Health GIS for pandemic response & beyond

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Geo Health Community of Practice
Earth Observations for Health Initiative
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Geographic Information Systems and Pandemic Influenza Planning and Response
How geographic information supports pandemic response:

- Situational Awareness
- Spatial Analysis & Equity
- Engagement
How geographic information supports pandemic response:

Situational Awareness
Impact
Key outcomes from this single dashboard

- Demonstrated the value of GIS for health on a global scale
- Promoted data sharing
- Exposed gaps in public health data collection
- Built expectations for real-time data
Africa CDC

Sharing vaccine, genomic and variant information with the world
Wastewater Trends

- Increasing (triangle)
- No Change (circle)
- Decreasing (inverted triangle)
Situational Awareness

Use Cases
- Disease Surveillance
- Monitor Spread / Trends
- Operations
- KPIs and Benchmarks
- Performance

Key Products
- ArcGIS Pro
- ArcGIS Dashboards
- Web AppBuilder
- Living Atlas

Malaria Transmission
UC Irvine
Kenya

Diabetes Hot Spots
Boyle Heights
California

Lead Poisoning
Department of Public Health
Los Angeles

Hospital Admissions and Patient Status
Aeroterra
Argentina
Social Distancing and Points of Interest
Analyzing capacity to determine your ability to respond
Understand Connections
Perform Link Analysis & Apply Graph Theory

Showing Person-to-Person-to-Place Connections
New Resources Needed
Vaccine Coverage Analysis Solution

Increasing access where it’s needed most

1. Start with existing vaccination locations
Vaccine Coverage Analysis Solution

Increasing access where it’s needed most

2. And your defined area of interest including population information at smaller geographic units across this area
Vaccine Coverage Analysis Solution

Increasing access where its needed most

3. Determine acceptable level of access

First output: percentage of the total population within reach of a vaccination site.

82.9% covered
Vaccine Coverage
Analysis Solution

Increasing access where it's needed most

4. Collect and map candidate vaccination sites to fill gaps
Vaccine Coverage Analysis Solution

Increasing access where it's needed most

5. Add factors to weight results toward greater equity
Vaccine Coverage Analysis Solution

Increasing access where its needed most

Final output: a selection of the fewest number of new vaccination sites that close geographic gaps while favoring the most vulnerable areas.
Spatial Analysis & Equity

Use Cases
- Analyze System Capacity
- Calculate Access
- Manage Risk
- Eliminate Inequities
- Strategic Planning
- Allocate Resources

Key Products
- ArcGIS Pro
- Network Analyst
- Spatial Analyst
- Business Analyst
- Living Atlas

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Facilities Siting
OSEP Kenya

Public Transit & Ride Sharing
SPIN Massachusetts

Vulnerable Populations
University of Eastern Finland Finland

Food Access
W.K. Kellogg Foundation Louisiana

Aedes Mosquito Habitats

Risk Factors for Homelessness

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Risk Factors for Homelessness
How geographic information supports pandemic response:

Engagement
New York City Vaccine locator

NYC’s Vaccine Finder tool: https://vaccinefinder.nyc.gov/

Key Capabilities:

• Find nearest vaccination site
• Filter by open appointments
• Connect directly with scheduling systems
Outreach to Homebound Individuals
Optimize Routing and Collect Field Data
hesitant, politically conservative, service job, uses Facebook

Confident, high education attainment, watches cable news
Engagement

Use Cases

• Connect People to Resources
• Public Information Maps and Apps
• Risk Communication
• Transparency

Key Products

• ArcGIS Hub
• Dashboards, maps and apps
• Survey123
• StoryMaps
• Living Atlas

Delivering Vaccines

Lewis & Clark County, Montana

Crowd-Sourced StoryMaps

Understanding Sentiment

United Nations Habitat

You can assist the global urban response to COVID-19

UN-HABITAT
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