Nassau County Department of Health

Childhood Lead Poisoning Prevention Program (CLPPP)

Case Analysis of Children with Elevated Lead: 2013-2016

A Continuation of the 2007-2012 Case Analysis

Introduction:

Childhood lead poisoning is still of great concern and the Nassau County Department of Health is an ongoing innovator in developing strategies to reduce the potential of lead exposure including:

- Generating public health awareness as well as treatment strategies for pediatricians to successfully manage such children until EBLL have been lowered successfully.
- Rigorous environmental screening to locate the source of exposure and educating families on foreign products which may lead to exposure as well as U.S. manufactured replacements for such items.
- Targeting "at-risk" non-traditional lead exposure sources within Nassau County.

It is important to remain vigilant of potential sources of lead exposure, particularly for our children. The result of these 2 studies over a 10-year period will demonstrate a shift in the sources of lead poisoning.

Background:

Approximately 4 million households in the United States have children living in them with elevated blood levels (EBLL).[1] Lead exposure affects every organ system within the body, and often does not show any obvious symptoms until later stages of exposure. Damage to the central nervous system (CNS) which includes the brain and spinal cord are of particular concern. Lead along with many other heavy metals is defined as a neurotoxin, which leads to impairments in neurological and behavioral functions. Often times these impairments are permanent and irreversible.[2] The dangers of lead toxicity are of particular concern to young children under the age of six due to their rapidly growing central nervous system, as well as high consumption of food and water during these years.[3] Thus, any level of toxicity is of great concern as a child's development can be affected. There are many ways in which a child can be exposed to lead hazards many of which includes interior hazards such as lead-based paint in older homes as well as exterior hazards which includes lead contaminated dust and soil. As a result of the ban of lead-based paint in the United States in 1978, there has been a significant reduction in the prevalence of lead poisoning in children from 78% in 1977-1980 to 1.6% in 1996-2002.[4] However, lead poisoning is still a concern within the United States and an increasing component of the hazardous exposure is coming from immigrant families' use of lead-contaminated products which leads

[1] https://www.cdc.gov/nceh/lead/default.htm Accessed 11/16/2018
[2] http://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health Accessed 11/20/2018
[3] 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.
[4] 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.

to an increase risk of exposure to their children[5]. Recognizing this growing concern, the Nassau County Department of Health, Childhood Lead Poisoning Prevention Program (CLPPP) has conducted chart reviews over 2 separate time periods to understand the changing characteristics of childhood lead poisoning (lead levels of ≥ 10.0 mcg/dL) in Nassau County children.

This report is a continuation and extension of a prior report which reviewed all records of lead poisoned children in Nassau County from 2007-2012. The prior report is available at: https://www.nassaucountyny.gov/DocumentCenter/View/8002). This report will focus on chart reviews of lead poisoned children in Nassau County identified between 2013 and 2016.

Current Status of Childhood Lead Poisoning in Nassau County:

The number of children with elevated blood lead levels in Nassau County has been decreasing over the past 12 years, until 2016 when we see an increase in the number of newly identified children with lead levels greater than 10 mcg/dL (Table 1). In Nassau County, between 2013 and 2016-the focus of this report, there were 106 children who were newly identified with blood levels ≥ 10.0 mcg/dL, the level at which New York State requires case management. Findings include the following:

- About 43% of the children had levels between 10-14.9, about 26% between 15-19.9, about 29% between 20-44.0 and 1% over 45 (Table 2).
- The lead level at which the child is diagnosed is higher in the 2013-2016 time period as compared to the earlier time period (Table 2).
- The average BLL of the children from 2013-2016 was 17.6 mcg/dL as compared with an average BLL of 16.1 mcg/dl from 2006-2012.
- More males were found to be affected than females (58% vs. 42%) as compared to our prior analysis where males and females were equally affected.
- The age at first test varied widely, from birth to 17 years with more than half (63%) over the age of 2 years at diagnosis.

Traditional vs. Non-Traditional Lead Poisoning Sources:

Excluding cases where no lead hazard could be identified, 55% of cases were exposed to lead via sources categorized as 'traditional' such as leaded paint and dust. These hazards can be considered interior hazards, exterior hazards, or a combination of both (Table 3). The remaining 45% of cases were exposed to lead via sources categorized as 'non-traditional'. The hazards identified in the 'non-traditional' category included: foreign cosmetics (surma, kajol, or kohl), imported medicine (ayurvedic, homeopathic/alternative), foreign household items (eating utensils, dishware, molcajete, and pottery), family occupation as well as food products of foreign origin (turmeric, spices, candy). Although U.S. made products are rigorously tested for lead toxicity, foreign products make their way into the homes of families from ethnic retail stores as well as from family trips overseas. The majority of these foreign products were found to be either cosmetics (48%) and food items (38%) (Table 4). The 'non-traditional' sources of lead poisoning were further elucidated upon by understanding the origins of these foreign products. We found that over 78% of the foreign products were of South Asian origin (including India, Pakistan, Bangladesh, Nepal, and Sri Lanka) and approximately 18% were of

Mexican origin (Table 5). These results are similar and consistent with our 2007-2012 analysis with the percentage of cases exposed via 'non-traditional sources' remaining stable.

Description of Race/Ethnicity:

To better understand the racial/ethnic component of lead poisoning within Nassau County, further analysis was done to understand the percentage of reported children of a specific race/ethnicity with EBLL compared to Nassau County racial/ethnic demographics. We found that the largest reported ethnic group was from the South Asian community making up over 37% of children with EBLL and yet account for only 3% of the population in Nassau County. The Hispanic community made up approximately 28% of children with EBLL and yet account for only 13% of the population in Nassau County (Table 6). These results are similar to our prior report.

Summary:

- Although we see a decreasing trend in children with lead poisoning, we are seeing an increase in the lead level at which they are identified.
- About half of the children with EBLL are exposed via 'traditional' sources such as lead-based paint, and half from 'non-traditional' sources of lead showing a shift to a more cultural exposure to lead poisoning in Nassau County.

These shifts in the source of lead poisoning requires changes in intervention strategies to prevent and treat childhood lead poisoning in today's environment in Nassau County.

The Health Department would like to acknowledge Bahadar Srichawla for assistance with the data analysis and initial drafting of this report.

Table 1

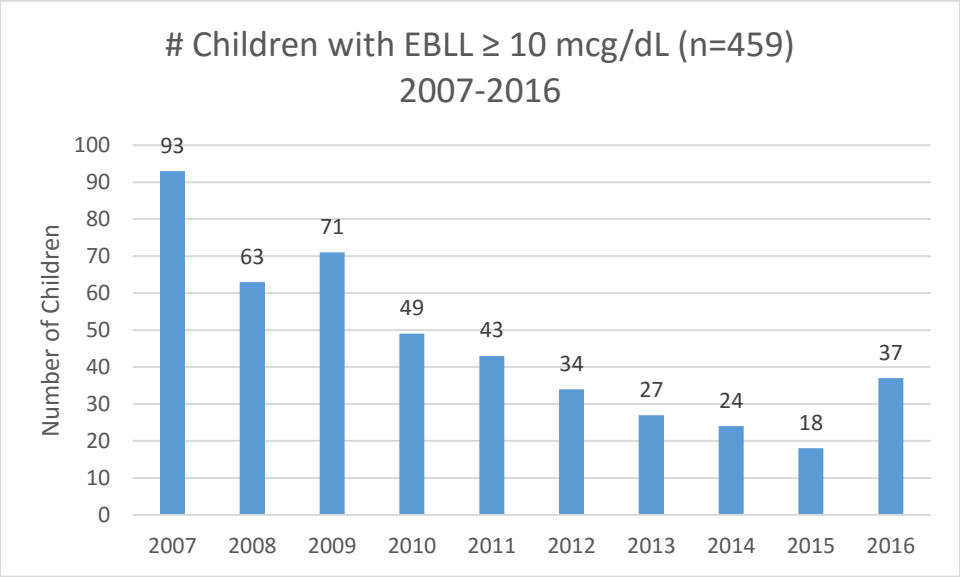


Table 2

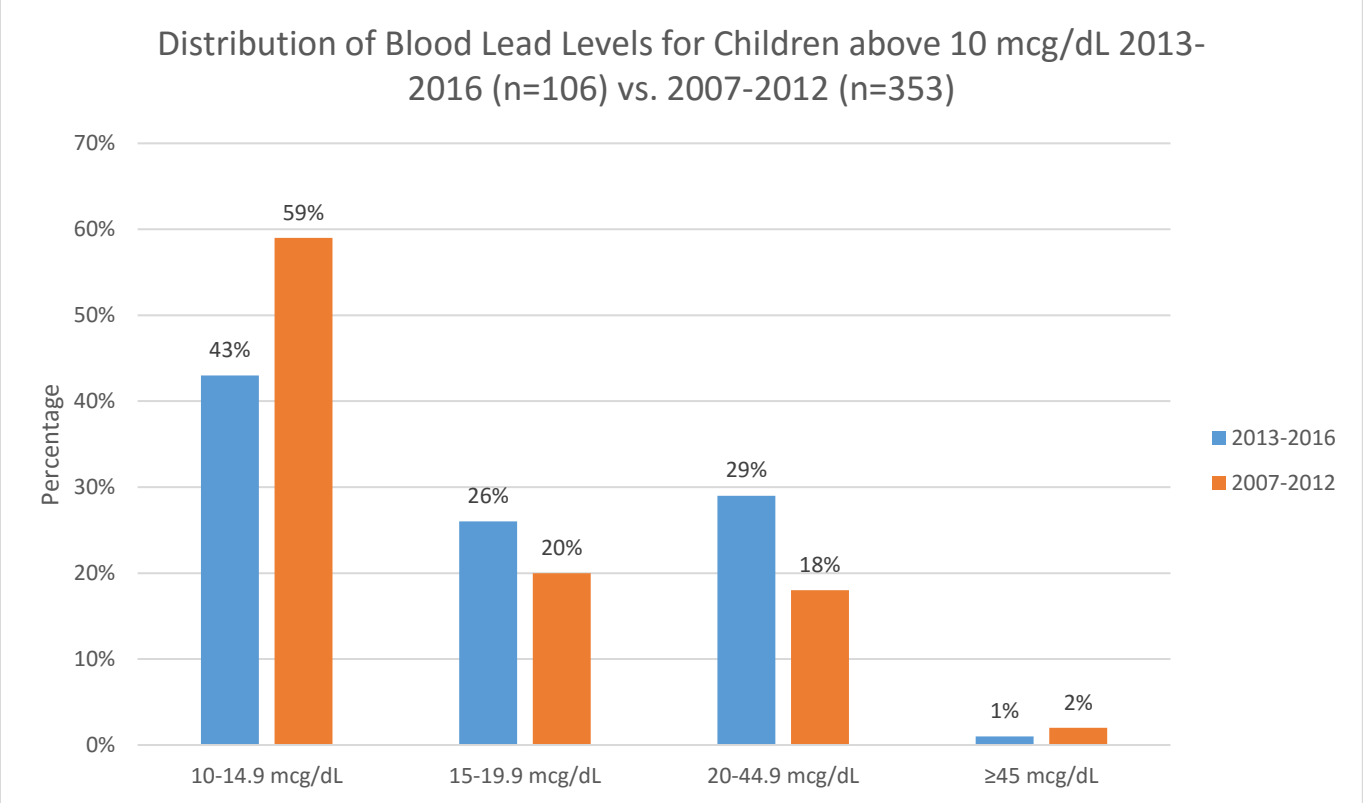


Table 3

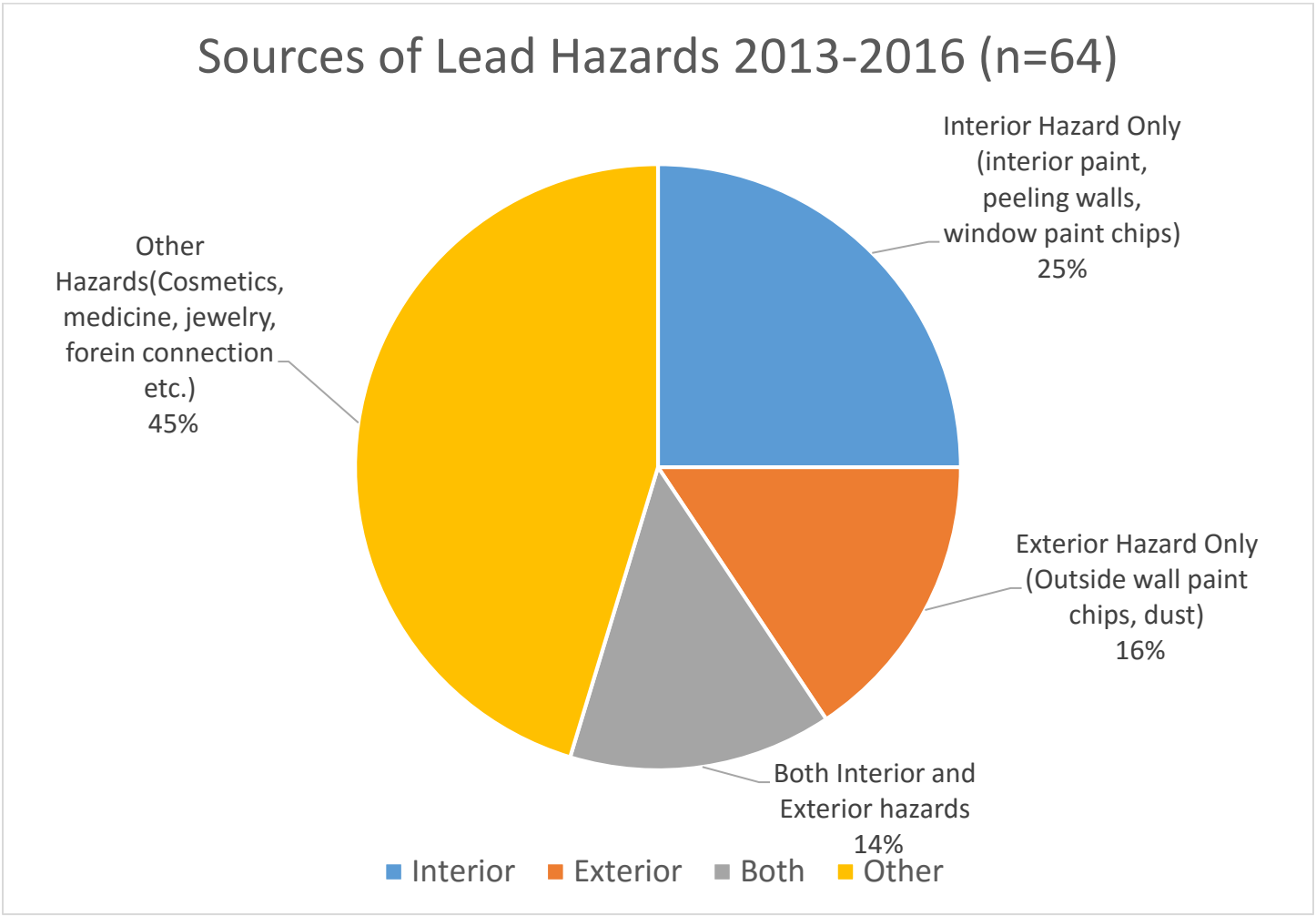

Sources of Lead Hazards 2013-2016 (n=64)
Interior Hazard Only (interior paint, peeling walls, window paint chips) 25%
Exterior Hazard Only (Outside wall paint chips, dust) 16%
Both Interior and Exterior hazards 14%
Other Hazards(Cosmetics, medicine, jewelry, forein connection etc.) 45%
Interior
Exterior
Both
Other

Table 4

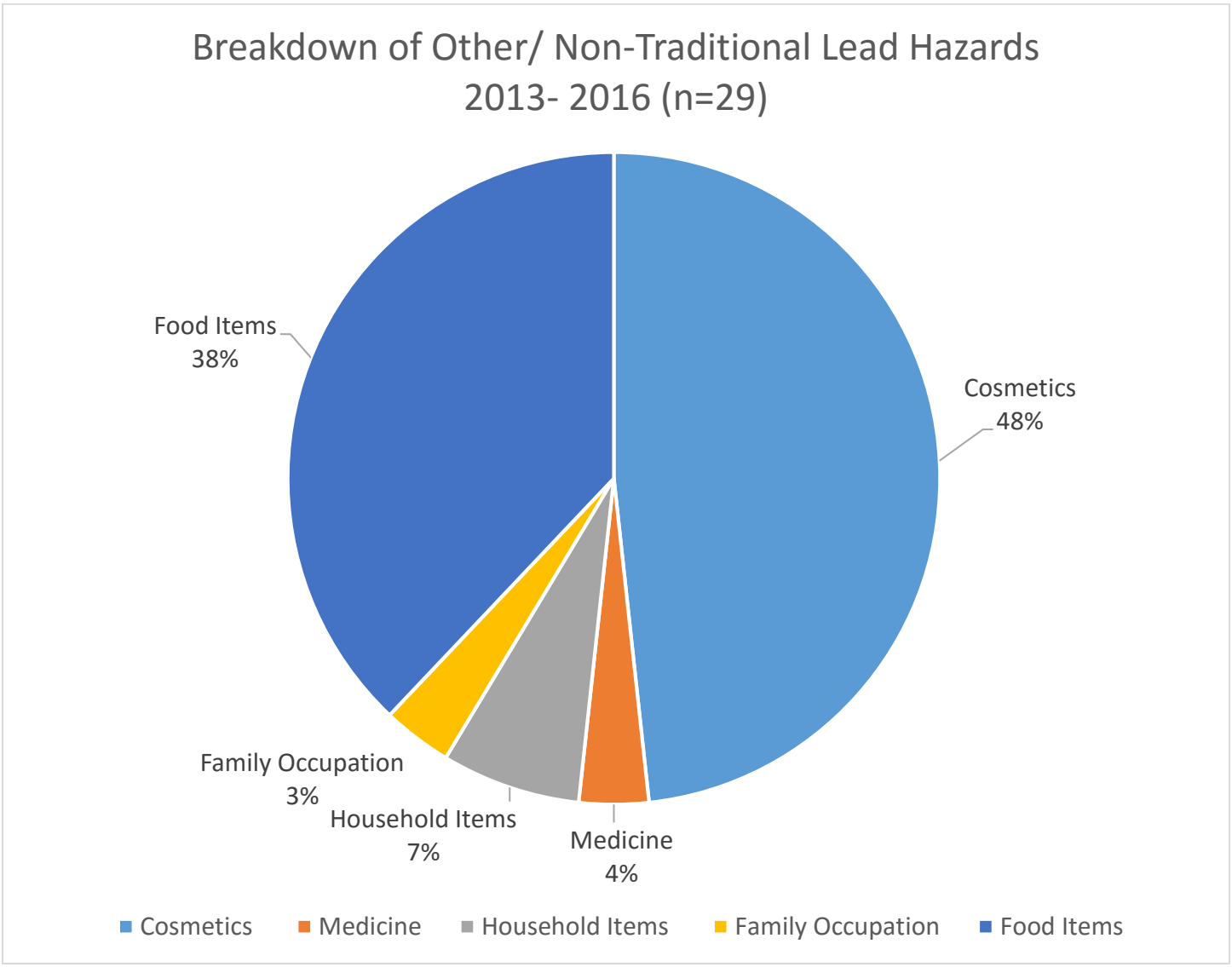

Breakdown of Other/ Non-Traditional Lead Hazards
2013- 2016 (n=29)
Food Items
38%
Cosmetics
48%
Family Occupation
3%
Household Items
7%
Medicine
4%
Cosmetics
Medicine
Household Items
Family Occupation
Food Items

Table 5

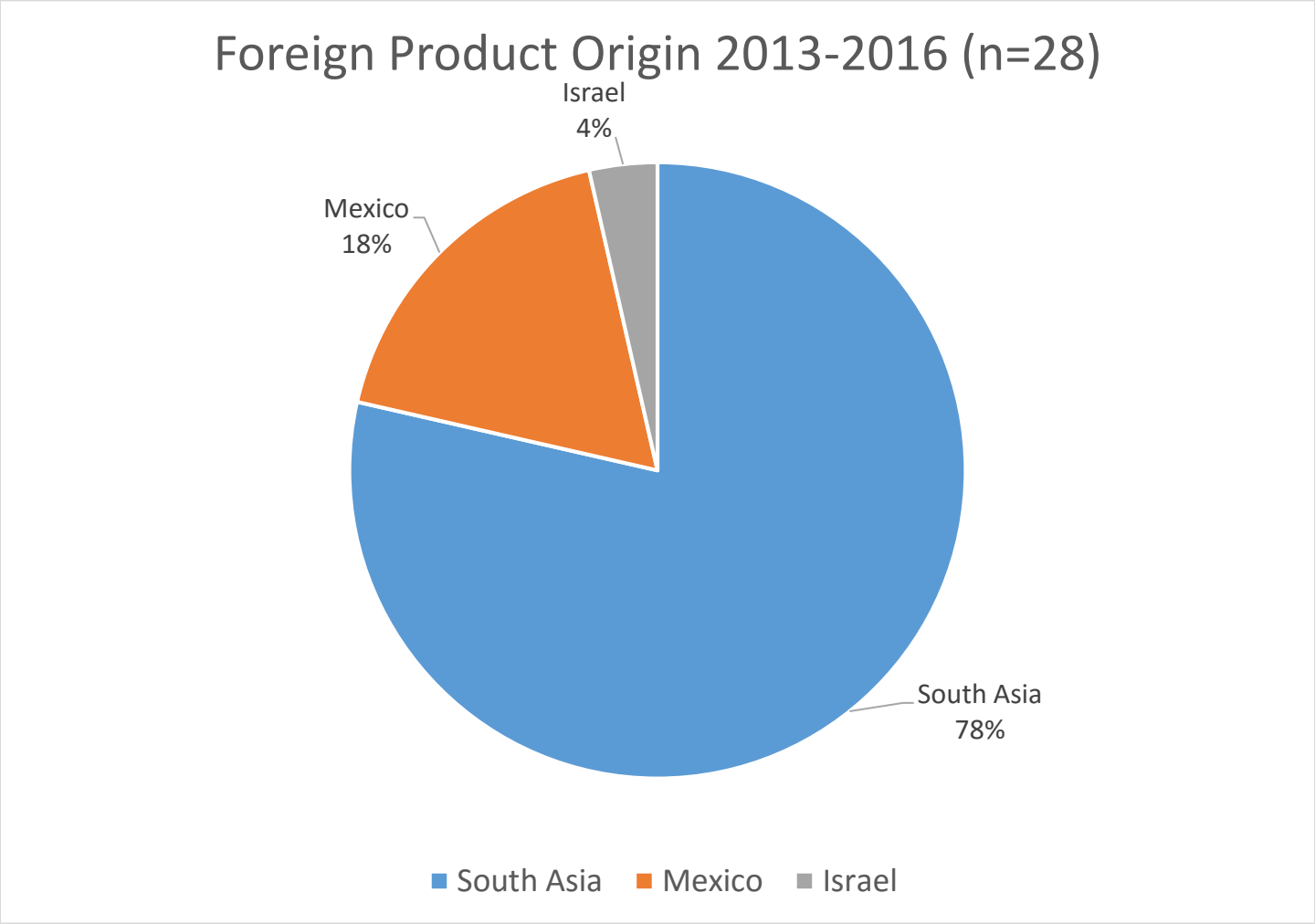
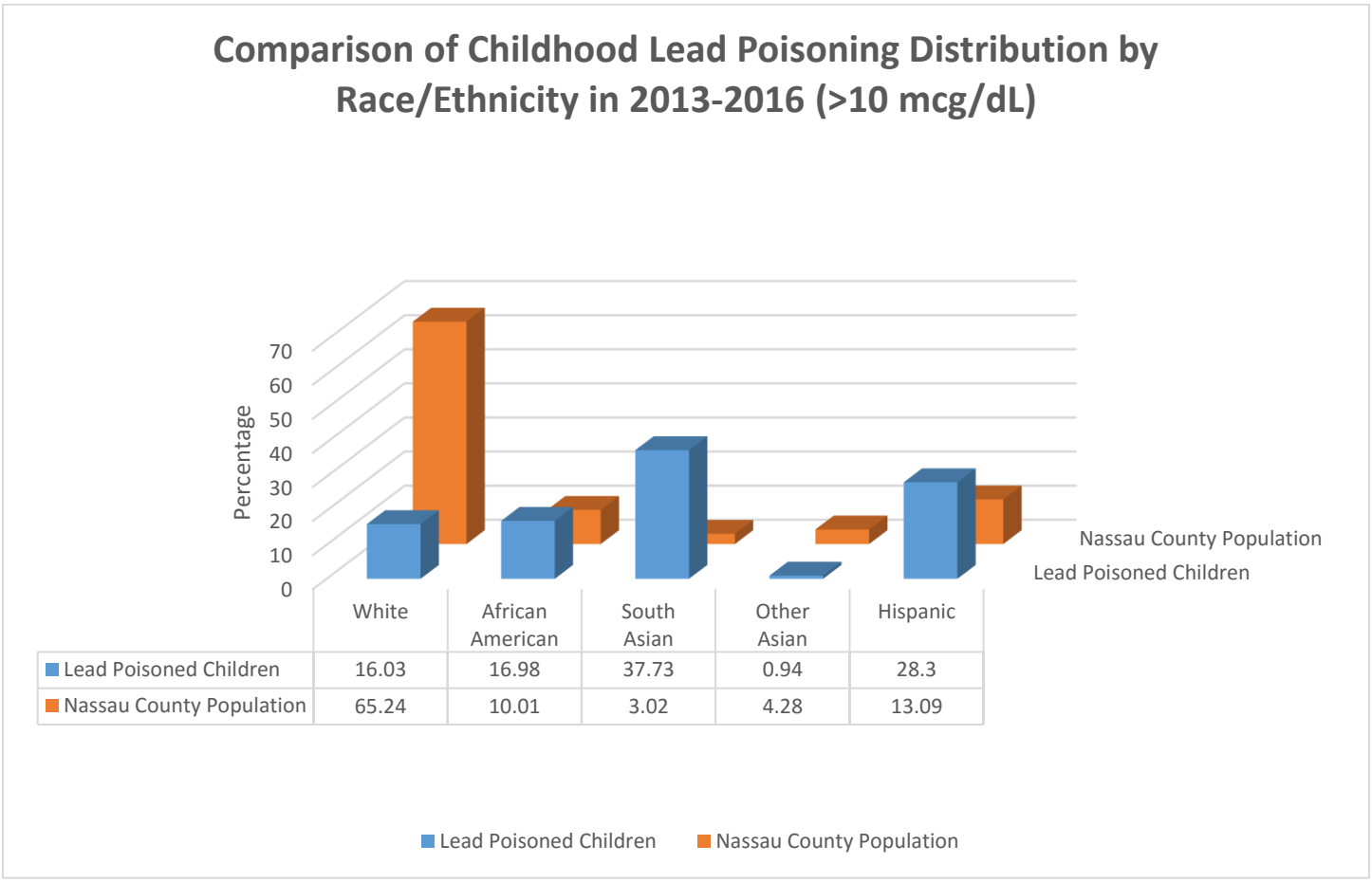

Foreign Product Origin 2013-2016 (n=28)
Israel
4%
Mexico
18%
South Asia
78%
South Asia
Mexico
Israel

Table 6



	White	African American	South Asian	Other Asian	Hispanic
Lead Poisoned Children	16.03	16.98	37.73	0.94	28.3
Nassau County Population	65.24	10.01	3.02	4.28	13.09