



## Washington County Cancer Report

The Arkansas Central Cancer Registry (ACCR) at the Arkansas Department of Health (ADH) is a population-based registry that collects and manages reports of cancer cases from hospitals and other facilities that diagnose or treat cancer in the state.

ACCR does not collect information on personal behaviors or environmental exposures that may affect cancer risk. However, research shows that several common factors can influence the risk of developing cancer. These include tobacco use, diet, excess body weight, alcohol use, too much sun exposure, and physical inactivity. Risk also increases with factors that cannot be controlled, such as age.

In 2025, the ACCR was asked to review cancer data for Washington county. Following the ADH's Guidelines for Examining Unusual Patterns of Chronic Disease and Environmental Concerns, ACCR analyzed cancer cases by cancer type from 2009 through 2023 in five-year intervals.<sup>1</sup> These data are referenced in Appendix A of this document. *Note: Data for 2023 are considered preliminary. To protect privacy, cancer sites with fewer than 10 cases are not shown.*

### How does ADH calculate an excess of cancer?

The ADH uses a method called the Standardized Incidence Ratio (SIR) that divides the number of cancer cases in an area (the observed cases) by the number of cases that would be expected based on statewide cancer rates (the expected cases). This helps determine whether cancer occurs more or less often in a specific area compared to the state overall.

In this report, SIRs for Benton and Pulaski Counties were provided for context, as Benton County is adjacent to the area of concern, and both have an urban population in a largely rural state. It is common for urban populations to have higher rates of cancer due to increased access to screenings.

### How do you interpret the SIR?

- SIR equal to 1 means that the number of observed cases is similar to the state average.
- SIR greater than 1 means there are more cases of cancer than expected.
- SIR less than 1 means there are fewer cases of cancer than expected.
- Confidence intervals (CI) show how reliable the SIR estimate is. A wider range means there is less certainty about the result, while a narrow range means there is more confidence in the number.

### **How is it decided if an epidemiologic study is needed?**

Cancer can develop from many factors, including genetics, lifestyle, and the length of time it takes for cancer to develop between an exposure and the onset of disease. Because of these factors, it is challenging for ACCR to identify a single cause of cancer in a community, especially when accounting for differences in screening and access to care.

When a chemical or exposure increases cancer risk, it's easier to notice that pattern in the data. Smaller increases, however, can be harder to detect because other factors also influence cancer risk.<sup>3,4</sup>

### **What are the limitations of this investigation?**

This investigation describes the number of cancer cases in Washington County and Benton County. It is important to keep in mind that there are limits to this information and to the cancer data used in the analysis, including:

- Cancer is a multifactorial disease with several different risk factors (for example, the risk factors for breast cancer include (but not limited to) age, genetics, family history, personal history, race and ethnicity, menstrual history, hormone use, obesity, and breast density. Similarly, the risk factors for skin cancer include (but not limited to) exposure to UV radiation from sun or tanning beds, fair skin, a family history of skin cancer, and presence of large moles. Our analysis does not account for all the risk factors for any given cancer assessed.
- Residential history and work data are limited. Cancer registry records typically include only a person's residence at the time of diagnosis, not their previous residences or places of work. Because many cancers take years to develop, past residence and exposure history are important but often unavailable.
- Cancer rates alone cannot prove cause and effect. Higher cancer rates in a community do not necessarily mean that living near a chemical or environmental concern caused the disease. This investigation used surveillance data grouped by cancer type and cannot directly show whether cancers are linked to environmental exposures.
- Small populations make results less precise. When data are analyzed for smaller areas, such as cities or ZIP codes, the small number of cases can make the results less reliable. For this reason, cancer investigations are conducted only at the county level.
- Reported cancer rates may be higher in areas where there is more access to care, for example breast cancer screenings.

### **What are the results of the investigation?**

Cancer is an umbrella term that includes more than 100 different diseases, each with its own set of risk factors. These factors—such as age, sex, race or ethnicity, and lifestyle—can increase the chance of developing cancer, but they do not always cause it directly.

From 2009 to 2023, the number of cancer cases for all combined cancer types was lower than expected for Washington and Benton counties for each five-year period.

- The SIR for all combined cancer types for Washington County between 2019 and 2023 was 0.87, indicating 13% fewer cancers than expected (Appendix A, Table 1).
- When evaluating cancer types separately, the SIR for breast cancer was consistently above 1.0 in Washington County, which means the number of people diagnosed with breast cancer was higher than what was expected. Between 2014 and 2018, the SIR in Washington County was 1.15, which means that there were about 15% more cases of breast cancer than what was expected (Appendix A, Table 2).

Based on the results of this investigation, no further action is needed.

Questions regarding this report should be directed to [adh.communications@arkansas.gov](mailto:adh.communications@arkansas.gov).

### **References**

1. Arkansas Department of Health. Arkansas - Guidelines for Examining Unusual Patterns of Chronic Disease and Environmental Concerns. Published online 2025. [https://healthy.arkansas.gov/wp-content/uploads/FINAL\\_ADH-Chronic-Disease-Pattern-Examination-Protocol.pdf](https://healthy.arkansas.gov/wp-content/uploads/FINAL_ADH-Chronic-Disease-Pattern-Examination-Protocol.pdf)
2. Centers for Disease Control and Prevention. Standardized Incidence Ratio (SIR) - Fact Sheet. Published online 2022. <https://www.cdc.gov/cancer-environment/media/pdfs/Standardized-Incidence-Ratio-Fact-Sheet-508.pdf>
3. Chen H, Cohen P, Chen S. How Big is a Big Odds Ratio? Interpreting the Magnitudes of Odds Ratios in Epidemiological Studies. *Communications in Statistics - Simulation and Computation*. 2010;39(4):860-864. doi:10.1080/03610911003650383
4. Ferguson CJ. An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice*. 2009;40(5):532-538. doi:10.1037/a0015808

## Appendix A

**Table 1. Standardized Incidence Ratio (SIR) by County, Arkansas, 2019 – 2023**

|                                 | Washington County |                |             |             |             | Benton County  |                |             |             |             | Pulaski County |                |             |             |             |
|---------------------------------|-------------------|----------------|-------------|-------------|-------------|----------------|----------------|-------------|-------------|-------------|----------------|----------------|-------------|-------------|-------------|
|                                 | Observed cases    | Expected cases | SIR         | 95% CI      |             | Observed cases | Expected cases | SIR         | 95% CI      |             | Observed cases | Expected cases | SIR         | 95% CI      |             |
| All Malignant and Non-Malignant | 5,558             | 6,360          | <b>0.87</b> | <b>0.85</b> | <b>0.90</b> | 7,896          | 8,186          | <b>0.96</b> | <b>0.94</b> | <b>0.99</b> | 13,193         | 12,470         | <b>1.06</b> | <b>1.04</b> | <b>1.08</b> |
| Combined                        | 4,098             | 4,591          | <b>0.89</b> | <b>0.89</b> | <b>0.89</b> | 5,904          | 5,924          | <b>1.00</b> | <b>0.97</b> | <b>1.02</b> | 9,520          | 9,065          | <b>1.05</b> | <b>1.03</b> | <b>1.07</b> |
| Brain and spinal-related tumors | 187               | 241            | <b>0.78</b> | <b>0.67</b> | <b>0.89</b> | 329            | 306            | <b>1.08</b> | <b>0.96</b> | <b>1.19</b> | 546            | 451            | <b>1.21</b> | <b>1.11</b> | <b>1.31</b> |
| Bones and joint                 | *                 | 13             | <b>0.69</b> | <b>0.31</b> | <b>1.22</b> | 15             | 15             | <b>1.00</b> | <b>0.56</b> | <b>1.57</b> | 21             | 22             | <b>0.95</b> | <b>0.59</b> | <b>1.41</b> |
| Breast                          | 1,088             | 964            | <b>1.13</b> | <b>1.06</b> | <b>1.20</b> | 1,384          | 1,230          | <b>1.13</b> | <b>1.07</b> | <b>1.19</b> | 2,207          | 1,927          | <b>1.15</b> | <b>1.10</b> | <b>1.19</b> |
| Colon                           | 340               | 360            | <b>0.94</b> | <b>0.85</b> | <b>1.05</b> | 399            | 466            | <b>0.86</b> | <b>0.77</b> | <b>0.94</b> | 642            | 712            | <b>0.90</b> | <b>0.83</b> | <b>0.97</b> |
| Kidney                          | 209               | 275            | <b>0.76</b> | <b>0.66</b> | <b>0.87</b> | 345            | 354            | <b>0.97</b> | <b>0.87</b> | <b>1.08</b> | 484            | 534            | <b>0.91</b> | <b>0.83</b> | <b>0.99</b> |
| Leukemia                        | 118               | 160            | <b>0.74</b> | <b>0.61</b> | <b>0.88</b> | 188            | 204            | <b>0.92</b> | <b>0.79</b> | <b>1.06</b> | 311            | 307            | <b>1.01</b> | <b>0.90</b> | <b>1.13</b> |
| Liver                           | 81                | 93             | <b>0.87</b> | <b>0.69</b> | <b>1.07</b> | 113            | 120            | <b>0.94</b> | <b>0.78</b> | <b>1.12</b> | 201            | 189            | <b>1.06</b> | <b>0.92</b> | <b>1.22</b> |
| Lung and bronchus               | 599               | 847            | <b>0.71</b> | <b>0.65</b> | <b>0.76</b> | 822            | 589            | <b>1.40</b> | <b>1.30</b> | <b>1.49</b> | 1,514          | 1,727          | <b>0.88</b> | <b>0.83</b> | <b>0.92</b> |
| Lymphoma                        | 212               | 245            | <b>0.87</b> | <b>0.75</b> | <b>0.99</b> | 293            | 310            | <b>0.95</b> | <b>0.84</b> | <b>1.06</b> | 498            | 468            | <b>1.06</b> | <b>0.97</b> | <b>1.16</b> |
| Prostate                        | 572               | 683            | <b>0.84</b> | <b>0.77</b> | <b>0.91</b> | 803            | 890            | <b>0.90</b> | <b>0.84</b> | <b>0.97</b> | 1,731          | 1,338          | <b>1.29</b> | <b>1.23</b> | <b>1.36</b> |
| Skin                            | 480               | 482            | <b>1.00</b> | <b>0.91</b> | <b>1.09</b> | 873            | 622            | <b>1.40</b> | <b>1.31</b> | <b>1.50</b> | 965            | 938            | <b>1.03</b> | <b>0.96</b> | <b>1.09</b> |
| Bladder                         | 203               | 225            | <b>0.90</b> | <b>0.78</b> | <b>1.03</b> | 340            | 295            | <b>1.15</b> | <b>1.03</b> | <b>1.28</b> | 400            | 462            | <b>0.87</b> | <b>0.78</b> | <b>0.95</b> |

\* To protect privacy, cancer sites with fewer than 10 cases are not shown.

Source: Arkansas Central Cancer Registry data retrieved 10/03/2025.

## Appendix A

**Table 2. Standardized Incidence Ratio (SIR) by County, Arkansas, 2014-2018**

|                                 | Washington County |                |             |             |             | Benton County  |                |             |             |             | Pulaski County |                |             |             |             |
|---------------------------------|-------------------|----------------|-------------|-------------|-------------|----------------|----------------|-------------|-------------|-------------|----------------|----------------|-------------|-------------|-------------|
|                                 | Observed cases    | Expected cases | SIR         | 95% CI      |             | Observed cases | Expected cases | SIR         | 95% CI      |             | Observed cases | Expected cases | SIR         | 95% CI      |             |
| All Malignant and Non-Malignant | 5,535             | 5,653          | <b>0.98</b> | <b>0.95</b> | <b>1.01</b> | 6,869          | 7,176          | <b>0.96</b> | <b>0.93</b> | <b>0.98</b> | 12,369         | 12,018         | <b>1.03</b> | <b>1.01</b> | <b>1.05</b> |
| Combined                        | 4,046             | 4,098          | <b>0.99</b> | <b>0.99</b> | <b>1.02</b> | 5,086          | 5,219          | <b>0.97</b> | <b>0.95</b> | <b>1.00</b> | 8,939          | 8,765          | <b>1.02</b> | <b>1.00</b> | <b>1.04</b> |
| Brain and spinal-related tumors | 154               | 203            | <b>0.76</b> | <b>0.64</b> | <b>0.88</b> | 214            | 252            | <b>0.85</b> | <b>0.74</b> | <b>0.97</b> | 539            | 408            | <b>1.32</b> | <b>1.21</b> | <b>1.43</b> |
| Bones and joint                 | 16                | 13             | <b>1.23</b> | <b>0.70</b> | <b>1.91</b> | 14             | 15             | <b>0.93</b> | <b>0.51</b> | <b>1.49</b> | 17             | 23             | <b>0.74</b> | <b>0.43</b> | <b>1.13</b> |
| Breast                          | 947               | 824            | <b>1.15</b> | <b>1.08</b> | <b>1.22</b> | 1,210          | 1,042          | <b>1.16</b> | <b>1.10</b> | <b>1.23</b> | 1,832          | 1,796          | <b>1.02</b> | <b>0.97</b> | <b>1.07</b> |
| Colon                           | 313               | 336            | <b>0.93</b> | <b>0.83</b> | <b>1.04</b> | 377            | 430            | <b>0.88</b> | <b>0.79</b> | <b>0.97</b> | 619            | 722            | <b>0.86</b> | <b>0.79</b> | <b>0.93</b> |
| Kidney                          | 204               | 230            | <b>0.89</b> | <b>0.77</b> | <b>1.01</b> | 246            | 292            | <b>0.84</b> | <b>0.74</b> | <b>0.95</b> | 450            | 485            | <b>0.93</b> | <b>0.84</b> | <b>1.02</b> |
| Leukemia                        | 160               | 152            | <b>1.05</b> | <b>0.90</b> | <b>1.22</b> | 166            | 191            | <b>0.87</b> | <b>0.74</b> | <b>1.01</b> | 322            | 314            | <b>1.03</b> | <b>0.92</b> | <b>1.14</b> |
| Liver                           | 61                | 77             | <b>0.79</b> | <b>0.61</b> | <b>1.00</b> | 71             | 98             | <b>0.72</b> | <b>0.57</b> | <b>0.90</b> | 178            | 168            | <b>1.06</b> | <b>0.91</b> | <b>1.22</b> |
| Lung and bronchus               | 663               | 811            | <b>0.82</b> | <b>0.76</b> | <b>0.88</b> | 823            | 1,047          | <b>0.79</b> | <b>0.73</b> | <b>0.84</b> | 1,503          | 1,778          | <b>0.85</b> | <b>0.80</b> | <b>0.89</b> |
| Lymphoma                        | 218               | 220            | <b>0.99</b> | <b>0.86</b> | <b>1.13</b> | 257            | 277            | <b>0.93</b> | <b>0.82</b> | <b>1.04</b> | 472            | 456            | <b>1.04</b> | <b>0.94</b> | <b>1.13</b> |
| Prostate                        | 550               | 609            | <b>0.90</b> | <b>0.83</b> | <b>0.98</b> | 694            | 779            | <b>0.89</b> | <b>0.83</b> | <b>0.96</b> | 1,716          | 1,296          | <b>1.32</b> | <b>1.26</b> | <b>1.39</b> |
| Skin                            | 533               | 415            | <b>1.28</b> | <b>1.18</b> | <b>1.40</b> | 728            | 528            | <b>1.38</b> | <b>1.28</b> | <b>1.48</b> | 902            | 878            | <b>1.03</b> | <b>0.96</b> | <b>1.10</b> |
| Bladder                         | 227               | 203            | <b>1.12</b> | <b>0.98</b> | <b>1.27</b> | 286            | 265            | <b>1.08</b> | <b>0.96</b> | <b>1.21</b> | 389            | 449            | <b>0.87</b> | <b>0.78</b> | <b>0.95</b> |

Source: Arkansas Central Cancer Registry data retrieved 10/03/2025.

## Appendix A

**Table 3. Standardized Incidence Ratio (SIR) by County, Arkansas, 2009-2013**

|                                 | Washington County |                |             |             |             | Benton County  |                |             |             |             | Pulaski County |                |             |             |             |
|---------------------------------|-------------------|----------------|-------------|-------------|-------------|----------------|----------------|-------------|-------------|-------------|----------------|----------------|-------------|-------------|-------------|
|                                 | Observed cases    | Expected cases | SIR         | 95% CI      |             | Observed cases | Expected cases | SIR         | 95% CI      |             | Observed cases | Expected cases | SIR         | 95% CI      |             |
| Malignant and non-malignant     | 4,460             | 4,542          | <b>0.98</b> | <b>0.95</b> | <b>1.01</b> | 5,468          | 5,719          | <b>0.96</b> | <b>0.93</b> | <b>0.98</b> | 11,345         | 10,290         | <b>1.10</b> | <b>1.08</b> | <b>1.12</b> |
| Combined                        | 3,342             | 3,322          | <b>1.01</b> | <b>0.97</b> | <b>1.04</b> | 4,049          | 4,202          | <b>0.96</b> | <b>0.93</b> | <b>0.99</b> | 8,384          | 7,560          | <b>1.11</b> | <b>1.09</b> | <b>1.13</b> |
| Brain and spinal-related tumors | 127               | 160            | <b>0.79</b> | <b>0.66</b> | <b>0.94</b> | 175            | 191            | <b>0.92</b> | <b>0.79</b> | <b>1.06</b> | 443            | 338            | <b>1.31</b> | <b>1.19</b> | <b>1.44</b> |
| Bones and joint                 | 13                | 10             | <b>1.30</b> | <b>0.69</b> | <b>2.10</b> | *              | 11             | <b>0.64</b> | <b>0.25</b> | <b>1.20</b> | 19             | 19             | <b>1.00</b> | <b>0.60</b> | <b>1.50</b> |
| Breast                          | 746               | 676            | <b>1.10</b> | <b>1.03</b> | <b>1.18</b> | 894            | 848            | <b>1.05</b> | <b>0.99</b> | <b>1.12</b> | 1,865          | 1,580          | <b>1.18</b> | <b>1.13</b> | <b>1.23</b> |
| Colon                           | 251               | 282            | <b>0.89</b> | <b>0.78</b> | <b>1.00</b> | 324            | 362            | <b>0.90</b> | <b>0.80</b> | <b>1.00</b> | 607            | 649            | <b>0.94</b> | <b>0.86</b> | <b>1.01</b> |
| Kidney                          | 132               | 159            | <b>0.83</b> | <b>0.69</b> | <b>0.98</b> | 171            | 199            | <b>0.86</b> | <b>0.74</b> | <b>0.99</b> | 382            | 358            | <b>1.07</b> | <b>0.96</b> | <b>1.18</b> |
| Leukemia                        | 89                | 107            | <b>0.83</b> | <b>0.67</b> | <b>1.01</b> | 119            | 132            | <b>0.90</b> | <b>0.75</b> | <b>1.07</b> | 277            | 232            | <b>1.19</b> | <b>1.06</b> | <b>1.34</b> |
| Liver                           | 50                | 55             | <b>0.89</b> | <b>0.66</b> | <b>1.16</b> | 56             | 69             | <b>0.81</b> | <b>0.61</b> | <b>1.04</b> | 158            | 129            | <b>1.22</b> | <b>1.04</b> | <b>1.42</b> |
| Lung and bronchus               | 593               | 687            | <b>0.86</b> | <b>0.80</b> | <b>0.93</b> | 651            | 887            | <b>0.73</b> | <b>0.68</b> | <b>0.79</b> | 1,388          | 1,598          | <b>0.87</b> | <b>0.82</b> | <b>0.91</b> |
| Lymphoma                        | 173               | 190            | <b>0.91</b> | <b>0.78</b> | <b>1.05</b> | 199            | 235            | <b>0.85</b> | <b>0.73</b> | <b>0.97</b> | 468            | 419            | <b>1.12</b> | <b>1.02</b> | <b>1.22</b> |
| Prostate                        | 533               | 549            | <b>0.97</b> | <b>0.89</b> | <b>1.06</b> | 690            | 706            | <b>0.98</b> | <b>0.91</b> | <b>1.05</b> | 1,695          | 1,228          | <b>1.38</b> | <b>1.32</b> | <b>1.45</b> |
| Skin                            | 447               | 280            | <b>1.60</b> | <b>1.45</b> | <b>1.75</b> | 510            | 350            | <b>1.46</b> | <b>1.33</b> | <b>1.59</b> | 716            | 623            | <b>1.15</b> | <b>1.07</b> | <b>1.24</b> |
| Bladder                         | 188               | 171            | <b>1.10</b> | <b>0.95</b> | <b>1.26</b> | 253            | 223            | <b>1.13</b> | <b>1.00</b> | <b>1.28</b> | 366            | 397            | <b>0.92</b> | <b>0.83</b> | <b>1.02</b> |

\* To protect privacy, cancer sites with fewer than 10 cases are not shown.

Source: Arkansas Central Cancer Registry data retrieved 10/03/2025.