

- The rate within the African American population shows a steady decrease, but is still statistically higher than comparison groups, Chi square 63.83, DF 2,  $p < 0.0001$  in 2000; 2003, chi square 10.07, DF 2,  $p < 0.0065$
- African Americans made up 48.10% of all cases; Caucasians, 19.62%; Hispanics, 17.85%
- The reason for the Hispanic drop-off from 1999 to 2000 is unclear and requires further study

- The overall median age of a severe lead poisoning case was 2.5 years old; mean, 2.0
- Over 30% of all male cases are over the age of 5; females, only 19%
- Males make up 60% of all cases
- The data show equally steady declines over the five year period for both genders

## Discussion

- Severe lead poisoning, using inpatient admissions as a signature, does still exist in the U.S
- The HCUP data source is a source of identifying potentially avoidable events and for tracking trends
- The 11 states show steady declines in African American and 0-4 year old populations, decreasing disparities,
- Urban centers still demonstrate higher rates
- Potential weaknesses: HCUP data does not include blood lead levels or outpatient cases
- This study compares well with studies using NHANES data: MMWR (2003), SS 10, found that the number of children age 0-3 showed declines in elevated blood lead levels from 1997-2001; MMWR (2005), 54, found that African Americans had the highest blood lead levels from 1999-2002; however, this group also showed the greatest declines in blood lead levels

## Severe Lead Poisoning: A Changing Demographic Profile?

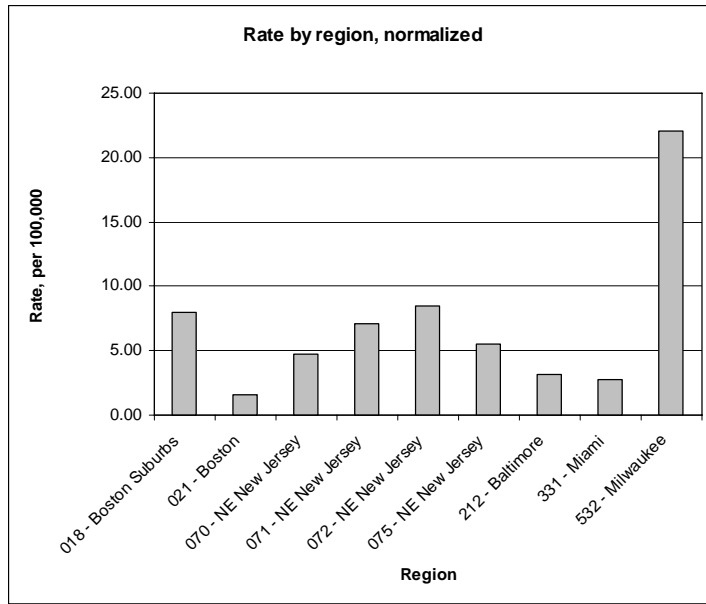
Robert J. Borotkanics, MPH<sup>✧</sup>  
 rborotka@jhsph.edu | 443.287.4913

## Background

- The study examined lead poisonings that result in inpatient admissions, which is generally considered a severe form of lead poisoning
- Severe lead poisoning still occurs in the U.S.
  - E.g., Death of a four year old boy, Minnesota, 2006
- Traditionally associated with specific neighborhood characteristics
  - Inner city, block groups
  - Neighborhoods with lower housing value
  - Houses built before 1950
  - Greater population densities
  - Lower rates of owner-occupied housing
- Also associated with specific demographics
  - African Americans
  - Less educated
- Recent imports - toys made in china - tainted with lead have increased the public's awareness of lead, including its risks and effects

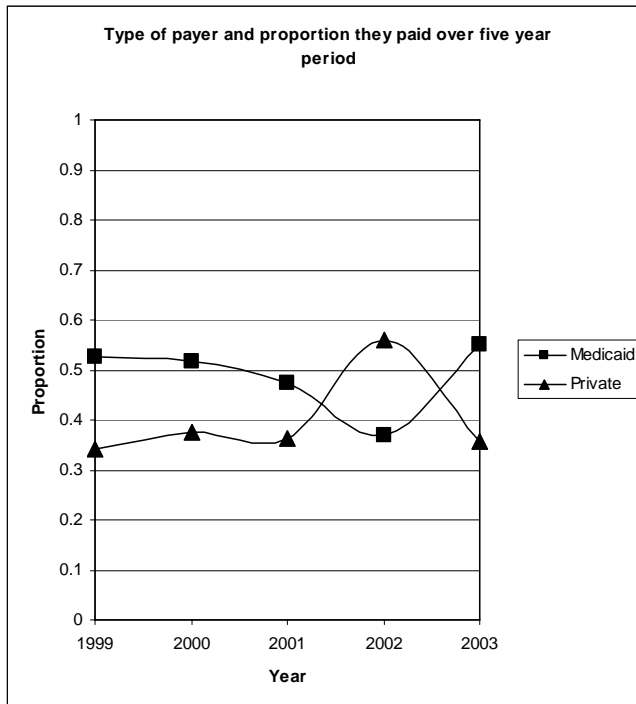
## Study Goals

1. To what extent does severe lead poisoning occur in the U.S.?
2. Who is most affected?
3. Where do the cases tend to occur?
4. What are the medical charges associated with treatment?
5. Who is paying for treatment?



Studied 11 States:		
Arizona	Colorado	Florida
Iowa	Massachusetts	Maryland
New Jersey	Oregon	Utah
Washington	Wisconsin	

- Of the states studied, urban centers and large metropolitan areas showed the highest rates
- The rates shown to the left are adjusted for population density, using U.S. Census data
- Regions are defined as an area represented by the first three digits of a zip code
- The 532 region demonstrated the greatest improvements, driven by declines of severe lead poisoning in the African American population
  - This region's African American rate in 1999 was 16.7 per 100,000; 2003, 5.39 per 100,000
- NE New Jersey regions have experienced general population shifts, which could potentially impact the rates of those racial/ethnic groups impacted by severe lead poisoning in the future
  - Caucasian population has declined from approximately 1.4 million in 1999 to 1.1 million in 2003
  - Hispanic population has increased from 542,000 in 1999 to 623,000 in 2003



- Medicaid pays for most admissions, closely followed by private insurers
- Median charge of treatment was \$8,420
- Median length of stay was 5 days

Who Paid	
Payer	Percent
Medicare	2.95
Medicaid	49.11
Private	39.32
Self Pay	6.02
No Charge	0.59
Other	2.01

Charges, age & race/ethnicity breakouts of select states

State	Total Cases	Total Estimated Charges	Age			Race/Ethnicity			
			0-4	6-17	18 and up	White	Black	Hispanic	Other
Florida	61	\$513,620	44.26%	22.95%	26.23%	31.67%	46.67%	18.33%	*
Iowa	43	\$362,060	81.40%	0.00%	*	72.00%	24.00%	0.00%	0.00%
Massachusetts	112	\$943,040	84.82%	*	*	33.64%	19.09%	26.36%	11.82%
Maryland	37	\$311,540	29.73%	40.54%	*	21.62%	72.97%	*	*
New Jersey	268	\$2,256,560	86.19%	8.58%	*	15.06%	48.65%	26.64%	6.95%
Wisconsin	282	\$2,374,440	86.43%	9.64%	*	8.54%	61.21%	8.54%	18.51%

\* Redacted to comply with HCUP privacy requirements