

# Nassau County Department of Health Childhood Lead Poisoning Prevention Program

## Case Analysis of Children with Elevated Lead: 2007-2012

Lead poisoning has been one of the most prevalent environmental hazards for children in the United States since the 1970s.<sup>1</sup> Lead is particularly dangerous to children under the age of six due to the rapid growth and development of their nervous system and their greater lead uptake from the food and water they consume.<sup>2</sup> The most common source of childhood lead poisoning has been lead-based paint in older homes, with the primary exposure pathway being the ingestion of lead-contaminated dust and soil.<sup>3</sup> Following the ban on lead-based paint and leaded gasoline, the prevalence of childhood lead poisoning among children in the United States has dramatically declined since the 1970s, from 78% in 1977-1980 to 1.6% in 1996-2002.<sup>4</sup> Yet, a study found that foreign-born children are more likely to have elevated blood lead levels than the children born in the United States; the study also reveals that immigrant families' use of lead-contaminated products can increase their children's risk of exposure to lead.<sup>5</sup> In an effort to understand how these changes may be affecting Nassau County, the Childhood Lead Poisoning Prevention Program (CLPPP), with the help of the Public Health Associate Program in the Centers for Disease Control and Prevention, conducted a longitudinal study to investigate the patterns of lead exposure in children with elevated blood lead levels ( $\geq 10\mu\text{g/dL}$ ) in Nassau County, New York, from 2007– through 2012.

The number of children with elevated blood lead levels in Nassau County has decreased over the past eight years (see Graph 1). In Nassau County, between 2007 and 2012, 353 children ages 8 months to 16 years, were newly identified with blood lead levels at or above 10 mcg/dl (the level at which New York State requires management) with an average BLL of 16.1 mcg/dl (see Table 1). Males and females were equally affected. More than half of the lead poisoned children were reported to have blood lead levels below 14.9  $\mu\text{g/dl}$  (see Graph 2). Of the cases with identified sources of lead, almost half were exposed to lead via sources other than the traditional sources of lead poisoning such as leaded paint and dust (see Graph 3). Along with the rise of the non-traditional sources in lead poisoning, it was found that children from certain population subgroups were more likely to be exposed to lead than other groups. Asian Indians comprised 13.03% of the lead poisoned children, yet accounts for 2.93% of the entire population in Nassau County; Hispanics/Latinos comprised 27.20% of the total lead poisoned children, yet accounts for 14.59% of the total population in the County (See Graph 4).

The non-traditional exposure risks that were identified included: foreign cosmetics (kohl, kajal and surma), imported medicine (ayurvedic medicine and imported vitamins), and foreign household items (molcajete

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<sup>1</sup> Guidelines for the Identification and Management of Lead Exposure in Pregnant and Lactating Women. Centers for Disease Control and Prevention. 2008.

<sup>2</sup> New York State Task Force on the Prevention of Childhood Lead Poisoning Preliminary Report. 2009. [http://www.health.ny.gov/environmental/lead/exposure/childhood/task\\_force/docs/2009\\_preliminary\\_report.pdf](http://www.health.ny.gov/environmental/lead/exposure/childhood/task_force/docs/2009_preliminary_report.pdf).

<sup>3</sup> New York State Task Force on the Prevention of Childhood Lead Poisoning Preliminary Report. 2009. [http://www.health.ny.gov/environmental/lead/exposure/childhood/task\\_force/docs/2009\\_preliminary\\_report.pdf](http://www.health.ny.gov/environmental/lead/exposure/childhood/task_force/docs/2009_preliminary_report.pdf).

<sup>4</sup> Screening for Lead During the Domestic Medical Examination for Newly Arrived Refugees. National Center for Emerging and Zoonotic Infectious Disease. Centers for Disease Control and Prevention. 2013.

<sup>5</sup> Tehranifar, Parisa, et al. "Immigration and Risk of Childhood Lead Poisoning: Findings from a Case-Control Study of New York City Children." *Am J Public Health*. 2008 January; 98(1): 92-97.

and imported pottery) (see Graph 5). Some of these products are found to contain as much as 80% lead and can enter the body via hand-to-mouth contact and/or absorption through the eyes. While these products are banned for sale in the U.S., many of them still make their way into ethnic retail stores and homes. In addition to the use of these items, the majority of the children and families were found to be recent immigrants from other countries such as India, Pakistan, Bangladesh, and the Central America or have visited those countries recently (see Graph 5).

Ages of the children at their first blood collection varied widely, from 8 months of age to 16 years of age, with almost half of them being tested at ages 2 years or older (Graph 6). Average blood lead level (BLL) for children older than 2 years is 16.7 µg/dL, similar to the overall average BLL of 16.1 µg/dL. The case review also shows that nearly 60 percent of the older children (older than 2 years) are Asian Indian, Hispanic/Latino, or Black/African American (Graph 7).

In summary, this research confirms that the sources of lead hazards have diversified over time and some populations seem to be exposed to the new sources more frequently. Years of federal, state, and local lead poisoning prevention measures have resulted in a decline in the number of children with elevated blood lead levels and an increase in public awareness for lead poisoning. Because even low levels of lead below 5 µg/dL in blood are shown to irreversibly affect IQ, ability to pay attention, and academic achievement, a greater focus on primary prevention of lead exposure is essential.<sup>6</sup> In fact, CDC has recently lowered its reference level of children's blood lead level from 10 µg/dl to 5 µg/dl.<sup>7</sup>

Childhood lead poisoning remains an on-going concern for children nationwide. Recognizing the changes in the pattern of children's lead exposure, the Nassau County Department of Health is working to develop new strategic interventions in order to reduce dangerous lead sources in children's environments before they are exposed. Some of the interventions being developed include:

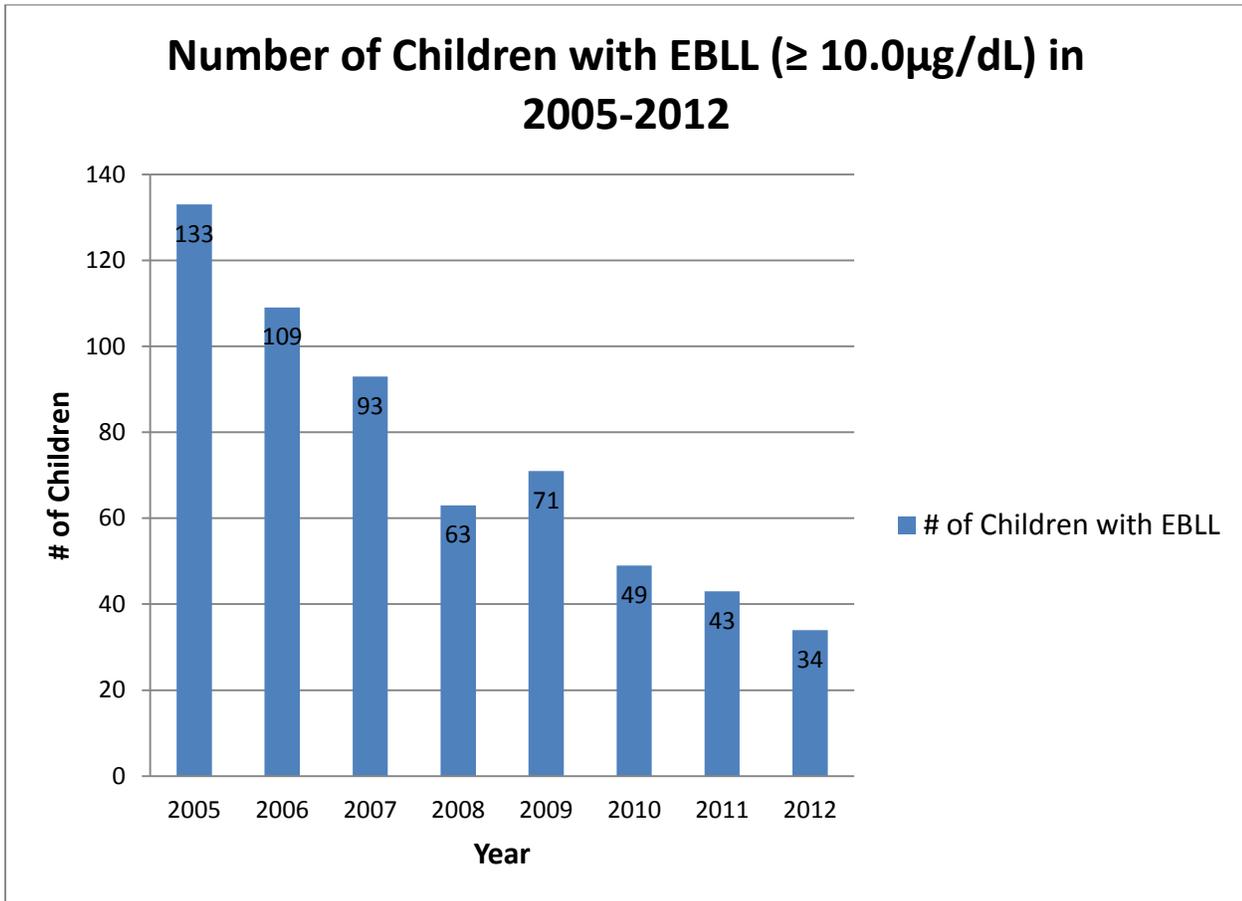
- Increasing awareness of pediatricians of current lead screening and testing laws, sources of lead and treatment recommendations.
- Increasing awareness of childhood lead poisoning in pregnant women by targeting obstetricians and gynecologists in local communities.
- Developing culturally competent partnerships to assist in providing education to at-risk populations.

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<sup>6</sup> Childhood Lead Poisoning. World Health Organization. 2010.

<sup>7</sup> "What Do Parents Need to Know to Protect Their Children?" The Centers for Disease Control and Prevention. 2012.

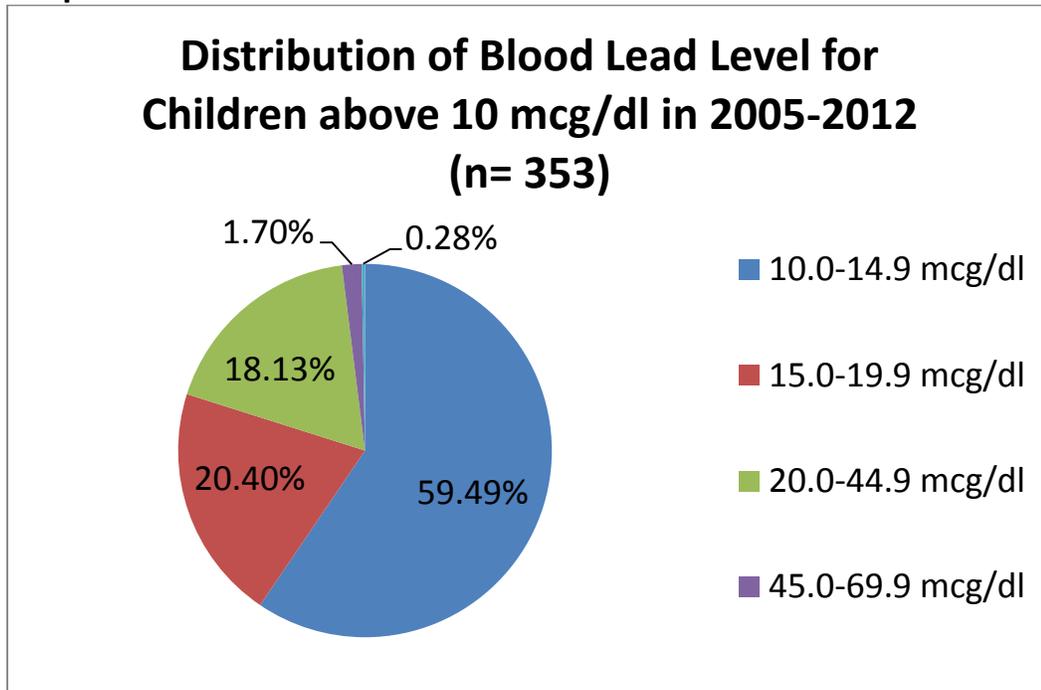
**Graph 1**



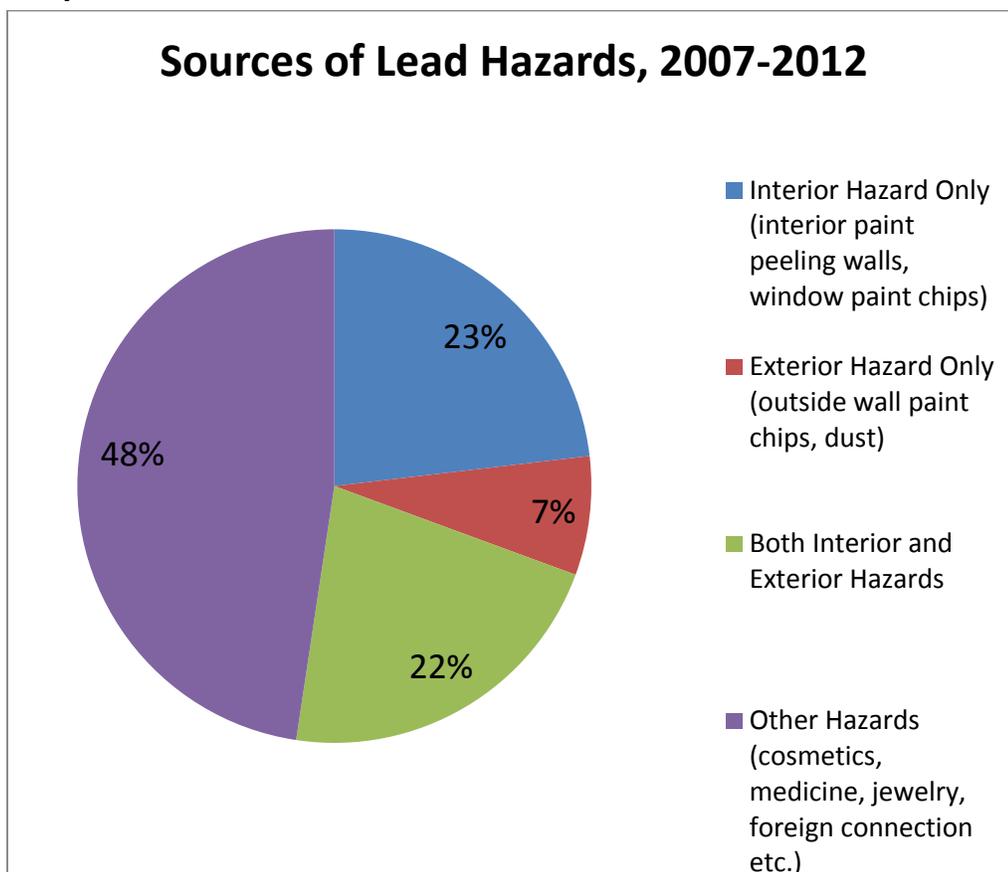
**Table 1: Overview of Children with Lead Poisoning in Nassau County, NY (2007-2012)**

	Count
# of Test Results	201,498
# of Test Results less than 5.0	193,143
# of Test Results 5.0 – 9.9	5,259
<b>Total Number of Children with Elevated Lead Level (<math>\geq 10.0\mu\text{g}/\text{dL}</math>)</b>	<b>353</b>
10.0 – 14.9	210
15.0 – 19.9	71
20.0 – 44.9	64
45.0 – 69.9	6
Greater than 70.0	1

Graph 2

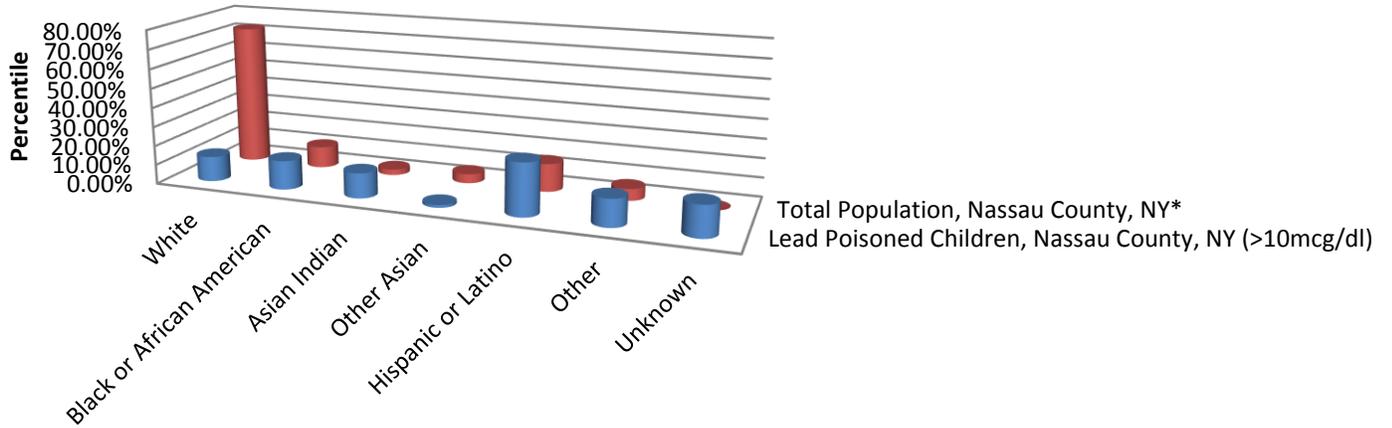


Graph 3



**Graph 4**

### Comparison of Childhood Lead Poisoning Distribution by Race/Ethnicity in 2007-2012 (>10 mcg/dl)

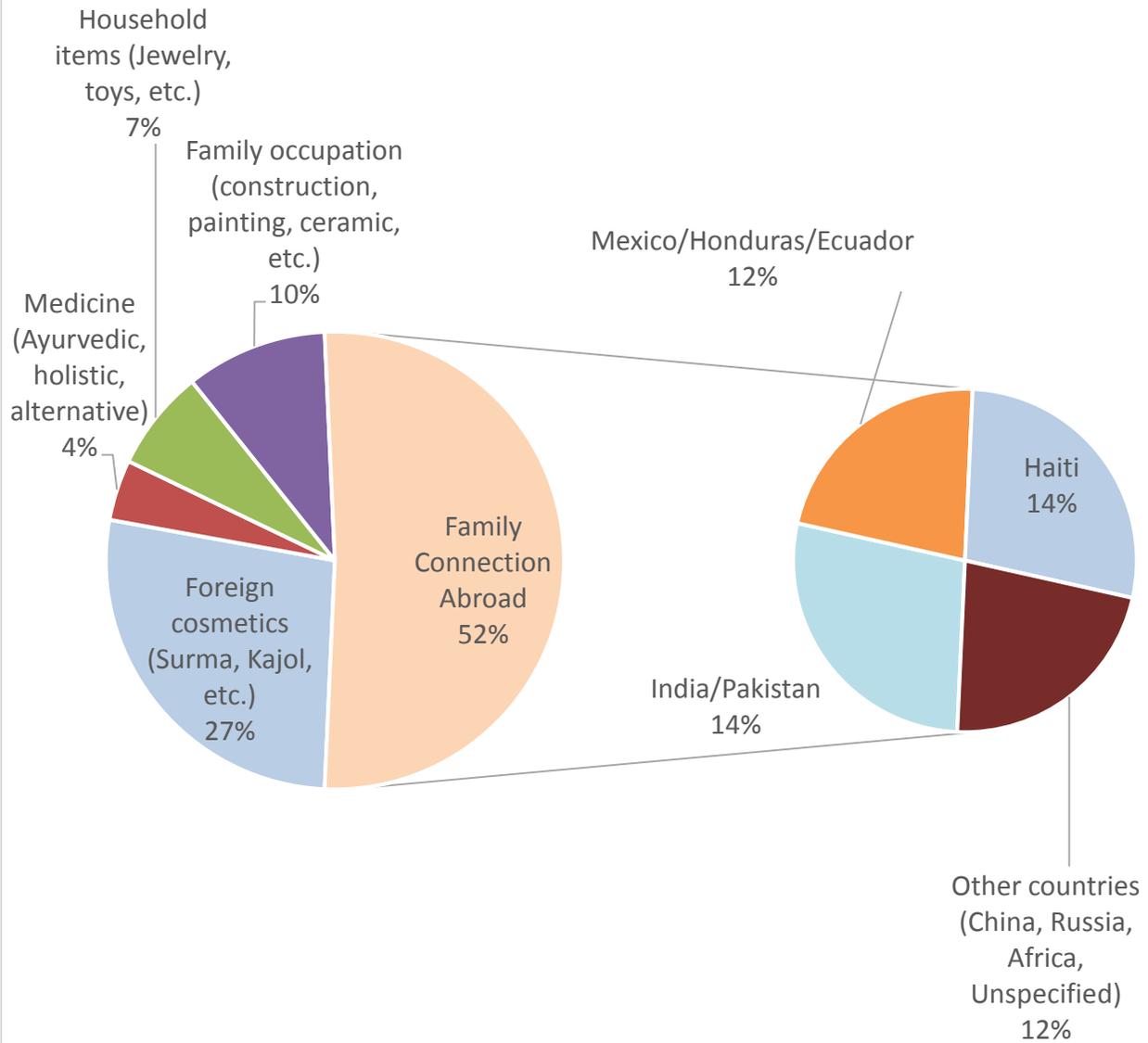


	White	Black or African American	Asian Indian	Other Asian	Hispanic or Latino	Other	Unknown
■ Lead Poisoned Children, Nassau County, NY (>10mcg/dl)	13.03%	15.01%	13.03%	1.42%	27.20%	14.16%	16.15%
■ Total Population, Nassau County, NY*	72.72%	11.11%	2.93%	4.82%	14.59%	6.08%	0.00%

\*2010 U.S. Census

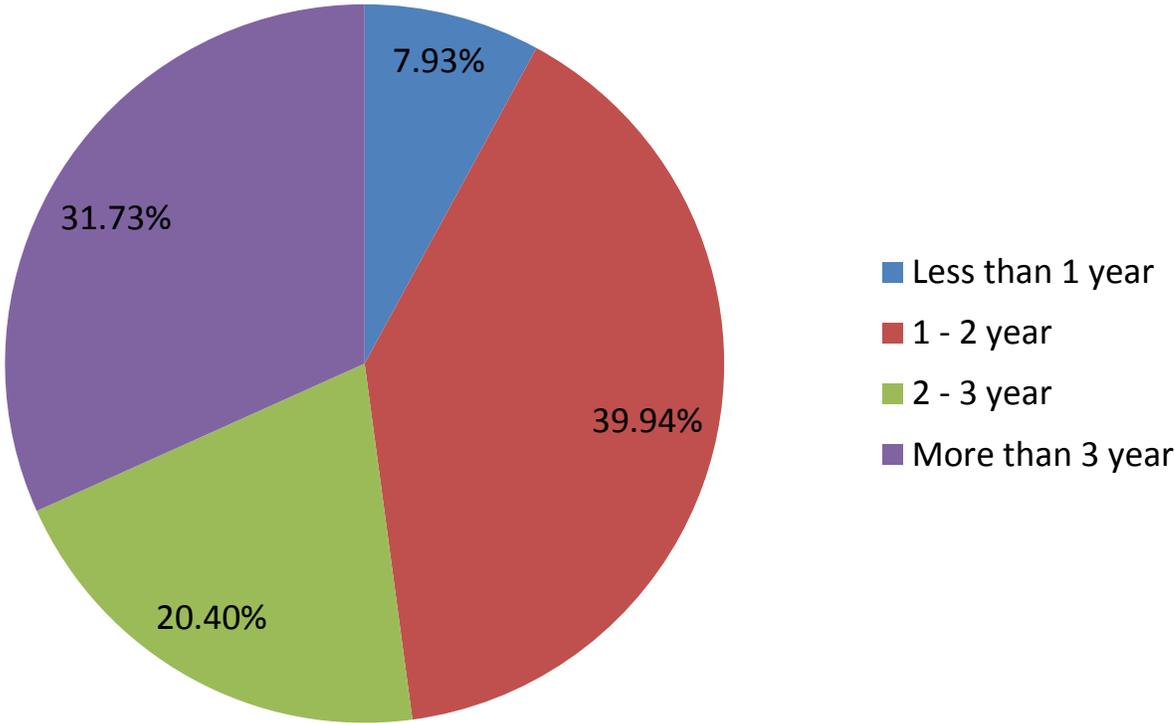
Graph 5

## Breakdown of Other/Non-Traditional Lead Hazards



Graph 6

### Distribution of Children's Age at First Collection Date



**Graph 7**

### Distribution of Race/Ethnicity for Older Children (>2 yr)

