

US EPA ARCHIVE DOCUMENT



The NYC Perc Project





MOUNT SINAI
SCHOOL OF
MEDICINE

Background



- Elevated perc above dry cleaners
 - New York City 1990-1997
 - median levels 441-530 $\mu\text{g}/\text{m}^3$
 - range 7-25,086 $\mu\text{g}/\text{m}^3$
- Perc associated with altered vision
 - color vision (50,000 $\mu\text{g}/\text{m}^3$)
 - visual contrast sensitivity (2,250 $\mu\text{g}/\text{m}^3$)
- Other solvents alter vision
 - styrene, toluene, mixed solvents

Questions



- Is living in a building with an onsite dry cleaner associated with altered vision?
- What level of residential perc is harmful?
 - relationship between perc exposure and vision
 - relationship between environmental and biological measures of perc exposure
- Are children more vulnerable than adults?
 - child and adult exposures
 - child and adult effect

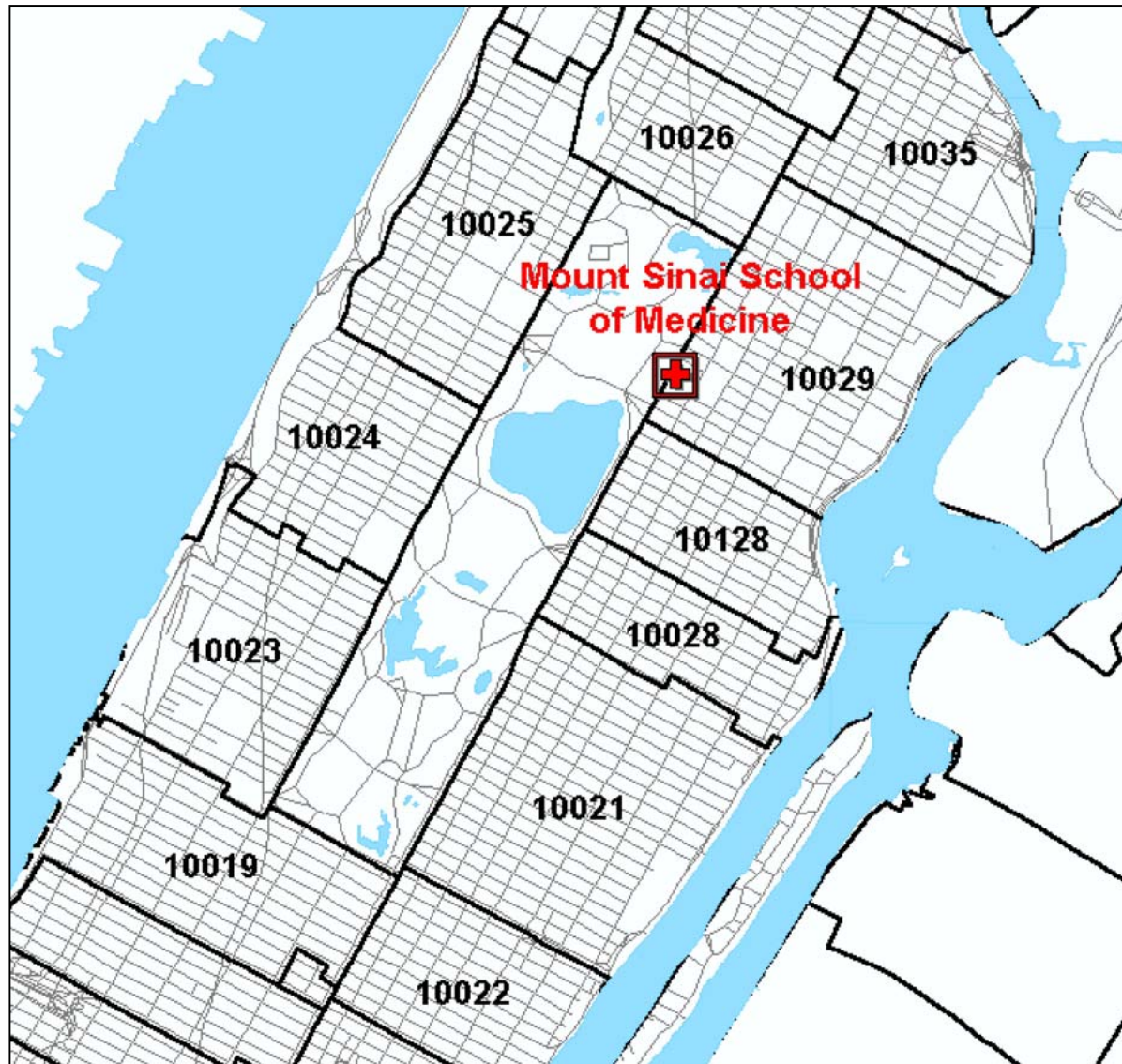
Data Collected

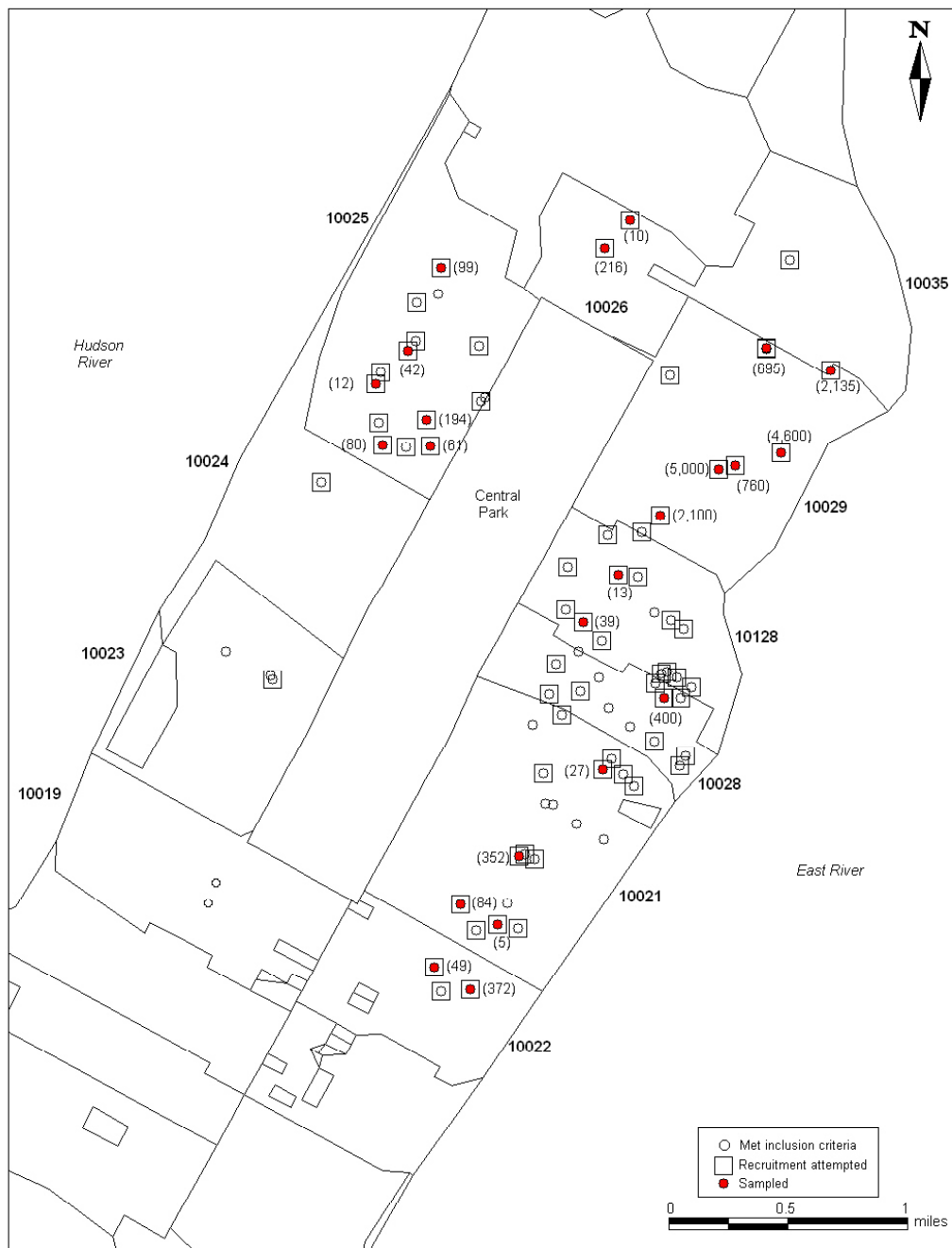
- Environmental -- Indoor Air Perc Level
 - households with parent/child pairs
 - buildings with and without dry cleaners
- Biological -- Breath, blood perc level
 - parent and child
 - home and clinic
- Health Outcome -- Visual Function
 - parent and child

Study Area

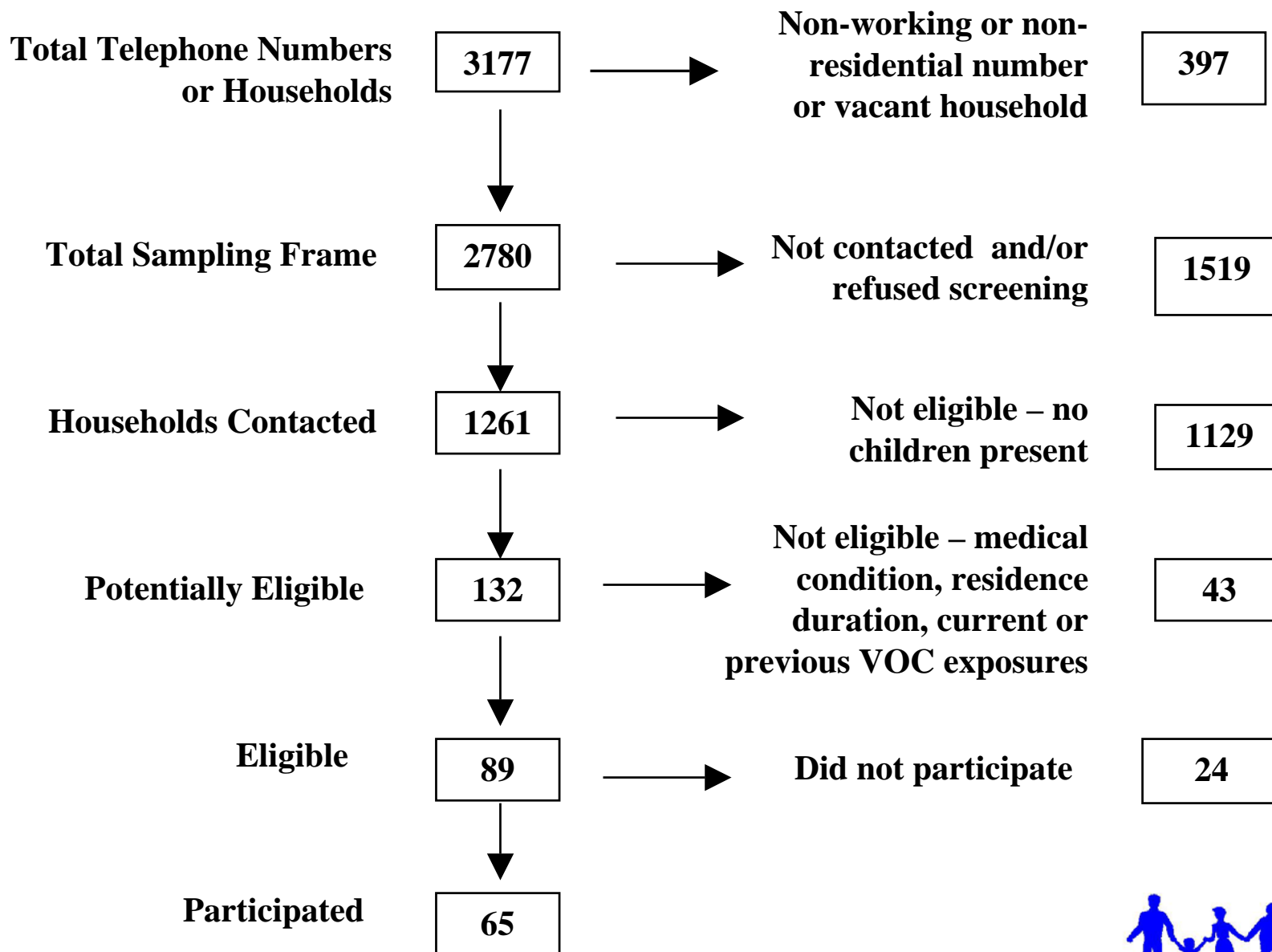


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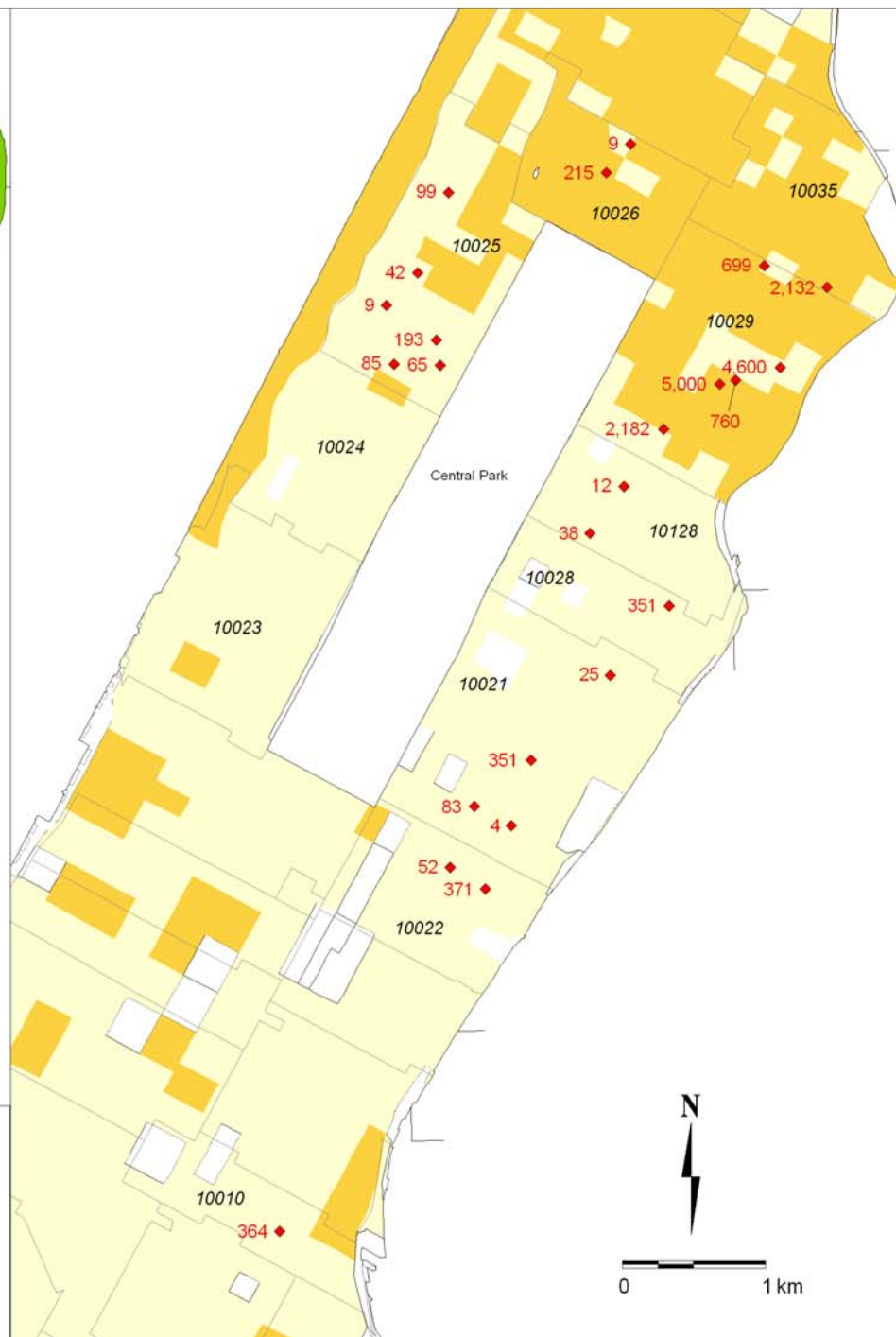
Study	Sampling Period	Dry Cleaner Type	Buildings Sampled	Apartments Sampled	Perchloroethylene (ug/m3)			Sampling Time (hr)
					Geometric Mean ^b	Median	Range	
NYC Perc Project	2001-2003	Onsite	24	65	34	28	3-5000	24
		Drop Off	5	9	6	3	3-29	24
		None	36	61	3	3	3-92	24

May 1997-Effective Date 6NYCRR Part 232-NYS Dry Cleaner Regulation

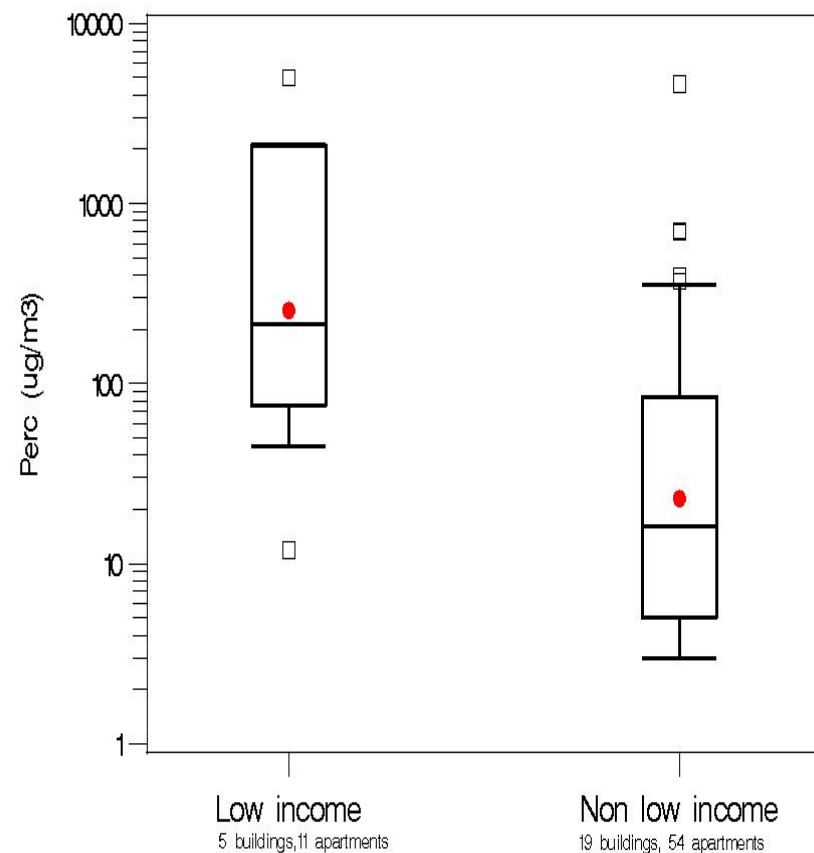
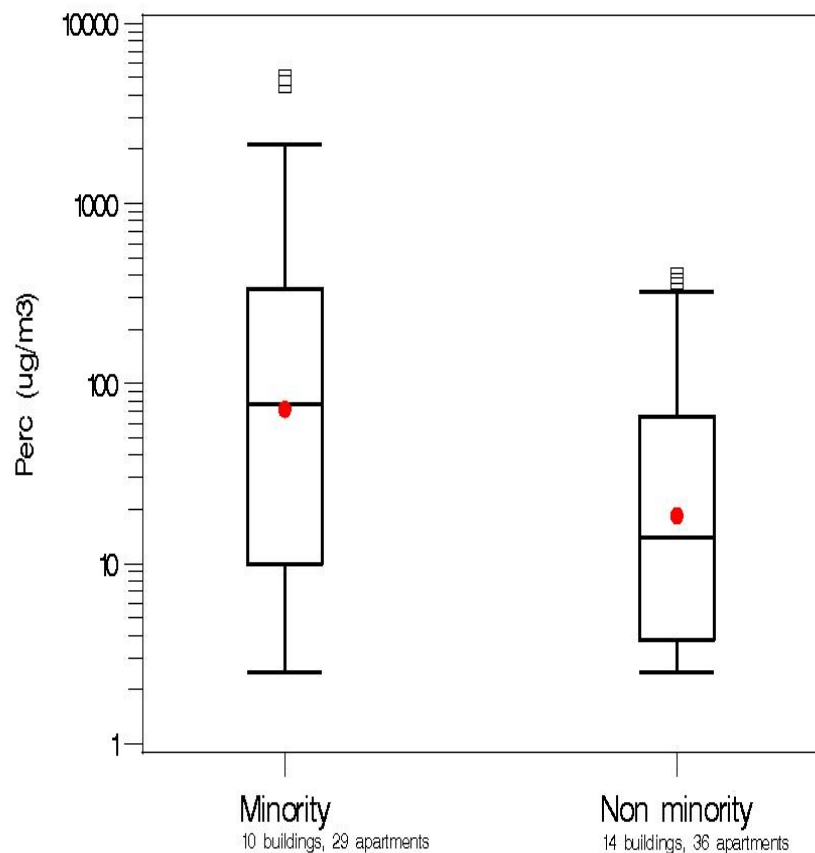
NYSDOH (Unpublished)	1996-1997	Onsite	8	18	336	530	19-5467	4-24
Wallace et al. 1995	1994-1995	Onsite	12	29	361	441	7-25086	24
		None	8	10	3	6	1-19	24
NYS DOH (Unpublished)	1991-1993	Onsite-AM	16	20	1326	2091	6-24667	12
		Onsite-PM	1	5	4629	5900	400-48000	12

Elevated Perc is
Present in 54% of
Residential Dry
Cleaner Buildings
Sampled

Building	Highest Perc Level Detected (ug/m ³)
e368	5
e702	10
e56	12
e103	13
e369	27
e107	39
e41	42
e432	49
e53	62
e63	81
e252	84
e64	101
e47	194
e703	216
e404	322
e249	375
e431	378
e404	402
e152	408
e18a	700
e4	770
e6	2100
e22	4800
e5	5200



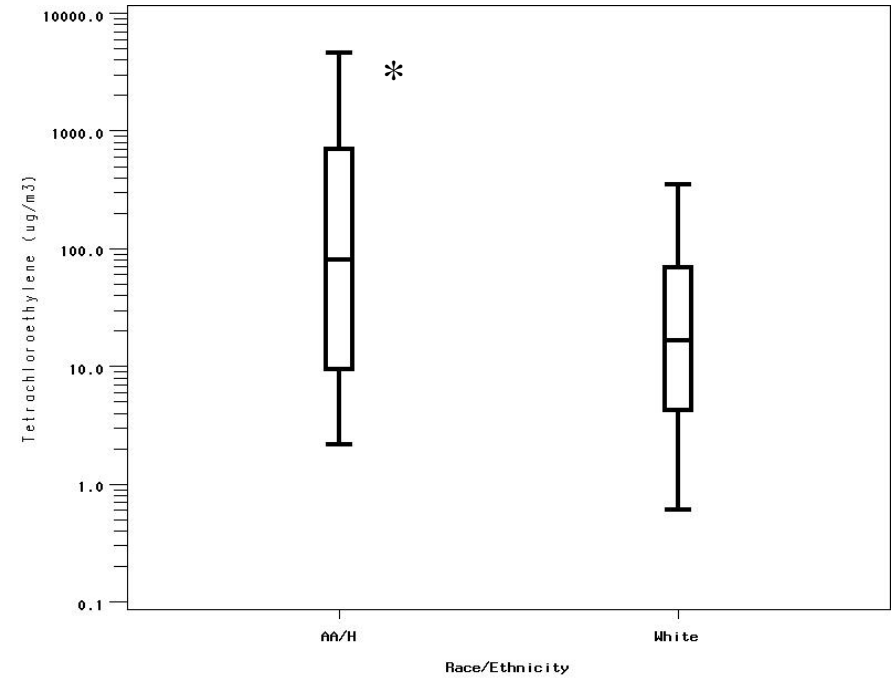
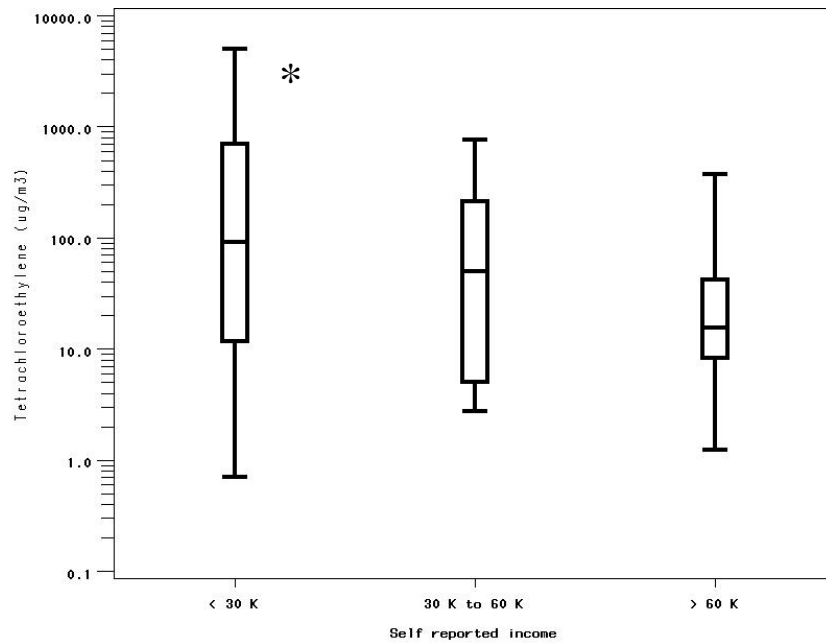
Indoor air perc (ug/m3) by census block group characteristics

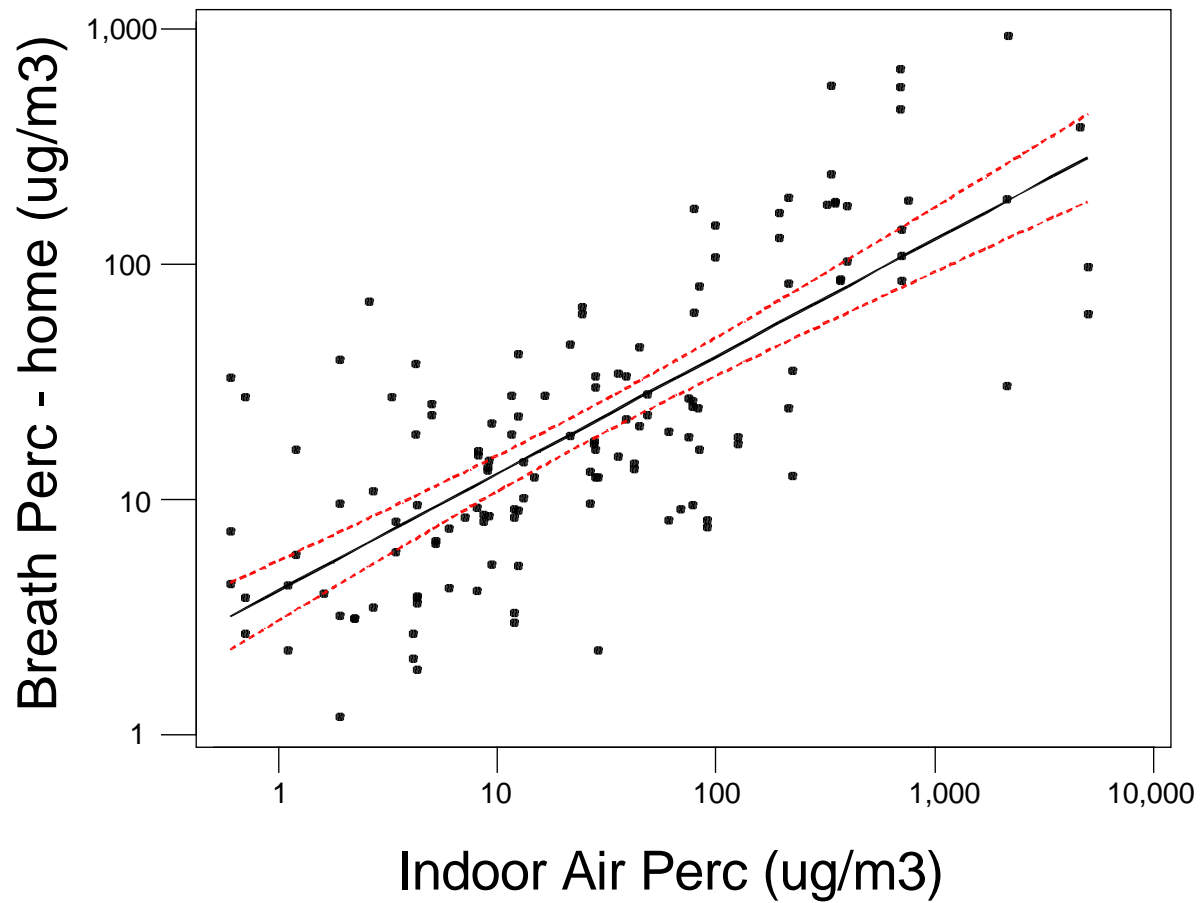


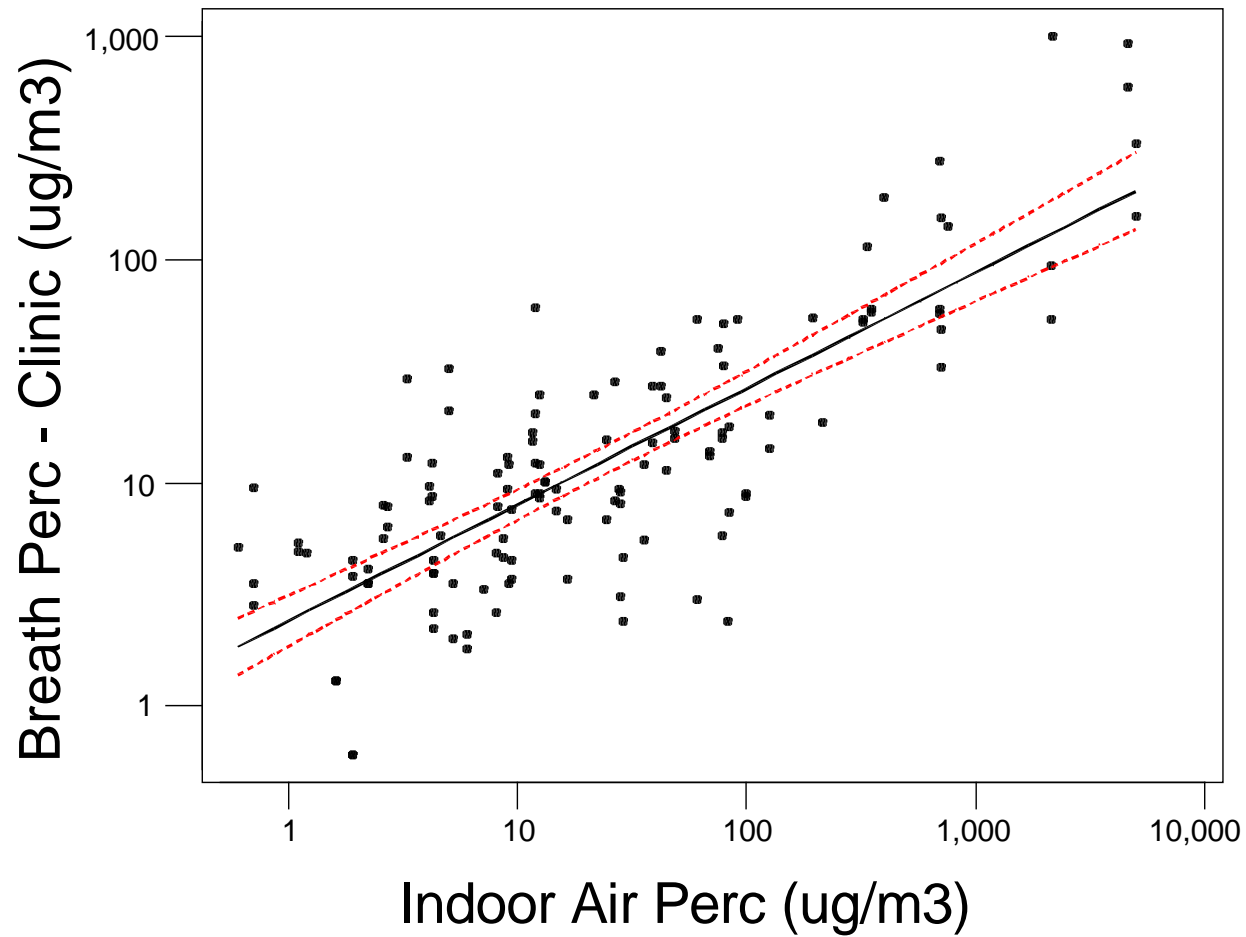
Self-reported
race/ethnicity,
annual income
ranges

Household Level		
Number of Households		65
Race/ethnicity	Number	(% of total)
African American	8	12%
Hispanic	13	20%
African American OR Hispanic	5	8%
White	31	48%
Other ^a	8	12%
Reported income		
<\$15,000	12	18%
\$15,000 to \$30,000	5	8%
\$30,000 to \$45,000	4	6%
\$45,000 to \$60,000	6	9%
>\$60,000	30	46%
No response	8	12%
Individual Level		
Number of Adults		67
Age \pm std.dev. (years)		41.7 \pm 0.9
Gender (% female)		74.6%
Numer of Children		68
Age \pm std.dev. (years)		9.5 \pm 0.3
Gender (% female)		55.8%

Indoor air perc (ug/m³) by self-reported race/ethnicity and income ranges

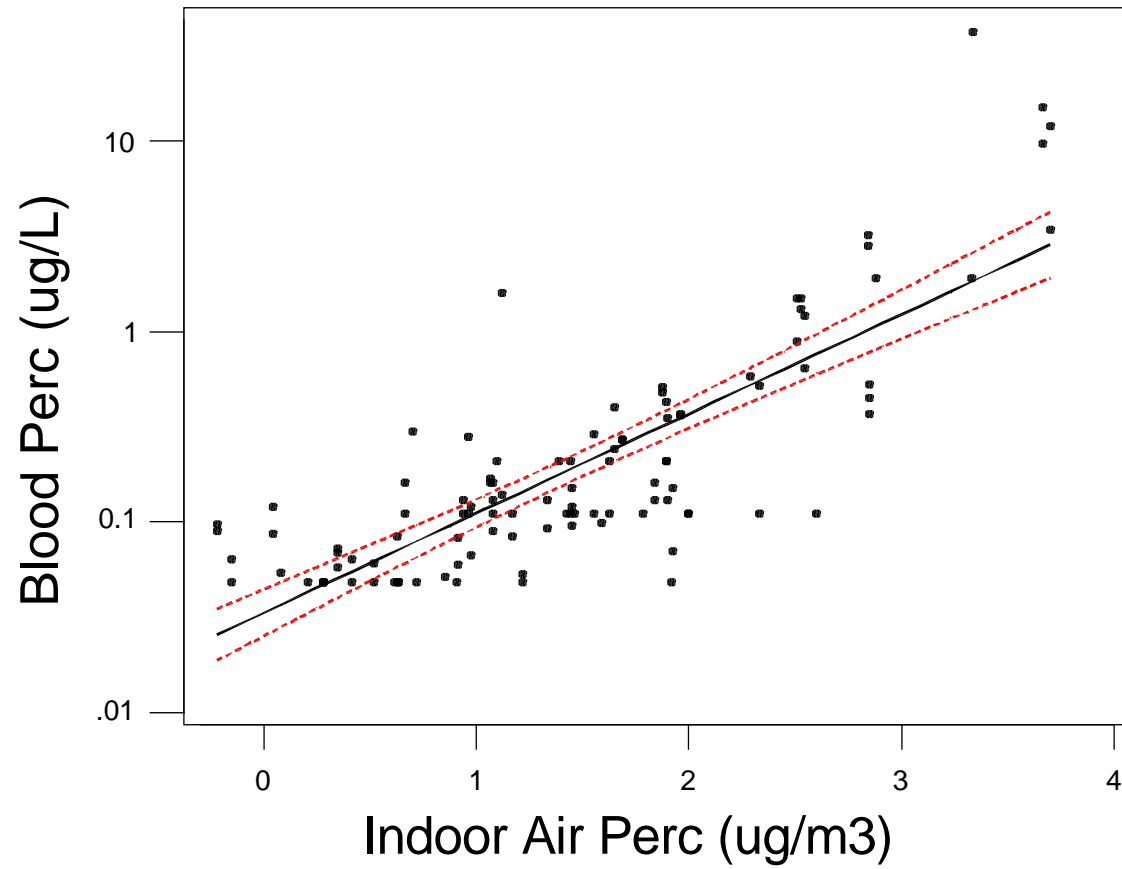




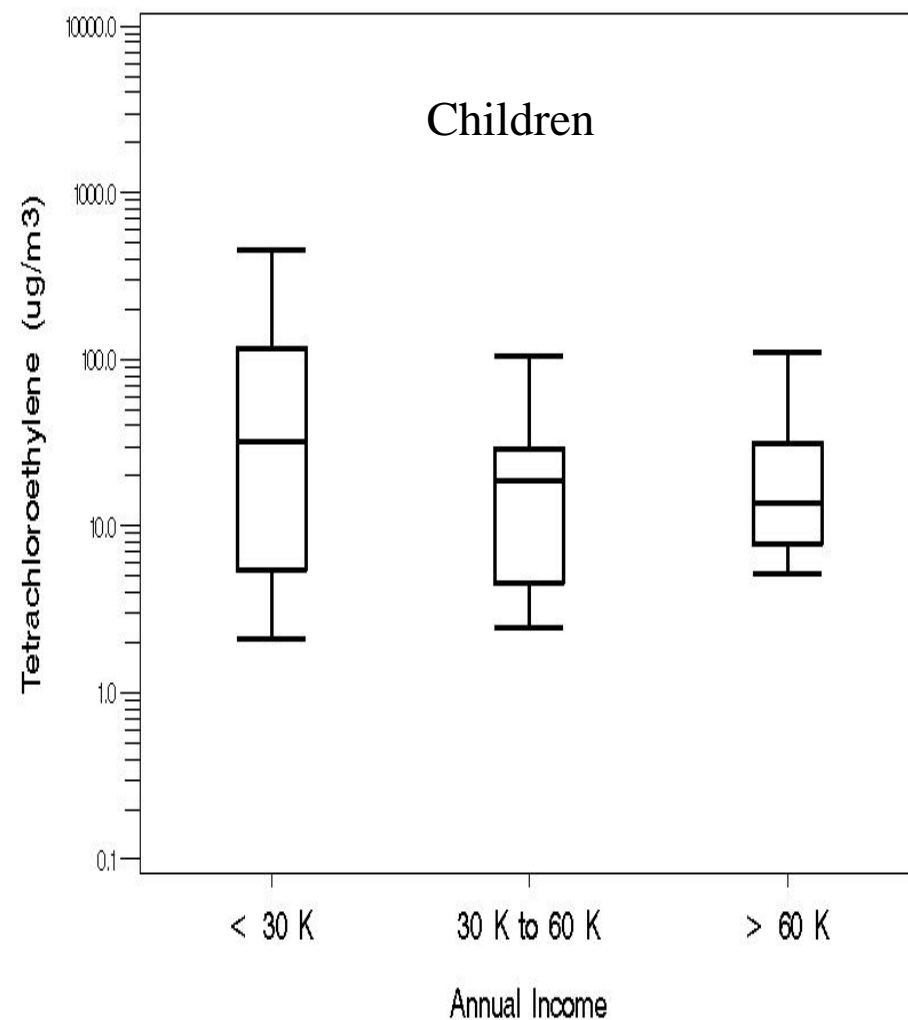
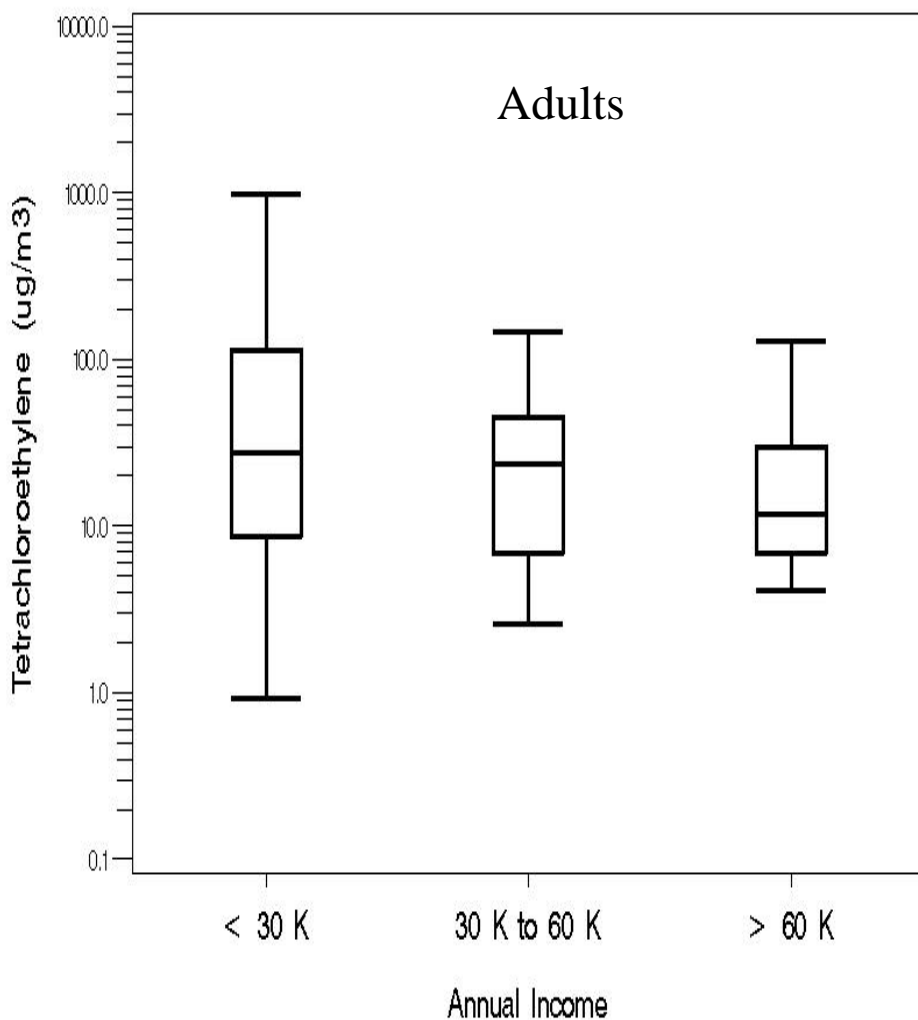




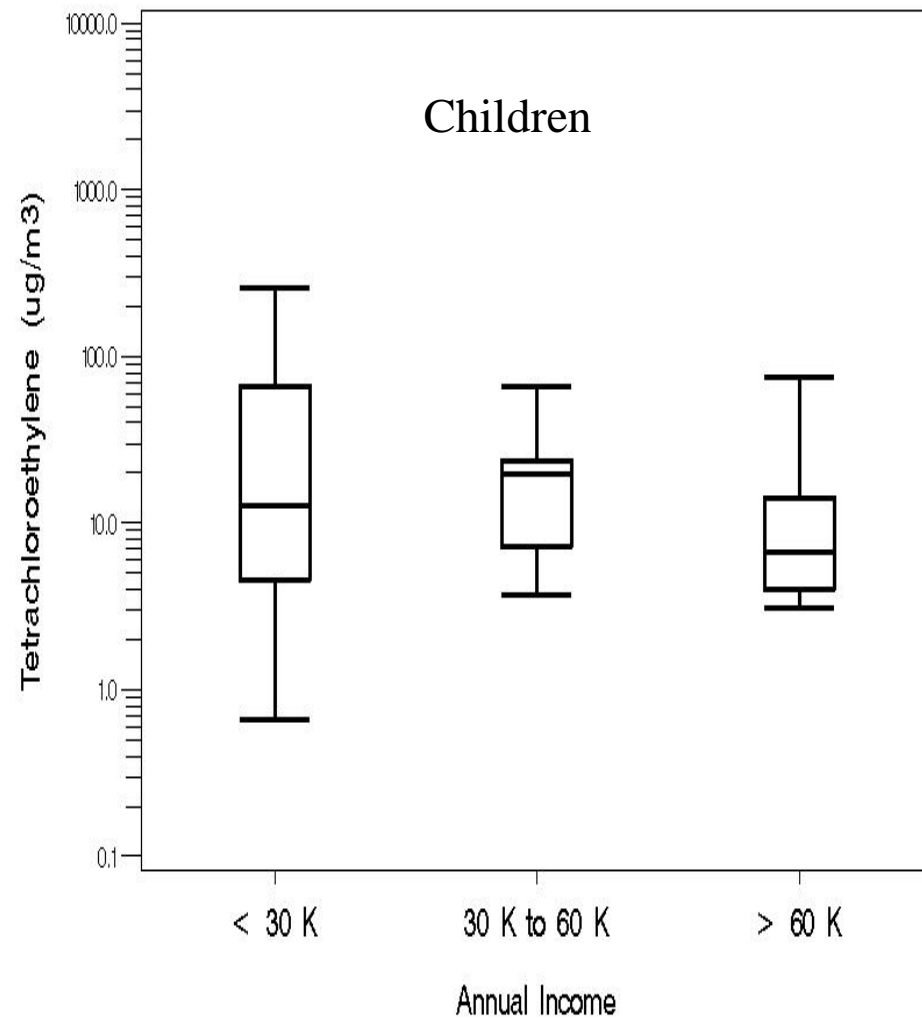
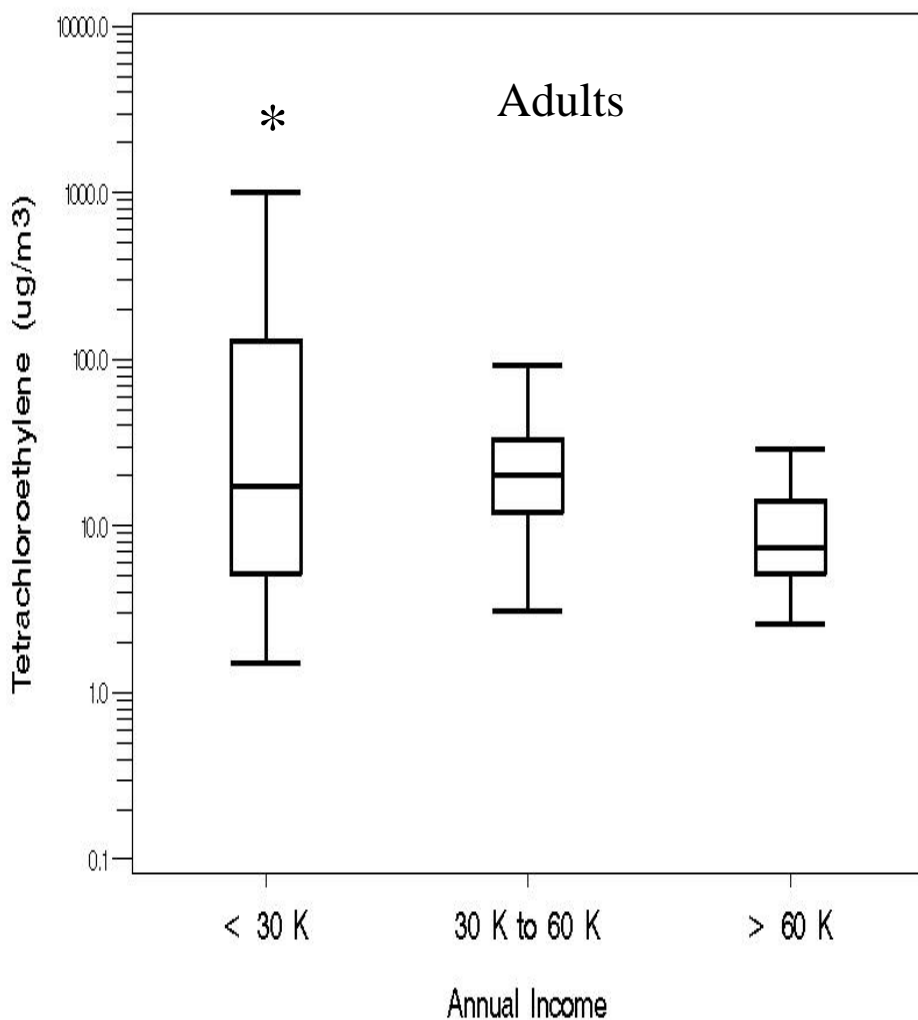
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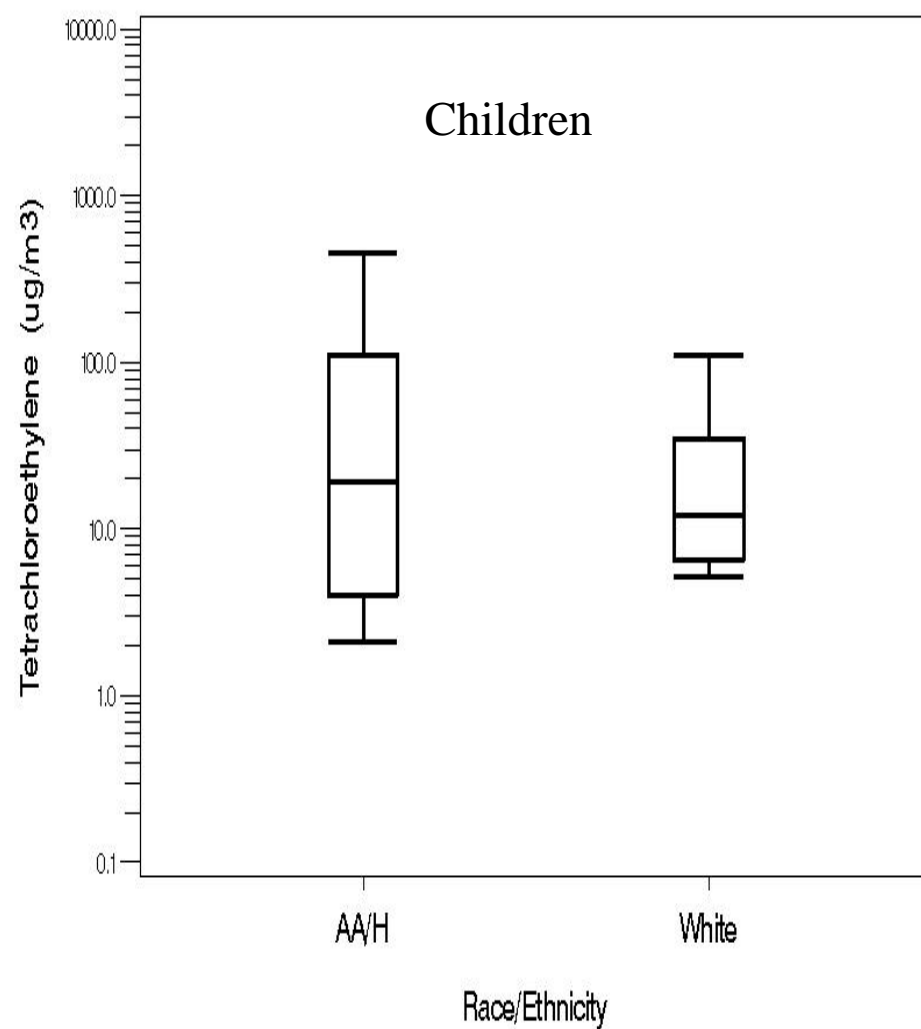
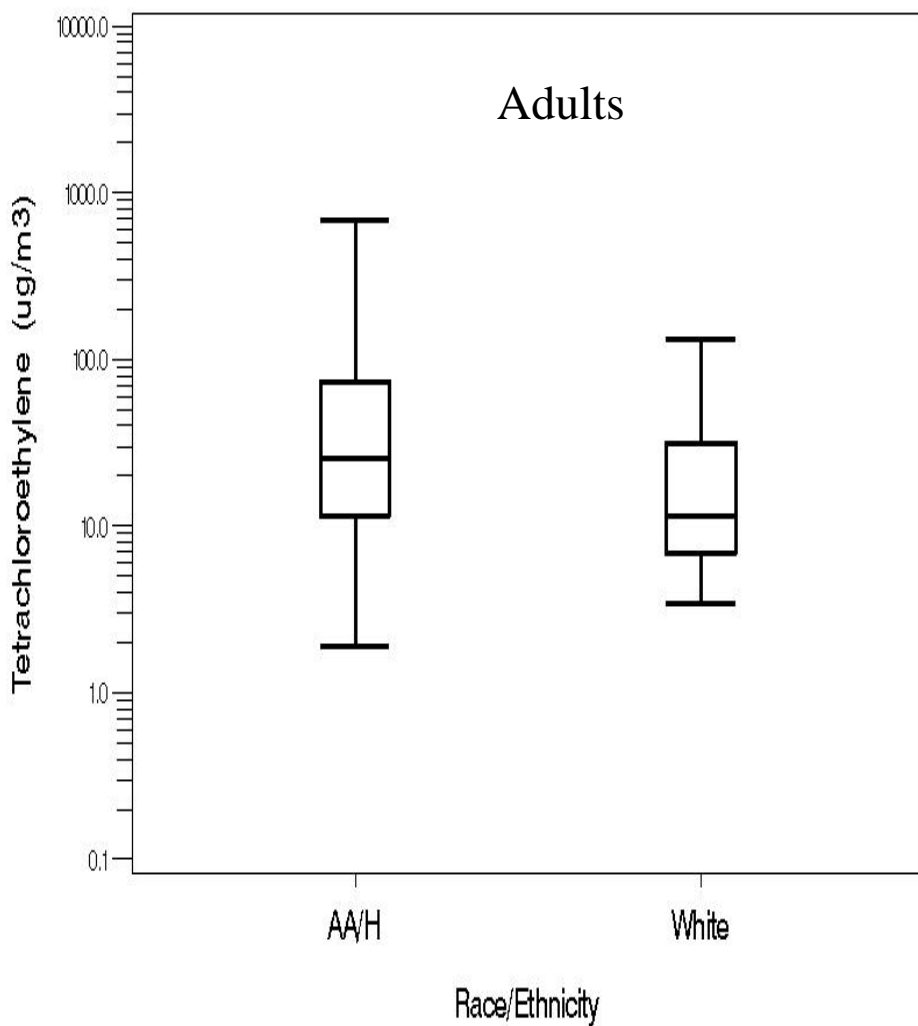
Perc in home breath samples by income



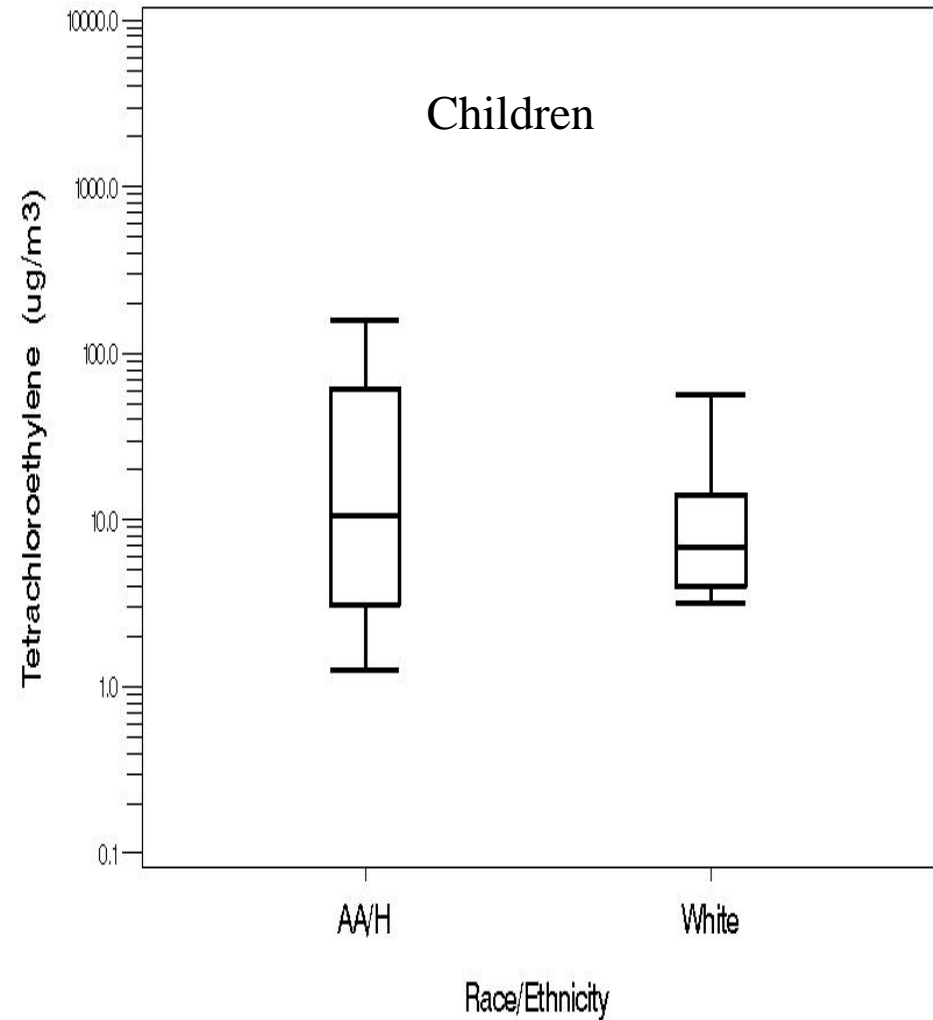
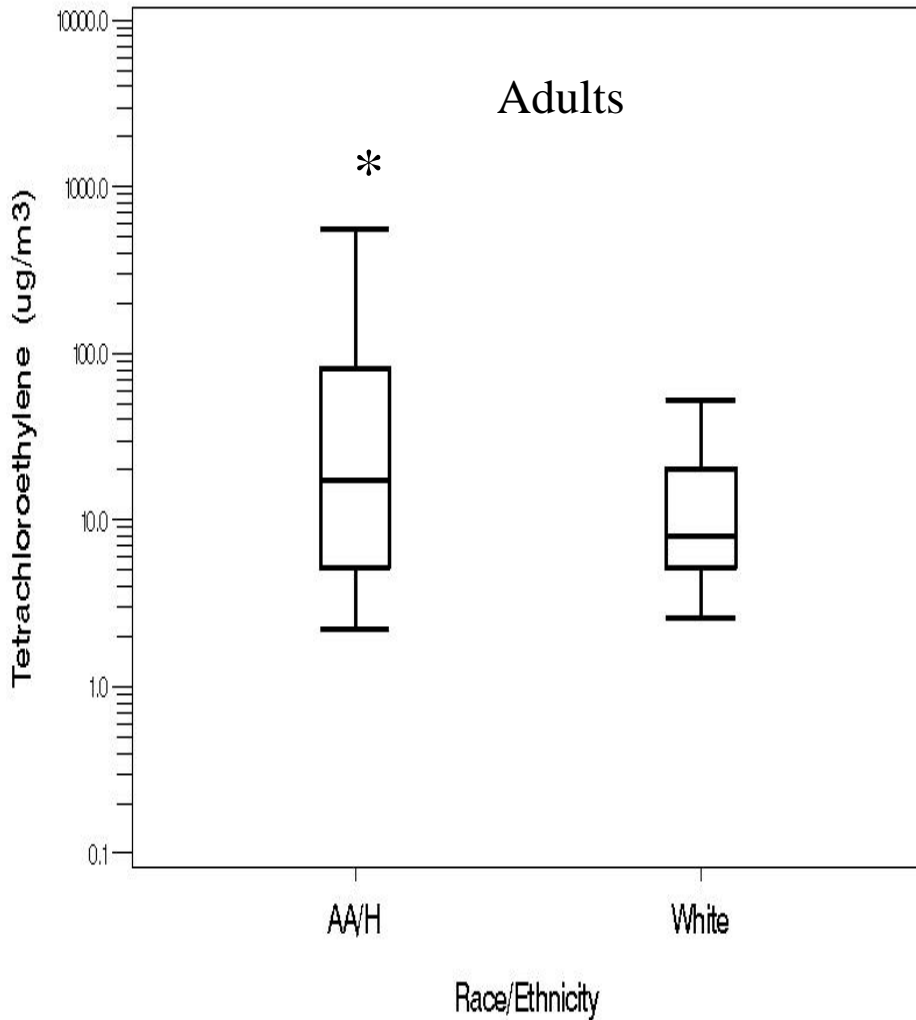
Perc in clinic breath samples by income



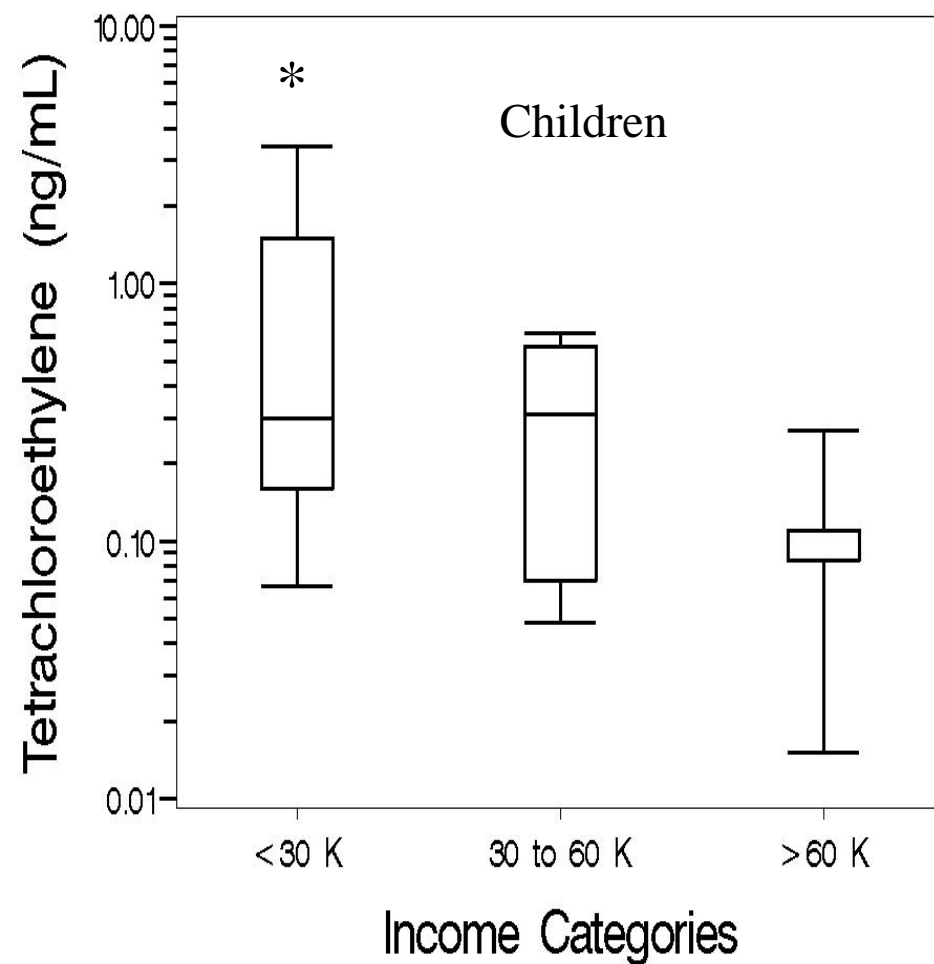
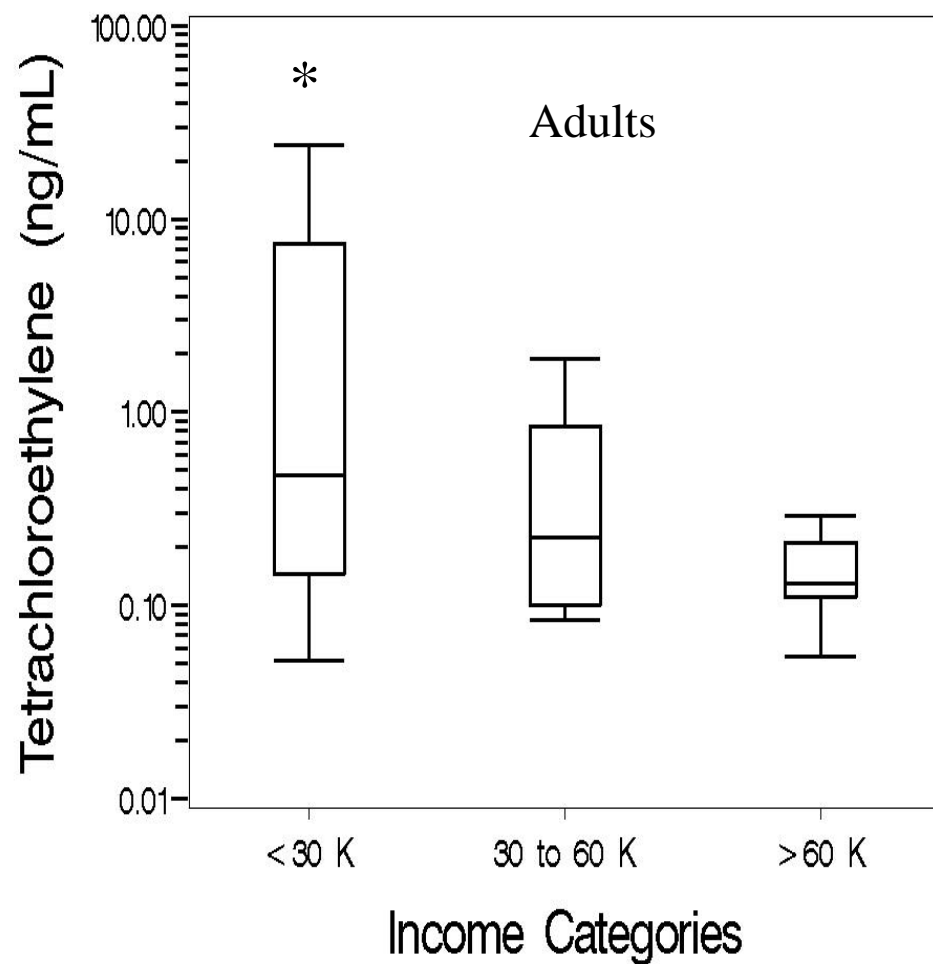
Perc in home breath samples by race/ethnicity



Perc in clinic breath samples by race/ethnicity



Perc in blood samples by income



Perc in blood samples by race/ethnicity

