



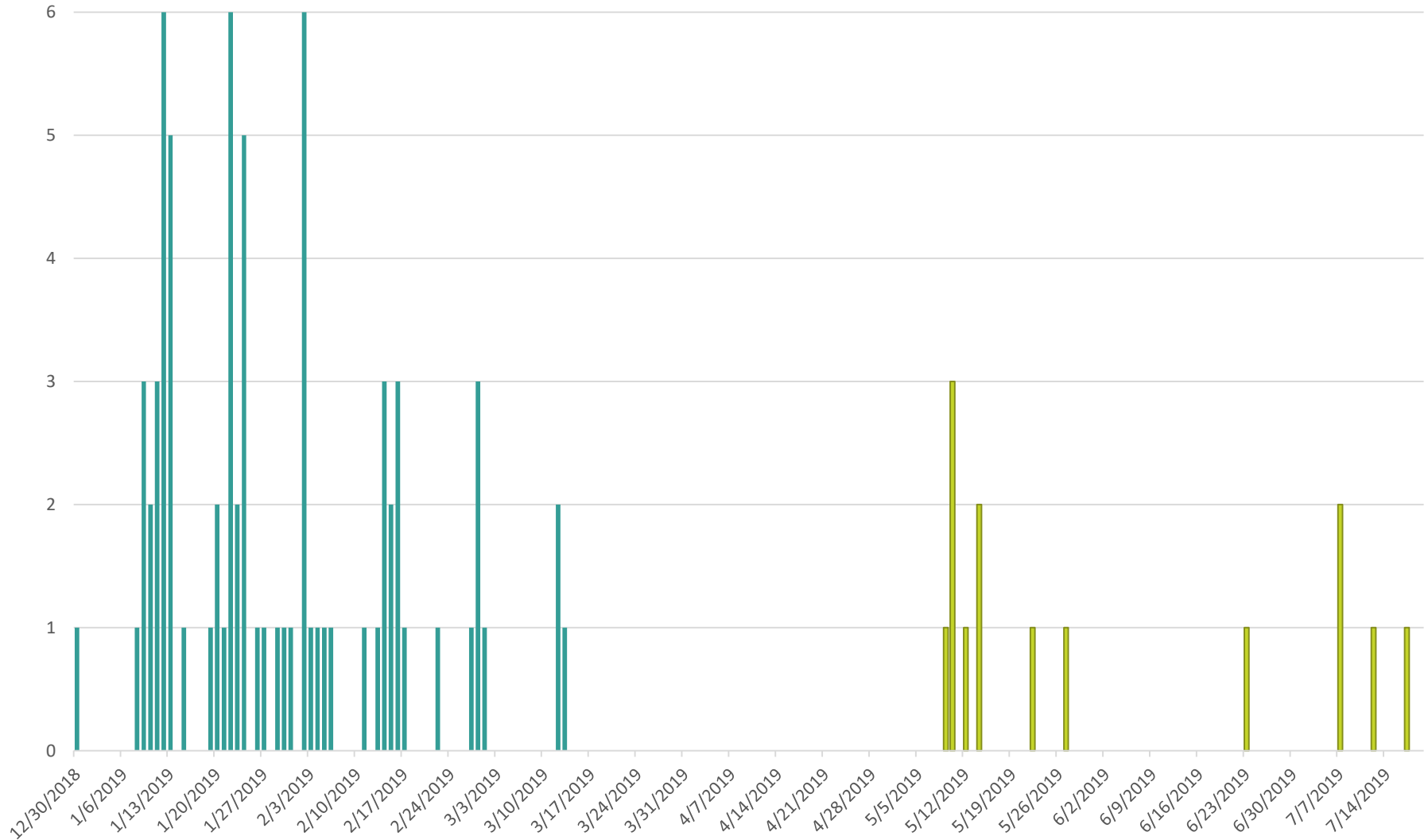
MEASLES IN WASHINGTON STATE, 2019: A TALE OF TWO OUTBREAKS

Chas DeBolt RN, MPH

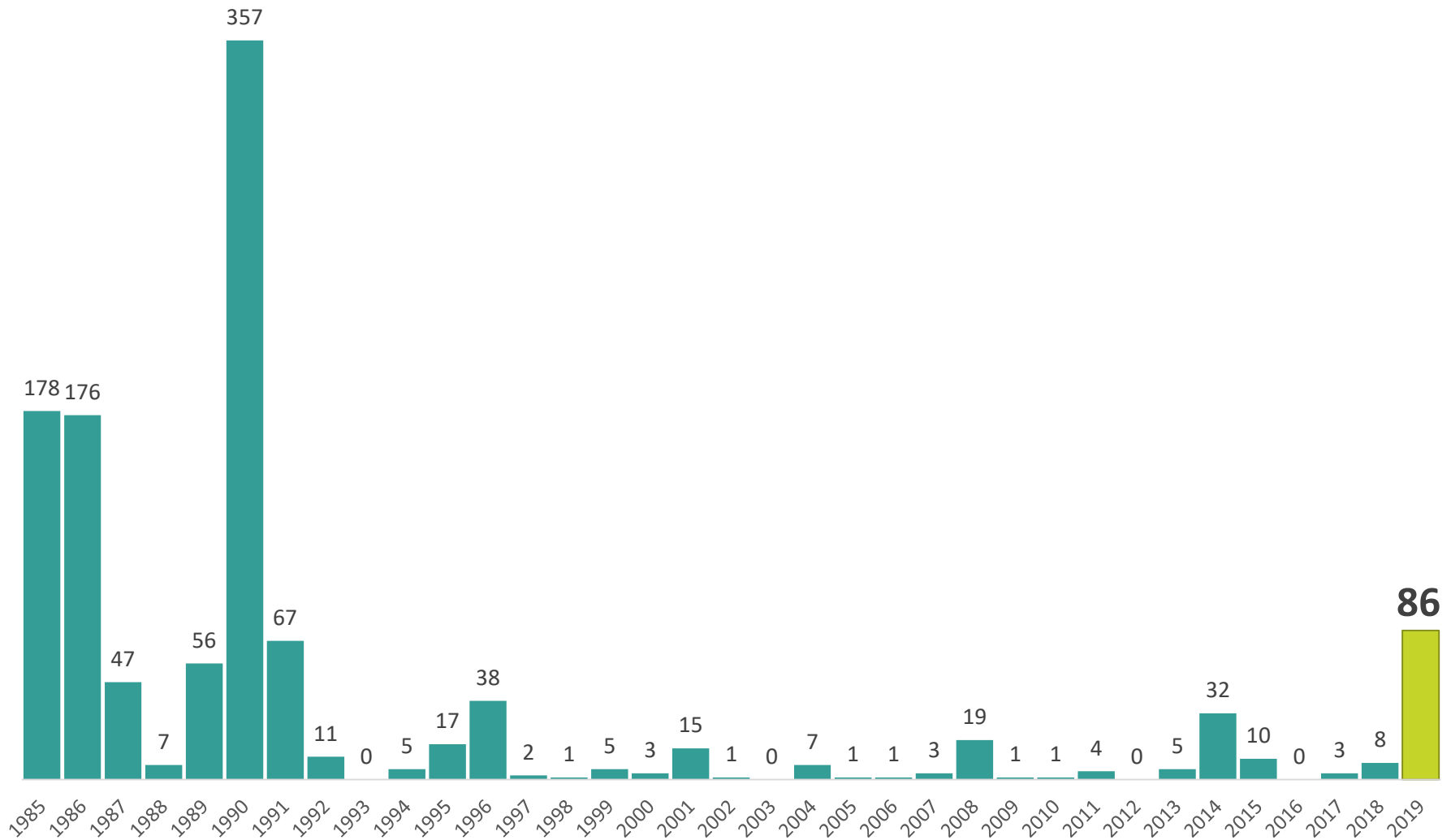
Sr. Epidemiologist for Vaccine Preventable Diseases

Washington State Department of Health

So far in 2019, 86 confirmed cases of measles have been reported in Washington : **72 in the Clark County outbreak***, and **14 in the Puget Sound outbreak***.

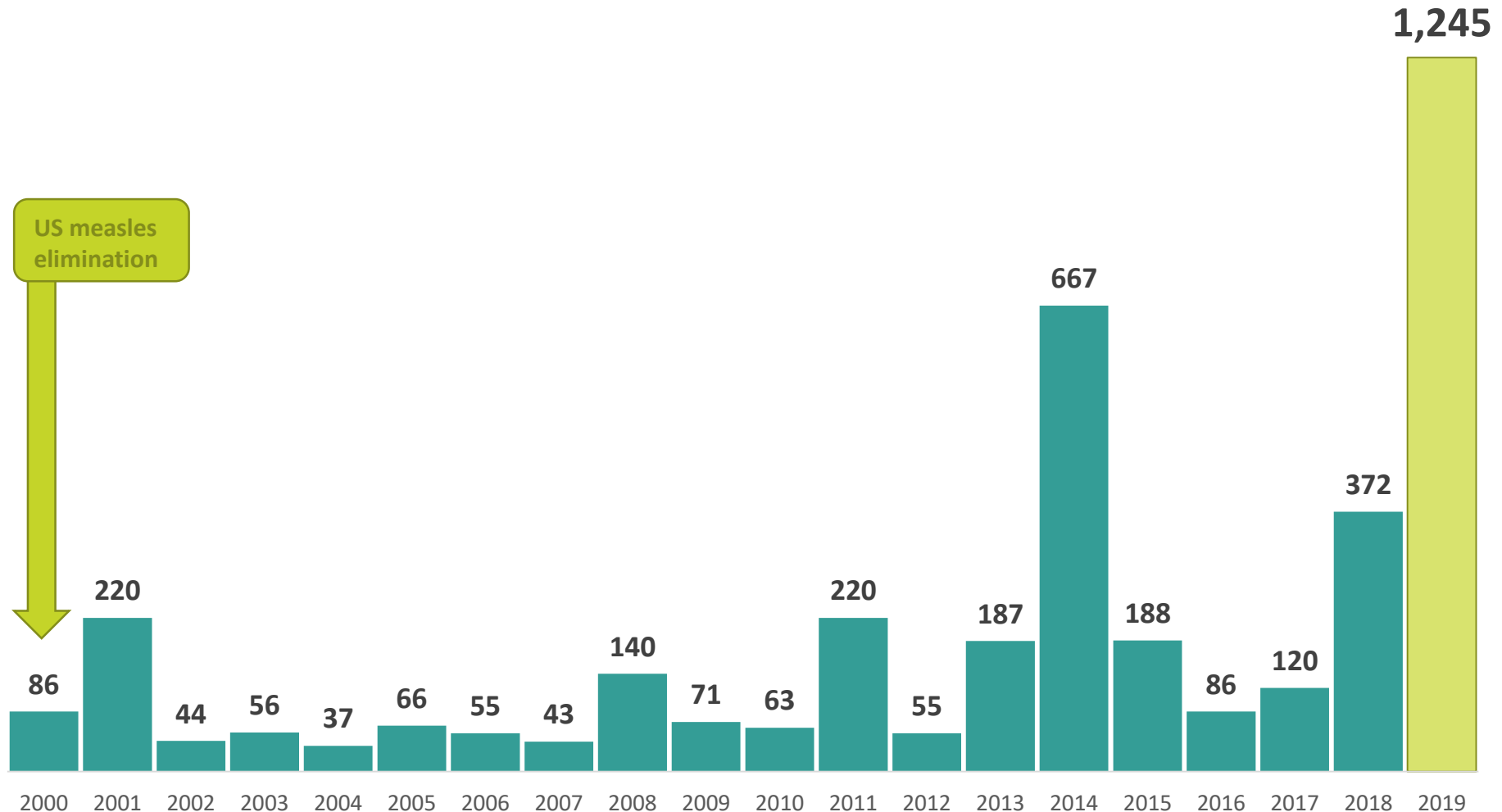


86 cases of measles is the highest number of cases reported in Washington since 1990.



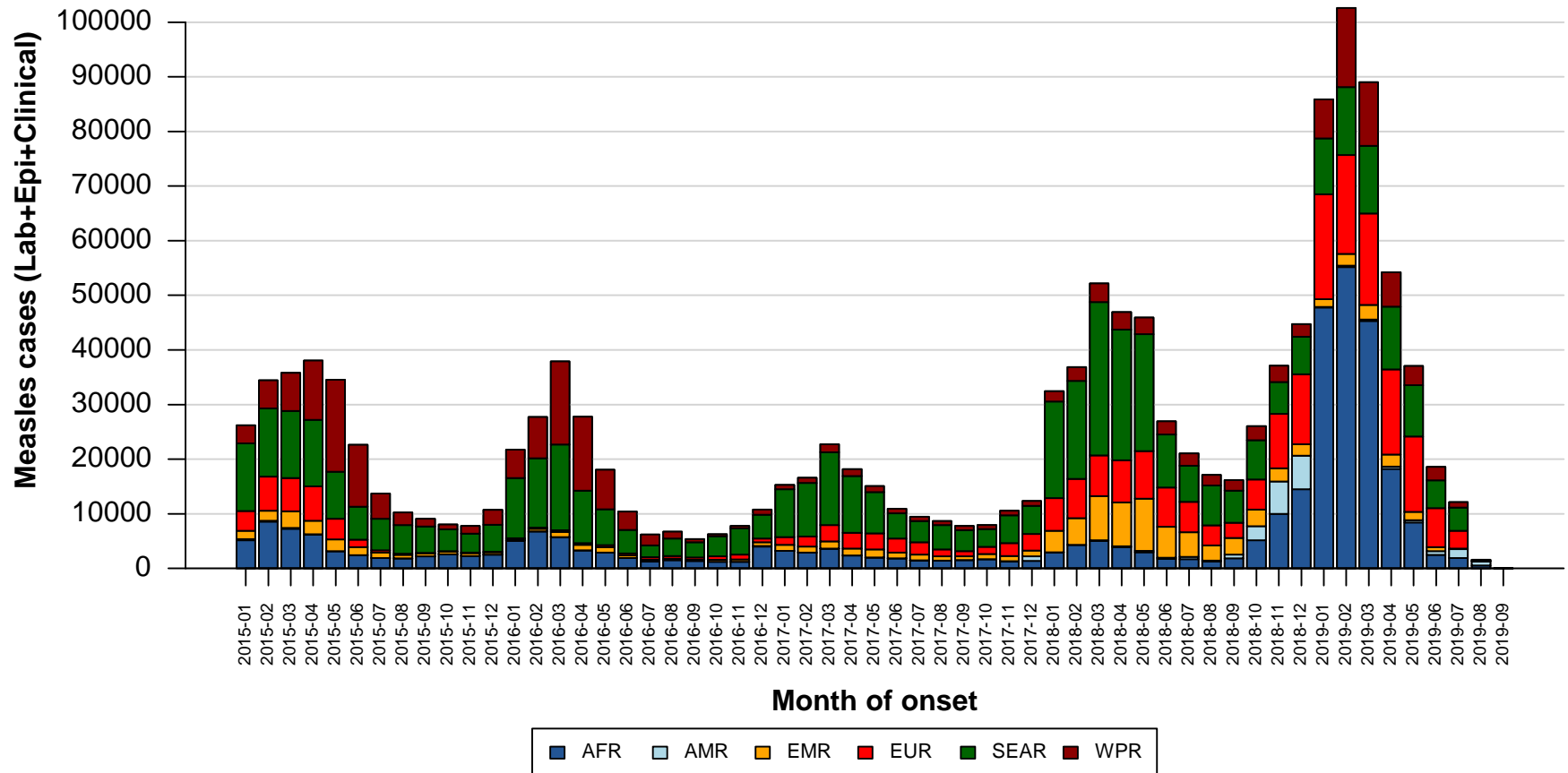
The CDC is also reporting a record number of measles cases across the US.

In 2019 we have seen the most cases in over 20 years.

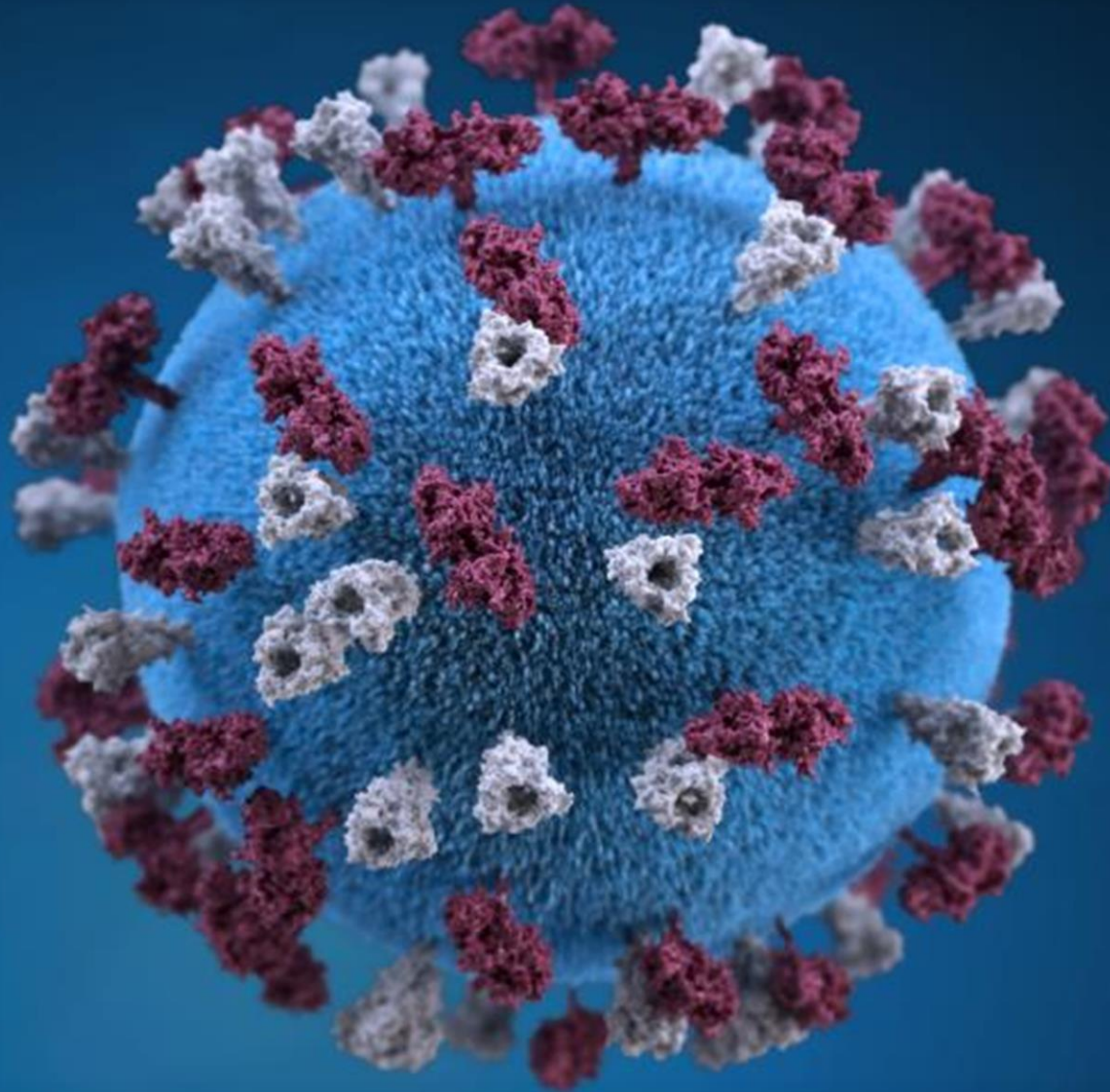


Across the world, many countries are having a record-breaking number of measles cases.

The World Health Organization (WHO) reports many regions with large outbreaks in 2018-2019. **Measles cases increased 300% in 2019.**

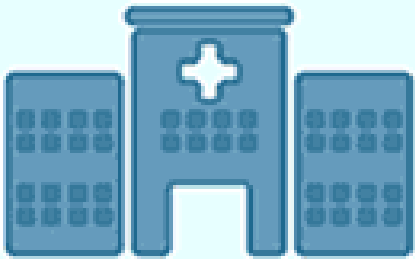


Measles is an infection caused by a virus.



Measles infection can be **serious**

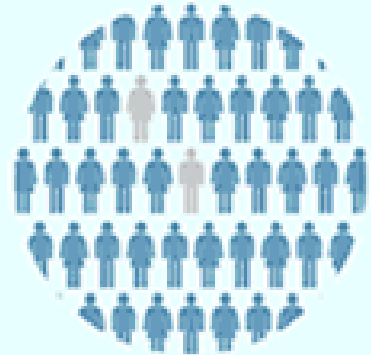
Global rates of measles complications:



About 1 out of 4 people who get measles will be hospitalized.



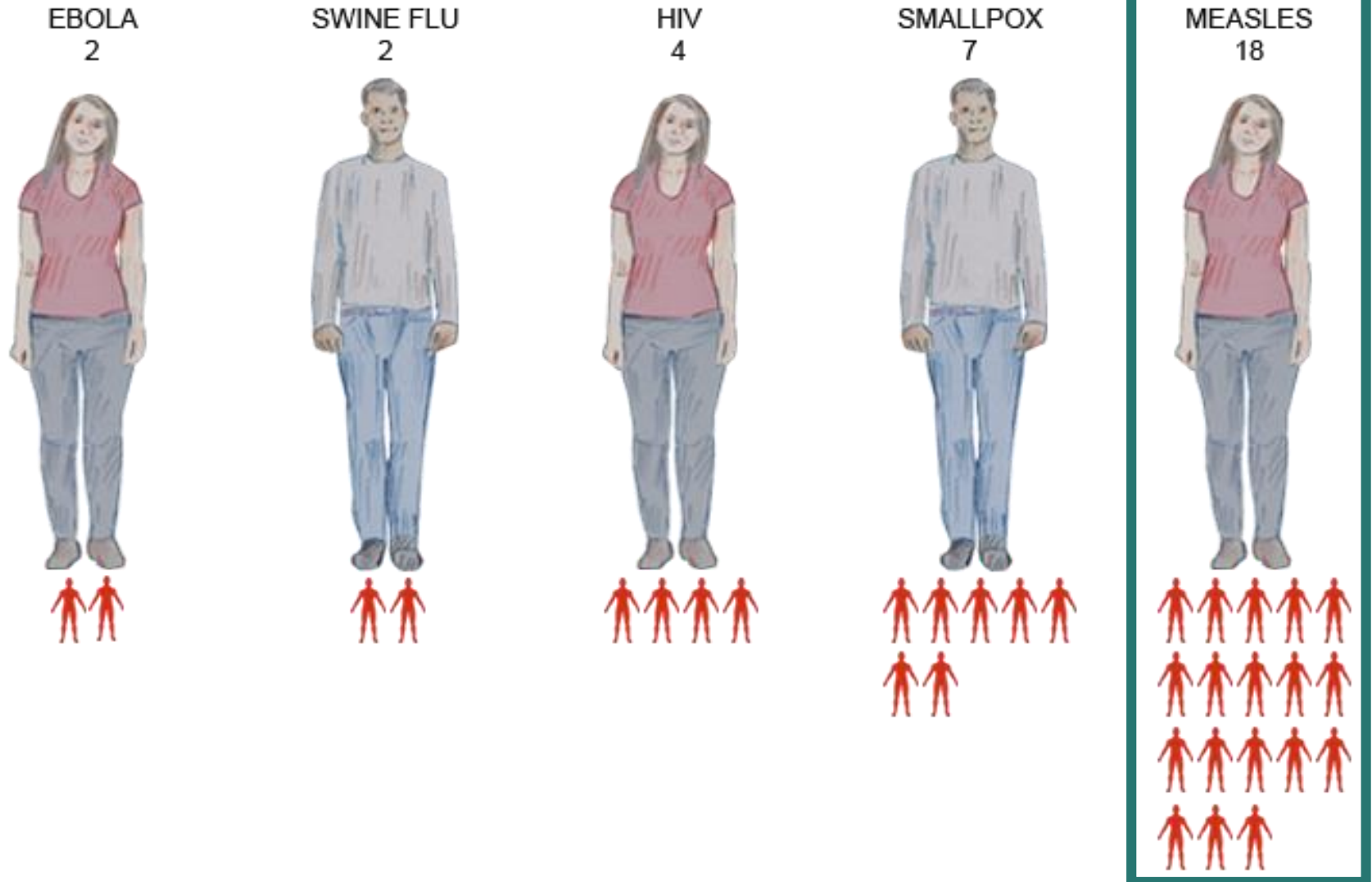
1 out of every 1,000 people with measles will develop brain swelling due to infection (encephalitis), which may lead to brain damage.



1 or 2 out of 1,000 people with measles will die, even with the best care.

Measles is **highly contagious**.

For each sick person, how many subsequent people will be infected?





MMR

Measles Mumps

Rubella

Vaccine

20 ml

RX Only

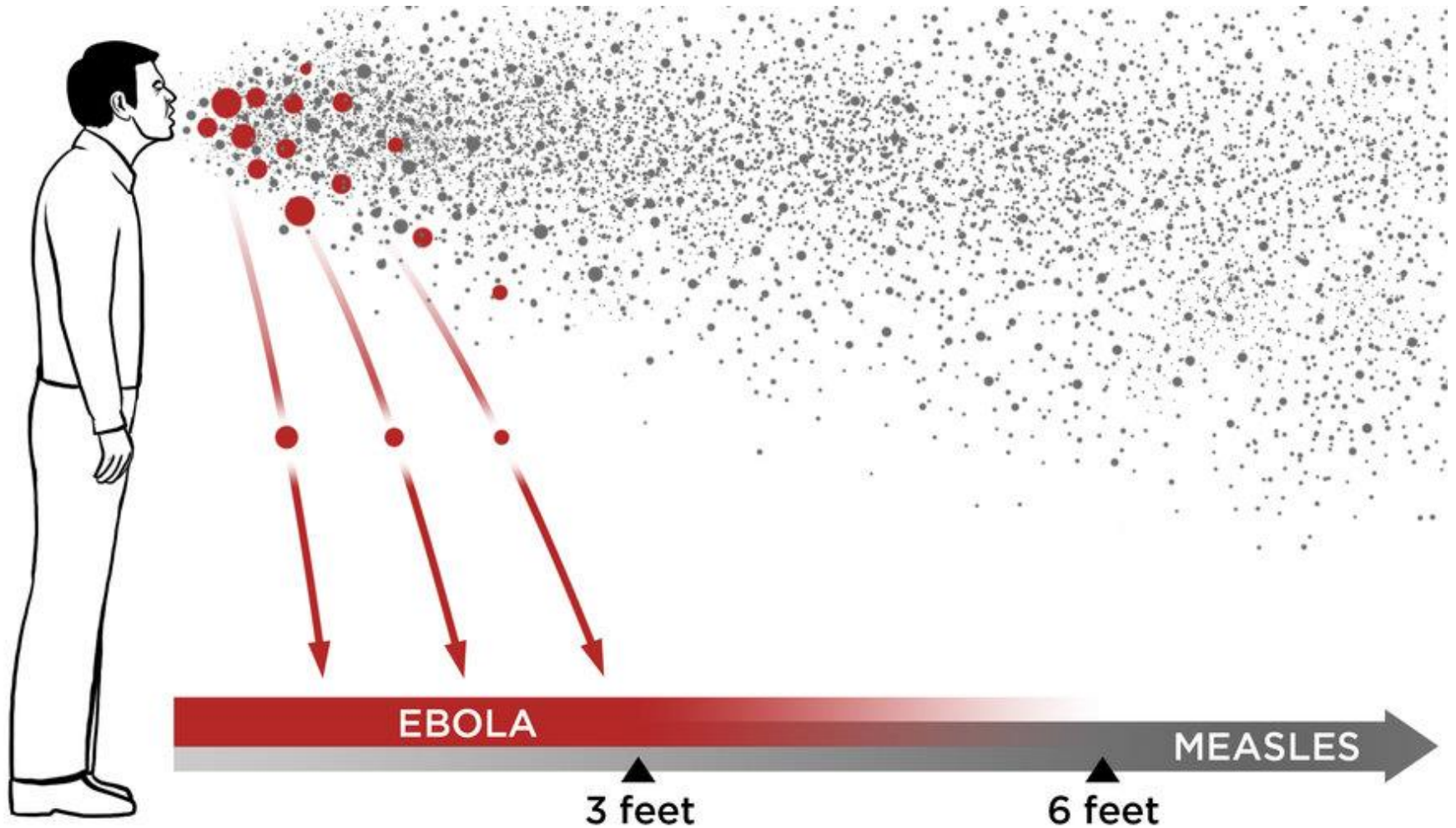
3 ml

“Why can’t I just wear a mask?”

Masks (and even N95 respirators) will not protect unvaccinated people from Measles.

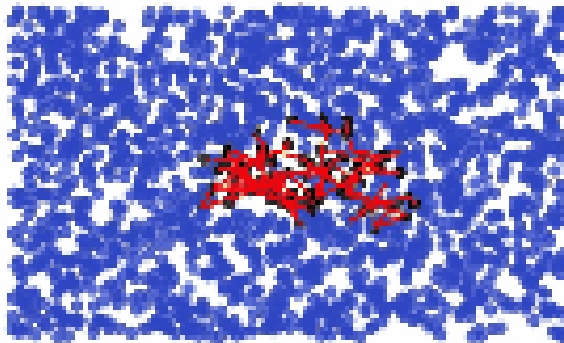


Measles **spreads easily.**

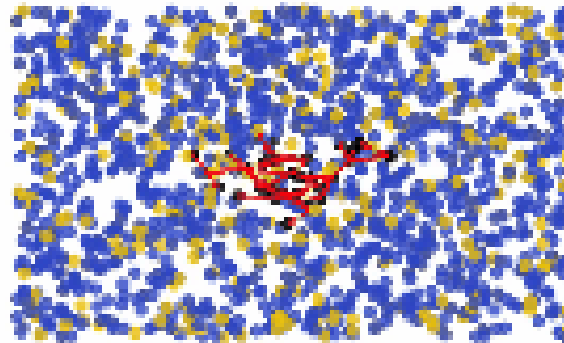


If enough people get vaccinated, a disease can't spread.
This is called **“Community Immunity.”**

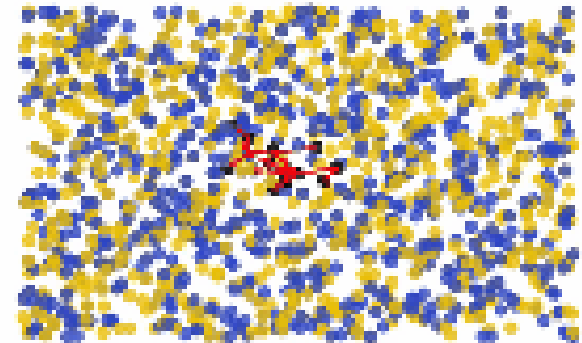
Percent Vaccinated: 0%



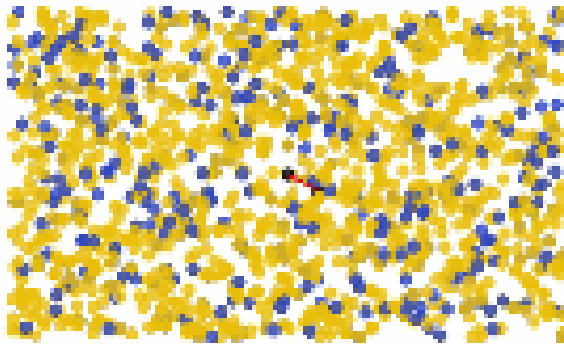
Percent Vaccinated: 25%



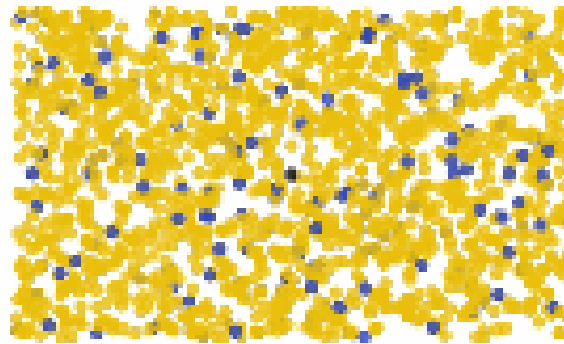
Percent Vaccinated: 50%



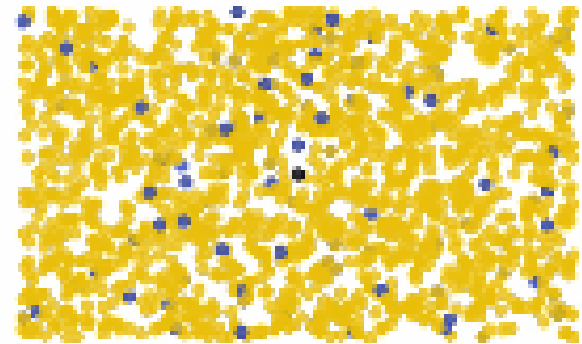
Percent Vaccinated: 75%



Percent Vaccinated: 90%



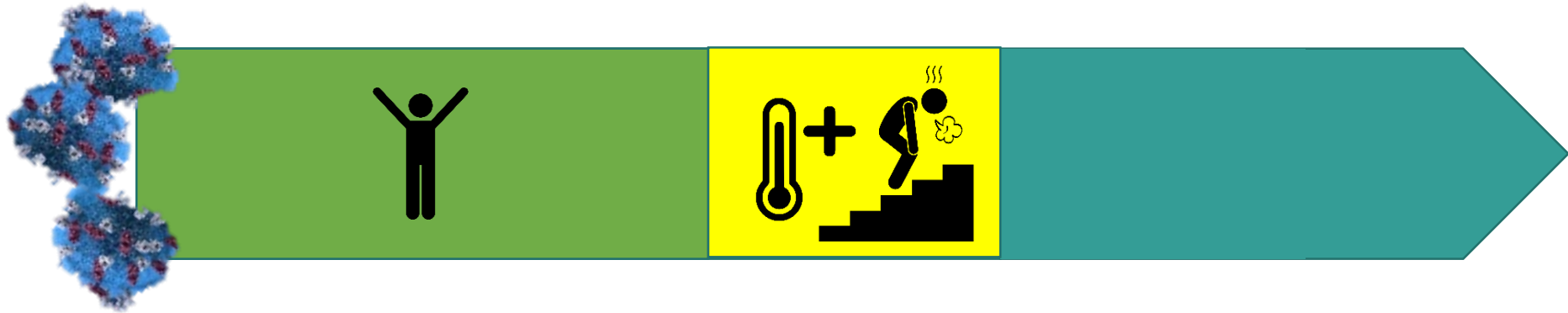
Percent Vaccinated: 95%



• Infected • Unvaccinated • Vaccinated

Measles symptoms start 7-10 days after exposure to a sick person.

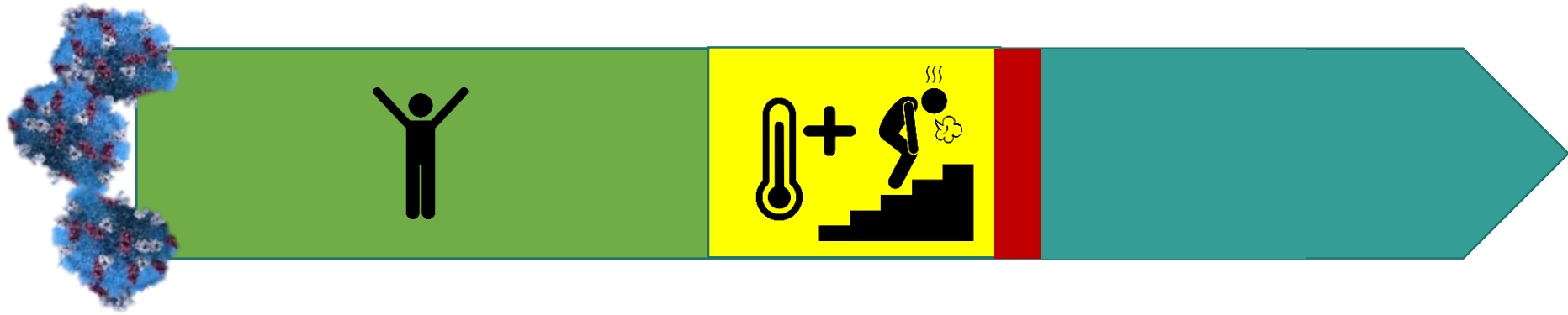
People might not know that they were exposed to measles.



- Cough
- Red Eyes
- Runny Nose

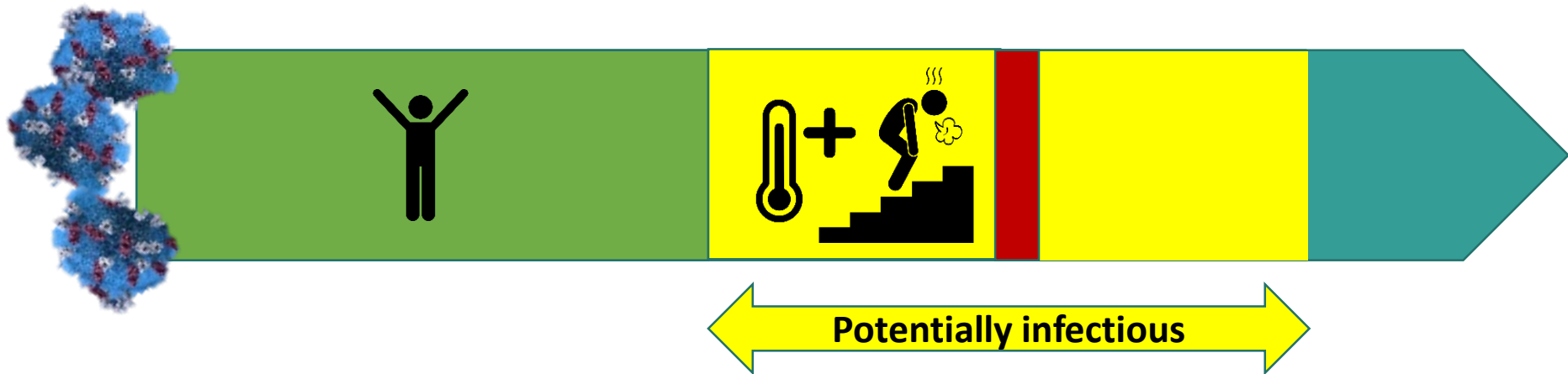
Measles rash starts 10-14 days after exposure.

The person also may have a very high fever.



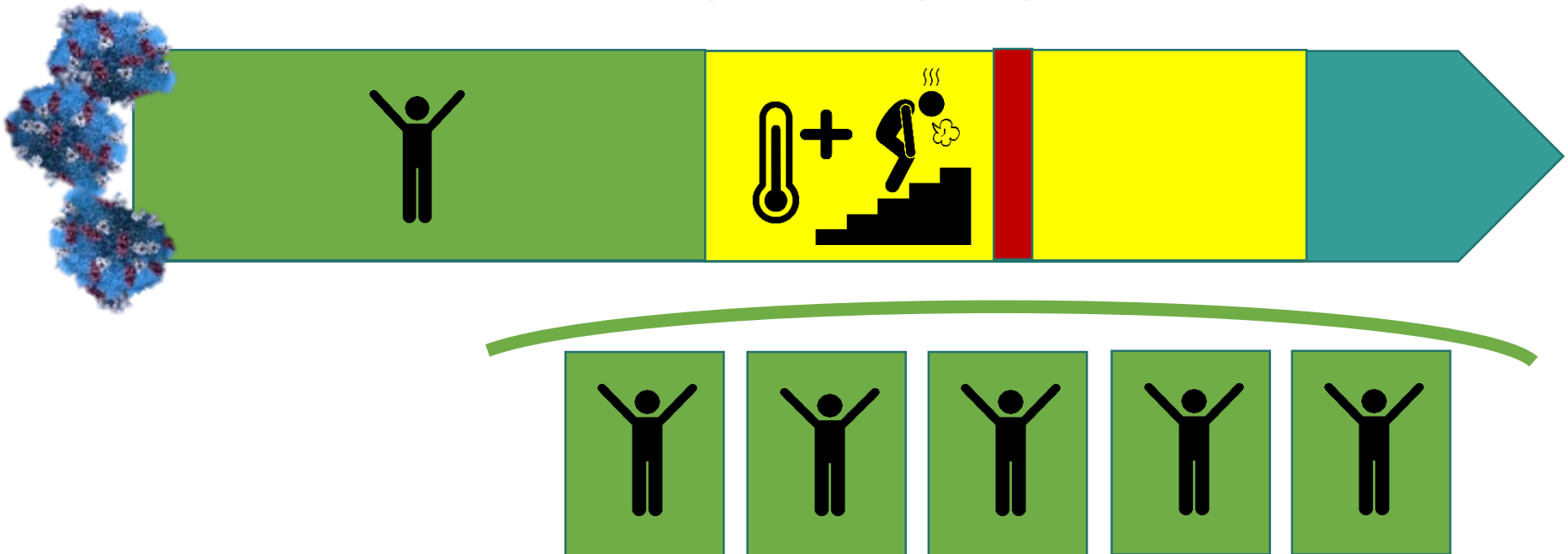
People can spread measles **4 - 5 days before and 4 days after** the rash

They can spread it before they know they have it.



Public health investigates to find out:

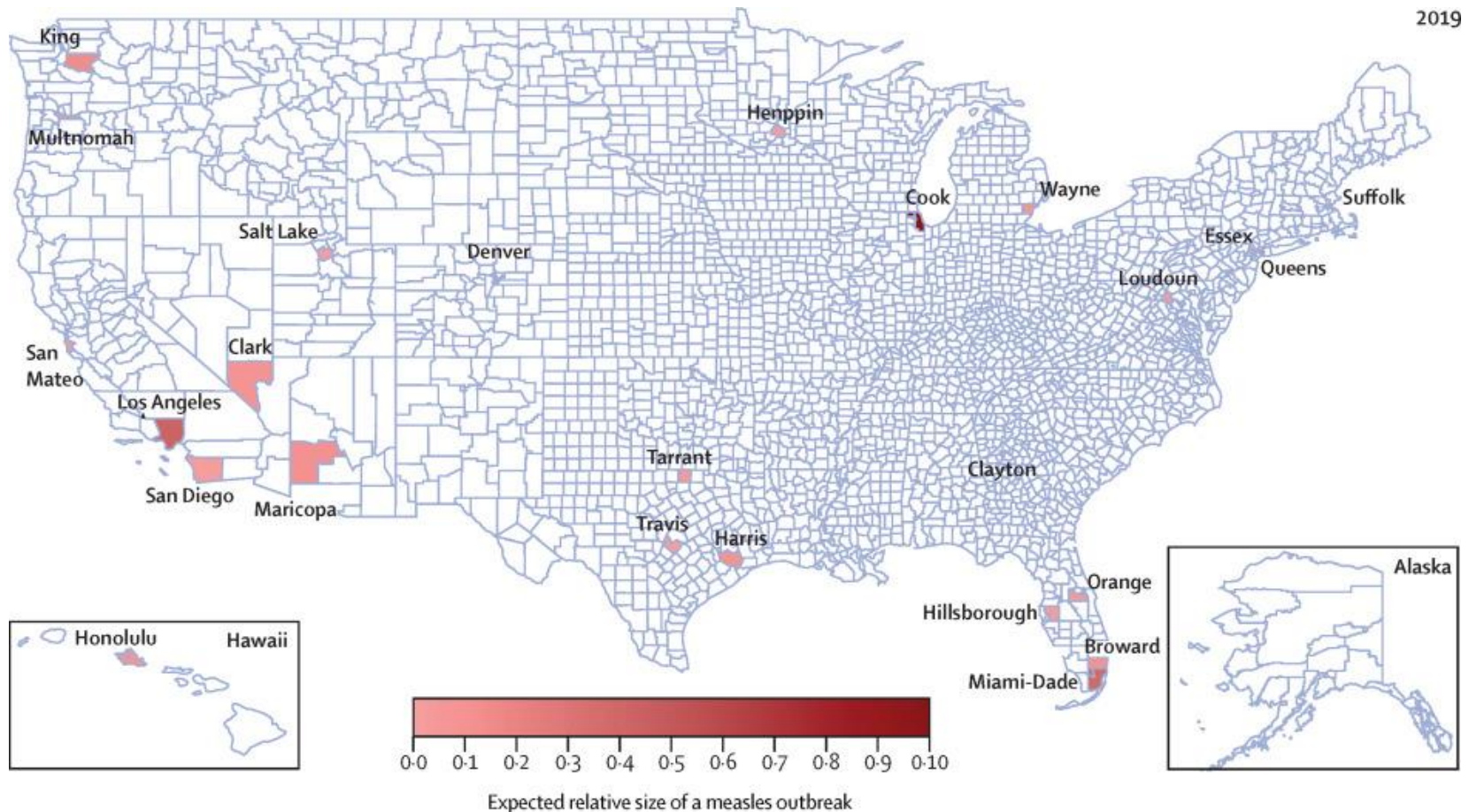
1. Who has a disease.
2. Who could it have spread to?
3. How can we protect people?





COMMENT | VOLUME 19, ISSUE 7, P684-686, JULY 01, 2019

Measles resurgence in the USA: how international travel compounds vaccine resistance



Measles outbreak in Clark County declared over; 71 cases confirmed

Originally published April 29, 2019 at 11:26 am Updated April 30, 2019 at 8:59 am



Public-health officials say raising vaccination rates is key to preventing future measles outbreaks. Shown here is a dose of measles-mumps-rubella vaccine. An outbreak in Southwest Washington has been declared over. (Eric Risberg / The Associated Press, 2015)

HEALTH

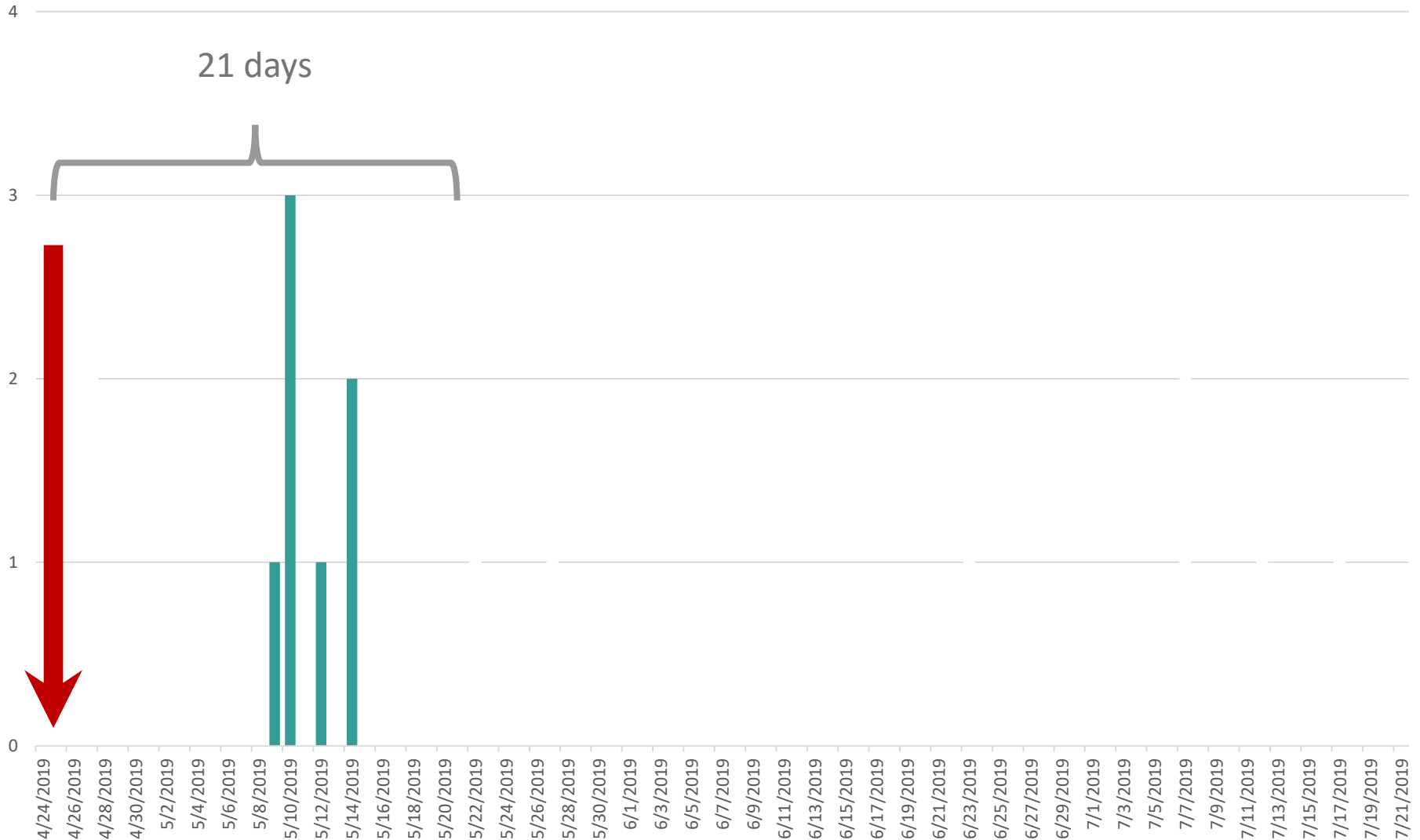


In this photo taken Tuesday, Oct. 22, 2013, a biplane hangs from the ceiling of the Gina Marie Lindsey Arrivals Hall at Seattle-Tacoma International Airport in SeaTac, Wash.

CREDIT: AP PHOTO/ELAINE THOMPSON

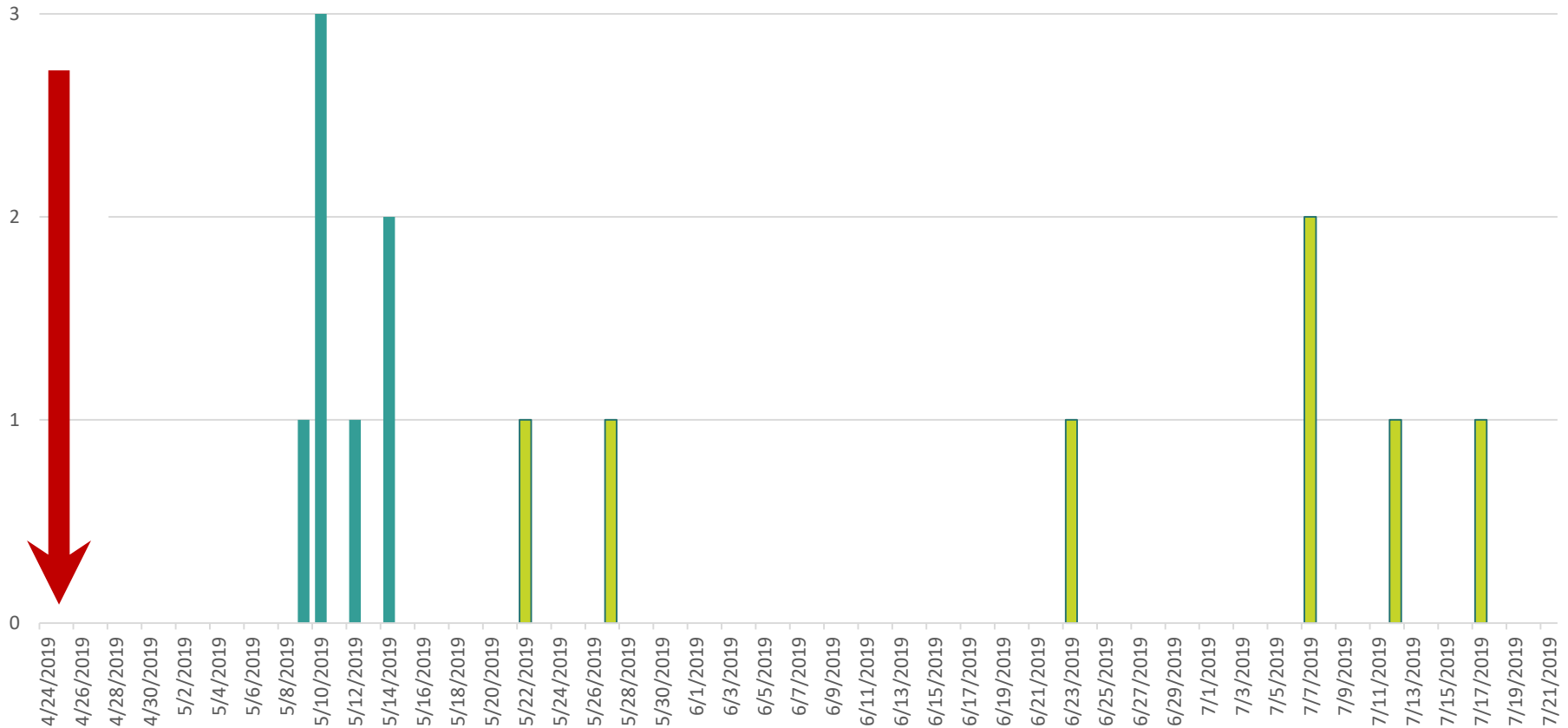
Another measles outbreak spreads, this time in Seattle

Investigation of the **first group of 7 cases** found a common travel date of **April 25**.

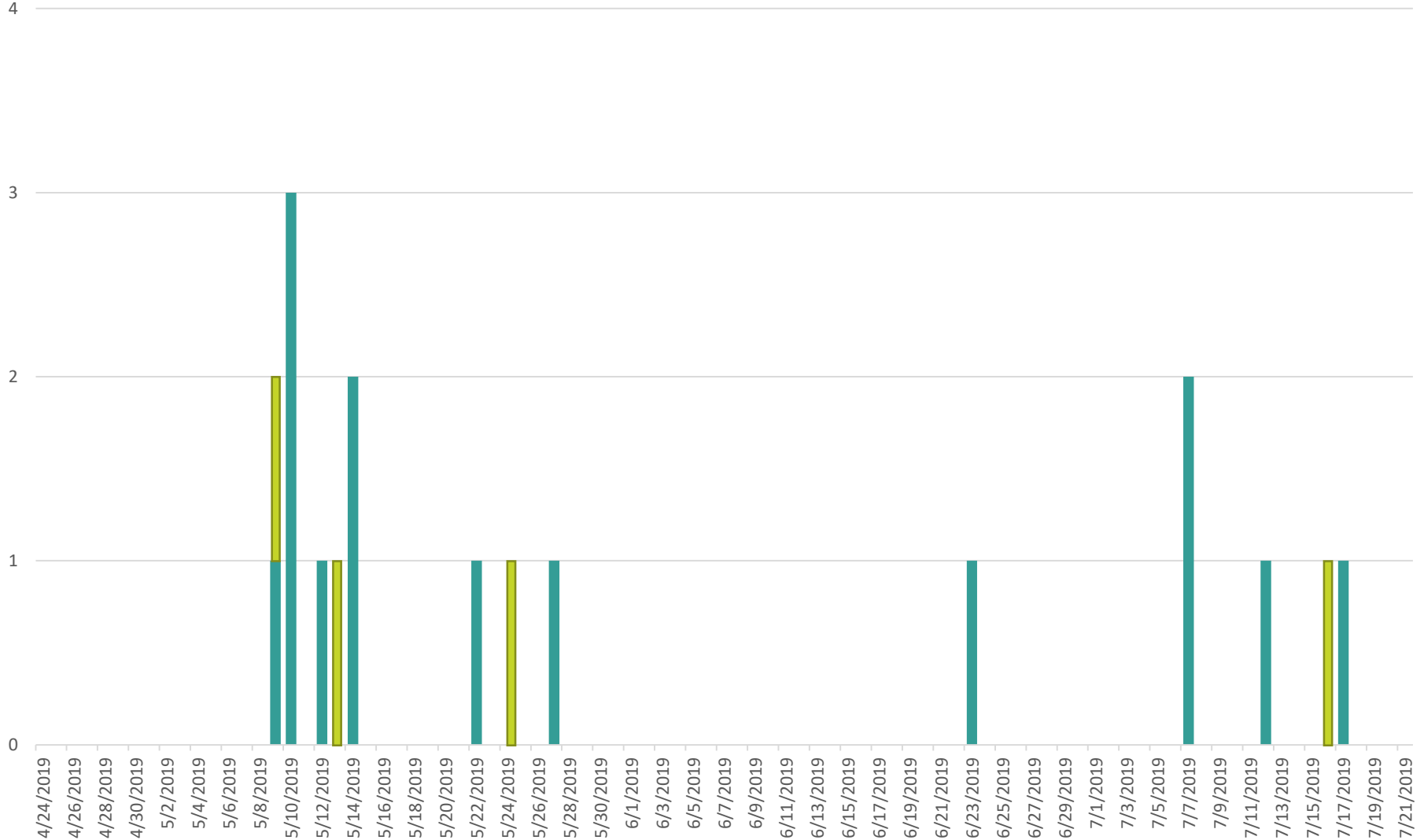


Investigation of the **first group of 7 cases** found a common travel date of **April 25**.

7 additional cases were not in the airport, but had contact with earlier cases.

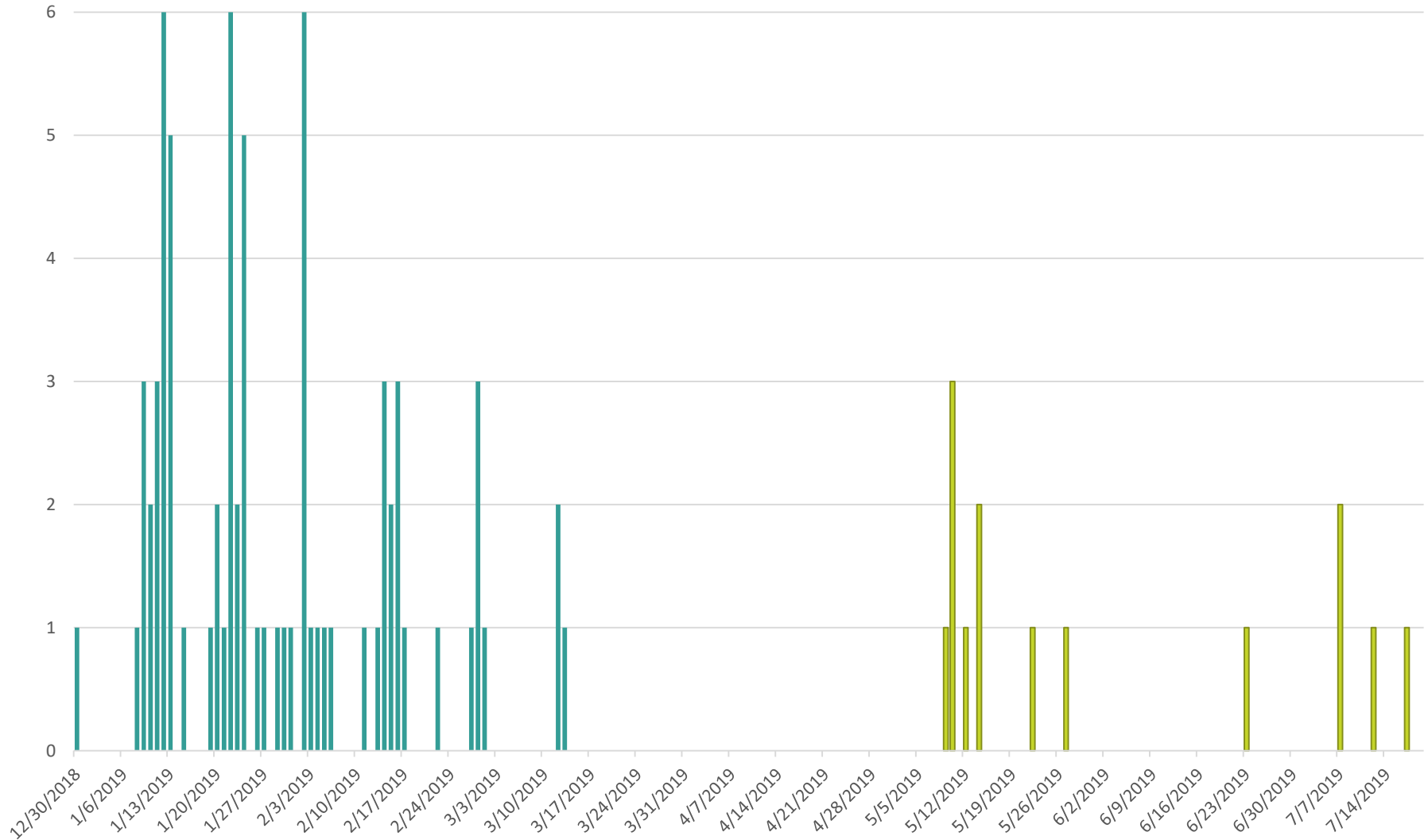


Aside from the **14 Washington cases**, at least **4 more cases from other states** are connected to this outbreak.

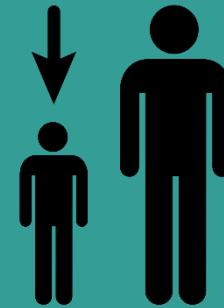
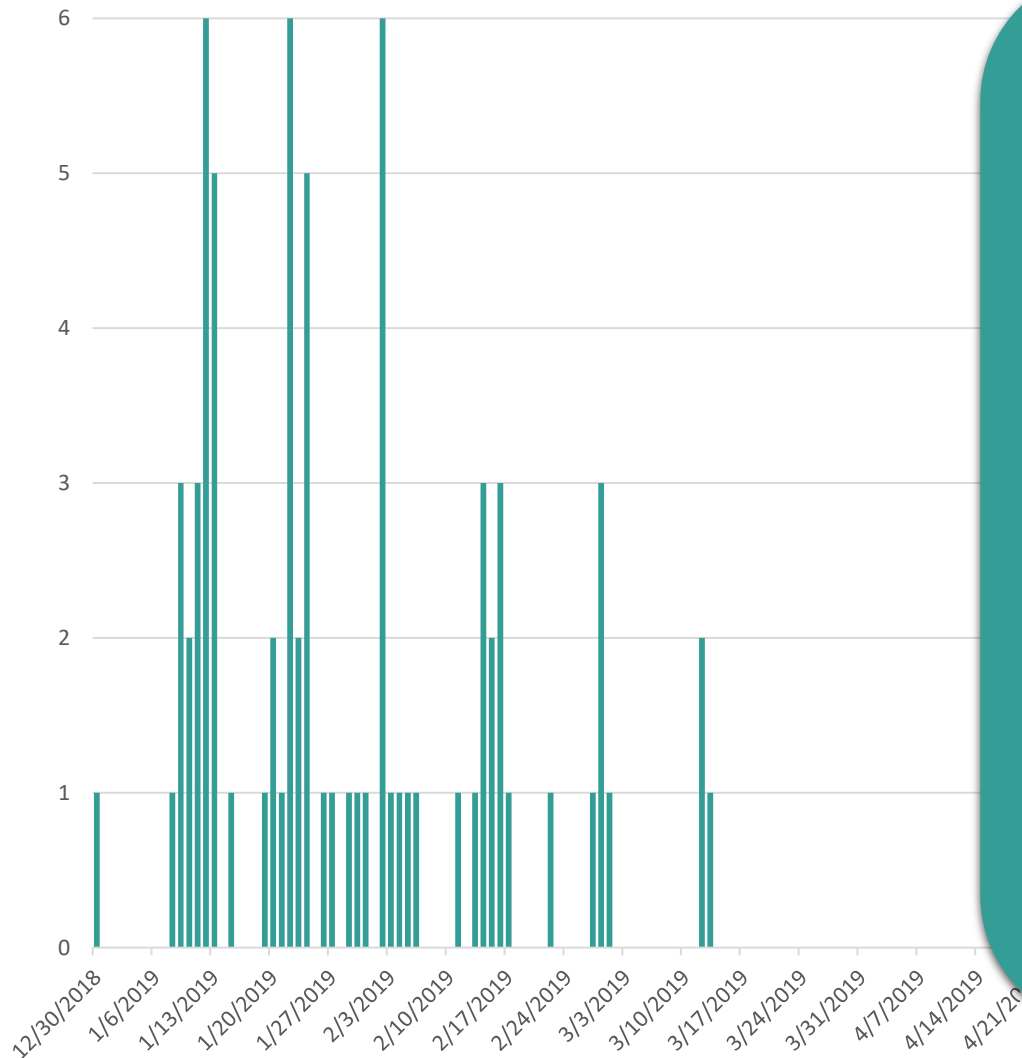


How are the two Washington measles outbreaks different?

And what can they teach us about preventing future outbreaks?



Cases from the **Clark County outbreak** were mostly in unvaccinated children.



72%

(52 cases) were 10 years or younger

85%

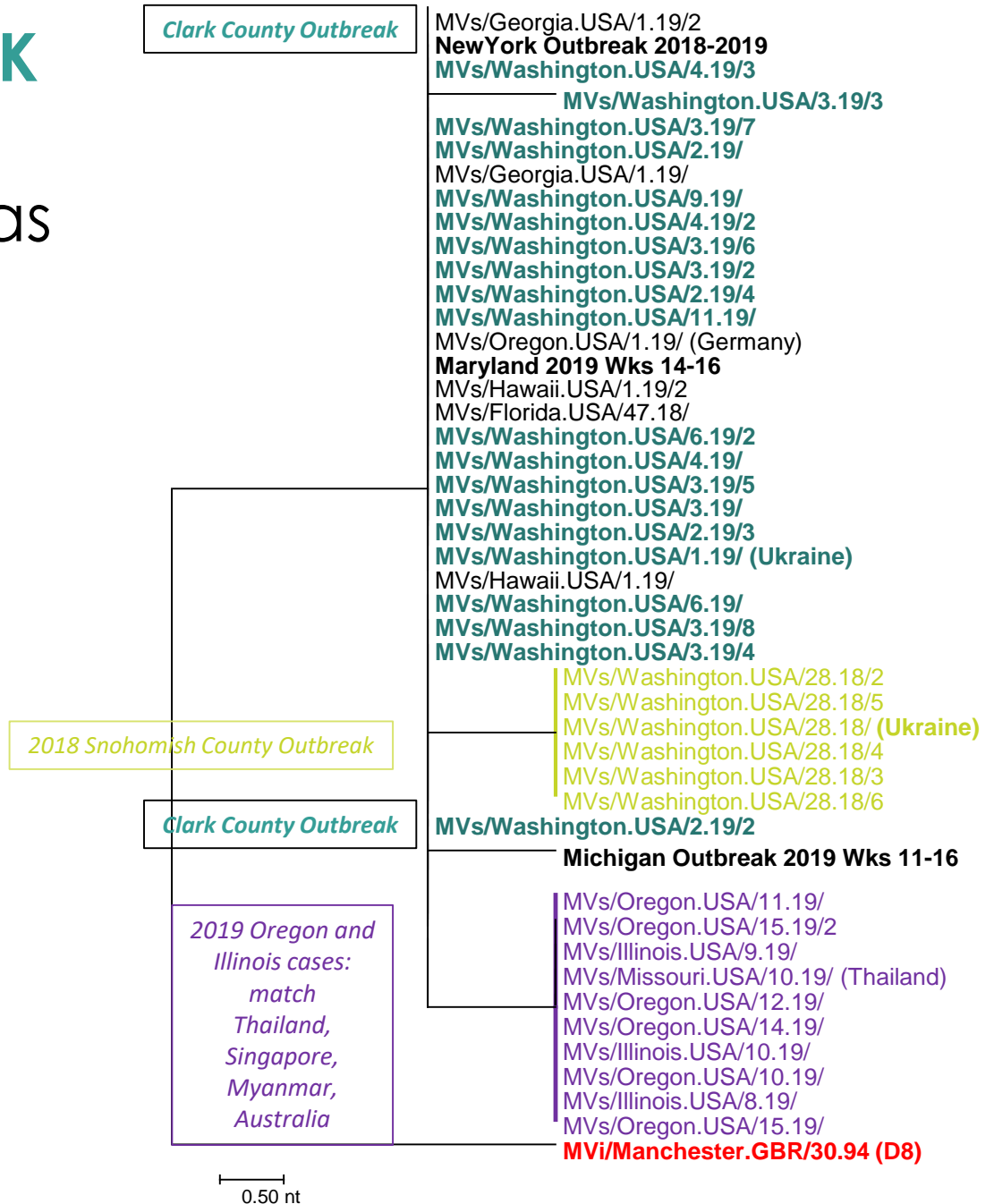
(61 cases) were unvaccinated



41.5%

(30 cases) exposed to measles in public

Cases in the CLARK County outbreak were genotyped as D8, matching the strain currently circulating in Ukraine.



Increase in Measles Cases — United States, January 1–April 26, 2019

Manisha Patel, MD¹; Adria D. Lee, MSPH¹; Susan B. Redd¹; Nakia S. Clemmons, MPH¹; Rebecca J. McNall, PhD¹;
Amanda C. Cohn, MD²; Paul A. Gastañaduy, MD¹

On April 29, 2019, this report was posted as an MMWR Early Release on the MMWR website (<https://www.cdc.gov/mmwr>).

As of April 26, 2019, CDC had reported 704 cases of measles in the United States since the beginning of 2019, representing the largest number of cases reported in the country in a single year since 1994, when 963 cases occurred, and since measles was declared eliminated* in 2000 (1,2). Measles is a highly contagious, acute viral illness characterized by fever and a maculopapular rash; complications include pneumonia, encephalitis, and death. Among the 704 cases, 503 (71%) were in unvaccinated persons and 689 (98%) occurred in U.S. residents. Overall, 66 (9%) patients were hospitalized. Thirteen outbreaks have been reported in 2019, accounting for 663 cases, 94% of all reported cases. Six of the 13 outbreaks were associated with underimmunized close-knit communities and accounted for 88% of all cases. High 2-dose measles vaccination coverage in the United States has been critical to limiting transmission (3). However, increased global measles activity poses a risk to U.S. elimination, particularly when unvaccinated travelers acquire measles abroad and return to communities with low vaccination rates (4). Health care providers should ensure persons are up to

(Table). Among all measles patients, 503 (71%) were unvaccinated, 76 (11%) were vaccinated (received ≥ 1 measles, mumps, and rubella (MMR) vaccine), and the vaccination status of 125 (18%) was unknown. Overall, 66 (9%) patients were hospitalized, and 24 (3%) had pneumonia. No deaths or cases of encephalitis were reported to CDC.

Of the 704 total cases, 663 (94%) were associated with outbreaks; 13 outbreaks have been reported in 2019. Outbreak-related cases have been reported in 12 states[†] and New York City; multistate transmission was documented in four outbreaks. Six outbreaks were associated with underimmunized close-knit communities and accounted for 88% of all cases. New York state and New York City accounted for 474 (67%) of all cases reported in 2019 and have had ongoing transmission since October 2018.

Among the 704 cases, 689 (98%) occurred in U.S. residents. Forty-four cases were directly imported from other countries, including 34 (77%) that occurred in U.S. residents; 23 imports resulted in no known secondary cases. Among the 44 internationally imported measles cases, 40 (91%) were in unvaccinated persons or persons whose vaccination status was unknown; all 40

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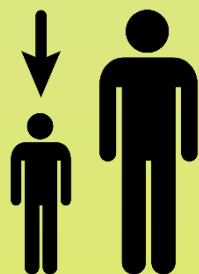
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Cases from the **Puget Sound outbreak** are mostly in adults who were exposed in a public setting.



64%

(9 cases) were adults over the age of 18

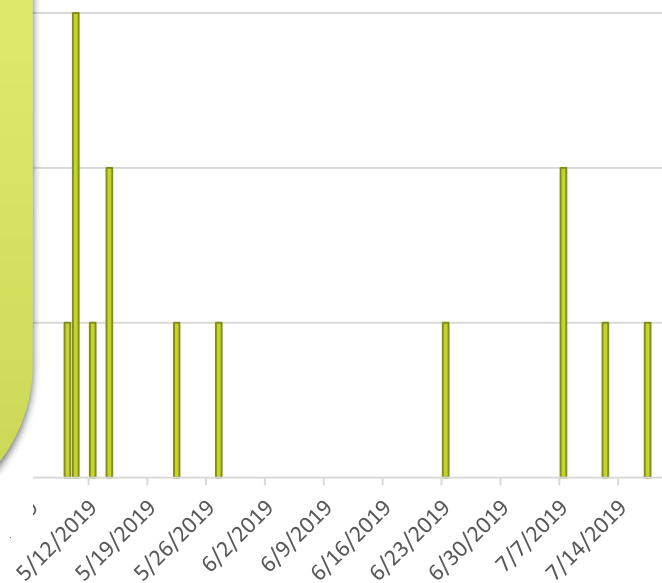
57%

(8 cases) were unvaccinated/
unknown status



64%

(9 cases) exposed to measles in public



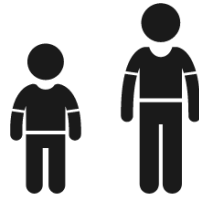
Should we consider changing what we call a “high risk” occupation?



Infants 6-11 mo.
with international travel



Preschool-aged
children



Children & Teens
(Grades K-12, College)



Adults in low-risk
occupations



Healthcare workers and
other high-risk occupations



Washington and **out-of-state** cases were genotype D8 and linked via travel and genetic sequencing but were unique in the U.S.

MVs/Washington.USA/6.19/2 (CDC RC-2019-125)
MVs/Washington.USA/4.19/3 (CDC RC-2019-123)
MVs/Washington.USA/4.19/ (CDC RC-2019-83)
MVs/Washington.USA/3.19/7 (CDC RC-2019-67)
MVs/Washington.USA/3.19/5 (CDC RC-2019-65)
— MVs/Washington.USA/3.19/3 (CDC RC-2019-62)
MVs/Washington.USA/3.19/ (CDC RC-2019-59)
MVs/Washington.USA/2.19/4 (CDC RC-2019-76)
MVs/Washington.USA/2.19/2 (CDC RC-2019-63)



MVs/Washington.USA/20.19/2 (CDC RC-2019-545)

MVs/California.USA/19.19/

MVs/Oklahoma.USA/19.19/



MVs/Washington.USA/20.19/ (CDC RC-2019-544)

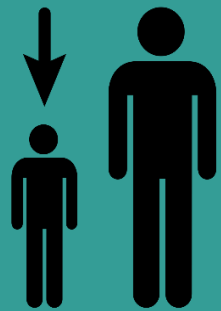
MVs/Washington.USA/19.19/ (CDC RC-2019-496)

MVs/Washington.USA/20.19/3 (CDC RC-2019-546)

MVs/Washington.USA/1.19/ (CDC RC-2019-36)



Washington's two measles outbreaks have been very different, highlighting the need for a variety of strategies.

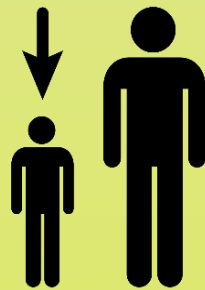


72%
(52 cases) were 10
years or younger

85%
(61 cases) were
unvaccinated

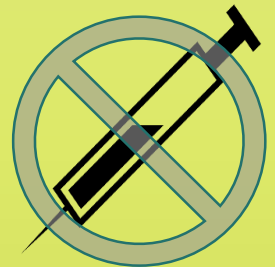


41.5%
(30 cases) exposed
to measles in public



64% (9 cases) were adults
over the age of 18

57% (8 cases) were
unvaccinated/
unknown status



64% (9 cases) were
exposed to
measles in public

Responding to a measles outbreak requires a lot of resources.



71 days

of incident
command in 2019

316

people



working more than

16,000

hours

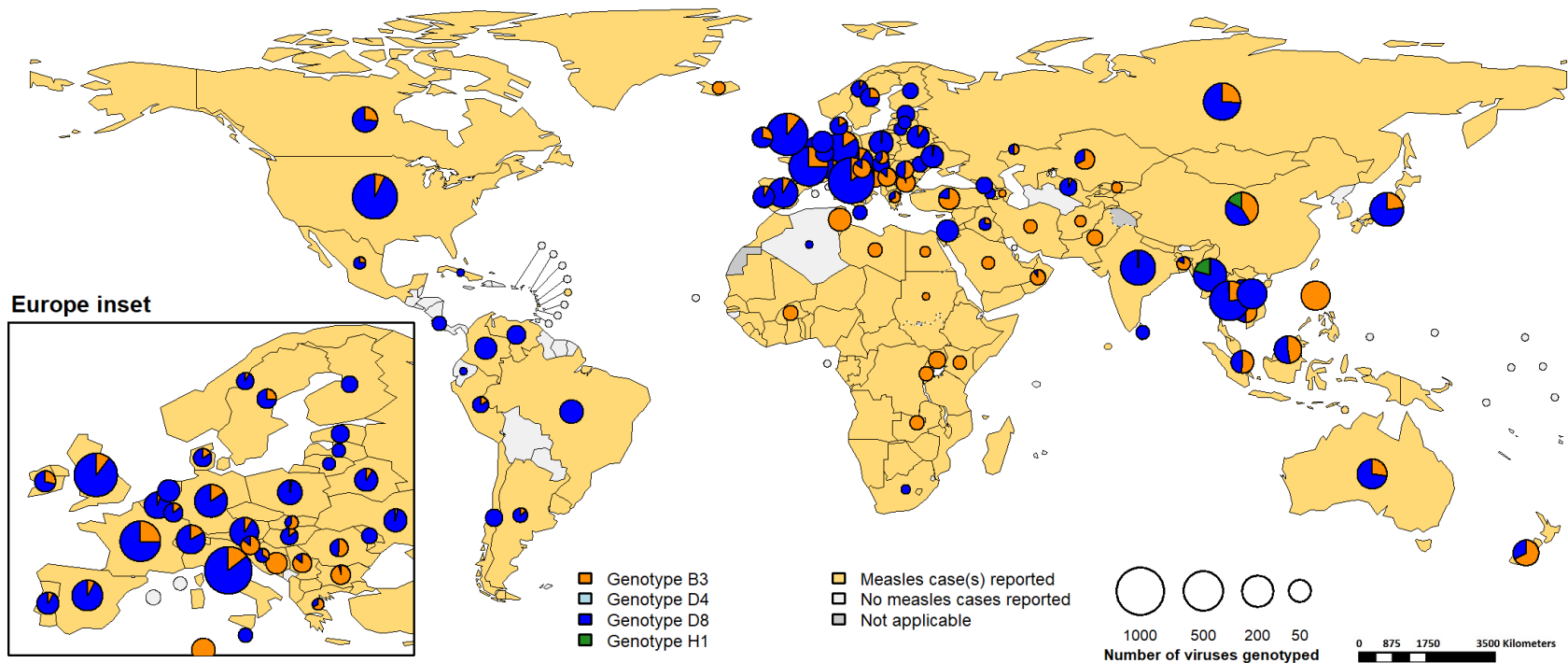


Total cost to DOH:

1,143,600

(or
8,800 per day)

Distribution of measles genotypes (last 12 months)



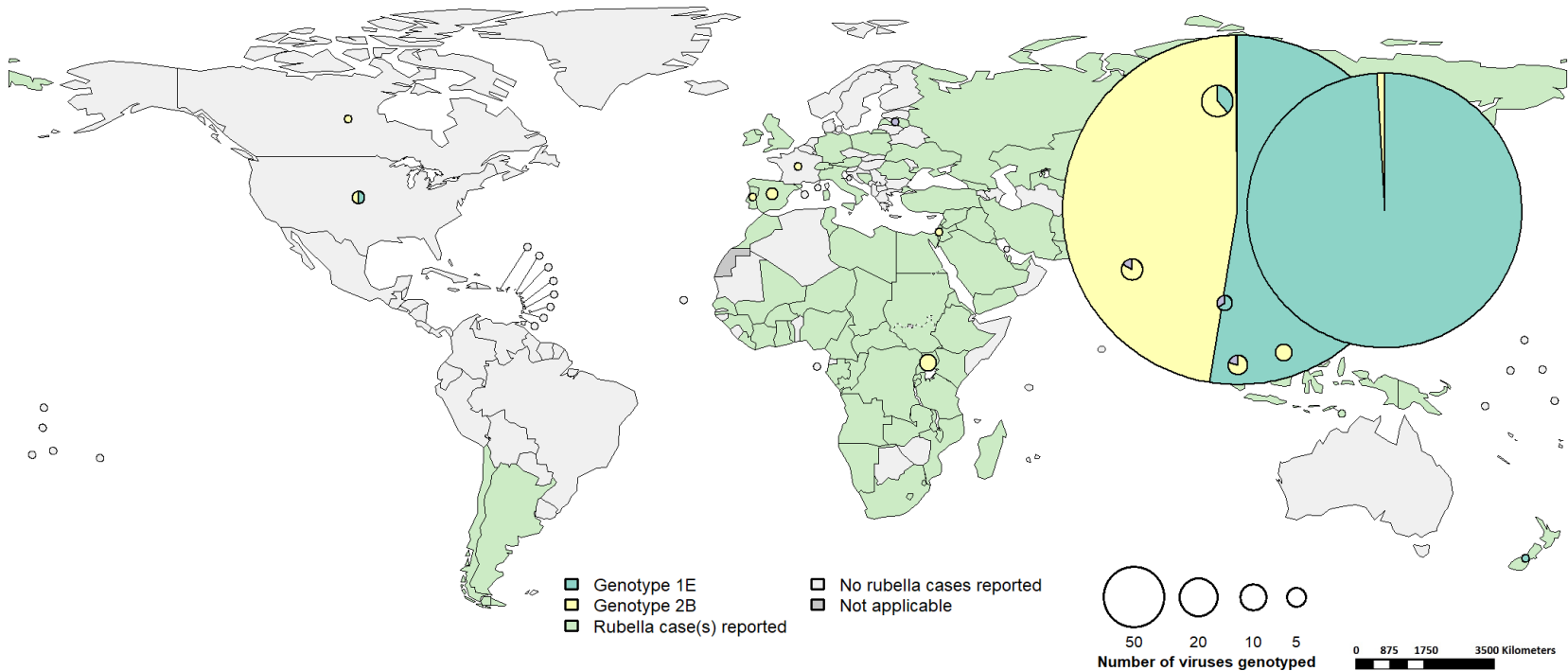
Disclaimer:

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.



Washington State Department of Health is committed to providing customers with forms and publications in appropriate alternate formats. Requests can be made by calling 800-525-0127 or by email at civil.rights@doh.wa.gov. TTY users dial 711.

Distribution of rubella genotypes (last 12 months)



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MMR Vaccine	Measles
<i>Uncommon Complications</i>	
300 children have seizures	10,000 children have seizures induced by fever
<i>Rare Complications</i>	
26 Children bruise or bleed more easily (thrombocytopenia)	330 Children develop thrombocytopenia
<i>VERY Rare Complications</i>	
Up to 4 children get severe anaphylaxis (allergic reaction)- treatable	0 Children get anaphylaxis
0 Children get SSPE (causes progressive brain damage & death)	10 Children get SSPE
Up to 1 child may develop encephalitis (brain inflammation that can cause brain damage and death)	2000 Children develop encephalitis

SEVERE COMPLICATIONS DUE TO MMR VACCINE AND MEASLES AMONG 1 MILLION CHILDREN AGED UNDER 5 YEARS. SOURCE: THE AUSTRALIAN ACADEMY OF SCIENCE