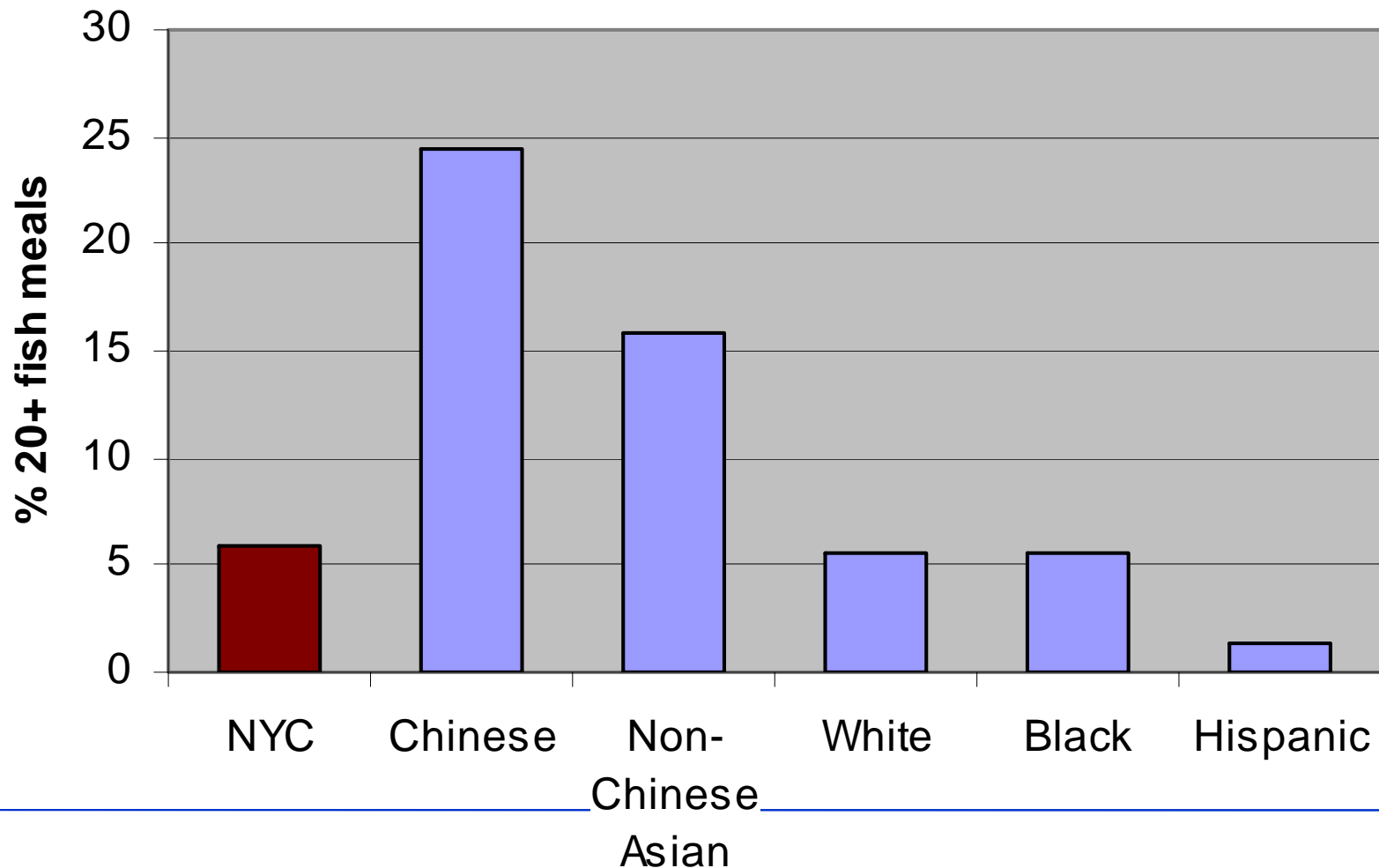
	No.	Geometric Mean	95th Percentile
Race/Ethnicity			
White	538	0.67	3.8
Foreign-born Dominican	149	1.04	21.2
Puerto Rican	178	0.79	3.5
Foreign-born Mexican	78	0.33	1.9
Non-Hispanic Caribbean-born Black	97	1.39	4.5

Key Findings: Organic Mercury Exposure is Higher in NYC, and Highest Among Asians

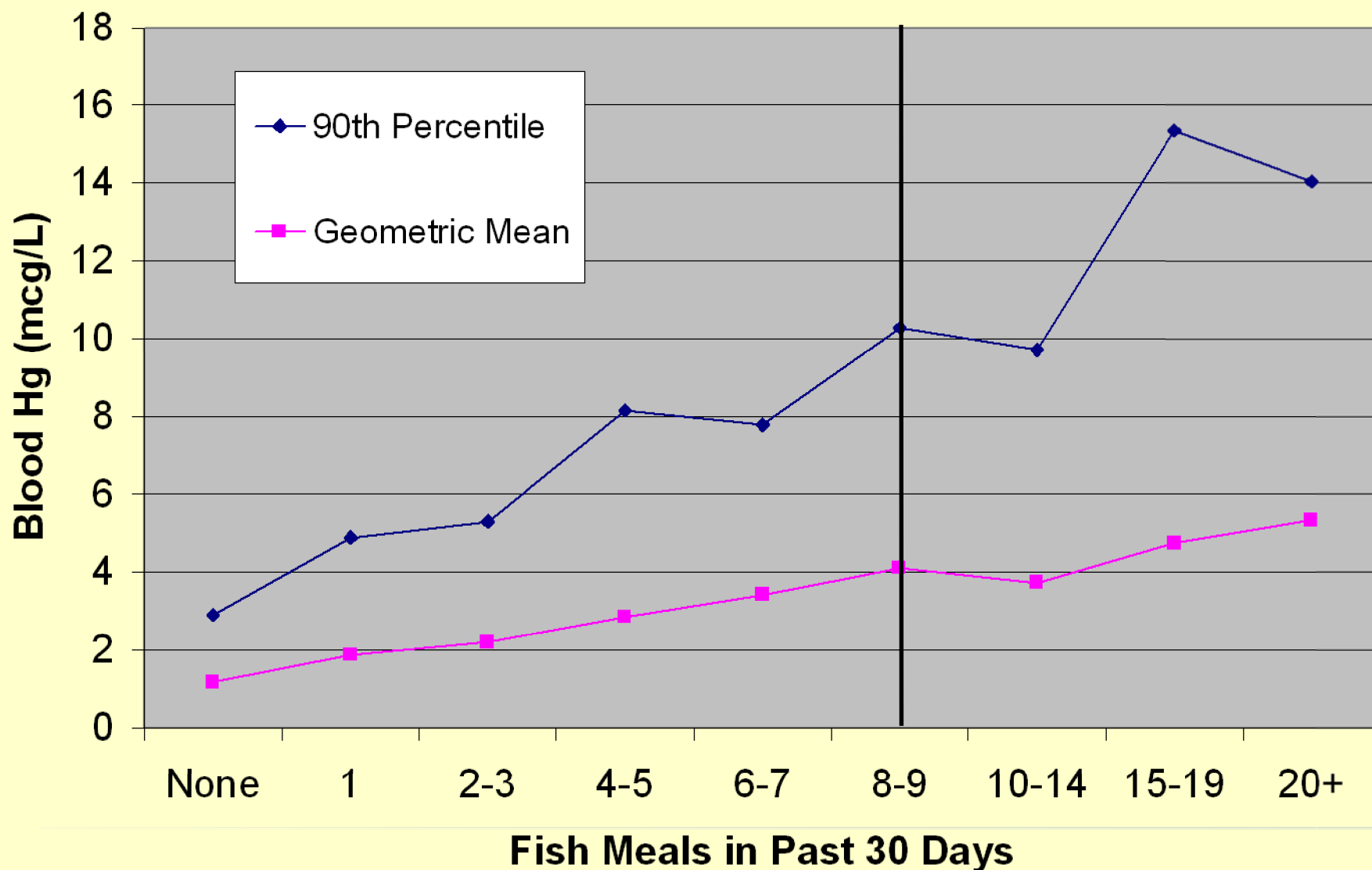
Percent Above State-Reportable Mercury Levels



Percent of New Yorkers Eating Fish or Shellfish 20+ Times in Past Month

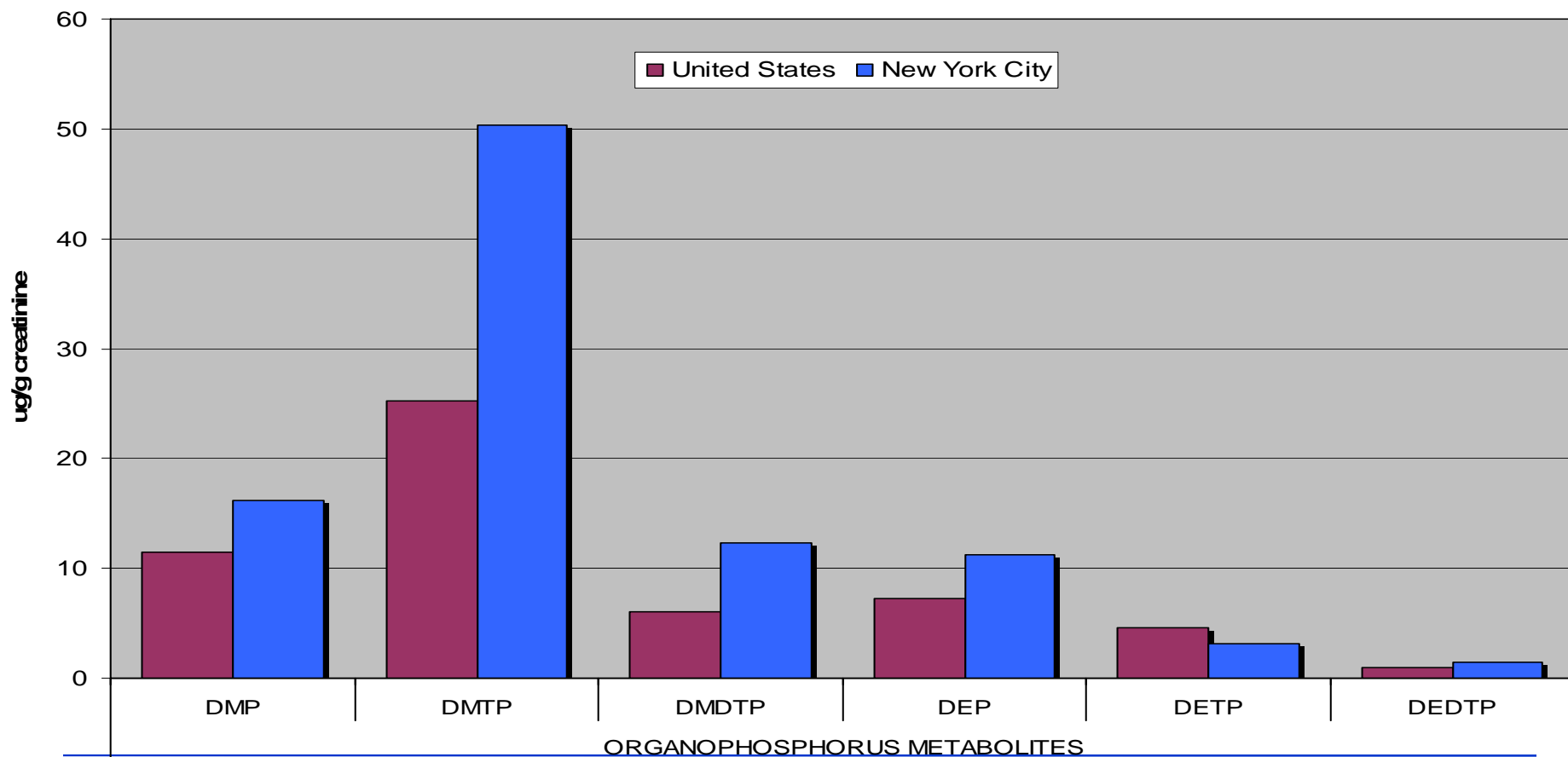


Blood Mercury Levels By Fish Meals in Past 30 Days Among NYC Women 20-49 Years Old



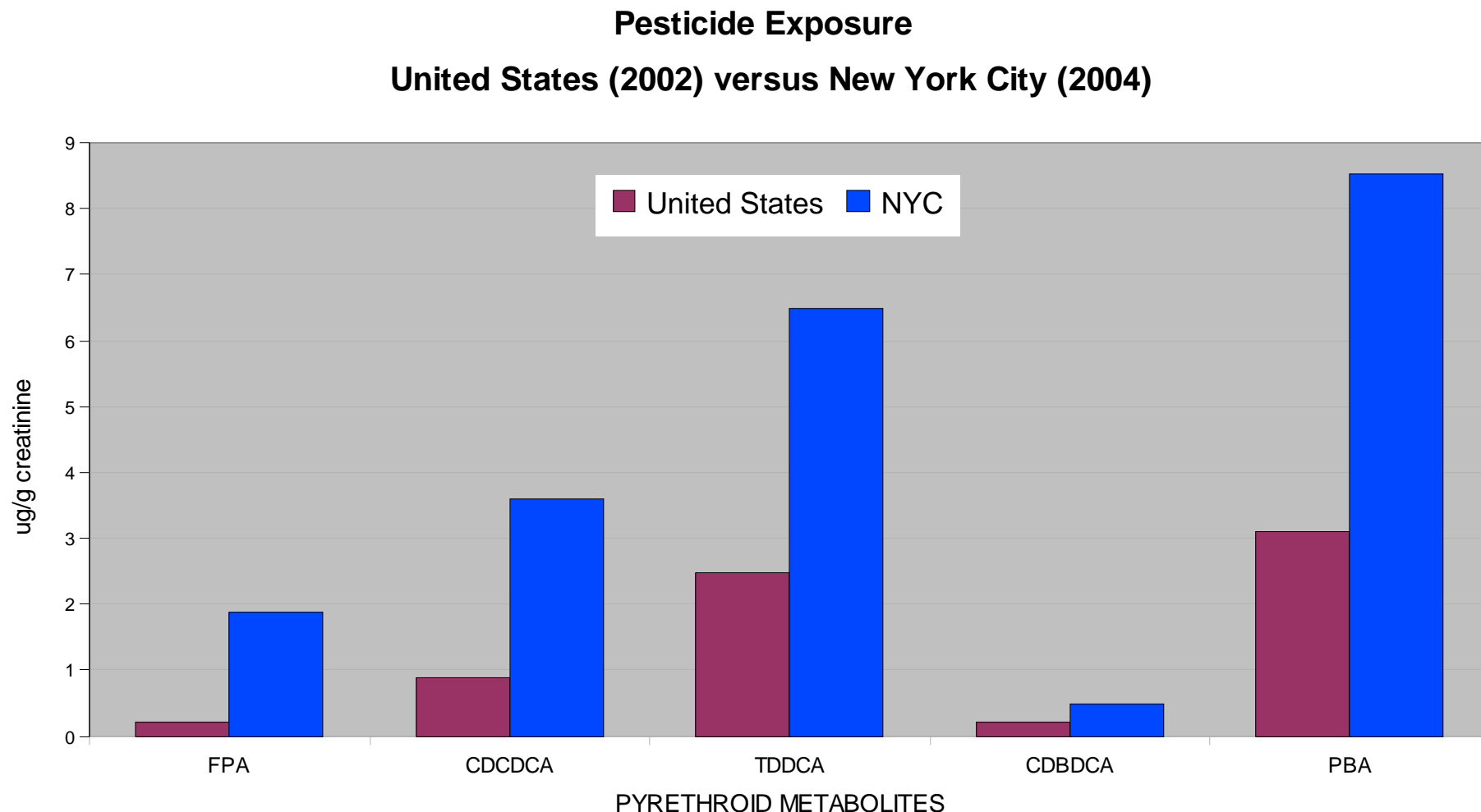
Key Findings: OP Pesticide Exposures are Higher in NYC (95th percentile)

Pesticide Exposure
United States (2002) versus New York City (2004)



Preliminary results. Do not quote or cite.

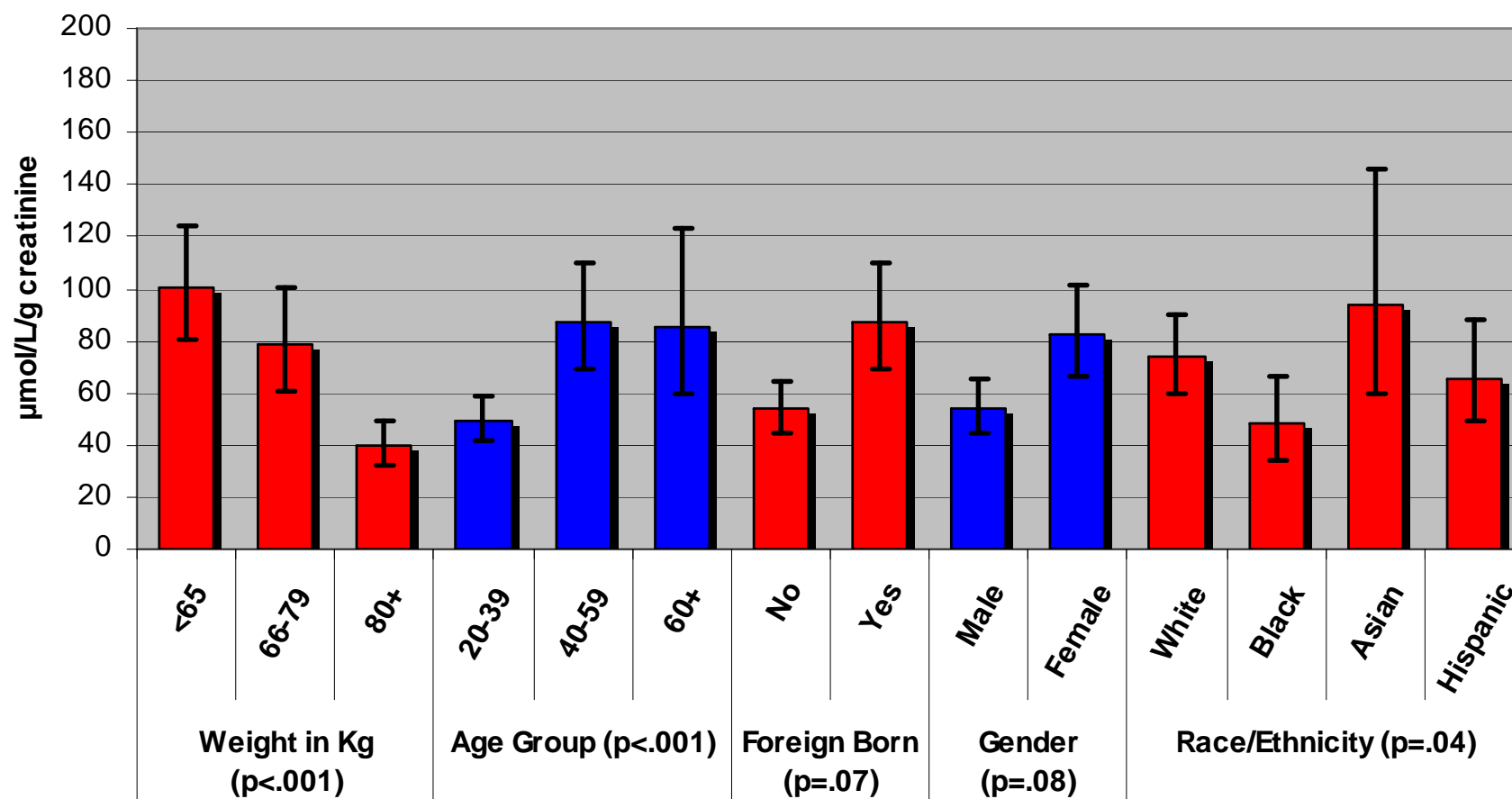
Key Findings: Pyrethroid Pesticide Exposures are Higher in NYC (95th percentile)



Preliminary results. Do not quote or cite.

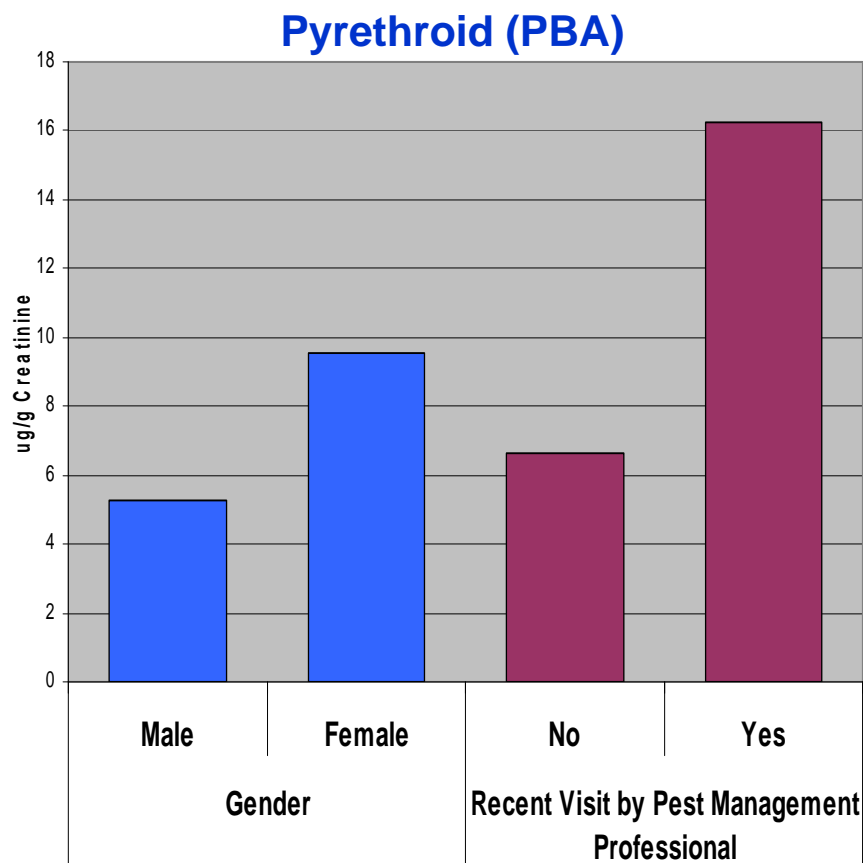
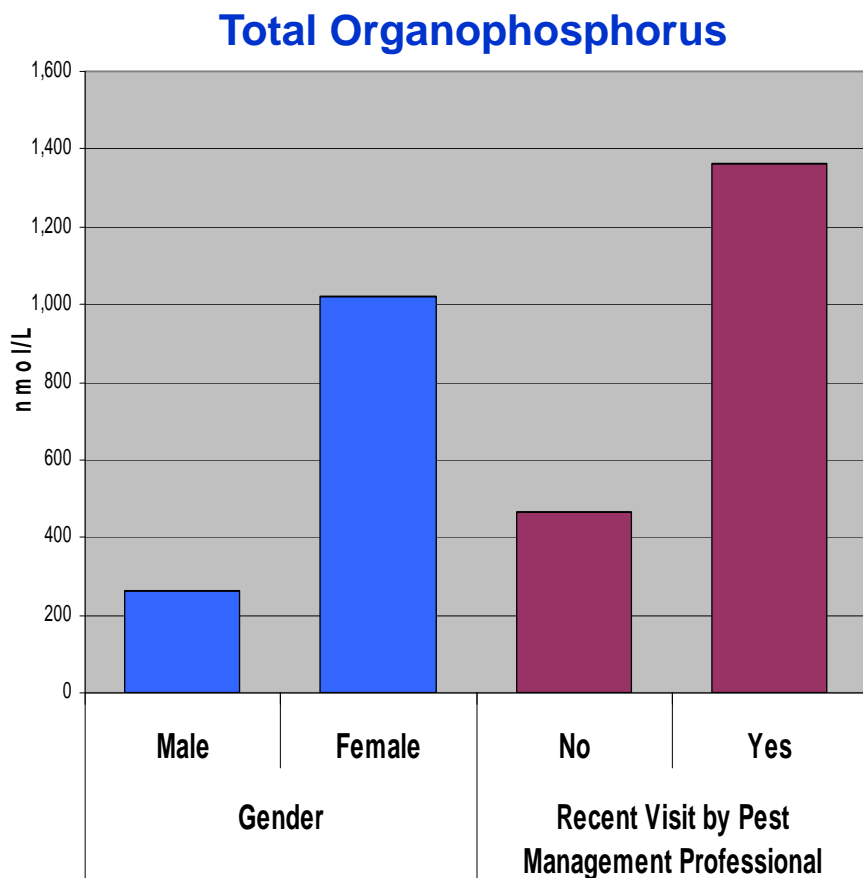
OP Pesticide Exposures by Demographic Factors

**Geometric Mean Total Organophosphate Exposure
by Demographic (Crude Estimates)**
p-values reflect adjusted ANOVA in model with all variables



Key Finding: Pesticide Exposure is NYC Varies by Demographic and Policy-Dependent Factors

95th Percentile Pesticide Exposures by Gender and Professional Pest Control



Preliminary results. Do not quote or cite.

Working Definition

Policy..

a course of actions intended to influence and determine decisions and other actions.

may be formed and implemented in the governmental, non-governmental and private sectors.

Policy Impacts from NYC's Biomonitoring – Inorganic Mercury



- Local embargoing and seizure of offending products
 - Regulations requiring posting of warning signs in stores that sold products
 - Permanent capacity built in NYC Health Dept to evaluate and interdict contaminated consumer products
 - International intergovernmental collaboration to alert Dominican Republic health officials
 - Dedication of NYC Health Dept resources for public education
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Inorganic Mercury

Skin-Lightening Creams — *Warning* —

Skin-lightening creams that contain mercury are dangerous — mercury is a poison.

Read the labels of all skin products.

Do not use if:

- mercury is listed as an ingredient, or if
- ingredients are not listed

See your doctor if you use mercury-containing products.

Call 311 or 212-POISONS (212-764-7667) for more information.



*Do Not Use These Products/
No Use Estos Productos*

- Recetas de la Farmacia Normal — Crema Blanqueadora
- Miss Key Crema Blanqueadora
- Santa Crema
- Dermaline Skin Cream
- Dr. Collado Jabón Germicida

Cremas Blanqueadoras — *Alerta* —

Las cremas blanqueadoras que contienen mercurio son peligrosas — el mercurio es un veneno.

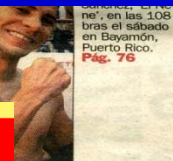
Lea la etiqueta de todo producto para la piel.

No use un producto si:

- la etiqueta indica que mercurio es un ingrediente, o si
- los ingredientes no están listados

Vea a su médico si usted usa productos que contienen mercurio.

Llame al 311 o 212-VENENOS (212-836-3667) para más información.



Policy Impacts from NYC's Biomonitoring – Organic Mercury

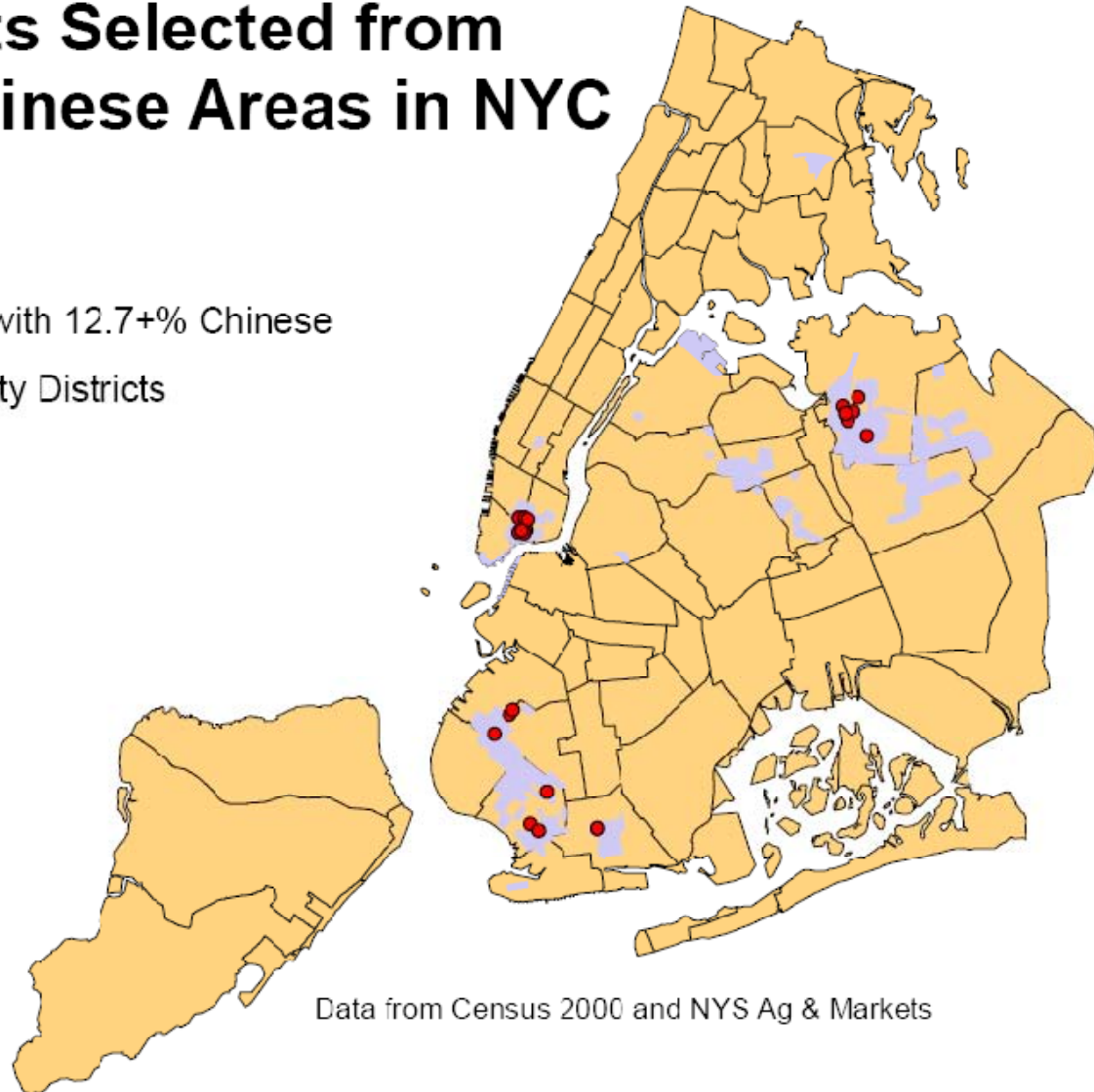


- Increased sampling of fish in NYC wholesale markets by New York State and US EPA
 - Shift in emphasis by State Agencies from recreational to market fish
 - NYC Health Dept launched study of mercury and PCBs in fish sold in Asian fish markets
 - Clinical advisory and guidelines to >35,000 health care workers in NYC
 - Adoption and distribution of NYC fish educational materials by:
 - largest retail food delivery service (FreshDirect)
 - NYS Women-Infants-Children food distribution program
 - Maternal-child clinics
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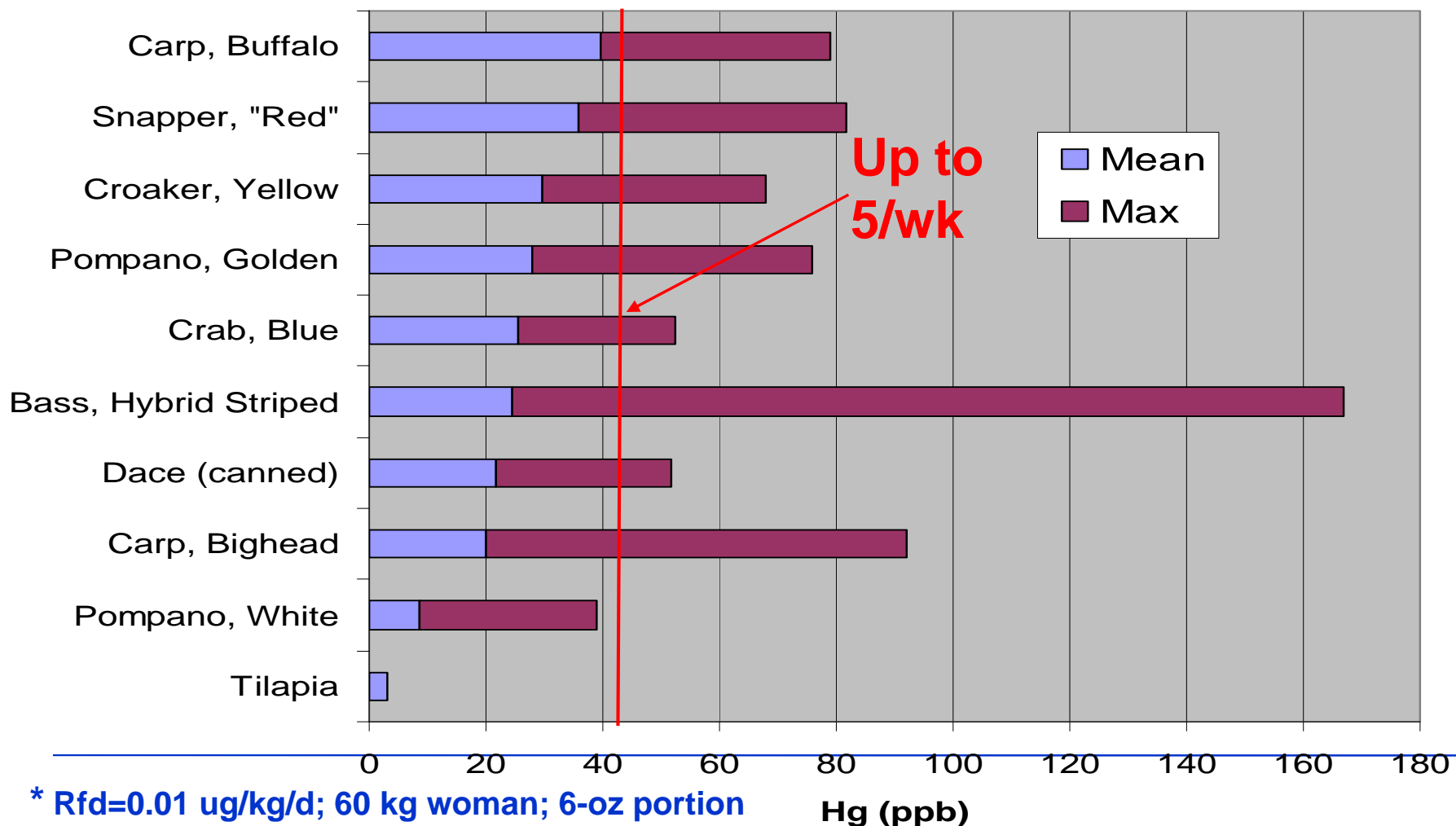
Organic Mercury Follow-Up

Fish Markets Selected from Densest Chinese Areas in NYC

- Fish Markets
- Census tracts with 12.7+% Chinese
- NYC Community Districts



Higher Mercury Exposure Among Asians: Frequency Driven



Policy Impacts from NYC's Pesticide Surveillance

- Adoption of NYC local laws that restrict governmental pesticide use
 - Mandatory local governmental pesticide use surveillance and reporting
 - Dedication of NYC Health Dept resources to public education on safer pest control
 - State regulator's pledge to restrict consumer sale of pesticide foggers
 - Continued effort to address the unique concerns of urban exposure use and exposure
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Policy Changes Related to Pesticides

The New York Times
nytimes.com

October 21, 2008

State Moving to Limit Use of Bug Killer by the Public

By [SEWELL CHAN](#)

“[Bug bombs](#)” — pesticide products intended to fill a home or workplace with [insecticide](#), killing cockroaches, termites and other pests — have been in use in American households since World War II, but federal and state authorities are now warning that they are too dangerous for the general public, and are moving to allow only professional exterminators to handle the bug-killing devices.

On Friday, the [Centers for Disease Control and Prevention](#) released a [study of illnesses and injuries](#) related to the use of bug bombs — in eight states from 2001 to 2006. New York was one of the states in the study, published in the journal *Environmental Health Perspectives*.

The study found 123 cases of bug bomb-related illness or injury in [New York State](#) (including 58 in New York City). The most commonly reported acute health effects from bug bombs were respiratory problems and gastrointestinal reactions. The study also found that the injury and illness figures were most likely underestimated.

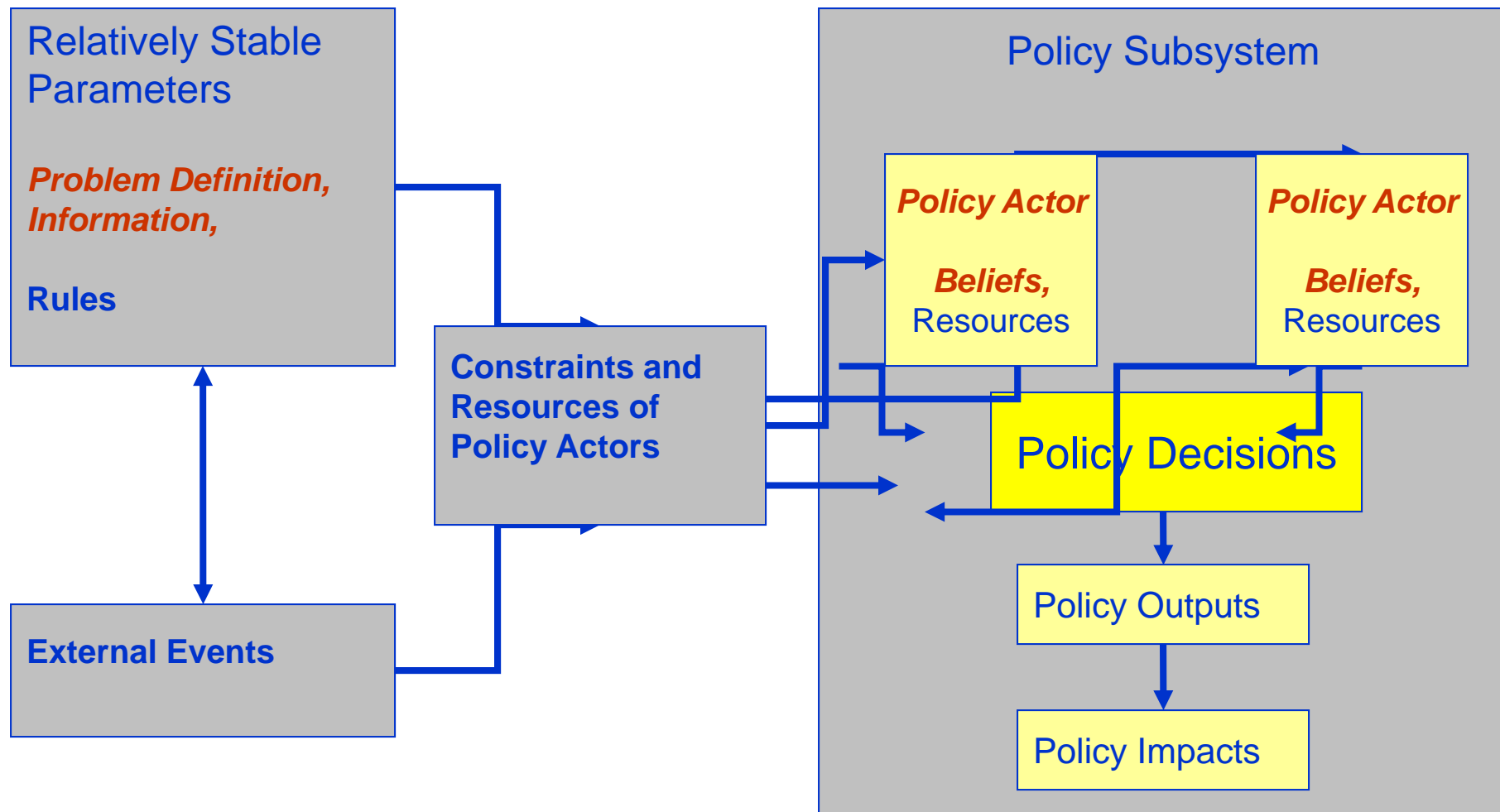


A Healthy Homes Guide



Guía para un hogar saludable

Policy Influences – A Framework



Ways Biomonitoring Results May Influence Policies

Problem Definition

- Additional information influences knowledge equilibrium – “External Perturbation”

Influence on External Events

- Media coverage of biomonitoring findings
- Contextualizing individual events

Introduction of Additional Policy Actors

- Advocacy coalitions emerge with new evidence
 - Health agencies heretofore uninvolved in policy formation
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Biomonitoring's Influence on the Beliefs of Policy Actors

- Normative beliefs
 - Scope of problem
 - Relative priority of values
 - Perceptions of disparity and equity
 - Susceptibility to change
 - Efficacy of governmental action
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Some Caveats

- NYC's efforts involved population-based exposure assessments for metals and pesticides.
 - Analytes were specifically selected in NYC mindful of our potential to interpret findings and compare our results.
 - Our findings are generally presented to policy actors alongside health outcome surveillance findings to strengthen the case for risk.
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Conclusion

Biomonitoring Can:

- Supplement more commonly available data on health endpoints.
 - Mirror public concerns by implicitly emphasizing primary prevention.
 - Identify populations at greater risk of exposure and illness/injury
 - Readily influence policy by
 - modifying assumptions among existing policy actors
 - creating disequilibrium between competing assumptions regarding risk
 - engaging new policy stakeholders, and by
 - modifying beliefs of key policy actors
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