

# **Integrating CDC's Vaccine Tracking System (VTrckS) Application Programming Interface (API) with NYC's Vaccine Inventory Management Application**

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**AIRA 2025 National Meeting**

**Spokane, WA**

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# Outline

- Background
- Objectives
- Methods
- Results
- Conclusion
  - Key Outcomes and Benefits
  - Next Steps



# Background



# Citywide Immunization Registry (CIR) Overview

- The Immunization Information System (IIS) for New York City (NYC)
  - Began citywide in 1997
  - Contains >15 million patient records and >180 million immunizations
  - The Online Registry is the CIR's user interface for providers
  - Reporting of immunizations for children 0-18 years is mandatory
  - Reporting for adults 19 years and older requires consent



# NYC's Vaccination Programs

- Vaccines for Children (VFC) Program
  - ~1,250 provider sites enrolled
  - NYC distributes ~3 million doses of vaccines annually
- Vaccines for Adult (VFA) Program/COVID-19 Bridge Access
  - Ended in August 2024
  - 145 provider sites enrolled
  - Distributed >21,000 COVID-19 doses
- Mpox Program
  - Ended August 2024
  - 129 provider sites enrolled
  - Distributed >10,000 Jynneos doses



# Vaccine Inventory Management (VIM) Module

- In 2013, NYC launched the public facing VIM module for VFC providers in the CIR Online Registry user interface
  - Ordering recommendations based on reporting, inventory, seasonality and a 5- week safety stock
  - Automatic inventory decrementing upon vaccine administration
  - Vaccine wastage/expiry reporting
  - Order status tracking
  - Ordering and inventory reports



# Internal Vaccine Inventory Management Application (VIM App)

- Developed with HLN (CIR's vendor) at the start of the COVID-19 vaccination campaign
- Utilized by immunization staff to document and track vaccine transfers between facilities
- Provides access to real-time updates of vaccine inventory
- Addresses challenges of vaccine distribution including urgent vaccine needs, changing vaccine availability, and supply limitations



# Federal Vaccine Roll-out

2020

- New COVID-19 Vaccine Products
- Controlled Vaccine Ordering and Distribution by CDC

2021-2023

- Additional COVID-19 Vaccine Products
- MPOX Outbreak - Jynneos Vaccine
- RSV Immunization Products on CDC Allocation
- COVID-19 Vaccine Commercialization

2024

- Jynneos Vaccine Commercialization
- RSV Immunization Products on CDC Allocation



# Rapid federal vaccine roll-out leads to an inefficient and unmanageable manual vaccine update process in VIM.

1



2



3





# Vaccine Management Automation

- The pandemic, the federal vaccine roll-out, and ordering controls on vaccine products highlighted the need for automated processes and the elimination of:
  - Manual updates of available vaccine product details (e.g., NDC, CVX, brand, manufacturer, cost)
    - Heavily dependent on CIR vendor availability
      - Pivot to focus on CIR vaccine updates
      - Time sensitive updates



# Program Objectives

- Increase overall efficiency of vaccine management
  - Responsiveness, timeliness and availability of vaccine products for providers
- Decrease dependency on CIR staff and vendor
- Modernize and enhance the CIR
- Improve NYC's preparedness for emergency public health events involving vaccine preventable diseases



# Methods

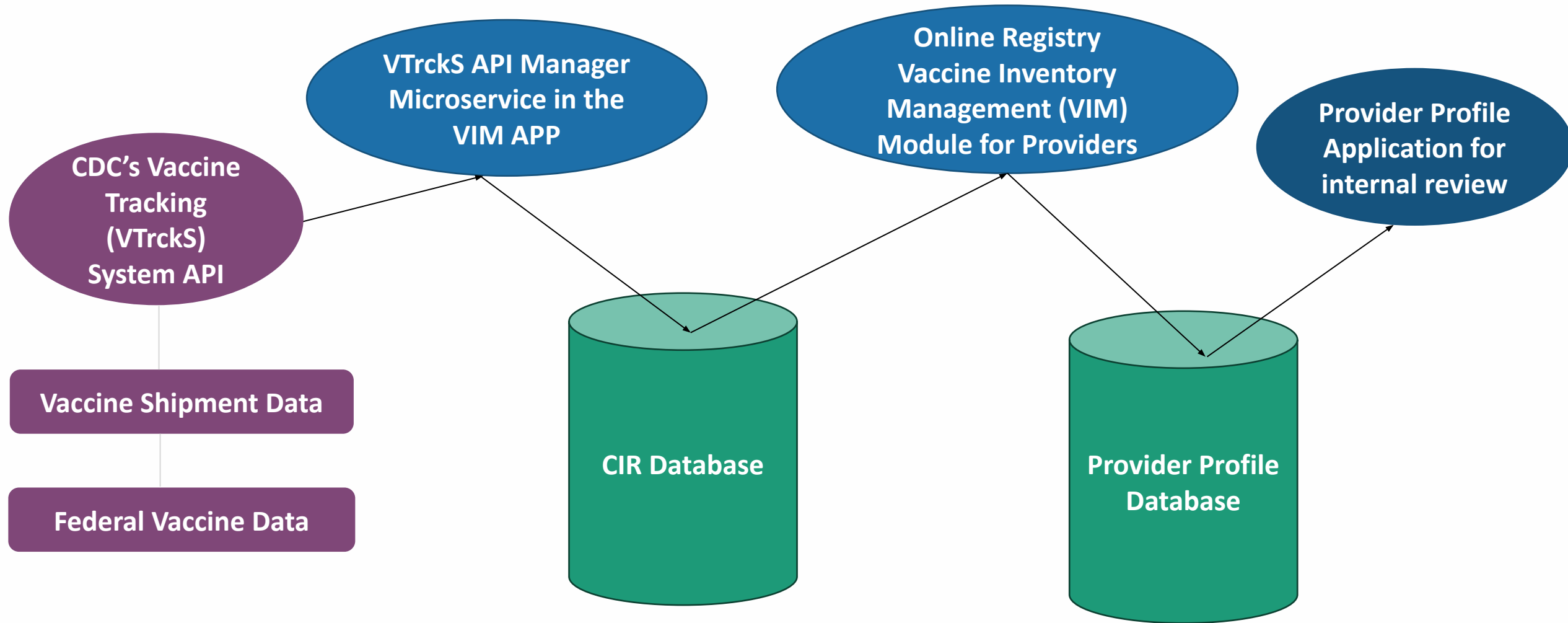


# CDC's VTrckS API Grant

- Applied and received the Vaccine Tracking System (*VTrckS*) Automation using an Application Programming Interface (API) Supplemental Grant: *Phases 1 and 2* developed by CDC in July 2023
  - Phase 1 - Inbound vaccine shipment data
  - Phase 2 - Master data such as the Federal, Pandemic, Non-Federal vaccines and county codes lists
- Required an internal dashboard to manage, access, audit and handle errors



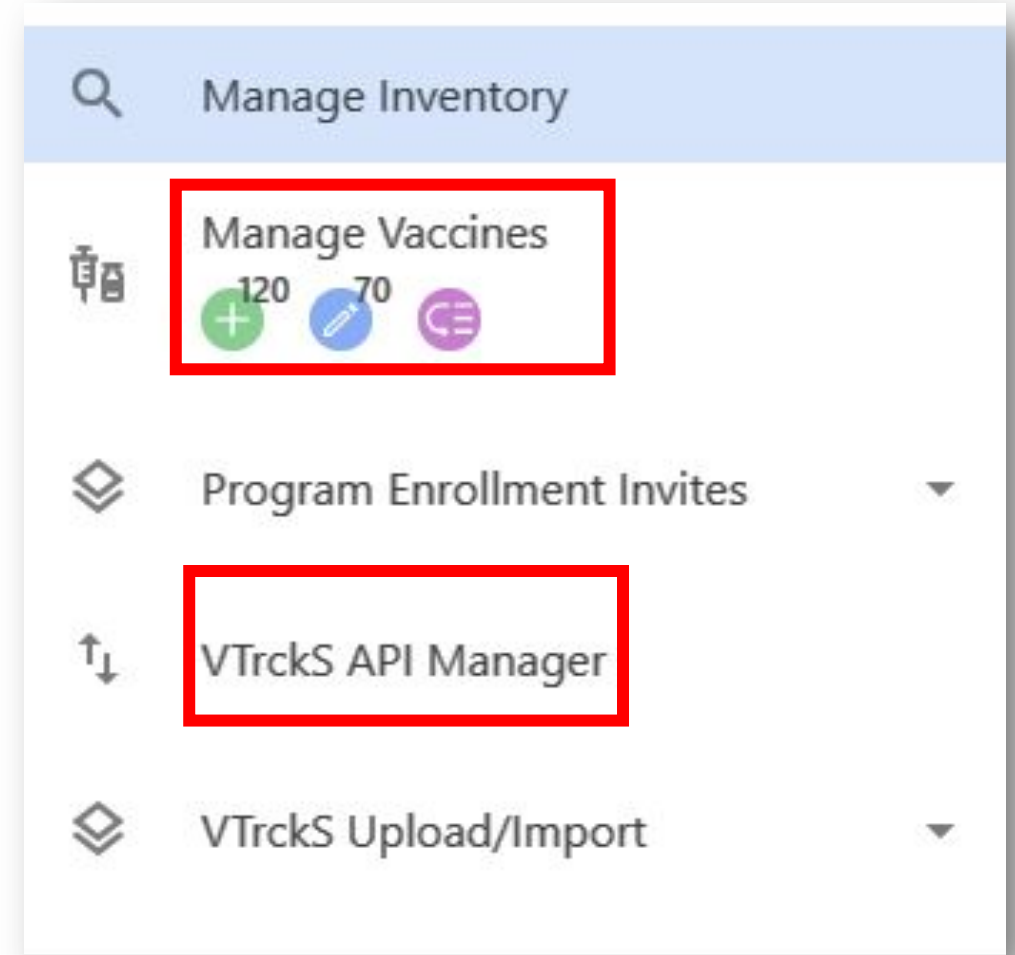
# VTrckS API Integration Overview





# VIM App Enhancements

- VTrckS API Manager
  - Dashboard launched March 2024
  - Activity Log menu
  - On-demand request capability
- Manage Vaccines
  - User interface launched in September 2024
  - Allows product updates and ordering control





# VTrckS API Manager Dashboard

VTrckS API Manager

ACTIVITY LOG ON-DEMAND REQUEST SHIPMENT IMPORT LOG PROVIDER MASTER LOG

4 FILTERS

Run ID	Request Type	Status	Date/Time Initiated	Date/Time Completed ↓	Trigger Type
2500003093	FEDNDCLIST	SUCCESS	3/31/2025, 6:05:00 PM	3/31/2025, 6:05:01 PM	Scheduled
2500003084	FEDNDCLIST	SUCCESS	3/31/2025, 4:05:00 PM	3/31/2025, 4:05:00 PM	Scheduled
2500003073	FEDNDCLIST	SUCCESS	3/31/2025, 3:49:58 PM	3/31/2025, 3:49:58 PM	On Demand
2500003044	FEDNDCLIST	SUCCESS	3/31/2025, 11:05:00 AM	3/31/2025, 11:05:01 AM	Scheduled
2500003024	FEDNDCLIST	SUCCESS	3/31/2025, 5:05:00 AM	3/31/2025, 5:05:02 AM	Scheduled

VTrckS API Manager

ACTIVITY LOG ON-DEMAND REQUEST SHIPMENT IMPORT LOG PROVIDER MASTER LOG

Federal NDC List

Shipment Data

Federal NDC List

Pandemic NDC List

Non-Fed NDC List

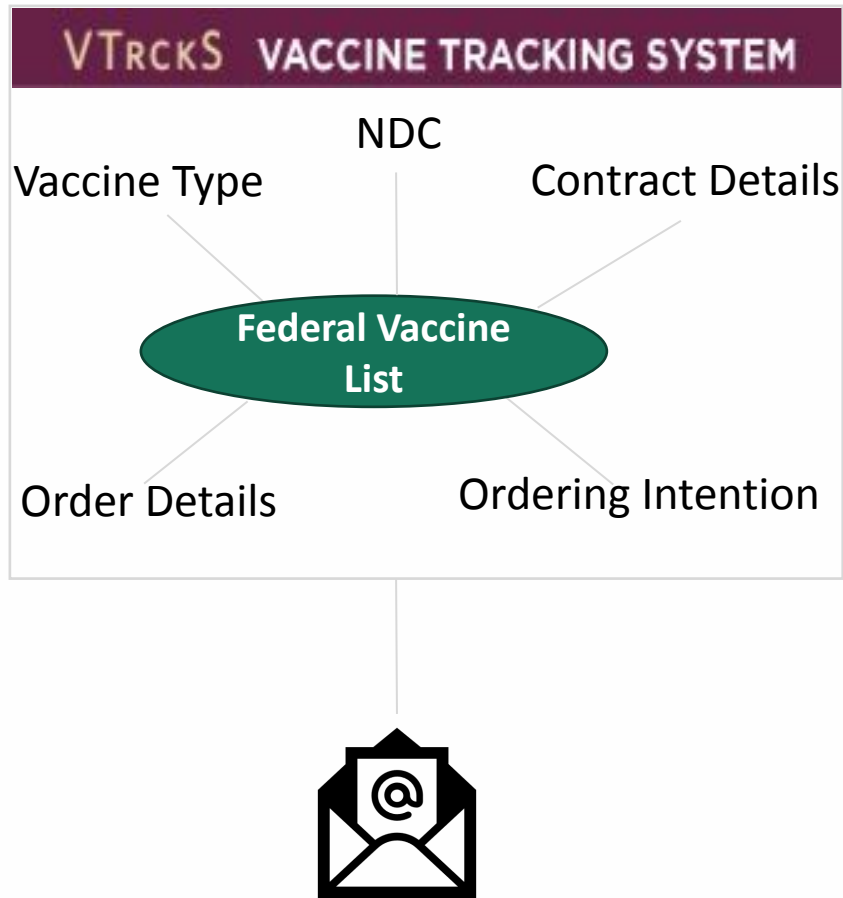
Status Interface

Update

SUBMIT




# Federal Vaccine List Data



- Vaccine Type
- NDC Availability
- Contract Details
  - Number
  - Dates
  - Cost
- Order Details
  - Direct Ship
  - Minimum Bulk
  - Override Flag
- Ordering Intention



# CDC Web-based Resources: IIS Code Sets



## Immunization Information Systems (IIS)

### Code Sets

- CVX**
  - CVX Mapped to Vaccine Groups
  - CVX Mapped to VIS
- MVX**
  - Product Name Mapped to CVX/MVX
- NDC Crosswalk Tables**
- CPT Mapped to CVX**
- VIS Barcode Lookup Table
- VIS URL Table
- Fall Season Respiratory Vaccine Codes

## IIS: Current HL7 Standard Code Set CVX -- Vaccines Administered

### Email Updates

Subscribe to receive email updates about this page.

[Get email updates](#)

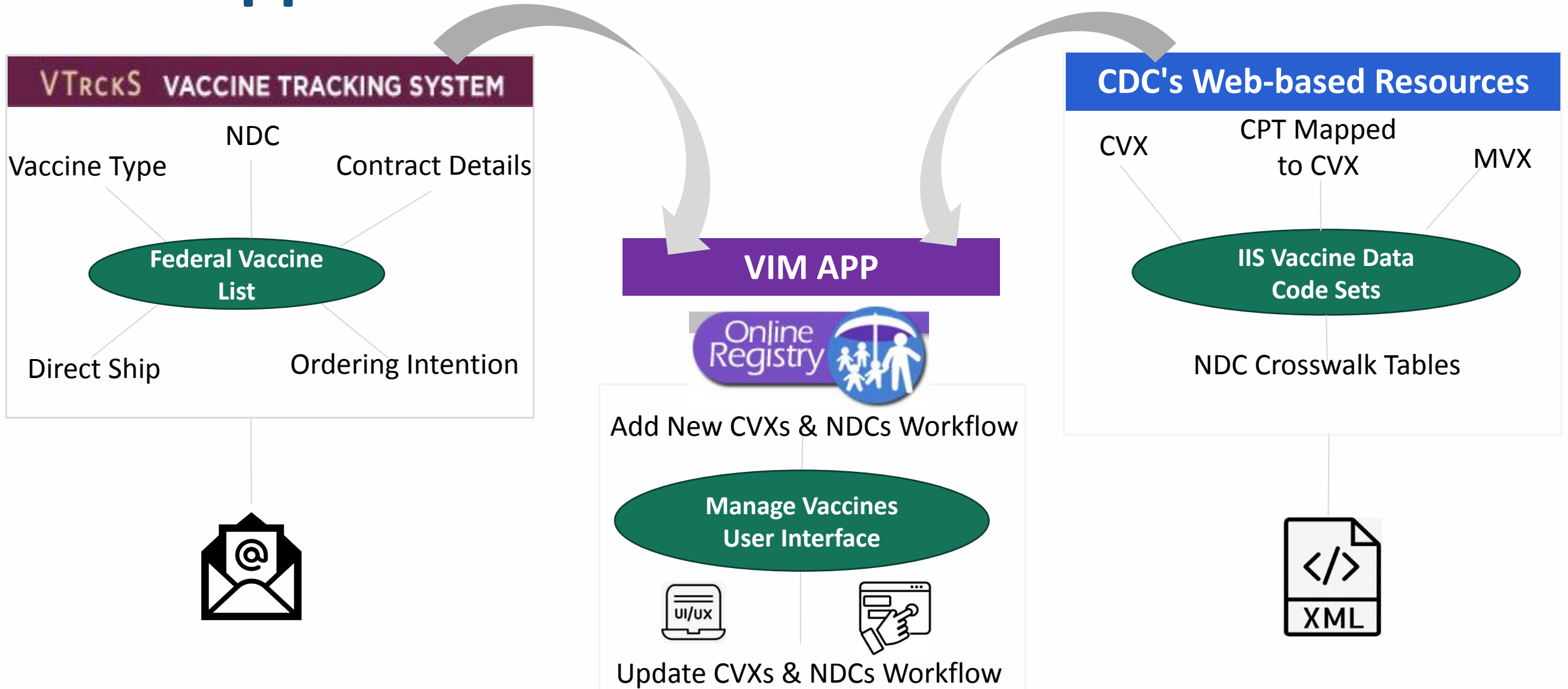
The CDC's National Center of Immunization and Respiratory Diseases ([NCIRD](#)) develops (and maintains) the current HL7 standard code set for vaccines administered (CVX). The table below has the most up to date values. It includes both codes available in the US. CVX codes for inactive vaccines allow transmission of historical immunization data. The specific trade name (manufacturer) code is paired with a CVX (vaccine administered) code, the specific trade name code should be used for immunization messages using either HL7 Version 2.3.1 or 2.5.1. The CVX code set for certification can be found on the [archive page](#).

The Status column indicates if the vaccine is currently available in the United States.

- **Active:** A currently available administrable vaccine
- **Inactive:** An administrable vaccine formulation that is no longer available for patient use



# VIM App Data Flow & CDC Web-based Resources





# **Add New CVXs & NDCs Workflow in Manage Vaccines**



# Add New CVX

120

+

ADD

70

✎

UPDATE

⚙

QUICK ADD  
DISPLAY ORDER

The full list of available NDCs can be viewed on the View NDC List screen under VMU Management in Provider Profile.

57 New CVXs Identified

63 New Sale NDCs Identified

+

ADD VACCINE

Showing 57 of 57

New CVX List

CDC Extract Date & Time: 4/7/2025, 5:00:01 AM

CVX Code ↑	CDC Short Description ↑↓	Status ↑↓	Last Updated by CDC ↑↓	
> 132	DTaP-IPV-HIB-HEP B, historical	Inactive	2018-05-10	ADD
✓ 140	Influenza, split virus, trivalent, PF	Active	2024-05-02	ADD

Additional Details

CDC Full Vaccine Name

Influenza, split virus, trivalent, injectable, preservative free

CDC Notes

Trivalent code reactivated for 2024/2025 season



# Review & Edit CVX Details

## Add CVX Identified from CDC Data

CVX Code	CDC Short Description	CDC Full Vaccine Name	
140	Influenza, split virus, trivalent, PF	Influenza, split virus, trivalent, injectable, preservative free	
Status	CDC Notes		Last Updated by CDC
Active	Trivalent code reactivated for 2024/2025 season		5/2/2024
Last Modified By	Last Modified Date & Time		
tammyseithel@hln.com	3/21/2025, 9:58:44 AM		

☐ Not Otherwise Specified (NOS) ☐ HL7 Historical Only

Date Licensed

01/01/1993



Vaccine Long Name \*

Influenza, IIV3, IM, Presrv-free

Consumer Display Name \*

Influenza, IIV3, p-free

Name used in MVR

CIR Vaccine Type \*

FLU

Vaccine Group \*

800 - Influenza

☐ Suppress OR

☐ Suppress in OR Add Current Vaccine List

☐ Suppress in Quick Add Vaccine List

☒ VFC Provided

CANCEL

RESET

SAVE & ADD NDC INFO >

SAVE



# Add New NDCs

108  
+  
ADD

52  
UPDATE

QUICK ADD  
DISPLAY ORDER

The full list of available NDCs can be viewed on the View NDC List screen under VMU Management in Provider Profile.

36 New CVXs Identified

72 New Sale NDCs Identified

+ ADD VACCINE

Showing 72 of 72

New Sale NDC List

CDC Extract Date & Time: 4/2/2025, 11:39:51 AM

	CVX Code ↑	Sale NDC Number ↑↓	Vaccine List Type ↑↓	Manufacturer ↑↓	CDC Description ↑↓	Ordering Intention	Contract Start Date	Contract End Date	
>	140	49281-0424-50	Federal	PMC	Flu;SYR;10-pack(TIV)	ADU PED	12/31/2023 12/31/2023	6/30/2025 6/30/2025	ADD
>	143	51285-0138-50		TVA					ADD



# Review & Add NDC Details

## CVX Details

CVX Code	Vaccine Long Name	Consumer Display Name	Status
140	Influenza, IIV3, IM, Presrv-free	Influenza, IIV3, p-free	Active

[Show additional CVX details](#)

Sale NDC Number	Vaccine List Type	CDC Vaccine Type	CDC Description	<a href="#">Manufacturer *</a>
49281-0424-50	Federal	FLU (M)	FLU; SYR; 10-pack (TIV)	PMC - Aventis Pasteur Inc.

NDC Group *	Ordering Increment	Brand Name *
Influenza	10	Fluzone IIV3 PF 6M+

Pkg Length	Pkg Width	Pkg Depth	Doses per Package	Presentation *
0 in.	0 in.	0 in.	10	0.5 mL SYR; 10-pack

Device *	ICD9	CPT Code	<input checked="" type="checkbox"/> Allocated Vaccine - Quantity
0.5 mL SYR; 10-pack		90656 - Influenza virus vaccine, triva...	10,000

☒ Returnable ☒ Preservative Free ☒ Store in Refrigerator ☐ Store in Freezer ☐ Store in Ultra-cold Freezer

## Pediatric (PED) Ordering Details

Contract Number	Contract Start Date	Contract End Date	Minimum Bulk	Unit Size	Package Size	Cost
2202418412	12/31/2023	6/30/2025	100	1	10	\$15.072

<input type="checkbox"/> Direct Ship	<input type="checkbox"/> Override Flag	<input checked="" type="checkbox"/> Orderable	<input checked="" type="checkbox"/> Inventory Current	<input checked="" type="checkbox"/> Allow Manual Ordering
--------------------------------------	--	---	---	---

[CANCEL](#)[RESET](#)[< BACK](#)[SAVE !\[\]\(4f6bf54ae7e4144a72d78316053e412d\_img.jpg\)](#)



# Update CVXs & NDCs Workflow in Manage Vaccines



# Update Existing CVX

Update Vaccines

120

+

ADD

70

UPDATE

QUICK ADD

DISPLAY ORDER

The full list of available NDCs can be viewed on the View NDC List screen under VMU Management in Provider Profile.

18 CVXs with Updates Identified

52 Sale NDCs with Updates Identified

UPDATE VACCINE

Showing 18 of 18

Updates to CVX List

CDC Extract Date & Time: 4/7/2025, 5:00:01 AM

CVX Code	CDC Short Description	Status	Last Updated by CDC	
140	Influenza, split virus, trivalent, PF	Active	2025-04-01	<div>VIEW &amp; UPDATE</div>
<div>Additional Details</div> <div><div><div>CDC Full Vaccine Name</div><div>Influenza, split virus, trivalent, injectable, preservative free</div></div><div><div>CDC Notes</div><div>Trivalent code reactivated for 2025/2026 season</div></div></div> <div><div>* Data that has an update requiring approval is displayed in orange</div></div>				



# Update CVX & Confirm Changes

## Updates Identified on CVX Data

Review and apply or ignore the updates made to CVX Code **140**. The CVX Code will be removed from the Updates to CVX List grid after all updates are processed.

### Updates to CVX Code 140

Field Name	Previous Value	New Value	Apply	Ignore
CDC Notes	Trivalent code reactivated for 2024/2025 season	Trivalent code reactivated for 2025/2026 season	<input type="radio"/>	<input type="radio"/>
Last Updated by CDC	2024-05-02	2025-04-07	Acknowledge as reviewed	

☒ I acknowledge that I have reviewed the changes applied to the CVX Code.\*

CLOSE

CONFIRM 




# Review & Update NDC Details

## CVX Details

CVX Code	Vaccine Long Name	Consumer Display Name	Status
140	Influenza, IIV3, IM, Presrv-free	Influenza, IIV3, p-free	Active

[Show additional CVX details](#)

 Inventory exists for this Sale NDC Number. Brand, Manufacturer and Device cannot be updated.

Sale NDC Number	Vaccine List Type	CDC Vaccine Type	CDC Description	Manufacturer *
49281-0424-50	Federal	FLU (M)	FLU; SYR; 10-pack (TIV)	PMC - Aventis Pasteur Inc.

NDC Group *	Ordering Increment	Brand Name *
Influenza	10	Fluzone IIV3 PF 6M+

Pkg Length	Pkg Width	Pkg Depth	Doses per Package	Presentation *
0 in.	0 in.	0 in.	10	0.5 mL SYR; 10-pack

Device *	ICD9	CPT Code
0.5 mL SYR; 10-pack		90656 - Influenza virus vaccine, triva...

☒ Allocated Vaccine - Quantity  
10,000

☒ Returnable ☒ Preservative Free ☒ Store in Refrigerator ☐ Store in Freezer ☐ Store in Ultra-cold Freezer

## Pediatric (PED) Ordering Details

Contract Number	Contract Start Date	Contract End Date	Minimum Bulk	Unit Size	Package Size	Cost
2202418412	12/31/2023	6/30/2025	100	1	10	\$15.072

☐ Direct Ship ☐ Override Flag ☐ Orderable ☒ Inventory Current ☒ Allow Manual Ordering

[CANCEL](#)[RESET](#)[< BACK](#)[SAVE !\[\]\(56549452e01ca28bdf2500ced9653143\_img.jpg\)](#)



# Vaccine product is available in CIR for ordering

**Online Registry** Search MyList Reports Add/Edit Tools Dashboards Recall Adv. Event VMM Set Up QuickAdd ? Help Home

Welcome **Georgia Elysee**  
Facility: **CITYWIDE IMMUNIZATION REGISTRY - 9009X01 (CIR)**  
Address: **42-09 28 STREET**

**Vaccine Inventory Management** Reports Other VFC Forms Standing Orders Aggregate Form

Order VFC/VFA Vaccine Order Influenza Vaccine Adjust Inventory Vaccine Returns/Wastage Vaccine Order Tracking

► Hide/Show

- Step 1 of 6 Review vaccine news and order history
- Step 2 of 6 Confirm shipping and storage information
- Step 3 of 6 Enter VFC/VFA inventory
- Step 4 of 6 Enter VFC/VFA order quantities**
- Step 5 of 6 Review and confirm order amounts
- Step 6 of 6 Receive confirmation number

**Request Order Quantities**

This tool makes ordering recommendations primarily based on your reporting to CIR

Vaccine Type / Brand	Doses Per Package	Unit Presentation	Inventory on Hand by Dose	Order Quantity by Dose	Order Subtotal by Dose	Recommended Quantity by Dose	Quantity Evaluation
<b>Influenza</b> <i>(Product is under CDC Allocation)</i>							
Fluzone IIV3 Preservative Free, 6M+	10	0.5mL single dose syringe, 10 pack	0	0	0	0	Order Total Okay

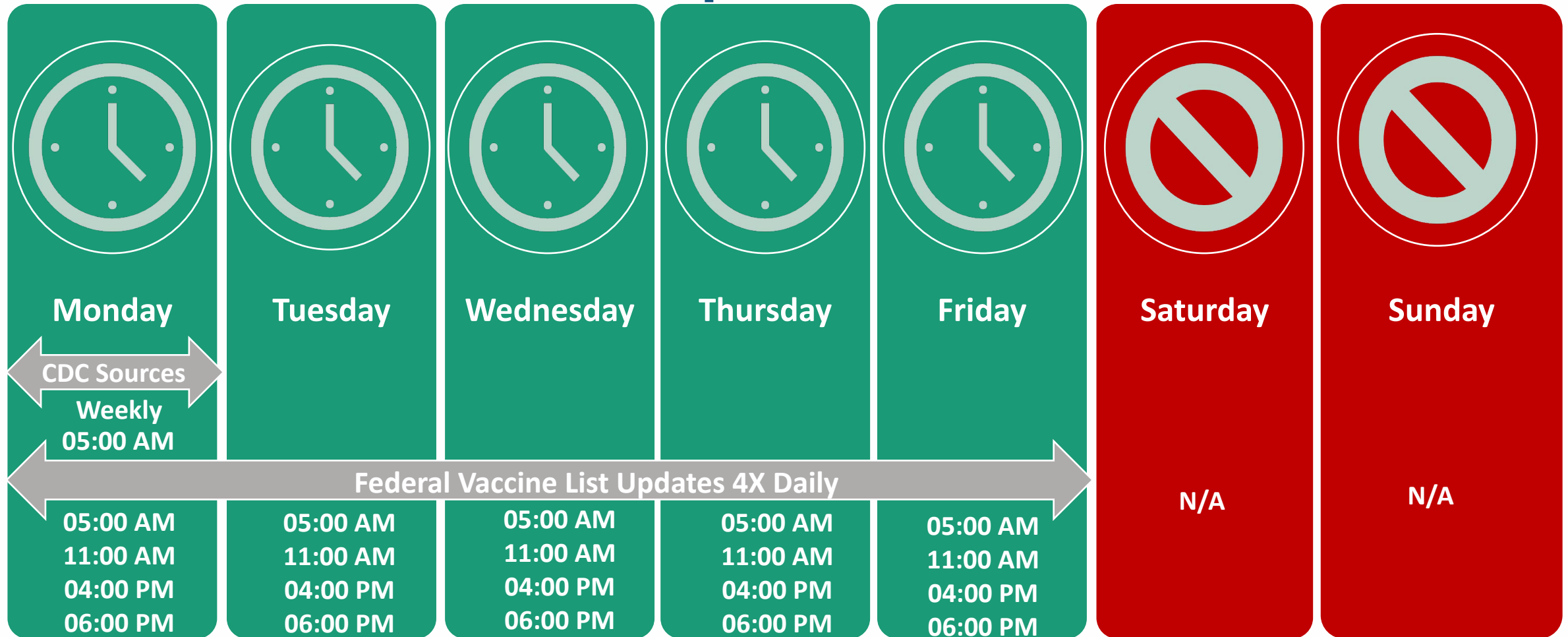
**HLN CONSULTING** **NYC Health**



# Results



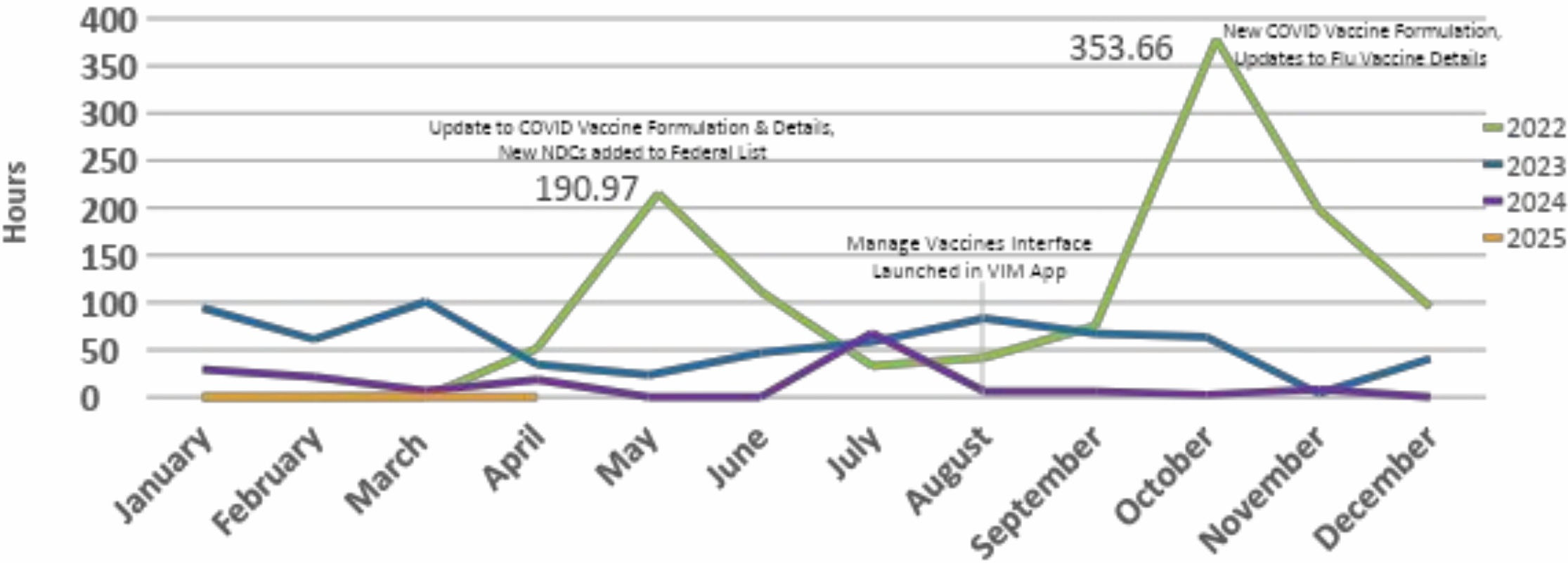
# Increase Timeliness and Availability of Vaccine Updates





# Increase Efficiency of Vaccine Management

Hours Spent on Vaccine Updates by CIR Vendor per Month  
January 2022 – April 2025  
N= 1,997





# Conclusion



# Key Outcomes and Benefits

- Data integration allows us to
  - Automate the collection of vaccine product details
  - Improve consistency across CIR systems, reduce errors and standardize workflows
  - Improve timeliness and availability of vaccine products
- Identify areas for further optimization to improve efficiency
- Accurate and up-to-date data is crucial for efficient vaccine management



# Next Steps

- Leverage the data obtained through the VTrckS API integration
- Continue to automate and modernize the CIR
- Enhance the VIM App through CDC's VTrckS API grant phase 3 to automatically submit data to CDC
  - Provider Master Data – Completed
  - Inventory Data – In progress
  - Provider Order Data – In Progress
  - Vaccine Returns/ Wastage – In Progress



# Resources

- CDC Vaccine Codes sets
  - CVX
    - <https://www2.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=cvx>
  - MVX
    - <https://www2.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=mvx>
  - NDC Crosswalk Tables
    - [https://www2.cdc.gov/vaccines/iis/iisstandards/ndc\\_crosswalk.asp](https://www2.cdc.gov/vaccines/iis/iisstandards/ndc_crosswalk.asp)
  - CPT Mapped to CVX
    - <https://www2.cdc.gov/vaccines/iis/iisstandards/vaccines.asp?rpt=cpt>



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