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HIS/GIS in Yemen: Evidence-Based Decision Support for Strengthening the Health System

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USAID-funded Health Systems 20/20 Project

PEPFAR OVC GIS Activity
Kickoff Meeting

December 12, 2006

Overview

- ▲ USAID health reform and health system strengthening activities
- ▲ HIS in the Yemen context – status, gaps, and interventions
- ▲ Comprehensive approach to enhancing HIS for all levels of government (e.g., resources, data sources and management, indicators, and eHealth solutions)
- ▲ Evidence-based decision-making using health GIS solutions



USAID Health Systems 20/20 Project

Increase access and use of Population, Health and Nutrition services through:

- ▲ Improving financing of services
- ▲ Enhancing effective health governance – transparency and accountability
- ▲ Improving health systems and operations – budgets, planning and implementation of programs
- ▲ Supporting capacity building – transfer of skills and knowledge; tools; aid to local organizations
- ▲ Leveraging cost sharing opportunities



HIS Challenges in Yemen: Unreliable and Underutilized System

- ▲ **Inaccurate data collection** and health indicators due to lack of uniform statistical registers and collection tools
- ▲ Current data collections are **used for reporting purposes only**—as only 36% of facilities use data for decision-making
- ▲ Weak and unreliable health information systems contribute to misinformed decisions and **poor quality** of health care services
- ▲ **Lack of incentives** to maintain data for the many vertical programs or share data across Ministries



HIS Patient Records & Health Indicators Pilot Study Initiative

- ▲ Objective: Collect **accurate** and **usable** health data at the point of service to support evidence-based decision-making and resource allocation at local, regional, and national levels
- ▲ Involved stakeholders and designed a **patient encounter form (PEF)** to record patient flow information
- ▲ Identify mechanisms—**local feedback loop**—to create incentives for health care providers to accurately fill out and process PEFs in customized **HIS software/RDMS**
- ▲ Emphasize the importance of **evidence-based approach** to inform local health facilities and regional health care providers

The screenshot shows a software window titled "Encounter Entry" with a form titled "ENCOUNTER FORM". The form includes fields for "Visit Date", "Birth Date", "Home Visit" (Y/N), "Uncovered" (checkbox), "Gender" (M/F), "Referral" (Y/N), "Subsidiary" (dropdown), "Married" (Y/N), "Fee paid" (Y/N), "Facility" (dropdown), "Patient Name", and "Name of Primary medical personnel". Below these are sections for "Primary Reason for Visit" (with a dropdown), "Chief Complaint" (3 numbered lines), "Investigations" (5 items: Blood, Stool, Urine, X-Ray, Ultrasound), "Medications" (5 items: Antibiotics, Analgesic, Sedative, Steroid, Antacids), "Diagnosis" (3 numbered lines), and "Procedure" (3 numbered lines). A "Close" button is visible in the bottom right corner.

The screenshot shows a "Report Generator" window. It has a "Report For" dropdown set to "Overall General Statistics" and a checked option "Include subordinate facilities". Below are two "Report Start Dates" sections, each with a table. The first table has columns: "Year", "Month", "Year", "Month", "Year", "Month", "Year", "Month", "Year", "Month". The second table has columns: "Year", "Month", "Year", "Month", "Year", "Month", "Year", "Month". Below the tables are several dropdown menus for "Encounters by Month", "Encounters by Day", "Water Damage", "Frequency of Complaint Categories", "Frequency of Diagnosis Categories", "Frequency of Procedure Categories", and "Frequency of Complications".



Methods and Results

- ▲ Worked in **(3) districts and one hospital** within one of five USAID-targeted governorates with varying administrative and health care quality
- ▲ Conducted pre-intervention assessment, held **sensitization seminar**, and defined data requirements and best HIS practices
- ▲ Provided **HIS software training**, statistical tools, registers, patient encounter forms, computers, printers, and office equipment
- ▲ **Monitored PEF data collection** and database entry, produced customized summary reports, and facilitated changes in facility- and District-level health care effectiveness as a result
- ▲ Generated demand for reform of registry system

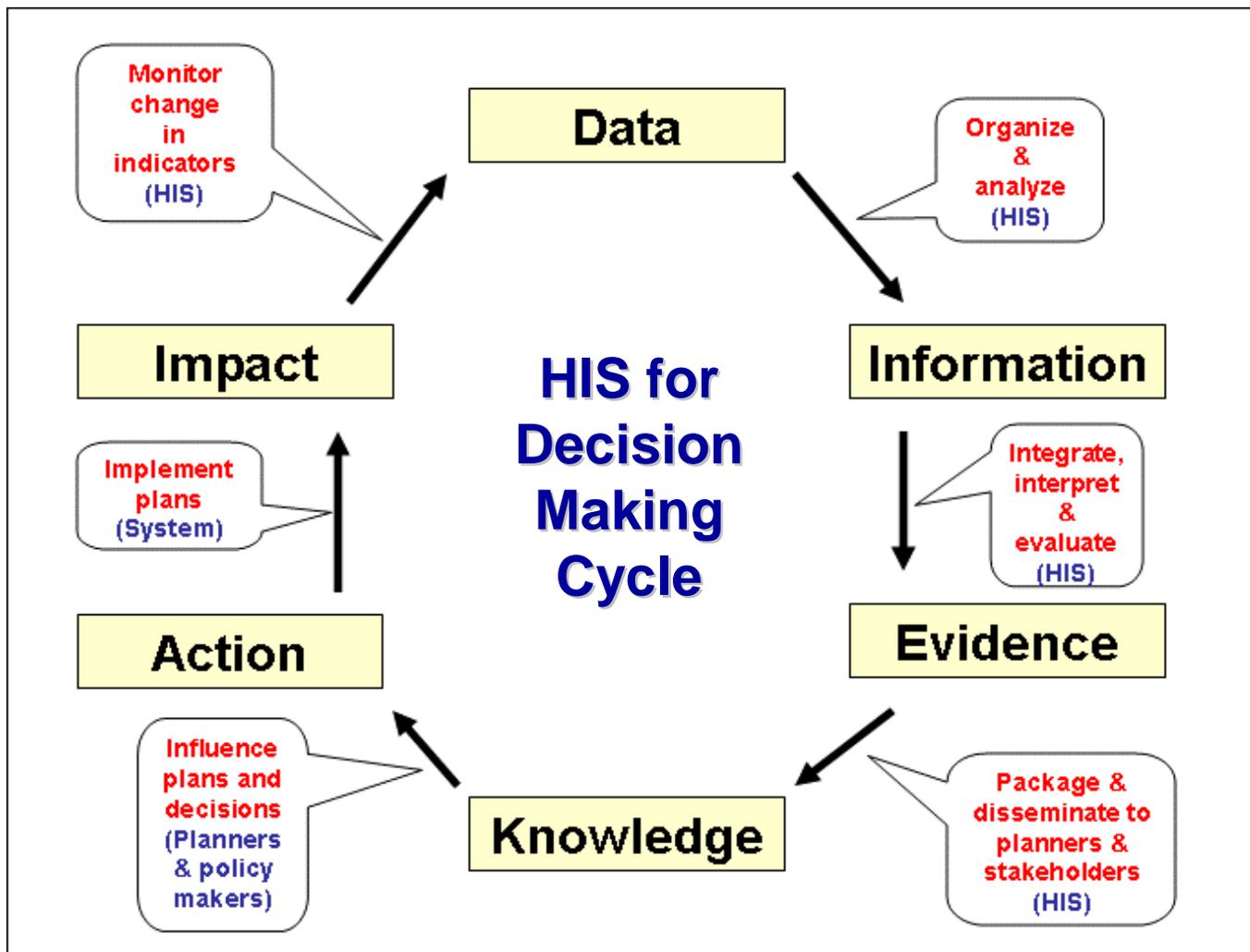




Ongoing HIS/GIS Technical Support

- ▲ Instituted **National Health Accounts (NHA)** to track expenditures
- ▲ Conducted comprehensive **health facility survey** (data collection instrument, GPS coordinates, digital photographs)
- ▲ Synthesized, cleaned, georeferenced, and standardized the best available **GIS base map data**
- ▲ Coordinated with Central Statistical Organization on **2004 Census data**
- ▲ Standardized **coding lists** for geographic units (settlements, districts, governorates) to increase compatibility and acceptance among all stakeholders
- ▲ **Building capacity** at all levels for District, Governorate, and National utilization of HIS through health GIS tools and applications
- ▲ Improved **transparency and accountability** of HIS resources, data sources, and indicators

HIS Coupled with Health GIS Applications





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About Yemen



Welcome

Our mission is to promote health and quality of life by preventing and controlling disease, injury, and disability.



Highlights

- Two-day conference in Sana'a on **Evidence-based Information Systems for Health**, June 18-19, 2006... [more](#)
- Health Sector Review - **Health & Population Sector Partners Coordination Meeting** summary, March 2006... [more](#)
- Now available on-line: **UNIC E-Newsletter**, February 2006... [more](#)
- USAID Yemen launches **Yemen Basic Health Services Program** to improve maternal and child health (MCH) in five of the poorest governorates in Yemen... [more](#)
- **Prevention Guide against Avian Influenza**, March 2006... [more](#)
- **Household Hygiene Improvement Survey** results... [more](#)
- **Health & Population Magazine**, now available on-line... [more](#)
- Latest USAID/Yemen MoPHP **Health Facility Viewer**... [more](#)
- Health & Population **Development Partners Meeting**... [more](#)
- **National Safe Motherhood Conference**, Dec 2005... [more](#)
- USAID Support Rehabilitation of the **Jadaan Cistern**... [more](#)
- New Tools Move **Polio Eradication** Drive Into Final Stage... [more](#)

Minister of Health



Prof. Dr. Abdul Karim
Yehia Rasae

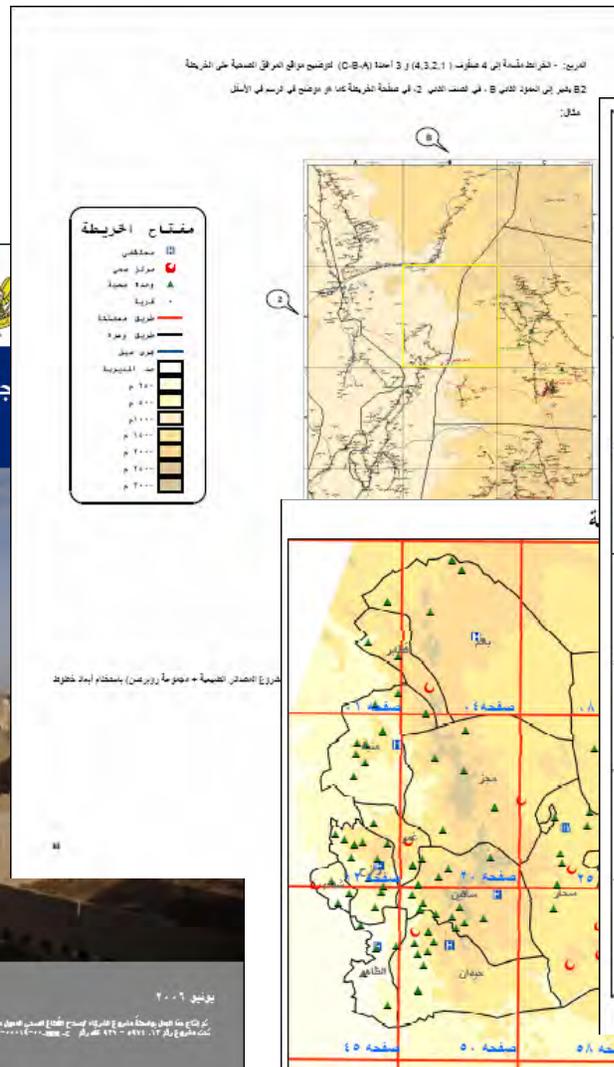
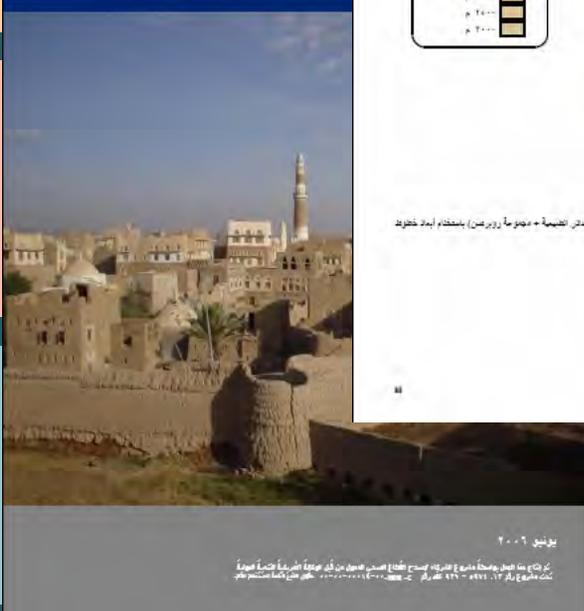
[Minister's Message](#)

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<http://www.moh.gov.ye>

District-Level HIS/GIS Support: Health Facility Atlases and Maps



رقعة خريطة المنطقة

رقعة خريطة المنطقة

رقعة الخريطة (المنطقة) من المرافق

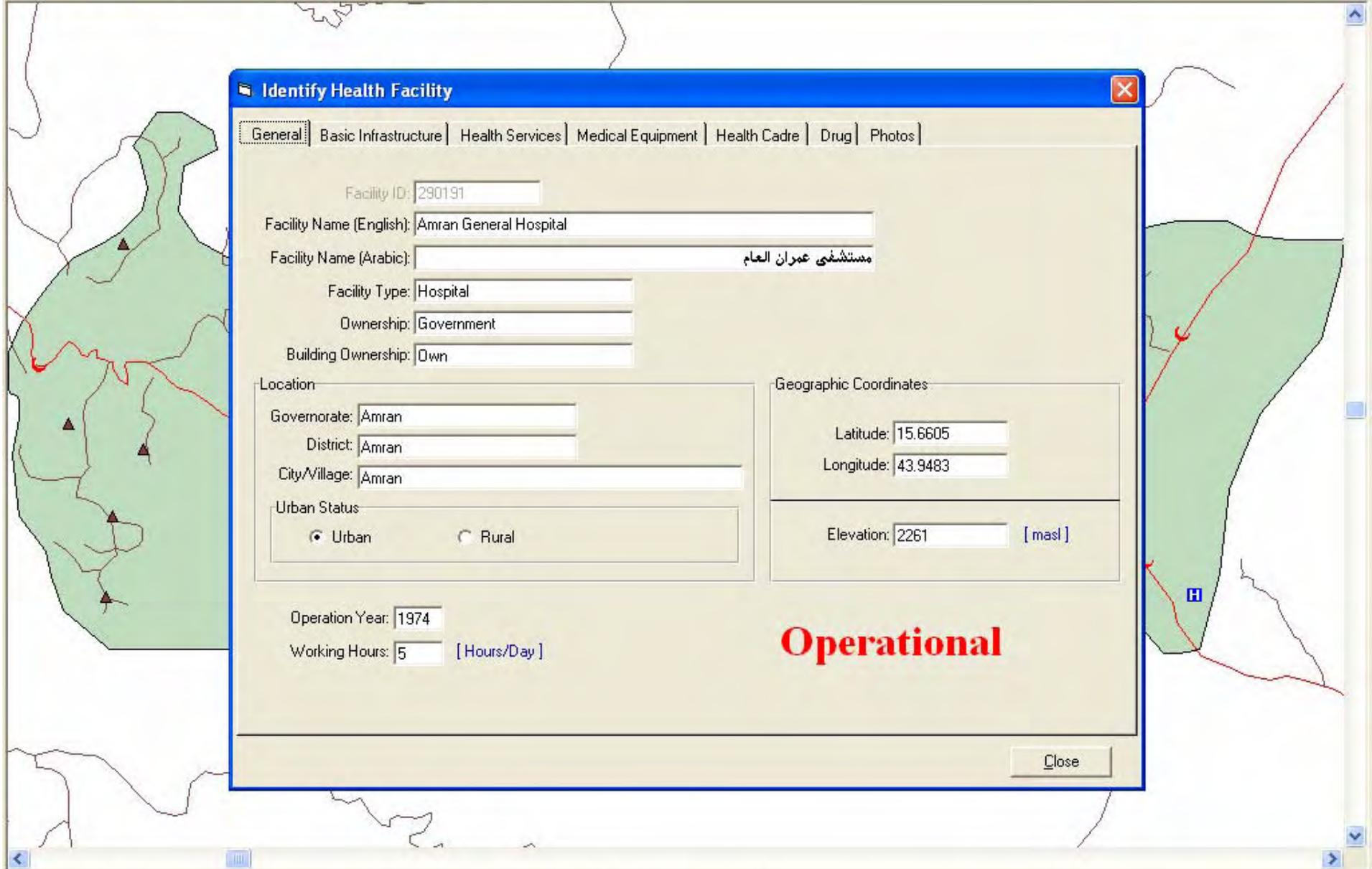
رقعة خريطة المنطقة

Each of these four panels contains a grid of photographs showing the interior and exterior of health facilities, accompanied by data tables for each facility. The tables include information such as facility name, location, and status.



Governorate-Level HIS/GIS Support

- ▲ Simple, elegant, novel eHealth solutions
 - ▲ *Health Facility Viewer* (Internet Explorer enabled)
 - ▲ *Health Sector Analyzer* (MapObjects stand-alone CD-ROM tool)
- ▲ **Target Audience:** Director-General of Health, Health Officials/Managers, Statisticians, Hospital Administrators
- ▲ Benefits anyone who can access and use a computer
- ▲ Easy-to-use **health care planning, targeting, management, budgeting, evaluation tools** in a GIS environment
- ▲ **Easy-to-understand analyses** and maps
- ▲ **Basic training, user's manual support, and evaluation**



Identify Health Facility

General | Basic Infrastructure | Health Services | Medical Equipment | Health Cadre | Drug | Photos

Facility ID: 290191

Facility Name (English): Amran General Hospital

Facility Name (Arabic): مستشفى عمران العام

Facility Type: Hospital

Ownership: Government

Building Ownership: Own

Location

Governorate: Amran

District: Amran

City/Village: Amran

Urban Status

Urban Rural

Geographic Coordinates

Latitude: 15.6605

Longitude: 43.9483

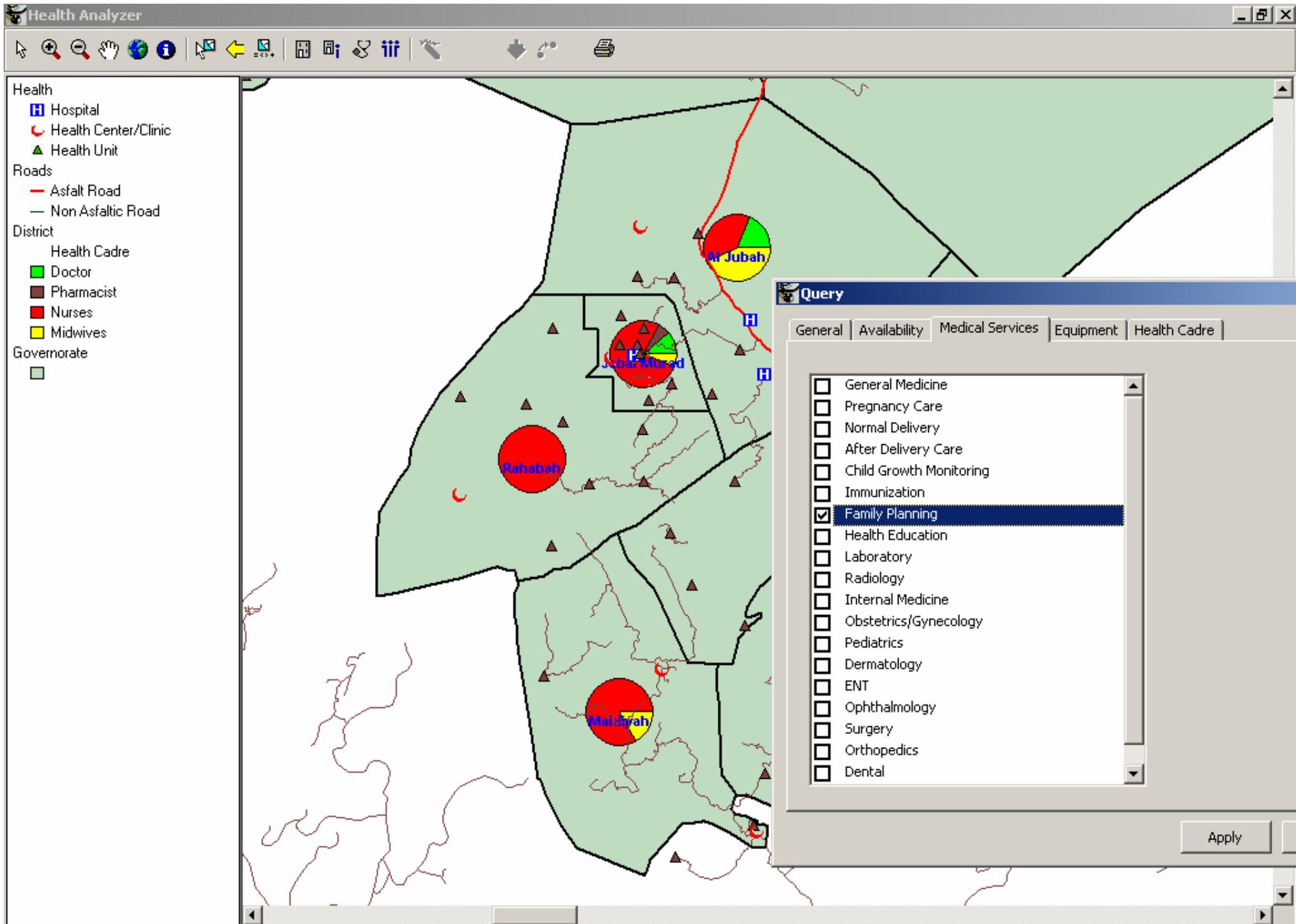
Elevation: 2261 [masl]

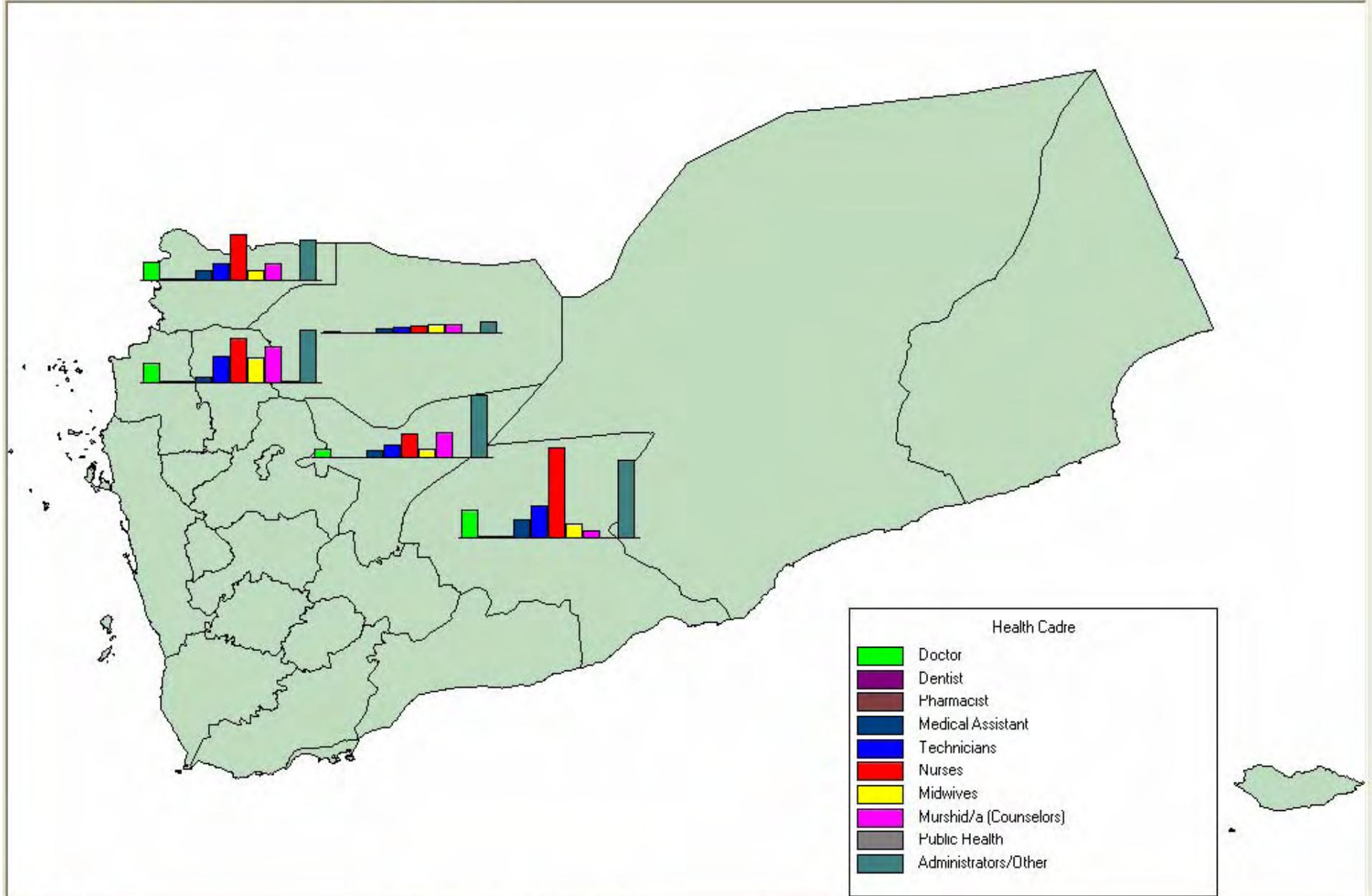
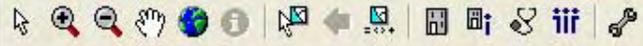
Operation Year: 1974

Working Hours: 5 [Hours/Day]

Operational

Close

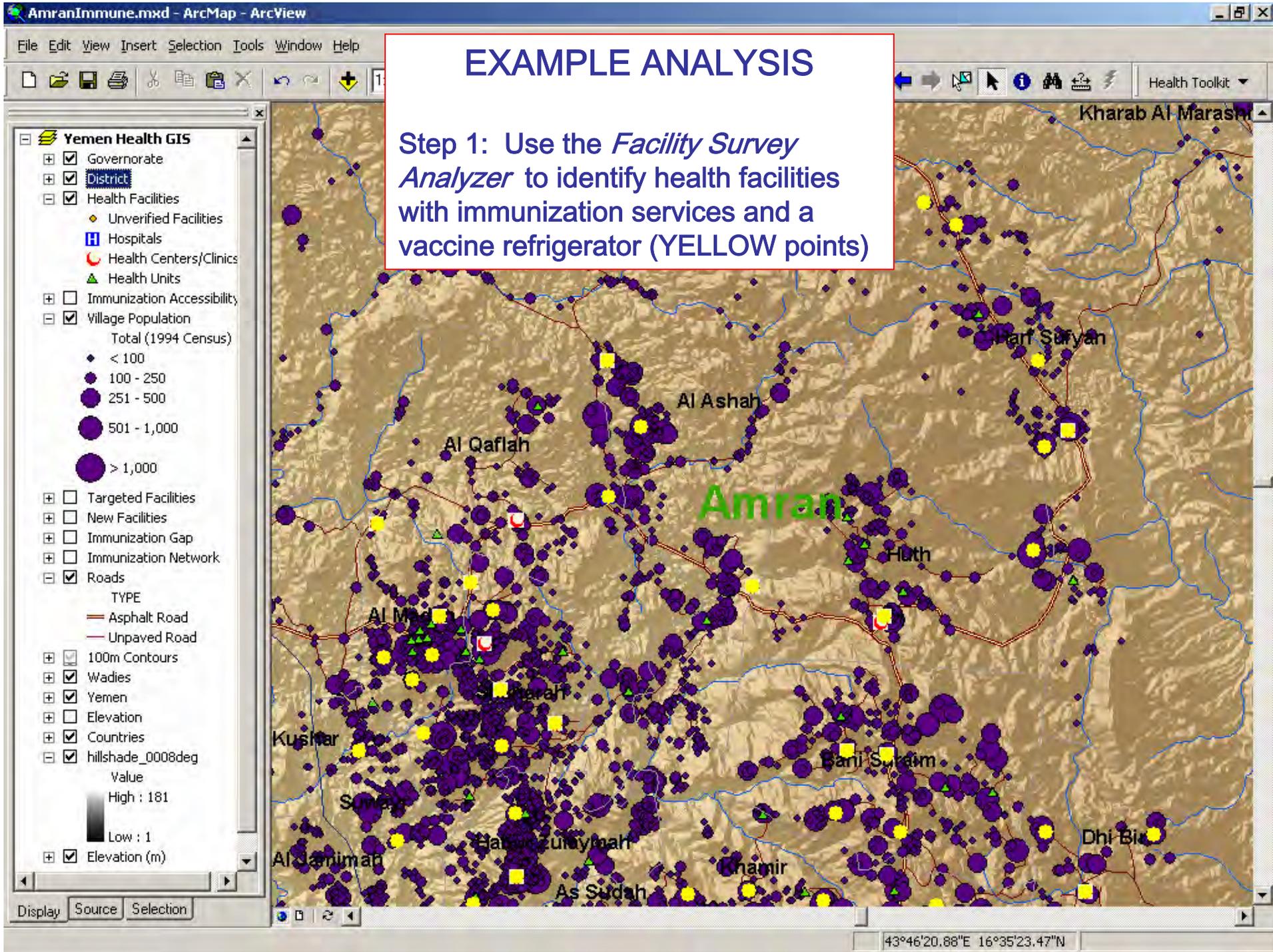


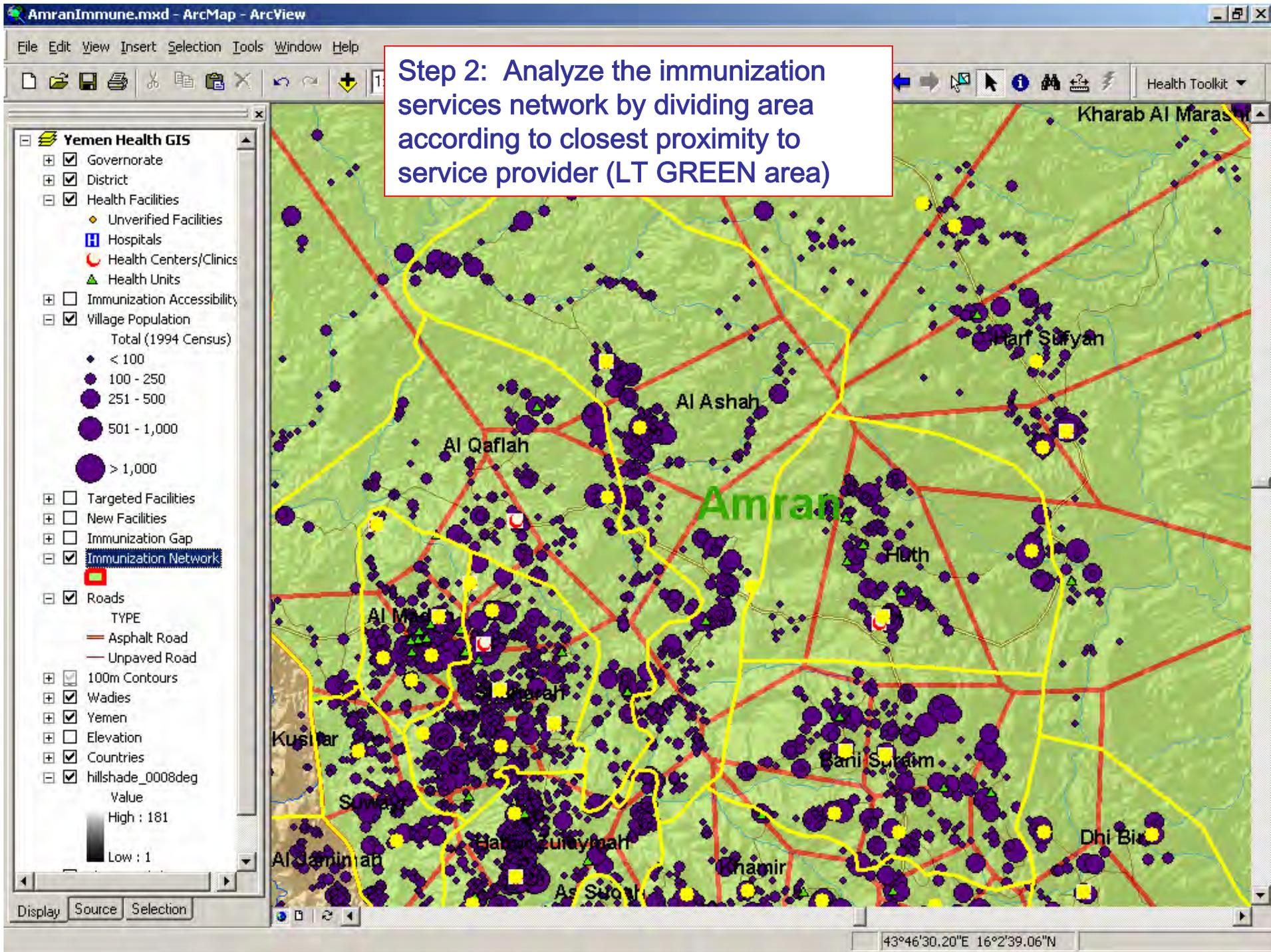


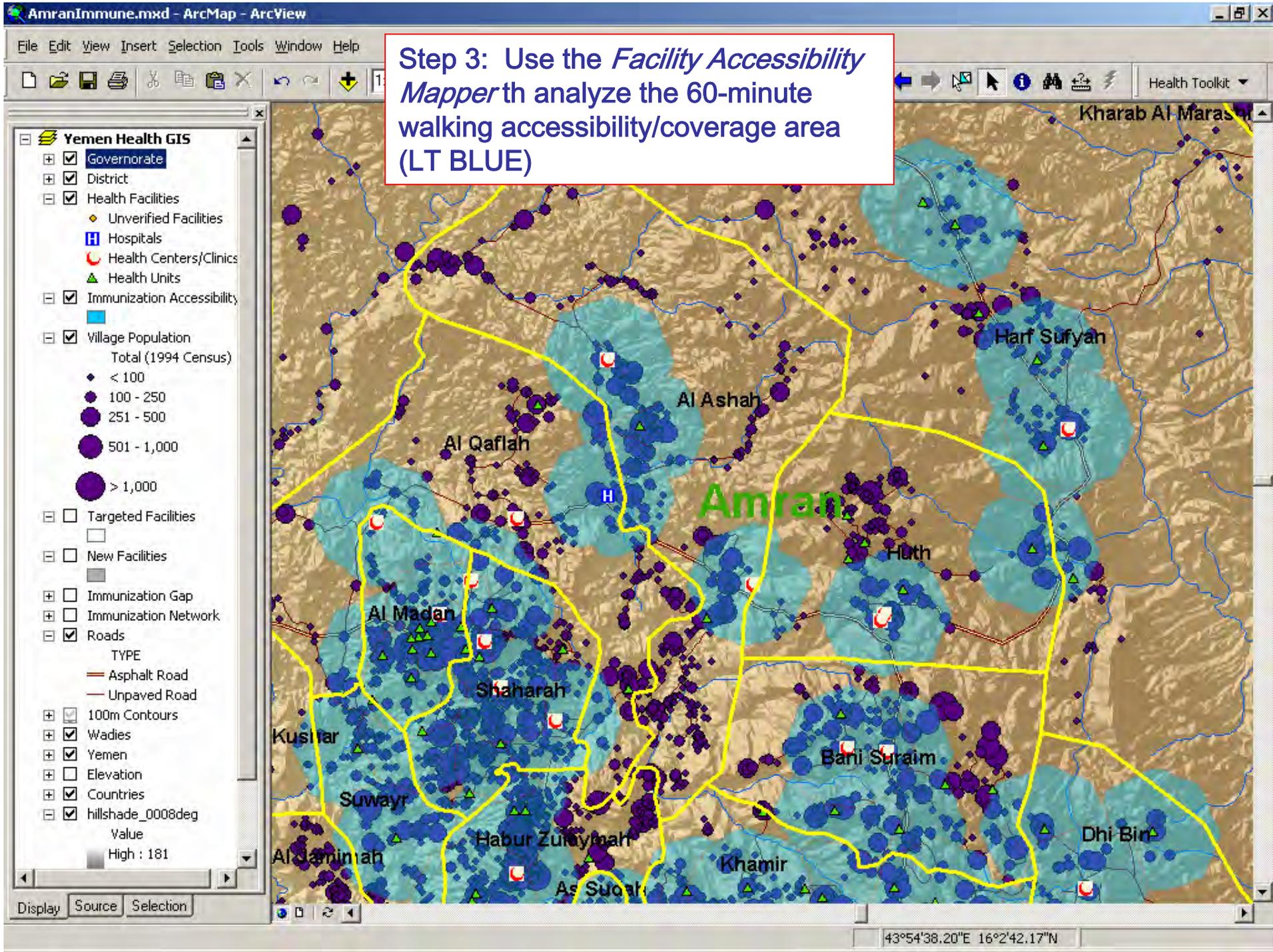
National-Level Users

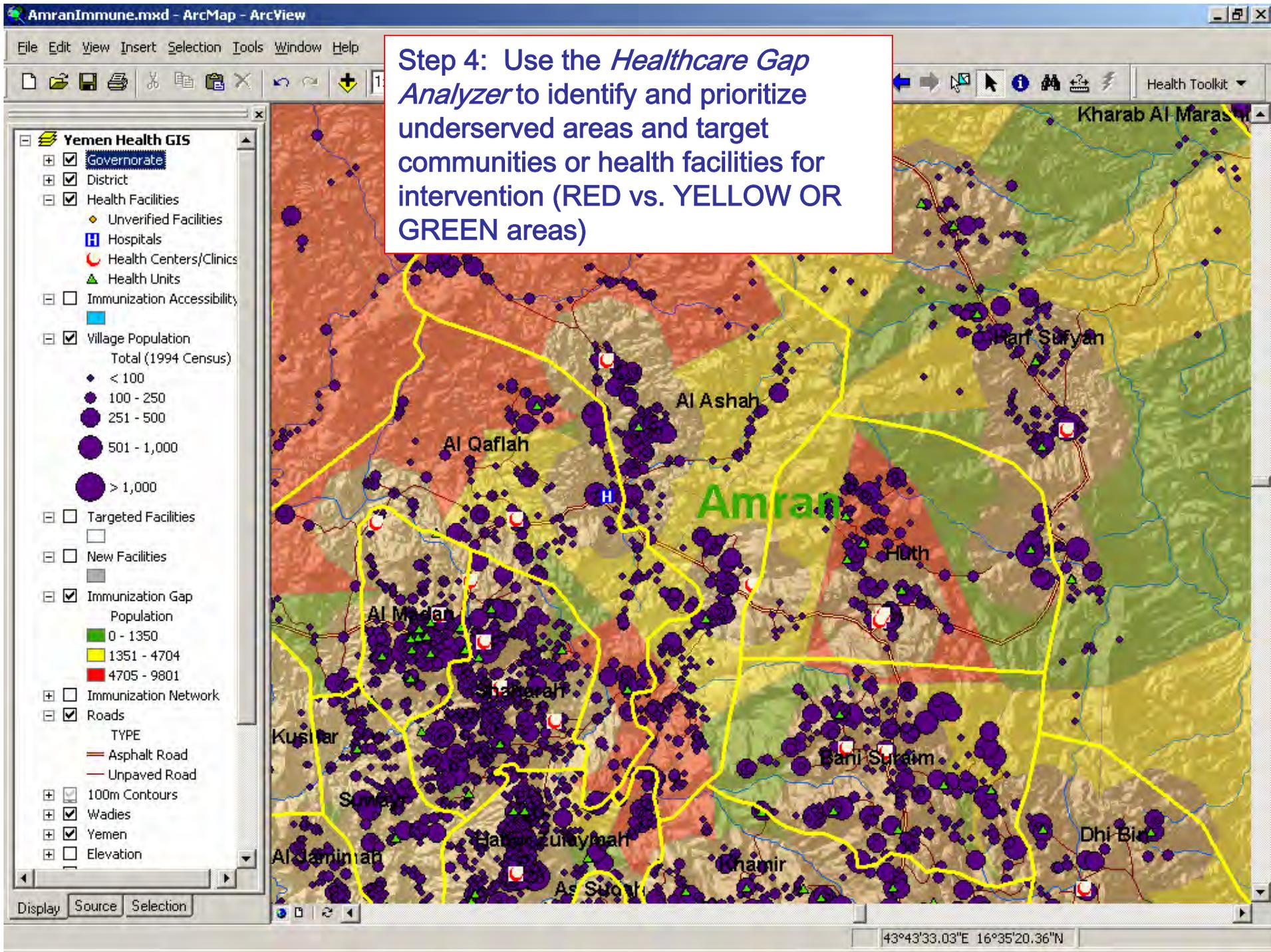
- ▲ Health GIS Toolkit for **ESRI ArcView 9.x** environment
- ▲ **Target Audience:** Ministry of Health, other ministries, USAID/Yemen (all sectors), WHO, World Bank, Social Fund for Development, others
- ▲ **Mechanism** for accessing HIS databases for analyzing, visualizing, and reporting health information for decision-making and performance tracking
- ▲ **Rapid assessment** of health care gaps
- ▲ **Evidence-based planning** for meeting needs
- ▲ Reducing or **avoiding duplication** of service coverage by type
- ▲ **Targeting** limited resources
- ▲ Improving **effectiveness, efficiency, and equity** of health services
- ▲ CD-ROM contents: toolkit, base map data, and health facility survey data

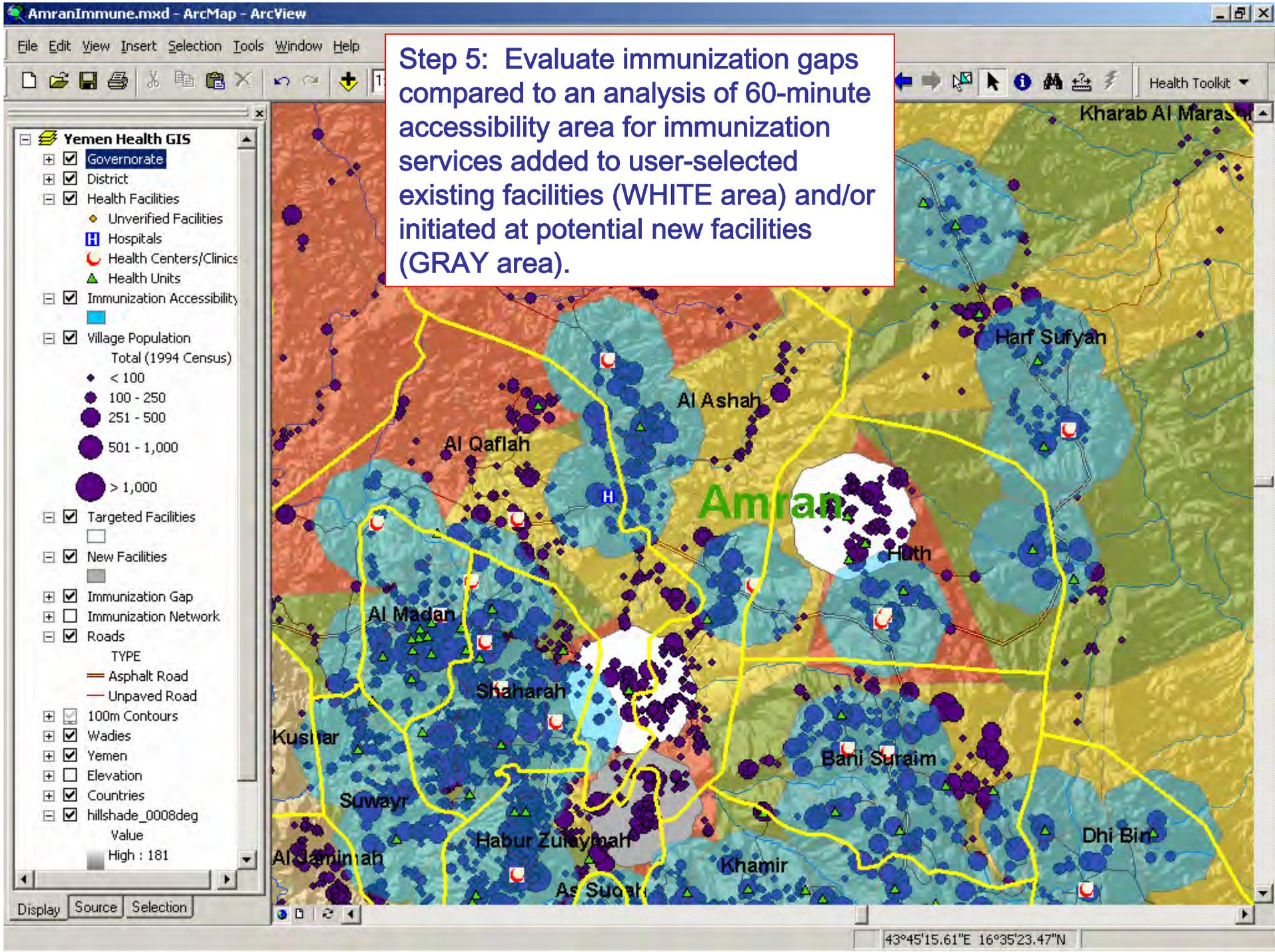












Search

Fly To Find Businesses Directions

e.g., 94043

Search input field with magnifying glass icon

Places

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 - Yemen Health GIS
 - Governorate
 - District
 - Health Facilities
 - Layers
 - Health Facilities
 - Tutorial
 - Sightseeing
 - default
- Temporary Places
 - Yemen Health GIS
 - Governorate
 - Abyan
 - Al Bayda
 - Al Dhale'e
 - Al Hudaydah

Layers



Search

Fly To Find Businesses Directions

e.g., 94043

Search input field with magnifying glass icon

Places

- [Amran General Hospital](#)
- [Amran Private Clinic](#)
- [Amstan Health Unit](#)
- [Angan Health Unit](#)
- [Ar Rawdah Health Unit](#)
- [Ar Rawdah Hospital](#)
- [Arah Health Unit](#)
- [Arma Hospital](#)
- [Arw Health Unit](#)
- [As Sawd Health Center](#)
- [As Sudah Rural Hospital](#)
- [Asafa Health Unit](#)
- [Asdas Health Center](#)
- [Asman Health Unit](#)
- [Ataq Central Hospital](#)
- [Ayash Health Unit](#)
- [Ayath Health Unit](#)
- [Ayesh Clinic](#)

Layers




Facility Name (English):	Amran General Hospital
Facility Name (Arabic):	مستشفى عمران العام
Facility Type:	Hospital
Location:	Rural
Governorate:	Amran
Operating since:	1974
Working Hours:	5
Total Rooms:	84

Image © 2006 DigitalGlobe
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Example Health Care Decision Support Results to Date

- ▲ **Targeting:** Midwives Association is using atlases to prioritize deployment of the newly trained
- ▲ **Assessment:** District health officials are using atlases, maps, viewer, and *Health Sector Analyzer* to justify (re)allocation of resources
- ▲ **Planning:** Governorate health officials are using health GIS to consider health care equity by analyzing catchment populations and resource flows by accessibility zones and building service networks
- ▲ **Gap Analyzing:** Governorates used health GIS to identify and prioritize rural facilities in need of electricity to support cold chain
- ▲ **Collaborative Solutions:** Ministry of Local Authority used the USAID-enhanced GIS to support Fall 2006 elections