NOTE: This report was originally published in July 2017. The March 2018 version contains a correction to county-level 2012 data.

Statewide Blood Lead Surveillance Report

March 2018

Kansas Department of Health and Environment

Environmental Public Health Tracking

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Foreword

There are an estimated half million children in the United States under age 6 with a blood lead level of 5 micrograms per deciliter (µg/dL) or greater, which is considered an elevated level of blood lead (1). The effects of lead exposure, particularly in children, result in costs to individuals and society. Blood lead poisoning can be prevented by removing the source of lead exposure in a child's environment. Making a child's environment safer and healthier begins with having the data necessary to understand the problem. Adults may also have elevated blood lead levels which can impact health, particularly if they have an occupation or hobby that may exposure them to lead.

Screening for blood lead helps to detect lead exposure to a child earlier and find and remove the source of lead exposure sooner. Although children and adults are not universally screened for lead, data from those that are screened helps to create baseline measurements for those with elevated blood lead nationally and in Kansas. This document presents data that describe the status of lead screening and elevated blood lead throughout Kansas for children and adults. The data are from 2000-2014, the most recent data available for Kansas for blood lead surveillance.

Acronyms and Abbreviations

ABLES	Adult Blood Lead Epidemiology and Surveillance
BLL	Blood Lead Level
CDC	Centers for Disease Control and Prevention
EBLL	Elevated Blood Lead Level
KDHE	Kansas Department of Health and Environment
NHANES	National Health and Nutrition Examination Survey
NIOSH	National Institute for Occupational Safety and Health
PEHSU	Pediatric Environmental Health Specialty Unit
µg/dL	Micrograms per deciliter (unit used to measure the amount of lead in the blood)

Summary

This Statewide Blood Lead Surveillance Report describes trends in lead testing and rates of elevated blood lead among children and adults in Kansas between 2000 and 2014.

The number of children being tested for blood lead since 2000 has generally increased, although in the years since 2011 there has been a substantial decrease in the number of children tested. The number of children under 6 years of age with EBLLs of 10 micrograms per deciliter (µg/dL) or higher has generally increased and decreased over the past 15 years, but numbers in 2014 are similar to those in 2000. Over the past 15 years, less than 15 percent of children are screened for blood lead each year leaving much unknown about the true burden of blood lead poisoning in the state. The most common source for lead exposure in children in Kansas is lead-based paint in older housing.

Adults in Kansas have consistently had higher rates of elevated blood lead than national rates. The majority of adult blood lead exposure is from occupational settings; Kansas has a number of industries with the potential for lead exposure.

In March 2017, the Kansas Department of Health and Environment (KDHE), in partnership with stakeholders and local health departments, updated the Disease Investigation Guidelines for elevated blood lead in children and adults in Kansas. A brief description of some of the updated guidelines for case investigation and management are presented in this report.

Lead Poisoning

Lead is a naturally occurring metal found in the Earth's crust. Lead in our environment often comes from human activities such as burning fossil fuels, mining, and manufacturing. Lead is also found in homes that were built before 1979. Lead-based paint was banned for residential use in the United States in 1978, but homes built before this ban commonly have lead-based paint which deteriorates into lead contaminated dust. In the United States, lead-based paint is the most common source of exposure for lead poisoning in children. Workplace-related lead exposure is the most common source for adult lead poisoning in the United States.

Lead primarily enters the body through ingestion. This can occur through eating contaminated food or water, eating paint chips, or a child putting contaminated toys and other objects into their mouths. Lead can also be inhaled, or breathed in, and in rare cases can enter the body through the skin. Lead is toxic and elevated levels of blood lead in early childhood may cause lowered IQ, learning disabilities, behavior problems, or developmental delay (2). These symptoms may not be noticed until a child has entered school.

Certain populations are more vulnerable to lead poisoning than others. Children are at particularly high risk because their brains are still developing and they absorb more lead into their blood than adults (3). Children also tend to have high risk behaviors such as putting potentially contaminated objects in their mouths. Pregnant women are also a vulnerable group because lead can travel to the developing fetus (2). Children enrolled in an assistance program, such as Medicaid, may be at a higher risk because they are more likely to live in older housing that may contain lead-based paint. Refugees and immigrants are also at high risk for lead poisoning; many have had lead exposure in their home countries and continue to be exposed by living in older housing when they move to the United States.

Defining Elevated Blood Lead Levels

The Centers of Disease Control and Prevention (CDC) previously used the value of 10 micrograms of lead per deciliter of whole blood (µg/dL) as their “level of concern” to identify children with high levels of blood lead. In 2012, CDC began using the reference value of 5 µg/dL to identify children who have had lead exposure and require monitoring (4,5). This reference value is based on data from the National Health and Nutrition Examination Survey (NHANES) and is updated every 4 years. Now, children with blood lead levels between 5 µg/dL and 10 µg/dL should be identified as having lead exposure which allows parents, doctors, communities, and public health to work together to reduce a child’s lead exposure earlier. Treatment for blood lead poisoning consists of chelation therapy and is only recommended if a child has a test result of 45 µg/dL or higher (4). The primary focus is on preventing lead exposure, and in the case where lead exposure has occurred, to identify the source and stop lead from entering the body.

Economic Burden of Lead

Elevated levels of blood lead in early childhood may cause lowered IQ, learning disabilities, behavior problems, slowed growth, and developmental delay (2). It is possible for lead to affect nearly every body system. No amount of lead exposure is considered safe, particularly in children because their brains are still developing and they absorb more lead into their blood than adults. When a child has lead exposure, the aforementioned effects can lead to additional future costs to individuals and society associated with special education, decreased earning potential, and criminal behavior as well as immediate costs associated with health care for treatment for lead poisoning and remediation of an environment exposing a child to lead.

Approximately 10 percent of children with a BLL above 10 µg/dL and 20 percent of children with a BLL above 25 µg/dL need special education (6,7). The average annual cost of special education is estimated at $14,317 per child (8). It is estimated that for each 1 µg/dL increase in BLL, a child's IQ decreases by 0.23-0.46 points (9). With each one IQ point lost, it is approximated that the reduction in lifetime earnings is $17,815 (10). There are certain violent crimes that are linked to excessive lead exposure (7). It is estimated that nationally, a decrease of 1 µg/dL in the overall average pre-school BLL would lead to a decrease in crimes associated with lead exposure decreasing costs associated with these crimes (Table 1) (10). These costs include costs of legal proceedings, incarceration, and lost earnings.

Table 1. Estimated annual reduction in lead linked crime from 1 µg/dL reduction in average pre-school blood lead level

Crime	Number of Lead Linked Crimes, Nationally	Direct Costs Per Crime	Total Direct Costs
Burglaries	116,541	$4,010	$467,329,410
Robberies	2,499	$22,871	$57,154,379
Aggravated Assaults	53,904	$20,363	$1,097,628,286
Rape	4,186	$28,415	$118,945,567
Murder	717	$31,110	$22,305,512
Total	177,847		$1,763,363,153

Source: Table derived from Gould, 2009 (10). Statistics calculated using Bureau of Justice Statistics (2004), inflated to 2006 USD and Nevin R. Understanding international crime trends: the legacy of preschool lead exposure. Environmental Research. 2006;104:315-336.

Health care for a child with elevated lead levels can include lab testing, monitoring of lead levels, follow-up appointments, home inspections, and even chelation therapy. In these health care related costs, a BLL of 10-20 µg/dL costs approximately $74 per child, a BL of 20-45 µg/dL costs approximately $1,027 per child, a BLL of 45-70 µg/dL costs approximately $1,335 per child, and a BLL of over 70 µg/dL costs approximately $3,444 per child (10). Decreasing lead in a child's environment can cost up to an estimated $10,800 per house to complete assessments and full abatement of lead-based paint hazards, as well as up to an estimated $16,660 per house for lead-safe window replacement (10,11). Cost-effectiveness of lead hazard control has been estimated and supports that there is greater benefit in lead hazard control (Table 2) (10). The benefits of lead hazard control include the sum of costs of medical treatment, lost earnings, tax revenue, special education, lead-linked ADHD cases, and lead-linked crime (10).

Table 2. §Costs and benefits of lead control

	Conservative Estimate
Total Benefit From Lead Reduction	$192.38
Total Cost of Lead Control	$11.02
Total Net Benefit	$181.37

§ Costs and benefits are in billions of 1996 dollars.
Source: Table derived from Gould. 2009 (10).

Blood Lead Screening and Testing Guidelines

The American Academy of Pediatrics recommends testing children at risk for lead exposure at 12 and 24 months of age (12). Factors that increase the risk of lead exposure in children include living in or frequently visiting a home, daycare or other building built before 1978, living in or frequently visiting a home, daycare or other building with ongoing repairs or remodeling, eating or chewing on non-food items like paint chips or dirt, having a family member or friend with an elevated blood lead level, being a newly arrived refugee or foreign adoptee, coming into contact with an adult whose job or hobby involves lead exposure, and the use of products such as pottery, health remedies, spices or food from other countries that may contain lead. Blood lead testing is required at 12 and 24 months for all Medicaid-enrolled children, regardless of known lead exposure risk (5). The Advisory Committee on Childhood Lead Poisoning Prevention, a CDC advisory committee, additionally recommends at least one blood lead test between the ages of 12 and 24 months, regardless of insurance status, and that all children $\leq$ 72 months (less than 6 years) should be tested if they had not been tested at a younger age, although KDHE does not have an official recommendation for lead screening at this time (5).

If a child's blood lead test result is elevated (5 µg/dL or greater), a confirmation test via venous draw will be requested if the initial test was from a capillary sample. The confirmation test must be completed within 12 weeks of the first test.

Elevated Blood Lead Case Investigation and Management

If a child under the age of 16 years has a confirmed blood lead level of 5 µg/dL or greater, case investigation and management begins. Case investigation and management responsibilities primarily lie with the local health department in the county where the child resides, in partnership with the provider and family.

The algorithm for elevated blood lead case investigation and management was developed by a workgroup of KDHE and local health department partners. Case investigation includes conducting a short interview, or in some cases an in-home investigation, to determine the source or sources of lead exposure. The results of the investigation, as well as education, are offered to providers and parents to help stop the source(s) of exposure from entering the child's body. Case management includes recommended retesting to ensure that blood lead levels are decreasing over time. A case of EBL in a child is closed once the child has two non-elevated blood lead levels within a 12 week time period.

Data Notes

Kansas Statutes Annotated (KSA) 65-1,200 through 65,1,214 authorize the Secretary of the Kansas Department of Health and Environment (KDHE) to investigate the extent of childhood lead poisoning in Kansas and to develop a data management system designed to collect and analyze information on childhood blood lead poisoning. The Bureau of Epidemiology and Public Health Informatics, housed within KDHE, maintains a database of blood lead test results for tests administered on children and adults living in Kansas. Kansas Administrative Regulation (KAR) 28-1-18 specifies that laboratories must report the results of all blood lead test results to KDHE. Analysis of the blood lead test results within the database helps to improve knowledge about the environmental factors contributing to lead exposure among Kansans.

Universal lead testing is not mandated in Kansas; therefore, the data in this report represent varying lead testing practices by providers and local health departments throughout the state and cannot be used to interpret incidence or prevalence for the overall population of children or adults living in Kansas or to interpret incidence or prevalence at the county level.

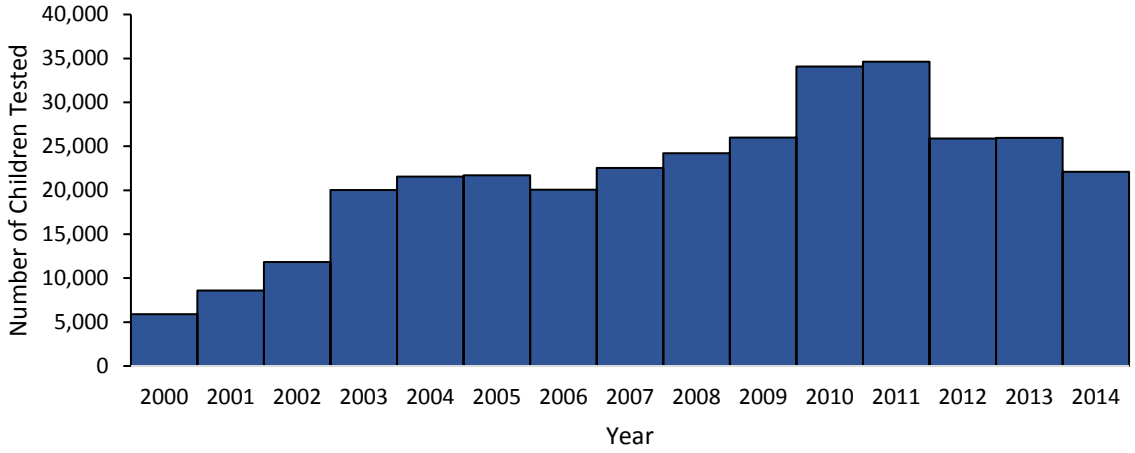
The quality of blood lead testing information reported from labs can vary. Addresses of children tested are not always included in the information reported, which does not allow us to determine the county of residence of children without address information reported. In some years, addresses are missing as much as 25% of the time. Because of this, county-level counts of children tested are often underestimated. There also may be an overall underreporting of children tested for blood lead, both at the state and county-level, due to some lab test results not being reported to KDHE.

While writing this report, KDHE became aware of missing non-elevated testing data from a major laboratory in Kansas. This missing information affects testing rates by state and county, but does not affect count data for elevated blood lead. KDHE is working to incorporate the missing data and will update the Kansas Environmental Public Health Tracking portal as the data become available.

Blood Lead Levels in Kansas Children

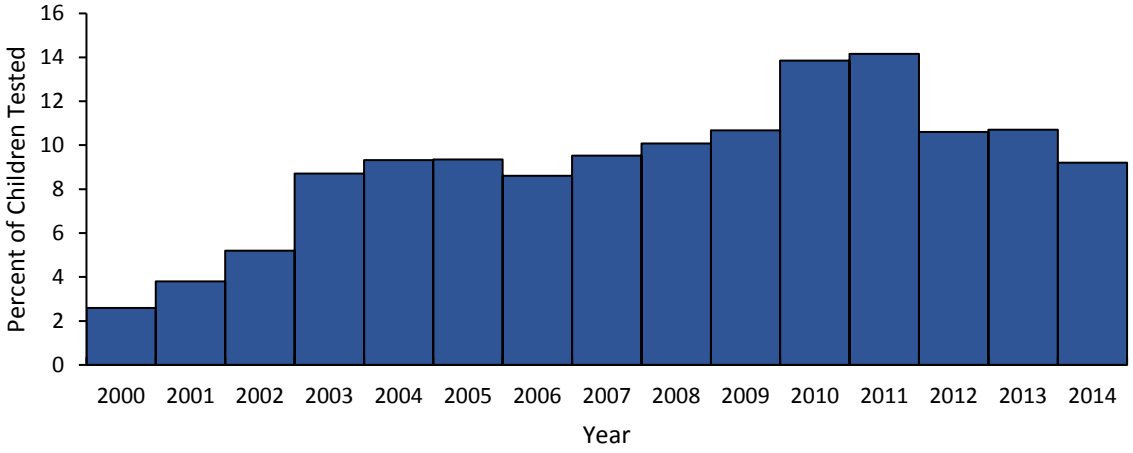
Generally, the number of children under age 6 years that have been tested for blood lead has increased in Kansas since 2000, though testing peaked in 2011 with 34,621 individual children tested (Figure 1). The number of children tested in Kansas has been on a downward trend since 2011. Similarly, the overall proportion of children under age 6 that are tested for blood lead has generally increased since 2000 with a decrease in testing since 2011 (Figure 2).

Figure 1. Number of children† tested for blood lead, Kansas 2000-2014



† Children under age 6
Source: Kansas Environmental Public Health Tracking Program. Available from: https://keap.kdhe.state.ks.us/Ephtm/.

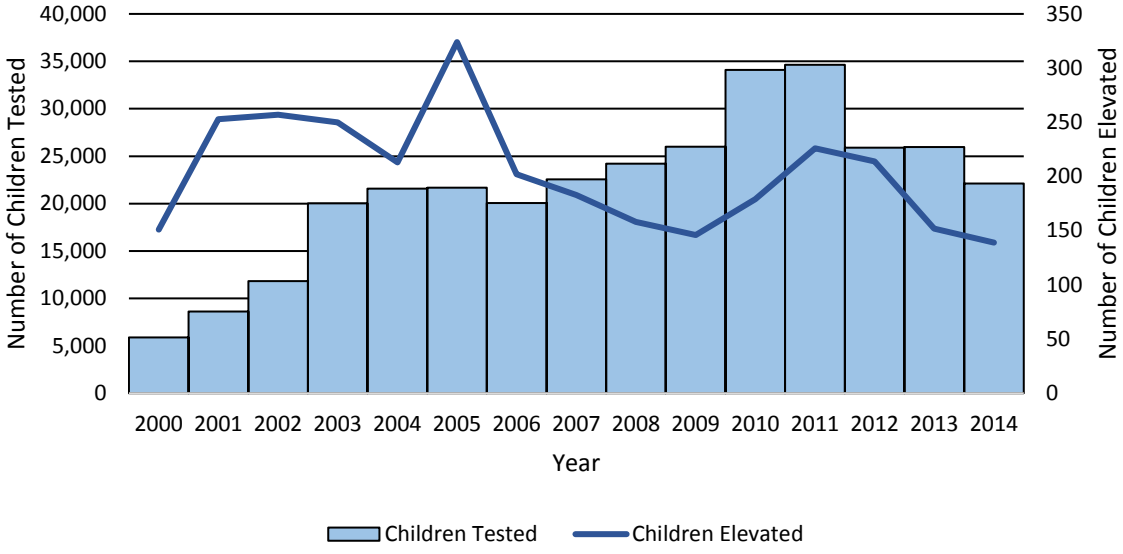
Figure 2. Percent of children† tested for blood lead, Kansas 2000-2014



† Children under age 6
Source: Kansas Environmental Public Health Tracking Program. Available from: https://keap.kdhe.state.ks.us/Ephtm/.

In Kansas, the number of children under age 6 years with blood lead levels of 10 µg/dL or higher has increased and decreased over the past 15 years, but in general the number in 2014 is similar to the number in 2000 (Figure 3). While the number of children with confirmed elevated blood lead is similar in 2000 and 2014, the number of children screened for blood lead is quite different making comparisons between the years difficult. Among children tested for blood lead, the number of children under age 6 years with a confirmed blood lead level of 10 µg/dL or greater is higher in 2011 than the years following. It is difficult to compare these raw numbers across years due to the varying number of individual children that were screened for blood lead each year because children in Kansas are not universally screened for lead. Although there is a decrease in the number of children with a confirmed blood lead level of 10 µg/dL or greater in 2013 and 2014, this does not necessarily indicate a decrease in elevated blood lead across the state because these years also saw a general decrease in the number of children screened for blood lead compared to the previous couple of years. This information for Kansas at the county level for years 2012-2014 can be found in Appendices A through C. Final calculations for children with EBLL are not yet available for 2015 and 2016.

Figure 3. Number of children† with confirmed elevated blood lead of 10 µg/dL or higher and number of children† tested for blood lead, Kansas 2000-2014



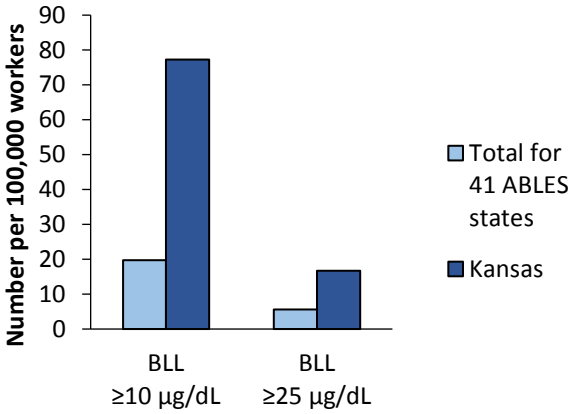
† Children under age 6

Source: Kansas Environmental Public Health Tracking Program. Available from: https://keap.kdhe.state.ks.us/Ephtm/.

Blood Lead Levels in Kansas Adults

For adults (ages 16 and older), 5 µg/dL is considered the reference blood lead level. This level was established by the National Institute for Occupational Safety and Health (NIOSH) and helps to protect workers exposed to lead because occupational lead exposure is the most common source of lead exposure among adults (13). Lead exposure in adults can lead to anemia, kidney or nervous system damage, hypertension, decreased fertility, and miscarriage (14). In Kansas, case investigation for adults exposed to lead begins with a confirmed blood lead level of 5 µg/dL or greater. Case investigation includes having educational information sent and asking adults exposed to lead about lead testing for any children in the home that may be exposed.

Figure 4. Rates of elevated blood lead among working adults†, 2012



† Adults ages 16 and older
Source: Kansas Adult Blood Lead Epidemiology and Surveillance program and Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report for Elevated Blood Lead Levels Among Employed Adults – United States, 1994-2012.

Compared to the average of 41 Adult Blood Lead Epidemiology and Surveillance (ABLES) reporting states, Kansas tends to have a high percentage of adults with elevated blood lead levels (Figure 4). The rate of employed adults with lead exposure has been decreasing slightly; the rate in 2010 was 82.7 per 100,000 workers, while in 2012 it was down to 77.3 per 100,000 workers (Table 3).

Table 3. Number of reported cases and rate per 100,000 employed adults† with blood lead ≥10 µg/dL, Kansas 2010-2012

2010		2011		2012	
Count	Rate	Count	Rate	Count	Rate
1,155	82.7	1,143	81.7	1,083	77.3

† Adults ages 16 and older
Source: Kansas Adult Blood Lead Epidemiology and Surveillance program and Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report for Elevated Blood Lead Levels Among Employed Adults – United States, 1994-2012.

Blood Lead Testing Among Medicaid Recipients

Children enrolled in an assistance program, such as Medicaid, may have an increased risk of lead exposure because they are more likely to live in older housing that contains lead-based paint (15). The number and percent of elevated blood lead levels among Medicaid recipients is not available in Kansas because insurance type is not consistently reported with laboratory results. However, the number of Medicaid recipients that receive lead testing is available.

The percent of Medicaid enrolled children under 6 years of age that have been tested for blood lead was highest in 2011 at 14.2% and lowest in 2010 at 8.0% (Table 4). These testing rates are similar to testing rates across the state. While in 2010 the overall rate of testing among Kansas children (13.8% Figure 2) was higher than Medicaid children (8.0%), it was lower than Medicaid receiving children in 2011 and 2012 at 14.1% and 10.6%, respectively. In more recent years, the percent of Medicaid enrolled children under age 6 years that have been tested for lead has been fairly constant. The information presented in Table 4 can be found at the county level in Appendices D and E.

Table 4. Blood lead testing for Medicaid recipients under age 6 years, Kansas 2010-2015

Year	Number of Children Enrolled in Medicaid	Number of Medicaid Recipients Tested for Lead	Percent of Medicaid Recipients Tested for Lead
2010	154,223	12,405	8.0
2011	216,881	30,881	14.2
2012	222,845	27,707	12.4
2013	220,598	22,601	10.2
2014	220,584	23,776	10.8
2015	216,864	23,320	10.8

Source: Kansas Department of Health and Environment, Division of Health Care Finance

Age of Housing

Lead-based paint is the most common source of lead exposure to children (16). Lead-based paint is found in older housing in the United States because lead-based paint was not banned for residential use in the United States until 1978. Because of this, many homes built before 1979 contain lead-based paint, which may chip off, disintegrate into dust, and potentially expose a child to lead. A child can have regular lead exposure from lead paint through their primary residence, at a daycare, or at a relative or friend's home where they regularly spend time.

Compared to other states, Kansas tends to have an average amount of homes built between 1950 and 1979, at about 44.0%, which ranks 28th nationally (17). Because data used for these statistics come from the 2000 Census, whether housing is vacant or not is not taken into account. Age of housing statistics by county are presented in Appendix F.

Appendix A: Blood Lead Levels in Kansas Children† by County, 2014

County	Number of Children Tested	Percent of Children Tested	Number of Children with Confirmed Blood Lead Level 5 to <10 µg/dL	Number of Children with Confirmed Blood Lead Level 10 µg/dL and greater	Number of Children with Confirmed Elevated Blood Lead	‡Percent of Children Tested with Confirmed Elevated Blood Lead
Allen	57	6.1	1	0	1	1.8
Anderson	46	7.7	1	0	1	2.2
Atchison	91	7.2	1	4	5	5.5
Barber	14	3.5	0	0	0	0.0
Barton	49	2.1	5	5	10	20.4
Bourbon	103	8.5	4	0	4	3.9
Brown	24	2.9	0	0	0	0.0
Butler	318	6.6	5	1	6	1.9
Chase	5	3.4	0	0	0	0.0
Chautauqua	21	9.3	0	4	4	19.0
Cherokee	141	9.6	0	1	1	0.7
Cheyenne	4	2.5	0	0	0	0.0
Clark	4	2.1	0	0	0	0.0
Clay	116	18.5	9	5	14	12.1
Cloud	83	11.0	1	0	1	1.2
Coffey	75	15.3	0	0	0	0.0
Comanche	4	2.2	0	0	0	0.0
Cowley	137	4.8	10	3	13	9.5
Crawford	79	2.7	2	0	2	2.5
Decatur	13	5.9	1	0	1	7.7
Dickinson	130	8.9	1	0	1	0.8
Doniphan	68	12.6	0	0	0	0.0
Douglas	437	6.0	6	1	7	1.6

Edwards	10	4.4	0	0	0	0.0
Elk	7	4.8	0	0	0	0.0
Ellis	44	1.9	4	2	6	13.6
Ellsworth	16	4.2	0	0	0	0.0
Finney	132	3.1	3	0	3	2.3
Ford	203	5.1	1	0	1	0.5
Franklin	185	9.5	1	0	1	0.5
Geary	315	6.5	1	1	2	0.6
Gove	4	1.8	0	0	0	0.0
Graham	10	4.9	0	2	2	20.0
Grant	16	2.0	0	0	0	0.0
Gray	12	2.2	1	0	1	8.3
Greeley	1	0.8	0	0	0	0.0
Greenwood	49	12.6	3	1	4	8.2
Hamilton	8	2.9	0	0	0	0.0
Harper	12	2.5	0	0	0	0.0
Harvey	450	15.7	10	4	14	3.1
Haskell	4	1.0	0	*	*	*
Hodgeman	3	1.9	0	0	0	0.0
Jackson	33	3.1	0	0	0	0.0
Jefferson	76	6.1	0	0	0	0.0
Jewell	4	2.4	0	0	0	0.0
Johnson	3,460	7.5	5	3	8	0.2
Kearny	36	9.7	0	0	0	0.0
Kingman	31	6.1	0	0	0	0.0
Kiowa	1	0.5	0	0	0	0.0
Labette	279	17.2	5	3	8	2.9
Lane	0	0.0	0	0	0	0.0
Leavenworth	810	13.0	10	2	12	1.5
Lincoln	14	5.7	0	0	0	0.0

Linn	64	10.9	1	1	2	3.1
Logan	1	0.5	0	0	0	0.0
Lyon	375	15.4	2	5	7	1.9
Marion	110	14.6	3	2	5	4.5
Marshall	35	4.7	2	6	8	22.9
McPherson	240	11.0	7	0	7	2.9
Meade	5	1.6	0	0	0	0.0
Miami	196	8.1	0	1	1	0.5
Mitchell	15	3.3	0	0	0	0.0
Montgomery	338	12.1	8	6	14	4.1
Morris	27	7.3	0	0	0	0.0
Morton	3	1.2	0	0	0	0.0
Nemaha	25	2.9	1	0	1	4.0
Neosho	193	13.9	6	1	7	3.6
Ness	2	0.9	1	0	1	50.0
Norton	2	0.6	0	0	0	0.0
Osage	73	6.7	0	1	1	1.4
Osborne	19	7.8	0	1	1	5.3
Ottawa	46	10.4	0	0	0	0.0
Pawnee	12	3.0	1	0	1	8.3
Phillips	5	1.2	0	0	0	0.0
Pottawatomie	106	4.7	2	1	3	2.8
Pratt	32	3.9	0	0	0	0.0
Rawlins	3	1.6	0	0	0	0.0
Reno	699	14.9	4	4	8	1.1
Republic	3	0.9	0	0	0	0.0
Rice	40	5.0	1	0	1	2.5
Riley	383	6.4	5	2	7	1.8
Rooks	33	8.6	2	3	5	15.2
Rush	7	4.3	0	2	2	28.6

Russell	20	3.8	1	1	2	10.0
Saline	653	14.4	10	2	12	1.8
Scott	7	1.7	0	0	0	0.0
Sedgwick	5,221	11.3	57	23	80	1.5
Seward	85	3.1	0	1	1	1.2
Shawnee	1,764	12.4	15	7	22	1.2
Sheridan	0	0.0	0	0	0	0.0
Sherman	4	0.8	0	0	0	0.0
Smith	1	0.4	0	0	0	0.0
Stafford	16	5.7	0	0	0	0.0
Stanton	1	0.5	0	0	0	0.0
Stevens	10	1.8	0	1	1	10.0
Sumner	126	6.7	1	0	1	0.8
Thomas	6	0.9	0	0	0	0.0
Trego	19	11.9	2	3	5	26.3
Wabaunsee	35	5.8	0	0	0	0.0
Wallace	1	0.9	0	0	0	0.0
Washington	27	7.3	0	0	0	0.0
Wichita	3	1.5	0	0	0	0.0
Wilson	55	8.7	1	4	5	9.1
Woodson	19	10.4	0	0	0	0.0
Wyandotte	2,704	16.5	42	18	60	2.2

† Children under age 6.

‡ Because universal testing is not done in Kansas, this rate may be unstable, particularly in counties where few children are tested.

* Elevated counts and percentages greater than 0 are suppressed for counties with 6 or fewer children tested.

Source: United States Census Bureau population estimates for the state of Kansas and Kansas Environmental Public Health Tracking Program. Census data available from https://www.cdc.gov/nchs/nvss/bridged_race.htm accessed 4/1/2017.

Appendix B: Blood Lead Levels in Kansas Children† by County, 2013

County	Number of Children Tested	Percent of Children Tested	Number of Children with Confirmed Blood Lead Level 5 to <10 µg/dL	Number of Children with Confirmed Blood Lead Level 10 µg/dL and greater	Number of Children with Confirmed Elevated Blood Lead	‡Percent of Children Tested with Confirmed Elevated Blood Lead
Allen	108	11.1	4	2	6	5.6
Anderson	99	15.1	0	0	0	0.0
Atchison	282	21.6	1	1	2	0.7
Barber	51	12.8	0	0	0	0.0
Barton	302	13.3	14	8	22	7.3
Bourbon	146	11.5	7	4	11	7.5
Brown	144	16.5	9	4	13	9.0
Butler	144	3.0	0	0	0	0.0
Chase	19	12.5	0	0	0	0.0
Chautauqua	128	56.4	0	0	0	0.0
Cherokee	315	20.7	2	0	2	0.6
Cheyenne	28	15.9	0	0	0	0.0
Clark	7	4.2	0	0	0	0.0
Clay	110	16.7	6	4	10	9.1
Cloud	108	16.0	1	1	2	1.9
Coffey	58	11.3	0	0	0	0.0
Comanche	17	8.9	0	0	0	0.0
Cowley	709	24.4	6	4	10	1.4
Crawford	701	23.9	0	5	5	0.7
Decatur	39	19.8	0	0	0	0.0
Dickinson	199	12.6	0	0	0	0.0
Doniphan	103	19.3	0	0	0	0.0
Douglas	416	5.7	3	4	7	1.7

Edwards	40	21.3	0	0	0	0.0
Elk	18	14.4	0	0	0	0.0
Ellis	524	21.9	30	6	36	6.9
Ellsworth	128	31.6	2	0	2	1.6
Finney	633	15.0	1	0	1	0.2
Ford	384	9.5	1	4	5	1.3
Franklin	210	10.8	5	1	6	2.9
Geary	180	3.6	2	1	3	1.7
Gove	29	11.9	0	0	0	0.0
Graham	67	36.0	1	1	2	3.0
Grant	96	11.1	0	0	0	0.0
Gray	36	6.5	0	0	0	0.0
Greeley	61	54.5	0	0	0	0.0
Greenwood	135	32.3	2	0	2	1.5
Hamilton	2	0.7	0	0	0	0.0
Harper	19	3.9	1	0	1	5.3
Harvey	335	12.0	3	3	6	1.8
Haskell	59	15.7	0	0	0	0.0
Hodgeman	45	30.8	0	0	0	0.0
Jackson	210	21.0	0	3	3	1.4
Jefferson	91	7.6	1	0	1	1.1
Jewell	11	7.1	0	0	0	0.0
Johnson	3,522	7.6	14	2	16	0.5
Kearny	13	3.4	0	0	0	0.0
Kingman	53	10.6	0	0	0	0.0
Kiowa	15	8.1	0	0	0	0.0
Labette	126	8.1	1	3	4	3.2
Lane	4	3.8	0	0	0	0.0
Leavenworth	941	15.2	9	1	10	1.1
Lincoln	64	26.4	0	1	1	1.6

Linn	86	14.0	0	0	0	0.0
Logan	40	19.5	0	0	0	0.0
Lyon	321	12.6	4	10	14	4.4
Marion	91	12.4	2	3	5	5.5
Marshall	219	29.5	0	1	1	0.5
McPherson	276	12.6	5	3	8	2.9
Meade	105	29.3	0	0	0	0.0
Miami	226	9.1	6	0	6	2.7
Mitchell	91	18.7	0	0	0	0.0
Montgomery	473	17.7	7	2	9	1.9
Morris	18	4.9	0	0	0	0.0
Morton	10	4.0	0	0	0	0.0
Nemaha	176	21.6	2	0	2	1.1
Neosho	385	29.2	7	7	14	3.6
Ness	19	10.4	0	1	1	5.3
Norton	78	22.8	0	0	0	0.0
Osage	73	6.3	1	0	1	1.4
Osborne	14	5.4	0	0	0	0.0
Ottawa	24	5.8	1	0	1	4.2
Pawnee	143	33.4	0	0	0	0.0
Phillips	29	7.8	0	0	0	0.0
Pottawatomie	103	4.5	2	3	5	4.9
Pratt	113	13.4	1	0	1	0.9
Rawlins	31	20.3	0	0	0	0.0
Reno	413	8.7	1	0	1	0.2
Republic	31	9.7	0	0	0	0.0
Rice	99	12.5	0	0	0	0.0
Riley	275	4.6	2	2	4	1.5
Rooks	93	23.4	0	0	0	0.0
Rush	42	24.6	4	1	5	11.9

Russell	89	17.0	7	2	9	10.1
Saline	475	10.4	12	7	19	4.0
Scott	75	17.4	0	0	0	0.0
Sedgwick	3,525	7.6	46	10	56	1.6
Seward	298	10.7	2	0	2	0.7
Shawnee	1,100	7.6	9	7	16	1.5
Sheridan	16	8.8	0	0	0	0.0
Sherman	117	24.1	4	2	6	5.1
Smith	30	14.6	0	0	0	0.0
Stafford	38	12.2	4	0	4	10.5
Stanton	9	4.1	0	0	0	0.0
Stevens	53	9.2	0	0	0	0.0
Sumner	120	6.4	0	2	2	1.7
Thomas	127	20.3	0	0	0	0.0
Trego	32	17.8	2	1	3	9.4
Wabaunsee	17	3.0	0	0	0	0.0
Wallace	28	24.8	0	0	0	0.0
Washington	95	25.1	0	0	0	0.0
Wichita	58	31.5	0	0	0	0.0
Wilson	95	14.9	2	6	8	8.4
Woodson	82	41.0	0	0	0	0.0
Wyandotte	3,108	19.1	23	19	42	1.4

† Children under age 6.
‡ Because universal testing is not done in Kansas, this rate may be unstable, particularly in counties where few children are tested.
Source: United States Census Bureau population estimates for the state of Kansas and Kansas Environmental Public Health Tracking Program. Census data available from https://www.cdc.gov/nchs/nvss/bridged_race.htm accessed 4/1/2017.

Appendix C: Blood Lead Levels in Kansas Children† by County, 2012

County	Number of Children Tested	Percent of Children Tested	Number of Children with Confirmed Blood Lead Level 5 to <10 µg/dL	Number of Children with Confirmed Blood Lead Level 10 µg/dL and greater	Number of Children with Confirmed Elevated Blood Lead	‡Percent of Children Tested with Confirmed Elevated Blood Lead
Allen	184	18.3	6	0	6	3.3
Anderson	128	19.8	0	1	1	0.8
Atchison	294	23.0	2	1	3	1.0
Barber	60	15.7	0	0	0	0.0
Barton	198	8.6	10	6	16	8.1
Bourbon	130	10.4	4	4	8	6.2
Brown	147	17.6	8	7	15	10.2
Butler	127	2.6	3	2	5	3.9
Chase	15	8.7	0	0	0	0.0
Chautauqua	125	57.9	2	0	2	1.6
Cherokee	271	17.5	2	0	2	0.7
Cheyenne	16	9.9	0	0	0	0.0
Clark	5	2.9	0	0	0	0.0
Clay	105	15.8	2	1	3	2.9
Cloud	87	12.5	4	2	6	6.9
Coffey	29	5.3	1	1	2	6.9
Comanche	10	6.6	0	2	2	20.0
Cowley	514	17.5	4	5	9	1.8
Crawford	613	21.1	3	1	4	0.7
Decatur	18	10.0	0	0	0	0.0
Dickinson	321	20.8	4	1	5	1.6
Doniphan	61	11.2	0	1	1	1.6
Douglas	442	6.0	3	1	4	0.9

Edwards	36	16.7	0	0	0	0.0
Elk	17	11.3	0	0	0	0.0
Ellis	407	17.4	21	8	29	7.1
Ellsworth	145	36.0	1	3	4	2.8
Finney	407	9.6	3	0	3	0.7
Ford	664	16.4	5	5	10	1.5
Franklin	199	9.7	3	2	5	2.5
Geary	345	6.7	4	4	8	2.3
Gove	20	9.0	0	0	0	0.0
Graham	34	17.8	0	0	0	0.0
Grant	96	11.7	0	0	0	0.0
Gray	53	8.9	0	0	0	0.0
Greeley	45	40.9	0	0	0	0.0
Greenwood	146	35.6	5	6	11	7.5
Hamilton	7	2.4	0	0	0	0.0
Harper	20	4.2	3	0	3	15.0
Harvey	244	8.7	1	2	3	1.2
Haskell	35	8.8	1	0	1	2.9
Hodgeman	36	24.0	0	0	0	0.0
Jackson	169	16.6	2	2	4	2.4
Jefferson	109	8.8	2	0	2	1.8
Jewell	21	11.4	0	1	1	4.8
Johnson	3,004	6.4	16	2	18	0.6
Kearny	16	3.9	1	0	1	6.3
Kingman	39	7.5	2	0	2	5.1
Kiowa	27	14.9	0	0	0	0.0
Labette	203	12.5	0	2	2	1.0
Lane	5	4.6	0	0	0	0.0
Leavenworth	826	13.3	12	7	19	2.3
Lincoln	68	27.1	4	1	5	7.4

Linn	53	8.5	5	0	5	9.4
Logan	33	16.2	0	0	0	0.0
Lyon	334	12.8	14	9	23	6.9
Marion	70	8.9	0	0	0	0.0
Marshall	196	25.0	1	2	3	1.5
McPherson	217	10.2	3	2	5	2.3
Meade	82	24.6	1	0	1	1.2
Miami	143	5.7	4	0	4	2.8
Mitchell	103	22.5	1	1	2	1.9
Montgomery	349	12.4	9	13	22	6.3
Morris	15	4.0	0	0	0	0.0
Morton	13	5.1	0	0	0	0.0
Nemaha	120	14.8	2	0	2	1.7
Neosho	364	26.0	1	2	3	0.8
Ness	14	7.0	1	0	1	7.1
Norton	36	11.1	2	0	2	5.6
Osage	81	6.9	2	2	4	4.9
Osborne	22	8.7	1	0	1	4.5
Ottawa	63	14.1	3	1	4	6.3
Pawnee	128	30.1	3	1	4	3.1
Phillips	27	6.9	1	0	1	3.7
Pottawatomie	176	7.7	2	2	4	2.3
Pratt	164	20.8	3	3	6	3.7
Rawlins	19	12.3	0	0	0	0.0
Reno	576	11.7	5	3	8	1.4
Republic	28	9.8	1	1	2	7.1
Rice	76	9.9	0	0	0	0.0
Riley	400	6.5	8	3	11	2.8
Rooks	115	28.5	7	3	10	8.7
Rush	26	14.5	0	1	1	3.8

Russell	73	14.0	4	3	7	9.6
Saline	711	15.0	18	4	22	3.1
Scott	100	24.0	0	0	0	0.0
Sedgwick	4,057	8.7	58	24	82	2.0
Seward	353	12.8	0	0	0	0.0
Shawnee	1,168	7.9	40	13	53	4.5
Sheridan	27	16.0	0	0	0	0.0
Sherman	97	19.2	4	0	4	4.1
Smith	32	15.6	0	0	0	0.0
Stafford	33	10.7	2	1	3	9.1
Stanton	3	1.4	0	0	0	0.0
Stevens	37	6.5	0	0	0	0.0
Sumner	133	7.0	0	2	2	1.5
Thomas	79	12.2	0	0	0	0.0
Trego	35	20.2	2	1	3	8.6
Wabaunsee	31	5.7	2	0	2	6.5
Wallace	25	24.8	1	0	1	4.0
Washington	77	19.4	1	1	2	2.6
Wichita	56	30.1	0	0	0	0.0
Wilson	69	10.3	2	0	2	2.9
Woodson	48	22.6	0	2	2	4.2
Wyandotte	3,238	19.8	69	32	101	3.1

† Children under age 6.
‡ Because universal testing is not done in Kansas, this rate may be unstable, particularly in counties where few children are tested.
Source: United States Census Bureau population estimates for the state of Kansas and Kansas Environmental Public Health Tracking Program. Available from: https://keap.kdhe.state.ks.us/Ephtm/ accessed on 4/01/2017. Census data available from https://www.cdc.gov/nchs/nvss/bridged_race.htm accessed 4/1/2017.

Appendix D: Blood Lead Testing for Medicaid Recipients Less Than Age 6 by County, 2013-2015

County	Number of Children Enrolled in Medicaid (2015)	Number Medicaid Children Tested for Lead (2015)	Percent of Medicaid Children Tested For Lead (2015)	Number of Children Enrolled in Medicaid (2014)	Number Medicaid Children Tested for Lead (2014)	Percent of Medicaid Children Tested For Lead (2014)	Number of Children Enrolled in Medicaid (2013)	Number Medicaid Children Tested for Lead (2013)	Percent of Medicaid Children Tested For Lead (2013)
Allen	1,021	111	10.9	1,054	91	8.6	1,055	71	6.7
Anderson	539	32	5.9	544	33	6.1	542	35	6.5
Atchison	1,356	256	18.9	1,361	185	13.6	1,316	226	17.2
Barber	358	37	10.3	360	40	11.1	363	33	9.1
Barton	2,472	289	11.7	2,484	208	8.4	2,540	249	9.8
Bourbon	1,566	156	10.0	1,562	151	9.7	1,550	129	8.3
Brown	934	65	7.0	984	78	7.9	1,033	80	7.7
Butler	3,614	232	6.4	3,794	315	8.3	3,839	239	6.2
Chase	145	16	11.0	156	16	10.3	136	13	9.6
Chautauqua	280	66	23.6	275	49	17.8	284	82	28.9
Cherokee	1,829	238	13.0	1,906	219	11.5	1,934	244	12.6
Cheyenne	136	5	3.7	121	8	6.6	130	11	8.5
Clark	157	11	7.0	158	12	7.6	147	13	8.8
Clay	545	64	11.7	559	64	11.4	516	65	12.6
Cloud	700	38	5.4	672	35	5.2	685	79	11.5
Coffey	469	31	6.6	481	41	8.5	460	47	10.2
Comanche	159	15	9.4	138	8	5.8	119	18	15.1
Cowley	3,500	506	14.5	3,544	509	14.4	3,496	296	8.5
Crawford	3,360	486	14.5	3,511	411	11.7	3,533	519	14.7

Decatur	231	27	11.7	218	13	6.0	209	18	8.6
Dickinson	1,413	117	8.3	1,392	132	9.5	1,350	133	9.9
Doniphan	462	62	13.4	477	89	18.7	431	59	13.7
Douglas	5,843	526	9.0	5,883	691	11.7	5,835	473	8.1
Edwards	248	27	10.9	254	25	9.8	253	34	13.4
Elk	214	17	7.9	205	18	8.8	188	16	8.5
Ellis	1,517	86	5.7	1,530	112	7.3	1,508	222	14.7
Ellsworth	281	36	12.8	293	60	20.5	295	61	20.7
Finney	5,309	587	11.1	5,437	650	12.0	5,384	421	7.8
Ford	4,946	913	18.5	4,981	658	13.2	4,867	688	14.1
Franklin	2,133	208	9.8	2,217	221	10.0	2,222	211	9.5
Geary	2,329	246	10.6	2,375	309	13.0	2,372	229	9.7
Gove	165	5	3.0	166	3	1.8	178	12	6.7
Graham	144	22	15.3	155	21	13.5	161	27	16.8
Grant	883	90	10.2	911	68	7.5	929	83	8.9
Gray	428	71	16.6	477	53	11.1	497	44	8.9
Greeley	94	14	14.9	93	19	20.4	92	25	27.2
Greenwood	411	28	6.8	451	55	12.2	456	66	14.5
Hamilton	280	13	4.6	273	15	5.5	270	13	4.8
Harper	481	32	6.7	428	23	5.4	436	18	4.1
Harvey	2,506	348	13.9	2,532	400	15.8	2,481	305	12.3
Haskell	333	33	9.9	357	19	5.3	398	38	9.5
Hodgeman	63	13	20.6	62	14	22.6	60	10	16.7
Jackson	1,264	149	11.8	1,222	99	8.1	1,131	120	10.6
Jefferson	954	75	7.9	951	108	11.4	949	88	9.3

Jewell	125	6	4.8	130	13	10.0	125	13	10.4
Johnson	22,171	1,765	8.0	22,561	2,009	8.9	22,458	1,906	8.5
Kearny	402	17	4.2	412	48	11.7	393	24	6.1
Kingman	395	42	10.6	371	36	9.7	357	23	6.4
Kiowa	212	6	2.8	201	11	5.5	177	6	3.4
Labette	1,887	219	11.6	1,942	244	12.6	1,961	140	7.1
Lane	90	4	4.4	101	6	5.9	98	3	3.1
Leavenworth	4,105	707	17.2	3,970	552	13.9	3,858	454	11.8
Lincoln	213	25	11.7	228	23	10.1	230	49	21.3
Linn	767	74	9.6	731	75	10.3	693	57	8.2
Logan	193	16	8.3	199	10	5.0	194	18	9.3
Lyon	2,556	293	11.5	2,663	397	14.9	2,797	291	10.4
Marion	664	90	13.6	658	100	15.2	634	89	14.0
Marshall	555	72	13.0	540	71	13.1	515	99	19.2
McPherson	1,450	148	10.2	1,493	142	9.5	1,550	173	11.2
Meade	378	42	11.1	385	46	11.9	382	65	17.0
Miami	1,835	118	6.4	1,838	155	8.4	1,839	160	8.7
Mitchell	319	26	8.2	304	33	10.9	311	54	17.4
Montgomery	3,524	388	11.0	3,570	417	11.7	3,596	356	9.9
Morris	358	22	6.1	339	29	8.6	337	16	4.7
Morton	195	14	7.2	208	5	2.4	223	14	6.3
Nemaha	471	63	13.4	496	85	17.1	465	101	21.7
Neosho	1,467	141	9.6	1,514	140	9.2	1,546	146	9.4
Ness	144	17	11.8	143	14	9.8	151	13	8.6
Norton	335	26	7.8	324	20	6.2	322	42	13.0

Osage	1,093	97	8.9	1,129	100	8.9	1,086	86	7.9
Osborne	200	7	3.5	182	2	1.1	175	2	1.1
Ottawa	361	17	4.7	365	16	4.4	366	39	10.7
Pawnee	387	51	13.2	393	38	9.7	406	69	17.0
Phillips	326	20	6.1	327	25	7.6	295	17	5.8
Pottawatomie	1,234	66	5.3	1,197	94	7.9	1,196	50	4.2
Pratt	781	126	16.1	752	47	6.3	706	69	9.8
Rawlins	158	17	10.8	179	11	6.1	151	17	11.3
Reno	4,509	239	5.3	4,707	280	5.9	4,861	505	10.4
Republic	286	18	6.3	290	20	6.9	296	22	7.4
Rice	746	43	5.8	788	52	6.6	769	48	6.2
Riley	2,863	217	7.6	2,873	266	9.3	2,840	226	8.0
Rooks	314	39	12.4	325	24	7.4	332	59	17.8
Rush	149	14	9.4	138	15	10.9	124	9	7.3
Russell	544	22	4.0	552	25	4.5	579	53	9.2
Saline	5,057	345	6.8	5,204	376	7.2	5,233	474	9.1
Scott	393	35	8.9	407	26	6.4	438	24	5.5
Sedgwick	47,487	5,222	11.0	48,847	5,553	11.4	49,416	5,197	10.5
Seward	3,455	352	10.2	3,616	282	7.8	3,784	228	6.0
Shawnee	15,292	1,827	11.9	15,521	1,919	12.4	15,512	1,496	9.6
Sheridan	109	16	14.7	87	10	11.5	96	4	4.2
Sherman	501	13	2.6	535	8	1.5	497	55	11.1
Smith	194	17	8.8	182	11	6.0	175	21	12.0
Stafford	310	29	9.4	295	17	5.8	296	25	8.4
Stanton	207	10	4.8	241	0	0.0	239	5	2.1

Stevens	521	48	9.2	534	37	6.9	548	36	6.6
Sumner	1,582	141	8.9	1,636	184	11.2	1,680	124	7.4
Thomas	488	49	10.0	491	42	8.6	470	30	6.4
Trego	128	8	6.3	106	20	18.9	101	3	3.0
Wabaunsee	305	21	6.9	314	16	5.1	292	15	5.1
Wallace	89	2	2.2	97	14	14.4	95	6	6.3
Washington	362	50	13.8	304	24	7.9	275	19	6.9
Wichita	132	33	25.0	150	18	12.0	130	23	17.7
Wilson	791	63	8.0	847	68	8.0	882	66	7.5
Woodson	185	9	4.9	207	11	5.3	196	21	10.7
Wyandotte	24,442	3,297	13.5	24,441	3,096	12.7	24,219	3,283	13.6

Source: Kansas Department of Health and Environment, Division of Health Care Finance.

Appendix E: Blood Lead Testing for Medicaid Recipients Less Than Age 6 by County, 2010-2012

County	Number of Children Enrolled in Medicaid (2012)	Number Medicaid Children Tested for Lead (2012)	Percent of Medicaid Children Tested For Lead (2012)	Number of Children Enrolled in Medicaid (2011)	Number Medicaid Tested for Lead (2011)	Percent of Medicaid Children Tested For Lead (2011)	Number of Children Enrolled in Medicaid (2010)	Number Medicaid Children Tested for Lead (2010)	Percent of Medicaid Children Tested For Lead (2010)
Allen	1,062	154	14.5	1,096	163	14.9	790	77	9.7
Anderson	517	68	13.2	525	71	13.5	372	35	9.4
Atchison	1,330	309	23.2	1,334	287	21.5	957	89	9.3
Barber	342	44	12.9	310	46	14.8	207	10	4.8
Barton	2,602	245	9.4	2,534	332	13.1	1,814	140	7.7
Bourbon	1,561	191	12.2	1,569	155	9.9	1,069	74	6.9
Brown	1,047	139	13.3	1,053	122	11.6	732	72	9.8
Butler	3,817	312	8.2	3,807	407	10.7	2,748	166	6.0
Chase	122	17	13.9	108	22	20.4	79	7	8.9
Chautauqua	299	92	30.8	290	49	16.9	210	31	14.8
Cherokee	1,924	288	15.0	1,987	305	15.3	1,409	107	7.6
Cheyenne	145	10	6.9	152	15	9.9	96	1	1.0
Clark	149	10	6.7	138	16	11.6	92	4	4.3
Clay	506	91	18.0	478	82	17.2	342	39	11.4
Cloud	713	65	9.1	707	102	14.4	515	38	7.4
Coffey	461	45	9.8	489	89	18.2	355	30	8.5
Comanche	107	7	6.5	105	17	16.2	63	2	3.2
Cowley	3,456	418	12.1	3,361	447	13.3	2,390	201	8.4
Crawford	3,564	582	16.3	3,484	487	14.0	2,503	205	8.2

Decatur	197	13	6.6	164	18	11.0	111	5	4.5
Dickinson	1,370	235	17.2	1,309	229	17.5	899	93	10.3
Doniphan	424	43	10.1	441	48	10.9	295	13	4.4
Douglas	5,830	703	12.1	5,563	665	12.0	3,901	271	6.9
Edwards	246	45	18.3	233	37	15.9	161	8	5.0
Elk	203	18	8.9	205	22	10.7	151	3	2.0
Ellis	1,549	214	13.8	1,511	121	8.0	1,076	83	7.7
Ellsworth	304	79	26.0	297	76	25.6	209	31	14.8
Finney	5,445	514	9.4	5,310	516	9.7	3,735	222	5.9
Ford	4,804	584	12.2	4,559	1,031	22.6	3,169	324	10.2
Franklin	2,191	214	9.8	2,133	211	9.9	1,501	98	6.5
Geary	2,383	377	15.8	2,302	329	14.3	1,567	101	6.4
Gove	171	16	9.4	167	10	6.0	119	8	6.7
Graham	164	31	18.9	133	30	22.6	84	6	7.1
Grant	937	87	9.3	879	65	7.4	614	30	4.9
Gray	527	46	8.7	514	75	14.6	356	18	5.1
Greeley	89	11	12.4	80	16	20.0	50	4	8.0
Greenwood	509	103	20.2	528	121	22.9	388	48	12.4
Hamilton	274	18	6.6	271	26	9.6	199	2	1.0
Harper	443	32	7.2	445	25	5.6	305	15	4.9
Harvey	2,566	356	13.9	2,444	401	16.4	1,718	129	7.5
Haskell	407	29	7.1	400	38	9.5	301	14	4.7
Hodgeman	59	10	16.9	61	21	34.4	41	7	17.1
Jackson	1,102	174	15.8	1,077	147	13.6	757	59	7.8
Jefferson	957	148	15.5	960	101	10.5	686	55	8.0

Jewell	144	22	15.3	155	18	11.6	104	7	6.7
Johnson	22,550	2,433	10.8	21,494	2,874	13.4	14,958	1,067	7.1
Kearny	358	32	8.9	360	29	8.1	241	9	3.7
Kingman	362	11	3.0	376	27	7.2	280	4	1.4
Kiowa	170	11	6.5	155	8	5.2	99	8	8.1
Labette	2,016	314	15.6	2,018	303	15.0	1,483	131	8.8
Lane	98	5	5.1	86	7	8.1	59	4	6.8
Leavenworth	3,863	699	18.1	3,682	728	19.8	2,644	306	11.6
Lincoln	241	45	18.7	239	43	18.0	173	22	12.7
Linn	717	67	9.3	689	83	12.0	489	43	8.8
Logan	190	24	12.6	179	22	12.3	129	8	6.2
Lyon	2,848	398	14.0	2,790	412	14.8	2,045	174	8.5
Marion	663	115	17.3	673	105	15.6	484	34	7.0
Marshall	531	123	23.2	526	112	21.3	402	56	13.9
McPherson	1,603	164	10.2	1,499	184	12.3	1,058	73	6.9
Meade	365	45	12.3	366	56	15.3	284	32	11.3
Miami	1,814	192	10.6	1,689	215	12.7	1,146	90	7.9
Mitchell	330	89	27.0	335	84	25.1	240	19	7.9
Montgomery	3,567	386	10.8	3,435	395	11.5	2,438	135	5.5
Morris	336	25	7.4	322	48	14.9	222	6	2.7
Morton	256	7	2.7	269	12	4.5	194	0	0.0
Nemaha	479	102	21.3	464	107	23.1	321	44	13.7
Neosho	1,564	247	15.8	1,514	243	16.1	1,089	85	7.8
Ness	154	11	7.1	166	3	1.8	120	4	3.3
Norton	318	25	7.9	316	21	6.6	210	17	8.1

Osage	1,082	117	10.8	1,039	132	12.7	768	67	8.7
Osborne	173	17	9.8	176	12	6.8	114	2	1.8
Ottawa	377	47	12.5	387	76	19.6	259	26	10.0
Pawnee	427	87	20.4	418	71	17.0	274	19	6.9
Phillips	296	15	5.1	318	23	7.2	235	10	4.3
Pottawatomie	1,231	129	10.5	1,202	142	11.8	864	46	5.3
Pratt	717	156	21.8	690	135	19.6	484	48	9.9
Rawlins	150	9	6.0	157	18	11.5	108	5	4.6
Reno	4,965	724	14.6	4,869	832	17.1	3,559	464	13.0
Republic	295	31	10.5	265	54	20.4	191	19	9.9
Rice	769	59	7.7	750	109	14.5	508	51	10.0
Riley	2,789	386	13.8	2,679	342	12.8	1,877	182	9.7
Rooks	350	65	18.6	331	56	16.9	269	24	8.9
Rush	138	19	13.8	131	20	15.3	97	13	13.4
Russell	586	73	12.5	537	71	13.2	389	33	8.5
Saline	5,247	777	14.8	5,070	857	16.9	3,607	437	12.1
Scott	458	31	6.8	437	33	7.6	307	8	2.6
Sedgwick	50,091	5,848	11.7	49,145	7,572	15.4	35,224	3,141	8.9
Seward	4,064	351	8.6	3,928	231	5.9	2,871	140	4.9
Shawnee	15,657	1,870	11.9	15,234	1,771	11.6	10,991	769	7.0
Sheridan	107	12	11.2	98	21	21.4	62	3	4.8
Sherman	492	62	12.6	476	70	14.7	332	18	5.4
Smith	208	33	15.9	212	32	15.1	157	16	10.2
Stafford	303	23	7.6	293	37	12.6	223	9	4.0
Stanton	250	7	2.8	257	7	2.7	202	7	3.5

Stevens	569	44	7.7	558	27	4.8	395	13	3.3
Sumner	1,727	168	9.7	1,709	215	12.6	1,209	31	2.6
Thomas	477	43	9.0	487	39	8.0	362	20	5.5
Trego	117	13	11.1	116	19	16.4	74	10	13.5
Wabaunsee	300	28	9.3	284	24	8.5	197	11	5.6
Wallace	88	9	10.2	87	5	5.7	61	2	3.3
Washington	285	47	16.5	273	33	12.1	196	20	10.2
Wichita	144	13	9.0	146	31	21.2	107	15	14.0
Wilson	879	90	10.2	857	87	10.2	619	51	8.2
Woodson	214	15	7.0	218	26	11.9	169	13	7.7
Wyandotte	24,411	3,510	14.4	23,737	3,919	16.5	16,814	1,309	7.8

Source: Kansas Department of Health and Environment, Division of Health Care Finance.

Appendix F: Age of Housing Statistics by County

County	Number of Homes Built Before 1950	Percent of Homes Built Before 1950	Number of Homes Built Between 1979 and 1950	Percent of Homes Built Between 1979 and 1950
Allen	2,838	44.0	2,448	38.0
Anderson	1,552	43.2	1,445	40.2
Atchison	3,406	50.0	2,287	33.5
Barber	1,455	53.1	920	33.6
Barton	4,715	36.6	6,407	49.7
Bourbon	3,398	47.6	2,345	32.9
Brown	2,585	53.7	1,519	31.5
Butler	5,797	25.0	8,873	38.3
Chase	802	52.5	457	29.9
Chautauqua	1,206	55.6	640	29.5
Cherokee	4,187	41.7	3,473	34.6
Cheyenne	966	59.0	521	31.8
Clark	624	56.2	358	32.2
Clay	2,211	54.1	1,383	33.9
Cloud	2,813	58.1	1,523	31.5
Coffey	1,472	38.0	1,378	35.6
Comanche	748	68.8	238	21.9
Cowley	6,824	43.5	6,111	39.0
Crawford	7,002	40.7	6,489	37.7
Decatur	980	53.8	669	36.7
Dickinson	4,205	48.4	2,956	34.0
Doniphan	1,521	43.6	1,130	32.4
Douglas	6,271	15.6	16,442	40.8
Edwards	1,038	59.2	600	34.2
Elk	1,111	59.7	485	26.1
Ellis	2,693	22.3	6,364	52.7
Ellsworth	1,672	51.8	1,103	34.2
Finney	2,237	16.3	6,551	47.6
Ford	2,960	25.4	5,974	51.3
Franklin	3,756	36.7	3,900	38.1

Geary	2,801	23.4	6,319	52.8
Gove	614	43.1	656	46.1
Graham	701	45.1	707	45.5
Grant	436	14.4	1,784	58.9
Gray	733	33.6	850	39.0
Greeley	277	38.9	305	42.8
Greenwood	2,029	47.5	1,465	34.3
Hamilton	430	35.5	587	48.5
Harper	1,807	55.3	1,137	34.8
Harvey	4,249	31.8	6,209	46.4
Haskell	421	25.7	803	49.0
Hodgeman	482	51.0	325	34.4
Jackson	1,918	37.7	1,757	34.5
Jefferson	2,069	27.6	3,122	41.7
Jewell	1,407	66.9	481	22.9
Johnson	14,110	7.8	81,498	44.9
Kearny	424	25.6	749	45.2
Kingman	1,958	50.8	1,311	34.0
Kiowa	802	48.8	676	41.1
Labette	5,261	51.0	3,442	33.4
Lane	478	44.9	435	40.8
Leavenworth	6,285	25.8	9,866	40.4
Lincoln	1,202	64.9	436	23.5
Linn	1,625	34.4	1,376	29.2
Logan	594	41.7	637	44.8
Lyon	5,060	34.3	6,648	45.0
Marion	2,844	48.4	2,016	34.3
Marshall	2,929	58.6	1,433	28.7
McPherson	4,364	36.9	4,814	40.7
Meade	902	45.8	794	40.3
Miami	3,122	28.4	3,816	34.7
Mitchell	1,829	54.8	1,102	33.0
Montgomery	8,729	50.7	5,864	34.1
Morris	1,585	50.2	1,112	35.2
Morton	466	30.7	776	51.1

Nemaha	2,303	53.1	1,271	29.3
Neosho	3,563	47.8	2,870	38.5
Ness	908	49.5	674	36.7
Norton	1,429	53.5	907	33.9
Osage	2,390	34.1	2,744	39.1
Osborne	1,476	61.0	777	32.1
Ottawa	1,363	49.5	786	28.5
Pawnee	1,511	48.5	1,293	41.5
Phillips	1,593	51.6	1,143	37.0
Pottawatomie	2,411	33.0	2,751	37.6
Pratt	2,322	50.1	1,601	34.6
Rawlins	920	58.8	514	32.8
Reno	11,025	39.9	12,502	45.3
Republic	1,907	61.3	912	29.3
Rice	2,523	54.7	1,648	35.8
Riley	3,991	17.1	12,357	52.8
Rooks	1,344	48.7	1,126	40.8
Rush	1,123	58.2	659	34.2
Russell	2,014	52.0	1,427	36.9
Saline	7,223	31.8	11,005	48.5
Scott	674	29.4	1,141	49.8
Sedgwick	40,089	21.0	90,153	47.2
Seward	1,338	16.7	4,555	56.7
Shawnee	17,366	23.5	38,010	51.5
Sheridan	611	48.4	504	39.9
Sherman	1,207	37.9	1,463	45.9
Smith	1,312	56.4	798	34.3
Stafford	1,454	59.2	771	31.4
Stanton	263	26.1	533	52.9
Stevens	674	29.8	946	41.8
Sumner	4,450	40.9	4,177	38.4
Thomas	1065	29.9	1,890	53.1
Trego	726	42.1	766	44.5
Wabaunsee	1,409	46.5	974	32.1
Wallace	348	44.0	343	43.4

Washington	1,940	61.7	955	30.4
Wichita	383	34.2	602	53.8
Wilson	2,326	47.1	1,725	34.9
Woodson	1,050	50.6	721	34.7
Wyandotte	20,636	31.3	36,881	56.0

Source: United States 2000 Census. Available from https://www.census.gov/census2000/sumfile3.html accessed on 4/1/2017.

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Statewide Blood Lead Surveillance Report

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