

Poll workers and security

Project report:
**Security insights and issues
for poll workers**

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<http://civicdesign.org/projects/pollworkers-security>

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Table of Contents

| | |
|--|-----------|
| About this project | 3 |
| Research questions | 3 |
| Method | 5 |
| Observation locations | 6 |
| Elections terminology | 8 |
| Part 1: Security in Elections | 9 |
| What does “security in elections” mean? | 10 |
| Security is (or should be) embedded in election procedures | 11 |
| How poll workers understand election security | 13 |
| Poll workers are <i>not</i> malicious, ignorant, or sloppy | 14 |
| The polling place is also a social setting | 16 |
| What is the social “feel” of the polling place? | 16 |
| Do the poll workers know each other? | 16 |
| How do poll workers resolve conflicts? | 19 |
| Guards and gatekeepers | 21 |
| The ‘Goldilocks problem’ of supporting poll workers | 23 |
| How much paper is the “right” amount? | 24 |
| Polling place materials and procedures can help or hinder | 25 |
| Examples of the ‘Goldilocks Problem’ | 27 |
| Election Day stress points | 28 |
| Summary: Potential vulnerabilities in the polling place | 30 |
| Part 2: Polling Places and Election Day | 32 |
| Polling places | 33 |
| What makes a space welcoming to voters | 33 |
| Managing the traffic flow | 36 |
| Before Election Day | 38 |
| Recruiting and motivating poll workers | 38 |
| Poll worker training | 39 |
| What is delivered ahead of time? | 40 |
| What is picked up? | 41 |
| Pre-show setup | 42 |

| | |
|---|----|
| Morning setup and opening the polls..... | 43 |
| During the Election Day..... | 44 |
| Continuous audit | 44 |
| Supporting poll workers during Election Day | 46 |
| Closing the polls and packing up..... | 47 |
| Packing materials and voting systems | 47 |
| Counting and Reconciliation..... | 49 |
| Reconciliation materials or process | 49 |
| Complexities | 50 |
| Counting | 51 |
| Pressure for perfect paperwork | 51 |
| Security considerations | 52 |
| Delivering the results | 53 |
| At the receiving station | 54 |
| Part 3: Conclusions and Recommendations..... | 55 |
| What have we learned in this project?..... | 56 |
| If it's not usable, it's not secure..... | 58 |
| Empower poll workers through training and trust | 59 |
| Feedback from election officials | 61 |
| Next steps and future research | 63 |
| Appendixes..... | 64 |
| About the polling places | 65 |
| Notes on conducting research in polling places | 67 |
| Research support materials | 70 |
| Relevant research..... | 79 |
| The research team..... | 81 |

Security insights and issues for poll workers

Every Election Day, hundreds of thousands of poll workers, in tens of thousands of precincts across the nation are responsible for making elections happen. They set up and shut down their polling place—including opening and closing voting machines for the day—and they report on the results in their precincts and account for ballots and other election materials. They do all this under pressure to work quickly as they open the polls on time in the morning and complete a long day of work at the end of an election day.

This project aimed to fill a gap in the research and focus in a meaningful way on what must happen to make poll workers truly effective in their vital role in administering elections securely on Election Day.

From November 2012 to November 2013, our team of researchers observed poll workers as they opened and closed their polling places for 19 elections in 12 states. These elections included the 2012 presidential elections and a variety of local elections. We chose the elections to include a variety of voting systems, types of elections, counting methods, and other local procedures.

Through this deep and direct studying of poll workers and polling places, we learned a lot about what happens in the polling place and how this can affect the security of an election. One of the most important insights for us was that there are many different ideas about what “security” means in the context of elections. We discuss these different viewpoints and their implications in **Part 1: Security in Elections**, starting on page 10.

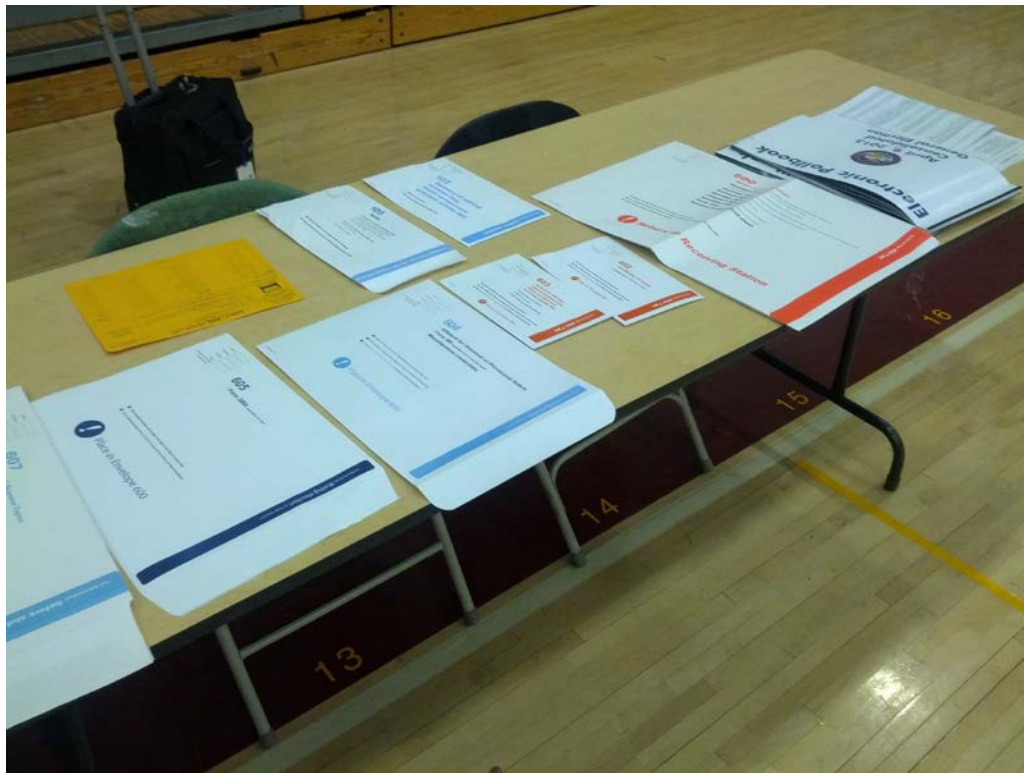
We also identified four patterns of poll workers’ attitudes about security in elections and what they believe their responsibilities to be. They start with a very limited view, and grow to a strong sense of responsibility for the conduct of the election in their polling place. These attitudes affect many details of how poll worker teams work together and how they solve the inevitable problems that come up on Election Day.

Although there is some variation by individual, these differences seem to be tied to both the history and culture of elections in each jurisdiction and to the way an election office works with poll workers. The way they are recruited and trained, the procedures and paperwork created for them, and how they are given responsibility for running the polling place all contribute.

As we followed poll workers through Election Day, we realized that much of the emphasis is on opening in the morning. The procedures for closing the polls and reporting the precinct results are not as well honed. The second part of the report, **Part 2: Polling Places and Election Day** starting on page 28 walks through our observations.

Getting the balance between strong procedures and empowering poll workers is what we call a “Goldilocks problem.” That is, they need solutions that are *just right*. Not too much paperwork or too little. Not too detailed procedures or too little support.

Most of all, we learned that serious, deliberate work by the elections offices to support poll workers worked. Good training, sensible procedures, useful checklists, and usable forms all paid off. The teams with the best balance of those elements did best at opening *and* closing. If they had problems, they were able to use the tools given to them to resolve them well.



Envelopes and checklists organized on a table in preparation for closing.

About this project

Most research about security in elections has focused on security risks related to physical and software vulnerabilities of voting equipment. Efforts by computer scientists, especially cryptographers, advanced the field's understanding of how to "harden" voting systems against simple mistakes and hostile attacks. Their work has advanced the field through concepts such as chain of custody requirements, software independence, and auditability—developments that advanced the collective knowledge of what it means to build voting systems that secure voters' individual ballots and ensure the integrity of election results.

But none of that research focused in any meaningful way on what must happen in the interaction between voting systems and poll workers—possibly a major vulnerability of the overall voting system—to make poll workers truly effective in their vital role in administering elections securely.

Research questions

Our starting hypothesis was:

Poorly designed voting systems and poll worker procedures and support tools leave hidden security challenges for poll workers.

Anecdotal evidence and a small body of research suggested that most poll workers get minimal hands-on experience with voting systems before Election Day. Our expectation was that most poll workers are not very familiar with how to:

- open a poll in a way that ensures that no votes have been cast before Election Day
- close a poll in a way that ensures that only those votes cast on Election Day are counted.

Our research was designed to study how poll workers manage voting technology at opening and closing of the polls to learn:

- What kinds of common security problems do poll workers encounter at opening and closing of the polls?
- Why do these problems seem to occur? Is it the design of the voting systems, the design of election procedures, the usability of procedures and tools, or something else?
- Are there particular "pain points" where poll workers are more likely to encounter security issues or make mistakes?

We focused on the security implications of interactions between people and technology and materials rather than possible vulnerabilities in the technology, specifically. By observing poll workers interacting with procedures, instructions,

and technology at opening and closing the polls we tried to answer these questions:

- At both poll opening and closing, are poll workers following procedures designed to promote the security of the voting process?
- If not, what procedures are being overlooked or ignored? Why, from what we can observe, were the procedures not followed?
- What are the resulting security vulnerabilities?
- Do printed materials, manuals and other instructions hinder or support poll workers' adherence to security procedures?
- How can current usability research be applied to these materials to improve poll worker compliance and enhance voting system security?

Method

Our study used ethnographic techniques to systematically study election days from the point of view of the people who make them happen. The project included several phases of work:

- **Review.** The researchers reviewed manuals and forms, and reviewed or attended poll worker training where we could. We wanted to see what the materials covered and to what extent. In particular, we wanted to get a measure of how much of the content for poll workers was related to security, and of that, what it covered, including troubleshooting and problem escalation.
- **Observe.** The centerpiece of the project was observing set up and shut down of the polls. To understand the culture of security and how procedures were conducted in a real election, researchers watched without interfering with the poll workers. We also had some opportunity to observe election office operations centers and poll worker training sessions.
- **Writing up.** To gather comparable material from our large team of researchers, we created a structured note-taking guide suggesting specific types of activity and materials to observe through the day. We took handwritten “jotted” notes and made sketches of the physical environment. Where allowed, researchers also took photographs of rooms, buildings, setups, and poll workers interacting with technology and materials.
- **Interview.** We conducted both informal discussions during the observation period and semi-structured follow-up interviews with election officials and poll workers.
- **Analyze.** Afterwards, we typed up the notes, filling in gaps along the way, and recorded commentary on what we observed. We analyzed these field notes to reveal patterns and trends, which led to the insights in this report.

There are “**Notes on conducting research in polling places**” starting on page 67

Observation locations

We observed 19 elections in 12 states. Our selection was a purposeful sample to provide a range of different types of jurisdictions. We looked for polling places:

- where we could observe poll workers working with a variety of voting systems from paper ballots to fully electronic systems
- representing different areas of the country and a range of neighborhood settings from inner city to small cities, suburbs, and rural towns
- with a variety of approaches to election administration and process

The selection was also a form of convenience sample, based on the election calendar for local elections and primaries in the spring of 2013 after initial observations in November 2012.

Polling place observation locations



| Large metro area | Small city or suburban | Small town or rural |
|-----------------------|--------------------------|------------------------------|
| Boston | Travis County, Texas | Hunterdon County, New Jersey |
| New York City | Ohio | Rhode Island |
| Detroit | Florida | |
| San Francisco | Virginia | |
| Cook County, Illinois | Minnesota | |
| Minnesota | Oakland County, Michigan | |

In most locations, we observed in only one polling place, and on one election, but there were exceptions:

- In November 2013, we had teams in six different places in two neighboring cities and the surrounding county, allowing us to see several sites with similar election administration and compare how the polls were run across these sites.
- In two locations, the researcher visited more than one polling place during the day, accompanied by an election official.
- In one state, the same researcher observed in two different locations; in a small town on November 2012 and in a large city on November 2013.

In two locations, we had researchers who also worked as poll workers, and had additional experience in their polling place, providing more insights into what was different or the same about the elections we include in our observations. In one case, the same polling place used different voting systems for the two elections.

Within the broad similarities of elections, we saw many differences in approaches to training and support of poll workers. This is too small a sample to suggest anything other than the wide range of practices that differences in history, local custom and culture, and state law create.

One of the risks of this sort of convenience sampling is that it does not include the full range of situations, including demographics of the voters and the type of neighborhood. We did, however, manage to see a wide range of locations and polling place neighborhoods, including inner cities to rural towns.

Conducting most of the observations throughout an “off-year” (that is, in 2013, a year without any federal elections) had the disadvantage of being smaller, less pressured events. But it also made it possible to watch poll workers when they were not under the scrutiny of a presidential year. And, election offices were much more willing to allow us to observe in these smaller elections.

How we identify the observation locations in this report

In this report we identify the polling places by the region or type of environment, rather than naming a specific jurisdiction or polling place. We do this not to be sly, but to protect the identity of the election jurisdiction and the specific poll workers we met and observed. Those places and people were generous and open with us, and we appreciate that. **Our job was not to point out flaws and report them, but instead to understand where design might help poll workers be more effective in ensuring security on Election Day.**

Additional details about the polling place locations are in “About the polling places” starting on page 65.

Elections terminology

The vocabulary of elections is fascinating to us. During this study, we encountered different ways of labeling the people, places, and tools of elections. There's probably a whole study just on how the taxonomy and vocabulary in an election describe the local election culture. But that is not this study.

For example, the temporary Election Day workers might be called judges, inspectors, clerks, wardens, or election officers. The officials who oversee the election might be county or town clerks, voter registrars, or directors of elections. Places where voters vote might have precincts or election districts, or both.

Elections terminology is diverse with different ways of labeling the people, places, and tools of elections.

A linguist could look at these terms and learn a lot about the elections culture and how it evolved. The differences, for example, between a “warden,” a “judge,” an “inspector,” and a “clerk” say a lot about how the legislators thought about conducting elections—and about the titles in use for similar functions at the time. This is beyond the scope of this project, and we have not read anything into the differences.

We learned to translate from region to region as we conducted interviews. For this report, we've settled on a normalized set of labels.

Terminology in this report

| Term we use | Meaning |
|----------------------------|--|
| Election office | The government office or department running the election, including assigning, and supporting the poll workers with training, procedures, equipment, documents and other material. |
| Clerk or election official | The local authority on all things Election Day. |
| Poll worker | Anyone working the polls on Election Day. |
| Lead or lead judge | The individuals who have leadership assignments in the polling place. |

Part 1: Security in Elections

What does “security in elections” mean?

Until this study, most of the discussion about security in elections focused on the hardware and software of voting systems themselves. We focused on what must happen to make poll workers effective in administering secure elections on Election Day, including the voting system. We wanted to look at where there might be vulnerabilities as poll workers interact with systems, procedures, materials, voters, and one another.

There are several ways to look at security in elections, depending on your point of view. Voters have one perspective; security experts have another. Poll workers and election administrators approach security differently from either of those.

Voters: Cast as intended, counted as cast

Voters want to feel secure that they voted as intended and that their votes will be counted. They have to trust a system that includes people in many different roles, as well as voting systems and other information technology. From the point of view of voters, security in elections is about the moral and ethical aspects. *Will all the people involved do what they’re supposed to do to make sure my vote is counted? Will the systems and tools help me vote the way I intend?*

Security experts: Concerned about hackers, intruders, and attackers

Often, security experts actively explore scenarios that could diminish the integrity of an election. Many of the security experts who are not election administrators are IT experts. Generally, all of these folks are concerned with protecting the IT—hardware, software, data, and networks—from attackers. They also may consider threats from insiders.

Election administrators: Election integrity through chain of custody

The job of an election administrator is largely one of logistics and operations. They manage and test voting equipment. They prepare ballots and other forms, reports, and rosters. They recruit, train and assign poll workers. They focus on the integrity of the whole election, including ensuring that ballots are countable and that the votes cast are protected.

Poll workers: Trusted temporary election officials

Poll workers interact directly with voters. They determine whether a person entering the polling place is a voter. They answer questions and assist voters as appropriate. Most have access to unmarked and marked ballots. And, they have direct access to one of the most important technological pieces of elections as they interact with voting systems to set them up, conduct polling, and shut them down. The U.S. election process puts great trust in poll workers, these one-day election officials.

Security is (or should be) embedded in election procedures

The practice of having a separate discipline or department dedicated to security is a model commonly used in large organizations. Corporations and government agencies have specific security policies and procedures. Employees get regular, mandatory training about security procedures. It is expected that employees will follow the procedures, and that violations are punishable. In large organizations security is typically part of IT, but it may also have its own department and leadership.

Almost none of the enterprise model of security actually carries over into the training poll workers get or the work they do on Election Day. Instead, security is a default property of elections procedures. It's baked into the process at every step.

Security in elections goes beyond “chain of custody.” It is the result of processes, procedures, and tools to ensure that elections run freely, fairly, and efficiently.

We interviewed poll workers and election administrators after studying elections in polling places. One question we asked was, “When I say, ‘security in elections,’ what comes to mind?” The answers ranged from “being prepared for emergencies in polling places,” to personal safety of voters and poll workers.

We heard stories of poll workers having medical emergencies themselves or reacting to emergencies voters had. Interviewees told us about preparing for tornado warnings, and recovering and making do after natural disasters like Hurricane Sandy. Few people said anything specifically about chain of custody.

Some of the administrators we interviewed seemed puzzled about our question. They were surprised that we would separate out security from the rest of the process. To them, *everything* about elections was security. All of the procedures and policies were in place to ensure the integrity of their elections.

This may be why poll workers didn't think of “security” in the same way that we did going into the project: *security was their main duty*. It was the air they breathed at the polling place on Election Day. Election Day processes,

procedures, and operations are designed with security embedded in them. This is how it should be.

Security defined from the point of view of poll workers goes beyond “chain of custody.” Security in elections is the processes, procedures, tools, and people put in place to ensure that elections run freely, fairly, and efficiently.

A few practices stood out as steps that probably enhance security in elections:

- short checklists for setting up and shutting down
- working in pairs while setting up and shutting down systems
- seals, locks, and cable ties on boxes, bins, cabinets, and voting systems
- signing and co-signing tallies and forms
- poll workers rotating through different stations through the day
- conducting mini-reconciliations throughout the day
- greeters-as-gatekeepers

There were also subtler approaches to ensuring that poll workers conducted elections securely. For example, though all of the poll workers we met went through at least an hour of classroom training, some were given guiding principles to follow. Election administrators we talked with said that giving poll workers guiding principles reminds them of the priorities.

For example, in some jurisdictions, the guiding principle is something similar to “Do whatever it takes to make sure that voters who are eligible get to vote.” In other jurisdictions, the principles might be around using the tools at hand. The by-word in one polling place was, “If you just follow the book, you’ll be fine.”

Similarly, some jurisdictions had robust systems of call centers and roving staff to support poll workers and encouraged their use. In others, poll workers said that in their experience “the phone is never answered at the elections office” so there was little point in calling for help.

How poll workers understand election security

We were surprised by some of the variation in how poll workers understood their role in good elections and election security.

Keeping an orderly polling place was often seen as a primary responsibility. After the initial rush to open the polls, poll workers continued to fine-tune the arrangements. In several of the polling places, we observed changes to the signage, organization of the space, locations of work stations, or the flow of traffic between the morning and evening.

There were four broad classifications of attitudes among the poll workers we met, from a shallower to deeper sense of ownership of the polling place.

Attitudes toward responsibility for the polling place

| Attitude | Focus of responsibility |
|---|--|
| I'm responsible for running the polling place | Safety and comfort of voters, and maintaining an orderly polling place. |
| I have to follow procedures | Completing all procedures correctly, as a way of running the polling place well. |
| I have to account for paperwork | Forms and reports as a double-check on equipment tallies and to ensure that all votes are accounted for. |
| I'm responsible for "my election" | The overall results of the election, broadly incorporating the polling place, procedures, and tallies. |

These attitudes were influenced by many factors: personal history, election culture, voting equipment and how long it had been in service, who managed the team, local policies, leadership of the election director or clerk, and changes in laws.

- **Personal history.** Each person's own experiences affect how they perceive their role as a lead poll worker. In one polling place, the lead had run a department in a government agency, and was used to directing workers. She said, "At the end of the day, it's my name signing off on all those forms."
- **Culture of the jurisdiction.** Is the general area a hotbed of contentious politics or social issues? Is there a culture of civility and neighborliness, or disputes? It didn't seem surprising that attitudes in a city like Boston or New York would be different from Minnesota. Are there people from campaigns around the polling place, as we saw in a few jurisdictions, or political poll-watchers in the polling place?

- **Equipment (and its age).** The equipment can be easy to work with, or temperamental. Trusted or worried over. Familiarity with the systems made opening and closing easier. New systems always introduce stress as everyone from the elections office to the voters learn to work with them.
- **Local control of team.** Is the team self-governing, or largely ruled by external procedures? Who selects the team at each polling place? Is there a designated lead, or not?
- **Local policies.** Legal guidelines and local election office policies affect the polling place. Some jurisdictions allow (or even encourage) poll workers to leave for meals; others require them to stay.
- **Election director or county clerk.** As the leader, the person with the overall responsibility for running the election sets the tone for the entire staff and how they communicate with poll workers.
- **Law changes.** Changes in the polling place often come from legislative changes. Election laws govern voter ID, provisional ballots, and can even include wording for ballot instructions. How well new legal requirements are integrated into procedures can affect how easy those procedures are to follow.

Poll workers are *not* malicious, ignorant, or sloppy

When we talked to poll workers, we found attitudes similar to those of the election officials who trained them.

We found that most poll workers take their jobs seriously and appreciate the importance of what they are doing. They do their best to ensure that everyone eligible gets to vote and to protect those votes.

People don't always act predictably. But the people who sign up to work the polls are *not*, generally speaking, lazy, malicious, ignorant, or sloppy. Most are engaged, intelligent, and experienced—and they try to do the right thing.

Well-trained, trusted, and empowered poll workers made good decisions in the polling places we studied. They had learned the boundaries of what they knew and their responsibilities. With some simple, reinforced guiding principles, they could carry out their duties securely even when there were gaps in procedures.

But it will be no surprise to people who study security that the humans are a weak link in ensuring the peak security of a polling place. Positive social pressure could turn into evil social engineering. In fact, some of the very same factors that should be good for security in the polling place could easily go bad, such as the parallels in the following table.

Social issues in the polling place

| Good for security | Bad for security |
|---|---|
| A greeter can act as a gatekeeper and an obstacle to attackers. | Greeters may allow known people in who should not be present in the polling place. |
| Changing roles during the day makes it easy to check the work at each station as people rotate to different jobs. | If poll workers are not properly trained, changing roles may leave problems unchecked or unnoticed. Dynamics within teams may make it difficult for some poll workers to challenge the previous workers at a station. |
| Law enforcement being present can make voters and poll workers feel more secure. | Law enforcement being present may intimidate some voters, and may send a message that poll workers aren't trusted. |
| Relationships outside the polling place lend reputational, social pressure and trust to do the right thing the right way. | Relationships outside the polling place may make it easier to conspire, or to let things go that should be checked and / or corrected. |
| Poll workers who know a lot of voters coming into the polling place can tell who belongs and who does not. | Poll workers with close connection to the neighborhood may be less diligent about preventing people from voting who should not be allowed, or they might skip procedural steps feeling that the steps aren't needed. |
| Diversity on a team can make voting more approachable for voters of different backgrounds, leading to greater trust in the process. | Diversity of poll workers where there is racial prejudice may cause conflicts within at team that open the door to sabotage.* |

In general, the human factor came through as a positive in our study. Everyone, from inexperienced poll workers to election office staff, saw maintaining an orderly and safe polling place as a key part of their job.

Poll worker teams usually worked as self-contained units. A few teams needed support from election staff on a few occasions. Support from election staff through local, regional, or central hotlines was generally effective. Poll workers got their questions answered quickly. But this type of support was not always present.

The presence of election staff may help with enforcing good security practices. When election staffers are in the polling place, they can troubleshoot and act as reminders that there are procedures to follow.

* We did *not* see this happen. We realize that this is an extreme suggestion.

The polling place is also a social setting

Poll workers are part of the social environment in which elections take place. By placing researchers in the polling places, we were able to learn about why people choose to become poll workers, how the social environment of a polling place works, and how that contributes or detracts from a well-run election.

What is the social “feel” of the polling place?

Generally, poll workers were pleasant with one another and made an inviting environment for voters, too. A few polling places seemed more focused on business than socializing, but this didn’t necessarily make the experience of the place feel impersonal.

Festive, friendly, or just business?

A couple of polling places reached for the extreme on friendly. In one small municipal election, poll workers frequently left their posts to chat with voters. However, all of the poll workers had been trained on all the positions, so when one position was left open, someone else simply filled in. This particular team didn’t have scheduled rotation of the positions—they seemed not to need to. By the end of the day, everyone had had a chance to work at every position, mainly because of the socializing.

In another polling place, we learned that the lead and his team wanted to create what the lead called a “festive” atmosphere. They were determined to *celebrate* Election Day, including decorating the room with balloons.

Is there food? Is it shared? Is there a kitchen?

Food figured prominently in the friendlier places. Poll workers brought cookies and hot dishes or stews to share with one another. Leads usually made sure that there was coffee available for poll workers. In other places, poll workers mostly fended for themselves, though they might go in on a delivered pizza together for lunch or dinner.

Do poll workers know voters? Do voters know the poll workers?

Several of the polling places we studied, regardless of the size of the jurisdiction, were in the same place election after election, staffed by the same poll workers. Though not all the poll workers were in their own neighborhoods, many were. In these places, there was plenty of friendly greeting, chatting, and exchanging of news. In one polling place, a long-time poll worker was “sitting out” the election with an injury and voters asked about her.

Do the poll workers know each other?

It was very common for poll workers to work with the same team from election to election, so even if they were not friends or acquaintances outside of the

polling place, they often did know one another from previous elections. This often happened because poll workers specifically requested to work in the same location, with the same leads, with the same team, or all of the above.

Teams that continue from election to election

While we might expect that we would encounter entrenched teams in rural polling places, even in precincts in the largest jurisdictions we visited, some poll workers had come back to the same location with at least some of the same team members for many years.

Some teams that had worked together for several elections knew, trusted, and worked well both independently and collaboratively. They seemed to need little direction and often went about their tasks without being given much verbal direction. As a team, they improved their processes and practices through the day and from election to election. The friendliest teams tended to collaborate and pitch in more than other teams.

Relationships outside of the polling place

When we asked poll workers how they started working elections, people on these friendly teams often told us that a friend already working the polls had recruited them or they got a nudge from a neighbor working the polls when they showed up to vote at their local polling place. We heard about team members who knew one another from mahjong clubs and yoga classes, as well as people whose kids played on the same soccer team.

On the downside, however, a couple of teams that had worked together for a long time seemed less concerned with following procedures and doing things “by the book.” We saw a number of situations where poll workers believed they knew what to do without consulting manuals or checklists. In other situations, using checklists had been emphasized in poll worker training. In one polling place, the equipment managers asked one of the other poll workers to read the steps for starting and stopping the voting system as they completed the task.

Close teams can exert pressure to do good work, but could conspire. On the security side, we can see advantages and disadvantages of having super friendly teams. The social pressure of personal ties could provide screening criteria, ensuring that poll workers are reliable and trustworthy by virtue of the personal connection. There is also the invisible force of the desire to do a good job and avoid negative gossip or complaints to the elections office.

As we saw in one polling place, however, close ties could lead to ignoring procedures. And though we did not observe this, there is the *potential* for conspiracy. In the places we observed, the positive aspects of friendliness far outweighed the negative ones.

Recruiting by family, friends, or the election office

Many of the polling places had brochures or flyers handy for people to take away and sign up to be poll workers. In a few polling places, the poll workers were quite assertive in recruiting voters to the poll worker ranks. In our observation, nearly any poll worker present might do the recruiting.

Many of the poll workers we met said that they learned of the job from someone they knew. One reported seeing a plea for poll workers as a slip in one of her paper utility bills. It wasn't unusual for people on the teams we observed to be acquainted outside the polling place. Families also worked the polls, either together or across different locations.

Active recruiting at the polling place and by the elections office pays off in more diversity on poll worker teams.

As common as it was for older people to work the polls, we saw many people who were not so old, often a result of specific efforts by the elections office to recruit younger poll workers and to balance the ages on the teams. There were some high school and college-age poll workers, and many in their 40s and 50s.

One young poll worker told us that he hadn't actually signed up, himself. His brother had signed him up and then told him to get to training. By the end of the day, he was pretty excited. The age of the poll workers in any given polling place seemed to be more a factor of recruiting methods than anything else.

Selection and balance of poll worker team

In many cases, poll workers self-selected their teams. Because friends had recruited them, they all requested to be on the same team at the same locations. It also happened that people who were strangers in one election become connected during an Election Day and determined to work together in succeeding elections. They might have no contact between elections, but they worked well together on Election Day.

Some jurisdictions—but not all—require poll worker teams to have a balance of people from different parties. In principle, party balancing is meant to be a check. Each party can observe and challenge the work of the other. (In most cases, only Republicans and Democrats are counted in this balancing, not including people in other parties.) In some places, this becomes rather difficult to do when one party dominates, and we heard about poll workers brought in from trades with other polling places to satisfy the balancing requirement.

Sometimes, the political parties are responsible for recruiting poll workers, usually by nominating them to the elections office for recruiting. This sometimes created friction between poll workers asserting their authority in the polling place and party campaign managers, who may have helped them get the job.

Who leads the teams?

Poll workers often talked of trade-offs that come with leadership positions. In most places, lead election officers get paid more than other poll workers, because they take more training, have responsibilities before Election Day (such as picking up materials and setting up furniture in the polling place), and are accountable for the chain of custody and the documentation of that custody.

In a few places (including early voting centers), or for some municipal elections, leads may be staff from the election office. But this is not typical of general elections and presidential elections.

Leads are not always the most experienced poll workers. For example, in one polling place, the lead judge was in his early 30s. There were regular poll workers in his group who had worked for 30 or 40 years. The election we observed was his third or fourth. After working one election as a regular poll worker, he applied for a lead position and got it. In the next election, he became a lead and oversaw 2 precincts in the same polling place. Considering that experience a success, in the muni election we observed, he stayed in the same location and accepted a lead judge position when two polling places consolidated—now he had 5 precincts to oversee.

How do poll workers resolve conflicts?

In the polling places we observed, poll workers were well behaved. But there were a few incidents where people didn't agree or someone was unhappy with a decision. In our observation, these were mere moments in a long day, probably fueled by simple personality conflicts, more than anything serious. Some are the normal friction of social relationships. Our researchers observed conflicts, but they were slow to come up in follow-up interviews.

In one polling place, an experienced poll worker disagreed with the lead on whether a voter who was in the wrong polling place could vote provisionally. They also disagreed about allowing voters to use whichever voting system they liked (the lead insisted that he'd been instructed to direct able voters to paper optical scan voting). These were not loud arguments; the poll worker questioned the lead but did as he was told.

Other conflicts, more serious from the perspective of this report, were about election procedures. In some places, these disagreements were resolved by the lead, but in most, there was a process of discussion and consensus. In one location, poll workers voted on issues when necessary.

Good poll worker teams had established procedures for resolving differences of opinion about their work.

In one polling place, a poll worker who wanted to be the lead in her precinct was out-ranked and angry about it. We don't know whether she had been assigned authority, but the lead in the polling place resolved the problem after a little chat with the frustrated poll worker and a few others, and moved her to a precinct where she could lead. It was all done fairly quietly and efficiently.

There will be conflicts among the poll workers occasionally. Dealing with the conflicts means that the lead not only has a firm grasp on rules and procedures, but has some management skill. The lead has to determine what is important and what isn't, and to exert confident authority when necessary. Poll workers generally respected the leads (especially those who had been leads before). When a decision had been made, the poll workers carried it out.

Racism shown by poll workers

Unfortunately, we did see some behavior among poll workers that indicated intolerance, at least, and blatant racism at the worst. During the presidential election in 2012 at one urban precinct, our research team observed a dynamic that suggested that the poll workers weren't getting along. The lead seemed to ignore some of her team, and was rude to others. Her demeanor with voters was pleasant, however. In one follow up interview with a black poll worker on the team, we heard that the lead had never called the interviewee by her name, but instead referred to her as "you." It happened that the interviewee was also one of the newer members of the team. The interviewee asserted that other poll workers of color were also treated this way, while the white poll workers were not.

We were surprised that there was any racism at all, and so it was more common in the polling place than we expected, including an episode with a member of our team. A researcher of Asian descent arrived at a suburban polling place and started to take notes before she introduced herself because interesting things were happening. One of the poll workers approached her saying, "I don't speak Chinese." He might have been trying to be funny, but it was inappropriate and insensitive.

Guards and gatekeepers

There were three broad groups of people who acted as guards and gatekeepers at the entrance to the polling place, in addition to the general role for poll workers to manage the space. These gatekeepers can be either a welcoming or obstructive presence in the polling place, where they offer security and can help maintain order, but can also be intimidating.

Police in the polling places

Police officers were part of the team conducting elections in all of the locations we observed in the northeast, so this may be a regional tradition.

- In Boston, a police officer sat at the checkout table during the day, next to a poll worker, signing people out in a duplicate roster.
- In Boston, San Francisco, Rhode Island, and New York City, a single police officer transported the ballots and other election materials to headquarters at the end of the day. The poll workers we spoke to said that this was normal procedure and that their responsibility ended when they give the materials to the officers.
- In New Jersey, a police officer drove two poll workers from the polls to headquarters at the end of the day. Local officers who live in the town came into the polling place during the day to vote.

Security guards

A few of the polling place locations had security guards as part of their normal operations. This included elementary schools, where recent violent incidents in schools have prompted tighter security.

When voters enter the polling place through the main entrance (as opposed to many schools where there is a separate entrance into the gym or community room), there can be conflicts between open access to the polls and the need to control access to the school.

This was a particularly visible problem in Illinois, where there was a lawsuit over the security requirement for visitors to show photo ID in a state that does not require voter ID.¹ Some schools repositioned the guard station so that voters could enter the polling place freely.

Greeters

In some polling places, there is an official role of “greeter.” This poll worker stands or sits near the entrance to greet voters and direct traffic. In this role, they also serve as an informal gatekeeper.

¹ The temporary solution was to require voters to show ID only during school hours. This meant that the peak morning and evening voting times were not included.

- In some jurisdictions, older poll workers fill the greeter role. They were often people who knew the community well and were able to greet many voters by sight.
- Sometimes the head poll workers took on this role, both directing traffic and informally checking who was entering the polling place.

Poll workers were often very aware of who was in the polling place, including campaign observers during the day and who arrived to collect tallies at closing.

- Poll workers often knew local campaign workers. One lead greeted a campaign worker by name at the end of the day, saying that she was still running “his” tape. She explained that he stopped by at the end of every election day.
- Some poll workers challenged observers when they entered the polling place, checked their credentials, and reminded them to cover up campaign shirts or slogans.
- In one polling place, one lead judge closed the door to the polling place at the end of the day, shooing campaign workers outside to wait for the tally tapes. The group had a discussion about what the rules were, but in the end went along with her decision.

The ‘Goldilocks problem’ of supporting poll workers

In the places we studied, some poll workers encountered piles of paperwork. Some had very little in the way of printed tools and support. Getting the amount of process and forms right was elusive. We call this the “Goldilocks Problem.”

The amount of paperwork associated with an election—in addition to ballots and tallies—would surprise many people. Starting with poll worker manuals—which can have 200 to 400 pages—given out at training, and ending with reconciliation sheets and equipment and supply inventory sheets, the checklists and documentation of elections can generate reams of paper per poll worker.

Or they might not. Some jurisdictions we studied took a minimalist approach. Poll workers got a 100-page manual, a dozen forms for documenting tallies and incidents, a poll book, and the phone number for the elections office.

Some poll workers had to guess or make a lot of calls because manuals were lacking or checklists didn’t exist. Other poll workers spent as much time sorting through the paperwork that was supposed to be helping them as they did doing the work the checklists were meant to support.

Good tools don’t get in the way. They help poll workers attend to their tasks.

Like the bowls of porridge in the Goldilocks story, some job aids were too much and some too little. There is a sweet spot in between, but we are not certain that we saw it.

People who work in user experience design or service design call this kind of design problem a **tradeoff of time spent on tools and meeting goals**. When working with the tools creates a distraction from meeting the goal, there are two costs: one for the time it takes to pay attention to the tool, and another for the loss of focus on the goal. Even good tools can add work, but ideally, tools should not get in the way, taking poll workers attention away from their tasks.

We wondered how the extremes got to be that way. Two factors seem to be at play:

- the desire to improve poll worker performance with each election
- patching holes in processes and procedures rather than taking a holistic view of causes of problems.

In follow-up interviews with poll workers and election administrators, we heard that every jurisdiction works to improve elections every time. Administrators meet with poll workers to gather feedback and ideas for making improvements. They also assess polling place incident logs, media coverage, and reports from call centers. From all this data, they make changes to forms, processes, and training.

How the changes get incorporated makes a difference in how elections go the next time. Ideally, the data and changes would be part of a broad review of processes and procedures that should flow together. It was more often the case that issues discovered in any one election were handled individually. When this happens, jurisdictions tended to add forms, steps, checklists, or training. It is possible that managing changes this way introduced other problems. For example, adding checklists ended up creating a kind of meta task in some jurisdictions—the checklists got a checklist.

In terms of security, we saw no evidence that more paper was a sign of a better, more secure election. Nor did we come away thinking that the minimalist jurisdictions were lacking in security.

More importantly, a polling place culture in which poll workers are encouraged to raise questions means that the process in the polling place gets more constructive scrutiny and that questions from poll workers can lead to improvements in the process.

The biggest opportunity we saw for improvement in poll worker performance was in the final reconciliations after closing the polls. The process is inherently complex. But the forms themselves are often confusing, with opportunities for mistakes in how they are completed.

How much paper is the “right” amount?

Much of the Goldilocks Problem lies with the amount of paper involved in documenting elections. While we saw some very good manuals, checklists and job aids, nearly all the examples we collected could be improved by applying research-based best practices, and by conducting usability testing on them (in addition to the “live” testing they get on Election Day).

The paper—forms, checklists, job aids, and manuals—interacts with training, too. We were able to observe training in a few of the jurisdictions we studied. Not enough of the training involves practice and hands-on experience. However, one of the best examples came from Travis County, Texas, where poll workers responded through role-play to flash card scenarios to practice how to respond to voter ID and other problematic situations.

Polling place materials and procedures can help or hinder

Even within some of the jurisdictions that seemed the most thorough and organized, some procedures don't make sense to poll workers. The procedures aren't complete or accurate or clear. So poll workers generally try to do their best. They rationalize and improvise, which usually results in a good outcome.

We know that election administrators try to make everything accurate, complete, and easy to use. But it doesn't always work out that way. One of the best practices of designing user interfaces and user assistance is to prevent errors. If users do make mistakes, help them recover quickly and easily. It takes time and attention to troubleshoot problems, so the fewer and shorter any troubleshooting episodes there are, the better. Any troubleshooting or improvising procedures is an opportunity for an attacker, and degrades the experience of voters.

Manuals and documentation

We saw several instances in which poll worker procedures—especially larger manuals—were either incomplete or incorrect. For example, step-by-step instructions might include outdated names for buttons or commands.

More rarely, but it did happen, we saw that steps were out of order, or steps were missing. In one case, poll workers were using a new voting system for the first time. Following the instructions to close the polls and print the tally tapes, they encountered a button on the screen that did not match the instructions in the manual. They stopped and had a quick group meeting before being willing to press the button with the mismatched label. Even with the backup of paper ballots that could be hand-counted (or re-scanned), they did not want to make a mistake.

Our experience as technical communicators suggests that these issues happen in manuals when they're updated piecemeal without thorough reviews or usability testing.

There were also issues with the usability of forms, and times when the manuals didn't help answer questions.

Procedures and operations

In addition to detailed procedural manuals, there were some general practices that seemed to be effective ways to ensure security and efficiency in the polling place. Among them:

- **Before opening:** Crosschecking set-up steps between precincts in a multi-precinct polling place is an opportunity for a procedural check.
- **During Election Day:** Continuous audits make it possible to find and fix problems early.

- **During Election Day:** Like continuous audits, frequent checks and double-checks on the ballot count during the day make shutdown and reconciliation faster.

Space: configuration, flow, size, and boundaries

Well-designed entry and exit traffic flow helps poll workers control access for people who should (and should not) be present. Traffic management tools, including furniture and cones, help manage access to sensitive areas.

Small spaces can make it hard to protect areas with sensitive materials.

Large spaces can make it difficult to watch voters and see what is happening.

It was fairly common practice for someone from the election office to have visited the polling place sometime before Election Day. The instructions to poll workers often maps out where the furniture and equipment should go. But the space didn't always cooperate with these plans.

- In one school gym, the election office visited when the gym was in use. When it was not in use by the students, the bleachers and mats were stored in such a way that power outlets were not accessible. Poll workers had to find a different arrangement.
- Another polling place was in the basement of a church meeting room. There were windows above the street level, which gave pleasant natural light during the day and better cell signal for the scanner. Poll workers moved the furniture to put the scanner in the optimal corner, creating a new traffic flow that they said worked better than what the election office had mapped out for them.
- In several polling places, poll workers found poor cell signal needed for transmitting poll book data or election results at the end of the day. We watched poll workers drag equipment to a door or window to find a signal.

The size of the space can also have security implications, affecting the poll workers' ability to manage the traffic in the space.

- Small spaces can be prone to congestion and other distractions that make it difficult for poll workers to easily monitor the space. Stress points appear at doors and in paths where the traffic flows cross.
- Large spaces can create a diffuse traffic pattern that makes it difficult to watch voters and see what is happening, even with poll workers directing voters through the space.

Boundaries for managing sensitive documents, such as unmarked ballots, can be informal, but still easy to manage. In most of the places we studied, a table came between voters (or others) and sensitive documents. At least one person and often 2 or 3 poll workers usually staffed each table, acting as a formal barrier.

In some larger spaces with multiple precincts, however, there might be very large openings between tables. Generally, this wasn't a problem, as each of the precincts backed onto a wall. But in a couple of polling places, it was possible to gain access to sensitive documents from behind the precinct tables. For example, in one multipurpose room, there was a permanent stage area. There were a few steps leading up to it from which we observed. We could easily have reached any number of piles of unmarked ballots or provisional ballots. We did not test to see what would happen if we did.

Examples of the 'Goldilocks Problem'

Paper: forms, checklists, job aids, and manuals

- Some job aids were too minimal to be effective; some were so complete as to be confusing.
- There was a huge range of types of envelopes and other containers for returning materials to the election office. Some made it easy to check and double-check that everything was returned accurately. Others were no help or difficult enough to create obstacles to closing down.
- During Election Day: Continuous audits make it possible to find and fix problems early. Waiting until shutdown was too late.
- During Election Day: Demonstrating ballot marking should be done with a script to avoid instructing voters incorrectly.
- Reconciliation: Well-designed forms are easier to use and more useful for recounts and audits.
- Reconciliation: Documentation is critical for process improvement. Undocumented problems in completing the reconciliation go untreated over time, and can leave vulnerabilities.

Process and training

- The style of training is important. Good training includes scenarios for common situations and uses adult learning principles.
- During Election Day: Poll workers need scenario-based training for handling voters who must show ID to vote (such as some first-time voters).
- During Election Day: Same-day registration avoids provisional ballots, but has implications for correct voter ID.
- Reconciliation: This process was highly varied, with some processes more effective than others in supporting poll workers on an accurate tally.

Election Day stress points

One election director told us that he and his staff pay attention to the “stress points” in polling places. Stress points signal gaps in training or support for poll workers, and may overlap with security concerns.

After each election, they review the feedback from poll workers, clerks, and staff to see where there were problems, to relieve or eliminate stress points. It’s a program of constant, incremental improvement. All of the jurisdictions we worked with mentioned similar steps.

Among the stress points, we saw these:

Before Election Day

- Delivering election materials to the polling place

Opening the polling place

- The degree to which work in the polling place is organized or self-organizing
- Inventorying ballots and other materials
- Coping with the early start

During Election Day

- Managing traffic flow
- Documenting and troubleshooting incidents and exceptions

Closing the polling place and packing up

- Inventorying ballots and other materials
- Reconciling counts from the poll book, ballots, and voting systems
- Organizing, sorting and packing up
- Managing the work assignments and tasks

- Coping with exhaustion and the urgency to finish the day and post results

Delivering the results

- Checking in with the election office from the polling place
- Returning materials to the election office

Summary:

Potential vulnerabilities in the polling place

The setup, people, and materials in polling places can contribute to election integrity, or create security vulnerabilities. This table summarizes the possibilities we identify throughout this report.

Vulnerabilities in process and procedures

| | Before Election Day | Setup & Opening | During Election Day | Closing & Packing Up | Counting & Reconciling | Delivering Results |
|------------|---|--------------------------------------|--|---|---|--|
| People | Volunteer helpers | Staff & trouble-shooting | Relationships between poll workers & voters Poll worker diversity Definition of "order" in polling place Poll watchers Security & law enforcement Changing roles Greeters-as-gatekeepers | Relationships among poll workers Unsupervised poll worker team | Distracted leads Unassigned poll worker team | Party-balanced pairs Attention to safety Police |
| Procedures | Training style | Trouble-shooting & hotlines | Demonstrating ballot marking Provisional ballots & forms Voter ID questions Election Day registration Continuous audits Trouble-shooting & hotlines | Filling checklists Lack of direction | Trouble-shooting & hotlines Reconciliation steps | Security of transmission channel |
| Paper | Detail in instructions Training manual | Detail in instructions Checklists | Provisional ballots Incident reports Audit forms | Checklists Envelope design & number Seals & closures | Reconciliation forms Checklists | Checklists Envelope design & number Checking paperwork |

| | | | | | | |
|-----------------------------------|---|-------------------------------|---------------------------|----------------------------------|------------------|-------------------------------------|
| Polling Place & Policy | | | Voter ID | | | |
| | | Setting up boundaries | Election Day registration | | | |
| | | Traffic flow & management | Cross-checking | | | |
| | Delivering materials and voting systems | Closures & seals | Position rotation | Entry and exit traffic flow | Closures & seals | Transmitting files |
| | Trouble-shooting | Crosschecking among precincts | Size of space | Containers with visible contents | Reconciling | Double-checking transmitted tallies |

Part 2:
Polling Places and Election Day

Polling places

Polling places are located in a wide variety of buildings, from schools to firehouses. The physical polling place can set the tone for both how the poll workers run the election there and for the voters' experience.

Poll workers do not choose where the polling place is located, but in many cases we saw them work hard to make the space work efficiently and smoothly. Even in long-established polling places, there was always a degree of improvisation as poll workers set up and established the flow of voters through the various stations of the voting process.

One of the more interesting aspects of our discussions with poll workers, especially with leads, was their response when we asked them about "security." For many, especially those in urban areas, their first reaction was that a secure polling place is one in which everyone is safe, there are no altercations, and things run smoothly.

Most of the observations were completed in elections with relatively low turnout, so there were not lines. Poll workers, however, remembered the lines they saw in November 2012 and talked about wanting to make sure that voters were able to vote as quickly as possible.

What makes a space welcoming to voters

The polling places we saw were located in schools, churches, and community centers.

| Type of building | Number of polling places | Notes |
|--------------------|--------------------------|---|
| School | ■■■■■■■■■ | All were middle or elementary schools |
| Community center | ■■■■■ | Public facility |
| Semi-private space | ■■ | Community space in an apartment complex |
| Church | ■■ | In a public meeting room |

For many districts, schools have been a primary location for polling places. Elementary and middle schools tend to be placed within communities, and are usually well-known, even by people without children currently attending the school.

The November 2012 election took place immediately after Superstorm Sandy. One of our observation locations was in an affected area, with no flooding, but power only restored on the day before Election Day. This polling place is normally in a community room, but because the room was in use as a shelter, the election was displaced into the garage of the rescue squad in the same building.

Cold spaces, welcoming spaces

There was a lot of variation in how open and welcoming, or cold and forbidding they were. This was both a function of the streetscape of the area and the buildings available for use as polling places.

Some of the buildings were austere, and even forbidding seen from the street. For example, a school in an inner city neighborhood included bars on the window, while a community center in a small city was in a neighborhood park.

For neighborhood polling places, the degree to which they are familiar or are part of the local landscape can make a difference as well. However physically imposing place may be familiar to voters, even when our observers found it off-putting.

In one city, the polling places were in a basement room of the apartment, where residents even call them the “voting rooms,” although they are really general purpose areas, used regularly for storage and other events.

Finally, the spaces themselves have a degree of personality. Some of the polling places had decoration suggesting their active community, and making them look welcoming.



This middle school lobby was full of photos, banners, and signs.



This church courtyard was full of signs of activities.

Finding the polling place

In most of the places we observed, poll workers were given signs to place at the entrance, including signs on their own stands and cardboard placards. These signs were usually used to mark the legal boundary of the polling place and set the area within which campaigning is prohibited.

Signs visible from the road or street also helped remind voters of the election, particularly important for municipal elections. One small city had signs placed on a main road reminding people of election day to supplement signs at polling places.



In this county, campaigners stretched out in both directions around the door to polling places.



Campaigners used shirts as signs, to add to their visibility.

In some places, however, even identifying the actual polling place could be difficult, especially if the polling place is not on a main road or does not have an easy street address. In facilities with more than one entrance or building, we heard reports that voters had trouble finding their way to the polling place entrance, and complained about it to the poll workers. For example, at one polling place, the polling place was at the very back of the large school building, with no signs directing voters to the location. By the end of the day, signs had been posted at both ends of the alley leading to the entrance.

Sometimes campaigns had staff at the polling places. Their signs and the people lining the area near the entrance made the polling place more visible. When there were a lot of enthusiastic campaigners, however, it could make entering the polling place feel a little bit like walking a gauntlet.

Accessibility and pathways to the polling place

Most of the polling places were in a single room, easily reached from the street. They all seemed to be accessible for people with disabilities, with ramps and other mobility features.



Handicapped entrance sign.



Voting booths set up with one on lower legs for voters who wanted or needed to sit while voting.

Managing the traffic flow

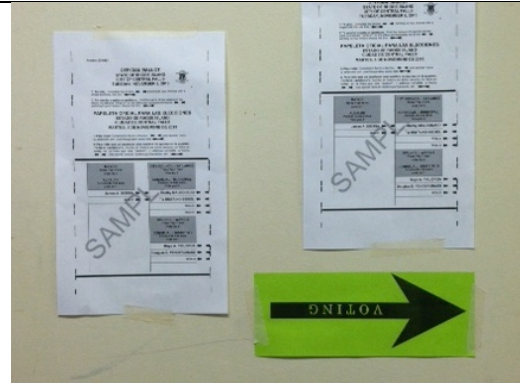
Once inside a polling place voters faced two navigational challenges:

- Finding the correct district or precinct (where there is more than one)
- Moving through the voting process, usually involving stops at several “stations.”

The degree to which traffic in a polling place is orderly depends in part on how well the space communicates to voters through a combination of a logical layout, good signs, and clear cues from the poll workers.



These large signboards were delivered to the polling place during the day. They have maps to help voters identify their district, and direct them to the right room.



Poll workers had to hang the sign with and arrow and the word “Voting” upside down so it pointed in the right direction.

Helping voters find their way through corridors

In about half the polling places, voters had to find their way from the building entrance to the actual polling place. In a few cases, the polling place was down corridors or even on a different floor. In schools and community centers, directional signs for the election had to compete with other information posted on the walls.

Helping voters identify the correct district in a multi-district polling place

Voters rarely knew their district number, and often had to ask, or try more than one district to get to the right one. Many places posted maps on the wall at the entry of the building, though they were often difficult to see immediately and had to be pointed out to voters.



The district map is hanging on a garage door. Poll workers often had difficulty finding good places to hang signs.



Posters like this one combine many small notices into one sheet, making it easier to display them effectively.

Greeters sometimes knew the neighborhood well enough that they could identify a district by a general address. In a few polling places, this became a small point of pride as poll workers settled into the day.

“Door greeters”—people standing near the entrance—were especially helpful, but only if they had maps or lists so they could direct voters accurately. In several locations, poll workers wondered whether there could be a more efficient check-in procedure at the door.

- In one polling place, greeters for the three different districts in the building collaborated on where they stood to help voters the best.
- Some cities have many districts in one polling place because of the dense population in part of the city.

ePollbooks can make directing voters easier.

- When a jurisdiction had ability for voters to go to any polling place, there are no “wrong” locations to check in to vote.
- Poll workers piloting a new e-poll book system liked that they could (accurately) tell voters where to go, and even print out a label for them with the address if they were in the wrong precinct.
- In several locations, each district had a full list of all the voters in the polling place so that any district could redirect a voter, if necessary (avoiding provisional ballots). This was often on a laptop with a stand-alone database.

All of these wayfinding elements contribute to a secure election by making it easier for poll workers to monitor both general access to the polling place and ensuring that voters (and others) stay out of areas where elections materials are stored.

Before Election Day

Recruiting and motivating poll workers

The experiences that poll workers bring to the polling place with them make a difference in their motivation to be poll workers and how the polling place operates. We looked at the intersections of motivation with training that poll workers get before an election day and the support they get on the job.

What motivates people to become poll workers?

We wanted to know why everyday citizens sign up for the long hours of being a poll worker. There are several motivations for becoming a poll worker, intertwined with family, community, relationships and history.

Regardless of how someone first became a poll worker, the most common reason most people we spoke to mentioned for signing up had to do with civic responsibility. Generally, the poll workers we spoke with felt that elections were important and working the polls was something they could do to support democracy. But when we analyzed our conversations, the motivations are a bit more nuanced.

Civic duty and community connection

The notion of civic duty was probably the most common motivation for some people to start working the polls and for others to come back election after election. The feeling of meaning and purpose they get drives people to work elections. In follow up interviews we conducted over the phone, we heard several individuals choke up as they described the importance of elections and the role of poll workers.

But people also talked about fun. And we saw from our own observations the warmth with which many poll workers greeted one another in the very early hours of Election Day. They were happy to see people they'd worked with before. The research team often described a feeling of reunion when they recorded the first moments as poll workers arrived to set up.

Something to do

There's a strongly held belief that poll workers are all older adults who have nothing better to do. It is, of course, not uncommon that poll workers are older people. They have time to spend in training sessions, preparing a polling place, and then a long day at the polling place. Most can take the day off the day after Election Day to recover. When we asked Gladys, who from her stories must have been well into her 80s, why she became a poll worker, she told us that she saw a neighbor of hers handing out ballots at an election and determined that if her neighbor could do that job, she could, too. She continued, "It's something to do."

This was a common thread, and not just with older poll workers. Saying it's "something to do" might make it look as if some people who become poll workers are bored and looking to fill their days. That was not true of the people we heard from. They were already active in their community. Instead, they wanted a way to be involved—in their town, their community, their elections.

"I did it for the money and then I got the bug"

Although involvement usually comes with some monetary reward (between \$50 and \$200, depending on a combination of location and role), and many people do sign up because it is relatively easy money, we heard repeatedly what Lara told us: "I did it for the money, and then I got the bug. ... I loved it so much, working the presidential [in November 2012], I came back."

There were several poll workers who came in with "the bug." Janine was one. She described herself as "a total elections dork." "I would just be sitting home chewing my arms off waiting for the returns to come in if I weren't here." She was a lead in a polling place in a suburban neighborhood, with two kids in high school.

Family history, and racism

Some poll workers we interviewed talked about family history, some of which centered on the Civil Rights Movement of the 1960s. One particularly poignant story came from a black poll worker whose mother grew up in Texas at a time of poll taxes and rampant racism. When the Voting Rights Act of 1965 passed, the mother not only voted, she became a poll worker. There was no question that her children would be involved in working elections. The daughter, now a poll worker in our study, had worked countless elections over 25 years in two different states. She brought her college-age grandson along to work in the receiving station at the end of the day.

Poll worker training

The work of poll workers actually starts before Election Day. In most places, poll workers must take at least one hour of training before they serve—either every year or once in a two-year cycle.

We were only able to observe training in a few locations, but we reviewed training materials and poll worker manuals everywhere. In some places both were minimalist. In others training took several hours and manuals had details of every procedure.

Some of this variation is based on the differences in voting systems and state laws. Whatever other benefits or flaws they have, electronic voting systems are simpler to tally than counting and reconciling paper ballots.

In some jurisdictions, new poll workers (who can be up to 30% of all poll workers in an election) are primarily trained on the basics of checking voters in at the polling place. Poll workers with more experience and specialized training handle more complex tasks and setting up the equipment. In others, however, all poll workers are trained on all of the systems and roles, so that they can fill in as needed, or rotate assignments during the day.

The style of training makes a difference as well. Although some training is almost entirely lecture, we saw some good training that included not only practice with typical tasks, but also scenarios for common situations, so poll workers are ready to handle them.

Everywhere we visited, voting systems, ballots, supplies, and some furniture were delivered to the polling place ahead of Election Day—sometimes up to a week ahead of time. For example, in one city, poll workers told us that tabulators and supplies were delivered the previous Friday.

Lead poll workers often show up at the polling location on the day before Election Day to check the space, arrange furniture, or do preliminary set up of voting booths and other materials that are delivered in advance.

It is also common for leads and sometimes others to show up at the election office to pick up sensitive materials such as poll books or memory cards for the voting systems to bring them to the polling place.

What is delivered ahead of time?

Usually, furniture such as tables and chairs was supplied by the building where the polling place was. This was especially true of polling places in schools, community centers, or churches.

In almost all locations, the large equipment—voting booths, ballot scanners, voting system hardware, and supplies—was delivered ahead of time by a specialist team from the election office.



A system of color-coded bags and boxes hold materials that are not packed into the voting systems.



File boxes also serve to organize the supplies of forms, signs, and other papers.

The voting systems themselves, including scanners, electronic voting systems, and the accessible voting systems, are typically larger and heavy. Even the smallest systems need stands or voting booths that are too large to transport in a personal car, so must be delivered in advance. The voting systems were sealed, but “seal” could mean anything from paper tape seals to cable ties and key locks, to all of that plus plastic wrap. Usually, voting systems were stored in a locked room overnight, but this was not universal. Some were in unlocked rooms, or tucked in the corner of the space that will be used the next day. Even if the building was locked, there were other activities in the space, from other groups to custodial staff.

What is picked up?

All of the lead poll workers picked up some part of the voting system a day or two before the election and brought them to the polling place on the morning of Election Day. This material included:

- Memory cartridges for voting systems
- Blank ballots
- Printed poll books
- Laptop computers used for e-poll books
- Lists of voters who had voted early or requested a vote-by-mail ballot
- Keys to open the supply cabinets or voting systems

The size of this “load” ranged from a small shoulder pack to several boxes of equipment, supplies, and even signs.

Pre-show setup

Setup includes furniture, mostly. However, sometimes there is more work than arranging furniture to the setup step. Anything set up ahead of Election Day was almost always set up by the lead poll workers. Sometimes they had help from unauthorized friends and family. By “unauthorized,” we mean that they were not trained poll workers or staff, but were instead helpful volunteers, such as spouses and other family members of poll workers. However, there were some exceptions.

In one county, the election workers were pleased to see that the delivery team had set up the voting system stands, and chained them together with a locked cable, saving them that work first thing in the morning.

In another, they opened the supply bags and checked that everything they needed and expected was there.

In the more formal advance preparations at one location, all the poll workers arrived about 6pm on the Monday evening to prepare:

- Everyone helped set up the voting booths.
- They also checked the seals on the tabulators.
- They added alphabetical tabs to the poll books and counted the ballots and other sensitive documents.
- When they’d completed this review, they put all the supplies and ballots back in their bags, sealed them, recorded the seals and loaded the bags onto a cart where they were cabled together and locked.

In some cases, the lead did some of this work on their own, working on materials they picked up from the elections office or town clerk. For example, in one place, the lead prepared the poll books to make them easier to use during the election, by adding alphabetical tabs to the poll books, and marking off the voters on the absentee ballot list (which another poll worker checked on Election Day).

Morning setup and opening the polls

To say there is a lot of pressure to open polls on time is probably an understatement. Opening on time is one major measure of the success of an election. The jurisdictions we studied polling places in clearly have put great emphasis on efficient setup. Much of the training and support (including checklists) seemed to be optimized for opening the polls.

Even with the best procedures, success in opening the polls on time comes down to how well a team of poll workers works together.

How does the team work together?

The amount of formal and informal teamwork varied greatly across the polling places we studied. It wasn't always evident that poll workers were assigned to roles ahead of time.

In most cases, though, poll workers had been assigned to specific roles ahead of arriving at the polls. When they were, they could find their station and begin working immediately to unpack and set up their stations.

*Some teams have pre-assigned roles for setup.
Others divided up tasks as they worked.*

Sometimes, however, poll workers received assignments when they arrived Election Day morning, or decided among themselves which role they would take. In some cases, it wasn't obvious to the observers when people were assigned to what roles. It may be that the lead poll worker quietly made assignments, or that people simply migrated to a work station and selected their own first tasks.

In one multiple-precinct polling place we studied, there was a super lead poll worker who oversaw 5 precincts. But in another location, one of the challenges was that there was no overall leader for a multi-precinct polling place. Despite the absence of overall management, by the end of the day, the three lead judges in one polling had obviously gotten together to work out how to direct traffic better than the morning plan.

In some other polling places, each precinct had its lead poll worker, and there was the bare minimum of coordination across the precincts, except to announce the opening and closing of the polls. The teams even seemed a bit competitive.

During the Election Day

While our focus was on setting up to opening and closing to shutdown, we were allowed to hang around for part of the day. We couldn't resist.

Continuous audit

Some of the teams we studied conducted checks throughout the day on various items. This was most obvious in elections with smaller turnout—it's entirely possible that leads in the precincts were looking for ways to keep poll workers busy and attentive. But reconciling and checking work throughout the day was standard procedure in some locations, regardless of the size of the election.

Checking rosters against ballot counts and incident reports during the day helped some teams shut down efficiently. In one polling place, the lead judge encouraged every precinct to reconcile throughout the day. He checked the reconciliations, periodically, himself. Two (party-balanced) poll workers in each of 5 precincts, conducted final reconciling, and managed the checklists for closing. Poll workers left the polling place within 45 minutes of the polls being declared closed.

In one state, poll workers rotated positions checking the work of prior shifts. For example, at the registration table, each new shift checked the accuracy by counting up signatures in the roster against authority slips given out. In addition, a lead was in charge of checking and reconciling the counts every hour at every station to make sure they all lined up. She told us it was important to catch a problem when it happened rather than discovering the problem at the end of the day. The polls closed at 8pm, and the last poll worker turned out the lights at 8:19pm.

Checks throughout the day didn't always help with closing, though. Even though one polling place had a procedure for checking how many voters had been issued ballots that poll workers performed roughly every hour during slow times, final tallies and reconciling were difficult.

Often poll workers relied on their leads to do checking, audits, or interim reconciliations. This is probably a security consideration, justified by having people with certain authority and responsibilities perform certain tasks, such as reconciling. Our observations suggest that the task of reconciling should be spread out through the day across the different poll worker roles. When the leads own audits and reconciliation completely, they become a bottleneck. They also got bogged down during the final shutdown and reconciliation trying to pull together all of the pieces.

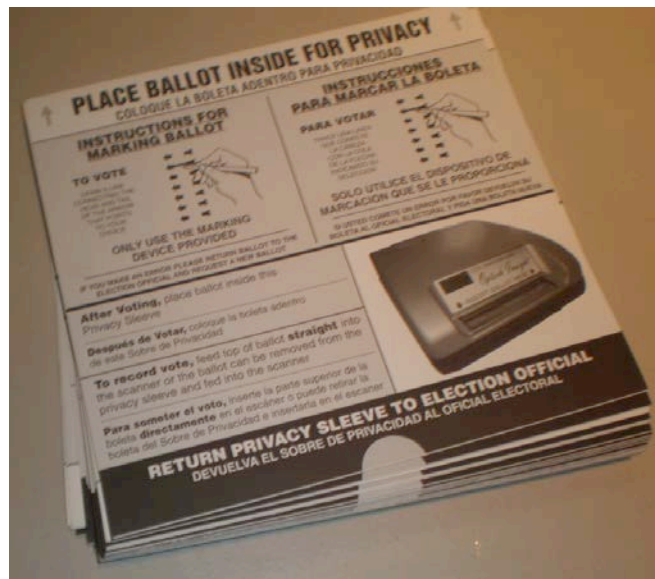
Training all poll workers on all positions, rotating people from position to position during the day, and having each new team check the work of the

previous team makes a lot of sense. The way this was carried out in some of the best polling places we observed suggests that the time saved at the end of the day is well worth any changes in how poll workers are trained and managed.

Most locations, however, seemed not to do any kind of checking through the day, and we think they paid for this by struggling with closing and shutting down, even in small, uncomplicated elections.

Ballot and voter issues during the day

We stayed for at least part of polling in several places, or later talked to poll workers about what happened during the day.



Privacy sleeves handed out with ballots.

Poll workers reported handling a wide variety of expected issues, including voters in the wrong polling place or who needed provisional ballots. In Minnesota, where there is same-day registration, poll workers needed to make sure that voters had the correct ID before they could vote.

There was also a scattering of problems with voters “misbehaving.” One of the most common was the using a phone in the polling place, because of possibility that a voter could use their phone camera to document how they had voted.

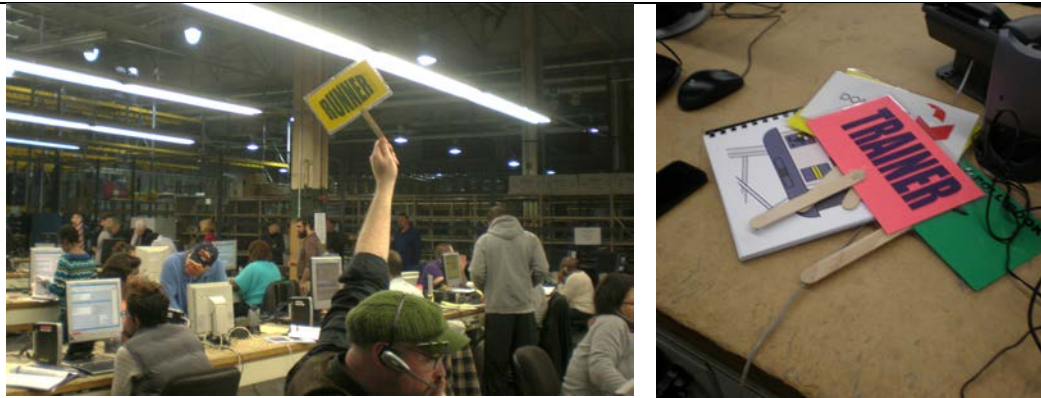
Poll workers also had to respond to voters’ questions in an unbiased way. In one city, the election included a relatively new counting method. Part of the procedures there included verbal voting instructions. Two poll workers sat at the “ballot station” where they told the voter how to complete the ranked choice ballot, following a script from the elections office. Only after that, the second poll worker gave the voter a ballot. The script was important because it helped ensure that all voters across the city received consistent instructions and that poll workers did not, even inadvertently, mislead a voter.

Supporting poll workers during Election Day

During the Election Day, elections staff can be more or less present in the polling place, both as a check on good operations, and as support for problems poll workers encounter. In almost all of the jurisdictions, a combination of visits from roving staff and telephone hotlines checks up on, and supports poll workers.

In the polling places we observed, we saw both extremes. Some jurisdictions had large support teams and systems set up to respond to problems and support poll workers throughout the day. In others, however, poll workers told us that they rarely called for help. In one case, we were told about calling the elections office and not even getting an answer.

Call center to support poll workers



In the call center set up for election day in the election office warehouse, phone operators use small signs to signal for help needed, including runners to bring supplies or equipment to a polling place or trainers for advanced technical help.

Closing the polls and packing up

Field notes from our researchers often used the word “chaos” to describe packing up and shutdown. We often observed teams starting to pack up before the polls close, especially if turnout is low. Teams started to disassemble voting booths and greeter tables. Sometimes they took down flags and signs. But counting couldn’t start until the polls were declared closed and all voters who were in line at the time of closing had voted.

At the end of the day, poll worker tasks mirrored setting up. A pair who was responsible for counting unused ballots before opening was responsible for counting unused, marked, spoiled, and provisional ballots at the end of the day. A pair assigned to preparing the poll book for opening completed tallying voters and logging incidents.

But assignments for shutdown were sometimes less clear, with more scrambling to get started and occasional overlaps between poll workers. It was not unusual for us to observe that, at first, no one except the leads had specific assignments. And then, miraculously, order and calm came upon each group as they fell into this last phase of their workday.

Packing up can be “controlled chaos.”

Teams often started packing up by sorting through and straightening piles. Someone might start tallying voters from the poll book, or counting spoiled and provisional ballots. It wasn’t uncommon for teams to get ahead of themselves, though. When counts didn’t work out in the reconciliation, they had to go back to envelopes or bins to pull things out to count again.

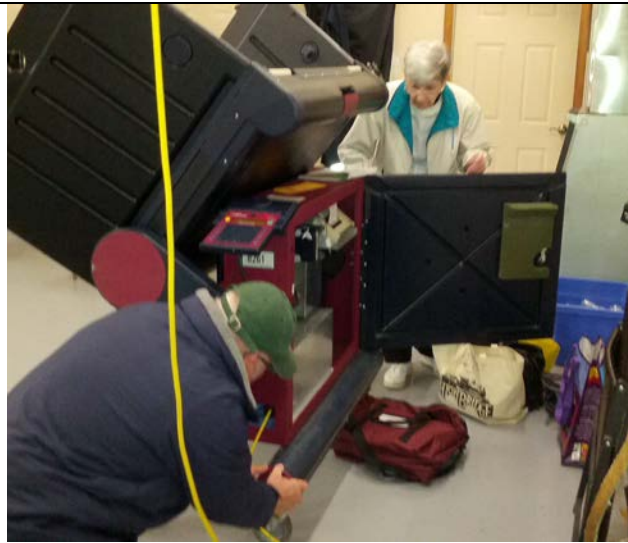
Packing materials and voting systems

The packing list is extensive. There are dozens of documents, including ballots. There are office supplies, signs, and flags. There is furniture, and of course, the voting systems themselves in addition to any peripherals.

Instructions can help or get in the way

Typically, lead judges took responsibility for shutting down the voting systems because they were trained on them, but this was not universally true. In general, however, two people worked together: One read the instructions while the other performed the steps. If there were seals to be opened and recorded, they worked together on that, too.

Good instructions—complete without being too detailed, accurate, and task oriented—helped the judges go quickly.



Shutting down the voting system. One poll worker reads the instructions while the other performed the steps.

When something didn't match the documentation, such as the user interface of the voting system and the instructions, things slowed down considerably. Judges might consult one another about what to do. They had a choice: guess based on their training and experience, or call someone at the election office.

The action the judges took depended on both the culture and guidelines in their county. We saw at least one problem that required a call to the elections office, but the team, the lead, or someone else on the team resolved most problems.

Containers, color coding, and checklists: some clarified, some confused

We saw lots of checklists and containers for materials and ballots, but packing up felt a lot like getting a genie back in a bottle.

One jurisdiction used large, clear, zipper bags to store supplies in. The bags had color-coded checklist decals on one side. It was easy to tell what should go in the bags, and it was easy to check without taking everything out.

Many of the places we studied used large paper envelopes to collect ballots and other materials. Clearly, someone paid a lot of attention to labeling and design on the envelopes. But as we saw in some polling places, sometimes poll workers had to use a combination of 6 or 8 envelopes of different sizes that had the same kind of design. It wasn't always easy to tell which one was for what thing, even with large labels and checklists. There was a lot of shuffling.

Counting and Reconciliation

When we compared the ease and efficiency of the start of the with the “chaos” of the end of the day, it seems clear that processes and forms are optimized for opening the polls. Reconciling all of the ballots and documentation was by far the most demanding and difficult part of shutdown.

BALLOT ACCOUNTING FORM - PALM BEACH COUNTY, FLORIDA
Precinct No. 4126
Date 11/03/13
1. Number of Optical Scan Ballots Received from the DRE 988
2. Optical Scan Ballots Counted from Ballot Box 0
3. Unreturned Ballots from Emergency Ballot Box 0
4. Provisional Optical Scan Ballots Counted 0
5. Number of Optical Scan Ballots 254
6. Total of all Optical Scan Ballots (Add lines 2, 3, 4 & 5) 254
7. Count of Optical Scan Ballots counted 200
8. ADD LINES 6 & 7 (Must equal 300-31) 200
PRECINCT REGISTER COUNT (Including Add On request) 0
Total Number of Signatures 0
10. Add lines 2 & 3 0
11. Votes Cast on AVC Edge 0
12. ADD LINES 10 & 11 (Total Ballots Cast should equal Line 9)

This form shows numbers crossed out as poll workers tried to reconcile the ballots.

VOTER RECEIPT & BALLOT COUNTER AUDIT
City of Westborough
Precinct No. 2
November 5, 2013
THESE NUMBERS SHOULD MATCH

| TIME | VOTER RECEIPT A | BALLOT COUNTER A | TOTAL OF ALL OPTICAL SCAN BALLOTS | TOTAL OF ALL BALLOTS | BALLOTS NOT COUNTED |
|------------|-----------------|------------------|-----------------------------------|----------------------|---------------------|
| 7:00 A.M. | 8 | 47 | 8 | 55 | 47 |
| 8:00 A.M. | 27 | 80 | 27 | 107 | 80 |
| 9:00 A.M. | 33 | 153 | 33 | 186 | 153 |
| 10:00 A.M. | 175 | 125 | 175 | 301 | 125 |
| 11:00 A.M. | 275-279 | 213 | 275 | 476 | 213 |
| 12:00 P.M. | 202 | 234 | 202 | 478 | 234 |
| 1:00 P.M. | 100 | 101 | 100 | 578 | 101 |
| 2:00 P.M. | 272 | 287 | 272 | 850 | 287 |
| 3:00 P.M. | 205 | 201 | 205 | 1055 | 201 |
| 4:00 P.M. | 320 | 362 | 320 | 1375 | 362 |
| 5:00 P.M. | 200 | 210 | 200 | 1575 | 210 |
| TOTAL | 204 | 287 | 204 | 200 | 287 |

Ballots Not Counted: 200

This form shows the mini-reconciliations done every two hours, making it easier to close at the end of the day.

Reconciliation materials or process

The task of reconciling after the polls close *appears* to be simple: count everything up, compare the counts to the counts at the beginning of the day, done. But of course it isn't that simple in most places.

The level of complexity in reconciling mainly comes from a combination of:

- The voting system
- Local implementation of provisional balloting
- Where write-ins and vote-by-mail ballots are processed
- Instructions for the poll workers
- Forms for gathering and balancing the counts

At one extreme, we observed one primary election using mechanical lever machines, for which shutdown and reconciling had only 2 counts to consider: the public count (number of voters who cast a ballot) and the protected (machine) count. Jurisdictions using DREs have similarly easy reconciliations. Poll workers were done a few minutes after the polls closed. This is not the most common situation.

Complexities

At the other extreme (and more usual) were locations with paper optical scan ballots counted at the precinct, along with a viable write-in campaign, processing vote-by-mail ballots at the polling place and complex or special rules around provisional ballots. This scenario is more common, and takes many people to manage the tasks and paper involved. Much is expected of poll workers in most places.

There were also variations in between. Because the majority of jurisdictions in the U.S. are using precinct counted optical scan ballots and have provisional ballots (versus Election Day registration), we'll focus the discussion there.

While having paper records, such as optical scan ballots and tapes from scanning tabulators, is useful for recounts and audits, their presence makes shutting down a polling place more complex than shutting down a DRE-based polling place. When the forms for documenting the counts are not clear and easy to use, shutdown gets harder.

The most important numbers to record before the polls open are the public count from the tabulators and the number of ballots available for marking. At the end of the day, every jurisdiction that uses paper ballots must take the count from the tabulator and the number of used and unused "regular" ballots.

In some of the polling places we studied, poll workers also counted absentee or vote-by-mail ballots for their precinct. Some precincts processed absentee ballots by counting and scanning them. Others only knew the numbers of absentee voters from coding the voters in the poll books. In others, they counted the number of ballots with write-ins on them, as a first step in the process of counting those votes. Most of the paper-based jurisdictions also had to account for provisional ballots.

Even though some of the elections we studied were small primaries and municipal elections, poll workers still had difficulty completing reconciliation sheets when shutting down the polls. Why? We observed 2 major reasons:

- Instructions and forms for reconciling are not ideally designed for their purpose and the timing of their use
- Packing up is going on at the same time that reconciling is.

In addition:

- There are more items to count than before opening the polls. For example, unmarked ballots from open packs have to be counted individually to ensure they are all accounted for.
- Poll workers were tired and want to leave

- Most of the work of reconciling seems to fall on the lead judges—tasks are not evenly distributed among poll workers.

Poll workers who were present at the close of polls must stay until everything is packed up. In a few multi-precinct polling places we studied, no one was allowed to leave until all of the precincts are completely packed up. Understandably, a few lead judges felt that pressure of having tired people standing around waiting for you to finish your job so they can go home after 14 or more hours of work. It may have affected their ability to manage a less-than-optimal process and set of forms.

Counting

How the counts are derived might matter for efficiency and security.

- Finding the right number on the tally tapes is not always simple.
- The type on tally tapes is often quite light and the different numbers on the tape aren't always labeled well or easy to find.
- The arrangement of information on the tapes rarely matches the forms poll workers need to complete.

Election offices use the reconciliation forms to account for all of the voters and ballots, including ballots that are cast, spoiled, provisional, unused or any other possibilities. This includes counting the cast and unused ballots by hand, both for a total and to match the cast ballots to the voting system's count. When this form does not add up, the poll workers have to find the missing ballots.

Typically, the missing ballots were spoiled ballots or ballots that didn't seem to fit into obvious categories, such as those used to make sure the Automark voting systems were working properly. Ballots can also be stuck inside a ballot box, or spoiled ballots might be in the wrong place.

When they were not found easily, team members went back to count everything again. The temptation to simply calculate the number of unused ballots to make the tally balance is very strong. This was especially true in small elections, where large packs of blank ballots were barely used.

Pressure for perfect paperwork

Different teams are motivated in different ways during the day, but no one wants to send results that aren't perfect. Teams wanted to have complete and accurate counts because they believe it is important for elections in general. But they also felt the pressure from their immediate leaders and the election office to get the paperwork right.

Poll workers all want to earn an A+ on their reconciliation forms.

If we were able to analyze all of the reconciliation forms for all of the elections we studied, we'd find that almost all of the forms had mistakes on them before they were turned in—answers erased or scratched out with corrections. This suggests the difficulty of the task. Often the first counts did not balance, sending the team back to re-check and re-count until they got it right.

Security considerations

Reconciliation is actually a challenging task. In all of the polling places, we saw that the paperwork—especially ballot reconciliation forms—are an important check on the overall accuracy of an election.

We saw some issues in the reconciliation process and in the forms that seemed to have persisted across elections. They include:

- Confusing prompts on forms
- Missing or incorrect button names
- Confusing steps in instructions for shutting down voting systems

These types of problems may not have been documented (and fixed) because they came up during shutdown when the poll workers' focus was on packing up. They were less likely to stop and write the problem down, or the official incident log may already have been packed.

The challenge of the final reconciliation suggests the value of doing counts and reconciliation during the day, when discrepancies can be resolved more easily. In one polling place, poll workers found and removed a ballot jammed in the scanner in a mid-day check.

It also suggests that the forms themselves could be more usable, helping poll workers maintain good procedures throughout the day and closing.

Delivering the results

We loved the Massachusetts tradition of having someone read the precinct counts out loud to those assembled after the tally tapes had been taped to the wall. The runners from some of the campaigns were there to collect the counts and moaned or cheered. Getting to this point was what the whole day was about for many in the room. The only thing left to do was to get the results to the collection points.

Multiple delivery media

In a few places, one step before completely shutting down the voting system was to transmit the results electronically. Jurisdictions used cell signals or a phone modem.

This transmission lets the election department know that the precinct has closed and completed the tally and reconciliation, so it gives them a way to look across the jurisdiction and see potential trouble spots. It is also a way to cover the gap between the polling place and the place where the election materials are delivered with an unofficial count.

Human chain of custody—with and without law enforcement

Mostly, however, tallies are reported on tally tapes and stored on flash drives (or other portable storage media). Usually the tapes and flash drives were packed together in an envelope. The marked ballots were stored in sealed cases of some kind. Who delivered the results to the collection point varied. In most places we studied, two poll workers (usually party-balanced) transported the marked ballots along with other sensitive materials. However, it wasn't uncommon for law enforcement to be involved.

- In some jurisdictions, police officers removed cases of marked ballots and transported the cases alone.
- In others, police officers accompanied one or two poll workers to the collection point.

Security considerations

Any electronic transmission raises concerns about the security of the data channel. Is it encrypted? Can it be attacked? Will it always be available?

There is also a question of what the count of record is—the electronic one, the tally tape, or the ballots themselves—and how all the counts are double-checked when everything reaches the same place.

The role and history of law enforcement officials in elections is both a cultural curiosity and potentially a security concern. Does the presence of uniformed police officers raise confidence in the election, or might it intimidate voters?

In the polling place in Massachusetts, there were police officers present in the polling place all day. One of the unusual features of polling places in Massachusetts is that voters check in and they check out. At this polling place, there was a police officer at each check out desk. At closing, there were at least 5 police officers in the 3-precinct polling place.

At the receiving station

For most lead poll workers, their last duties were to deliver the election results and other materials to the election office. Some counties set up regional *receiving stations* to minimize the distance they had to travel. Others had a single location at the election office, a warehouse, or other government facility. In all the places we observed, two poll workers traveled together.

At the receiving station, the staff was a combination of elections office staff and special poll workers or temporary staff hired for this work. Like polling places, there are many variations of the general process, but typically, someone:

- Reviewed the reconciliation forms, sometimes comparing them to the tally tapes from the voting system
- Collected the memory cartridges from any electronic voting machines
- Received and logged boxes of ballots
- Collected all audit materials, such as tally tapes, authority slips, poll books, or other records
- Checked all other paperwork or forms (including poll worker timesheets)
- Checked that all materials or equipment on the checklist had been turned in.

We were able to visit the receiving station for two locations that used electronic voting systems (that is DREs, or systems that stored marked ballots and counts). In both of them, someone from the election staff plugged the memory cartridges into computers to be read as soon as they arrived.

In one place, the procedure included 3 checks. The poll workers were not allowed to leave until all three checks were complete.

- The tally tape from the polling place was reviewed.
- A new tally tape was read and compared to the one from the polling place.
- The cartridge was removed from the voting system and read into the election management system to confirm that there were no immediately obvious technical problems.

This is almost always the end of the poll workers' Election Day. Turning in the ballots and tallies from their polling place is their final responsibility.

Part 3: Conclusions and Recommendations

What have we learned in this project?

When we started this study, we proposed to explore the impact poll workers have on voting system security. We expected to identify common security problems poll workers encounter in opening and closing the polls and why the problems happen.

We hoped to reveal opportunities for deeper investigation of security gaps that might be remedied by better design of procedures, job aids, training, and content available at the polling place.

We expected that security problems between poll workers and voting systems would be mostly an issue of human factors engineering, and we approached our observations and interviews from the angle of how election workers were trained on *security* procedures and where those *security* procedures are broken, just as we might in a comparable situation in a private sector organization.

We thought that it was most likely that security problems for poll workers would be inadvertent, originating because of mistakes rather than as purposeful attacks. In answering our research questions, we learned

- Do poll workers follow procedures designed to promote the security of the voting process?
In most of the places we studied, poll workers have, and use, procedures designed for security. Security is not a separate layer consciously, explicitly carried out. Election officials approach security as an part of elections and attempt to design election procedures to support trust in the election. Poll workers use those procedures to their best ability.
- If poll workers are not following procedures to promote security, what procedures are being overlooked/ignored? Why, from what we can observe, were the procedures not followed?
Even within some of the jurisdictions that seemed the most thorough and organized, some procedures don't make sense, or aren't complete, accurate, or clear. So poll workers generally try to do their best. They rationalize and improvise, which usually results in a good or improved result.
- What are the resulting security vulnerabilities?
The security vulnerabilities are distributed among people, processes, paper, and procedures and training. However, the issues around reconciling after closing the polls deserve specific attention.

- Do printed materials, manuals and other instructions hinder or support poll workers' adherence to security procedures?
No jurisdiction was perfect but we did not see a threat to the integrity of an election because of tools or aids for poll workers. The most problematic activity of the day, across jurisdictions, polling places, and precincts was reconciliation at the end of the day.
- How can current usability research be applied to these materials to improve poll worker compliance and enhance voting system security?
Current research, including research on instructions for poll workers at NIST, EAC Quick Start Guides, and The Field Guides To Ensuring Voter Intent already address some of the issues we observed and would also be helpful in improving training, manuals, and Election Day task support.

We also learned that election days can be chaotic, with many stress points and that planning for security must take this into account. You don't deploy over a million temporary workers and not get some variation in their diligence and effectiveness.

If it's not usable, it's not secure

We need to know more about how to find a balance between restrictive, locked down procedures, and allowing poll workers to take responsibility for *their* election.

Running elections with confidence requires reconciling two needs:

- The need for defensive security practices to ensure election integrity.
- The need for procedures that help poll workers open, manage and close the polling places they run.

The ultimate way to ensure that poll workers perform at their peak efficiency and effectiveness is to make sure that the materials, tools, and technology they have to use are usable and accessible.

Issues around reconciling after closing the polls deserve detailed study, feedback from poll workers, and iterated testing and design.

What's happening on Election Day is, effectively, live usability testing, in a large scale. Jurisdictions work hard to improve elections every time based on data and feedback that they collect post hoc, which is its own kind of research.

While there were no glaring issues and we witnessed no major security breaches, the tiny hindrances, obstacles, and questions leave tiny openings for security vulnerabilities. We are also concerned that by the end of the day, small problems might also have a cumulative effect. In the same way that people experience decision fatigue across the day (as they get tired, they make poorer decisions), poll workers need better usability at the end of the day than they seem to be getting now.

There has been so much emphasis on getting the polls open on time that our observations suggest that processes and procedures are optimized for opening the polls, with less emphasis on efficient and easy closing and shutdown. The next phase in improving poll worker performance should be on streamlining closing and shutdown.

Empower poll workers through training and trust

We found some good practices in every polling place where we observed. But there were common things across election departments that went well (and badly). A few jurisdictions stood out for the serious, deliberate work by the election department to create strong support for poll workers and for the resulting good practices we saw in their polling places.

We especially noticed that the most empowered teams had the easiest time navigating the stress points and places where security issues were most likely to come up.

- The teams worked well together and had ways to resolve disputes.
- The leads were given—and took—strong responsibility for the overall election in their polling place.
- They had forms and checklists that helped the teams catch mistakes before they became big problems.

Training, trust, and constraints contributed to successful poll worker performance. To help poll workers do the best job possible:

- Train well, using scenarios and role-playing to anticipate things that come up at the polling place.
- Trust them and then leave them alone except when they need support
- Put appropriate constraints in place to guide their work. Good checklists, for example, restrain poll workers by providing models for how to complete procedures correctly.
- Give them responsibility, from picking up the election materials to delivering the final results.
- Have strong expectations (and appropriate penalties) for any indications that they have not reconciled the election results carefully, or not completed the paperwork correctly.

Getting this balance right is all a Goldilocks Problem. Simply adding more and more materials, checklists, training, or other support can be just as bad as not having enough. Each aspect of the process must be balanced. Luckily, this can be done through experimentation over many elections.

To build towards training and support that is just right, our research strongly suggests jurisdictions take these actions:

- Test your paperwork. *Designing* the paperwork matters. Focus on
 - Forms
 - Checklists
 - Job aids
- Get feedback on training to test its effectiveness.
- Optimize for closing by
 - Ensuring that poll workers know at the beginning of the day what their assignments are for closing and shutdown.
 - Creating spaces for reconciling that are separate from other activities such as packing up non-sensitive materials.
- Put reconciliation at the center of closing activity.
 - Careful iterated design and testing will help.
 - The steps of reconciliation should drive the sequence of shutdown steps and frame closing procedures.

Feedback from election officials

At the end of the project, we invited the election officials who hosted our research teams to a workshop to discuss the work and see how they might use what we learned.

Their view was that **security** is one aspect of the larger goal of **election integrity**. For them, security grows of a familiar, well-understood process, in which each piece of the process is well-tested.

They were interested in how to recruit and train poll workers to create the empowered teams that can take responsibility for “their” election.

- They were particularly interested in ways to recruit in underserved areas of the county. Some had tried some modern technologies like robo-calls and “every address” postal delivery, but wondered if they were effective enough to justify the cost.
- They worked to balance the need to keep current materials up-to-date and wanting to be able to try new ideas for training and job aids.
- They shared ideas about how to make training engaging and effective, including using “clickers” to check that everyone in a class understood the material, training slides that coordinate with the Election Day manual, and video for self-study material.
- They knew that much of the training comes on the job, as new poll workers learn from more experienced people. One county organized the training to cover the basics first, offering more advanced training only to those ready for it.

They looked for ways to motivate poll workers, and ensure that control materials were all returned at the end of the day.

- They were interested in whether social media or other online tools could help give poll workers a stronger sense of identity as the election front line staff.
- They looked for ways to make the rewards--and pay--fair to all, not rewarding people who showed up late.
- They wanted to understand poll workers’ motivations better so they could use that knowledge in recruiting, retention, and rewards.

They also brought up some details of their processes that addressed security vulnerabilities.

- In one jurisdiction, collection drivers visited the polling places, rather than poll workers going to a receiving station. They used color-coordinated materials as part of the identification for each election.

- Variations in voting systems made a big difference in what security issues they faced in both managing the systems and reconciling at the end of the day. Electronic poll books, for example, made it easier to do some of the closing calculations of the total number of voters.

Next steps and future research

This project was a first step in a qualitative understanding what works well—and risks—in how we run polling places. It focused on description, but did not analyze the procedures and practices for their effectiveness in promoting secure elections. But what we saw raised some questions.

There is still a lot to learn about the relationships and dynamics on the poll worker team:

- What are the risks in the way that equipment and materials are distributed before Election Day, and who does this work?
- During Election Day, what are the implications when poll workers have relationships with poll watchers or have ardent involvement with a political party?

There are questions about the materials used to report on events at the polling place and the results of the election:

- When delivering the results to the election office, poll workers often work in pairs for party balance, custody reasons, or safety—or all of those. Is this effective in ensuring the integrity of the election?
- What is the role of law enforcement personnel who either take control of marked ballots, or who accompany poll workers who are responsible for delivering ballots?
- How effective are seals used on pouches and cases?
- Many jurisdictions send results to their elections office over cell or network connections. Are the results encrypted? Are they sent over a secure channel? How are the results reported from the polling place double-checked.

The most interesting area for future research, however, is in how the material poll workers use is designed:

- How detailed and prescriptive should instructions and procedures be?
 - How can materials be designed so their function is easy to understand?
 - How much documentation is needed? Should manuals be a reference book or a how-to guide?
 - How can checklists and other forms be more helpful both to poll workers as job aids and as a check on the processes in the polling place?
- and
- How can reconciliation forms be more effective in helping poll workers accurately account for the voters and ballots from their polling place?

Appendixes

About the polling places

One goal in selecting places to observe was to see a variety of elections and voting systems.

Type of county

- 5 metropolitan areas plus 6 locations in the Minneapolis-St. Paul area
- 6 suburban or small city areas
- 2 rural areas or very towns

Type of voting system

- 3 locations using electronic voting systems
- 2 locations with a voter option for paper or electronic
- 1 location using lever machines
- 13 locations using paper ballots

Type of election

- 4 presidential elections (2012)
- 1 primary
- 2 consolidated municipal
- 12 municipal

Summary of the observation locations

| Location | Election date and type | Primary voting system |
|------------------------------|------------------------|---|
| Boston | Presidential | Electronic: Premiere AccuVote |
| Hunterdon County, New Jersey | Presidential | Electronic: AVC Advantage |
| Travis County, Texas | Consolidated Local | Electronic: Hart eSlate |
| Cook County, Illinois | Consolidated Local | Paper: Optech Insight and Electronic: AVC Edge + VVPAT (voter's choice) |
| Virginia | Municipal | Paper/Scanner or DRE: Winvote (voter's choice) |
| Oakland County, Michigan | Presidential | Paper/Scanner: ES&S DS-200 |
| San Francisco | Presidential | Paper/Scanner: Optech Insight |
| Ohio | Municipal | Paper/Scanner: ES&S M100 |

| Location | Election date and type | Primary voting system |
|--|------------------------|--|
| Florida | Municipal | Paper/Scanner: ES&S DS-200 |
| New York City | Primary | Lever Machines |
| New York City | Municipal | Paper/Scanner: ES&S DS-200 |
| Fairfax County, Virginia | Municipal | Paper/Scanner or DRE: Winvote (voter's choice) |
| Detroit | Municipal | Paper/Scanner |
| Rhode Island | Municipal | Paper/Scanner: Eagle |
| Minnesota (6 polling places in 3 counties) | Municipal | Paper/Scanner: ES&S DS-200 |

Election demographics

The number of registered voters districts in the polling places and the number of registered voters in the polling place as a whole provide an idea of the size of the polling places we observed. The turnout percentage offers an idea of what capacity was being used.

The number of registered voters in the locations we studied ranged from 654 in the precinct, to 9149 at a vote center. Turnout ranged from a tiny 8% in a muni election to 72% in the presidential election. The table below shows some highlights from the jurisdictions we studied.

Polling place size and turnout

| Polling place location | Election date and type | Districts in polling place | Registered voters in location | Number voting in location | Turnout at location (%) | Total turnout for city/county (%) |
|------------------------|------------------------|----------------------------|-------------------------------|---------------------------|-------------------------|-----------------------------------|
| New Jersey | Nov 2012 General | 3 | 2497 | 1788 | 72% | 74% |
| San Francisco | Nov 2012 General | 1 | 654 | 313 | 48% | 73% |
| Cook County | Apr 2013 Municipal | 2-3* | 880 | 191 | 22% | 19% |
| Florida | May 2013 Municipal | 2 | 2283 | 268 | 12% | 14% |
| Travis County | May 2013 Municipal | 2 | 9149 | 710 | 8% | 10% |

Notes on conducting research in polling places

One of the secondary goals of this project was to learn how to do research in polling places, given the constraints of working around a real election. It can be difficult to observe in a setting where people are working under the stress of time and the importance of elections.

Challenges in setting up observation locations

In arranging for the first observations, we discovered a number of challenges in working with the election jurisdictions.

- **The word ‘observation’ has specialized meaning in elections.** To a researcher, observation is a relatively unobtrusive activity, but in elections, it carries political and evaluative overtones that set off alarms. We changed the way we described the study to avoid this word, focusing instead on shadowing poll workers to understand their jobs better and learn how elections work.
- **Election officials are protective of their poll workers.** In any ethnographic study, gaining the cooperation of ‘gatekeepers’ is an important step. Election officials wanted to know that we would not interfere with the election work or do anything that might upset their poll workers.
- **It is easier to observe best practices than problems.** Officials want to show their processes at their best. In general, this means that we are introduced to their best workers and polling places, rather than being encouraged to see places where there may be more problems.

Building relationships

One of the first indicators of local election culture was how easy or difficult it was to gain access to polling places and poll workers. The general assumption is that observers are from political parties. Many states have laws restricting polling place observers. Some even prevent observers outright, while other states allow nearly any observer into the polling place who wants to be there as long as there is no electioneering.

Our approach was to ask permission to study elections as an academic exercise. Mostly, this worked. Some otherwise closed jurisdictions opened—after they understood what we wanted to do. They provided lists of polling places and names of leads to introduce ourselves to. Others gave us letters to present to lead judges when we arrived at polling places. A few assigned staff to meet us on site, make introductions, and answer our questions. It is likely that these “handlers” were assigned mainly to prevent us from getting in the way, and we

appreciated that. As a given election day wore on, though, we built rapport and trust, and were allowed more direct access to poll workers.

Conducting the observations

Our plan for conducting the observations was to arrive at the polling place with the poll workers, usually an hour before the Election Day opens, and then return at the end of the day to stay with them until they completed their work. We chose this approach because so many states have laws that restrict who can be in the polling place during Election Day.

Even with this simple plan, we had a lot of variations in how the observations were conducted:

- Working as a poll worker, taking notes as a participant observer
- Escorted to the polling place by an election official
- Introduced to a lead poll worker, and allowed to make our own arrangements

Each of them had advantages and disadvantages from a methodological perspective, but all allowed us to gather good information and have good access to the polling place and poll workers. We do not believe that this variation compromises the data for this project. It may give us important insights about the election culture in each place.

This variation also gave us the opportunity to include other activities in our observations.

- It was invaluable to both see poll worker training manuals in advance, and attend training when this was possible. It was helpful to hear what procedures were emphasized, exactly how the training was conducted, and the tone set by the election department trainers.
- When we were able to observe during the election day, the time was very valuable. It let us see small issues as they arose and were dealt with. In talking about them afterwards, neither election officials nor poll workers classified them as “problems”—just things they have to deal with during a normal election day.
- Having a specific poll worker to shadow, to whom we have been introduced in advance, was helpful. When this happened, the poll worker often volunteered explanations, made sure we got to see things, and generally gave us a better view of the process.

- Actually working as a poll worker provides a deeper view of the process, but is also a limiting view. An ideal solution is to identify someone who can work as a poll worker, providing additional reporting and contacts, but to debrief them in a post-election interview just as we would any other contact.
- In most locations (so far) there is some set-up 1-3 days before the elections. Poll workers pick up materials and sometimes prepare them (for example, marking absentee voters) in advance. One or more poll workers may set up the polling place in advance. These activities are worth observing, when possible, or covering in an interview when not.
- It is also important, when possible, to “follow the ballots,” for example going to the collection center or following the process all the way to delivering the materials back to the election department. Not only is this a good chance to chat, but the variations in this part of the process are also interesting.

Finally, it probably goes without saying that the more rapport we could establish with the poll workers, the better, so the way in which we were introduced was critical. The most effective solution was to say that we are studying how poll workers run elections, with an open invitation to point out anything they think might be interesting to include in the study.

At 2 locations, we were given informal badges from the election department. Even a simple name tag hanging on a lanyard helped reassure poll workers that they could talk to us.

Finally, it’s important to note that one benefit for participating that we offered election officials was the opportunity to read the field reports from all the locations. They were eager to share their own best practices, and to learn from other jurisdictions.

The National Association of Secretaries of State (NASS) report on State Laws on Authorized Poll Watchers and Voter Challenges (available from <http://www.nass.org/reports/surveys-a-reports/>) is a useful summary of laws on who is allowed in the polling place.

Research support materials

We created a guide for the polling place observations, which all of the researchers used. It was printed as a small 48-page booklet. Each page included questions and reminders about one aspect of the polling place, with space for notes and sketches.

1. You are at the polling place to observe.

Do not get in the way of poll workers as they do their jobs. When in doubt, be a 'fly-on-the-wall'

But, you can talk to poll workers when they are not busy, and can ask questions about what they are doing.

If they are busy, save questions to ask in a convenient moment or note them for follow-up interviews.

Take photographs, if you are allowed to before or after the polls are open.

- Most jurisdictions do not allow photography when voters are present.
- Avoid taking photographs of poll workers that can identify them
- Please do not take photos of poll workers without their permission!

Draw sketches if you cannot take photographs.

Collect materials if you can, or take note of good materials so we can ask for copies later.

If you have any problems during the day, call or text one of us.

2. Statistics

Districts

Precincts or districts in this polling place?

Voters

Registered voters in this polling place?

People voted at this polling place today?

Poll workers

How many poll workers for each district?

How many poll workers in the polling place?

Campaign staff?

Were there people from political campaigns near/outside the polling place?

Were there polling place observers in the polling place?

3. About the polling place

Sketch (or take photos) of the outside of the polling place. Show the location of entryways, signs, parking, etc.

What type of community is the polling place in?
(Urban, suburban, rural + any description of the location)

What kind of building is this polling place in?

How long has this location been in use as a polling place?

Are there signs identifying the polling place?

What is the path from the street to the polling place?

Is the accessible entrance easy to find or clearly marked?

4. Polling place layout

Sketch the layout and traffic pattern of the polling place, showing all districts or precincts

How is the polling place laid out?

Be sure to include:

- Entrances and exits
- Check-in point or greeters
- Registration table
- Voting booths
- Scanners
- Accessible voting system
- Where poll workers are stationed
- Any purposeful or accidental "gates" that separated operations and voters?

Who decides the layout of the polling place?

Does the poll workers manual include instructions or suggestions for the layout?

If there is more than one district or precinct in the polling place, are they all laid out in a similar pattern?

5. Election materials

Sketch, take photos, or collect any materials.

Show where they are used in the polling place, if appropriate.

What **devices or tools/kits** are present?

For

- IDing voters
- Activating ballots
- Issuing ballots
- Casting ballots
- Collecting ballots
- Handling provisional ballots
- Collecting spoiled ballots
- Directing voters within the polling place

What **printed materials** do you see?

- Forms
- Manuals
- Checklists
- Job aids

Where are extra materials stored during Election Day?

6. Poll workers

For each district, how many poll workers work at one time?

What are their roles and titles?

Are there **informal roles** that are different from the formal roles and titles?

Do they keep the same position all day, or do they rotate?

Who is in charge? How do they make decisions?

How do districts within a polling place interact?

Are election staff or local clerks/officers present?

What are their roles?

Questions to ask poll workers, if you have the opportunity:

- How did you decide to be a poll worker?
- How many elections have you worked?
- What is your role or title in this election?
- Have you always worked in this polling place?
- Is there anything new or different about this election?

7. Poll worker teams

What is the **social structure** of the polling place?

How well do the poll workers seem to know one another? Are they friends or acquaintances? Have they worked together before?

Are there younger poll workers who could be high school students working the polls?

Are there older poll workers who seem to have a lot of experience working elections?

Are poll workers allowed to leave and return?
What are the rules around that?

Do they have things to read or do (books, knitting, computers)?

Where do they eat? Do they share food and coffee? Who supplies food?

8. Set-up before election day

Describe or sketch what setup is done before Election Day, if any. Describe the steps to set up the space. Take photos if allowed.

What happens to set up the polling place before Election Day?

Do poll workers pick up materials before Election Day?
Who does this? When? What materials do they receive? Where do they go to get them?

Do they do anything to prepare materials before Election Day?

Is anything delivered to the polling place before Election Day?
Who does this? When? What is delivered?

Do poll workers do any setup before Election Day?
Who does this? Are there procedures, or is this informal?

Do poll workers from all districts in a multi-district polling place work together? How do they make decisions?

List or photograph what is delivered, and how it is left for the poll workers.

9. Setting up the space on Election Day

Describe the steps to set up the voting systems.

Take photos if allowed

What was here when you arrived?

- Tables and chairs

- Voting systems and tabulators/ballot boxes
- Booths
- Assistive technology (including magnifiers)
- Signs and posters
- Anything used to control traffic

Who organized and directed the set up process? How were decisions made?

Was there a **specialized team** or extra staff for setting up the polling place that is different from the people who will work the polling place the rest of the day?

Did anything **unexpected** happen? How was that handled?
Who took care of it?

10. Setting up the voting systems

Were the voting systems already set up, or partially set up when you arrived?

What equipment or voting systems are used

- E-poll books (where voters check in)
- Electronic (screen-based) voting systems
- Ballot activators (a secure card given to the voter)
- Optical scanners

Make and model of:

The main voting system _____

The accessible voting system _____

E-Poll book _____

Other _____

Who set up the voting system?

Did anything **unexpected** happen? How was that handled?
Who took care of it?

11. Zero votes report

Was it generated?

By whom?

How was it generated?

At what point in the process was it generated?

(What happened in the 3 minutes **before** and **after** this?)

Was it verified?

By whom?

How was it verified?

Where is it stored during the day?

12. Documentation and job aids

For setting up the polling place or the voting systems:

Were any checklists or job aids used?

Were any documentation or manuals used?

Where were these materials found? (Did poll workers bring them with them, or were they supplied with the other election materials)

How were they used? (Did poll workers pair up to go through the procedures? Did they read each step? Check off a list?)

13. Opening the polls

What happened in the 3 minutes **before** and **after** the polls opened

How were the polls opened?

Who decided it was time?

[was there discussion among leaders?]

[how were clocks synchronized?]

[was there any delay? Why?]

How was it done (announcement, open doors?)

Where did voters wait before the polls opened?

How many voters were in line when the polls opened?

14. When the polls are open

[If you are in the polls to observe while voters are present]

How well did the traffic flow set up for the polling place work?

- Did voters know where to go?
- How were they assisted?

If it was a multi-precinct polling place

- Could voters find the right precinct?
- Were poll workers able to redirect them, when necessary?

Were there any unusual events, or challenges to voters?

Where there any problems using the voting systems?

Do not disturb poll workers while they are working, but if there are moments with no activity, or when they are on a break, here are some questions to ask them:

- What works well at this polling place?
- Did anything unusual or unexpected happen today?
- Were there any problems with the voting systems?
- How did you solve the problem or decide what to do?
- What was your training like?
- Do you think the training prepared you well for your work as a poll worker?
- What would you change about being a poll worker?

15. Closing the polls

Describe the steps to shut down the voting systems.

Take photos if allowed

Closing poll time: _____

Number of voters in line: _____

Shutdown start time: _____

Polling place lights-out time: _____

Shutting down the voting systems

Is there a **specialized team for shutting down** the polling place that is different from the people who will work the polls the rest of the day?

Is a tally report generated?

When? By whom? How was it generated?

Was it verified? By whom? How was it verified?

Was there any tampering evident?

What is the state of seals and ties applied at the opening of the polls?

How was that handled? Who took care of it?

Handling paper ballots

Describe the steps to tally and pack up any physical ballots.

Take photos if allowed

What happens to physical ballots? Look for

- Unmarked ballots
- Absentee ballots
- Provisional ballots
- Spoiled ballots

Posting counts publicly

Take a photo of the way the public counts are posted, if appropriate.

How does that happen? What are the steps?

Troubleshooting voting systems shutdown

List documents, checklists, or job aids used.

Take photos or get copies if allowed

Anything unexpected happen?

How was that handled? Who took care of it?

16. Packing up

Sketch or photograph the polling place when it is completely closed up, if allowed

Is there a **specialized team for packing up** the polling place that is different from the people who will work the polls the rest of the day?

How is the polling place packed up?

- Are there envelopes, reconciliation sheets or other materials provided to pack up the materials from the polling place?
- Who manages the process?
- What are the different jobs, and how are the poll workers organized to complete them

Is there a final “sign-off” or other paperwork that poll workers complete at the end of the day?

17. Returning election material to HQ

If you visit it, describe the HQ receiving center for election materials.

What is the process there?

Conveying counts to Election HQ

How do the counts get to HQ?

Modem?

Phone?

Memory pack of some kind?

Who does it?

Transporting materials and equipment to HQ

When does that happen? Who does it? How does it happen?

18. Language

List any special terminology used in the polling place, especially words for poll worker roles, equipment, or the election process.\

Did you hear any special terminology that poll workers would have to learn to do their jobs?

What questions did you hear poll workers ask?

Did you hear anything that you didn't understand – comments or questions?

19. Support for poll workers

Questions to ask poll workers, if you have an opportunity:

- What questions do voters ask the most?
- Are you able to answer the questions?
- Have you ever had a voter challenged? What did you do?

What support do poll workers have from HQ?

- Phone number to call?
- Cell phone supplied?
- Visits from election staff?
-

Were there any incidents during the day when they needed support?

- What happened?
- Was support helpful?

What happens if there is a problem with a voting system?

20. Summary impressions

What is your overall impression of how this polling place was managed for

- Transparency of operations
- Reliability of results reported from this polling place
- Security

Did the poll workers appear to follow established procedures in both normal activities and in trouble-shooting problems or unusual events?

- Did the manuals or other documentation cover all events you saw?
- Did poll workers have to improvise solutions?

Relevant research

The Field Guides To Ensuring Voter Intent already address some of the issues we observed, but the research they are based on would also be helpful in improving training, manuals, and Election Day task support.

In addition, the Election Assistance Commission released quick start guides in the summer of 2014 that include tips for better election management and administration. This set of quick start guides result from a series of EAC roundtable discussions in which experts including election officials brought lessons learned from recent elections. In “9 Tips To Manage the Voting Process Better,” checklists figure prominently. In “6 Tips to Employ Effective Poll Workers,” the EAC suggests that jurisdictions “offer training that fits.” The guide emphasizes hands-on practice sessions and implementing adult-learning techniques.

With that said, we also saw many fine examples of checklists, forms, and procedures. Many match our recommended guidelines for writing effective poll worker materials, from Field Guide Vol. 04: *Effective poll worker materials*.

- **Address one group of readers at a time.**
It was common to have separate materials for different roles. They were often color-coded, which seemed helpful.
- **Focus on poll workers’ tasks.**
Generally, materials reflected specific steps without a lot of description. Our research shows this to be an effective technique.
- **Describe the tasks, not the equipment.**
This is more difficult to do than it might appear. Some of the materials did a poor job of presenting a true task rather than a pseudo task. There is a lot of equipment involved in elections, after all, and it includes poll books and supplies.
- **Write directly to readers.**
The documentation and forms are uneven in how they meet this guideline. The most common problem is passive voice. When instructions are in passive voice, it isn’t clear who the actor is. Ambiguity about who should perform a task means they can be left undone.
- **Put warnings before consequences.**
Be sure that poll workers can follow instructions in sequence, as they read to do each step. Putting a warning or a condition after steps in a sequence risks poll workers doing exactly the thing that the warning is about.

- **Put information in a step in the order needed.**
Most of the materials did a good job of putting steps in the right order. But within steps, the writing wasn't always so clear. Our observations suggest that the poor writing happens because the writer wants to save space by fitting as many procedures on a page as possible. But the tradeoff is that poll workers miss key instructions that are buried in the text.
- **Use graphics to illustrate actions.**
We were pleased to see that many of the materials made excellent use of photographs and line drawings, as well as small images of forms to be found and used.
- **Design pages for use in the polling place.**
Many of the procedures and checklists were easy to hold and manage while performing steps, and we liked that the checklists were laminated, which made them durable and reusable.

These guidelines are based on NIST-commissioned research on procedures for poll workers reported in NISTIR 7519, *Style Guide for Voting System Documentation*.

The research team

We originally proposed observing elections in 8 locations over the period of the grant. Several more opportunities presented themselves, however, and we decided to pursue them. By adding elections and locations, we expanded the sample across different types of jurisdictions with different practices and procedures, and populations. We also got to see more types of elections.

But our small core team couldn't be everywhere at once. So we included other collaborating researchers in the project temporarily. Most were professional researchers of our acquaintance. But several were graduate students. In Minnesota, we got help from 8 political science students. Having them gave us great spread over a major metropolitan area. In Rhode Island, two design students expanded an internship they'd been working to help us observe there. All of the co-researchers were auditioned and trained before they went into the field and then fully debriefed afterward.

The full team included:

- Emily Barabas
- Josie Scott
- Karen Lin
- Keela Potter
- Kelsey Lim
- Lynn Baumeister
- Rachel Goddard

And University of Minnesota graduate students from Doug Chapin's class at the Humphrey School

- Aaron Rosenthal
- Ashley English
- Christina Farhart
- Emily Barabas
- Hunter Gordon
- Julie Koehler
- Paul Linnell
- Peter Polga-Hecimovich



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