Integration and Application of GIS into Pandemic Flu Response
What is a Pandemic Flu?

- “An influenza pandemic is a global outbreak of disease that occurs when a new influenza A virus appears in the human population, causes serious illness, and then spreads easily from person to person worldwide.”

- Different than seasonal flu which is a subtype of influenza that are already in existence among people
Pandemic Flu: Local Impact

According to the Maryland Department of Health and Human Services an influenza pandemic could likely last for months including waves which could continue for over a year.

The estimated impact of a “medium level” pandemic could cause:

- Approximately 10,000 deaths
- 44,500 hospitalizations
- And over 1 million becoming ill in this state alone

Pandemic Flu Exercise Overview

City of Laurel Objectives

- To educate volunteers and staff on the various stages of a pandemic.
- To familiarize staff with Points of Distribution (POD’s) and how they are delivered and how a POD center operates.
- To educate the public in pandemics and what response and mitigation efforts the city has put into place.
- Detail and practice the City’s response plan for Pandemics.
Pandemic Flu Exercise Overview

Proposed Timeline of Events

- June 17th 2:00 pm, Laurel’s emergency operations center (EOC) would be opened. As a part of the exercise, all means of communication available to the city would be utilized (conventional radio, cellular, satellite phones, reverse 911 and amateur radio systems).
- At 4pm, a full call out of the City Community Emergency Response Team (CERT) would be engaged to conduct a field assessment.
- Upon completion of the needs assessment, a deployment of the Strategic National Stockpile of antiviral’s Tamiflu and Relenza would commence.
- The data collected from the needs assessment be compiled and used to prepare the medication to be deployed. At the same time, volunteers would be engaging data entry into the CDC’s CRA.
- CERT teams would be once again deployed to deliver the medication.
The primary goal was to demonstrate that by using geospatial technology in response to a pandemic flu outbreak the result would be a faster response to the constituency while also creating alternate communication systems.

Real-time visual updates on a map as to the status of this assessment would be presented to decision-making officials in the emergency operations center.

Illustrating how to utilize the attribute data taken to create reports and labels which would aid in deployment of the medication.
Pandemic Flu GIS Integration

Communicating with GIS

- Internet Data Collection/Geocoding Application
- Digital Needs Assessment
- Emergency Command Center (EOC) visualizations
- Collected feature data interoperability
Geocoding Application Details

- Web data form component
- Data download conducted every 30 minutes
- Address geocoded on custom address locator file
- Feature class created is centroid on building footprint

Spatia join (inner) point to polygon

Symbology applied to new feature class "Sick/Well"
- 3 Volunteer teams, just-in-time training
- Custom ArcPad applications written; VB Scripting utilized for custom data form
• 3 Volunteer teams, just-in-time training
• Custom ArcPad applications written; VB Scripting utilized for custom data form
• Database structure same as geocoded application for easy integration
• Used Trimble Juno ST handhelds to collect data
Feature Class Data Usage

<table>
<thead>
<tr>
<th>Address</th>
<th>Phone</th>
<th># in House</th>
<th>Child Sick</th>
<th>Child Birth Year</th>
<th>Adult Sick</th>
<th>Adult Birth Year</th>
<th>House Stat</th>
<th>Batch Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>15205 Alan Dr</td>
<td></td>
<td>1</td>
<td>0</td>
<td>2000</td>
<td>1</td>
<td>1970</td>
<td>SICK</td>
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<tr>
<td>15207 Alan Dr</td>
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<td></td>
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<tr>
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<tr>
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<td>1970</td>
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<td>2000</td>
<td>2</td>
<td>1970</td>
<td>SICK</td>
<td></td>
</tr>
</tbody>
</table>
Feature Class Data Usage

- Created reports utilizing Microsoft Access
- Reports were given to CERT, Prince George’s County Health Department volunteers and Medical Reserve Corp volunteers at the POD location’s where the medication doses to be handed out were being put together.
- Labels were created for each household member at each address who would receive medication
# Pandemic Flu GIS Integration

## Participation

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td><strong>Total # of Houses in Study Area</strong></td>
<td>896</td>
</tr>
<tr>
<td><strong>Total # of Houses participating</strong></td>
<td>321</td>
</tr>
<tr>
<td><strong>% of Household's Participating</strong></td>
<td>36%</td>
</tr>
<tr>
<td><strong># of Households via Web</strong></td>
<td>187</td>
</tr>
<tr>
<td><strong># of Households via Juno</strong></td>
<td>134</td>
</tr>
<tr>
<td><strong>% via Web</strong></td>
<td>58%</td>
</tr>
<tr>
<td><strong>% via Juno</strong></td>
<td>42%</td>
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<tr>
<td><strong>Total time it took to do Juno survey</strong></td>
<td>60 min</td>
</tr>
</tbody>
</table>
Pandemic Flu GIS Integration

Successes

- Through the integration of GIS into Pandemic Influenza response protocol, we demonstrated the ability to speed up the response time to constituency while at the same time maintaining social distancing.
- Displayed alternate communication methods available during an emergency response scenario which could take pressure off the 911 system.
- Through our display of data interoperability between spatial database and more traditional spreadsheet, the CDC has expressed interest in adopting practices which would allow the upload of the data in batches opposed to entering each medication deployed into the CRA individually.
Pandemic Flu GIS Integration

Contributors

- I wanted to recognize the Community College of Baltimore County who contributed GIS support in both the pre-planning phase and during the exercise.

- We also want to thank the CDC, the Medical Reserve Corps and Prince George’s County Department of Emergency Management and Health Department.

- We would like to recognize the commitment of the City of Laurel’s Community Emergency Response Team volunteers.