Recent Esri Enhancements and VA Healthcare Planning

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Overview

• Our GIS mission, infrastructure, products & services
• New and upcoming enhancements
  • Location-allocation analysis
  • Data driven pages
  • Geocoding improvements
  • Historical traffic data
  • Community Analyst
  • GeoPortal Server
  • Web apps
Who we are

- Planning Systems Support Group (PSSG), a GIS office within the VHA Office of Policy & Planning
- Four geographers and support staff
- Contract support from Penobscot Bay Media and GIS Inc.

Primary mission: population-based planning of healthcare delivery locations
Infrastructure

- Esri
  - ArcGIS Advanced Enterprise for Windows
  - ArcInfo levels of
    - ArcGIS Desktop
    - Network Analyst
    - Spatial Analyst
    - 3D Analyst
    - Geostatistical Analyst
  - StreetMap Premium Advanced NAVTEQ USA
  - Community Analyst
GIS mission, infrastructure, products & services

Infrastructure (cont.)

• SAS
• SAFE FME and StatTransfer
• Five servers, accessed via Citrix
Major products

- VHA enrollee file (n = 9 million)
  - Geocoded, with geopolitical and admin attributes
- VA Site Tracking system (n = 1,100 sites)
  - Geocoded, with geopolitical and admin attributes
- Drive time file
- Geographic Access Report
- GIS Planning Portal
- Standard VHA market maps
GIS mission, infrastructure, products & services

Major services
- Bulk address geocoding and drive time estimation
- Custom maps
- Custom analyses
  - Spatial Analyst
  - Network Analyst
New features we are actively using

- Location-allocation analysis
- Data driven pages
- Geocoding improvements
Location-allocation analysis

- Traditionally access-to-care statistics based on proportion of population within drive time guidelines
- Statistics guide location of new sites, with goal of maximizing coverage within guidelines
- “Maximize coverage” is but one location-allocation solution for optimal site location
Location-allocation analysis

• Maximize coverage
  “Assuming 30-minute cut off, which new location will maximize coverage?”

• Maximize attendance
  “Assuming 30-minute cut off, which new location will maximize the total number of probable visits?”
Location-allocation analysis

• Minimize facilities
  “What are the fewest new locations needed to get us to 80% coverage, and where are they?”

• Minimize impedance
  “Which new locations result in the lowest average drive time?”
Location-allocation analysis

• Maximize market share
  “Which new locations will maximize coverage, accounting for competitors’ sites?”

• Target market share
  “Which new locations will achieve 80% coverage, accounting for competitors’ sites?”
Data driven pages

• Auto-generates multiple maps based on the features of an index layer
• Our challenge: produce web-based “map movies” that depict spatiotemporal changes in projected healthcare demand
• 22 areas
  x 17 healthcare themes
    x 7 population groups
      x 21 years
    = 54,978 maps!
Geocoding improvements

• Custom composite address locator sequence
  • street address with ZIP info
  • street address without ZIP info
  • ZIP+4
  • ZIP (5 digit only)
  • city/state
## Geocoding improvements

<table>
<thead>
<tr>
<th>Locator type</th>
<th>2010 data</th>
<th>2011 data</th>
</tr>
</thead>
<tbody>
<tr>
<td>street address (or address point)</td>
<td>85.61%</td>
<td>89.34%</td>
</tr>
<tr>
<td>ZIP+4</td>
<td>3.34%</td>
<td>1.81%</td>
</tr>
<tr>
<td>ZIP</td>
<td>11.00%</td>
<td>8.83%</td>
</tr>
<tr>
<td>city/state</td>
<td>0.04%</td>
<td>0.02%</td>
</tr>
</tbody>
</table>
New features we are just now testing

• Historical traffic data
• Community Analyst
• Geoportal Server
• Web apps
Historical traffic data

• Incessant customer complaint: “Your drive time estimates are too low.”

• Were using common Network Analyst “nearest facility” tool parameters, with StreetMap Premium Tele Atlas

• Changed to StreetMap Premium Advanced NAVTEQ
Historical traffic data

- My home to my office
  - 22.30 minutes off-hours
  - 35.93 minutes rush hour
  - 13.63 minutes difference
  - 61% increase in access estimate
Esri subscription service for quickly discovering
  • locations meeting specified criteria
  • patterns, relationships and trends
Community Analyst
Geoportal Server

We currently disseminate PSSG geodata via email, ftp, or special access to our servers

• time consuming
• bureaucratic
• requestor must have prior knowledge of data
• documentation often separated from data downstream -> misuse of data
Geoportal Server

Esri Geoportal Server is a web-based registry of geospatial resources
• Stores and catalogs metadata for quick discovery and consumption
• ADUSH Geoportal Server (AGS)
  • VA internal users
  • thumbnail and summary of each item
Web apps

• Obviate need for thousands of pre-rendered planning maps
• Place spatially referenced content in the hand of users
• Quickly support new major planning initiatives such as VA response to Affordable Care Act
Web apps
Web apps
Questions?