AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

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SNAPSHOTS

IMMUNIZATION REGISTRY NEWS *from the* AMERICAN IMMUNIZATION REGISTRY ASSOCIATION (AIRA)

PRESIDENT'S REPORT

Dear IIS partners,

Happy June! I hope you are enjoying the first month of summer and all that it brings. We were so happy to see the amazing turnout at last month's AIRA National Meeting! What a great opportunity to connect and learn from each other. This edition of *SnapShots* is a valuable extension of the National Meeting, highlighting some fantastic work from a couple of jurisdictions. First up is Illinois, which worked with AIRA and an independent consulting firm on creating a public-facing Tableau dashboard showing school vaccination coverage. This collaboration is a perfect example of capacity-building supported through AIRA technical assistance offerings. Next, we hear from Louisiana, which partnered with STChealth to determine the effectiveness of late-season flu vaccine reminders. Their findings could help all of us who perform IIS-based reminder/recall for flu vaccine.

This edition of *SnapShots* is a valuable extension of the National Meeting, highlighting some fantastic work from a couple of jurisdictions.

Also included in this edition is an overview of AIRA's Publication Project Workgroup. Ever wonder how to turn a presentation into a publication in a peer-reviewed journal? Read below for more details and resources. This edition concludes with information and links to seven new, free, IIS e-learnings from the Public Health Informatics Institute covering topics ranging from data quality and HL7 messaging to how to conduct immunization evaluation and forecasting activities inside an IIS. I'd add these as mandatory training for any new IIS staff members. Finally, we hope you enjoy the Tech Corner, where you are invited to "think like a hacker" to better design systems that align with user behaviors and needs while also enhancing a system's security.

Best,
Heather Roth, MA
Immunization Branch Chief, Colorado Department of Public Health and Environment
AIRA Board President

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Welcome to *SnapShots*, the American Immunization Registry Association's newsletter about the progress, best practices, and accomplishments of immunization information systems (IIS) across the country. We invite you to share news about your IIS. Email us at info@immregistries.org with information about a successful programmatic or technical innovation, major accomplishment, or milestone that your IIS has reached.

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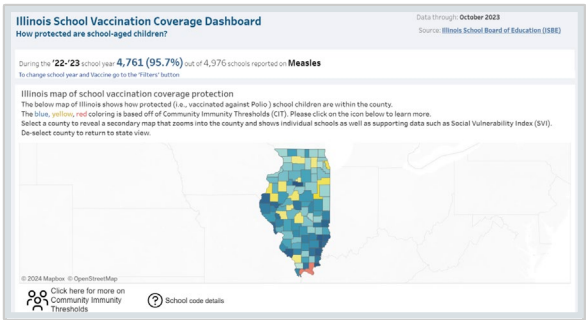
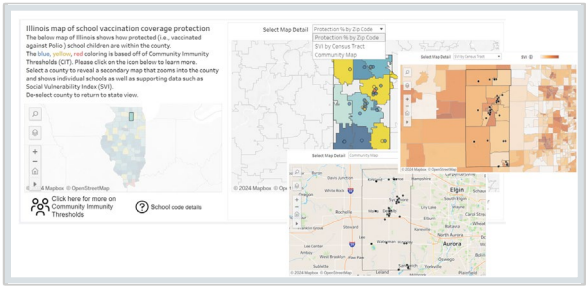
USING TABLEAU TO VISUALIZE SCHOOL-BASED IMMUNIZATION RATES IN ILLINOIS

The Illinois Department of Public Health (IDPH) immunizations epidemiology (EPI) team approached AIRA in the spring of 2023 for technical assistance in creating its public-facing Tableau dashboard for school vaccination coverage.

AIRA used this as an opportunity to pilot an advanced Tableau training program in conjunction with Plante Moran, an independent consulting firm. The goals of the pilot were to:

- Support the development of the Illinois School Vaccination Coverage Dashboard
- Advance the technical Tableau skills of the involved Illinois team
- Garner feedback for future iterations of this project





Collaborating with AIRA and Plante Moran to develop this dashboard, the IDPH immunizations EPI team worked weekly to develop unique visualizations to help tell their story. Each week, the IDPH immunizations EPI team produced a list of questions, and Plante Moran led live tutorials to answer the questions and/or support Illinois in developing the dashboard after the meeting was done.

As novices to Tableau, the IDPH immunizations EPI team was eager to learn how to build out the initial layout of the School Vaccination Coverage Dashboard with Plante Moran. One of the core visions for the dashboard was to provide parents, school personnel, local health departments, and/or other stakeholders flexibility to zero in on schools or areas of interest at different geographical levels. Two of the biggest challenges they faced included (1) having limited space to show a multitude of maps at one time and (2) finding ways users could easily filter the dashboard with just the map instead of relying on the use of specific filter buttons. Plante Moran assisted the IDPH immunizations EPI team in developing a very creative and efficient interactive map, where users are provided with a statewide coverage map in addition to other detailed maps of coverage by ZIP code, school location as defined by social vulnerability (SVI), or neighboring community. Users can alternate between one or two maps within one Tableau Dashboard container by selecting or deselecting counties of choice, in addition to being able to directly view coverage at the state, school-specific, or ZIP code level—all at the same time.

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USING TABLEAU TO VISUALIZE SCHOOL-BASED IMMUNIZATION RATES IN ILLINOIS *Continued from page 2*

The IDPH immunizations EPI team said that immense assistance in structuring and cleaning the data was among the most helpful parts of working with Plante Moran and AIRA. They also noted that Plante Moran provided unique options for dashboard functionality they would not have thought of. Furthermore, it was helpful to have more complex technical assistance that enabled them to make consistent progress in getting the dashboard published. The resulting dashboard took three staff members approximately 25 hours to complete.

The IDPH immunizations EPI team said that immense assistance in structuring and cleaning the data was among the most helpful parts of working with Plante Moran and AIRA.

The IDPH immunizations EPI team learned so much about Tableau and its mapping capabilities through its partnership with Plante Moran and AIRA. They hope to build out more dashboards in the future to creatively share data with a variety of audiences, optimizing space and functionality to facilitate understanding. You can see the complete dashboard on the Illinois Department of Public Health website.

- Submitted by Mikafui Dzotsi, MSC, *Senior Epidemiologist, CDC Foundation;*
Ronke Aina, MPH, *Epidemiologist/Data Analyst, CDC Foundation;*
Taylor Boomsma, MPH, *Epidemiologist/Data Analyst, American Immunization Registry Association (AIRA)*

EXTEND THE REACH OF YOUR WORK THROUGH PUBLICATION

Congratulations to members of the IIS community who gave presentations at the AIRA 2024 National Meeting in Orlando, Florida. But don't make the National Meeting the end of your dissemination efforts; it's just the beginning!

Whether you have an abstract drafted or not, if you have been working on an innovative application of IIS, the Publication Project Workgroup (PPW) would like to encourage you to write up and submit your work for publication in a peer-reviewed journal.

Why publish your IIS innovation and/or evaluation project?

- **Contribute to growing knowledge.** By publishing your innovative applications of IIS, you will contribute to the evidence base supporting IIS as essential public health infrastructure. By publishing, you can be an ambassador for the IIS community, communicating the capabilities and impacts of IIS.
- **Show the power of IIS to drive change.** The majority of immunization research so far has been conducted on survey data collected by CDC and others. But these are small groups and may be subject to inclusion bias. Depending on your jurisdiction's policies, you may have more comprehensive data in the IIS that could support and drive transformation in how your jurisdiction approaches vaccination outreach.
- **Inspire others.** At a recent PPW meeting, workgroup members shared how reading publications inspired new work or research in their jurisdictions. What you share in a publication can provide an "aha" moment for someone else in the IIS community.
- **Elevate your résumé/CV.** Maybe publications are not highly prized in your current position. However, having publications on your résumé or CV can make you stand out from other candidates while exploring future career opportunities.

Publish your IIS innovation and/or evaluation project to:

- ✓ Contribute to growing knowledge
- ✓ Show the power of IIS to drive change
- ✓ Inspire others
- ✓ Elevate your résumé/CV

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EXTEND THE REACH OF YOUR WORK THROUGH PUBLICATION *Continued from page 4*

Here are some examples of recent publications that either drew on IIS data or are relevant to IIS activities:

- AIRA's PPW authored an article that provides some insight on the impact of the pandemic on IIS operations and potential areas for improvements.
- Louisiana recently published an article using IIS data showing the broad impact of innovations undertaken during the COVID-19 vaccination program and how they can be successfully applied against other outbreaks, such as mpox.
- North Dakota recently published an evaluation assessing COVID-19 vaccination rates among North Dakota residents who gave birth between April 2021 and July 2022 and another article that assessed over-immunization, or administration of excess doses of vaccine, in North Dakota's adult population from 2016 to 2021.
- NYC's publication describes the impact of requiring workplace vaccinations during COVID-19 and the potential for this strategy to affect overall vaccination rates.
- Oregon's article assesses whether receipt of outer membrane vesicles (OMV)-based meningococcal group B vaccine (MBV) was associated with subsequent lower gonorrhea prevalence than receipt of non-OMV-based MBV in a group of university students using IIS data.

These are just a few examples of how IIS data can be used to contribute to growing knowledge in the immunization and IIS fields and how IIS projects are excellent candidates for publication in peer-reviewed journals. Now is a great time to start thinking about IIS projects (including AIRA 2024 presentations) that may be written and submitted for publication.

NEED HELP PUBLISHING?

AIRA created a "collegial queries" email address, pubsupport@immregistries.org, where you can send publication-related questions and subject matter experts (SMEs) from the PPW will respond. Any publication-related questions are welcome.

- Submitted by AIRA's Publication Project Workgroup

EFFECTIVENESS OF LATE-SEASON REMINDER/RECALL FOR FLU VACCINATIONS IN LOUISIANA

In 2023, the Louisiana immunization information system (IIS) team partnered with STChealth to determine the effectiveness of late-season reminder/recall for flu vaccinations.

Mail-based reminder/recall is a technique commonly used by immunization departments across the country, as registries do not always contain information for other methods of contact such as email or phone number. According to Louisiana's immunization information system (LINKS), 30% of adults 65–70 years old had received their flu vaccine as of January 1, 2024. Since individuals 65 and older are at a higher risk of developing flu-related complications compared to their younger counterparts, the Louisiana Department of Health (LDH) makes an annual effort to promote flu vaccinations in this population.

Late season reminders/recalls were mailed on January 24, 2024, by LDH to individuals 65–70 years old who had not yet received the 2023–2024 flu vaccine (N=45,526). In accordance with best practices, efforts were made to include artwork of the same race categories as the recipients. Two separate mailers were created, one depicting a white family (n=28,913) and the other with a racially ambiguous family (n=13,451). Individuals received mailers with the artwork that fit most closely with their race designation in LINKS. If race was unknown, mailers depicting the most common race of their ZIP codes were mailed. Of the eligible adults identified, approximately 5% could not be reached due to incorrect addresses (n=2,362). In total, 42,364 reminder/recall postcards were mailed.

Upon completion of the reminder/recall campaign, STChealth extracted flu vaccination data from LINKS for the 2023–2024 season for individuals 65–70 years old. Individuals missing gender were dropped from the final analytic sample (1%). Due to varying levels of missingness, missing race (6%) and ethnicity (24%) were addressed using multiple imputation using chained equations. We created 15 imputed data sets to stabilize our variance estimates. The final analytic sample for individuals aged 65–70 years eligible for a flu vaccine during the 2023–2024 flu season was N=309,129.

Evaluation conducted two weeks after the mailing (January 31, 2024, to February 14, 2024) revealed that approximately 3% of people who were sent the mailers and had not yet received a flu vaccination received the flu vaccine (n=1,099). People vaccinated after reminder/recall were primarily white (47%) and female (53%). Black individuals made up a much higher proportion of those who got vaccinated after reminder/recall (36%) compared to their earlier vaccinating counterparts (23%); however, this is consistent with previous seasonal trends (Figure 1 & 2). Flu vaccine uptake during the 2023–2024 flu

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EFFECTIVENESS OF LATE-SEASON REMINDER/RECALL FOR FLU VACCINATIONS IN LOUISIANA *Continued from page 6*

season was right-skewed, peaking during the week of October 8, 2023, and declined rapidly for the rest of the season (Figure 3). Eighty-four percent of all flu vaccines administered during the 2023–2024 flu season were given by December 3, 2023. There were no statistically significant greater odds of receiving the flu vaccine during the week after the reminders/recalls were mailed compared to the week prior.

Figure 1. Race/ethnicity demographics for flu vaccine recipients aged 65–70 before and after reminder/recall

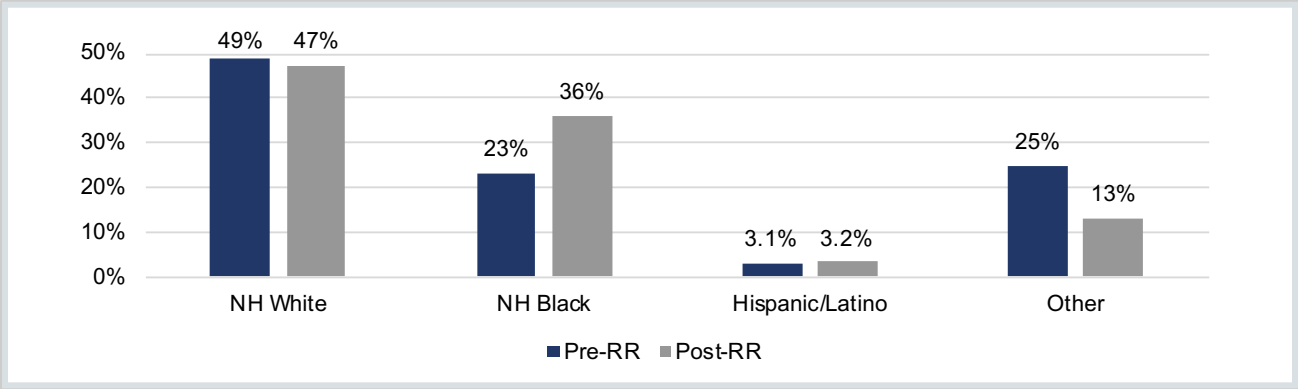
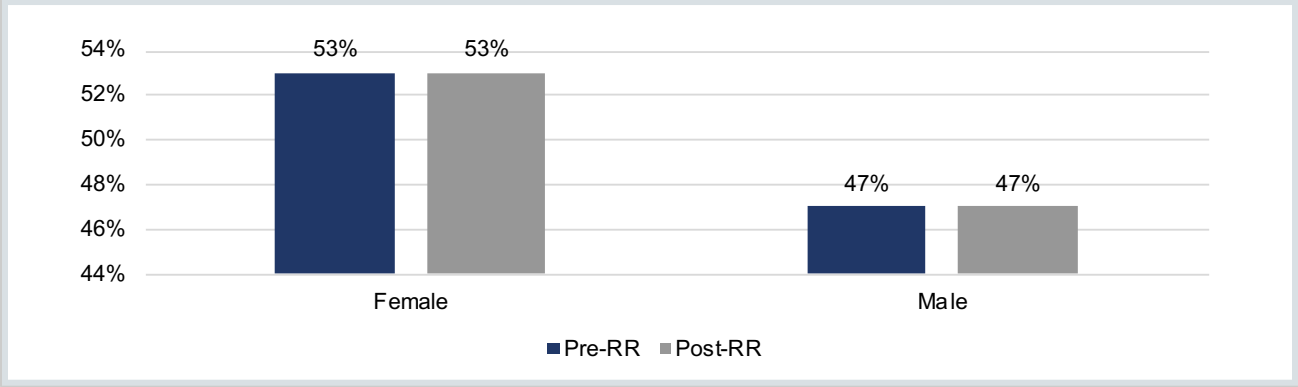


Figure 2. Gender demographics for flu vaccine recipients aged 65–70 before and after reminder/recall



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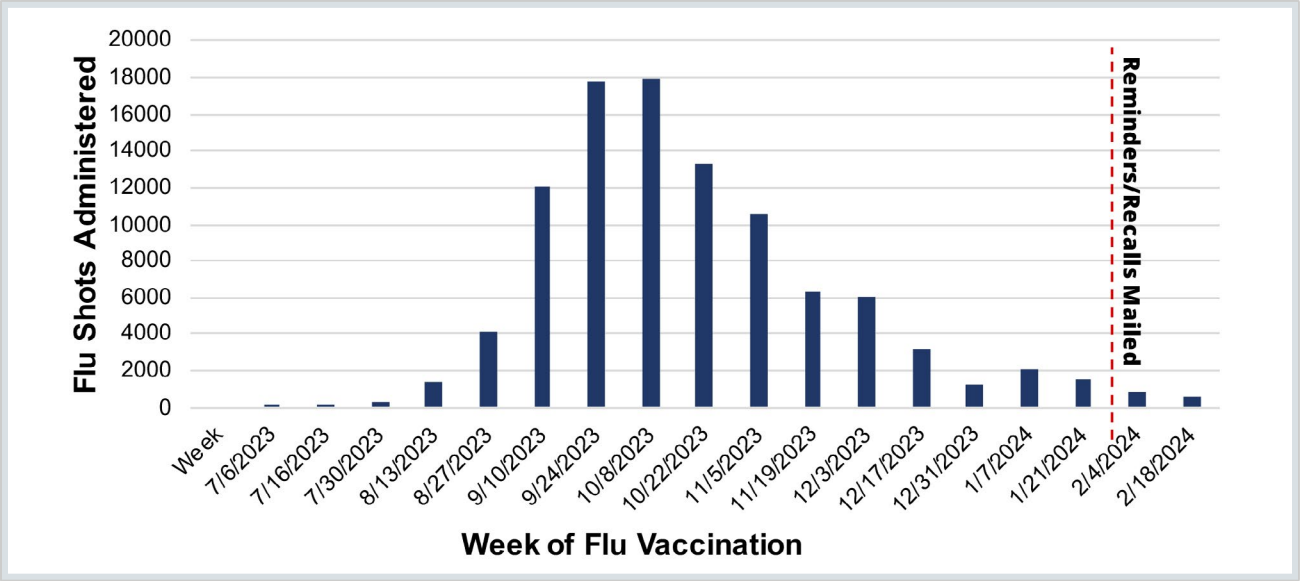
EFFECTIVENESS OF LATE-SEASON REMINDER/RECALL FOR FLU VACCINATIONS IN LOUISIANA *Continued from page 7*

Figure 3. Flu shots administered to Louisiana adults 65–70 years of age for the 2023–2024 flu season



After a late-season reminder/recall campaign in January 2024, an additional 1,099 flu vaccinations were recorded among recipients. Although uptake among reminder/recall recipients remained low at 3%, this reminder/recall campaign was still able to reach unvaccinated individuals. The low uptake rate demonstrates the need for more research into the timing and mode of reminder/recall as well as the inclusion of a control group to help draw firmer conclusions.

After a late-season reminder/recall campaign in January 2024, an additional 1,099 flu vaccinations were recorded among recipients.

- Submitted by Sara Brown, MPH, CHES, *Epidemiologist II, STChealth;*
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NOW AVAILABLE: NEW, FREE IIS E-LEARNINGS FROM THE PUBLIC HEALTH INFORMATICS INSTITUTE

PHII is thrilled to announce that its new spring 2024 lineup of e-learning courses for the IIS community is now available through the Informatics Academy!

These seven courses are designed to support the complex daily operational work and systems maintenance of an IIS team. These offerings cover topics ranging from data quality and HL7 messaging to how to conduct immunization evaluation and forecasting activities inside an IIS. Fundamental courses are ideal for new IIS staff going through orientation, and advanced courses offer a deep dive into technical topics for established team members.

Five existing courses, now updated to provide a smoother user experience and more up-to-date content reflecting the current IIS world, include:

1. Fundamentals of IIS: HL7 Basics
2. Fundamentals of IIS: Data Quality
3. Fundamentals of IIS: Interoperability
4. Advanced HL7 for IIS
5. Immunization Evaluation and Forecasting

Two entirely new courses, reflecting the most up-to-date best practices of IIS, include:

1. Data Use and Evaluation
2. Communications and Change Management

All seven courses have free enrollment, thanks to funding provided through a CDC cooperative agreement. Enroll here!

PHII is grateful for ongoing collaborations with CDC, AIRA, and jurisdictional IIS teams from around the United States in developing and refining all our tools. Make sure you're signed up to receive PHII's email updates to stay informed of new resources and technical assistance opportunities. Send any questions or comments on PHII's IIS e-learning course offerings to iis@phii.org.

- Submitted by Piper Hale, MPH, *Associate Director of Communications, Public Health Informatics Institute (PHII)*

TECH CORNER | PROVIDING PUBLIC HEALTH EXPERTS WITH PRAGMATIC EXPLANATIONS OF TECHNICAL CONCEPTS

THINK LIKE A HACKER: UNDERSTANDING THE PATH OF LEAST RESISTANCE

The term "hacker" often conjures images of a lawbreaker intent on system disruption.

However, its original use is less sinister, referring to someone adept at finding simple solutions to complex problems—much like how "life hacks" simplify everyday tasks. Hackers operate on the principle of finding the path of least resistance to achieve their goals.

Consider a highly secured government facility: while it may feature stringent front-door security, hackers wouldn't necessarily challenge this system head-on. Instead, they might exploit simpler vulnerabilities, such as employees' propping open a back door to make reentry after breaks easier. This "hack" by employees forms a security breach more inviting than any sophisticated frontal assault.

A similar situation arises in workplace settings. For instance, a department handling patient data might circumvent convoluted login account creation processes by sharing a single user account with a predictable password. As a student, I worked in a department that shared a single, yet critical, account used for research; we knew that the current password on the joint account always included the current month and year. This "hack" may have streamlined access, but it also created an accountability nightmare. If a security breach, such as data misuse had occurred, there would have been no way for the university to trace individual user actions.

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The "AIRA Tech Corner" is published as a blog. Read more on the AIRA website.

TECH CORNER | PROVIDING PUBLIC HEALTH EXPERTS WITH PRAGMATIC EXPLANATIONS OF TECHNICAL CONCEPTS

THINK LIKE A HACKER: UNDERSTANDING THE PATH OF LEAST RESISTANCE *Continued from page 10*

To enhance security, system designs must align with user behaviors and needs, making compliance the easiest course of action. For the secure government facility, providing a safe yet convenient way for employees to take breaks without bypassing security checks would close a critical vulnerability. Similarly, simplifying the login account creation process in workplace environments could prevent insecure workarounds.

Ultimately, by understanding the hacker mindset and anticipating the path of least resistance, we can better design systems that align with user behaviors and needs. This approach not only enhances security but also ensures that the simplest process is also the most secure.

To enhance security, system designs must align with user behaviors and needs, making compliance the easiest course of action.

- Submitted by Nathan Bunker, *Senior Technical Standards Architect, American Immunization Registry Association (AIRA)*

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