SHAPE: Advancing Population Health Data Evaluation and Visualization for the Huntsman Cancer Institute Catchment Area

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1. Background
Huntsman Cancer Institute (HCI) previously created the System for Health Assessment Population Data Evaluation (SHAPE) with the intention of hosting a robust system for monitoring the catchment area. This tool has become more powerful over the past year to meet the needs of the institution.

2. Goals
Our goal is to standardize and streamline the approach for gathering and disseminating data for our catchment area.

3. Solutions and Methods
The SHAPE team has spent time gathering significant amounts of data, standardizing the database, and streamlining the process for investigators to request data and visualizations.

The SHAPE database is made up of data from Cancer InFocus (CIF), Behavioral Risk Factor Surveillance System, Heath Information National Trends Survey, Community Health Assessment Survey, National Health Interview Survey, Federal Communications Commission, the American Community Survey, Environmental Protection Agency, United States Department of Agriculture, HPV Vaccination Coalition, Utah Cancer Registry, National Cancer Institute State Cancer Profiles, and our local electronic data warehouse (EDW). EDW data consists of all patients who were seen at our facility, all patients in our local cancer registry, and patients who were accrued to clinical trials. The geographic levels of our data sources range from state level to census-tract level.

Tableau is used to visualize key metrics across domains such as cancer incidence, mortality, and stage, health behaviors, health care access, environmental exposures, clinical trial engagement, and others. SHAPE geovisualization functions include travel time mapping with user-specified origins and destinations, heat mapping of metrics, and other thematic mapping.

SHAPE uses SQL Server Reporting Serves to host reports serving the HCI Office of Community Outreach and Engagement, investigators, clinical partners, and our community advisory board. Reports consist of summary data on accruals, travel time, distance, sociodemographic characteristics, and health needs hot spots.

SHAPE implemented CIF, which is a tool used to gather and visualize data. This platform was developed by the Community Impact Office at UK Markey Cancer Center. It is made available to others through CancerInFocus.org, and a no-cost licensing agreement.

The SHAPE team provides a portal allowing investigators and staff to submit tickets for questions, data requests, visualizations, and more. This system helps the SHAPE team stay organized and keeps ticket submitters informed as their requests are processed.

4. Outcomes

Semi-automated database integration of patient, population, and geographic data layers allows HCI to understand the cancer control needs across our very large and heterogeneous catchment area. Having this data compiled into one database allows us to build reports and visualizations with ease and serves as a platform for a large language model-based AI query function, which is under development.

5. Lessons Learned and Future Directions

We learned that building in thorough documentation at every step is critical. Live data can be stored in the database, but "snapshots" of the data should be taken on the same day each year to ensure standardization in annual reporting. We also learned about several crucial data points that inform staff and senior leaders about what to prioritize within our catchment area.