#### **National Center for Immunization & Respiratory Diseases**



## Interim Estimates of 2023–24 Seasonal Influenza Vaccine Effectiveness

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On behalf of CDC Influenza Vaccine Effectiveness Collaborators

Advisory Committee on Immunization Practices

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#### CDC Influenza Vaccine Effectiveness Networks

Four networks to evaluate vaccine effectiveness (VE) against laboratory-confirmed influenza for children, adolescents, and adults in the outpatient and inpatient settings

#### CDC Influenza Vaccine Effectiveness Networks

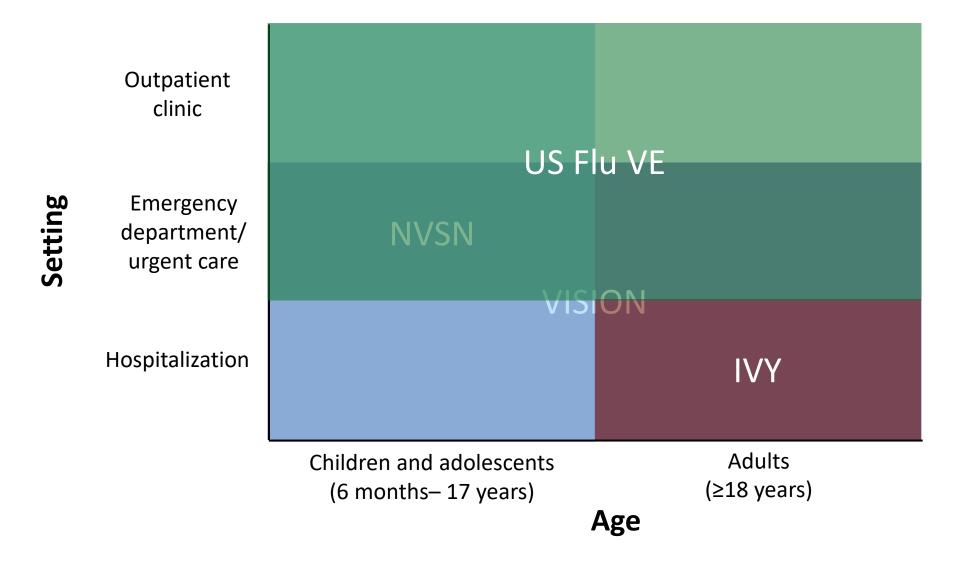
**Investigating Respiratory Viruses in the Acutely III (IVY)** 

**New Vaccine Surveillance Network (NVSN)** 

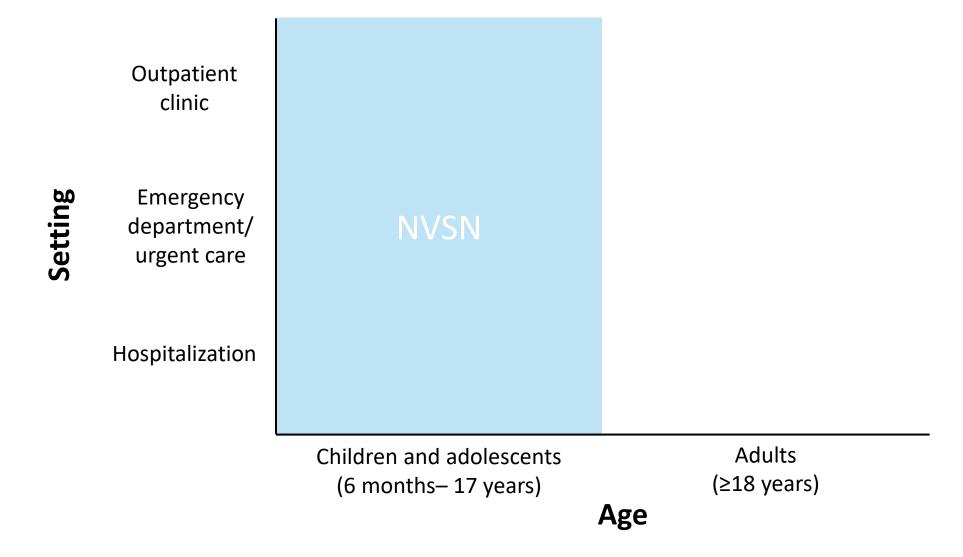
U.S. Flu Vaccine Effectiveness Network (US Flu VE)

Virtual SARS-CoV-2, Influenza, and Other respiratory viruses Network (VISION)

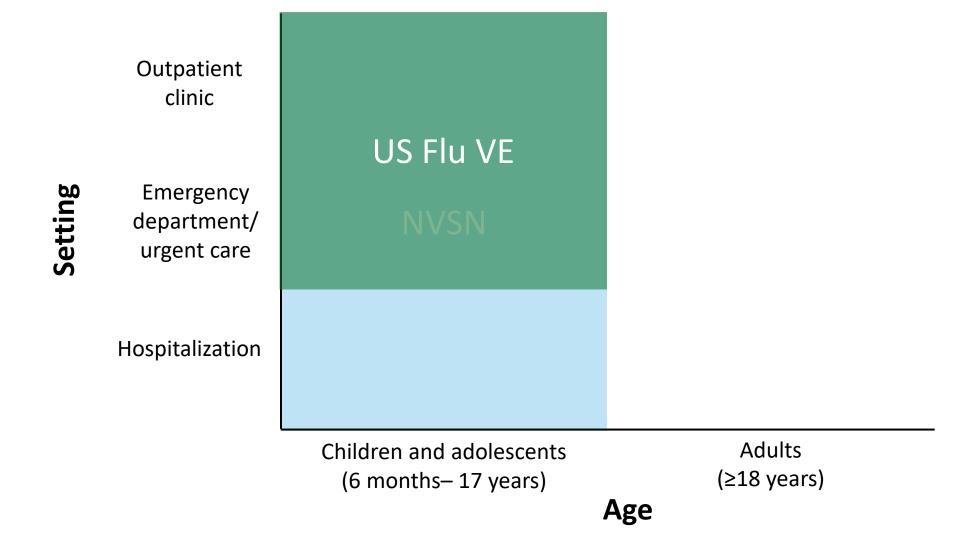
#### These networks include all ages across settings



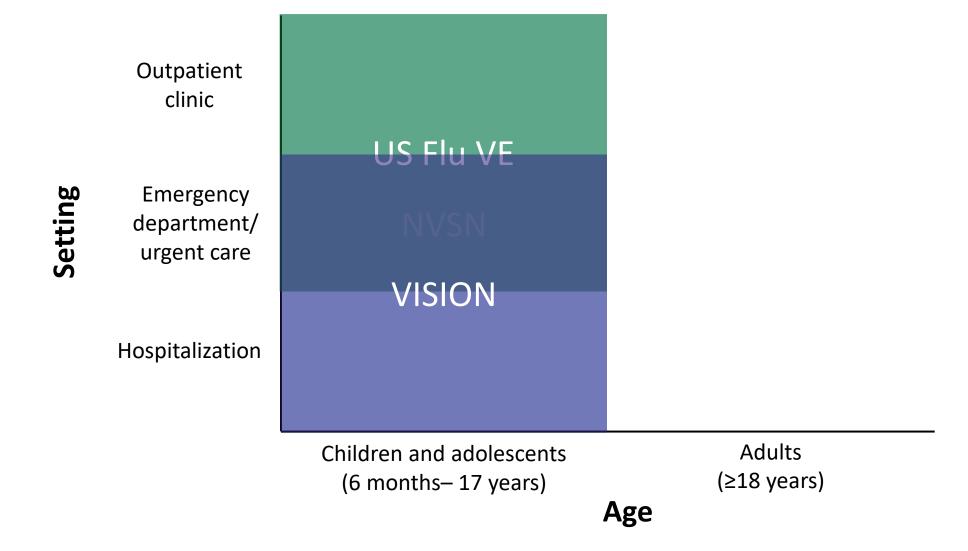
#### **NVSN:** all settings



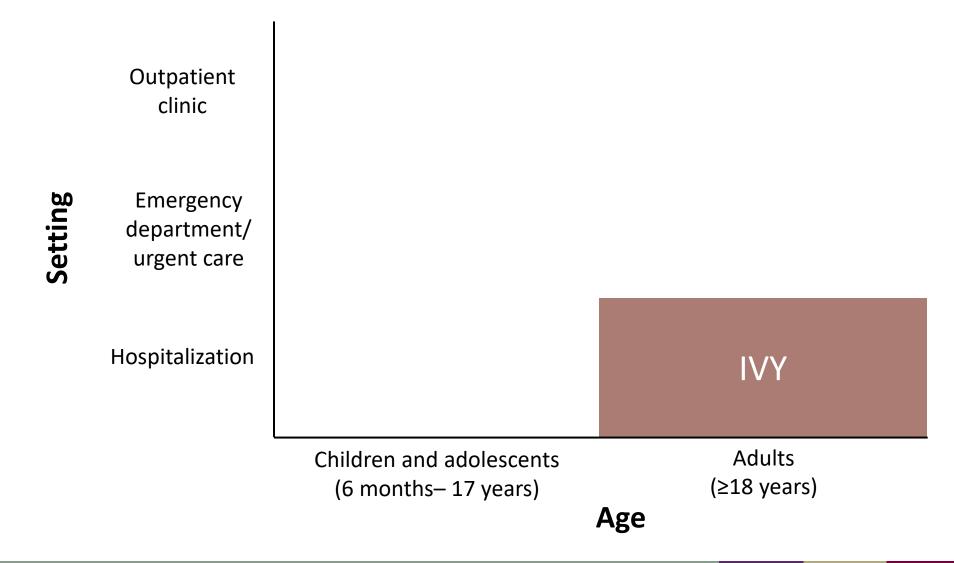
#### US Flu VE: Outpatient clinic and ED/UC



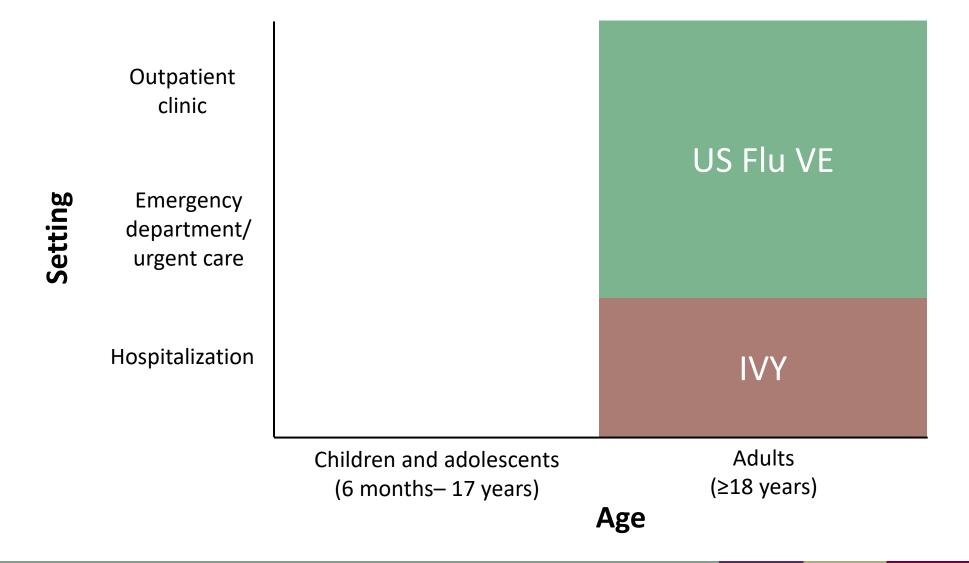
#### VISION: ED/UC & hospitalization



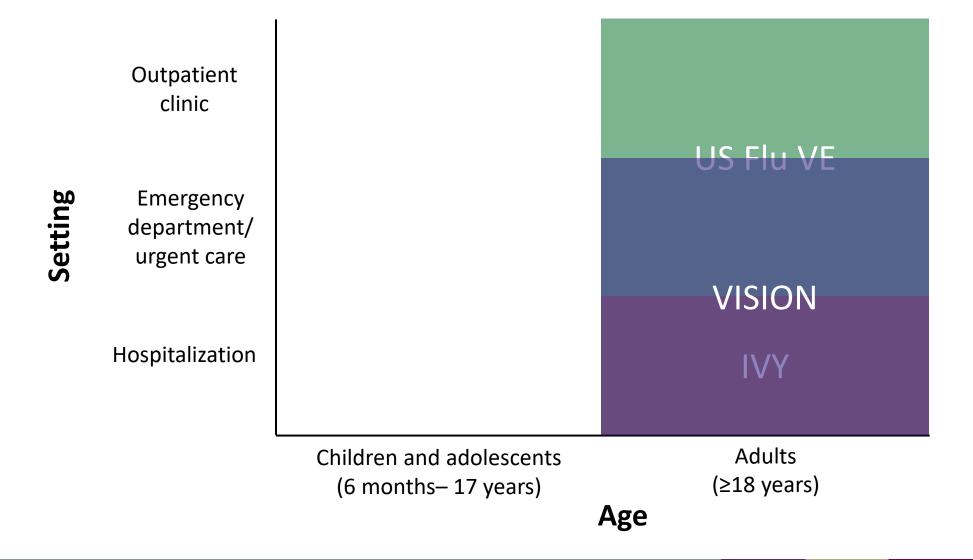
#### **IVY:** hospitalization



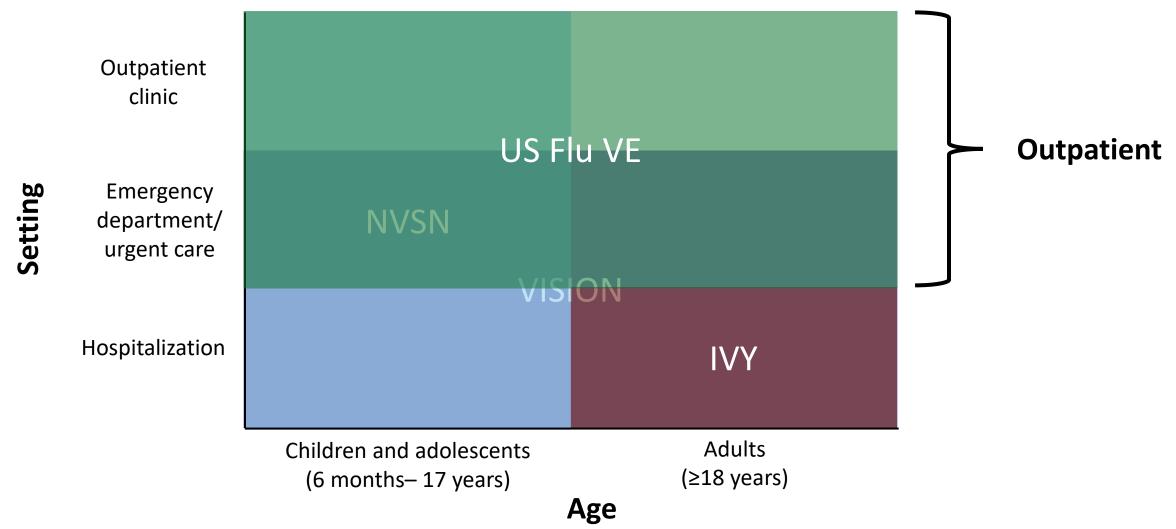
#### US Flu VE: Outpatient clinic and ED/UC



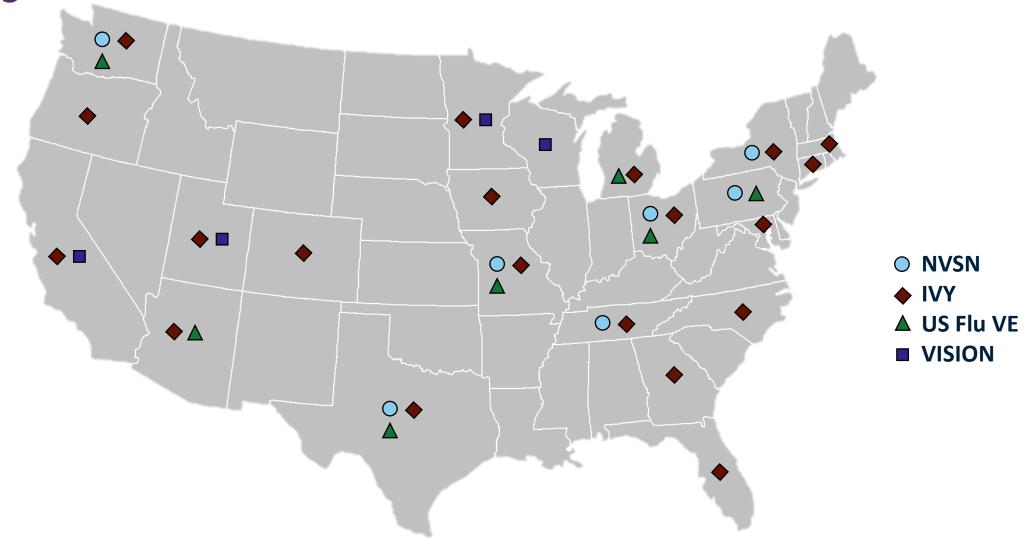
#### VISION: ED/UC & hospitalization



#### These networks include all ages across settings



# CDC influenza VE networks include patients from 22 states



#### 2023-2024 Influenza VE Methods

**Enrollees:** Have acute respiratory illness

Dates of enrollment: Fall 2023- Early 2024

**Design:** Test-negative design

- Comparing vaccination odds among case patients with influenza confirmed by molecular assay versus control patients testing negative for influenza and SARS-CoV-2
- Vaccination status: receipt of any 2023–24 seasonal flu vaccine according to medical records, immunization registries, claims data, and/or self-report

#### 2023-2024 Influenza VE Methods

**Analysis**:  $VE = (1 - adjusted OR) \times 100\%$ 

- Adjusted for geographic region, age, calendar time of illness
  - IVY, US Flu VE, and VISION also adjusted for sex and race and ethnicity
  - US Flu VE also adjusted for days between illness onset and enrollment and self-reported general health status.
- VE estimates were calculated for influenza A subtypes A(H1N1)pdm09 and A(H3N2) when possible
  - Subtype not available for VISION
- VE was not estimated for some age groups and settings when sample size was small or when models did not converge

### **Pediatric VE**

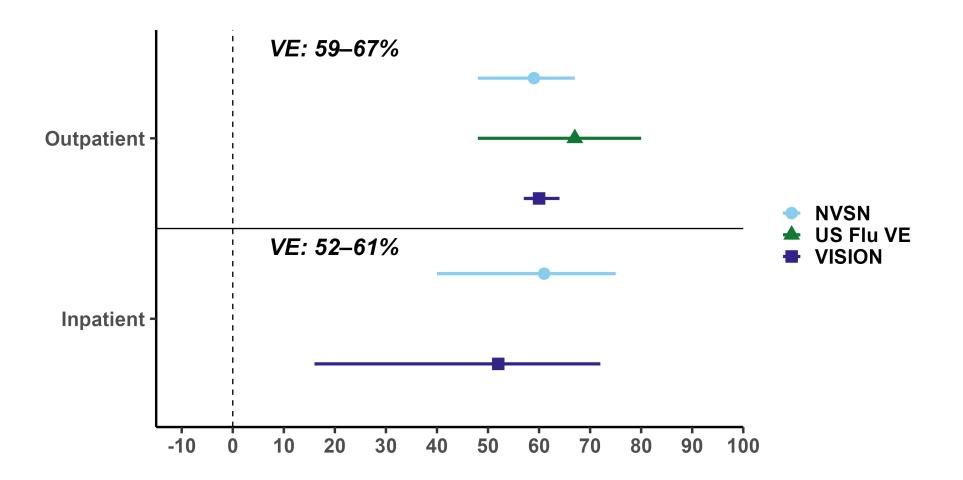
(aged 6 months–17 years)

#### Pediatric VE against any influenza

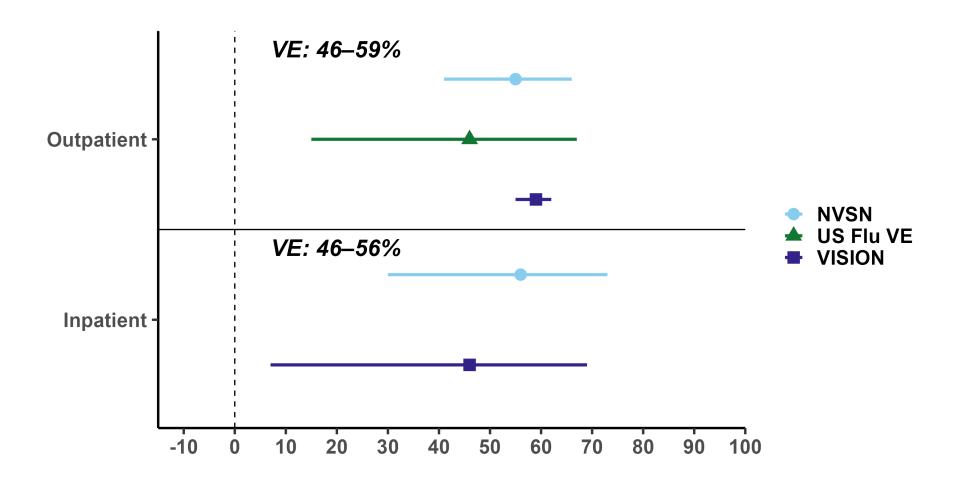
### Influenza test result by influenza vaccination status, no. vaccinated/Total (%)

	Influenza-positive	Influenza-negative	VE (95% CI)
NVSN (Outpatient)	123/622 (20)	793/2,577 (31)	59 (48, 67)
US Flu VE (Outpatient)	29/283 (10)	182/736 (25)	67 (48, 80)
VISION (Outpatient)	961/6,068 (16)	4,579/15,274 (30)	60 (57, 64)
NVSN (Inpatient)	29/128 (23)	543/1,321 (41)	61 (40, 75)
VISION (Inpatient)	21/113 (19)	299/921 (32)	52 (16, 72)

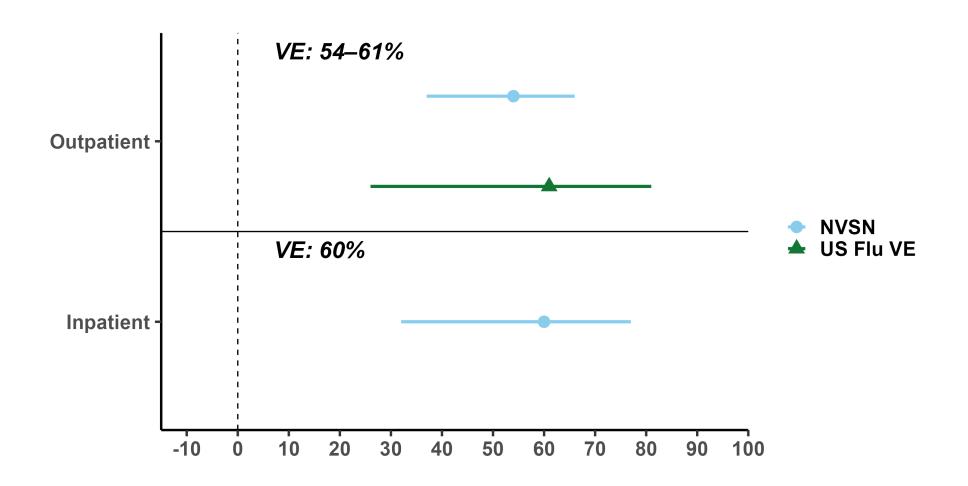
#### Pediatric VE against any influenza



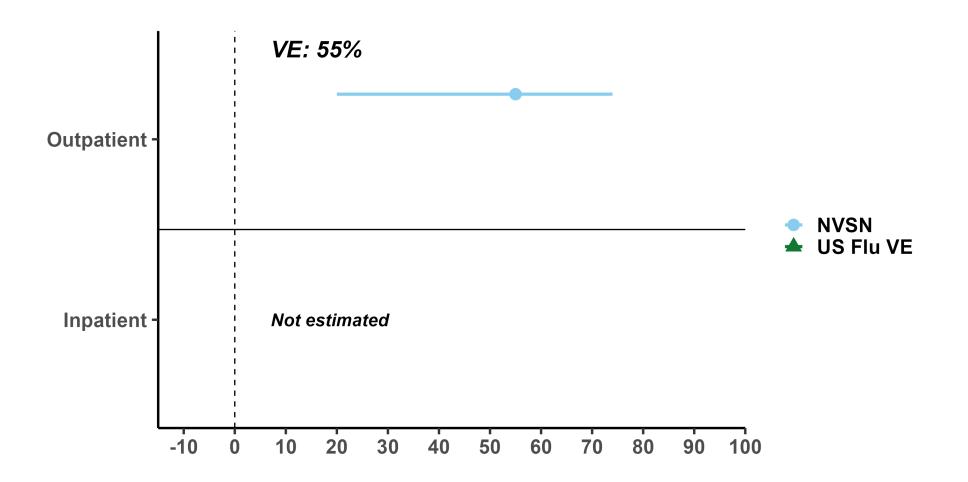
#### Pediatric VE against influenza A



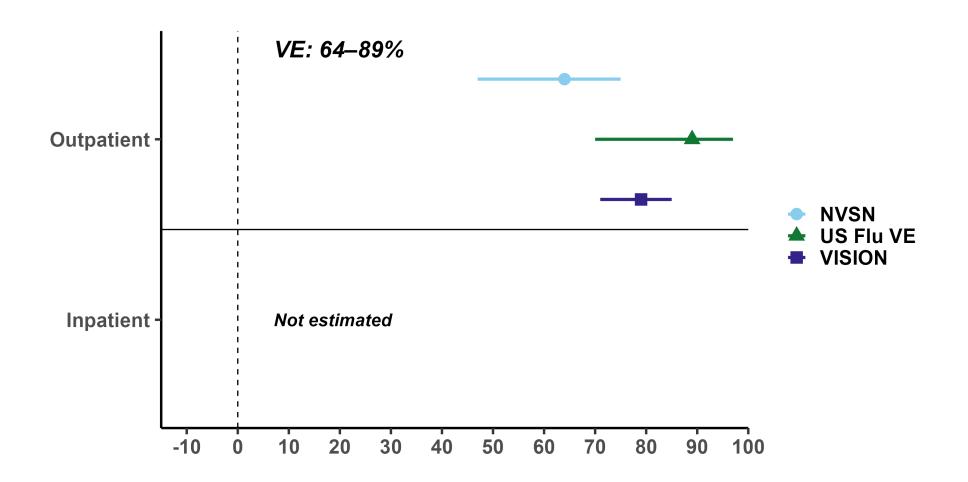
#### Pediatric VE against influenza A(H1N1)pdm09



#### Pediatric VE against influenza A(H3N2)



#### Pediatric VE against influenza B



### Adult VE

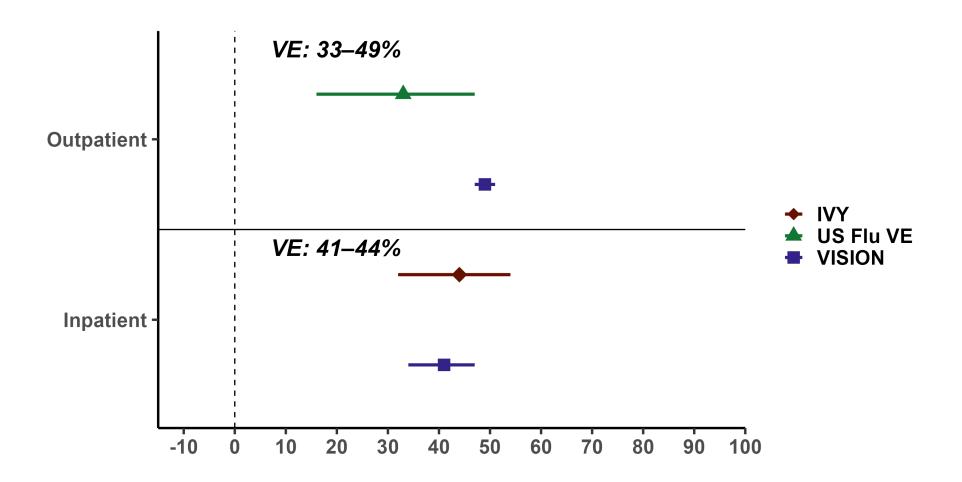
(aged ≥18 years)

#### Adult VE against any influenza

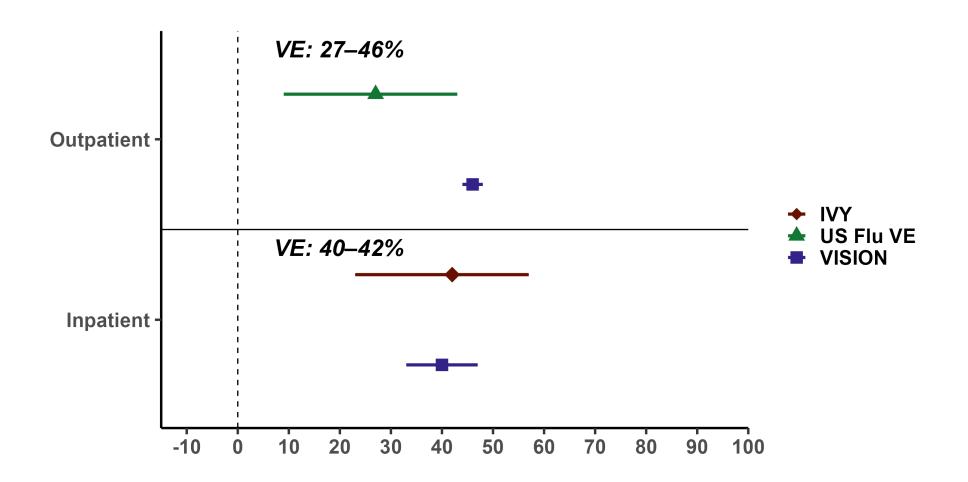
### Influenza test result by influenza vaccination status, no. vaccinated/Total (%)

	Influenza-positive	Influenza-negative	VE (95% CI)
US Flu VE (Outpatient)	177/568 (31)	803/1,807 (44)	33 (16, 47)
VISION (Outpatient)	4,501/18,385 (24)	21,356/52,657 (41)	49 (47, 51)
IVY (Inpatient)	200/632 (32)	1,517/3,872 (39)	44 (32, 54)
VISION (Inpatient)	728/1,839 (40)	7,425/14,168 (52)	41 (34, 47)

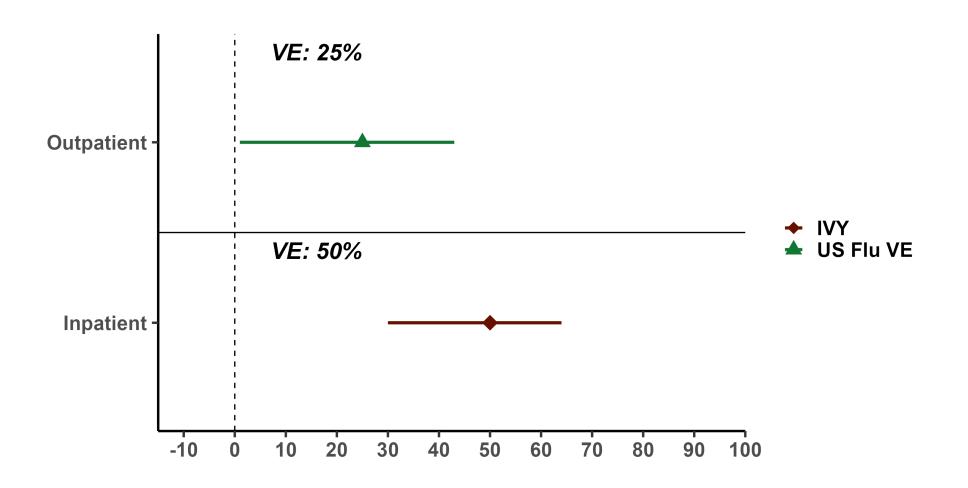
#### Adult VE against any influenza



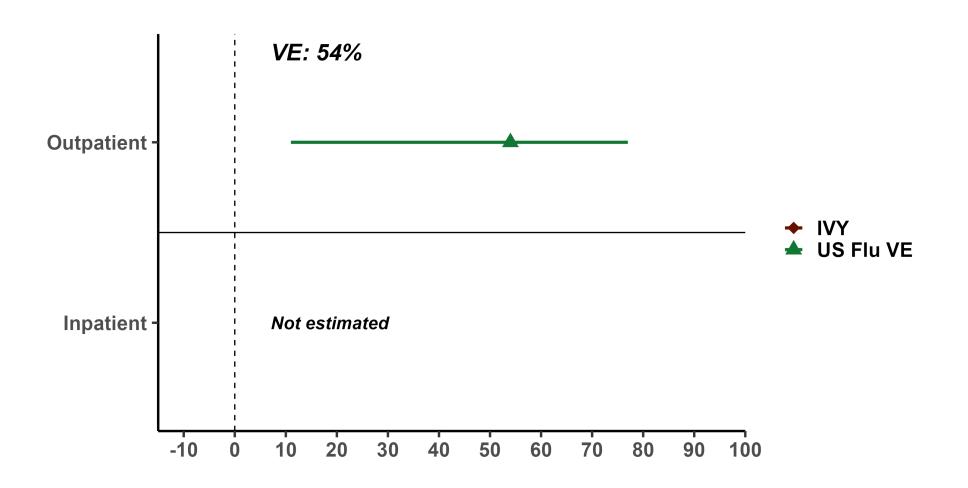
#### Adult VE against influenza A



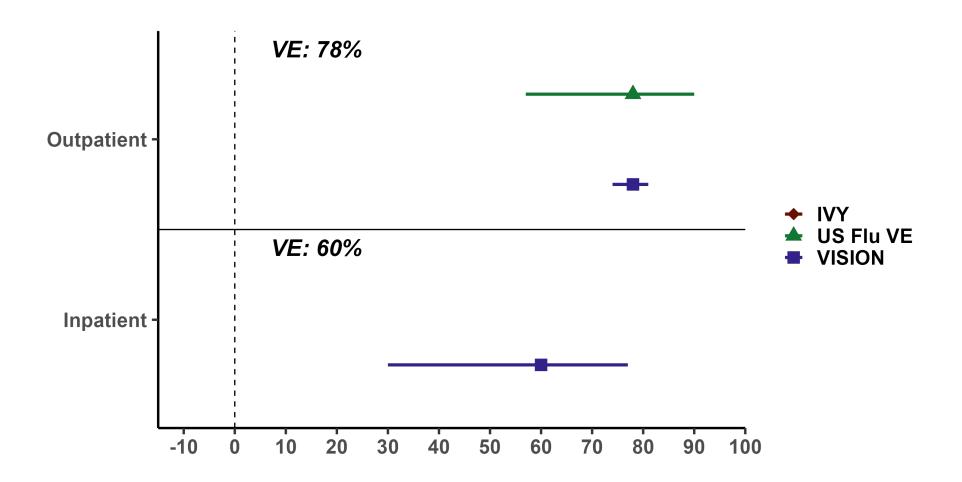
#### Adult VE against influenza A(H1N1)pdm09



#### Adult VE against influenza A(H3N2)



#### Adult VE against influenza B



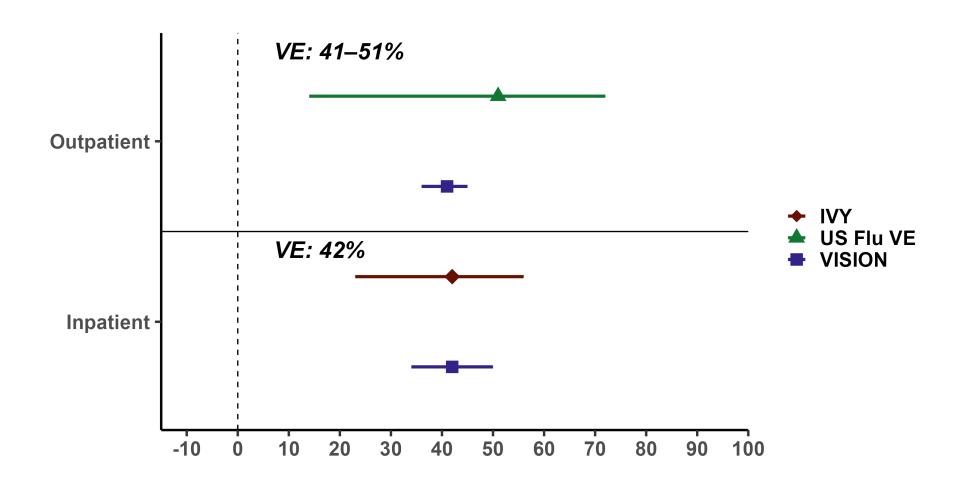
Adult (aged ≥65) VE

#### Adult (aged ≥65) VE against any influenza

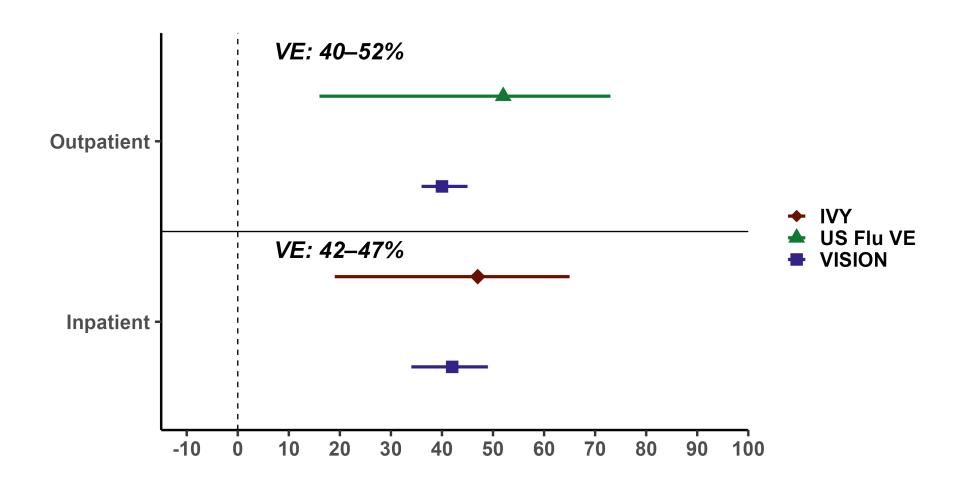
### Influenza test result by influenza vaccination status, no. vaccinated/Total (%)

	Influenza-positive	Influenza-negative	VE (95% CI)
US Flu VE (Outpatient)	41/79 (52)	300/439 (68)	51 (14, 72)
VISION (Outpatient)	1,944/3,687 (53)	12,162/19,571 (62)	41 (36, 45)
IVY (Inpatient)	113/249 (45)	938/1,945 (48)	42 (23, 56)
VISION (Inpatient)	531/1,066 (50)	6,058/10,118 (60)	42 (34, 50)

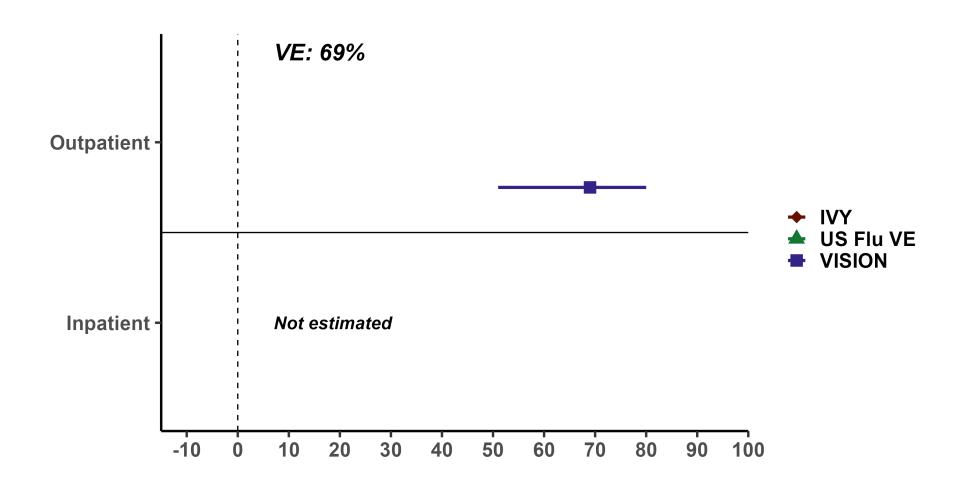
#### Adult (aged ≥65) VE against any influenza



#### Adult (aged ≥65) VE against influenza A



#### Adult (aged ≥65) VE against influenza B



### Discussion

#### **Summary of four CDC influenza VE networks**

Vaccination with a 2023-24 influenza vaccine reduced the risk for medically attended influenza outpatient visits and hospitalizations among children, adolescents, and adults across 22 US States

Vaccination was effective against **both influenza A (mostly subtype A(H1N1)pdm09) and B (lineage Victoria) viruses** that have circulated this season

Results were consistent across networks

# Thank you

We'd like to thank our many collaborators from CDC, IVY, NVSN, US Flu VE, and VISION

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For more information, contact CDC 1-800-CDC-INFO (232-4636) TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



#### Overall VE (pediatric and adults) by season\*

