

# Measles and Rubella Global Update

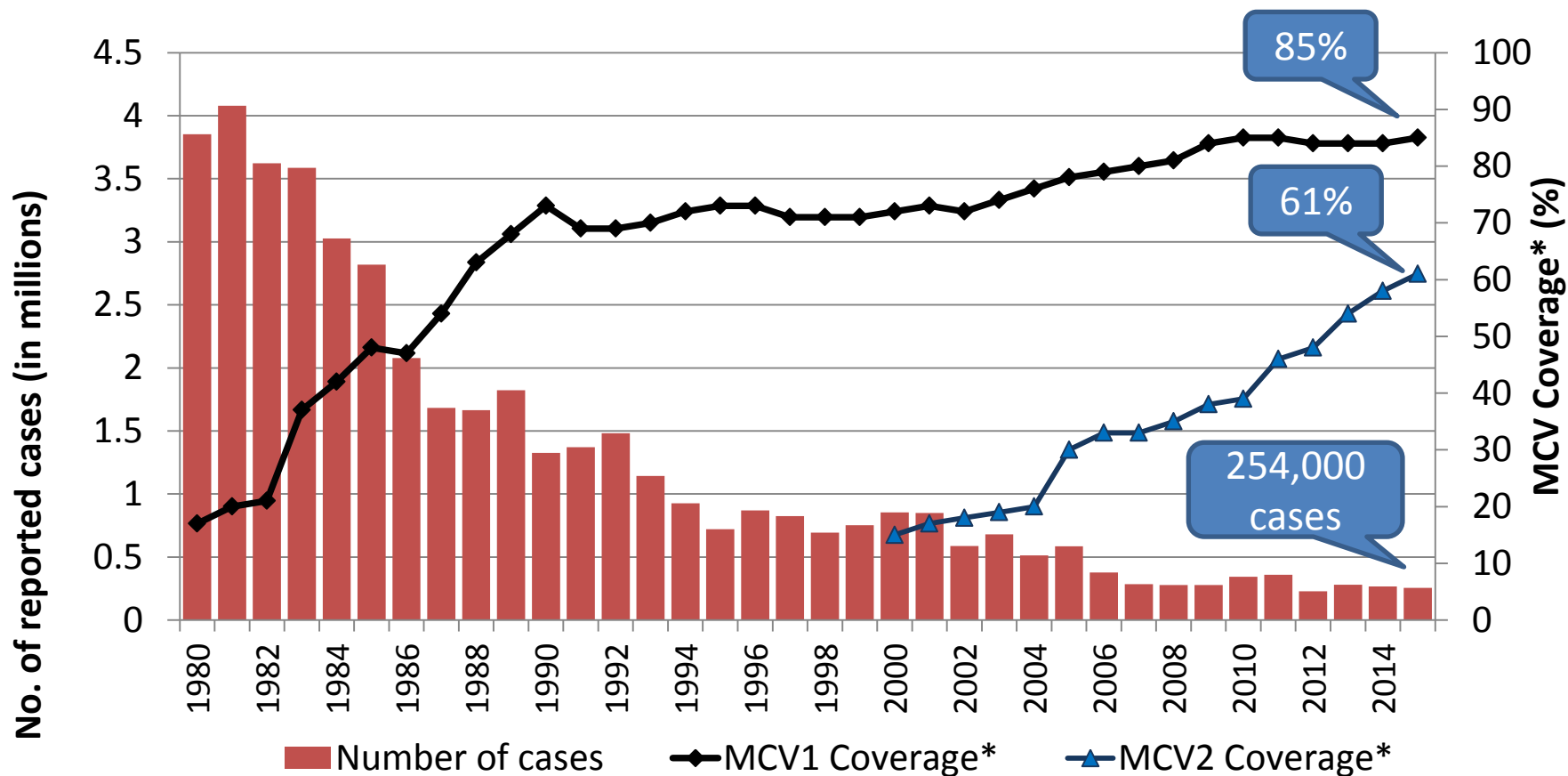
SAGE Meeting, 19 October 2016,  
Peter Strebel, WHO, IVB/EPI

# Overview

- Progress
  - Global milestones
  - Regional updates
- Barriers and risks
- Opportunities
- Summary

## Little change in MCV1 coverage or case load since 2009

Annual reported measles cases and MCV1 and MCV2\*\* coverage\*, 1980-2015



\* Coverage as estimated by WHO and UNICEF.

\*\* MCV2 estimates are only available from 2000 when global data collection started, however some countries have introduced the vaccine earlier.

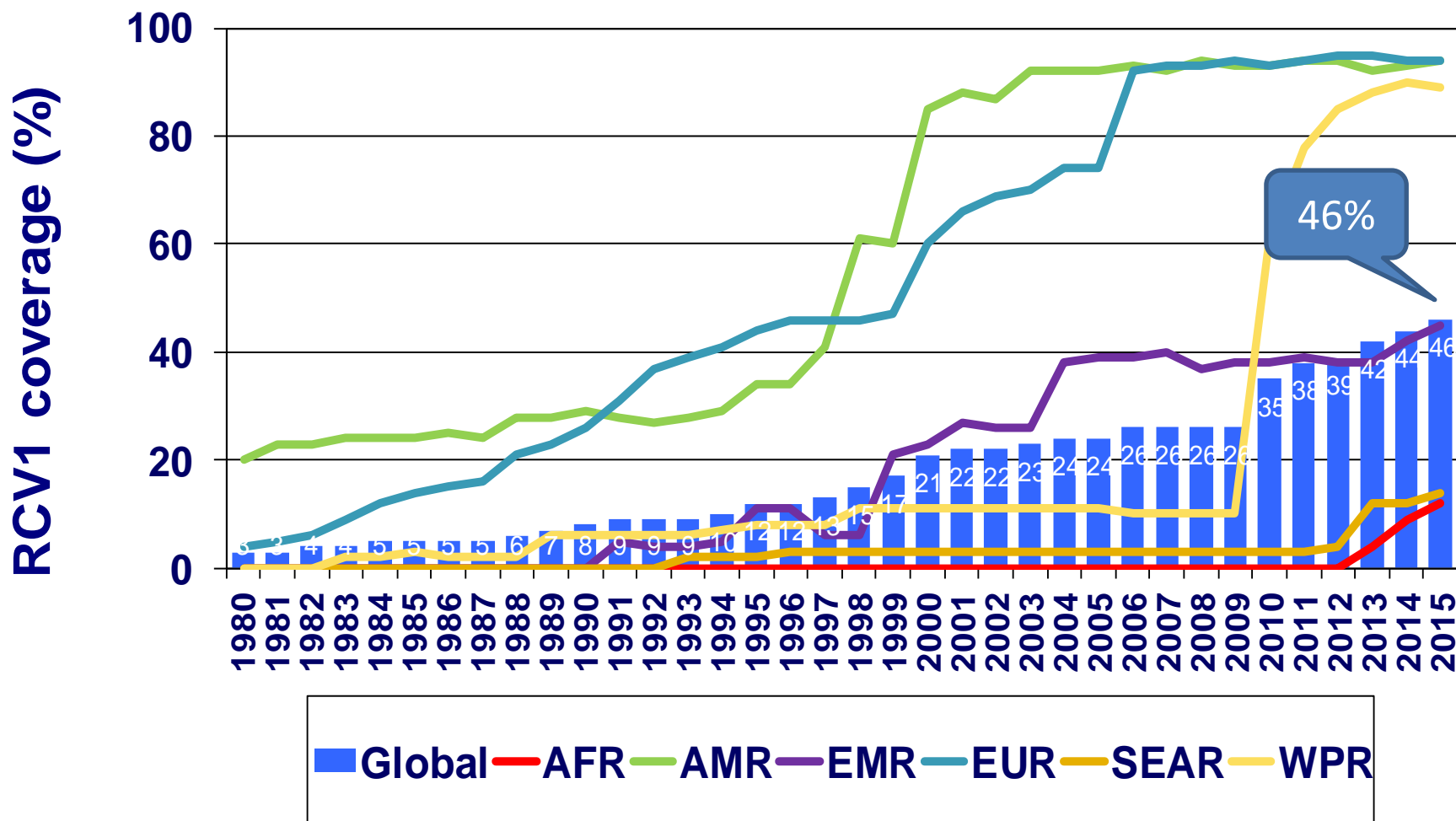
Source: JRF

194 WHO Member States.

Updated on 18 July 2016

# Global rubella vaccination coverage still <50%

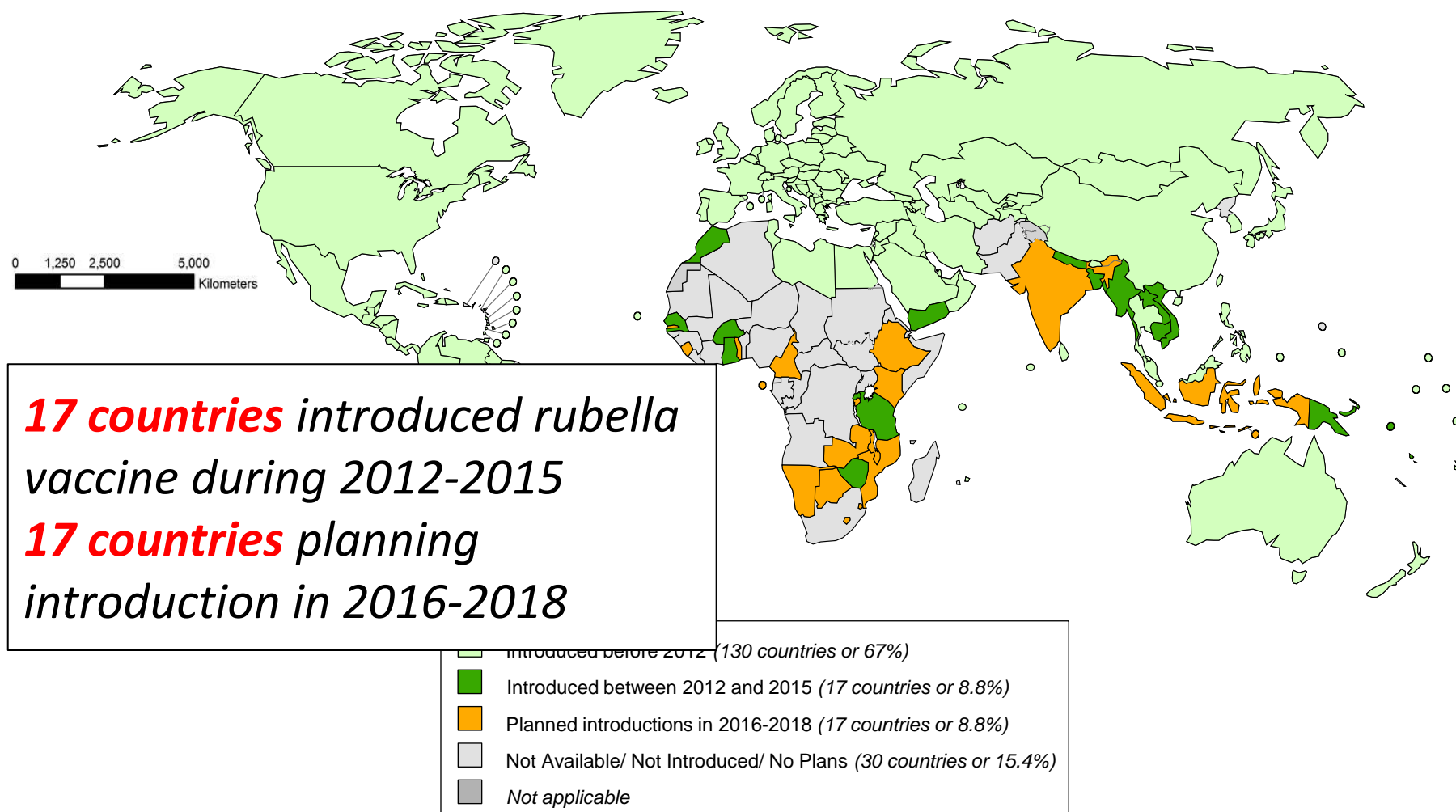
Rubella containing vaccine 1st Dose (RCV1) coverage\*  
by WHO region, 1980-2015



\*coverage estimates for the 1st dose of rubella containing vaccine are based on WHO and UNICEF estimates of coverage of measles containing vaccine.

## Recent increase in countries using rubella vaccine

Countries with rubella vaccine in the national immunization programme, by year of vaccine introduction



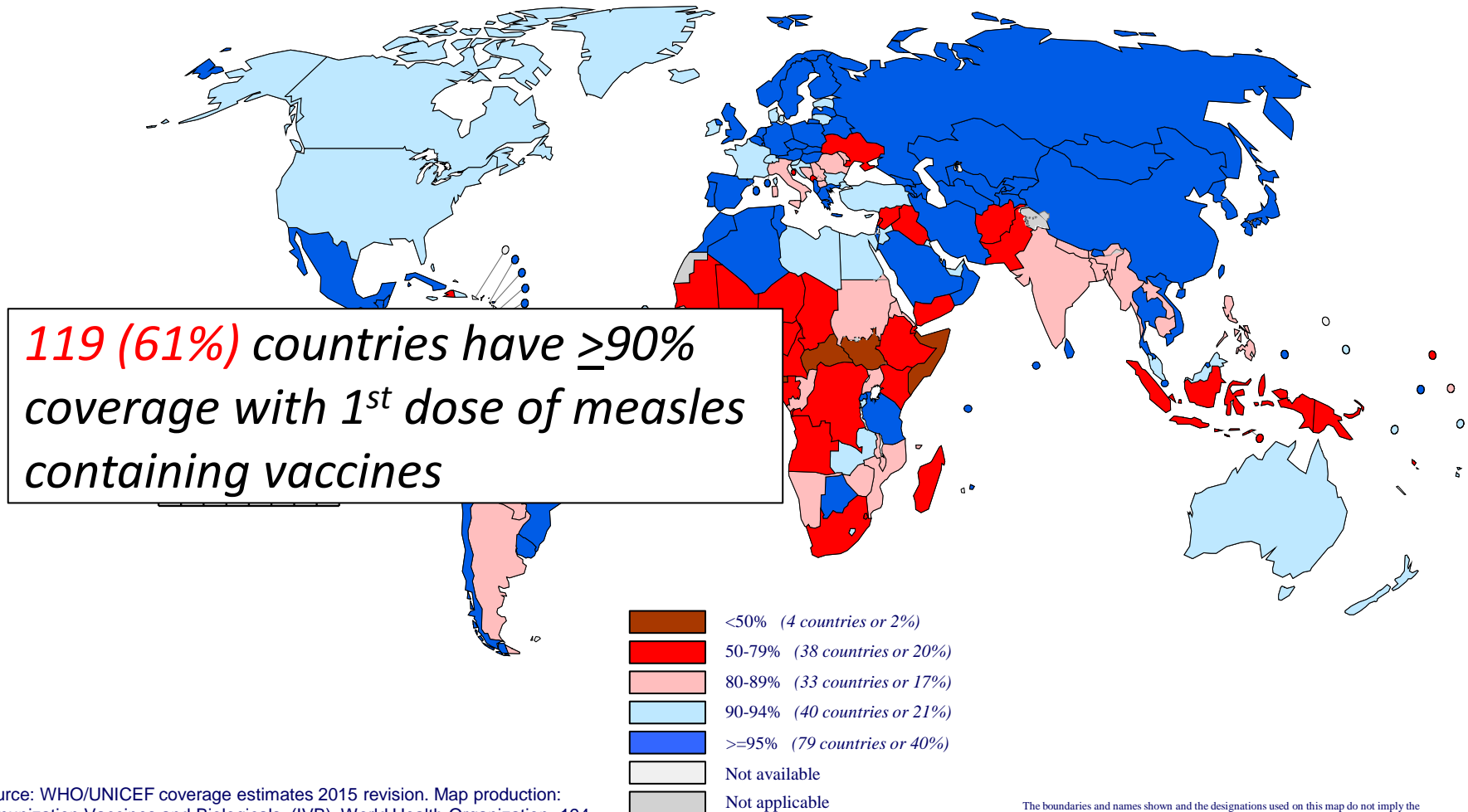
**17 countries** introduced rubella vaccine during 2012-2015  
**17 countries** planning introduction in 2016-2018

- Introduced before 2012 (130 countries or 67%)
- Introduced between 2012 and 2015 (17 countries or 8.8%)
- Planned introductions in 2016-2018 (17 countries or 8.8%)
- Not Available/ Not Introduced/ No Plans (30 countries or 15.4%)
- Not applicable

# Global Milestone #1:

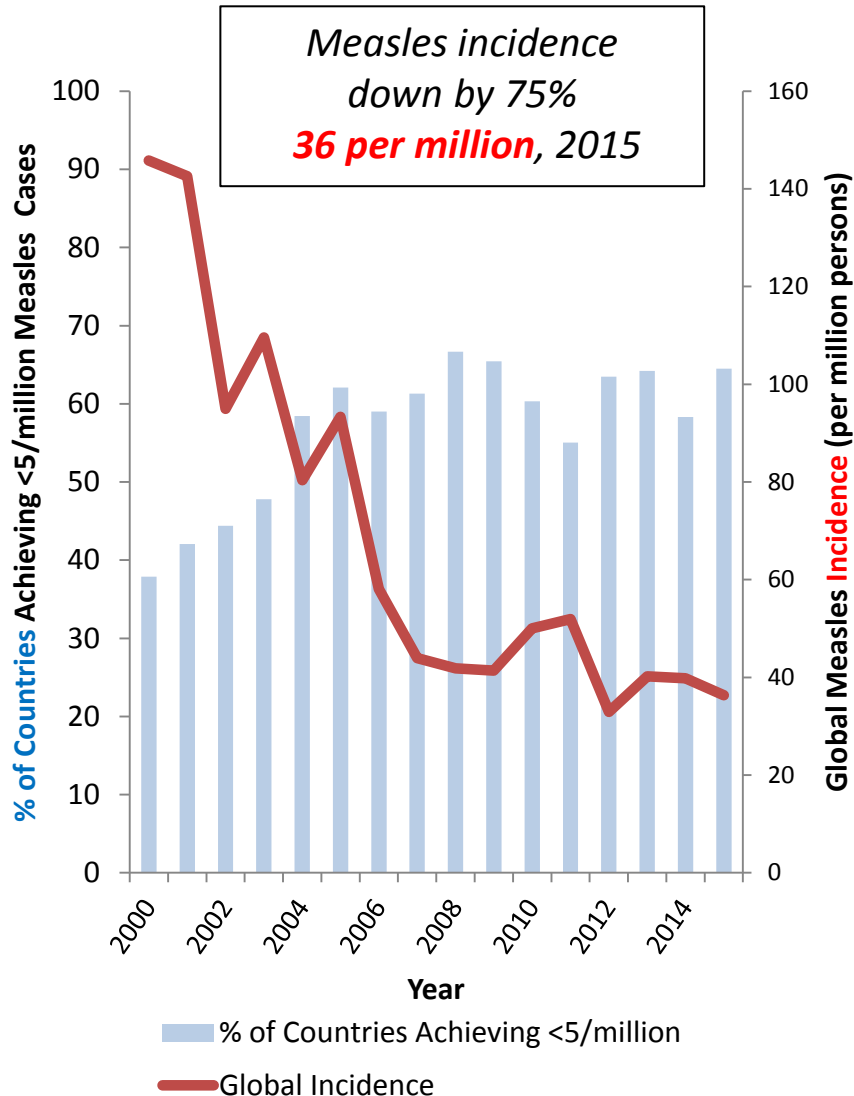
## >90% MCV1 Vaccination Coverage in Every Country

Immunization coverage with 1st dose of measles containing vaccines in infants, 2015



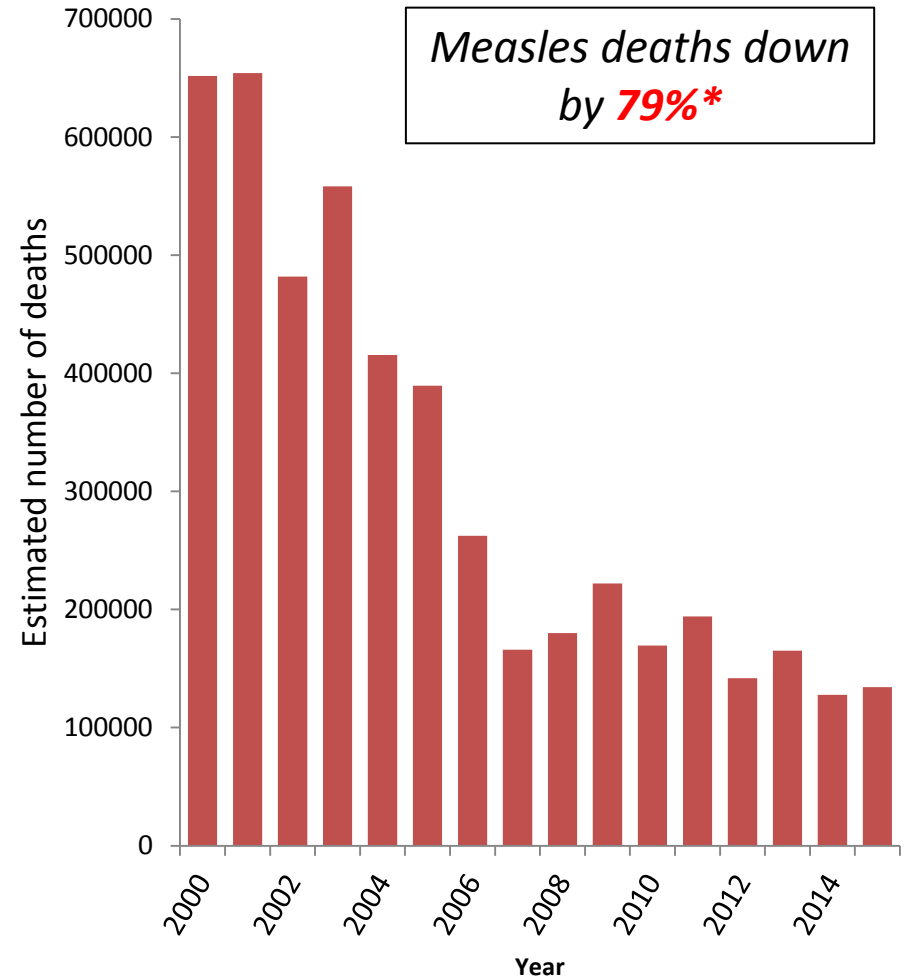
## Milestone #2

Reported Measles Incidence  
**<5 cases/million**



## Milestone #3

**95%** Reduction in Measles Deaths\*



\*2015 estimates are provisional

# Progress by Region



# The Americas (PAHO)

## Achievements:

- Proof of concept for elimination
- May 2015 – Region declared free of rubella and CRS
- September 2016 – verification of measles elimination

## Challenges:

- Maintaining elimination in the face of ongoing importations
- Lack of global commitment threatens sustainability in Americas
- Competing priorities (e.g., Zika and Chikungunya virus)

Announcement of measles elimination in the Americas, 27 September 2016



# W. Pacific Region

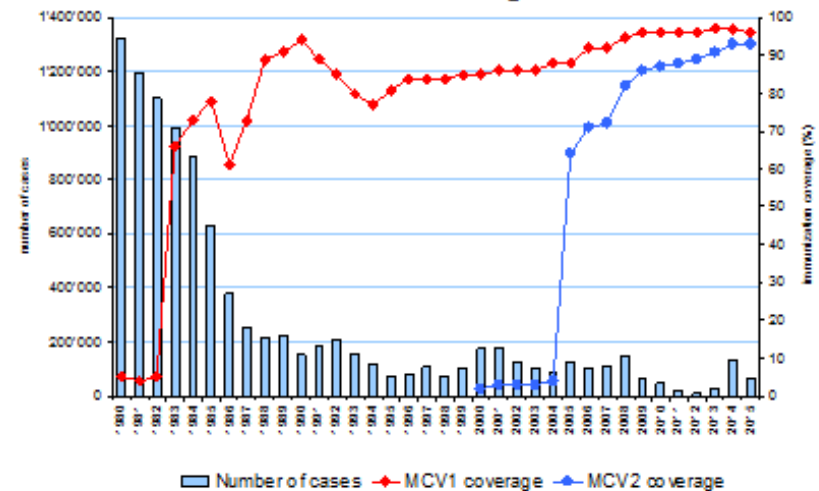
## Achievements:

- High MCV1, MCV2 and SIA coverage
- All countries have introduced RCV
- Lowest measles incidence in 2012

## Challenges:

- Measles resurgence in endemic countries (China and the Philippines)
- Outbreaks following measles importations in Lao PDR, Mongolia, PNG, Solomon Islands, Viet Nam
- <1y and adolescents/adults increasingly affected by measles

W. Pacific Region: Annual reported measles cases and MCV1 and MCV2\* coverage, 1980-2015

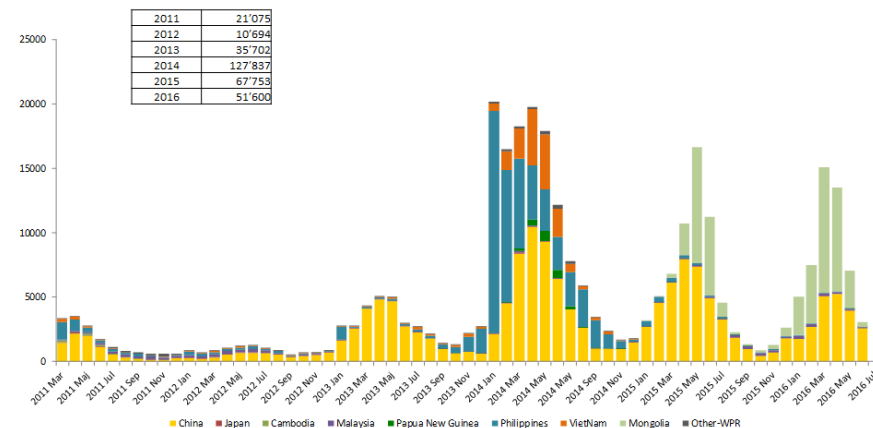


Source: WHO/EW database, 2016  
194 WHO Member States  
Data as of 15 July 2016

\*MCV2 estimates are only available from 2000 when global data collection started. Some countries have introduced the vaccine earlier.



Measles Cases Distribution by Month  
WPR Region, 2011-2016 (Jun)



# European Region

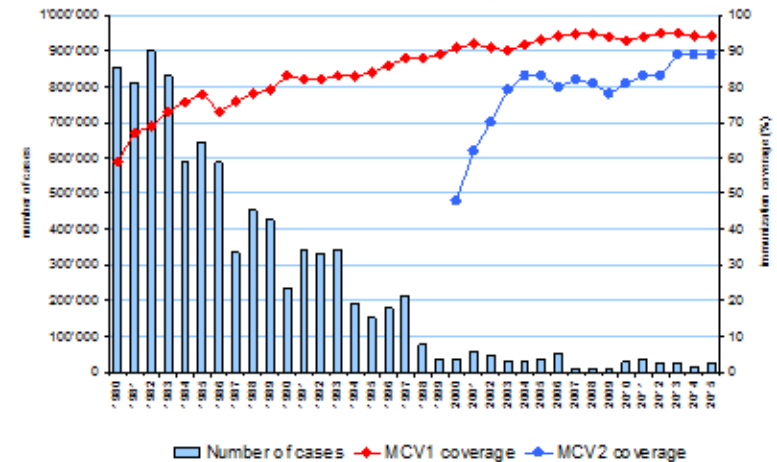
## Achievements:

- High coverage with 2 doses of MCVs
- In 2016, reported rubella and measles cases at all-time low
- Advocacy event at London School of Hygiene and Tropical Medicine

## Challenges:

- Low commitment to elimination in some member states
- Variable quality of reporting surveillance data (measles and rubella/CRS)
- Outbreaks fueled by susceptible populations: adolescent and adults, migrants, religious groups
- Vaccine hesitancy

European Region: Annual reported measles cases and MCV1 and MCV2\* coverage, 1980-2015

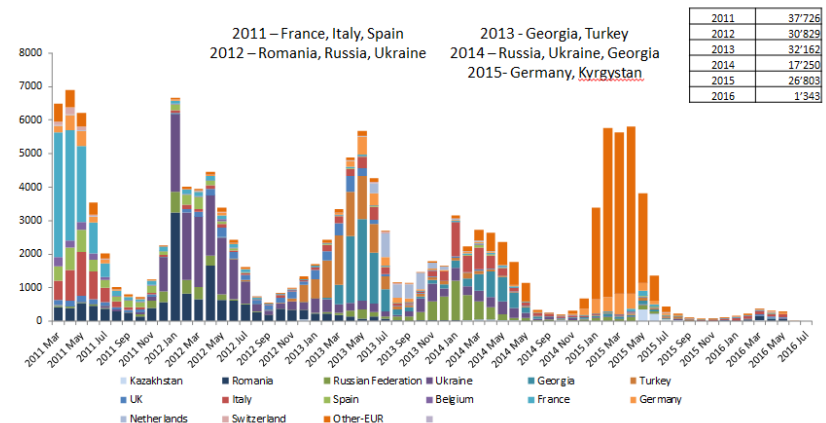


Source: WHO/EVS database, 2016  
194 WHO Member States  
Data as of 15 July 2016

\*MCV2 estimates are only available from 2000 when global data collection started. In some countries, data collection has continued the vaccine earlier.



Measles Cases Distribution by Month  
EUR Region, 2011-2016 (Jun)



# S.E. Asian Region

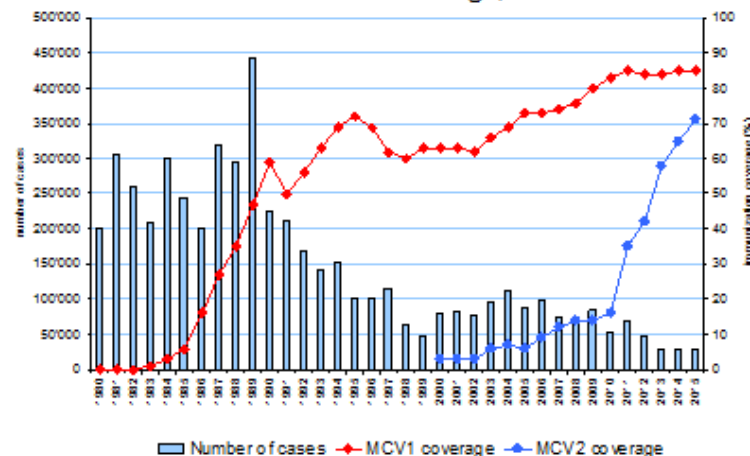
## Achievements:

- MCV1 at 84% and rapid increase in MCV2
- All countries conducting case based surveillance for measles & rubella
- India has started reporting measles
- Regional Verification Commission had 1<sup>st</sup> meeting in August 2016

## Challenges:

- Need to increase routine immunization and strengthen surveillance (India and Indonesia)
- Outbreaks in some high coverage countries (Sri Lanka, Thailand)
- MR vaccine supplies

SE Asian Region: Annual reported measles cases and MCV1 and MCV2\* coverage, 1980-2015

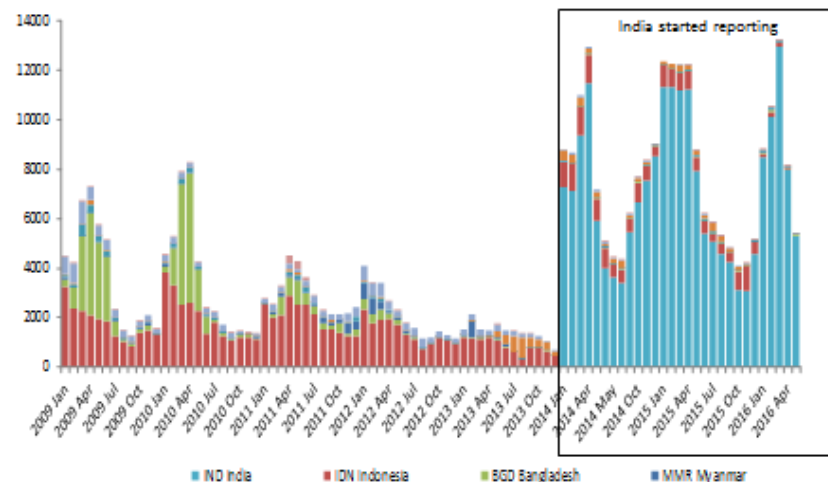


Source: WHO/DHS database, 2016  
196 WHO Member States  
Data as of 15 July 2016

\*MCV2 estimates are only available from 2000 when detailed data collection started. Some countries have introduced the vaccine earlier.



Measles Cases Distribution by Month  
SEAR\* Region, 2011-2016 (May)



Data source: surveillance DSR file  
Data in HD as of 4 July 2016

Note: India started submitting monthly measles data from 2014 onwards.



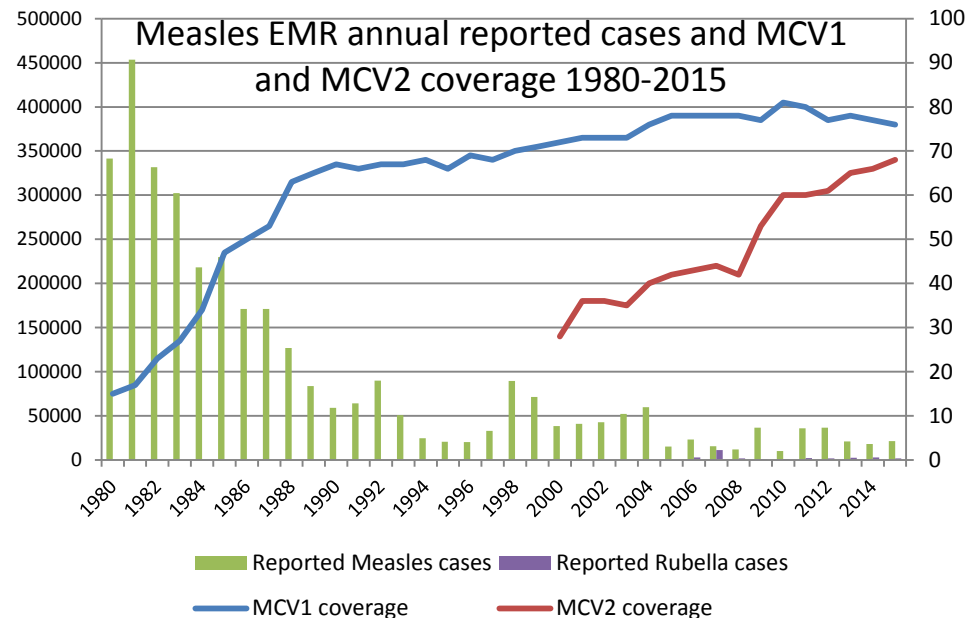
# E. Mediterranean Region

## Achievements:

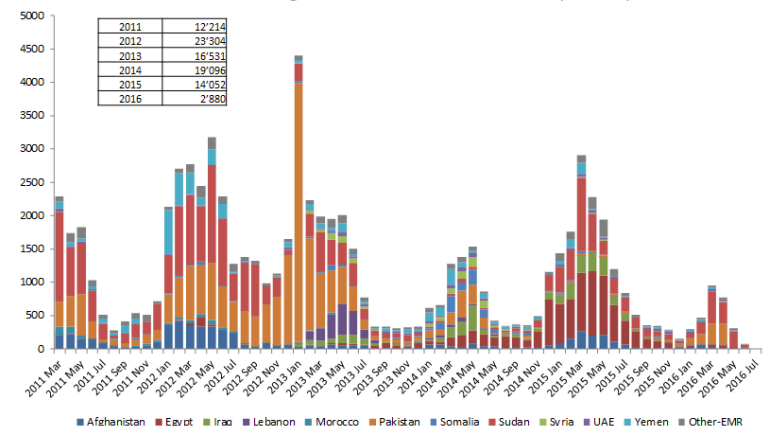
- High level of control achieved in 7 countries, of which, Bahrain, Oman and Palestine are ready to verify elimination
- Egypt conducted a high quality 2015 national campaign

## Challenges:

- Persistent low coverage in some countries (Somalia, Pakistan, Afghanistan)
- Decreasing coverage in countries with active conflict (Iraq, Syria, Yemen)
- Many member states affected by civil unrest
- Outbreak in Sudan of measles and rubella
- New strategies needed to deliver vaccination services in conflict settings



Measles Cases Distribution by Month  
EMR Region, 2011-2016 (Jun)



# African Region

## Achievements:

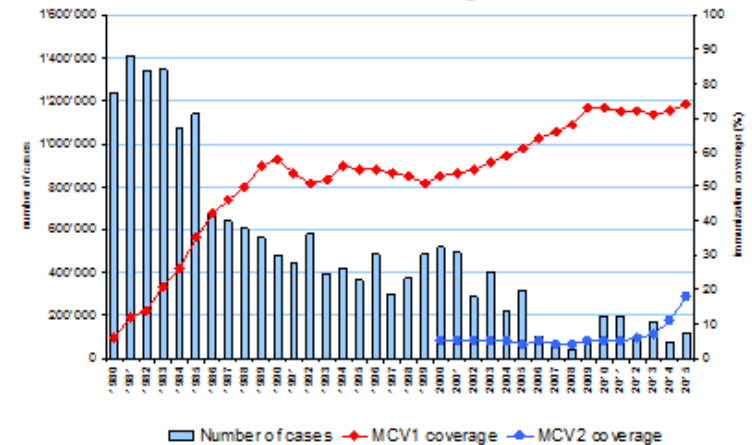
- 12 countries near elimination\* and an additional 14 on track for the 2020 goal
- 19 countries with MCV2
- 7 countries with RCV

## Challenges:

- Weak and fragile health systems in many countries
- Need for periodic SIAs in most countries to reach children missed by routine immunization
- No target yet for rubella/CRS elimination
- Lack of resources for surveillance

\*Algeria, Burkina, Cap Verde, Rwanda, Eritrea, Gambia, Ghana, Mauritius, Senegal, Seychelles, Sao Tome, Zimbabwe

African Region: Annual reported measles cases and MCV1 and MCV2\* coverage, 1980-2015

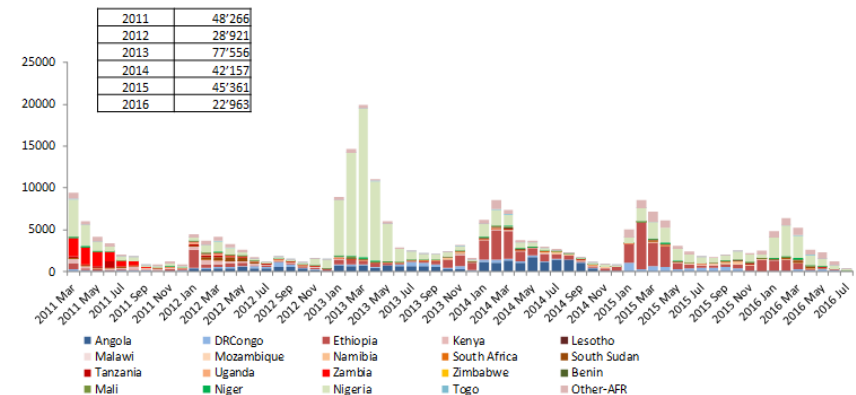


Source: WHO/UNICEF database, 2016  
194 WHO Member States  
Data as of 15 July 2016

\*MCV2 estimates are only available from 2000 when global data collection started. However some countries have introduced the vaccine earlier.



## Measles Cases Distribution by Month AFR Region, 2011-2016 (Jun)



## ***Scorecard on verification of elimination, October 2016***

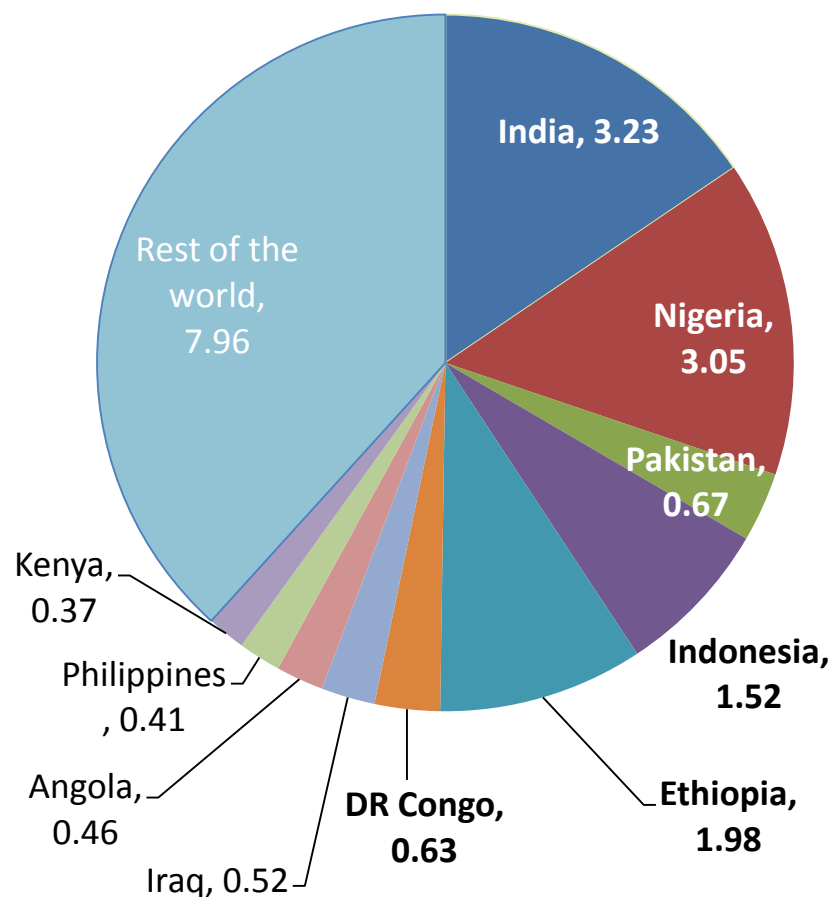
WHO Region (no. countries)	Regional Verification Commissions Established	Elimination Achieved	
		No. of countries	% of countries
Americas (n=35)	Yes	<b>Measles: 35</b> <b>Rubella: 35</b>	<b>100%</b> <b>100%</b>
Europe (n=53)	Yes	Measles: 21 Rubella: 20	40% 38%
Western Pacific (n=27)	Yes	Measles: 5	19%
Eastern Mediterranean (21)	No	-	-
South-East Asia (n=11)	Yes	-	-
Africa (n=47)	No	-	-
<b>TOTAL</b>		<b>Measles: 61</b> <b>Rubella: 55</b>	

# Barriers and Risks



# #1 Stagnant MCV1 coverage

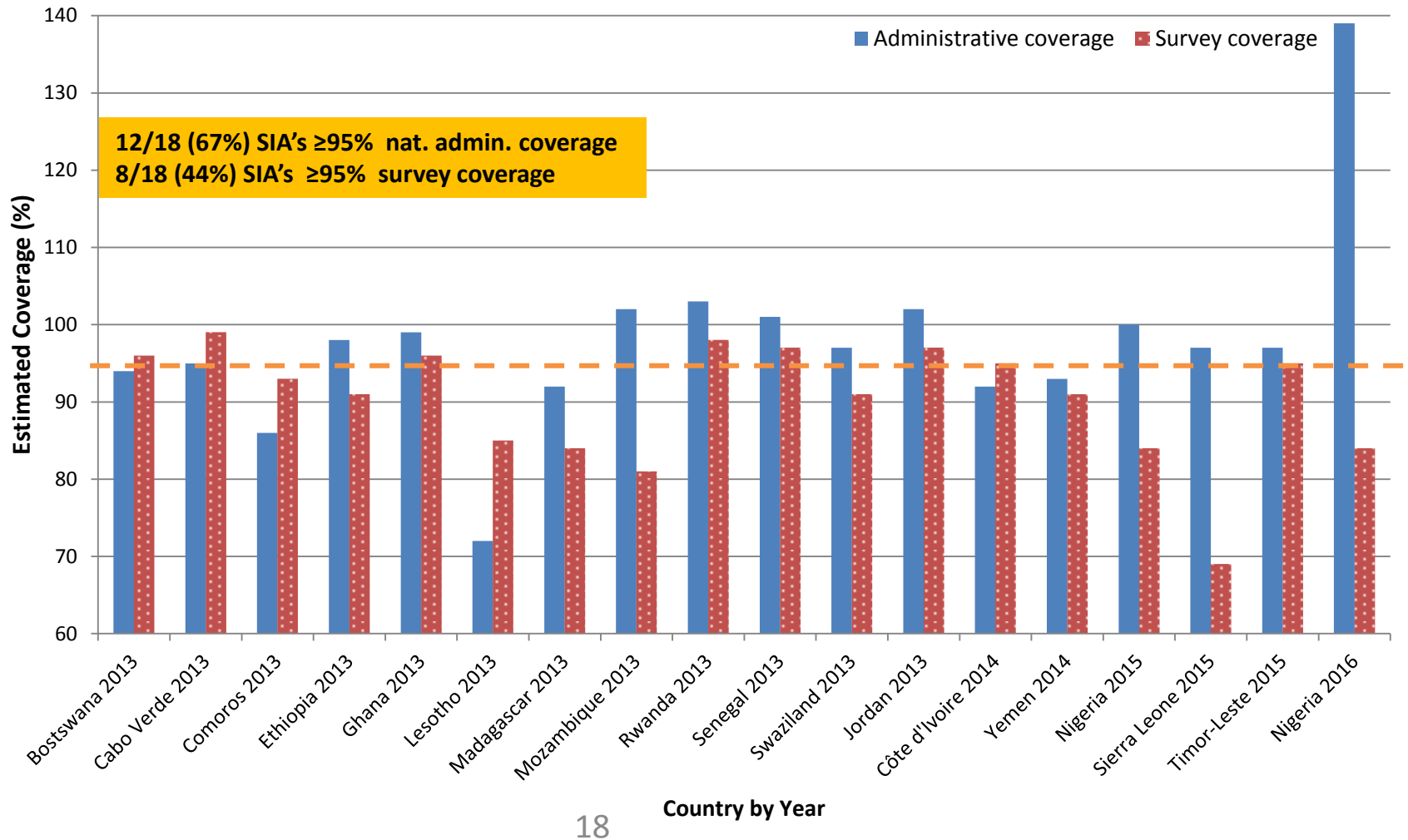
Number of infants (in millions) who missed MCV1 in 2015



- 20 million infants missed measles vaccination in 2015
- Six countries account for over half of all unvaccinated infants and 75% of estimated measles deaths
- Coordinated strategic approach needed to build health infrastructure

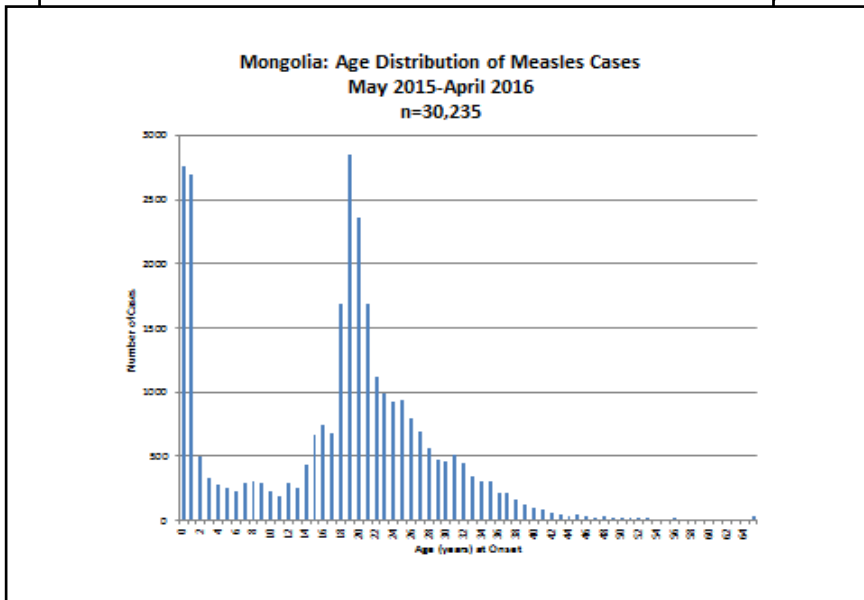
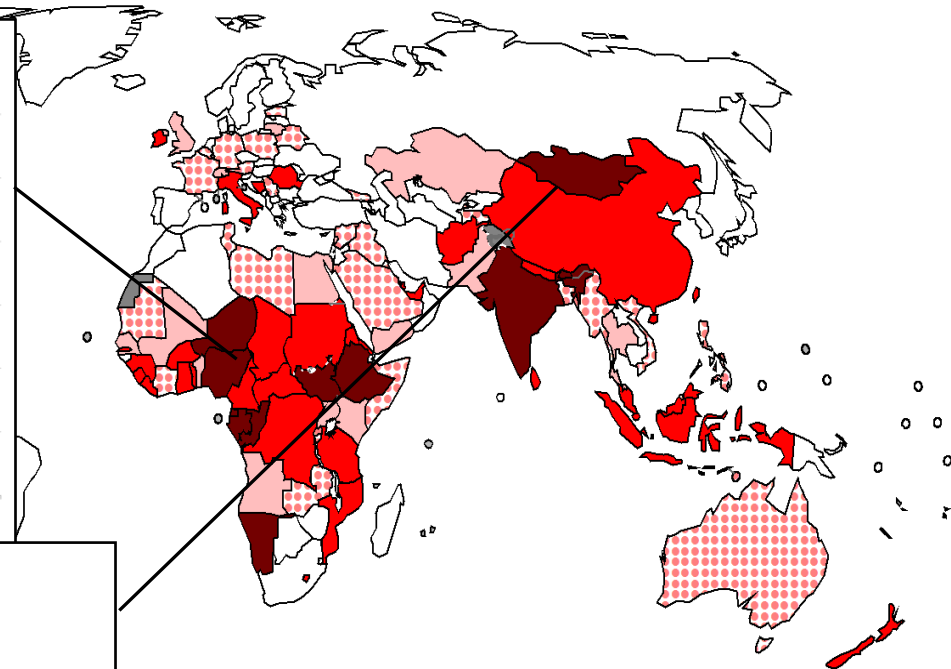
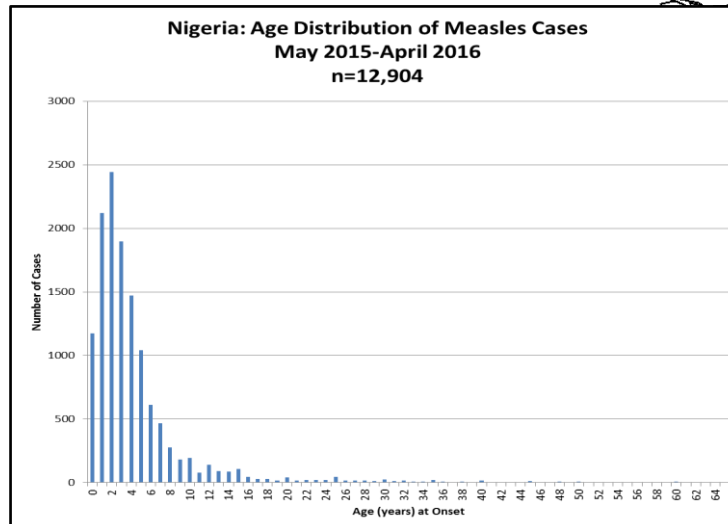
## #2 SIAs missing 95% coverage target

Measles SIA Administrative Coverage vs Survey Coverage,  
Selected Countries, 2013-2016



# #3. Large outbreaks of measles

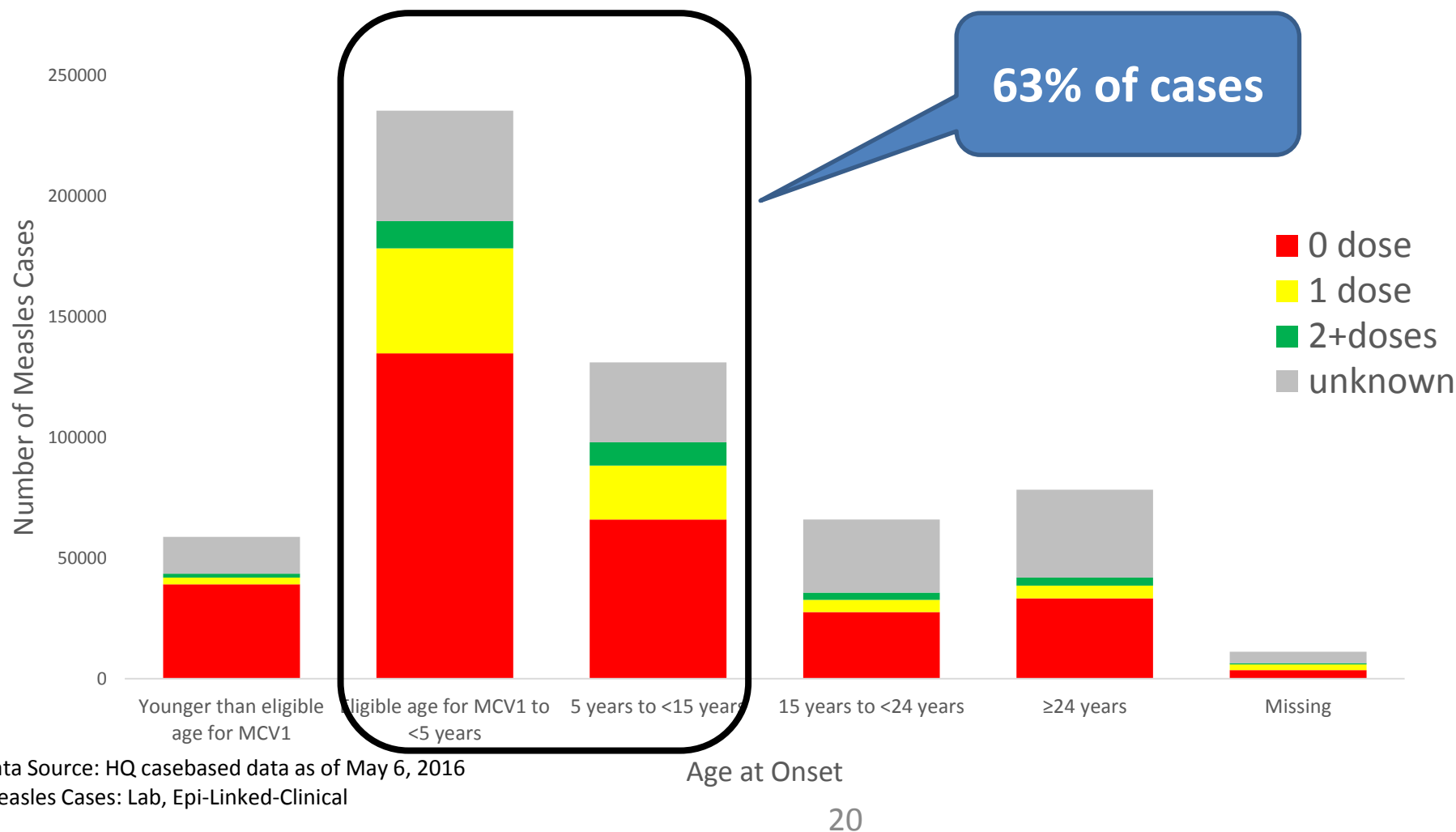
Reported Measles Incidence Rate\*,  
September to August 2016



(99 countries or 51%)  
(29 countries or 15%)  
(16 countries or 8%)  
(30 countries or 15%)  
(11 countries or 6%)  
(9 countries or 0%)

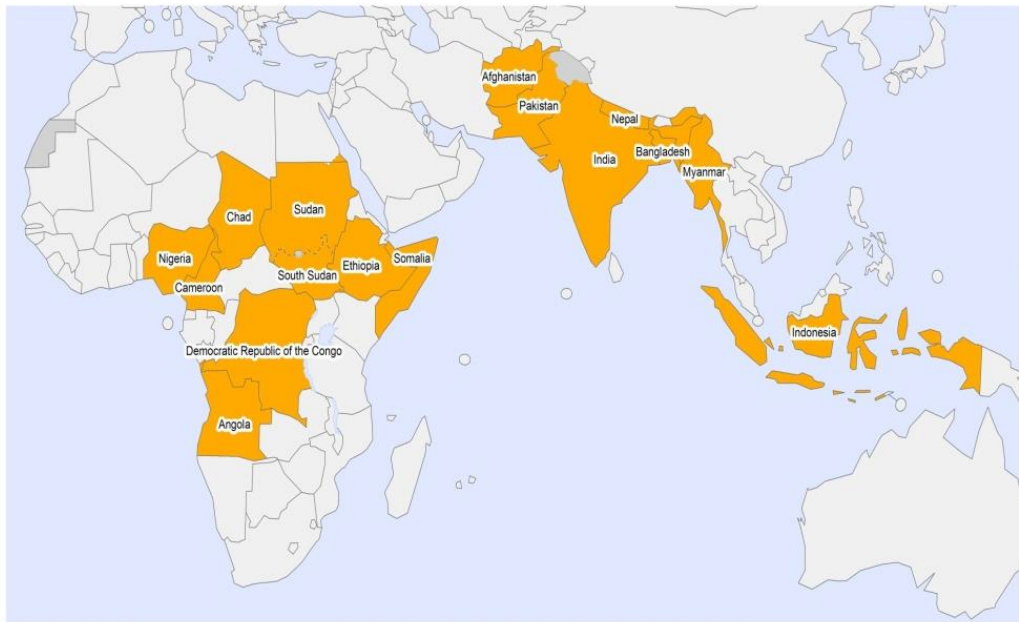
reported  
HQ  
cable

## Age and vaccination status of reported measles cases, 2011-2016\* (N=581,290)



# #4 At risk of losing of polio assets

## 16 countries with largest polio assets



- 88% of estimated measles deaths occur in these countries
- Polio field staff spend nearly 1/3 of their time working on routine immunization and measles
- Critical for SIA quality and surveillance

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.

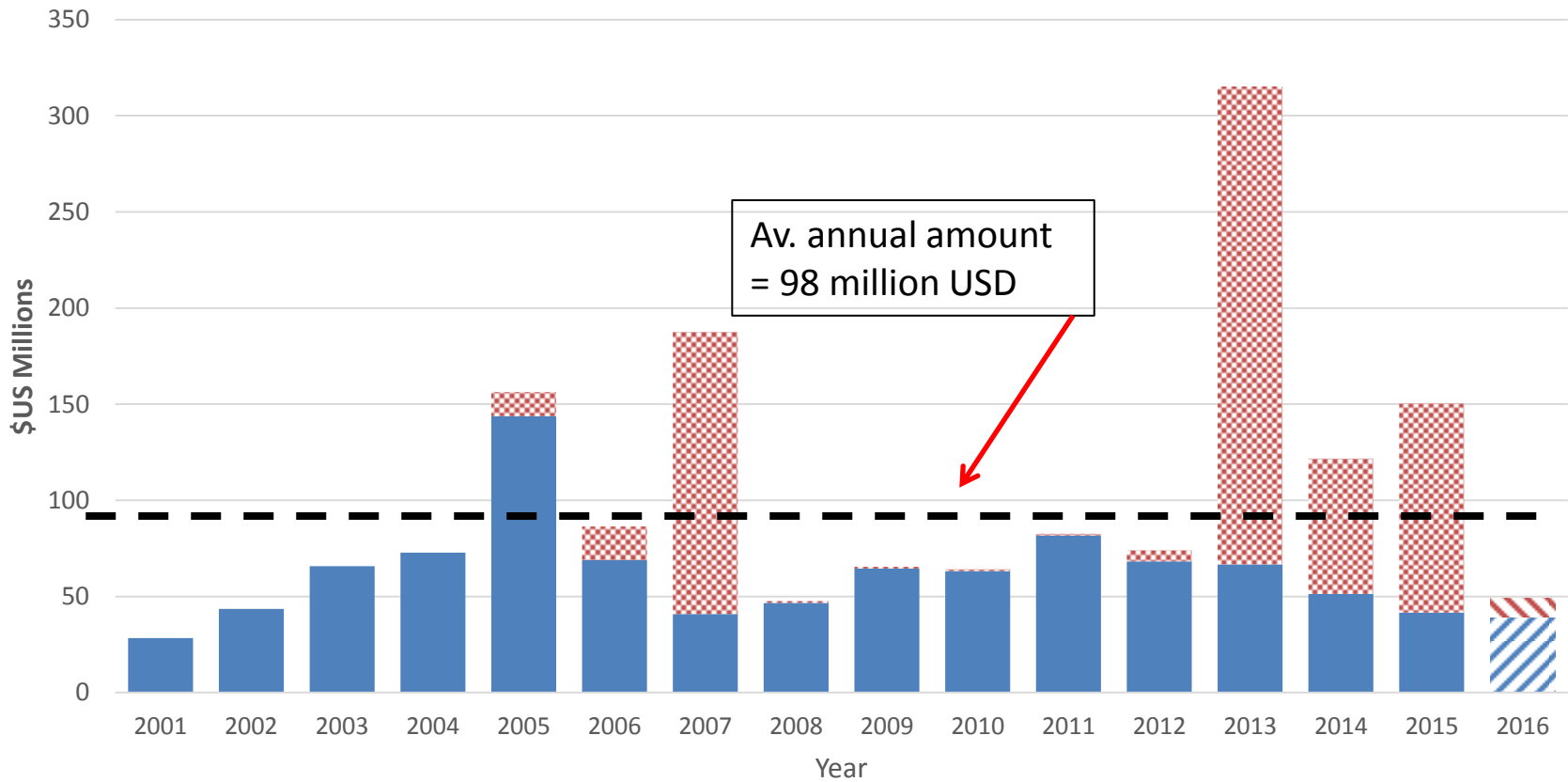
Data Source: <type data source>  
Map Production: <type unit name>  
World Health Organization



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## #5 Unpredictable funding and expenditures

Annual partner expenditures for measles and rubella,  
Measles and Rubella Initiative (M&RI) and Gavi, 2001-2016\*



\*2106 data as of 30 September

■ M&RI expenditures ■ Gavi expenditures

# Opportunities

# #1 Economics of MR vaccination

- Published studies show high cost-effectiveness
- High return on investment for measles vaccination in low- and middle-income countries<sup>1</sup>
  - \$58 return on \$1 invested
- Current level of control costs \$98 billion annually<sup>2</sup>:
  - Programme (\$2 billion)
  - Treatment (\$8 billion)
  - Cost of lost productivity (\$88 billion)
- Measles and rubella are eradicable with potential for cost-savings <sup>3</sup>
  - Earlier estimate of cost of measles eradication of \$8-14 billion<sup>4</sup>
- Results from eradication investment case expected in mid-2017

1. Ozawa S et al., *Health Affairs* 2016; 35(2): 199-207

2. Thompson KM, Odahowski CL, *Risk Analysis*, 2016; 36(7):1357-1382, Aug 6, 2015, doi: 10.1111/risa.12459

3. WHO. *Weekly Epidemiological Record*, No 6, 12 February 2016, 91, 61–72

4. Bishai et al., *J Vaccines Vaccin* 2012, S:3. <http://dx.doi.org/10.4172/2157-7560.S3-002>



## *#2 Gavi's new measles and rubella strategy: Comprehensive multi-year support*

Past support	New strategy
<b>2004-2020</b> <b>\$1.3 billion</b>	<b>2016-2020</b> <b>+\$220 million</b> <ul style="list-style-type: none"><li>• Comprehensive 5 year plan</li><li>• Countries fully finance cost of 1st dose of measles vaccine</li><li>• Co-financing of follow-up SIAs</li><li>• Flexible strategy within the approved budget</li></ul>

## #3 New tools for programme performance



- Nepal:
  - Rapid convenience monitoring using mobile phones allowed real time monitoring and corrective vaccination activities in 42% of areas
- Kenya:
  - Provisional results from the survey following the MR campaign
  - 95% (CI: 94%-96%)

## #4 New approaches

### Diagnosis



### Vaccination



100 micro-array  
patches

# Summary

- Substantial progress in measles control since 2000
- Elimination of measles and rubella in the Americas
- All other 2015 global and regional targets were not met
- Risks to further progress are related to weak underlying national programmes and inadequate resources
- Opportunities include the Gavi measles and rubella strategy, new tools to support SIA quality and funding for development of novel tools
- Midterm review recently completed