

Defining and implementing data validation processes

Geo-Enabling Elections

June 3, 2021



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Housekeeping

- **Slides and supplementary materials** are available on the registration page
- Use the **chat panel** to say hello, chat with other attendees, and ask questions

What we'll cover today

- Describe how validation practices are a necessary part of geo-enabled elections
- Practice developing audit plans to ensure accurate voter placement
- Prepare to communicate with voters about audits to build public trust in elections

Today's agenda

- Introduction (5 minutes)
- Why spatial audits? (5 minutes)
- The basics of data validation (10 minutes)
- Auditing precinct assignments (10 minutes)
- Audits and trust (5 minutes)
- Pulling it all together (10 minutes)
- Q&A (10 minutes)
- Wrapping up and course survey (5 minutes)

Hello, there!



Josh Simon Goldman
CTCL
josh@techandciviclife.org



Rocío Hernandez
CTCL
rocio@techandciviclife.org



Veronica Degraffenreid
Acting Secretary of the
Commonwealth, Pennsylvania



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NSGIC

National States Geographic Information Council

Best Practices for Geo-Enabling Elections



Building confidence in your data

Why spatial audits?



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Audit

A systematic, independent, documented process for obtaining and evaluating evidence to understand if your goals were met.

Spatial audit

Voters are assigned to the correct political geography based on their voter registration address. **And you can prove it.**

Point-in-polygon analysis



Right **ballot**
to the right
voter.

Mitigating local risk

**Thousands of Virginians
may have voted in the
wrong state House districts**

Check to see if you're one of them.

**Election error may have cost Georgia representative
his race**

Ineligible Greenville District 2 candidate files formal complaint...

The better the data, the more convincing the audit

The basics of data validation



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Best Practices for Geo-Enabling Elections



Source: "Raising Election Accuracy and Efficiency with GIS," NSGIC 2019

Data validation categories

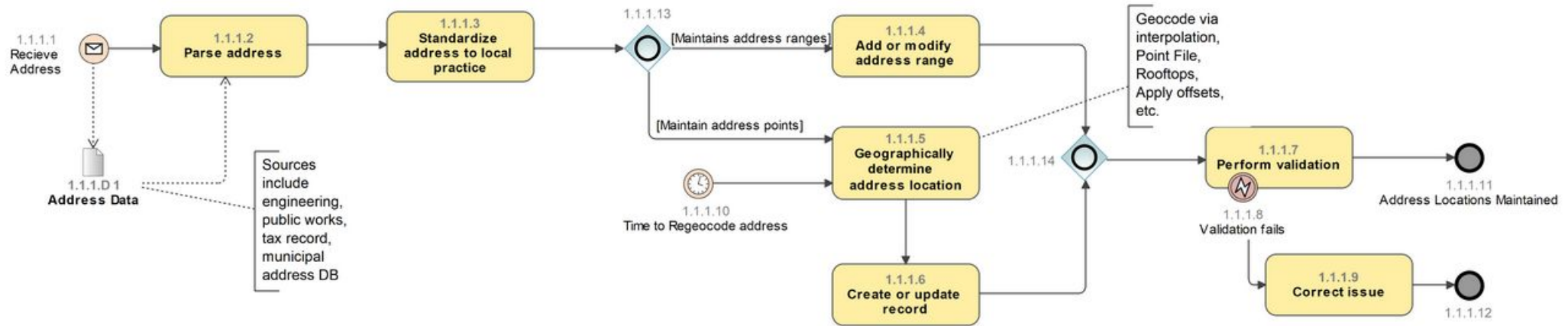
What we're validating	What we're asking (a few examples)
 Team roles (administration)	• Who is responsible for performing key roles? • Is a external audit also desired? By whom?
 Voting unit layer	• Any gaps in precincts? • Any overlaps in precincts? • Do all voting units have a unique voting identifier?
 Geocoded addresses	• Is the address point as accurate as possible? (On the house, driveway, parcel, street, etc) • Do we standardize addresses once we receive them from voters?
 Contextual layers	• Do we have the best available, most up-to-date maps to guide us when we make changes?

Data validation best practices

- Operational data quality controls
- Periodic full review and reporting
- Change logging
- Metadata documentation
- Periodic archiving

WHAT is the data validation process?	WHO is responsible for conducting it?	WHERE is the data and process documentation stored?	WHEN should validation processes be conducted?	WHY do we do this?	WHAT'S NEXT? (How do we integrate findings?)
Examples					
- Boundary assignments for all voting districts and precincts are checked to ensure they are updated with latest data, have no unintentional gaps or overlaps	- County GIS office (Jane Doe) - County Clerk sends reminder 1 month prior to each due date	- Documentation for boundary assignment validation, including reporting format, is saved in the "Documentation" folder in the Shared Drive (link). - Boundary assignments (shapefiles) are in the voting unit GIS layer, which is stored in the Shared Drive (link). - Earlier versions of the data from our office and our partners are archived in the Shared Drive (link).	- Data updated and validated 14 weeks prior to every election - Major review every 5 years	- Annexations, new housing developments, and improved data from partners mean updates to the voting unit GIS layer. As we add data we need to make sure it is clean and accurate - Accurate boundary assignments help us ensure voters are in the correct precinct and receive the correct ballot	- Validation reports are saved in the correct Shared Drive folder (link) - Corrections are made to data no later than 12 weeks prior to each election (County GIS office) - Point-in-polygon audit conducted and updates made 10 weeks prior to every election (County GIS office) - Send thank you email to GIS partners with stats on how many voters' data we improved

NIST Election Modeling



Voting unit GIS layer



A GIS layer that overlays voting boundaries created by federal, state, and local districts and includes precincts

✓ Are there any gaps in the precincts?



Source: Map imagery from Google Maps, CNES/Airbus, First Base Solutions, Maxar Technologies (2021)

Geocoding



The process of transforming a description of a place, like an address or name of a place, to a location on the earth's surface.

✓ How close is the point to the voter's residence?

WISVOTE

Address

Addresses > N49W25202 SEVEN ...

🕒

🔍

⚙️

VILLAGE OF SUSSEX - WAUKESHA COUNTY

👤

💾 SAVE

🗑️ SAVE & CLOSE

📄 CONFIRM

➕ NEW

🔒 DEACTIVATE

✖ CANCEL

📋 AUDIT HISTORY

⚙️ RUN WORKFLOW

⋮

↑ ↓ ↻ ✕

📍 ADDRESS

N49W25202 SEVEN STONES DR, PEWAUKEE, WI 53072-...

District Combo
68181-008-3122-1

GENERAL

RESIDENCE

House Number *

N49W25202

Street Name *

SEVEN STONES DR

Building Name

Unit Type

Unit Number

Postal City *

PEWAUKEE

State *

WI

Postal Code *

53072-1347

Process

DETAILS

🏠 Jurisdiction *

VILLAGE OF SUSSEX - WAUKESHA COUNTY

District Combo *

68181-008-3122-1

Care Facility

GeoCode Source

USER

Geo DC Mismatch

No

DC Changed

Created On

4/1/2016 4:13 PM

Created By

Freiheit, Susan

Modified On

4/1/2016 4:13 PM

Modified By

Freiheit, Susan

Owner

VILLAGE OF SUSSEX - WAUKESHA COUNTY

Active

Map

Satellite

Map data ©2021

Terms of Use

Report a map error

unsaved changes

Source: Wisconsin Election Commission 2021

100 block of Oak Street

Source: Map imagery from Google
Maps, CNES/Airbus, First Base
Solutions, Maxar Technologies (2021)



100 block of Oak Street

Source: Map imagery from Google
Maps, CNES/Airbus, First Base
Solutions, Maxar Technologies (2021)



“200” block of “North” Pima Rd



Source: “Maricopa County, Arizona,” NSGIC 2020

Point-in-polygon analysis

Auditing precinct assignments



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Auditing precinct assignments

- Different assignments (two systems disagree)
- Multiple assignments (overlaps)
- No assignments (gaps)

Auditing precinct assignments

Jane Doe	
Precinct	2
State house	H1
State senate	S3
City council	C2



Source: Map imagery from Google Maps, CNES/Airbus, First Base Solutions, Maxar Technologies (2021)

802 N 30th St

Source: "Maricopa County,
Arizona," NSGIC 2020



Engaging with the public

Audits and trust



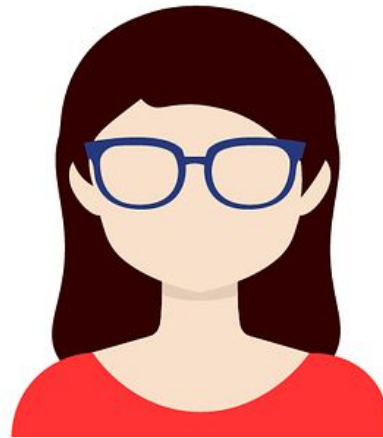
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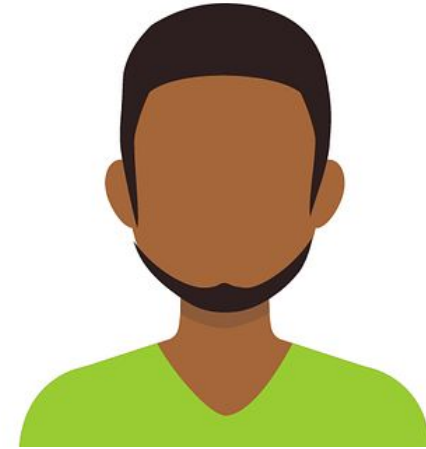
Meet the voters



Sandra



Diane



Felix

Sandra

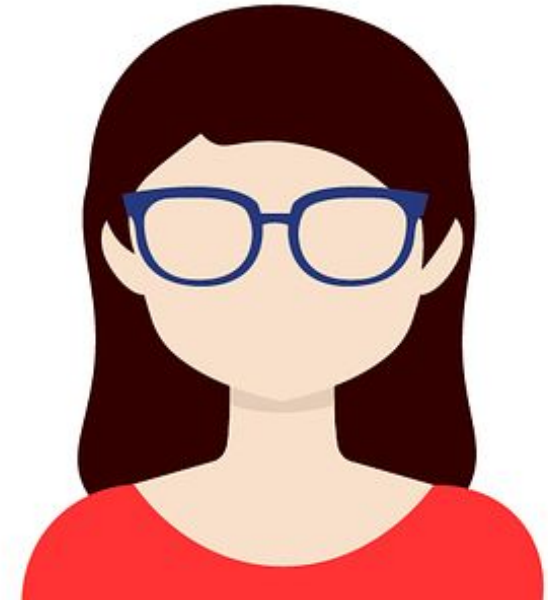
- Focused on a Town Council race
- Knows which Town Council district they live in
- Doesn't find the race on her ballot
- Confronts the poll worker



What's the role of geo-enabled data validation in preventing this situation?

Diane

- Watches a false TV news report
- Calls the local election office and demands to verify precinct assignments
- Asks a local reporter to investigate



What's the role of geo-enabled data validation in responding to this situation?

Felix

- Juggling an unexpectedly busy schedule on Election Day
- Uses an online wait time map
- Runs inside when the wait is short
- Finds the polling location well staffed and well stocked



What's the role of geo-enabled data validation in facilitating this situation?

Best practices building trust

Pulling it all together



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Case Study: North Carolina

- Convened statewide team of specialists to gather NC GIS data, focusing on address points and district boundaries
- Provided data and audit tools to local election officials
- Collaborated with local election officials to fix flagged addresses and assignments

Case Study: North Carolina

- Use contextual data to investigate flagged addresses
- Updates made in the voter registration streetfiles
- Constantly manage geocoding, including updates from new or extended streets, redistricting, and other changes

Case Study: Pennsylvania

- Replacing an aging voter registration system
- New system will include GIS capabilities, and statewide geo-enabling efforts have begun
- The goal is for precinct and precinct split assignments to be done via using GIS technology
- As new data is released as part of the redistricting process, the State will assist counties in updating voter assignments and geocoding

Case Study: Pennsylvania

- Audits are a core part of how Pennsylvania builds voters' confidence in the outcome of elections
- Pennsylvania is among the first states to pilot risk-limiting audits (RLAs)
- Spatial audits will join these audits as tools for building voter confidence

Let's talk

Discussion



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Next steps

- Have a conversation with NSGIC about developing data validation practices
- Reach out to colleagues in GIS or elections to propose new data validation practices
- Implement data validation processes like change logging and periodic archiving
- Use a template to write a data validation plan
- Integrate new data validation processes into existing practices
- Communicate with the public about our spatial data audits and data validation practices
- Ask an expert questions to learn more about data validation processes
- I'm not sure

Share your thoughts

- What resonated with you from today's webinar? (Any "ah-ha" moments?)
- What questions do you have about what we covered today?
- What questions do you have about what we didn't cover today?

We've covered a lot of ground

Wrapping up



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What was your experience with today's webinar?

- Quick poll
- Please complete now to provide feedback and improve the webinar for future participants

Up next: self-paced courses

- Convening a team of specialists
- Collecting & sustaining a voting unit GIS layer
- Implementing a geocoding strategy
- Assembling best available contextual layers
- Defining & implementing data validation processes

techandcivicliflife.org/course/geo-enabled-elections/

Thanks!

Email: hello@techandciviclife.org

Twitter: @HelloCTCL

Website: www.techandciviclife.org

Email: info@nsgic.org

Twitter: @NSGIC

Website: elections.nsgic.org

