Using ArcGIS Collector and Dashboard for Polling Center Accountability

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City of Baltimore
Baltimore City Demographics

**Baltimore City Demographics at a Glance:**
A closer look at the composition of Baltimore City.

**Population**
- Total Population: 621,849
- No. of Households: 238,897
- Median Age: 34.6
- % Born outside of US: 8%

**By Age:**
- Under 5: __
- 5 to 17: __
- 18 to 24: __
- 25 to 34: __
- 35 to 44: __
- 45 to 54: __
- 55 to 64: __
- Over 65: __

**By Race:**
- Hispanic: __
- Black: __
- Other: __

**Education, Employment and Income**
- Median Household Income: $42,665
- % Unemployment: 11.8%
- % with College or Advanced Degree: 30%
- % with no HS Diploma/GED: 16%

**Income by Education:**
- Income 0-9,999: __
- Income 10,000-19,999: __
- Income 20,000-29,999: __
- Income 30,000-49,999: __
- Income 50,000-74,999: __
- Income 75,000+: __

**Top Employment Sectors:**
- Education and health care: __
- Professional, scientific, management: __
- Arts, entertainment, and recreation: __
- Retail trade: __
- Public administration: __

**Housing & Transportation**
- % Owner Occupied: __
- % Renter Occupied: __
- % Housing Cost Burdened: >30% of Income on Housing

**Housing Units by Tenure:**
- Vacant housing units: __
- Owner-occupied: __
- Rent: __

Voter Geography

- There are 302 polling precincts
- There is a total of 291 voting locations
- There can be multiple precincts voting in a single location
- Voting is managed by the Board of Elections
  - Partner with the Police Department
Voting History

- In the middle decades of the nineteenth century 89 Americans were killed at the polls during Election Day riots. A large number of these deaths occurred in the City of Baltimore
  - Baltimorean’s took their politics very seriously and elections, in particular, arouse to a state of such feverish excitement as to produce violence and disorder.
  - Riots, brawls, and other disturbances were quite common; especially during the Presidential election held in 1856.
    - On the day of the election, bloodshed and terror were rampant
    - There were hundreds of stabbings and in one battle artillery was actually used
  - In 1860, the Police Department was reorganized and placed under state control and were directed to restore law and order during election day
  - Today, the City of Baltimore is the only jurisdiction in the State of Maryland that still employs Police Officers during the voting cycle
Modern Day Problems

- When it began.....2006 Primary Election
  - Only 75% of locations opened on time.
  - 119 polling centers experienced some sort of problem
  - 180 judges didn’t show up.
  - Citizens called 911/311 complaining that they could not vote
  - Lawsuits were filed against the BOE
  - Bad Press
    - City Hall was blamed for the problem
Project History

- **Primary Mitigation Steps:**
  - CitiStat, the Mayor’s accountability agency, worked with EGIS, Election Board, and Baltimore Police to set up a new process, which included:
    - Recruiting and training election day workers
    - Providing cell phones to designated officers at each polling place
    - The creation of a online spreadsheet-based tracking system to monitor and report any potential issues for each location.
Project History

- Officers provided readiness information from each precinct within the district over the phone.
- This information was recorded on a paper form and was then given to the volunteer Mayoral office employee who were placed at each police district headquarters.
- Volunteers would enter this information into a web-based database application.
History

The entered information would appear onto a spreadsheet. Each row, representing a district, would be colored according to their readiness.

<table>
<thead>
<tr>
<th>Color</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>&quot;Can NOT Open&quot;</td>
<td>Precinct has problems that will prevent it from opening.</td>
</tr>
<tr>
<td>Green</td>
<td>&quot;Can Open&quot;</td>
<td>Precinct is ready to open. There are no problems reported that would prevent opening.</td>
</tr>
<tr>
<td>Yellow</td>
<td>&quot;Open&quot; OR &quot;Can Open&quot;</td>
<td>Precinct can open OR is already open, but there are problems that may need to be addressed, such as missing technicians or the need for additional judges.</td>
</tr>
<tr>
<td>Blue</td>
<td>&quot;Open&quot; OR &quot;Can Open&quot;</td>
<td>Precinct is open. No unresolved problems have been reported.</td>
</tr>
<tr>
<td>White</td>
<td>&quot;Report Not In&quot;</td>
<td>No information has been received.</td>
</tr>
</tbody>
</table>

As a result, polling place readiness improved from:

• 75% (2006 Primaries)

to:

• 94% (2006 General Election)
The web application was 10 years old, and no longer supported.

Since 2006, mobile technology, based on smartphones and/or tablets, has emerged as a game changer for capturing information out in the field.

As a result, it was suggested to leverage mobile technology for entering the polling place data directly at the polling place.

Eliminate steps, reduce number of involved staff, and add a spatial element to quickly identify and mobilize staff/resources to problem areas.
GIS Involvement

- CitiStat asked EGIS to create a mobile app that could do the following:
  - Have a smart phone with the app installed and distributed to an assigned person at each polling place.
  - The assigned person would first select their precinct, and enter the information through a form.
  - That data would automatically feed into a color-coded map and corresponding spreadsheet at the control room at the Watch Center.
  - From there, they can identify and mitigate problem areas more logistically and effectively.
  - It would also eliminate the staffing of City Hall personnel from the police stations collecting the reporting data.
Technical Requirements

- After a review of ESRI mobile applications, we decided on the **Collector App** since it would enable the users to enter in data at existing locations that we would create from an ArcGIS project.

- Easy to use – the people entering data on the assigned smart phone often had no technical skill.

- The app would be installed on the smart phones, with a login for each precinct

- Have the entered information feed into both a color-coded map and a table at the Watch Center.
Application Overview

- Smart phone users launch the Collector app by clicking on the icon and logging in.
- Locations were filtered by districts so that users would only see the information for their respective district.
Application Overview

- The field person enters information at 6am to report readiness, and at 7am to report open status.
- This information is immediately reflected on the map being monitored at the Watch Center.
- The questionnaire form shown below is based off a layer created in ArcMap and published as a service for ArcGIS Online.
At the Watch Center a City-wide map was shown. The user can search for a specific polling place location by entering one of the following:

- Ward/Precinct Number
- Polling Location Name
- Address of Polling Place
Application Overview

- By clicking on the dot a pop-up window appears allowing managers to Edit the information entered in the table.

- This allowed managers to update the information as issues were resolved.
Training and Implementation

- The apps were installed on the phones and tested.

- EGIS trained managers and supervisory staff, who would in turn, train the field personnel.

- On the day of the Primary Elections, all of the 180 ward/precincts were able to enter their data through the mobile application.
Lessons Learned

- First time implementation was overall a success!
- There were some minor changes that needed to be made:
  - Add another point layer for the 7am call. That way the polling place dots will truly reflect the readiness of each place.
  - Create individual, unstacked points for each polling center location
  - Adding an “intermediate” color for those with issues but could still open
  - Confusion as to what elements truly prevented a location from being opened “on-time”
Questions

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