

November 2024



Commentary

Acquisition, Analysis, Action: Harnessing the Power of Catchment Area Data

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Commentary Overview

- Assessing the effects of place on health requires access to reliable geographic data. The development of Geographic Information Science and technology has facilitated more sophisticated data gathering, spatial analyses, and visualization of geographic patterns of cancer.
- Recognizing the importance of understanding a community across several dimensions, more organizations are offering resources and tools that can help characterize the community served by a cancer center.
- Key to the success of leveraging data across multiple sources is synthesis of information for analysis and decision-making.
- The 2025 AACI Catchment Area Data Excellence (CADEX) Conference, January 29-31, will host catchment area data experts, geospatial statisticians, and representatives from government and industry to address topics in cancer prevention and control analytics.

The physical and social environments that surround us influence health in both positive and negative ways. Where someone lives, works, and plays can impact their likelihood of developing cancer, opportunities for prevention and early detection, access to treatment, and quality of life post-recovery.

Assessing the effects of place on health requires access to reliable geographic data. Over the

past 30 years, the development of Geographic Information Science (GIS) and technology has facilitated more sophisticated data gathering, spatial analyses, and visualization of geographic patterns of cancer.

With the exponential growth in the availability of geographic data, it is now possible for researchers to more carefully evaluate the impact of social and environmental factors on cancer risk and outcomes at the population level. In addition, individual level data that were previously costly and difficult to obtain are now more easily accessible. Thus, researchers now have the opportunity to perform individual data linkages and multilevel analysis for a more comprehensive assessment of the spatial context of cancer.

A Universe of Cancer Data Resources

Recognizing the importance of understanding a community across several dimensions, more organizations are offering resources and tools that can help characterize the communities cancer center serves.

Here are some mapping and data tools for research, cancer prevention, and control in the U.S.:

- The National Cancer Institute's (NCI) [GIS Portal for Cancer Research](#) provides geospatial tools for cancer statistics and risk factors, resources for geospatial data, and relevant publications.
- The [North American Association of Central Cancer Registries](#) (NAACCR) GIS resources website includes tools for cluster analysis, geocoding, and address validation.
- [State Cancer Profiles](#) is an interactive map produced by the NCI and Centers for Disease Control and Prevention (CDC). It provides a geographic profile of cancer burden in the U.S. and helps identify geographic disparities in cancer incidence, mortality, risk factors for cancer, and cancer screening across different population subgroups.
- NCI's [Surveillance, Epidemiology, and End Results](#) (SEER) program, which provides cancer incidence data from population-based cancer registries covering approximately 47.9 percent of the U.S. population.
- [CDC WONDER](#) is an easy-to-use, menu-driven system that makes the information resources of the CDC available to public health professionals and the public at large.

For population characteristics, there are also many sources of publicly available data. The United States Census Bureau provides a [wide range of data](#) on age, sex, race, ethnicity, poverty, education, and housing through the decennial census and the American Community Survey.

Cancer risk factors, including behavioral and environmental factors, can now be incorporated into catchment area assessment through resources such as the CDC's [Behavioral Risk Factor Surveillance System](#), [National Health Interview Survey](#), and [CDC PLACES](#).

Environmental exposures impacting specific catchment areas can be explored using the U.S. Environmental Protection Agency's (EPA) [EJ Screen](#), [EnviroAtlas](#), and [Superfund site maps](#).

Socioeconomic indices can help summarize neighborhood characteristics for cancer research. The [Area Deprivation Index](#) (ADI) allows for rankings of neighborhoods by socioeconomic disadvantage at the census block group level. It includes factors representing multiple dimensions of social determinants of health including income, education, employment, and housing quality. Other similar national indices that can be used at various geographic levels include the [Social Vulnerability Index](#), the [Neighborhood Deprivation Index](#), and the [Yost index](#). These indices can be used to inform outreach, education, health care delivery and policy, especially for the most disadvantaged neighborhood groups.

Identifying community organizations like [community health centers](#) and [screening facilities](#) can help cancer centers identify and create meaningful partnerships with organizations that are often the first line of health care for individuals within the catchment area.

Many of these place-based factors can be explored, visualized, and downloaded from the [UCSF Health Atlas](#). This data visualization platform provides users the ability to explore over 120 variables from over 20 sources for all 50 states, the District of Columbia, and Puerto Rico.

Putting It All Together

Key to the success of leveraging data across these sources is synthesis of information for analysis and decision-making. One example of an integrated data gathering and visualization platform is [Cancer InFocus](#), developed by the Community Impact Office at the University of Kentucky Markey Cancer Center. Cancer InFocus is designed to make understanding the cancer burden in a geographic area easier through a rapid and repeatable process of tool creation. This resource is made freely available to other organizations.

Similarly, [SCAN 360](#), an interactive website, aims to provide a “360 degree view” of the factors that drive patterns in cancer burden in the four-county catchment area served by Sylvester Comprehensive Cancer Center, University of Miami. This resource has been made available to other centers.

[California Health Maps](#) is an interactive mapping tool of health data for geographies beyond the county level in California. The California Health Maps team worked with NCI and Westat to develop cancer reporting zones to minimize suppression and maximize sub-county cancer incidence rates. The platform uses open source code so that other centers can use the same framework for visualization.

Targeted strategies for communicating information to different audiences are seen in publications like the [Moffitt Catchment Area Profile](#), covering 23 counties in southwest and central Florida, and a report by the [Cancer Health Equity Center of Excellence](#), a partnership between the Cancer Institute of New Jersey and Rutgers School of Public Health.

Taken together, these resources provide an important baseline to be able to:

- Identify cancer disparities
- Use a data driven approach to engage communities in prioritizing efforts
- Show researchers key areas of need within the catchment area
- Target outreach and research efforts at the intersection of population, cancer burden, and risk factors
- Engage relevant partners on both outreach and research initiatives
- Monitor impact of efforts over time (reaching new populations, impacting behavior change, reducing disparities)

Catchment Area Data Excellence Conference

In January, we will take a deep dive into catchment area data collection and analysis as moderators of two sessions at the [2025 AACI Catchment Area Data Excellence \(CADEx\) Conference](#). We have invited national leaders to discuss “The Spatial Context of Cancer: Overview and Strategies,” and “Measuring Impact on Your Catchment Area: Data Tools and Analytics at Cancer Centers.”

This three-day event, January 29-31 in Coronado, CA, will bring together cancer center catchment area data experts, geospatial statisticians, and representatives from government and industry to address emerging topics in cancer prevention and control analytics. Attendees will share best practices in data collection, explore policies and methodologies to advance catchment area cancer surveillance, build relationships to transform cancer care through public-private collaboration and technology innovation, and discuss how artificial intelligence could be used to transform the future of data analysis within the catchment area.

The conference provides a vital educational platform for developing an intentional approach to using high-quality data across multiple dimensions. Such an approach allows for informed conversations between key stakeholders within and outside a cancer center or related organization to identify the problem, develop solutions, and importantly, assess the potential impact of efforts in reducing cancer burden.

[Register for the 2025 AACI Catchment Area Data Excellence](#)

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The Association of American Cancer Institutes (AACI) represents over 100 premier academic and freestanding cancer centers in the United States and Canada. AACI is accelerating progress against cancer by enhancing the impact of academic cancer centers and promoting cancer health equity.

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