Why the Long Lines?

Some answers to this question using statistics
Focus

• Do the “long waiting time” precincts have identifiable characteristics not shared with the other precincts?

• Approach
  – Use statistics with available public data
    • From Board of Elections & Virginia DLS
  – Identify important & statistical relationships
  – Use of Number of Voters Past 7 as surrogate for line length
What Can the Data Tell Us?

• Data analysis goes hand-in-hand with good judgment
• Statistics don’t prove, they measure strength of relationship

Correlation is not causation
Data Analysis

- Tests for differences in means
- Tests for strength of relationship

A Course in Methods of Data Analysis, Ramsey & Schafer

http://www.mathsisfun.com/data/correlation.html
<table>
<thead>
<tr>
<th></th>
<th>Question Addressed</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Were the deviations from the distribution of DREs required by law (750/Active voter) a factor in line length?</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Was the voting rate (Checked In/DRE/hour) a factor in line length?</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Were the number of people that voted (Checked In) a factor in line length?</td>
<td>Yes – Precincts with more voters, had more voters past 7</td>
</tr>
<tr>
<td>4</td>
<td>Was the turnout (Checked In/Active) a factor in line length?</td>
<td>Yes – but minor negative effect (higher turnout/less vote past 7)</td>
</tr>
<tr>
<td>5</td>
<td>Was the Number of voters who voted (Checked In) a factor in line length?</td>
<td>Yes – The more voters, the longer the wait</td>
</tr>
<tr>
<td>6</td>
<td>Was the number of “Address Confirm Mark” in the EPB a factor in line length?</td>
<td>Yes – The more marks a precinct had, the larger the Number of Voters Past 7</td>
</tr>
<tr>
<td>7</td>
<td>Were the number of “Address Confirm Mark” in the EPB correlated with any other factors?</td>
<td>Yes – With the precinct Minority Percentage and Checked In</td>
</tr>
</tbody>
</table>
Impact of Deviations of # of DRE from Required on Voters Past 7PM

- No Relationship
- Though it looks like there is a difference, the variability is so large one cannot say there is one
- Only correlates with number of DREs
Is there a Relationship between Voting Rate and Number of Voters Past 7PM?

- No
  - Even though you can show a line through the data, the spread in the data is so large that you cannot say there is a relationship.
Impact of Turnout on Number of Voters Past 7

- Slight relationship
  - Still lots of variability
- The higher the percent turnout – the fewer voters past 7
Impact of Number of Voters on Voters Past 7

- A stronger relationship
- The more voters in a precinct who voted, the more who voted past 7 PM
  - Larger precincts were more likely to have longer wait times
Impact of Address Confirmations on Voting Past 7

- Strong relationship
- The more address confirmation marks, the more people who voted past 7
Other Relationships With Address Marks

Turnout and Address Marks

- Moderate relationship

\[ R^2 \text{Linear} = 0.147 \]
Other Relationships With Address Marks
Minority Percentage and Address Marks

• Strong relationship
Impact of Precinct Minority Percentage on Voters Past 7

- Strong relationship

\[ R^2 \text{ Linear} = 0.245 \]
How long did you wait to vote? Depends on your race
Posted by Rachel Weiner on April 8, 2013 at 2:39 pm

Long lines to vote in last fall’s November have gotten a lot of attention — so much that President Obama has established a commission to tackle the issue. How big a problem was it, really? It depends on your race and where you live, according to a new study from Massachusetts Institute of Technology Professor Charles Stewart.

....

There was also significant variation within states. Dense urban areas saw longer lines than less-populated territory. Race was a major factor. “Viewed nationally, African Americans waited an average of 23 minutes to vote, compared to 12 minutes for whites; Hispanics waited 19 minutes,” Stewart writes.
References

• ...This means there are three basic levers to reduce peak waiting times: reduce the number of people arriving at any one time, increase the points of service, or decrease the length of the transactions

1. Justin Levitt, Means to Reduce Lines ate the polls 1 (Loyola Law School 2012)
2. Charles Stewart III, Waiting to Vote in 2012, University of Virginia law school, March 23, 2013
4. Time Tax: Which Groups Wait in the Longest Lines on Election Day?, Stephen Pettigrew
Intentionally Blank