

Evaluation of Ethylene Oxide-related Cancers in Kanawha County, West Virginia

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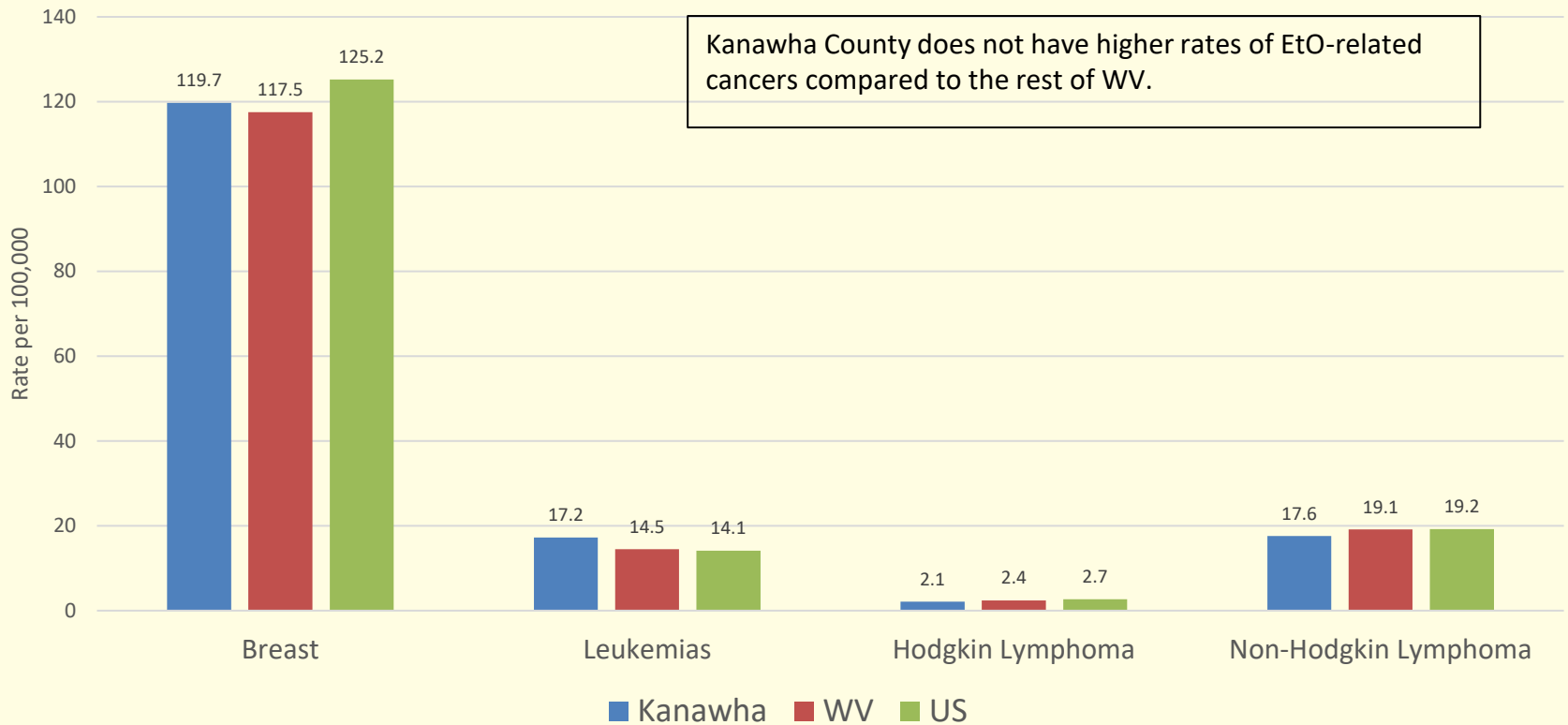


Concerns

- Are there more cancers associated with ethylene oxide (EtO) in Kanawha County compared to other counties in West Virginia (WV)?
- Are trends in EtO-related cancers different in Kanawha County compared to the rest of WV?
- Are there higher percentages of EtO-related cancers in Institute, Dunbar, or South Charleston compared to the rest of Kanawha County?
- Are EtO-related cancers in Kanawha County clustered around the facilities identified by the US Environmental Protection Agency (EPA)?

Rate Comparison for Cancers Associated with EtO

Rate Comparison for Cancers Associated with EtO 2012-2016

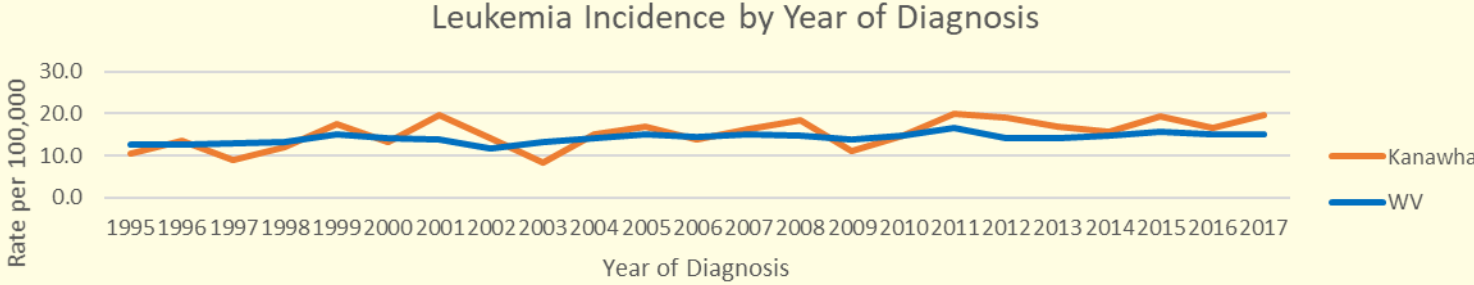
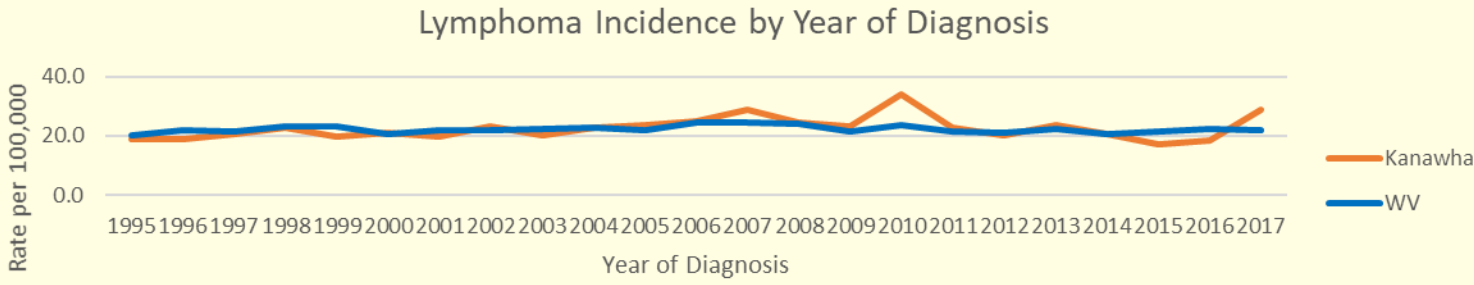
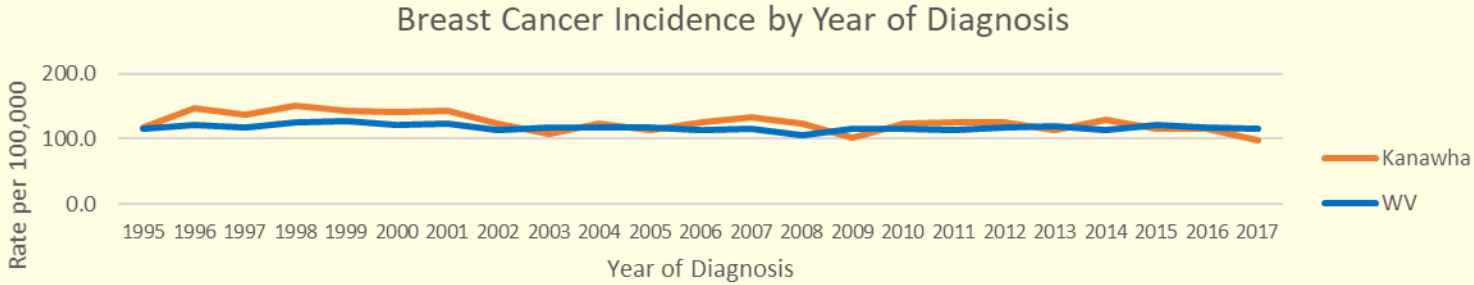


Cancer Type Ranking in Kanawha County

Type of Cancer	Kanawha County Rank Among WV Counties	Top 3 Counties
Breast	23rd (22 WV counties have higher rates)	Greenbrier, Marion, Pleasants
Leukemias	12th	Pleasants, Clay, Summers
Hodgkin Lymphoma	38th	Pocahontas, Tucker, McDowell
Non-Hodgkin Lymphoma	36th	Tucker, Pendleton, Roane

Kanawha County does not rank in the top ten WV counties for any cancer associated with EtO.

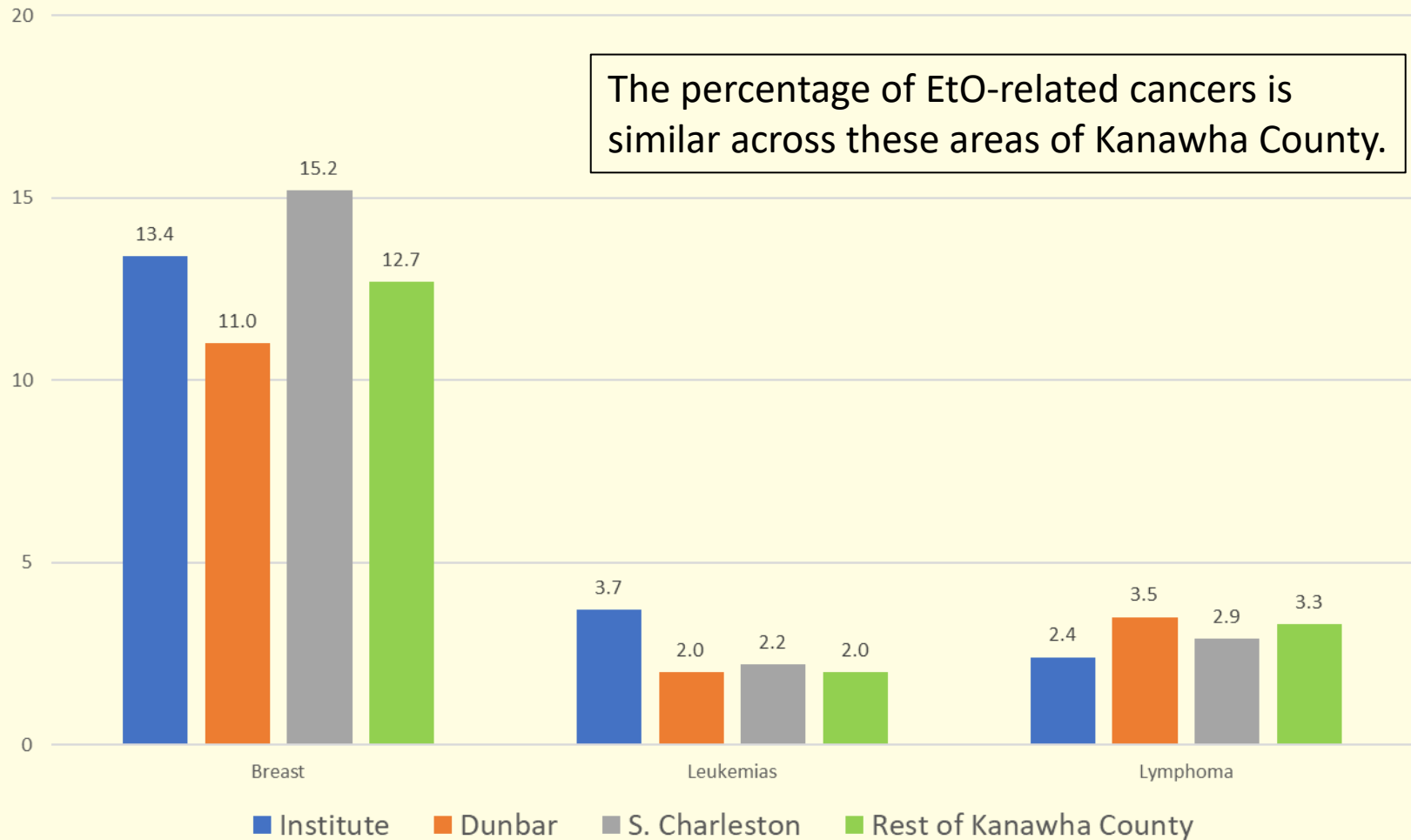
Kanawha County Trends



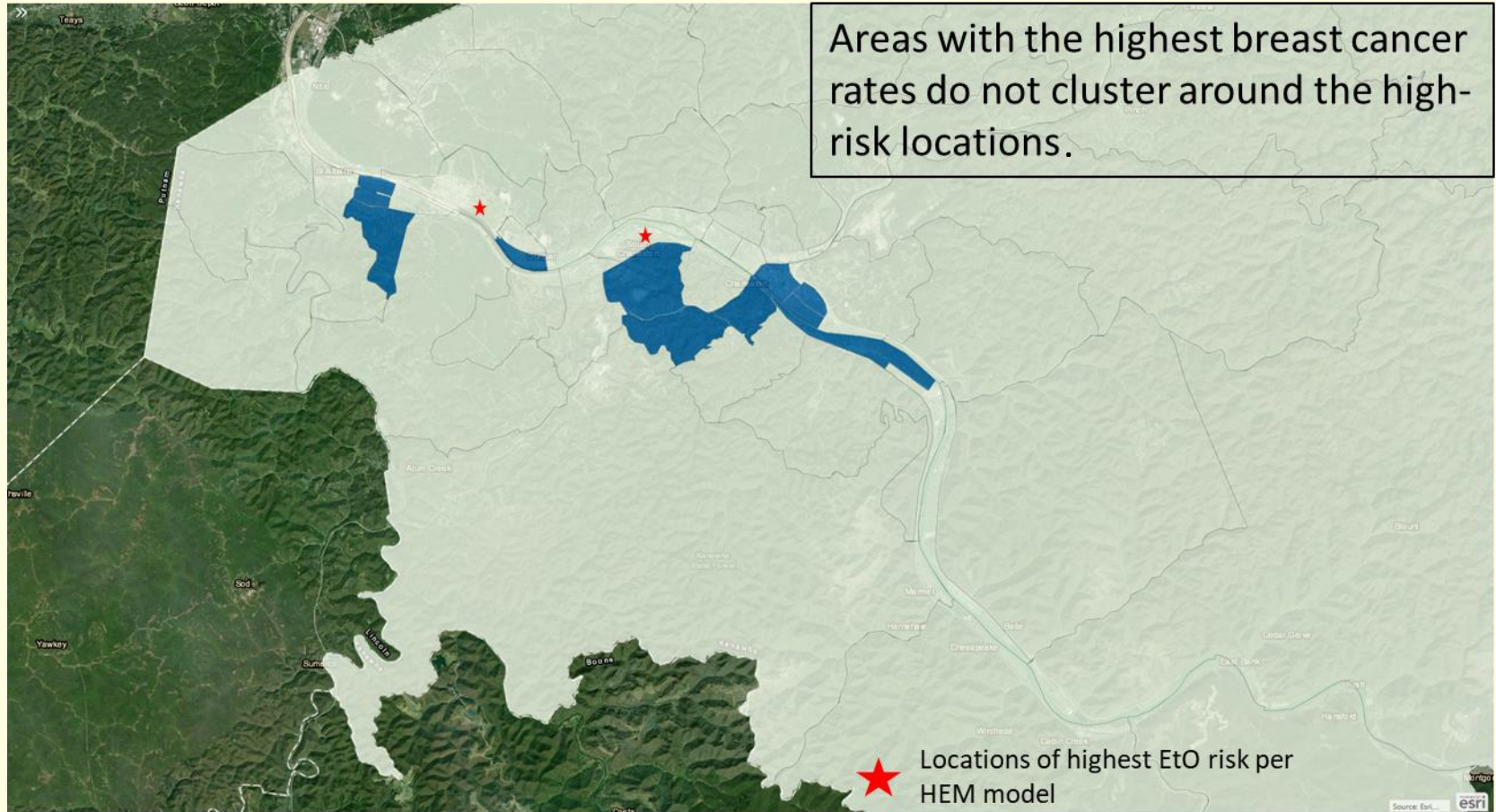
Trends in Kanawha County are similar to trends in the rest of the state

Percentage of Cases by Zip Code

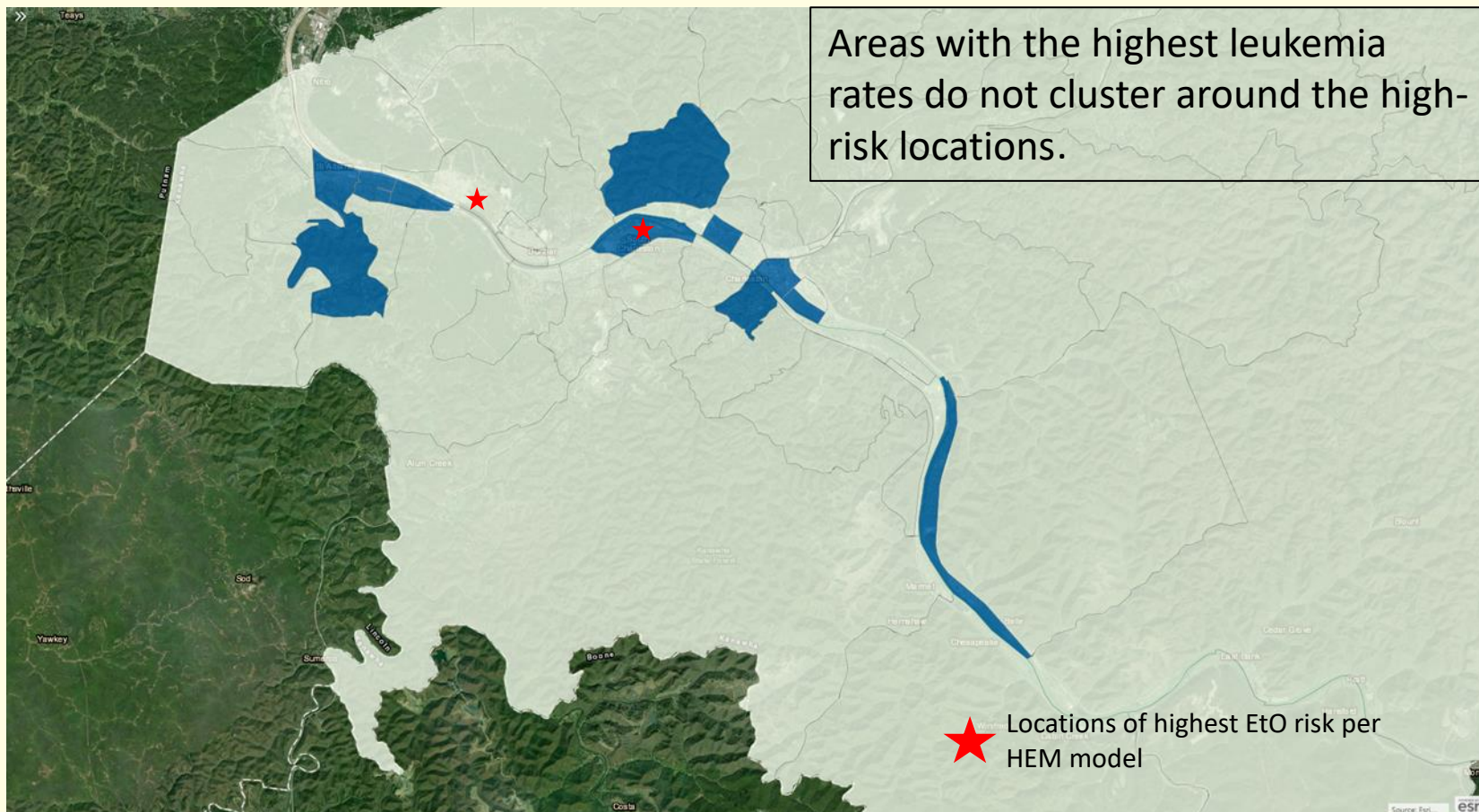
Percentage of Cases by Zip Code



Kanawha County Breast Cancer



Kanawha County Leukemias



- The rate of EtO-related cancers in Kanawha County is not significantly higher than the rate in the rest of WV.
- Trends in EtO-related cancers over time in Kanawha County are not significantly different than the trends in the rest of WV.
- The percentage of cases of EtO-related cancers in Institute, Dunbar, and South Charleston are not significantly different than the percentages in the rest of Kanawha County.
- There is no evidence of increased risk of EtO-related cancers surrounding the facilities identified by the EPA.

Understanding “Excess Cancer Risk”

Cancer risk is the likelihood, or chance, of getting cancer. We say “excess cancer risk” because we have a “background risk” of about one in four chances of getting cancer. In other words, in a million people, it is expected that 250,000 individuals would get cancer from a variety of causes. If we say that there is a “one in a million” excess cancer risk from a given exposure to a contaminant, we mean that if one million people are exposed to a carcinogen at a certain concentration over their lifetime, then one cancer above the background chance, or the 250,000th cancer, may appear in those million persons from that particular exposure. In order to take into account, the uncertainties in the science, the risk numbers used are plausible upper limits of the actual risk based on conservative assumptions. In actuality, the risk is probably somewhat lower than calculated, and in fact may be zero.

Quoted from the source below. Highlighting added for emphasis.

www.atsdr.cdc.gov/HAC/pha/CasmaliaResources/Appendix_A-B.pdf

Examples of Lifetime Risk

- 1 in 2 Risk of being diagnosed with cancer (male)
- 1 in 3 Risk of being diagnosed with cancer (female)
- 1 in 101 Risk of death by car accident
- 1 in 102 Risk of death by falling
- 1 in 1,024 Risk of drowning
- 1 in 2,745 Risk of death by choking on food
- 1 in 15,300 Risk of being struck by lightning
- 1 in 69,016 Risk of death by dog attack

Source for death statistics: National Safety Council estimates based on data from National Center for Health Statistics—Mortality Data for 2020

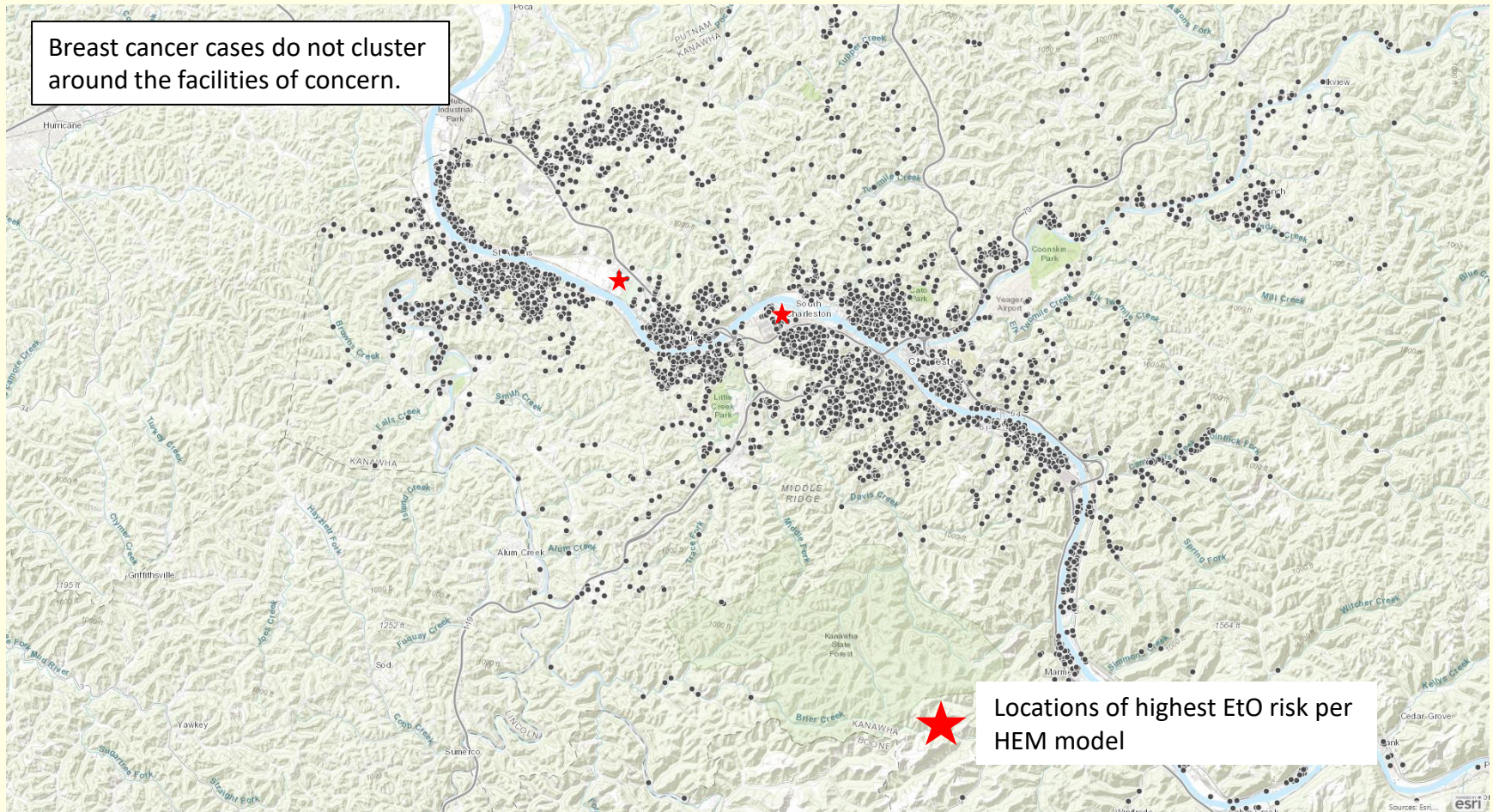
Recommendations

- Talk with your primary care provider if you have concerns
- Get your recommended cancer screenings
- Get your annual physical

- Individual cases of the types of cancer known to be associated with EtO exposure were mapped to look for evidence of clustering around the facilities of interest
- One would expect that if EtO is a significant driver of cancer incidence in Kanawha County, these cases should cluster near the facilities and decrease in number with distance from the facilities
- The results show no evidence that cancer incidence is related to living near these facilities

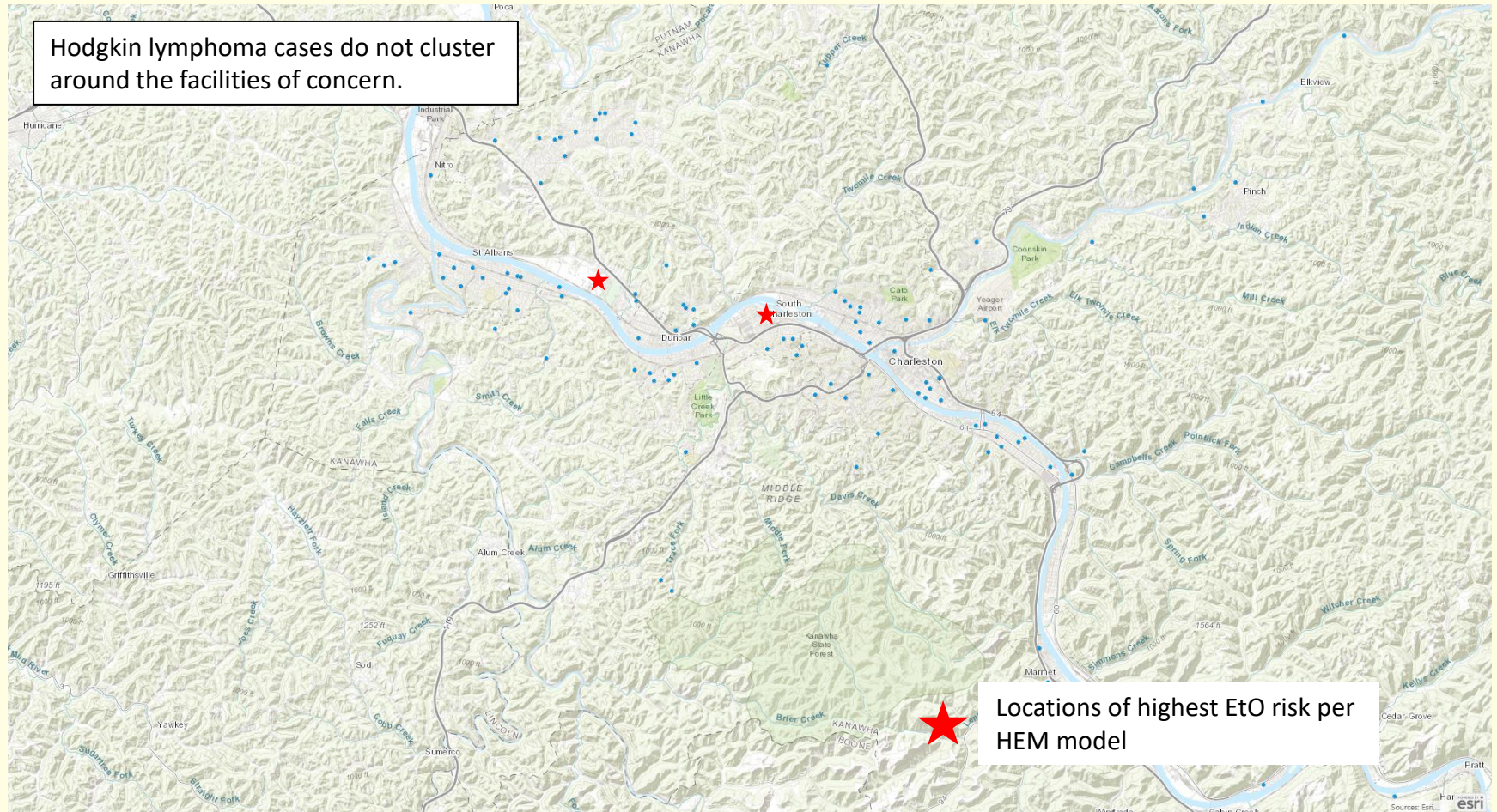
Distribution of Breast Cancer Cases

Kanawha County, 1993 – 2019 (n=4,941)



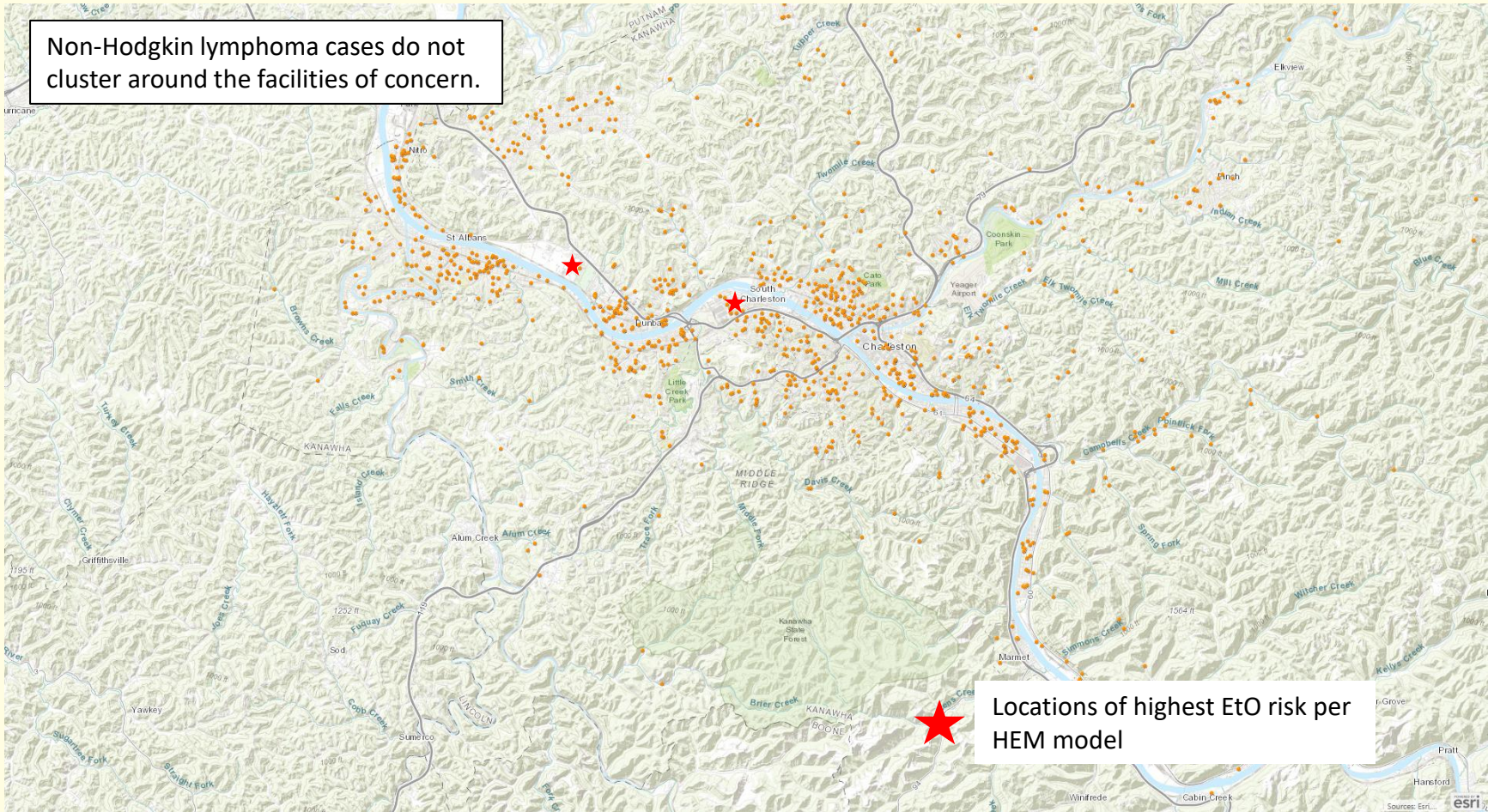
Distribution of Hodgkin Lymphoma Cases

Kanawha County, 1993 – 2019 (n=117)



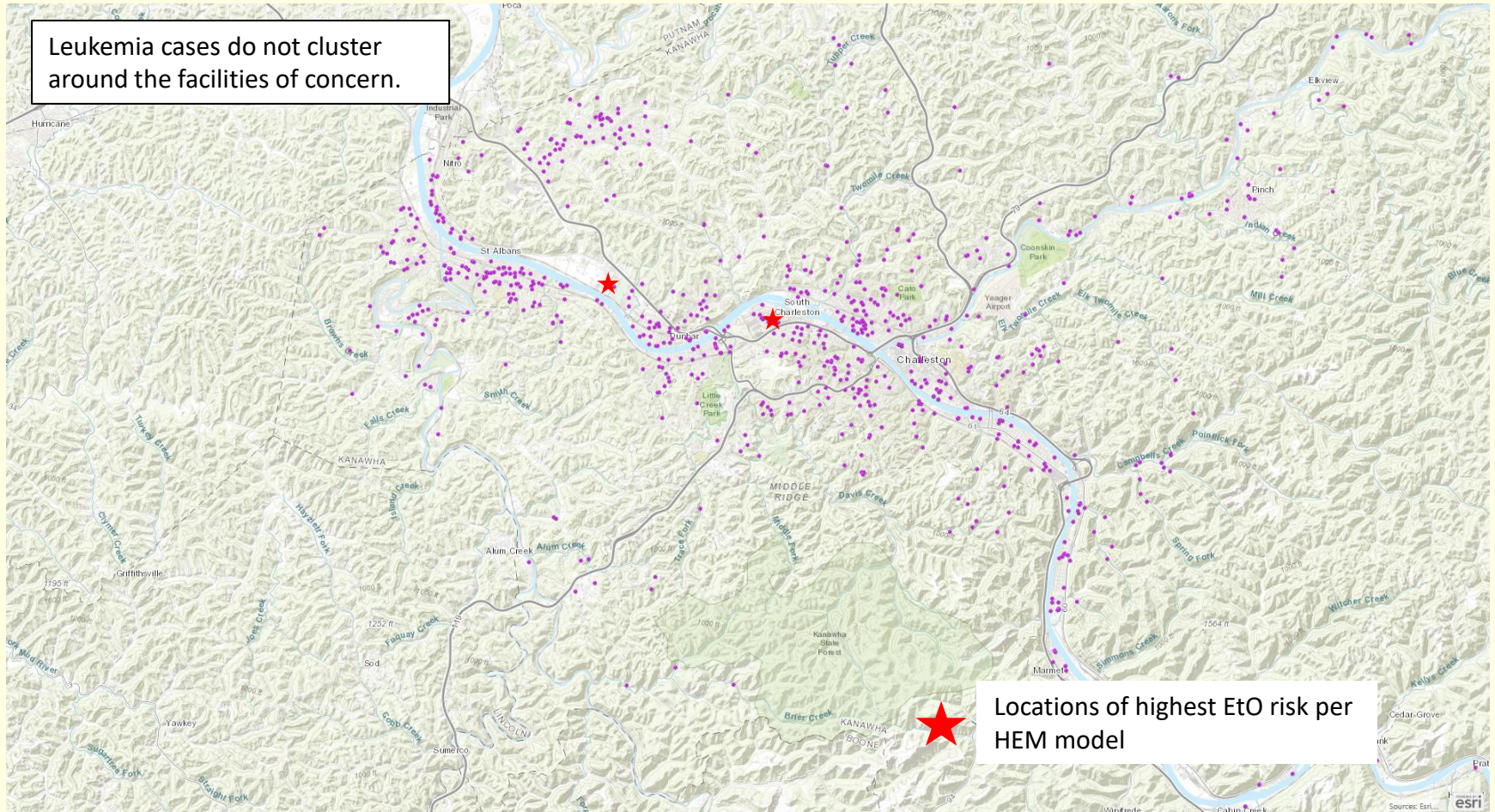
Distribution of Non-Hodgkin Lymphoma Cases

Kanawha County, 1993 – 2019 (n=1,100)



Distribution of Leukemia Cases

Kanawha County, 1993 – 2019 (n=808)



Contact Information

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