2005

Annual Report on Blood Lead Levels on Adults and Children in Michigan

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A Joint Report

of

Michigan State University
Department of Medicine
117 West Fee Hall
East Lansing, Michigan 48824-1316
(517) 353-1846

Kenneth D. Rosenman, M.D., Professor of Medicine
Amy S. Sims, B.S., ABLES Program Coordinator

and

the Michigan Department of Labor and Economic Growth
Michigan Occupational Safety and Health Administration
P.O. Box 30643
Lansing, Michigan 48909-8143
(517) 322-1817

Martha B. Yoder, M.S., Acting Director
John H. Peck, M.S., Acting Deputy Director

and

Michigan Department of Community Health
Division of Family and Community Health
Childhood Lead Poisoning Prevention Project
109 West Michigan Avenue
P.O. Box 30195
Lansing, Michigan 48909
(517) 335-8885

Brenda Fink, A.C.S.W., Project Director
Mary A. Scoblic, R.N., M.N., Project Unit Director
Sharon Hudson, R.N., M.S.N., C.N.M., Project Coordinator

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Part I

Blood Lead Levels Among *Adults* in Michigan

Summary:

This is the eighth annual report on surveillance of blood lead levels in Michigan citizens. It is based on regulations that went into effect on October 11, 1997 that require laboratories to report all blood lead levels analyzed. The first part of the report (pages 1 to 47 and appendices I-V) is about blood lead levels in adults (16 years and older) and the second part (pages 49 to 89) is about the results of blood lead tests in children under the age of six.

In 2005, 14,211 blood lead tests were received for 13,122 individuals ≥16 years of age. Seven hundred twenty-five (5.5%) individuals had blood lead levels greater than or equal to 10 µg/dL; 133 of those 725 had lead levels greater than or equal to 25 µg/dL and 13 of the 133 had blood lead levels greater than or equal to 50 µg/dL.

There were 1,413 fewer blood lead tests and 18 fewer individuals reported in 2005 compared to 2004. Both the total number and percent of individuals with blood lead levels greater than or equal to 10 µg/dL decreased from 816 (6.2%) in 2004 to 725 (5.5%) in 2005. The number and percent of individuals with blood lead levels greater than or equal to 25 µg/dL decreased, from 155 (1.2%) in 2004 to 133 (1.0%) in 2005. The number of individuals with blood lead levels greater than or equal to 50 µg/dL increased slightly from 9 (0.07%) in 2004 to 13 (0.1%) in 2005. This is the seventh year in a row that blood lead levels greater than or equal to 25 µg/dL decreased from the previous year and the third year in a row that blood leads greater than or equal to 10 µg/dL decreased from the previous year. This overall decrease was secondary to a decrease in elevated blood leads from occupational exposure. For non-occupational exposure, the decrease did not begin to occur until 2004.

Individuals with blood lead levels greater than or equal to 10 µg/dL were likely to be men (91.6%) and white (88.4%). Their mean age was 45. They were most likely to live in Wayne (14.8%), St. Clair (10.7%) and Oakland (6.9%) counties.

Occupational exposure remains the predominant source of lead exposure in Michigan adults (80% of all individuals with elevated blood lead, ≥ 10 µg/dL). These exposures typically occurred where individuals were performing abrasive blasting on outdoor metal structures such as bridges, overpasses or water towers, casting brass or bronze fixtures, fabricating metal products or exposed to lead fumes from guns at shooting ranges. Individuals with elevated blood lead from exposure at shooting ranges were exposed not only as part of work, but also from their involvement in the activity as recreation. This included individuals using commercial ranges and members of private clubs. This is the most common cause of non-occupational exposure (13.3% of all cases with blood lead ≥ 10µg/dL and 67% of all cases with blood lead ≥ 10µg/dL from non-occupational causes).

In 2005, inspection reports were finalized on nine companies first identified in 2005 where employees had blood lead levels greater than or equal to 25 µg/dL. These reports showed that 6 of 9 (67%) companies were in violation of the lead standard. Evaluation of these inspections has shown them to be effective relative to other types of workplace enforcement inspections and suggests that they play a role in helping to reduce blood lead levels (1).

The eighth year of operation of an adult blood lead surveillance system in Michigan proved successful in continuing to identify a large number of individuals with elevated blood lead levels and sources of exposures that could be remediated to reduce lead exposure. Outreach activities that were continued this past year included: distributing resources on diagnosis and management of lead exposure to health care providers

with patients with elevated blood lead levels and distributing a "how to" guide for home renovation. Two new educational brochures for individuals exposed to lead were developed this past year: one on the toxicity of lead and the second on controlling lead exposure in firing ranges. Copies of these brochures and diagnosis management plan for health care providers are available at www.oem.msu.edu under resources for lead.

Ongoing surveillance in future years will determine if the favorable trend in lower blood lead levels found from 1998-2005 will continue.

Background:

This is the eighth annual report on surveillance of blood lead levels in Michigan residents. Blood lead levels of Michigan residents, including children, have been monitored by the state since 1992. From 1992 to 1995, laboratories performing analyses of blood lead levels, primarily of children, had been voluntarily submitting reports to the Michigan Department of Public Health and then beginning in 1996 to the Michigan Department of Community Health (MDCH). The Michigan Department of Community Health promulgated regulations effective October 11, 1997 that require laboratories to submit reports of both children and adults to the MDCH for any blood testing for lead. Coincident with this, the Michigan Occupational Safety and Health Administration (MIOSHA) in the Michigan Department of Labor and Economic Growth (MDLEG) (formerly called the Occupational Health Division within the Michigan Department of Consumer and Industry Services (MDCIS); which formerly had been part of the Michigan Department of Public Health) received federal funding in 1997 from the Centers for Disease Control and Prevention (CDC) to monitor adult blood lead levels as part of the Adult Blood Lead Epidemiology and Surveillance (ABLES) Program. Beginning this past year the funds have been provided directly to Michigan State University. Currently 37 states have established lead registries through the ABLES Program for surveillance of adult lead absorption, primarily based on reports of elevated blood lead levels (BLL) from clinical laboratories.

The Michigan Adult Blood Lead Registry:

Reporting Regulations and Mechanism

Since October 11, 1997, laboratories performing blood lead analyses of Michigan residents are required to report the results of all blood lead level tests (BLLs) to the Michigan Department of Community Health (R325.9081-.9087). Prior to these new regulations, few reports of elevated lead levels among adults were received.

The laboratories are required to report blood sample analysis results, patient demographics, and employer information on a standard Michigan Department of Community Health Lead Reporting Form (Appendix I). The physician or health provider ordering the blood lead analysis is responsible for completing the patient information (section I), the physician/provider information (section II) and the specimen collection information (section IIa). Upon receipt of the blood sample for lead analysis, the clinical laboratory is responsible for completion of the laboratory information (section III). All clinical laboratories conducting business in Michigan that analyze blood samples for lead must report all adult and child blood lead results to the Michigan Department of Community Health, Childhood Lead Poisoning Prevention Program (MDCH/CLPPP) within five working days.

All blood lead results on individuals 16 years or older are forwarded to the Michigan Occupational Safety and Health Administration (MIOSHA) in the Michigan Department of Labor and Economic Growth

(MDLEG) for potential follow-up. A summary of blood lead results from 2005 on children less than six years old is in Part II of this report.

Laboratories

Employers providing blood lead analysis on their employees as required by the Michigan Occupational Safety and Health Administration (MIOSHA) are required to use a laboratory approved by OSHA to be in compliance with the lead standard. Appendix II lists the eleven approved laboratories in Michigan. This number is up from ten in the previous year.

Data Management

When BLL reports are received at the MDCH, they are reviewed for completeness. For those reports where information is missing, copies are returned to the physician/provider to complete. Lead Registry staff code the information on the lead reporting form using a standard coding scheme and enter this information into a computerized database. Each record entered into the database is visually checked for any data entry errors, duplicate entries, missing data, and illogical data. These quality control checks are performed monthly.

Case Follow Up

Adults whose BLL is 25 µg/dL or greater are contacted for an interview. We also interview individuals with blood lead levels ranging from 10 to 24 µg/dL if we cannot identify the source of their lead exposure from the reporting form. A letter is sent to the individual explaining Michigan's lead surveillance program and inviting them to answer a 15-20 minute telephone questionnaire about their exposures to lead and any symptoms they may be experiencing. The questionnaire collects patient demographic data, work exposure and history information, symptoms related to lead exposure, information on potential lead-using hobbies and non-work related activities, and the presence of young children in the household to assess possible take-home lead exposures among these children. Trained interviewers administer the questionnaire.

Michigan OSHA (MIOSHA) Requirements for Medical Monitoring and Medical Removal

MIOSHA requirements for medical surveillance (i.e. biological monitoring) and medical removal are identical to Federal OSHA's. The requirements for medical removal differ for general industry and construction. For general industry, an individual must have two consecutive blood lead levels above 60 µg/dL or an average of three blood lead levels greater than 50 µg/dL before being removed (i.e. taken pursuant to the standard or the average of all blood tests conducted over the previous six months, whichever is longer). For construction, an individual needs to have only two consecutive blood lead level measurements taken pursuant to the standard above 50 µg/dL. However, an employee shall not be required to be removed if the last blood-sampling test indicates a blood lead level at or below 40 µg/dL. See Appendix III for a more detailed description of the requirements.

In the absence of a specific exposure to lead, blood lead levels in the general population are typically below 10 µg/dL (2).

Dissemination of Surveillance Data

Quarterly data summaries, without personal identifiers, are forwarded to the Program's funding agency, the National Institute for Occupational Safety and Health (NIOSH). NIOSH compiles quarterly reports from all states that require reporting of BLLs and publishes them in the Morbidity and Mortality Weekly Report (MMWR) (3). See Appendix IV for the most recent publication.

Results:

2005 is the eighth year with complete laboratory reporting in Michigan since the lead regulations became effective on October 11, 1997. Accordingly, this report provides a summary of all the reports of adult blood lead levels received in 2005 as well as more detailed information from interviews of those adults with BLLs 25 µg/dL and greater and the sample of individuals interviewed who had blood lead levels ranging 10-24 µg/dL. It also describes the Michigan Occupational Safety and Health Administration (MIOSHA) inspections at the work sites where these individuals were exposed to lead.

Blood Lead Levels Reported in 2005

Number of Reports and Individuals

Between January 1 and December 31, 2005, the State of Michigan received 14,211 blood lead level reports for individuals 16 years of age or older. Because an individual may be tested more than once each year, the 14,211 reports received were for 13,122 individuals (Table 1). The number of individuals tested for blood lead each year gradually increased up to 2004 (Figure 1). The increase in 1999 and 2000 probably was secondary to better compliance with the new regulation. The increase in more recent years is assumed secondary to increased testing.

The following descriptive statistics are based on the 13,122 individuals reported in 2005, and are based on the highest BLL reported for each of these adults.

Distribution of Blood Lead Levels

In 2005, 725 (5.5%) of the 13,122 adults reported had blood lead levels greater than or equal to 10 µg/dL; 133 of those 725 had blood lead levels greater than or equal to 25 µg/dL and 13 of those 133 had blood lead levels greater than or equal to 50 µg/dL (Table 1). A total of 12,397 (94.5%) of the adults reported in 2005 had BLLs less than 10 µg/dL. Among those individuals whose blood lead $\geq$10µg/dL, those whose source of lead was non-work exposure had slightly higher blood leads than individuals with work exposure (Table 1).

There has been a gradual decline in the overall number of individuals with elevated blood lead because of a reduction in elevated blood leads from occupational exposure (Figures 2 and 3). For non-work exposures elevated blood lead increased from 1998 until 2003 and then has decreased in 2004 and 2005 (Figure 3).

Gender and Age Distribution

All Blood Lead Levels

Fifty-seven percent of the adults reported to the Registry were male, and 43 percent were females (Table 2). The age distribution is shown in Table 3. The mean age was 45.

Blood Lead Levels ≥ 10 µg/dL

For the 725 adults reported to the Registry with blood lead levels greater than or equal to 10 µg/dL, 664 (91.6%) were men and 61 (8.4%) were women (Table 2). The age distribution for these adults is shown in Table 3. The mean age was 43.

Race Distribution

All Blood Lead Levels

Although laboratories are required to report the patients' race, this information is frequently not provided. Race was missing for 7,840 (59.7%) of the 13,122 adults reported. Where race was known, 4,232 (80.1%) were reported as Caucasian, 853 (16.1%) were reported as African American, 93 (1.8%) were reported as Native American, 55 (1.0%) were reported as multiracial/other, and 49 (0.9%) were reported as Asian/Pacific Islander (Table 4).

Blood Lead Levels ≥ 10 µg/dL

For adults with blood lead levels greater than or equal to 10 µg/dL where race was indicated, 471 (88.4%) were reported as Caucasian, 39 (7.3%) were reported as African American, 14 (2.6%) were reported as Native American, 5 (0.9%) were reported as multiracial/other, and 4 (0.8%) were reported as Asian/Pacific Islander, (Table 4). The percentage of African-Americans with blood leads levels ≥ 10µg/dL was decreased as compared to all blood lead levels.

Geographic Distribution

County of residence was determined for 9,754 of the 13,122 adults reported to the Registry. They lived in all of Michigan's 83 counties. The largest number of adults reported in 2005 lived in Wayne County (1,913, 19.6%), followed by Kent (1,245, 12.8%) and Oakland (678, 7.0%). County was unknown for 3,368 adults (Figure 4 and Table 5).

Figure 5 and Table 5 show the county of residence of the 581 adults with blood lead levels greater than or equal to 10 µg/dL where county of residence could be determined. The largest number of adults reported with a BLL of 10 µg/dL and greater were from Wayne County (86, 14.8%), followed by St. Clair (62, 10.7%) and Oakland (40, 6.9%). County was unknown for 144 adults.

Figure 6 and Table 5 show the county of residence for the 119 adults with blood lead levels greater than or equal to 25 µg/dL where county of residence could be determined. The largest number of adults reported

with a BLL of 25 µg/dL and above were from Wayne County (18, 15.1%), followed by St. Clair (16, 13.5%), and Kalamazoo (14, 11.8%). County was unknown for 14 adults.

Figure 7 and Table 5 show the percentage of adults tested for blood lead within each county with BLLs of 10 µg/dL or greater. St. Clair (62, 35.0%), Gratiot (17, 32.1%), and Montcalm (25, 25.8%) counties had the highest percentages of adults with BLLs of 10 µg/dL or greater.

Figure 8 and Table 5 show the percentage of adults tested for blood lead within each county with BLLs of 25 µg/dL or greater. Arenac (1, 20.0%), St. Clair (16, 9.0%) and Montcalm (6, 6.2%) counties had the highest percentage of adults with BLLs of 25 µg/dL or greater.

Figure 9 and Table 6 show the incidence rates of BLLs of 10 µg/dL and above, by county, for women. There were 49 women reported in 2005 with a BLL of 10 µg/dL or greater where county of residence could be determined. Clinton (22/100,000), Montmorency (22/100,000) and Mason (8/100,000) had the three highest incidence rates. With source of exposure known, women with elevated blood lead had their exposure from work (10, 50.0%), mostly in transportation equipment (10.0%), special trade construction (10.0%), and fabricated metal products (10.0%). Women with elevated blood leads also had non-work exposures mostly from firearms (15.0%) and remodeling performed in their homes (15.0%). Source of exposure was unknown for 41 of the 61.

Figure 10 and Table 7 show the incidence rates of BLLs of 10 µg/dL and above, by county, for men. There were 532 men reported in 2005 with a BLL of 10 µg/dL or greater where county of residence could be determined. Mackinac (193/100,000), Clinton (113/100,000) and Gratiot, Montcalm and St. Clair (each 95/100,000) had the highest incidence rates. The elevated rates in Clinton, Gratiot, Montcalm and St. Clair counties were secondary to individuals exposed to lead while working in brass/bronze foundries. The elevated rate in Mackinac was secondary to exposure to workers doing paint removal on bridges. The overall incidence rate for men was 14 times higher than that for women (14/100,000 vs 1/100,000).

Source of Exposure

Table 8 shows the source of exposure of lead for individuals with blood lead levels greater than 10 µg/dL reported in 2005. For 448 (80.1%) individuals, work was the identified source, for the other 111 (19.9%) a hobby, mainly related to guns 74 (66.7%) was the source. Home remodeling was the source in 9 (8.1%) individuals and lead paint ingestion was the source in 9 (8.1%) of the individuals with non-occupational exposure. For an additional 127 individuals, we are still investigating the source.

Table 9 shows the occupational sources of lead for individuals reported in 2005. The most frequent reports were on individuals in the manufacturing sector (54.0%), then construction (30.9%) and then public transportation and public utilities (4.4%), services (4.4%), and public administration (4.4%).

Figure 11 shows the distribution of the twenty non-construction companies that reported at least one adult with a BLL of 25 µg/dL or greater in Michigan during 2005. These companies included brass/bronze casting operations, radiator repair facilities and indoor firing ranges. Of the 433 individuals with blood lead $\geq$ 10 µg/dL, and exposure occurred at work, 299 (69%) were from these twenty companies.

Blood leads have decreased across all types of industry, although in 2004 lead levels in construction increased (Figure 12).

Summary of Industrial Hygiene Inspections

Since the 2004 report, the statewide surveillance system identified 23 companies where MIOSHA had not performed a recent inspection for lead (Table 10). Nine of these companies have now been inspected. Inspections are planned for the other 14 companies. Inspections of these nine companies resulted in 7 of the 9 (77.8%) companies receiving citations for a violation of an occupational health standard (Table 11). Six of the 9 (67%) companies were issued citations for violations of the lead standard. Violations of the lead standard by industry type is shown in (Table 12).

Of the 23 companies identified, ten were identified by elevated blood lead reports collected because of a company's medical surveillance program and seven from an individual having the test performed by their personal health care provider. For six we are unable to determine at this time why the blood lead sample was collected.

We conducted a survey of 28 Michigan radiator repair facilities and found that only 7 (25%) of the companies were providing blood lead testing to their employees. This is better than the 8% reported from the survey conducted in the early 1990's in California. Four (14%) indicated they were unaware of the requirement to provide blood lead testing and 10 (36%) indicated air lead levels in their facilities were below levels where such blood lead testing is required. Four (14%) reported they did not use lead and 3 (11%) reported they had no employees or were no longer in business.

To date eleven of the thirteen radiator repair facilities selected for additional follow-up to determine the reliability of these self-reports have been inspected. These eleven facilities were selected based on the facility reporting either their air levels were not above the action level of 30 $\mu g/m^3$ (9 facilities) or they were unaware of the requirement to test for lead (3 facilities). Violations of the lead standard were found in seven of the eleven radiator repair facilities inspected (Table 13).

Case Narratives

Appendix V contains brief narratives about individuals with blood lead greater than or equal to 50 µg/dL.

Interviews of Adults with Blood Lead Levels of 10 µg/dL or Greater

Between October 15, 1997 and December 31, 2005, there were 1,238 reports received on adults with blood lead levels $\geq$10 µg/dL that completed an interview by telephone. The following summary of interview data is based on the 1,238 questionnaires completed by telephone. These 1,238 adults were reported to the Registry from October 15, 1997 to December 31, 2005.

Table 14 lists the demographic characteristics of the 1,238 adults with completed questionnaires by highest lead level reported. Most of the completed questionnaires were of males (91.4%), which parallels the gender distribution of the number of lead level reports $\geq$ 10 µg/dL. There was no difference in gender by highest blood lead level. The percentage of African-Americans was greater among adults with the highest

blood lead levels (≥ 60 µg/dL). The percentage of ever or current smokers was higher among adults with the higher blood lead levels. The group with the highest lead levels had the youngest mean age.

The higher blood leads were seen in high school graduates without any college education and high school graduates with 1-3 years of college a technical school than in those who had not graduated high school or had completed college (Table 15).

Table 16 presents the types of lead-related symptoms reported during the interviews, by lead level. Only individuals who had daily or weekly symptoms were included in this table. Loss of 10+ pounds without dieting, continued loss of appetite, frequent pain/soreness, headache, being tired, feeling nervous, waking up at night, and being irritable were associated with a statistically significant increasingly higher levels of blood lead. Having any gastro-intestinal, musculoskeletal, nervous, or reproductive system symptom was associated with a statistically significant increasingly higher levels of blood lead. Table 17 shows the reporting of anemia, kidney disease, high blood pressure and hearing loss by lead level category.

Table 18 presents the type of industry by lead level reported among those interviewed. Overall, 34.3% worked in special trade construction, followed by 23.6% working in the primary metals industry. Among individuals with the higher blood leads (≥ 40 µg/dL), the most common exposure was the same as for all elevated blood lead levels with construction followed by the primary metals industry (foundries). Table 19 presents the number of years worked by highest lead level reported for the adults who completed a questionnaire. Higher blood lead level results were more likely to occur in shorter-term workers (i.e. worked in a lead exposed job for five or fewer years).

Table 20 lists the types of working conditions reported by the interviewed adults, again by highest lead level reported. Workers with lower lead levels were more likely to report having their work clothing laundered at work, having a showering facility and having a separate lunch room. They also were more likely to report eating in the lunch room. As expected, workers with higher blood lead levels were more likely to have been removed from the job.

The questionnaire also asks about children in the household, in order to document the potential for and extent of take-home lead. Twenty-eight percent of the adults interviewed reported children age 6 and younger living or spending time in the home (Table 21). Children from 100 of the 345 (31.9%) households where an adult had an elevated lead level and young children lived or frequently visited were tested for blood lead. Among the 100 households where we know the childs' blood test results, 35 (37.6%) households had a child with an elevated blood lead level (≥ 10 µg/dL). A letter was sent to all adults encouraging them to test any children age 6 and younger who lived or frequently visited their house for lead.

Discussion:

An individual may have a blood lead test performed as part of an employer medical-screening program or as part of a diagnostic evaluation by their personal physician. Whatever the reason for testing, the results are then sent by the testing laboratories to the MDCH as required by law. If the individual reported is an adult, the report is then forwarded to the MDLEG and maintained in the ABLES Program Lead Registry. Individuals with a blood lead level of 25 µg/dL or greater, and a sample of individuals with blood lead levels of 10-24 µg/dL, are interviewed by a trained interviewer by telephone. The interview details demographic information, exposure history and the presence and nature of lead related symptoms. A MIOSHA

enforcement inspection is conducted to assess the company's compliance with the lead standard when an individual from the company is identified with a blood lead value of 25 μg/dL or greater.

Michigan is one of 37 states conducting surveillance of elevated blood lead levels. Michigan requires the reporting of all blood lead level results. Major benefits for reporting all blood lead levels are: the ability to calculate the rates of elevated blood lead levels in specific groups of interest, the ability to monitor compliance with the testing requirements of the lead standard, and facilitating the tracking of reports from particular employers to monitor their progress in reducing workers' exposures to lead.

Data from the state surveillance systems shows that elevated lead levels from occupational exposures are an important public health problem in the United States (3). It is well-documented that exposure to lead may cause serious health effects in adults, including injury to the nervous system, kidneys, and blood-forming and reproductive systems in men and women. The level of lead in the blood is a direct index of a worker's recent exposure to lead as well as an indication of the potential for adverse effects from that exposure (4). A further problem is that workers can bring lead home on their clothes and expose children to lead. Thirty-eight percent of households with children under the age of six where the adult had an elevated blood lead level and the child was tested had an elevated blood level (Table 21). Children can experience serious adverse effects on neurological and intellectual development from lead exposure.

Average blood lead levels in the United States general population range from 2.1 to 3.4 μg/dL with 1.5 to 4.6% of adults tested for blood lead having blood lead levels greater than 9 μg/dL (2). On the average, blood lead levels are higher in the elderly, in men, and in African-Americans and Hispanics. Despite these differences, the mean blood lead levels and the percentage greater than 9 μg/dL for these sub populations are not clinically significantly different (2). A blood lead level greater than 9 μg/dL is an indication of exposure and increased absorption of lead regardless of age, race and gender. Values above 9 μg/dL indicate exposure to lead beyond that found in the background environment. An effort was made in previous years to have all laboratories use the same normal ranges. All but Warde Medical Laboratory now uses 9 μg/dL as the upper limit for a "normal" blood lead level.

Symptoms involving the gastrointestinal, musculoskeletal and nervous systems occurred at levels within the allowable MIOSHA and OSHA standards (Table 16). The presence of these symptoms supports the need to lower the blood lead level that mandates medical removal. The current allowable level is up to 50 μg/dL. Ninety-six percent of individuals with blood lead below this level had daily or weekly symptoms consistent with lead toxicity.

We have previously reported that nervous system symptoms began to increase at 25-30 μg/dL, gastrointestinal symptoms at 30-35 μg/dL and musculoskeletal symptoms at 35-40 μg/dL (5). Other studies also support the inadequacy of the current occupational standard of 50 μg/dL to protect workers' health. Significant increases in all-cause, circulatory and cardiovascular mortality were reported in the United States among individuals followed up until 1992 who were identified with blood lead levels of 20-29 μg/dL during the years 1976 to 1980 (6). A further study from Taiwan among individuals with chronic renal disease without increased body burdens of lead and blood leads of only 5.3 μg/dL showed that treatment to increase lead excretion improved kidney function and decreased progression to end state renal disease (7). All these studies provide added weight to the inadequacy of the current occupational standard of 50 μg/dL. The American Conference of Governmental Industrial Hygienists has recommended a maximum blood lead of 30 μg/dL. In addition to suggesting the need for a new occupational standard, this data indicates the need to update health care providers of the latest information about the hazards of lead. A new report from the

Association of Occupational and Environmental Clinics (AOEC) is a useful guide for management of individuals with elevated blood lead levels (www.aoec.org/documents/positions/MMG_FINAL.pdf).

In 2005, there were 725 adults reported in Michigan with blood lead levels greater than or equal to 10 µg/dL. Approximately ninety-one percent were men. The mean age was 45. They were predominately white (88.4%) and lived in a band of counties stretching across the state from Muskegon and Oceana to Wayne and Macomb. The counties with the highest percentage of elevated blood leads were counties with non-ferrous metal foundries (Figure 11). In addition to the non-ferrous metal foundries, the source of exposure to lead was predominately occupational in origin. Exposure occurred during the abrasive blasting to remove paint from outdoor metal structures, during the fabricating of metal products, during the repair of car radiators or during work in indoor firing ranges.

Individuals with the highest blood leads were more likely to be younger (Table 15). We attribute this finding to a higher percentage of younger workers in construction doing abrasive blasting on metal structures. Also younger, less experienced workers may be given the dirtier, less desirable tasks.

Based on the experience in other states we presume that the number of reports of elevated blood lead levels we receive is an underestimate of the true number of Michigan citizens with elevated blood leads (8, 9). For example, in a study in California in the early 90's reported that while 95% of lead battery employees had blood leads performed by their employers, only 8% of employees from radiator repair facilities and 34% of employees from secondary smelters of non-ferrous metal had blood leads performed by their employer (9). Overall it was estimated that less than 3% of employees in California exposed to lead were provided blood lead testing by their employer (9). On a national basis it was estimated that less than 12% of companies using lead provided blood lead testing for their employees (8). Our survey performed 15 years later of 28 Michigan radiator repair facilities showed only slightly better results 25% were performing blood testing for lead. Inspection of 11 radiator repair facilities not doing blood tests found that 7 (64%) are required by OSHA regulations to be performing such testing.

Thirteen adults had blood lead levels above 50 µg/dL, which is the maximum blood lead level allowed in the workplace. Nine of the thirteen adults were exposed to lead at work (five from foundries, two from sandblasting/painting, and two from a firing range). Non-work sources were: two using firing ranges as a hobby, one from ingestion of paint chips, and one was an attempted suicide.

An inspection was conducted at nine companies where a worker was reported with a blood lead level $\geq$ 25 µg/dL. Six of nine (67%) of these companies were cited for violations of the lead standard (Table 13). Repeat inspections of these same companies has continued to identify problems (Table 12). Inspections will be continued at all facilities with workers with blood lead levels $\geq$25 µg/dL to ensure that employers implement changes to comply with the MIOSHA lead standard.

In its eighth year of operation, the surveillance system for lead proved successful in continuing to identify large numbers of adults with elevated lead levels and sources of exposure that could be remediated to reduce exposures. Continued outreach is planned to the medical community on the recognition and management of individuals with potential lead-related medical problems. Reevaluation of the current occupational lead standard should also be considered. Finally, we continue to be encouraged both by the continued compliance with the reporting law and by the reduction in elevated blood lead levels particularly from occupational exposures (Figure 3). We will continue to monitor for these trends in the year 2006.

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Appendices

Appendix I	Blood Lead Analysis Reporting
Appendix II	OSHA Blood Lead Laboratories: Michigan
Appendix III	Summary of Michigan's Lead Standards
Appendix IV	Morbidity and Mortality Weekly Report (MMWR): Adult Blood Lead Epidemiology and Surveillance-United States, 2003-2004.
Appendix V	Case Narratives

Table 1. Distribution of Highest Blood Lead Levels (BLLs) Among Adults and Source of Exposure in Michigan: 2005

	Work BLLs		Non-Work BLLs		Source Not Yet Identified		All BLLs	
BLLs (ug/dL)	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
<10	*	*	*	*	*	*	12,397	94.5
10-24	358	79.9	84	75.7	150	90.4	592	4.5
25-29	43	9.6	9	8.1	1	0.6	53	0.4
30-39	31	6.9	8	7.2	8	4.8	47	0.4
40-49	8	1.8	6	5.4	6	3.6	20	0.2
50-59	6	1.3	3	2.7	0	--	9	0.1
≥ 60	2	0.4	1	0.9	1	0.6	4	0.0
TOTAL	**448**	**100.0**	**111**	**100.0**	**166**	**100.0**	**13,122 ****	**100.0**

*No follow-up is conducted of individuals with blood leads < 10 ug/dL.
**In 2005, 14,211 BLL reports were received for 13,122 individuals.

Table 2. Distribution of Gender Among Adults Tested for Blood Lead in Michigan: 2005

	All Blood Lead Level Tests		Blood Lead Levels ≥ 10 ug/dL	
Gender	**Number**	**Percent**	**Number**	**Percent**
Male	7,402	56.5	664	91.6
Female	5,697	43.5	61	8.4
Total	**13,099 ***	**100.0**	**725**	**100.0**

*Gender was unknown for 23 additional individuals.

Table 3. Distribution of Age Among Adults Tested for Blood Lead in Michigan: 2005

	All Blood Lead Level Tests		Blood Lead Levels ≥ 10 ug/dL	
Age Range	**Number**	**Percent**	**Number**	**Percent**
16-19	1,128	8.6	15	2.1
20-29	2,370	18.1	102	14.1
30-39	2,459	18.7	128	17.7
40-49	2,766	21.1	189	26.1
50-59	2,264	17.3	186	25.7
60-69	1,052	8.0	71	9.8
70-79	697	5.3	26	3.6
80-89	346	2.6	5	0.7
90-99	37	0.3	3	0.4
100+	3	0.0	0	0.0
TOTAL	**13,122**	**100.0**	**725**	**100.0**

Table 4. Distribution of Race Among Adults Tested for Blood Lead in Michigan: 2005

	All Blood Lead Level Tests		Blood Lead Levels ≥ 10 ug/dL	
Race	**Number**	**Percent**	**Number**	**Percent**
Caucasian	4,232	80.1	471	88.4
African American	853	16.1	39	7.3
Native American	93	1.8	14	2.6
Asian/Pacific Islander	49	0.9	4	0.8
Multiracial/Other	55	1.0	5	0.9
TOTAL	**5,282 ***	**100.0**	**533 ****	**100.0**

*Race was unknown for 7,840 additional individuals.
**Race was unknown for 192 additional individuals.

Table 5. Number and Percent of Adults With All Blood Lead Levels (BLLs), BLLs ≥ 10 ug/dL and ≥ 25 ug/dL by County of Residence and Percent of Adults with BLLs ≥ 10 ug/dL and ≥ 25 ug/dL Among All Adults Tested for BLL in Each County of Residence in Michigan: 2005

	All BLLs		BLLs >10 ug/dL			BLLs >25 ug/dL		
County	Number	Percent	Number	Percent of all BLLs in State	Percent of all BLLs in County	Number	Percent of all BLLs in State	Percent of all BLLs in County
Alcona	13	0.13	0	0.00	0.00	0	0.00	0.00
Alger	11	0.11	0	0.00	0.00	0	0.00	0.00
Allegan	71	0.73	2	0.34	2.82	0	0.00	0.00
Alpena	29	0.30	0	0.00	0.00	0	0.00	0.00
Antrim	11	0.11	0	0.00	0.00	0	0.00	0.00
Arenac	5	0.05	1	0.17	20.00	1	0.84	20.00
Baraga	15	0.15	0	0.00	0.00	0	0.00	0.00
Barry	45	0.46	1	0.17	2.22	0	0.00	0.00
Bay	91	0.93	5	0.86	5.49	0	0.00	0.00
Benzie	4	0.04	1	0.17	25.00	0	0.00	0.00
Berrien	117	1.20	11	1.89	9.40	6	5.04	5.13
Branch	19	0.19	2	0.34	10.53	0	0.00	0.00
Calhoun	126	1.29	7	1.20	5.56	2	1.68	1.59
Cass	15	0.15	1	0.17	6.67	0	0.00	0.00
Charlevoix	11	0.11	0	0.00	0.00	0	0.00	0.00
Cheboygan	25	0.26	0	0.00	0.00	0	0.00	0.00
Chippewa	72	0.74	8	1.38	11.11	0	0.00	0.00
Clare	171	1.75	0	0.00	0.00	0	0.00	0.00
Clinton	157	1.61	36	6.20	22.93	4	3.36	2.55
Crawford	22	0.23	1	0.17	4.55	1	0.84	4.55
Delta	55	0.56	3	0.52	5.45	0	0.00	0.00
Dickinson	17	0.17	0	0.00	0.00	0	0.00	0.00
Eaton	101	1.04	4	0.69	3.96	2	1.68	1.98
Emmet	16	0.16	0	0.00	0.00	0	0.00	0.00
Genesee	332	3.40	17	2.93	5.12	2	1.68	0.60
Gladwin	97	0.99	3	0.52	3.09	1	0.84	1.03
Gogebic	7	0.07	1	0.17	14.29	0	0.00	0.00
Grand Traverse	65	0.67	9	1.55	13.85	0	0.00	0.00
Gratiot	53	0.54	17	2.93	32.08	2	1.68	3.77
Hillsdale	10	0.10	0	0.00	0.00	0	0.00	0.00
Houghton	31	0.32	2	0.34	6.45	0	0.00	0.00
Huron	24	0.25	2	0.34	8.33	0	0.00	0.00
Ingham	412	4.22	14	2.41	3.40	3	2.52	0.73
Ionia	55	0.56	12	2.07	21.82	2	1.68	3.64
Iosco	22	0.23	1	0.17	4.55	0	0.00	0.00
Iron	11	0.11	0	0.00	0.00	0	0.00	0.00
Isabella	62	0.64	4	0.69	6.45	1	0.84	1.61
Jackson	101	1.04	4	0.69	3.96	1	0.84	0.99
Kalamazoo	244	2.50	20	3.44	8.20	14	11.76	5.74
Kalkaska	12	0.12	0	0.00	0.00	0	0.00	0.00
Kent	1,245	12.76	37	6.37	2.97	8	6.72	0.64
Keweenaw	2	0.02	0	0.00	0.00	0	0.00	0.00
Lake	6	0.06	0	0.00	0.00	0	0.00	0.00
Lapeer	61	0.63	2	0.34	3.28	1	0.84	1.64

Continued

Table 5. Number and Percent of Adults With All Blood Lead Levels (BLLs), BLLs ≥ 10 ug/dL and ≥ 25 ug/dL by County of Residence and Percent of Adults with BLLs ≥ 10 ug/dL and ≥ 25 ug/dL Among All Adults Tested for BLL in Each County of Residence in Michigan: 2005

	All BLLs		BLLs >10 ug/dL			BLLs >25 ug/dL		
County	Number	Percent	Number	Percent of all BLLs in State	Percent of all BLLs in County	Number	Percent of all BLLs in State	Percent of all BLLs in County
Leelanau	17	0.17	0	0.00	0.00	0	0.00	0.00
Lenawee	81	0.83	3	0.52	3.70	0	0.00	0.00
Livingston	151	1.55	6	1.03	3.97	3	2.52	1.99
Luce	11	0.11	0	0.00	0.00	0	0.00	0.00
Mackinac	51	0.52	9	1.55	17.65	0	0.00	0.00
Macomb	580	5.95	31	5.34	5.34	5	4.20	0.86
Manistee	19	0.19	1	0.17	5.26	0	0.00	0.00
Marquette	43	0.44	2	0.34	4.65	1	0.84	2.33
Mason	19	0.19	2	0.34	10.53	0	0.00	0.00
Mecosta	34	0.35	0	0.00	0.00	0	0.00	0.00
Menominee	8	0.08	0	0.00	0.00	0	0.00	0.00
Midland	90	0.92	2	0.34	2.22	1	0.84	1.11
Missaukee	10	0.10	0	0.00	0.00	0	0.00	0.00
Monroe	257	2.63	9	1.55	3.50	1	0.84	0.39
Montcalm	97	0.99	25	4.30	25.77	6	5.04	6.19
Montmorency	35	0.36	5	0.86	14.29	2	1.68	5.71
Muskegon	520	5.33	22	3.79	4.23	2	1.68	0.38
Newaygo	31	0.32	2	0.34	6.45	0	0.00	0.00
Oakland	678	6.95	40	6.88	5.90	2	1.68	0.29
Oceana	29	0.30	2	0.34	6.90	0	0.00	0.00
Ogemaw	13	0.13	0	0.00	0.00	0	0.00	0.00
Ontonagon	17	0.17	0	0.00	0.00	0	0.00	0.00
Osceola	13	0.13	0	0.00	0.00	0	0.00	0.00
Oscoda	13	0.13	0	0.00	0.00	0	0.00	0.00
Otsego	23	0.24	1	0.17	4.35	0	0.00	0.00
Ottawa	133	1.36	9	1.55	6.77	3	2.52	2.26
Presque Isle	9	0.09	0	0.00	0.00	0	0.00	0.00
Roscommon	46	0.47	2	0.34	4.35	2	1.68	4.35
Saginaw	114	1.17	5	0.86	4.39	2	1.68	1.75
Saint Clair	177	1.81	62	10.67	35.03	16	13.45	9.04
Saint Joseph	28	0.29	4	0.69	14.29	1	0.84	3.57
Sanilac	31	0.32	4	0.69	12.90	0	0.00	0.00
Schoolcraft	4	0.04	0	0.00	0.00	0	0.00	0.00
Shiawassee	57	0.58	6	1.03	10.53	2	1.68	3.51
Tuscola	31	0.32	1	0.17	3.23	0	0.00	0.00
Van Buren	45	0.46	2	0.34	4.44	1	0.84	2.22
Washtenaw	236	2.42	9	1.55	3.81	0	0.00	0.00
Wayne	1,913	19.61	86	14.80	4.50	18	15.13	0.94
Wexford	19	0.19	1	0.17	5.26	0	0.00	0.00
TOTAL	**9,754** *	100.00	**581** **	100.00	5.96	**119** ***	100.00	1.22

*County was unknown for 3,368 additional adults.

**County was unknown for 144 additional adults.

***County was unknown for 14 additional adults.

Table 6. Annual Incidence of Blood Lead Levels (BLLs) ≥10 ug/dL Among Women in Michigan by County of Residence: 2005

County	Number Reported	Michigan Population Women	Rate per 100,000 women
Chippewa	1	14,009	7
Clinton	6	27,085	22
Genesee	3	178,967	2
Grand Traverse	1	33,870	3
Ingham	2	116,548	2
Isabella	1	25,161	4
Kalamazoo	2	99,495	2
Kent	10	229,339	4
Livingston	1	68,970	1
Macomb	4	335,290	1
Marquette	1	26,990	4
Mason	1	12,059	8
Monroe	1	60,690	2
Montcalm	1	24,172	4
Montmorency	1	4,533	22
Oakland	4	489,066	1
Ottawa	1	98,874	1
Washtenaw	2	137,942	1
Wayne	6	802,959	1
TOTAL	**49 ***	**4,049,004** **	1 ***

*County was unknown for 12 additional female adults.

**Total number of women in all 83 counties of Michigan age 16+ years; Census County Population Estimates: April 1, 2000 to July 1, 2004.

***Rate per 100,000 women, age 16+ years.

Table 7. Annual Incidence of Blood Lead Levels (BLLs) ≥10 ug/dL Among Men in Michigan by County of Residence: 2005

County	Number Reported	Michigan Population Men	Rate per 100,000 Men
Alcona	0	4,935	0
Alger	0	4,456	0
Allegan	2	42,796	5
Alpena	0	12,077	0
Antrim	0	9,800	0
Arenac	1	7,197	14
Baraga	0	3,888	0
Barry	1	23,030	4
Bay	5	41,736	12
Benzie	1	6,909	14
Berrien	11	60,583	18
Branch	2	18,631	11
Calhoun	7	51,899	13
Cass	1	20,442	5
Charlevoix	0	10,332	0
Cheboygan	0	10,860	0
Chippewa	7	18,196	38
Clare	0	12,437	0
Clinton	30	26,434	113
Crawford	1	6,121	16
Delta	3	15,169	20
Dickinson	0	10,605	0
Eaton	4	40,900	10
Emmet	0	12,877	0
Genesee	14	159,948	9
Gladwin	3	10,821	28
Gogebic	1	7,567	13
Grand Traverse	8	32,339	25
Gratiot	17	17,898	95
Hillsdale	0	18,403	0
Houghton	2	15,876	13
Huron	2	13,853	14
Ingham	12	106,344	11
Ionia	12	27,491	44
Iosco	1	10,737	9
Iron	0	5,224	0
Isabella	3	25,161	12
Jackson	4	65,075	6
Kalamazoo	18	90,941	20
Kalkaska	0	6,760	0
Kent	27	218,758	12
Keweenaw	0	947	0
Lake	0	5,190	0
Lapeer	2	36,569	5
Leelanau	0	8,989	0
Lenawee	3	39,903	8
Livingston	5	68,983	7
Luce	0	3,269	0
Mackinac	9	4,671	193
Macomb	27	315,586	9
Manistee	1	10,301	10
Marquette	1	27,022	4
Mason	1	11,466	9
Mecosta	0	17,329	0
Menominee	0	10,098	0
Midland	2	32,176	6
Missaukee	0	5,983	0
Monroe	8	58,662	14
Montcalm	24	25,381	95
Montmorency	4	4,328	92
Muskegon	22	65,818	33
Newaygo	2	18,924	11
Oakland	36	460,583	8
Oceana	2	11,048	18
Ogemaw	0	8,776	0
Ontonagon	0	3,241	0
Osceola	0	9,121	0
Oscoda	0	3,721	0
Otsego	1	9,507	11
Ottawa	8	93,805	9
Presque Isle	0	5,945	0
Roscommon	2	10,671	19
Saginaw	5	76,596	7
Saint Clair	62	65,195	95
Saint Joseph	4	23,657	17
Sanilac	4	17,236	23
Schoolcraft	0	3,645	0
Shiawassee	6	27,684	22
Tuscola	1	22,834	4
Van Buren	2	29,724	7
Washtenaw	7	135,198	5
Wayne	80	713,961	11
Wexford	1	12,060	8
TOTAL	**532** *	**3,821,309** **	14 ***

*County was unknown for 132 additional male adults.

**Total number of men in all 83 counties of Michigan age 16+ years; Census County Population Estimates: April 1, 2000 to July 1, 2004.

***Rate per 100,000 men, age 16+ years.

Table 8. Source of Exposure Among Adults with BLLs ≥10 ug/dL in Michigan: 2005

Exposure Source Description	Number	Percent
Work-Related	448	80.1
Hobby: Firearms, Reloading, Casting	74	13.2
Remodeling	9	1.6
Lead Paint Ingestion	9	1.6
Gun Shot Wound	6	1.1
Hobby: Leather Tooling, Toy Soldiers, Ceramics, Car Racing	6	1.1
Hobby: Sinkers	2	0.4
Hobby: Stained Glass	2	0.4
Environment: Lead Water Pipes	1	0.2
Attempted Suicide	1	0.2
Refugee Screening	1	0.2
TOTAL	**559 ***	**100.0**

*Patient interviews were attempted on 424 individuals; no patient interviews were attempted with 135 individuals, instead source was obtained from laboratory reporting form. For 94 additional adults source is pending an interview; for 33 additional adults source is pending medical records review; for 33 additional adults source was inconclusive based on interview; for 6 additional adults source was inconclusive and no patient interview was attempted.

Table 9. Industries Where Individuals with BLLs ≥10 ug/dL Were Exposed to Lead in Michigan: 2005

Industry (SIC Code)*	Work-Exposed Individuals (BLL ≥ 10 ug/dL) Number	Percent
Construction (15-17)	**134**	**30.9**
Painting (17)	124	
Manufacturing (20-39)	**234**	**54.0**
Fabricated and Primary Metals (33-34)	211	
Transportation and Public Utilities (40-49)	**19**	**4.4**
Wholesale and Retail Trade (50-59)	**7**	**1.6**
Finance, Insurance and Real Estate (60-67)	**1**	**0.2**
Services (70-89)	**19**	**4.4**
Automotive Repair Services (75)	8	
Public Administration (91-97)	**19**	**4.4**
Justice, Public Order, Safety (92)	14	
TOTAL	**433****	**100.0**

*Standard Industrial Classification.

**Another 15 were work-related, however, the industry was unknown.

Table 10. Inspection Status of Twenty-Three Companies First Identified in 2005 and Ten Companies Identified in 2005 that were Previously Inspected Prior to 2005 with an Employee with a Blood Lead Report of ≥25 ug/dL, Michigan

	Companies First Identified in 2005		Companies Identified in 2005 that were Previously Inspected Prior to 2005	
Inspection Status	**Number**	**Percent**	**Number**	**Percent**
Completed Inspections	9	39.1	5	50.0
Scheduled for Inspection	14	60.9	5	50.0
TOTAL	**23**	**100.0**	**10**	**100.0**

Table 11. Results of Inspections in Nine Companies First Identified in 2005 and Five Companies Identified in 2005 that were Previously Inspected Prior to 2005 with an Employee with a Blood Lead Report of ≥25 ug/dL, Michigan

	Companies First Identified in 2005		Companies Identified in 2005 that were Previously Inspected Prior to 2005	
Inspection Results	**Number**	**Percent**	**Number**	**Percent**
Cited for Lead Standard Violation(s) Only	3	33.3	1	20.0
Cited for Lead Standard and Other Violation(s)	3	33.3	1	20.0
Only Cited for Non-Lead Violation(s)	1	11.1	0	--
Not Cited for any Violation(s)	2	22.2	3	60.0
TOTAL	**9**	**100.0**	**5**	**100.0**

Table 12. Industry Distribution of Nine Companies First Identified in 2005 and Five Companies Identified in 2005 that were Previously Inspected Prior to 2005 with an Employee with a Blood Lead Report of ≥25 ug/dL, Michigan

	Companies First Identified in 2005			Companies Identified in 2005 that were Previously Inspected Prior to 2005		
		Cited for Violation of Lead Standard			Cited for Violation of Lead Standard	
Industry (SIC)*	**Companies Number**	**Number**	**Percent**	**Companies Number**	**Number**	**Percent**
Construction, Heavy (16)	1	1	100	0	--	--
Special Trade Construction (17)	1	1	100	1	0	--
Stone/Clay/Glass (32)	1	1	100	0	--	--
Primary and Fabricated Metals (33-34)	2	1	50	1	0	--
Industrial, Commercial Machinery (35)	1	0	--	0	--	--
Transportation Equipment (37)	1	1	100	1	1	100
Automotive Repair Services (75)	1	1	100	1	0	--
Recreation (79)	2	1	50	1	1	100
TOTAL	**9**	**6** **	67	**5**	**2** **	40

*Standard Industrial Classification

**Six facilities were not cited in violation of the Lead Standard.

Table 13. Results of Inspections in Eleven Radiator Repair Facilities, Michigan, 2005

Inspection Results	Number	Percent
Cited for Lead Standard and Also Other Violation(s)	7	63.6
Not Cited for any Violation(s)	4	36.4
TOTAL	**11**	**100.0**

Table 14. Demographic Characteristics of Michigan Adults with Blood Lead Levels (BLLs) of ≥10 μg/dL, Interviewed from 10-15-1997 to 12-31-2005, by Highest Reported Blood Lead Level (μg/dL)

Demographic Characteristics	10-24 μg/dL		25-29 μg/dL		30-39 μg/dL		40-49 μg/dL		50-59 μg/dL		≥60 μg/dL		TOTAL	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Male	561	(89.0)	187	(92.1)	256	(95.2)	81	(92.0)	33	(97.1)	13	(92.9)	1131	(91.4)
Female	69	(11.0)	16	(7.9)	13	(4.8)	7	(8.0)	1	(2.9)	1	(7.1)	107	(8.6)
Hispanic Origin	35	(5.8)	7	(3.7)	9	(3.5)	11	(12.9)	1	(3.0)	0	--	63	(5.3)
Caucasian	525	(84.8)	179	(88.6)	233	(87.3)	76	(86.4)	31	(91.2)	11	(78.6)	1055	(86.2)
African American	62	(10.0)	10	(5.0)	19	(7.1)	6	(6.8)	3	(8.8)	3	(21.4)	103	(8.4)
Asian/Pacific Islander	3	(0.5)	1	(0.5)	2	(0.7)	0	--	0	--	0	--	6	(0.5)
Native American/Alaskan	5	(0.8)	4	(2.0)	8	(3.0)	0	--	0	--	0	--	17	(1.4)
Other	24	(3.9)	8	(4.0)	5	(1.9)	6	(6.8)	0	--	0	--	43	(3.5)
Average Age	47	n=630	48	n=203	47	n=269	49	n=88	49	n=34	41	n=14	47	n=1238
Ever Smoked	405	(66.1)	146	(74.1)	180	(72.3)	59	(72.0)	25	(83.3)	8	(66.7)	823	(69.6)*
Now Smoke**	205	(49.8)	80	(54.4)	127	(69.4)	42	(70.0)	20	(80.0)	6	(75.0)	480	(57.5)*

*P= < 0.05 for linear trend.

**The percentages of *now smoke* are calculated using the denominator of those who *ever smoked*.

Table 15. Highest Education Level of Michigan Adults with Blood Lead Levels (BLLs) of ≥10 μg/dL, Interviewed from 10-15-1997 to 12-31-2005, by Highest Reported Blood Lead Level (μg/dL)

Highest Education Level	10-24 μg/dL		25-29 μg/dL		30-39 μg/dL		≥ 40 μg/dL		TOTAL	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
7th Grade or Less	14	(2.5)	3	(2.3)	3	(2.3)	3	(4.9)	23	(2.6)
8^{th}-11^{th} Grade	76	(13.4)	6	(4.5)	17	(13.3)	12	(19.7)	111	(12.5)
High School Graduate	188	(33.2)	50	(37.6)	50	(39.1)	15	(24.6)	303	(34.1)
1-3 Years College/Technical School	189	(33.4)	54	(40.6)	37	(28.9)	19	(31.1)	299	(33.7)
4 or more years College/Technical School	99	(17.5)	20	(15.0)	21	(16.4)	12	(19.7)	152	(17.1)
TOTAL	566	(100)	133	(100)	128	(100)	61	(100)	888	(100)

Table 16. Symptoms of Michigan Adults with Blood Lead Levels (BLLs) of ≥10 μg/dL, Interviewed from 10-15-1997 to 12-31-2005, by Highest Reported Blood Lead Level (μg/dL)

Symptoms	10-24 μg/dL		25-29 μg/dL		30-39 μg/dL		40-49 μg/dL		50-59 μg/dL		≥60 μg/dL		TOTAL	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
GASTRO-INTESTINAL														
Lost 10+ lbs without diet	64	(10.4)	14	(7.1)	32	(12.1)	19	(21.8)	6	(18.8)	3	(23.1)	138	(11.4)*
Continued loss of appetite	71	(11.5)	18	(9.0)	38	(14.2)	18	(20.7)	7	(21.2)	3	(21.4)	155	(12.7)*
Pains in belly	110	(17.7)	21	(10.5)	44	(16.7)	22	(25.0)	9	(27.3)	3	(21.4)	209	(17.1)
MUSCULOSKELETAL														
Frequent pain/soreness	226	(36.5)	67	(33.7)	99	(37.4)	44	(51.2)	14	(42.4)	7	(50.0)	457	(37.6)*
Muscle weakness	149	(24.2)	27	(13.6)	50	(19.2)	31	(36.0)	12	(36.4)	7	(50.0)	276	(22.8)
NERVOUS														
Headaches	102	(16.3)	26	(12.9)	57	(21.3)	23	(26.1)	10	(29.4)	5	(35.7)	223	(18.1)*
Dizziness	64	(10.3)	14	(6.9)	16	(6.1)	12	(13.8)	4	(12.1)	5	(35.7)	115	(9.4)
Depressed	96	(15.6)	21	(10.6)	39	(14.9)	13	(15.1)	10	(29.4)	6	(42.9)	185	(15.3)
Tired	254	(41.2)	64	(31.8)	128	(48.3)	50	(57.5)	20	(58.8)	8	(57.1)	524	(43.0)*
Nervous	94	(15.2)	20	(10.1)	43	(16.5)	20	(22.7)	10	(30.3)	6	(42.9)	193	(15.9)*
Waking up at night	186	(30.0)	41	(20.4)	90	(34.1)	32	(36.8)	15	(44.1)	5	(38.5)	369	(30.3)*
Nightmares	41	(6.6)	3	(1.5)	12	(4.6)	5	(5.8)	4	(12.1)	3	(21.4)	68	(5.6)
Irritable	134	(21.8)	44	(22.2)	73	(27.8)	28	(32.2)	14	(42.4)	7	(50.0)	300	(24.8)*
Unable to concentrate	110	(17.8)	22	(11.1)	54	(20.3)	15	(17.6)	9	(26.5)	4	(28.6)	214	(17.6)
REPRODUCTIVE														
Unable to have an erection	8	(17.8)	5	(8.2)	10	(8.1)	5	(12.8)	7	(36.8)	0	--	35	(11.9)
Trouble having a child	27	(4.4)	13	(6.7)	13	(5.1)	1	(1.2)	0	--	1	(8.3)	55	(4.6)
Gastro-Intestinal Symptoms	162	(25.9)	35	(17.3)	70	(26.1)	34	(38.6)	14	(41.2)	6	(42.9)	321	(26.1)*
Musculoskeletal Symptoms	256	(41.2)	70	(35.0)	107	(40.4)	49	(56.3)	16	(48.5)	8	(57.1)	506	(41.4)*
Nervous Symptoms	368	(59.0)	98	(48.5)	173	(64.8)	58	(65.9)	25	(73.5)	8	(57.1)	730	(59.4)*
Reproductive Symptoms	31	(44.3)	15	(21.4)	20	(15.4)	4	(10.0)	2	(10.5)	1	(14.3)	73	(21.7)*
Any Symptoms	429	(68.5)	123	(60.9)	184	(68.7)	67	(76.1)	28	(82.4)	9	(64.3)	840	(68.2)
Average Number Symptoms	2.8	n=626	2.1	n=202	3.0	n=268	3.8	n=88	4.3	n=34	5.2	n=14	2.8	n=1232

*P= < 0.05 for linear trend.

Table 17. Lead Related Health Conditions of Michigan Adults with Blood Lead Levels (BLLs) of ≥10 μg/dL, Interviewed from 10-15-1997 to 12-31-2005, by Highest Reported Blood Lead Level (μg/dL)

Lead Related Disease	10-24 μg/dL		25-29 μg/dL		30-39 μg/dL		40-49 μg/dL		50-59 μg/dL		≥60 μg/dL		TOTAL	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Anemia	39	(6.4)	4	(2.1)	11	(4.2)	6	(7.1)	2	(6.1)	1	(8.3)	63	(5.3)
Kidney Disease	18	(3.0)	1	(0.5)	5	(1.9)	2	(2.3)	1	(3.1)	0	--	27	(2.2)
High Blood Pressure	33	(5.4)	11	(5.5)	28	(10.7)	13	(15.7)	4	(12.5)	1	(7.7)	90	(7.5)*
Hearing Loss	104	(24.7)	23	(34.3)	19	(29.7)	5	(23.8)	1	(16.7)	1	(25.0)	153	(26.2)

*P= < 0.05 for linear trend.

Table 18. Industry of Michigan Adults with Blood Lead Levels (BLLs) of ≥10 µg/dL, Interviewed from 10-15-1997 to 12-31-2005, by Highest Reported Blood Lead Level (µg/dL)

	10-24 µg/dL		25-29 µg/dL		30-39 µg/dL		40-49 µg/dL		50-59 µg/dL		≥60 µg/dL		TOTAL	
Standard Industrial Classification	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Construction, Building (15)	6	(1.6)	1	(0.6)	0	--	0	--	0	--	0	--	7	(0.8)
Construction, Heavy (16)	12	(3.3)	1	(0.6)	2	(0.9)	0	--	0	--	0	--	15	(1.8)
Special Trade Construction (17)	133	(36.1)	39	(25.0)	73	(33.3)	28	(43.1)	13	(44.8)	5	(41.7)	291	(34.3)
Food and Kindred Products (20)	0	--	1	(0.6)	0	--	0	--	0	--	0	--	1	(0.1)
Lumber and Wood (24)	1	(0.3)	0	--	0	--	0	--	0	--	0	--	1	(0.1)
Furniture and Fixtures (25)	1	(0.3)	0	--	0	--	0	--	0	--	0	--	1	(0.1)
Printing and Publishing (27)	1	(0.3)	0	--	1	(0.5)	0	--	0	--	0	--	2	(0.2)
Stone/Clay/Glass (32)	8	(2.2)	3	(1.9)	4	(1.8)	2	(3.1)	0	--	0	--	17	(2.0)
Primary Metals Industry (33)	34	(9.2)	49	(31.4)	83	(37.9)	22	(33.8)	8	(27.6)	4	(33.3)	200	(23.6)
Fabricated Metal Products (34)	20	(5.4)	16	(10.3)	18	(8.2)	5	(7.7)	0	--	0	--	59	(6.9)
Industrial, Commercial Machinery (35)	7	(1.9)	3	(1.9)	5	(2.3)	1	(1.5)	2	(6.9)	1	(8.3)	19	(2.2)
Electronics (36)	12	(3.3)	1	(0.6)	0	--	0	--	0	--	0	--	13	(1.5)
Transportation Equipment (37)	13	(3.5)	3	(1.9)	5	(2.3)	2	(3.1)	1	(3.4)	0	--	24	(2.8)
Measuring, Analyzing, Crtl Instr. (38)	1	(0.3)	0	--	0	--	0	--	0	--	0	--	1	(0.1)
Misc. Manufacturing Industries (39)	2	(0.5)	1	(0.6)	0	--	0	--	0	--	0	--	3	(0.4)
Railroad Transportation (40)	1	(0.3)	3	(1.9)	3	(1.4)	0	--	0	--	0	--	7	(0.8)
Motor Freight Trans, Warehousing (42)	1	(0.3)	0	--	0	--	0	--	0	--	0	--	1	(0.1)
Water Transportation (44)	2	(0.5)	0	--	0	--	0	--	0	--	0	--	2	(0.2)
Trans., Electric, Gas & San. Svcs. (49)	14	(3.8)	4	(2.6)	2	(0.9)	1	(1.5)	0	--	0	--	21	(2.5)
Wholesale-Durable Goods (50)	5	(1.4)	1	(0.6)	1	(0.5)	0	--	0	--	0	--	7	(0.8)
Building Materials, Hardware (52)	1	(0.3)	0	--	0	--	0	--	0	--	0	--	1	(0.1)
Automotive Dealers, Gas (55)	0	--	3	(1.9)	1	(0.5)	0	--	0	--	0	--	4	(0.5)
Other Retail Trade (59)	3	(0.8)	0	--	1	(0.5)	0	--	0	--	0	--	4	(0.5)
Depository Institutions (60)	1	(0.3)	0	--	0	--	0	--	0	--	0	--	1	(0.1)
Finance, Insurance, Real Estate (65)	2	(0.5)	0	--	0	--	0	--	0	--	0	--	2	(0.2)
Business Services (73)	4	(1.1)	0	--	0	--	0	--	0	--	0	--	4	(0.5)
Automotive Repair Services (75)	17	(4.6)	7	(4.5)	5	(2.3)	5	(2.3)	4	(6.2)	2	(6.9)	35	(4.1)
Misc. Repair Services (76)	4	(1.1)	1	(0.6)	3	(1.4)	0	--	0	--	0	--	8	(0.9)
Amusement and Recreation (79)	11	(3.0)	5	(3.2)	3	(1.4)	0	--	3	(10.3)	2	(16.7)	24	(2.8)
Health Services (80)	1	(0.3)	0	--	0	--	0	--	0	--	0	--	1	(0.1)
Educational Services (82)	8	(2.2)	3	(1.9)	1	(0.5)	0	--	0	--	0	--	12	(1.4)
Museum, Art Galleries (84)	1	(0.3)	1	(0.6)	0	--	0	--	0	--	0	--	2	(0.2)
Engineering Services (87)	10	(2.7)	2	(1.3)	2	(0.9)	0	--	0	--	0	--	14	(1.6)
Services, NEC (89)	2	(0.5)	0	--	0	--	0	--	0	--	0	--	2	(0.2)
General Government (91)	1	(0.3)	0	--	0	--	0	--	0	--	0	--	1	(0.1)
Justice, Public Order, Safety (92)	21	(4.5)	7	(4.5)	5	(2.3)	0	--	0	--	0	--	33	(3.9)
Human Resources (94)	0	--	0	--	1	(0.5)	0	--	0	--	0	--	1	(0.1)
Admin Of Environmental Quality (95)	1	(0.3)	0	--	0	--	0	--	0	--	0	--	1	(0.1)
Admin Of Economic Programs (96)	4	(1.1)	1	(0.6)	0	--	0	--	0	--	0	--	5	(0.6)
National Security, Int'l Affairs (97)	2	(0.5)	0	--	0	--	0	--	0	--	0	--	2	(0.2)
TOTAL	**368**	**(100)**	**156**	**(100)**	**219**	**(100)**	**65**	**(100)**	**29**	**(100)**	**12**	**(100)**	**849**	**(100)**

Table 19. Number of Years Worked of Michigan Adults with Blood Lead Levels (BLLs) of ≥10 μg/dL, Interviewed from 10-15-1997 to 12-31-2005, by Highest Reported Blood Lead Level (μg/dL)

Number of Years Worked	10-24 μg/dL		25-29 μg/dL		30-39 μg/dL		40-49 μg/dL		50-59 μg/dL		≥60 μg/dL		TOTAL	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
≤ 5	209	(56.3)	96	(62.7)	120	(53.8)	37	(56.9)	15	(53.6)	7	(58.3)	484	(56.8)
6 – 10	56	(15.1)	27	(17.6)	35	(15.7)	8	(12.3)	8	(28.6)	2	(16.7)	136	(16.0)
11 – 20	62	(16.7)	20	(13.1)	36	(16.1)	10	(15.4)	3	(10.7)	2	(16.7)	133	(15.6)
21 – 30	29	(7.8)	9	(5.9)	27	(12.1)	2	(3.1)	1	(3.6)	1	(8.3)	69	(8.1)
≥ 31	15	(4.0)	1	(0.7)	5	(2.2)	8	(12.3)	1	(3.6)	0	--	30	(3.5)

Table 20. Working Conditions Reported by Michigan Adults with Blood Lead Levels (BLLs) of ≥10 μg/dL, Interviewed from 10-15-1997 to 12-31-2005, by Highest Reported Blood Lead Level (μg/dL)

Working Conditions	10-24 μg/dL		25-29 μg/dL		30-39 μg/dL		40-49 μg/dL		50-59 μg/dL		≥60 μg/dL		TOTAL	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Separate lockers: dirty and clean*	201	(55.8)	108	(70.6)	149	(69.0)	35	(54.7)	18	(60.0)	3	(27.3)	514	(61.6)
Work clothes laundered: work*	130	(36.7)	90	(60.0)	126	(57.8)	28	(43.8)	12	(40.0)	3	(27.3)	389	(47.0)*
Shower facility*	182	(50.6)	97	(63.8)	157	(72.0)	31	(47.7)	13	(44.8)	5	(45.5)	485	(58.1)
Lunch room*	227	(63.9)	107	(70.9)	172	(79.3)	36	(55.4)	15	(51.7)	5	(45.5)	562	(67.9)
Clean off dust and wash hands before eating*	334	(93.0)	135	(88.8)	202	(91.8)	55	(87.3)	26	(86.7)	9	(81.8)	761	(91.1)
Eat in lunchroom*	155	(60.5)	85	(69.7)	114	(62.0)	28	(50.0)	9	(37.5)	4	(44.4)	395	(60.7)*
Wear respirator*	232	(64.1)	106	(69.7)	167	(75.6)	51	(79.7)	19	(63.3)	9	(81.8)	584	(69.5)*
Smoke in work area**	122	(59.8)	50	(62.5)	80	(64.5)	16	(39.0)	10	(50.0)	4	(66.7)	282	(59.4)
Keep cigarettes in pocket while working**	97	(48.7)	32	(39.5)	64	(52.5)	16	(39.0)	7	(35.0)	3	(50.0)	219	(46.7)
Exposed to Lead now*	202	(57.1)	91	(61.5)	144	(67.0)	33	(55.0)	17	(65.4)	3	(27.3)	490	(60.2)
Removal from job*	17	(4.7)	12	(7.8)	30	(13.6)	15	(23.8)	8	(26.7)	4	(36.4)	86	(10.2)*

*Based on positive questionnaire responses.
**Based on negative questionnaire responses.

Table 21. Number of Households with Children (6 or under) Potentially Exposed to Take-Home Lead from Michigan Adults with Blood Lead Levels (BLLs) of ≥10 μg/dL, Interviewed from 10-15-1997 to 12-31-2005, by Highest Reported Blood Lead Level (μg/dL)

Description of Households	10-24 μg/dL		25-29 μg/dL		30-39 μg/dL		40-49 μg/dL		50-59 μg/dL		≥60 μg/dL		TOTAL	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Households with Children living or spending time in house	165	(26.7)*	59	(29.4)	81	(30.3)	26	(29.9)	11	(32.4)	3	(21.4)	345	(28.2)
Households with Children tested for Lead	54	(37.2)**	12	(21.4)	17	(22.4)	11	(50.0)	4	(36.4)	2	(66.7)	100	(31.9)
Households where Children had elevated Lead levels	18	(37.5)***	3	(27.3)	8	(42.1)	4	(40.0)	1	(33.3)	1	(50.0)	35	(37.6)

* Among individuals within blood lead category, percentage of their households with children living or spending time in house.

** Among individuals within blood lead category, percentage of households with children living or spending time in house where the children were tested for lead. Because of missing data the denominator may be less than the number with children living or spending time in house in the first row of the table.

*** Among individuals within blood lead category, percentage of households with children living or spending time in house where children, who had blood lead tests, had blood lead levels ≥ 10 μg/dL. Because of missing data, the denominator may be less then the number tested for lead in the second row of the table.

Figure 1. Number of Adults Tested for Blood Lead, Michigan: 1998-2005

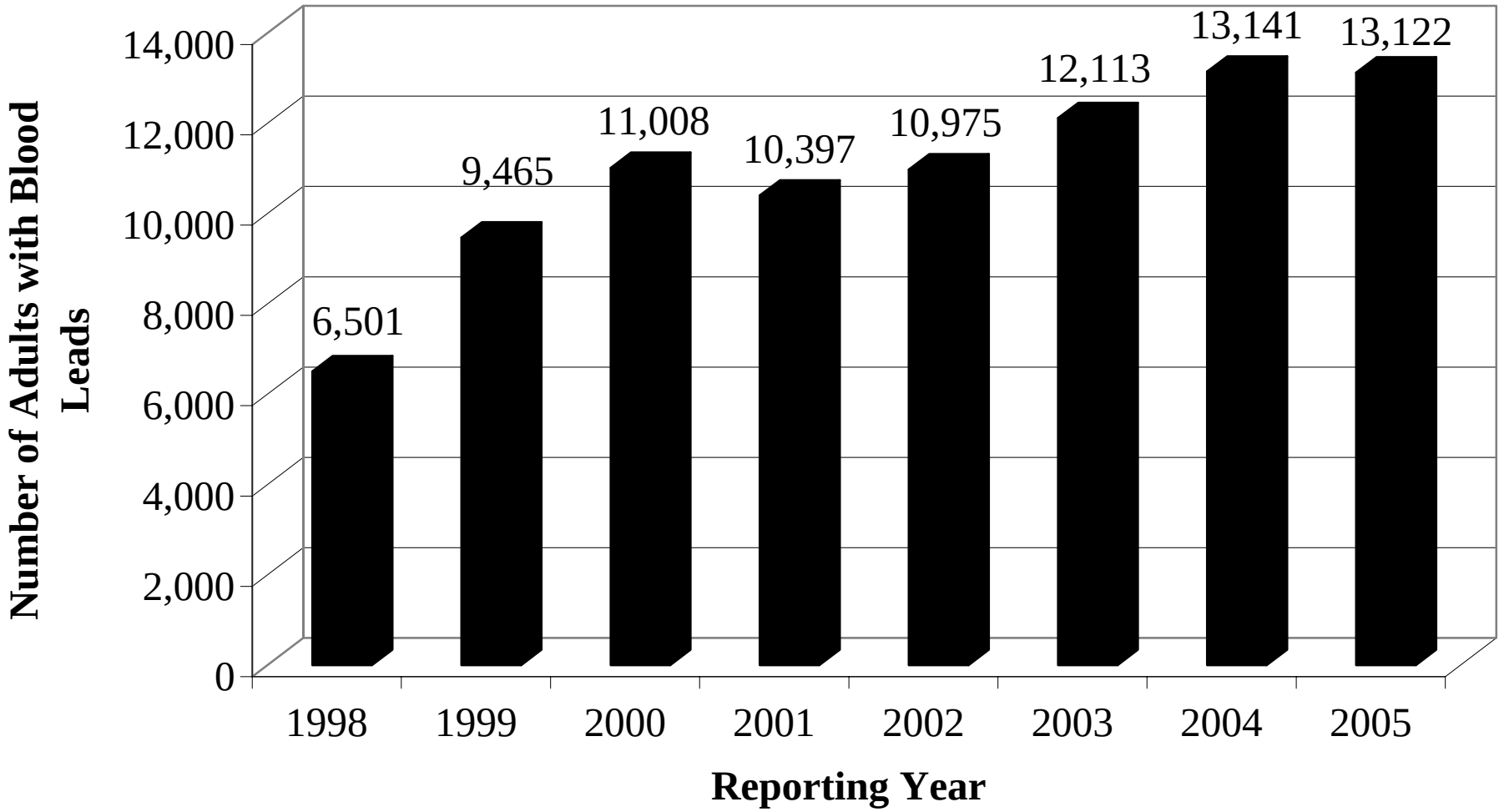


Figure 2. Number of Adults with Blood Lead Levels ≥ 10 ug/dL, ≥ 25 ug/dL and ≥ 50 ug/dL, Exposed to Lead at Work, Michigan: 1998-2005

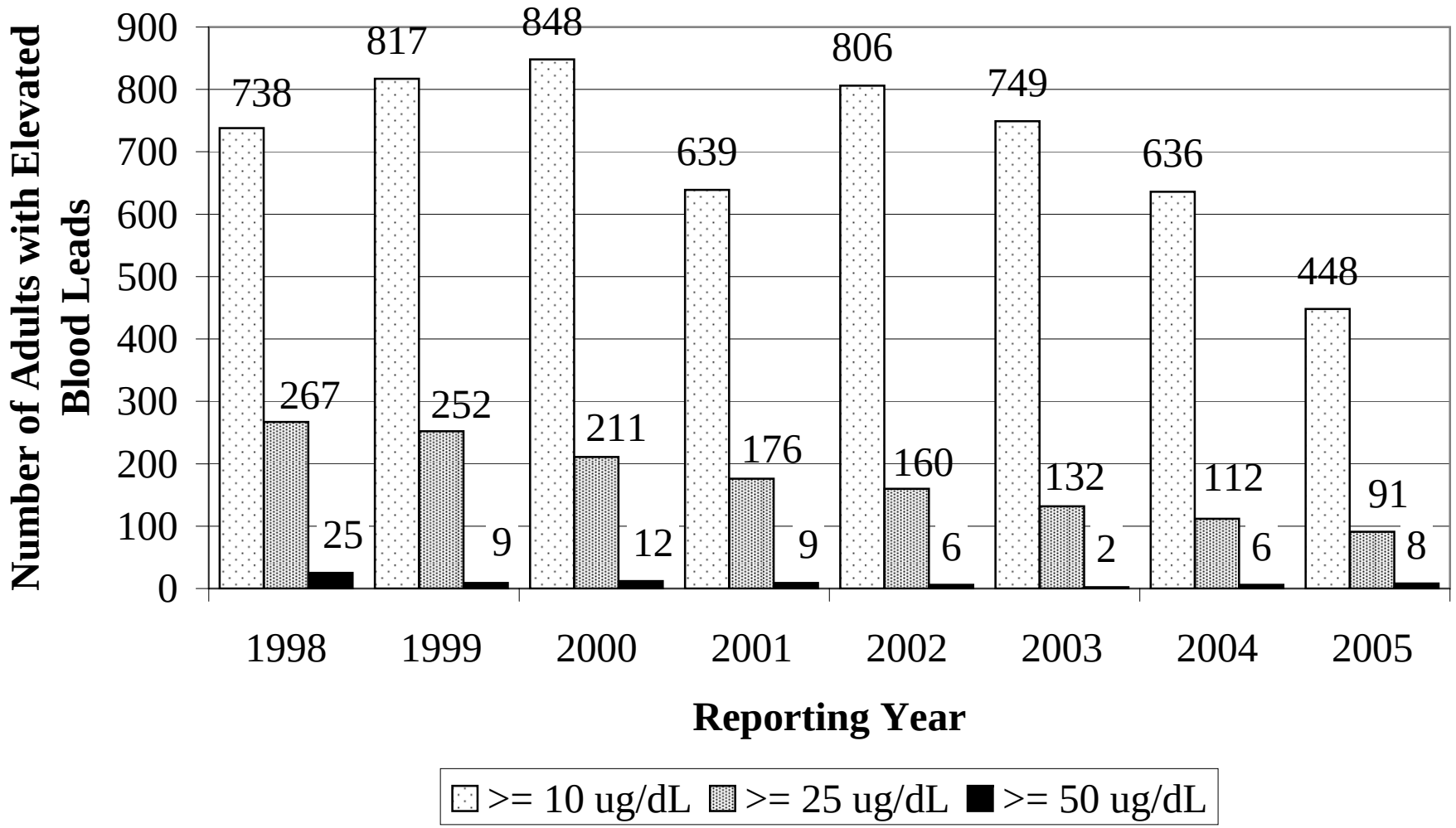


Figure 3. Number of Adults with Blood Lead Levels ≥ 10 ug/dL, ≥ 25 ug/dL and ≥ 50 ug/dL, Exposed to Lead Not At Work, Michigan: 1998-2005

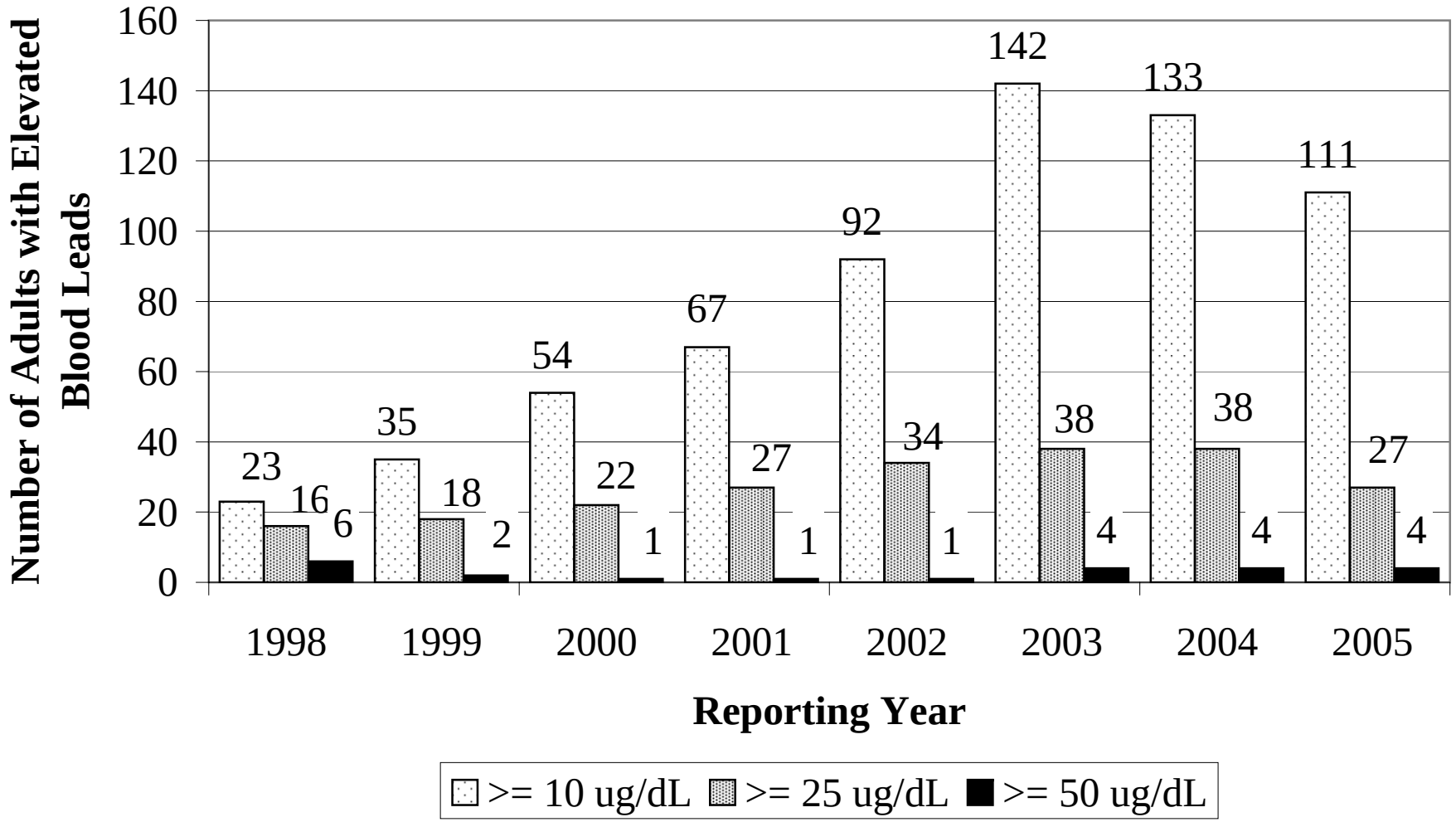
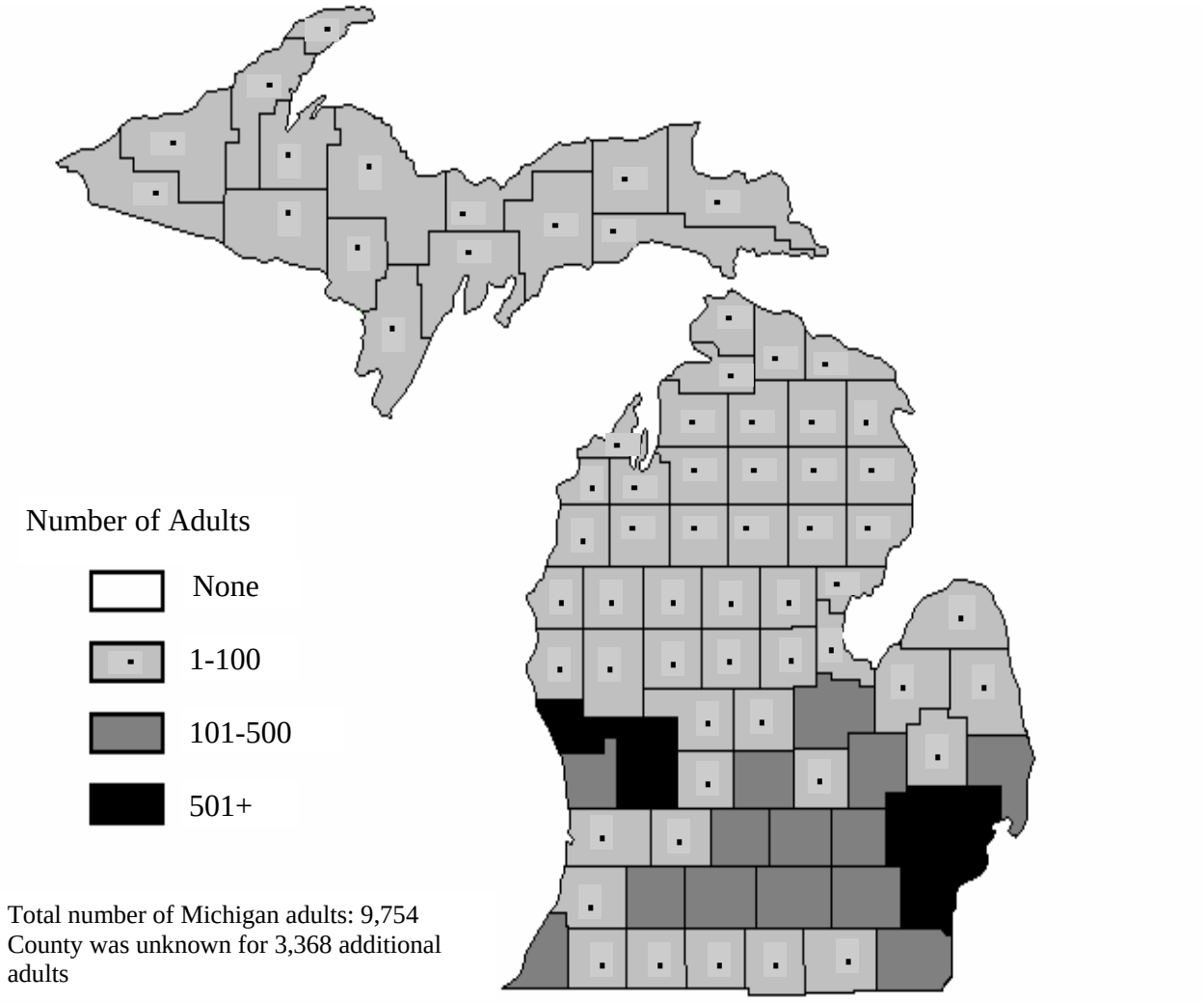
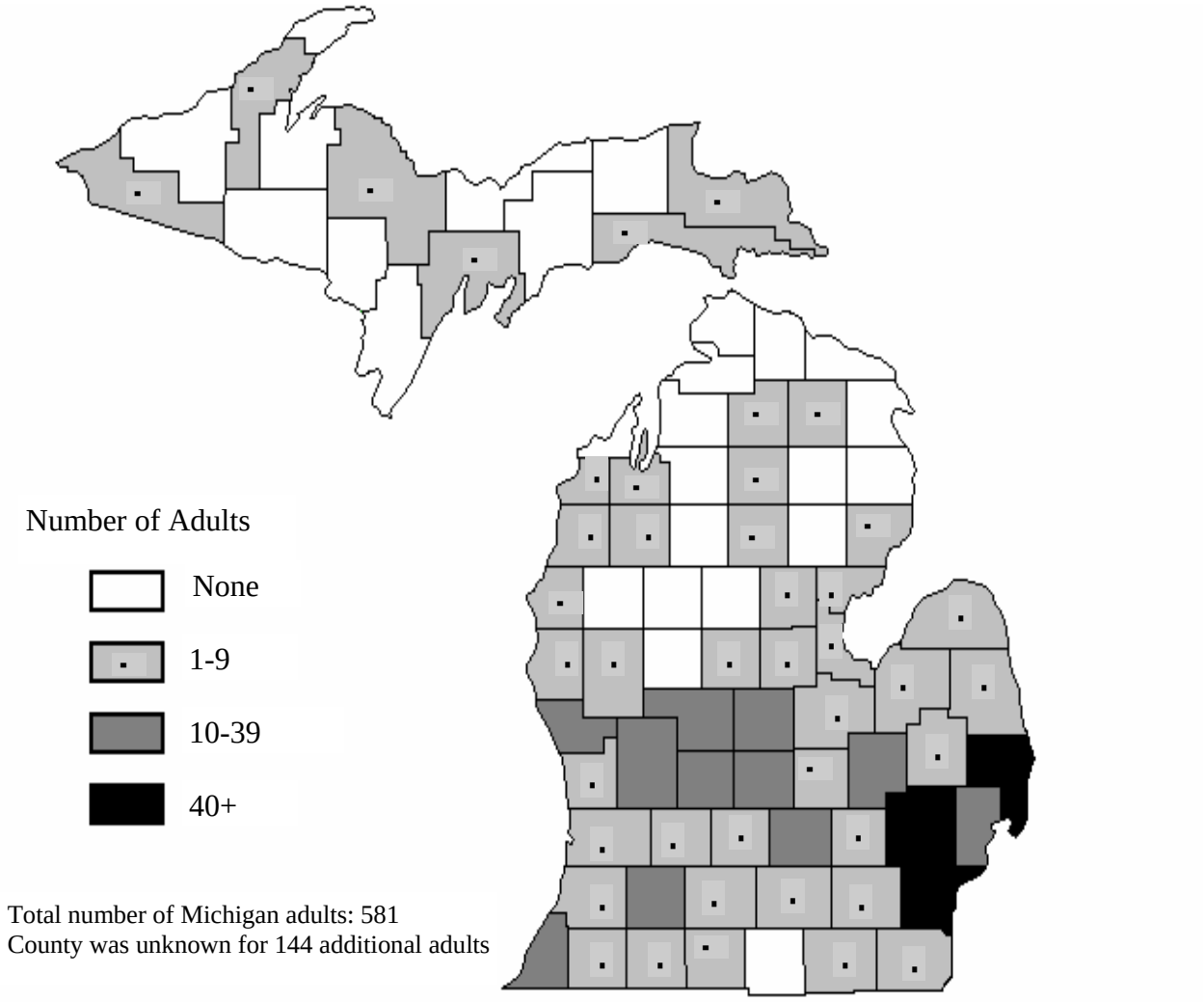


Figure 4. Distribution of Adults Tested for Blood Lead in Michigan by County of Residence: 2005



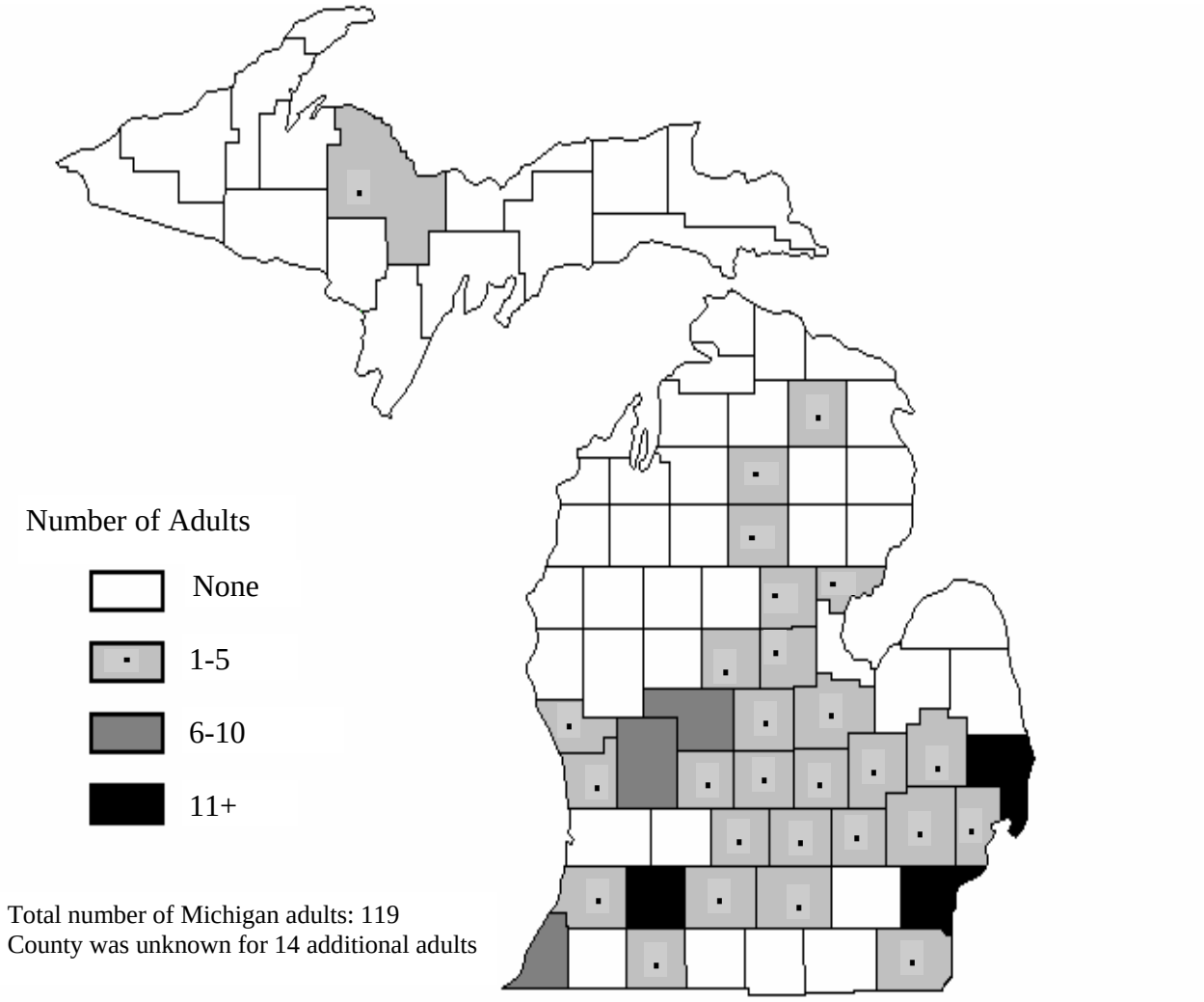
Kent and **Wayne** counties had the highest number of adults reported, with 1,245 and 1,913, respectively.

Figure 5. Distribution of Adults with Blood Lead Levels (BLLs) ≥10 ug/dL in Michigan by County of Residence: 2005



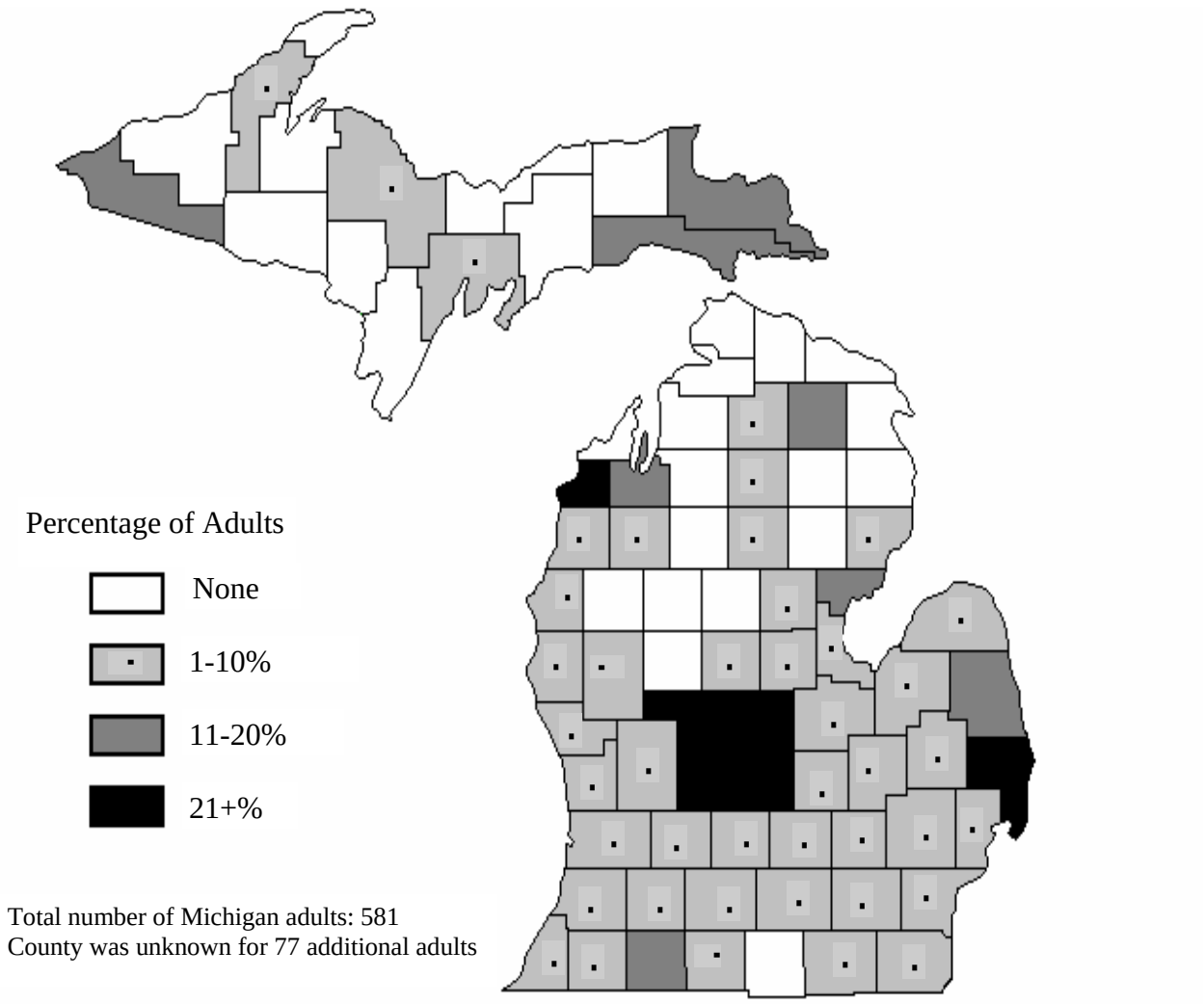
St. Clair and **Wayne** counties had the highest number of adults with blood lead levels of 10 ug/dL or greater reported, with 62 and 86, respectively.

Figure 6. Distribution of Adults with Blood Lead Levels (BLLs) ≥25 ug/dL in Michigan by County of Residence: 2005



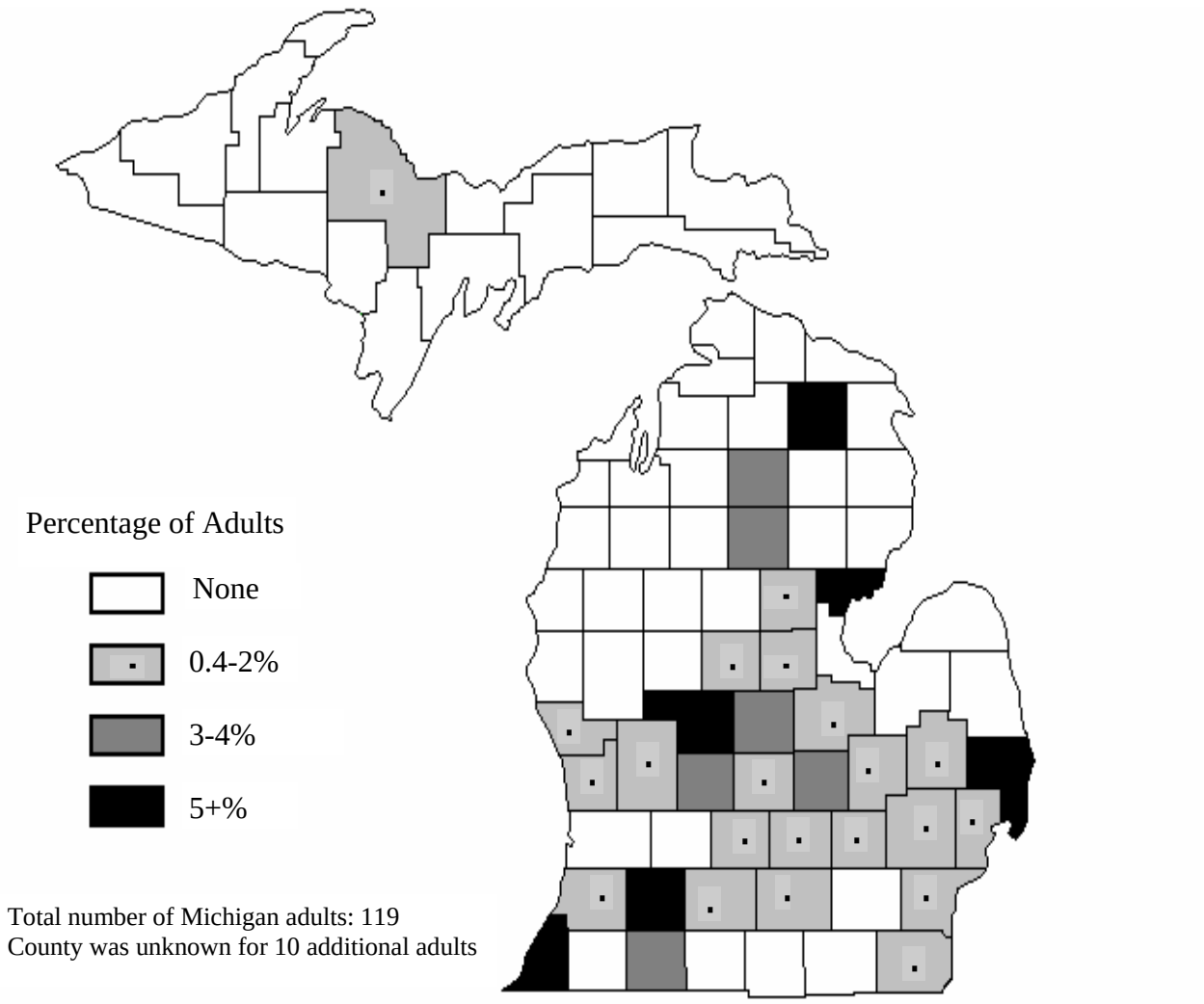
St. Clair and **Wayne** counties had the highest number of adults with blood lead levels of 25 ug/dL or greater reported, with 16 and 18 adults, respectively.

Figure 7. Percentage of Adults with Blood Lead Levels (BLLs) ≥10 ug/dL in Michigan by County of Residence: 2005*



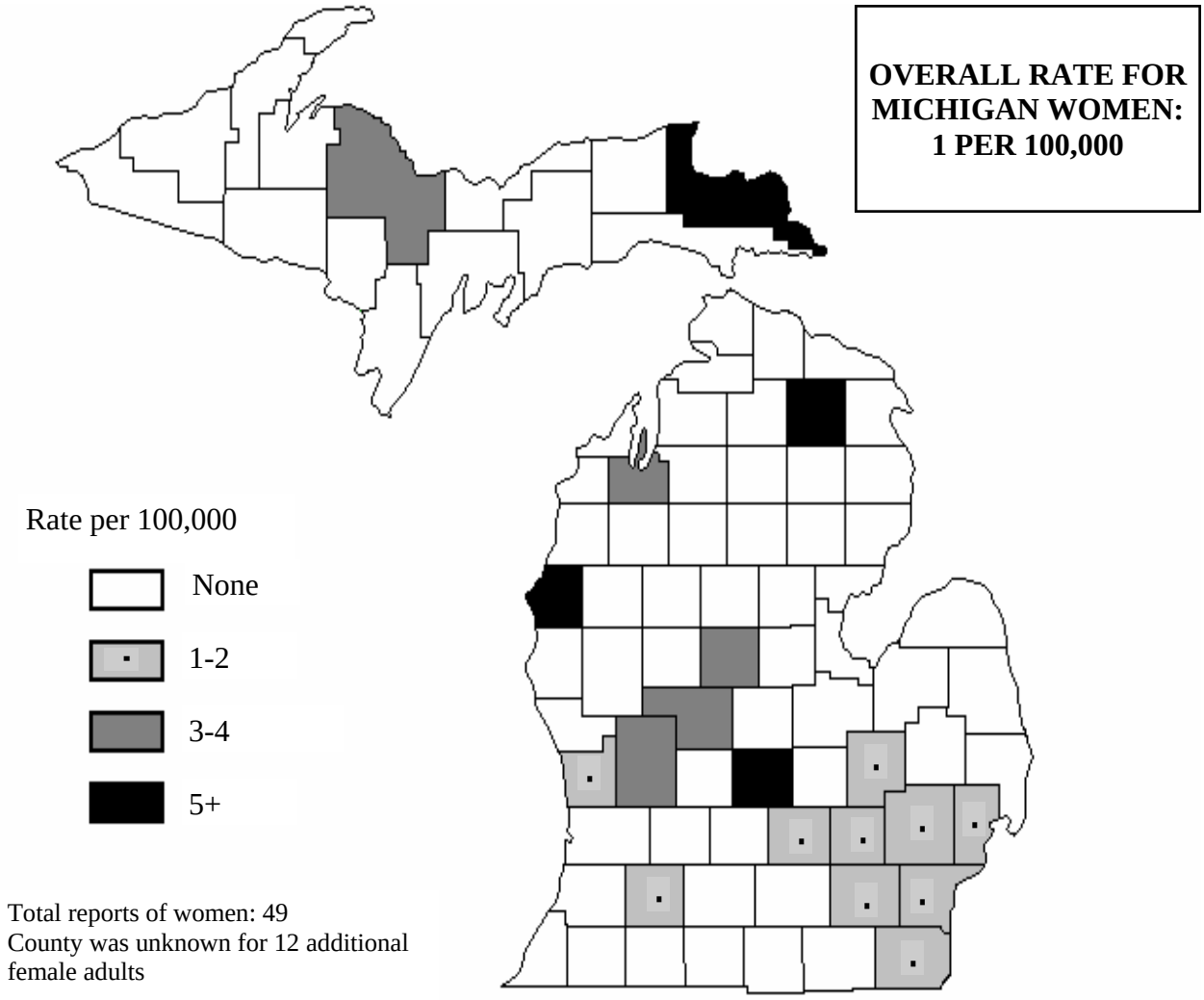
*Denominator used was the total number of adults tested for blood lead within each county.

Figure 8. Percentage of Adults with Blood Lead Levels (BLLs) ≥25 ug/dL in Michigan by County of Residence: 2005*



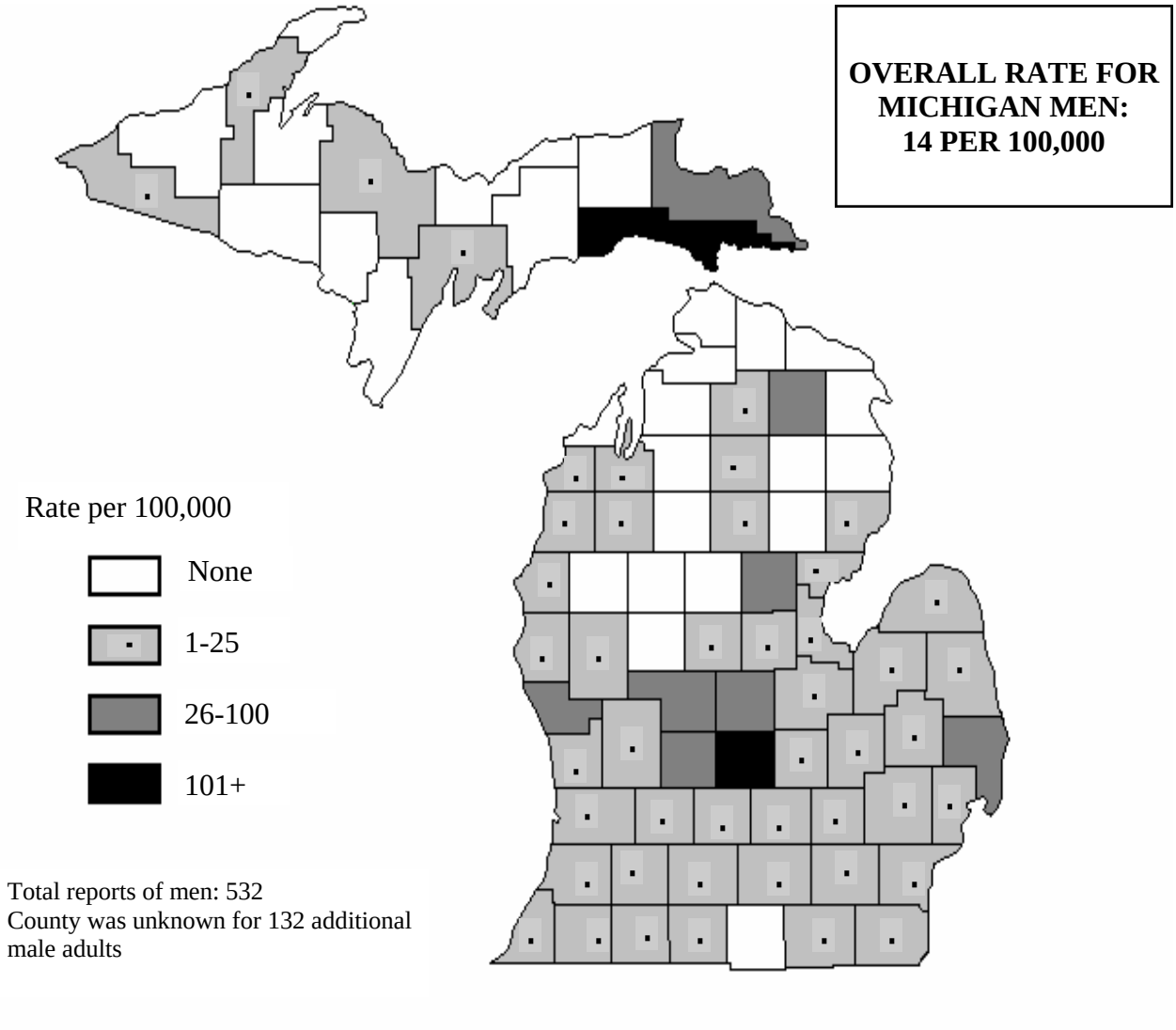
*Denominator used was the total number of adults tested for blood lead within each county.

Figure 9. Annual Incidence of Blood Lead Levels (BLLs) ≥10 ug/dL Among Women in Michigan by County of Residence: 2005*



*Rate per 100,000 women age 16+; denominator is the Census County Population Estimates: April 1, 2000 to July 1, 2004.

Figure 10. Annual Incidence of Blood Lead Levels (BLLs) ≥10 ug/dL Among Men in Michigan by County of Residence: 2005*



*Rate per 100,000 men age 16+; denominator is the Census County Population Estimates: April 1, 2000 to July 1, 2004.

Figure 11. Geographic Distribution of Non-Construction Companies Reporting Adults with Blood Lead Levels (BLLs) ≥25 ug/dL in Michigan: 2005

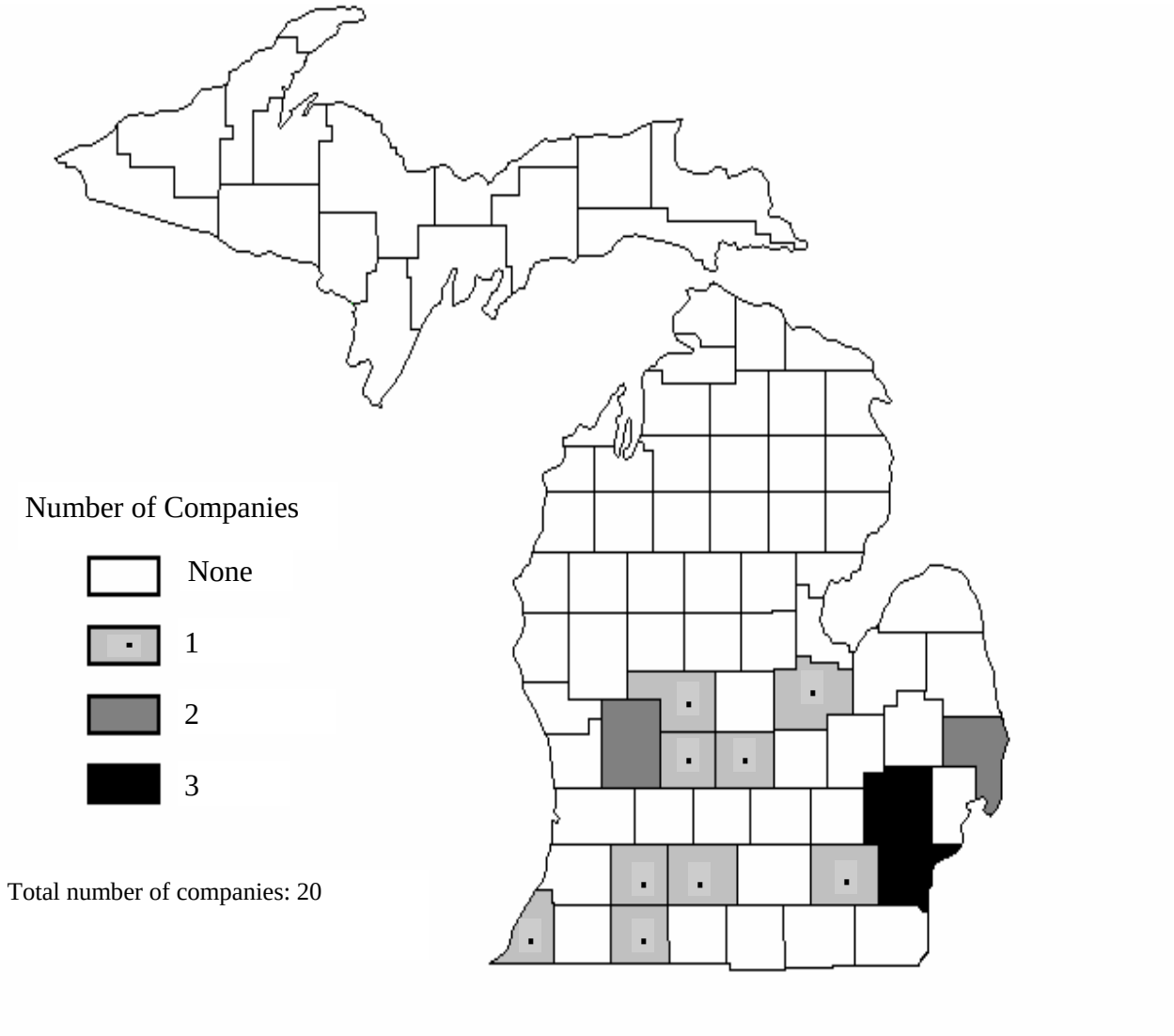
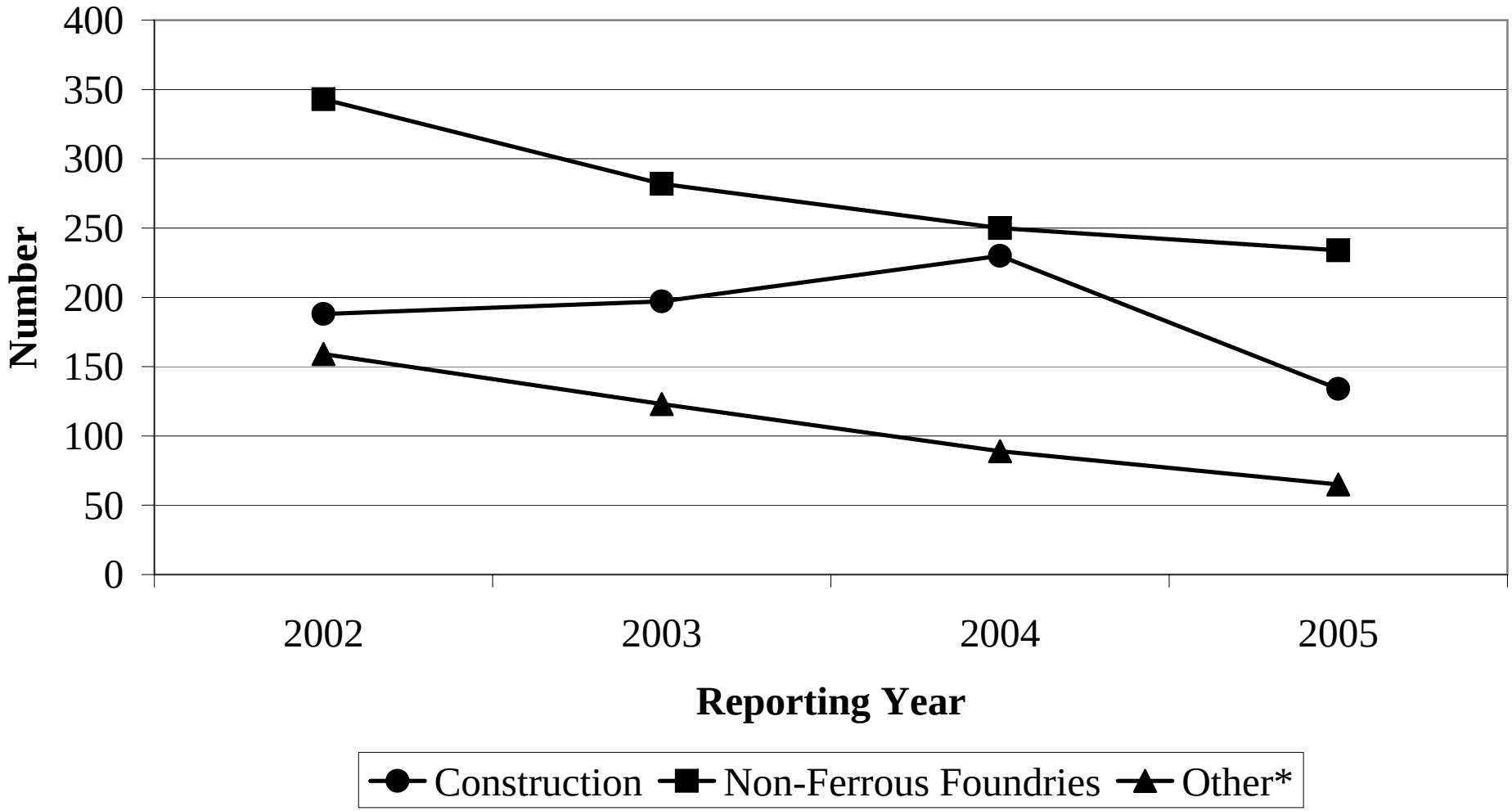


Figure 12. Number of Individuals with BLLs ≥ 10ug/dL by Industry, Where Exposed to Lead in Michigan, 2002-2005



*Including radiator repair, police, and retail firing ranges.

Part II

Blood Lead Levels Among *Children* in Michigan

Childhood Lead Poisoning Prevention Program
Michigan Department of Community Health
2005 Annual Report

Overview:

The Childhood Lead Poisoning Prevention Program (CLPPP), located in the Michigan Department of Community Health (MDCH), focuses its activities on children younger than six years of age, their families, pregnant women, health care providers, and child health advocates in Michigan communities.

The Centers for Disease Control and Prevention (CDC) has provided funding for lead poisoning related activities in Michigan since 1992. The State of Michigan provides a modest amount of funding (from General Funds), and the federal Maternal Child Health Block Grant (Title V) also provides some funding for the program. Beginning in mid-2005, one million dollars from the Healthy Michigan Fund (tobacco tax funds) was made available to the two childhood lead programs (CLPPP and the Lead and Healthy Homes Section, formerly the Lead Hazard Remediation Program or LHRP) by the Governor and legislature. A description of activities and deliverables enabled by that funding follows in this report.

The Lead and Healthy Homes Section (LHHS) in the Division of Epidemiology within MDCH prior to the provision of tobacco tax funds was funded solely by Housing and Urban Development, Office of Healthy Homes and Lead Hazard Control (HUD) and the Environmental Protection Agency (EPA). Chief among the program's responsibilities are: abatement of lead hazards in eligible pre-1978 homes; certification of lead inspectors, risk assessors, abatement workers, supervisors, clearance technicians, abatement contractors and the accreditation of training providers; and enforcement of certification, accreditation and work practice standards established by the Lead Abatement Act of 1998 and associated Administrative Rules.

The two MDCH programs (CLPPP and LHHS) work closely together on a comprehensive response to the complex issue of housing which makes young children and their families sick.

Michigan continues to be one of the top ten states in the country for number of children who are lead poisoned. The primary source of lead exposure for Michigan children is lead-based paint in pre-1978 housing. Deteriorating lead-based paint---flaking, chipping, peeling, or simply dust from multiple coats of paint on impact surfaces---creates an often invisible hazard on windowsills, floors, porches, and in the "drip-lines" around the outside of a home. Soil in driveways and yards adjacent to streets and highways may also be a source of invisible lead exposure. It resulted from tailpipe exhaust falling to the side of roadways during the twenty years of leaded gasoline; a secondary source would be lead tire weights which are lost during heavy truck traffic and crushed by successive road traffic. Two additional sources in Michigan are farm equipment which may still use leaded gasoline and high performance engine fuel (such as is used at the Michigan International Speedway (MIS) and other NASCAR-type venues).

During 2005, another increasingly observed source of exposure for children was repair and renovation done in pre-1978 (often pre-1950) homes where the child resided or visited frequently. Failure to recognize the need for and to follow lead-safe work practices during renovation resulted in significant household exposure. In several cases, the work on the home which resulted in exposure was being accomplished by the parent(s); at least twice, the parent was a building/construction professional doing his/her own work.

Young children ingest lead dust through developmentally appropriate hand-to-mouth behaviors. As the central nervous system is undergoing a period of rapid and critical growth in early childhood, and because children (as compared with adults) absorb a greater proportion of the lead that they consume, the effects on a child's nervous system, hearing, vision, cognitive development and behavior can be devastating. For the most part it is also irreversible. Long-term effects of lead poisoning reduce a child's potential in school, work, health and human relationships. Thus, long-term effects of lead poisoning impact the whole community.

A statewide surveillance system is the basis for the Statewide Testing/Screening Plan. The Plan is reviewed by the CLPPP staff and approved by the Lead Advisory Committee on an annual basis, incorporating surveillance data from the prior year. Since 1997, the CLPPP has maintained a registry of all children with a Michigan address who have had a blood lead test. Participation in reporting of test results to the registry is mandatory, as required by Michigan Administrative Rules (333.5111 and 325.78 and 330.3101 of the Michigan Compiled Laws). The registry forms the "backbone" of the statewide surveillance system.

The CLPPP assures that the health care provider for each child tested and the local public health agency for the child's area of residency is notified of blood lead test results, so that management of the child's lead exposure source can begin. Local health departments (LHDs) vary in their capacity to provide either Public Health Nurse home visits for health assessment and family education and/or environmental investigations. EBLL (elevated blood lead level) investigations must be conducted by a state-certified Lead Inspector/Risk Assessor. Although the environmental investigation completed for a Medicaid-enrolled child can be billed to Michigan Medicaid as a "covered service," the reimbursement rate, as well as competition for the environmental health staffs' time, do not encourage the LHDs to pursue lead professional training for their staff members. Managed care plans and commercial insurance companies do not pay for lead hazard identification in homes or other sites which present lead hazards. The outcome: only 293 EBLL investigations were reported by Lead Inspector/Risk Assessors to LHHS in 2005 (of 3,137 children with confirmed elevated blood lead levels). Assuming that about 10% of those EBLLs were not Medicaid-insured children, we can surmise that more than 2,500 children who have had significant lead exposure were not recipients of environmental investigation services.

Providing professional education and training, current health education materials as well as education for the general public are other regular CLPPP and LHHS activities. Response to both internal and external requests for data to direct local plans and activities represents a significant demand for the data staff. CLPPP staff also continues to monitor policy development (both internal and external to the Department) that potentially affects the lead program, and

collaborates with housing authorities, rental property owners and other community groups to provide safe housing for children.

Partners in these efforts also include the MDCH Trace Metals Laboratory, local public health departments, and other agencies throughout the state with shared interests: Department of Education, Department of Labor and Economic Growth, Michigan State Housing Development Authority, Department of Environmental Quality, Department of Human Services (was FIA), WIC (Women, Infants and Children food supplement program), Early On, Head Start and Early Head Start.

CLPPP also provides funding to nine regions, or clusters of local health departments, with a Regional Coordinator identified for each. This represents a new strategy to accomplish three program goals: 1) to increase blood lead testing, with particular emphasis on thirteen targeted communities; 2) to assure that case management occurs for all children with venous blood lead levels $\geq$ 20µg/dL; and 3) to encourage and promote primary prevention (of childhood lead poisoning), with emphasis, once again, on reaching families in pre-1978 housing where young children or pregnant women reside. The Regional Coordinators develop local relationships and offer professional information and technical support to the lead contact person in each health department in her/his region. In collaboration with that individual and the health department leadership, planning for increasing testing, case management and primary prevention activities in that county take place. The Regional Coordinator provides oversight for comprehensive case management and care coordination; responsibility for service, however, still belongs to the local health department in whose jurisdiction the child and family reside. If the community has the political will to develop a community coalition around the issue of lead poisoning/child health, the Regional Coordinator is available to provide assistance in beginning that project. Approximately half of the nine Regional Coordinators are also certified Lead Inspector/Risk Assessors; in counties where no certified inspector exists, the Regional Coordinator may also complete a lead inspection when a child with lead poisoning is identified.

The Federal Centers for Medicare and Medicaid Services (CMS) requires blood lead testing of **all** Medicaid-eligible children at the ages of one and two years. That federal requirement cannot be waived. If a Medicaid-eligible child is between the ages of three and six years and has never had a blood lead test, he/she is required to have at least one test during those years. The CDC, utilizing data collected in the national Childhood Blood Lead Surveillance System, has reported that more than 80% of children with blood lead levels equal to or greater than 20ug/dL (significantly lead poisoned) are Medicaid-insured children. Of all children with blood lead levels of 10µg/dL or greater, more than half are Medicaid-insured.

Most commercial insurance companies, and even the MIChild health insurance program, do not cover the cost of blood lead testing for their insured clients. This lack of coverage for laboratory testing is a deterrent to testing for commercially insured as well as uninsured children.

2005:

During the year ending December 31, 2005, 132,913 children in Michigan received first blood lead tests. This represents an increase in testing of more than 7,000 children (as compared with 2004); nonetheless that testing number accounts for only 16 % of Michigan children younger than age six years (Table 1). To put this number in perspective: slightly less than half of Michigan children are Medicaid-insured, and the Federal Centers for Medicare and Medicaid requires that all of their insured be tested at the ages of one and two years. The undertesting performance of health care providers, while improving, remains apparent. Increasing testing numbers, especially in "target" communities, remains one of CLPPP's primary goals for the last five years of program funding by CDC. The state (and federal) goals of elimination of childhood lead poisoning by 2010 means that there will no longer be funding for state CLPP programs through the Centers for Disease Control and Prevention.

"Missed opportunities":
Testing data analysis as reported by Medical Services Administration (MSA, or Michigan Medicaid) identifies that if Medicaid health care providers ordered and completed a blood lead test on all appropriate-aged children with whom they actually have a physical "encounter" in their office, the new legislative mandate (Public Act 55) of 80% of Medicaid-enrolled children receiving a blood lead test would already be reached. Medicaid providers are required to have achieved blood lead tests on at least 80% of their enrolled children by October, 2007, or face sanctions by Medicaid.

Among the children tested in 2005, there were 3,137 with elevated blood lead levels; this is an EBLL rate, for the state of Michigan, of 2.4% (Figure 4). The National EBLL rate is now 1.6 %.

While children younger than six years of age are CLPPP's focus, special emphasis is placed on testing appropriate children at the ages of one and two years, when creeping and hand-to-mouth behaviors begin, and then peak. Slightly more than half (66,669) of children tested in 2005 were in that age group. This number represents 24.9% of one and two year olds. Among this cohort, 1,695 children had elevated blood lead levels ($\geq$ 10 µg/dL). This represents an elevated blood lead level (EBLL) rate of 2.6% (Figure 2).

The number of children with dangerously high blood lead levels ($\geq$ 40 µg/dL) in 2005 was 52; of those children, 33 had blood lead levels (BLLs) $\geq$ 45 µg/dL. Children with blood lead levels in this range require hospital treatment, often numerous times, to begin to lower their BLLs. Except in the situation of a single, near-catastrophic, exposure to lead (e.g., child drinks pottery glaze), children with BLLs in this range have had chronic, low level exposure to a lead source over a lengthy period of time. Reducing the child's BLL is a process that takes place over a year or more. The potential toxicity of lead is **irreversible**.

MDCH CLPPP, along with their colleagues in Medical Services Administration (Michigan Medicaid), closely monitor provider compliance with testing requirements. Beginning in March 2004, enhanced monitoring of testing performance by the Medicaid managed care organizations

("the plans") and fee-for-service providers resulted in a monthly (rather than quarterly) data report to all Medicaid providers depicting testing numbers for the prior month by age of child, by plan, by provider type (i.e., fee-for-service vs. health plan; all are also available at www.michigan.gov/leadsafe). When tabulated, results indicate that all providers regularly "miss opportunities" for lead testing when conducting child health visits.

Medicaid has also facilitated testing by local public health agencies by allowing the health departments to bill Medicaid directly when tests are provided. Some of the WIC clinics (Women, Infants and Children, a nutrition enhancement program), realizing that children eligible for the supplemental food program are also among the group at risk for lead poisoning, have extended their clinic staff to collection of blood samples for lead testing as they collect their required "re-certification" blood testing for hemoglobin level (anemia screen). This results in "one-stop-shopping" for the family at risk. (Figure 1)

The Governor and the Michigan Legislature were very active in 2004, passing **six** lead bills. All of the bills were signed by the Governor between April and December, resulting in significant visibility and "tools" for use by lead poisoning professionals and communities. The bills and their progress and outcomes include:

1. Mandatory electronic reporting by labs of blood lead test results to the state lead registry became effective in October 2005.
   Outcome: By the end of 2005, all but a few small production labs were reporting electronically to the CLPPP. This has increased the timeliness of reporting, reduced errors and has had a measurable effect on completeness of results reporting.
2. Recipients of Medicaid payments must be "substantially in compliance" with the federal requirements for testing children in federally-funded programs by October 2007. Achieving lead testing for 80% (or more) of their Medicaid-enrolled children is a condition of continued participation in and funding by Michigan Medicaid.
   Outcome: By the end of 2005, children continuously enrolled in Medicaid, and those in the Medicaid managed care plans were more likely to have received at least **one** blood lead test by the age of three years (the federal requirement is two blood lead tests by the age of twenty-four months). Medicaid reports that, if all Medicaid-insured children for whom an "Encounter" form (evidence of a face to face visit having occurred; used for billing purposes) was submitted had received a blood lead test at age-appropriate times, Medicaid providers would currently be in compliance with P.A.55 of 2004 at 85% testing.
3. Establish a commission to study lead poisoning and to review and evaluate the state's lead poisoning prevention programs.
   Outcome: The Governor's Childhood Lead Poisoning Prevention and Control Commission held its initial meeting on June 29, 2005, followed by public hearings in Lansing and Flint. The Commission's first annual report, due out to the Governor and the public in March 2006, will be available in its entirety at www.michigan.gov/leadsafe. It will make recommendations, based on study, testimony offered at the hearings and prior published documents ("Report of the

Task Force for Elimination of Childhood Lead Poisoning," also found at the above web address). It is anticipated that gaps in service, statute and cooperation by state agencies will be addressed.

4. Identify agencies and groups to serve as voting members on the commission (see #3). Appointments to the commission were named by the Governor and approved by the legislature.
   Outcome: (see #3); the Commission's first annual report will be available on-line in April 2006.
5. Require development & maintenance of a voluntary "lead-safe housing registry" for rental properties built before 1978.
   Outcome: LHHS and the Michigan Department of Information Technology began work on an on-line housing registry as soon as funding to cover its development became available. Initially, it will be populated by homes made leadsafe by LHHS and partner contractors and community action agencies (CLEARCorps Detroit). It will be available to the public, allowing families to make purchase and/or rental choices with lead safety in mind in the second half of 2006.
6. Identify violations and penalties for rental property owners who "knowingly rent" housing with lead hazards to families with minor children.
   Outcome: By the end of 2005, only one Michigan county (Wayne County) had begun, through the Prosecutor's Office, to pursue the rental property owner of record when a child with an elevated blood lead level was identified in his/her property. The goal of PA 434 is remediation/abatement of a residence so that the affected child (as well as future residents) is no longer exposed to lead hazards. The process depends upon prompt and thorough professional assessment of lead hazards, usually accomplished by the certified lead inspector/risk assessor in the local public health agency ("the health department"), and the personal attention from the prosecutor's office. In Wayne County, the prosecuting attorney has offered a diversion agreement to the rental property owner, stipulating that the hazards will be controlled within ninety days, and the case dropped; the individual (or management company) is also provided with financing information, if needed. When the local public health risk assessor clears the address (for lead hazards) after the appropriate hazard controls occur, criminal charges against the rental property owner are dismissed. To date, all Wayne County cases have resulted in properly (and promptly) remediated properties.

During 2005, MDCH CLPPP:

- In collaboration with the Department's Steering Committee, began the Lead Initiative Master Work Plan, sorting the recommendations from the report (see above) into nine objectives and activities and identifying responsibility and timelines for the various components. The resulting document is the Strategic Plan for Michigan Elimination of Childhood Lead Poisoning; the goal is to accomplish this by 2010.

- The CDC requires (as a condition for ongoing funding) an annual report to all Michigan stakeholders in the elimination plan. This ABLES/CLPPP annual report will serve that purpose.
- Wrote and submitted a grant proposal, for continuing funding from the CDC, for childhood lead poisoning related activities in the state.
- CLPPP, working with and through it's Regional Coordinators, is
    1. Assuring case management services for children in all Michigan counties/communities with BLLs $\geq$ 20 µg/dL;
    2. Increasing blood lead testing rates, with primary focus on the targeted communities;
    3. Providing/encouraging primary prevention activities in all Michigan counties, with special emphasis on the targeted communities; also in Michigan day care facilities, etc.

- Observed a modest increase in number of children lead-tested, as reported to our registry. In some areas of the state, providers have implemented the use of alternate collection and/or testing strategies to make testing accessible to the children/families in their practices. Use of a microanalyzer (LeadCare portable analyzer), as well as utilizing filter paper for collection with atomic furnace for analysis are alternatives that are in practice. Regardless, all blood lead tests completed on an individual with a Michigan address are reported to the lead registry.

There are 16,000 children in Michigan whose blood lead level (5-9µg/dL) indicates that an exposure to lead has taken place, but the blood lead level is not yet at the CDC's "level of concern." This number identifies that we have an appropriate opportunity for early intervention/primary prevention of childhood lead poisoning on a very large scale. When both environmental and health information are given to the affected family, exposure can be controlled and/or eliminated before the child's blood lead level reaches the level of concern. (Figure 7)

New and ongoing research, such as that published or released beginning in 2003, indicates that blood lead levels less than 10µg/dL have a measurable impact on the IQ of a child. These findings reinforce the assertion that there is **NO** "safe" blood lead level for children.

In summary, the main focus areas for the Childhood Lead Poisoning Prevention Program at the State of Michigan in the 2004-2005 grant year has been:

- Increasing numbers of children tested, at the appropriate ages, and particularly in the "target communities"; (Figures 5 and 6)
- Providing primary prevention outreach for children younger than six years of age, and for pregnant women;
- Assuring that comprehensive case management for children with BLLs $\geq$ 20 µg/dL takes place throughout the state.

FUTURE plans (FY 2005) for CLPPP and the LHHS:

- Provide funding for and work with a team of consultants from National Center for Healthy Housing/Healthy Housing Solutions, to develop local coalitions in Flint, Hamtramck, and Highland Park and to assist those coalitions with grant writing in order to build local capacity for primary prevention of lead poisoning.
- Provide funding for and work with a team of consultants from Get the Lead Out!/Grand Rapids to develop (Benton Harbor) and/or enhance (Muskegon) local community coalitions and provide technical assistance with grant writing in order to build local capacity for primary prevention activities.
- Develop a Lead-Safe Housing Registry for rental properties built before 1978 which pass inspection or have had abatement work completed.
- Provide staff support and logistics for the State Lead Commission.
- Provide a staff Remediation Ombudsman to consult with individuals and communities attempting to identify funding sources for remediation or interim controls, as appropriate (based on funding availability).
- Make an additional $250,000 available for remediation.
- Fund and assist in development of materials for a public awareness campaign for parents (comparable to the very effective immunization public awareness campaign).
- Provide funding for grant writing consultants to assist Calhoun County and City of Lansing with writing of HUD grants (due this spring).
- Enhance capacity in Ingham County (Ingham, Jackson, Washtenaw, Lenawee), Kalamazoo County (Battle Creek, Kalamazoo, Benton Harbor) and Oakland County (Oakland, Macomb, Livingston) for comprehensive case management of children with blood lead levels $\geq$ 20 µg/dL.
- Enhance the Michigan Childhood Immunization Registry ("MCIR") so that child health care providers not only receive a prompt to provide blood lead testing to the appropriate children at the appropriate ages, but can also access blood lead test results, date of test(s), and receive information describing recommended follow-up (health and environmental) per guidelines of the CDC. This capacity has been requested by the providers since the 2004 introduction of the MCIR "prompt;" it has been hampered by restrictive legislation concerning the MCIR, the required change in the Administrative Rules, and the financial support for the information technology changes that will be required. It is anticipated that the Governor will sign legislation that enables this project to proceed, as she has supported all other "lead laws" that the legislature has developed and passed through bipartisan activity.

Interesting cases/sources of childhood lead poisoning, 2005 include the following:

1. In Macomb County, a toddler was lead poisoned by drapery weights that fell out of new drapes installed in his home by a reputable national department store. The child was "mouthing" the weights.
2. In the Thumb, a child with autism was lead poisoned by exposure to lead in a deteriorating dental apron that was wrapped around him to assist him in "settling" behavior when he went to bed.

3. In Kent County, a child was lead poisoned when she explored the science experiment that her teacher/mother was conducting in the kitchen in her home after school hours.
4. In Jackson County, an older child was lead poisoned when he swallowed a lead-containing piece of jewelry that he found at an excavation site.
5. In Grand Rapids, twins were poisoned before birth by placental transfer. Their mother was exposed to lead in her housing and by her pica behaviors while she was pregnant.
6. In Livingston County, children were poisoned at the more than 100-year-old home that their father was restoring.
7. In southeast Michigan, toddler twins were lead poisoned as their mother dry-sanded exterior doors in the basement of their home. Their father is a restorer of vintage homes.

Table 1

2005 CHILDHOOD LEAD EXPOSURE INFORMATION SHEET - Children less than Six Years of Age
Including Children with Blood Lead Levels between 5 and 9 ug/dL, a target population for Primary Prevention efforts

County	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL							
			Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20 to 44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous
Alcona	21.0	630	88	14.0	12.5	2.3	9	1	1	0	0	0
Alger	32.6	562	87	15.5	3.4	0.0	3	0	0	0	0	0
Allegan	27.4	9,272	1,310	14.1	10.0	0.8	113	9	1	1	0	7
Alpena	28.6	2,118	355	16.8	9.0	0.6	30	1	1	0	0	0
Antrim	22.6	1,625	281	17.3	12.8	0.0	35	0	0	0	0	1
Arenac	20.6	1,124	220	19.6	13.6	0.0	28	0	0	0	0	2
Baraga	34.9	590	127	21.5	4.7	0.0	6	0	0	0	0	0
Barry	29.4	4,606	681	14.8	9.5	0.6	58	3	0	1	0	3
Bay	37.1	8,126	1,152	14.2	15.2	1.8	150	18	2	1	0	4
Benzie	27.3	1,135	138	12.2	9.4	0.0	13	0	0	0	0	0
Berrien	32.7	12,820	2,283	17.8	18.6	3.2	342	56	8	8	0	10
Branch	36.5	3,484	688	19.7	15.1	0.4	90	3	0	0	0	11
Calhoun	36.4	10,945	3,112	28.4	12.1	1.2	328	25	8	3	0	11
Cass	30.4	3,818	508	13.3	16.9	1.6	74	6	2	0	0	4
Charlevoix	25.7	2,052	296	14.4	10.5	0.7	28	2	0	0	0	1
Cheboygan	21.7	1,893	214	11.3	8.9	0.9	16	2	0	0	0	1
Chippewa	28.4	2,500	440	17.6	6.4	0.2	24	1	0	0	0	3
Clare	13.1	2,236	255	11.4	6.3	0.4	15	1	0	0	0	0
Clinton	28.7	5,436	499	9.2	7.4	0.2	36	1	0	0	0	0
Crawford	19.6	949	81	8.5	9.9	0.0	8	0	0	0	0	0
Delta	37.7	2,530	446	17.6	11.7	0.2	51	1	0	0	0	0
Dickinson	41.6	1,871	166	8.9	3.6	1.2	4	2	0	0	0	0
Eaton	23.4	7,980	1,057	13.2	7.5	0.4	68	2	2	0	0	7
Emmet	27.7	2,366	279	11.8	10.0	0.4	23	0	1	0	0	4
Genesee	22.8	38,204	7,091	18.6	9.8	1.3	596	60	18	15	1	7
Gladwin	13.7	1,733	212	12.2	10.4	0.9	20	1	1	0	0	0
Gogebic	54.1	973	155	15.9	4.5	0.0	7	0	0	0	0	0
Grand Traverse	17.8	5,733	325	5.7	5.5	1.2	14	3	0	1	0	0
Gratiot	39.8	3,012	266	8.8	4.9	0.0	13	0	0	0	0	0
Hillsdale	39.0	3,628	571	15.7	11.4	1.6	55	5	3	1	0	1
Houghton	54.8	2,348	456	19.4	6.4	0.2	25	1	0	0	0	3
Huron	33.5	2,447	270	11.0	9.6	0.7	24	0	2	0	0	0
Ingham	25.9	23,460	2,840	12.1	12.8	1.1	311	16	2	11	1	22
Ionia	37.9	5,111	441	8.6	9.5	0.9	37	3	1	0	0	1
Iosco	19.8	1,577	218	13.8	6.9	0.0	14	0	0	0	0	1
Iron	44.5	677	84	12.4	3.6	0.0	3	0	0	0	0	0
Isabella	19.2	3,945	347	8.8	4.6	1.2	12	4	0	0	0	0
Jackson	35.7	12,586	2,075	16.5	25.6	1.6	459	21	6	4	2	40
Kalamazoo	24.6	18,597	2,322	12.5	14.8	1.9	290	25	12	6	0	10
Kalkaska	15.2	1,306	146	11.2	10.3	0.0	14	0	0	0	0	1
Kent	26.8	55,787	10,344	18.5	16.9	2.5	1383	146	46	62	4	103
Keweenaw	54.9	127	15	11.8	6.7	0.0	1	0	0	0	0	0
Lake	15.1	718	134	18.7	11.2	0.0	15	0	0	0	0	0
Lapeer	22.2	7,217	678	9.4	7.8	0.7	47	2	1	2	0	1
Leelanau	22.0	1,328	60	4.5	3.3	0.0	2	0	0	0	0	0
Lenawee	38.6	7,564	983	13.0	31.1	1.9	285	14	1	4	0	2
Livingston	13.7	13,800	733	5.3	5.0	0.7	32	0	2	3	0	0
Luce	30.0	438	54	12.3	18.5	0.0	9	0	0	0	0	1
Mackinac	28.1	708	106	15.0	16.0	0.9	16	0	1	0	0	0
Macomb	10.9	60,738	6,076	10.0	5.3	0.2	303	10	2	3	0	5
Manistee	35.9	1,616	244	15.1	10.7	0.0	26	0	0	0	0	0
Marquette	32.6	3,985	431	10.8	7.2	0.5	26	1	1	0	0	3
Mason	31.1	1,902	258	13.6	13.6	0.4	33	0	1	0	0	1
Mecosta	22.0	2,892	456	15.8	5.9	0.4	25	0	2	0	0	0
Menominee	38.4	1,783	221	12.4	16.3	0.5	32	0	0	1	0	3
Midland	16.9	6,572	453	6.9	5.1	1.1	17	4	0	1	0	1
Missaukee	20.6	1,143	108	9.4	7.4	0.0	7	0	0	0	0	1
Monroe	28.3	11,757	1,193	10.1	13.1	0.7	147	3	4	1	0	1
Montcalm	28.1	4,888	759	15.5	11.1	1.1	70	6	2	0	0	6
Montmorency	18.4	544	101	18.6	8.9	1.0	8	1	0	0	0	0
Muskegon	29.8	14,215	4,057	28.5	17.9	2.4	582	69	20	9	0	47
Newaygo	22.7	4,014	607	15.1	7.1	0.2	41	1	0	0	0	1
Oakland	15.9	93,862	9,824	10.5	7.1	0.5	639	39	7	7	0	7
Oceana	26.8	2,092	600	28.7	11.2	0.7	59	2	1	1	0	4
Ogemaw	18.3	1,384	237	17.1	12.2	0.0	28	0	0	0	0	1
Ontonagon	43.4	419	51	12.2	3.9	0.0	2	0	0	0	0	0
Osceola	24.2	1,754	233	13.3	6.4	0.0	15	0	0	0	0	0
Oscoda	18.3	608	59	9.7	11.9	0.0	7	0	0	0	0	0
Otsego	12.6	1,759	230	13.1	6.1	0.0	14	0	0	0	0	0
Ottawa	18.0	25,536	2,164	8.5	8.9	0.7	170	11	1	3	0	7
Presque Isle	27.6	832	105	12.6	17.1	0.0	15	0	0	0	0	3
Roscommon	16.1	1,368	142	10.4	7.7	0.0	11	0	0	0	0	0
Saginaw	29.3	17,275	3,453	20.0	18.2	1.5	547	30	11	9	0	30
St Clair	29.6	13,360	1,833	13.7	13.5	0.7	226	7	4	1	0	10
St Joseph	34.8	5,389	1,047	19.4	11.5	1.1	108	10	1	1	0	0
Sanilac	34.7	3,506	537	15.3	11.9	0.6	61	2	0	1	0	0
Schoolcraft	33.1	615	106	17.2	10.4	0.0	10	0	0	0	0	1
Shiawassee	35.9	5,914	1,100	18.6	7.5	0.2	79	2	0	0	0	1
Tuscola	32.8	4,310	620	14.4	11.0	0.2	66	1	0	0	0	1
Van Buren	29.4	6,243	995	15.9	15.4	0.3	139	3	0	0	0	11
Washtenaw	19.3	24,994	2,287	9.2	4.8	0.7	92	6	8	3	0	0
Wayne ex Det	24.0	100,717	13,692	13.6	11.2	1.3	1,326	107	35	33	4	35
Wexford	26.2	2,377	240	10.1	8.8	0.4	20	0	0	1	0	0
Detroit, City of	56.0	76,074	32,705	43.0	33.7	6.1	8,536	1,258	388	291	18	541
MICHIGAN	27.0	795,041	132,913	16.7	17.2	2.4	18,723	2,008	610	489	30	983

*Genesee, Ingham, Kent, Macomb, Oakland, Ottawa, Washtenaw & Wayne Counties, Detroit, and Michigan: U.S. Census Bureau, American Community Survey 2004. All other areas: U.S. Census Bureau, Census 2000.

**%EBLL is calculated as follows: Number of Children w/EBLL divided by (Number of Children Tested minus Children w/elevated capillary tests, not confirmed by venous)

Note: Counts of children tested and blood lead levels are reported from Michigan Department of Community Health, Childhood Lead Poisoning Prevention Program statewide database.

January 2006

Table 2

2005 CHILDHOOD LEAD POISONING INFORMATION SHEET - Children One and Two Years of Age
Including Children with Blood Lead Levels between 5 and 9 ug/dL, a target population for Primary Prevention efforts

County	%Pre-1950 Housing*	Children 1 & 2 years of age*	Children 1 & 2 years of age, Tested for Lead: Number of Children Tested	Children 1 & 2 years of age, Tested for Lead: % Tested	Children with Blood Lead Levels >= 5 ug/dL: % with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20 to 44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous
Alcona	21.0	224	47	21.0	14.9	2.1	6	1	0	0	0	0
Alger	32.6	166	74	44.6	4.1	0.0	3	0	0	0	0	0
Allegan	27.4	2,978	797	26.8	11.5	0.8	78	5	1	0	0	8
Alpena	28.6	687	216	31.4	10.6	0.5	22	1	0	0	0	0
Antrim	22.6	533	170	31.9	13.5	0.0	22	0	0	0	0	1
Arenac	20.6	348	118	33.9	11.9	0.0	14	0	0	0	0	0
Baraga	34.9	210	63	30.0	4.8	0.0	3	0	0	0	0	0
Barry	29.4	1,475	451	30.6	11.5	0.7	47	2	0	1	0	2
Bay	37.1	2,690	762	28.3	16.1	2.1	104	13	2	1	0	3
Benzie	27.3	408	93	22.8	8.6	0.0	8	0	0	0	0	0
Berrien	32.7	4,169	1,228	29.5	18.9	3.1	186	30	4	4	0	8
Branch	36.5	1,158	287	24.8	13.9	0.7	32	2	0	0	0	6
Calhoun	36.4	3,534	1,762	49.9	12.9	1.1	201	12	5	3	0	6
Cass	30.4	1,212	299	24.7	16.4	1.7	41	3	2	0	0	3
Charlevoix	25.7	676	174	25.7	11.5	1.1	18	2	0	0	0	0
Cheboygan	21.7	638	144	22.6	9.0	1.4	10	2	0	0	0	1
Chippewa	28.4	819	260	31.7	7.7	0.4	16	1	0	0	0	3
Clare	13.1	742	131	17.7	9.2	0.0	12	0	0	0	0	0
Clinton	28.7	1,755	283	16.1	8.8	0.4	24	1	0	0	0	0
Crawford	19.6	295	60	20.3	10.0	0.0	6	0	0	0	0	0
Delta	37.7	841	366	43.5	12.8	0.3	46	1	0	0	0	0
Dickinson	41.6	598	82	13.7	6.1	2.4	3	2	0	0	0	0
Eaton	23.4	2,558	716	28.0	8.4	0.3	52	1	1	0	0	6
Emmet	27.7	756	164	21.7	13.4	0.6	17	0	1	0	0	4
Genesee	22.8	12,531	3,734	29.8	10.2	1.3	329	28	12	10	0	3
Gladwin	13.7	555	75	13.5	9.3	1.3	6	0	1	0	0	0
Gogebic	54.1	294	86	29.3	7.0	0.0	6	0	0	0	0	0
Grand Traverse	17.8	1,908	140	7.3	7.1	2.1	7	2	0	1	0	0
Gratiot	39.8	1,000	190	19.0	5.8	0.0	11	0	0	0	0	0
Hillsdale	39.0	1,209	273	22.6	14.7	2.2	33	3	2	1	0	1
Houghton	54.8	776	264	34.0	5.7	0.4	14	1	0	0	0	0
Huron	33.5	793	150	18.9	8.7	1.3	11	0	2	0	0	0
Ingham	25.9	7,695	1,609	20.9	13.5	1.2	182	12	1	6	1	17
Ionia	37.9	1,704	305	17.9	11.5	1.0	31	3	0	0	0	1
Iosco	19.8	535	126	23.6	5.6	0.0	6	0	0	0	0	1
Iron	44.5	225	47	20.9	4.3	0.0	2	0	0	0	0	0
Isabella	19.2	1,321	180	13.6	4.4	1.1	6	2	0	0	0	0
Jackson	35.7	4,112	1,216	29.6	26.1	2.0	276	16	4	4	1	17
Kalamazoo	24.6	6,175	1,551	25.1	14.1	1.6	187	15	4	5	0	7
Kalkaska	15.2	408	77	18.9	13.0	0.0	9	0	0	0	0	1
Kent	26.8	18,298	7,375	40.3	16.8	2.4	985	110	27	39	4	78
Keweenaw	54.9	39	9	23.1	0.0	0.0	0	0	0	0	0	0
Lake	15.1	250	86	34.4	8.1	0.0	7	0	0	0	0	0
Lapeer	22.2	2,356	357	15.2	9.5	1.1	29	2	1	1	0	1
Leelanau	22.0	430	43	10.0	2.3	0.0	1	0	0	0	0	0
Lenawee	38.6	2,420	544	22.5	32.4	2.4	161	10	1	2	0	2
Livingston	13.7	4,482	442	9.9	6.1	0.2	26	0	0	1	0	0
Luce	30.0	135	44	32.6	22.7	0.0	9	0	0	0	0	1
Mackinac	28.1	205	75	36.6	17.3	1.3	12	0	1	0	0	0
Macomb	10.9	19,922	3,683	18.5	5.4	0.2	185	5	2	2	0	4
Manistee	35.9	532	129	24.2	10.1	0.0	13	0	0	0	0	0
Marquette	32.6	1,307	298	22.8	7.7	0.7	19	1	1	0	0	2
Mason	31.1	619	163	26.3	16.6	0.6	25	0	1	0	0	1
Mecosta	22.0	981	272	27.7	6.6	0.4	17	0	1	0	0	0
Menominee	38.4	603	159	26.4	17.0	0.6	24	0	0	1	0	2
Midland	16.9	2,167	228	10.5	5.7	1.3	10	2	0	1	0	0
Missaukee	20.6	380	58	15.3	15.5	0.0	7	0	0	0	0	2
Monroe	28.3	3,898	784	20.1	13.5	0.8	99	2	3	1	0	1
Montcalm	28.1	1,601	507	31.7	10.3	1.0	44	3	2	0	0	3
Montmorency	18.4	192	46	24.0	8.7	0.0	4	0	0	0	0	0
Muskegon	29.8	4,670	2,228	47.7	16.7	2.3	298	33	10	8	0	22
Newaygo	22.7	1,336	425	31.8	7.5	0.2	30	1	0	0	0	1
Oakland	15.9	30,787	5,295	17.2	7.3	0.5	355	19	6	1	0	5
Oceana	26.8	697	364	52.2	12.4	0.6	41	1	1	0	0	2
Ogemaw	18.3	432	102	23.6	9.8	0.0	9	0	0	0	0	1
Ontonagon	43.4	125	32	25.6	6.3	0.0	2	0	0	0	0	0
Osceola	24.2	604	130	21.5	6.9	0.0	9	0	0	0	0	0
Oscoda	18.3	190	29	15.3	13.8	0.0	4	0	0	0	0	0
Otsego	12.6	586	143	24.4	8.4	0.0	12	0	0	0	0	0
Ottawa	18.0	8,376	1,327	15.8	7.8	0.6	90	5	1	2	0	5
Presque Isle	27.6	277	56	20.2	19.6	0.0	9	0	0	0	0	2
Roscommon	16.1	447	52	11.6	9.6	0.0	5	0	0	0	0	0
Saginaw	29.3	5,709	2,048	35.9	17.6	1.2	321	16	5	4	0	15
St Clair	29.6	4,355	1,101	25.3	15.1	0.7	152	5	2	1	0	6
St Joseph	34.8	1,727	648	37.5	13.3	1.4	77	7	1	1	0	0
Sanilac	34.7	1,165	292	25.1	15.4	0.7	43	2	0	0	0	0
Schoolcraft	33.1	215	84	39.1	11.9	0.0	9	0	0	0	0	1
Shiawassee	35.9	1,939	567	29.2	8.3	0.4	45	2	0	0	0	0
Tuscola	32.8	1,410	333	23.6	11.7	0.3	38	1	0	0	0	0
Van Buren	29.4	2,047	586	28.6	14.7	0.2	80	1	0	0	0	5
Washtenaw	19.3	8,198	1,266	15.4	5.3	0.6	59	2	4	2	0	0
Wayne ex Det	24.0	33,035	6,702	20.3	11.7	1.3	677	51	16	22	2	17
Wexford	26.2	740	132	17.8	11.4	0.8	14	0	0	1	0	0
Detroit, City of	56.0	24,952	14,228	57.0	37.3	7.1	4,011	643	188	153	15	319
MICHIGAN	27.0	260,773	72,242	27.7	17.2	2.3	10,154	1,085	316	279	23	597

*Genesee, Ingham, Kent, Macomb, Oakland, Ottawa, Washtenaw & Wayne Counties, Detroit, and Michigan: estimated from U.S. Census Bureau, American Community Survey 2004. All other areas: U.S. Census Bureau, Census 2000.

**%EBLL is calculated as follows: Number of Children w/EBLL divided by (Number of Children Tested minus Children w/elevated capillary tests, not confirmed by venous)

Note: Counts of children tested and blood lead levels are reported from Michigan Department of Community Health, Childhood Lead Poisoning Prevention Program statewide database.

January 2006

2005

Blood Lead Testing Among Children who are Insured by Medicaid - All Counties in Michigan

Table 3

	Children age < 6 years, Insured by Medicaid					Children age 1 & 2 years, Insured by Medicaid				
County	# of Children, age < 6 yrs, Insured by Medicaid	# of Children Tested for Lead Poisoning in CY2005	% Tested	# of Children Confirmed w/EBLL*	% EBLL	# of Children, age < 6 yrs, Insured by Medicaid	# of Children Tested for Lead Poisoning in CY2005	% Tested	# of Children Confirmed w/EBLL*	% EBLL
Alcona	303	64	21.1	2	3.1	105	34	32.4	1	2.9
Alger	264	65	24.6	0	0.0	88	42	47.7	0	0.0
Allegan	3,943	998	25.3	9	0.9	1,322	490	37.1	4	0.8
Alpena	1,060	247	23.3	0	0.0	345	118	34.2	0	0.0
Antrim	893	258	28.9	0	0.0	322	132	41.0	0	0.0
Arenac	702	170	24.2	0	0.0	217	75	34.6	0	0.0
Baraga	326	79	24.2	0	0.0	102	34	33.3	0	0.0
Barry	1,837	510	27.8	5	1.0	614	264	43.0	4	1.5
Bay	3,836	927	24.2	16	1.7	1,310	506	38.6	10	2.0
Benzie	601	126	21.0	0	0.0	228	71	31.1	0	0.0
Berrien	7,308	1,955	26.8	67	3.4	2,484	942	37.9	33	3.5
Branch	1,913	457	23.9	4	0.9	674	176	26.1	2	1.1
Calhoun	6,477	1,907	29.4	33	1.7	2,252	903	40.1	21	2.3
Cass	2,123	428	20.2	8	1.9	705	219	31.1	4	1.8
Charlevoix	827	239	28.9	1	0.4	271	116	42.8	0	0.0
Cheboygan	1,069	185	17.3	1	0.5	364	97	26.6	1	1.0
Chippewa	1,445	359	24.8	1	0.3	505	182	36.0	1	0.5
Clare	1,323	221	16.7	1	0.5	424	99	23.3	0	0.0
Clinton	1,489	289	19.4	1	0.3	541	150	27.7	1	0.7
Crawford	531	64	12.1	0	0.0	182	29	15.9	0	0.0
Delta	1,402	385	27.5	1	0.3	490	244	49.8	1	0.4
Dickinson	986	118	12.0	1	0.8	344	49	14.2	1	2.0
Eaton	3,044	753	24.7	3	0.4	1,038	411	39.6	1	0.2
Emmet	1,299	318	24.5	3	0.9	467	172	36.8	2	1.2
Genesee	20,458	5,044	24.7	89	1.8	6,964	2,259	32.4	43	1.9
Gladwin	934	152	16.3	1	0.7	303	46	15.2	0	0.0
Gogebic	577	119	20.6	0	0.0	205	63	30.7	0	0.0
Grand Traverse	2,802	243	8.7	4	1.6	983	89	9.1	3	3.4
Gratiot	1,651	201	12.2	0	0.0	573	118	20.6	0	0.0
Hillsdale	1,865	357	19.1	7	2.0	623	180	28.9	4	2.2
Houghton	1,224	289	23.6	0	0.0	402	128	31.8	0	0.0
Huron	1,095	204	18.6	2	1.0	368	101	27.4	2	2.0
Ingham	10,648	2,233	21.0	27	1.2	3,660	1,045	28.6	16	1.5
Ionia	2,231	309	13.9	3	1.0	774	179	23.1	1	0.6
Iosco	980	189	19.3	0	0.0	348	92	26.4	0	0.0
Iron	395	70	17.7	0	0.0	131	34	26.0	0	0.0
Isabella	2,014	214	10.6	1	0.5	710	103	14.5	0	0.0
Jackson	6,397	1,747	27.3	31	1.8	2,212	799	36.1	18	2.3
Kalamazoo	8,648	1,730	20.0	38	2.2	3,011	944	31.4	23	2.4
Kalkaska	881	141	16.0	0	0.0	296	53	17.9	0	0.0
Kent	24,841	8,340	33.6	228	2.7	8,550	4,593	53.7	151	3.3
Keweenaw	67	14	20.9	0	0.0	25	7	28.0	0	0.0
Lake	498	116	23.3	0	0.0	178	63	35.4	0	0.0
Lapeer	2,652	442	16.7	4	0.9	965	194	20.1	2	1.0
Leelanau	350	45	12.9	0	0.0	121	18	14.9	0	0.0
Lenawee	3,403	662	19.5	15	2.3	1,146	310	27.1	11	3.5
Livingston	2,599	494	19.0	6	1.2	846	238	28.1	3	1.3
Luce	235	58	24.7	0	0.0	81	35	43.2	0	0.0
Mackinac	333	75	22.5	1	1.3	99	48	48.5	1	2.1
Macomb	19,266	3,646	18.9	15	0.4	6,685	1,697	25.4	6	0.4
Manistee	869	221	25.4	1	0.5	288	95	33.0	0	0.0
Marquette	1,878	335	17.8	1	0.3	657	177	26.9	1	0.6
Mason	1,116	241	21.6	1	0.4	382	107	28.0	0	0.0
Mecosta	1,618	369	22.8	2	0.5	536	166	31.0	2	1.2
Menominee	844	166	19.7	0	0.0	287	104	36.2	0	0.0
Midland	2,403	345	14.4	5	1.4	846	150	17.7	2	1.3
Missaukee	529	76	14.4	0	0.0	168	29	17.3	0	0.0
Monroe	4,122	664	16.1	7	1.1	1,427	334	23.4	4	1.2
Montcalm	2,559	585	22.9	4	0.7	894	301	33.7	1	0.3
Montmorency	336	66	19.6	1	1.5	121	34	28.1	0	0.0
Muskegon	8,315	3,155	37.9	96	3.0	2,792	1,425	51.0	49	3.4
Newaygo	2,062	446	21.6	2	0.4	666	215	32.3	2	0.9
Oakland	22,204	5,378	24.2	44	0.8	7,480	2,440	32.6	20	0.8
Oceana	1,626	496	30.5	2	0.4	563	226	40.1	1	0.4
Ogemaw	942	188	20.0	0	0.0	313	65	20.8	0	0.0
Ontonagon	175	38	21.7	0	0.0	52	15	28.8	0	0.0
Osceola	901	147	16.3	0	0.0	311	63	20.3	0	0.0
Oscoda	297	45	15.2	0	0.0	101	17	16.8	0	0.0
Otsego	1,040	201	19.3	0	0.0	345	103	29.9	0	0.0
Ottawa	6,855	1,392	20.3	11	0.8	2,334	690	29.6	4	0.6
Presque Isle	383	67	17.5	0	0.0	119	29	24.4	0	0.0
Roscommon	914	129	14.1	0	0.0	301	35	11.6	0	0.0
Saginaw	9,261	2,819	30.4	54	1.9	3,047	1,376	45.2	26	1.9
St Clair	5,531	1,258	22.7	5	0.4	1,924	634	33.0	3	0.5
St Joseph	3,140	755	24.0	11	1.5	1,086	406	37.4	8	2.0
Sanilac	1,683	425	25.3	2	0.5	571	194	34.0	1	0.5
Schoolcraft	332	97	29.2	0	0.0	110	55	50.0	0	0.0
Shiawassee	2,645	800	30.2	4	0.5	888	332	37.4	2	0.6
Tuscola	2,127	461	21.7	1	0.2	736	201	27.3	0	0.0
Van Buren	3,795	767	20.2	2	0.3	1,285	374	29.1	0	0.0
Washtenaw	7,147	1,568	21.9	8	0.5	2,447	745	30.4	5	0.7
Wayne ex Det	33,903	9,031	26.6	195	2.2	11,645	3,815	32.8	90	2.4
Wexford	1,587	229	14.4	1	0.4	536	72	13.4	1	1.4
Detroit, City of	62,343	25,671	41.2	1733	6.8	20,832	9,936	47.7	831	8.4
MICHIGAN	357,527	96,887	27.1	2,822	2.9	121,743	43,951	36.1	1,424	3.2

*EBLL: elevated blood lead level--i.e.,≥ 10 µ/dL

Source: MDCH Data Warehouse

April 5, 2006

2005 CHILDHOOD LEAD EXPOSURE INFORMATION SHEET - Children less than Six Years of Age
Including Children with Blood Lead Levels between 5 and 9 ug/dL, a target population for Primary Prevention efforts
All "Rural" Counties in Michigan

			Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL							
County	%Pre-1950 Housing*	Children Under Age 6*	Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20 to 44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous
Alcona	21.0	630	88	14.0	12.5	2.3	9	1	1	0	0	0
Alger	**32.6**	562	87	15.5	3.4	0.0	3	0	0	0	0	0
Allegan	**27.4**	9,272	1,310	14.1	10.0	0.8	113	9	1	1	0	7
Alpena	**28.6**	2,118	355	16.8	9.0	0.6	30	1	1	0	0	0
Antrim	22.6	1,625	281	17.3	12.8	0.0	35	0	0	0	0	1
Arenac	20.6	1,124	220	19.6	13.6	0.0	28	0	0	0	0	2
Baraga	**34.9**	590	127	21.5	4.7	0.0	6	0	0	0	0	0
Benzie	**27.3**	1,135	138	12.2	9.4	0.0	13	0	0	0	0	0
Branch	**36.5**	3,484	688	19.7	15.1	0.4	90	3	0	0	0	11
Charlevoix	25.7	2,052	296	14.4	10.5	0.7	28	2	0	0	0	1
Cheboygan	21.7	1,893	214	11.3	8.9	0.9	16	2	0	0	0	1
Chippewa	**28.4**	2,500	440	17.6	6.4	0.2	24	1	0	0	0	3
Clare	13.1	2,236	255	11.4	6.3	0.4	15	1	0	0	0	0
Crawford	19.6	949	81	8.5	9.9	0.0	8	0	0	0	0	0
Delta	**37.7**	2,530	446	17.6	11.7	0.2	51	1	0	0	0	0
Dickinson	**41.6**	1,871	166	8.9	3.6	1.2	4	2	0	0	0	0
Emmet	**27.7**	2,366	279	11.8	10.0	0.4	23	0	1	0	0	4
Gladwin	13.7	1,733	212	12.2	10.4	0.9	20	1	1	0	0	0
Gogebic	**54.1**	973	155	15.9	4.5	0.0	7	0	0	0	0	0
Grand Traverse	17.8	5,733	325	5.7	5.5	1.2	14	3	0	1	0	0
Gratiot	**39.8**	3,012	266	8.8	4.9	0.0	13	0	0	0	0	0
Hillsdale	**39.0**	3,628	571	15.7	11.4	1.6	55	5	3	1	0	1
Houghton	**54.8**	2,348	456	19.4	6.4	0.2	25	1	0	0	0	3
Huron	**33.5**	2,447	270	11.0	9.6	0.7	24	0	2	0	0	0
Iosco	19.8	1,577	218	13.8	6.9	0.0	14	0	0	0	0	1
Iron	**44.5**	677	84	12.4	3.6	0.0	3	0	0	0	0	0
Isabella	19.2	3,945	347	8.8	4.6	1.2	12	4	0	0	0	0
Kalkaska	15.2	1,306	146	11.2	10.3	0.0	14	0	0	0	0	1
Keweenaw	**54.9**	127	15	11.8	6.7	0.0	1	0	0	0	0	0

			Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL							
County	%Pre-1950 Housing*	Children Under Age 6*	Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20 to 44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous
Lake	15.1	718	134	18.7	11.2	0.0	15	0	0	0	0	0
Leelanau	22.0	1,328	60	4.5	3.3	0.0	2	0	0	0	0	0
Lenawee	**38.6**	7,564	983	13.0	31.1	1.9	285	14	1	4	0	2
Luce	**30.0**	438	54	12.3	18.5	0.0	9	0	0	0	0	1
Mackinac	**28.1**	708	106	15.0	16.0	0.9	16	0	1	0	0	0
Manistee	**35.9**	1,616	244	15.1	10.7	0.0	26	0	0	0	0	0
Marquette	**32.6**	3,985	431	10.8	7.2	0.5	26	1	1	0	0	3
Mason	**31.1**	1,902	258	13.6	13.6	0.4	33	0	1	0	0	1
Mecosta	22.0	2,892	456	15.8	5.9	0.4	25	0	2	0	0	0
Menominee	**38.4**	1,783	221	12.4	16.3	0.5	32	0	0	1	0	3
Midland	16.9	6,572	453	6.9	5.1	1.1	17	4	0	1	0	1
Missaukee	20.6	1,143	108	9.4	7.4	0.0	7	0	0	0	0	1
Montcalm	**28.1**	4,888	759	15.5	11.1	1.1	70	6	2	0	0	6
Montmorency	18.4	544	101	18.6	8.9	1.0	8	1	0	0	0	0
Oceana	26.8	2,092	600	28.7	11.2	0.7	59	2	1	1	0	4
Ogemaw	18.3	1,384	237	17.1	12.2	0.0	28	0	0	0	0	1
Ontonagon	**43.4**	419	51	12.2	3.9	0.0	2	0	0	0	0	0
Osceola	24.2	1,754	233	13.3	6.4	0.0	15	0	0	0	0	0
Oscoda	18.3	608	59	9.7	11.9	0.0	7	0	0	0	0	0
Otsego	12.6	1,759	230	13.1	6.1	0.0	14	0	0	0	0	0
Presque Isle	**27.6**	832	105	12.6	17.1	0.0	15	0	0	0	0	3
Roscommon	16.1	1,368	142	10.4	7.7	0.0	11	0	0	0	0	0
St Joseph	**34.8**	5,389	1,047	19.4	11.5	1.1	108	10	1	1	0	0
Sanilac	**34.7**	3,506	537	15.3	11.9	0.6	61	2	0	1	0	0
Schoolcraft	**33.1**	615	106	17.2	10.4	0.0	10	0	0	0	0	1
Shiawassee	**35.9**	5,914	1,100	18.6	7.5	0.2	79	2	0	0	0	1
Tuscola	**32.8**	4,310	620	14.4	11.0	0.2	66	1	0	0	0	1
Wexford	26.2	2,377	240	10.1	8.8	0.4	20	0	0	1	0	0

*U.S. Census Bureau, Census 2000.

**%EBLL is calculated as follows: Number of Children w/EBLL divided by (Number of Children Tested minus Children w/elevated capillary tests, not confirmed by venous)

Note: Counts of children tested and blood lead levels are reported from Michigan Department of Community Health, Childhood Lead Poisoning Prevention Program statewide database.

April 2006

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
48001	Yes	25.7	913	119	13.0	5.9	0.0	6	0	0	0	0	1	
48002	Yes	25.8	273	14	5.1	14.3	0.0	1	0	0	0	0	1	
48003	Yes	24.1	483	31	6.4	6.5	3.2	1	1	0	0	0	0	
48004		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48005	Yes	32.5	436	22	5.0	9.1	0.0	2	0	0	0	0	0	
48006	Yes	28.1	318	38	11.9	21.1	2.6	7	1	0	0	0	0	
48007		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48009	Yes	39.8	1567	80	5.1	1.3	0.0	1	0	0	0	0	0	
48014	Yes	36.9	340	36	10.6	25.0	0.0	9	0	0	0	0	0	
48015	Yes	33.4	647	80	12.4	10.0	0.0	8	0	0	0	0	0	
48017		20.9	842	46	5.5	0.0	0.0	0	0	0	0	0	0	
48021	Yes	31.4	2603	337	12.9	3.0	0.0	10	0	0	0	0	0	
48022	Yes	21.7	222	9	4.1	0.0	0.0	0	0	0	0	0	0	
48023	Yes	16.7	648	61	9.4	11.5	0.0	7	0	0	0	0	0	
48025		14.5	1099	32	2.9	0.0	0.0	0	0	0	0	0	0	
48026		7.3	1078	79	7.3	6.3	0.0	5	0	0	0	0	0	
48027	Yes	29.1	222	27	12.2	3.7	0.0	1	0	0	0	0	0	
48028	Yes	32.0	42	3	7.1	0.0	0.0	0	0	0	0	0	0	
48030	Yes	36.7	1661	244	14.7	13.9	1.2	30	1	2	0	0	1	
48032	Yes	19.7	162	31	19.1	19.4	0.0	6	0	0	0	0	0	
48034		7.1	2056	355	17.3	7.0	0.6	23	2	0	0	0	0	
48035		5.5	2815	265	9.4	5.7	0.4	14	1	0	0	0	0	
48036		4.7	1676	159	9.5	9.4	1.3	13	1	1	0	0	0	
48037		0.0		7	---	14.3	0.0	1	0	0	0	0	0	POB
48038		0.9	2597	205	7.9	5.4	0.0	11	0	0	0	0	0	
48039	Yes	41.7	639	79	12.4	12.7	0.0	10	0	0	0	0	0	
48040		11.3	664	96	14.5	10.4	0.0	10	0	0	0	0	0	
48041	Yes	28.0	401	31	7.7	6.5	0.0	2	0	0	0	0	0	
48042		6.2	1656	108	6.5	2.8	0.0	3	0	0	0	0	0	
48043	Yes	40.4	1364	136	10.0	5.9	0.0	8	0	0	0	0	0	
48044		1.6	3862	310	8.0	2.9	0.0	9	0	0	0	0	0	
48045		11.5	1657	161	9.7	3.1	0.0	5	0	0	0	0	0	
48047		7.8	2944	228	7.7	6.6	0.0	15	0	0	0	0	0	
48048		15.6	573	102	17.8	6.9	1.0	6	1	0	0	0	0	
48049		14.2	430	46	10.7	8.7	0.0	4	0	0	0	0	0	
48050	Yes	33.0	122	5	4.1	20.0	0.0	1	0	0	0	0	0	
48051		5.1	1586	107	6.7	5.6	0.0	6	0	0	0	0	0	
48054		24.9	437	41	9.4	4.9	0.0	2	0	0	0	0	0	
48059		19.4	1049	142	13.5	11.3	0.0	15	0	0	0	0	1	
48060	Yes	44.7	3675	796	21.7	17.7	1.3	124	5	4	1	0	7	
48062	Yes	28.7	639	61	9.5	14.8	0.0	9	0	0	0	0	0	
48063		12.3	428	28	6.5	0.0	0.0	0	0	0	0	0	0	
48064		25.1	433	29	6.7	10.3	0.0	3	0	0	0	0	0	
48065		25.4	854	51	6.0	3.9	0.0	2	0	0	0	0	0	
48066		16.0	3855	438	11.4	4.3	0.5	17	1	0	1	0	0	
48067	Yes	53.6	1689	128	7.6	9.4	0.8	11	1	0	0	0	0	
48068		0.0		3	---	33.3	0.0	1	0	0	0	0	0	POB
48069	Yes	79.6	186	8	4.3	0.0	0.0	0	0	0	0	0	0	
48070	Yes	55.2	560	29	5.2	6.9	0.0	2	0	0	0	0	0	
48071		11.6	2313	269	11.6	4.8	1.1	10	3	0	0	0	0	
48072	Yes	55.2	1224	102	8.3	3.9	1.0	3	1	0	0	0	0	
48073		24.7	2173	150	6.9	3.3	1.3	3	2	0	0	0	0	
48074	Yes	23.4	707	93	13.2	5.4	0.0	5	0	0	0	0	0	
48075		12.8	1500	277	18.5	9.7	1.8	22	5	0	0	0	0	
48076		9.4	1954	274	14.0	6.9	0.7	17	2	0	0	0	0	
48079	Yes	26.0	1007	97	9.6	10.3	0.0	10	0	0	0	0	0	
48080		19.2	1425	111	7.8	4.5	0.0	5	0	0	0	0	0	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
48081		15.0	1335	81	6.1	1.2	0.0	1	0	0	0	0	0	
48082		10.2	1077	74	6.9	2.7	0.0	2	0	0	0	0	0	
48083		7.5	1899	149	7.8	4.0	0.0	5	0	0	0	0	1	
48084		3.0	973	41	4.2	4.9	0.0	2	0	0	0	0	0	
48085		0.0		79	---	6.3	0.0	5	0	0	0	0	0	STN
48088		0.0		114	---	6.1	0.9	5	1	0	0	0	1	STN
48089	Yes	23.9	3315	490	14.8	8.4	0.8	36	2	1	1	0	1	
48090		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
48091	Yes	19.1	2646	435	16.4	9.9	0.2	40	1	0	0	0	2	
48092		8.7	1823	222	12.2	1.8	0.0	4	0	0	0	0	0	
48093		3.4	2796	158	5.7	7.6	0.6	11	0	0	1	0	0	
48094		5.6	1109	74	6.7	8.1	0.0	6	0	0	0	0	0	
48095		8.9	329	10	3.0	30.0	0.0	3	0	0	0	0	0	
48096		19.6	300	14	4.7	0.0	0.0	0	0	0	0	0	0	
48097	Yes	41.2	495	44	8.9	18.2	0.0	8	0	0	0	0	0	
48098		4.4	3231	43	1.3	4.7	0.0	2	0	0	0	0	0	
48099		0.0		0	---	---	---	0	0	0	0	0	0	POB
48101		25.6	1921	190	9.9	2.1	0.0	4	0	0	0	0	0	
48103		21.9	3835	256	6.7	4.7	0.8	10	2	0	0	0	0	
48104	Yes	36.7	1454	93	6.4	1.1	1.1	0	1	0	0	0	0	
48105		7.3	2649	185	7.0	2.2	0.5	3	0	0	1	0	0	
48106		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48107		0.0		0	---	---	---	0	0	0	0	0	0	POB
48108		5.0	2015	220	10.9	5.0	0.5	10	0	1	0	0	0	
48109	Yes	36.0	12	0	0.0	---	---	0	0	0	0	0	0	
48110		0.0		3	---	0.0	0.0	0	0	0	0	0	0	POB
48111		11.1	3350	383	11.4	6.5	0.0	25	0	0	0	0	0	
48112		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48113		0.0		0	---	---	---	0	0	0	0	0	0	POB
48114		5.0	1609	54	3.4	1.9	0.0	1	0	0	0	0	0	STN
48115		0.0		0	---	---	---	0	0	0	0	0	0	POB
48116		11.8	2152	64	3.0	9.4	3.1	4	0	1	1	0	0	
48117		21.4	777	75	9.7	13.3	2.7	8	1	1	0	0	0	
48118	Yes	27.7	727	26	3.6	3.8	0.0	1	0	0	0	0	0	
48120	Yes	34.3	784	369	47.1	13.3	0.8	45	2	0	1	0	1	
48121		0.0		4	---	50.0	0.0	2	0	0	0	0	0	POB
48122	Yes	39.7	882	180	20.4	6.1	0.0	11	0	0	0	0	0	
48123		0.0		4	---	0.0	0.0	0	0	0	0	0	0	POB
48124	Yes	46.1	2348	203	8.6	4.9	0.0	10	0	0	0	0	0	
48125	Yes	26.7	1777	247	13.9	6.9	0.8	14	1	1	0	0	1	
48126	Yes	54.1	5751	1869	32.5	13.7	0.9	236	12	4	1	0	3	
48127		12.1	2667	585	21.9	4.4	0.3	24	2	0	0	0	0	
48128	Yes	53.0	799	93	11.6	3.2	0.0	3	0	0	0	0	0	
48130	Yes	20.9	863	30	3.5	6.7	3.3	1	0	1	0	0	0	
48131	Yes	35.7	579	52	9.0	15.4	0.0	8	0	0	0	0	0	
48133	Yes	26.5	393	42	10.7	19.0	0.0	8	0	0	0	0	0	
48134		13.1	1616	195	12.1	4.1	0.0	8	0	0	0	0	0	
48135		17.6	2254	181	8.0	2.8	0.0	5	0	0	0	0	0	
48136		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
48137	Yes	24.9	349	32	9.2	6.3	0.0	2	0	0	0	0	0	
48138		19.1	649	35	5.4	0.0	0.0	0	0	0	0	0	0	
48139	Yes	31.0	1	3	300.0	0.0	0.0	0	0	0	0	0	0	POB
48140	Yes	36.2	265	9	3.4	11.1	11.1	0	1	0	0	0	0	
48141	Yes	19.0	2964	666	22.5	10.4	1.1	56	4	0	2	1	6	
48143		21.7	7	1	14.3	0.0	0.0	0	0	0	0	0	0	POB
48144		12.4	660	53	8.0	18.9	0.0	10	0	0	0	0	0	
48145	Yes	33.6	223	26	11.7	15.4	3.8	3	0	0	1	0	0	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
48146	Yes	35.2	3283	590	18.0	5.1	0.2	28	1	0	0	0	1	
48150		13.8	2195	162	7.4	1.9	0.0	3	0	0	0	0	0	
48151		0.0		1	---	100.0	0.0	1	0	0	0	0	0	POB
48152		9.3	2168	169	7.8	3.0	0.0	5	0	0	0	0	0	
48154		7.0	2622	177	6.8	1.7	0.0	3	0	0	0	0	0	
48157	Yes	45.8	126	12	9.5	8.3	0.0	1	0	0	0	0	0	
48158	Yes	36.1	532	23	4.3	13.0	0.0	3	0	0	0	0	0	
48159	Yes	48.2	187	24	12.8	12.5	4.2	2	0	1	0	0	0	
48160	Yes	32.2	866	63	7.3	4.8	0.0	3	0	0	0	0	0	
48161	Yes	38.7	2242	284	12.7	12.0	0.4	32	0	1	0	0	1	
48162	Yes	28.5	2235	282	12.6	13.5	0.7	36	1	1	0	0	0	
48164		26.3	626	52	8.3	7.7	1.9	3	0	1	0	0	0	
48165		6.1	525	31	5.9	3.2	0.0	1	0	0	0	0	0	
48166	Yes	21.0	1101	111	10.1	4.5	0.0	5	0	0	0	0	0	
48167		8.9	2442	109	4.5	4.6	0.9	4	0	0	1	0	0	
48169		15.4	1669	65	3.9	9.2	3.1	4	0	0	2	0	0	
48170		15.7	2802	147	5.2	3.4	0.0	5	0	0	0	0	0	
48173		18.2	773	99	12.8	1.0	0.0	0	0	0	0	0	1	
48174	Yes	15.8	2772	457	16.5	5.7	0.7	20	1	1	0	1	3	
48175		0.0		0	---	---	---	0	0	0	0	0	0	STN
48176		12.2	1573	62	3.9	1.6	0.0	1	0	0	0	0	0	
48177		0.0		3	---	0.0	0.0	0	0	0	0	0	0	POB
48178		7.9	2223	64	2.9	4.7	0.0	3	0	0	0	0	0	
48179	Yes	32.7	182	15	8.2	0.0	0.0	0	0	0	0	0	0	
48180		13.8	5968	962	16.1	5.6	0.2	51	2	0	0	0	1	
48182		17.3	1570	109	6.9	20.2	0.0	22	0	0	0	0	0	
48183		9.3	3133	343	10.9	2.3	0.0	7	0	0	0	0	1	
48184	Yes	30.4	1698	204	12.0	2.9	0.0	5	0	0	0	0	1	
48185		4.7	3588	405	11.3	4.0	0.0	15	0	0	0	0	1	
48186		17.9	3617	422	11.7	7.3	0.0	31	0	0	0	0	0	
48187		2.0	4225	254	6.0	3.5	0.4	8	1	0	0	0	0	
48188		2.6	3919	227	5.8	3.1	0.4	6	1	0	0	0	0	
48189		15.7	1218	72	5.9	2.8	0.0	2	0	0	0	0	0	
48190	Yes	70.3	7	7	100.0	0.0	0.0	0	0	0	0	0	0	POB
48191	Yes	30.7	173	23	13.3	0.0	0.0	0	0	0	0	0	0	
48192	Yes	37.1	3109	300	9.6	6.0	0.7	16	1	0	0	1	0	
48195		14.7	1972	216	11.0	7.4	0.5	15	0	1	0	0	0	
48197	Yes	17.0	4505	607	13.5	6.4	1.0	33	1	4	1	0	0	
48198	Yes	14.0	3791	652	17.2	5.1	0.8	28	2	2	1	0	0	
48201	Yes	51.0	1090	378	34.7	23.3	1.9	80	6	1	0	0	1	
48202	Yes	68.5	1721	624	36.3	42.9	10.2	197	35	13	13	2	8	
48203	Yes	61.4	4717	1474	31.2	46.2	10.1	506	86	30	29	1	29	
48204	Yes	67.2	4121	1459	35.4	45.8	9.2	497	80	26	20	5	40	
48205	Yes	48.2	7914	2540	32.1	37.5	8.1	716	134	43	27	0	32	
48206	Yes	78.1	3278	1073	32.7	52.4	13.5	390	86	29	24	2	31	
48207	Yes	34.7	1759	704	40.0	35.7	8.5	183	37	9	13	0	9	
48208	Yes	64.7	1105	436	39.5	42.9	11.0	125	29	6	11	0	16	
48209	Yes	76.0	4804	2632	54.8	29.3	3.7	646	70	14	10	1	30	
48210	Yes	68.1	4869	2687	55.2	35.7	5.4	750	89	34	18	1	66	
48211	Yes	72.1	1140	354	31.1	59.9	17.1	139	34	11	12	1	15	
48212	Yes	70.6	4663	1765	37.9	39.4	6.1	556	73	19	14	0	34	
48213	Yes	62.5	4802	1695	35.3	47.0	10.8	578	112	35	31	0	40	
48214	Yes	71.0	2653	1006	37.9	54.3	15.5	363	87	35	27	2	32	
48215	Yes	55.5	1954	702	35.9	47.7	10.7	241	49	12	11	1	21	
48216	Yes	71.5	601	237	39.4	27.4	3.0	57	5	2	0	0	1	
48217	Yes	56.1	795	267	33.6	20.6	2.6	47	2	1	4	0	1	
48218	Yes	62.1	1012	224	22.1	20.1	1.4	40	2	0	1	0	2	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
48219	Yes	34.4	5379	1425	26.5	16.9	1.1	217	9	2	5	0	8	
48220	Yes	59.7	1771	258	14.6	8.5	0.0	22	0	0	0	0	0	
48221	Yes	63.5	3274	940	28.7	21.0	2.8	161	15	8	2	1	10	
48222		0.0		6	---	16.7	0.0	1	0	0	0	0	0	UNQ
48223	Yes	39.5	3948	1009	25.6	20.2	2.4	175	18	2	3	1	5	
48224	Yes	57.9	5612	1792	31.9	28.3	4.8	404	61	16	8	1	18	
48225	Yes	29.5	1110	219	19.7	9.1	1.8	16	4	0	0	0	0	
48226	Yes	49.4	148	51	34.5	19.6	5.9	7	2	1	0	0	0	
48227	Yes	53.5	5939	1789	30.1	27.4	3.7	408	38	17	11	0	17	
48228	Yes	39.5	6981	2300	32.9	19.4	2.0	382	33	9	4	0	18	
48229	Yes	47.3	1053	247	23.5	14.6	1.2	32	2	1	0	0	1	
48230	Yes	71.4	1451	135	9.3	9.6	0.7	12	0	0	1	0	0	
48231		0.0		3	---	33.3	0.0	1	0	0	0	0	0	POB
48232		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48233		0.0		0	---	---	---	0	0	0	0	0	0	POB
48234	Yes	47.2	4569	1770	38.7	31.6	3.9	459	45	15	7	0	33	
48235	Yes	44.9	4230	1238	29.3	18.3	2.0	197	20	3	2	0	4	
48236	Yes	43.3	2287	215	9.4	6.5	0.9	12	1	0	1	0	0	
48237		16.0	2679	532	19.9	8.6	0.2	44	1	0	0	0	1	
48238	Yes	71.7	4369	1364	31.2	41.2	7.5	429	70	20	10	0	33	
48239		23.1	3132	475	15.2	6.1	0.2	28	0	1	0	0	0	
48240	Yes	29.4	1654	185	11.2	7.6	0.0	14	0	0	0	0	0	
48242	Yes	0.0	0	2	---	50.0	0.0	1	0	0	0	0	0	POB
48244		0.0		5	---	0.0	0.0	0	0	0	0	0	0	POB
48301		7.3	1016	15	1.5	0.0	0.0	0	0	0	0	0	0	
48302		5.5	879	46	5.2	4.3	0.0	2	0	0	0	0	0	
48304		6.0	946	33	3.5	15.2	0.0	4	0	0	0	0	1	
48306		3.9	1899	86	4.5	4.7	0.0	4	0	0	0	0	0	
48307		10.9	3429	220	6.4	4.5	0.0	10	0	0	0	0	0	
48308		0.0		0	---	---	---	0	0	0	0	0	0	POB
48309		5.4	1967	92	4.7	1.1	0.0	1	0	0	0	0	0	
48310		2.1	3166	453	14.3	3.8	0.0	16	0	0	0	0	1	
48311		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
48312		1.9	2153	213	9.9	3.3	0.5	6	1	0	0	0	0	
48313		1.8	2650	260	9.8	3.5	0.0	9	0	0	0	0	0	
48314		4.2	1395	124	8.9	6.5	0.0	8	0	0	0	0	0	
48315		1.8	1569	67	4.3	1.5	0.0	1	0	0	0	0	0	
48316		2.7	1588	104	6.5	1.9	0.0	2	0	0	0	0	0	
48317		8.4	2063	207	10.0	3.4	0.5	6	1	0	0	0	0	
48318		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48320	Yes	41.4	310	35	11.3	0.0	0.0	0	0	0	0	0	0	
48321		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48322		0.9	2265	109	4.8	2.8	0.0	3	0	0	0	0	0	
48323		6.6	1274	52	4.1	1.9	0.0	1	0	0	0	0	0	
48324		12.6	1714	64	3.7	9.4	3.1	4	1	1	0	0	0	
48326		10.6	1622	218	13.4	6.4	0.9	12	1	0	1	0	0	
48327		11.0	2016	210	10.4	4.8	0.0	10	0	0	0	0	0	
48328		22.0	2186	286	13.1	4.2	0.3	11	0	0	1	0	0	
48329		19.4	2129	234	11.0	3.4	0.0	8	0	0	0	0	0	
48330		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48331		1.2	1710	87	5.1	4.6	0.0	3	0	0	0	0	1	
48332		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48333		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48334		3.9	1283	126	9.8	2.4	0.0	3	0	0	0	0	0	
48335		4.0	1485	181	12.2	8.3	0.6	14	1	0	0	0	0	
48336		15.7	2100	222	10.6	5.4	0.0	12	0	0	0	0	0	
48340	Yes	21.4	2860	830	29.0	6.6	0.4	51	2	1	0	0	1	

2005

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Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
48341	Yes	46.4	1742	400	23.0	20.5	0.8	78	2	0	1	0	1	
48342	Yes	42.3	2456	762	31.0	19.7	2.4	131	12	2	4	0	1	
48343		0.0		4	---	25.0	0.0	1	0	0	0	0	0	POB
48346		8.4	1972	243	12.3	2.1	0.0	5	0	0	0	0	0	
48347		0.0		0	---	---	---	0	0	0	0	0	0	POB
48348		5.8	1875	267	14.2	1.5	0.4	3	1	0	0	0	0	
48350		10.6	689	82	11.9	0.0	0.0	0	0	0	0	0	0	
48353		8.1	506	22	4.3	0.0	0.0	0	0	0	0	0	0	
48356		19.4	730	41	5.6	2.4	0.0	1	0	0	0	0	0	
48357		7.9	825	65	7.9	3.1	0.0	2	0	0	0	0	0	
48359		6.4	832	112	13.5	4.5	0.0	5	0	0	0	0	0	
48360		3.6	1288	69	5.4	1.4	0.0	1	0	0	0	0	0	
48361		0.0		0	---	---	---	0	0	0	0	0	0	POB
48362	Yes	24.4	1295	111	8.6	3.6	0.0	4	0	0	0	0	0	
48363		13.0	318	12	3.8	0.0	0.0	0	0	0	0	0	0	
48366		0.0		0	---	---	---	0	0	0	0	0	0	POB
48367		19.1	393	32	8.1	3.1	0.0	1	0	0	0	0	0	
48370		18.4	157	7	4.5	0.0	0.0	0	0	0	0	0	0	
48371		15.5	1802	198	11.0	3.0	0.0	6	0	0	0	0	0	
48374		1.3	1324	28	2.1	7.1	0.0	2	0	0	0	0	0	
48375		1.0	1820	75	4.1	4.0	0.0	3	0	0	0	0	0	
48376		0.0		0	---	---	---	0	0	0	0	0	0	POB
48377		5.7	856	76	8.9	5.3	0.0	4	0	0	0	0	0	
48380		7.4	459	14	3.1	0.0	0.0	0	0	0	0	0	0	
48381		13.6	1109	30	2.7	10.0	0.0	3	0	0	0	0	0	
48382		12.4	1897	73	3.8	2.7	0.0	2	0	0	0	0	0	
48383		8.8	1222	92	7.5	3.3	0.0	3	0	0	0	0	0	
48386		14.1	1259	89	7.1	3.4	0.0	3	0	0	0	0	0	
48387		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
48390		9.9	1826	98	5.4	5.1	1.0	4	0	1	0	0	0	
48391		0.0		0	---	---	---	0	0	0	0	0	0	POB
48393		2.4	1629	103	6.3	4.9	0.0	5	0	0	0	0	0	
48398		0.0		0	---	---	---	0	0	0	0	0	0	UNQ
48401	Yes	34.3	133	15	11.3	13.3	0.0	2	0	0	0	0	0	
48410		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
48411		0.0		4	---	0.0	0.0	0	0	0	0	0	0	POB
48412	Yes	27.7	515	28	5.4	10.7	0.0	3	0	0	0	0	0	
48413	Yes	35.9	582	56	9.6	12.5	1.8	6	0	1	0	0	0	
48414	Yes	40.4	199	30	15.1	6.7	0.0	2	0	0	0	0	0	
48415		17.4	783	114	14.6	10.5	0.0	12	0	0	0	0	0	
48416	Yes	37.6	459	39	8.5	7.7	0.0	3	0	0	0	0	0	
48417		20.6	282	35	12.4	2.9	0.0	1	0	0	0	0	0	
48418	Yes	27.6	390	41	10.5	9.8	2.4	3	1	0	0	0	0	
48419	Yes	35.4	198	48	24.2	12.5	0.0	6	0	0	0	0	0	
48420		19.3	1610	212	13.2	5.2	0.0	11	0	0	0	0	0	
48421		20.4	541	58	10.7	1.7	0.0	1	0	0	0	0	0	
48422	Yes	33.1	558	89	15.9	16.9	2.2	13	2	0	0	0	0	
48423		10.5	2381	330	13.9	4.2	0.3	13	0	1	0	0	0	
48426	Yes	39.6	70	15	21.4	13.3	0.0	2	0	0	0	0	0	
48427	Yes	38.6	206	32	15.5	12.5	0.0	4	0	0	0	0	0	
48428		19.7	376	27	7.2	14.8	0.0	4	0	0	0	0	0	
48429	Yes	29.7	854	156	18.3	3.8	0.0	6	0	0	0	0	0	
48430		17.2	2665	280	10.5	5.0	0.4	12	1	0	0	0	1	
48432	Yes	45.3	64	11	17.2	0.0	0.0	0	0	0	0	0	0	
48433		14.4	1601	283	17.7	4.6	0.0	13	0	0	0	0	0	
48434	Yes	44.6	13	3	23.1	0.0	0.0	0	0	0	0	0	0	POB
48435	Yes	24.8	199	15	7.5	13.3	0.0	2	0	0	0	0	0	

2005

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48436	Yes	19.9	296	42	14.2	2.4	0.0	1	0	0	0	0	0	
48437	Yes	36.4	32	8	25.0	0.0	0.0	0	0	0	0	0	0	POB
48438		16.7	502	50	10.0	0.0	0.0	0	0	0	0	0	0	
48439		6.7	3245	447	13.8	3.4	0.4	13	1	1	0	0	0	
48440	Yes	100.0	5	3	60.0	0.0	0.0	0	0	0	0	0	0	POB
48441	Yes	42.0	321	32	10.0	9.4	0.0	3	0	0	0	0	0	
48442		18.5	1564	209	13.4	1.9	0.5	3	1	0	0	0	0	
48444	Yes	29.0	811	93	11.5	20.4	4.3	14	2	1	1	0	1	
48445	Yes	34.3	112	18	16.1	5.6	0.0	1	0	0	0	0	0	
48446		20.0	2442	235	9.6	6.4	0.4	14	0	0	1	0	0	
48449		17.1	308	37	12.0	2.7	0.0	1	0	0	0	0	0	
48450	Yes	28.9	322	35	10.9	5.7	0.0	2	0	0	0	0	0	
48451		16.3	1172	139	11.9	2.2	0.0	3	0	0	0	0	0	
48453	Yes	37.6	511	84	16.4	4.8	1.2	3	0	0	1	0	0	
48454	Yes	34.5	119	12	10.1	0.0	0.0	0	0	0	0	0	0	
48455		16.9	664	50	7.5	6.0	0.0	3	0	0	0	0	0	
48456	Yes	51.6	82	6	7.3	16.7	0.0	1	0	0	0	0	0	
48457		21.7	634	107	16.9	1.9	0.0	2	0	0	0	0	0	
48458	Yes	18.5	2201	388	17.6	5.7	0.5	20	2	0	0	0	0	
48460	Yes	34.9	174	34	19.5	8.8	0.0	3	0	0	0	0	0	
48461	Yes	21.5	752	80	10.6	5.0	0.0	4	0	0	0	0	0	
48462		14.2	1094	122	11.2	1.6	0.0	2	0	0	0	0	0	
48463		21.5	358	30	8.4	6.7	0.0	2	0	0	0	0	0	
48464	Yes	27.8	138	39	28.3	7.7	0.0	3	0	0	0	0	0	
48465	Yes	33.9	52	6	11.5	33.3	0.0	2	0	0	0	0	0	
48466	Yes	41.0	128	18	14.1	11.1	0.0	2	0	0	0	0	0	
48467		22.4	122	12	9.8	0.0	0.0	0	0	0	0	0	0	
48468	Yes	31.1	66	3	4.5	0.0	0.0	0	0	0	0	0	0	
48469	Yes	24.8	83	24	28.9	20.8	0.0	5	0	0	0	0	0	
48470	Yes	44.7	82	9	11.0	11.1	0.0	1	0	0	0	0	0	
48471	Yes	29.7	406	73	18.0	15.1	0.0	11	0	0	0	0	0	
48472	Yes	49.5	181	24	13.3	4.2	0.0	1	0	0	0	0	0	
48473		14.1	1391	237	17.0	2.5	0.0	6	0	0	0	0	0	
48475	Yes	39.9	234	22	9.4	4.5	0.0	1	0	0	0	0	0	
48476	Yes	59.8	34	15	44.1	6.7	0.0	1	0	0	0	0	0	POB
48501		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
48502	Yes	69.8	21	15	71.4	53.3	13.3	6	1	1	0	0	0	
48503	Yes	49.1	2890	602	20.8	15.6	2.8	77	8	6	2	1	0	
48504	Yes	31.2	4060	949	23.4	13.3	2.1	106	16	1	3	0	0	
48505	Yes	38.2	3893	978	25.1	18.9	3.3	151	20	5	7	0	2	
48506	Yes	31.2	3409	683	20.0	16.4	2.1	94	8	3	3	0	4	
48507	Yes	20.9	3039	636	20.9	5.3	0.3	32	2	0	0	0	0	
48509		20.0	735	87	11.8	2.3	0.0	2	0	0	0	0	0	
48519		14.9	584	99	17.0	4.0	0.0	4	0	0	0	0	0	
48529	Yes	30.0	1092	228	20.9	5.7	0.4	12	1	0	0	0	0	
48531		0.0		0	---	---	---	0	0	0	0	0	0	POB
48532		14.5	1386	302	21.8	6.3	0.0	19	0	0	0	0	0	
48601	Yes	36.4	4957	1472	29.7	24.0	2.1	302	17	7	7	0	21	
48602	Yes	59.9	3116	709	22.8	20.3	1.8	125	9	3	1	0	6	
48603		7.6	2445	349	14.3	7.4	0.0	25	0	0	0	0	1	
48604	Yes	26.7	948	141	14.9	12.1	0.7	16	1	0	0	0	0	
48605		0.0		3	---	33.3	0.0	1	0	0	0	0	0	POB
48606		0.0		0	---	---	---	0	0	0	0	0	0	POB
48607	Yes	74.4	221	62	28.1	51.6	8.3	25	3	1	1	0	2	
48609		12.9	786	64	8.1	7.8	0.0	5	0	0	0	0	0	
48610		7.9	210	26	12.4	3.8	0.0	1	0	0	0	0	0	
48611		21.9	441	26	5.9	3.8	0.0	1	0	0	0	0	0	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
48612	Yes	11.6	647	73	11.3	5.5	0.0	4	0	0	0	0	0	
48613		24.9	83	14	16.9	0.0	0.0	0	0	0	0	0	0	
48614	Yes	25.3	118	21	17.8	14.3	0.0	3	0	0	0	0	0	
48615	Yes	40.3	261	16	6.1	0.0	0.0	0	0	0	0	0	0	
48616	Yes	31.2	534	90	16.9	5.6	0.0	5	0	0	0	0	0	
48617	Yes	23.9	778	63	8.1	3.2	0.0	2	0	0	0	0	0	
48618	Yes	29.3	383	42	11.0	9.5	2.4	2	1	0	0	0	1	
48619	Yes	37.2	19	5	26.3	40.0	0.0	2	0	0	0	0	0	
48620		10.4	2	0	0.0	---	---	0	0	0	0	0	0	
48621		15.6	88	8	9.1	0.0	0.0	0	0	0	0	0	0	
48622		13.1	414	47	11.4	4.3	0.0	2	0	0	0	0	0	
48623		18.6	958	79	8.2	7.6	0.0	6	0	0	0	0	0	
48624	Yes	15.8	1050	126	12.0	13.5	1.6	15	1	1	0	0	0	
48625	Yes	10.2	940	129	13.7	9.3	0.8	11	1	0	0	0	0	
48626		22.7	476	42	8.8	4.8	0.0	2	0	0	0	0	0	
48627		26.8	12	2	16.7	0.0	0.0	0	0	0	0	0	0	POB
48628		14.3	132	14	10.6	0.0	0.0	0	0	0	0	0	0	
48629		15.7	436	59	13.5	6.8	0.0	4	0	0	0	0	0	
48630	Yes	49.4	19	2	10.5	0.0	0.0	0	0	0	0	0	0	POB
48631	Yes	27.2	348	38	10.9	18.4	0.0	7	0	0	0	0	0	
48632		13.8	296	42	14.2	0.0	0.0	0	0	0	0	0	0	
48633		22.7	2	1	50.0	0.0	0.0	0	0	0	0	0	0	POB
48634		25.2	340	44	12.9	11.4	2.3	4	1	0	0	0	0	
48635	Yes	23.4	91	17	18.7	5.9	0.0	1	0	0	0	0	0	
48636		19.1	87	2	2.3	0.0	0.0	0	0	0	0	0	0	
48637	Yes	35.3	231	33	14.3	3.0	0.0	1	0	0	0	0	0	
48640		21.4	2554	205	8.0	4.9	1.5	7	2	0	1	0	0	
48641		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
48642		11.3	2635	136	5.2	5.9	0.7	7	1	0	0	0	0	
48647		23.2	337	33	9.8	9.1	0.0	3	0	0	0	0	0	
48649	Yes	35.6	132	18	13.6	0.0	0.0	0	0	0	0	0	0	
48650	Yes	21.6	519	58	11.2	12.1	1.7	6	1	0	0	0	0	
48651		13.8	287	26	9.1	7.7	0.0	2	0	0	0	0	0	
48652		13.6	101	14	13.9	7.1	0.0	1	0	0	0	0	0	
48653		18.1	539	46	8.5	6.5	0.0	3	0	0	0	0	0	
48654		15.2	175	24	13.7	20.8	0.0	5	0	0	0	0	0	
48655	Yes	29.5	522	92	17.6	8.7	0.0	8	0	0	0	0	0	
48656		10.8	237	15	6.3	13.3	0.0	2	0	0	0	0	0	
48657		10.5	623	43	6.9	4.7	0.0	2	0	0	0	0	0	
48658	Yes	24.3	385	84	21.8	14.3	0.0	12	0	0	0	0	0	
48659	Yes	24.7	201	52	25.9	9.6	0.0	5	0	0	0	0	0	
48661	Yes	19.7	696	130	18.7	10.8	0.0	13	0	0	0	0	1	
48662	Yes	44.8	129	9	7.0	11.1	0.0	1	0	0	0	0	0	
48701	Yes	47.5	119	24	20.2	4.2	0.0	1	0	0	0	0	0	
48703		21.1	178	26	14.6	7.7	0.0	1	0	0	0	0	1	
48705		19.5	27	3	11.1	0.0	0.0	0	0	0	0	0	0	
48706	Yes	33.5	2865	410	14.3	14.6	1.5	52	5	1	0	0	2	
48707		0.0		0	---	---	---	0	0	0	0	0	0	POB
48708	Yes	59.1	2318	437	18.9	19.5	2.8	71	10	1	1	0	2	
48710		0.0		0	---	---	---	0	0	0	0	0	0	UNQ
48720	Yes	57.8	66	16	24.2	12.5	0.0	2	0	0	0	0	0	
48721		15.0	31	3	9.7	33.3	0.0	1	0	0	0	0	0	
48722	Yes	17.1	229	49	21.4	6.1	0.0	3	0	0	0	0	0	
48723	Yes	31.4	886	153	17.3	13.7	0.0	21	0	0	0	0	0	
48724	Yes	47.5	26	15	57.7	20.0	0.0	3	0	0	0	0	0	POB
48725		14.8	103	11	10.7	0.0	0.0	0	0	0	0	0	0	
48726	Yes	37.7	471	73	15.5	15.1	0.0	11	0	0	0	0	0	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar
Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
48727	Yes	33.2	102	8	7.8	0.0	0.0	0	0	0	0	0	0	
48728	Yes	24.5	14	4	28.6	0.0	0.0	0	0	0	0	0	0	
48729	Yes	33.3	128	15	11.7	0.0	0.0	0	0	0	0	0	0	
48730	Yes	29.3	270	24	8.9	4.2	0.0	1	0	0	0	0	0	
48731	Yes	44.5	171	24	14.0	12.5	4.2	2	0	1	0	0	0	
48732		22.5	828	95	11.5	8.4	0.0	8	0	0	0	0	0	
48733	Yes	46.4	142	16	11.3	6.3	0.0	1	0	0	0	0	0	
48734		20.2	438	34	7.8	2.9	0.0	1	0	0	0	0	0	
48735	Yes	48.0	83	11	13.3	27.3	0.0	3	0	0	0	0	0	
48736		0.0		0	---	---	---	0	0	0	0	0	0	POB
48737		19.2	70	4	5.7	0.0	0.0	0	0	0	0	0	0	
48738		22.6	79	5	6.3	20.0	20.0	0	0	1	0	0	0	
48739	Yes	19.0	235	47	20.0	14.9	0.0	6	0	0	0	0	1	
48740	Yes	24.2	150	23	15.3	13.0	0.0	3	0	0	0	0	0	
48741	Yes	32.3	155	28	18.1	3.6	0.0	1	0	0	0	0	0	
48742	Yes	19.9	92	17	18.5	11.8	5.9	1	1	0	0	0	0	
48743	Yes	26.1	0	1	---	0.0	0.0	0	0	0	0	0	0	
48744	Yes	30.3	390	53	13.6	9.4	0.0	5	0	0	0	0	0	
48745		21.4	104	13	12.5	15.4	0.0	2	0	0	0	0	0	
48746		22.1	648	95	14.7	4.2	0.0	3	0	0	0	0	1	
48747	Yes	44.3	111	11	9.9	0.0	0.0	0	0	0	0	0	0	
48748		16.8	70	8	11.4	0.0	0.0	0	0	0	0	0	0	
48749		15.4	90	16	17.8	12.5	0.0	2	0	0	0	0	0	
48750		14.0	607	97	16.0	4.1	0.0	4	0	0	0	0	0	
48754	Yes	50.0	86	8	9.3	37.5	0.0	3	0	0	0	0	0	
48755	Yes	27.3	183	17	9.3	11.8	0.0	2	0	0	0	0	0	
48756		14.5	253	52	20.6	13.5	0.0	7	0	0	0	0	0	
48757	Yes	30.8	287	35	12.2	11.4	0.0	4	0	0	0	0	0	
48758		0.0		0	---	---	---	0	0	0	0	0	0	POB
48759	Yes	43.8	248	26	10.5	7.7	0.0	2	0	0	0	0	0	
48760	Yes	23.3	74	14	18.9	0.0	0.0	0	0	0	0	0	0	
48761		18.4	68	6	8.8	16.7	0.0	1	0	0	0	0	0	
48762		25.6	54	9	16.7	11.1	0.0	1	0	0	0	0	0	
48763	Yes	25.3	253	28	11.1	7.1	0.0	2	0	0	0	0	0	
48764		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48765	Yes	27.6	74	12	16.2	50.0	0.0	6	0	0	0	0	0	
48766	Yes	22.9	117	20	17.1	15.0	0.0	2	0	0	0	0	1	
48767	Yes	59.1	161	18	11.2	16.7	0.0	3	0	0	0	0	0	
48768	Yes	30.5	792	84	10.6	16.7	1.2	13	1	0	0	0	0	
48769		0.0		1	---	0.0	0.0	0	0	0	0	0	0	STN
48770	Yes	27.8	138	16	11.6	12.5	0.0	2	0	0	0	0	0	
48801	Yes	36.0	884	100	11.3	6.0	0.0	6	0	0	0	0	0	
48804		0.0		2	---	0.0	0.0	0	0	0	0	0	0	STN
48805		0.0		0	---	---	---	0	0	0	0	0	0	POB
48806	Yes	44.2	130	14	10.8	0.0	0.0	0	0	0	0	0	0	
48807	Yes	37.0	72	11	15.3	18.2	0.0	2	0	0	0	0	0	
48808	Yes	19.9	337	32	9.5	6.3	0.0	2	0	0	0	0	0	
48809	Yes	35.7	1062	114	10.7	11.4	0.0	12	0	0	0	0	1	
48811	Yes	49.8	302	43	14.2	4.7	0.0	2	0	0	0	0	0	
48812		0.0		0	---	---	---	0	0	0	0	0	0	POB
48813	Yes	36.7	1585	258	16.3	10.1	0.8	19	1	1	0	0	5	
48815	Yes	41.4	192	11	5.7	9.1	0.0	1	0	0	0	0	0	
48816		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48817	Yes	35.4	455	82	18.0	4.9	0.0	4	0	0	0	0	0	
48818	Yes	32.0	195	36	18.5	8.3	0.0	2	0	0	0	0	1	
48819	Yes	34.4	198	12	6.1	0.0	0.0	0	0	0	0	0	0	
48820		15.5	1216	82	6.7	1.2	0.0	1	0	0	0	0	0	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

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Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
48821		19.2	291	26	8.9	3.8	0.0	1	0	0	0	0	0	
48822	Yes	33.4	203	8	3.9	0.0	0.0	0	0	0	0	0	0	
48823	Yes	13.8	2239	173	7.7	5.2	0.0	9	0	0	0	0	0	
48824		0.0	0	1	---	0.0	0.0	0	0	0	0	0	0	STN
48825		0.0		0	---	---	---	0	0	0	0	0	0	STN
48826		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
48827	Yes	30.7	1267	162	12.8	6.2	0.0	8	0	0	0	0	2	
48829	Yes	34.9	297	47	15.8	6.4	0.0	2	0	0	0	0	1	
48830	Yes	44.4	11	0	0.0	---	---	0	0	0	0	0	0	POB
48831	Yes	52.7	288	44	15.3	4.5	0.0	2	0	0	0	0	0	
48832	Yes	24.1	119	10	8.4	0.0	0.0	0	0	0	0	0	0	
48833		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48834	Yes	32.8	200	17	8.5	5.9	0.0	1	0	0	0	0	0	
48835	Yes	45.2	360	35	9.7	2.9	0.0	1	0	0	0	0	0	
48836	Yes	26.2	1053	112	10.6	3.6	0.0	4	0	0	0	0	0	
48837	Yes	27.3	1317	121	9.2	9.1	0.8	10	0	1	0	0	0	
48838	Yes	24.4	1328	232	17.5	10.3	0.9	22	2	0	0	0	0	
48840		8.5	801	56	7.0	3.6	1.8	1	1	0	0	0	0	
48841	Yes	54.9	73	10	13.7	20.0	0.0	2	0	0	0	0	0	
48842		11.4	1524	108	7.1	2.8	0.0	3	0	0	0	0	0	
48843		15.8	4230	203	4.8	3.0	0.0	6	0	0	0	0	0	
48844		0.0		2	---	50.0	0.0	1	0	0	0	0	0	POB
48845	Yes	53.1	96	2	2.1	0.0	0.0	0	0	0	0	0	0	
48846	Yes	42.1	1357	146	10.8	13.7	2.1	16	2	1	0	0	1	
48847	Yes	47.3	528	32	6.1	0.0	0.0	0	0	0	0	0	0	
48848	Yes	22.5	649	49	7.6	2.0	0.0	1	0	0	0	0	0	
48849	Yes	44.5	521	32	6.1	18.8	0.0	6	0	0	0	0	0	
48850	Yes	30.6	400	57	14.3	15.8	1.8	8	1	0	0	0	0	
48851	Yes	31.6	164	15	9.1	13.3	0.0	2	0	0	0	0	0	
48852	Yes	79.1	11	2	18.2	0.0	0.0	0	0	0	0	0	0	POB
48853	Yes	61.1	40	10	25.0	10.0	0.0	1	0	0	0	0	0	POB
48854	Yes	27.7	1164	83	7.1	6.0	0.0	4	0	0	0	0	1	
48855		0.0		50	---	6.0	2.0	2	0	1	0	0	0	
48856	Yes	61.4	83	7	8.4	0.0	0.0	0	0	0	0	0	0	
48857	Yes	31.8	222	31	14.0	6.5	0.0	2	0	0	0	0	0	
48858	Yes	17.0	2483	213	8.6	3.8	1.4	5	3	0	0	0	0	
48859		0.0		0	---	---	---	0	0	0	0	0	0	UNQ
48860	Yes	42.0	105	13	12.4	23.1	0.0	3	0	0	0	0	0	
48861	Yes	41.3	127	19	15.0	5.3	0.0	1	0	0	0	0	0	
48862		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
48864		6.4	1296	55	4.2	0.0	0.0	0	0	0	0	0	0	
48865	Yes	29.3	158	16	10.1	18.8	6.3	2	1	0	0	0	0	
48866	Yes	43.5	398	55	13.8	16.4	0.0	9	0	0	0	0	0	
48867	Yes	42.9	2332	546	23.4	9.2	0.2	48	1	0	0	0	1	
48870		0.0		2	---	0.0	0.0	0	0	0	0	0	0	STN
48871	Yes	31.4	142	16	11.3	0.0	0.0	0	0	0	0	0	0	
48872	Yes	25.6	708	86	12.1	9.3	0.0	8	0	0	0	0	0	
48873	Yes	46.0	215	8	3.7	0.0	0.0	0	0	0	0	0	0	
48874	Yes	79.0	14	1	7.1	0.0	0.0	0	0	0	0	0	0	POB
48875	Yes	35.1	869	61	7.0	1.6	0.0	1	0	0	0	0	0	
48876		18.0	312	46	14.7	8.7	0.0	4	0	0	0	0	0	
48877	Yes	22.9	226	23	10.2	13.0	0.0	3	0	0	0	0	0	
48878	Yes	35.9	155	11	7.1	18.2	0.0	2	0	0	0	0	0	
48879	Yes	38.6	1430	153	10.7	12.4	0.7	18	1	0	0	0	0	
48880	Yes	35.1	511	35	6.8	11.4	0.0	4	0	0	0	0	0	
48881	Yes	31.3	454	32	7.0	0.0	0.0	0	0	0	0	0	0	
48882		0.0		3	---	0.0	0.0	0	0	0	0	0	0	POB

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
48883	Yes	25.1	574	31	5.4	9.7	0.0	3	0	0	0	0	0	
48884	Yes	30.5	323	62	19.2	14.5	0.0	9	0	0	0	0	0	
48885	Yes	36.5	66	9	13.6	0.0	0.0	0	0	0	0	0	0	
48886	Yes	23.2	196	17	8.7	11.8	5.9	1	1	0	0	0	0	
48887		0.0		0	---	---	---	0	0	0	0	0	0	STN
48888	Yes	26.2	535	93	17.4	12.9	1.1	8	1	0	0	0	3	
48889	Yes	35.3	107	4	3.7	0.0	0.0	0	0	0	0	0	0	
48890	Yes	42.3	181	13	7.2	0.0	0.0	0	0	0	0	0	0	
48891	Yes	24.1	231	27	11.7	14.8	3.7	3	1	0	0	0	0	
48892	Yes	33.3	362	23	6.4	8.7	0.0	2	0	0	0	0	0	
48893		10.3	370	40	10.8	7.5	2.5	2	1	0	0	0	0	
48894	Yes	39.4	75	5	6.7	0.0	0.0	0	0	0	0	0	0	
48895	Yes	26.0	894	40	4.5	2.5	0.0	1	0	0	0	0	0	
48896	Yes	44.9	6	1	16.7	0.0	0.0	0	0	0	0	0	0	POB
48897	Yes	55.5	113	7	6.2	0.0	0.0	0	0	0	0	0	0	
48901		0.0		4	---	25.0	0.0	1	0	0	0	0	0	POB
48906	Yes	39.6	2572	513	19.9	17.9	1.8	74	4	1	4	0	9	
48908		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
48909		0.0		7	---	14.3	0.0	1	0	0	0	0	0	POB
48910	Yes	37.7	3162	527	16.7	13.1	0.6	62	3	0	0	0	4	
48911		8.3	4241	706	16.6	7.8	0.3	52	0	1	1	0	1	
48912	Yes	48.3	1501	298	19.9	19.8	3.1	46	5	0	3	1	4	
48913		0.0		1	---	0.0	0.0	0	0	0	0	0	0	UNQ
48915	Yes	61.2	1072	203	18.9	20.7	2.5	35	3	0	2	0	2	
48916		0.0		2	---	0.0	0.0	0	0	0	0	0	0	UNQ
48917		9.6	2208	249	11.3	4.4	0.4	9	1	0	0	0	1	
48933	Yes	42.8	139	47	33.8	27.7	2.1	12	0	0	1	0	0	
49001	Yes	44.5	3970	394	9.9	30.2	3.1	104	6	4	2	0	3	
49002		13.4	1491	131	8.8	6.1	0.0	8	0	0	0	0	0	
49003		0.0		0	---	---	---	0	0	0	0	0	0	POB
49004	Yes	22.5	1870	174	9.3	9.8	0.0	17	0	0	0	0	0	
49006		15.1	1466	176	12.0	7.4	0.6	11	1	0	0	0	1	
49007	Yes	61.2	936	181	19.3	37.0	7.3	52	6	5	2	0	2	
49008	Yes	32.6	1046	136	13.0	16.2	3.0	17	3	0	1	0	1	
49009		7.5	2351	249	10.6	6.0	0.8	13	2	0	0	0	0	
49010	Yes	31.7	1355	251	18.5	13.1	0.8	28	1	0	1	0	3	
49011	Yes	43.1	157	24	15.3	8.3	4.2	1	1	0	0	0	0	
49012	Yes	32.0	232	29	12.5	6.9	0.0	2	0	0	0	0	0	
49013	Yes	33.1	470	96	20.4	19.8	0.0	17	0	0	0	0	2	
49014	Yes	32.3	1806	485	26.9	15.7	1.2	67	4	1	1	0	3	
49015	Yes	30.1	2769	854	30.8	10.5	0.8	83	5	2	0	0	0	
49016		0.0		3	---	0.0	0.0	0	0	0	0	0	0	POB
49017	Yes	39.0	3002	866	28.8	14.3	1.9	106	11	3	2	0	2	
49019		0.0		3	---	33.3	0.0	1	0	0	0	0	0	POB
49020		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
49021	Yes	36.5	441	113	25.6	5.3	0.0	6	0	0	0	0	0	
49022	Yes	34.2	3674	1131	30.8	26.1	5.6	228	49	7	7	0	4	
49023		0.0		3	---	0.0	0.0	0	0	0	0	0	0	POB
49024		4.5	2445	203	8.3	4.9	1.0	7	1	1	0	0	1	
49026	Yes	33.1	215	34	15.8	23.5	0.0	8	0	0	0	0	0	
49027	Yes	70.5	10	10	100.0	30.0	0.0	3	0	0	0	0	0	POB
49028	Yes	38.9	533	122	22.9	13.9	0.0	16	0	0	0	0	1	
49029	Yes	48.3	109	40	36.7	15.0	0.0	6	0	0	0	0	0	
49030	Yes	44.3	202	25	12.4	12.0	0.0	3	0	0	0	0	0	
49031	Yes	32.0	626	89	14.2	25.8	4.5	18	2	2	0	0	1	
49032	Yes	39.4	324	43	13.3	14.0	2.3	5	1	0	0	0	0	
49033	Yes	33.4	104	27	26.0	7.4	0.0	2	0	0	0	0	0	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar
Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
49034	Yes	39.6	174	14	8.0	7.1	0.0	1	0	0	0	0	0	
49035		0.0		4	---	0.0	0.0	0	0	0	0	0	0	POB
49036	Yes	32.0	1659	331	20.0	19.6	0.6	55	2	0	0	0	8	
49038	Yes	30.2	750	103	13.7	11.7	1.0	10	0	1	0	0	1	
49039		0.0		0	---	---	---	0	0	0	0	0	0	STN
49040	Yes	37.0	288	39	13.5	15.4	0.0	6	0	0	0	0	0	
49041		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49042	Yes	41.1	392	80	20.4	15.0	1.3	11	1	0	0	0	0	
49043	Yes	31.0	252	53	21.0	24.5	0.0	12	0	0	0	0	1	
49045	Yes	39.3	518	76	14.7	13.2	1.3	8	1	0	0	0	1	
49046	Yes	25.1	566	91	16.1	12.1	1.1	10	1	0	0	0	0	
49047	Yes	36.8	1277	217	17.0	17.5	1.4	34	3	0	0	0	1	
49048		0.0		358	---	15.1	2.2	44	6	1	1	0	2	STN
49050	Yes	26.1	107	21	19.6	0.0	0.0	0	0	0	0	0	0	
49051	Yes	30.1	151	39	25.8	0.0	0.0	0	0	0	0	0	0	
49052	Yes	53.0	52	11	21.2	9.1	0.0	1	0	0	0	0	0	
49053	Yes	24.7	533	72	13.5	5.6	0.0	4	0	0	0	0	0	
49055	Yes	21.8	494	61	12.3	23.0	0.0	14	0	0	0	0	0	
49056	Yes	28.4	344	96	27.9	16.7	0.0	12	0	0	0	0	4	
49057	Yes	35.1	638	146	22.9	13.0	0.7	17	1	0	0	0	1	
49058	Yes	34.4	1541	243	15.8	13.2	0.8	28	1	0	1	0	2	
49060	Yes	40.1	133	23	17.3	8.7	0.0	2	0	0	0	0	0	
49061	Yes	35.5	104	11	10.6	36.4	0.0	4	0	0	0	0	0	
49062		0.0		3	---	33.3	0.0	1	0	0	0	0	0	POB
49063		0.0		3	---	0.0	0.0	0	0	0	0	0	0	POB
49064	Yes	33.3	311	60	19.3	15.0	0.0	9	0	0	0	0	0	
49065	Yes	22.9	505	57	11.3	12.3	0.0	7	0	0	0	0	0	
49066	Yes	62.9	86	11	12.8	9.1	0.0	1	0	0	0	0	0	
49067	Yes	40.8	363	40	11.0	7.5	2.5	2	1	0	0	0	0	
49068	Yes	38.6	1116	287	25.7	7.3	1.4	15	3	1	0	0	2	
49070	Yes	34.4	198	35	17.7	11.4	0.0	4	0	0	0	0	0	
49071		11.4	680	59	8.7	3.4	0.0	2	0	0	0	0	0	
49072	Yes	37.4	274	29	10.6	3.4	0.0	1	0	0	0	0	0	
49073	Yes	45.8	405	92	22.7	13.0	1.1	10	1	0	0	0	1	
49074		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49075		12.5	30	5	16.7	0.0	0.0	0	0	0	0	0	0	POB
49076	Yes	36.9	371	66	17.8	9.1	0.0	6	0	0	0	0	0	
49077		0.0		0	---	---	---	0	0	0	0	0	0	POB
49078	Yes	35.8	758	119	15.7	10.1	0.8	10	1	0	0	0	1	
49079	Yes	29.5	967	94	9.7	17.0	1.1	14	1	0	0	0	1	
49080	Yes	25.4	1130	190	16.8	12.1	1.1	21	2	0	0	0	0	
49082	Yes	39.0	614	104	16.9	8.7	0.0	8	0	0	0	0	1	
49083		20.3	464	41	8.8	0.0	0.0	0	0	0	0	0	0	
49084		0.0		2	---	0.0	0.0	0	0	0	0	0	0	POB
49085	Yes	28.8	1554	125	8.0	9.6	0.0	12	0	0	0	0	0	
49087	Yes	26.0	439	31	7.1	6.5	0.0	2	0	0	0	0	0	
49088	Yes	31.4	221	27	12.2	7.4	0.0	2	0	0	0	0	0	
49089	Yes	41.7	168	30	17.9	16.7	0.0	5	0	0	0	0	0	
49090	Yes	33.2	1099	187	17.0	11.8	0.5	20	0	1	0	0	1	
49091	Yes	33.0	1929	447	23.2	9.2	1.3	35	5	0	1	0	0	
49092	Yes	50.9	177	51	28.8	7.8	0.0	3	0	0	0	0	1	
49093	Yes	33.8	1496	302	20.2	14.2	1.3	39	3	1	0	0	0	
49094	Yes	45.3	320	76	23.8	6.6	1.3	4	1	0	0	0	0	
49095	Yes	24.4	144	22	15.3	4.5	0.0	1	0	0	0	0	0	
49096	Yes	44.5	255	29	11.4	3.4	0.0	1	0	0	0	0	0	
49097	Yes	30.6	695	68	9.8	5.9	1.5	3	0	1	0	0	0	
49098	Yes	38.6	544	71	13.1	9.9	0.0	7	0	0	0	0	0	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
49099	Yes	26.0	371	58	15.6	12.1	0.0	7	0	0	0	0	0	
49101	Yes	29.0	255	20	7.8	5.0	0.0	1	0	0	0	0	0	
49102	Yes	42.3	94	20	21.3	10.0	0.0	2	0	0	0	0	0	
49103	Yes	24.2	862	111	12.9	7.2	0.0	7	0	0	0	0	1	
49104		0.0		0	---	---	---	0	0	0	0	0	0	UNQ
49106	Yes	18.3	323	32	9.9	12.5	6.3	2	2	0	0	0	0	
49107	Yes	35.6	822	99	12.0	14.1	0.0	13	0	0	0	0	1	
49111	Yes	34.8	262	78	29.8	12.8	0.0	9	0	0	0	0	1	
49112		21.0	696	58	8.3	10.3	0.0	5	0	0	0	0	1	
49113	Yes	44.5	121	11	9.1	0.0	0.0	0	0	0	0	0	0	
49115	Yes	42.5	0	1	---	0.0	0.0	0	0	0	0	0	0	POB
49116	Yes	59.5	10	0	0.0	---	---	0	0	0	0	0	0	
49117	Yes	30.2	252	12	4.8	8.3	0.0	1	0	0	0	0	0	
49119	Yes	64.3	9	2	22.2	50.0	0.0	1	0	0	0	0	0	POB
49120	Yes	33.8	2663	414	15.5	13.8	1.0	50	4	0	0	0	3	
49125	Yes	52.7	162	10	6.2	0.0	0.0	0	0	0	0	0	0	
49126	Yes	26.9	116	26	22.4	15.4	0.0	4	0	0	0	0	0	
49127		13.0	645	67	10.4	9.0	1.5	5	0	0	1	0	0	
49128	Yes	42.8	335	30	9.0	10.0	3.3	2	1	0	0	0	0	
49129	Yes	53.1	38	3	7.9	0.0	0.0	0	0	0	0	0	0	
49130		19.9	79	7	8.9	0.0	0.0	0	0	0	0	0	0	
49201	Yes	26.9	3107	463	14.9	24.4	1.5	102	4	3	0	0	4	
49202	Yes	46.2	2040	468	22.9	23.1	0.9	93	3	0	1	0	11	
49203	Yes	46.1	3602	739	20.5	35.3	2.6	223	11	3	3	2	19	
49204		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49220	Yes	33.9	171	23	13.5	21.7	0.0	5	0	0	0	0	0	
49221	Yes	37.2	3271	487	14.9	35.5	1.6	163	6	1	1	0	2	
49224	Yes	45.8	1157	295	25.5	14.6	1.0	36	2	1	0	0	4	
49227	Yes	45.3	111	18	16.2	5.6	0.0	1	0	0	0	0	0	
49228	Yes	55.7	387	47	12.1	31.9	2.1	14	1	0	0	0	0	
49229	Yes	49.3	244	24	9.8	16.7	4.2	3	1	0	0	0	0	
49230		22.4	548	66	12.0	15.2	0.0	9	0	0	0	0	1	
49232	Yes	35.9	289	41	14.2	9.8	2.4	3	1	0	0	0	0	
49233	Yes	28.1	122	14	11.5	14.3	0.0	2	0	0	0	0	0	
49234	Yes	38.3	163	16	9.8	12.5	0.0	1	0	0	0	0	1	
49235	Yes	49.6	156	30	19.2	43.3	3.3	12	1	0	0	0	0	
49236	Yes	35.8	366	33	9.0	18.2	0.0	6	0	0	0	0	0	
49237	Yes	36.9	277	44	15.9	6.8	0.0	3	0	0	0	0	0	
49238	Yes	54.6	165	13	7.9	7.7	0.0	1	0	0	0	0	0	
49239		0.0		0	---	---	---	0	0	0	0	0	0	POB
49240	Yes	27.8	587	19	3.2	5.3	0.0	1	0	0	0	0	0	
49241	Yes	32.1	170	32	18.8	15.6	6.3	3	2	0	0	0	0	
49242	Yes	40.9	1146	206	18.0	9.7	2.4	14	1	3	1	0	1	
49245	Yes	40.9	408	100	24.5	7.0	0.0	7	0	0	0	0	0	
49246		23.7	228	21	9.2	19.0	0.0	2	0	0	0	0	2	
49247	Yes	49.3	439	69	15.7	27.5	0.0	19	0	0	0	0	0	
49248	Yes	76.0	67	10	14.9	60.0	10.0	5	1	0	0	0	0	
49249		18.5	218	20	9.2	15.0	0.0	3	0	0	0	0	0	
49250	Yes	37.4	465	95	20.4	12.6	1.1	11	1	0	0	0	0	
49251	Yes	33.5	516	43	8.3	23.3	0.0	10	0	0	0	0	0	
49252	Yes	42.4	215	35	16.3	8.6	0.0	3	0	0	0	0	0	
49253	Yes	36.1	182	19	10.4	31.6	0.0	6	0	0	0	0	0	
49254	Yes	49.6	224	29	12.9	13.8	0.0	4	0	0	0	0	0	
49255	Yes	53.1	225	15	6.7	13.3	0.0	2	0	0	0	0	0	
49256	Yes	54.8	337	33	9.8	48.5	3.0	15	1	0	0	0	0	
49257		0.0		0	---	---	---	0	0	0	0	0	0	POB
49258		0.0		0	---	---	---	0	0	0	0	0	0	POB

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
49259		26.7	232	32	13.8	6.3	0.0	2	0	0	0	0	0	
49261		0.0		6	---	16.7	0.0	1	0	0	0	0	0	POB
49262	Yes	54.2	123	16	13.0	6.3	0.0	1	0	0	0	0	0	
49263	Yes	53.3	3	2	66.7	100.0	0.0	2	0	0	0	0	0	POB
49264	Yes	28.9	161	9	5.6	0.0	0.0	0	0	0	0	0	0	
49265	Yes	28.1	336	35	10.4	17.1	0.0	6	0	0	0	0	0	
49266	Yes	37.8	224	33	14.7	9.1	0.0	3	0	0	0	0	0	
49267	Yes	39.6	278	11	4.0	18.2	0.0	2	0	0	0	0	0	
49268	Yes	62.6	90	15	16.7	40.0	6.7	5	1	0	0	0	0	
49269	Yes	28.4	509	56	11.0	19.6	1.9	8	1	0	0	0	2	
49270	Yes	28.9	470	36	7.7	19.4	0.0	7	0	0	0	0	0	
49271	Yes	54.7	176	27	15.3	22.2	0.0	6	0	0	0	0	0	
49272	Yes	33.9	187	12	6.4	0.0	0.0	0	0	0	0	0	0	
49274	Yes	40.3	306	45	14.7	11.1	2.2	4	1	0	0	0	0	
49275	Yes	0.0		0	---	---	---	0	0	0	0	0	0	POB
49276	Yes	66.0	77	8	10.4	62.5	0.0	5	0	0	0	0	0	
49277	Yes	23.9	316	20	6.3	0.0	0.0	0	0	0	0	0	0	
49278		0.0		0	---	---	---	0	0	0	0	0	0	STN
49279	Yes	57.6	66	5	7.6	20.0	0.0	1	0	0	0	0	0	
49280		0.0		0	---	---	---	0	0	0	0	0	0	STN
49281		7.3	40	3	7.5	0.0	0.0	0	0	0	0	0	0	
49282		6.9	47	3	6.4	33.3	0.0	1	0	0	0	0	0	STN
49283		15.6	155	16	10.3	6.3	0.0	1	0	0	0	0	0	
49284	Yes	40.4	225	32	14.2	15.6	0.0	5	0	0	0	0	0	
49285	Yes	34.9	421	47	11.2	12.8	0.0	6	0	0	0	0	0	
49286	Yes	26.5	1120	116	10.4	18.1	2.6	18	1	0	2	0	0	
49287	Yes	29.8	140	12	8.6	8.3	8.3	0	0	0	1	0	0	
49288	Yes	64.2	123	18	14.6	22.2	5.6	3	1	0	0	0	0	
49289	Yes	64.9	3	6	200.0	33.3	16.7	1	1	0	0	0	0	POB
49301		13.7	902	44	4.9	2.3	0.0	1	0	0	0	0	0	
49302		21.0	585	37	6.3	0.0	0.0	0	0	0	0	0	0	
49303	Yes	30.7	86	9	10.5	11.1	0.0	1	0	0	0	0	0	
49304		13.8	223	60	26.9	16.7	0.0	10	0	0	0	0	0	
49305		22.0	161	45	28.0	6.7	0.0	3	0	0	0	0	0	
49306		9.9	732	68	9.3	4.4	0.0	3	0	0	0	0	0	
49307	Yes	25.6	1217	197	16.2	5.6	1.0	9	0	2	0	0	0	
49309		15.8	151	23	15.2	8.7	0.0	2	0	0	0	0	0	
49310	Yes	33.7	226	26	11.5	3.8	0.0	1	0	0	0	0	0	
49311		0.0		0	---	---	---	0	0	0	0	0	0	POB
49312		3.2	4	4	100.0	0.0	0.0	0	0	0	0	0	0	POB
49314		0.0		0	---	---	---	0	0	0	0	0	0	POB
49315		17.7	1214	75	6.2	9.3	0.0	7	0	0	0	0	0	
49316		16.7	1324	91	6.9	1.1	0.0	1	0	0	0	0	0	
49318	Yes	42.0	116	24	20.7	16.7	4.2	3	1	0	0	0	0	
49319		17.1	1292	234	18.1	2.6	0.4	5	1	0	0	0	0	
49320		0.0		5	---	0.0	0.0	0	0	0	0	0	0	POB
49321		8.9	1451	249	17.2	4.8	0.0	12	0	0	0	0	0	
49322	Yes	40.4	104	14	13.5	21.4	0.0	3	0	0	0	0	0	
49323		13.8	810	50	6.2	6.0	2.0	1	1	0	0	0	1	
49325	Yes	37.9	143	15	10.5	6.7	0.0	1	0	0	0	0	0	
49326		14.4	262	35	13.4	11.4	0.0	3	0	0	0	0	1	
49327	Yes	22.4	792	99	12.5	8.1	0.0	8	0	0	0	0	0	
49328	Yes	39.7	343	39	11.4	7.7	0.0	3	0	0	0	0	0	
49329	Yes	17.8	673	78	11.6	7.7	2.6	4	0	2	0	0	0	
49330	Yes	30.4	446	69	15.5	7.2	1.4	4	1	0	0	0	0	
49331	Yes	21.6	1277	124	9.7	5.6	0.0	7	0	0	0	0	0	
49332		22.1	177	16	9.0	6.3	0.0	1	0	0	0	0	0	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
49333	Yes	21.6	855	90	10.5	3.3	0.0	3	0	0	0	0	0	
49335	Yes	71.8	14	6	42.9	16.7	16.7	0	1	0	0	0	0	POB
49336	Yes	26.1	412	57	13.8	10.5	0.0	6	0	0	0	0	0	
49337	Yes	20.6	963	138	14.3	4.3	0.0	6	0	0	0	0	0	
49338		14.4	139	18	12.9	5.6	0.0	1	0	0	0	0	0	
49339	Yes	32.5	173	18	10.4	0.0	0.0	0	0	0	0	0	0	
49340	Yes	29.0	230	24	10.4	4.2	0.0	1	0	0	0	0	0	
49341		14.3	2964	220	7.4	5.0	0.0	10	0	0	0	0	1	
49342		23.3	159	19	11.9	5.3	0.0	1	0	0	0	0	0	
49343		22.4	442	60	13.6	3.3	0.0	2	0	0	0	0	0	
49344	Yes	23.0	252	45	17.9	0.0	0.0	0	0	0	0	0	0	
49345	Yes	27.3	1128	160	14.2	7.5	0.0	12	0	0	0	0	0	
49346		7.4	327	53	16.2	3.8	0.0	2	0	0	0	0	0	
49347	Yes	29.8	97	15	15.5	20.0	0.0	3	0	0	0	0	0	
49348	Yes	21.9	1082	111	10.3	0.9	0.0	1	0	0	0	0	0	
49349	Yes	20.2	653	130	19.9	8.5	0.8	9	1	0	0	0	1	
49401		10.7	936	76	8.1	1.3	0.0	1	0	0	0	0	0	
49402		11.6	76	5	6.6	0.0	0.0	0	0	0	0	0	0	
49403	Yes	41.1	203	50	24.6	8.0	0.0	4	0	0	0	0	0	
49404	Yes	28.6	682	59	8.7	5.1	0.0	3	0	0	0	0	0	
49405	Yes	34.4	98	14	14.3	7.1	0.0	1	0	0	0	0	0	
49406	Yes	38.5	42	3	7.1	33.3	0.0	1	0	0	0	0	0	POB
49408	Yes	24.4	864	145	16.8	4.8	0.7	6	1	0	0	0	0	
49409		0.0		1	---	100.0	0.0	1	0	0	0	0	0	POB
49410	Yes	16.0	116	17	14.7	5.9	0.0	1	0	0	0	0	0	
49411	Yes	26.5	94	9	9.6	11.1	0.0	1	0	0	0	0	0	
49412	Yes	31.3	888	140	15.8	7.9	0.0	11	0	0	0	0	0	
49415	Yes	19.3	410	78	19.0	9.0	0.0	7	0	0	0	0	0	
49416		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49417	Yes	23.4	2206	177	8.0	6.8	0.0	12	0	0	0	0	0	
49418		13.8	2172	172	7.9	4.7	0.0	8	0	0	0	0	0	
49419	Yes	21.6	658	53	8.1	13.2	0.0	7	0	0	0	0	0	
49420	Yes	36.9	587	193	32.9	14.0	0.5	23	0	1	0	0	3	
49421	Yes	23.3	492	108	22.0	11.1	0.9	11	1	0	0	0	0	
49422		0.0		4	---	0.0	0.0	0	0	0	0	0	0	POB
49423	Yes	30.3	4288	651	15.2	14.9	1.1	87	6	1	0	0	3	
49424		8.1	4606	560	12.2	7.5	0.7	36	2	0	2	0	2	
49425		23.7	290	63	21.7	3.2	1.6	1	1	0	0	0	0	
49426		12.3	2838	124	4.4	4.0	0.8	4	1	0	0	0	0	
49427		0.0		5	---	40.0	0.0	2	0	0	0	0	0	POB
49428		3.9	1991	88	4.4	3.4	0.0	2	0	0	0	0	1	
49429		0.0		0	---	---	---	0	0	0	0	0	0	POB
49430		0.0		0	---	---	---	0	0	0	0	0	0	POB
49431	Yes	36.8	1127	164	14.6	17.1	0.0	27	0	0	0	0	1	
49434	Yes	87.8	0	0	---	---	---	0	0	0	0	0	0	POB
49435	Yes	27.6	288	16	5.6	6.3	6.3	0	1	0	0	0	0	
49436		15.3	99	18	18.2	22.2	0.0	4	0	0	0	0	0	
49437	Yes	24.4	483	115	23.8	7.0	0.9	6	1	0	0	0	1	
49440	Yes	65.3	42	23	54.8	39.1	8.7	7	2	0	0	0	0	
49441	Yes	33.8	3230	724	22.4	17.8	2.8	99	12	6	2	0	10	
49442	Yes	29.0	4187	1407	33.6	21.4	3.3	232	30	10	5	0	24	
49443		0.0		3	---	33.3	0.0	1	0	0	0	0	0	POB
49444	Yes	42.2	2147	874	40.7	23.5	2.9	170	20	3	2	0	10	
49445		22.1	1397	301	21.5	6.6	0.7	18	1	1	0	0	0	
49446	Yes	29.4	184	33	17.9	9.1	0.0	3	0	0	0	0	0	
49448		24.7	249	29	11.6	13.8	3.4	3	1	0	0	0	0	
49449	Yes	29.5	138	18	13.0	5.6	0.0	1	0	0	0	0	0	

2005

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Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
49450	Yes	23.0	380	140	36.8	12.1	0.7	14	1	0	0	0	2	
49451	Yes	20.9	507	105	20.7	6.7	1.0	6	1	0	0	0	0	
49452		18.8	159	40	25.2	12.5	2.5	4	0	0	1	0	0	
49453	Yes	38.3	145	13	9.0	0.0	0.0	0	0	0	0	0	0	
49454	Yes	33.2	365	42	11.5	7.1	2.4	2	0	1	0	0	0	
49455	Yes	31.0	397	153	38.5	9.8	0.7	13	1	0	0	0	1	
49456		18.9	1311	130	9.9	9.2	0.8	11	0	0	1	0	0	
49457	Yes	17.9	806	227	28.2	10.6	0.4	22	1	0	0	0	1	
49458		15.3	11	2	18.2	0.0	0.0	0	0	0	0	0	0	POB
49459		16.9	118	51	43.2	9.8	0.0	5	0	0	0	0	0	
49460		14.6	817	75	9.2	8.0	0.0	5	0	0	0	0	1	
49461	Yes	23.0	665	117	17.6	7.7	0.0	8	0	0	0	0	1	
49464	Yes	22.3	2118	210	9.9	5.2	0.0	11	0	0	0	0	0	
49468		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49501		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49502		0.0		5	---	0.0	0.0	0	0	0	0	0	0	UNQ
49503	Yes	66.1	3063	1284	41.9	27.3	4.5	276	26	15	16	0	17	
49504	Yes	58.0	3867	1170	30.3	29.5	4.6	266	32	10	10	1	26	
49505	Yes	37.8	3031	580	19.1	14.8	1.7	73	6	0	3	1	3	
49506	Yes	48.2	2973	447	15.0	29.1	6.0	88	16	2	8	0	16	
49507	Yes	58.0	4913	1669	34.0	30.2	5.3	386	50	15	21	1	31	
49508		3.3	3655	688	18.8	7.4	0.4	48	3	0	0	0	0	
49509	Yes	20.6	5628	1200	21.3	9.2	0.9	95	5	2	4	0	4	
49510		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49512		1.5	1023	225	22.0	3.6	0.4	7	1	0	0	0	0	
49514		0.0		0	---	---	---	0	0	0	0	0	0	POB
49518		0.0		0	---	---	---	0	0	0	0	0	0	POB
49519		0.0		18	---	5.6	0.0	1	0	0	0	0	0	
49523		0.0		0	---	---	---	0	0	0	0	0	0	POB
49525		13.3	2004	201	10.0	5.0	1.0	7	2	0	0	0	1	STN
49544		11.2	2395	262	10.9	4.6	0.8	9	0	1	0	1	1	
49546		3.7	2594	303	11.7	7.3	0.7	20	1	1	0	0	0	
49548		20.2	3137	689	22.0	4.6	0.3	28	2	0	0	0	2	
49599		0.0		0	---	---	---	0	0	0	0	0	0	POB
49601	Yes	29.6	1542	152	9.9	9.9	0.7	14	0	0	1	0	0	
49610		0.0		0	---	---	---	0	0	0	0	0	0	POB
49611	Yes	29.1	25	5	20.0	0.0	0.0	0	0	0	0	0	0	POB
49612		23.6	69	6	8.7	0.0	0.0	0	0	0	0	0	0	
49613	Yes	48.2	27	4	14.8	0.0	0.0	0	0	0	0	0	0	
49614	Yes	31.9	209	48	23.0	6.3	0.0	3	0	0	0	0	0	
49615	Yes	19.9	249	46	18.5	23.9	0.0	10	0	0	0	0	1	
49616	Yes	23.3	138	21	15.2	19.0	0.0	4	0	0	0	0	0	
49617		24.6	193	23	11.9	8.7	0.0	2	0	0	0	0	0	
49618	Yes	16.3	61	7	11.5	0.0	0.0	0	0	0	0	0	0	
49619		26.3	69	10	14.5	0.0	0.0	0	0	0	0	0	0	
49620	Yes	20.8	193	18	9.3	11.1	0.0	2	0	0	0	0	0	
49621		16.8	194	6	3.1	16.7	0.0	1	0	0	0	0	0	
49622	Yes	32.2	176	29	16.5	17.2	0.0	5	0	0	0	0	0	
49623	Yes	18.8	98	12	12.2	16.7	0.0	2	0	0	0	0	0	
49625	Yes	33.2	101	21	20.8	19.0	0.0	4	0	0	0	0	0	
49626	Yes	66.7	15	8	53.3	12.5	0.0	1	0	0	0	0	0	POB
49627	Yes	30.7	11	2	18.2	0.0	0.0	0	0	0	0	0	0	POB
49628	Yes	62.6	21	9	42.9	0.0	0.0	0	0	0	0	0	0	POB
49629	Yes	30.7	122	13	10.7	0.0	0.0	0	0	0	0	0	0	
49630	Yes	27.3	51	1	2.0	0.0	0.0	0	0	0	0	0	0	
49631	Yes	24.3	471	85	18.0	10.6	0.0	9	0	0	0	0	0	
49632	Yes	20.0	95	7	7.4	14.3	0.0	1	0	0	0	0	0	

2005

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				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
49633		19.9	248	15	6.0	6.7	0.0	1	0	0	0	0	0	
49634	Yes	66.7	2	2	100.0	0.0	0.0	0	0	0	0	0	0	POB
49635	Yes	40.1	220	24	10.9	8.3	0.0	2	0	0	0	0	0	
49636	Yes	14.6	26	2	7.7	0.0	0.0	0	0	0	0	0	0	
49637		13.4	173	14	8.1	7.1	7.1	0	1	0	0	0	0	
49638		10.8	63	3	4.8	0.0	0.0	0	0	0	0	0	0	
49639		16.7	184	26	14.1	0.0	0.0	0	0	0	0	0	0	
49640	Yes	28.1	99	9	9.1	11.1	0.0	1	0	0	0	0	0	
49642	Yes	23.3	66	13	19.7	0.0	0.0	0	0	0	0	0	0	
49643		9.4	415	39	9.4	2.6	0.0	1	0	0	0	0	0	
49644		8.3	118	14	11.9	21.4	0.0	3	0	0	0	0	0	
49645	Yes	28.4	116	16	13.8	12.5	0.0	2	0	0	0	0	0	
49646		13.7	675	83	12.3	13.3	0.0	10	0	0	0	0	1	
49648		13.5	99	9	9.1	11.1	0.0	1	0	0	0	0	0	
49649	Yes	16.7	583	33	5.7	0.0	0.0	0	0	0	0	0	0	
49650		10.5	243	13	5.3	0.0	0.0	0	0	0	0	0	0	
49651	Yes	16.8	564	72	12.8	6.9	0.0	5	0	0	0	0	0	
49653	Yes	29.6	132	9	6.8	0.0	0.0	0	0	0	0	0	0	
49654	Yes	36.7	14	4	28.6	0.0	0.0	0	0	0	0	0	0	
49655		19.2	228	18	7.9	0.0	0.0	0	0	0	0	0	0	
49656		26.0	99	15	15.2	6.7	0.0	1	0	0	0	0	0	
49657	Yes	33.9	284	9	3.2	11.1	0.0	0	0	0	0	0	1	
49659		16.5	573	138	24.1	10.1	0.0	14	0	0	0	0	0	
49660	Yes	43.1	864	112	13.0	11.6	0.0	13	0	0	0	0	0	
49663	Yes	23.9	456	51	11.2	3.9	0.0	2	0	0	0	0	0	
49664		23.8	134	2	1.5	0.0	0.0	0	0	0	0	0	0	
49665		26.7	307	27	8.8	11.1	0.0	3	0	0	0	0	0	
49666	Yes	30.0	4	1	25.0	0.0	0.0	0	0	0	0	0	0	POB
49667		23.5	40	5	12.5	0.0	0.0	0	0	0	0	0	0	
49668		16.7	262	28	10.7	10.7	0.0	3	0	0	0	0	0	
49670	Yes	30.3	83	9	10.8	0.0	0.0	0	0	0	0	0	0	
49673		0.0		0	---	---	---	0	0	0	0	0	0	POB
49674		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49675	Yes	37.7	71	4	5.6	0.0	0.0	0	0	0	0	0	0	
49676		21.1	214	25	11.7	12.0	0.0	3	0	0	0	0	0	
49677	Yes	27.3	529	91	17.2	2.2	0.0	2	0	0	0	0	0	
49679	Yes	14.7	74	10	13.5	0.0	0.0	0	0	0	0	0	0	
49680		20.7	157	13	8.3	7.7	0.0	1	0	0	0	0	0	
49682		20.6	300	12	4.0	8.3	0.0	1	0	0	0	0	0	
49683		17.5	122	24	19.7	16.7	0.0	4	0	0	0	0	0	STN
49684		19.1	2656	151	5.7	7.9	2.0	9	2	0	1	0	0	
49685		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49686		17.6	1886	87	4.6	3.4	0.0	3	0	0	0	0	0	
49688	Yes	26.3	188	12	6.4	8.3	0.0	1	0	0	0	0	0	
49689		16.8	112	20	17.9	10.0	0.0	2	0	0	0	0	0	
49690		12.2	428	18	4.2	0.0	0.0	0	0	0	0	0	0	
49696		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49701		25.7	53	3	5.7	33.3	0.0	1	0	0	0	0	0	STN
49705		18.2	89	15	16.9	6.7	0.0	1	0	0	0	0	0	
49706		17.5	384	55	14.3	18.2	0.0	10	0	0	0	0	0	
49707	Yes	30.2	1620	271	16.7	10.3	0.7	26	1	1	0	0	0	
49709		20.1	208	20	9.6	20.0	5.0	3	1	0	0	0	0	
49710	Yes	25.2	24	0	0.0	---	---	0	0	0	0	0	0	
49711		0.0		1	---	0.0	0.0	0	0	0	0	0	0	STN
49712	Yes	23.9	607	95	15.7	7.4	0.0	7	0	0	0	0	0	
49713		23.0	159	21	13.2	14.3	4.8	2	1	0	0	0	0	
49715		18.6	252	54	21.4	1.9	0.0	0	0	0	0	0	1	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
49716		13.0	72	9	12.5	11.1	0.0	1	0	0	0	0	0	
49717		0.0		0	---	---	---	0	0	0	0	0	0	POB
49718	Yes	33.7	54	4	7.4	50.0	0.0	2	0	0	0	0	0	
49719	Yes	22.8	88	7	8.0	14.3	0.0	1	0	0	0	0	0	
49720	Yes	27.2	674	89	13.2	12.4	1.1	9	1	0	0	0	1	
49721	Yes	26.8	1104	113	10.2	9.7	0.9	9	1	0	0	0	1	
49722	Yes	47.2	6	2	33.3	50.0	0.0	0	0	0	0	0	1	POB
49723		0.0		0	---	---	---	0	0	0	0	0	0	POB
49724		23.8	88	10	11.4	0.0	0.0	0	0	0	0	0	0	
49725		19.9	41	7	17.1	0.0	0.0	0	0	0	0	0	0	
49726		14.0	45	6	13.3	0.0	0.0	0	0	0	0	0	0	
49727	Yes	25.0	668	105	15.7	12.4	0.0	13	0	0	0	0	0	
49728	Yes	18.5	15	4	26.7	0.0	0.0	0	0	0	0	0	0	
49729	Yes	33.2	138	20	14.5	10.0	0.0	2	0	0	0	0	0	
49730		14.6	170	16	9.4	12.5	0.0	2	0	0	0	0	0	
49733		15.6	119	16	13.4	6.3	0.0	1	0	0	0	0	0	
49735		11.2	1468	164	11.2	6.1	0.0	10	0	0	0	0	0	
49736		20.5	25	4	16.0	0.0	0.0	0	0	0	0	0	0	
49737		0.0		0	---	---	---	0	0	0	0	0	0	STN
49738		21.8	702	58	8.3	12.1	0.0	7	0	0	0	0	0	
49740	Yes	24.2	451	31	6.9	6.5	0.0	1	0	0	0	0	1	
49743	Yes	34.9	49	6	12.2	16.7	0.0	1	0	0	0	0	0	
49744	Yes	30.9	65	12	18.5	16.7	0.0	2	0	0	0	0	0	
49745	Yes	50.7	11	5	45.5	40.0	0.0	2	0	0	0	0	0	STN
49746		18.9	212	70	33.0	5.7	0.0	4	0	0	0	0	0	
49747		21.0	107	19	17.8	0.0	0.0	0	0	0	0	0	0	
49748		24.9	6	4	66.7	25.0	0.0	1	0	0	0	0	0	POB
49749		14.8	267	25	9.4	16.0	0.0	4	0	0	0	0	0	
49751		17.7	118	15	12.7	0.0	0.0	0	0	0	0	0	0	
49752	Yes	9.0	15	6	40.0	0.0	0.0	0	0	0	0	0	0	
49753	Yes	20.7	150	17	11.3	5.9	0.0	1	0	0	0	0	0	
49755	Yes	26.2	180	25	13.9	20.0	4.2	3	0	1	0	0	1	
49756		10.8	194	23	11.9	8.7	0.0	2	0	0	0	0	0	
49757	Yes	53.8	23	5	21.7	20.0	0.0	1	0	0	0	0	0	
49759		14.0	105	9	8.6	22.2	0.0	2	0	0	0	0	0	
49760	Yes	25.4	34	4	11.8	0.0	0.0	0	0	0	0	0	0	
49761		0.0	2	0	0.0	---	---	0	0	0	0	0	0	POB
49762		22.1	32	2	6.3	0.0	0.0	0	0	0	0	0	0	
49764	Yes	29.3	10	2	20.0	0.0	0.0	0	0	0	0	0	0	POB
49765	Yes	26.8	301	40	13.3	22.5	2.7	5	1	0	0	0	3	
49766		24.7	165	24	14.5	4.2	0.0	1	0	0	0	0	0	
49768		10.9	21	2	9.5	0.0	0.0	0	0	0	0	0	0	
49769	Yes	30.3	149	35	23.5	8.6	0.0	3	0	0	0	0	0	
49770	Yes	31.6	1149	122	10.6	3.3	0.0	3	0	0	0	0	1	
49774	Yes	26.6	149	14	9.4	14.3	0.0	2	0	0	0	0	0	
49775	Yes	29.3	1	0	0.0	---	---	0	0	0	0	0	0	POB
49776	Yes	31.0	123	18	14.6	5.6	0.0	1	0	0	0	0	0	
49777		17.7	69	9	13.0	0.0	0.0	0	0	0	0	0	0	STN
49779	Yes	38.1	279	37	13.3	18.9	0.0	7	0	0	0	0	0	
49780		23.6	159	16	10.1	0.0	0.0	0	0	0	0	0	0	
49781	Yes	28.1	357	60	16.8	13.3	1.7	7	0	1	0	0	0	
49782		18.2	27	0	0.0	---	---	0	0	0	0	0	0	
49783	Yes	39.7	1336	227	17.0	8.4	0.4	16	1	0	0	0	2	
49788		15.6	359	86	24.0	7.0	0.0	6	0	0	0	0	0	
49790		0.0		0	---	---	---	0	0	0	0	0	0	STN
49791	Yes	70.0	1	3	300.0	0.0	0.0	0	0	0	0	0	0	POB
49792		22.2	6	3	50.0	0.0	0.0	0	0	0	0	0	0	POB

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								PO type**
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	
49793	Yes	33.8	4	0	0.0	---	---	0	0	0	0	0	0	POB
49795		16.3	135	31	23.0	3.2	0.0	1	0	0	0	0	0	
49796	Yes	47.6	10	2	20.0	0.0	0.0	0	0	0	0	0	0	POB
49797		0.0		1	---	0.0	0.0	0	0	0	0	0	0	POB
49799		14.5	173	28	16.2	3.6	0.0	1	0	0	0	0	0	
49801	Yes	42.2	830	82	9.9	6.1	2.4	3	2	0	0	0	0	
49802	Yes	43.1	489	41	8.4	0.0	0.0	0	0	0	0	0	0	STN
49805	Yes	75.0	15	1	6.7	0.0	0.0	0	0	0	0	0	0	STN
49806	Yes	34.3	26	5	19.2	0.0	0.0	0	0	0	0	0	0	
49807	Yes	27.6	265	29	10.9	24.1	0.0	7	0	0	0	0	0	
49808		26.4	10	1	10.0	0.0	0.0	0	0	0	0	0	0	POB
49812	Yes	37.5	63	7	11.1	14.3	0.0	1	0	0	0	0	0	
49813	Yes	27.7	9	0	0.0	---	---	0	0	0	0	0	0	
49814	Yes	30.5	93	7	7.5	14.3	0.0	1	0	0	0	0	0	
49815	Yes	37.5	47	3	6.4	0.0	0.0	0	0	0	0	0	0	
49816	Yes	37.6	51	10	19.6	10.0	0.0	1	0	0	0	0	0	
49817	Yes	29.8	42	1	2.4	0.0	0.0	0	0	0	0	0	0	
49818	Yes	24.7	76	6	7.9	0.0	0.0	0	0	0	0	0	0	
49819		0.0		2	---	50.0	0.0	1	0	0	0	0	0	STN
49820		23.7	42	6	14.3	16.7	0.0	1	0	0	0	0	0	
49821	Yes	36.6	108	10	9.3	10.0	0.0	1	0	0	0	0	0	
49822	Yes	15.4	6	0	0.0	---	---	0	0	0	0	0	0	
49825	Yes	35.5	15	5	33.3	0.0	0.0	0	0	0	0	0	0	
49826	Yes	22.2	5	2	40.0	0.0	0.0	0	0	0	0	0	0	
49827	Yes	31.1	60	14	23.3	14.3	0.0	2	0	0	0	0	0	
49829	Yes	46.0	1231	256	20.8	11.3	0.4	28	1	0	0	0	0	
49831	Yes	57.1	0	5	---	0.0	0.0	0	0	0	0	0	0	STN
49833	Yes	17.6	12	1	8.3	0.0	0.0	0	0	0	0	0	0	
49834	Yes	32.4	17	1	5.9	0.0	0.0	0	0	0	0	0	0	
49835	Yes	32.0	53	3	5.7	0.0	0.0	0	0	0	0	0	0	
49836	Yes	31.1	48	6	12.5	0.0	0.0	0	0	0	0	0	0	
49837	Yes	34.7	675	97	14.4	10.3	0.0	10	0	0	0	0	0	
49838		21.2	16	2	12.5	0.0	0.0	0	0	0	0	0	0	
49839	Yes	33.3	6	7	116.7	0.0	0.0	0	0	0	0	0	0	
49840	Yes	19.1	44	4	9.1	25.0	0.0	1	0	0	0	0	0	
49841		12.4	464	92	19.8	6.5	0.0	6	0	0	0	0	0	
49845		0.0		0	---	---	---	0	0	0	0	0	0	POB
49847	Yes	45.3	59	2	3.4	0.0	0.0	0	0	0	0	0	0	
49848	Yes	43.8	17	1	5.9	100.0	0.0	1	0	0	0	0	0	
49849	Yes	48.5	896	97	10.8	9.3	2.1	6	1	1	0	0	1	
49852	Yes	71.8	4	0	0.0	---	---	0	0	0	0	0	0	STN
49853	Yes	23.4	70	5	7.1	0.0	0.0	0	0	0	0	0	0	
49854	Yes	37.7	469	95	20.3	10.5	0.0	9	0	0	0	0	1	
49855	Yes	30.7	1779	154	8.7	5.8	0.0	8	0	0	0	0	1	
49858	Yes	43.4	895	118	13.2	22.9	0.9	23	0	0	1	0	3	
49861	Yes	34.0	18	7	38.9	0.0	0.0	0	0	0	0	0	0	
49862	Yes	35.8	310	37	11.9	2.7	0.0	1	0	0	0	0	0	
49863	Yes	57.8	13	4	30.8	0.0	0.0	0	0	0	0	0	0	POB
49864	Yes	48.5	0	0	---	---	---	0	0	0	0	0	0	POB
49866	Yes	40.2	477	47	9.9	8.5	0.0	3	0	0	0	0	1	
49868	Yes	32.9	368	48	13.0	20.8	0.0	9	0	0	0	0	1	
49870	Yes	51.6	247	23	9.3	4.3	0.0	1	0	0	0	0	0	
49871	Yes	60.8	22	4	18.2	25.0	0.0	1	0	0	0	0	0	POB
49872	Yes	58.8	2	1	50.0	0.0	0.0	0	0	0	0	0	0	POB
49873	Yes	27.1	8	2	25.0	0.0	0.0	0	0	0	0	0	0	
49874	Yes	29.4	72	11	15.3	0.0	0.0	0	0	0	0	0	0	
49876		22.0	77	7	9.1	0.0	0.0	0	0	0	0	0	0	

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	PO type**
49877	Yes	52.8	1	0	0.0	---	---	0	0	0	0	0	0	STN
49878	Yes	27.4	193	34	17.6	14.7	0.0	5	0	0	0	0	0	
49879	Yes	36.0	44	5	11.4	0.0	0.0	0	0	0	0	0	0	
49880	Yes	36.8	74	12	16.2	8.3	0.0	1	0	0	0	0	0	
49881	Yes	24.1	25	0	0.0	---	---	0	0	0	0	0	0	
49883	Yes	28.3	17	1	5.9	0.0	0.0	0	0	0	0	0	0	
49884		15.9	38	4	10.5	0.0	0.0	0	0	0	0	0	0	
49885		22.5	159	16	10.1	0.0	0.0	0	0	0	0	0	0	
49886	Yes	40.8	37	1	2.7	0.0	0.0	0	0	0	0	0	0	
49887	Yes	36.4	144	23	16.0	17.4	0.0	4	0	0	0	0	0	
49891	Yes	37.6	66	5	7.6	20.0	0.0	1	0	0	0	0	0	
49892	Yes	34.1	129	5	3.9	0.0	0.0	0	0	0	0	0	0	
49893	Yes	26.1	119	9	7.6	22.2	0.0	2	0	0	0	0	0	
49894	Yes	39.5	34	11	32.4	0.0	0.0	0	0	0	0	0	0	
49895		18.4	32	9	28.1	0.0	0.0	0	0	0	0	0	0	
49896	Yes	27.8	172	31	18.0	0.0	0.0	0	0	0	0	0	0	
49901	Yes	85.8	22	3	13.6	0.0	0.0	0	0	0	0	0	0	POB
49902	Yes	69.2	22	1	4.5	100.0	0.0	1	0	0	0	0	0	POB
49903	Yes	67.0	11	1	9.1	0.0	0.0	0	0	0	0	0	0	POB
49905	Yes	56.0	168	32	19.0	0.0	0.0	0	0	0	0	0	0	
49908	Yes	30.5	213	46	21.6	4.3	0.0	2	0	0	0	0	0	
49910	Yes	33.4	14	0	0.0	---	---	0	0	0	0	0	0	
49911	Yes	58.8	161	32	19.9	3.1	0.0	1	0	0	0	0	0	
49912	Yes	50.6	50	3	6.0	0.0	0.0	0	0	0	0	0	0	
49913	Yes	75.6	659	111	16.8	9.0	0.0	10	0	0	0	0	0	
49915	Yes	69.3	44	10	22.7	10.0	0.0	1	0	0	0	0	0	POB
49916	Yes	37.0	201	41	20.4	2.4	0.0	1	0	0	0	0	0	
49917	Yes	84.8	11	5	45.5	0.0	0.0	0	0	0	0	0	0	POB
49918	Yes	69.3	3	1	33.3	0.0	0.0	0	0	0	0	0	0	STN
49919	Yes	36.9	10	2	20.0	0.0	0.0	0	0	0	0	0	0	
49920	Yes	41.6	204	18	8.8	0.0	0.0	0	0	0	0	0	0	
49921	Yes	57.9	38	5	13.2	0.0	0.0	0	0	0	0	0	0	
49922	Yes	35.5	99	16	16.2	12.5	0.0	2	0	0	0	0	0	POB
49925	Yes	43.0	38	4	10.5	0.0	0.0	0	0	0	0	0	0	
49927	Yes	53.4	32	7	21.9	0.0	0.0	0	0	0	0	0	0	
49929	Yes	70.2	6	3	50.0	0.0	0.0	0	0	0	0	0	0	POB
49930	Yes	56.5	367	102	27.8	7.8	1.0	6	1	0	0	0	1	
49931	Yes	38.0	349	84	24.1	6.0	0.0	3	0	0	0	0	2	
49934	Yes	88.8	70	14	20.0	14.3	0.0	2	0	0	0	0	0	POB
49935	Yes	42.8	306	43	14.1	2.3	0.0	1	0	0	0	0	0	
49938	Yes	63.6	564	87	15.4	5.7	0.0	5	0	0	0	0	0	
49942	Yes	89.0	18	0	0.0	---	---	0	0	0	0	0	0	STN
49945	Yes	49.1	189	25	13.2	4.0	0.0	1	0	0	0	0	0	
49946	Yes	33.9	296	66	22.3	1.5	0.0	1	0	0	0	0	0	
49947	Yes	33.3	31	4	12.9	0.0	0.0	0	0	0	0	0	0	
49948	Yes	58.7	47	4	8.5	0.0	0.0	0	0	0	0	0	0	
49950	Yes	52.7	75	10	13.3	10.0	0.0	1	0	0	0	0	0	
49952	Yes	29.5	8	1	12.5	0.0	0.0	0	0	0	0	0	0	
49953	Yes	43.8	193	26	13.5	7.7	0.0	2	0	0	0	0	0	
49955	Yes	85.9	24	6	25.0	0.0	0.0	0	0	0	0	0	0	POB
49958	Yes	43.3	99	12	12.1	25.0	0.0	3	0	0	0	0	0	
49959	Yes	74.0	28	6	21.4	0.0	0.0	0	0	0	0	0	0	POB
49960	Yes	66.2	26	3	11.5	0.0	0.0	0	0	0	0	0	0	POB
49961	Yes	44.1	8	0	0.0	---	---	0	0	0	0	0	0	POB
49962	Yes	42.0	7	1	14.3	0.0	0.0	0	0	0	0	0	0	
49963	Yes	61.5	65	10	15.4	0.0	0.0	0	0	0	0	0	0	POB
49964	Yes	65.3	58	1	1.7	0.0	0.0	0	0	0	0	0	0	POB

2005

Childhood Lead Poisoning Prevention - All ZIP Codes in Michigar

Children less than six years of age, Tested in Calendar Year 2005

Table 5

ZIP	High-Risk?	%Pre-1950 Housing*	Children Under Age 6*	Children < Age 6, Tested for Lead in 2005		Children with Blood Lead Levels >= 5 ug/dL								PO type**
				Number of Children Tested	% Tested	% with BLL >= 5 ug/dL	% EBLL (>= 10 ug/dL venous only)**	5 to 9 ug/dL (capillary, venous or unknown)	10-14 ug/dL (venous only)	15-19 ug/dL (venous only)	20-44 ug/dL (venous only)	45+ ug/dL (venous only)	Capillary >= 10, not confirmed by venous	
49965	Yes	39.1	20	4	20.0	0.0	0.0	0	0	0	0	0	0	
49967	Yes	48.9	18	5	27.8	0.0	0.0	0	0	0	0	0	0	
49968	Yes	53.6	109	20	18.3	5.0	0.0	1	0	0	0	0	0	
49969	Yes	20.8	81	6	7.4	0.0	0.0	0	0	0	0	0	0	
49970	Yes	59.4	22	1	4.5	0.0	0.0	0	0	0	0	0	0	
49971		8.4	26	3	11.5	0.0	0.0	0	0	0	0	0	0	POB
unknown	---	---	---	696	---	20.1	0.4	137	3	0	0	0	0	
Total	(642)	27.0	795,041	132,913	16.7	17.2	2.4	18,723	2,008	610	489	30	983	

*U.S. Census Bureau, Census 2000, except Total, which is from U.S. Census Bureau, American Community Survey 2004.

**POB: designated "post office box only" by USPS; UNQ: designated "unique"; all others designated "standard"

Note: Counts of children tested and blood lead levels are reported from MI Dept. of Comm. Health, Childhood Lead Poisoning Prevention Program statewide database.

January 2006

Table 10

2005

Blood Lead Testing Among Children who are Insured by Medicaid - 13 Target Communities in Michigan

Place	Children age < 6 years, Insured by Medicaid					Children age 1 & 2 years, Insured by Medicaid				
	# of Children, age < 6 yrs, Insured by Medicaid	# of Children Tested for Lead Poisoning in CY2005	% Tested	# of Children Confirmed to have EBLL*	% EBLL	# of Children, age < 6 yrs, Insured by Medicaid	# of Children Tested for Lead Poisoning in CY2005	% Tested	# of Children Confirmed to have EBLL*	% EBLL
Battle Creek	3,221	937	29.1	23	2.5	1,138	448	39.4	15	3.3
Benton Harbor	1,319	430	32.6	44	10.2	440	198	45.0	22	11.1
Detroit	62,343	25,671	41.2	1,733	6.8	20,832	9,936	47.7	831	8.4
Flint	9,916	2,610	26.3	73	2.8	3,312	1,166	35.2	39	3.3
Grand Rapids	12,485	4,574	36.6	203	4.4	4,347	2,541	58.5	134	5.3
Hamtramck	1,929	619	32.1	30	4.8	676	258	38.2	11	4.3
Highland Park	1,145	470	41.0	76	16.2	389	193	49.6	35	18.1
Jackson	2,863	858	30.0	25	2.9	982	392	39.9	16	4.1
Kalamazoo	3,728	749	20.1	25	3.3	1,278	385	30.1	13	3.4
Lansing	7,040	1,669	23.7	24	1.4	2,417	763	31.6	14	1.8
Muskegon	2,840	1,172	41.3	60	5.1	964	524	54.4	27	5.2
Pontiac	5,375	1,683	31.3	23	1.4	1,762	751	42.6	8	1.1
Saginaw	4,922	1,493	30.3	45	3.0	1,604	728	45.4	22	3.0
Subtotal	119,126	42,935	36.0	2,384	5.6	40,141	18,283	45.5	1,187	6.5
Michigan	357,527	96,887	27.1	2,822	2.9	121,743	43,951	36.1	1,424	3.2

Source: MDCH Data Warehouse

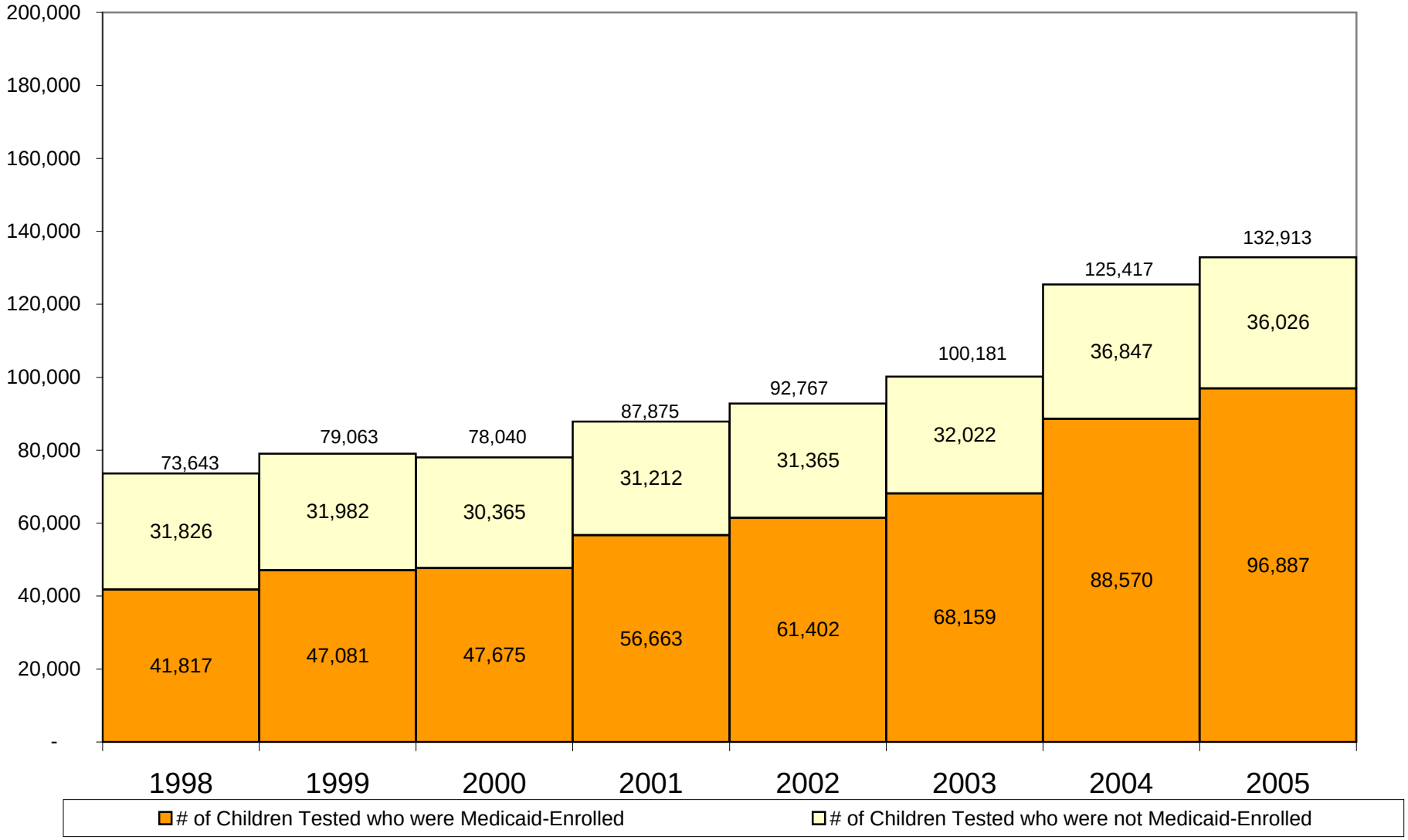
*EBLL: Elevated blood lead level--I.e., >= 10 ug/dL

April 5, 2006

Figure 1

Blood Lead Testing in Michigan

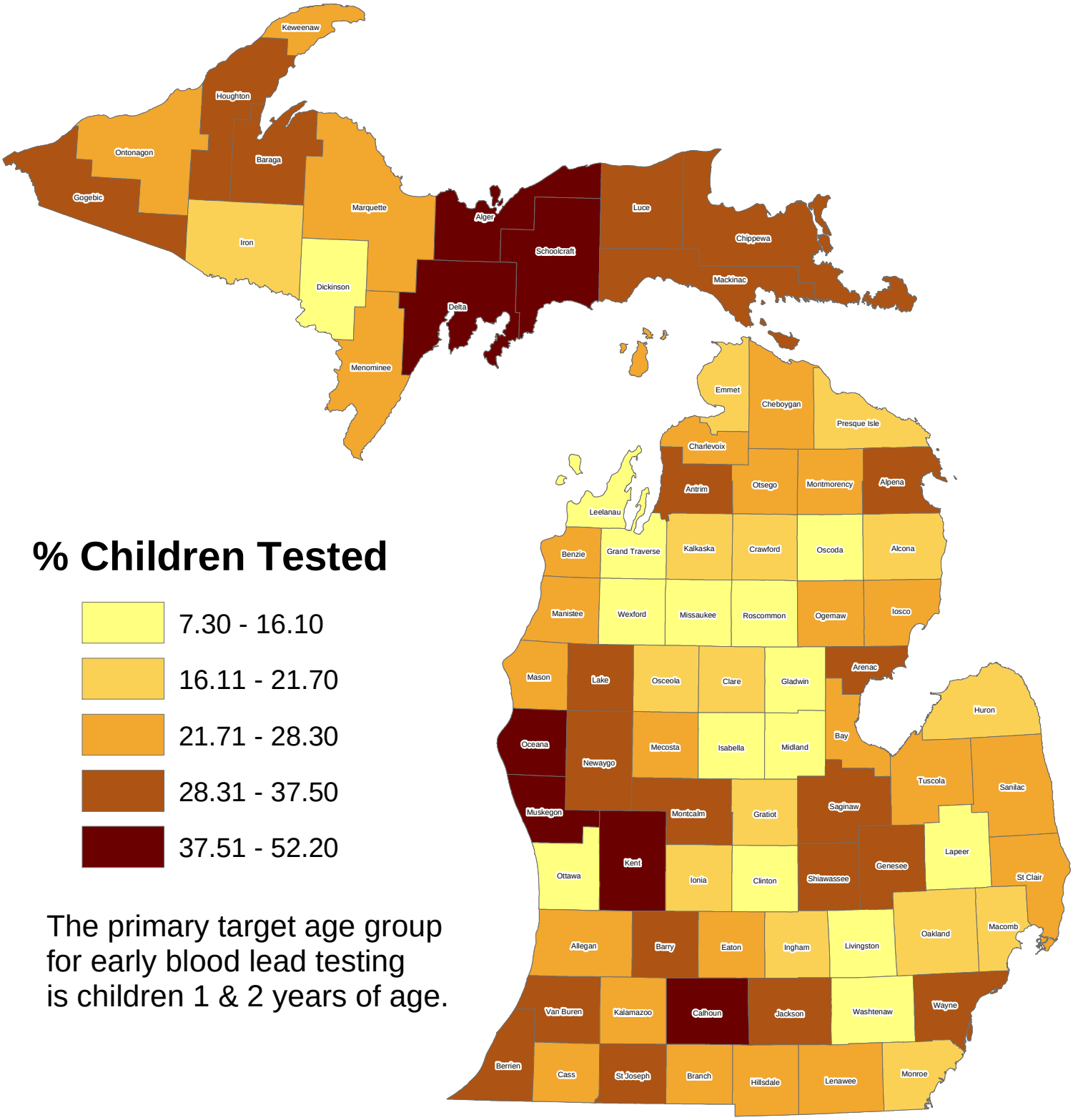
Children under Age Six, 1998 - 2005



April 2006 Source: MDCH Childhood Lead Poisoning Prevention Program statewide database

Figure 2

Pct. of Children 1 & 2 years of age Tested for Lead Poisoning 2005



% Children Tested

- 7.30 - 16.10
- 16.11 - 21.70
- 21.71 - 28.30
- 28.31 - 37.50
- 37.51 - 52.20

The primary target age group for early blood lead testing is children 1 & 2 years of age.

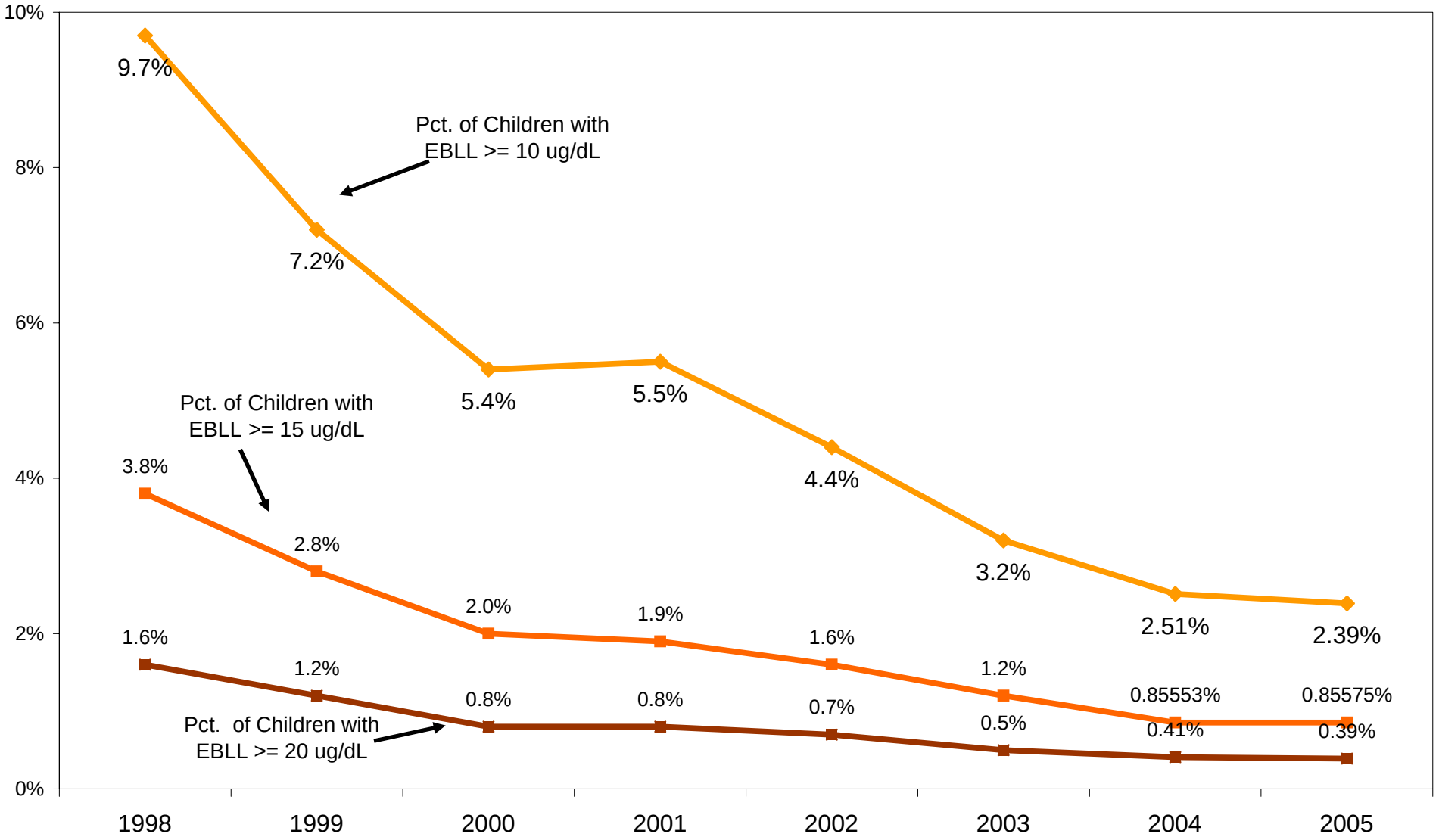
Sources: MDCH CLPPP statewide database & 2000 Census

April 2006

Figure 3

Elevated Blood Lead Levels (EBLL) in Michigan

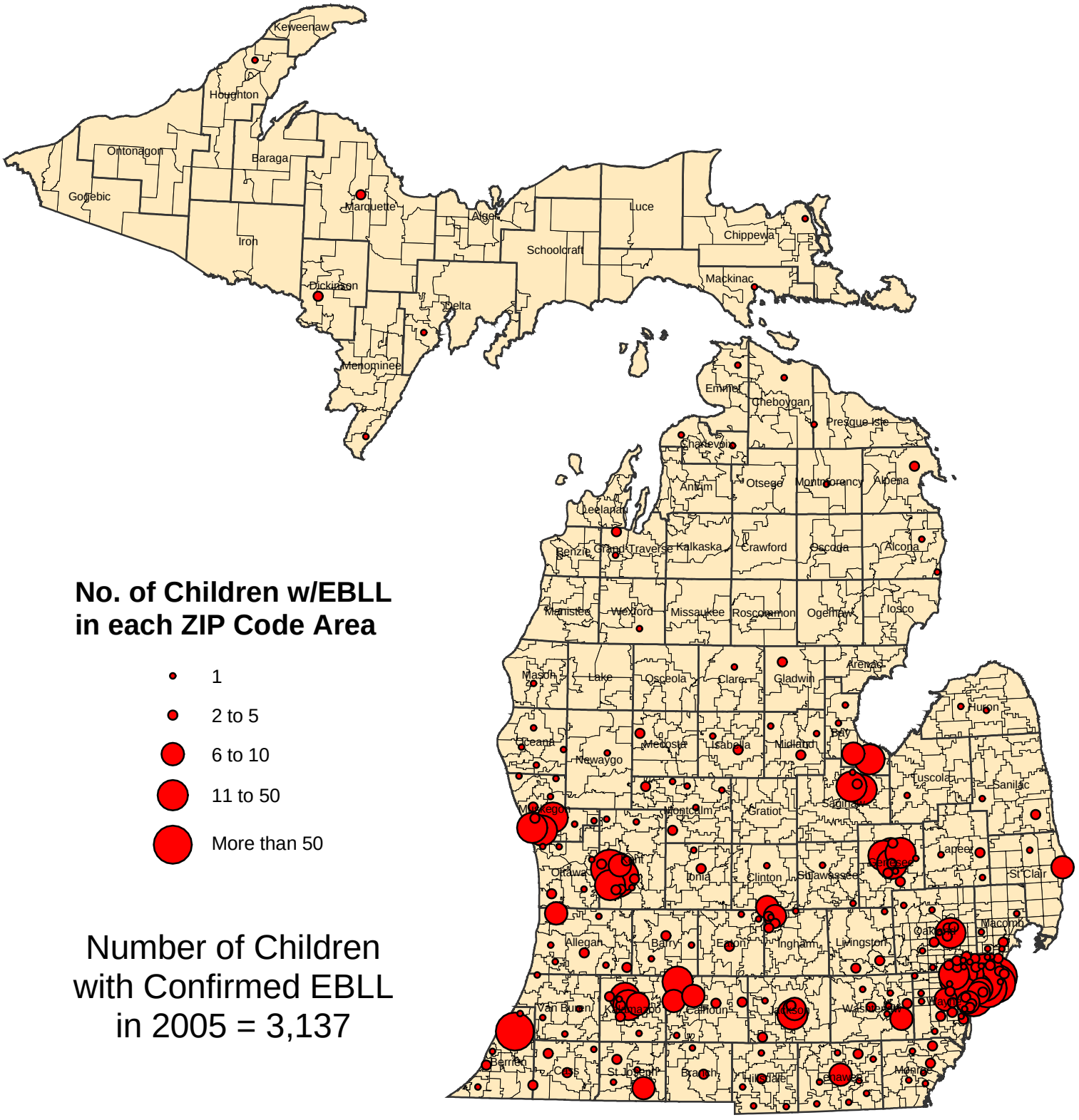
Children under Age Six, 1998 - 2005



Source: MDCH Childhood Lead Poisoning Prevention Program statewide database
February 2006

Figure 4

Children less than Six years of age with Confirmed Elevated Blood Lead Levels (EBLL) 2005



No. of Children w/EBLL in each ZIP Code Area

- 1
- 2 to 5
- 6 to 10
- 11 to 50
- More than 50

Number of Children with Confirmed EBLL in 2005 = 3,137

Sources: MDCH CLPPP statewide database

March 2006

Figure 5

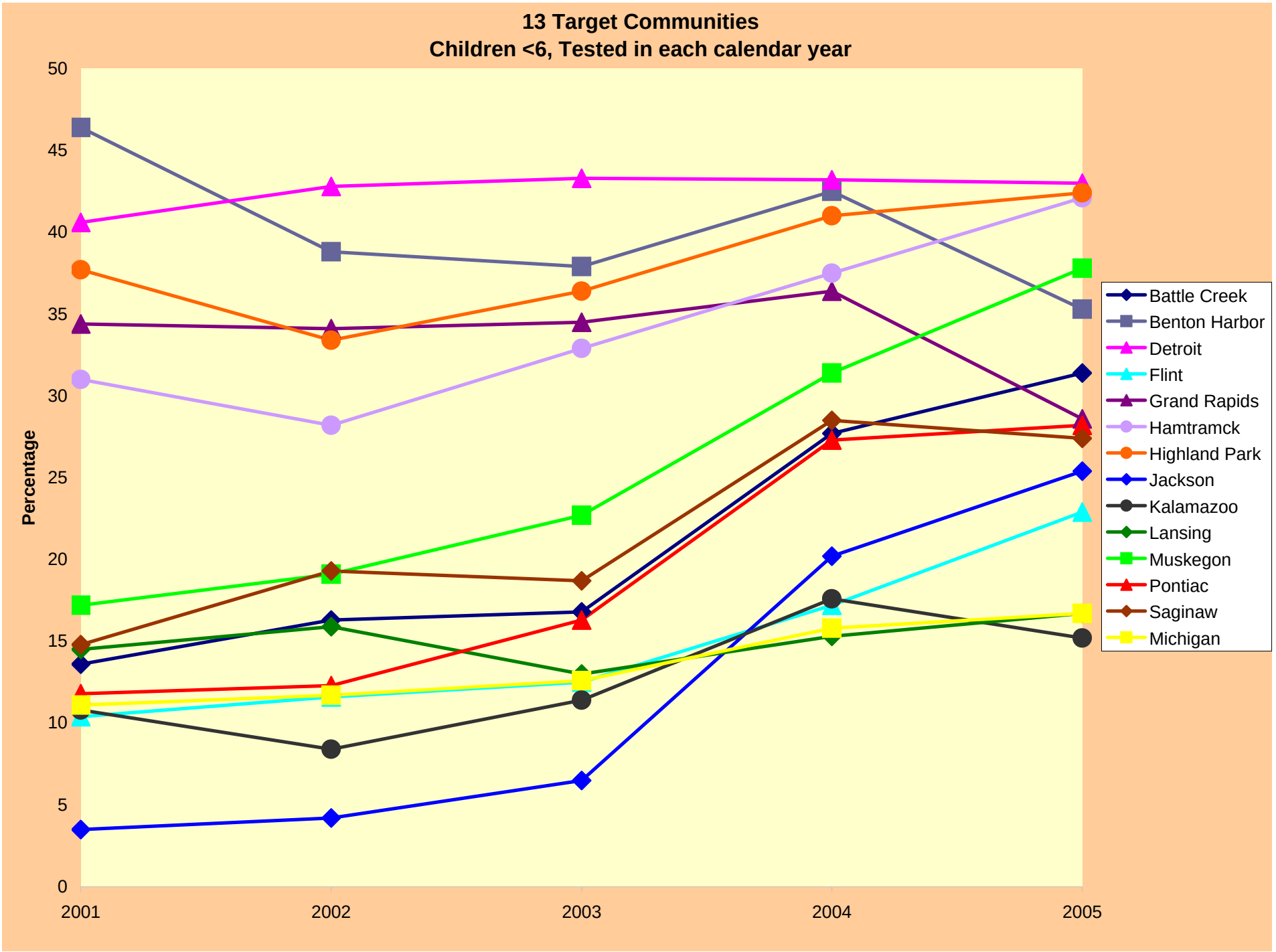

13 Target Communities
Children <6, Tested in each calendar year
Percentage
50
45
40
35
30
25
20
15
10
5
0
2001
2002
2003
2004
2005
Battle Creek
Benton Harbor
Detroit
Flint
Grand Rapids
Hamtramck
Highland Park
Jackson
Kalamazoo
Lansing
Muskegon
Pontiac
Saginaw
Michigan

Figure 6

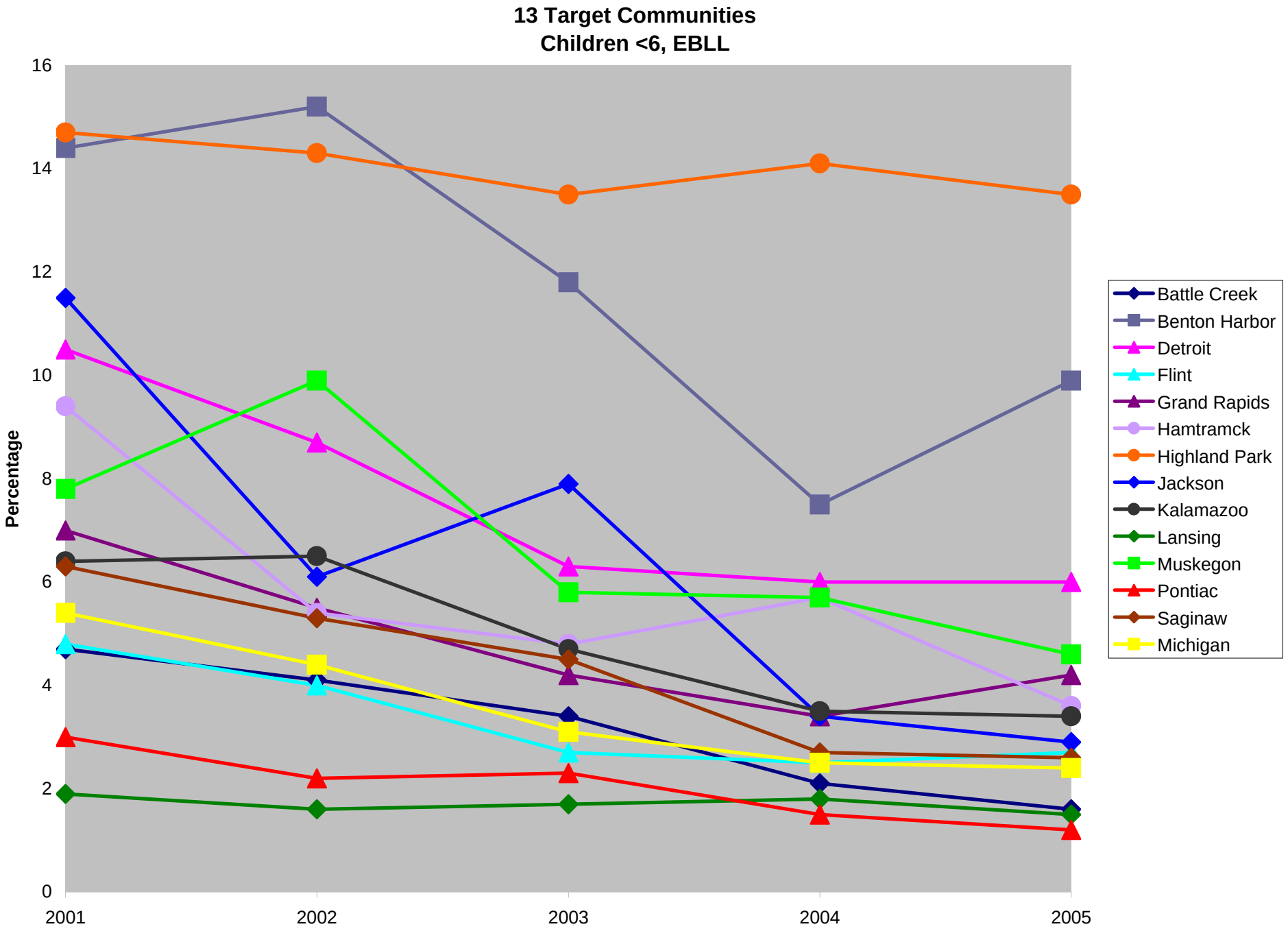
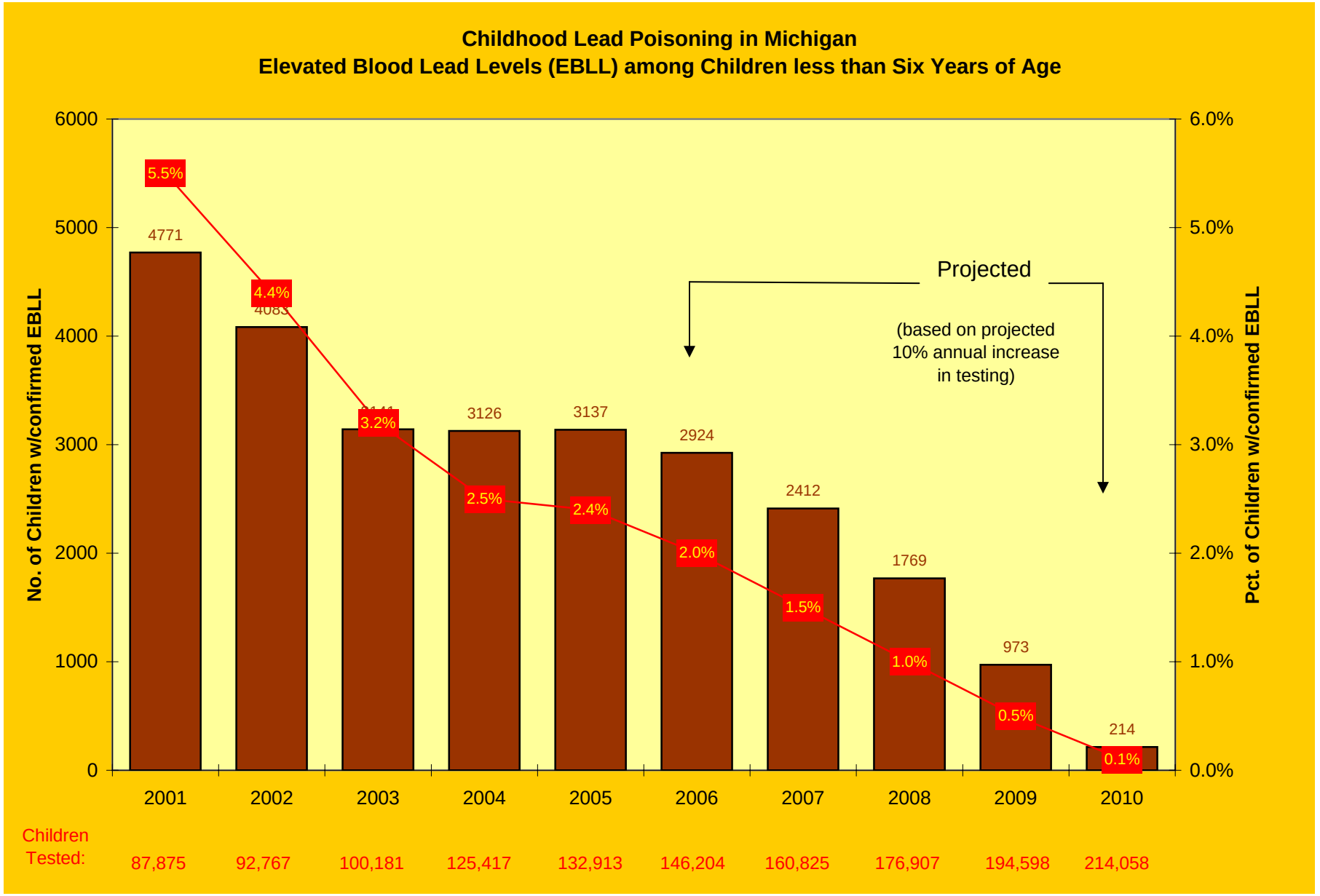

13 Target Communities
Children <6, EBLL
Percentage
16
14
12
10
8
6
4
2
0
2001
2002
2003
2004
2005
Battle Creek
Benton Harbor
Detroit
Flint
Grand Rapids
Hamtramck
Highland Park
Jackson
Kalamazoo
Lansing
Muskegon
Pontiac
Saginaw
Michigan

Figure 7


Childhood Lead Poisoning in Michigan
Elevated Blood Lead Levels (EBLL) among Children less than Six Years of Age
No. of Children w/confirmed EBLL
Pct. of Children w/confirmed EBLL
6000
5000
4000
3000
2000
1000
0
6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
Projected
(based on projected 10% annual increase in testing)
4771
4083
3126
3137
2924
2412
1769
973
214
5.5%
4.4%
3.2%
2.5%
2.4%
2.0%
1.5%
1.0%
0.5%
0.1%
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Children Tested:
87,875
92,767
100,181
125,417
132,913
146,204
160,825
176,907
194,598
214,058

APPENDIX I

DEPARTMENT OF COMMUNITY HEALTH

HEALTH LEGISLATION AND POLICY DEVELOPMENT

BLOOD LEAD ANALYSIS REPORTING

Filed with the Secretary of State on September 25, 1997. These rules take effect 15 days after filing with the Secretary of State.

(By authority conferred on the community public health agency by section 5111 of Act No. 368 of the Public Acts of 1978, as amended, section 8 of Act No. 312 of the Public Acts of 1978, and Executive Reorganization Order No. 1996-1, being §§333.5111 and 325.78, and 330.3101 of the Michigan Compiled Laws)

R 325.9081 Definitions.

Rule 1. (1) As used in these rules:

(a) "Blood lead analysis report form" means the form used to report the required reportable information for blood that has been analyzed for lead.

(b) "Agency" means the community public health agency.

(c) "Physician/provider" means a licensed professional who provides health care services and who is authorized to request the analysis of blood specimens. For this purpose, provider may also mean the local health department.

(2) The term "local health department," as defined in Act No. 368 of the Public Acts of 1978, as amended, being §333.1101 et seq. of the Michigan Compiled Laws, has the same meaning when used in these rules.

R 325.9082 Reportable information.

Rule 2. (1) Reportable information is specifically related to blood samples submitted to clinical laboratories for lead analysis.

(2) Upon initiating a request for blood lead analysis, the physician/provider ordering the blood lead analysis shall complete the client information (section I) and the physician/provider information (section II) of a blood lead analysis report form designated by the agency or shall complete another similar form that ensures the inclusion of the same required data and shall provide all of the following information:

(a) All of the following information with respect to the individual tested:

(i) Name.

(ii) Sex.

(iii) Racial/ethnic group.

(iv) Birthdate.

(v) Address, including county.

(vi) Telephone number.

(vii) Social security number and medicaid number, if applicable.

(viii) If the individual is a minor, the name of a parent or guardian and social security number of the parent or guardian.

(ix) If the individual is an adult, the name of his or her employer.

(b) The date of the sample collection.

(c) The type of sample (capillary or venous).

(3) The blood lead analysis report form or a document with the same data shall be submitted with the sample for analysis to a clinical laboratory that performs blood lead analysis.

(4) Upon receipt of the blood sample for lead analysis, the clinical laboratory shall complete the laboratory information (section III) and provide all of the information required and/or submitted by the physician/provider and the following:

(a) The name, address, and phone number of the laboratory.

(b) The date of analysis.

(c) The results of the blood lead analysis in micrograms of lead per deciliter of whole blood rounded to the nearest whole number.

R 325.9083 Reporting responsibilities.

Rule 3. (1) All clinical laboratories doing business in this state that analyze blood samples for lead shall report all blood lead results, rounded to the nearest whole number, for adults and children to the Community Public Health Agency, Childhood Lead Poisoning Prevention Program (CPHA/CLPPP), 3423 N.M.L. King Jr. Blvd., Lansing , MI 48909. Reports shall be made within 5 working days after test completion.

(2) Nothing in this rule shall be construed to relieve a laboratory from reporting results of a blood lead analysis to the physician or other health care provider who ordered the test or to any other entity as required by state, federal, or local statutes or regulations or in accordance with accepted standard of practice, except that reporting in compliance with this rule satisfies the blood lead reporting requirements of

Act No. 368 of the Public Acts of 1978, as amended, being §333.1101 et seq. of the Michigan Compiled Laws.

R 325.9084 Electronic communications.

Rule 4. (1) A clinical laboratory may submit the data required in R 325.9083 electronically to the agency.

(2) For electronic reporting, upon mutual agreement between the reporting laboratory and the agency, the reporting shall utilize the data format specifications provided by the agency.

R 325.9085 Quality assurance.

Rule 5. For purposes of assuring the quality of submitted data, each reporting entity shall allow the agency to inspect copies of the medical records that will be submitted by the reporting entity to verify the accuracy of the submitted data. Only the portion of the medical record that pertains to the blood lead testing shall be submitted. The copies of the medical records shall not be recopied by the agency and shall be kept in a locked file cabinet when not being used. After verification of submitted data, the agency shall promptly destroy the copies of the medical records.

R 325.9086 Confidentiality of reports.

Rule 6. (1) The agency shall maintain the confidentiality of all reports of blood lead tests submitted to the agency and shall not release reports or any information that may be used to directly link the information to a particular individual, unless the agency has received written consent from the individual, or from the individual's parent or legal guardian, requesting the release of information.

(2) Medical and epidemiological information that is released to a legislative body shall not contain information that identifies a specific individual. Aggregate epidemiological information concerning the public health that is released to the public for informational purposes only shall not contain information that identifies a specific individual.

R 325.9087 Blood lead analysis report form.

Rule 7. The blood lead analysis report form reads as follows:

MICHIGAN DEPARTMENT OF COMMUNITY HEALTH
BLOOD LEAD ANALYSIS REPORT
DATA/INFORMATION REQUIRED BY ADMINISTRATIVE RULE # R325.9082 AND R 325.9083

PATIENT INFORMATION

To be completed by Parent/Guardian or Patient
PLEASE PRINT

Last Name _____ First Name _____ M. Initial _____

Address – No PO Boxes, please _____ Apt. # _____ City _____ State MI Zip _____

( ) _____ Birthdate (month/day/year) _____ Parent/Guardian Name (please print) _____
Area Code and Phone Number

Race (Check all that apply):
- □ American Indian or Alaskan Native
- □ Asian
- □ Black or African American
- □ Native Hawaiian or Other Pacific Islander
- □ White
- □ Hispanic or Latino
- □ Middle Eastern or Arabic

Sex:
- □ Male
- □ Female

Funding Sources:
- □ Self Pay/Insurance
- □ Medicaid

ID# (Medicaid only): _____

If Patient is an adult (≥ 16 years):

Employer: _____

Social Security #: _____

PROVIDER/PHYSICIAN INFORMATION

To be completed by provider's office

Clinic, Hospital or Agency Name _____ Physician name _____

Mailing Address _____ City _____ State _____ Zip _____

( ) _____ Fax Number _____
Area Code and Phone Number

SPECIMEN COLLECTION INFORMATION

To be completed by person who draws specimen

Specimen Collection Date _____

Source of Specimen □ Capillary □ Venous □ Filter Paper

LABORATORY INFORMATION

To be completed by testing laboratory

Laboratory Name _____ Specimen ID Number _____

( ) _____ Analysis Date _____
Area Code and Phone Number

BLOOD LEAD LEVEL in Micrograms per Deciliter _____ (round to nearest whole number, please)

APPENDIX II

OSHA BLOOD LEAD LABORATORIES*: MICHIGAN

Laboratory Name	City	County
Comprehensive Health Services Inc	Detroit	Wayne
Detroit Health Department**	Detroit	Wayne
DMC University Laboratories	Detroit	Wayne
Hackley Hospital Laboratory	Muskegon	Muskegon
Marquette General Health Systems	Marquette	Marquette
Michigan Department of Community Health	Lansing	Ingham
Mount Clemens General Hospital	Mount Clemens	Macomb
Quest Diagnostics	Auburn Hills	Oakland
Regional Medical Laboratories	Battle Creek	Calhoun
Sparrow Regional Laboratories	Lansing	Ingham
Warde Medical Laboratory	Ann Arbor	Washtenaw

*OSHA approved blood lead laboratories as of March 14, 2006. For a complete listing of OSHA approved blood lead laboratories, visit the OSHA web site at http://www.osha.gov/SLTC/bloodlead/program.html
**New laboratory since the 2004 annual report.

APPENDIX III

SUMMARY OF MICHIGAN'S LEAD STANDARDS

In 1981, under the authority of the Michigan Occupational Safety and Health Act (MIOSHA), Michigan promulgated a comprehensive standard to protect workers exposed to lead in general industry (i.e., R325.51901 - 325.51958). That standard was most recently amended in February, 1998. In October 1993, MIOSHA adopted by reference the federal Occupational Safety and Health Administration's (OSHA) Lead Standard for Construction (i.e., 29 CFR 1926.62). That standard was most recently amended October 18, 1999. Both the MIOSHA Lead Exposure in Construction Standard (Part 603) and the Lead Exposure in General Industry Standard (Part 310) establish an "action level" (30 micrograms of lead per cubic meter of air [ug/m^3] averaged over an eight-hour period) and a permissible exposure limit (50 ug/m^3 averaged over an eight hour period) for employees. Both standards require employers to conduct initial exposure monitoring and to provide employees written notification of these monitoring results. If employee exposure levels exceed the permissible exposure limit (PEL), employees are required to develop a written compliance program that addresses the implementation of feasible engineering and/or work practice controls to reduce and maintain employee exposures below the PEL. The Lead Exposure in Construction Standard (Part 603) also allows the use of administrative controls to achieve this objective. An employer's obligations concerning hygiene facilities, protective work clothing and equipment, respiratory protection, medical surveillance and training under the Lead Exposure in Construction Standard (Part 603) are triggered initially by job tasks and secondarily by actual employee exposure level to lead. Under the Lead Exposure in General Industry Standard (Part 310), these potential obligations are triggered by actual employee exposure levels to lead. Medical surveillance and training are triggered by exposures above the action level (AL), whereas protective clothing and equipment, respiratory protection and hygiene facilities are triggered by exposures above the PEL.

The medical surveillance program requirements for Michigan's Lead Exposure in General Industry Standard (Part 310) versus those required in Lead Exposure in Construction Standard (Part 603) do vary. Under the Lead Exposure in General Industry Standard (Part 310), a medical surveillance program must be implemented which includes periodic biological monitoring (blood tests for lead and zinc protoporphyrin [ZPP] levels), and medical exams/consultation for all workers exposed more than 30 days per year to lead levels exceeding the AL. Under the Lead Exposure in Construction Standard (Part 603), a distinction is made between "initial medical surveillance" (consisting of biological monitoring in the form of blood sampling and analysis for lead and ZPP levels) and secondary medical surveillance (consisting of follow-up biological monitoring and a medical examination/consultation). The initial medical exam is triggered by employee exposure to lead on any day at or above the AL. The secondary medical exam is triggered by employee exposures to lead at or above the AL for more than 30 days in any 12 consecutive months period.

Michigan's Lead Exposure in General Industry Standard (Part 310) mandates that employees exposed at or above the AL must be removed from the lead exposure when:

- A periodic blood test and follow-up blood test indicate that the blood lead level (BLL) is at or above 60 micrograms per deciliter (ug/dL) of whole blood.

- Medical removal is also triggered if the average of the last three BLL or the average of all blood sampling tests conducted over the previous six months, whichever is longer, indicates the employees blood lead level is at or above 50 ug/dL. Medical removal is not required however, if the last blood sampling test indicates a blood lead level at or below 40 ug/dL of whole blood.

- When a final medical determination reveals that an employee has a detected medical condition which places that employee at an increased risk of material impairment to health from the lead exposure.

The Lead Exposure in Construction Standard (Part 603) mandates removal of an employee from a lead exposure at or above the AL when:

- A periodic and follow-up blood test indicates that an employee's BLL is at or above 50 ug/dL; or

- There is a final medical determination that an employee has a detected medical condition which places that employee at an increased risk of material impairment to health from the lead exposure.

When an employee can return to work at their former job also differs by standard. The Lead Exposure in General Industry Standard (Part 310) allows an employee to return to his or her former job status under any of the following circumstances:

- If the employee's BLL was at or above 70 ug/dL, then two consecutive blood tests must have the BLL at or below 50 ug/dL.

- If the employee's BLL was at or above 60 ug/dL or due to an average BLL at or above 50 ug/dL, then two consecutive BLL must be at or below 40 ug/dL.

- For an employee removed due to a final medical determination, when a subsequent medical determination no longer detects a medical condition which places the employee at an increased risk of material impairment to health from exposure to lead.

The Lead Exposure in Construction Standard (Part 603) allows the employer to return an employee to their former job status under these circumstances:

- If the employee's BLL was at or above 50 ug/dL, then two consecutive blood tests must have the employee's BLL at or below 40 ug/dL.

- For an employee removed due to a final medical determination, when a subsequent medical determination no longer has a detected medical condition which places the employee at an increased risk of material impairment to health from exposure to lead.

Both the Lead Exposure in General Industry (Part 310) and Lead Exposure in Construction (Part 603) Standards have a medical removal protection benefits provision. This provision requires employers maintain full earnings, seniority and other employment rights and benefits of temporarily removed employees up to 18 months on each occasion that an employee is removed from exposure to lead. This includes the right to their former job status as though the employee had not been medically removed from the job or otherwise medically limited.

Provisions of Lead Exposure in General Industry (Part 310) and Lead Exposure in Construction (Part 603) Standards

Workers exposed to lead have a right to: an exposure assessment, respiratory protection, protective clothing and equipment, hygiene facilities, medical surveillance, medical removal and training. The triggering mechanisms that activate these rights are primarily based upon employee lead exposure levels. However, under the Lead Exposure in Construction Standard (Part 603), many of these rights are initially triggered by the specific work activity being performed.

Exposure Assessment

Air monitoring must be conducted to determine employee airborne lead exposure levels when a potential lead exposure exists. Under the Lead Exposure in Construction Standard (Part 603), however, specific work activities are identified/categorized that require "interim protection" (i.e., respiratory protection, personal protective clothing and equipment, work clothes change areas, hand washing facilities, biological monitoring and training) until air monitoring has been performed that establishes that these lead exposure levels are within the acceptable limits (AL or PEL).

Respiratory Protection

Respiratory protection is required whenever employee exposure levels exceed the PEL and as an interim control measure under the Lead Exposure in Construction Standard (Part 603). The level of respiratory protection required is dependent upon the actual employee exposure level or by the job activities identified in the Lead Exposure in Construction Standard (Part 603).

Protective Clothing/Equipment

Protective clothing/equipment (i.e., coveralls or similar full body clothing; gloves, hats, shoes or disposable shoe coverlets; and face shield, vented goggles, or other applicable equipment) is required whenever employee exposure levels exceed the PEL and as an interim protection measure under the Lead Exposure in Construction Standard (Part 603).

Hygiene Facilities

Hygiene facilities (i.e., clothing change areas, showers, eating facilities) are required whenever employee exposures to lead exceed the PEL. Except for shower facilities, these same hygiene facilities must be provided as interim protection under the Lead Exposure in Construction Standard (Part 603). The construction employer must, however, provide hand washing facilities in lieu of the shower facility as an interim protection.

Medical Surveillance

Medical surveillance (i.e., medical exam and consultation) is required when workers are exposed to lead at or exceeding the AL for more than 30 days a year. Biological blood sampling and analysis to determine lead and ZPP levels is required initially under the Lead Exposure in Construction Standard (Part 603) when employee lead exposure is at or exceeds the AL on any single day. Under the Lead Exposure in General Industry Standard (Part 310), it is required when employees are exposed to concentrations of airborne lead greater than the A.L. for more than 30 days per year.

Medical Removal

Workers covered by the Lead Exposure in General Industry (Part 310) Standard have the right to be removed from airborne lead exposures at or above the AL when their periodic and follow-up blood lead level is at or above 60 ug/dL or when an average of the last three blood lead levels or the average of all blood sampling tests conducted over the previous six months, whichever is longer, indicates the employee blood lead level is at or above 50 ug/dL. However, under this later removal criteria, they are not required to be removed if the last blood sampling test indicates a blood lead level at or below 40 ug/dL.

Workers covered by the Lead Exposure in Construction Standard (Part 603) have the right to be removed from airborne lead exposures at or above the AL on each occasion that a periodic and follow-up blood sample test indicate that the employee's blood lead level is at or above 50 ug/dL.

Under both the Lead Exposure in General Industry (Part 310) and Lead Exposure in Construction (Part 603) Standards, workers also have the right to be removed from airborne lead exposures at or above the AL whenever there is a final medical determination that has detected that they have a medical condition that places them at an increased risk of material impairment to health from exposure to lead.

Training

Under the Lead Exposure in General Industry Standard (Part 310), employees exposed to any level of airborne lead must be informed of the contents of appendices A and B from that standard.

Under both the Lead Exposure in General Industry (Part 310) and Lead Exposure in Construction (Part 603) Standards, employees who are exposed at or above the AL on any day or who are subject to exposure to lead compounds which may cause skin or eye irritation must be provided comprehensive training covering all topics specified in those standards.

Also, under the Lead Exposure in Construction Standard (Part 603), employees involved in any of the specified work activities requiring interim controls, must receive training prior to initiating those activities that addresses the recognition and avoidance of unsafe conditions involving lead and the specific regulations applicable to the worksite that have been established to control or eliminate the hazards associated with exposure to lead.

APPENDIX IV

MMWR Weekly
August 18, 2006 / 55(32);876-879

Adult Blood Lead Epidemiology and Surveillance --- United States, 2003--2004

Since 1994, CDC's state-based Adult Blood Lead Epidemiology and Surveillance (ABLES) program has been tracking laboratory-reported blood lead levels (BLLs) in U.S. adults. A national public health objective for 2010 (objective 20-7) is to reduce the prevalence of BLLs ≥25 µg/dL among employed adults to zero (*1*). A second key ABLES measurement level is a BLL ≥40 µg/dL, the level at which the Occupational Safety and Health Administration (OSHA) requires workers to have an annual medical evaluation of health effects related to lead exposure (*2*,*3*). A previously published ABLES report provided data collected from 35 states during 2002 (*4*). This report summarizes ABLES data collected from 37 states* during 2003--2004 and compares them with annual data collected since 1994. The findings indicated that the national rate of adults with elevated BLLs (i.e., ≥25 µg/dL) declined from 2002 to 2003 and declined further in 2004. Projections using 1994--2004 ABLES data trends indicate that the national prevalence rate of adults with BLLs ≥25 µg/dL will be approximately 5.7 per 100,000 employed adults in 2010. Increased prevention measures, particularly in work environments, will be necessary to achieve the 2010 objective of reducing this rate to zero.

Changes in Methods

This report reflects three changes in ABLES analytic methods. First, state rates for persons with elevated BLLs now focus on residents of the states reporting them; previously, state rates were for state residents and nonresidents combined. Second, the annual national prevalence rate was calculated using the combined number of persons with elevated BLLs from all 37 states divided by the combined employed populations of those states; previously, the average state rate was presented as the national rate. Third, the denominators used in state and national rate calculations were determined using updated Bureau of Labor Statistics estimates† for employed populations aged ≥16 years in the reporting states during 1994--2004.

National Magnitude and Trend

During 2003 and 2004, totals of 9,884 and 9,170 resident adults, respectively, were reported with BLLs ≥25 µg/dL from 37 states. During 2002, a total of 9,915 resident adults had been reported with BLLs ≥25 µg/dL from 35 states. To compare yearly state rates, the numbers of resident adults with elevated BLLs from each state were divided by the state's annual resident employed population aged ≥16 years. The combined state numerators and denominators were then used to calculate the national prevalence rate. The national rate in 2003 for resident adults was 8.2 per 100,000 employed population aged ≥16 years and, in 2004, it declined to 7.5 per 100,000 (Figure 1). The rate in 2003 was 4% lower than in 2002 (8.5 per 100,000); the 2004 rate was 9% lower than in 2003. A total of 1,649 resident adults (1.4 per 100,000) with BLLs ≥40 µg/dL were reported in 2003, and 1,425 (1.2 per 100,000) were reported in 2004. This rate represents a 7% decrease from 2002 (1.5 per 100,000) to 2003 and a further decrease of 14% from 2003 to 2004.

Occupational Sources of Exposure

During 2003--2004, a total of 32§ of the 37 states reporting through ABLES provided North American Industry Classification System or Standard Industrial Classification (SIC) codes for 6,640 (67%) and 6,686 (73%) resident

adults with BLLs ≥25 µg/dL, respectively, who were identified as exposed to lead via occupational sources. Ninety-four percent of adults with identified lead-exposure sources were exposed via occupational sources. During 2003--2004, the industry sectors with the highest annual average numbers of resident adults with elevated BLLs were manufacturing, 4,622 (69%); construction, 1,252 (19%); and mining, 488 (7%). The specific industries with the highest numbers were manufacture of storage batteries, 2,499; painting, paperhanging, and decorating, 626; and mining of lead ores, 482 (Table).

Nonoccupational Sources of Exposure

The same 32 states that provided industry codes also provided sources for 442 and 400 resident adults with BLLs ≥25 µg/dL in 2003 and 2004, respectively, who were identified as exposed to lead via nonoccupational sources. During 2003--2004, nonoccupational sources represented 6% of the annual average of 7,084 resident adults with BLLs ≥25 µg/dL and identified sources of exposure. Among those exposed to nonoccupational sources, an annual average of 23% were exposed from shooting firearms, 13% from remodeling or renovation activities, 11% from hobbies (e.g., casting, ceramics, or stained glass), 5% from retained bullets or gunshot wounds, and 3% from pica (i.e., an abnormal craving or appetite for nonfood substances such as dirt, paint, or clay), ingesting lead-contaminated food or liquids, or ingesting traditional or folk medicines; another 3% were retired (and probably were former lead workers), and 36% were determined to have nonoccupational exposure from unknown sources.

Distribution by State

For resident adults with BLLs ≥25 µg/dL, 29 of 37 states reported average prevalence rates of <10 per 100,000 employed population aged ≥16 years during 2003--2004 (Figure 2). Rates ranged from 0.4 per 100,000 in Hawaii to 36.6 in Kansas. Twenty-six of the 35 states that reported BLLs both in 2002 and during 2003--2004 reported the same or lower rates during 2003--2004; nine reported higher rates. For resident adults with BLLs ≥40 µg/dL, 23 of 35 states reported the same or lower rates during 2003--2004; 12 reported higher rates. State rates ranged from zero cases per 100,000 in Alaska and Hawaii to 9.1 in Alabama.

Reported by: *RJ Roscoe, MS, JR Graydon, Div of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC.*

Editorial Note:

ABLES data for 2003 and 2004 indicate that the national prevalence rate of elevated BLLs in adults continued to decrease, as it has overall since 1994 (Figure 1). Part of this decrease likely is the result of improved prevention measures, but the decrease also might have resulted partly from a decline in the number of high-risk manufacturing jobs or decreased employer compliance with testing or reporting requirements.

Changes in methods since the previous ABLES report have resulted in differences in certain national prevalence rates reported previously (*4*). For state rates, numerators now include only state residents because only resident employed adults aged ≥16 years are counted in the denominators. During 1994--2001, ABLES data were not reported separately for residents and nonresidents. Annual national rates now consist of the combined numerators and denominators for all states that reported to ABLES in the respective years. This method weights data from states reporting many adults with elevated BLLs and large employed populations more heavily than small states reporting few adults. Previously, the national rate was the average of state rates, which weighted the rate from each state equally. Differences occurred between the lower rates for residents and the higher rates for residents and nonresidents combined during 2002--2004 (Figure 1). The difference between the lower rates for combined numerators and denominators and the higher rates for the average state averaged 8.6% during 1994--2004.¶

The findings in this report are subject to at least three limitations. First, the number of adults with elevated BLLs reported by ABLES is underreported because not all employers provide BLL testing to all lead-exposed workers as required by OSHA regulations and because some laboratories might not report all tests as required by state regulations. In addition, these factors likely vary among the 37 participating states. This limitation might be especially important with regard to the storage battery industry, which appears to be more thorough in BLL testing and reporting of its lead-exposed workers than other industries with lead-exposure risk such as the construction

industry. Kansas had the highest rate of adults with BLLs ≥25 µg/dL, which might indicate a more severe problem with lead exposures but more likely reflects a substantial number of workers in the storage battery industry in Kansas and the standards for BLL reporting in that industry. Second, using the employed population aged ≥16 years as the denominator excludes unemployed adults; however, most of these persons have little or no risk for lead exposure, according to state ABLES reports. Finally, because the distribution of jobs that include lead exposure varies among ABLES states, caution should be exercised in comparing state rates.

Despite improvements, exposure to lead remains a substantial (largely occupational) health problem in the United States. The ABLES program continues to enhance surveillance for BLLs by increasing the number of participating states, identifying the sources of persistent exposures, and helping states focus their intervention, education, and prevention activities. To assist states in decreasing elevated BLLs, OSHA has a national program** to reduce workplace lead exposures among all U.S. workers. If the 2010 national health objective for adult lead exposures is to be met, current activities should continue, the ABLES states should implement more effective intervention activities, and employers in the lead industry should do all that is feasible to reduce workplace exposures to lead.

Acknowledgments

This report is based, in part, on data contributed by ABLES state coordinators.

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3. US Department of Labor, Occupational Safety and Health Administration. Lead exposure in construction---interim rule. Federal Register 1993;58:26590--26649 [29 CFR § 1926.62].
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* Alabama, Alaska, Arizona, California, Connecticut, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Washington, Wisconsin, and Wyoming.

† Available at http://www.bls.gov/data.

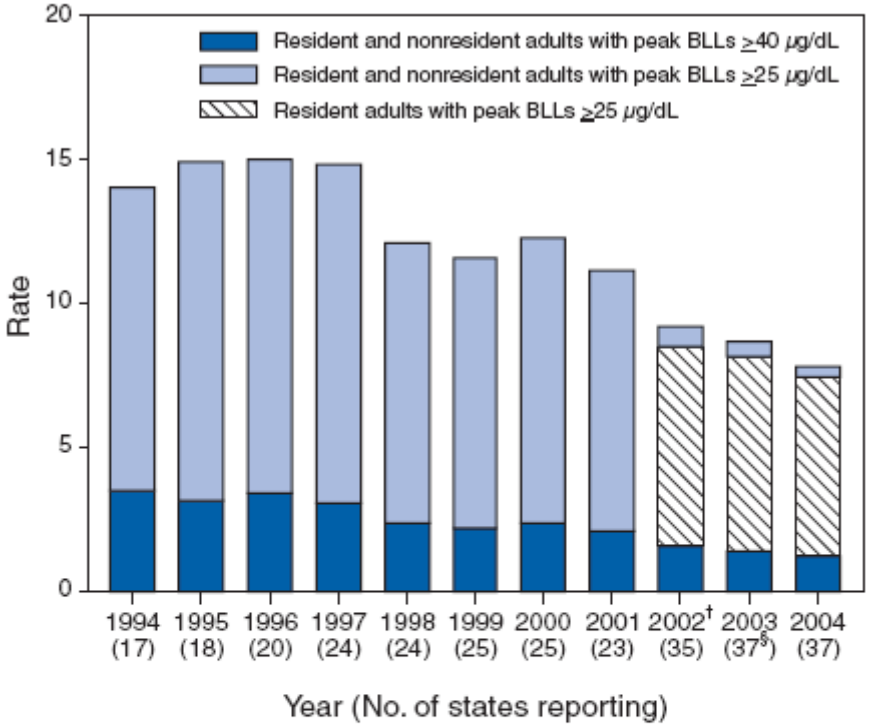
§ Alaska, Arizona, California, Connecticut, Florida, Georgia, Hawaii, Illinois, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Texas, Utah, Washington, and Wisconsin.

¶ Additional information regarding interpretation of specific state ABLES data, definitions, and rate calculations is available at http://www.cdc.gov/niosh/topics/ABLES/ables.html.

** Information available at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=2572.

Figure 1

FIGURE 1. Prevalence rates* of adult elevated blood lead levels (BLLs), by year — Adult Blood Lead Epidemiology and Surveillance (ABLES) program, United States, 1994–2004



* Per 100,000 workers aged ≥16 years. Estimates based on 2005 U.S. Department of Labor, Bureau of Labor Statistics Current Population Survey (available at http://www.bls.gov/data).

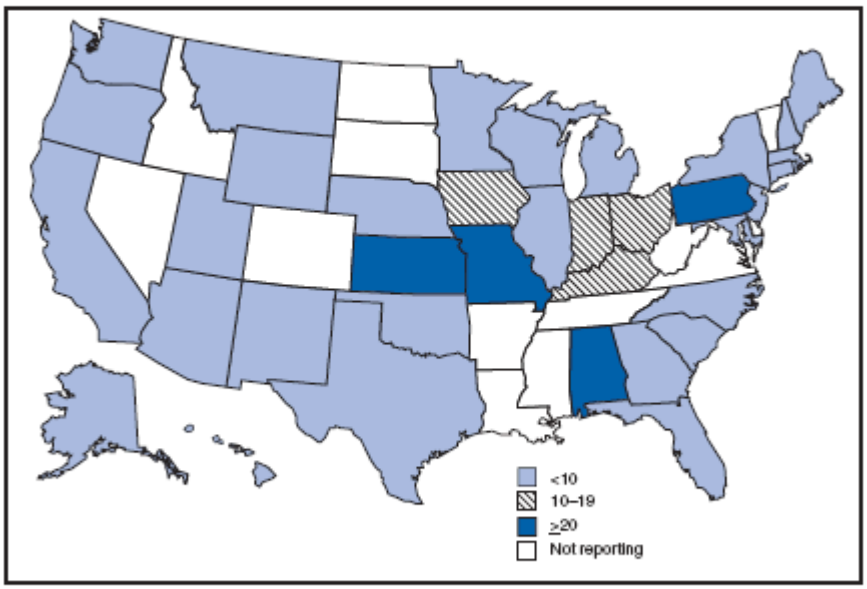
† During 1994–2001, ABLES states did not report residents and nonresidents separately; thus, only combined rates are available. During 2002–2004, ABLES states did report residents and nonresidents separately; thus, both the resident rate and resident plus nonresident rate are indicated for those years. The resident plus nonresident rate is included for comparison with the earlier years.

§ Alabama, Alaska, Arizona, California, Connecticut, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Washington, Wisconsin, and Wyoming.

Return to top.

Figure 2

FIGURE 2. Prevalence rates* for resident adults with peak blood lead levels ≥25 µg/dL, by state — Adult Blood Lead Epidemiology and Surveillance program, United States, 2003–2004 annual average



* Per 100,000 workers aged ≥16 years. Estimates based on 2005 U.S. Department of Labor, Bureau of Labor Statistics Current Population Survey (available at http://www.bls.gov/data).

Return to top.

Table

TABLE. Industries reporting the highest number of resident workers aged ≥16 years with elevated blood lead levels (BLLs) — Adult Blood Lead Epidemiology and Surveillance program, United States, 2003–2004 annual average*

Industry	Total no. of workers with elevated BLLs (≥25 µg/dL)	No. of workers with BLLs ≥40 µg/dL (% of total with elevated BLLs)
Manufacture of storage batteries (SIC† 3691, NAICS§ 335911)	2,499	147 (6)
Painting, paperhanging, and decorating (SIC 1721, NAICS 238320)	626	156 (25)
Mining of lead ores (SIC 1031, NAICS 212231)	482	94 (20)
Secondary smelting (SIC 3341, NAICS 331492)	300	39 (13)
Bridge and tunnel construction (SIC 1622, NAICS 237310)	211	45 (21)
Manufacture of primary batteries (SIC 3692, NAICS 335912)	210	39 (19)
Primary smelting (SIC 3339, NAICS 331419)	200	26 (13)
Lead paint removal (SIC 1799, NAICS 562910)	160	40 (25)
Copper foundries (SIC 3366, NAICS 331525)	114	21 (18)
Roll and draw nonferrous metals (SIC 3356, NAICS 331491)	90	16 (18)

* Based on 32 states reporting (Alaska, Arizona, California, Connecticut, Florida, Georgia, Hawaii, Illinois, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Texas, Utah, Washington, and Wisconsin).
† Standard Industrial Classification.
§ North American Industry Classification System.

Return to top.

**Questions or messages regarding errors in formatting should be addressed to mmwrq@cdc.gov.

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APPENDIX V

Narratives of Thirteen Individuals with a Blood Lead Level of ≥ 50 μg/dL in 2005

Work-Related (9)

Non-Ferrous Foundries (SIC 336) (5)

1. A male in his 40s had blood lead testing as part of a company medical screening, which was begun after a MIOSHA inspection that had been initiated by his elevated blood lead in the previous year. His results were 71 μg/dL and 68 μg/dL. After a blood lead result of 65 μg/dL in 2004 which was ordered by his personal physician, he denied lead-related health symptoms. He was not interviewed after the two higher blood leads. He denied any lead-related recreational activities. He worked at a small foundry pouring brass/bronze (5-9% lead) for the past eighteen years. He reported that the foundry did not have separate lockers to separate work clothes from street clothes, he did not wear a respirator and he had never had any medical monitoring. He did indicate that there were showering facilities at work, coveralls were provided, and a lunch room available. Previously, he was not removed from the job. He was a non-smoker. Eight-hour time-weighted average (TWA) results for lead indicated levels of 130, 200, 780, 500 and 380 mg/m^3 of air compared to the allowable limit of 50 mg/m^3.

2. A male in his 30s had blood lead testing as part of a company medical screening, which was begun after a MIOSHA inspection initiated by the elevated blood lead found in Case #1, during 2005 ranging from 36 to 61 μg/dL. He worked for the same foundry as Case #1. To date, we have been unable to contact him.

3. A male in his 40s had blood lead testing as part of a company medical screening, which was begun after a MIOSHA inspection initiated by the elevated blood lead found in Case #1, during 2005 ranging from 35 to 60 μg/dL. He worked for the same foundry as Case #1. To date, we have been unable to contact him.

4. A male in his 60s had blood lead testing as part of a company medical screening at a brass/aluminum foundry during 2005 ranging from 45 to 58 μg/dL. He has had elevated blood lead levels since 2000. Previously he reported frequent pain/soreness in joints, exhaustion, and sleeplessness. He also reported outdoor firearms activity for the majority of his life. He denied any other lead-related recreational activities. Previously, he reported no lockers to separate work clothes from street clothes, work clothes were washed at home, no showering facilities were provided, and no lunch room provided. He reported wearing a respirator for half an hour per day. He was not previously removed from the job because of elevated lead levels. He was a non-smoker. There were children under the age of six spending time in his home, however, they were not tested for lead.

5. A male in his 60s had blood lead testing as part of a company medical screening during 2005 ranging from 26 to 50 μg/dL. He has had elevated blood lead levels since 1998. He worked for the same brass/aluminum foundry as Case #4.

Painting and Paper Hanging (1721) (2)

6. A male in his 20s had blood lead testing as part of a company medical screening during 2005 of 50 μg/dL. He denied any lead-related symptoms and any lead-related recreational activities. He worked as a sandblaster/painter for a company that primarily works on water towers. He reported that the company did provide separate lockers for work clothes and street clothes, showering facilities, and lunch room. He wore a respirator four hours per day. He reported never being removed from job because of elevated lead levels. He was a smoker.

7. A male in his 20s had blood lead testing in 2005 of 36 and 50 μg/dL. He has had elevated blood lead levels since 2004. He was a self-employed painter. Educational materials for painters/renovators were mailed.

Amusement and Recreation (SIC 7999) (1)

8. A male in his 40s requested a blood lead test from his physician. Results in 2005 were 51 μg/dL and 33 μg/dL . He reported headaches, exhaustion, irritability, and hearing loss. He denied any lead-related recreational activities. He has worked for a firearms gallery for the past three years. He reported that the firearms gallery did not provide lockers to separate work clothes from street clothes, work clothes were washed at home, no showering facilities were provided, and he did not wear a respirator. He had not been removed from the job because of elevated lead levels. He was a non-smoker.

Public Safety (SIC 9221) (1)

9. A male in his 50s had a blood lead test as part of a company medical screening program. Multiple tests in 2005 resulted in blood lead results ranging from 13 μg/dL to 50 μg/dL. He has had elevated blood lead levels since 2001. He previously reported frequent pain/soreness in joints, muscle weakness, exhaustion, nightmares, and difficulty concentrating. He denied any lead-related recreational activities. He has been in public safety since the late 1970s. He reported that the police department did not have separate lockers to separate firearms-related work clothes from street clothes, work clothes were washed at home, no showering facilities were provided, no lunch room was provided, and he did not wear a respirator. He denied smoking cigarettes while at the firearms range. He was sent educational materials on lead hazards at indoor firing ranges.

Non-Work, Hobby: Firearms (2)

10. A male in his 40s had two blood lead tests in 2005 of 31 and 54 μg/dL, ordered by his physician. He had been going to firing ranges for the last five years and also reloads his own ammunition approximately two times per week. He was sent educational materials on lead hazards at indoor firing ranges.

11. A male in his 60s requested a blood lead test from his physician. Multiple test results in 2005 ranged from 19 to 50 μg/dL. He reported dizziness, exhaustion, difficulty concentrating, anemia, high blood pressure, and hearing loss. He indicated that he had been a weekly volunteer firearms instructor on indoor and outdoor ranges for the past two years. He also indicated that he had provided firearms instruction for a security guard agency in the past. He was sent educational materials on lead hazards at indoor firing ranges.

Non-Work, Environment (1)

12. A Hispanic male in his late teens was referred for blood lead testing by the public school nurse. Multiple test results in 2005 ranged from 16 to 59 μg/dL; in 2004 ranged from 12 to 26 μg/dL; and in 2003 ranged from 23 to 42 μg/dL. He reported weight loss, decreased appetite, exhaustion, and nervousness. It was noted that he was anemic and had low iron levels. He denied any lead-related hobbies or work. He was a non-smoker. A home inspection was conducted and the current residence was lead-free. It was concluded that the previous residence was the source of exposure as the teen was seen to be eating paint chips, soil, and dry cement that was laying around in old cement bags. He received chelation and his levels have been decreasing. One child, under the age of six who lived in the same household, was found to have elevated lead levels and was treated.

Non-Work, Attempted Suicide (1)

13. A male in his 40s received emergency blood lead testing after ingesting lead monoxide powder. His initial blood lead result was 477 μg/dL. He was given charcoal in the emergency room and started on IV chelation. He had no changes in his mental status. He denied any lead-related symptoms, including: nausea, vomiting, abdominal pain, diarrhea, chest pain, or visual symptoms. The diagnosis, after psychiatric consultation, was adjustment disorder with disturbance of emotional conduct, alcohol and marijuana use and nicotine dependence. Subsequent blood lead testing resulted in values of 230, 38, 8, and 10 μg/dL during a one month period. He was admitted to a hospital and released in stable condition three days later.