Preliminary Estimates of 2023–24 Seasonal Influenza Vaccine Effectiveness

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On behalf of CDC Influenza Vaccine Effectiveness Collaborators

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

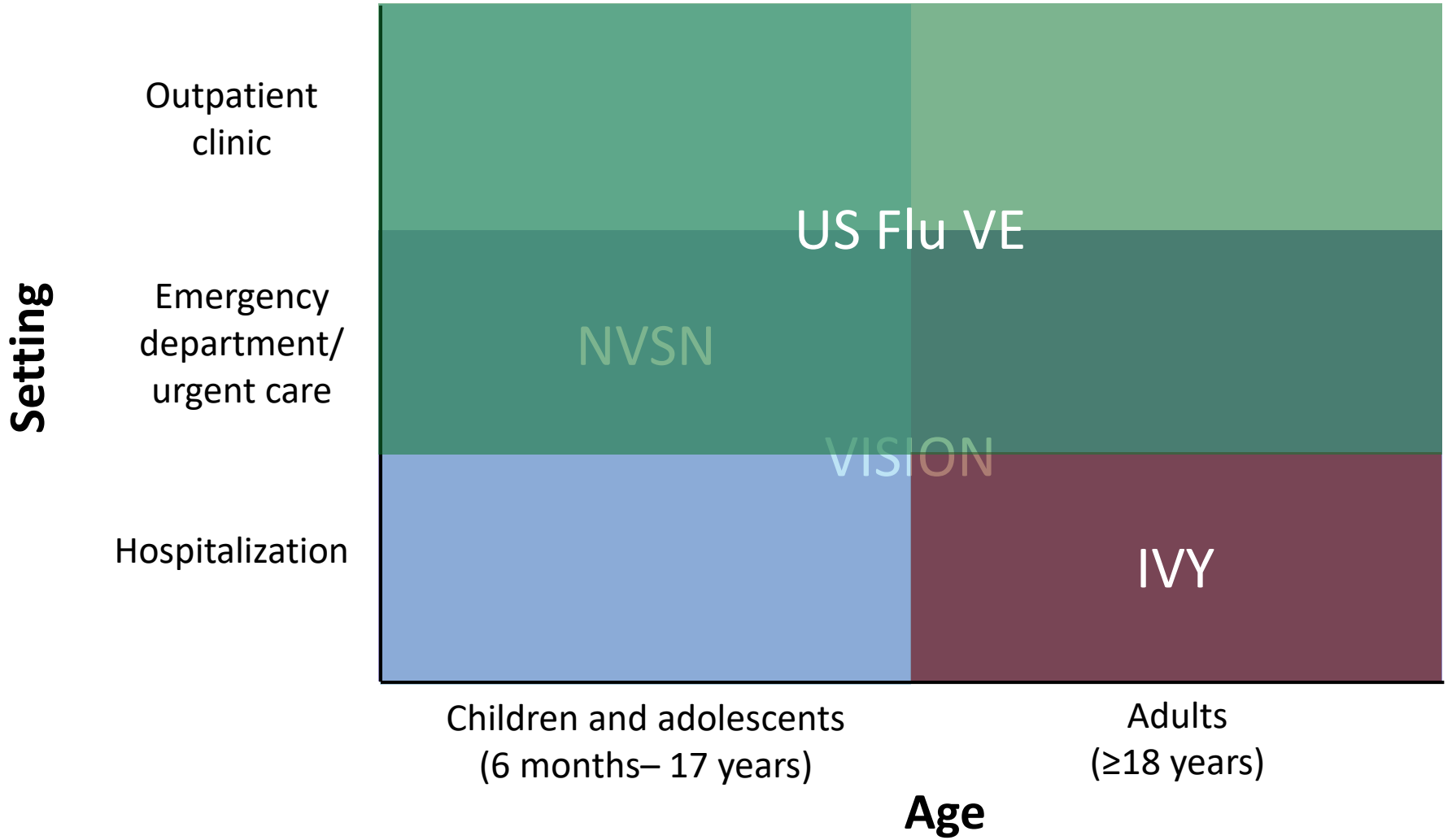
Investigating Respiratory Viruses in the Acutely Ill (IVY)

New Vaccine Surveillance Network (NVSN)

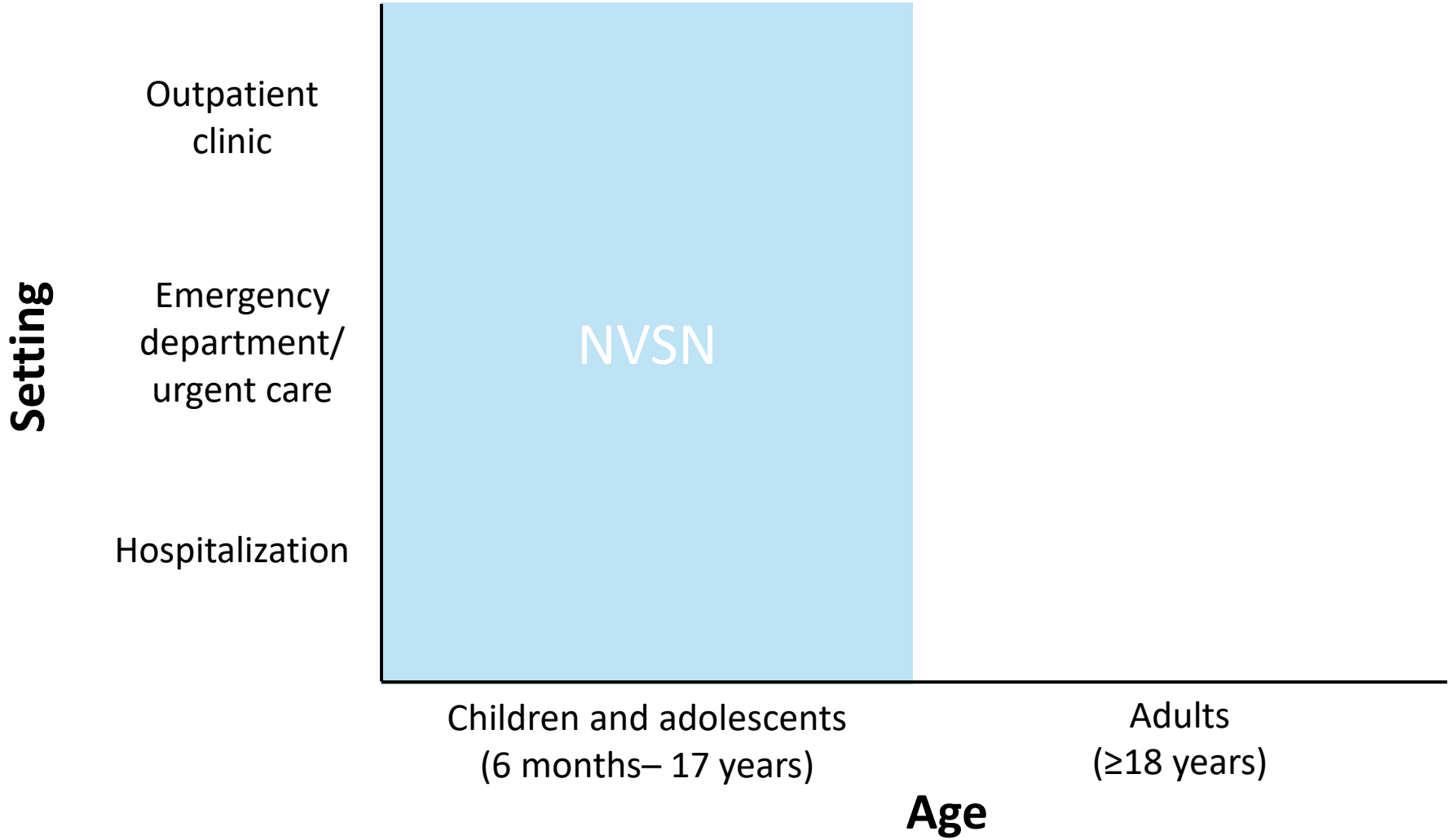
U.S. Flu Vaccine Effectiveness Network (US Flu VE)

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

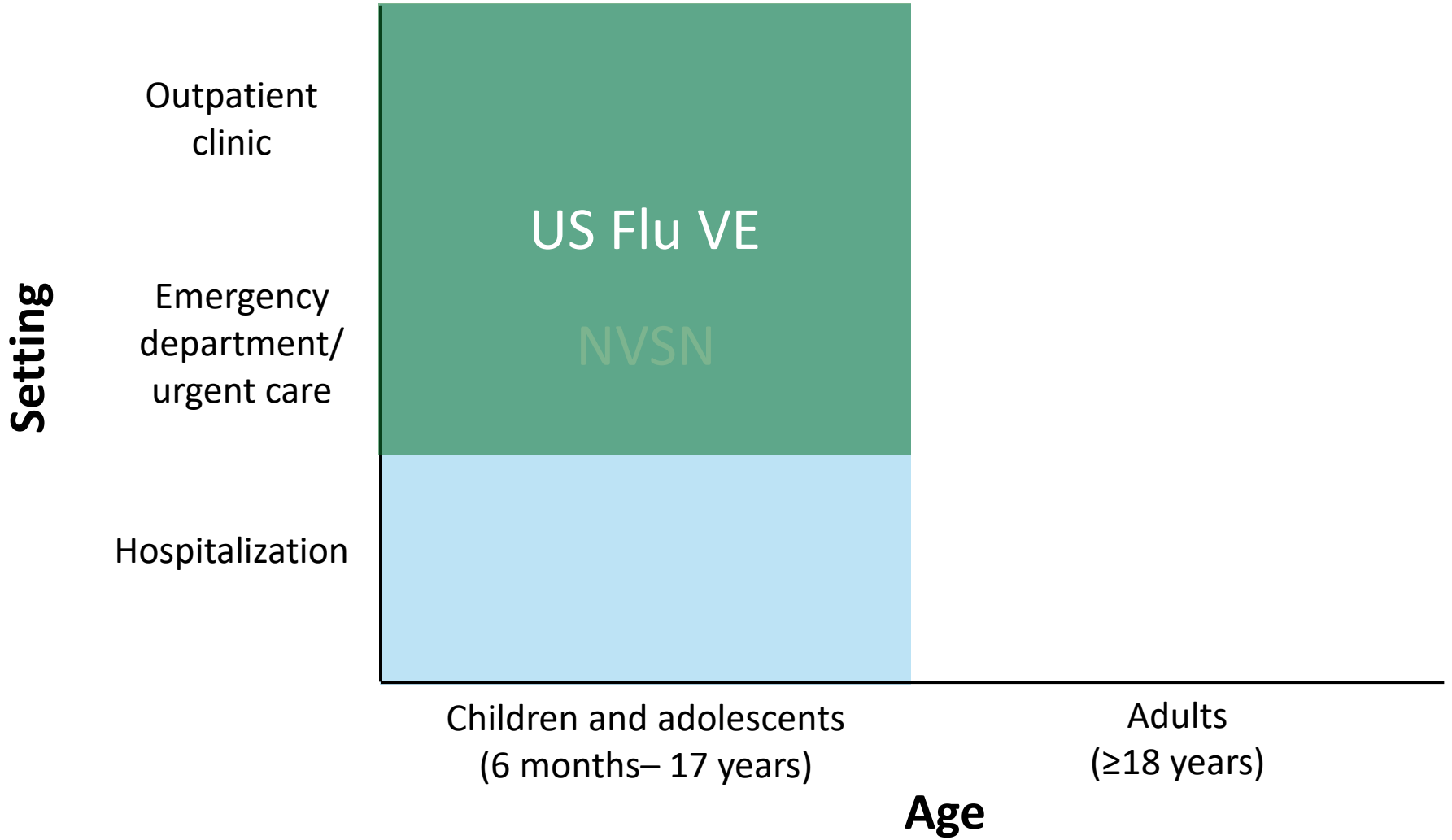
These networks include all ages across settings



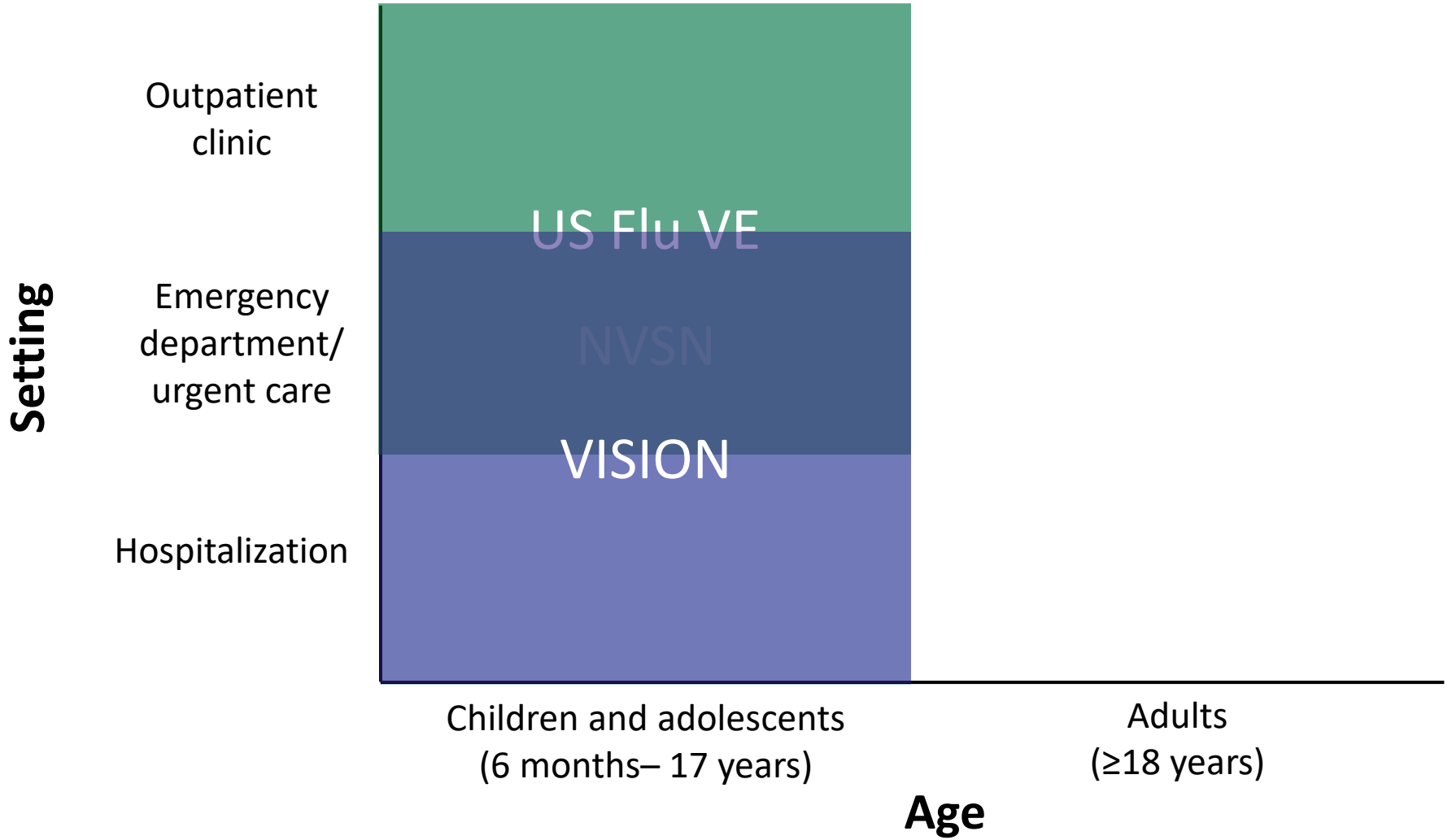
NVSN: all settings



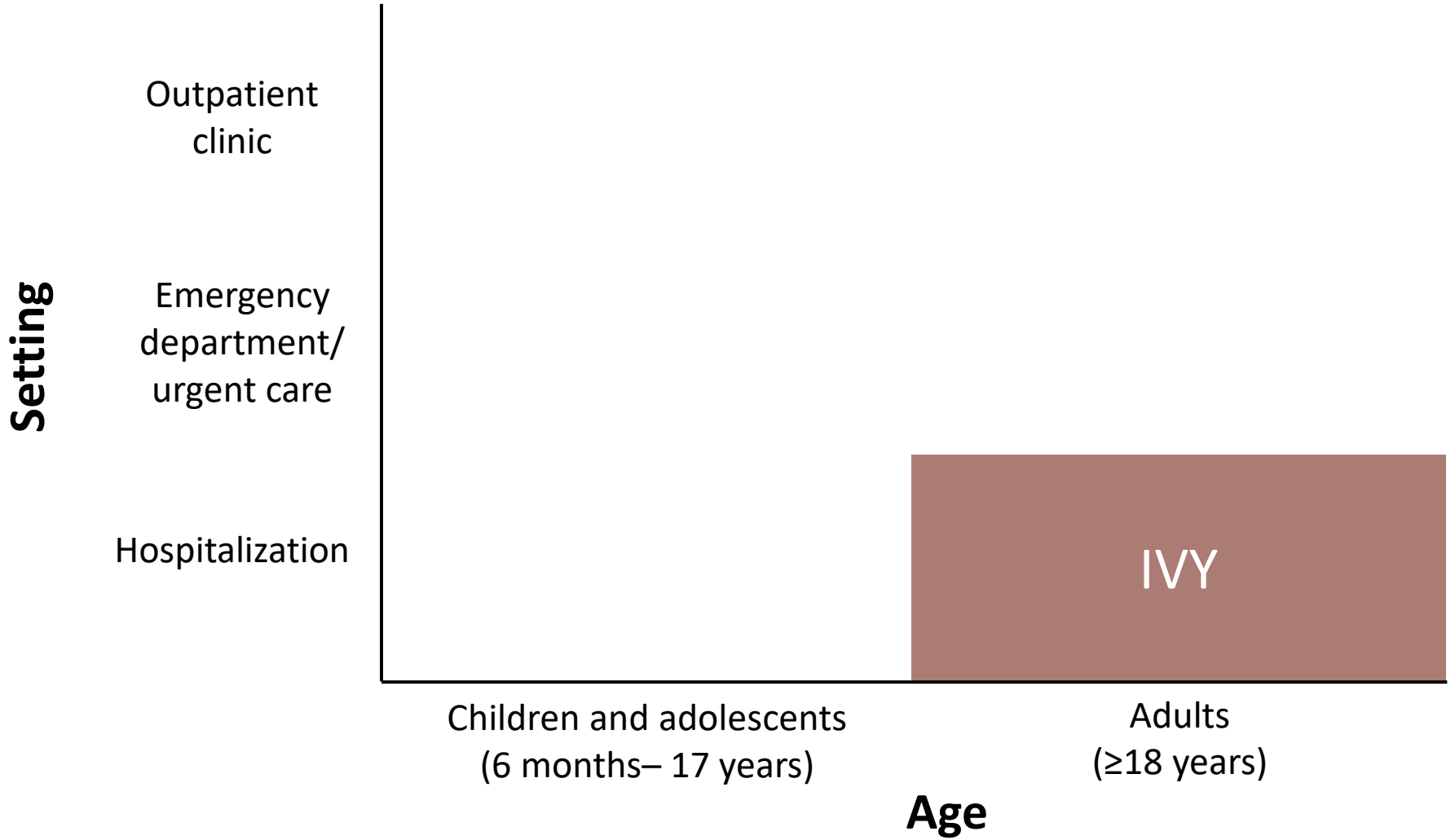
US Flu VE: Outpatient clinic and ED/UC



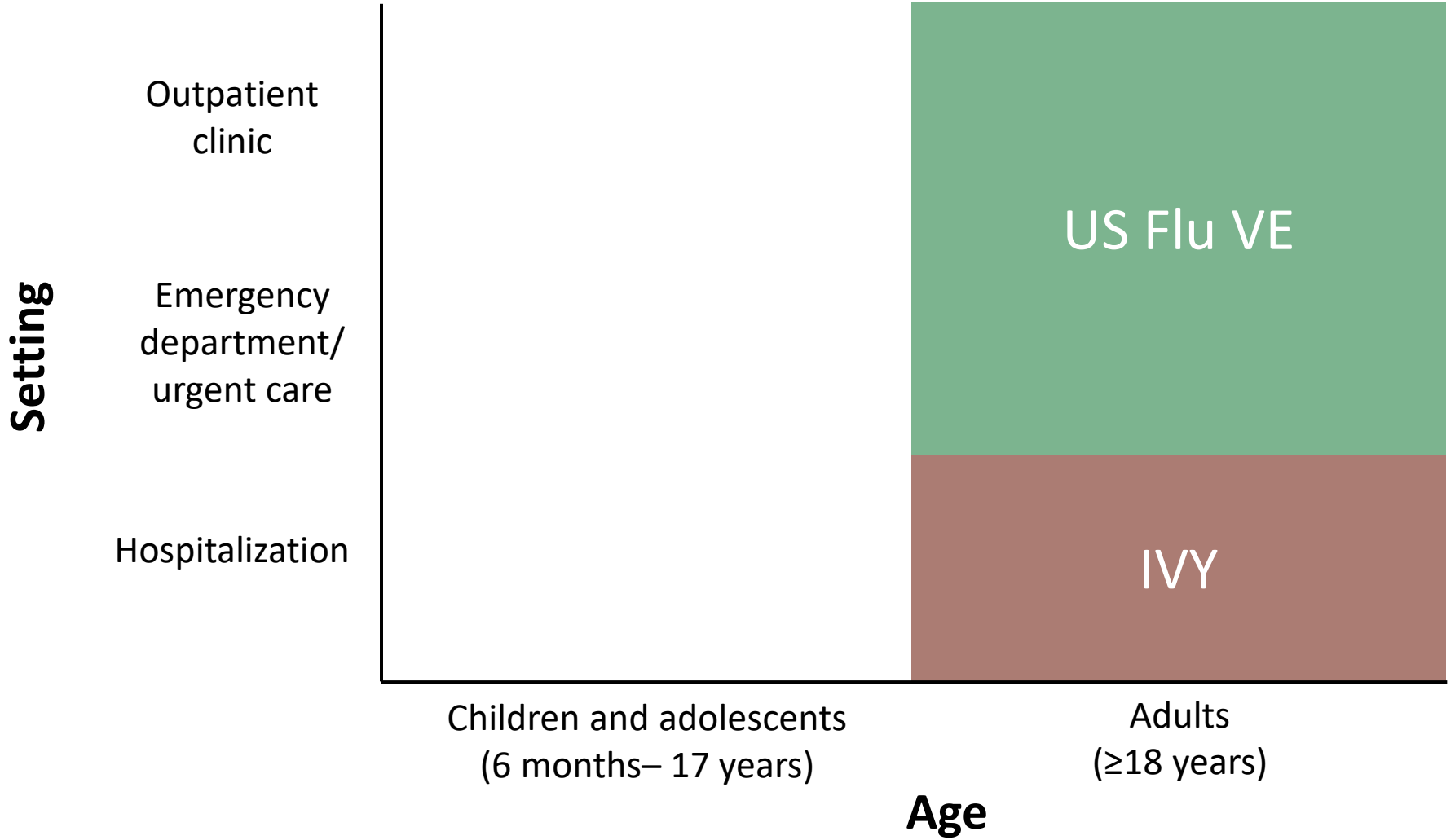
VISION: ED/UC & hospitalization



IVY: hospitalization



US Flu VE: Outpatient clinic and ED/UC



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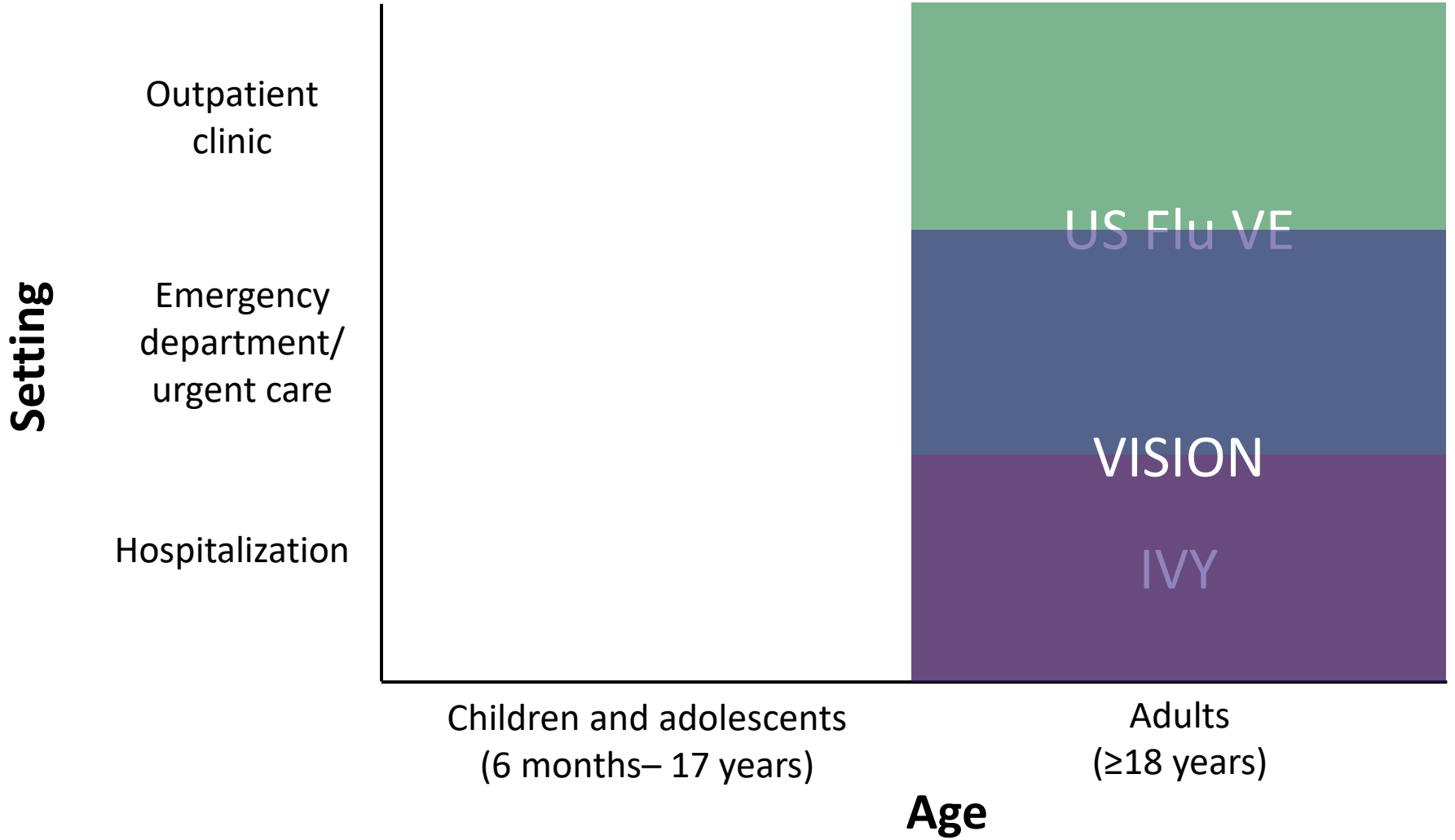
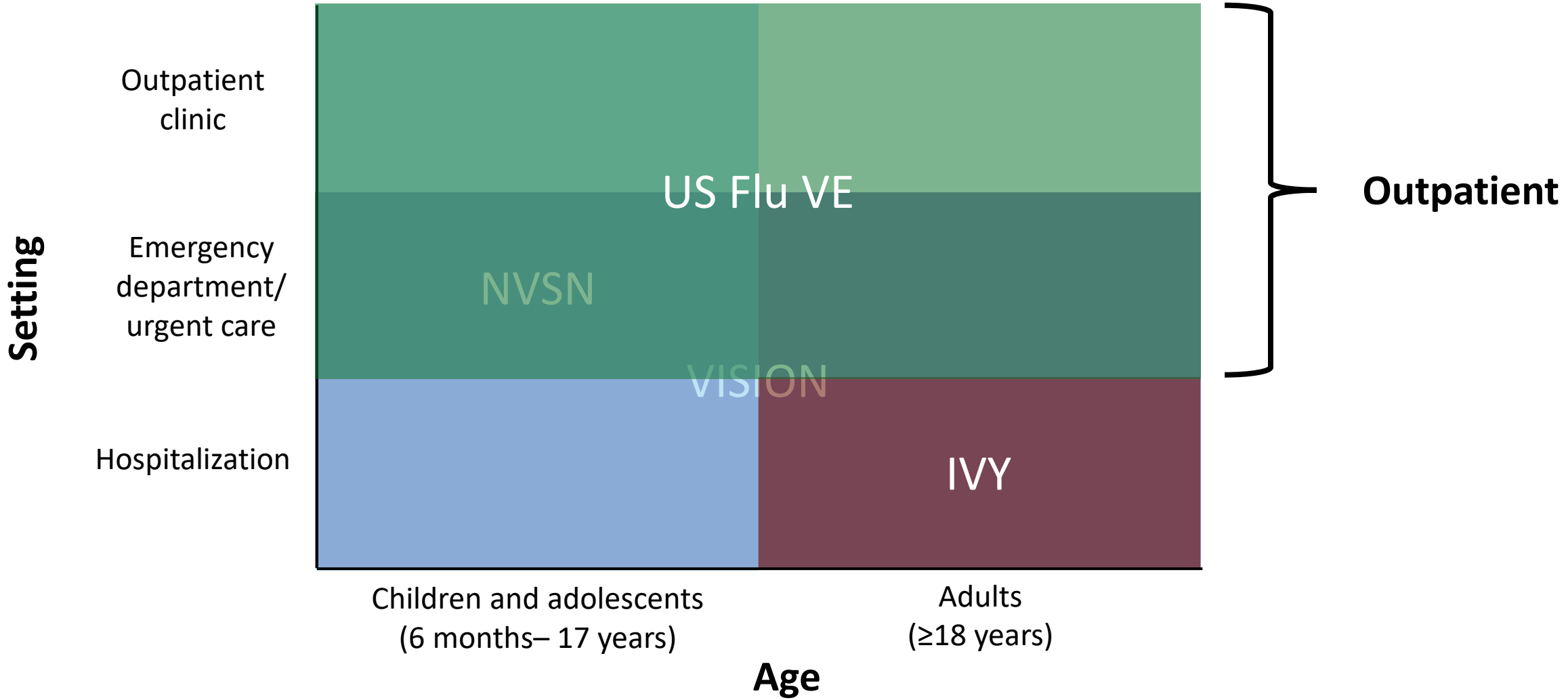
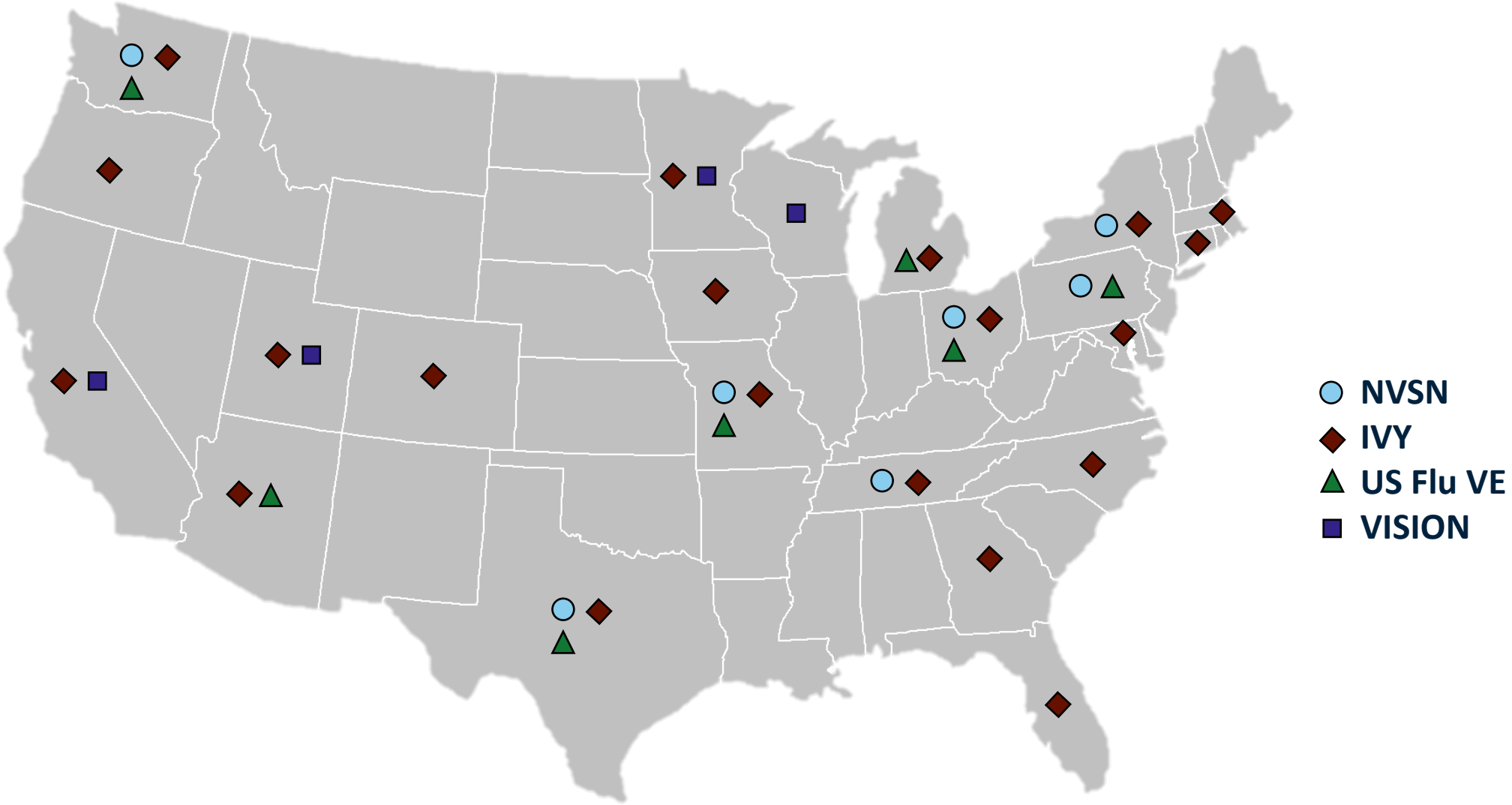


These networks include all ages across settings



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) x 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
    - Influenza A subtype estimates were not calculated for VISION because of limited subtype data
- 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)	244/1019 (24)	1233/3431 (36)	56 (48-64)
US Flu VE (Outpatient)	71/506 (14)	245/975 (25)	53 (35-66)
VISION (Outpatient)	1601/9139 (18)	9276/27189 (34)	57 (55–60)
NVSN (Inpatient)	64/226 (28)	770/1729 (45)	55 (38-67)
VISION (Inpatient)	41/195 (21)	624/1623 (38)	53 (31–68)

Pediatric VE against influenza by type and subtype

	VE (95% CI)			
	Any Influenza A	**A(H1N1)pdm09**	**A(H3N2)**	**B (Victoria)**
NVSN (Outpatient)	48 (36-58)	46 (30-58)	55 (34-69)	68 (57-76)
US Flu VE (Outpatient)	36 (8-57)	52 (23-71)	—	70 (51-83)
VISION (Outpatient)	52 (48–55)	—	—	75 (71–79)
NVSN (Inpatient)	48 (26-63)	61 (39-75)	—	72 (46-85)
VISION (Inpatient)	41 (12–61)	—	—	—

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)	295/952 (31)	1179/2615 (45)	39 (27-49)
VISION (Outpatient)	6740/26992 (25)	40520/93386 (43)	47 (45–49)
IVY (Inpatient)	339/977 (35)	2213/5114 (43)	41 (32-50)
VISION (Inpatient)	1098/2712 (40)	14619/26216 (56)	41 (35–46)

Adult VE against influenza by type and subtype

	VE (95% CI)			
	Any Influenza A	**A(H1N1)pdm09**	**A(H3N2)**	**B (Victoria)**
US Flu VE (Outpatient)	25 (9-38)	21 (0-37)	41 (13-61)	82 (71-89)
VISION (Outpatient)	42 (40–44)	—	—	76 (74–79)
IVY (Inpatient)	39 (25-51)	41 (25-54)	27 (-9-51)	67 (16-87)
VISION (Inpatient)	39 (34–45)	—	—	63 (46–75)

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)	65/128 (52)	416/596 (70)	54 (28–71)
VISION (Outpatient)	2806/5183 (54)	22992/35285 (65)	39 (35–43)
IVY (Inpatient)	200/4408 (49)	1361/2616 (52)	33 (14-52)
VISION (Inpatient)	806/1558 (52)	11900/18808 (63)	40 (33–46)

Adult (aged ≥65) VE against influenza by type

	VE (95% CI)	
	Any Influenza A	**B (Victoria)**
US Flu VE (Outpatient)	51 (23–69)	—
VISION (Outpatient)	38 (34–42)	68 (61–77)
IVY (Inpatient)	36 (14-52)	—
VISION (Inpatient)	40 (33–46)	68 (37-84)

Discussion

Summary VE against influenza

	Summary VE Across Platforms		
	Any Influenza	**Influenza A**	**Influenza B**
Pediatric Outpatient	53-57%	36-52%	68-75%
Pediatric Inpatient	53-55%	41-48%	72%
Adult Outpatient	39-47%	25-42%	76-82%
Adult Inpatient	41%	39%	63-67%

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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