CASE STUDY

AIRA

Improving address data quality in immunization information systems (IIS)

Challenge

American Immunization Registry Association (AIRA) member organizations needed more reliable address validation to improve patient immunization record accuracy and reduce duplicate entries across numerous data sources.

Solution

AIRA member organizations integrated Smarty's address validation into daily IIS processes to standardize, validate, and geocode addresses to boost healthcare data quality for immunization coverage rates and outreach.

Results

Smarty's standardization and validation enabled AIRA members to improve address accuracy, with a 2016 pilot showing a 23.94% boost in deliverability and cutting invalid addresses to 12%.

PRODUCTS USED

US Address Verification

smarty

The client: AIRA

AIRA is a nonprofit that supports immunization efforts across the U.S., including territories. They focus on advancing immunization information systems (IIS) through education, standards creation, and collaborative problem-solving. AIRA's members range from state and local immunization registries to software vendors and public health organizations that work together to improve immunization data quality and interoperability across the nation.

One of AIRA's central missions is to help the 61 IIS jurisdictions across the nation to maintain accurate, consolidated lifespan vaccination records. With immunization records often fragmented across various providers and electronic health records (EHRs), address discrepancies can result in duplicate records within IIS databases, complicating patient matching and data tracking.

AIRA embarked on a mission to solve this issue by providing an address validation solution, in partnership with CDC, that would serve as a cornerstone for data standardization across its member organizations.

The challenge: Addressing patient data quality in immunization records

To help improve the quality of consolidated immunization records within the IIS, AIRA wanted to support members as they addressed data quality challenges within demographic data. Even minor address variations can lead to duplicate entries in IIS databases, resulting in fragmented or overrepresented patient histories. These continuing healthcare data quality issues posed challenges for forecasting future vaccine needs, created inefficiencies in patient tracking, and added extensive manual work for public health employees tasked with consolidating patient records.

"The goal of an IIS is always to have a single, comprehensive view of an individual's vaccination history," explained Tesha Lucas, Senior Technical Analyst at AIRA. "But fragmented records caused by small address differences meant public health staff often had to manually review queues of potential duplicates, which used considerable time and resources."

Given these challenges, AIRA and its members determined that a solution focused on address validation and standardization could make a substantial impact.

They sought out a number of leading address validation companies and evaluated their potential benefit for IIS. AIRA selected Smarty to verify and improve address accuracy.

> As of early 2025, AIRA's members have standardized and validated over 4.5 billion records through Smarty's address verification system.

The solution: Piloting and implementing Smarty's address verification for reliable data standardization

Prior to the pilot's launch, AIRA contracted with an independent consultant to conduct a comprehensive evaluation, comparing several services on parameters such as technical support, licensing costs, ease of use, address metadata detail, and industry reputation. Ultimately, Smarty was selected. AIRA launched a pilot in late 2016 to evaluate Smarty's address validation software, testing its impact on healthcare data quality and operational efficiency.

The pilot included 6 IIS programs, each using a different immunization information system platform, including Envision, STC, WIR, and

awardee-developed systems. Several connection methods were tested during the pilot; all connection methods were successful.

As part of the evaluation, AIRA purchased 5 million record validations from Smarty and used these to assess address validation and standardization capabilities quantitatively and qualitatively. The pilot processed 835,539 addresses, which were standardized, validated, and geocoded. During the pilot, the deliverability status of addresses increased by just under 24% (23.94%), a substantial improvement for IIS records. In address cleansing, "deliverability" refers to the likelihood that a mail piece will successfully reach its intended recipient at the provided address, essentially meaning the address is accurate and verifiable enough to be considered a valid delivery point by the postal service.

The process also identified that, on average, 12% of the addresses were undeliverable, flagging AIRA's members not to send to those addresses, avoiding unnecessary mailing costs.

Tesha shared, "Right out of the gate, people quickly saw Smarty's value. It offered an effective solution for standardizing and validating addresses, which directly improved the quality of our records and reduced operational costs."

Tesha has appreciated Smarty's support during and since the pilot, saying, "Smarty is very customer-focused. My experience with Smarty support has always been great. I love and appreciate Smarty's passion for its customers. When I reach out to Smarty, I feel valued and important."

Since implementing Smarty, AIRA's members have been delighted with several operational efficiencies that have led to cost savings, making the software an essential

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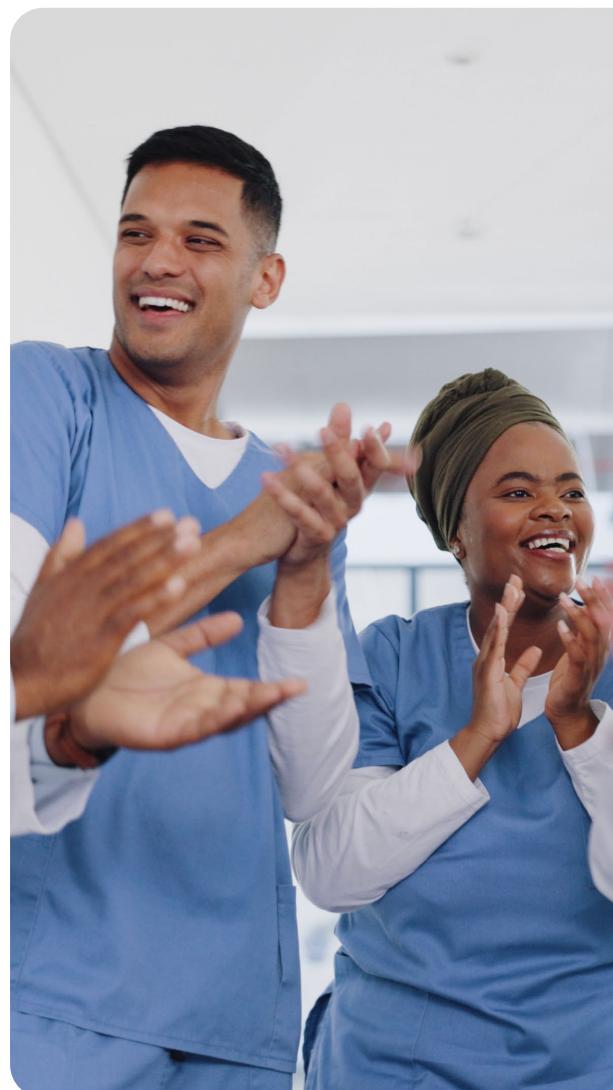
Tesha Lucas
Senior Technical Analyst
AIRA

tool for immunization information systems. These benefits include:

- **Reduced duplication and improved patient matching:** Standardized addresses help merge fragmented patient records, reducing duplication within IIS databases and resulting in more complete patient histories. Rashid Malik, Information Technology Manager with the Maryland Department of Health, stated, "Smarty cleanses and standardizes our incoming address data, resulting in a more accurate and reliable customer database. In addition, it adds value to our database by adding accurate ZIP Codes + 4 and county delineations. This results in more accurate reports. All cleansed data also get latitude and longitude coordinates to help us map our immunization data and identify gaps."

- **Resource optimization:** With Smarty's verification service, public health employees no longer need to spend as much time manually reviewing extensive queues for duplicate records, allowing them to allocate time to higher-priority work.

- **Improved mail deliverability status and cost savings:** Smarty's address validation enables AIRA's members to confirm valid mailing addresses prior to sending reminder or recall notices to their constituents, avoiding the expense of sending immunization reminders to undeliverable addresses.making operational efficiency climb.

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Ongoing success with Smarty

Integrating Smarty into AIRA's offerings has brought substantial and lasting benefits to its members in data accuracy and operational efficiency. Each year at AIRA's national meeting, members share insights on how Smarty has impacted their workflows, including reduced duplicate records and enhancements in patient matching processes. Smarty has continued to support AIRA as they transitioned to Smarty's Core Edition, which offers the same benefits and expanded capabilities

Katie Cruz, Manager of the New Mexico Statewide Immunization Information System, noted how Smarty has helped to improve the IIS experience. "For New Mexico specifically, we have improved our confidence in our geographic patient data for more than three-quarters of our patients. We currently have 3,590,719 patients in the registry with a total of 8,238,804 addresses (including mailing, physical, and historical), and only 1,791,589 of these addresses are unvalidated. This means that over 78% of addresses in our registry have been validated. The majority of these validations were done through automated jobs and HL7 processing, which meant it was minimally labor intensive on our small IIS staff."

Significant research has also pointed to the positive impact of address standardization and validation on improved patient matching. A 2019 article published in the

Journal of the American Medical Informatics Association found unequivocally that data standardization can improve match rates, thus ensuring that patients and clinicians have better data to make decisions to enhance care quality and safety.

AIRA's partnership with Smarty has positioned the association to support the immunization community with a reliable, scalable address standardization solution. As AIRA continues to expand its capabilities and Smarty evolves its product offerings, both organizations look forward to maintaining their partnership, ensuring that accurate, standardized data remains a foundational component of public health efforts across the U.S.

Questions?

Learn more at Smarty.com

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