

Lead Poisoning in New York City



Annual Data Report 2009

New York City Department of Health and Mental Hygiene

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Mayor

Department of
Health & Mental
Hygiene

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For more information about the Lead Poisoning Prevention Program or the Adult Lead Poisoning Prevention Program of the New York City Department of Health and Mental Hygiene, call 311 and ask for the Lead Poisoning Prevention Program. This report can be accessed at www.nyc.gov/lead.

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Definitions Used in This Report

Lead Poisoning Prevention Program (LPPP): The program providing environmental intervention, care coordination, education, surveillance, and other services to pregnant women and children who have or are at risk for lead poisoning.

Adult Lead Poisoning Prevention Program (ALP): The program providing environmental intervention, care coordination, education, surveillance, and other services to males and non-pregnant women who have or are at risk for lead poisoning. ALP is a part of the Environmental and Occupational Disease Epidemiology Program (EODE).

Blood Lead Level (BLL): The concentration of lead in blood, measured in micrograms per deciliter of blood ($\mu\text{g}/\text{dL}$).

Elevated Blood Lead Level (EBLL): U.S. Centers for Disease Control and Prevention term to describe a BLL greater than or equal to 10 $\mu\text{g}/\text{dL}$. The New York City (NYC) Health Code also defines lead poisoning as a BLL of 10 $\mu\text{g}/\text{dL}$ or higher.

Environmental Intervention Blood Lead Level (EIBLL): The BLL at which care coordination and environmental intervention are initiated for lead-poisoned children in NYC is currently 15 $\mu\text{g}/\text{dL}$ or greater. The NYC Health Code mandates environmental intervention at this level.

Age Groups: LPPP provides services to lead-poisoned children younger than 18 years of age. ALP provides services to adults with lead poisoning 18 years of age and older. Pregnant women usually are identified by ALP and receive services from LPPP regardless of age. Except where specified, data presented in this report refer to these age groups.

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Executive Summary

This report presents data on lead poisoning in New York City (NYC) in 2009 and describes NYC's progress in reducing lead poisoning among children and adults, as well as the continuing challenges to achieving this goal. This report also summarizes the program activities and accomplishments of the Lead Poisoning Prevention Program (LPPP) and the Adult Lead Poisoning Prevention Program (ALP).

Lead Poisoning Prevention Program

LPPP's mission is to prevent and control childhood lead poisoning. To achieve this goal, the program has developed a proactive and comprehensive approach to lead poisoning prevention that combines lead hazard reduction in homes and communities with education and community partnerships. The program systematically tracks NYC's progress in reducing childhood lead poisoning and also uses these data to target interventions to communities at greatest risk of lead poisoning.

LPPP provides important environmental and care coordination services to lead-poisoned children and lead-poisoned pregnant women. The program has intensified its efforts to prevent lead poisonings before they occur. In 2009, LPPP continued to conduct primary prevention inspections to reduce lead hazards in the homes of newborns and young children before lead poisoning occurs, and added activities targeted to children with elevated blood lead levels (BLLs).

Significant Progress, New Challenges in Childhood Lead Poisoning Prevention

Childhood lead poisoning is a serious but preventable public health problem. In young children, exposure to lead can result in long-lasting neurological damage that may cause learning and behavioral problems and lowered intelligence. Pregnant women and their fetuses may also be adversely affected. Preventing exposure to lead is the only effective way to protect children from the long-term consequences of lead poisoning.

NYC has had tremendous success in reducing both the number of children with lead poisoning and the severity of lead poisonings.

- In 2009, there was a 92% decrease in the number of children younger than 18 years of age newly identified with a BLL greater than or equal to 10 µg/dL compared with 1995 (1,634 children in 2009 versus 21,575 children in 1995).

Recent research has shown that BLLs less than 10 µg/dL may cause adverse health effects. In 2009, more than 12,000 children younger than 18 years of age were newly identified with BLLs between 5 and 9 µg/dL. LPPP has responded by changing its prevention messages to health care providers and families to encourage consideration of potential risk exposures at BLLs of 5 µg/dL or greater.

EARLY IDENTIFICATION THROUGH BLOOD LEAD TESTING

Early identification of lead-poisoned children through blood lead testing triggers actions to prevent additional lead exposure. In New York State (NYS), blood lead testing is required by law for all children at both 1 and 2 years of age. NYS also requires health care providers to annually assess lead poisoning risks for young children 6 months to younger than 6 years of age, and test those who are at risk.

In 2009:

- 83% of 1-year-olds and 70% of 2-year-olds were tested.
- 93% of children born in 2006 were tested for lead at least once before their third birthday in 2009; only 50% had been tested at both 1 and 2 years of age.

LEAD-POISONED CHILDREN IN NEW YORK CITY

Although lead poisoning can affect children of all ages, race/ethnicities, and incomes, certain populations are at greater risk for lead poisoning than others, including:

- Children younger than 3 years of age
- Low-income children living in older, deteriorated housing
- Asian, black, and Hispanic children
- Children born outside the United States (U.S.).

In 2009, 512 children younger than 18 years of age were newly identified with an environmental intervention blood lead level (EIBLL) of 15 µg/dL or higher. For children with this level, LPPP provides environmental intervention and care coordination services*. Of these children:

- 86% lived in homes built before 1950.
- About half lived in just 9 of 42 NYC neighborhoods†.
- 42% lived in Brooklyn.
- 64% were younger than 3 years of age.
- 88% were younger than 6 years of age.
- 86% were Asian, black, or Hispanic.
- 19% were foreign-born.
- 76% spent time in homes or other dwellings, such as the home of a babysitter, in which lead-based paint hazards were found during inspection.
- 79% were reported to be enrolled in Medicaid.

Adult Lead Poisoning Prevention Program

ALP's mission is to promote lead poisoning prevention in the workplace and community, and to investigate and track cases of lead poisoning in NYC residents 18 years of age and older. The program works closely with LPPP to identify and prevent adult exposures to non-paint sources of lead, and to identify and provide services to pregnant women with lead poisoning. In 2009, ALP expanded surveillance, data tracking, risk assessment, and education for adults with elevated BLLs.

Successes and Challenges in Adult Lead Poisoning Prevention

The most common cause of adult lead poisoning is occupational exposure to lead in the construction industry. Workers are exposed by breathing lead dust or lead fumes during construction activities that disturb old, lead-based paint, such as renovations, repairs, and demolition. Adults also can be exposed through hobbies or work in other industries that involve metal, paint, pigments, or ceramic glazes that contain lead.

* Environmental intervention blood lead level (EIBLL) is the BLL at which LPPP provides environmental intervention and care coordination to lead-poisoned children. Since August 2004, the EIBLL has been defined as a BLL ≥ 15 µg/dL. From July 1999 to August 2004, the EIBLL was defined as ≥ 20 µg/dL or 2 BLLs of 15 to 19 µg/dL taken at least 3 months apart. The EIBLL has been reduced 6 times since it was set at 60 µg/dL in 1970. In general, the reductions were made in response to emerging evidence of adverse health effects at successively lower BLLs.

† In this report, neighborhoods are defined as those established by the United Hospital Fund, which has aggregated contiguous NYC ZIP codes into 42 neighborhoods. See **Table 5** for list of neighborhoods and ZIP codes.

BLOOD LEAD TESTING IN ADULTS

Both Federal and NYS laws require employers to provide regular blood lead testing for workers who are exposed to lead on the job. In addition, NYS law requires health care providers to assess lead poisoning risk for pregnant women at their initial prenatal visit and to perform blood lead testing for those at risk. Although there was no change in testing among adults between 2008 and 2009, a 14% increase was previously seen between 2007 and 2008 (90,107 adults in 2009 compared with 90,742 adults in 2008 and 81,783 adults in 2007).

NEW YORK CITY ADULTS WITH ELEVATED BLOOD LEAD LEVELS

In adults, exposure to lead can result in short-term effects such as headaches, irritability, stomach cramps, constipation, muscle or joint pain, fatigue, sleep problems, and loss of sex drive. Long-term effects include high blood pressure, nerve disorders, brain damage, kidney damage and reproductive damage. Adverse health effects for pregnant women and their fetuses include high blood pressure, increased risk of miscarriage, premature birth, decreased fetal growth, and future learning and behavioral problems in children exposed to lead in utero.

In 2009:

- There was a 14% decrease in the number of adults identified with BLLs greater than or equal to 10 µg/dL compared with 2008 (749 adults in 2009 versus 868 adults in 2008).
- There were 234 men and 82 women, including 68 pregnant women, identified with BLLs greater than or equal to 15 µg/dL.

Strategies for Continued Progress

NYC has made great progress in reducing lead poisoning. Continued success will require creative strategies and new partnerships that:

- Utilize surveillance data to identify high-risk populations and target prevention efforts to those groups
- Expand efforts to prevent childhood and adult lead poisoning before it occurs
- Eliminate or reduce lead-based paint hazards and other sources of lead in homes, workplaces, and communities
- Promote blood lead testing for children, pregnant women, newborns, and workers through outreach to health care providers, Medicaid Managed Care Organizations, families, employers, and unions
- Educate health care providers, families, workers, employers, and community-based organizations about preventing lead poisoning
- Increase culturally and linguistically appropriate outreach to immigrant populations
- Build partnerships with community-based organizations, housing groups, health care providers, unions, employers, and agencies concerned with child, environmental, and occupational health
- Promote other healthy homes issues including safe pest control, moisture and mold elimination, smoke and carbon monoxide alarms, and window guards.

Childhood Lead Poisoning

Overview of Childhood Lead Poisoning Data in NYC, 2009

Blood Lead Testing in Children

In NYS, blood lead testing is required for children at both 1 and 2 years of age, and for high-risk children from 6 months to 6 years of age. Besides identifying individual children with elevated BLLs, blood lead tests are used to identify groups at high risk and to target Health Department lead poisoning prevention activities.

In 2009[‡]:

- The number of 1- and 2-year-olds tested for lead poisoning increased 5% (171,567 children in 2009 versus 163,534 children in 2008).
- 83% of 1-year-olds and 70% of 2-year-olds were tested for lead poisoning (**Figure 1**).
- Testing rates for 1-year-olds and 2-year-olds showed significant geographic variation.
 - Across boroughs, rates ranged from 61% in Manhattan to 88% in the Bronx (**Figure 2**).
 - Among neighborhoods, rates ranged from 37% in Upper East Side, Manhattan, to 98% in Hunts Point-Mott Haven, Bronx (**Figure 3**).
- 93% of children born in 2006 were tested for lead at least once before their third birthday in 2009; only 50% had been tested at both 1 and 2 years of age.

Fewer Lead-poisoned Children

LPPP provides services to children younger than 18 years of age who are identified with lead poisoning.

In 2009:

- The number of children younger than 18 years of age newly identified with a BLL greater than or equal to 10 µg/dL decreased 12% compared with 2008 (1,634 children in 2009 versus 1,859 children in 2008) (**Figure 4**).
- NYC achieved a 92% decline in the number of children with lead poisoning since 1995, when more than 20,000 children younger than 18 years of age were newly identified with a BLL greater than or equal to 10 µg/dL (**Figure 4**).

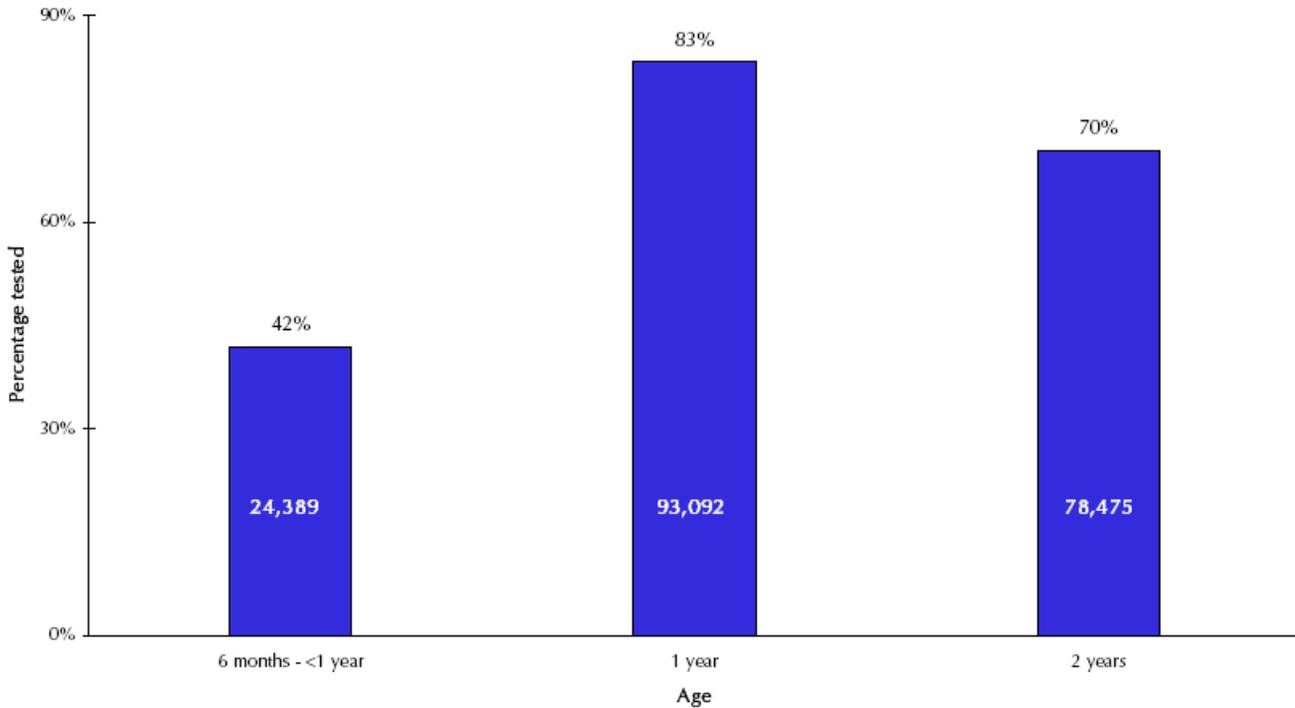
Cases of severe lead poisoning have also declined dramatically since 1995. Children newly identified with BLLs greater than or equal to 45 µg/dL require immediate health care intervention and may require hospitalization to receive chelation, a treatment that removes lead from the body. In 2009, there were 21 children younger than 18 years of age newly identified in this group (**Figure 5**).

Increasing Attention to Lower Blood Lead Levels

Recent research shows that BLLs less than 10 µg/dL may cause adverse health effects. Significant declines in childhood lead poisoning have allowed NYC to increase its attention to lower BLLs. Although NYC has made tremendous progress in reducing lead poisoning, these lower levels are LPPP's next challenge. In 2009, 12,039 children younger than 18 years of age were newly identified with BLLs between 5 and 9 µg/dL.

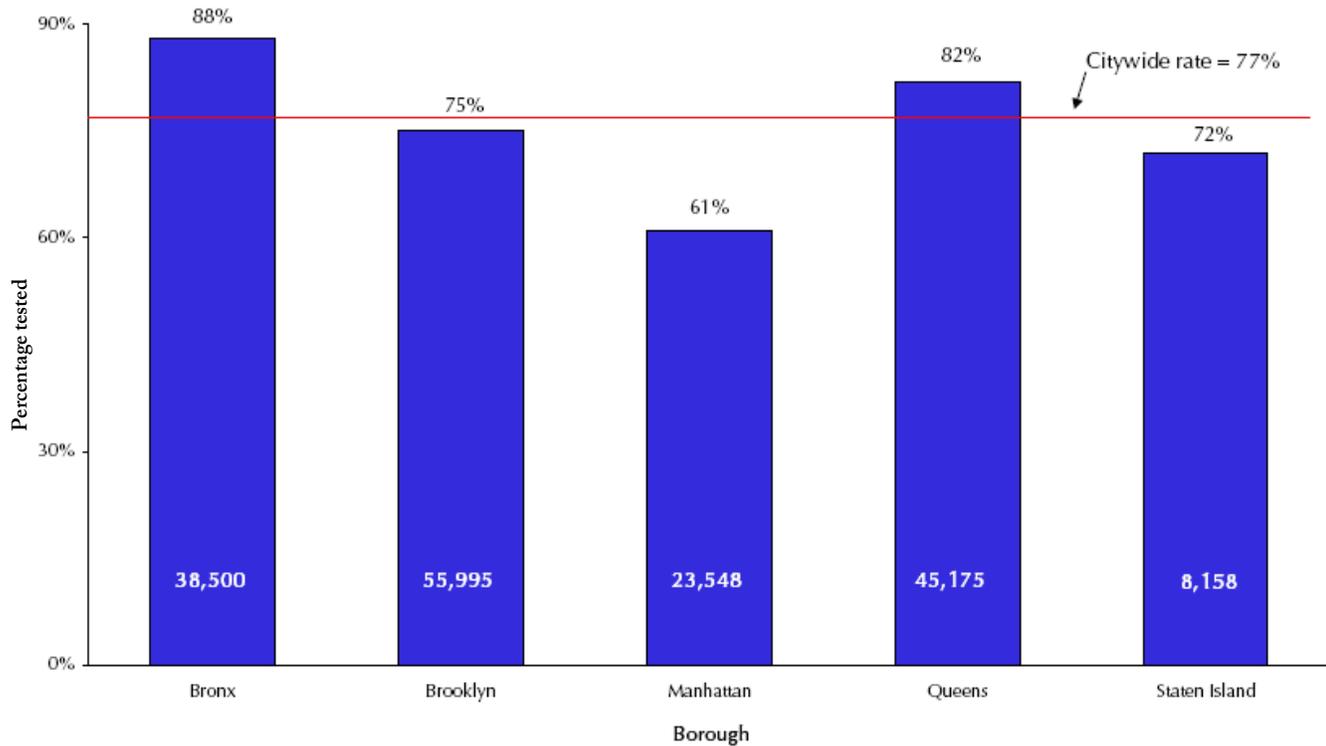
[‡] Numbers from the intercensal population estimates for 2007 were used to calculate the percentage of children tested for lead poisoning. Previous reports used population numbers from Census 2000. Comparing these two population sources, the number of 1- and 2-year-old children has increased 5% citywide between 2000 and 2007. The most substantial increase has been in the borough of Manhattan, where the number of 1- and 2-year-old children has increased 30% between 2000 and 2007.

Figure 1. More Than Half of 1-Year-Old and 2-Year Old Children Were Tested for Lead Poisoning



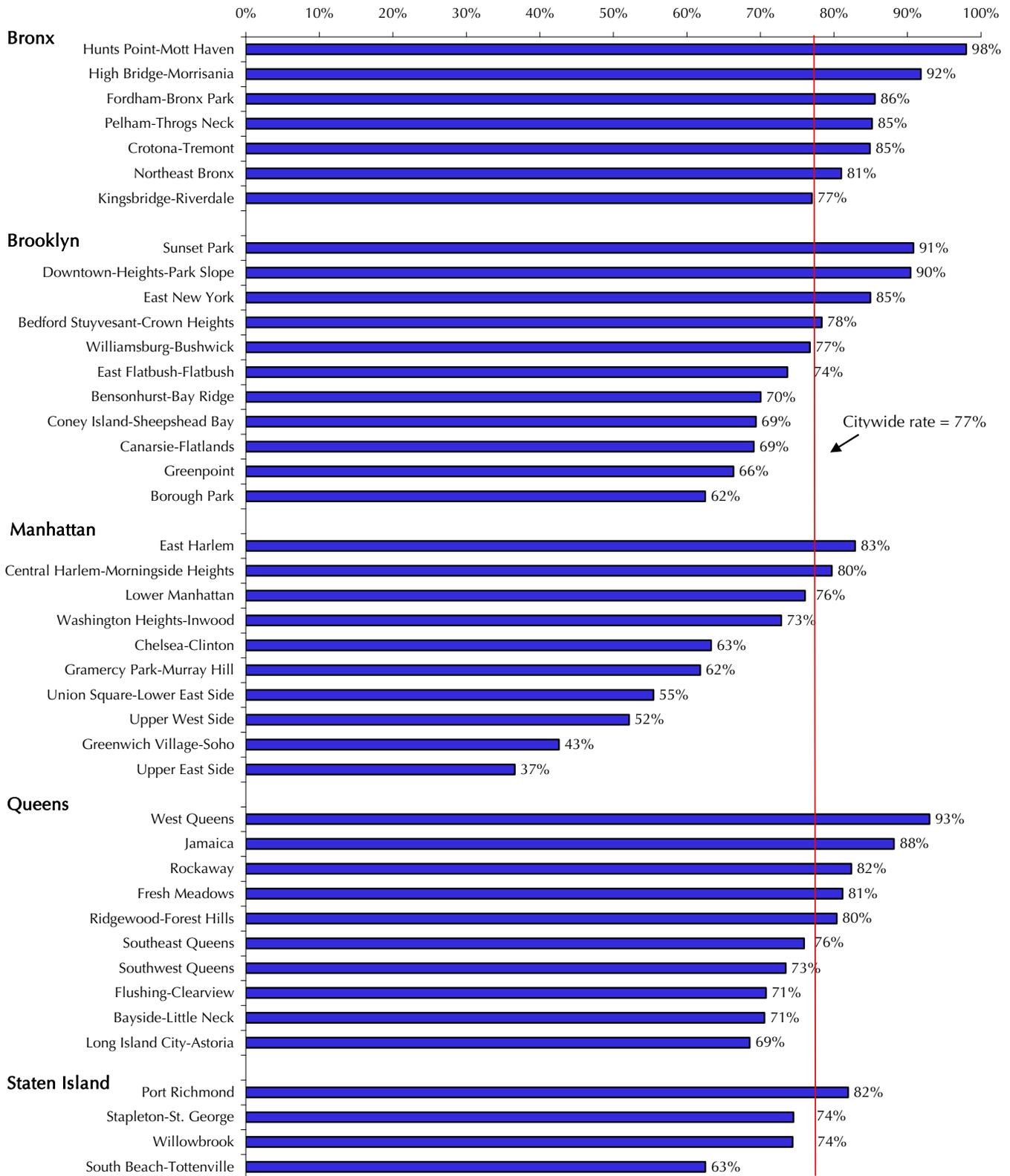
Number and percentage of children, ages 6 months to less than 3 years, tested for lead poisoning, by age: NYC, 2009. Sources: NYC DOHMH LPPP and NYC DOHMH BES/US Census Bureau Intercensal Estimate 2007.

Figure 2. Percentage of Children Tested for Lead Poisoning Varied by Borough



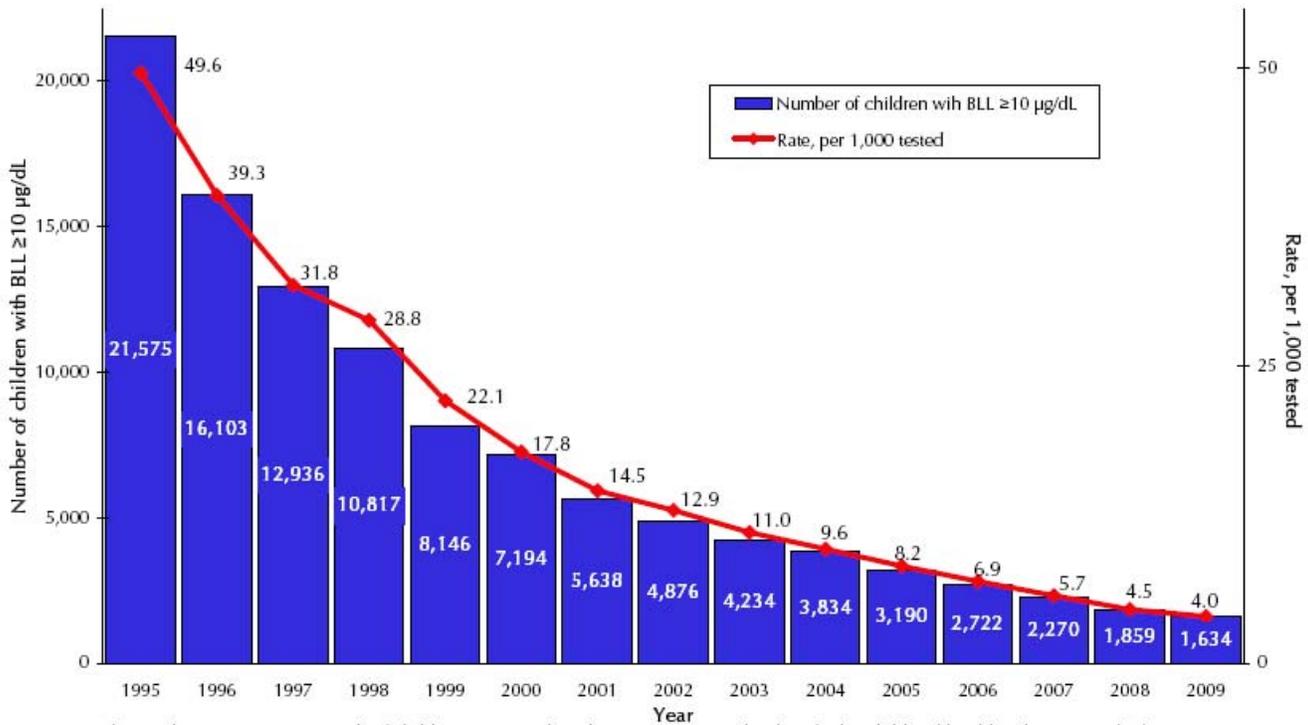
Percentage of children, ages 1 year to less than 3 years, tested for lead poisoning, by borough: NYC, 2009. NYC DOHMH LPPP and NYC DOHMH BES/US Census Bureau Intercensal Estimate 2007.

Figure 3. Percentage of Children Tested for Lead Poisoning Was Higher in Some Neighborhoods



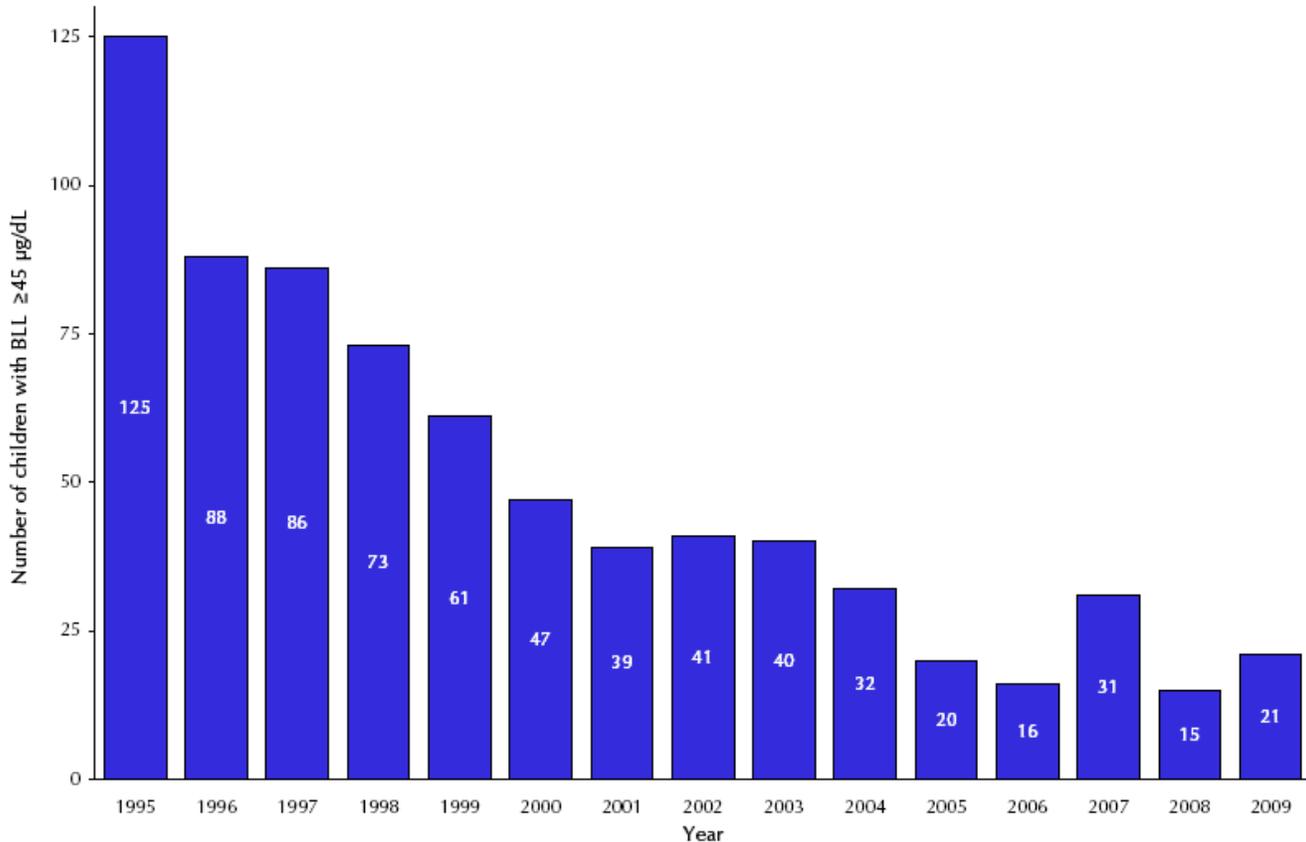
Percentage of children, ages 1 year to less than 3 years, tested for lead poisoning, by United Hospital Fund Neighborhood: NYC, 2009.
Sources: NYC DOHMH LPPP and NYC DOHMH BES/US Census Bureau Intercensal Estimate 2007.

Figure 4. Steady Decline in Number of Lead-Poisoned Children



Number and rate (per 1,000 tested) of children, age 0 to less than 18 years, newly identified with blood lead levels ≥ 10 $\mu\text{g/dL}$, by year: NYC, 1995-2009.

Figure 5. Decline in Severe Cases of Childhood Lead Poisoning



Number of children, ages 0 to less than 18 years, newly identified venous blood lead levels ≥ 45 $\mu\text{g/dL}$, by year: NYC, 1995-2009.

Profile of Children with Lead Poisoning and Their Communities

Environmental Intervention Blood Lead Levels

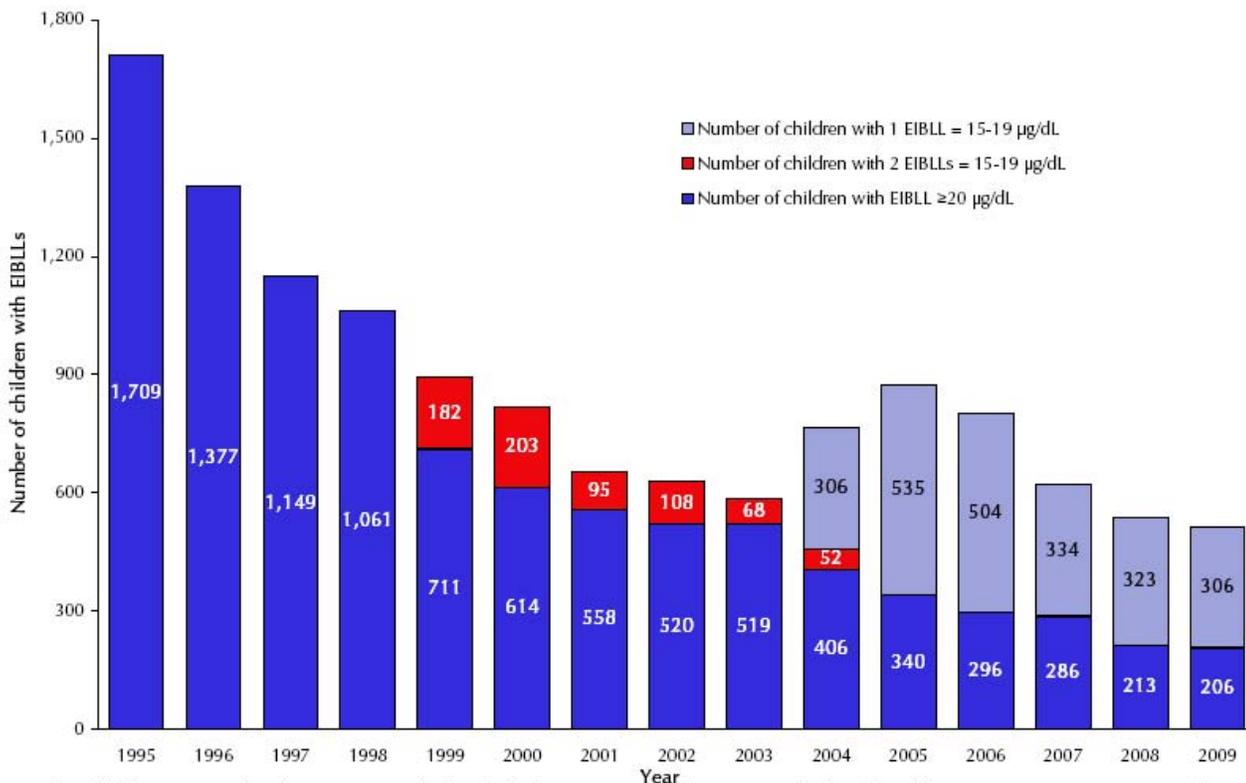
LPPP provides environmental intervention and care coordination services for children with BLLs greater than or equal to 15 µg/dL. In 2004, the threshold for providing environmental intervention services was lowered to 15 µg/dL. This resulted in an increase in the number of children eligible for environmental intervention services.

In 2009, there was a:

- 4% decrease in the number of children younger than 18 years of age newly identified with an EIBLL compared with 2008 (512 children in 2009 versus 536 children in 2008) (**Figure 6**).
- 2% decrease in the number of children 6 months to younger than 6 years of age newly identified with an EIBLL compared with 2008 (439 children in 2009 versus 446 children in 2008).

The decline in the number of children in the number of children newly identified with an EIBLL was lower than anticipated compared with the average annual decline of 15% seen between 2005 and 2008. LPPP is monitoring this trend closely.

Figure 6. Fewer Children Required Environmental Intervention



Number of children, ages 0 to less than 18 years, newly identified with an Environmental Intervention Blood Lead Level, by year: NYC, 1995-2009. From July 1999 through July 2004, the Environmental Intervention Blood Lead Level was defined as either (a) one venous blood lead level ≥ 20 µg/dL, or (b) two blood lead levels 15-19 µg/dL that were drawn at least 3 months apart, where the second test was a venous test. As of August 2004, the EIBLL is defined as one venous blood lead level ≥ 15 µg/dL.

Community Characteristics for Children with Lead Poisoning

OLD HOUSING

The main source of childhood lead poisoning in NYC, as in most regions of the U.S., is lead-based paint in older, deteriorated housing. Nationwide, lead poisoning is associated with housing constructed before 1950, when lead-based paint was widely used and generally contained more lead than in later decades. More than 65% of NYC housing stock was built before 1950, compared with about 22% of all U.S. housing.

In 2009:

- 86% of children newly identified with EIBLLs lived in dwellings built before 1950 (**Table 2**).
- For 76% of children with EIBLLs, LPPP inspectors found peeling or deteriorated lead-based paint or lead dust in the child's home or secondary addresses (for example, their babysitter's residence) (**Table 2**).

MULTIPLE DWELLINGS

Unlike the rest of the country, NYC housing is comprised mostly of multiple dwellings. Of all U.S. housing, only 22% contains 3 or more dwelling units. In NYC, 70% of housing is found in buildings with 3 or more units. NYC housing maintenance regulations, including lead poisoning prevention laws, apply to these multiple dwellings. Health regulations apply to all housing, regardless of building size.

- In 2009, 63% of children newly identified with EIBLLs lived in a multiple dwellings containing 3 or more dwelling units (**Table 2**).

BOROUGH

Brooklyn children are disproportionately affected by lead poisoning. About 34% of NYC children younger than 18 years old reside in Brooklyn, but the proportion of children with BLLs greater than or equal to 10 µg/dL from that borough are higher (**Figure 7**).

In 2009:

- 41% of children newly identified with BLLs greater than or equal to 10 µg/dL lived in Brooklyn (**Table 3**).
- 42% of children newly identified with EIBLLs resided in Brooklyn (**Figure 7 and Table 3**).

Queens accounted for nearly one-third of children with EIBLLs, which is similar to the proportion of NYC children living in the borough. Children from the Bronx, Manhattan, and Staten Island made up the remaining 30% of children with EIBLLs.

NEIGHBORHOOD

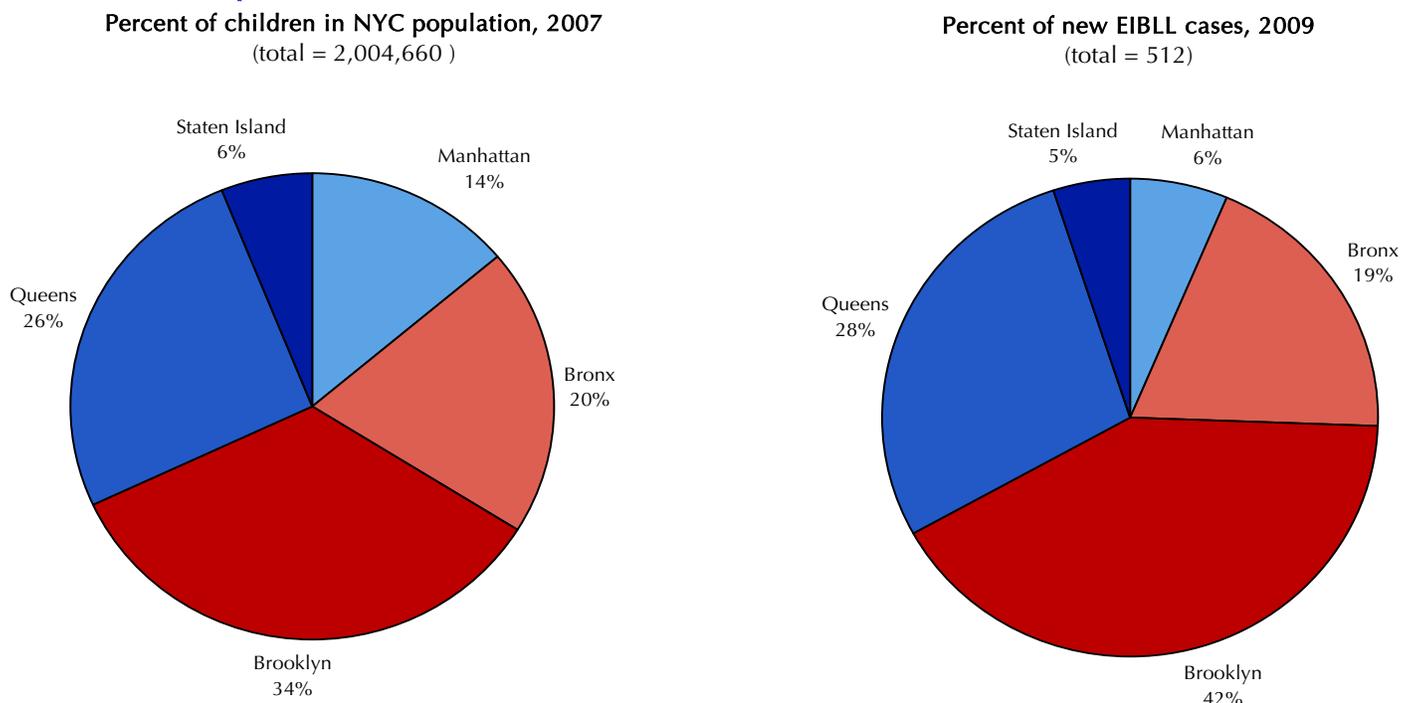
The disproportionate burden of lead poisoning in certain neighborhoods is evident when rates of elevated blood lead levels (EBLLs) and EIBLLs in each community in the city are compared with the citywide average.

The citywide rate for children newly identified with BLLs greater than or equal to 10 µg/dL in 2009 was 4.0 for every 1,000 children tested. In 16 of 42 neighborhoods, the rate was equal to or higher than the citywide rate. One neighborhood was located in the Bronx, 6 in Brooklyn, 5 in Manhattan, 2 in Queens, and 2 on Staten Island (**Figure 8 and Table 3**).

For children newly identified with EIBLLs, the citywide rate was 1.2 for every 1,000 children tested. This rate was higher in 15 of 42 neighborhoods: 2 neighborhoods in the Bronx, 8 in Brooklyn, 3 in Queens, and 2 on Staten Island (**Figure 9 and Table 3**).

Figure 10 shows rates of EIBLL by neighborhoods; those with the highest rates of lead poisoning are shaded darkest.

Figure 7. Brooklyn Children Continue To Be Overrepresented in the Environmental Intervention Blood Lead Level Group



Distribution of children, ages 0 to less than 18 years, in the population, and distribution of children newly identified with an Environmental Intervention Blood Lead Level, by borough: NYC, 2009. Sources: NYC DOHMH LPPP and NYC DOHMH BES/US Census Bureau Intercensal Estimate 2007.

Characteristics of Children with Lead Poisoning

AGE

Young children (especially those younger than 3 years of age) are at greatest risk for lead poisoning—they are more likely to ingest lead-based paint or lead dust as they crawl on floors and put their hands and toys in their mouths. Lead is also more readily absorbed in the gastrointestinal tract of these children. Research suggests that children younger than 2 years of age may be particularly vulnerable to the neurotoxic effects of lead because of their rapidly developing neurological systems.

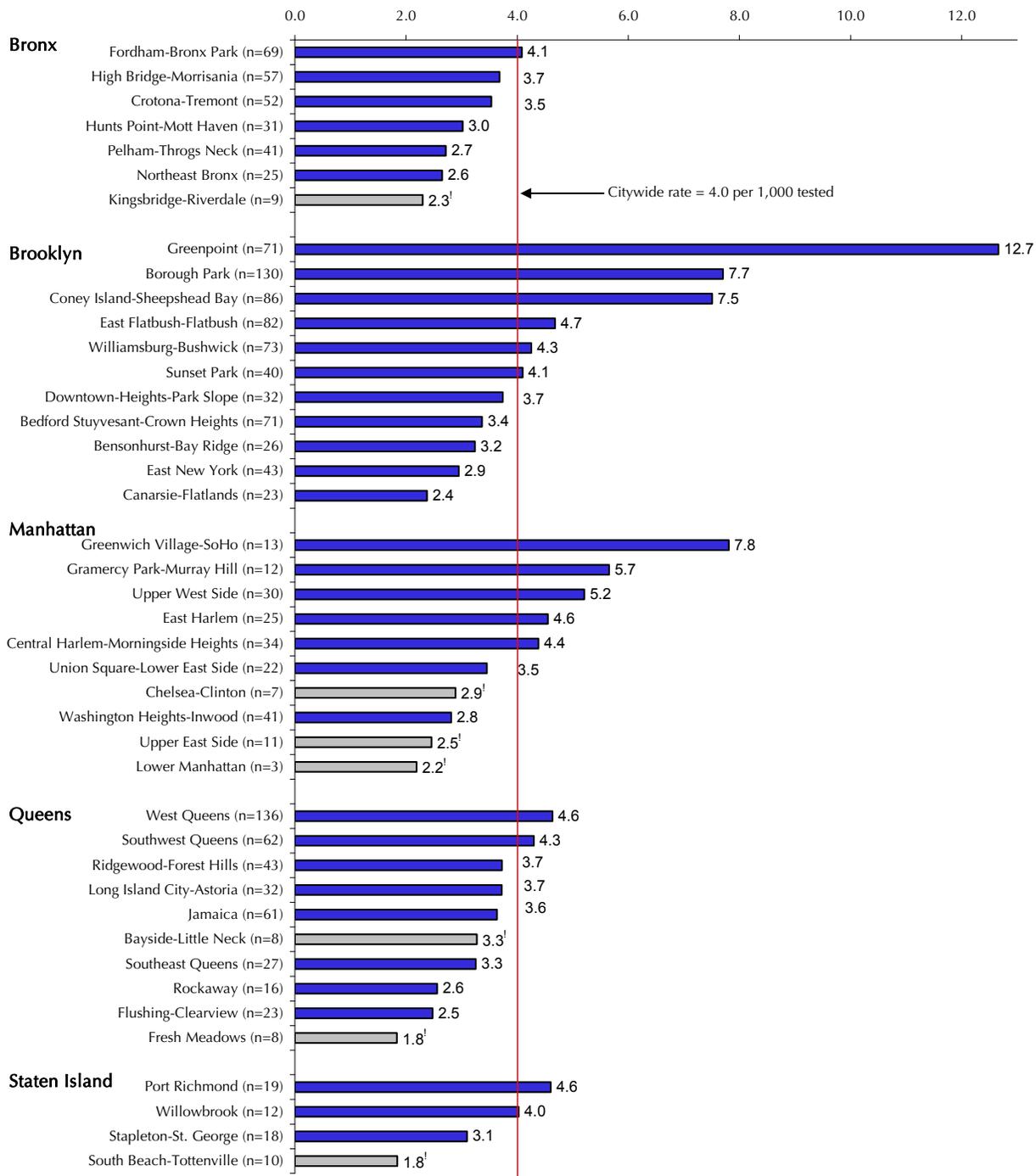
In 2009:

- Among the 1,634 children newly identified with BLLs greater than or equal to 10 µg/dL, 63% (1,040) were younger than 3 years of age and another 24% (391) were between 3 years and younger than 6 years of age.
- Among the 512 children newly identified with EIBLLs, 64% (328 children) were younger than 3 years of age and another 24% (121 children) were between 3 years and younger than 6 years of age (**Table 2**).

POVERTY AND MEDICAID

In 2009, 79% of NYC children with EIBLLs were reported to be enrolled in Medicaid, a program serving low-income families (**Table 2**). Poverty contributes to the risk of childhood lead poisoning as low-income families often reside in older, poorly maintained housing. LPPP collaborates with NYC's Medicaid Managed Care Organizations and the DOHMH Division of Healthcare Access and Improvement to promote appropriate blood lead testing and follow-up services for Medicaid-eligible children.

Figure 8. Rates of Children with Elevated Blood Lead Levels Were Higher in Some Neighborhoods

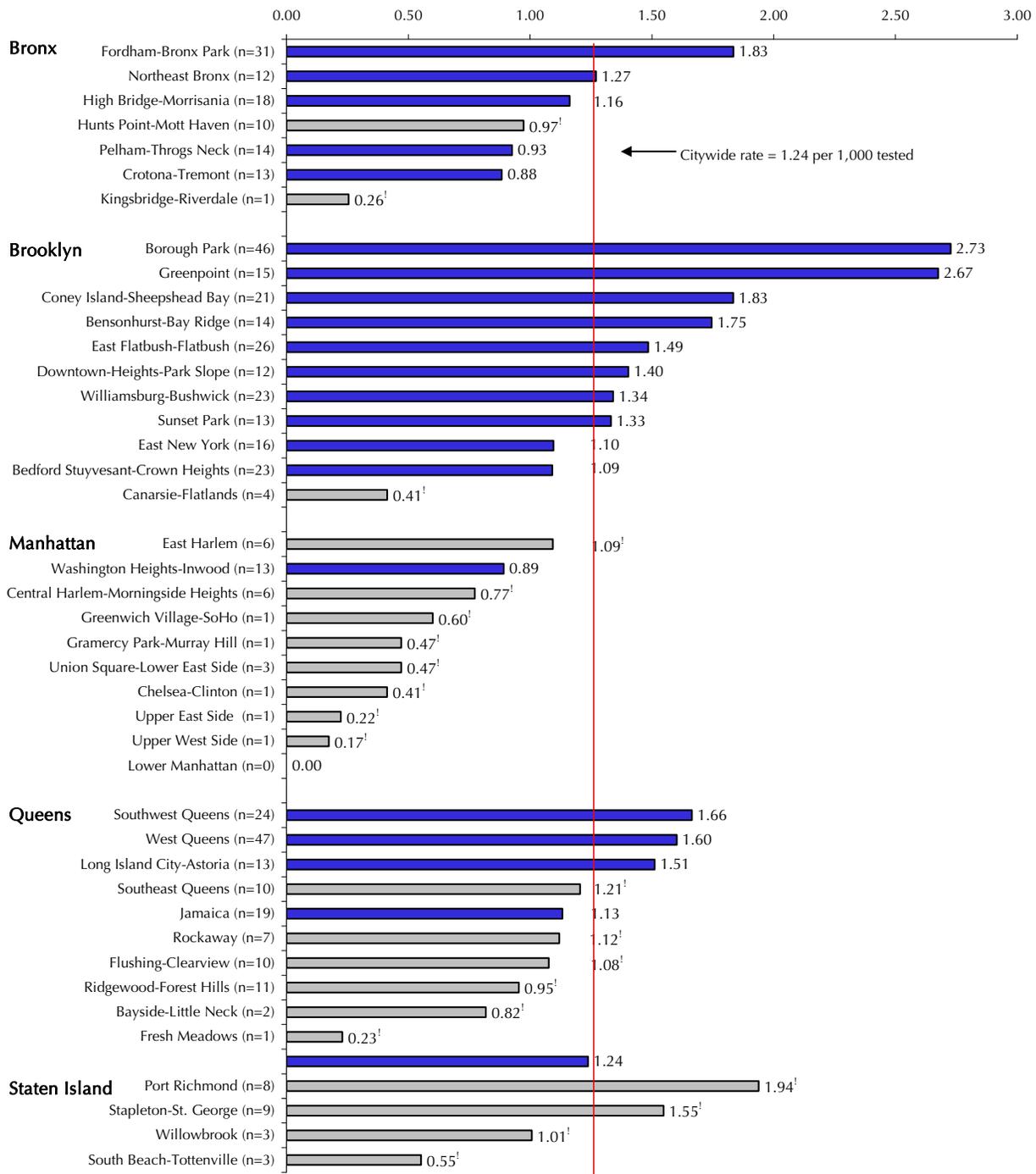


Number and rate (per 1,000 children tested) of children, ages 0 to less than 18 years, newly identified with an Elevated Blood Lead Level (≥ 10 $\mu\text{g}/\text{dL}$), by United Hospital Fund Neighborhood (sorted highest to lowest within each borough): NYC, 2009.

[†]Elevated Blood Lead Level rates in neighborhoods represented by gray bars were less precise (relative standard error $>30\%$) due to small numbers of children with elevated BLL. Caution should be used in interpreting these rates.

Note: Number of children with EBLL in each neighborhood is reported in parentheses to the right of neighborhood name.

Figure 9. Environmental Intervention Blood Lead Level Case Rates Were Higher in Some Neighborhoods

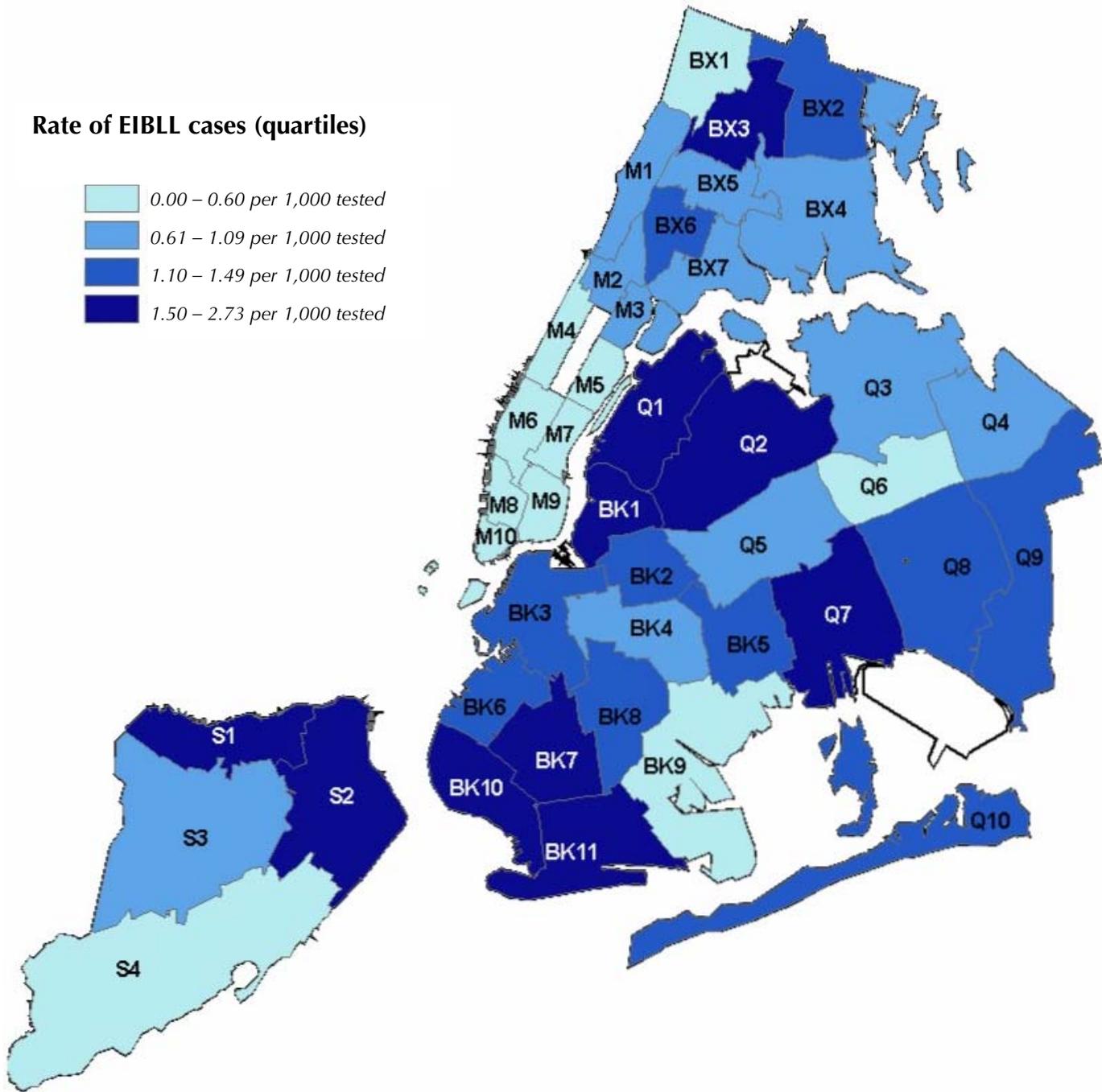


Number and rate (per 1,000 children tested) of children, ages 0 to less than 18 years, newly identified with an Environmental Intervention Blood Lead Level, by United Hospital Fund Neighborhood (sorted highest to lowest within each borough): NYC, 2009.

¹Case rates in neighborhoods represented by gray bars were less precise (relative standard error >30%) due to small numbers of cases. Caution should be used in interpreting these case rates.

Note: Number of cases in each neighborhood is reported in parentheses to the right of neighborhood name.

Figure 10. Environmental Intervention Blood Lead Level Case Rates Varied by Neighborhood



Rates of children (per 1,000 children tested), ages 0 to less than 18 years, newly identified with an Environmental Intervention Blood Lead Level: NYC, 2009. Note: the United Hospital Fund classifies New York City into 42 neighborhoods, comprised of contiguous ZIP codes. Neighborhood codes and their corresponding names and ZIP codes are provided in Table 5.

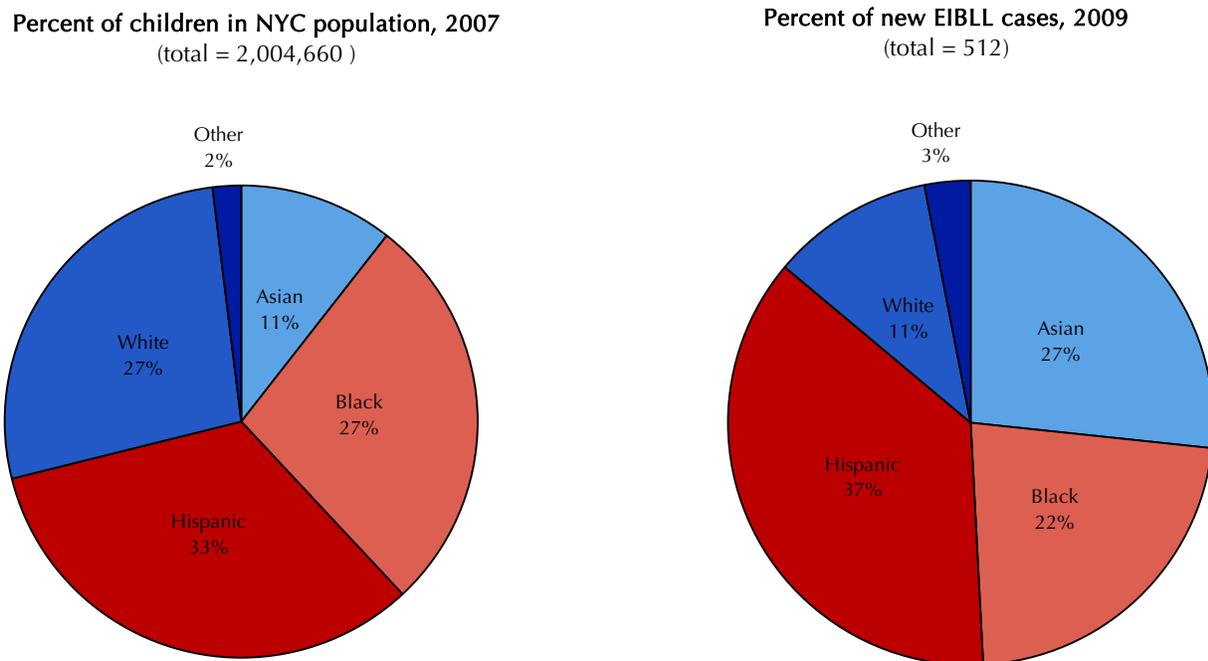
RACE/ETHNICITY

Although lead poisoning can affect all children, Asian, black, and Hispanic children are at high risk. The racial/ethnic distribution of children with EIBLLs varies from year to year. While Hispanic children and black, non-Hispanic children historically are the largest groups among children newly identified with EIBLLs, Asian children are most overrepresented in the EIBLL case group compared with the citywide population. LPPP will continue to monitor the race/ethnicity distribution among children with EIBLLs to identify new trends.

In 2009, the race/ethnicity distribution of children with EIBLLs (**Figure 11 and Table 2**) was:

- 37% Hispanic children (citywide, 33% Hispanic)
- 22% black, non-Hispanic children (citywide, 27% black, non-Hispanic)
- 27% Asian, non-Hispanic children (citywide, 11% Asian, non-Hispanic)
- 11% white, non-Hispanic children (citywide, 27% white, non-Hispanic).

Figure 11. Asian and Hispanic Children Are Overrepresented in the Environmental Intervention Blood Lead Level Group



Distribution of children, ages 0 to less than 18 years, in the population, and distribution of children newly identified with an Environmental Intervention Blood Lead Level, by race/ethnicity: NYC, 2009. Sources: NYC DOHMH LPPP and NYC DOHMH BES/US Census Bureau Intercensal Estimate 2007.

COUNTRY OF BIRTH

In NYC, children born outside the U.S. are overrepresented among children with EIBLLs[§]. Foreign-born children with EIBLLs are, on average, older than U.S.-born children with EIBLLs and less likely to have identified lead-based paint hazards in their homes. Frequent travel to a foreign country appears to be an important risk factor.

[§] From 2002 to 2009, in descending order of frequency, lead poisoning has been found in at least 2 NYC children emigrating from Haiti, Bangladesh, Pakistan, Mexico, Dominican Republic, India, China, Guinea, Guyana, Liberia, Georgia, Ecuador, Jamaica, Nigeria, Guatemala, Sierra Leone, Senegal, Albania, Egypt, Togo, Yemen, Ghana, Ivory Coast, Mali, Nepal, United Kingdom, Burma, Canada, Israel, Suriname, Trinidad and Tobago, Uzbekistan, Yugoslavia, Afghanistan, Morocco, Thailand, Burkina Faso, Republic of Congo, Cuba, El Salvador, Gambia, Honduras, Mauritania, and Peru.

In 2009:

- 19% of the 512 children with EIBLLs were born outside the U.S.; approximately 14% of NYC children are foreign-born.
- 46% of Asian, non-Hispanic children with EIBLLs were born outside of the U.S., compared with 9% of Hispanic and black, non-Hispanic children with EIBLLs.
- The average age of foreign-born children with EIBLLs is 5.8 years old (70 months). In comparison, the average age of U.S.-born children with EIBLLs is 2.6 years old (32 months).
- The most frequently reported countries of birth among foreign-born EIBLL cases in descending order were:
 - Pakistan
 - Bangladesh
 - Haiti
 - Mexico.
- The most frequently reported countries of birth overall for foreign-born NYC children were:
 - Dominican Republic
 - Mexico
 - China
 - Jamaica.

LEAD-BASED PAINT HAZARDS

Lead-based paint is the primary cause of lead poisoning for NYC children. In 2009, three-quarters of children newly identified with EIBLLs had an identified lead-based paint violation in their home or secondary address (for example, their babysitter's residence).

In 2009:

- 76% of all children newly identified with EIBLLs had an identified lead-based paint violation (**Table 2**).
- 78% of U.S.-born children with EIBLLs had an identified lead-based paint violation, compared with 71% of foreign-born children with EIBLLs.
- 81% of Hispanic and black, non-Hispanic children with EIBLLs had an identified lead-based paint violation, compared with 71% of Asian, non-Hispanic children with EIBLLs.

Adult Lead Poisoning

Overview of Adult Lead Poisoning Data in NYC, 2009

Blood Lead Testing Among NYC Adults

Both Federal and NYS laws require employers to provide regular blood lead testing for workers who are exposed to lead on the job. In addition, NYS law requires health care providers to assess lead poisoning risk for pregnant women at their initial prenatal visit and to perform blood lead testing for those at risk. Providers may choose to test patients with a suspected lead exposure, such as from the use of imported health remedies or participation in hobbies associated with lead (like target shooting or stained glass making).

In 2009:

- While there was no change in testing among adults between 2008 and 2009, a 14% increase was previously seen between 2007 and 2008 (90,107 adults in 2009 compared with 90,742 adults in 2008 and 81,783 adults in 2007) (**Figure 12**).
- Of the adults tested, 77,743 (86%) were women and 11,961 (13%) were men**.

Blood Lead Levels among NYC Adults

The NYC Health and Nutrition Examination Survey (NYC HANES)^{††} estimates that less than 1% of men and 0.1% of women aged 20 years and older have BLLs greater than or equal to 10 µg/dL^{‡‡}. However, among individuals reported to the NYC Adult Lead Registry in 2009, 3.9% of men (467) and 0.4% of women (275) have BLLs greater than or equal to 10 µg/dL. This difference is attributed to testing requirements that focus on those individuals at highest risk. Only individuals working in occupations with known lead exposures are required to be tested according to Federal and NYS regulations. Pregnant women assessed to be at risk of a lead exposure during their first prenatal visit are required to be tested in accordance with NYS law.

In 2009:

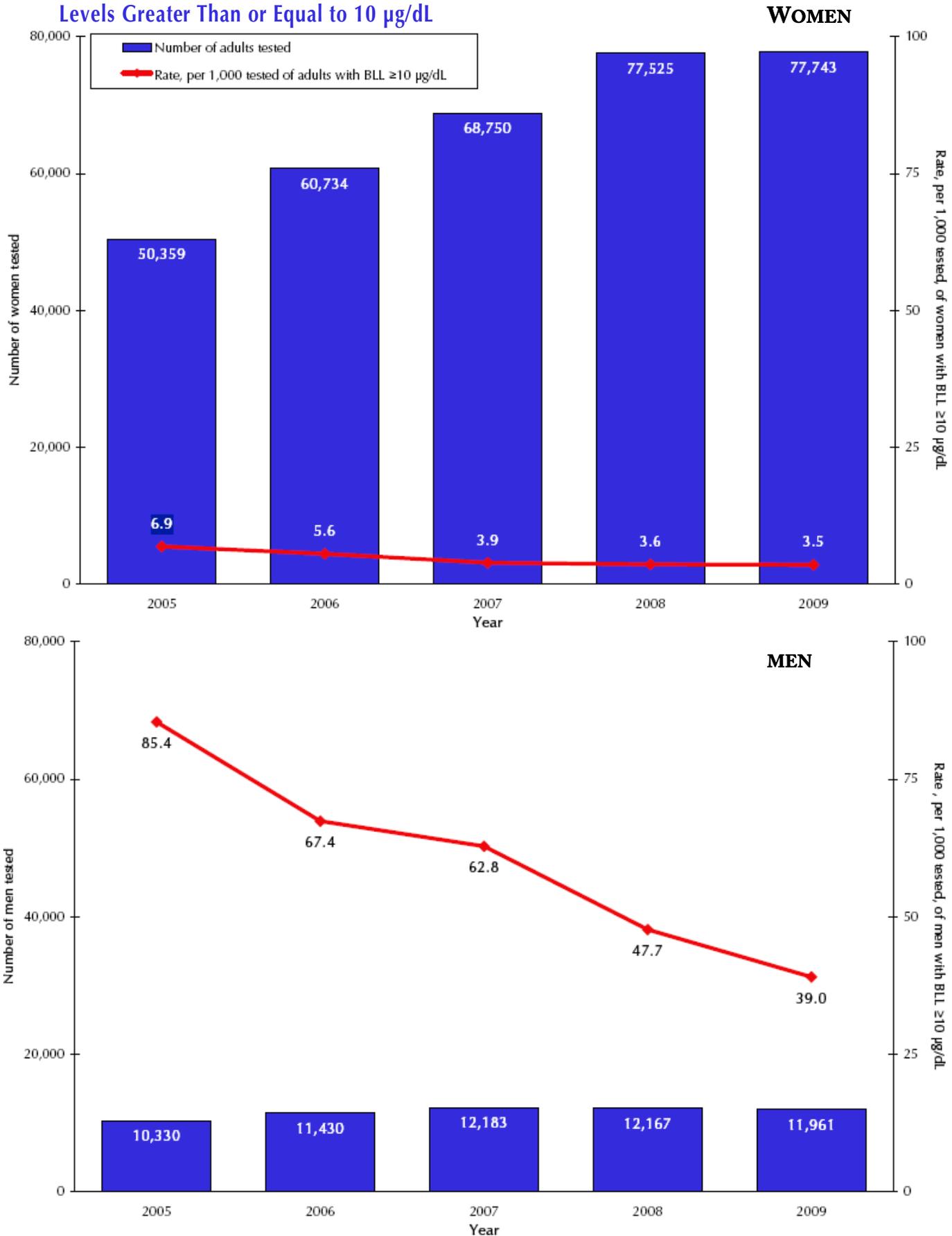
- The rate of women who were identified with BLLs greater than or equal to 10 µg/dL decreased by more than 40% compared with 2005 (3.5 women per 1,000 tested in 2009 versus 6.9 women per 1,000 tested in 2005). The rate of women with EBLs declined substantially between 2005 and 2007, and slight declines have been seen since 2007 (**Figure 12**). ALP will monitor this trend closely.
- The rate of men identified with BLLs greater than or equal to 10 µg/dL declined by more than 50% compared with 2005 (39.0 men per 1,000 tested in 2009 versus 85.4 men per 1,000 tested in 2005) (**Figure 12**).

** Gender was not confirmed for 403 adults mostly because their blood lead level was less than 10 µg/dL.

^{††} Blood lead concentrations were measured in a representative sample of 1,811 NYC residents as part of the NYC HANES, a community-based survey conducted by DOHMH from June through December 2004 and modeled after the National Health and Nutrition Examination Survey, www.nyc.gov/html/doh/html/hanes/hanes.shtml.

^{‡‡} McKelvey W, Gwynn RC, Jeffery N, Kass D, Thorpe LE, Garg RK, Palmer CD, Parsons PJ. A biomonitoring study of lead, cadmium, and mercury in the blood of New York City adults. *Environ Health Perspect.* 2007;115(10):1435-1441.

Figure 12. Increase in Adults Tested for Lead Poisoning and Decline in Rate of Adults Blood Lead Levels Greater Than or Equal to 10 µg/dL



Number of adults tested for lead poisoning and rate (per 1,000 tested) of adults with blood lead levels ≥ 10 µg/dL, by gender and year: NYC, 2005-2009.

Profile of Adults with Lead Poisoning, 2009

Characteristics of lead-poisoned adults vary by gender. Men and women have different risk factors for lead poisoning. Additionally, the potential effects from lead poisoning are more harmful for women who are pregnant because lead can be passed to the fetus. ALP provides services to men and non-pregnant women with BLLs greater than or equal to 15 µg/dL. LPPP provides services to pregnant women with BLLs greater than or equal to 15 µg/dL. This profile of adults with lead poisoning is arranged accordingly.

In 2009, there were:

- 234 men identified with BLLs greater than or equal to 15 µg/dL
- 14 non-pregnant women identified with BLLs greater than or equal to 15 µg/dL
- 68 pregnant women identified with BLLs greater than or equal to 15 µg/dL.

Characteristics of Men and Non-pregnant Women with Lead Poisoning

ALP interviews lead-poisoned adults identified with BLLs greater than or equal to 15 µg/dL. Of the 248 men and non-pregnant women identified with lead poisoning in 2009, ALP successfully conducted interviews about potential sources of lead exposure with a total of 162 adults (150 men and 12 non-pregnant women).

AGE

Most men identified with lead poisoning are tested because of occupational exposures. The age distribution of lead-poisoned men may reflect the age distribution of men working in lead-related construction industries.

According to the Bureau of Labor Statistics, the average age of construction workers in 2005 was 39 years old.

In 2009:

- Among men with BLLs greater than or equal to 15 µg/dL, the average age was 41 years old, with a range of 18 to 81 years of age. More than 50% were between the ages of 30 and 50 years old.
- Among non-pregnant women with BLLs greater than or equal to 15 µg/dL, the average age was 31 years old with a range of 21 to 52 years of age.

COUNTRY OF BIRTH

The men and women interviewed by ALP come from all around the world, with 29 different countries represented.

In 2009:

- 41% were born in the United States or Puerto Rico.
- 15% were born in South and Central American countries such as Brazil, Columbia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, and Peru.
- 7% were born in Caribbean countries such as Barbados, British Virgin Islands, Dominican Republic, Guyana, Jamaica, and Trinidad.
- 7% were born in European countries such as Albania, Belarus, Bulgaria, England, Greece, Poland, Portugal, and Russia.
- 6% were born in Asian countries such as Bangladesh, China, Pakistan, and Philippines.
- 1% were born in the African country of Liberia.
- 22% did not provide their country of birth.

PRIMARY LANGUAGE SPOKEN

Interviews of adult men and non-pregnant women identified with BLLs greater than or equal to 15 µg/dL are conducted in many languages using telephone interpretation services and staff fluent in those languages. Although the most common primary language spoken was English, a total of 11 different primary languages were reported.

In 2009:

- 51% reported English as their primary language.
- 20% reported Spanish.
- 5% reported Urdu, Hindi, or Bengali.
- 7% reported Albanian, Bulgarian, Greek, Polish, Portuguese, or Russian.
- 17% did not provide primary language information but were interviewed in English.

SOURCES OF EXPOSURE IN MEN WITH LEAD POISONING

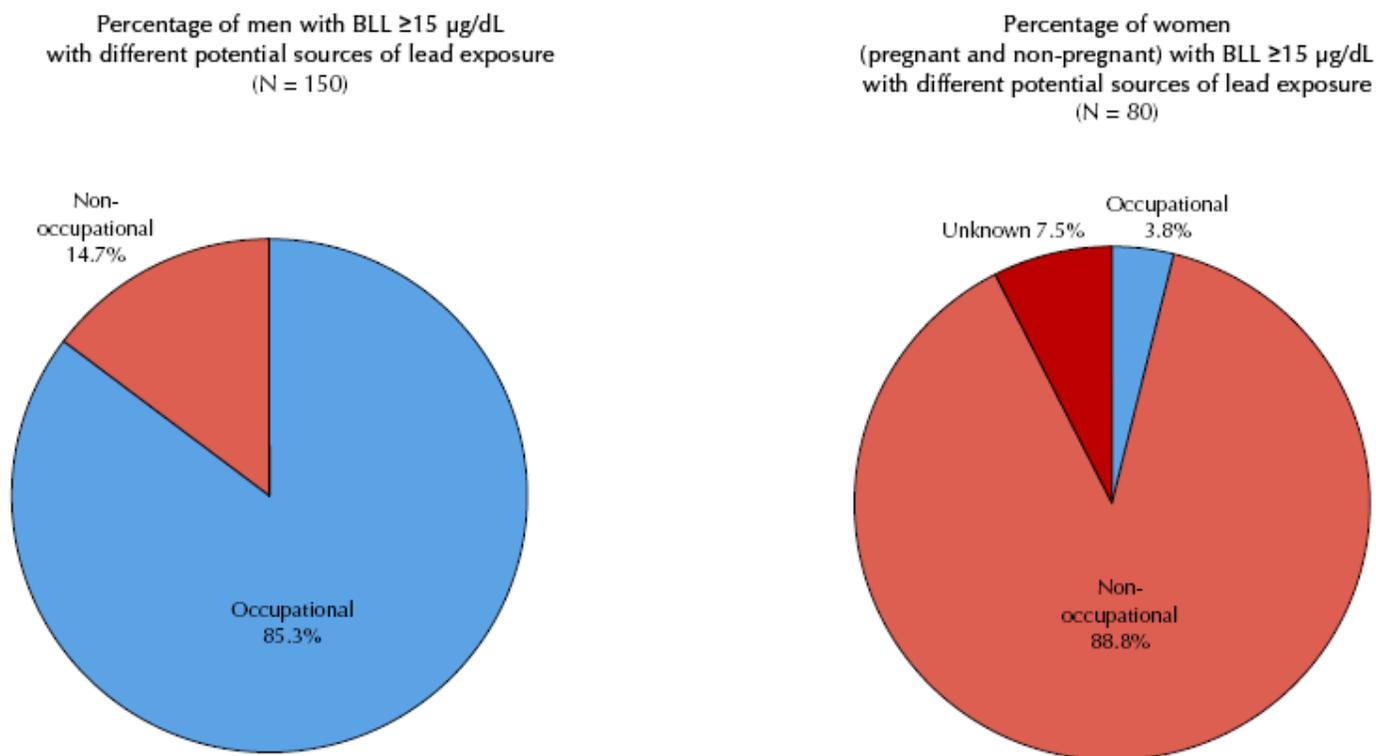
The most common cause of lead poisoning among men is occupational exposure in construction-related jobs. Workers may be exposed by breathing in lead dust or lead fumes during construction activities that disturb old, lead-based paint, such as renovations, repairs, and demolition. Workers may also ingest lead dust by eating or smoking on the job without cleaning their hands. Workers in other industries, as well as hobbyists, may be at risk if they work with metal, paint, pigments, or ceramic glazes that contain lead. Adults can also be exposed through the use of lead-contaminated products such as imported health remedies, spices, foods, pottery, and cosmetics. Non-occupational exposures are the most common cause of lead poisoning among women, regardless of pregnancy status. **Figure 13** shows the total number of men and women (non-pregnant and pregnant) with lead poisoning and their potential sources of lead exposure.

In 2009, among men with lead poisoning:

- 85% reported potential occupational sources of lead exposure.
 - Two-thirds of men exposed occupationally were construction workers who mainly engaged in bridge and steel structure painting and repair.
 - The remaining one-third of men exposed occupationally engaged in jobs involving cable splicing, metal recycling, stained glass, arts, shooting range, law enforcement, auto repair, and smelting.
- 15% reported potential non-occupational sources of lead exposure, including hobbies such as target shooting and soldering, bullet fragments retained in the body from previous shootings, use of imported spices and herbal medicine products, and participation in home renovation.

Because non-occupational exposures are the most common cause of lead poisoning among both non-pregnant and pregnant women, potential sources of lead exposures among women with lead poisoning identified in 2009 are discussed later in the section on pregnant women.

Figure 13. Potential Sources of Lead Exposures More Likely to Be Occupational Among Men than Women



Characteristics of Pregnant Women with Lead Poisoning

During pregnancy, a woman who has an elevated BLL can pass lead to her developing fetus. EBLs in pregnant women may be due to lead stored in the body from previous lead poisoning. Pregnant women can also have EBLs from current exposures, such as using imported health remedies, foods, spices and cosmetics; cooking with imported pottery; eating non-food items such as clay, pottery, soil, or paint chips; and working in a lead-related occupation or hobby.

LPPP, in collaboration with ALP, provided services to 68 pregnant women newly identified with BLLs greater than or equal to 15 $\mu\text{g}/\text{dL}$ in 2009. The increase in the number of pregnant women who receive care coordination services seen since 2004 is due to lowering the level that triggers services from 20 $\mu\text{g}/\text{dL}$ to 15 $\mu\text{g}/\text{dL}$ (Figure 14).

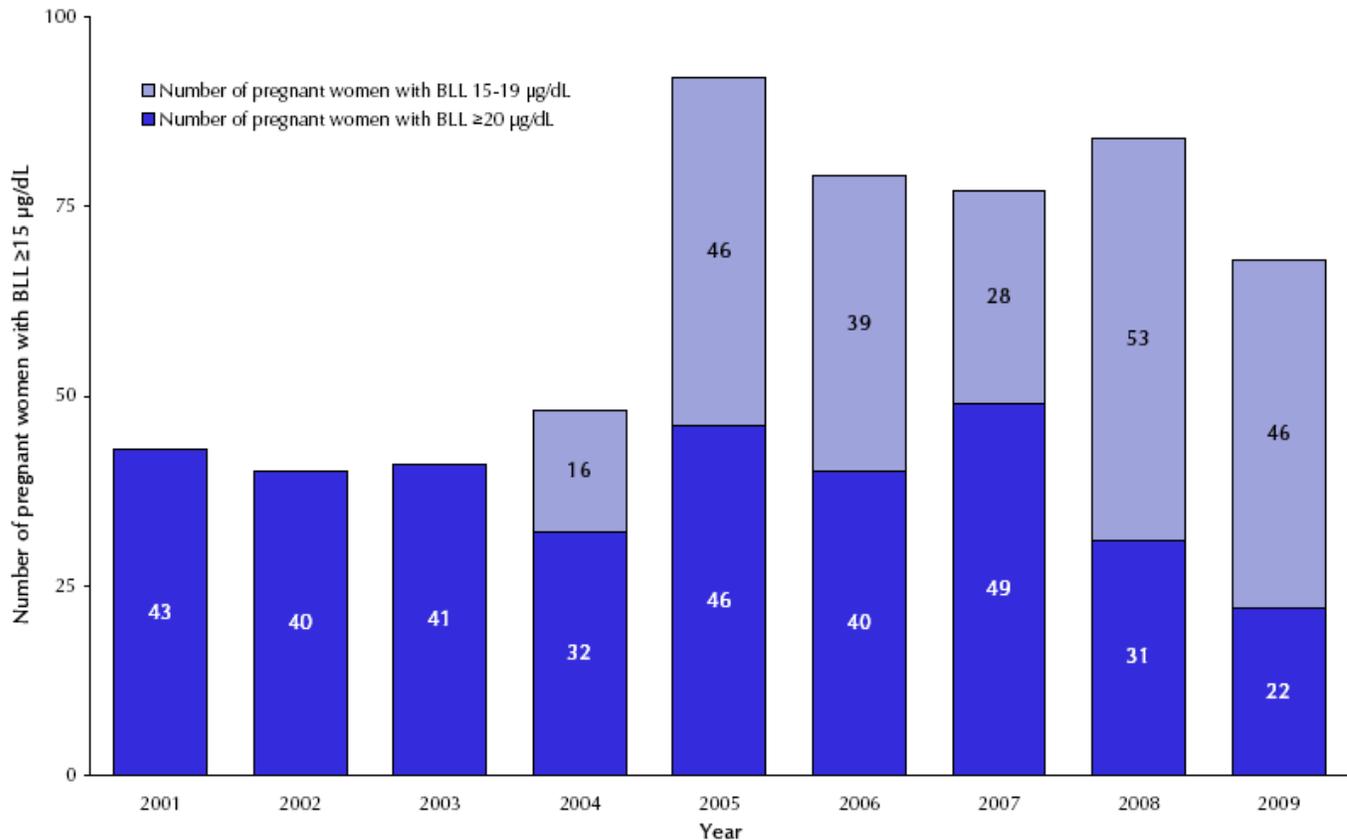
BOROUGH

The largest proportion of pregnant women newly identified with BLLs greater than or equal to 15 $\mu\text{g}/\text{dL}$ reside in Queens. The borough of Queens has large immigrant populations from Mexico and South Asian countries. Like children, foreign-born women are more at risk for lead poisoning.

In 2009:

- 43% of pregnant women identified with lead poisoning lived in Queens.
- 28% lived in Brooklyn.
- 19% lived in the Bronx.
- 6% lived in Staten Island.
- 4% lived in Manhattan (Table 4).

Figure 14. Lowered Intervention Level Creates Increase in Number of Pregnant Women Provided Services for Lead Poisoning



Number of pregnant women newly identified with blood lead levels ≥ 15 $\mu\text{g}/\text{dL}$, by year: NYC, 2009. Prior to August 2004, LPPP provided services to pregnant women with blood lead levels ≥ 20 $\mu\text{g}/\text{dL}$. In August 2004, the blood lead level that triggers case coordination was reduced to 15 $\mu\text{g}/\text{dL}$ to correspond with the change in blood lead level that triggers services for children. Due to continuous data cleaning efforts, numbers published in the 2005 and 2006 annual report have been corrected. The corrections reflect LPPP and ALP's increased capacity to identify and report women who were pregnant at the time of their elevated blood lead test, but may have had a pregnancy termination or may have delivered before they were contacted by LPPP or ALP.

AGE

The average age of pregnant women newly identified with BLLs greater than or equal to 15 $\mu\text{g}/\text{dL}$ was 29 years old, ranging from 18 to 43 years of age. The distribution of pregnant women with lead poisoning by age was similar to the citywide distribution of women who had live births in 2008 for most age groups, with a slightly higher percentage of women in the 25 to 29 year age group than citywide (37% vs. 26%, respectively), and slightly lower percentage of women in the 30 to 34 year age group than citywide (19% vs. 26%, respectively) (**Table 4**).

COUNTRY OF BIRTH

Lead poisoning disproportionately affects foreign-born pregnant women, and among them, certain countries of birth where lead poisoning is common are overrepresented. Overall, foreign-born pregnant women were relatively recent immigrants, with a median length of residence in the U.S. of 7 years (**Table 4**).

In 2009:

- 94% of pregnant women newly identified with a BLL greater than or equal to 15 µg/dL were foreign-born, yet approximately 50% of women who give birth in NYC each year are foreign-born.
- Among foreign-born pregnant women with BLL greater than or equal to 15 µg/dL:
 - 47% were born in Mexico.
 - 19% were born in Bangladesh.
 - 6% were born in India.
 - 6% were born in Pakistan^{§§}.

SOURCES OF LEAD EXPOSURE IN WOMEN WITH LEAD POISONING

Compared with the primarily occupational exposure seen in men with lead poisoning, women with lead poisoning are more likely to be exposed non-occupationally. An important potential risk factor for lead poisoning in non-pregnant and pregnant women is their country of birth. Women from countries where lead exposure is common, such as Mexico and Bangladesh, may be at greater risk for lead poisoning through past exposures and use of products imported from their home countries. When a woman is pregnant, lead from previous exposures that has been stored in the bones and other body tissues may be released into the bloodstream, resulting in EBLs for the women and their fetuses. Women may also be exposed to lead through jobs and hobbies. **Figure 13** shows the total number of non-pregnant and pregnant women with lead poisoning and their potential sources of lead exposure.

In 2009:

- 89% of women with lead poisoning reported potential non-occupational sources of lead exposure. Of these women:
 - 81% reported use of imported products, including food, spices, herbal medicine, pottery, and cosmetics.
 - 23% reported recent travel to a foreign country.
 - 10% reported peeling paint in their homes.
 - 9% reported eating earth, clay or crushed pottery during pregnancy.
 - 5% reported recent renovations in their homes.
- 4% of women reported potential occupational sources.
- Potential lead sources were not identified in 8% of pregnant women.

^{§§} From 2002 to 2009, in descending order of frequency, lead poisoning has been found in at least 2 NYC pregnant women emigrating from Mexico, Bangladesh, India, Ecuador, Pakistan, Guatemala, China, Russia, Dominican Republic, Jamaica, Georgia, Morocco, Haiti, and Nepal.

Accomplishments of the Lead Poisoning Prevention Programs

Childhood Lead Poisoning Prevention Program Accomplishments

LPPP has developed a proactive and comprehensive approach to lead poisoning prevention and control. Strategies include:

- Lead hazard reduction in homes and communities
- Outreach and education for the public and health care providers to promote prevention and early detection of lead poisoning
- Care coordination for lead-poisoned children as well as pregnant women and their newborns
- Environmental investigation and enforcement
- Surveillance and research.

Reducing Exposure to Lead Paint Through Primary Prevention Efforts

Primary prevention efforts are designed to prevent lead exposure before poisoning occurs. LPPP has developed innovative strategies targeted to young children who are at greatest risk for lead poisoning. LPPP provides environmental inspections to families referred by home visiting programs serving newborns and children with asthma. In 2009, LPPP mounted a new initiative to offer inspections to families with children younger than 3 years of age with BLLs of 10 to 14 µg/dL and to families with newborns living in the same building. LPPP also responds to complaints of peeling paint from tenants with young children living in 1- and 2-family homes^{***}. Families are educated about lead poisoning and given the option to allow an inspection. Landlords are ordered to remediate identified lead hazards as well as repair other environmental home health hazards.

In 2009^{†††}:

- 424 homes with peeling paint were referred by home visiting programs to LPPP for lead hazard inspections.
 - 87% (370) of these homes were inspected and lead hazards were identified in 54% (201) of inspected homes.
- 587 homes of children younger than 3 years of age with BLLs of 10 to 14 µg/dL were identified for intervention.
 - 85% (498) of these homes were inspected and lead hazards were identified in 64% (317) of inspected homes.
- 229 homes of newborns in the same building as a child younger than 3 years of age with BLLs of 10 to 14 µg/dL were identified for intervention.
 - 54% (124) of these homes were inspected and lead hazards were identified in 60% (75) of inspected homes.
- 41 complaints were received for peeling paint in 1- or 2-family homes.
 - 95% (39) of these homes were inspected and lead hazards were identified in 77% (30) of inspected homes.

Promoting Timely and Safe Work Practices

LPPP enforces the NYC Health Code provisions requiring safe work practices during lead abatement and remediation. The program also investigates complaints of work creating potential lead hazards in and around the homes of young children and monitors the progress and safety of work that disturbs lead-based paint by performing safety and follow-up inspections.

^{***} The NYC Department of Housing Preservation and Development responds to peeling paint complaints from tenants with young children living in buildings with 3 or more units.

^{†††} Not all homes are inspected due to location issues, access difficulties, and tenant refusal.

In 2009:

- 183 unsafe work practice complaints in the homes of young children were received.
- 3,169 inspections were performed to monitor compliance with safe work practice requirements.
- 2,635 inspections were performed to monitor the timeliness of ordered work.

LPPP also offers free lead-safe work practices (LSWP) trainings using the Environmental Protection Agency (EPA)/Department of Housing and Urban Development (HUD) curriculum in English and Spanish to contractors, general construction workers, repair workers, painters, homeowners, custodians, superintendents, maintenance workers, handymen, and do-it-yourselfers. Trainings take place on weekends at community sites in high-risk neighborhoods. These classes are supported through a grant from the NYS Department of Health.

In 2009:

- 597 people attended 22 LSWP trainings.
 - 496 (83%) of those attending the class passed the EPA exam.

Promoting Blood Lead Testing

The percentage of 1- and 2-year-olds tested for lead poisoning has risen dramatically over the past 10 years. We credit this success to our diverse approaches to improving screening, including our data-matching collaboration with the 13 Medicaid Managed Care Organizations (MMCOs) in NYC. LPPP identifies Medicaid-enrolled children younger than 3 years of age who have not been appropriately tested for lead poisoning. MMCOs follow up with these children's families and health care providers. LPPP also collaborates with the DOHMH Citywide Immunization Registry to maintain the Online Registry, which provides physicians with online access to a patient's immunizations and lead screening history. A new functionality is being developed to allow health care providers using in-office point-of-care testing devices to report blood lead results electronically via the Online Registry.

In 2009:

- 31% (9,775) of the 31,545 Medicaid-enrolled children younger than 3 years of age identified as never having had a blood lead test were subsequently tested for lead poisoning as a result of the LPPP-MMCO data match.
- 1,458,680 searches for blood lead and immunization records by health care providers were conducted using the Online Registry.
- 32,000 health care providers received an updated NYCDOHMH City Health Information newsletter "Prevention, Identification, and Management of Lead Poisoning for Children and Pregnant Women."
- 6 presentations to 153 physicians and health care students on screening, risk assessment, and contaminated herbal medicine products were conducted by health care and/or education staff.

LPPP also sends outreach letters and educational materials to families and health care providers of children with possible exposure to lead. Letters are sent when a report of BLL of 10 to 14 µg/dL is received, and subsequent reminders are sent if follow-up testing does not show a reduction in BLL. In 2009, LPPP began sending these outreach letters and educational materials to families and health care providers of children with BLLs of 5 to 9 µg/dL.

In 2009:

- 6,394 bilingual letters were sent to the families of children with BLLs of 5 to 14 µg/dL to educate guardians about lead poisoning prevention and the need for follow-up testing.
- 5,214 letters were sent to the health care providers associated with these children^{###}.

^{##} Accurate mailing address for health care providers is not always included in blood lead test reports.

Providing Environmental Investigation and Care Coordination Services to Children with Lead Poisoning

LPPP provides both environmental intervention and care coordination services in response to children who have BLLs at or above the EIBLL. Authorized by the NYC Health Code, environmental intervention includes assessment and inspection of children's homes and places where they spend significant time (e.g., babysitter's home). When lead-based paint hazards are identified, LPPP orders building owners to remediate and enforces requirements for timeliness and safety of repair work. Care coordination services include lead exposure reduction education for families and health care providers, health care management education for providers, including consultation on chelation and hospitalization for providers treating children with BLLs greater than or equal to 45 µg/dL, routine contact to encourage follow-up testing, and referrals to the Early Intervention Program (EI) and lead-safe temporary housing as needed.

For children newly identified with EIBLLs in 2009:

- 601 addresses were inspected where children newly identified with an EIBLL of 15 µg/dL or higher live or spend time.
 - 67% (400) addresses had identified lead-based paint hazards.
- 1,778 inspections were conducted to monitor the progress and safety of ordered remediation work at addresses related to children with EIBLLs.
- 2,257 contacts were conducted with families to provide education and outreach.
- 1,301 calls were made to health care providers to support health care management.
- 308 referrals were made to EI (referrals are made, with family consent, for children less than 3 years old).
- 56 referrals were made to lead-safe temporary housing (referrals are made, with family consent, for children with identified lead-based paint hazards).

Reducing Exposure to Other Sources of Lead

In 2009, LPPP continued working on its EPA-funded project looking at BLLs and herbal medicine use among NYC's South Asian community. Bangladesh, India, and Pakistan represent some of the most frequently reported countries of birth among foreign-born children and pregnant women with lead poisoning. As part of this project, LPPP performed BLL testing for 230 adults and children and administered surveys to characterize herbal medicine product use and other lead poisoning risk factors. Forty-three participants had BLLs greater than or equal to 5 µg/dL, of whom 9 had BLLs greater than or equal to 10 µg/dL. LPPP is conducting an analysis of data collected to develop intervention strategies addressing risk factors identified through this study.

Using Data to Strengthen Activities

LPPP monitors testing and rates of lead poisoning throughout NYC. Each year, LPPP receives more than 400,000 blood lead tests results for more than 300,000 children. These testing data, along with data collected through environmental intervention and care coordination services, are maintained in an electronic registry. In addition to using data in the registry to track progress, plan activities, and evaluate achievements, LPPP collaborates with several programs in order to make data available to support interventions and inform the public.

In 2009:

- LPPP implemented a data match between the Lead and Vital Statistics registries in order to supplement primary prevention efforts. Families of newborns living in the same building as families with young children with BLLs of 10 to 14 µg/dL are identified by comparing lead testing data within the Lead registry to birth certificate data within the Vital Statistics registry.

- LPPP provided historic childhood lead poisoning data for use within the DOHMH Environmental Public Health and Sustainability Tracking Portal (EPHSTP), which was launched in 2009. Via the EPHSTP, anyone with Web access is able to create neighborhood, borough and citywide tables, charts, and maps that display counts and rates of children:
 - Tested for lead poisoning
 - Newly identified with BLLs greater than or equal to 10 µg/dL
 - Newly identified with BLLs greater than or equal to 15 µg/dL.
- LPPP continued to participate in My Community's Health, the Health Department's online data repository. The web page provides easy access to data available electronically from the Department and links to published data reports. Via My Community's Health, the public can download neighborhood, borough, and citywide data tables that highlight changes in the counts and rates of children newly identified with lead poisoning.

Educating the Public

LPPP has built strong collaborations with community groups to increase public awareness of lead poisoning. LPPP provides presentations and workshops at a wide range of community venues, including educational institutions, health care centers, libraries, faith-based organizations, and community-based organizations.

In October 2009, Mayor Bloomberg signed a proclamation for National Lead Poisoning Prevention Week (NLPPW). The proclamation recognized NYC's success in reducing childhood lead poisoning. The proclamation was displayed at libraries in all 5 boroughs, as well as at DOHMH and HPD offices.

In 2009:

- 23,700 English and Spanish brochures describing financial resources to support lead hazard control projects were distributed. The brochures were developed in collaboration with HPD and Neighborhood Housing Services (NHS).
- 275,685 educational materials in 10 languages were distributed.
- 1,779 calls were answered on the LPPP information line.
- 16,963 New Yorkers were educated through 646 health fairs, parent talks, and staff workshops.

COMMUNITY ENGAGEMENT

LPPP's Technical Advisory Committee (TAC) includes more than 46 academic, governmental, and community organizations specializing in areas as diverse as child and environmental health, urban planning, housing, Medicaid, and cultural and immigrant affairs. The TAC monitors progress on NYC's plan to eliminate childhood lead poisoning. In 2009, two TAC meetings were held, focusing on LPPP's primary prevention expansion efforts, lead poisoning among Medicaid-enrolled children, and proposed amendments to the Health Code to require posting of signage for lead and other safety issues in apartment buildings.

HEALTHY HOMES HARDWARE STORE CAMPAIGN

This point-of-purchase educational outreach campaign is aimed at increasing awareness of home health hazards among store managers, workers, contractors, building owners, superintendents, and do-it-yourselfers. The Healthy Homes campaign provides useful home improvement promotional items and information on environmental hazard prevention strategies, safe work practices, and health effects.

In 2009:

- 689 stores participated.
- 244 enforcement visits were made to check whether "No Dry Scraping/Dry Sanding Paint" signs had been posted as required by Local Law 1; 78% of visited stores were in compliance.

Collaboration with the Department of Housing Preservation and Development

LPPP has built a strong partnership with the Department of Housing Preservation and Development (HPD) to protect children from lead paint hazards.

MAKING HOUSING SAFER FOR CHILDREN

LPPP makes referrals to HPD for building-wide follow-up when lead paint hazards are identified in buildings associated with a lead-poisoned child. Also, tenants in multiple dwelling buildings with 3 or more units may lodge complaints with HPD by calling 311. HPD inspectors will perform a lead paint inspection each time they are in an apartment where a young child resides, and HPD will order the landlord to safely repair any identified lead hazards. If an owner fails to complete work ordered by HPD or LPPP, the HPD Emergency Repair Program (ERP) will make the repairs and bill the landlord for the work. In addition, HPD sends LPPP contact information for families living in units where inspectors have identified lead paint hazards so that educational materials may be sent.

In 2009:

- 381 buildings were referred to HPD by LPPP for building-wide follow up after LPPP inspected the home of a lead-poisoned child in that building and identified lead paint hazards.
- 121 dwelling units were referred to HPD ERP after landlords failed to make repairs ordered by LPPP.
- 4,286 letters recommending blood lead tests were sent by LPPP to families with young children living in apartments in buildings where HPD identified lead paint hazards.

SUPPORTING FINANCIAL ASSISTANCE FOR LEAD HAZARD REDUCTION

DOHMH and HPD continued to collaborate on a project funded by HUD that provides forgivable loans to eligible buildings owners for lead hazard repairs. In 2007, HUD awarded NYC 2 new grants totaling \$7 million to support this work through 2010.

In 2009:

- 546 units were remediated.
- 347 families received lead poisoning prevention education.

Collaboration with Home Visiting Programs

LPPP receives referrals from other home visiting programs within DOHMH including the Newborn Home Visiting Program (NHVP) and the Asthma Initiative (AI). Home visiting staff have been trained by LPPP to conduct visual inspections for lead and other home health hazards. When peeling paint is identified, the programs refer the apartment to LPPP for an environmental inspection. If lead paint hazards are identified, the building owner is ordered to correct the hazards.

In 2009:

- 363 dwelling units were referred by NHVP and AI to LPPP.

Adult Lead Poisoning Program Accomplishments

ALP tracks adult lead poisoning in NYC. Surveillance activities help to identify lead-poisoned individuals, high-risk job sites, consumer products that contain lead, and other sources of lead exposure in NYC. ALP provides intervention services to adults with EBLs, including providing referrals to health care providers with experience in managing lead poisoning in adults; educating the public about sources of adult lead poisoning and ways to reduce BLLs; encouraging blood lead testing of at-risk adults; and promoting best practices to prevent lead poisoning in the workplace and informing workers, employers, unions, and health care providers about the risks of lead exposure. ALP and LPPP collaborate to provide services to pregnant women with EBLs.

Care Coordination and Investigation Services for Adults with Lead Poisoning

ALP sends letters advising follow-up BLL testing along with educational materials on preventing lead poisoning to all adults with BLLs greater than or equal to 10 µg/dL. For women with BLLs greater than or equal to 15 µg/dL, ALP determines if the woman is pregnant by calling the woman or her health care provider. These pregnant women are referred to LPPP for services. ALP interviews non-pregnant women to assess potential sources of lead exposure, and provides information on the general health effects of lead, and ways to prevent lead poisoning. ALP also conducts interviews of men with BLLs greater than or equal to 15 µg/dL to assess potential lead exposure and provide information on preventing future exposures. If potential occupational lead exposure is identified during the interviews, ALP will interview employers and visit work sites.

In 2009:

- 966 letters were sent to adults with BLLs greater than or equal to 10 µg/dL.
- 12 employers were contacted to discuss lead-related work exposures on their job sites.
- 179 adults were interviewed to assess lead poisoning risks and provide education.
- 68 pregnant women newly identified with BLLs greater than or equal to 15 µg/dL were referred to LPPP.

Care Coordination Services for Pregnant Women

LPPP, in collaboration with ALP, provides care coordination services to pregnant women with lead poisoning. Since August 2004, services have been provided for women with BLLs greater than or equal to 15 µg/dL. Prior to that time, the level that triggered care coordination services was 20 µg/dL. Services include education for prenatal care providers on consequences of prenatal exposure and health care management of lead-poisoned pregnant women, exposure assessment and risk reduction education for women, and contact with both women and providers to encourage and coordinate follow-up testing. In addition, environmental intervention services, including home inspection, have been offered since 2007 to lead-poisoned pregnant women who have young children or newborns living with them.

In 2009, care coordination services for pregnant women and their newborns included:

- 84 contacts with health care providers to coordinate care
- 152 letters sent to health care providers to support health care management
- 66 interviews with pregnant women to identify possible sources of lead exposure
- 243 contacts with pregnant women to monitor their health status, provide education and coordinate care
- 54 letters sent to pregnant women to provide outreach
- 79 referrals for peeling paint inspections of the homes of pregnant women with lead poisoning who had a newborn or a child younger than 6 years of age living with them.
 - 59 (75%) inspections were conducted and 26 (44%) had lead hazards identified.

Table 1. Lead Poisoning Surveillance Data for New York City Children, Ages 6 Months to Younger than 6 Years, By Borough and United Hospital Fund Neighborhood, 2009

	(1) Tests ^(a)		(2) Elevated blood lead levels ^(b)		(3) Environmental intervention blood lead levels (EIBLL) ^(c)			
United Hospital Fund Neighborhood	Tested		Newly identified > 10 µg/dL		Newly identified EIBLL			
	Number	Percent tested Vital Records ^(d)	Number	Rate BLL ≥ 10 /1,000 tested	Number	Rate EIBLL /1,000 tested	95% CI	
							Low	High
New York City total	332,026	53	1,387	4.2	439	1.32	1.20	1.45
NYC, unknown borough	392	---	0	---	0	---	---	---
Bronx	70,155	60	229	3.3	83	1.18	0.94	1.47
Bronx unknown or invalid ZIP code	1,016	---	0	0.0	0	0	---	---
Crotona - Tremont	11,924	56	45	3.8	12	1.01	0.52	1.76
Fordham - Bronx Park	13,774	59	53	3.8	25	1.82	1.17	2.68
High Bridge - Morrisania	12,302	59	46	3.7	15	1.22	0.68	2.01
Hunts Point - Mott Haven	8,186	61	25	3.1	8	0.98	0.42	1.93
Kingsbridge - Riverdale	3,321	61	7	2.1	1	0.30	0.01	1.68
Northeast Bronx	7,498	64	22	2.9	10	1.33	0.64	2.45
Pelham - Throgs Neck	12,134	57	31	2.6	12	0.99	0.51	1.73
Brooklyn	111,999	50	607	5.4	194	1.73	1.50	1.99
Brooklyn unknown or invalid ZIP code	1,121	---	0	---	0	---	---	---
Bedford Stuyvesant - Crown Heights	15,885	57	58	3.7	22	1.38	0.87	2.10
Bensonhurst - Bay Ridge	6,594	50	23	3.5	14	2.12	1.16	3.56
Borough Park	14,127	39	119	8.4	41	2.90	2.08	3.94
Canarsie - Flatlands	7,518	55	15	2.0	3	0.40	0.08	1.17
Coney Island - Sheepshead Bay	9,721	51	74	7.6	20	2.06	1.26	3.18
Downtown-Brooklyn Heights-Park Slope	7,434	41	31	4.2	11	1.48	0.74	2.65
East Flatbush - Flatbush	13,987	53	70	5.0	22	1.57	0.99	2.38
East New York	11,173	67	42	3.8	15	1.34	0.75	2.21
Greenpoint	4,919	39	70	14.2	14	2.85	1.56	4.78
Sunset Park	7,655	43	36	4.7	11	1.44	0.72	2.57
Williamsburg - Bushwick	11,865	58	69	5.8	21	1.77	1.10	2.71

	(1) Tests ^(a)		(2) Elevated blood lead levels ^(b)		(3) Environmental intervention blood lead levels (EIBLL) ^(c)			
United Hospital Fund Neighborhood	Tested		Newly identified > 10 µg/dL		Newly identified EIBLL			
	Number	Percent tested Vital Records ^(d)	Number	Rate BLL ≥ 10 /1,000 tested	Number	Rate EIBLL /1,000 tested	95% CI	
							Low	High
Manhattan	43,194	39	179	4.1	29	0.67	0.45	0.96
Manhattan unknown or invalid ZIP code	318	---	0	---	0	---	---	---
Central Harlem - Morningside Heights	6,169	50	33	5.3	6	0.97	0.36	2.12
Chelsea - Clinton	2,156	31	4	1.9	1	0.46	0.01	2.58
East Harlem	4,473	51	21	4.7	4	0.89	0.24	2.29
Gramercy Park - Murray Hill	1,986	29	12	6.0	1	0.50	0.01	2.81
Greenwich Village - SoHo	1,467	29	13	8.9	1	0.68	0.02	3.80
Lower Manhattan	1,158	32	3	2.6	0	0.00	0.00	0.00
Union Square - Lower East Side	5,013	37	19	3.8	2	0.40	0.05	1.44
Upper East Side	4,218	27	11	2.6	1	0.24	0.01	1.32
Upper West Side	5,368	33	27	5.0	1	0.19	0.00	1.04
Washington Heights - Inwood	10,868	53	36	3.3	12	1.10	0.57	1.93
Queens	90,701	60	317	3.5	113	1.25	1.03	1.50
Queens unknown or invalid ZIP code	1,284	---	0	---	0	---	---	---
Bayside - Little Neck	2,165	77	7	3.2	2	0.92	0.11	3.34
Flushing - Clearview	8,070	55	17	2.1	7	0.87	0.35	1.79
Fresh Meadows	3,797	62	8	2.1	1	0.26	0.01	1.47
Jamaica	13,382	64	37	2.8	12	0.90	0.46	1.57
Long Island City - Astoria	6,859	51	20	2.9	11	1.60	0.80	2.87
Ridgewood - Forest Hills	8,723	54	41	4.7	10	1.15	0.55	2.11
Rockaway	5,064	68	15	3.0	7	1.38	0.56	2.85
Southeast Queens	6,577	66	26	4.0	9	1.37	0.63	2.60
Southwest Queens	11,616	60	53	4.6	22	1.89	1.19	2.87
West Queens	23,164	57	93	4.0	32	1.38	0.94	1.95
Staten Island	15,585	49	55	3.5	20	1.28	0.78	1.98
Staten Island unknown or invalid ZIP code	113	---	0	---	0	---	---	---
Port Richmond	3,400	58	17	5.0	7	2.06	0.83	4.24
South Beach - Tottenville	4,705	42	10	2.1	3	0.64	0.13	1.86
Stapleton - St. George	4,786	52	16	3.3	7	1.46	0.59	3.01
Willowbrook	2,581	48	12	4.6	3	1.16	0.24	3.40

(a) Test types: venous, capillary, unspecified.

(b) Elevated blood lead level was defined as a venous, capillary, or unspecified BLL ≥ 10 µg/dL.

(c) The Environmental Intervention Blood Lead Level (EIBLL) is defined as a venous BLL ≥ 15 µg/dL, consistent with Local Law 1.

(d) In this column, population counts used as the denominator for percent of children tested were calculated by summing NYC births 2004-2009. Data were obtained from the NYCDOHMH Office of Vital Statistics.

Table 2. Profile of Children Newly Identified with Blood Lead Levels at or Above Environmental Intervention Blood Lead Level, Ages 0 to Younger than 18 years and Ages 6 Months to Younger than 6 Years, New York City, 2009

		0 years - < 18 years			6 months - < 6 years		
		Number EIBLL ⁽¹⁾	Percent EIBLL	EIBLL Rate ⁽²⁾ (number per 1,000 tested)	Number EIBLL ⁽¹⁾	Percent EIBLL	EIBLL Rate ⁽²⁾ (number per 1,000 tested)
Total	EIBLL	512	100.0%	1.2	439	100.0%	1.3
Age	Less than 6 months old	10	2.0%	8.5 ⁽³⁾	--	--	--
	6 months to less than 1 year old	21	4.1%	0.9	21	4.8%	0.9
	1 year old	173	33.8%	1.9	173	39.4%	1.9
	2 years old	124	24.2%	1.6	124	28.2%	1.6
	3 years old	61	11.9%	1.2	61	13.9%	1.2
	4 years old	42	8.2%	0.8	42	9.6%	0.8
	5 years old	18	3.5%	0.5	18	4.1%	0.5
	6 to less than 18 years old	63	12.3%	0.8	--	--	--
Gender	Male	261	51.0%	1.3	225	51.3%	1.3
	Female	251	49.0%	1.3	214	48.7%	1.3
Borough	Brooklyn	213	41.6%	1.5	194	44.2%	1.7
	Queens	144	28.1%	1.3	113	25.7%	1.2
	Bronx	99	19.3%	1.1	83	18.9%	1.2
	Manhattan	33	6.4%	0.6	29	6.6%	0.7
	Staten Island	23	4.5%	1.2	20	4.6%	1.3
Race/ethnicity	Hispanic	188	36.7%		160	36.4%	
	Asian, Non-Hispanic	136	26.6%		108	24.6%	
	Black, Non-Hispanic	115	22.5%		103	23.5%	
	White, Non-Hispanic	56	10.9%		52	11.8%	
	Other/Unknown	17	3.3%		16	3.6%	
Country of Birth	United States	414	80.9%		377	85.9%	
	Not United States	98	19.1%		62	14.1%	
Medicaid	Medicaid ID on record	406	79.3%		359	81.8%	
	No Medicaid ID on record	106	20.7%		80	18.2%	
Blood lead level at case assignment (µg/dL)	15 to 19	306	59.8%		261	59.5%	
	20 to 29	152	29.7%		131	29.8%	
	30 to 39	34	6.6%		33	7.5%	
	40 to 49	13	2.5%		10	2.3%	
	50 to 59	4	0.8%		2	0.5%	
	60 to 69	3	0.6%		2	0.5%	
	70 or more	0	0.0%		0	0.0%	
Year primary residence was built	1939 or earlier	427	83.4%		369	84.1%	
	1940 to 1949	13	2.5%		10	2.3%	
	1950 to 1959	16	3.1%		14	3.2%	
	1960 to 1969	17	3.3%		14	3.2%	
	1970 to present	38	7.4%		31	7.1%	
	Unknown	1	0.2%		1	0.2%	
Size of the building where the child resides	Building has less than 3 dwelling units	189	36.9%		273	37.6%	
	Building has 3 or more dwelling units	322	62.9%		165	62.2%	
	Unknown	1	0.2%		1	0.2%	
Lead-based paint hazard identified at child's residence⁽⁴⁾	Lead-based paint hazard was identified	391	76.4%		336	76.5%	
	No lead-based paint hazard identified	121	23.6%		103	23.5%	

(1) The Environmental Intervention Blood Lead Level (EIBLL) is defined as a venous BLL \geq 15 µg/dL, consistent with Local Law 1.

(2) Data on some indicators were missing from a sizeable number of tests reported to the LPPP; thus, case rates could not be calculated for all indicators because denominator data were not available.

(3) The case rate for children younger than 6 months was very high because many of the infants tested were referred for testing due to their high risk for lead poisoning from prenatal exposure.

(4) This included the child's primary residence and supplementary addresses where the child spent considerable periods of time. Hazards were identified by April 30, 2010.

Table 3. Lead Poisoning Surveillance Data for New York City Children, Ages 0 to Younger than 18 years, By Borough and United Hospital Fund Neighborhood, New York City, 2009

United Hospital Fund Neighborhood	(1) Tests ^(a)	(2) Elevated blood lead levels ^(b)		(3) Environmental intervention blood lead levels (EIBLL) ^(c)			
	Tested	Newly identified BLL \geq 10 μ g/dL		Newly identified EIBLL			
	Number	Number	Rate BLL \geq 10 /1,000 tested	Number	Rate EIBLL /1,000 tested	95% CI Low High	
New York City total	413,518	1,634	4.0	512	1.24	1.13	1.35
NYC, unknown borough	460	0	---	0	---	---	---
Bronx	87,259	284	3.3	99	1.13	0.9	1.38
Bronx unknown or invalid ZIP code	1,418	0	---	0	---	---	---
Crotona - Tremont	14,715	52	3.5	13	0.88	0.47	1.51
Fordham - Bronx Park	16,896	69	4.1	31	1.83	1.25	2.60
High Bridge - Morrisania	15,480	57	3.7	18	1.16	0.69	1.84
Hunts Point - Mott Haven	10,275	31	3.0	10	0.97	0.47	1.79
Kingsbridge - Riverdale	3,915	9	2.3	1	0.26	0.01	1.42
Northeast Bronx	9,446	25	2.6	12	1.27	0.66	2.22
Pelham - Throgs Neck	15,114	41	2.7	14	0.93	0.51	1.55
Brooklyn	141,836	677	4.8	213	1.50	1.3	1.72
Brooklyn unknown or invalid ZIP code	1,552	0	---	0	---	---	---
Bedford Stuyvesant - Crown Heights	21,078	71	3.4	23	1.09	0.69	1.64
Bensonhurst - Bay Ridge	8,022	26	3.2	14	1.75	0.95	2.93
Borough Park	16,874	130	7.7	46	2.73	2.00	3.64
Canarsie - Flatlands	9,682	23	2.4	4	0.41	0.11	1.06
Coney Island - Sheepshead Bay	11,454	86	7.5	21	1.83	1.13	2.80
Downtown - Brooklyn Heights - Park Slope	8,551	32	3.7	12	1.40	0.73	2.45
East Flatbush - Flatbush	17,507	82	4.7	26	1.49	0.97	2.18
East New York	14,596	43	2.9	16	1.10	0.63	1.78
Greenpoint	5,608	71	12.7	15	2.67	1.50	4.41
Sunset Park	9,759	40	4.1	13	1.33	0.71	2.28
Williamsburg - Bushwick	17,153	73	4.3	23	1.34	0.85	2.01

	(1) Tests ^(a)	(2) Elevated blood lead levels ^(b)		(3) Environmental intervention blood lead levels (EIBLL) ^(c)			
United Hospital Fund Neighborhood	Tested	Newly identified BLL ≥ 10 µg/dL		Newly identified EIBLL			
	Number	Number	Rate BLL ≥ 10 /1,000 tested	Number	Rate EIBLL /1,000 tested	95% CI	
						Low	High
Manhattan	52,478	198	3.8	33	0.63	0.4	0.88
Manhattan unknown or invalid ZIP code	462	0	---	0	---	---	---
Central Harlem - Morningside Heights	7,758	34	4.4	6	0.77	0.28	1.68
Chelsea - Clinton	2,422	7	2.9	1	0.41	0.01	2.30
East Harlem	5,488	25	4.6	6	1.09	0.40	2.38
Gramercy Park - Murray Hill	2,122	12	5.7	1	0.47	0.01	2.63
Greenwich Village - SoHo	1,665	13	7.8	1	0.60	0.02	3.35
Lower Manhattan	1,371	3	2.2	0	0.00	0.00	0.00
Union Square - Lower East Side	6,373	22	3.5	3	0.47	0.10	1.38
Upper East Side	4,475	11	2.5	1	0.22	0.01	1.25
Upper West Side	5,760	30	5.2	1	0.17	0.00	0.97
Washington Heights - Inwood	14,582	41	2.8	13	0.89	0.47	1.52
Queens	112,983	416	3.7	144	1.27	1.1	1.50
Queens unknown or invalid ZIP code	1,657	0	---	0	---	---	---
Bayside - Little Neck	2,444	8	3.3	2	0.82	0.10	2.96
Flushing - Clearview	9,291	23	2.5	10	1.08	0.52	1.98
Fresh Meadows	4,357	8	1.8	1	0.23	0.01	1.28
Jamaica	16,781	61	3.6	19	1.13	0.68	1.77
Long Island City - Astoria	8,602	32	3.7	13	1.51	0.80	2.58
Ridgewood - Forest Hills	11,538	43	3.7	11	0.95	0.48	1.71
Rockaway	6,249	16	2.6	7	1.12	0.45	2.31
Southeast Queens	8,298	27	3.3	10	1.21	0.58	2.22
Southwest Queens	14,421	62	4.3	24	1.66	1.07	2.48
West Queens	29,345	136	4.6	47	1.60	1.18	2.13
Staten Island	18,502	59	3.2	23	1.24	0.8	1.87
Staten Island unknown or invalid ZIP code	153	0	---	0	---	---	---
Port Richmond	4,128	19	4.6	8	1.94	0.84	3.82
South Beach - Tottenville	5,428	10	1.8	3	0.55	0.11	1.62
Stapleton - St. George	5,813	18	3.1	9	1.55	0.71	2.94
Willowbrook	2,980	12	4.0	3	1.01	0.21	2.94

(a) Test types: venous, capillary, unspecified.

(b) Elevated blood lead level was defined as a venous, capillary, or unspecified BLL ≥ 10 µg/dL.

(c) The Environmental Intervention Blood Lead Level (EIBLL) is defined as a venous BLL ≥ 15 µg/dL, consistent with Local Law 1.

Table 4. Profile of Pregnant Women Newly Identified with Elevated Blood Lead Levels, New York City, 2009

		<i>Number</i>	<i>Percent</i>
Total		68	100.0%
<i>Age</i>	<i>Less than 20 years old</i>	3	4.4%
	<i>20 to 24 years old</i>	12	17.6%
	<i>25 to 29 years old</i>	25	36.8%
	<i>30 to 34 years old</i>	13	19.1%
	<i>35 years old and older</i>	15	22.1%
	<i>Mean 29 years</i>		
	<i>Median 29 years</i> <i>Range 18 to 43 years</i>		
<i>Borough</i>	<i>Queens</i>	29	42.6%
	<i>Brooklyn</i>	19	27.9%
	<i>Bronx</i>	13	19.1%
	<i>Manhattan</i>	3	4.4%
	<i>Staten Island</i>	4	5.9%
<i>Race/ethnicity</i>	<i>Hispanic</i>	38	55.9%
	<i>Asian, Non-Hispanic</i>	22	32.4%
	<i>Black, Non-Hispanic</i>	4	5.9%
	<i>White, Non-Hispanic</i>	3	4.4%
	<i>Other/Unknown</i>	1	1.5%
<i>Country of birth</i>	<i>Mexico</i>	32	47.1%
	<i>Bangladesh</i>	13	19.1%
	<i>India</i>	4	5.9%
	<i>Pakistan</i>	4	5.9%
	<i>Ecuador</i>	3	4.4%
	<i>Other foreign countries*</i>	8	11.8%
	<i>United States</i>	3	4.4%
	<i>Unknown</i>	1	1.5%
<i>Blood lead level at referral (µg/dL)</i>	<i>15 to 19</i>	46	67.6%
	<i>20 to 29</i>	14	20.6%
	<i>30 to 39</i>	7	10.3%
	<i>40 and higher</i>	1	1.5%
	<i>Mean 20.5</i>		
	<i>Median 18</i> <i>Range 15 to 47</i>		
<i>Length of residence in the United States (for foreign born)</i>	<i>Less than 1 year</i>	6	9.4%
	<i>1 to 4 years</i>	17	26.6%
	<i>5 to 8 years</i>	22	34.4%
	<i>9 to 12 years</i>	11	17.2%
	<i>More than 13 years</i>	8	12.5%
	<i>Mean 6.9 years</i>		
	<i>Median 7 years</i> <i>Range 1 month to 29 years</i>		

*Includes women from Afghanistan, Colombia, Dominican Republic, Georgia, Guatemala, Haiti, Jamaica, Nigeria.

Table 5. Neighborhood Codes and Their Corresponding Names and ZIP Codes, New York City

Code	Neighborhood Name	ZIP Codes
Bronx		
BX1	Kingsbridge-Riverdale	10463,10471
BX2	Northeast Bronx	10466,10469,10470,10475,10803
BX3	Fordham-Bronx Park	10458,10467,10468
BX4	Pelham-Throgs Neck	10461,10462,10464,10465,10472,10473
BX5	Crotona-Tremont	10453,10457,10460
BX6	High Bridge-Morrisania	10451,10452,10456
BX7	Hunts Point-Mott Haven	10454,10455,10459,10474
Brooklyn		
BK1	Greenpoint	11211,11222
BK2	Williamsburg-Bushwick	11206,11221,11237
BK3	Downtown-Heights-Park Slope	11201,11202,11205,11215,11217,11231,11251
BK4	Bedford Stuyvesant-Crown Heights	11212,11213,11216,11233,11238
BK5	East New York	11207,11208
BK6	Sunset Park	11220,11232
BK7	Borough Park	11204,11218,11219,11230
BK8	East Flatbush-Flatbush	11203,11210,11225,11226
BK9	Canarsie-Flatlands	11234,11236,11239
BK10	Bensonhurst-Bay Ridge	11209,11214,11228,11252
BK11	Coney Island-Sheepshead Bay	11223,11224,11229,11235
Manhattan		
M1	Washington Heights-Inwood	10031,10032,10033,10034,10040
M2	Central Harlem-Morningside Heights	10026,10027,10030,10037,10039
M3	East Harlem	10029,10035
M4	Upper West Side	10023,10024,10025,10069
M5	Upper East Side	10021,10028,10044,10128,10162,10075,10065
M6	Chelsea-Clinton	10001,10011,10018,10019,10020,10036
M7	Gramercy Park-Murray Hill	10010,10016,10017,10022
M8	Greenwich Village-Soho	10012,10013,10014
M9	Union Square-Lower East Side	10002,10003,10009
M10	Lower Manhattan	10004,10005,10006,10007,10038,10048,10280,10281,10282
Queens		
Q1	Long Island City-Astoria	11101,11102,11103,11104,11105,11106,11109
Q2	West Queens	11368,11369,11370,11371,11372,11373,11377,11378
Q3	Flushing-Clearview	11351,11352,11354,11355,11356,11357,11358,11359,11360
Q4	Bayside-Little Neck	11361,11362,11363,11364
Q5	Ridgewood-Forest Hills	11374,11375,11379,11385
Q6	Fresh Meadows	11365,11366,11367
Q7	Southwest Queens	11414,11415,11416,11417,11418,11419,11420,11421,11430
Q8	Jamaica	11412,11423,11424,11425,11431,11432,11433,11434,11435,11436
Q9	Southeast Queens	11001,11004,11005,11040,11411,11413,11422,11426,11427,11428,11429
Q10	Rockaway	11691,11692,11693,11694,11695,11697
Staten Island		
S1	Port Richmond	10302,10303,10310
S2	Stapleton-St. George	10301,10304,10305
S3	Willowbrook	10313,10314
S4	South Beach-Tottenville	10306,10307,10308,10309,10312



Michael R. Bloomberg
Mayor

**Department of
Health & Mental
Hygiene**

Thomas Farley, M.D., M.P.H.
Commissioner