

Technical Guidance for Pennsylvania Adult Blood Lead Epidemiology and Surveillance (ABLES) Dashboard

**Division of
Environmental
Health Epidemiology**

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pennsylvania
DEPARTMENT OF HEALTH

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Glossary

ABLES – Adult Blood Lead Epidemiology and Surveillance

BLL – Blood Lead Level, refers to the amount of lead that is in a venous blood sample measured in micrograms per deciliter (mcg/dl)

DEHE – Division of Environmental Health Epidemiology

NAICS – North American Industry Classification System, a numeric system commonly used by government agencies to classify industries

PA DOH – Pennsylvania Department of Health

PA-NEDSS – The Pennsylvania National Electronic Disease Surveillance System

PennOSHS – Pennsylvania Occupational Safety and Health Surveillance Program

Executive Summary

The Division of Environmental Health Epidemiology (DEHE) at the Pennsylvania Department of Health (DOH) has developed an interactive dashboard for the Adult Blood Lead Epidemiology and Surveillance (ABLES) program to display public health data pertaining to adult workers who are exposed to lead in Pennsylvania. The PA ABLES program is supported by the PA DOH and the federally funded Pennsylvania Occupational Safety and Health Surveillance (PennOSHS) program.

The historic widespread use of lead in consumer products resulted in environmental contamination and public health concern in the state. Occupations in which the disposal, maintenance, production, recycling, and use of lead-containing materials and products are needed increases the likelihood of exposure. Therefore, the workplace is a common source of lead exposure for adult Pennsylvanians.

The PA ABLES program monitors lead exposure among adult Pennsylvanians through blood lead laboratory reports, which are reportable to the PA DOH by law (28 Pa. Code § 27.34). Pennsylvania's version of the National Electronic Disease Surveillance System (PA-NEDSS) captures information on each blood lead test reported to the state, including blood lead level (BLL) in microgram per deciliter (mcg/dL), year in which the test was conducted, industry type, and demographic information including age, race, ethnicity, and sex. To increase workplace lead exposure awareness among the public, the ABLES Dashboard displays aggregate data, from these blood lead test reports in four distinct tabs:

- *Prevalence and Incidence*
- *Demographics*
- *Blood Lead Levels by Industry Sector*
- *Blood Lead Levels by Industry Subsector*

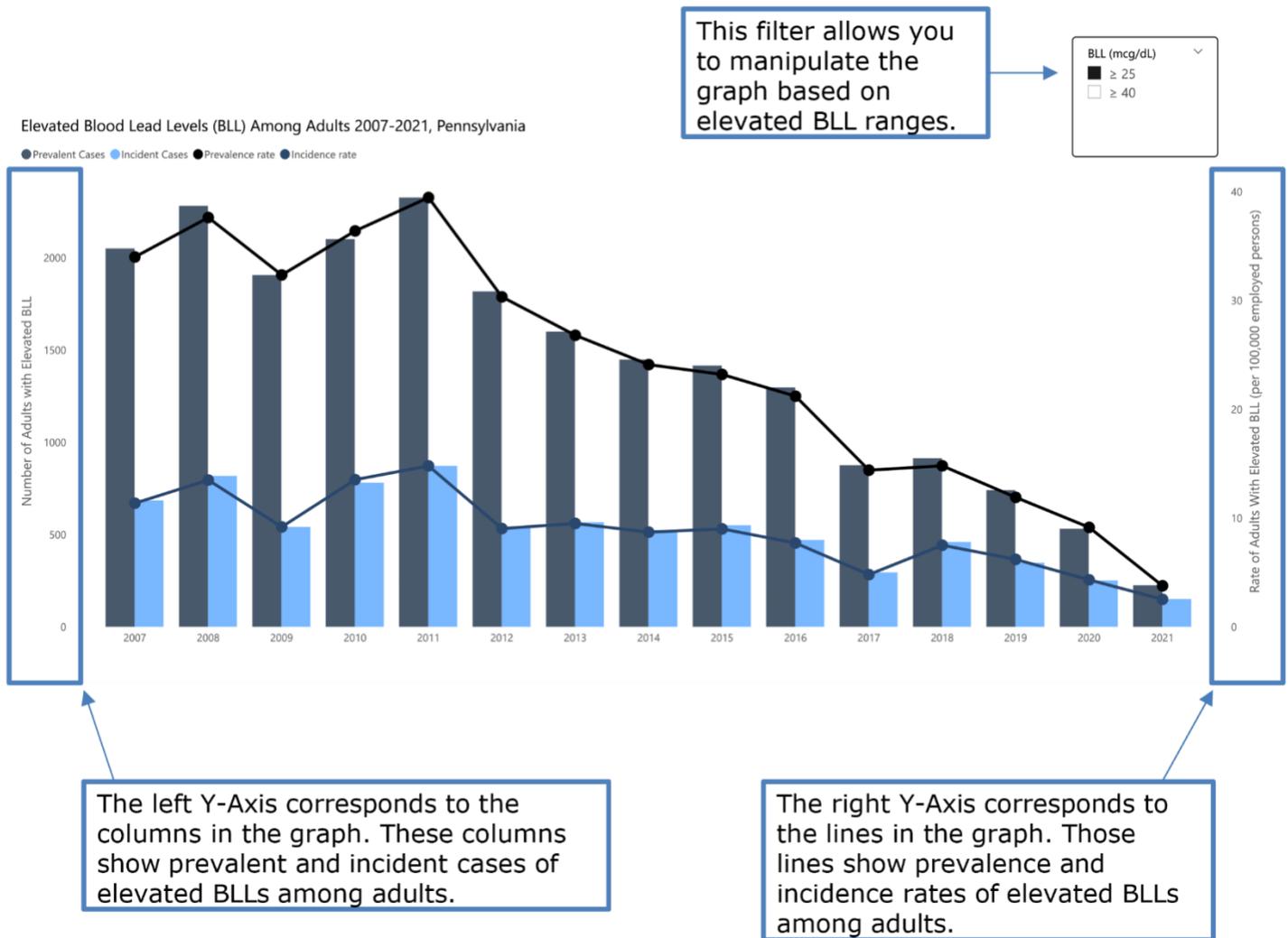
Each tab was constructed to be interactive, so that users can manipulate graphs to show data based on their interests. All graphs are dynamic, which means they respond to clicking, scrolling, or adjusting variable filters. The ABLES Dashboard is an ongoing project that will be updated as data become available. This document provides additional information on the dashboard and how to use it. For more information on the ABLES Dashboard and lead exposure, please see the Frequently Asked Questions at the end of this document.

ABLES Dashboard Instructions

The ABLES Dashboard is intended to be used by the public, including policymakers, industry representatives, university partners, non-profit and community advocates. To increase accessibility, all graphs within the dashboard were constructed using colorblind safe designs. The following overview will help users navigate through the Pennsylvania ABLES Dashboard. The pages below provide a description of how to view data within the four ABLES Dashboard tabs. An explanation on how to manipulate graphs by using filters is also included.

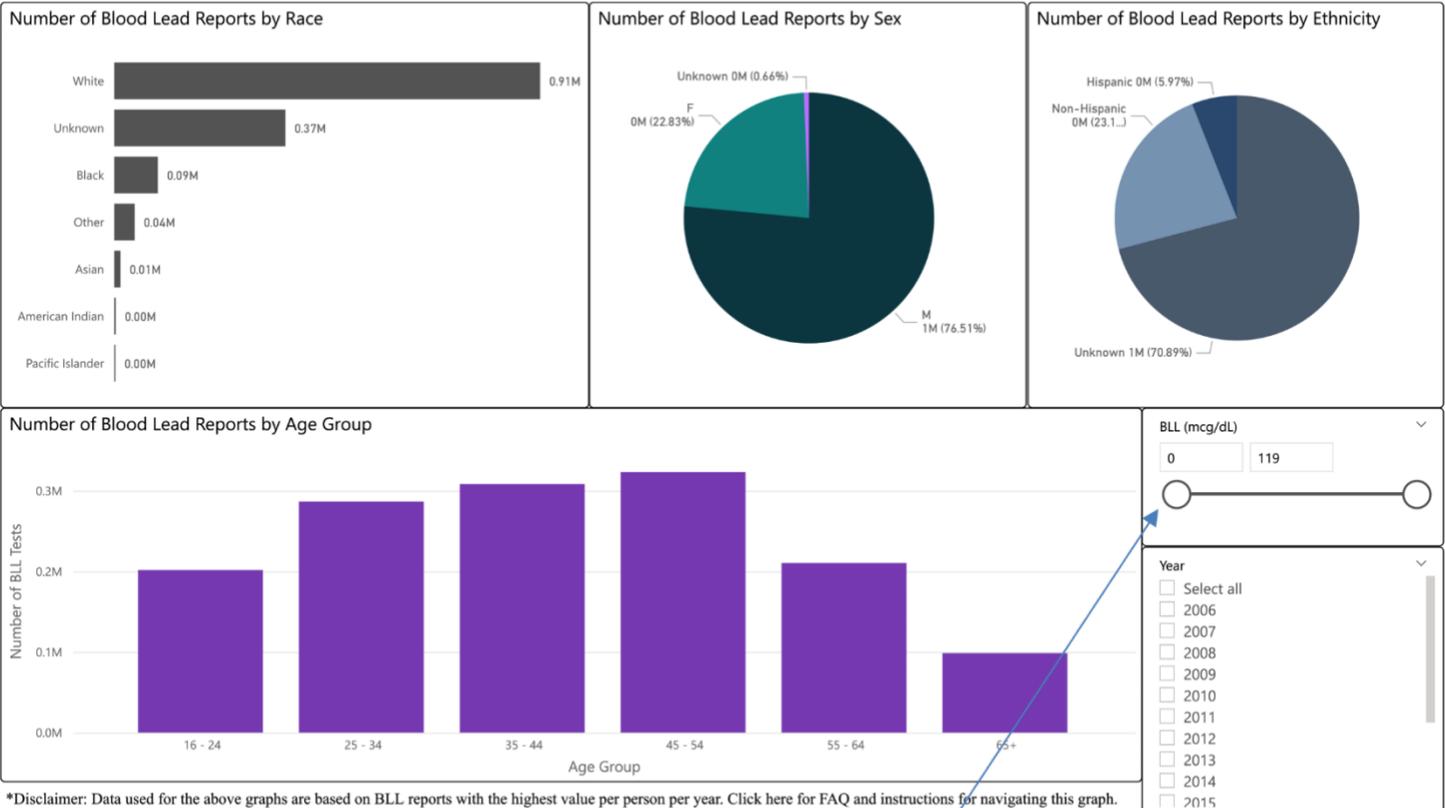
The ABLES program is supported by the PADOH and the federally funded Pennsylvania Occupational Safety and Health Surveillance program (PennOSHS). For more information regarding PennOSHS, please visit PennOSHS (pa.gov), email dehe@pa.gov, or call 717-787-3350.

Prevalence and Incidence: The *Prevalence and Incidence* tab contains a graph that shows the prevalence and incidence of lead exposure over time among adult workers in PA. Prevalence and Incidence Counts and Rates are displayed by BLL and Year. Prevalence refers to the proportion of persons who have a condition at or during a particular time period, whereas incidence refers to the proportion or rate of persons who develop a condition during a particular time period. Prevalence includes new and pre-existing cases whereas incidence includes new cases only. Prevalence and incidence were calculated based upon the Council of State and Territorial Epidemiologists (CSTE) annual Occupational Health Indicator guidelines. Additional information on calculations can be found on the [CSTE webpage](#).



Demographics: The *Demographics* tab includes various charts that show the demographic characteristics of individuals who were tested for BLL. Race, Sex, Ethnicity and Age Group Counts are displayed by BLL and Year.

*Please note that hovering your computer cursor over a specific column, pie chart, or bar of interest will provide additional information.



*Disclaimer: Data used for the above graphs are based on BLL reports with the highest value per person per year. Click here for FAQ and instructions for navigating this graph.

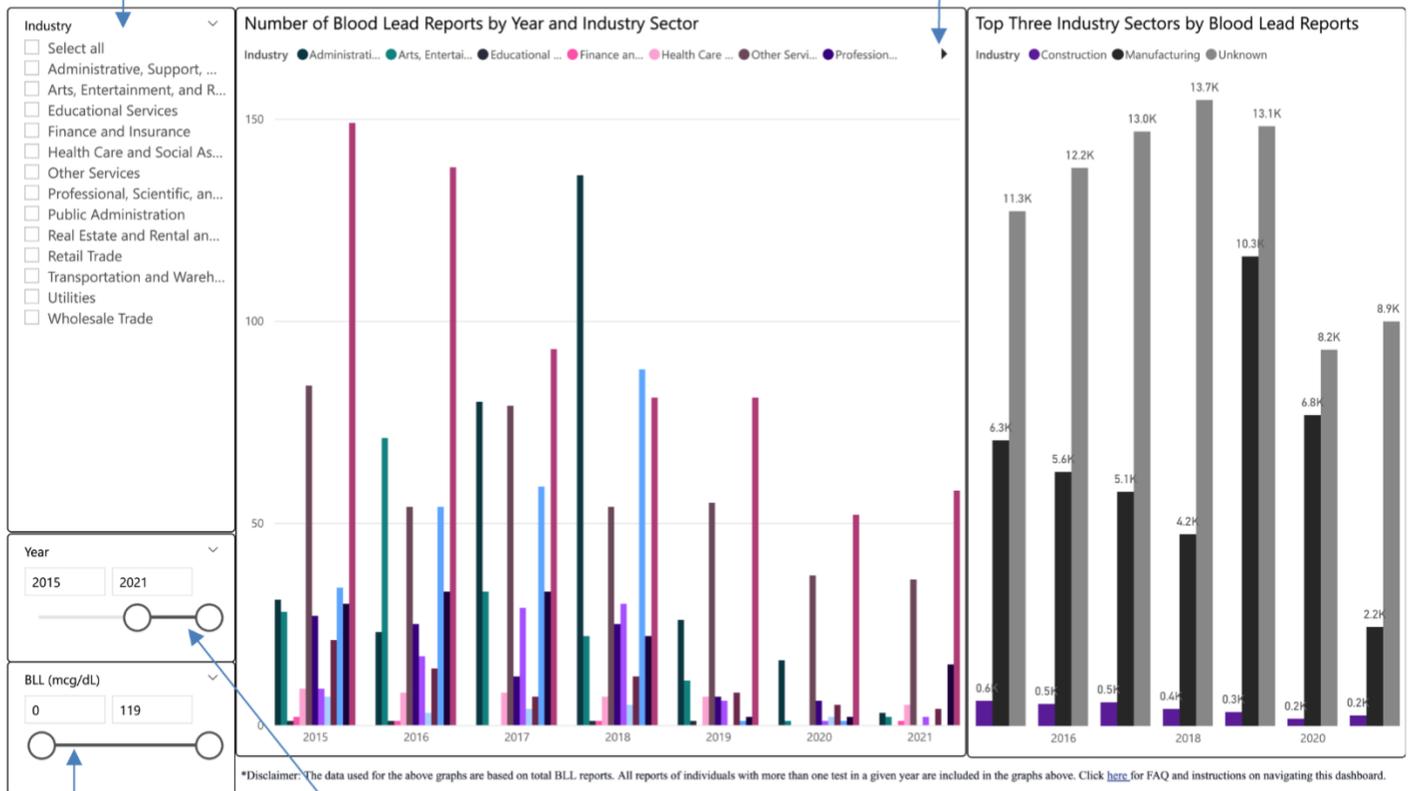
The BLL filter slider allows you to adjust the blood lead level.

The Year filter allows you to manipulate the graph based on year.

Blood Lead Levels by Industry Sector: The *BLLs by Industry Sector* tab shows the distribution of blood lead level reports by industry. Industry sectors were classified by the North American Industry Classification System (NAICS) sector (2-digit code) level. The graph also highlights the three industries with the greatest number of BLL reports submitted to PA DOH within a given year. Industry Sector Counts are displayed by BLL and Year.

This is a list of various industry sectors in Pennsylvania. You can select one or multiple industry sectors to see the corresponding data in the chart.

This button will allow you to view more industry sectors by expanding the list.



The BLL filter slider allows you to adjust the blood lead level.

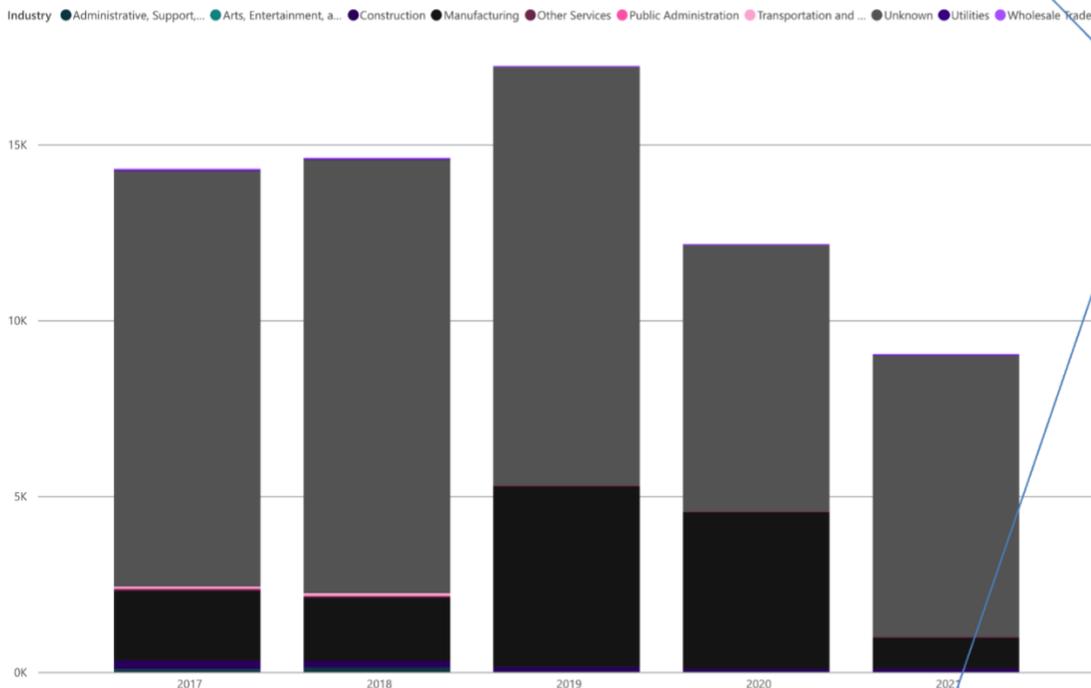
The Year filter slider allows you to adjust the year range by clicking on the circle(s) and moving them to the left or right direction. Note that the wider the year range is, the more data will appear on the graph.

Blood Lead Levels by Industry Subsector: The *BLLs by Industry Subsector* tab shows the total number of BLL reports per industry subsector. Industry sectors were classified by the North American Industry Classification System (NAICS) sector (2-digit code) level and subsectors are classified by the NAICS U.S Industry (5-digit code) level. Please note that the graph will only populate for subsectors with 10 or more BLL reports each year. Industry Sector and Subsector Counts are displayed by BLL and Year.

The BLL filter slider allows you to adjust the blood lead level.

The Year filter allows you to manipulate the graph based on year.

Number of Blood Lead Reports by Year and Industry Subsector



*Note: Industry subsectors with less than 10 BLL reported cases per year are not shown. The data used for the above graphs are based on total BLL reports. Industry sectors are divided into subsectors based on the NAICS U.S. industry level. Click [here](#) for the technical guidance manual.

Year v

Multiple selections v

BLL (mcg/dL)

0 119

Sector

Select all

Administrative, Support, Waste Man...

Arts, Entertainment, and Recreation

Construction

Manufacturing

Other Services

Public Administration

Transportation and Warehousing

Unknown

Utilities

Subsector

Select all

Adhesive Manufacturing

All Other Amusement and Recreatio...

All Other Miscellaneous Fabricated ...

Aluminum Foundries (except Die-Ca...

Copper Rolling, Drawing, Extruding, ...

Highway, Street, and Bridge Constru...

Iron and Steel Mills and Ferroalloy ...

Iron and Steel Pipe and Tube Manuf...

Materials Recovery Facilities

Metal Service Centers and Other Me...

Mixed Mode Transit Systems

New Single-Family Housing Constru...

Nonferrous Metal (except Aluminu...

Nonferrous Metal (except Copper a

You can select one or more industry sectors from this list. This will allow you to see the corresponding industry subsectors in the box below.

This list of industry subsectors allows you to view detailed data for industry sectors. You can select one or more subsectors.

Frequently Asked Questions

➤ **What is lead poisoning?**

Lead is a naturally occurring, toxic metal from the Earth's crust. The historic widespread use of lead in consumer products resulted in vast environmental contamination and public health concern in Pennsylvania. If exposed, lead may be absorbed into the body, resulting in negative health outcomes and lead poisoning.

➤ **How can I be exposed to lead?**

Occupations in which the disposal, maintenance, production, recycling, and use of leaded materials and products are needed increases the likelihood of exposure. These occupations are more prominent in Pennsylvania compared to other states, making the workplace a common source of lead exposure for adult Pennsylvanians. Other sources of exposure, outside of the workplace (when participating in recreational activities such as hunting, fishing, home restoration projects, etc.) can contribute to total lead exposure. No level of lead exposure is considered to be safe. Lead exposure can be prevented or minimized by taking appropriate precautions.

➤ **What are blood lead levels?**

Blood lead levels (commonly abbreviated as BLLs) are measured by taking a venous blood sample and indicate if a person was exposed to lead. By checking a worker's BLL, occupational safety and health professionals can determine if the appropriate actions are being taken to minimize workplace exposure.

➤ **What blood lead levels are considered dangerous?**

The Centers for Disease Control and Prevention (CDC) and National Institute of Occupational Safety and Health (NIOSH) consider an elevated BLL in adults to be ≥ 5 $\mu\text{g}/\text{dL}$. This is due to the surmounting evidence that adverse health effects can occur at low levels. BLLs exceeding 40 $\mu\text{g}/\text{dL}$ are considered dangerous and may result in immediate negative health outcomes. The CDC has developed a reference guide that presents several regulations and recommendations related to BLLs among workers.

➤ **How does the PA DOH get data for the ABLES Dashboard?**

ABLES Dashboard data come from blood lead laboratory reports, which are reportable to the PA DOH (28 Pa. Code § 27.34). This means that when an adult blood lead test is performed and the result is greater than or equal to 5 µg/dL, the lab is required by state law to send the test result with other personal information (e.g., name, date of birth, residential address, etc.) to the PA DOH. Prior to 2019, the reporting requirement for blood lead laboratory reports were those that had a test result greater than or equal to 25 µg/dL. The DEHE monitors these reports to keep people safe, particularly in the workplace.

➤ **What is an interactive dashboard?**

The Pennsylvania Adult Blood Lead Epidemiology and Surveillance (ABLES) Dashboard was constructed to be interactive, so that public viewers can manipulate the graphs to show data based on the viewer's interests. All graphs are dynamic, which means they respond to clicking, scrolling, or adjusting the BLL and Year filters.

➤ **What does "Count of BLL" represent?**

Counts (of sex, ethnicity, age, race, and BLL variables) represent the number of blood lead laboratory reports, submitted to the PA DOH, that are associated with a particular variable. Counts will change based upon the BLL and Year filters selected. Please note that the industry graphs were created using data from all BLL reports submitted to PA DOH. All other graphs were created using data based on the highest BLL value per person per year. Because an individual can have more than one blood lead test per year, the deduplicated dataset more accurately reflects the burden for the industries and demographics most associated with elevated BLLs.

➤ **What is the difference between incidence and prevalence?**

An incidence rate is the number of new cases of a disease (elevated BLLs) divided by the total population at risk (adult workers in Pennsylvania). Prevalence rate is the total number of cases of a disease divided by the total population at risk. Prevalence differs from incidence in that prevalence includes all cases, both new and preexisting, in a population at a specified time, whereas incidence is limited to new cases only (or cases that were not cases during the previous time frame). Prevalence and incidence rates in the ABLES dashboard were calculated based upon the Council of State and Territorial Epidemiologists (CSTE) annual Occupational Health Indicator (OHI) guidelines. Additional information on these calculations can be found on

the [CSTE webpage](#). Data pertaining to lead prevalence and incidence in Pennsylvania can be accessed through the [Enterprise Data Dissemination Informatics Exchange \(EDDIE\) system](#).

➤ **Are all adult elevated blood lead levels considered to be occupationally related?**

Based upon the Council of State and Territorial Epidemiologists (CSTE) annual Occupational Health Indicator (OHI) guidelines, most (85 – 90%) elevated BLLs are considered to be occupationally-related. Given that it is not always possible to distinguish an occupational from a non-occupational exposure, prevalence and incidence may encompass non-occupational exposures as well. Additional information can be found on the [CSTE webpage](#).

➤ **What is the difference between industry sector and subsector?**

An industry sector is a group of companies with similarities in the business activities they conduct and the products or services they provide. A subsector is part of a larger industry sector. In the ABLES dashboard, industry sectors are grouped according to the North American Industry Classification System (NAICS) sector (2-digit code) level and subsectors are grouped by the NAICS U.S Industry (5-digit code) level classification. Additional information on NAICS and industry classification can be found on the [U.S. Bureau of Labor Statistics website](#).

➤ **Why am I not seeing any data in the *Blood Lead Level by Industry Subsector* tab?**

Detailed industry subsector data will only populate for subsectors that have 10 or more deduplicated blood lead reports submitted per year. Therefore, if industry subsector data is not displayed, it is because less than 10 deduplicated blood lead reports were submitted.

➤ **Why are counts lower for 2020 and 2021 compared to previous years?**

The decrease in the number of laboratory reports with elevated BLLs submitted in 2020 and 2021 may be due to increased lead exposure awareness and workplace safety. It may also be a result of the COVID-19 pandemic, in which additional safety protocols were put into place and workers may not have been tending to job duties as regularly (shift changes to increase social distancing) or were furloughed. Continued surveillance by the ABLES program and communication with employers will help distinguish why the numbers of elevated BLLs in adults declined.

➤ **Are there initiatives to reduce workplace lead exposure?**

The PA ABLES program regularly monitors lead exposure among adult Pennsylvanians. Currently, interviews are being conducted to identify sources of workplace and non-workplace lead exposure among adult Pennsylvanians with elevated BLLs. Information collected from

interviews will be used to update lead exposure education materials. Additional information can be found on the [PA DOH ABLES webpage](#).

➤ **Where can I find more information on lead exposure?**

Please see our lead fact sheets for information on [occupational](#) and [non-occupational](#) lead exposure and lead poisoning. If you have additional questions regarding lead exposure, please do not hesitate to contact us at 717-787-3350 or dehe@pa.gov, or reach out to your primary care doctor.