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Examination of Hepatic Cancer Rates in Varying Trichloroethylene Concentrations in the Contamination Zone of the IBM-Endicott Chemical Spill

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Examination of Hepatic Cancer Rates in Varying Trichloroethylene Concentrations in the Contamination Zone of the IBM-Endicott Chemical Spill

Introduction

In 1979, the IBM-Endicott facility reported a 3700 gal spill of trichloroethylene (TCE), a volatile organic compound which has been shown to possess high levels of cancer and noncancer toxicity. TCE exposure has caused symptoms ranging from headaches to liver cancer.

Following the spill, TCE infiltrated into the groundwater surrounding the facility. It became a public health crisis when the vapor from the groundwater permeated homes and degraded indoor air quality, exposing residents to TCE.

Prior studies of Endicott conducted by the New York State Department of Health have been limited, and the state ultimately determined that they would not conduct a case-control study of Endicott.

Our overarching goal is to determine whether the IBM-Endicott chemical spill has resulted in an increased incidence of hepatic cancer in Endicott, NY.

Objectives

- Identify a potential elevated incidence of hepatic cancer by collecting locational and hepatic cancer survey data from Endicott residents
- Geographically display the correlation between TCE exposure and hepatic cancer
- Employ multidisciplinary methods to improve traditional case-control studies

Results

“Preliminary data suggests that there has been a steady increase in liver cancer in Endicott, NY. However, this increase cannot currently be attributed to the 1979 IBM-Endicott chemical spill.”

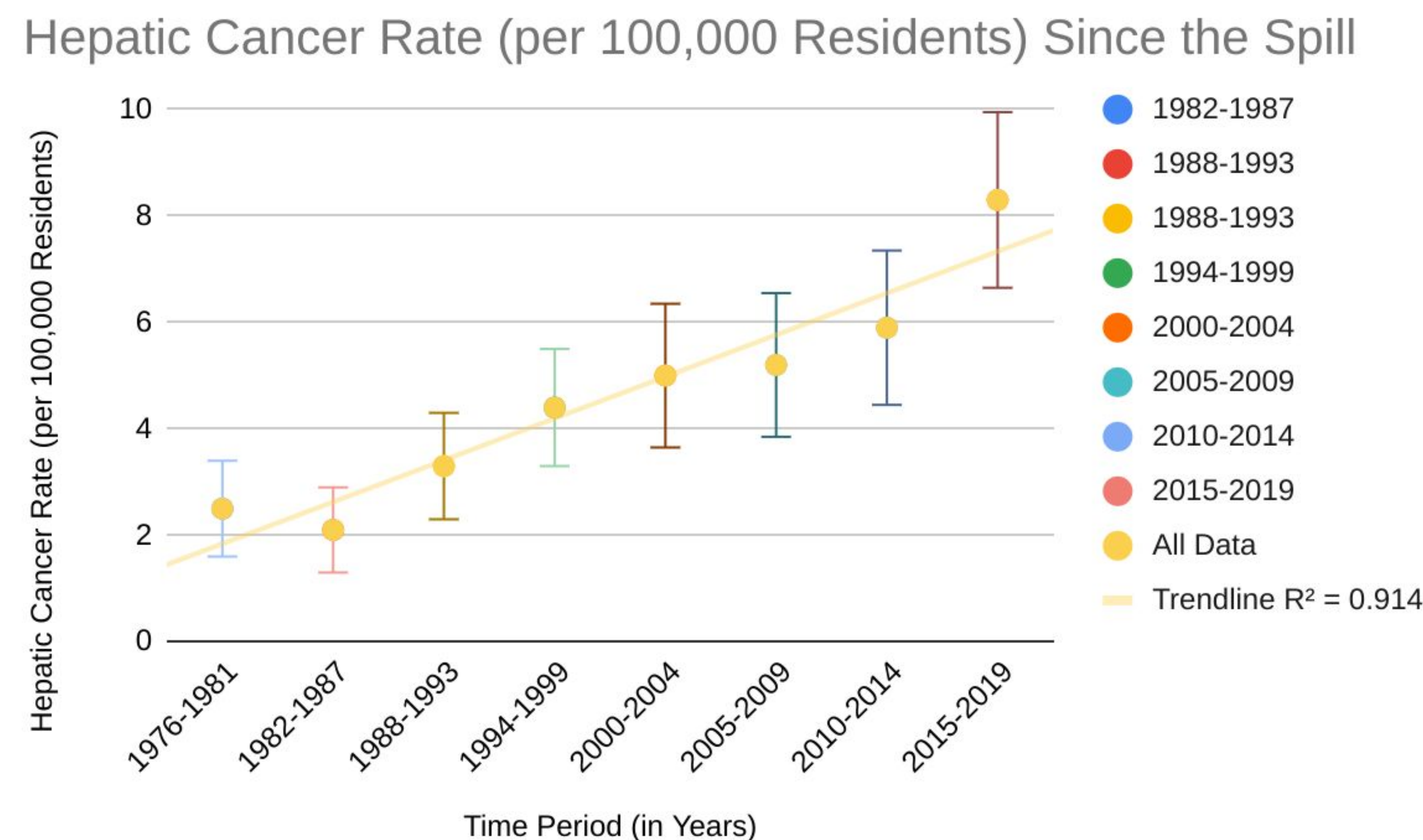


Fig 1... Graph of hepatic cancer rate over time in Endicott, NY. Data was age-adjusted for ages 65-85. Error bars represent a 95% confidence interval.

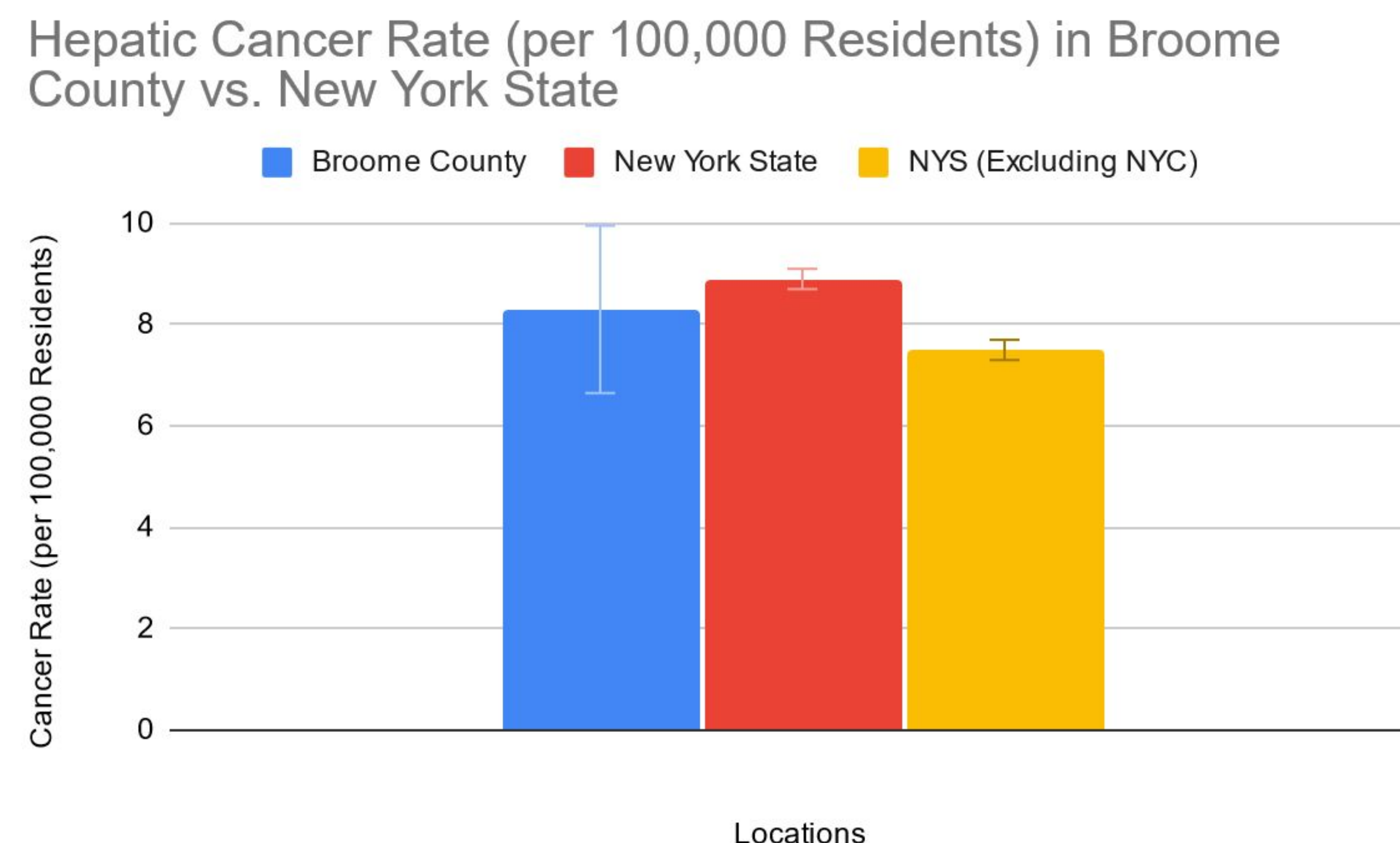


Fig 2... Graph of present-day hepatic cancer rate in Endicott, NY. Error bars represent a 95% confidence interval

Methods

- Administered surveys to Endicott residents which included questions regarding their time spent living in Endicott, their address, and age
- Experimentally-determined hepatic cancer data mapped against groundwater trichloroethylene concentrations to observe potential coincidence with zone of chemical spill
- Experimentally-determined hepatic cancer data compared with other hepatic cancer data about Endicott, as well as other counties in New York and statewide trends
- Next steps: Longitudinal study examining further incidences of hepatic cancer in Endicott, NY

Next Steps

- Verifying cases via comparison w/NYS Cancer Registry data, standard epidemiological practice
- Longitudinal study examining further incidences of hepatic cancer

References



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