

# Domestic Measles Update

Advisory Committee on Immunization Practices  
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B3

D9



**Global transmission patterns of measles viruses from the Philippines, 2014**

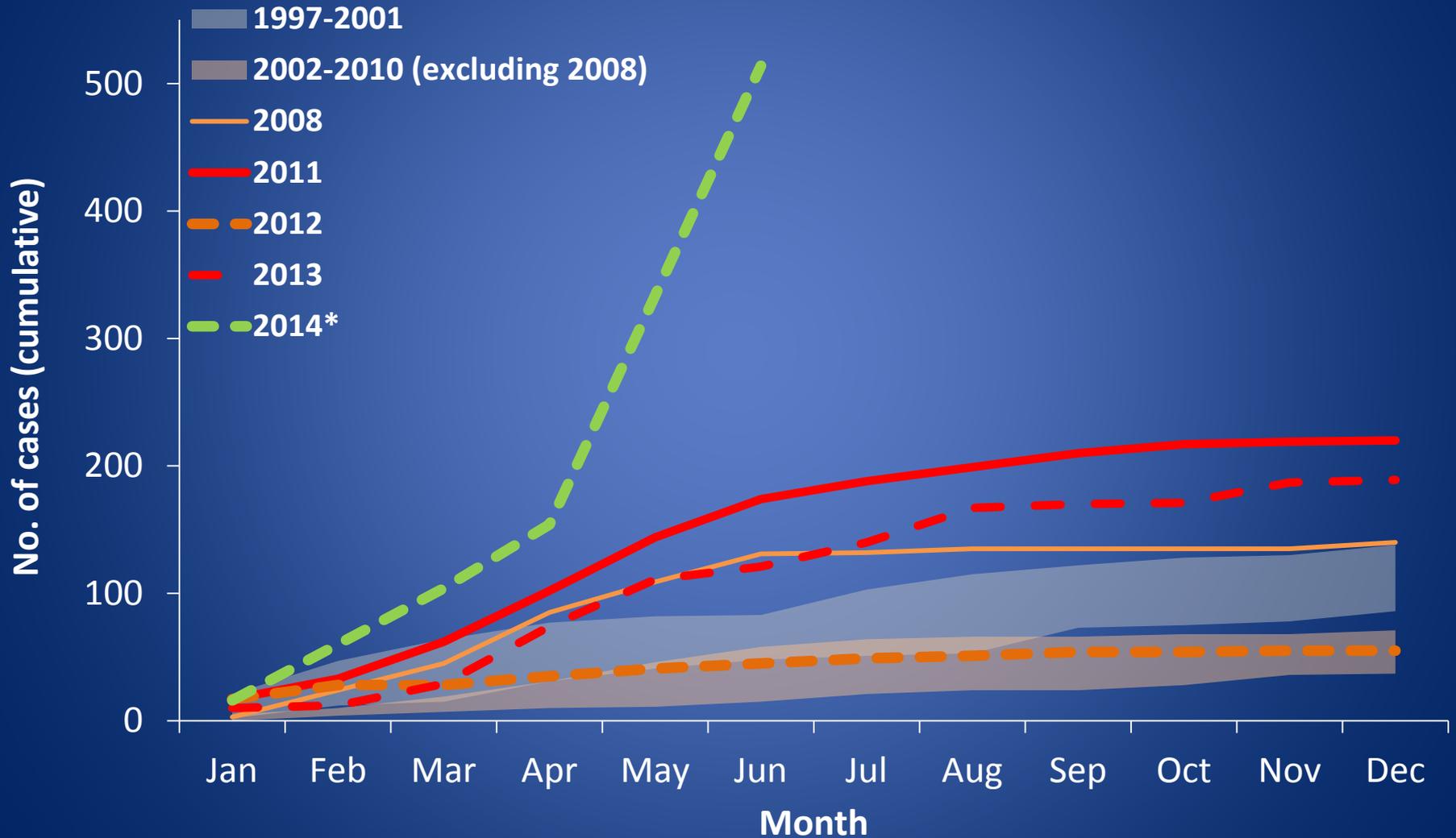
# Measles, United States, Jan – June 20, 2014

## Source of Importations (N=48)

WHO Region	# of cases	Countries of travel
African	0	
Eastern Mediterranean	1	Pakistan
European	5	Dubai/Germany/London (1), Republic of Georgia (1), Netherlands (1), France/Belgium (1), Greece (1)
Americas	3	Brazil (1), Canada (1), Chile (1)
South-East Asia	8	India (6), Indonesia (1), Thailand/South Korea (1)
Western Pacific	31	China (3), Philippines (23), Singapore (1), Saipan (1), Vietnam (1), SE Asia/Philippines (1), FSM (1)

# Measles, U.S., 1997-2014\*

## Cumulative Number by Month of Rash Onset



\*As of June 20, 2014

# Measles U.S. 2014\*

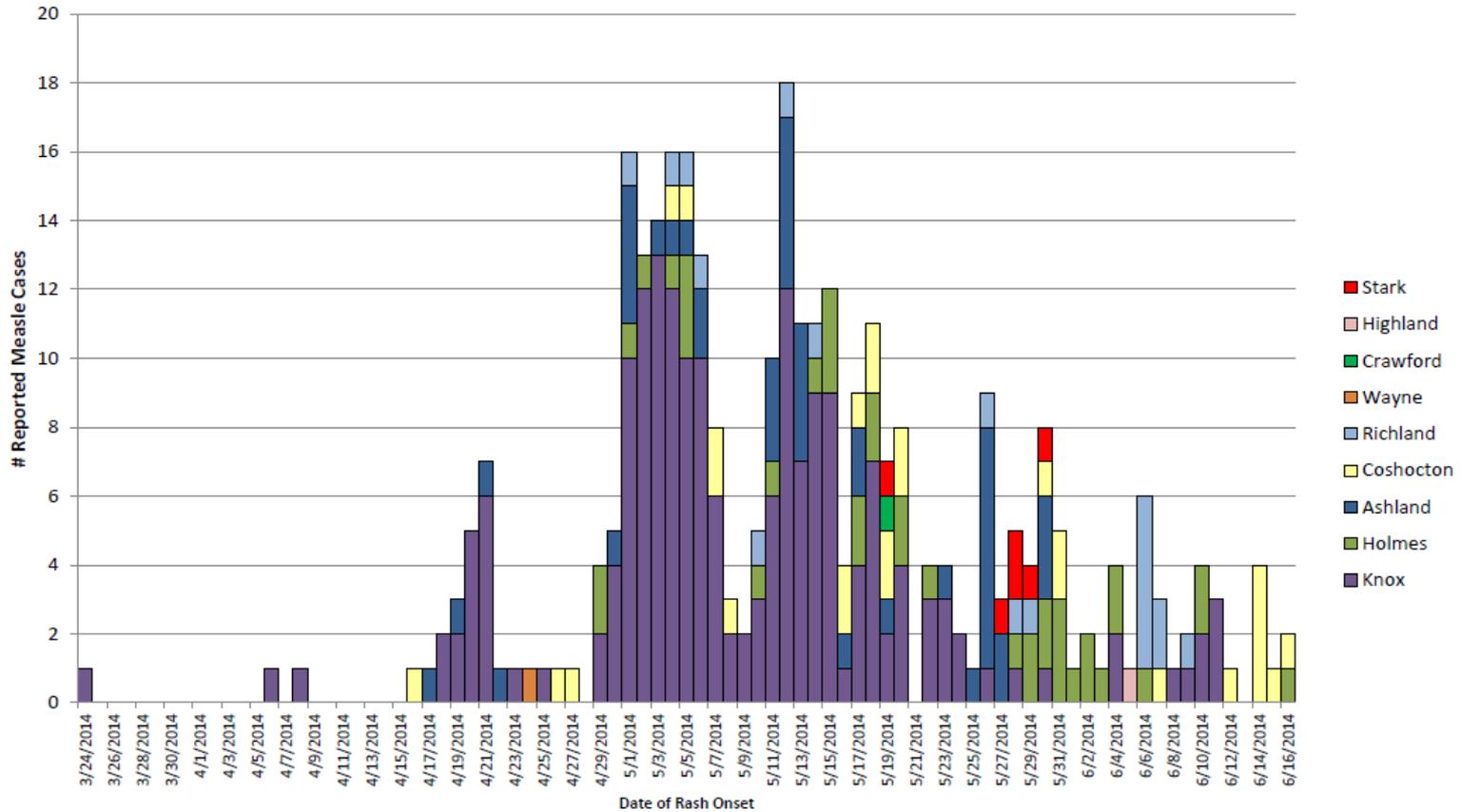
- 514 cases reported from 20 states including 16 outbreaks
  - 48 importations
    - 23 from the Philippines
    - 43 (90%) US residents
  - 98% cases import-associated
  - 56 cases (11%) hospitalized
- Cases in US residents (N=506)
  - 81% unvaccinated
  - 12% unknown vaccination status (78% of those adults)
  - 7% vaccinated (including 5% with 2 or more doses)
  - Among unvaccinated
    - 87% were personal belief exemptors
    - 3% unvaccinated travelers age 6 mos – 2 yrs
    - 5% too young to be vaccinated

# Measles Outbreaks with >20 Cases, United States, 2001-2014\*

Year	Outbreak Name	State	# of Cases	Import Status	Genotype	Setting	1st & last rash onsets	Duration	Median Age	Age Range
2014	Knox County	OH	340*	Imported (Philippines)	D9	Community	3/22/2014 –	13 weeks and counting	23 y (early) 13 y (late)	2 wks – 52 y
2013	Brooklyn	NYC	58	Imported (UK)	D8	Household/ community	3/13/2013 – 6/9/2013	13 weeks	10 y (early) 19 mos (late)	0 mos – 32 y
2005	Tippecanoe County	IN	34	Imported (Romania)	D4	Church/ household	5/16/2005 - 6/24/2005	6 weeks	12 y	9 mos - 49 y
2008	DuPage/Cook County	IL	30	Imported-virus	D4	Homeschool	5/17/2008 - 7/3/2008	7 weeks	10 y	8 mos - 43 y
2014	Manhattan	NYC	25	Imported-virus	B3	Community	2/11/2014 – 3/24/2014	6 weeks	22 y	3 mos – 63 y
2013	Stokes/Orange County	NC	23	Imported (India)	D8	Community	4/5/2013 – 5/7/2013	5 weeks	14 y	12 mos -59 y
2014	KC Metro	MO/KS	22*	Imported-virus	B3	Community	5/5/2014 –	7 weeks and counting	5 y	2 wks – 37 y
2013	Tarrant/Denton County	TX	21	Imported (Indonesia)	D9	Church	7/21/2013 – 8/21/2013	5 weeks	11 y	4 mos – 44 y
2011	Hennepin County	MN	21	Imported (Kenya)	B3	Shelter	2/15/2011 - 4/24/2011	10 weeks	23 m	3 mos - 51 y
2008	Brooklyn/ Kings County	NYC	21	Imported (Israel, Belgium)	D4	Community	2/17/2008 - 4/25/2008	10 weeks	15 m	5 mos - 11 y

\*as of June 20, 2014

## 2014 Measles Outbreak, Ohio, Confirmed Cases by Date of Rash Onset, N=329



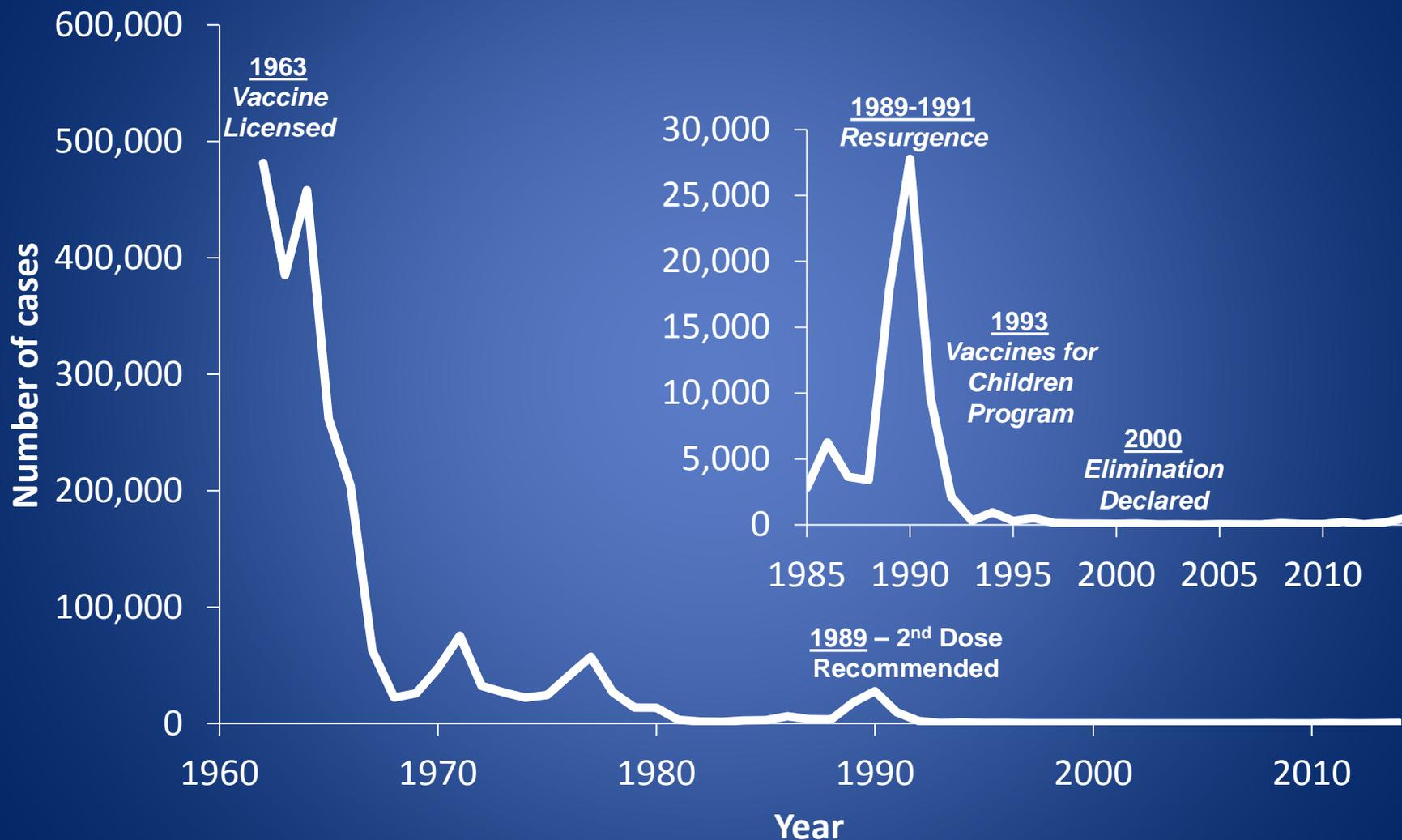
Data as of 6/18/2014

Source: Ohio Disease Reporting System

# US Annual Disease Burden Prior to Vaccine

- 3-4 million estimated and ~ 500,000 reported cases
- 48,000 hospitalizations
- 4,000 encephalitis cases
- 450-500 deaths

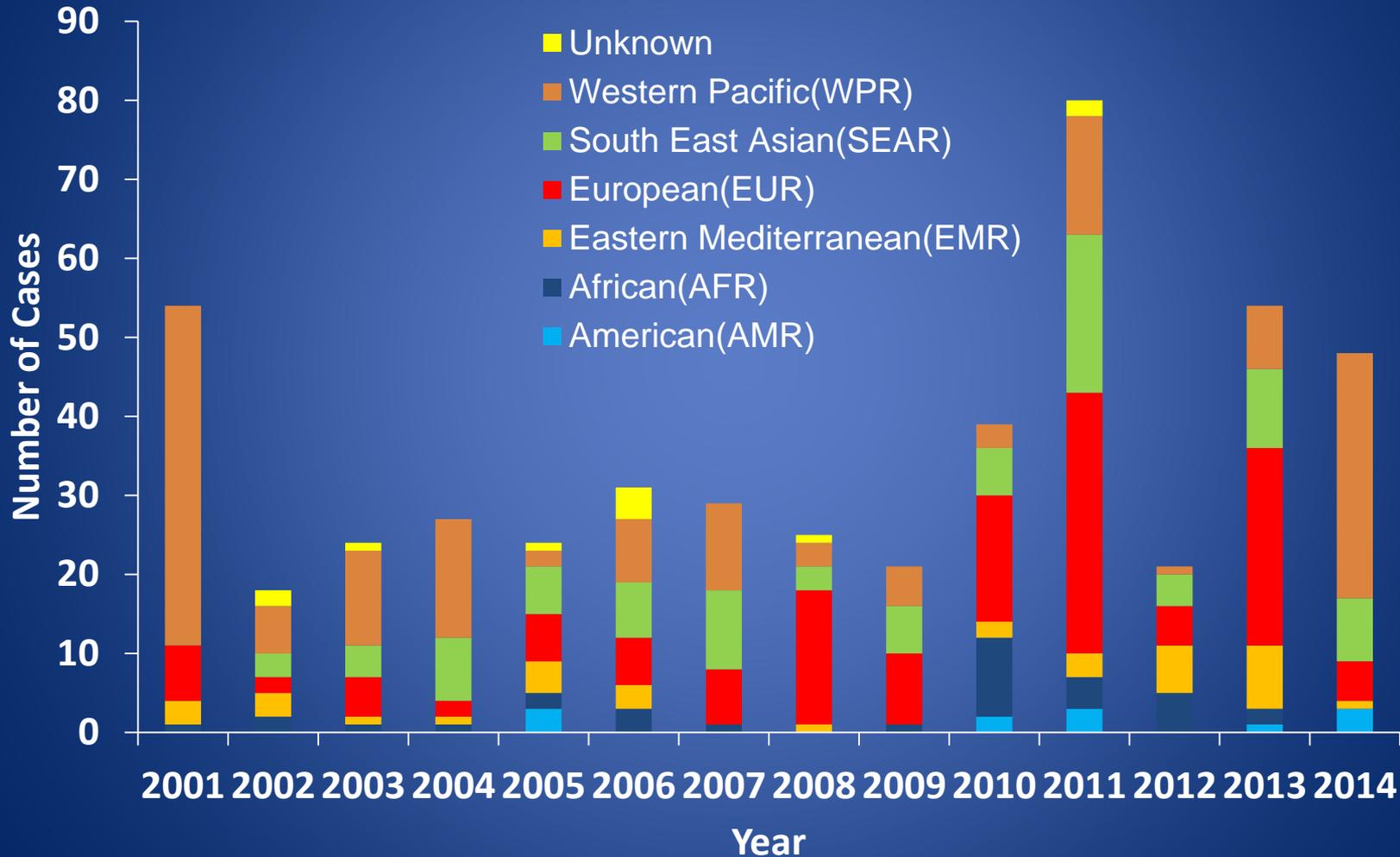
# Measles Cases, United States, 1962-2014\*



\*2014 case count preliminary as of June 20

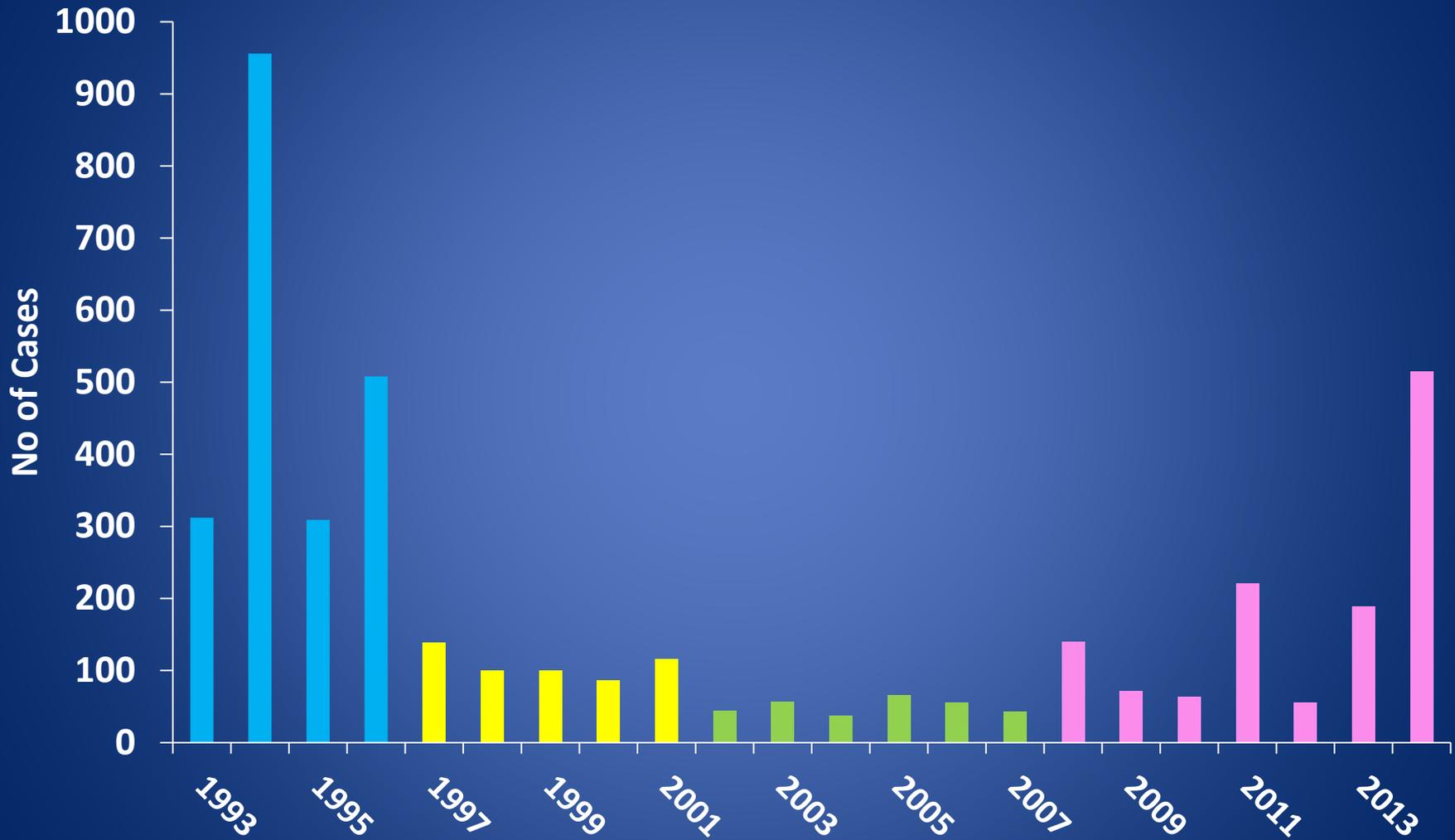
# Measles, United States, 2001-2014\*

## Importations by WHO Region



\*2014 case count preliminary as of June 20

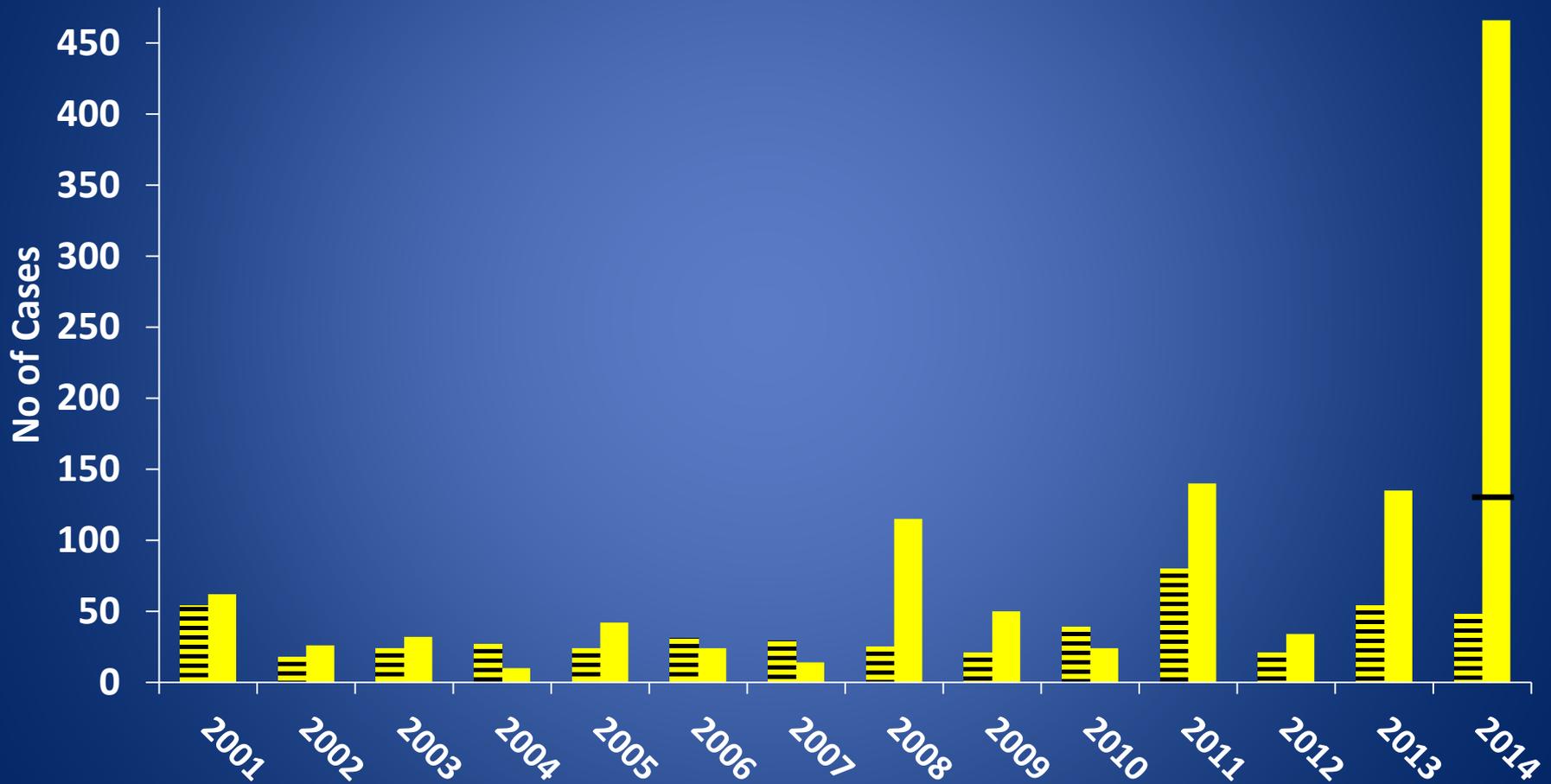
# Measles, United States, 1993-Present\*



\*2014 case count preliminary as of June 20

# Measles, United States, 2001-Present\*

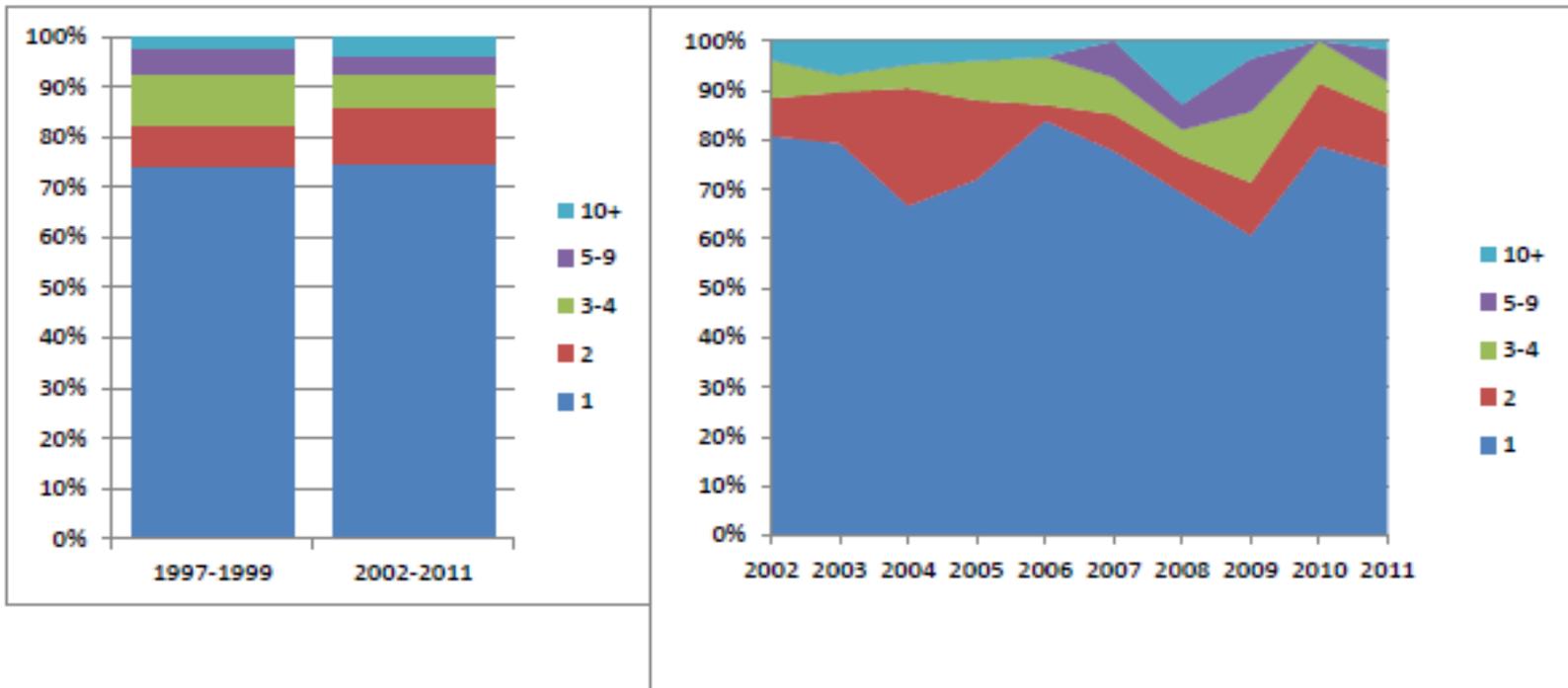
≡ Import   ■ Non-Import



\*2014 case count preliminary as of June 20

# Most Measles Cases Result in Limited Transmission

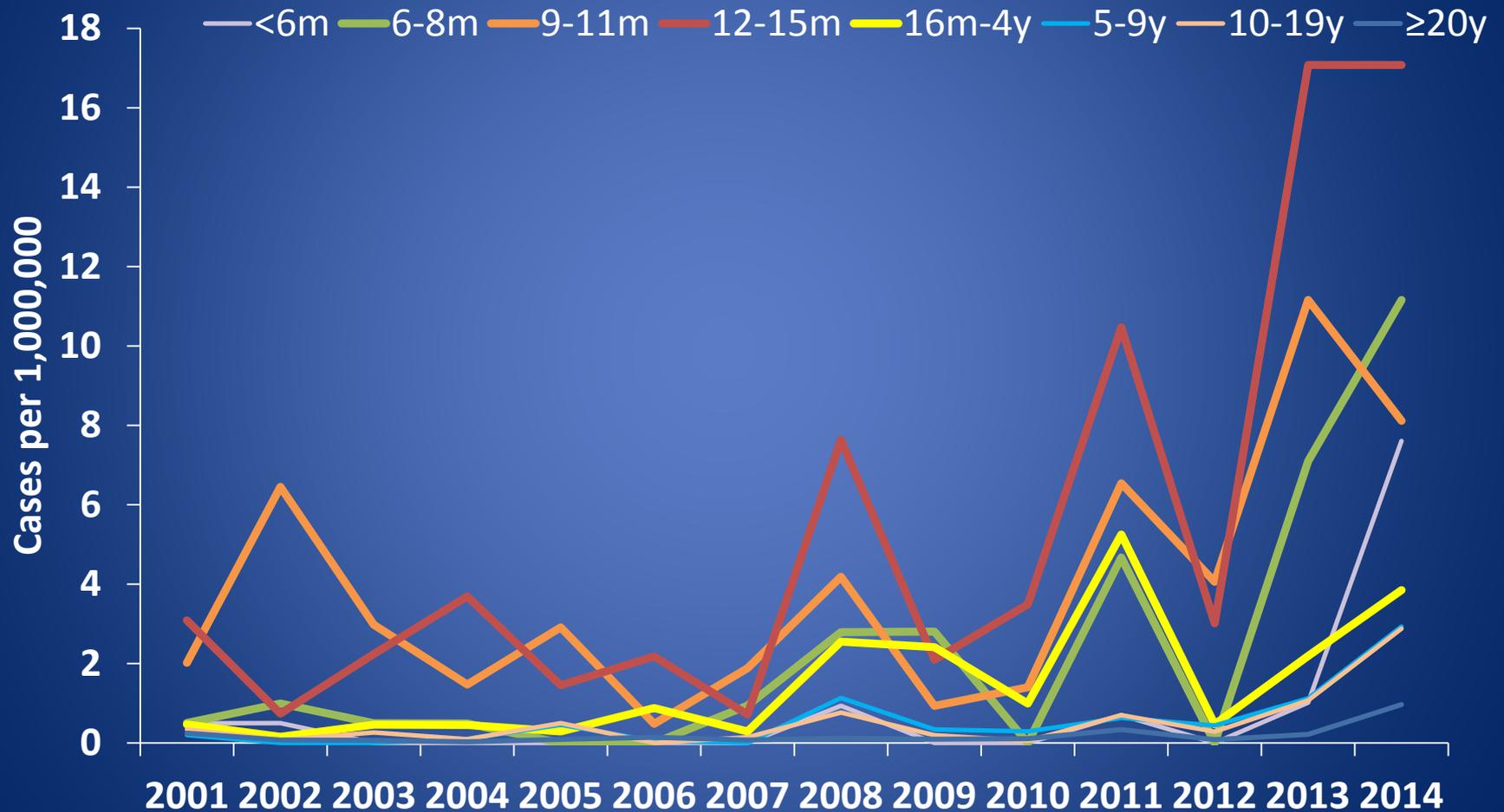
Figure 7. Measles Chains of Transmission  
Proportion by Chain Length, United States 1997- 2011



2014: 76% with 1 or 2 chains of transmission, 6% with 10 or more

# Measles, United States, 2001-2014\*

## Age Specific Incidence



\*2014 case count preliminary as of June 20

# What Works

- National vaccine coverage remains high
- Aggressive public health response can limit transmission
- Improved implementation of healthcare worker recommendations

# Challenges

- Heterogeneity
  - Outbreaks reveal groups of accumulating and aging susceptibility
- Global arena
  - Importations continue
- Early diagnosis of initial cases
  - Including obtaining proper specimens
- Implementing travel recommendations
  - Early dose for infants; 2 doses for everyone else
- Resource intensive public health response
  - Diverts resources
  - Mission fatigue

# Key Messages

- Measles in the U.S. is a global issue
  - Most importations are U.S. travelers
- Measles does exploit pockets of unvaccinated
  - Highly contagious
- Keep measles in the differential diagnosis
  - Febrile rash illness (Dengue, Kawasaki's)
  - Travel history or exposure to travelers
  - Vaccine history
  - Viral specimens
- Variety of susceptible groups in the U.S.
  - Challenge to identify and intervene prior to exposures

# DISCUSSION