
Indian River Cancer Cluster Investigation

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About Cancer Clusters

- ◆ What is a cancer cluster?
- ◆ How do you investigate a cancer cluster?
- ◆ Why are the causes of a cancer cluster hard to identify?
- ◆ Have the causes of a cancer cluster *ever* been identified?



What is a Cancer Cluster?

A greater-than-expected number of cancer cases that occurs within a group of people in a specific geographic area during a specific time period.



How Do You Investigate a Cancer Cluster?

- ◆ **Step 1:** Specify the population at risk and the time period in question.
- ◆ **Step 2:** Determine if the number of cases that actually occurred is significantly greater than the number that is expected.
- ◆ **Step 3:** Interpret the data to determine if the cluster could be the result of an unusual external cause.
- ◆ **Step 4:** If there is reason to believe that there is an unusual external cause, perform follow-up studies to prove causality.



Why are the Causes of a Cancer Cluster Hard to Identify?

- ◆ Clusters of any disease occur by chance
- ◆ Time between “exposure” and the development of cancer can be decades
- ◆ Mobility of the population
- ◆ In the community setting (as opposed to a work setting), exposure to environmental agents is difficult to measure
- ◆ Cancer almost always caused by a combination of factors not yet fully understood
- ◆ Risk factors having nothing to do with an “external” cause are common



Have the Causes of a Cancer Cluster *Ever* been Identified?

- ◆ Yes, when:
 - ✓ A large number of one type of cancer rather than several different types
 - ✓ A rare type of cancer rather than common types
 - ✓ An increased number of cases of a certain type of cancer in an age group that is not usually affected by that type of cancer
- ◆ Research has shown that unless these conditions are met the causes of a cancer cluster are not identified



Have the Causes of a Cancer Cluster *Ever* been Identified?

Example: BF Goodrich: Polyvinyl Chloride and Angiosarcoma



A large number of one type of cancer rather than several different types



A rare type of cancer rather than common types



An increased number of cases of a certain type of cancer in an age group that is not usually affected by that type of cancer

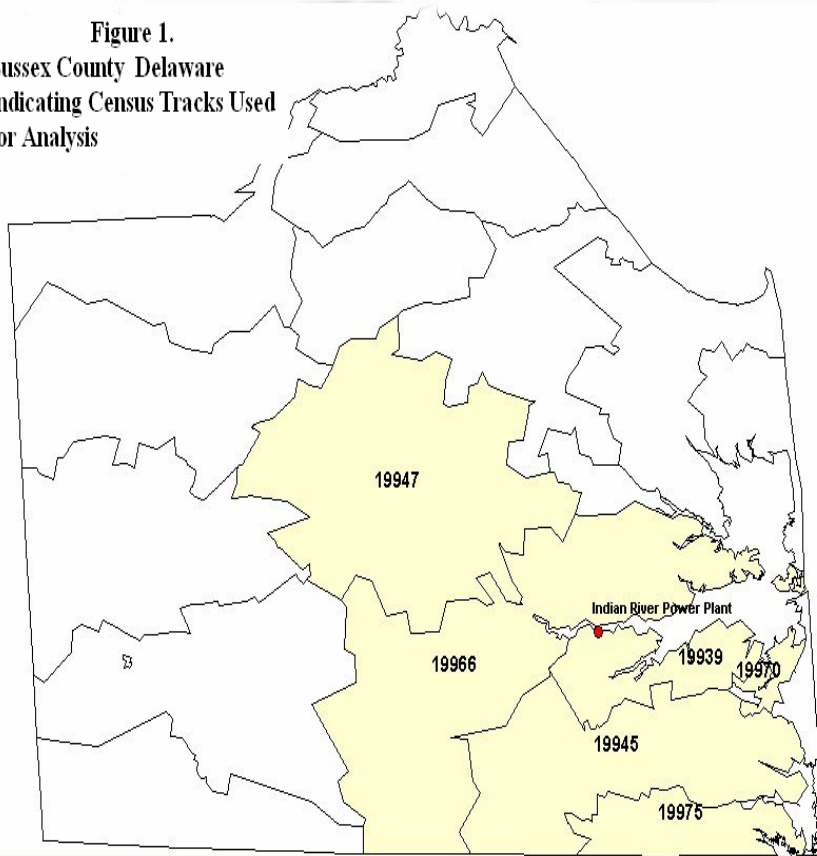


Indian River Cancer Cluster Investigation



Step 1: Specify the population at risk and the time period in question.

Figure 1.
Sussex County Delaware
Indicating Census Tracts Used
for Analysis

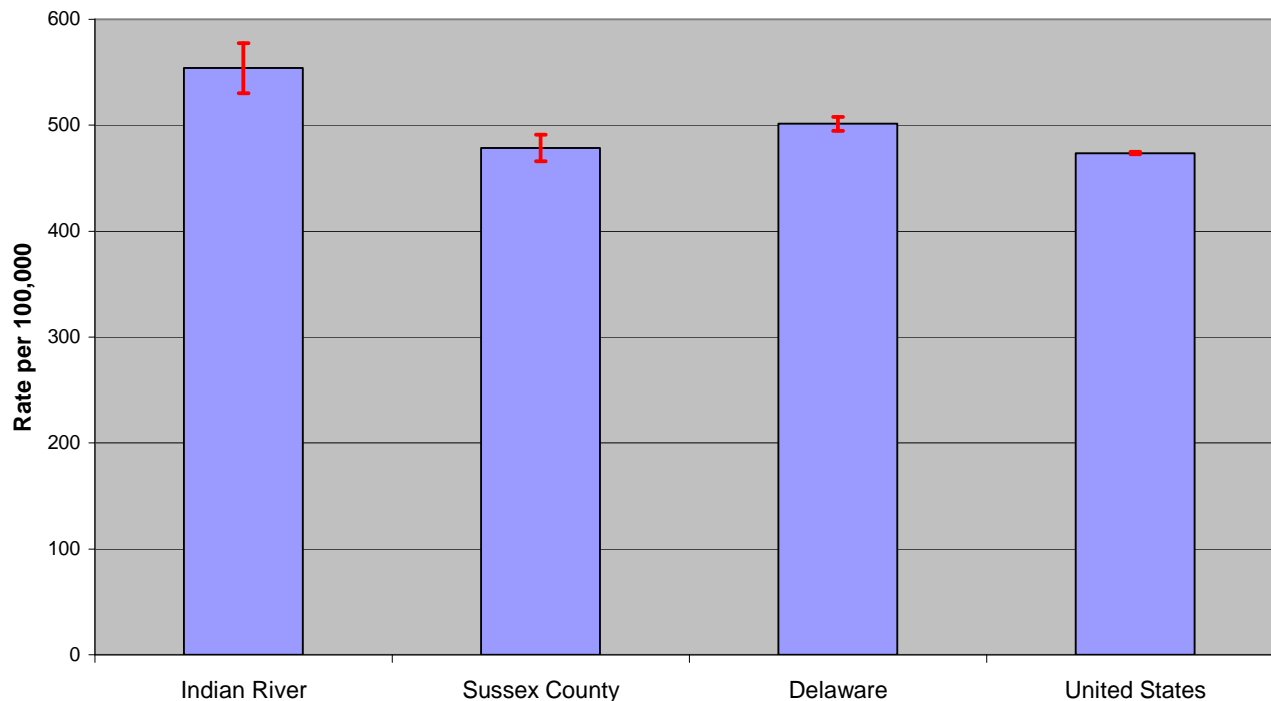


- ◆ 2000-2004 age adjusted rates
- ◆ 1995-2004 number of cases



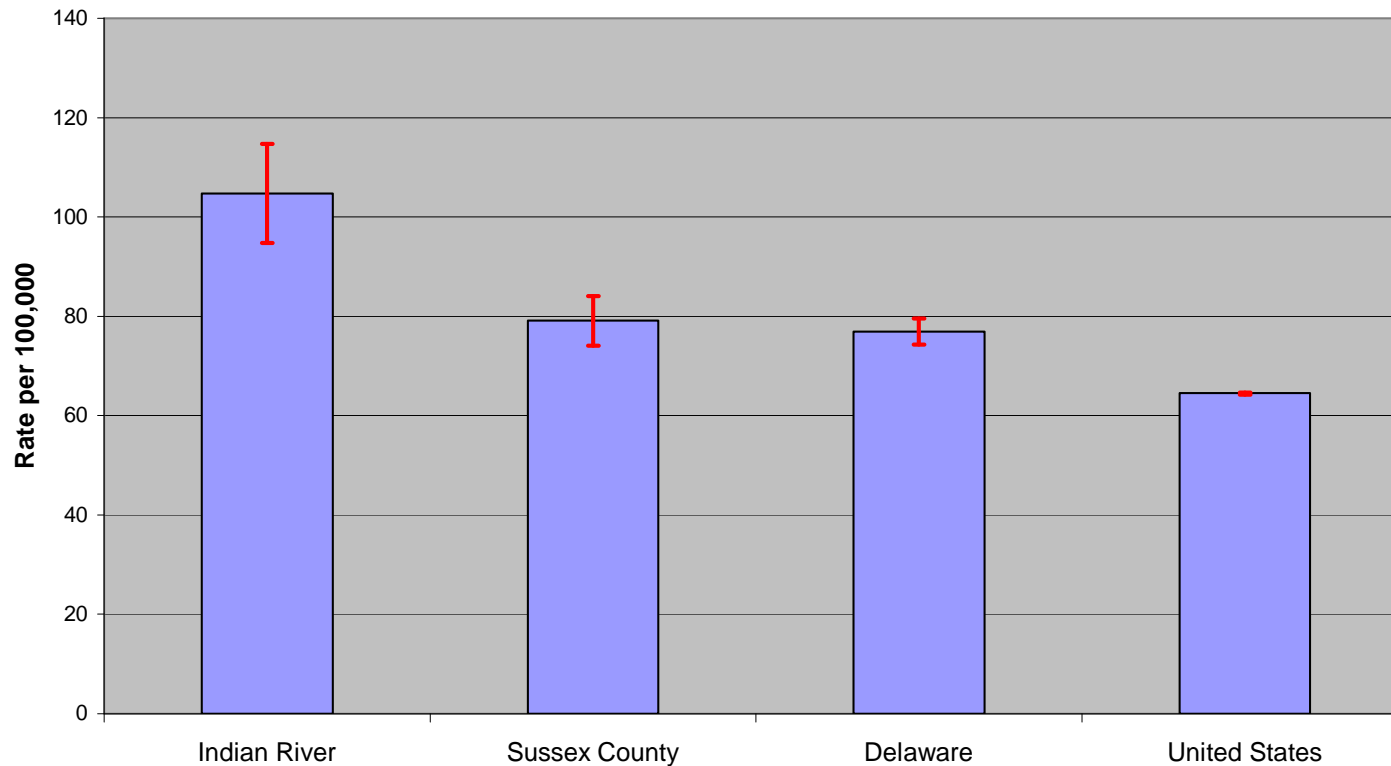
Step 2: Determine if the number of cases that actually occurred is significantly greater than the number that is expected.

**Age-Adjusted All-Sites Cancer Incidence Rate
per 100,000 People
2000-2004**

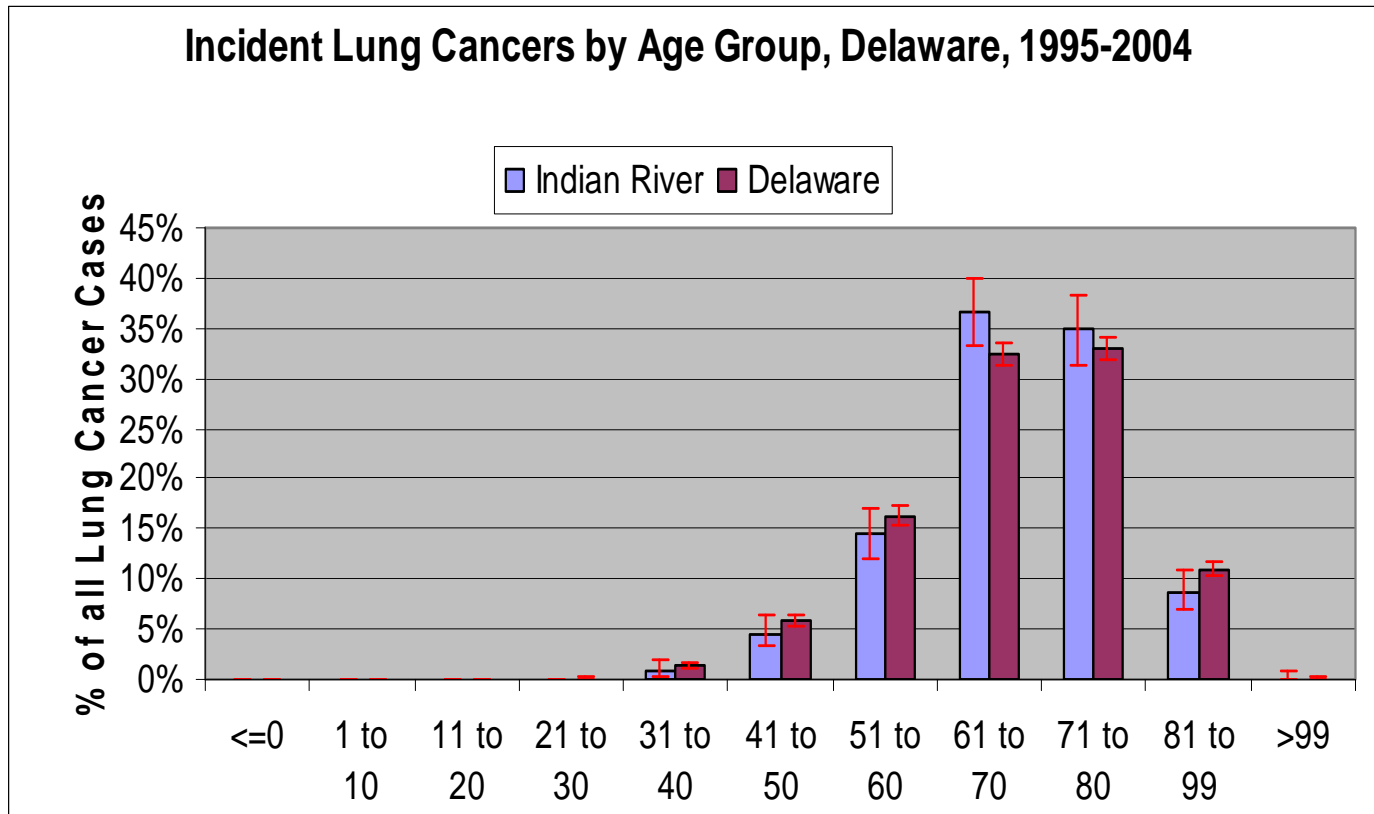


Step 2: Determine if the number of cases that actually occurred is significantly greater than the number that is expected.

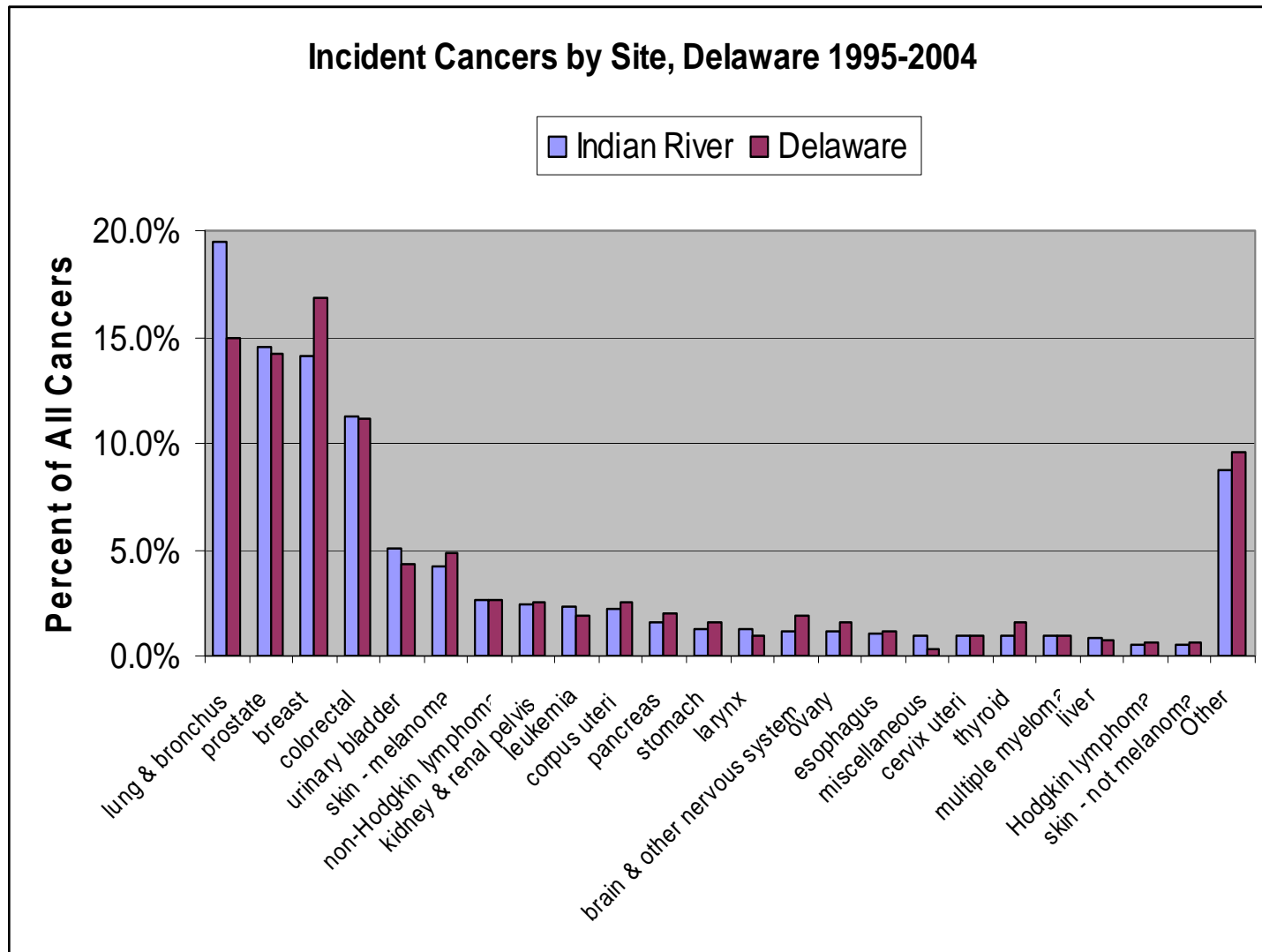
**Age-Adjusted Lung / Bronchus Cancer Incidence Rate
per 100,000 People
2000-2004**



Step 3: Interpret the data to determine if the cluster could be the result of an unusual external cause.



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Indian River



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A rare type of cancer rather than common types



An increased number of cases of a certain type of cancer in an age group that is not usually affected by that type of cancer



Step 4: If there is reason to believe that there is an unusual external cause, perform follow-up studies to prove causality.

- ◆ The data does not suggest that there is an unusual external cause. Nevertheless, the Cancer Council asked us to recommend that the Environmental Committee of the Consortium:
 - ✓ Consider the value of additional environmental monitoring
 - ✓ Consider the value of additional epidemiologic studies
- ◆ “Consider” means:
 - ✓ Are the benefits of further study likely to produce results that would justify the diversion of time and money from other cancer efforts?



Conclusions

- ◆ Lung cancer incidence rates are elevated in the Indian River area.
- ◆ The elevated rate is due to a common cancer (lung) which is occurring in the age group we would expect.
- ◆ Because tobacco causes 85% of all lung cancer, the elevated cancer rate in Indian River is most likely due to tobacco use.
- ◆ Based on research documenting many years of cancer cluster investigations, further investigation of this cancer cluster is unlikely to shed additional light on an environmental cause.

