

BACKGROUND

Cancer centers are expected to identify disparities, guide outreach, and demonstrate community impact. However, data needed for these analyses are stored in complex systems that typically require analyst support, limiting timeliness and flexibility in data requests. Existing dashboards address only predefined sets of questions and take time to adapt. This gap between data availability and accessibility constrains the effective use of catchment analytics for equity-focused decision making and reporting.

METHOD

We developed a pilot AI-powered interface for a catchment area database that enables users to submit plain-language questions about catchment area data and receive plain-language responses. The system uses this modular LangGraph workflow (see Agent Architecture):

- Gathers context from two elastic search indexes.
- Routes queries to SQL, general, or out of scope branches using gathered context.
- Creates and executes a research plan including steps to:
 - Gathers database schema.
 - Gathers more context.
 - Generates/executes SQL queries.
- Responds to the user's query using gathered data.

Performance was evaluated using historical requests and analyst test prompts designed to assess accuracy, routing, and robustness.

AGENT USER INTERFACE



Pilot AI-powered Interface: Demonstrated Feasibility for Expanding Access to Catchment Area Data

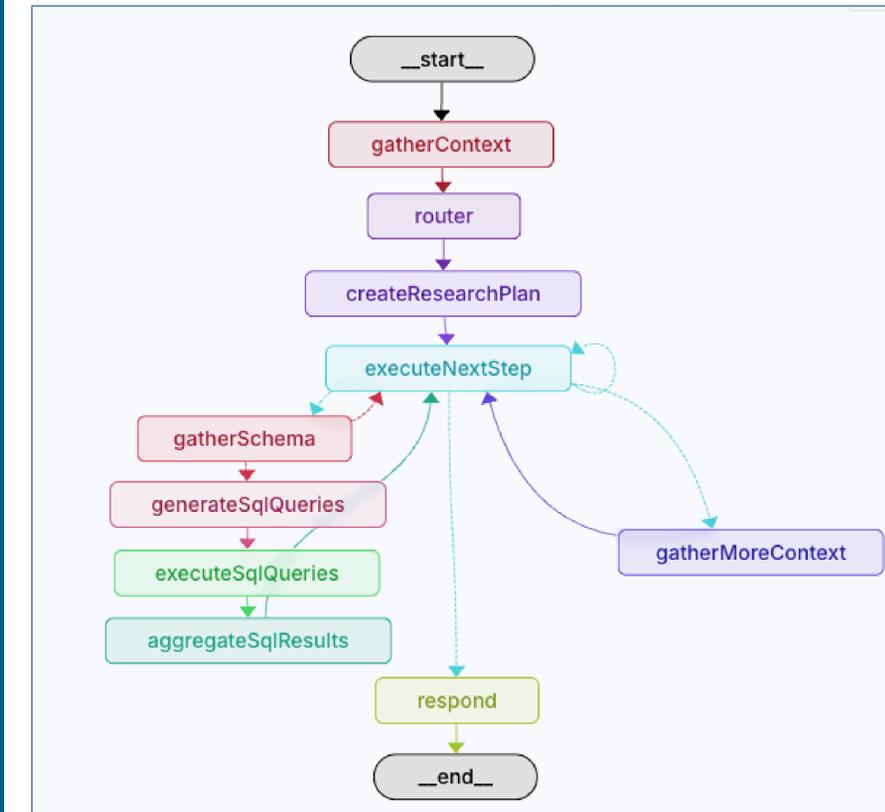
An AI-Powered Approach to Accessing Catchment Area Data

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AGENT ARCHITECTURE



HIGHLIGHTED FINDINGS

Preliminary testing showed moderate performance. The system correctly routed 96.7% of queries. Analyst scoring of generated SQL averaged 3.2/5, reflecting mixed query validity. User-facing responses scored 4.1/5, indicating clarity for non-technical users. Although formal time-savings analyses haven't been done yet, results were returned within seconds, substantially faster than analyst-mediated workflows.

FUTURE PLANS

Early testing suggests that a natural language interface can expand access to catchment area data for both technical and non-technical users, though accuracy improvements are needed for reliable deployment.

Future work will focus on expanding documentation for richer context, enabling visualizations, implementing security guardrails, and conducting broader user testing. Ongoing evaluation of accuracy and time savings will guide development toward a scalable, secure, and equity-promoting analytics tool.