

CARTOGRAPHIC ENHANCEMENTS TO INDIANA'S COUNTY-LEVEL CANCER INCIDENCE RATES SUPPORT COLLABORATION

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ABSTRACT

BACKGROUND: Traditional methods of reporting cancer incidence rates to the public generally use county geography. These rates are typically accompanied by a choropleth map, which categorizes each county relative to all other counties. This familiar and conventional visualization of data tends to promote counties as distinct, isolated entities. Regional collaboration opportunities may not be fully realized, thus marginalizing cancer control efforts for a county's population. Mapping county rates using an interpolation technique instead offers a fresh view, removing geographic boundaries from the process.

METHODS: Counties are represented by either a population-weighted centroid point, or a group of tract centroid points within a geographic information system. These "sample" points are assigned a county rate. An inverse distance weight (IDW) interpolation method is applied to the points generating a raster surface. The raster values are then reclassified and converted to vector graphics for easier distribution through user-friendly web mapping interfaces.

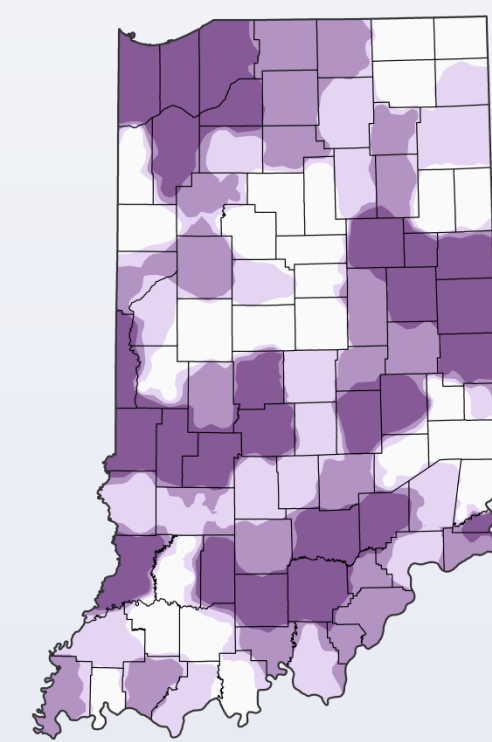
RESULTS: The interpolation yields a fluid surface of rates, which presents a smooth visual transition between counties while still maintaining the integrity of distinct county-specific rates. This helps the reader more easily identify relationships with adjacent counties.

CONCLUSIONS: Visual interest gained by offering gradational shading draws attention to populations most in need of interventions aimed at reducing cancer incidence. Entities working to reduce incidence rates can target resources and health promotion efforts in an equitable manner toward areas of need. Additionally, this method supports the development of collaborative efforts that span county boundaries and encourages the pooling of limited resources.

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THE MAPPING PROCESS

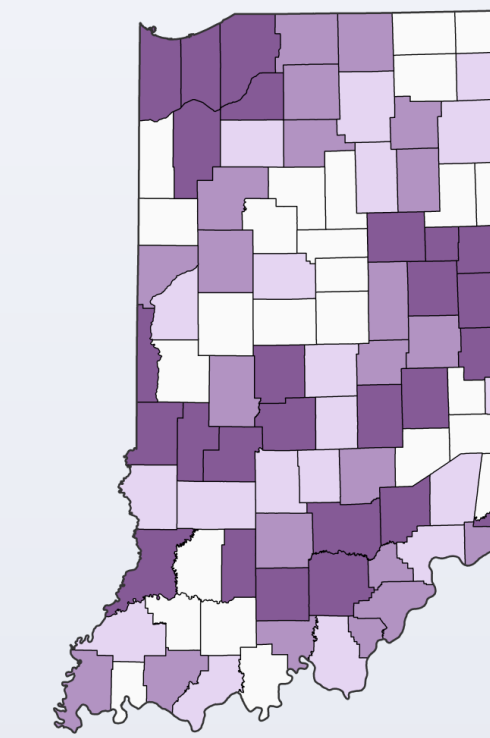
County Surface Map



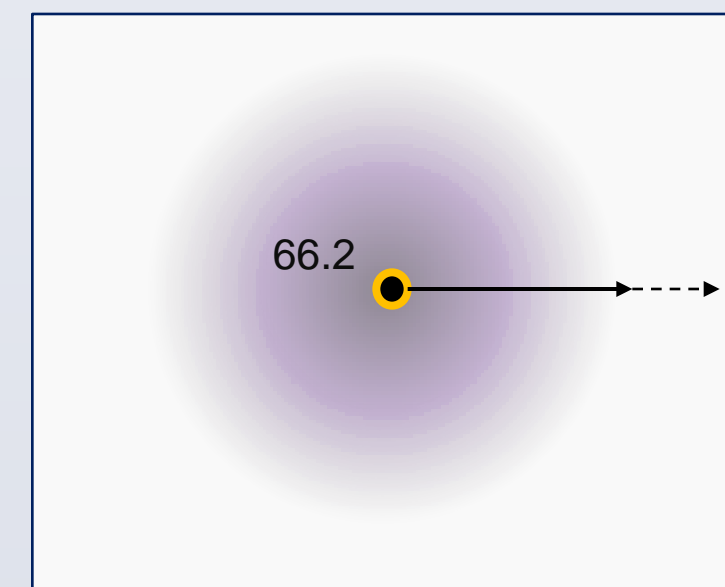
Publicly Available Incidence Rates

| COUNTY | ALL | LUNG |
|-------------|-------|------|
| Adams | 440.7 | 48.5 |
| Allen | 447.7 | 62.5 |
| Bartholomew | 467.7 | 76.0 |
| Benton | 424.8 | 83.0 |
| Blackford | 493.9 | 78.9 |
| Boone | 428.0 | 63.7 |
| Brown | 448.9 | 63.3 |

Traditional County Map

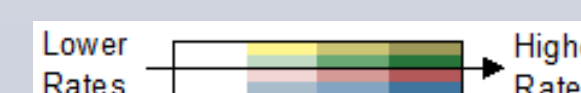
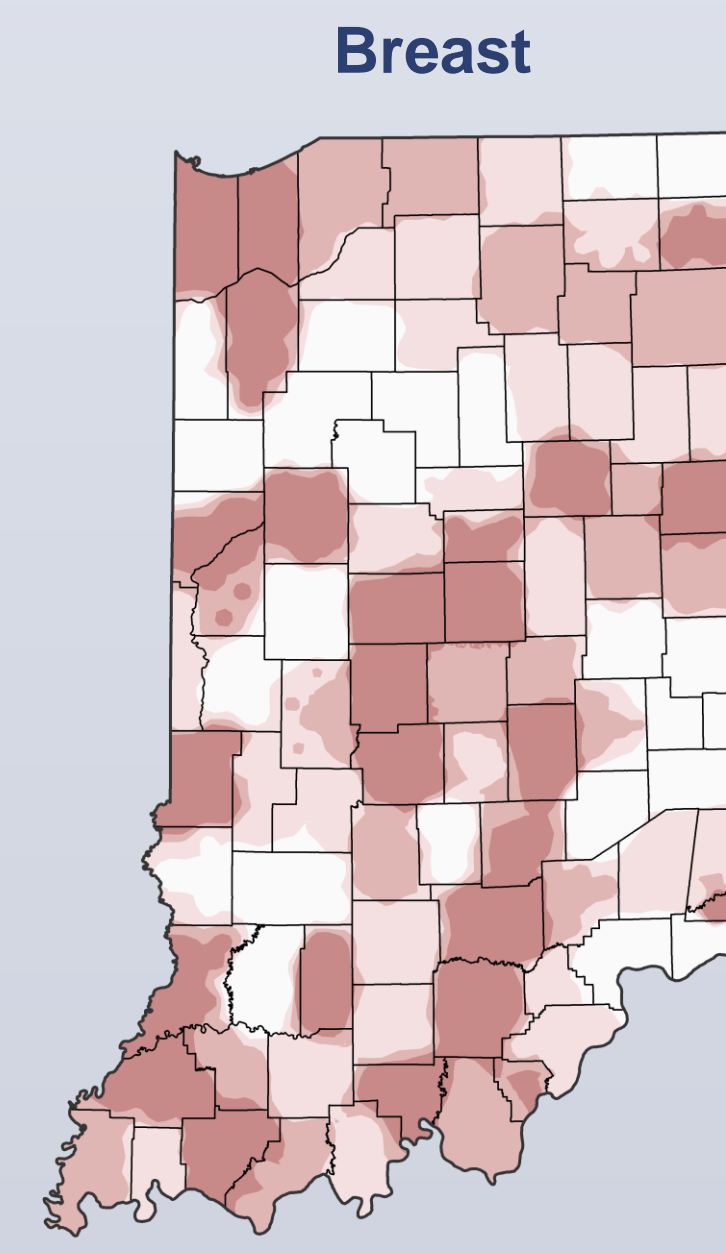
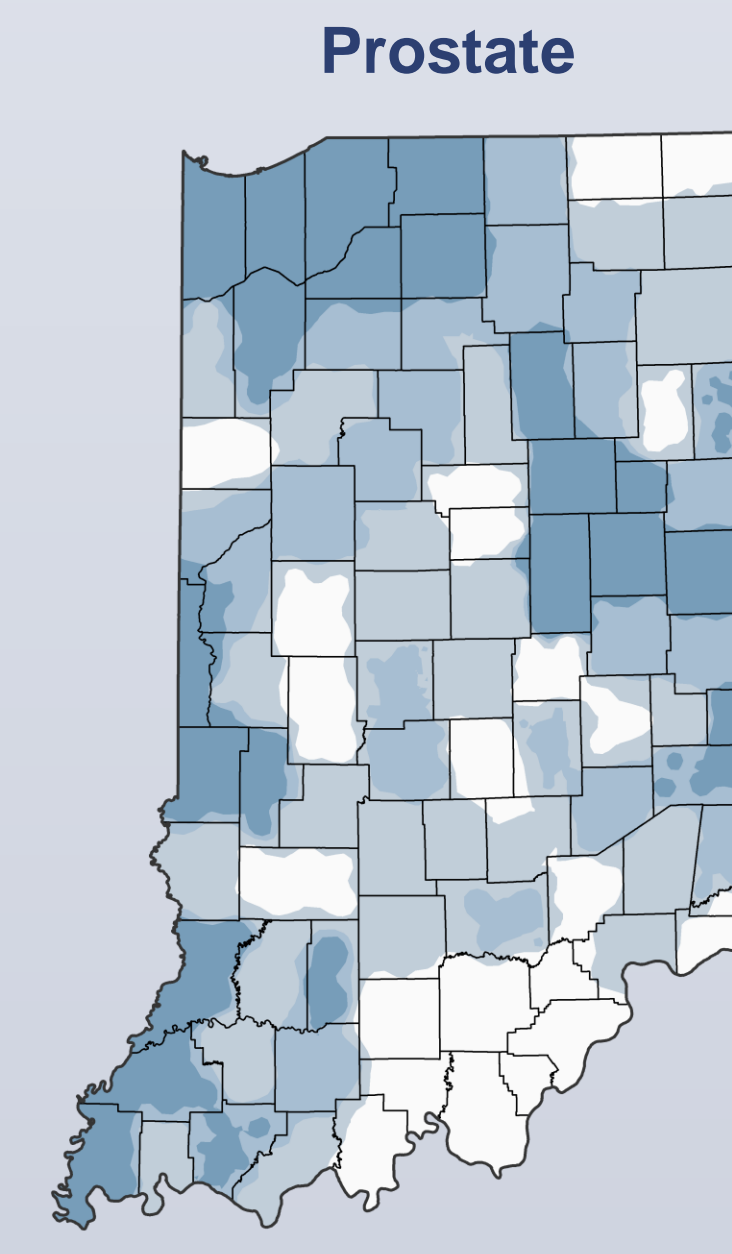
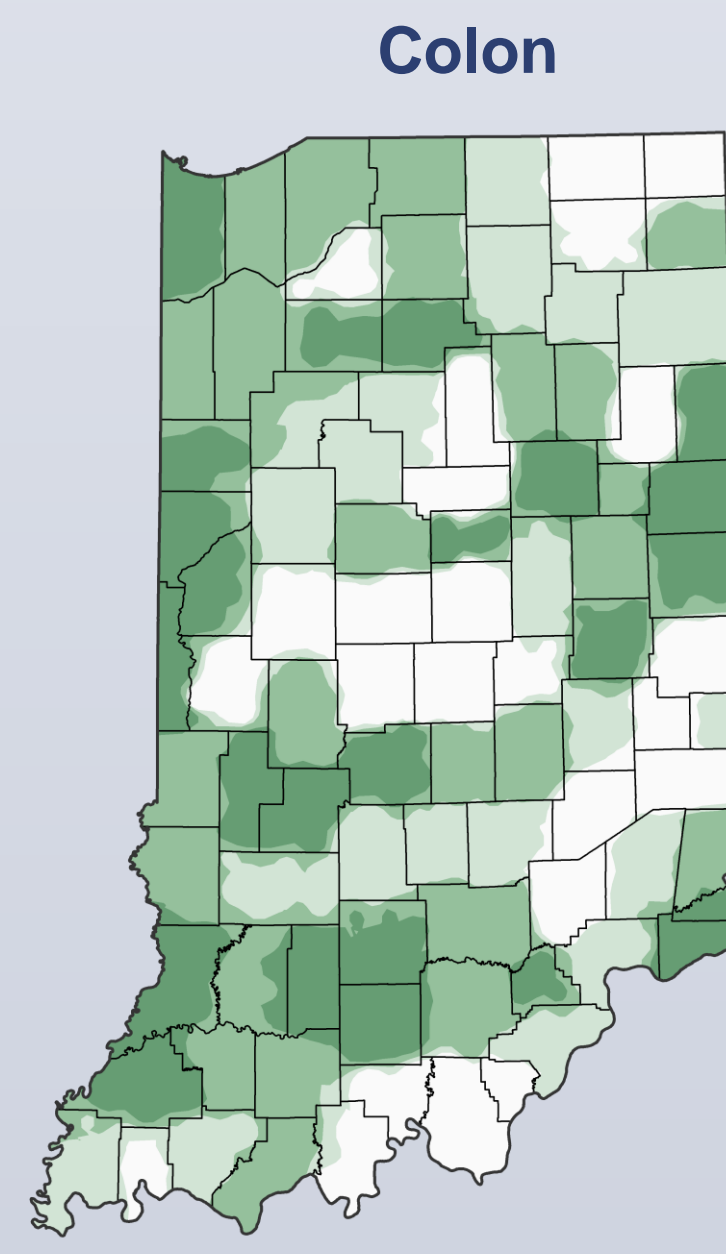
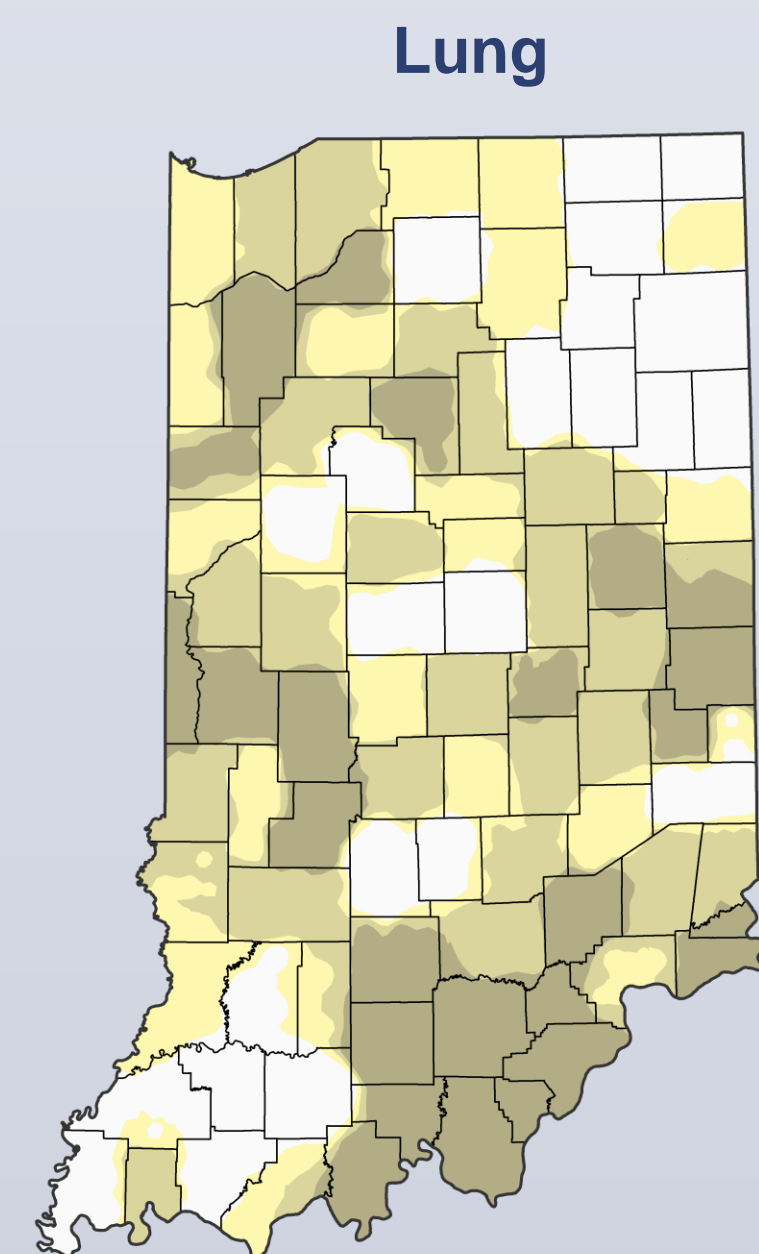
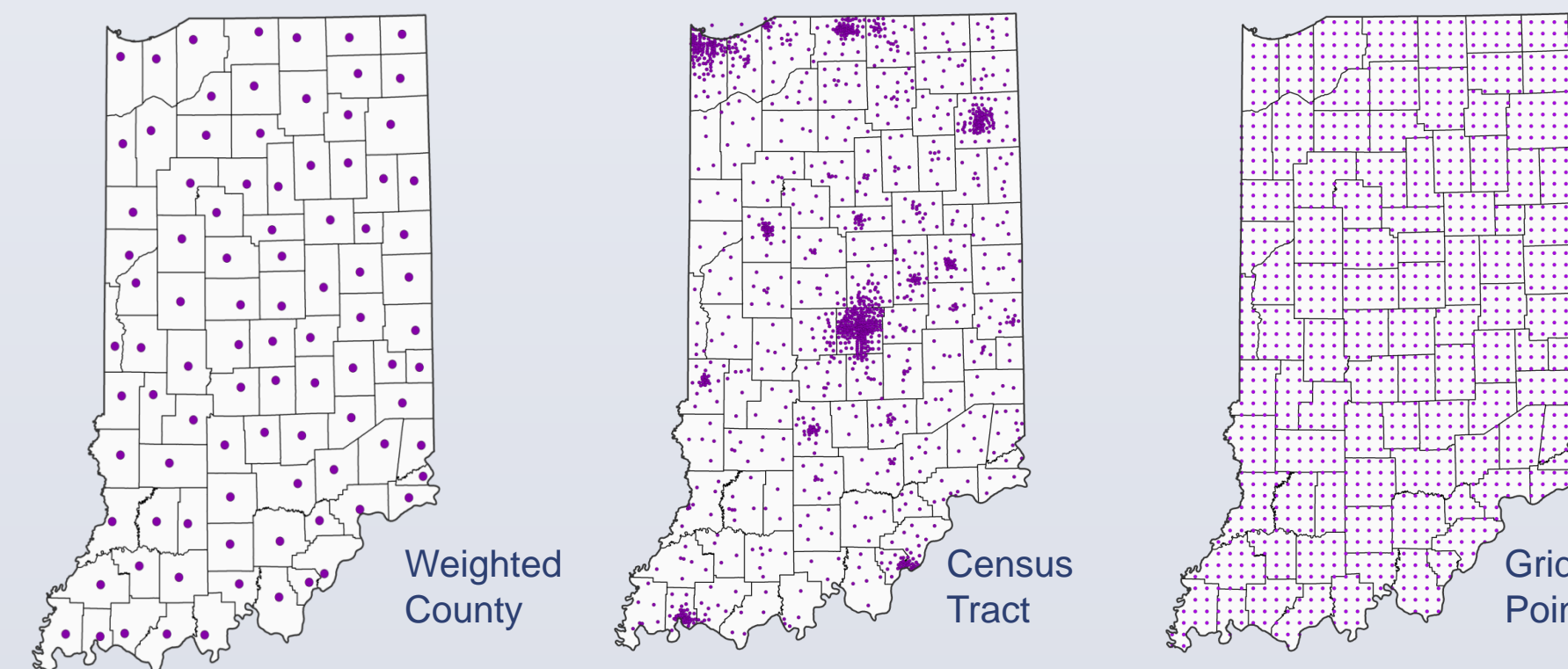


Surface Generation
IDW with GIS software



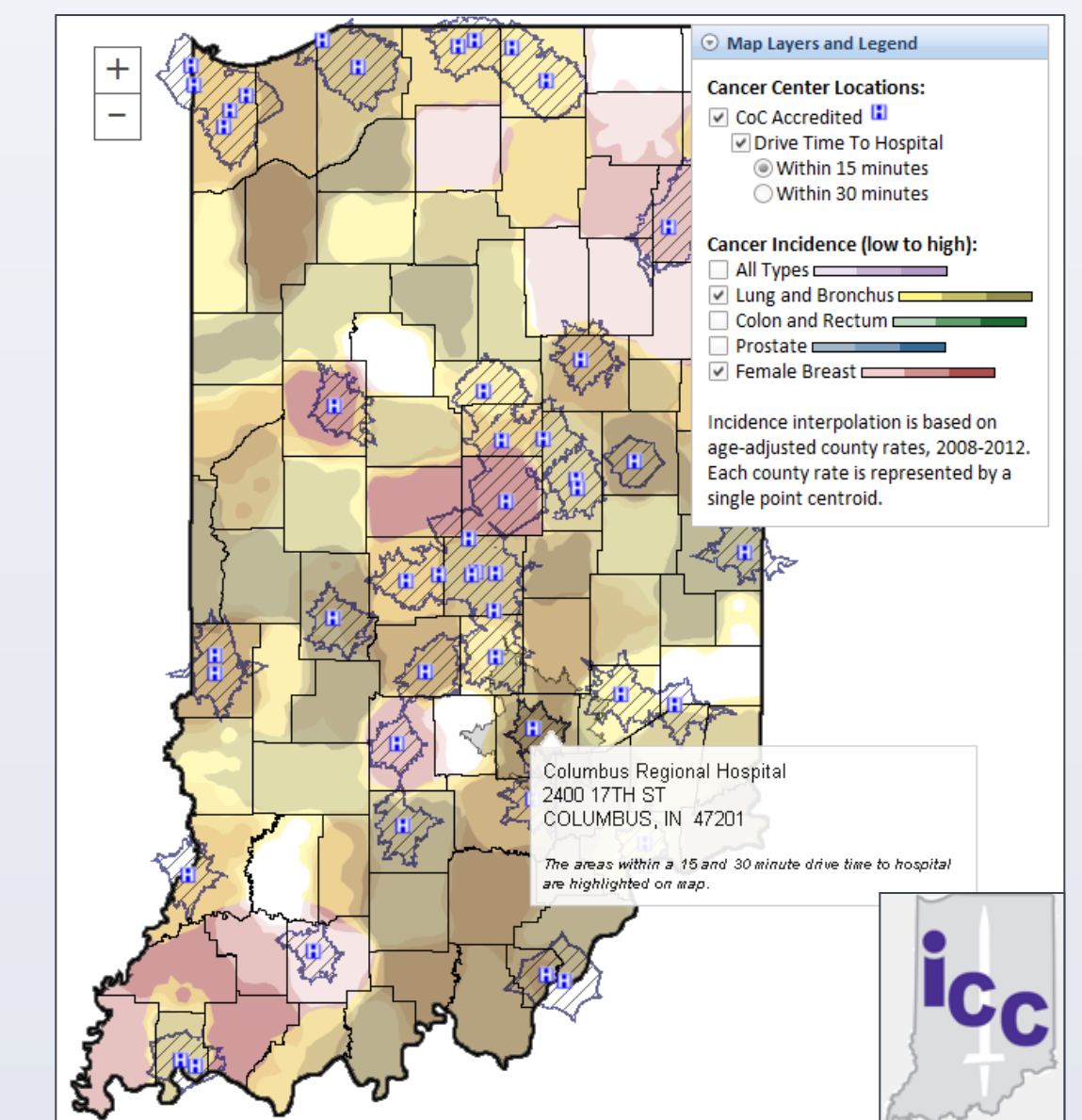
IDW extends the value of data points to predict the value between points

Options For Distributing County Rates to Data Points
Each point within a county is assigned the county's rate



APPLICATIONS

The Indiana Cancer Consortium uses the map enhancements to create an interactive web page.



In addition, the state of Indiana utilizes the enhancements in many publications and presentations including the *Indiana Cancer Facts and Figures* report.



REFERENCES

Indiana State Cancer Registry
<http://www.in.gov/isdh/24360.htm>

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