



Strategies for Evaluating and Integrating SmartyStreets

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Background: SmartyStreets, AIRA, & KIDSNET

- SmartyStreets is a third-party address standardization, cleaning, validation, and geocoding service
- AIRA selected SmartyStreets as its preferred service provider
- KIDSNET is Rhode Island's integrated child health information system and IIS



Goals for SmartyStreets Initiative in RI

- Improve deduplication of addresses
- Improve quality of addresses for display and mailing
- Improve city identification for school district mapping
- Make geocoding data more accessible

Determine how to best utilize SmartyStreets for all of the above

Where to Begin?

Immunization Information System (IIS)
Implementation Guidance for a
**Shared Address Cleansing
and Geocoding Service**

May 2017





SmartyStreets Integration Opportunities

1. Replace existing routines in batch de-duplication
2. Incorporate into existing web-based data entry
3. Incorporate into existing data imports
4. Clean addresses already in KIDSNET
5. Produce geo-coding and postal service metadata



Testing SmartyStreets with KIDSNET

- Credentials were obtained from AIRA
- SmartyStreets Python SDK (Software Development Kit) was used to develop an interface between KIDSNET and SmartyStreets
- Testing framework was developed to send random samples of KIDSNET addresses to SmartyStreets and evaluate results



Results

- Ease of use:
 - Installing and using the SmartyStreets SDK was straightforward
 - Code samples provided on website were utilized
- Performance:
 - 0.25 seconds for a single address
 - 150 addresses per second through batch interface
 - About 90 minutes for all of KIDSNET's 800,000 addresses
- Output:
 - SmartyStreets "cleaned" duplicate address pairs into a single address
 - Identification of duplicate addresses for 50% of children who had duplicates that KIDSNET's existing deduplication processes was unable to identify



SmartyStreets-enabled Deduplication

- 123 TORTELLOT HILL ROAD, SCITUATE, RI, 02857
- 123 TOURTELLOT HILL ROAD, SCITUATE, RI, 02857
- → **123 Tourtellot Hill Rd, Scituate RI 02857**
- 123 SAUNDERS BROOKE RD, CHEPACHET, RI, 02814
- 123 SAUNDERS BROOK RD, CHEPACHET, RI, 02814
- → **123 Saunders Brook Rd, Chepachet RI 02814**
- 123 MCCARRIE LANE, PORTSMOUTH, RI, 02871
- 123 MCCORRIE LANE, PORTSMOUTH, RI, 02871
- → **123 McCorrie Ln, Portsmouth RI 02871**
- 123 JOSLIN STREET 1ST FL, PROVIDENCE, RI, 02909
- 123 JOSLIN STREET 1ST FLR, PROVIDENCE, RI, 02909
- → **123 Joslin St Fl 1, Providence RI 02909**
- 123 WINTERBERRY RD, SAUNDERSTOWN, RI 02874
- 123 WINTERBERRY RD, NARRAGANSETT, RI 02874
- → **123 Winterberry Rd, Saunderstown, RI 02874**
- 123 POTTER AVE, PROVIDENCE, RI 02907
- 123 POTTERS AVE, PROVIDENCE, RI 02905
- 123 POTTERS ST, PROVIDENCE, RI 02905
- → **123 Potters Ave, Providence, RI 02905**



SmartyStreets Integration Opportunities

1. Replace existing routines in batch de-duplication
 - Low-hanging fruit, low-risk – implemented first
 - 24,000 pairs of duplicate addresses identified
2. Incorporate into existing web-based data entry
3. Incorporate into existing data imports
4. Clean addresses already in KIDSNET
5. Produce geo-coding and postal service metadata

Web-based Data Entry

- Real-time suggestions as the user types
- Demonstration at smartystreets.com

Step 1: Pick one US International

Step 2: Choose a lookup type address components

Step 3: Enter an address

Address line 1:

Address line 2:

City:

State:

ZIP Code:

[Try a sample](#) [View Results](#)

Step 1: Pick one US International

Step 2: Choose a lookup type address components

Step 3: Enter an address

Address line 1:

Address line 2:

City:

State:

ZIP Code:

[Try a sample](#) [View Results](#)

You entered:
3 Capitol HI Providence, RI

✓ Found 1 valid address:

3 Capitol HI Delivery line 1

Providence RI 02908-5034 City, State, ZIP Code, +4 Code

- ✓ Matched street and city and state
- ✗ Confirmed without secondary
- ✗ Missing secondary number

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Web-based Data Entry

- Currently in development in KIDSNET:

Address for Parent/Guardian CURRENTLY DISPLAYED ABOVE

☐ Correct Current Address ☒ Moved To New Address

Street:

Apt: ☒ Good ☐ Bad

City:

State: Zip:

Mailing

Street:

City:

State: Zip:

Apt: ☐ Good ☐ Bad

Historical Parent Addresses - Check to Mark as Current Address

Address for Parent/Guardian CURRENTLY DISPLAYED ABOVE

☐ Correct Current Address ☒ Moved To New Address

Street:

Apt: ☒ Good ☐ Bad

City:

State: Zip: ☒ Verified

Mailing Address ☐ Same as above Address

Street:

Apt:

City:

State: Zip:

Address verified! Click to undo.

Postal City vs. Actual City

- SmartyStreets uses United States Postal Service (USPS) addresses
- USPS city names may not be the actual city in which the property resides
- The example below (a business) resides in and pays taxes to the city of Warwick, RI

You entered:
4372 Post Rd East Greenwich, RI

✓ Found 1 valid address:

4372 Post Rd
Delivery line 1

East Greenwich RI 02818-4123
City, State, ZIP Code, +4 Code

✓ Matched street and city and state

✓ Confirmed entire address

You entered:
4372 Post Rd Warwick, RI

✗ UNKNOWN ADDRESS

4372 Post Rd
Delivery line 1

Warwick RI
City, State, ZIP Code, +4 Code

✗ ZIP+4 did not match

✗ Address not found

You entered:
4372 Post Rd Warwick, RI 02818

✓ Found 1 valid address:

4372 Post Rd
Delivery line 1

East Greenwich RI 02818-4123
City, State, ZIP Code, +4 Code

✓ Matched street and city and state

✓ Confirmed entire address

✗ Unverifiable city/state



USPS address vs. Physical address

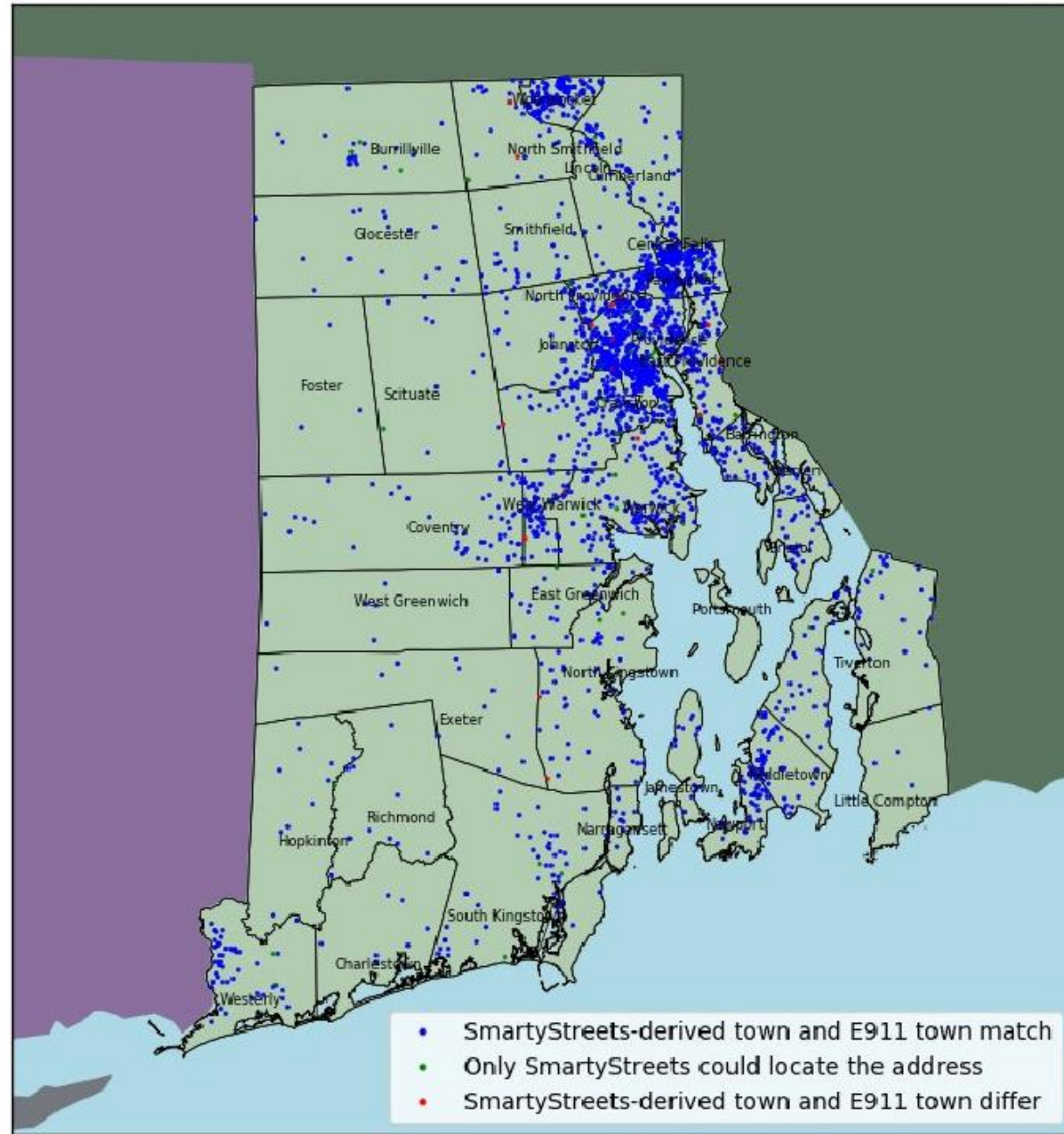
- Most addresses provided to KIDSNET are USPS addresses
- But sometimes a person may intentionally provide a physical, non-USPS city
- So if we force the SmartyStreets (USPS) address into the address field...
 - User types: WARWICK
 - KIDSNET shows: EAST GREENWICH – frustrating!



USPS address vs. physical address

- Solution: “Official City” – a calculated field
- Using SmartyStreets coordinates, geolocate USPS address on the map inside the official city boundaries
- Automatically populate (and in the case of web data entry, *show*) the official city
- **Problem:** SmartyStreets precision may be up to a few hundred yards off; houses near municipal borders may land on the wrong side
- **Solution:** Verify with E911 address database
 - If coordinates are less than a half-mile apart, trust E911 city
 - If more than a half-mile apart, trust SmartyStreets-mapped city

Mapping SmartyStreets geocode to municipal boundaries:
SmartyStreets vs. State E911 database for 3,000 random KIDSNET addresses





Next Steps

- Refine and test web-based data entry
- Implement “Official City” solution followed by back-end address clean-up
 - Consider re-integration best practices and options
 - Important to be aware of potential data loss in cleaned address, e.g.:
 - City name
 - Extraneous info after street address that is not floor, apartment, etc.:
 - 2 WASHINGTON AVE / **WEST HALL ROOM**
 - Street Address



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