

GIS Applications and Strategies to Revolutionize Health Care

Maximus Federal Health

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BACKGROUND

Data visualization tools paired with timely and complete health data provide a solid foundation for understanding patterns, trends, and relationships across data systems which may not be visible in standard or tabular formats. A Geographic Information System (GIS) is a computer-based system that creates, edits, manages, analyzes, and visualizes data. Advances in GIS technology expand its capability to incorporate all types of data, including non-spatial, disparate datasets within the healthcare ecosystem. GIS also plays a significant role in integrating artificial intelligence (AI), data mining, machine learning (ML), and high-performance computing – creating the geospatial artificial intelligence or GeoAI. Some use cases of GeoAI in health care are data enrichment, location-based recommendations, engineering of new AI/ML features using spatial data and using AI/ML for geospatial dataset.

KEY OUTCOMES OF GIS UTILIZATION:

GIS applications are critical in health care planning, policy development, program management and implementation, and emergency response.

- ✓ Allows the health systems leadership, public health workforce, and health care providers to effectively plan and implement interventions and conduct surveillance activities.
- ✓ Help identify community resources, perform community health needs assessments, communicate health implications to the community, transform community engagement, and increase uptake of healthcare services.
- ✓ Display and analyze geographically referenced data originating from healthcare organizations such as electronic case records (eCR), electronic medical records, public health data sources, and syndromic surveillance from emergency rooms, for example.
- ✓ Support other health informatics domains, including information system planning, health data standards implementation, data exchange and integration, data privacy and security applications, systems design, and data reporting.
- ✓ Widely used in health informatics and epidemiology methods such as health risk analyses, healthcare access patterns, assessment of health inequity, and community health profiling.
- ✓ GIS offers superior functions of spatial visualization, data integration, epidemiological analysis, resource allocation and management, and early warning systems for biosurveillance activities.

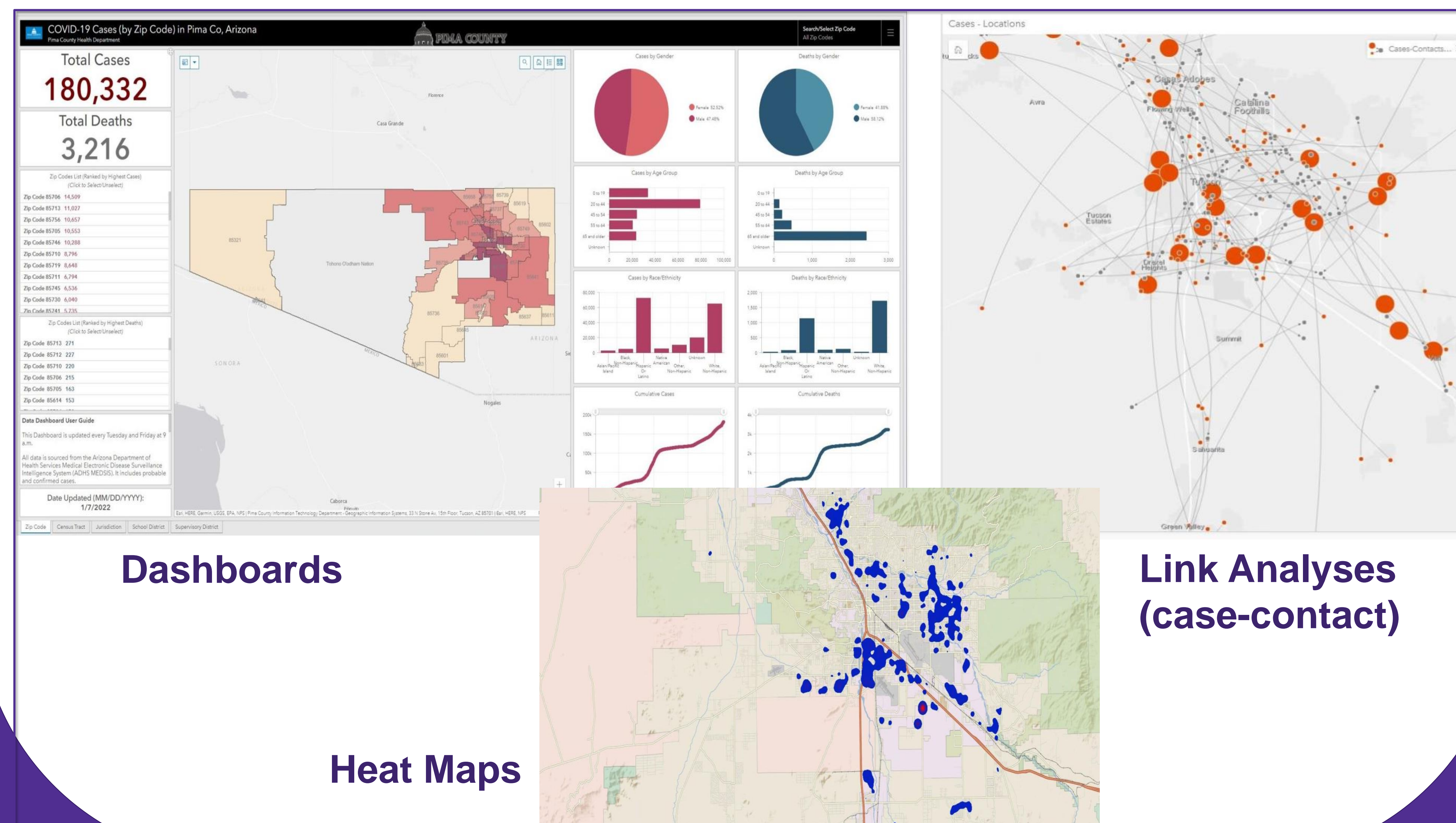
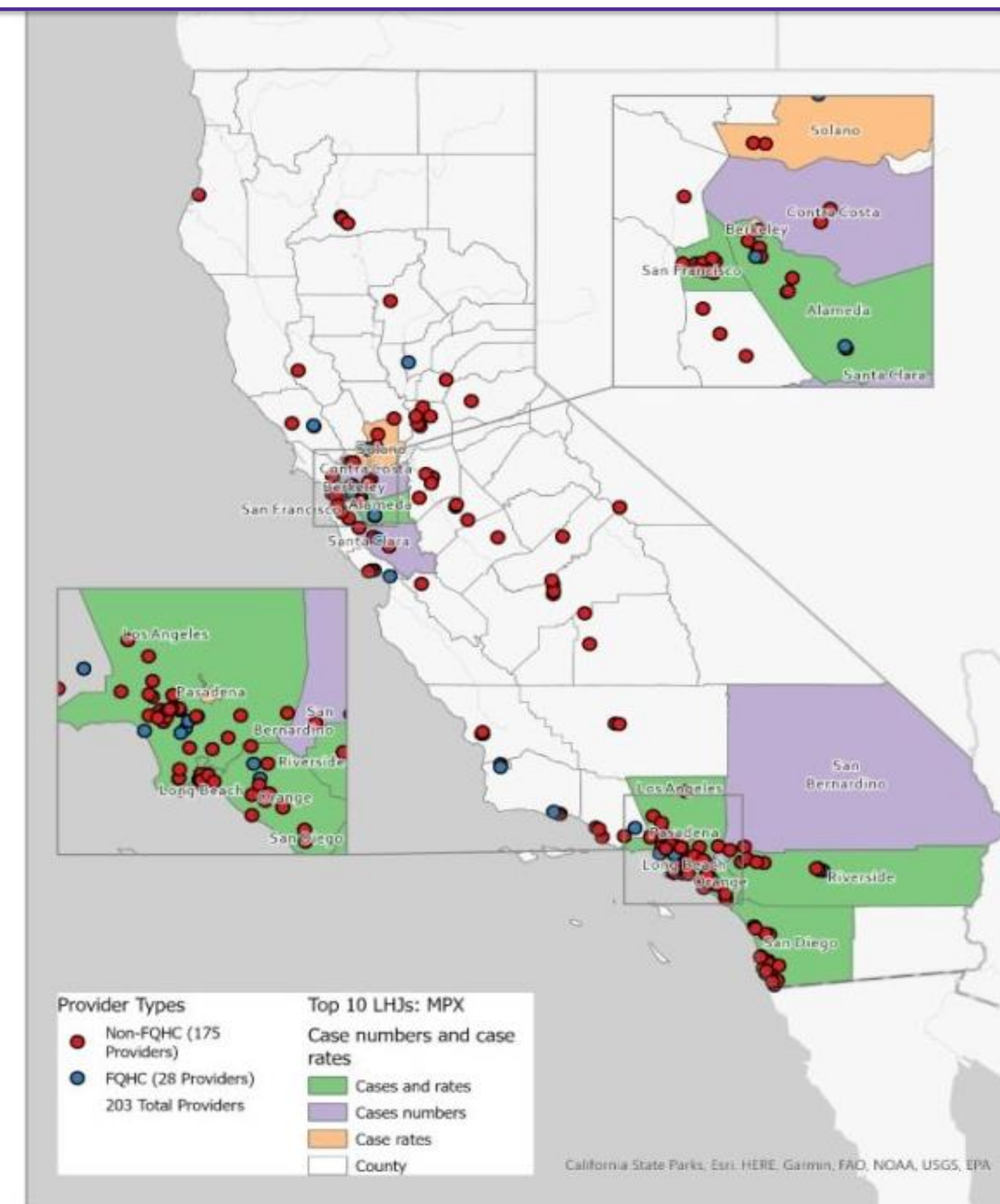
Citizen Centric, Innovative, Scalable, Response - Ready, Technology- Driven, Data focused, Secure

Data visualization tools and techniques support data integration; transform program management; assist with decision-making, resource allocation; improve audience engagement; enhance resource and service utilization.

Data Visualization Case Study: California Mpox Response

Impacts and Results

- Improved access to health care
- Optimized service delivery and resource utilization
- Increased equity and data accuracy
- Supported strategic decision-making
- Shared accurate information with partners and the public
- Enabled visualization of disparate health and spatial data



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Optimizing Health Solutions Through:

Systems integration and visualization of program resources and individual data.

Digital First approach prioritizes use of tools and technology to deliver improved, coordinated care.

Secure, timely, complete and standardized data exchange, integration and visualization.

Multi-tier engagement and communication with agency leadership, health professionals, partners and the public.

