

# Accuracy of Vendor Geocoding for Rural Addresses

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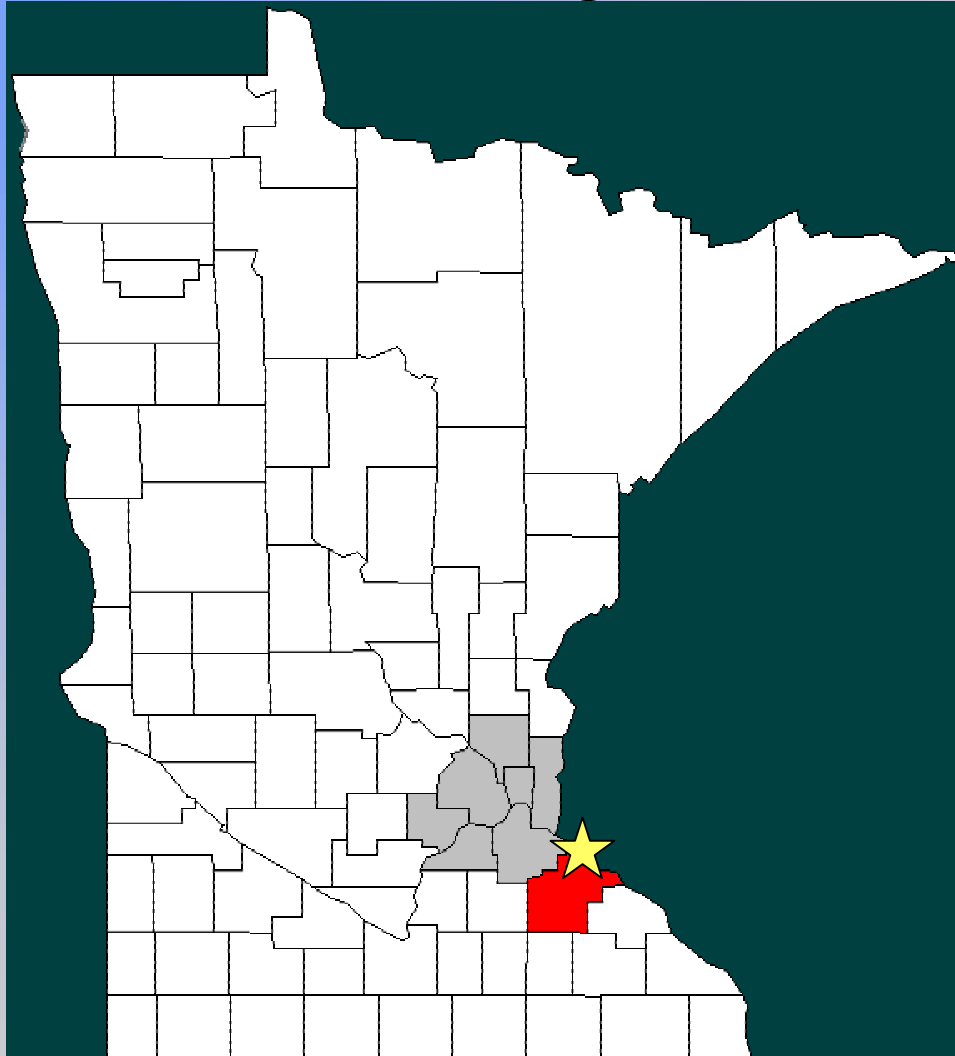
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# Background

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- ★ Concern about cancer occurrence by a nuclear power plant
- ★ Largely rural county -- many rural route addresses
- ★ Nuclear plant was located in county's largest city
- ★ Was cancer incidence higher in census tracts nearest to the nuclear power plant?

# Goodhue County, Minnesota



# Methods (1)

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- ★ All cancers incident between 1988 and 1996
- ★ County at diagnosis = “Goodhue” OR Zipcode at dx borders Goodhue county
- ★ N = 2,573
- ★ Send all addresses to vendor in one batch in 1999
- ★ Manually assign census tract using all available sources

# Methods (2)

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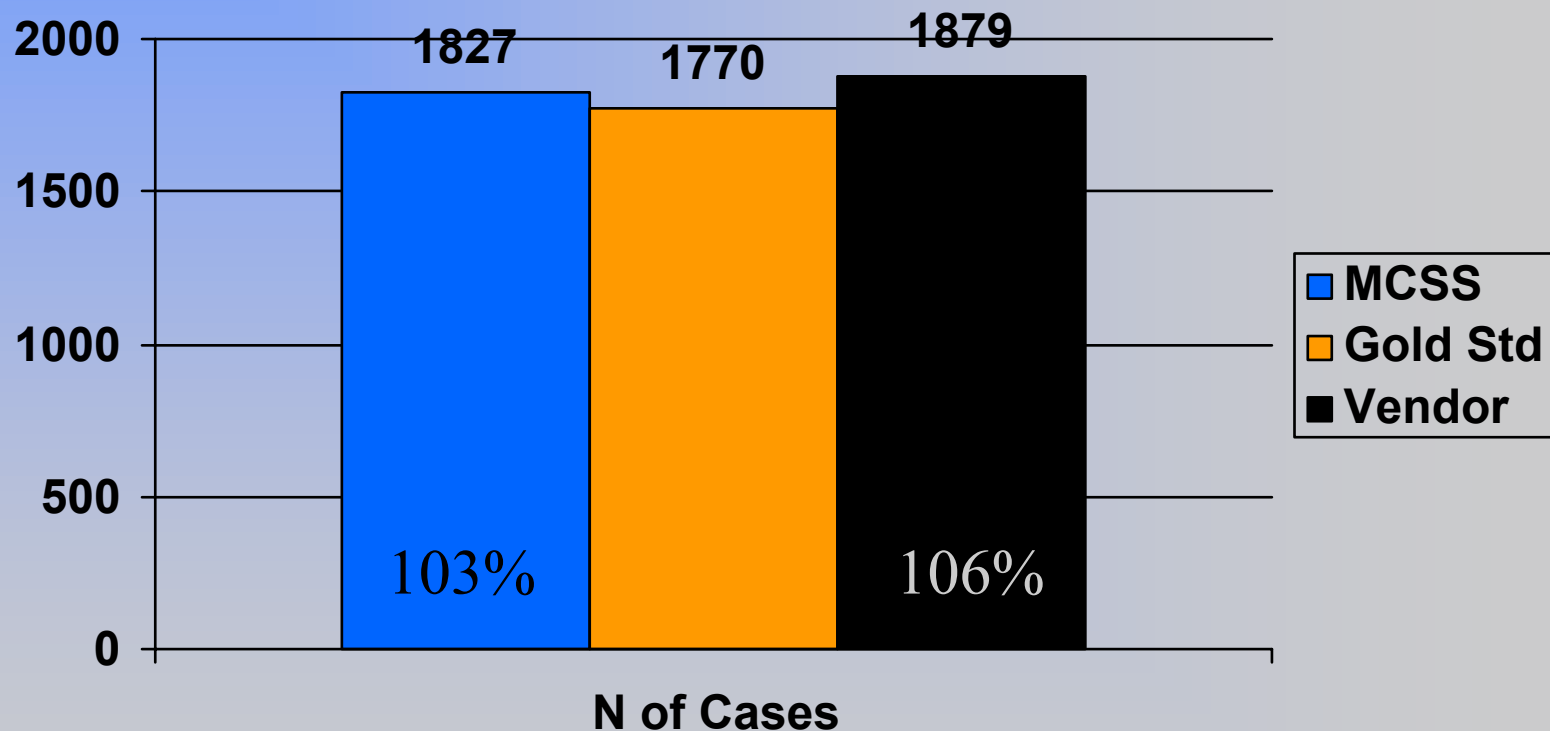
- ★ Use manually-assigned census tract as “Gold Standard”
- ★ Compute accuracy:
  - Registry data (county)
  - Vendor-assigned codes
  - Effect of census tract certainty

## Methods (3)

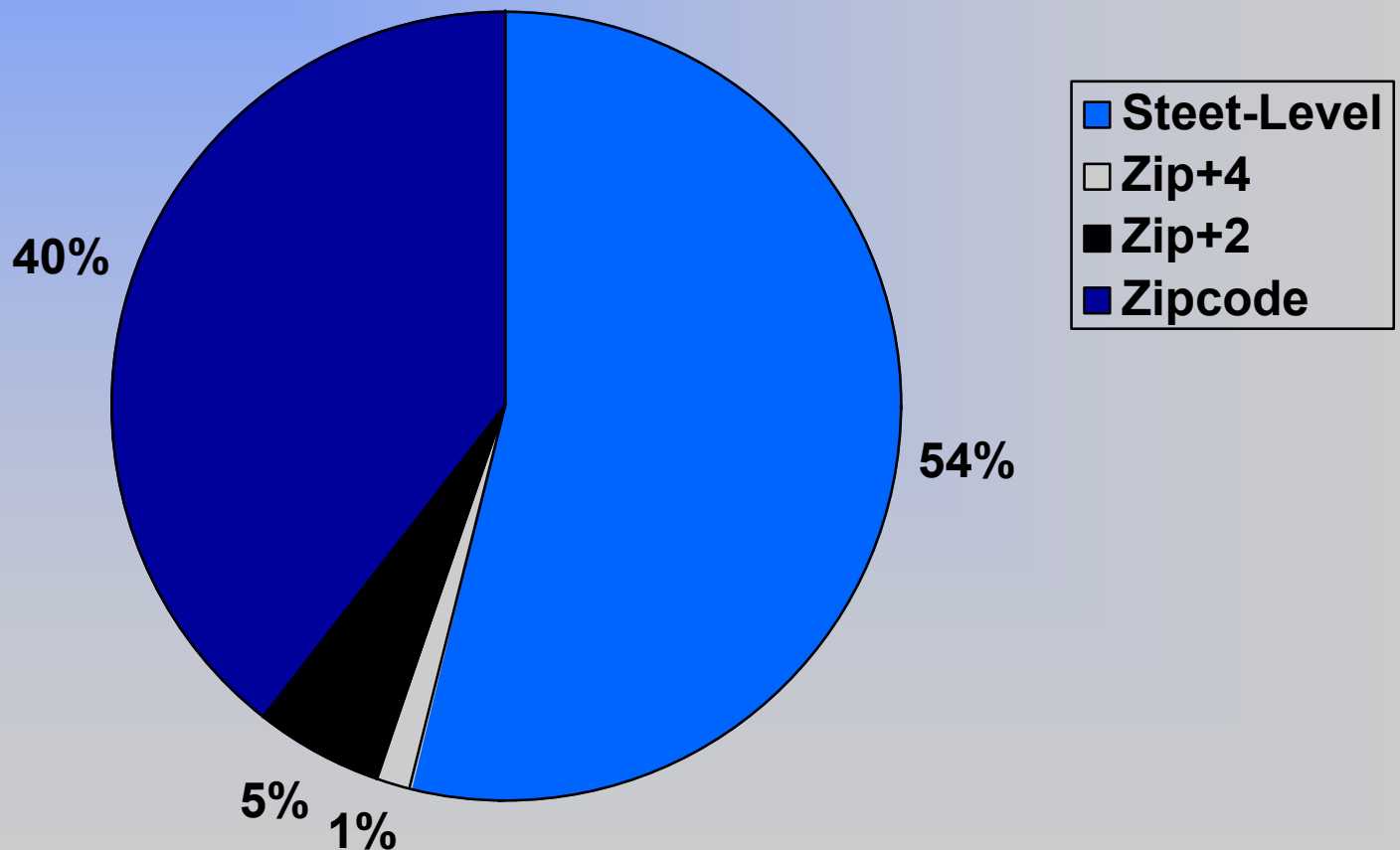
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- ★ Use 1990 census for 1990 population
- ★ Estimate population for other years based on % change, separately for Red Wing (9801, 9802) and remainder of county
- ★ Compute Standardized Incidence Ratios (SIRs) for Gold Standard and Vendor codes

# Results: Number of Cases in County

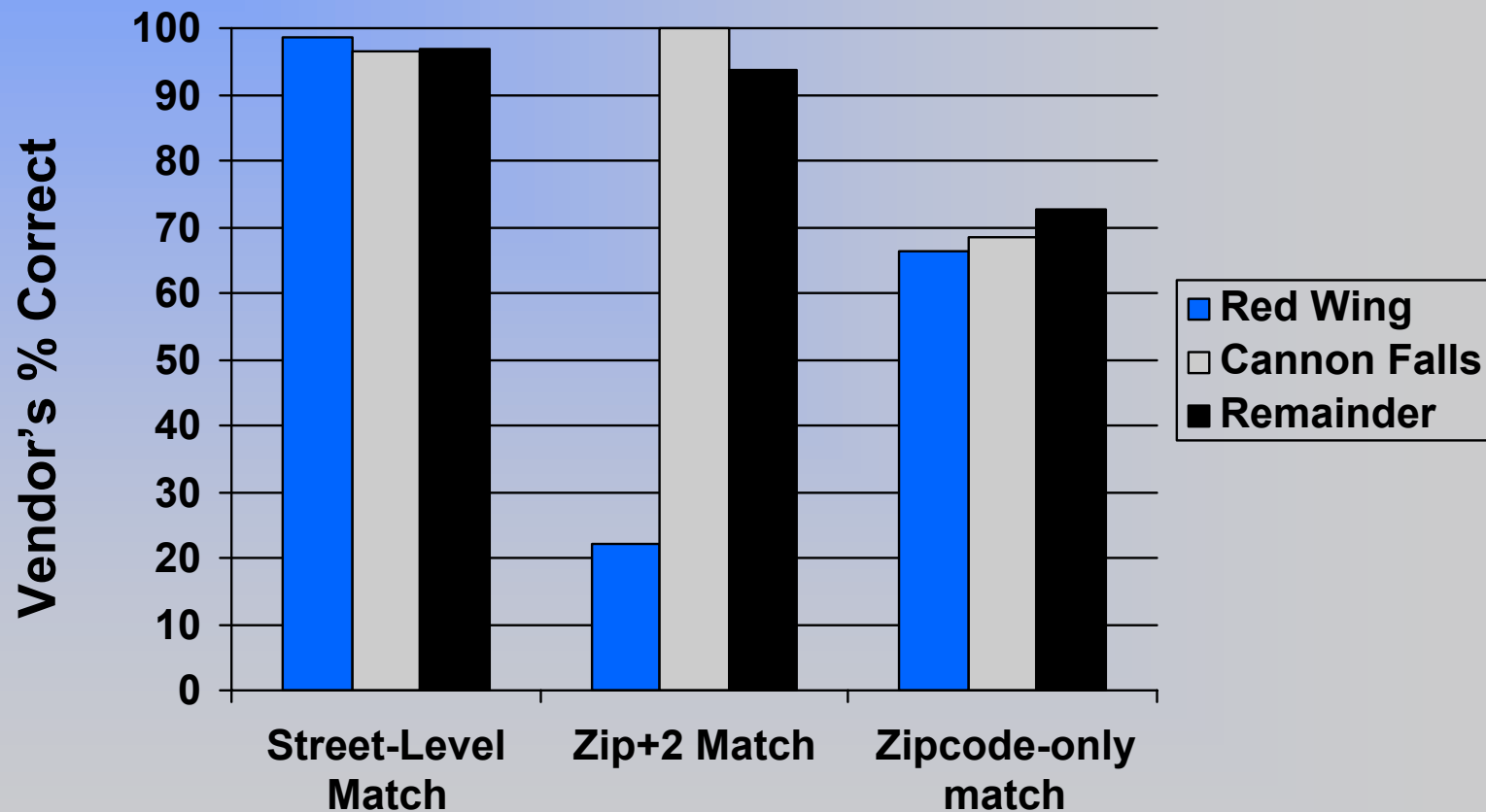


# Census Tract Certainty of Geocoded Addresses, Goodhue County

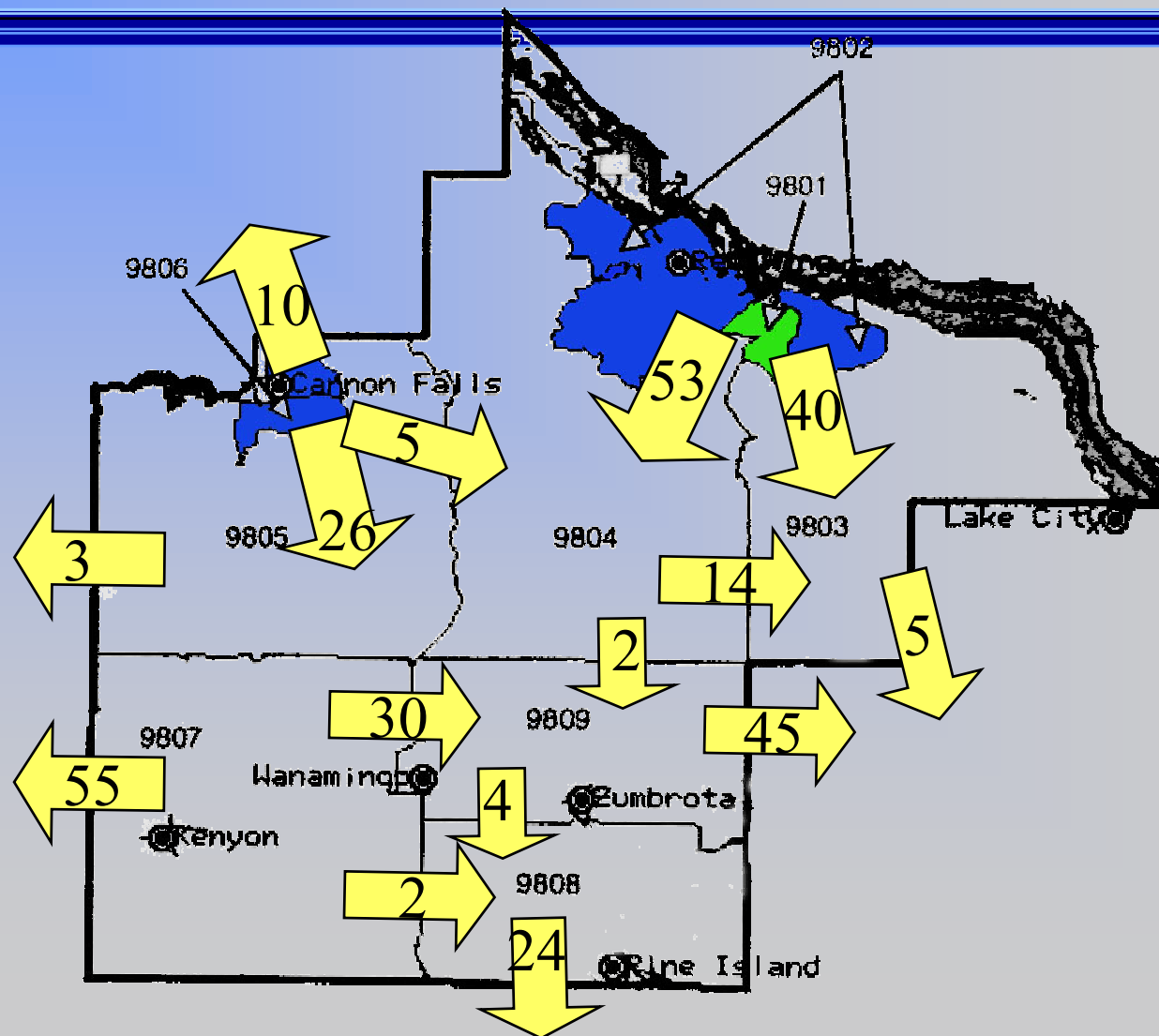




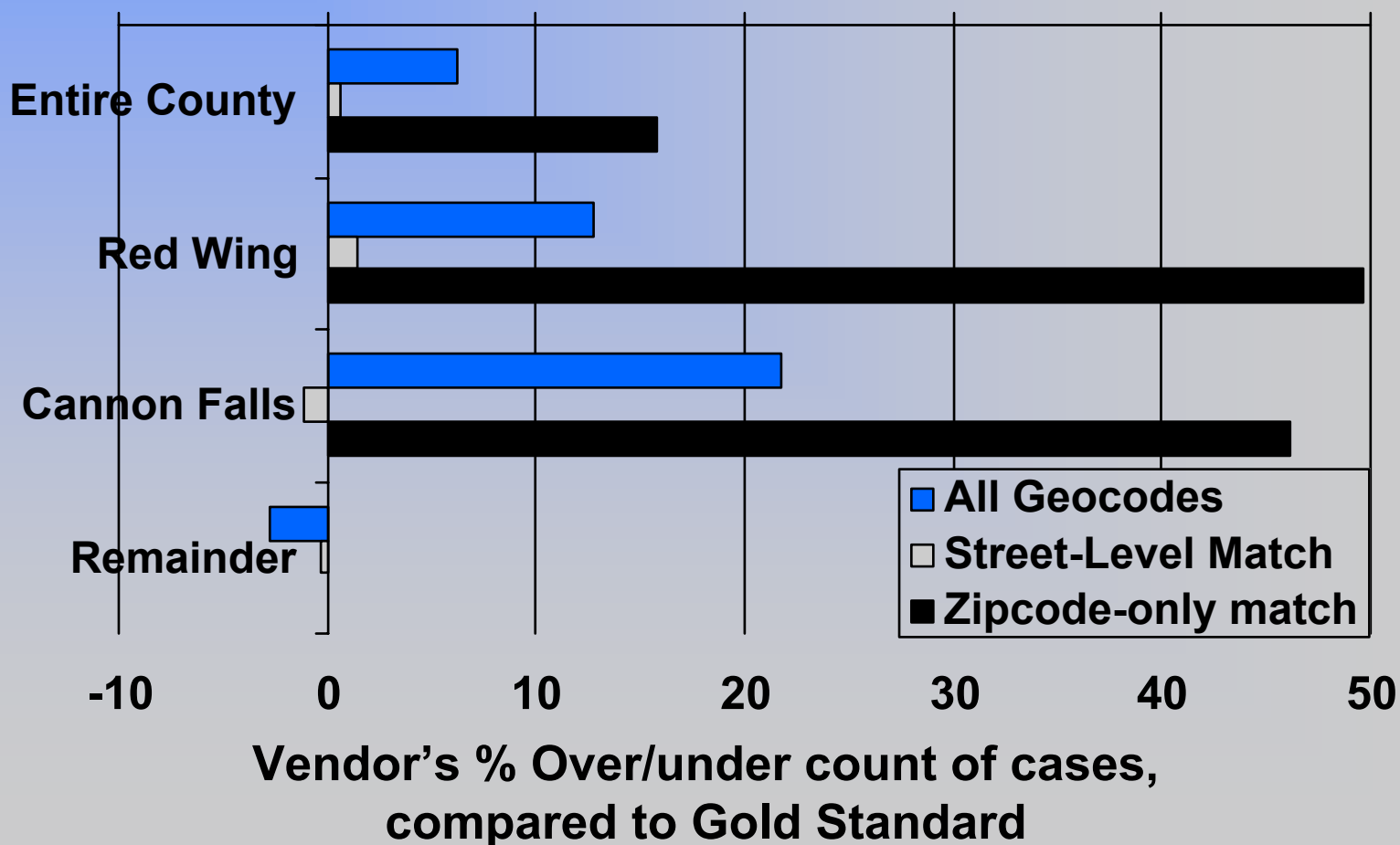
# Vendor Accuracy by Area and Census Tract Certainty



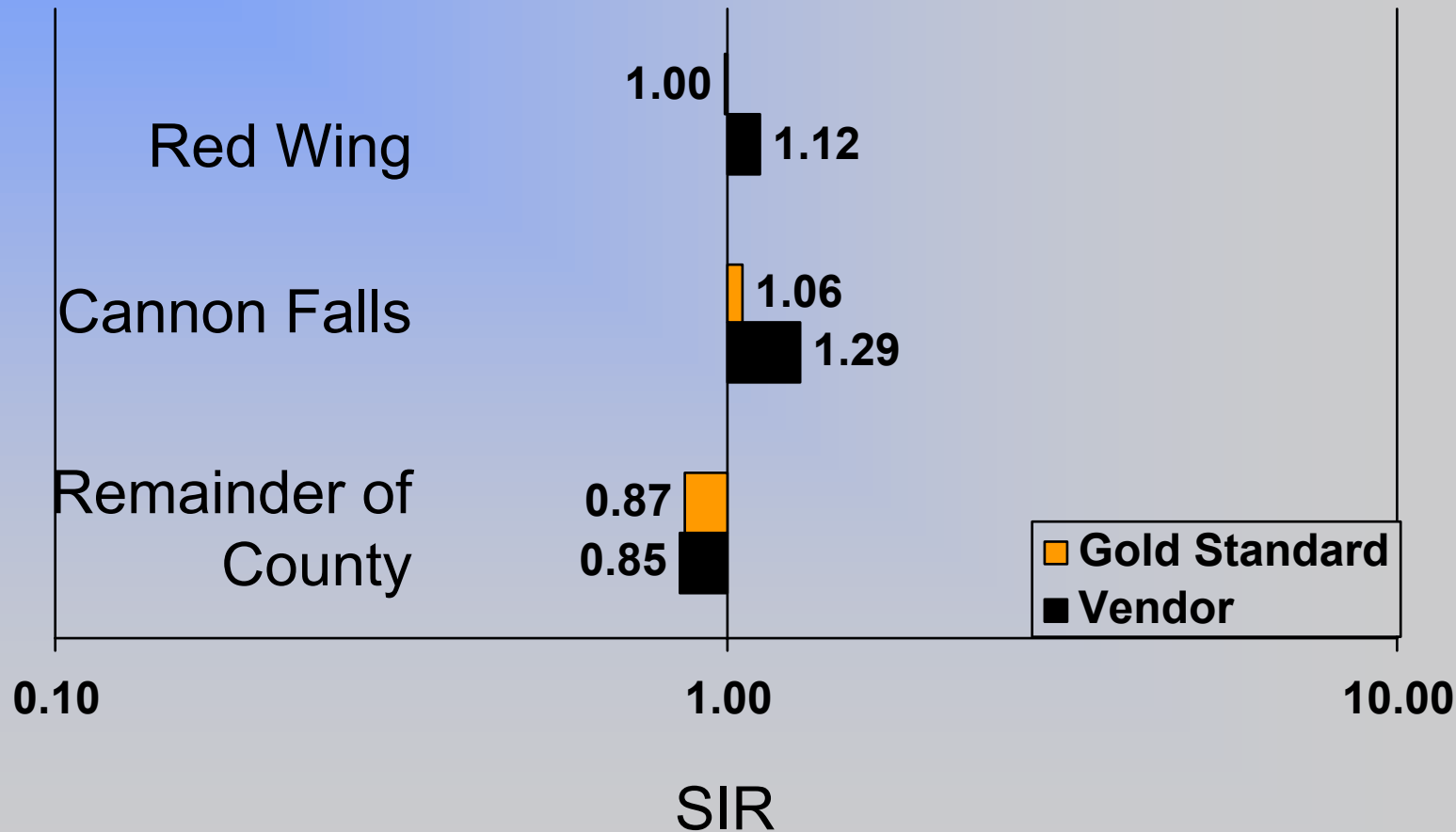
# Results: Net Manual Corrections on Vendor-Assigned Tracts



# Vendor Over/Under Counts

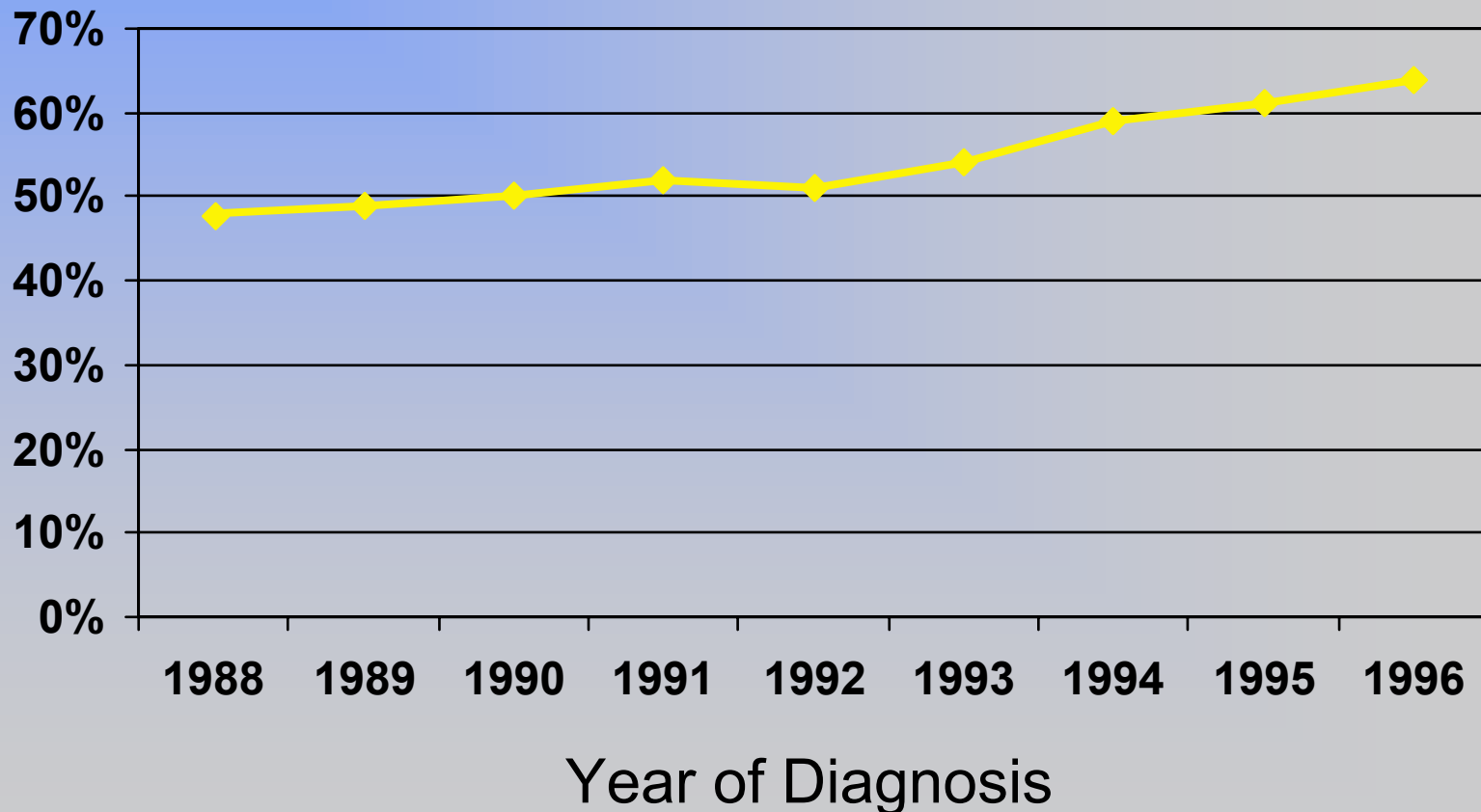


# Standardized Incidence Ratios by Geocoding Source, Goodhue County



# Census Tract Certainty by Year of Diagnosis

% Street-Level Matches



# Summary

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- ★ Street address-based census tracts were quite reliably coded by vendor.
- ★ Centroid-based census tracts were not.
- ★ Misclassification of census tracts was not random; it produced falsely elevated SIRs in cities.
- ★ More street address-based geocodes are becoming available over time.

# Conclusions

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- ★ Don't assume that you have useful geocodes just because the vendor returns a code.
- ★ Census tract certainty codes mean something -- pay attention to them.
- ★ Rural areas will be difficult to geocode accurately until 911 addressing is very common.