



# Measles Outbreak Associated with a Migrant Shelter in Chicago

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*Chicago Department of Public Health*



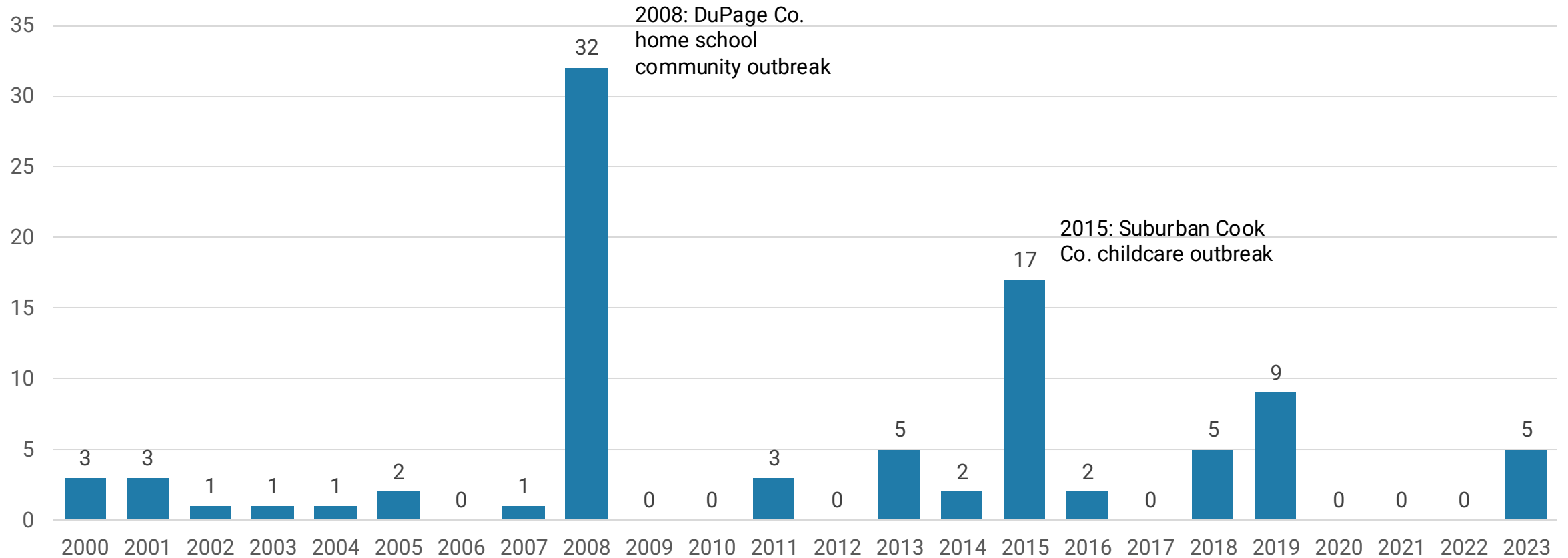
# Measles is highly contagious but can be prevented through vaccination

- Febrile rash illness caused by the measles virus.
  - Prodrome with fever and cough, coryza, or conjunctivitis (3 “C”s).
  - Maculopapular rash that spreads from the head downward.
- Transmitted via airborne droplets or airborne route.
- Infectious period: 4 days before to 4 days after rash onset.
- Highly contagious – 90% of susceptible household contacts will develop illness.
- Measles vaccine is effective!
  - 93% protection with 1 dose. 97% with 2 doses.





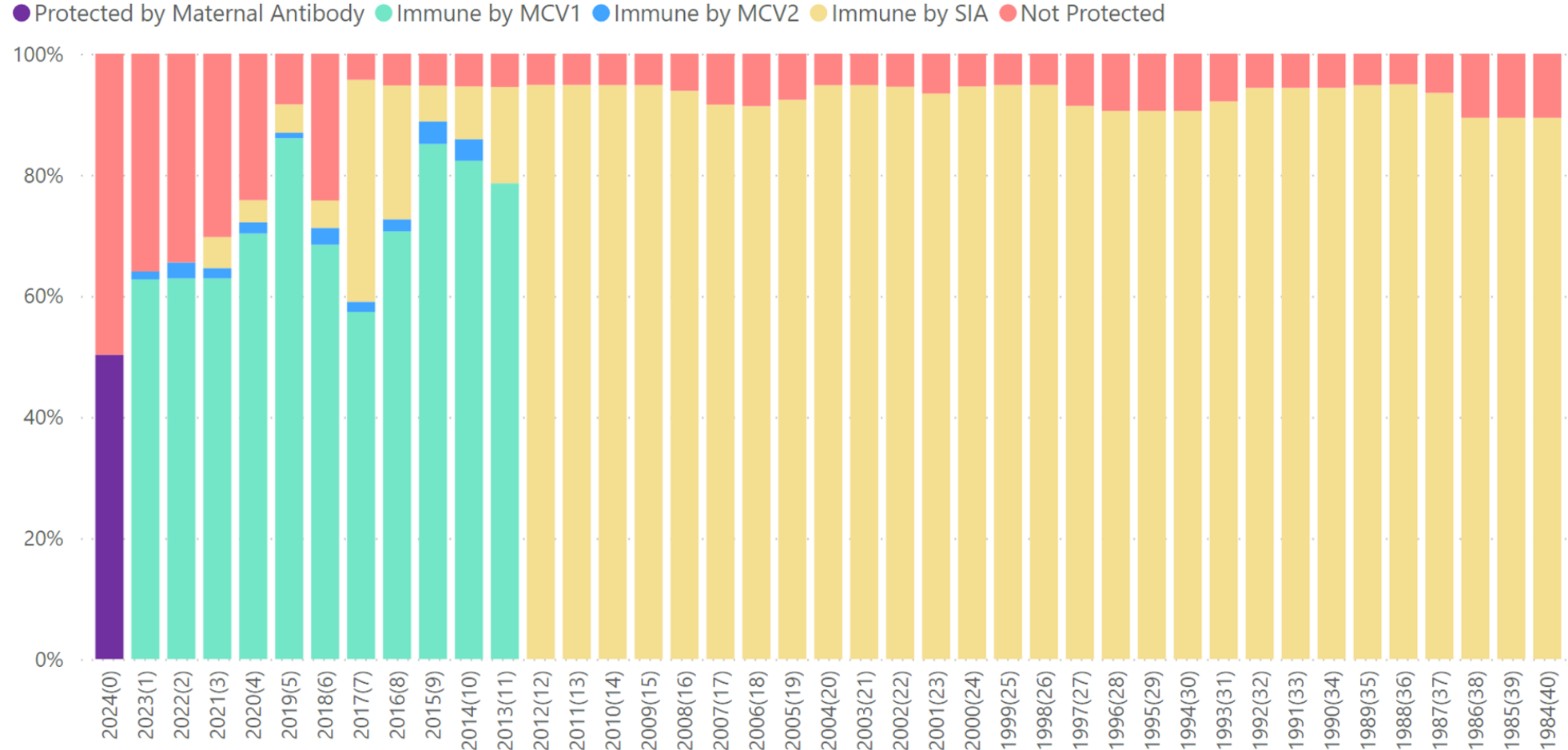
# Measles is generally well controlled in Illinois and Chicago. No recent large outbreaks in Illinois had occurred.



# Venezuela – Immunity Profile



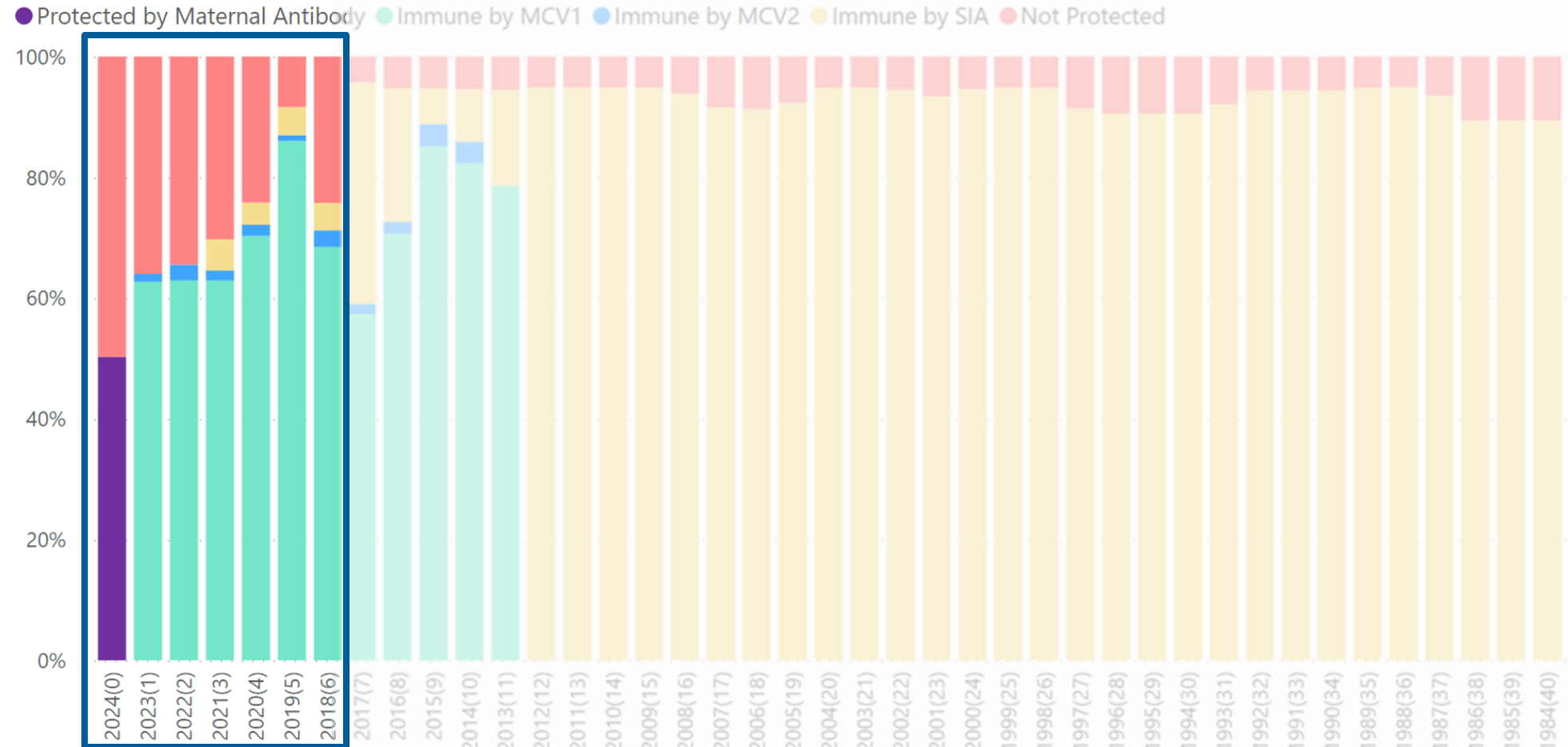
Immunity by birth cohort assuming MCV2 and SIAs first reach previously vaccinated children (fully dependent assumption)



# Measles vaccine coverage in Venezuela has declined since 2017.




Immunity by birth cohort assuming MCV2 and SIAs first reach previously vaccinated children (fully dependent assumption)





# In late 2023, measles cases were increasing in the US



**COCA Now**  
 CDC Clinician Outreach and Communication Activity

January 25, 2024

## Stay Alert for Measles Cases

Between December 1, 2023 and January 23, 2024, the Centers for Disease Control and Prevention (CDC) was notified of 23 confirmed U.S. [cases](#) of measles, including seven direct importations of measles by international travelers and two outbreaks with more than five cases each. Most of these cases were among children and adolescents who had not received a measles-containing vaccine (MMR or MMRV), even if age eligible.

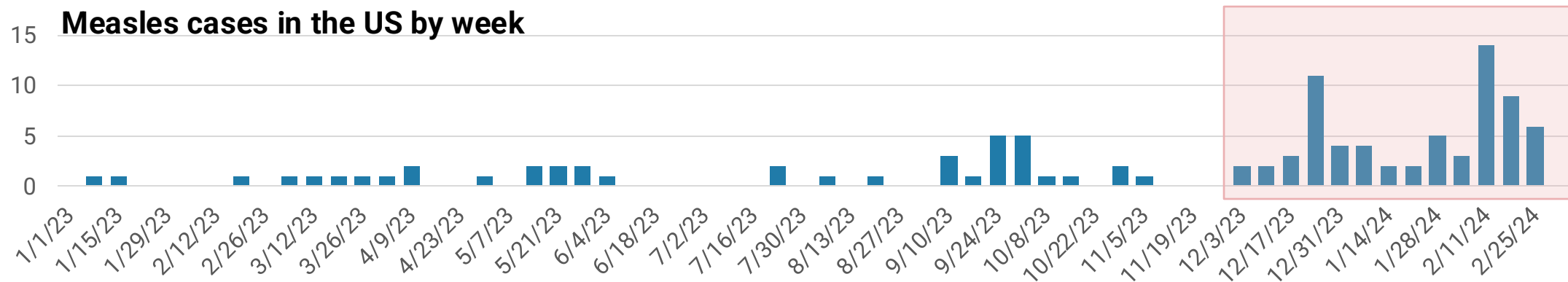


Chicago Department of Public Health  
**Health Alert** CDPH  
 Chicago Department of Public Health  
 City of Chicago  
 Brandon Johnson, Mayor  
 www.chicagohan.org  
 Chicago Department of Public Health  
 Oluşimbo Ige, MD, MS, MPH, Commissioner

## Measles Confirmed in Indiana Resident — Exposures Identified at Chicago Hospitals

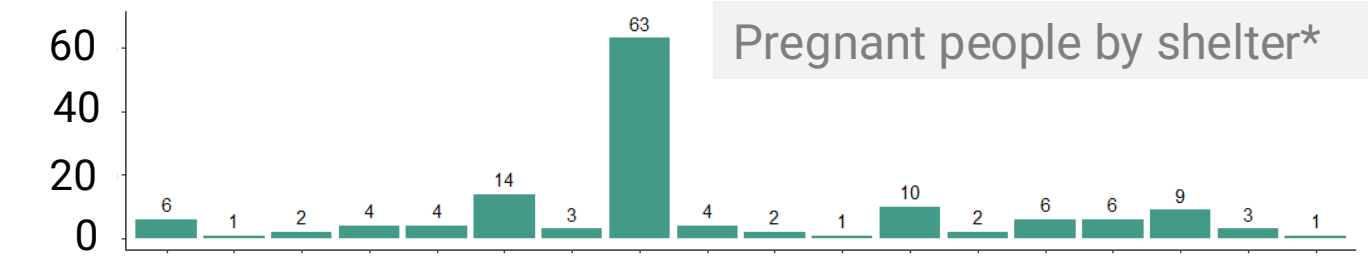
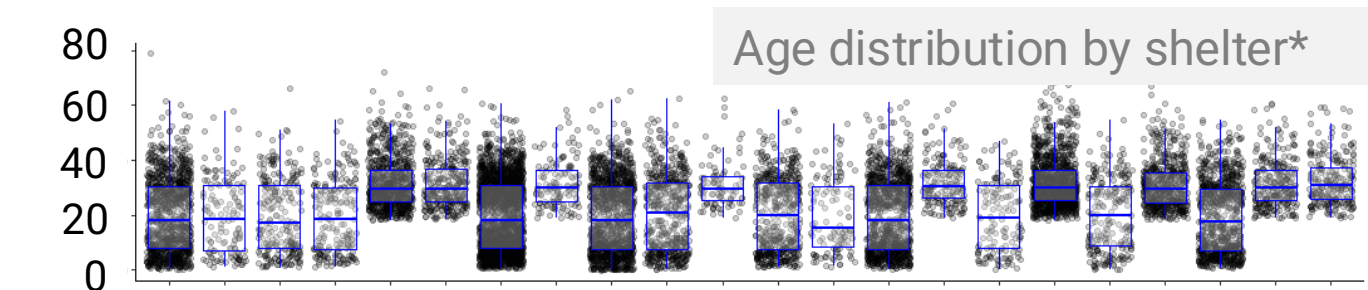
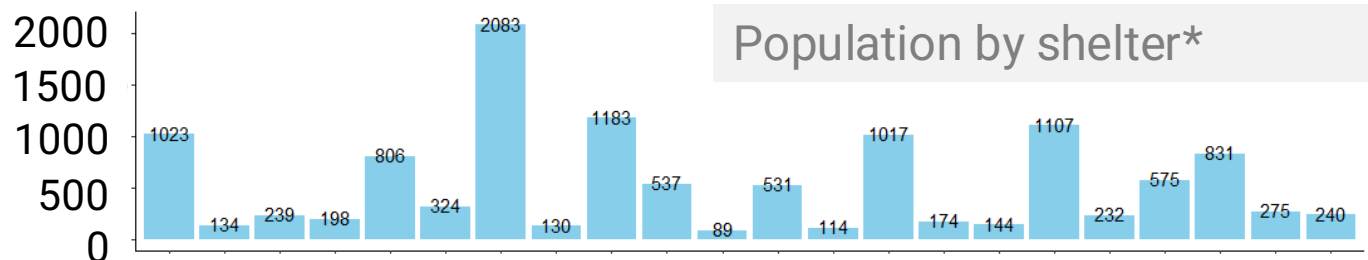
February 23, 2024

### Measles cases in the US by week

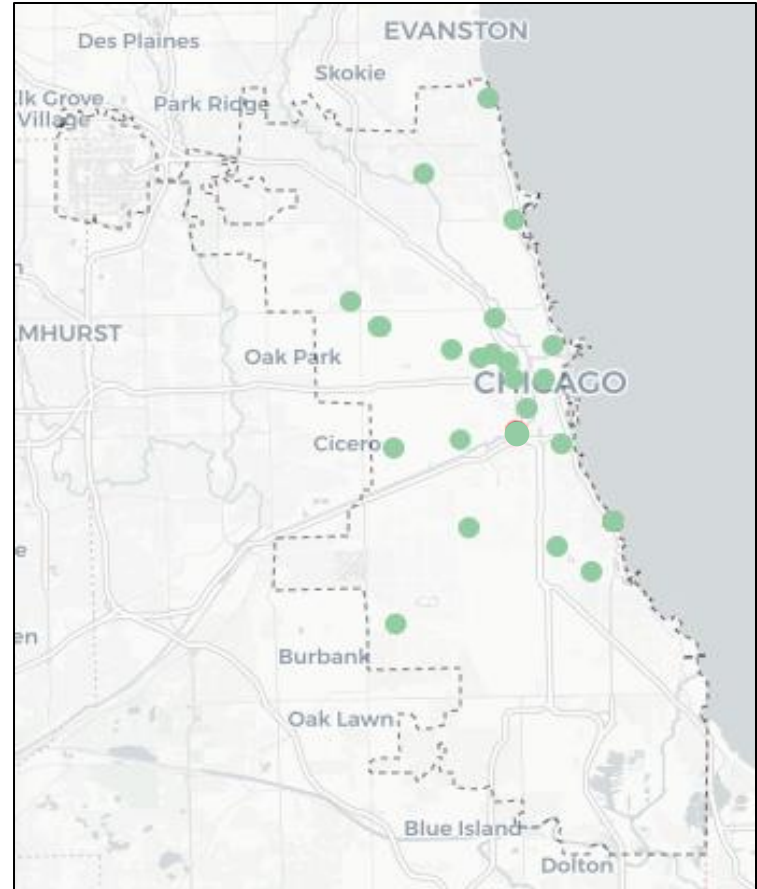




# More than 12,000 New Arrivals were living in 22 shelters throughout Chicago, in early Spring 2024



← City-operated shelters →

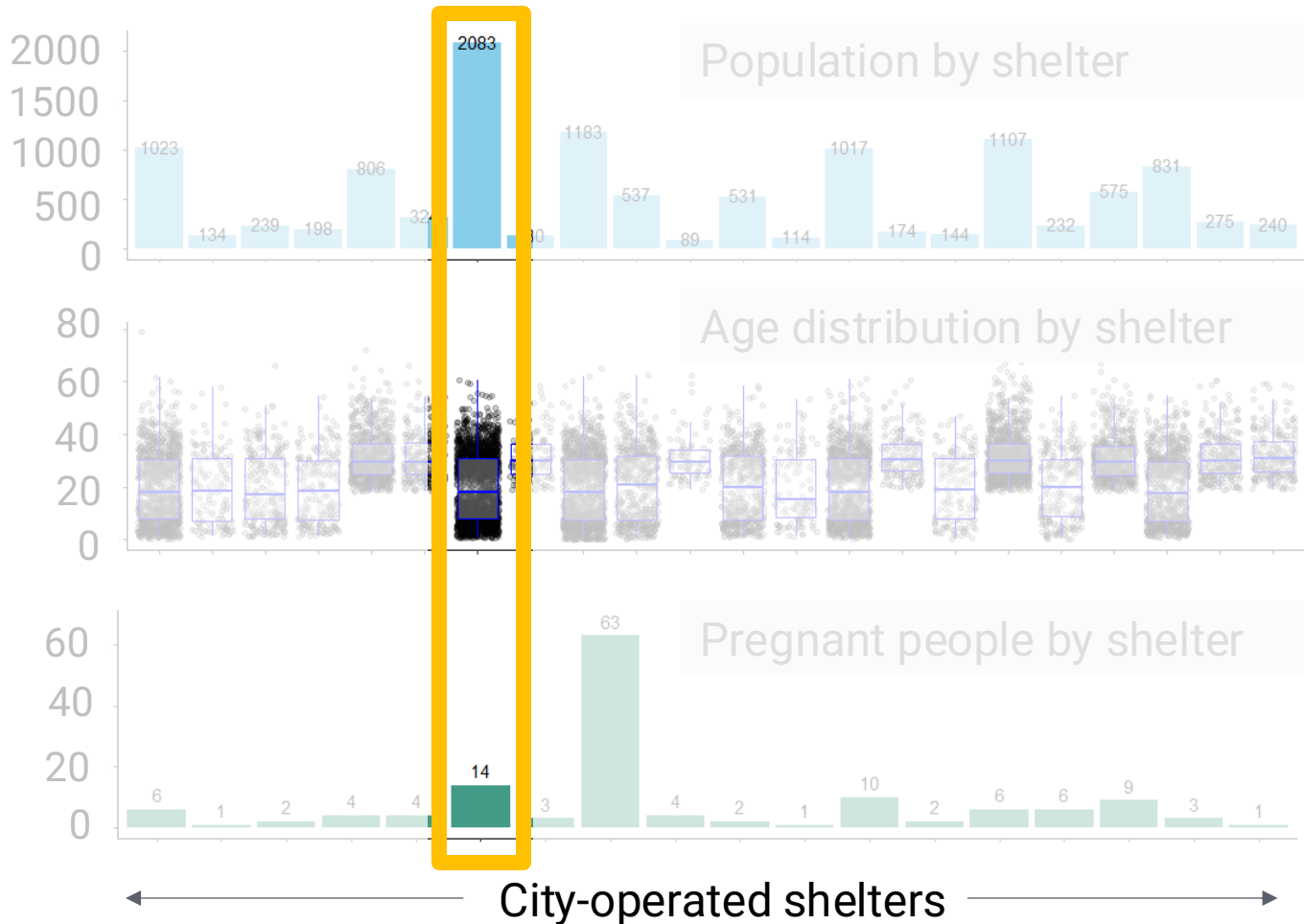


Location of Chicago's congregated shelters

\* As of Feb. 26, 2024



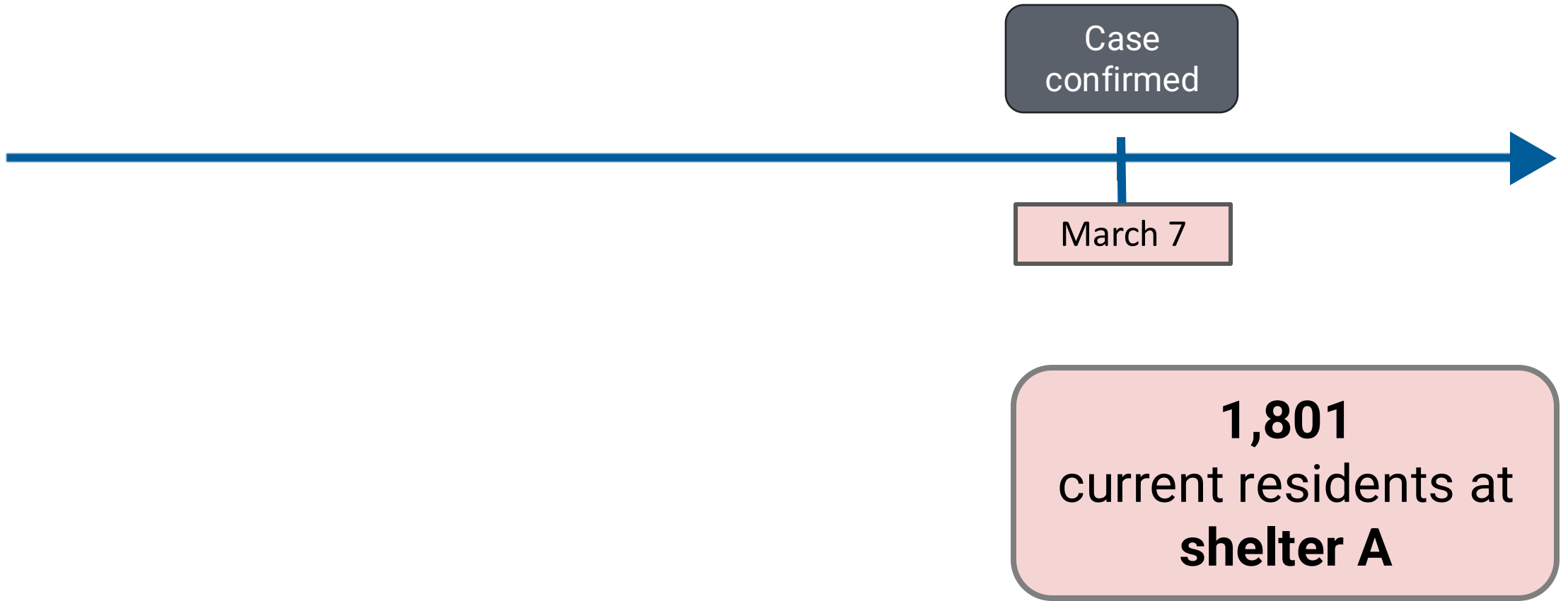
# ★ On March 7, measles was confirmed in largest shelter.



cdc.gov

- **1-year-old**
- **Arrived >5 months prior**
- **No recent travel**
- **History of MMR x1. Later determined to be primary vax failure**







Rash onset

Case confirmed



Feb 22

Feb 26

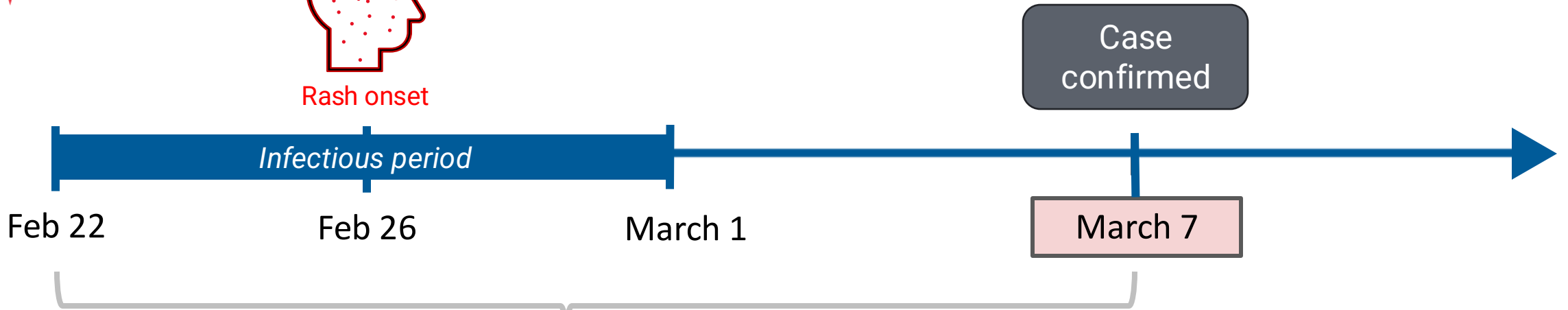
March 1

March 7

**1,801**  
current residents at  
**shelter A**



Rash onset



Feb 22

Feb 26

March 1

March 7

**20**  
transferred to  
**other shelters**

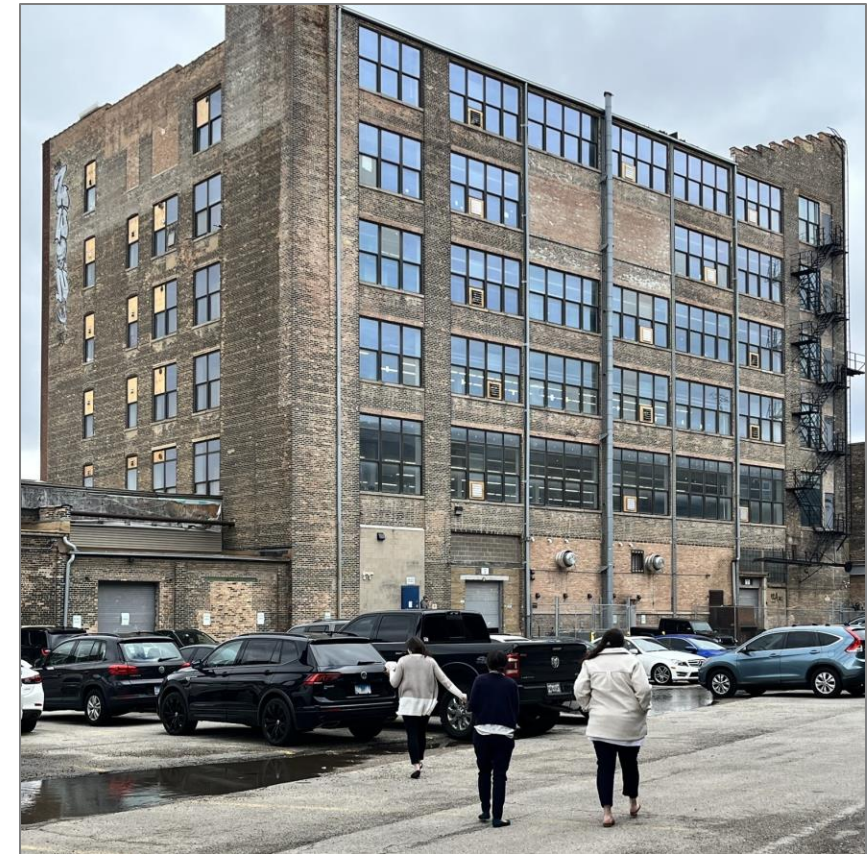
**386**  
exited shelter into  
**community**

**1,801**  
current residents at  
**shelter A**



# CDPH responded quickly with a multiple interventions.

- Quarantine & isolation
- Case investigation & contact tracing
- Healthcare coordination
- Active screening and testing
- Vaccination



Shelter A



# 67 cases were identified associated with the outbreak

A case was defined as a person with an RT-PCR–confirmed, wild-type measles infection during February 22 – May 30 and had one of the following epidemiologic links:

- **Current or former shelter A resident**
- **Shelter A worker**
- **Secondary case:** No direct exposure to shelter A but known epi-link to shelter A
- **Community:** No known epi-link to shelter A but were present in the greater Chicago area during the majority of their incubation period, and whose clinical materials had an identical partial sequence to other outbreak-associated cases



# Cases occurred over 2 months and primarily were among shelter residents

■ Current or Former Shelter A Resident   ■ Shelter A Worker   ■ Secondary Case (not exposed at Shelter A)   ■ Community (unknown link to Shelter A)

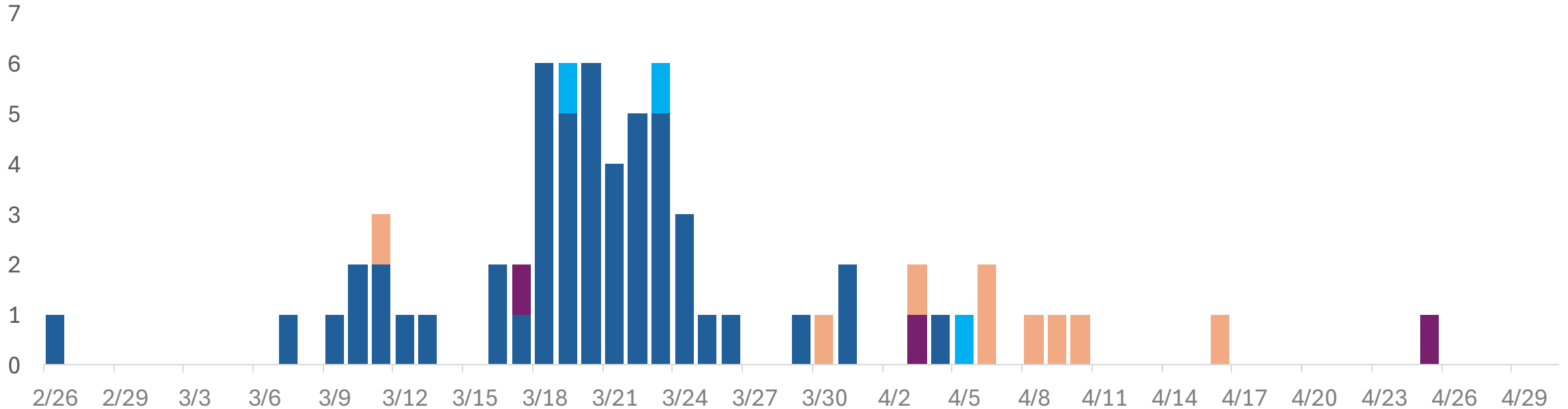
52 (78%)

3 (4%)

3 (4%)

9 (13%)

Confirmed Cases



Date of Rash Onset\*

\*If no documented rash (n=2), first symptom onset date was used

# ★ Characteristics of Outbreak-associated Cases

Age Group	N (%)
<12 months	13 (19%)
1 – 4 years	20 (30%)
5 – 19 years	9 (13%)
20+ years	25 (37%)
Race-ethnicity	
Latinx	61 (91%)
Black	3 (4%)
White	2 (3%)
Asian	1 (1%)

Hospitalization	N (%)
Yes, clinical indication	17 (25%)
Yes, isolation only	35 (52%)
No	15 (22%)
No. verified measles doses received	
1	14 (21%)
≥2	5 (7%)
None or Unknown	48 (72%)



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<b>Age group</b>	<b>Shelter residents (n=52)</b>	<b>Shelter workers (n=3)</b>	<b>Secondary or Community (n=12)</b>
<12 months	13 (25%)	0 (0%)	0 (0%)
1 – 4 years	19 (39%)	0 (0%)	1 (8%)
5 – 19 years	7 (13%)	0 (0%)	2 (17%)
20+ years	13 (25%)	3 (100%)	9 (75%)
<b>Race-ethnicity</b>			
Latinx	52 (100%)	3 (100%)	6 (50%)
Black	0 (0%)	0 (0%)	3 (25%)
White	0 (0%)	0 (0%)	2 (17%)
Asian	0 (0%)	0 (0%)	1 (8%)
<b>Hospitalized for clinical indication</b>	13 (25%)	1 (33%)	3 (25%)
<b>≥1 verified vax doses</b>	13 (25%)	3 (100%)	3 (25%)



	Shelter residents (n=52)	Shelter workers (n=3)	Secondary or Community (n=12)
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Latinx	52 (100%)	3 (100%)	6 (50%)
Black	0 (0%)	0 (0%)	3 (25%)
White	0 (0%)	0 (0%)	2 (17%)
Asian	0 (0%)	0 (0%)	1 (8%)
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5 – 19 years	7 (13%)	0 (0%)	2 (17%)
20+ years	13 (25%)	3 (100%)	9 (75%)
<b>Race-ethnicity</b>			
Latinx	52 (100%)	3 (100%)	6 (50%)
Black	0 (0%)	0 (0%)	3 (25%)
White	0 (0%)	0 (0%)	2 (17%)
Asian	0 (0%)	0 (0%)	1 (8%)
<b>Hospitalized for clinical indication</b>	13 (25%)	1 (33%)	3 (25%)
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	Shelter residents (n=52)	Shelter workers (n=3)	Secondary or Community (n=12)
<b>Age group</b>			
<12 months	13 (25%)	0 (0%)	0 (0%)
1 – 4 years	19 (39%)	0 (0%)	1 (8%)
5 – 19 years	7 (13%)	0 (0%)	2 (17%)
20+ years	13 (25%)	3 (100%)	9 (75%)
<b>Race-ethnicity</b>			
Latinx	52 (100%)	3 (100%)	6 (50%)
Black	0 (0%)	0 (0%)	3 (25%)
White	0 (0%)	0 (0%)	2 (17%)
Asian	0 (0%)	0 (0%)	1 (8%)
<b>Hospitalized for clinical indication</b>	13 (25%)	1 (33%)	3 (25%)
<b>≥1 verified vax doses</b>	13 (25%)	3 (100%)	3 (25%)

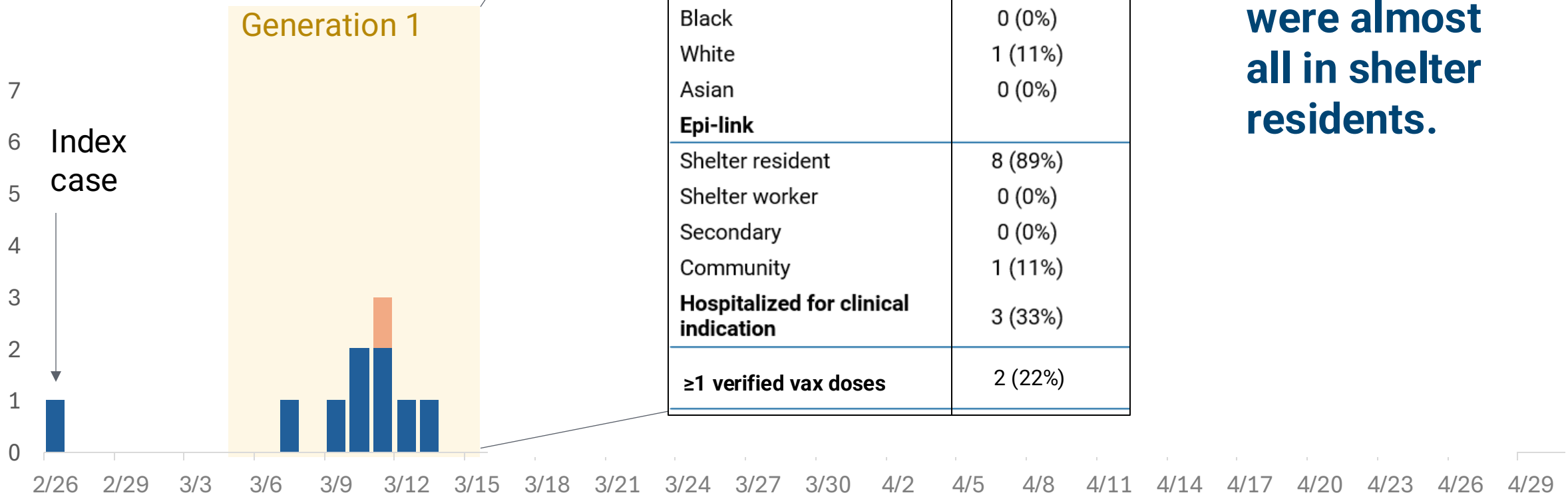




	Shelter residents (n=52)	Shelter workers (n=3)	Secondary or Community (n=12)
<b>Age group</b>			
<12 months	13 (25%)	0 (0%)	0 (0%)
1 – 4 years	19 (39%)	0 (0%)	1 (8%)
5 – 19 years	7 (13%)	0 (0%)	2 (17%)
20+ years	13 (25%)	3 (100%)	9 (75%)
<b>Race-ethnicity</b>			
Latinx	52 (100%)	3 (100%)	6 (50%)
Black	0 (0%)	0 (0%)	3 (25%)
White	0 (0%)	0 (0%)	2 (17%)
Asian	0 (0%)	0 (0%)	1 (8%)
<b>Hospitalized for clinical indication</b>	13 (25%)	1 (33%)	3 (25%)
<b>≥1 verified vax doses</b>	13 (25%)	3 (100%)	3 (25%)



Confirmed Cases

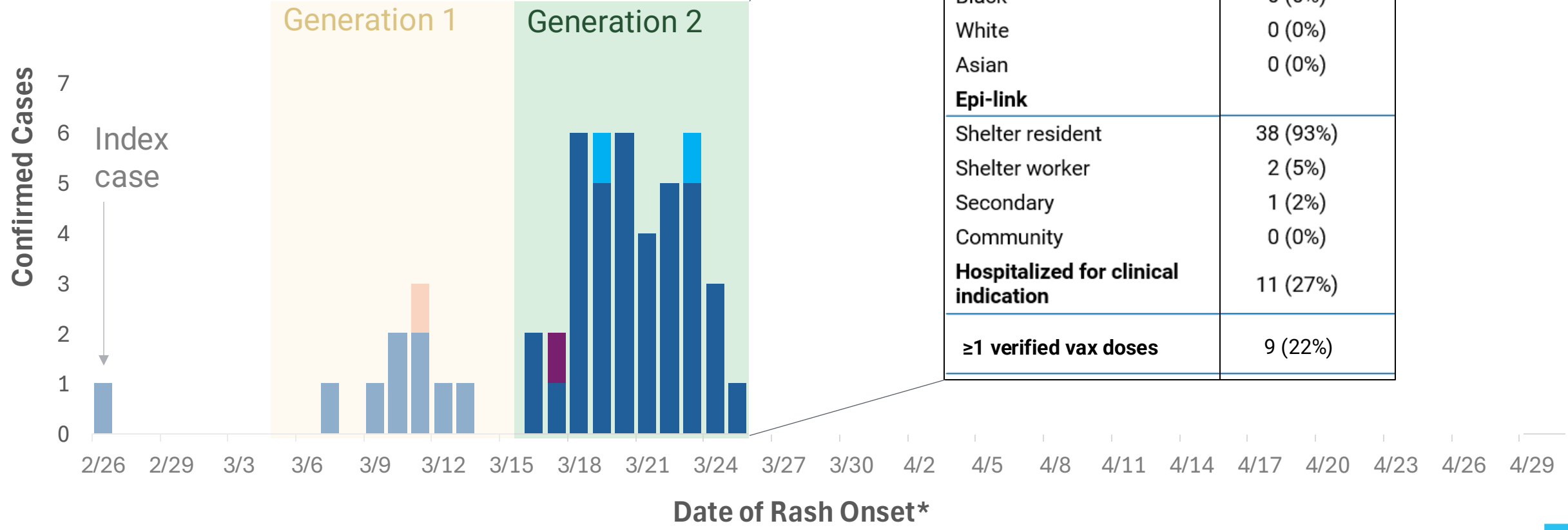


Cases in the first generation were almost all in shelter residents.

■ Current or Former Shelter A Resident ■ Shelter A Worker ■ Secondary Case (not exposed at Shelter A) ■ Community (unknown link to Shelter A)

\*If no documented rash (n=2), first symptom onset date was used

**Generation 2 was still primarily in shelter A residents but also saw two shelter A workers develop illness.**



	<b>Generation 2 (n=41)</b>
<b>Age group</b>	
<12 months	12 (30%)
1 – 4 years	14 (34%)
5 – 19 years	6 (15%)
20+ years	9 (22%)
<b>Race-ethnicity</b>	
Latinx	41 (100%)
Black	0 (0%)
White	0 (0%)
Asian	0 (0%)
<b>Epi-link</b>	
Shelter resident	38 (93%)
Shelter worker	2 (5%)
Secondary	1 (2%)
Community	0 (0%)
<b>Hospitalized for clinical indication</b>	11 (27%)
<b>≥1 verified vax doses</b>	9 (22%)

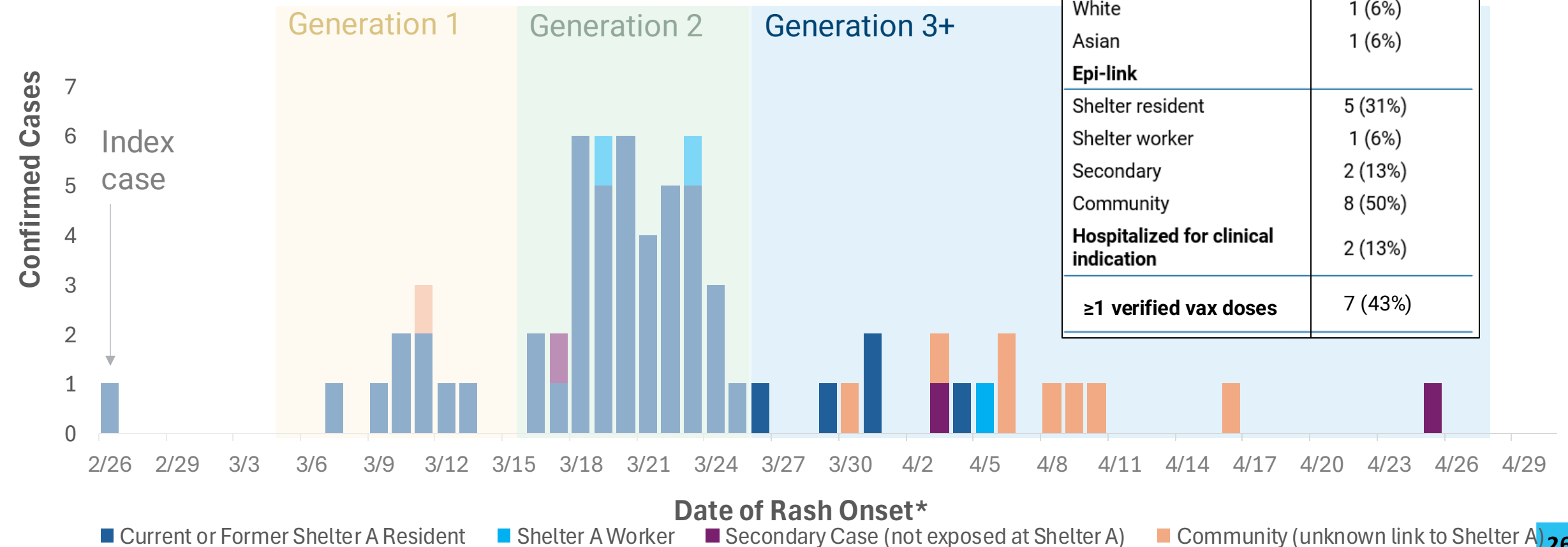
■ Current or Former Shelter A Resident ■ Shelter A Worker ■ Secondary Case (not exposed at Shelter A) ■ Community (unknown link to Shelter A)

\*If no documented rash (n=2), first symptom onset date was used



# By generation 3, the outbreak was moving beyond the shelter.

Age group	Generation 3+ (n=16)
<12 months	0 (0%)
1 – 4 years	2 (13%)
5 – 19 years	3 (19%)
20+ years	11 (69%)
Race-ethnicity	
Latinx	11 (69%)
Black	3 (25%)
White	1 (6%)
Asian	1 (6%)
Epi-link	
Shelter resident	5 (31%)
Shelter worker	1 (6%)
Secondary	2 (13%)
Community	8 (50%)
Hospitalized for clinical indication	2 (13%)
<b>≥1 verified vax doses</b>	<b>7 (43%)</b>



\*If no documented rash (n=2), first symptom onset date was used



# Takeaways

- Largest measles outbreak in IL since 1994
- Continued outreach and support is needed for the new arrival population to ensure catch-up vaccination occurs to prevent future outbreaks
- Enforcing quarantine among adult populations, especially in the post-COVID era is difficult – may explain the high proportion of adult community cases in this outbreak
- Outbreak started with a case of primary vaccine failure in a child with age-appropriate vaccination

# ★ Thanks to all our partners



Healthcare providers that cared for measles patients  
Community health workers

# Thank you!

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