

ARIZONA DEPARTMENT  
OF HEALTH SERVICES

**A Cancer Analysis for Dewey-Humboldt, Arizona**

**Arizona Department of Health Services**

**Arizona Cancer Registry**

**March 1, 2023**

## Summary

Yavapai County reached out to the [Arizona Cancer Registry \(ACR\)](#) at ADHS regarding a cancer concern from individuals in the Dewey-Humboldt community related to arsenic and lead exposure associated with mining activity in the area. The ACR, based on the cancer concern protocol, completed an analysis for this community looking at cancer rates for cancers known to be associated with certain heavy metal exposures. Determining a cause or source of cancers in the Dewey-Humboldt area, or in the Prescott Valley or Black Canyon PCAs, is not possible using ACR data.

- Findings
  - This analysis found a higher rate of cases of lung/bronchus and bladder cancers in the Prescott Valley and Black Canyon primary care areas (PCAs), compared to state or county rates of those cancers diagnosed in 2010-2018. Based on the cancer concern protocol, PCAs are the lowest level of geography at which analyses are completed.
  - Dewey-Humboldt comprised only 5.7% (74 of 1,293) of lung/bronchus and bladder cancer cases in the Prescott Valley and Black Canyon City PCAs during this time, making it difficult to attribute the higher rates in these PCAs specifically to the Dewey-Humboldt community.
- Investigating Cancer Health Concerns
  - The reason for a lack of cause and effect outcomes in cancer studies is due to a variety of factors: random cancer patterns forming that appear to be clusters but are due to chance; an inability to determine the extent of an individual's exposure or how long they have been exposed; difficulty in defining geographic boundaries; and varying likelihoods of developing cancer even among individuals with similar exposures.<sup>1</sup>
  - The ACR follows the national reporting guidelines for cancer registries, which do not include collecting information on exposure to hazardous materials, so the ACR does not have data on past exposure to heavy metals for the individuals included in this analysis.
  - Due to statistical limitations we are not able to geographically limit this analysis to Dewey-Humboldt, but rather the two combined PCAs primary care areas (Prescott Valley and Black Canyon City) that encompass Dewey-Humboldt.
  - Due to these limitations, the ACR is not able to reach conclusions regarding linkages between exposures to heavy metals and the presence of elevated lung/bronchus or bladder cancer risk in the Dewey-Humboldt area.
- Recommendations due to Health Concerns
  - The Dewey-Humboldt community has several avenues to explore in terms of health recommendations for the community today and in the future. These include:
    - [How to Reduce Your Exposure to Arsenic and Lead In Dewey-Humboldt, Arizona](#)
      - Water filtration and testing
      - Practice safe gardening
      - Reduce dust in the home
      - Consult with a physician about possible cancer screening and testing options
    - [How to Reduce Your Exposure to Chemicals at Home, Work, and Play](#)
      - Educational materials on the best ways to protect yourself from harmful chemical exposures that you may encounter at home, work, or when engaging in hobbies.

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<sup>1</sup> American Cancer Society. 2019. "Cancer Clusters." American Cancer Society. <https://www.cancer.org/healthy/cancer-causes/general-info/cancer-clusters.html>.

## The Arizona Cancer Registry

The Arizona Cancer Registry (ACR) is the designated program that collects cancer case information on persons that have been diagnosed and/or treated for cancer in Arizona. Cancer cases are actively reported by hospitals, clinics, physicians, and pathology laboratories. Cases that go unreported to the registry are identified through data exchanges and linkages with collaborating agencies and facilities. The data collected from these cases includes demographic and cancer-specific information such as: age, race, sex, primary site of cancer, and the geographical area of each case at diagnosis.

## Requested Information

The ACR received a request from Cecil Newell, Public Health Protection Section Manager for Yavapai County. Mr. Newell requested a review of cancer incidence rates in the Dewey-Humboldt Area, as a result of community questions about cancers associated with heavy metals of arsenic, lead, and beryllium in the Dewey-Humboldt area.

## Background Information on Cancer in the United States and Arizona

As of 2022, cancer remains the second leading cause of death among Americans.<sup>2</sup> The American Cancer Society (ACS) estimates that in the United States, approximately 40 out of every 100 men, and 39 out of every 100 women will develop cancer in their lifetime.<sup>3</sup> In Arizona for 2015-2019, an average of 33,511 invasive cancer cases were diagnosed annually; with more males (17,064) being diagnosed compared to females (16,447).<sup>4</sup> In 2019, the Arizona cancer rate (372.1/100,000) was 17.9% lower than the United States (438.6/100,000) cancer incidence rate.<sup>3</sup>

## Data Analysis for Dewey-Humboldt

ACR uses Primary Care Areas (PCAs) to analyze health data. Primary Care Areas (PCAs) are geographic regions designed to represent Arizona communities while maintaining sufficient population numbers for statistical analysis. These regions are defined by existing political and community boundaries, demographics and common utilization of primary care services. The ACR assigns the PCA by geocoding the address at diagnosis for each reported case.

Dewey-Humboldt sits on the border of the Prescott Valley PCA and the Black Canyon City PCA. Image 1 displays the border between these two PCAs, as well as the Dewey and Humboldt town centers. Dewey-Humboldt was incorporated on December 20, 2004, and consists of the two previously unincorporated areas of Dewey and Humboldt. The incorporated town boundaries of Dewey-Humboldt extend across the two PCAs: Prescott Valley and Black Canyon City (Image 2). **The findings of this request will provide information on rates for the two PCA areas only.** Note that Dewey-Humboldt cancer cases comprise only 5.7% of the cancer cases in the Prescott Valley and Black Canyon City PCAs combined.

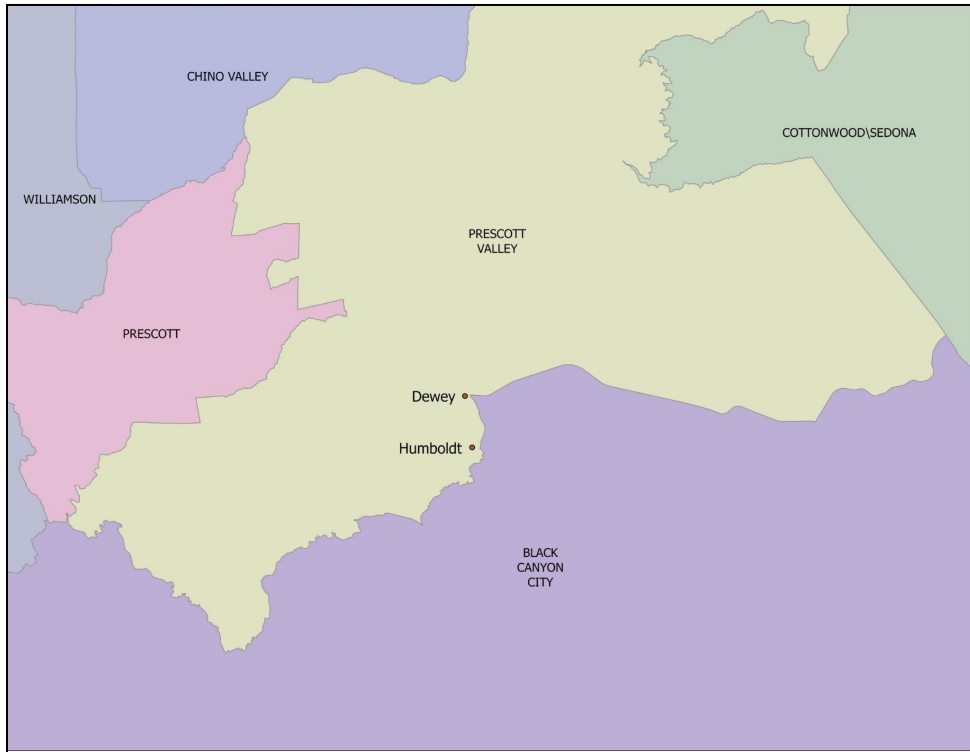
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<sup>2</sup> Centers for Disease Control and Prevention. (n.d.). *FastStats - Leading Causes of Death*. CDC. Retrieved December 5, 2022, from <https://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm>

<sup>3</sup> American Cancer Society. (n.d.). *Cancer Facts & Figures 2022*. American Cancer Society. Retrieved December 5, 2022, from <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2022/2022-cancer-facts-and-figures.pdf>

<sup>4</sup> Arizona Cancer Registry. (2022, June 29). *State of Cancer in Arizona*. Arizona Department of Health Services. Retrieved December 5, 2022, from <https://www.azdhs.gov/documents/preparedness/public-health-statistics/cancer-registry/adhs-acr-arizona-cancer-report-2015-2019.pdf>

**Image 1.**



**Image 2.**

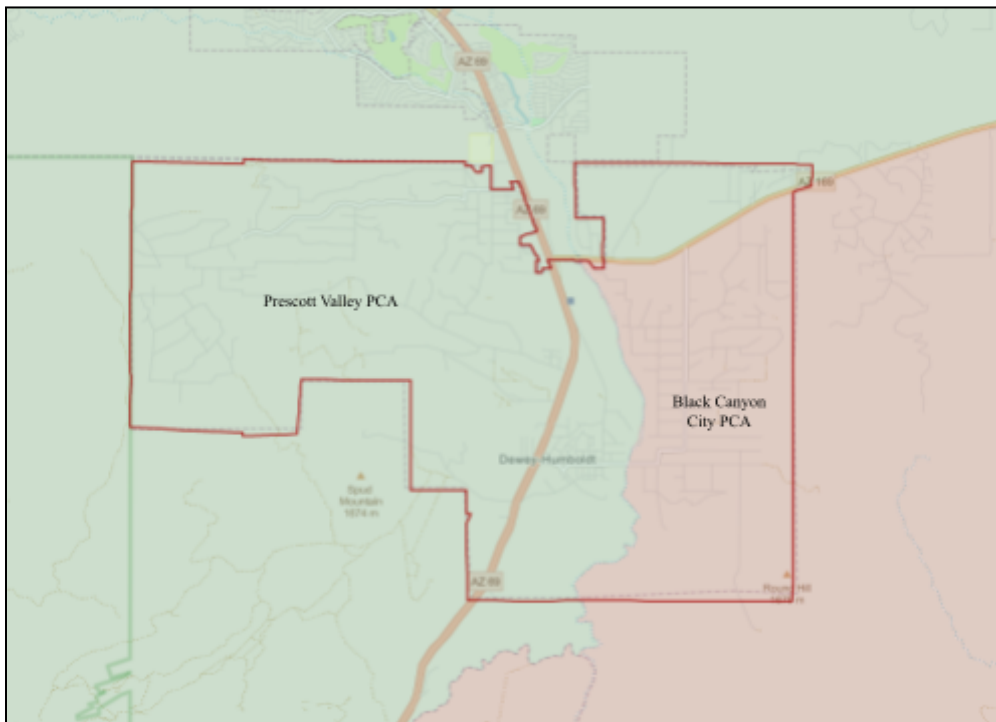


Image 2: The PCA limits and Dewey-Humboldt incorporated town boundaries. **Green:** Prescott Valley PCA; **Pink:** Blank Canyon PCA; **Red:** Incorporated town boundaries of Dewey-Humboldt

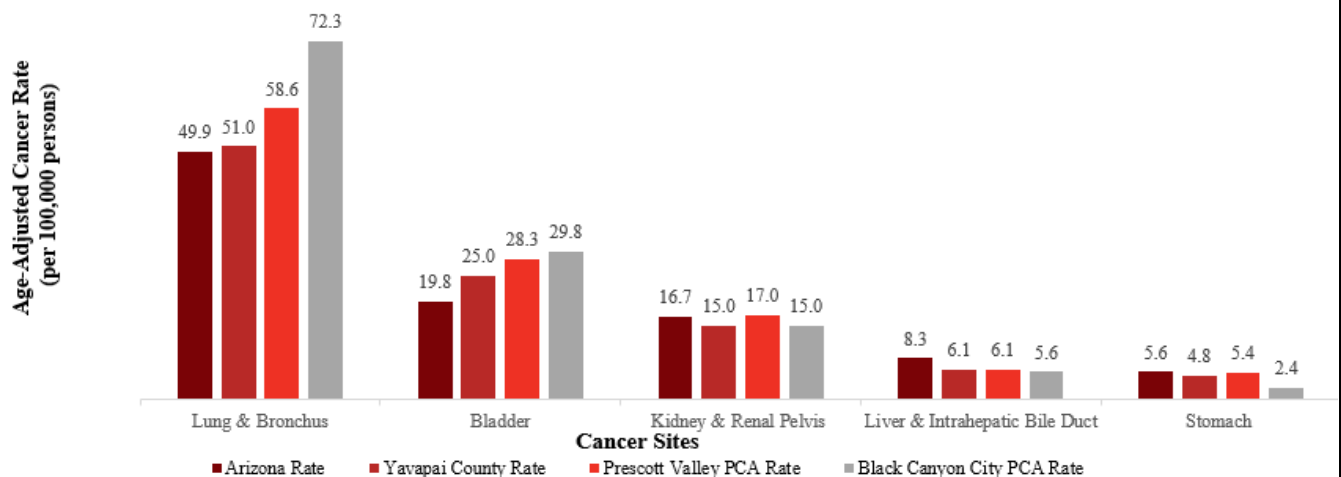
Based on the request, the ACR focused on cancers associated (Appendix B) with the heavy metals arsenic, lead, and beryllium, and performed a literature review to identify these cancers. Based on this review, the ACR evaluated Lung/Bronchus, Bladder, Kidney/Renal Pelvis, Liver and Intrahepatic Bile Duct, and Stomach cancers. The ACR analyzed cases of these specific cancer sites assigned to the Prescott Valley PCA and Black Canyon City PCA for the diagnosis years 2010 through 2018. At the time of this analysis, case reporting is complete through the 2018 diagnosis year, and mortality data is complete through 2019. The ACR compared age-adjusted rates of the Prescott Valley PCA and the Black Canyon City PCA to the Yavapai County and Arizona rates.

To determine statistical significance, 95% confidence intervals (CI) were calculated based on the age-adjusted rates of the PCAs (Prescott Valley and Black Canyon City). The age-adjusted cancer rate for the PCA is considered statistically higher than the county or state rate if the PCA rate's lower confidence bound is higher than the county or state rate. The PCA rate is considered *not* statistically different if the county or state rate falls within the confidence interval of the rate for the PCA.

### Findings

- The Prescott Valley and Black Canyon City PCA cancer rates were statistically higher for **Lung and Bronchus cancer** compared to the Arizona and Yavapai County rates.
- The Prescott Valley and Black Canyon City PCA cancer rates were statistically higher for **Bladder cancer** compared to the Arizona cancer rate but not the Yavapai County rate.
- The Prescott Valley and Black Canyon City PCA cancer rates were *not* statistically higher for **Kidney and Renal Pelvis, Liver and Intrahepatic Bile Duct, and Stomach cancer** compared to the Arizona and Yavapai County cancer rates.
- Further information regarding Lung and Bronchus and Bladder cancer is included in Appendix C.

**Figure: Comparison of the Prescott Valley PCA, Black Canyon City PCA, Yavapai County, and Arizona Age-Adjusted Cancer Rates by Cancer Site (Diagnosis Years 2010-2018)**



	Lung & Bronchus	Bladder	Kidney & Renal Pelvis	Liver & Intrahepatic Bile Duct	Stomach
■ Arizona Rate	49.9	19.8	16.7	8.3	5.6
■ Yavapai County Rate	51.0	25.0	15.0	6.1	4.8
■ Prescott Valley PCA Rate	58.6 (CI: 53.4-63.9)	28.3 (CI: 24.7-32.0)	17.0 (CI: 13.9-20.1)	6.1 (CI: 4.5-7.9)	5.4 (CI: 3.7-7.0)
■ Black Canyon PCA Rate	72.3 (CI: 60.6-84.0)	29.8 (CI: 22.3-37.3)	15.0 (CI: 9.2-20.8)	5.6 (CI: 2.7-8.6)	2.4 (CI: 0.6-4.2)

## **Limitations of the Data**

Even in the event of a statistically elevated rate of cancer in a particular region, the ACR is unable to make any conclusions regarding a link between cancers and heavy metals or any particular exposure or risk factor in that area. The ACR is limited in the data that it receives for each individual case. Data regarding a patient's environmental exposures, occupational hazards, and family and medical histories is absent from the ACR database. The ACR is able to provide a general view of cancer in the Prescott Valley and Black Canyon City PCAs through calculating age-adjusted cancer rates but cannot draw any conclusions about what may have caused elevated rates. Information on risk factors for Lung and Bronchus and Bladder cancer are included in Appendix A.

It is important to understand that the causes of many of these cancers is still unknown. Higher rates do not necessarily imply that something in a specific geographic area is causing more cancer. It is difficult to determine the cause of a cancer diagnosis or cancer cluster because there are many underlying factors that can affect an individual or population's cancer risk. Some of these underlying factors include but are not limited to inheriting genes related to increased cancer risk and engaging in behavioral risk factors associated with cancer (e.g., tobacco use, alcohol consumption, physical activity, nutrition, sexual activity etc.). The extent and prevalence of these risk factors for an individual and/or among a population impacts their cancer risk. Higher numbers of cancer cases occur by chance far more often than they occur from a causal factor in the community, and naturally occurring events sometimes occur in clusters.<sup>5</sup>

## **Conclusion**

The Arizona Department of Health Services is unable to reach any conclusions regarding the presence of an elevated cancer risk in the Dewey-Humboldt area. This analysis shows that a higher than average rate of cases of Lung/Bronchus and Bladder cancer have been identified in the Prescott Valley and Black Canyon PCAs, compared to state or county rates of those cancers for 2010-2018. However, Dewey-Humboldt comprised only 5.7% of cancer cases in the Prescott Valley and Black Canyon PCAs during this time, making it difficult to attribute that higher rate specifically to Dewey-Humboldt. Determining a cause or source of cancers in the Dewey-Humboldt area, or in the Prescott Valley or Black Canyon PCAs, is not possible using ACR data.

## **Recommendations**

- Cancer screening recommendations
- Water filtration prevention method
- Occupational exposure considerations

**Appendices: See attached document for additional information.**

**Questions:** Questions regarding this report can be directed to Dana Doyle from the Arizona Cancer Registry ([dana.doyle@azdhs.gov](mailto:dana.doyle@azdhs.gov)).

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<sup>5</sup> American Cancer Society. 2019. "Cancer Clusters." American Cancer Society. <https://www.cancer.org/healthy/cancer-causes/general-info/cancer-clusters.html>.

## Appendix A: Risk Factors for Lung/Bronchus and Bladder Cancer

The Centers for Disease Control and Prevention (CDC) found that smoking is the most prominent risk factor for lung/bronchus and bladder cancer.<sup>6,7</sup> In the United States, cigarette smoking is linked to 80-90% of all lung cancer deaths and 47% of all bladder cancer cases.<sup>8</sup>

- Risk Factors for Lung and Bronchus Cancer<sup>9</sup>
  - [Tobacco Use](#)
  - Prolonged exposure to:
    - Radon gas
    - Secondhand smoke
    - Asbestos
    - Certain metals (chromium, cadmium, arsenic)
    - Some organic chemicals
    - Radiation
    - Air pollution
    - Diesel exhaust
  - Occupational exposure:
    - Rubber manufacturing
    - Paving
    - Roofing
    - Painting
    - Chimney sweeping
- Risk Factors for Bladder Cancer<sup>10</sup>
  - [Tobacco Use](#)
  - Occupational hazards:
    - Dye industry
    - Rubber industry
    - Leather industry
    - Aluminum industry
    - Painters
  - Public drinking water contaminated with arsenic
  - Born with certain bladder defects or long-term urinary catheters

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<sup>6</sup> Centers for Disease Control and Prevention. (n.d.). *What Are the Risk Factors for Lung Cancer?* CDC. Retrieved December 6, 2022, from [https://www.cdc.gov/cancer/lung/basic\\_info/risk\\_factors.htm](https://www.cdc.gov/cancer/lung/basic_info/risk_factors.htm)

<sup>7</sup> Centers for Disease Control and Prevention. (n.d.). *Bladder Cancer*. CDC. Retrieved December 6, 2022, from <https://www.cdc.gov/cancer/bladder/index.htm>

<sup>8</sup> American Cancer Society. (n.d.). *Cancer Facts & Figures 2022*. American Cancer Society. Retrieved December 5, 2022, from <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2022/2022-cancer-facts-and-figures.pdf>

<sup>9</sup> American Cancer Society. (n.d.). *Cancer Facts & Figures 2022*. American Cancer Society. Retrieved December 5, 2022, from <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2022/2022-cancer-facts-and-figures.pdf>

<sup>10</sup> American Cancer Society. (n.d.). *Cancer Facts & Figures 2022*. American Cancer Society. Retrieved December 5, 2022, from <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2022/2022-cancer-facts-and-figures.pdf>

## Appendix B: Association versus Causation and Latency Periods

### Association versus Causation

When a cancer is associated with an environmental hazard that means that increased exposure to that hazard can increase an individual's risk of developing cancer, but it is impossible to determine if that exposure is the direct cause of the cancer.

A common example of association versus causation is of those in lower socioeconomic status having a higher risk of lung cancer.<sup>11</sup> Being of lower socioeconomic status does not cause an individual to develop lung cancer alternatively, those in a lower socioeconomic status are more likely to smoke and be exposed to air pollution which damages and mutates respiratory cells resulting in lung cancer.<sup>12</sup>

Another example of association versus causation is those who heavily consume alcohol have a higher risk of lung cancer. Being a heavy drinker does not cause an individual to develop lung cancer but those who are heavy drinkers tend to smoke more frequently and with a higher intake compared to non-drinkers, which then damages and mutates respiratory cells resulting in lung cancer.<sup>13</sup>

### Latency Periods

A latency period is the time frame from when an individual is exposed to something that can cause disease to when that individual experiences symptoms or is diagnosed.<sup>14</sup> For example, a 2014 study estimating cancer latency periods found that in a sample of 358,750 lung and bronchus cancer cases, the latency period was 13.6 years.<sup>15</sup> This means that it took 13.6 years from the time of exposure or engagement with a risk factor for an individual to experience symptoms or be diagnosed with lung cancer. During this 13.6 years an individual may engage in other risk factors that further increase their risk of lung cancer and shorten that latency period (e.g tobacco use, smoking). Since it takes approximately 13.6 years for the cancer to be detectable, it is impossible to determine a direct cause when many risk factors could be related.

#### Estimated Latency Periods:

- Lung and Bronchus: 13.6 years<sup>16</sup>
- Bladder: 14-26 years<sup>17</sup>
- Kidney and Renal Pelvis: 48.2 years<sup>18</sup>

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<sup>11</sup> LaMorte, Wayne W. 2021. "Association versus Causation." SPH.

<https://sphweb.bumc.bu.edu/otlt/MPH-Modules/PH717-QuantCore/PH717-Module1A-Populations/PH717-Module1A-Populations6.html>.

<sup>12</sup> LaMorte, Wayne W. 2021. "Association versus Causation." SPH.

<https://sphweb.bumc.bu.edu/otlt/MPH-Modules/PH717-QuantCore/PH717-Module1A-Populations/PH717-Module1A-Populations6.html>.

<sup>13</sup> Boffetta, Paolo. "Causation in the presence of weak associations." *Critical Reviews in Food Science and Nutrition* 50, no. S1 (2010): 13-16.

<sup>14</sup> National Cancer Institute. n.d. "Definition of latency period - NCI Dictionary of Cancer Terms - NCI." National Cancer Institute. Accessed January 24, 2023. <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/latency-period>.

<sup>15</sup> Nadler, Diana L., and Igor G. Zurbenko. "Estimating cancer latency times using a Weibull model." *Advances in Epidemiology* 2014 (2014).

<sup>16</sup> Nadler, Diana L., and Igor G. Zurbenko. "Estimating cancer latency times using a Weibull model." *Advances in Epidemiology* 2014 (2014).

<sup>17</sup> Yamaguchi, Naohito, Hiroshi Tazaki, Toshiteru Okubo, and Toshio Toyama. "Periodic urine cytology surveillance of bladder tumor incidence in dyestuff workers." *American journal of industrial medicine* 3, no. 2 (1982): 139-148.

<sup>18</sup> Nadler, Diana L., and Igor G. Zurbenko. "Estimating cancer latency times using a Weibull model." *Advances in Epidemiology* 2014 (2014).

- Liver: 10.8 years<sup>19</sup>
- Stomach: 22.3 years<sup>20</sup>

### **Appendix C: Additional Information about Smoking and Tobacco Use in Yavapai County**

- Information from the National Cancer Institute states that tobacco use causes many types of cancer: Lung, Larynx, Mouth, Esophagus, Throat, Bladder, Kidney, Liver, Stomach, Pancreas, Colon & Rectum, Cervix, and Acute Myeloid Leukemia.<sup>21</sup>
- Data from the Arizona Behavioral Risk Factor Surveillance System for the years 2010-2018 show:
  - The average Yavapai County smoking rate was 18.8%.
  - The average Arizona smoking rate was 15.8%.
  - Although the average Yavapai County smoking rate is higher than the Arizona rate, there is no significant statistical difference between the two rates. The sample size for Yavapai County is also small and may not be representative of the county.

### **Appendix D: Information on Lung/Bronchus and Bladder Cancer**

#### *Lung and Bronchus Cancer*

Lung and Bronchus cancer is the second most common cancer diagnosis in the United States.<sup>22</sup> There are two main types of Lung and Bronchus cancer: Non-Small Cell Lung Cancer (NSCLC) and Small Cell Lung Cancer (SCLC). NSCLC is the most common form and accounts for approximately 80-85% of all cases.<sup>23</sup> In the United States, Lung and Bronchus cancers make up approximately 12.3% of all cancer cases with an age-adjusted rate of 52.0 per 100,000 persons per year.<sup>24</sup> The National Cancer Institute, based on 2015-2019 national cancer data, states that approximately 6.0% of all men and women in the United States will be diagnosed with Lung and Bronchus cancer during their lifetime.<sup>25</sup> In Arizona, Lung and Bronchus cancer was the 2nd most diagnosed cancer in 2019 and the leading cause of death in Arizona for 2020.<sup>26</sup> Based on 2016-2019 data, the Arizona cancer incidence rate is 43.9 per 100,000 Arizonans, with the rate being higher among males (47.6/100,000) compared to females (40.8/100,000).<sup>27</sup> The mortality rate (27.7/100,000) is also higher among males (31.8/100,000) compared to females (24.2/100,000) in Arizona.<sup>28</sup>

<sup>19</sup> Nadler, Diana L., and Igor G. Zurbenko. "Estimating cancer latency times using a Weibull model." *Advances in Epidemiology* 2014 (2014).

<sup>20</sup> Nadler, Diana L., and Igor G. Zurbenko. "Estimating cancer latency times using a Weibull model." *Advances in Epidemiology* 2014 (2014).

<sup>21</sup> National Cancer Institute. (2017). Tobacco, January 23, 2017. Accessed at: <https://www.cancer.gov/about-cancer/causes-prevention/risk/tobacco> on March 21, 2022.

<sup>22</sup> American Cancer Society. (2022, February 14). *Lung Cancer Statistics | How Common is Lung Cancer?* American Cancer Society. Retrieved December 12, 2022, from <https://www.cancer.org/cancer/Lung-cancer/about/key-statistics.html>

<sup>23</sup> American Cancer Society. (2019, October 1). *What Is Lung Cancer? | Types of Lung Cancer.* American Cancer Society. Retrieved December 5, 2022, from <https://www.cancer.org/cancer/Lung-cancer/about/what-is.html>

<sup>24</sup> National Cancer Institute. (n.d.). *Common Cancer Sites — Cancer Stat Facts.* Surveillance, Epidemiology, and End Results Program. Retrieved November 16, 2022, from <https://seer.cancer.gov/statfacts/html/common.html>

<sup>25</sup> American Cancer Society. (2022, February 14). *Lung Cancer Statistics | How Common is Lung Cancer?* American Cancer Society. Retrieved December 12, 2022, from <https://www.cancer.org/cancer/Lung-cancer/about/key-statistics.html>

<sup>26</sup> Arizona Cancer Registry. (n.d.). *LUNG CANCER.* Arizona Department of Health Services. Retrieved December 12, 2022, from <https://www.azdhs.gov/documents/preparedness/public-health-statistics/cancer-registry/adhs-acr-Lung-cancer-infographic.pdf>

<sup>27</sup> American Cancer Society. (2019, October 1). *What Is Lung Cancer? | Types of Lung Cancer.* American Cancer Society. Retrieved December 5, 2022, from <https://www.cancer.org/cancer/Lung-cancer/about/what-is.html>

<sup>28</sup> American Cancer Society. (2019, October 1). *What Is Lung Cancer? | Types of Lung Cancer.* American Cancer Society. Retrieved December 5, 2022, from <https://www.cancer.org/cancer/Lung-cancer/about/what-is.html>

### *Bladder Cancer*

Bladder cancer is the fourth most common cancer diagnosis among men in the United States.<sup>29</sup> The risk for developing Bladder cancer is higher among males (1 in 27) compared to females (1 in 89).<sup>30</sup> In the United States, the incidence rates for Bladder cancer have been decreasing approximately 1% per year between 2009-2018.<sup>31</sup> The mortality rate also decreased from 2015-2019 at approximately 1.7% per year.<sup>32</sup> For Arizonans, Bladder cancer was the 6th most common cancer diagnosis in 2019 and the 9th leading cause of cancer death in 2020.<sup>33</sup> The incidence rate for Bladder cancer (18.2/100,000) is higher among males (30.6/100,000) compared to females (7.6 /100,000).<sup>9</sup> The mortality rate (4.0/100,000) is also higher among males (6.7/100,000) compared to females (1.8 /100,000).<sup>9</sup>

### **Appendix E: Additional Resources & Education**

- [CDC: Lung Cancer](#)
  - [How to Reduce Your Risk of Lung Cancer](#)
  - [Who Should be Screened for Lung Cancer](#)
- [ACS: Bladder Cancer](#)
  - The American Cancer Society web page for Bladder Cancer. Basic information, statistics, and resources can be found here.
- [CDC: Bladder Cancer](#)
  - The Centers for Disease Control and Prevention web page for Bladder Cancer. Information on symptoms, causes, how to reduce risk of Bladder Cancer, statistics, and resources can be found here.
- [ADHS/ATSDR: How to Reduce Your Exposure to Arsenic and Lead in Dewey-Humboldt, Arizona](#)
  - This fact sheet provides information on arsenic and lead exposure and gives tips for protecting yourself and your family from coming into contact with arsenic and lead in Dewey-Humboldt, Arizona.
- [ADHS: How to Reduce Your Exposure to Chemicals at Home, Work, and Play](#)
  - Educational materials on the best ways to protect yourself from harmful chemical exposures that you may encounter at home, work, or when engaging in hobbies.
- [ADHS: Environmental Health Fact Sheets](#)
  - The Environmental Health Fact Sheets provides basic information and resources developed by public health agencies on various environmental health topics and how to prevent exposures to chemicals.
- [ADHS: Environmental Toxicology](#)
  - ADHS Environmental Toxicology home page, with links to various resources and services.

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<sup>29</sup> American Cancer Society. (2022, January 12). *About Bladder Cancer - What Is Bladder Cancer? - Key Statistics for Bladder Cancer*. American Cancer Society. Retrieved December 5, 2022, from <https://www.cancer.org/cancer/Bladder-cancer/about/key-statistics.html>

<sup>30</sup> National Cancer Institute. (n.d.). *Common Cancer Sites — Cancer Stat Facts*. Surveillance, Epidemiology, and End Results Program. Retrieved November 16, 2022, from <https://seer.cancer.gov/statfacts/html/common.html>

<sup>31</sup> Centers for Disease Control and Prevention. (n.d.). *Bladder Cancer*. CDC. Retrieved December 6, 2022, from <https://www.cdc.gov/cancer/bladder/index.htm>

<sup>32</sup> Centers for Disease Control and Prevention. (n.d.). *Bladder Cancer*. CDC. Retrieved December 6, 2022, from <https://www.cdc.gov/cancer/bladder/index.htm>

<sup>33</sup> Arizona Cancer Registry. (n.d.). *BLADDER CANCER*. Arizona Department of Health Services. Retrieved December 12, 2022, from <https://www.azdhs.gov/documents/preparedness/public-health-statistics/cancer-registry/adhs-acr-Bladder-cancer-infographic.pdf>

- [ADHS: What You Should Know About Arsenic in Arizona Groundwater](#)
  - ADHS infographic on arsenic in Arizona groundwater. Information pertaining when to schedule testing if you have a private well, the health effects of arsenic exposure, and how arsenic can be removed from water can be found here.