

Pesticide Tracking in New York City: Early Reports, a Proposed Birth Outcomes Study, and Legislative Initiatives

**New York City
Department of Health & Mental Hygiene**



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Outline

- Background for NYC's EPHT Program
- New York City 101
- Asthma in NYC
- Infestations in NYC
- Pesticide use in NYC
- A proposed birth outcomes study
- Using tracking to guide legislation

EPHT in NYC – Background

- Counties in NYC are among the state's highest users of pesticides.
- Issues surrounding *urban* pesticide use are unique.
 - ✓ Indoor Use
 - ✓ Population density leads to infestation
 - ✓ Rodents

EPHT in NYC – Background

- Objective: To track pesticide hazards, exposures and related health effects.
- Objective: To reduce exposure to pesticides in NYC and to promote pest control using integrated pest management.

Data Sources Used So Far

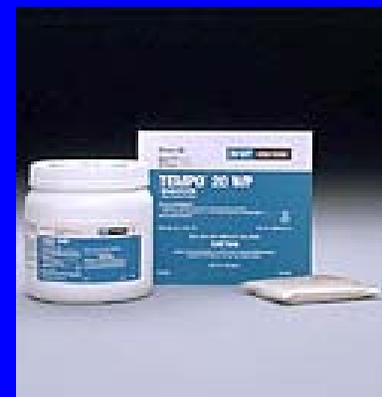
- Pesticide Sales and Use Reporting System (PSURS) 1998-2002
- Community Health Survey (CHS) 2003
- Housing and Vacancy Survey (HVS) 2002
- Census 2000
- PLUTO 2004
- NYS Hospital Discharge Data (SPARCS) 2003
- Poison Control Center (PCC) 2003-2004

“Pesticide Misuse”

- Personal use of sprays, bombs or foggers
- Use of illegal products
- Use of pesticides without complementary integrated pest management

Illegal Pesticide Use in NYC

- Tempo: pyrethroid insecticide
- Tres Pasitos: carbamate rodenticide
- Chinese or Cockroach Chalk: pyrethroid insecticides



New York City 101

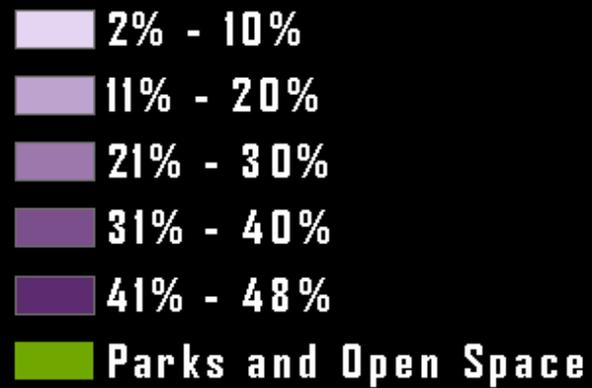


New York City and Its 5 Boroughs



Poverty in New York City

Percent of People in Poverty



Source: US Census 2000

Population Density in New York City

 Parks and Open Space

Persons Per 1,000 Square Meters

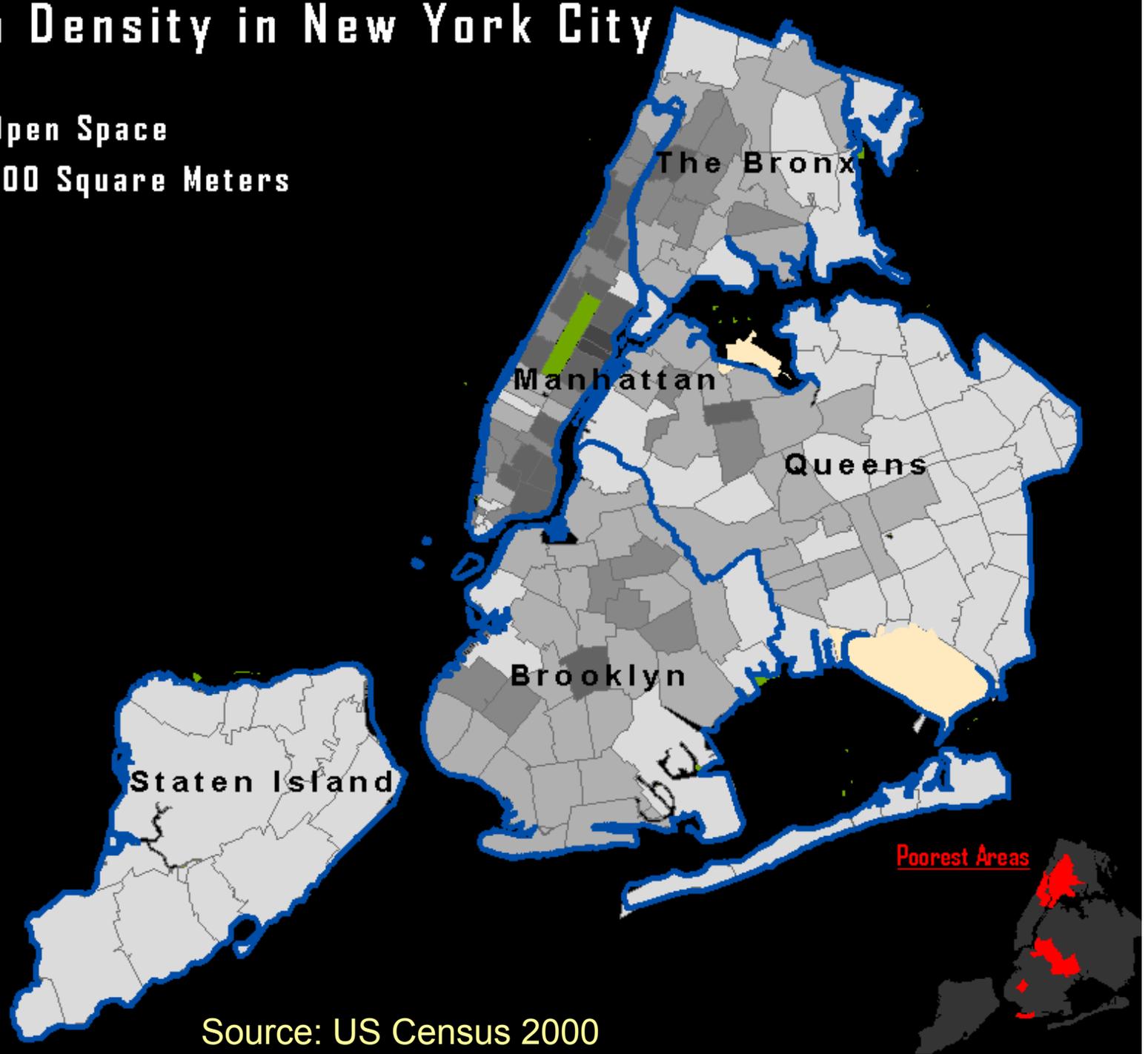
 0 - 10

 11 - 20

 21 - 30

 31 - 40

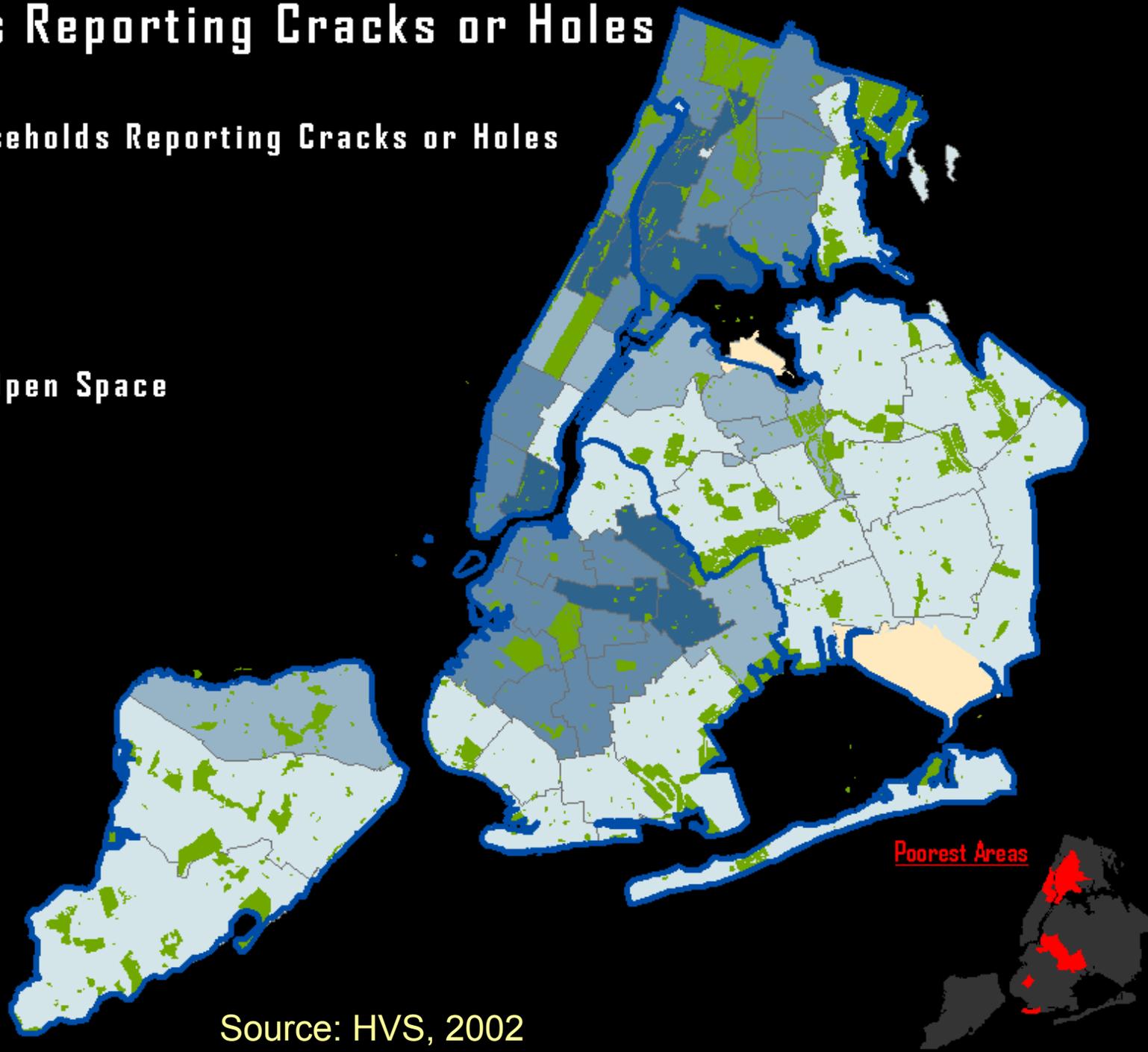
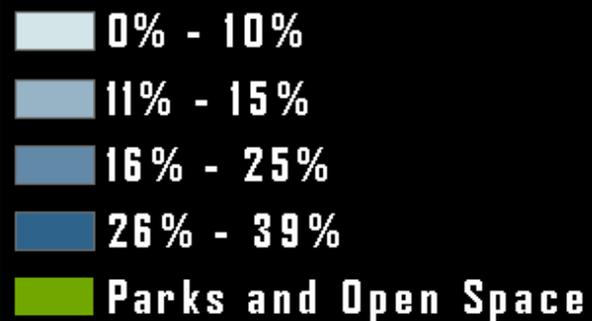
 41 - 50



Source: US Census 2000

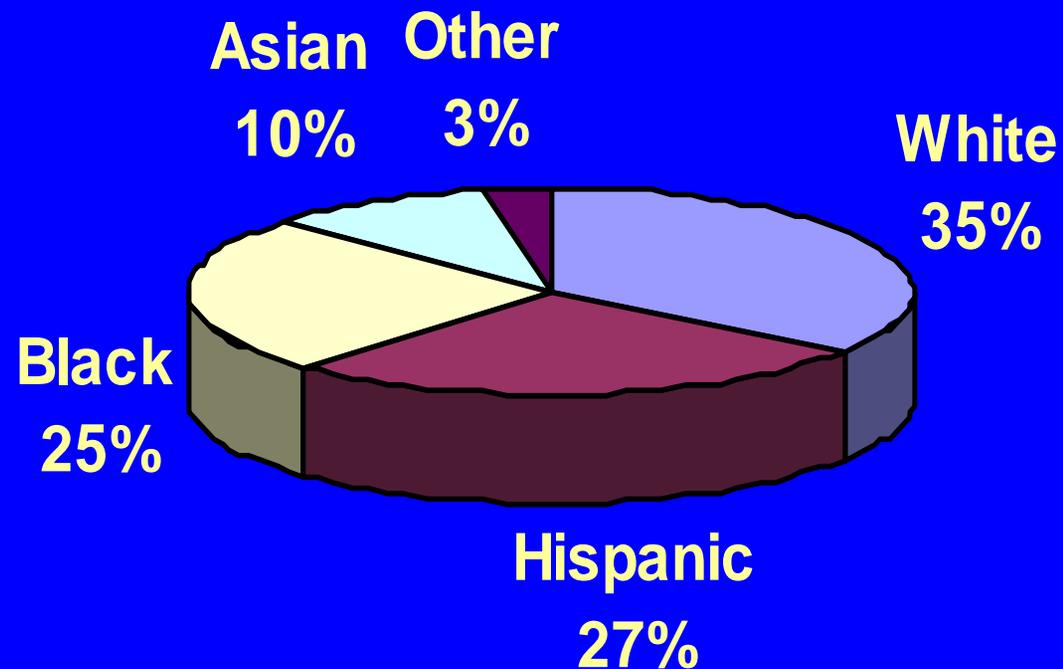
Households Reporting Cracks or Holes

Percent Of Households Reporting Cracks or Holes



Source: HVS, 2002

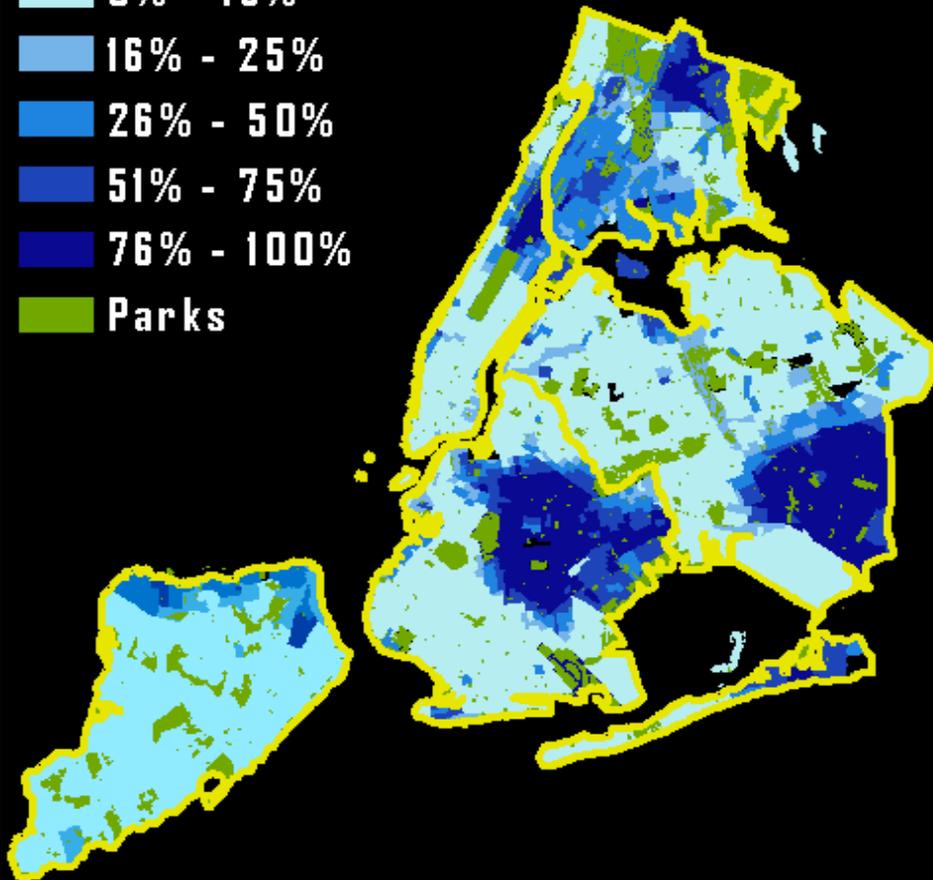
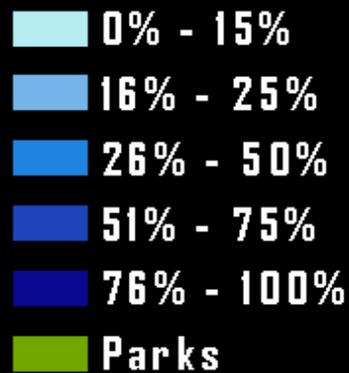
Percent of Racial/Ethnic Groups in New York City - 2000



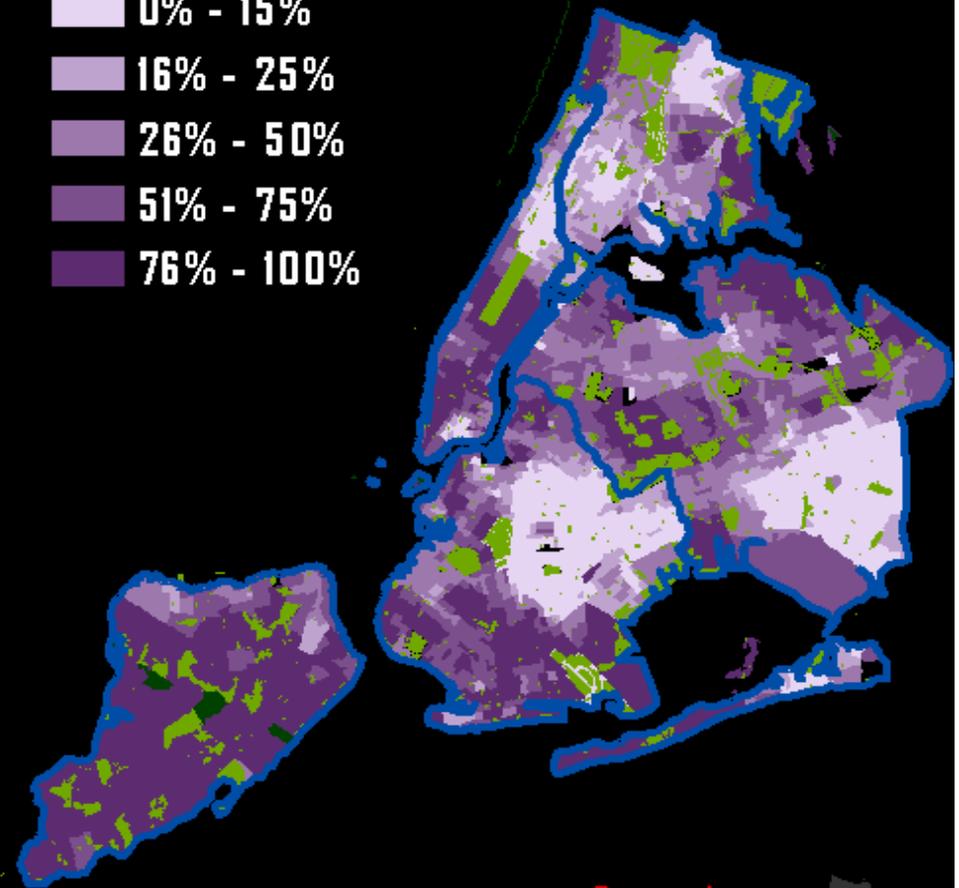
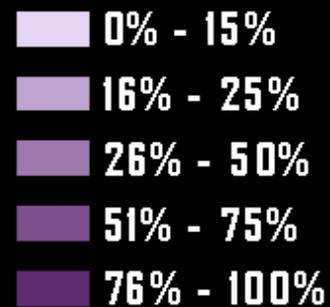
Source: US Census 2000

Black Versus White Population Density

Percent Black



Percent White



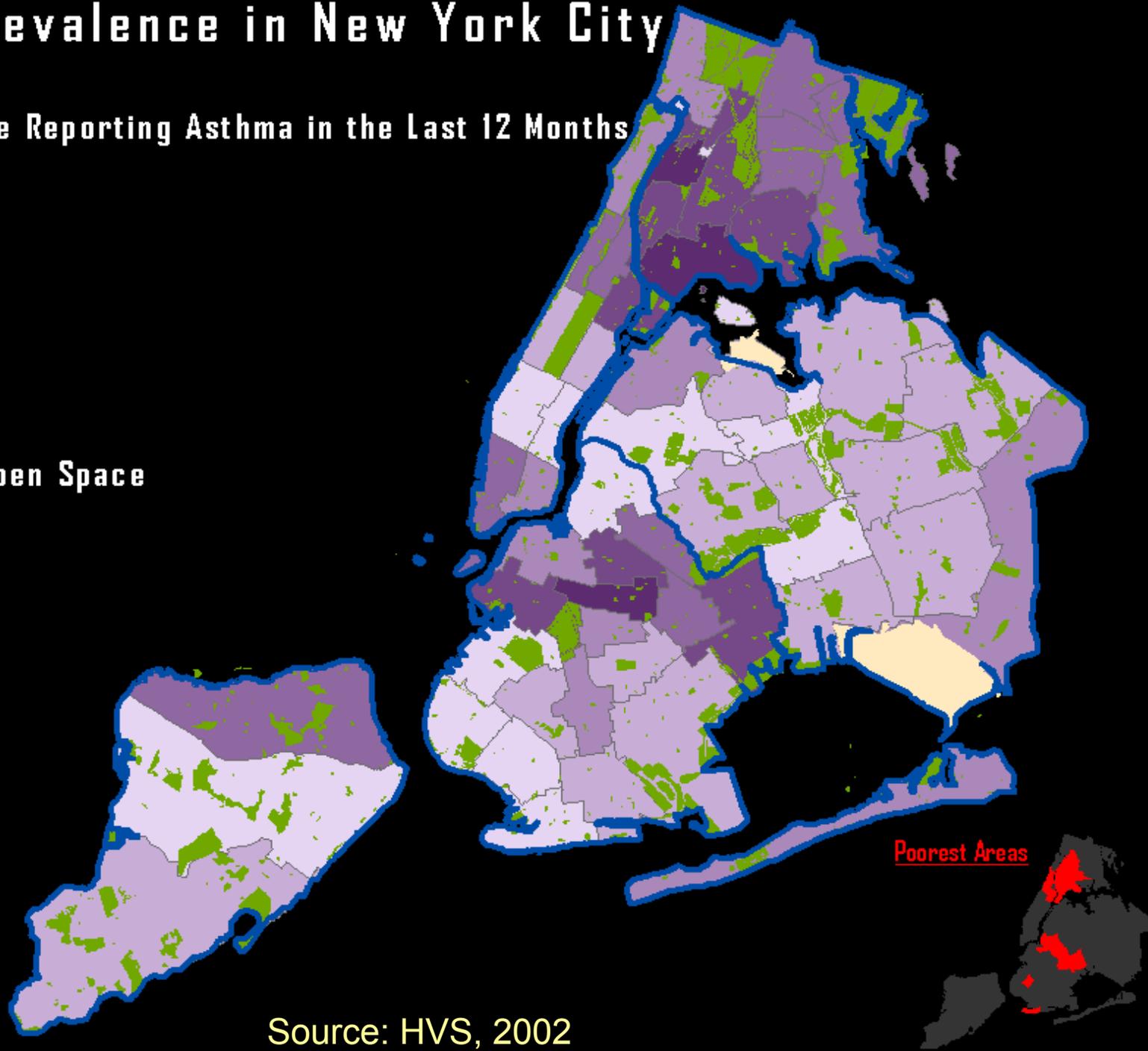
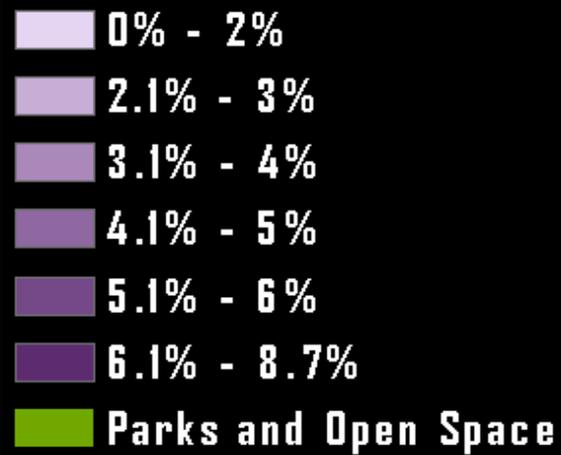
Poorest Areas



Source: US Census 2000

Asthma Prevalence in New York City

Percent of People Reporting Asthma in the Last 12 Months



Source: HVS, 2002

Rodent Sightings and Current Asthma in NYC Households

	Current Asthma	No Current Asthma	Total
Rodents	72 K (12%)	509 K (88%)	581 K (100%)
No Rodents	119 K (6%)	1,867 K (94%)	1,986 K (100%)
Total	191 K (7%)	2,376 K (93%)	2,567 K (100%)

Source: HVS, 2002

Housing Disrepair and Current Asthma in NYC Households

	Current Asthma	No Current Asthma	Total
Cracks or Holes	46 K (13%)	309 K (87%)	355 K (100%)
No Cracks or Holes	142 K (7%)	2,009 K (93%)	2,151 K (100%)
Total	188 K (8%)	2,318 K (92%)	2,506 K (100%)

Source: HVS, 2002

Cockroaches and Current Asthma among Adults in NYC

	Current Asthma	No Current Asthma	Total
Roaches	112 K (6%)	1,702 K (94%)	1,814 K (100%)
No Roaches	167 K (4%)	3,989 K (96%)	4,156 K (100%)
Total	279 K (5%)	5,691 K (95%)	5,970 K (100%)

Source: CHS, 2003

Percent of Households Reporting Pests

 Parks and Open Space

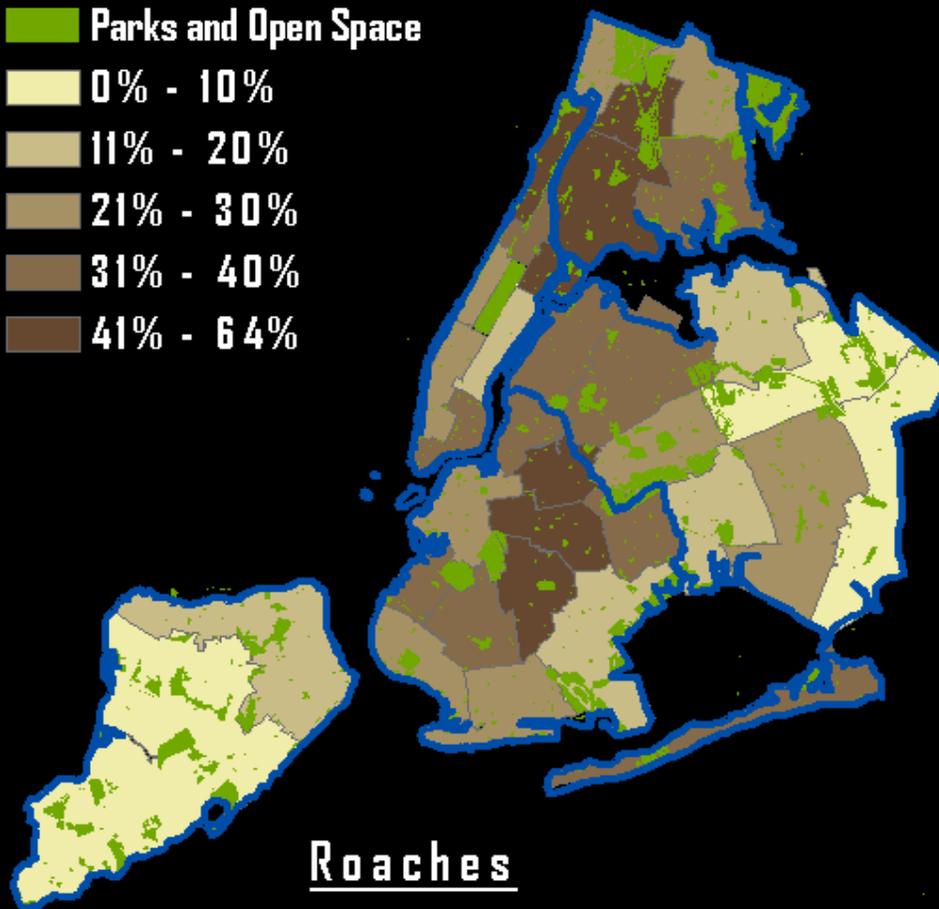
 0% - 10%

 11% - 20%

 21% - 30%

 31% - 40%

 41% - 64%

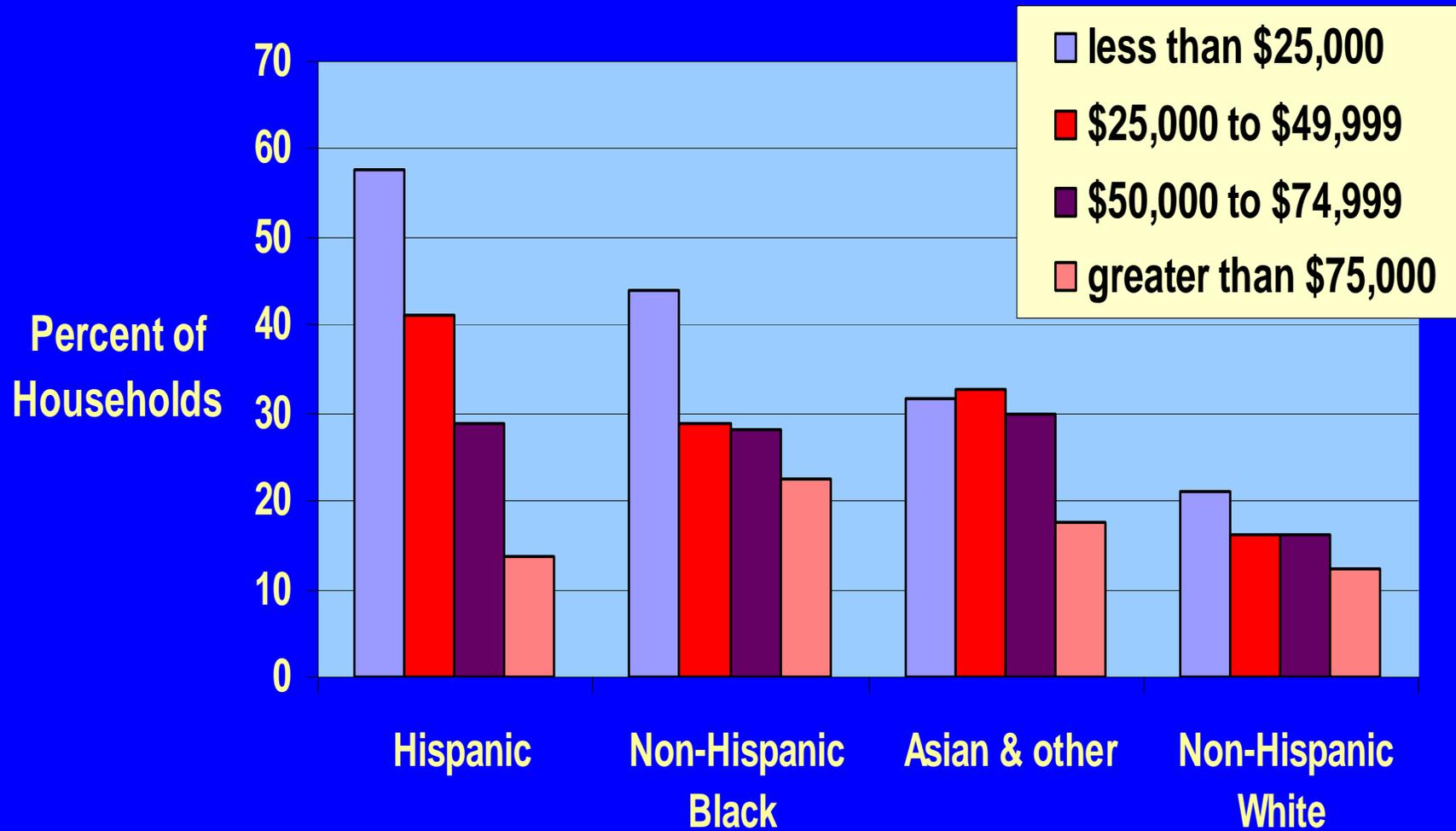


Poorest Areas



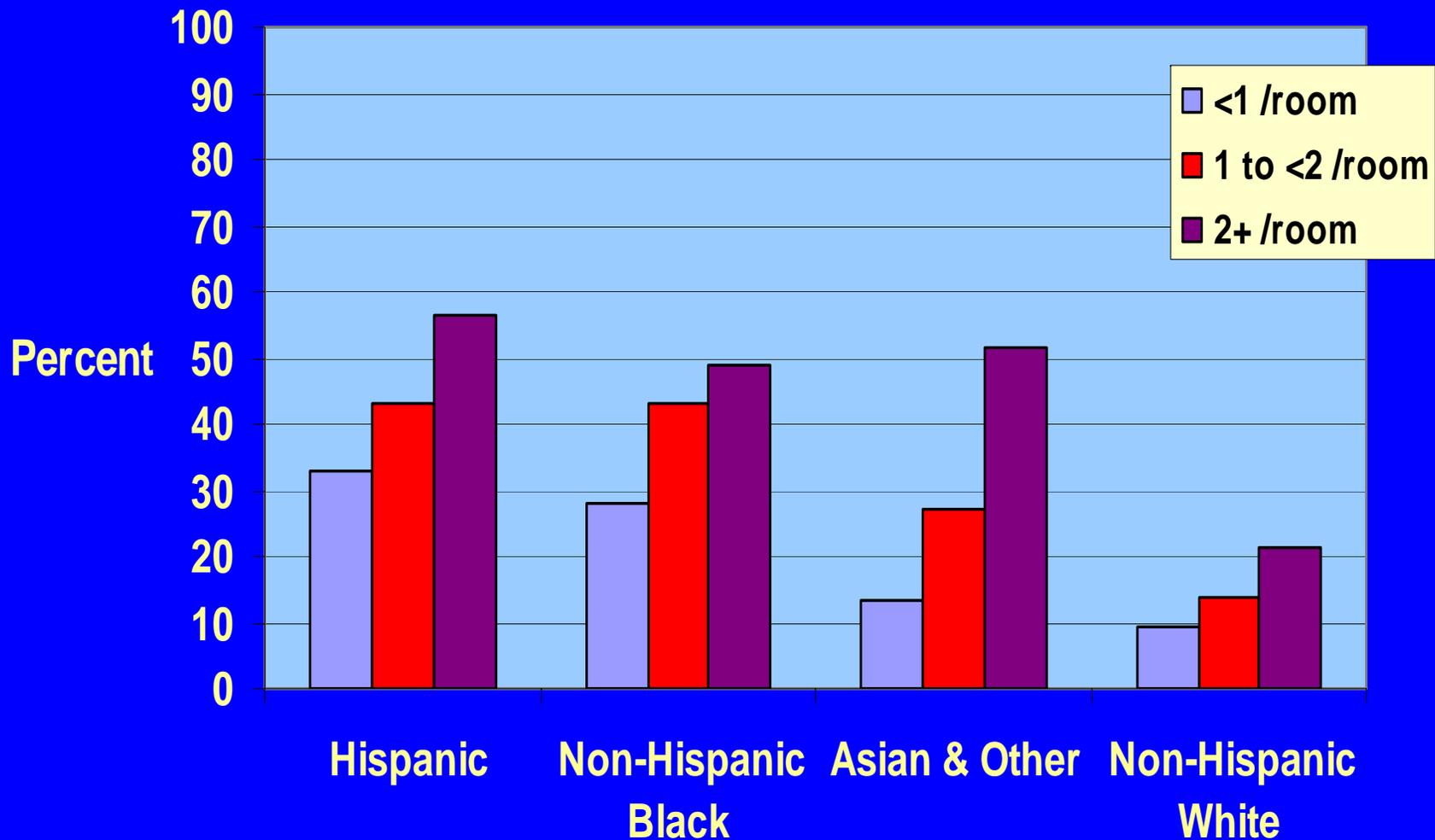
Sources: CHS, 2003 and HVS, 2002

NYC Households Reporting Cockroaches by Income and Race/Ethnicity



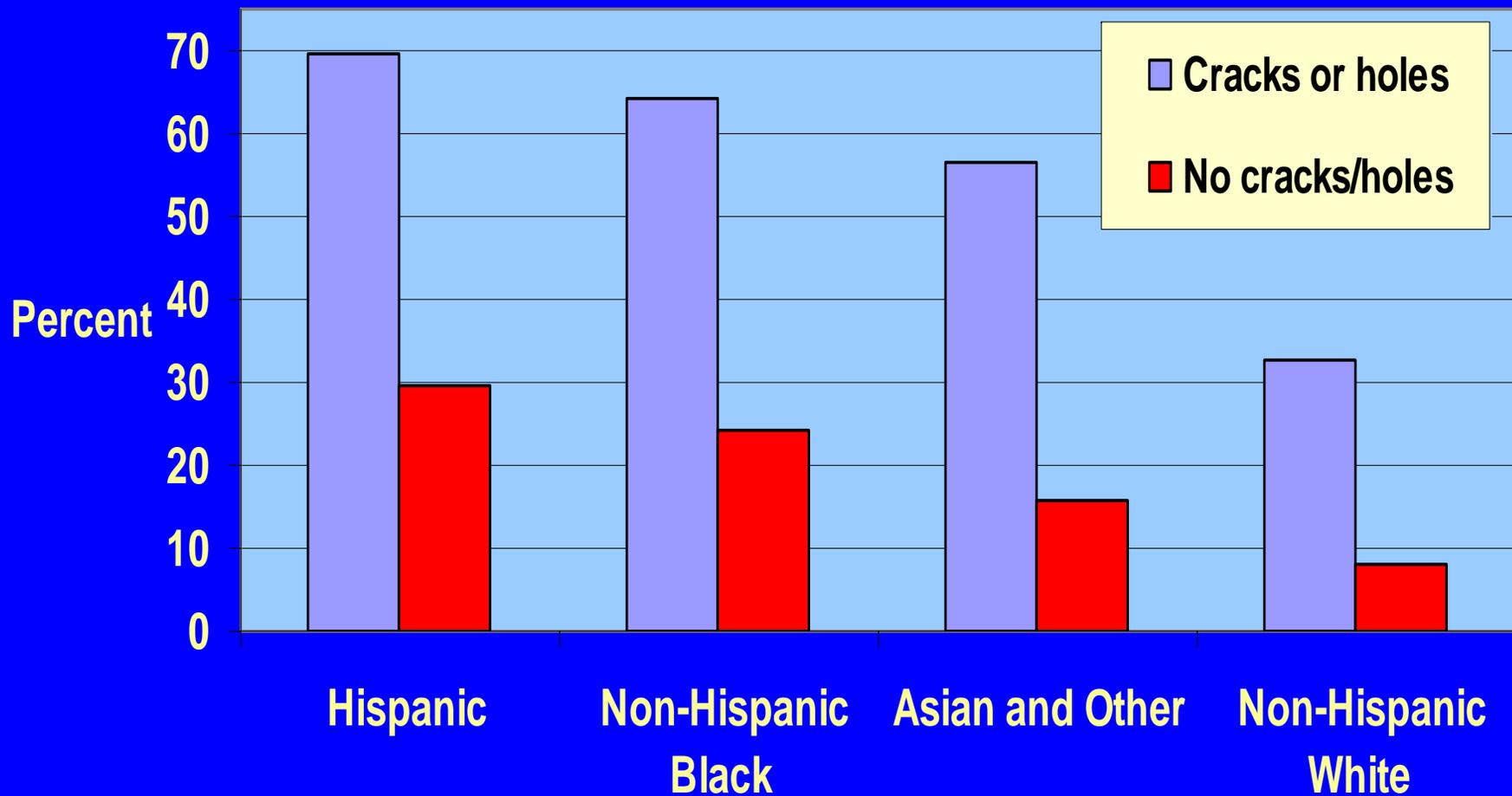
Source: CHS, 2003

NYC Households Reporting Rodents by Crowding and Race/Ethnicity



Source: HVS, 2002

NYC Households Reporting Rodents by Building Disrepair and Race/Ethnicity

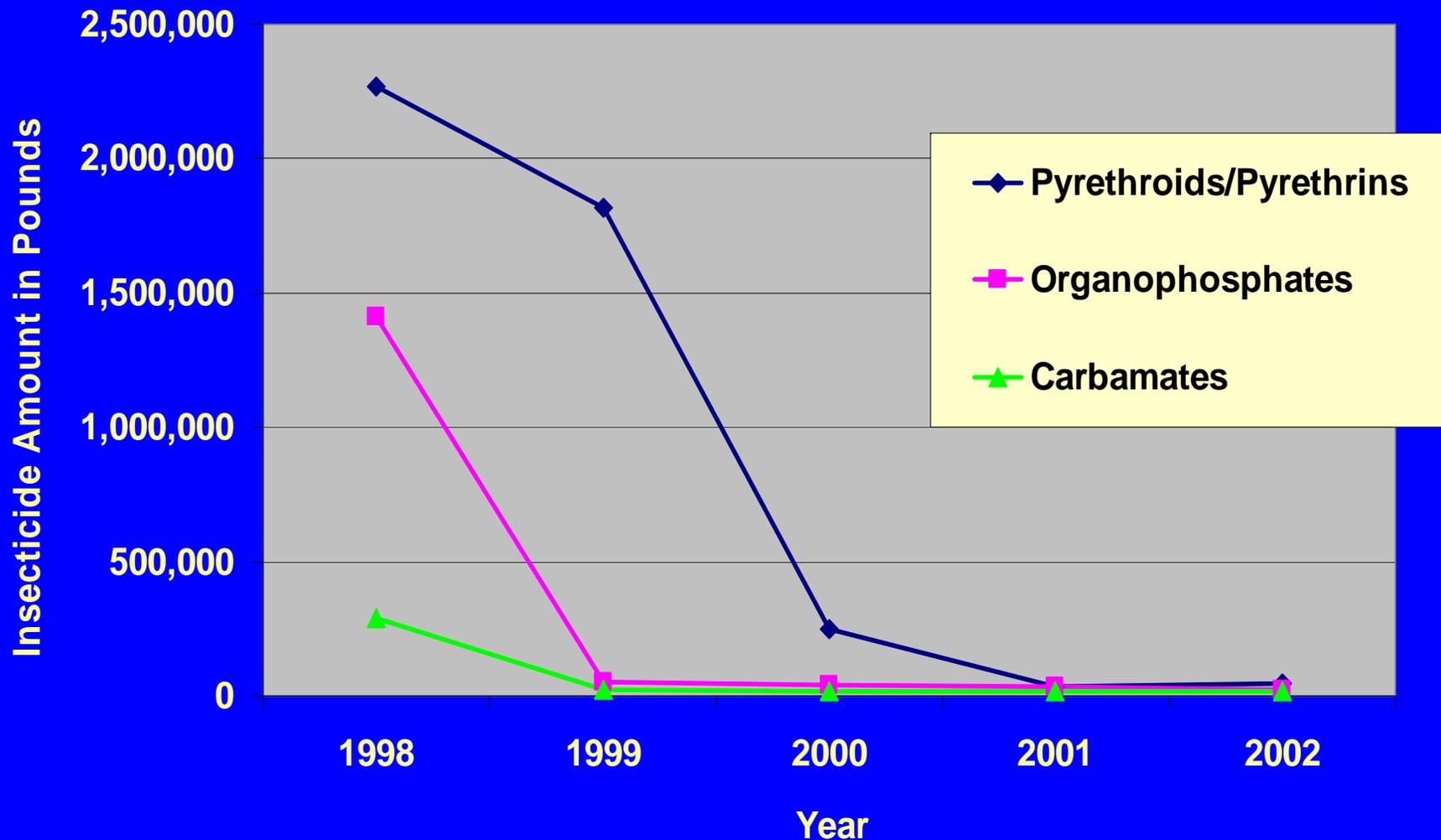


Source: HVS, 2002

Geographic and Demographic Factors Associated with Pesticide Use

Insecticide Use Trends in NYC, 1998 -2002

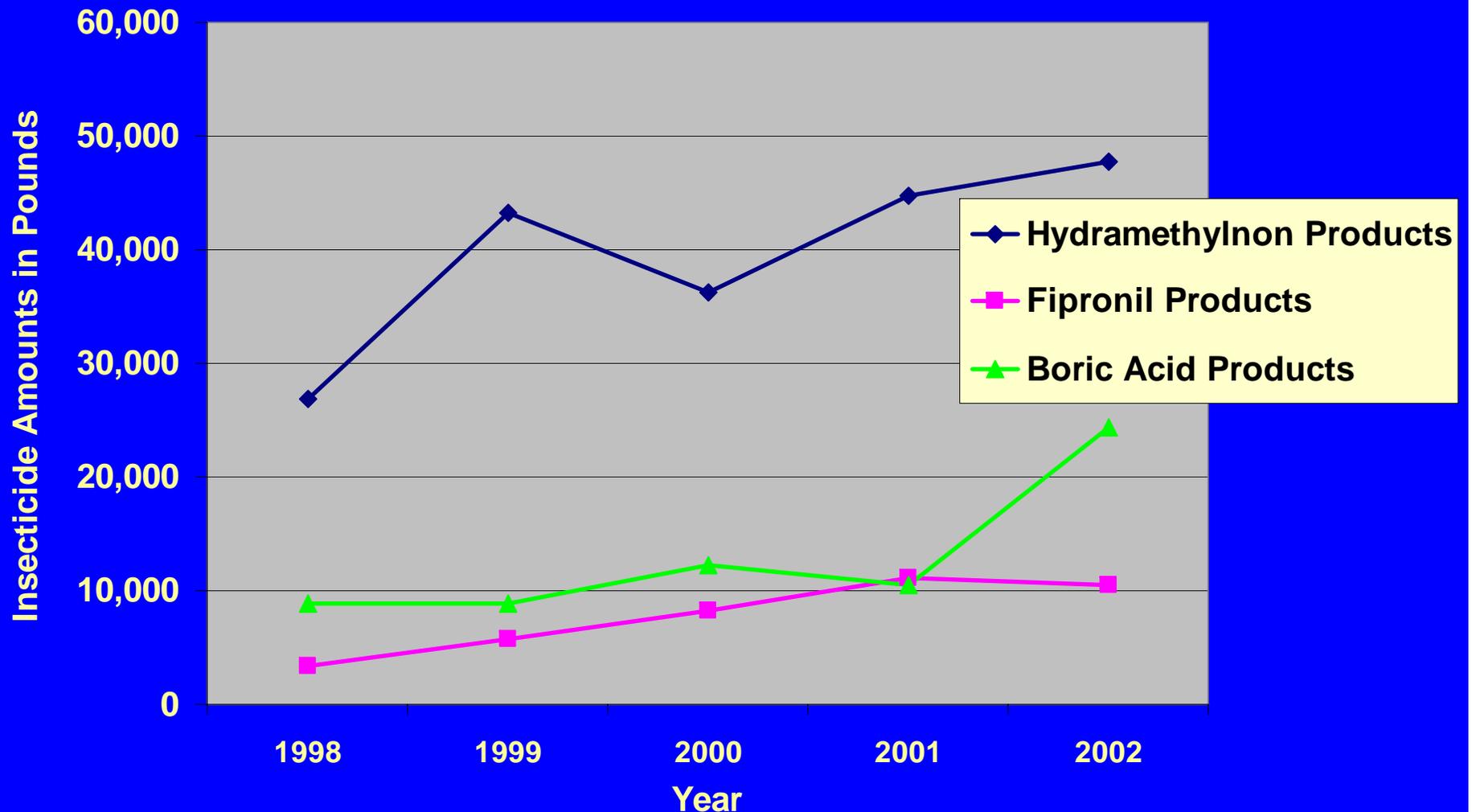
(excluding zip codes 11419, 11420, 11433)



Source: PSURS

“Best Practice” Trends in NYC, 1998 -2002

(excluding zip codes 11419, 11420, 11433)



Source: PSURS

Percent of Households Using Sprays, Bombs or Foggers

 Parks and Open Space

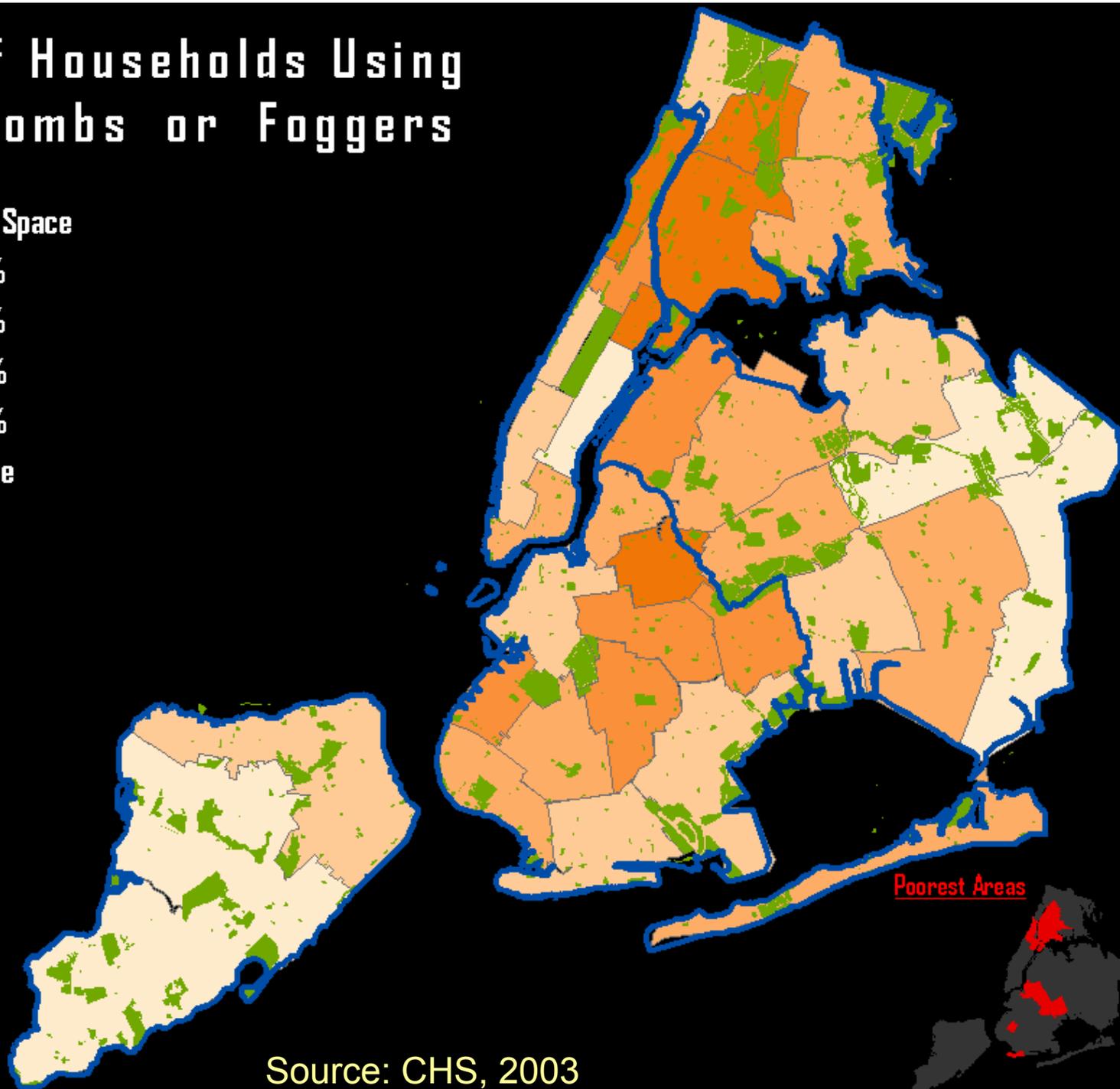
 13.5% - 20%

 20.1% - 30%

 30.1% - 40%

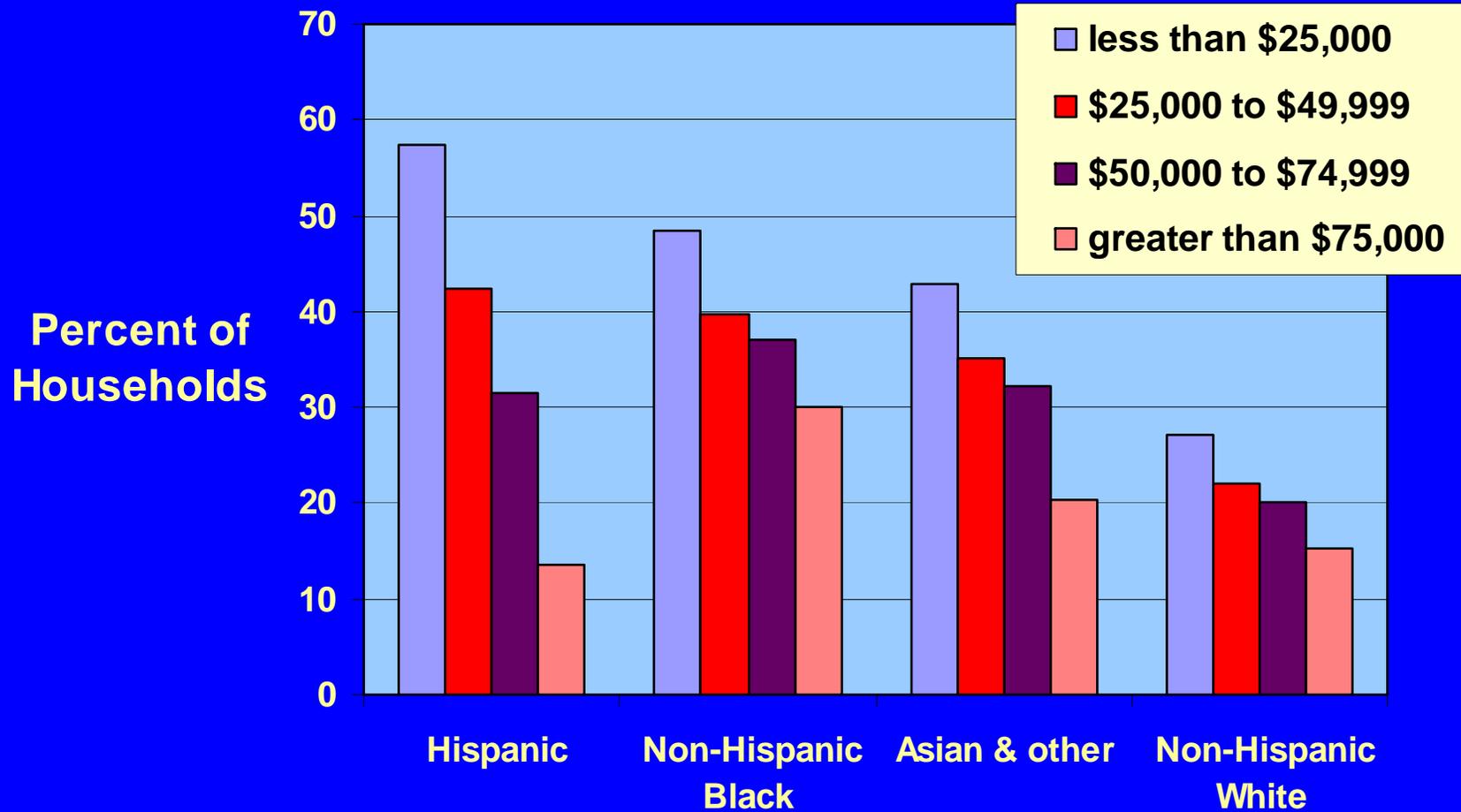
 40.1% - 50%

 50% or more



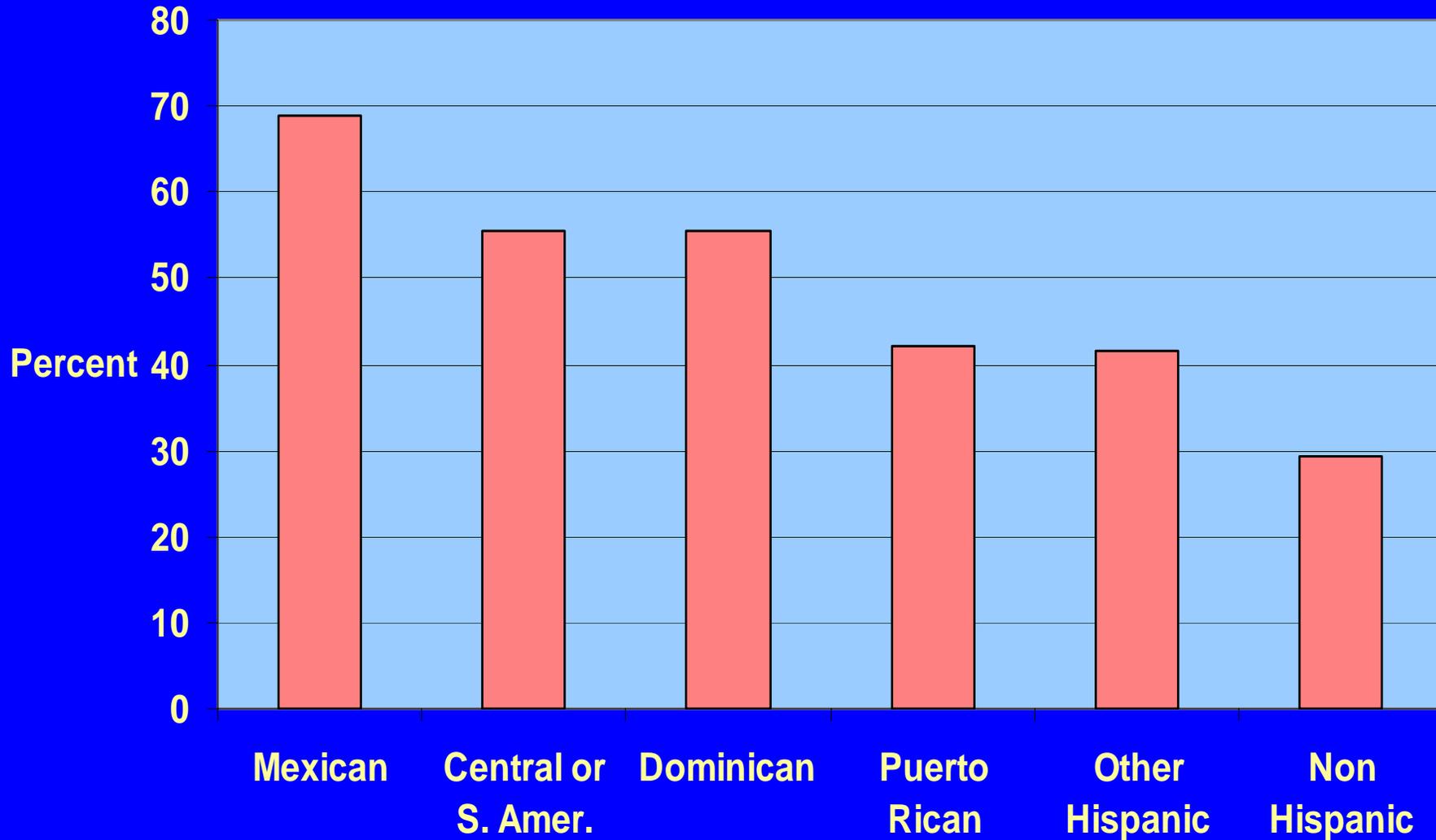
Source: CHS, 2003

NYC Households Using Sprays, Bombs or Foggers by Income and Race/Ethnicity



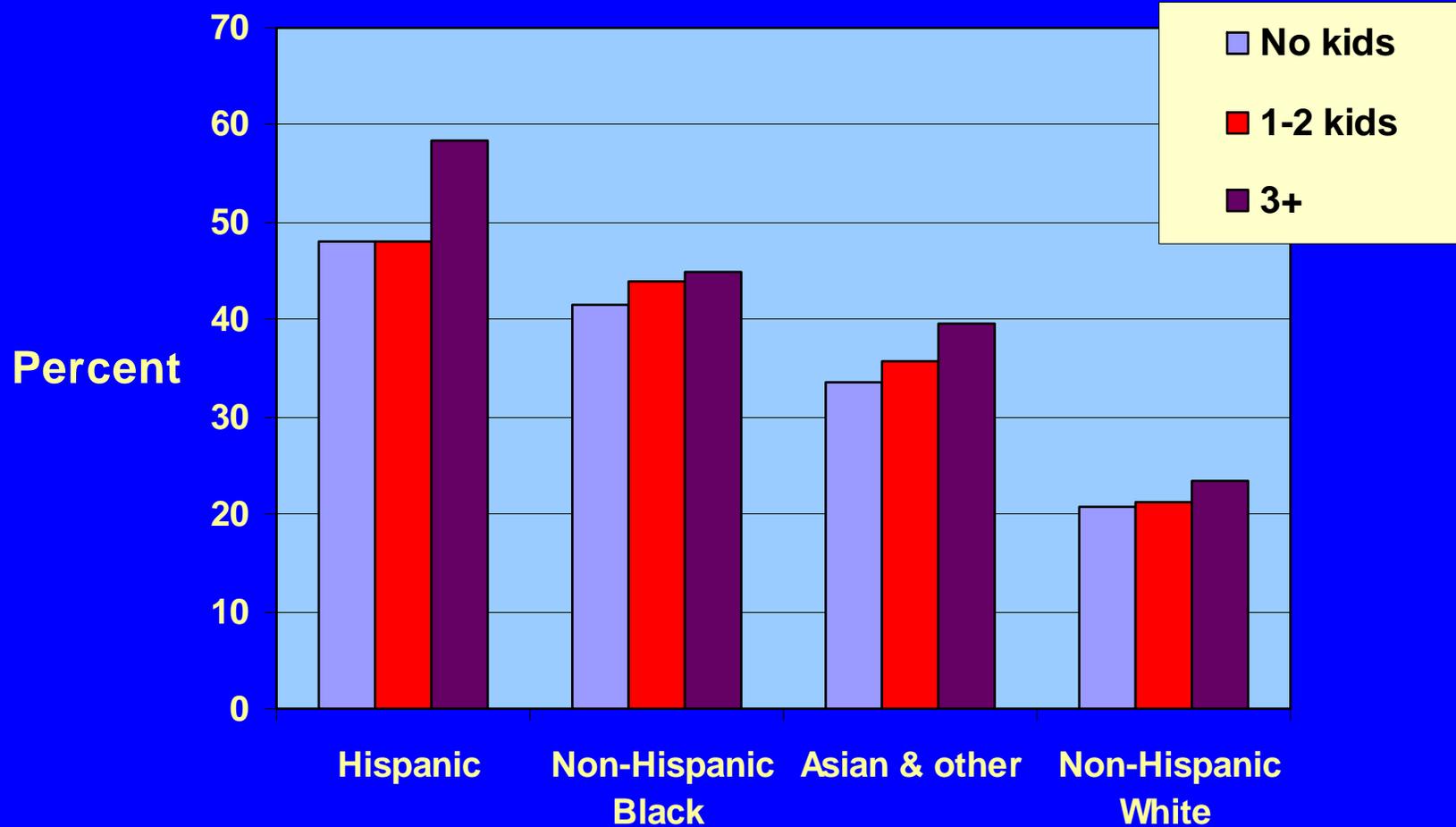
Source: CHS, 2003

Use of Sprays, Bombs or Foggers in NYC by Hispanic Country of Origin



Source: CHS, 2003

NYC Households Using Sprays, Bombs or Foggers by Number of Children and Race/Ethnicity

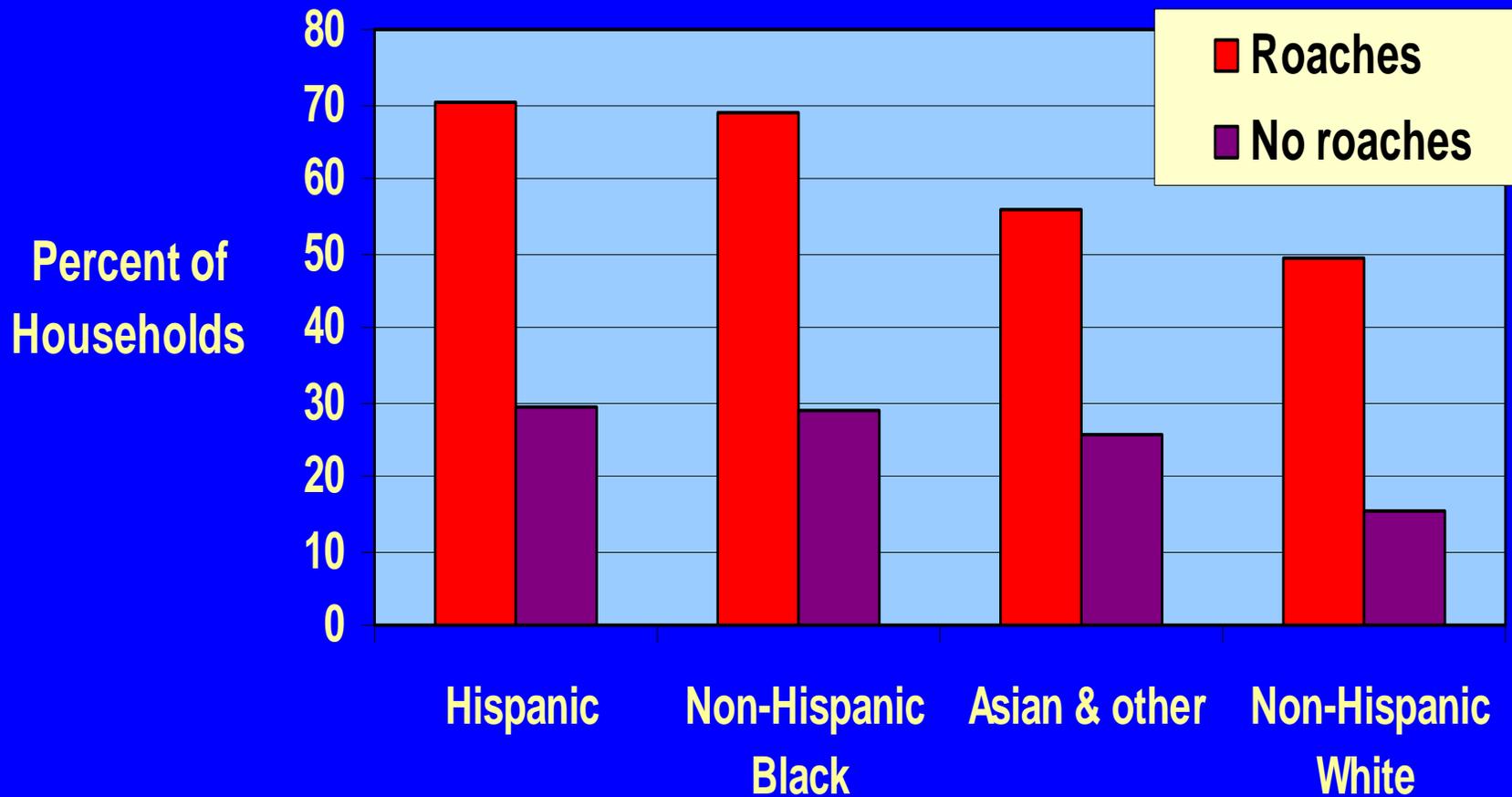


Source: CHS, 2003

Use of Sprays, Bombs or Foggers and Cockroach Infestation

	Sprays	Doesn't Spray	Total
Roaches	544 K (63%)	315 K (37%)	860 K (100%)
No Roaches	446 K (22%)	1,627 K (78%)	2,073 K (100%)
Total	990 K (34%)	1,943 K (66%)	2,933 K (100%)

Spray, Bomb or Fogger Use among Households in NYC by Cockroach Infestation and Race/Ethnicity



Source: CHS, 2003

What predicts use of sprays, bombs or foggers?

INDEPENDENT VARIABLES	Crude Odds Ratios	Adjusted Odds Ratios (95% CL)
Roaches vs. No Roaches	6.3	5.0 (4.5, 5.6)
Hispanic vs. White	3.6	1.6 (1.4, 1.9)
Black vs. White	2.8	1.8 (1.6, 2.1)
Asian vs. White	2.1	1.4 (1.1, 1.7)
< \$25,000 vs. > \$75,000	3.7	1.8 (1.5, 2.2)
\$25,000 - \$49,999 vs. > \$75,000	2.3	1.5 (1.3, 1.8)
\$50,000 - \$75,999 vs. > \$75,000	1.7	1.4 (1.1, 1.7)

Source: CHS 2003

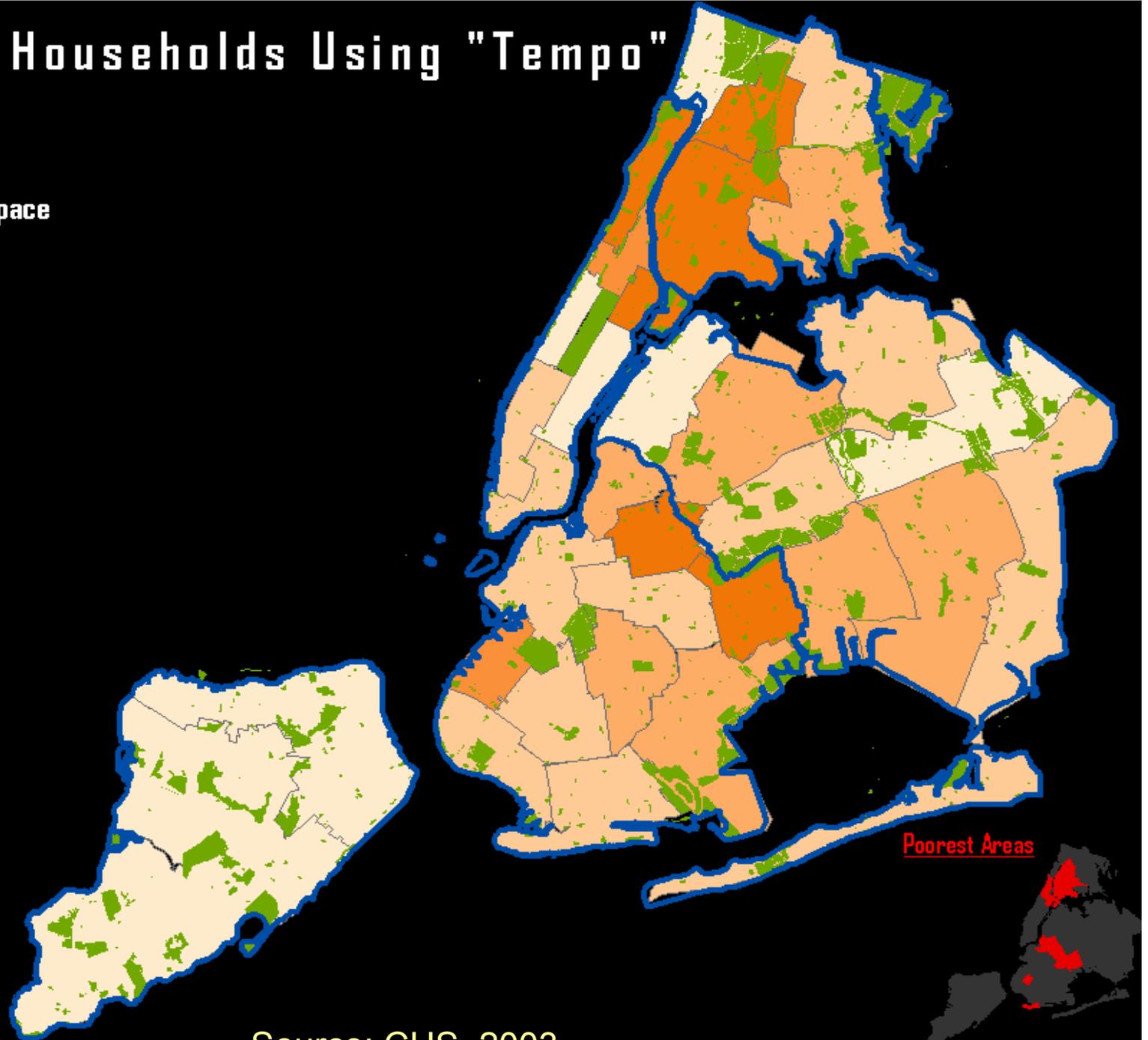
What predicts use of sprays, bombs or foggers?

INDEPENDENT VARIABLES	Crude Odds Ratios	Adjusted Odds Ratios (95% CL)
< High School vs. College Degree +	3.2	1.5 (1.3, 1.8)
High School vs. College Degree +	1.6	1.1 (0.9, 1.2)
Some College vs. College Degree +	1.4	1.0 (0.9, 1.2)
1-2 Kids vs. No Kids	1.4	1.0 (0.9, 1.1)
3 + Kids vs. No Kids	1.7	1.0 (0.8, 1.2)
Foreign vs. US Born	2.0	1.4 (1.2, 1.6)

Source: CHS, 2003

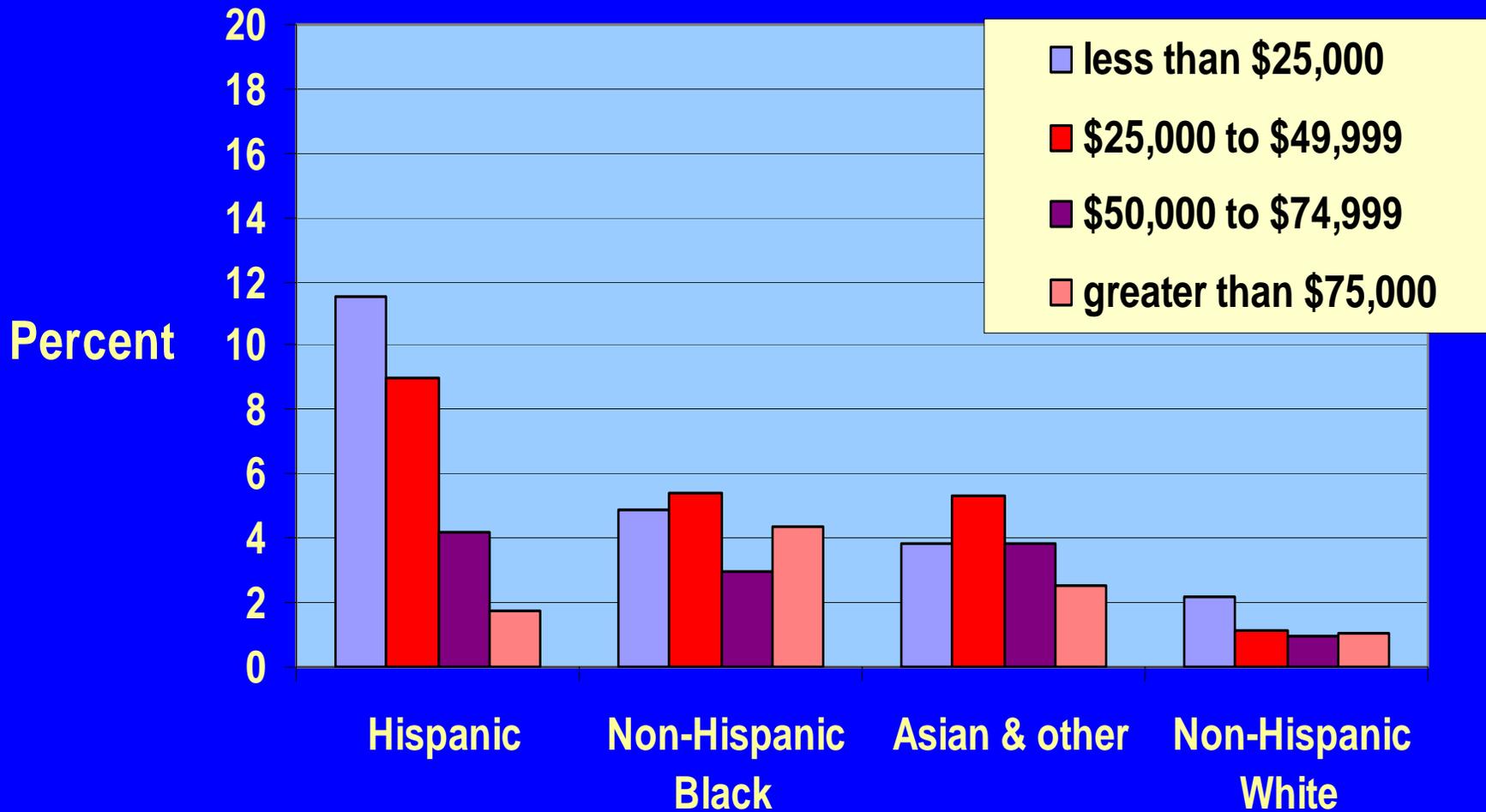
Percent of Households Using "Tempo"

-  Parks and Open Space
-  0.5% - 2%
-  2.1% - 4%
-  4.1% - 6%
-  6.1% - 8%
-  8% or more



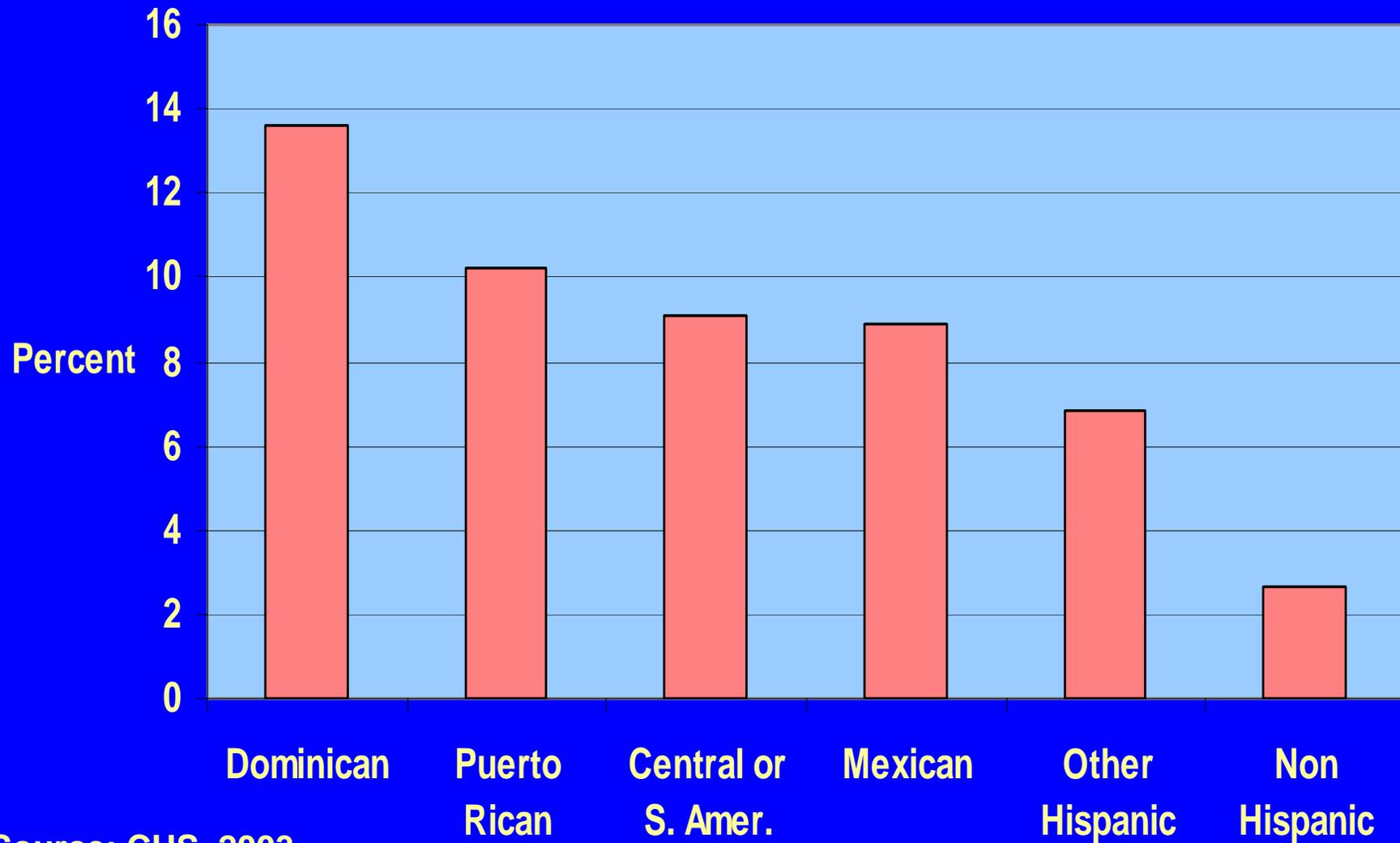
Source: CHS, 2003

NYC Households Using Tempo to Control Cockroaches by Income and Race/Ethnicity



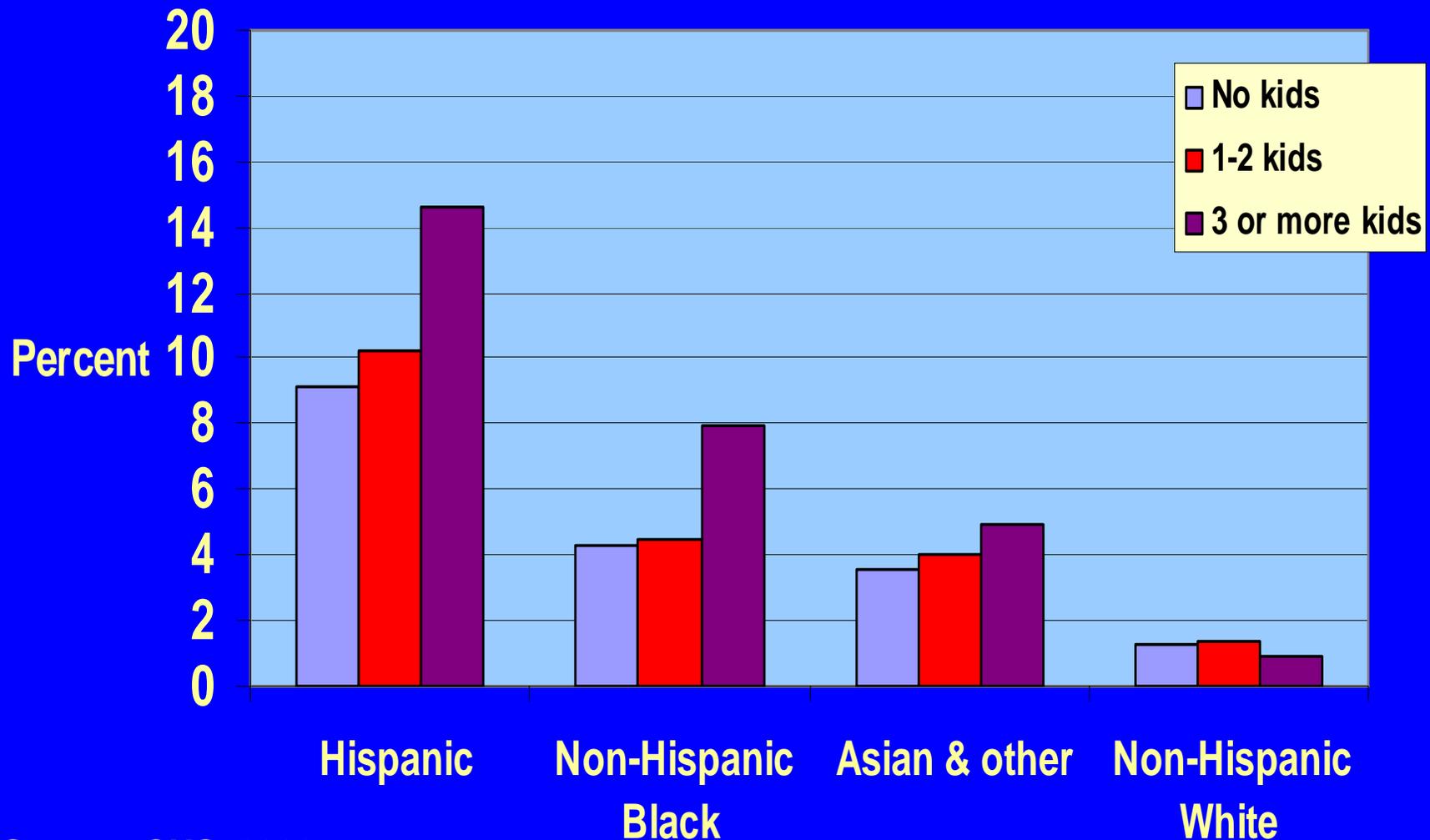
Source: CHS, 2003

Use of Tempo in NYC by Hispanic Country of Origin



Source: CHS, 2003

NYC Households Using Tempo to Control Cockroaches by Number of Children and Race/Ethnicity



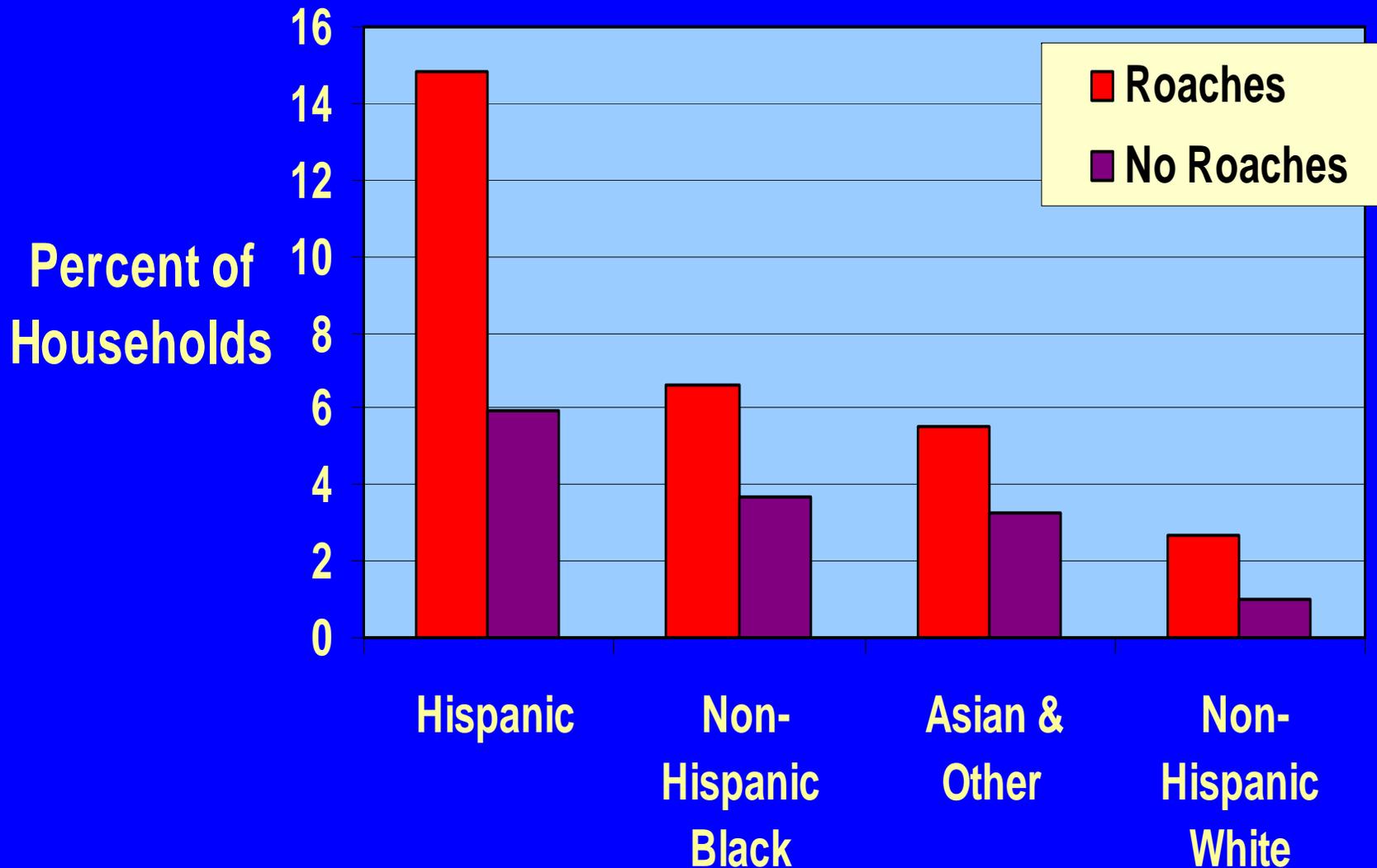
Source: CHS, 2003

Use of Tempo by Presence of Cockroaches

	Uses Tempo	Doesn't Use Tempo	Total
Roaches	71 K (9%)	750 K (91%)	821 K (100%)
No Roaches	52 K (3%)	1,969 K (97%)	2,021 K (100%)
Total	123 K (4%)	2,718 K (96%)	2,843 K (100%)

Source: CHS, 2003

Tempo Use among Households in NYC by Cockroach Infestation and Race/Ethnicity



Source: CHS, 2003

What predicts use of Tempo?

INDEPENDENT VARIABLES	Crude Odds Ratios	Adjusted Odds Ratios (95% CL)
Roaches vs. No Roaches	3.5	2.2 (1.7, 2.7)
Hispanic vs. White	8.0	3.9 (2.7, 5.7)
Black vs. White	3.6	2.4 (1.7, 3.5)
Asian vs. White	3.1	2.1 (1.3, 3.3)
< \$25,000 vs. > \$75,000	3.9	1.3 (0.8, 2.2)
\$25,000 - \$49,999 vs. > \$75,000	2.8	1.4 (0.9, 2.3)
\$50,000 - \$75,999 vs. > \$75,000	1.4	0.9 (0.5, 1.7)

Source: CHS 2003

What predicts use of Tempo?

INDEPENDENT VARIABLES	Crude Odds Ratios	Adjusted Odds Ratios (95% CL)
< High School vs. College Degree +	4.2	1.6 (1.1, 2.3)
High School vs. College Degree +	1.9	1.1 (0.8, 1.6)
Some College vs. College Degree +	2.2	1.4 (1.0, 2.0)
1-2 Kids vs. No Kids	1.6	1.1 (0.8, 1.3)
3 + Kids vs. No Kids	2.8	1.6 (1.1, 2.2)
Foreign vs. US Born	2.5	1.5 (1.2, 1.9)

Source: CHS 2003

Summary

- NYC promotes IPM whenever feasible.
- NYC discourages personal use of sprays, bombs, foggers, and illegal products.
- High-use groups need education on safer pest control.
- Controlling infestation will reduce pesticide use.
- Geographical Targets: Northern Manhattan, South Bronx and North and Central Brooklyn.

A Proposed Birth Outcomes Study

Hypothesis: Maternal exposure to commercial application of organophosphate and pyrethroid pesticides in residential areas is a risk factor for pre-term birth and intrauterine growth retardation.

Strengths of a NYC-wide Birth Outcomes Study

NUMBERS!

Fetal growth and gestational length have heterogeneous etiologies, so associations may be small.

- Approximately 96,000 births among women 18-35 years of age in 2002.
- Over 7500 births less than 2500 grams.
- A similar number of preterm births.

Strengths of a NYC-wide Birth Outcomes Study

- Birth certificates contain data on parents' demographics, maternal health history, tobacco and alcohol use.
- EPHT will allow us to link a mother's residential address with pesticide application at that address.

Limitations of a NYC-wide Birth Outcomes Study

- Commercial pesticide application in residential areas \neq total maternal exposure.
- Exposure data may not be accurate (changes of residence, missing data, recording errors).
- The request for mothers' addresses without informed consent may not be readily approved by the IRB.