An assessment of the Expanded Program on Immunization (EPI) in the Philippines: challenges and ways forward

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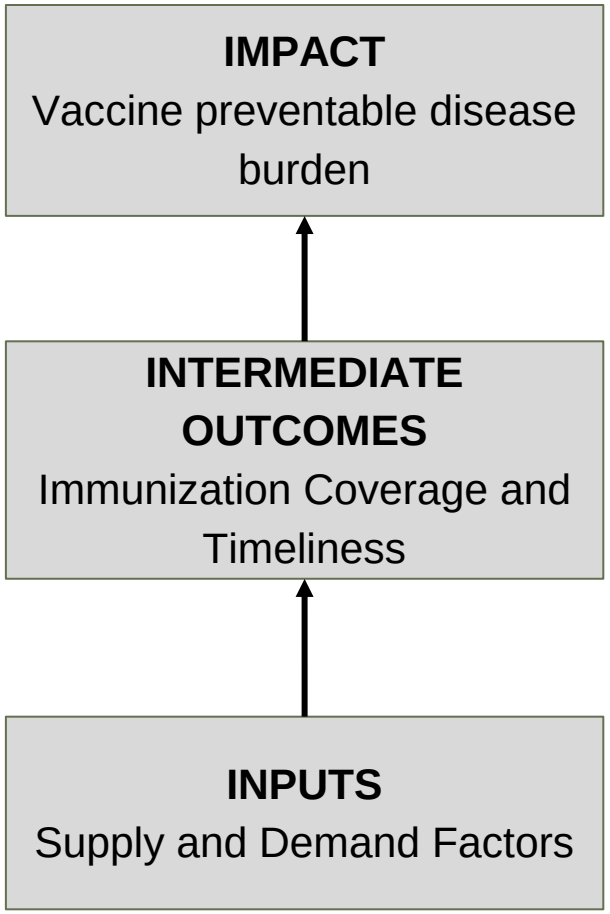
Framework and Outline



- Trends in VPD mortality and morbidity
- National immunization coverage and timeliness
- Equity
- Analysis of DOH EPI expenditures
- Supply-side challenges in EPI
- Recommendations for consideration

DOH Expanded Program on Immunization (EPI)

Established in 1976

- Presidential decree 996
- Reinforced by RA 10152 in 2011

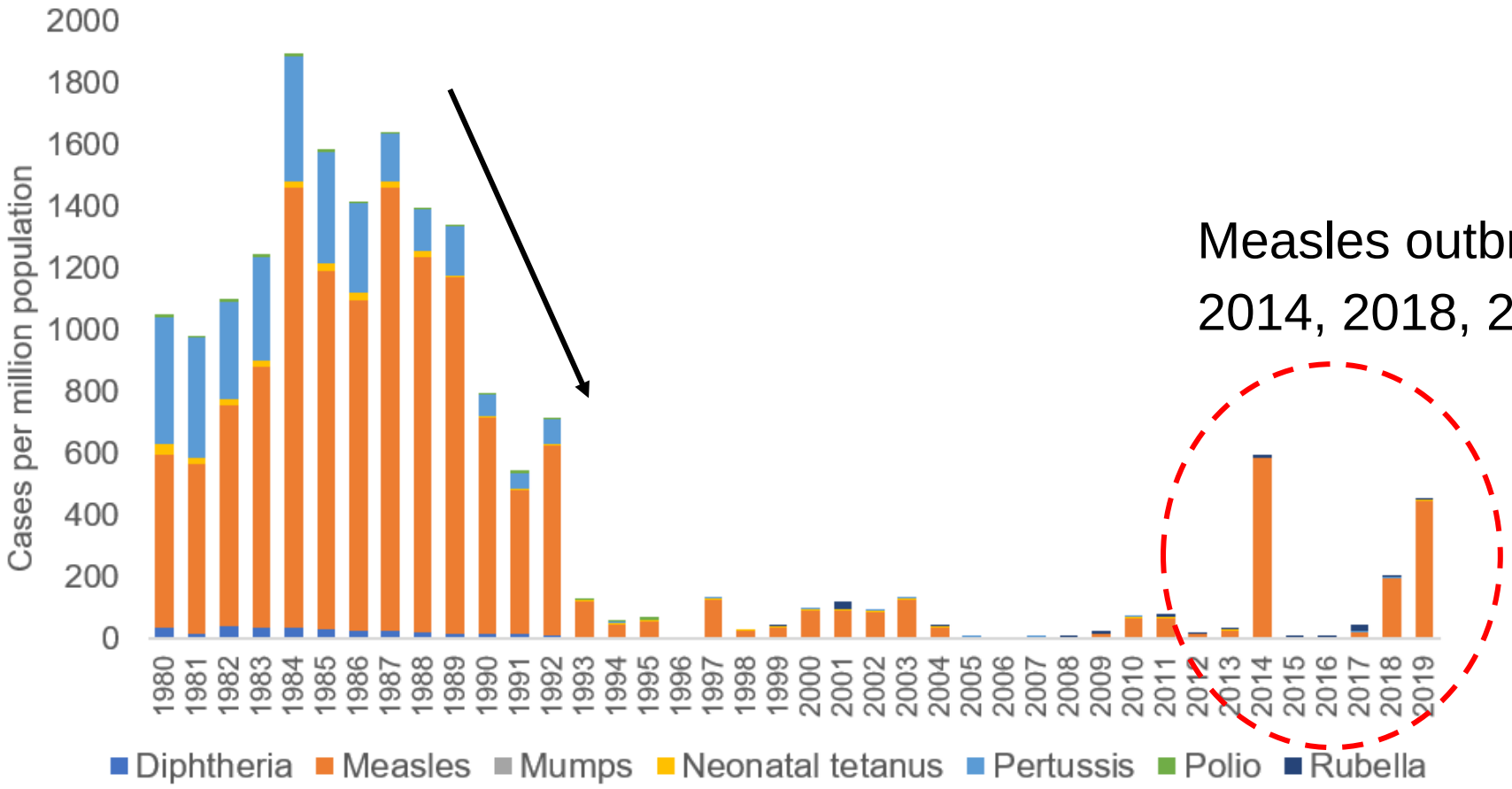
Goals

- Provide children with access to life-saving vaccines
- Reduce morbidity and mortality against vaccine-preventable diseases

Basic vaccines for children (6)	**Disease Covered (8)**
BCG	Tuberculosis
Hepatitis B (HepB)	Hepatitis B
Oral Polio (OPV)	Poliomyelitis
Pentavalent (Penta)	Diptheria, Tetanus, Pertussis Hepatitis B Haemophilus influenza type b
Measles-containing vaccines	Measles

Vaccines under the EPI

Impact: significant decline in vaccine preventable disease burden, but occasional outbreaks



Measles outbreaks in 2014, 2018, 2019

2 cases of vaccine-derived polio cases in 2019

Figure 3. Cases of Vaccine-Preventable Diseases, 1980-2019

Source: Analysis of data from the WHO vaccine-preventable diseases monitoring system

These occasional outbreaks reflect long-standing problems of **low vaccination coverage and untimely administration of vaccines** that lead to **failure to reach and maintain herd immunity.**

Intermediate Outcomes

Coverage: fluctuating and unable to reach target coverage levels

- **2002**: Steady increase sustained until 2012
- **2013**: Sharp decline for all basic vaccines
- **2016**: Only around 70% of children complete all basic vaccines
- **Since 1990**, we have never reached the 95% coverage target for all basic vaccines*

*Basic vaccines: BCG, 3 doses polio, 3 doses DPT, 1 dose measles)

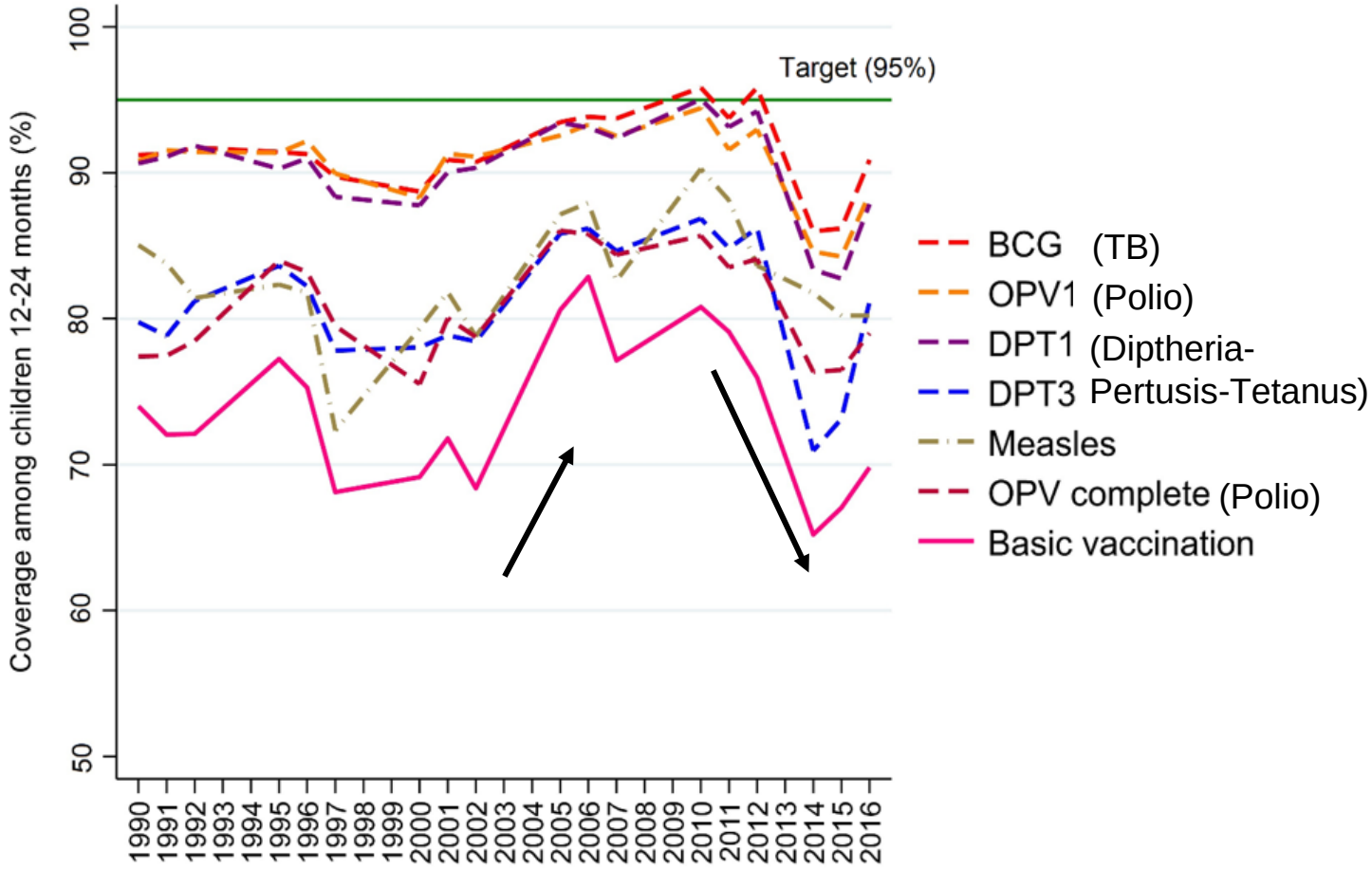
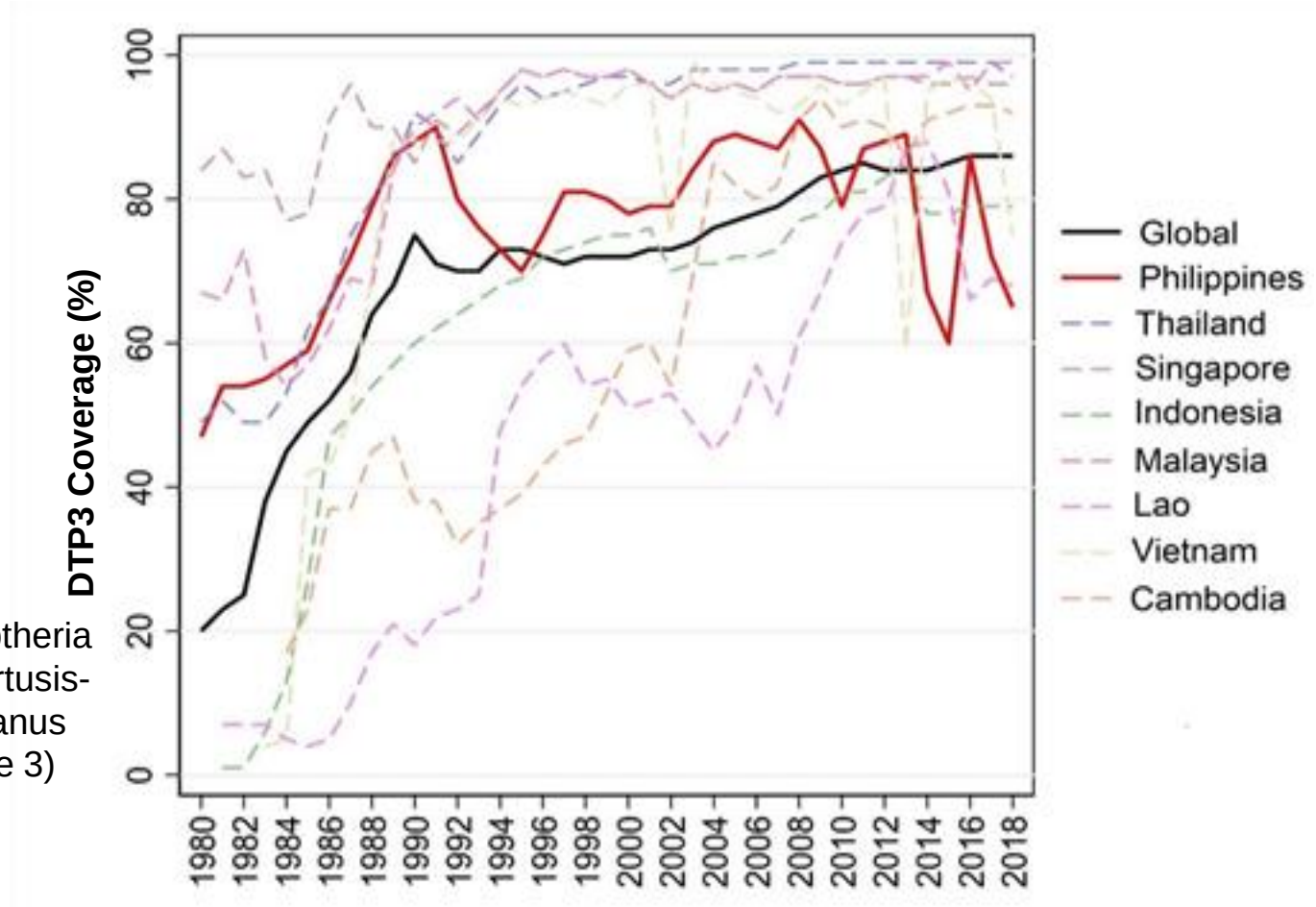


Figure 5. Vaccination by birth cohort in the Philippines, 1990-2016

Source: Analysis of National Demographic and Health Survey (NDHS) 1993-2017

Coverage: Globally, Philippine EPI started strong, but was unable to maintain gains



(Diptheria -Pertusis-Tetanus dose 3)

Source: Analysis of WHO-UNICEF coverage estimates data

1980-83: Philippines DPT3 coverage (47%) was more than twice global average (20%)

2012 – present: Global average and ASEAN countries successfully increased and maintained high coverage

2017-2018: Philippine coverage (72%)..

- Lowest in ASEAN
- Lower than some of the poorest countries in Sub-Saharan Africa:

  Burundi (90%), Malawi (92%)

  Liberia (84%)

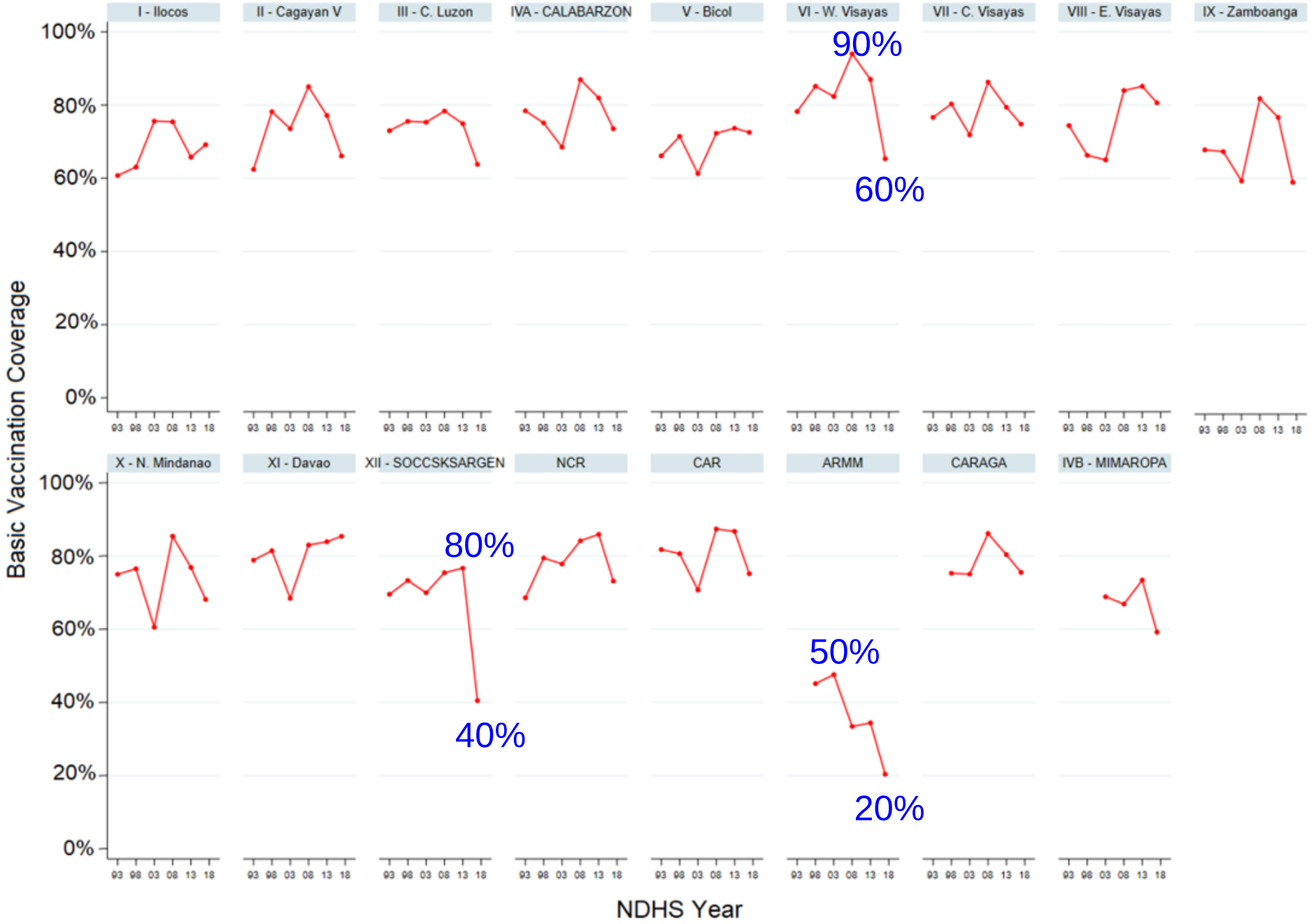


Figure 8. Basic vaccination coverage, by region, 1990-2017

Source: Analysis of the NDHS 1993-2017

Equity: Immunization coverage varies across region

- Fluctuating like national coverage
- Consistent decline in all regions (except in Davao) starting 2013
- Alarming decline in
  - VI
  - XII
  - ARMM

*Basic vaccines: BCG, 3 doses polio, 3 doses DPT, 1 dose measles)

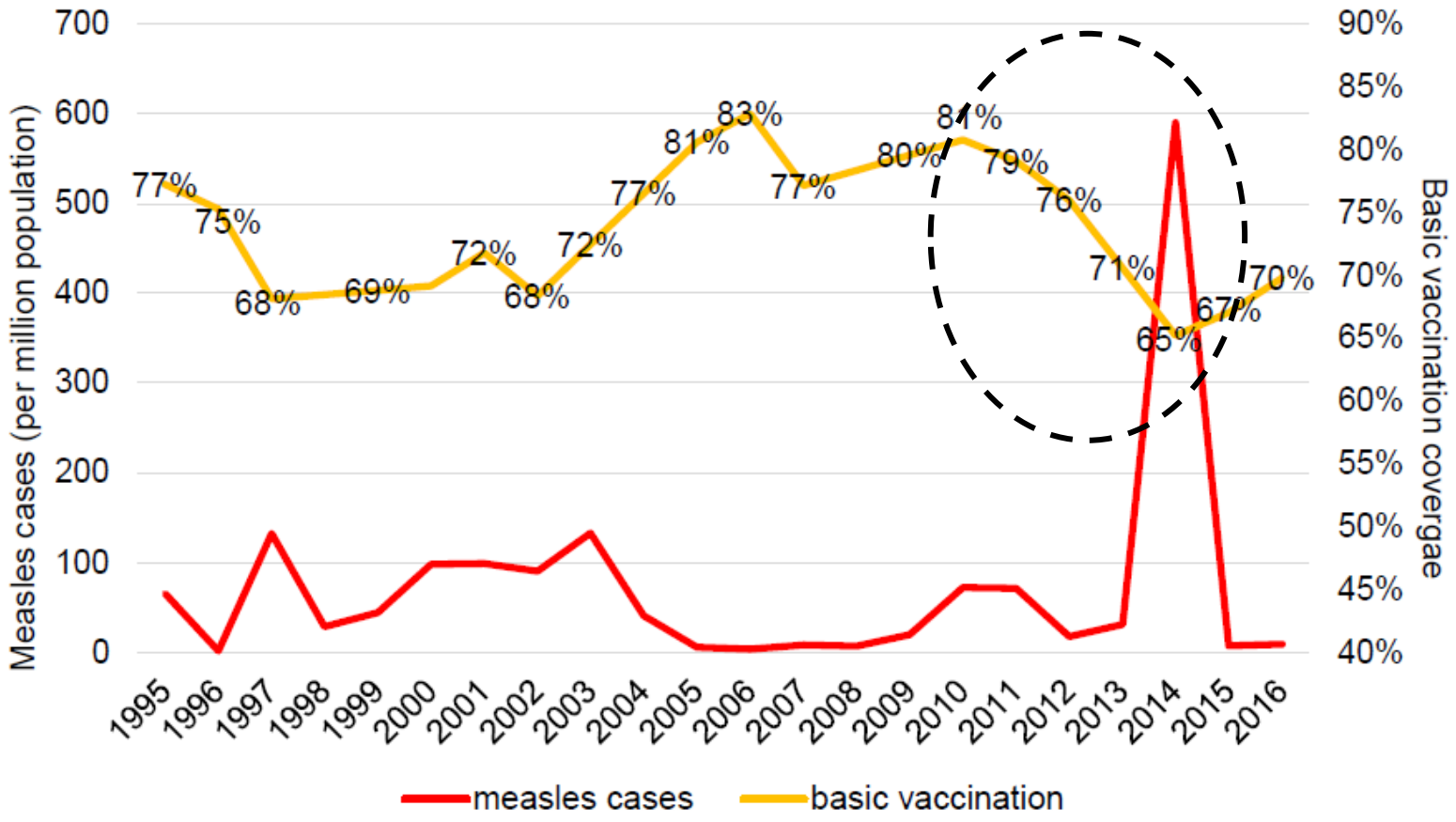
Coverage: Incidence of outbreaks follows the fluctuations in coverage

2014: measles outbreak precipitated by

- Uneven/declining coverage in past years precipitated in measles outbreak
- Lowest point of basic vaccination coverage

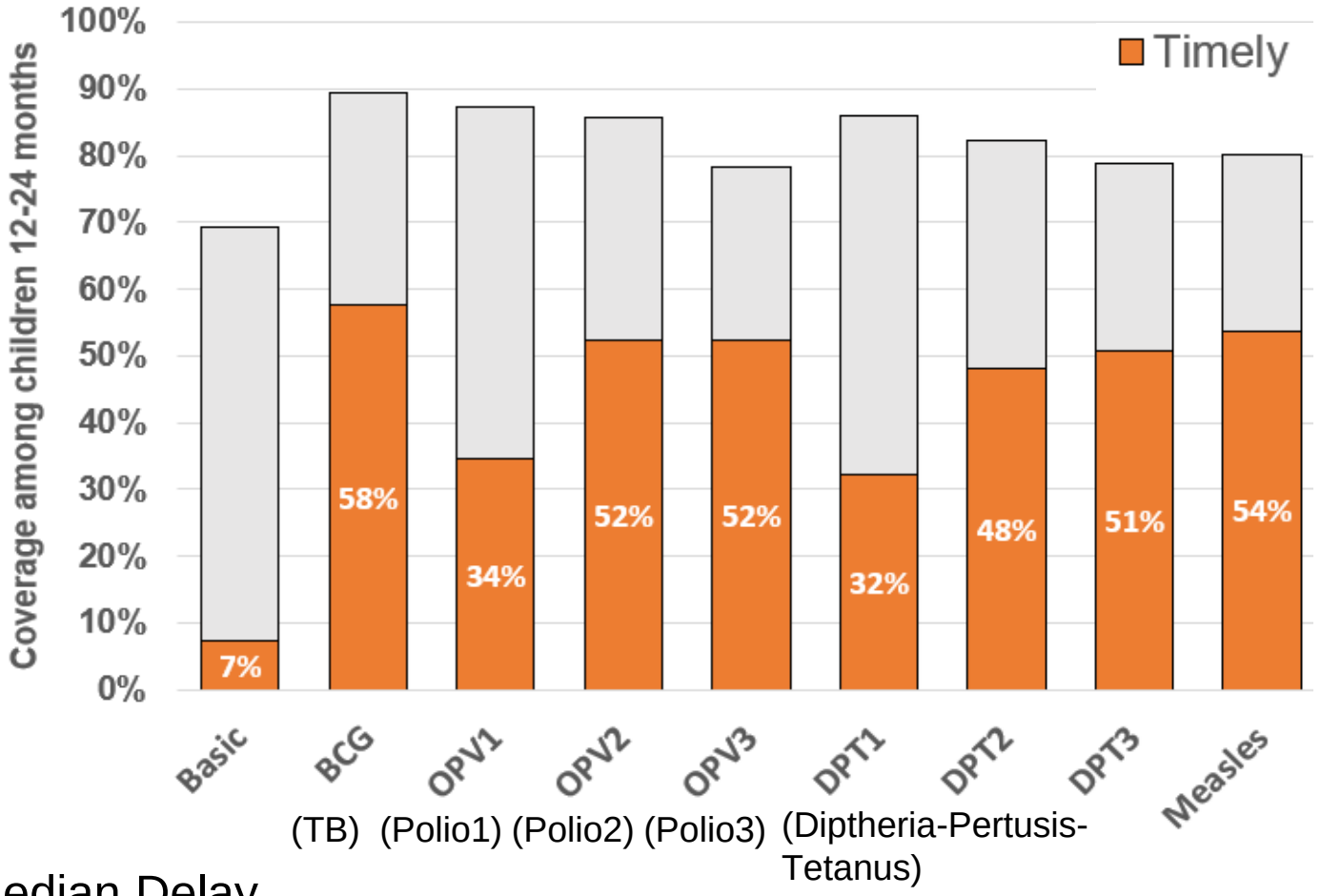
*Basic vaccines: BCG, 3 doses polio, 3 doses DPT, 1 dose measles)

Figure 6. Immunization coverage and measles cases, 1995-2016



Source: Analysis of annual surveillance data from WHO VPD monitoring system and NDHS 1993-2007

Timeliness: a large portion of vaccinated children were not immunized on time



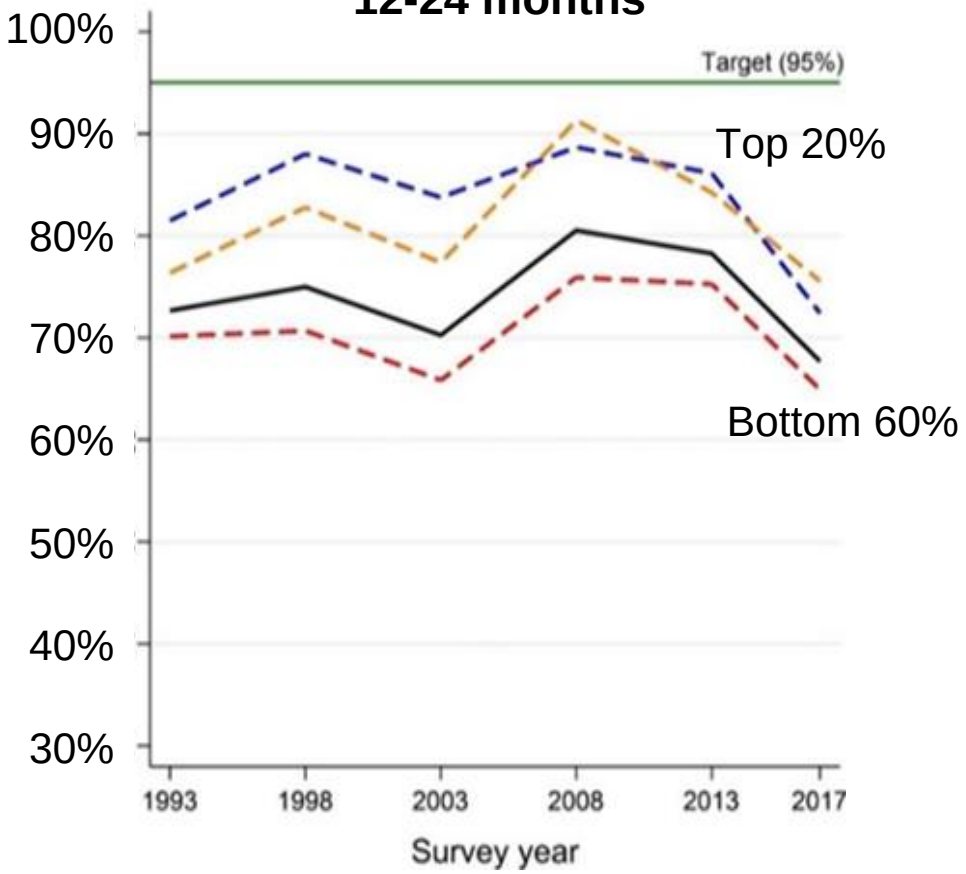
Median Delay (days):	25	19	37	**50**	23	45	**62**	27

- Around 40% of immunized children were not vaccinated within recommended age ranges
- Median delay ranged from 20-60 days
- Greater delays for doses later in a series

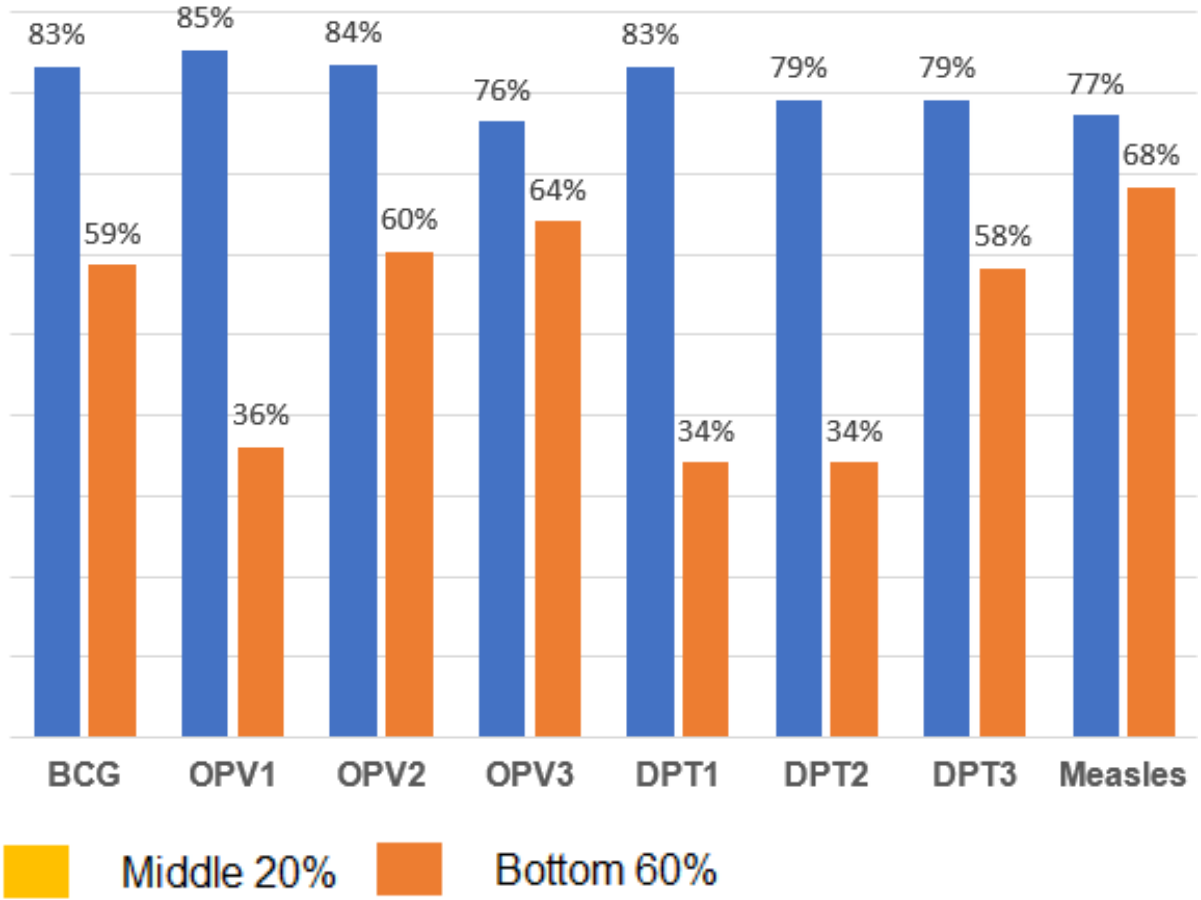
*Basic vaccines: BCG, 3 doses polio, 3 doses DPT, 1 dose measles)

Equity: coverage and timeliness has been consistently lower among the poor

Basic vaccination coverage among 12-24 months



Timeliness of immunization among vaccinated children 12-24 months



While **demand factors like vaccine confidence have contributed**, the decline in immunization coverage is **largely a result of recurring supply-side systems** challenges.

Inputs: Demand-side and Supply-side

Demand-Side: Post-Dengvaxia, vaccine confidence dropped sharply, but it does not entirely explain the fluctuations in coverage in the past decade

(Diptheria -Pertusis-Tetanus dose 3)

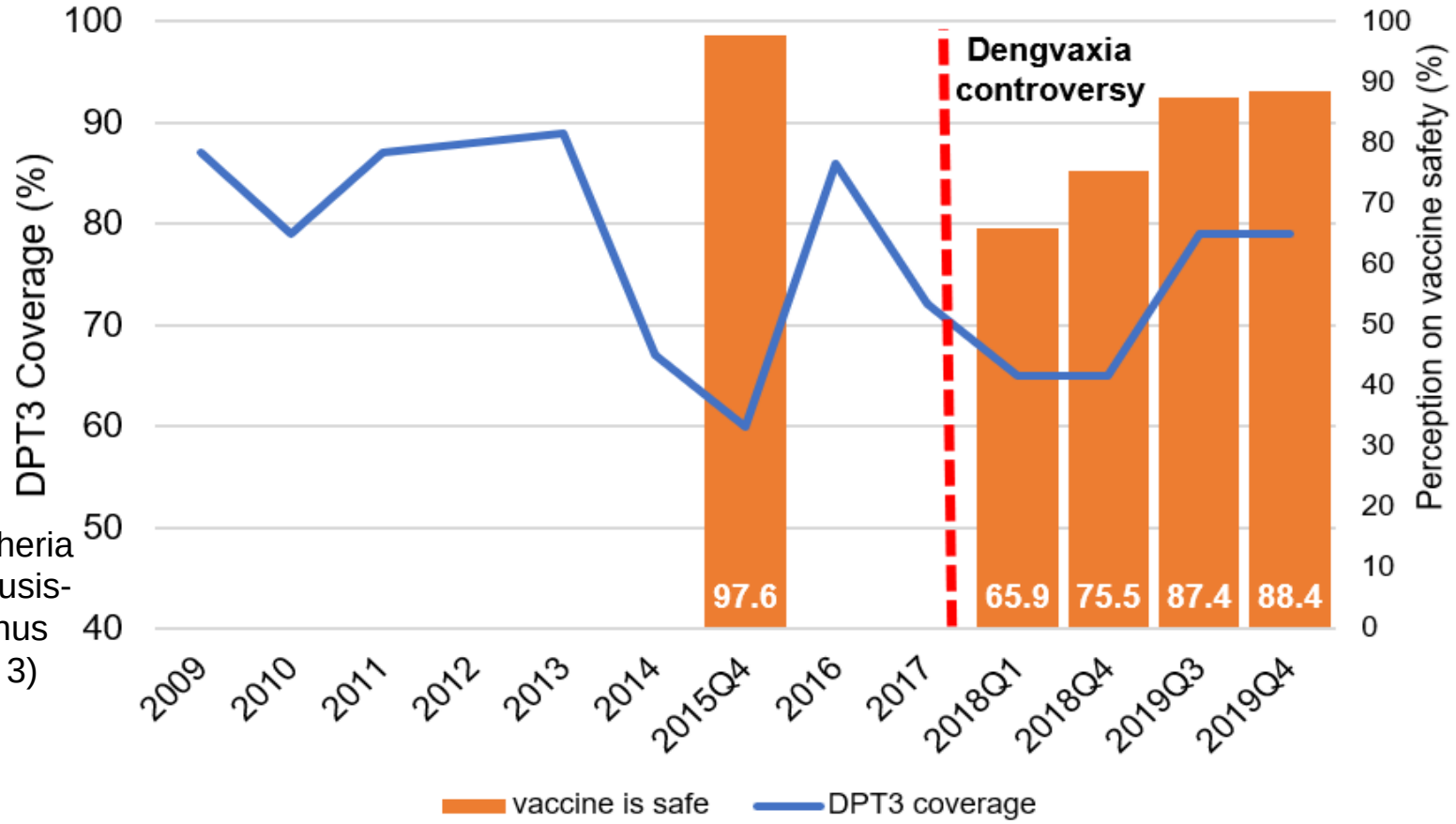


Figure 12. DPT3 coverage and perception on vaccine safety

Source: Coverage data from WHO-UNICEF and vaccine confidence data from Philippine Survey and Research Center (PSRC)

- DPT3 coverage was low in 2015, even when confidence was high
- Coverage was on already on a downward trend pre-Dengvaxia
- Coverage recovered slightly in 2016
- Post-Dengvaxia (end 2017/start of 2018), coverage level dropped to 66%

Supply-Side:

National stock outs have been common in the past decade

- **2013-15:** Persistent stockout in pentavalent vaccines
  - caused by failed local bidding
- **2016-2019: national stock** deficits at end year, for IPV, pentavalent, and MMR
  - Difficulty maintaining buffer stock

Table 11. Duration of vaccine stock outs at the national level

	2012	2013	2014	2015	2016
Hepatitis B	6 months		1 month		
Pentavalent		9 months	2 months	9 months	
IPV					6 months
OPV					1 month
PCV					1 month

Source: data from RITM collated by UNICEF and WHO Philippines

Table 10. Levels of vaccine stocks in national storage from 2016-2019

Vaccine	2016	2017	2018	2019
BCG	+5.5 million	+4.1 million	+2.1 million	- 2.5 million
Hepatitis B	+1.6 million	-0.47 million	+0.83 million	+0.06 million
OPV	-3.6 million	+2.1 million	-2.2 million	+3.5 million
IPV	-1.3 million	-0.6 million	-0.04 million	-0.26 million
Pentavalent	+1.6 million	-3.4 million	-1.7 million	no data
MMR	+0.2 million	-0.16 million	-1.3 million	-4.96 million

Source: data from RITM collated by UNICEF and WHO Philippines

Note: green = excess of annual requirement; red = deficits

Procurement of National Supply:

Local procurement for basic vaccines have frequent bid failures

- UNICEF Vaccine Independence Program: DOH-EPI has been trying to procure locally via competitive bidding
- Trend in local bidding for basic vaccines:
  - Large number of failures in 2015
  - UN procurement in 2017 to 2018
  - Tried local bidding again in 2019 with limited success
- After local tenders fail, DOH resorts to emergency procurement with UNICEF late in the year
- Additional bottlenecks in procurement: steps of giving notice of award and contract signing

Table 2. Profile of the Vaccine items*

	Basic Vaccines (N=84)		NonBasic (N=44)	
Year, n (number failed)	Competitive	Negotiated	Competitive	Negotiated
2013	1 (1)	6 (0)	0 (0)	5 (0)
2014	4 (1)	8 (0)	2 (1)	4 (1)
2015	16 (11)	3 (1)	9 (3)	0 (0)
2016	12 (5)	3 (0)	7 (1)	2 (0)
2017	1 (0)	7 (0)	4 (0)	0 (0)
2018	2 (1)	6 (0)	6 (3)	1 (1)
2019	8 (6)	7 (0)	4 (0)	0 (0)

* Excluded cancelled or repeat order items.

Basic: BCG, HepB, Polio, Penta (DPT-HepB,HiB), Measles

NonBasic: HPV, PCV, influenza, rotavirus, JEV

Source: DOH procurement monitoring reports, 2013 to 2019

Closer look: Failed Bids for Basic Vaccines

- After bid failures, DOH will turn to UNICEF later in the year
- **2015** was a particularly bad year for local procurement of basic vaccines

Legend:

Failed bid

Table 9. Failed procurement of vaccines in 2015 and 2019

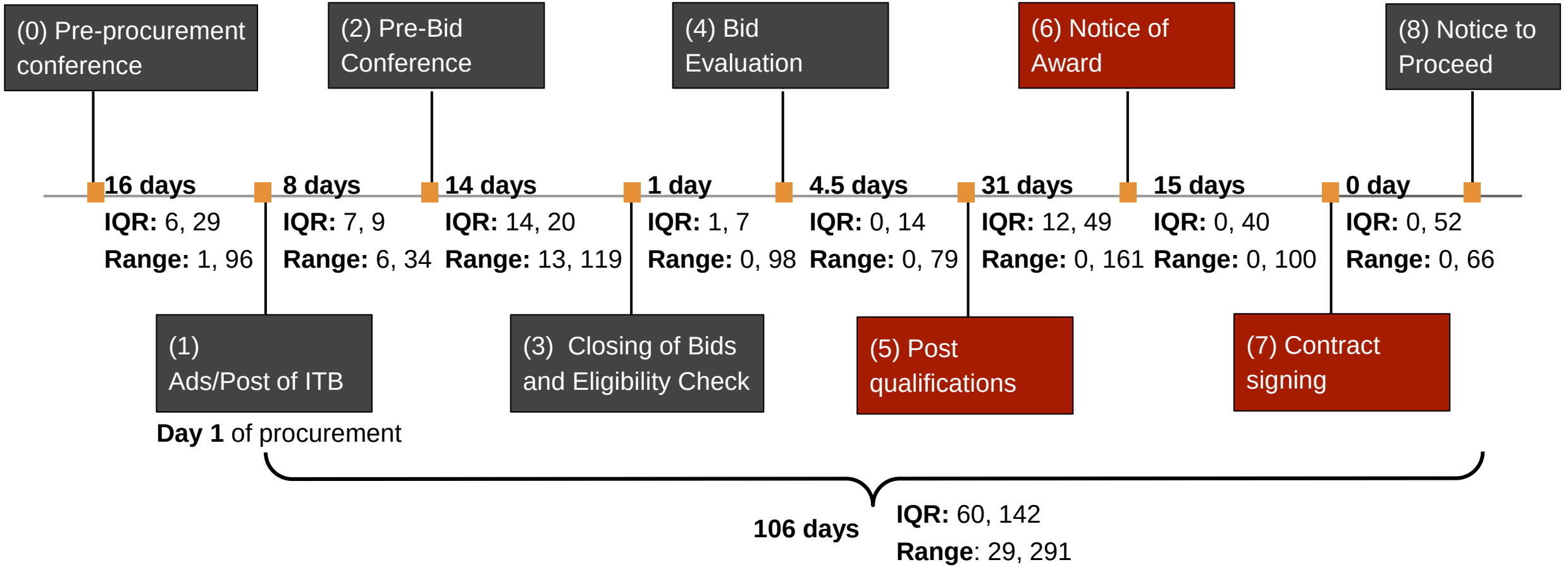
COBAC ID	Procurement Mode	Start Date*	Fail Date	Days Delay
2015				
A. BCG				
2015-087	Competitive bidding	Mar 6, 2015	Mar 31, 2015	117
2015-087A	Competitive bidding	May 21, 2015	Jun 23, 2015	
NP NO. 2015-015	UNICEF - negotiated	Jul 1, 2015		
B. Pentavalent				
2015-086	Competitive bidding	Mar 6, 2015	Mar 31, 2015	166
2015-086-A	Competitive bidding	Apr 7, 2015	May 12, 2015	
2015-158	Competitive bidding	Aug 19, 2015		
EP NO.2015-003	UNICEF - negotiated			
C. Measles				
2015-080	Competitive bidding	Mar 6, 2015	Mar 31, 2015	157
2015-085	Competitive bidding	Mar 6, 2015	Mar 31, 2015	
2015-085-A	Competitive bidding	May 12, 2015	Jun 23, 2015	
NP-UNICEF-014-2015	UNICEF - negotiated		Jul 8, 2015	
2015-111	Competitive bidding	Apr 28, 2015		
2015-111-A	Competitive bidding	Jun 29, 2015	Jul 27, 2015	
2015-111-B	Competitive bidding	Aug 10, 2015		

Source: DOH procurement monitoring reports, 2013 to 2019

Procurement Bottlenecks: steps of **post-qualification, notice of award, and contract signing**

Median time between procurement steps for awarded competitive bids from 2013 to 2019 (n=62)

* Vaccines and safe injection supplies only



Storage and Distribution: DOH-CO limited capacity

- **RITM:** can only accomodate **3-month supply**
  - Delivery must be split into 4 tranches a year
  - Ideally: annual supply + 3-6 months buffer stock

2017 Effective Vaccine Management (EVM) assessment for the Philippines [30]:

> *"Expansion of the storage capacity is not possible due to the premises. This is a very serious situation and exposes the Philippines to unacceptable risk of stock-outs and very slow response to disease outbreaks."*

- **Lack of organized system to distribute vaccines to LGUs**
  - third-party logistics (3PL) have difficulty fulfilling quarterly deliveries of DOH supplies (not just vaccines)
  - Delayed payments for 3PL which lead to pausing deliveries
  - Inventory of vaccines (as well as other DOH supplies) in health facilities are not electronically monitored

Financing: Clearly a Priority Program

Massive infusion of funds from SinTaxes

Pre 2010: < PHP 1 billion

2020: PHP 7.3 billion or 7.2% of DOH's total budget

4-fold increase in public spending from PHP 2 billion in 2013

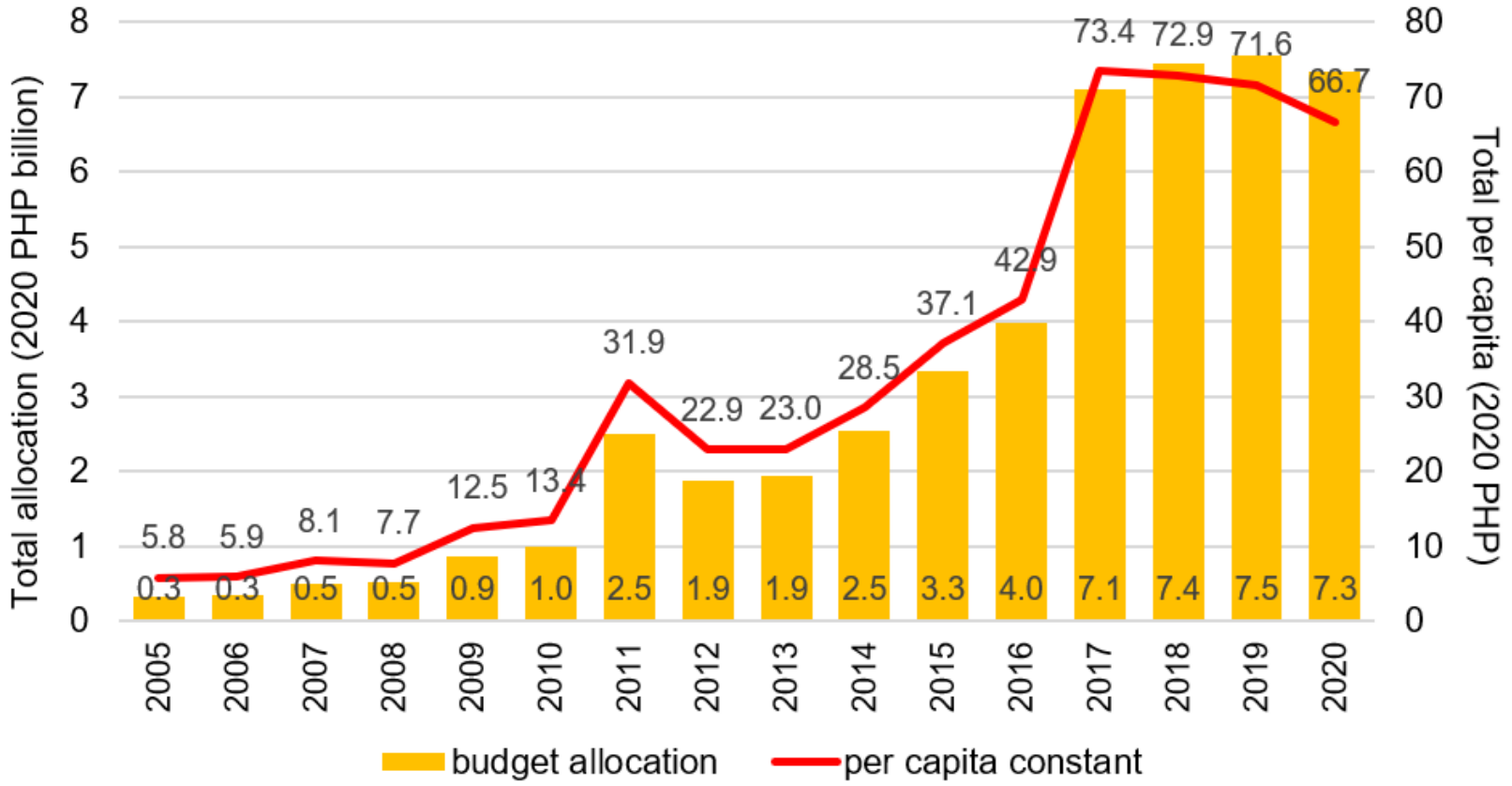


Figure 13. Budget allocation of DOH Expanded Program on Immunization

Source: Analysis of DBM National Expenditure Program data from FY 2005-2020

Financing: lack of investment in systems and basic vaccination

- SinTaxes were used to **include WHO recommended underutilized vaccines**
  - Rotavirus, human papilloma virus
  - Japanese encephalitis
- **EPI continues to expand** vaccines included in the EPI, ***without concomitant increases*** **in**
  - DOH EPI staff quantity (2 at DOH-CO, 1 in each DOH-region)
  - DOH logistics and cold chain capacity
  - LGU capacity to store and deliver vaccines
  - DOH capacity to monitor
  - Service delivery channels (limited or unknown private sector involvement)

Table 6. DOH EPI expenditures for 2017 and 2018, millions of pesos

	2017		2018	
Vaccines	**Disbursed**	**Share**	**Disbursed**	**Share**
Total	**7,762.46**	**100%**	**7,596.86**	**100%**
A. Vaccines	**7,398.93**	**95.3%**	**7,061.40**	**93.0%**
Basic routine	*1,705.06*	*22.0%*	*1,913.50*	*25.2%*
PCV	*4,692.59*	*60.5%*	*4,822.91*	*63.5%*
B. Vaccine import taxes	**119.09**	**1.5%**	**266.43**	**3.5%**
C. Safe injection supplies	**140.66**	**1.8%**	**26.86**	**0.4%**
D. Supplemental immunization activities	**8.56**	**0.1%**	**92.59**	**1.2%**
E. Cold and Supply Chain (3PL, warehouse)	**70.83**	**0.9%**	**143.21**	**1.9%**
F. Equipment (vaccine carriers)	**11.11**	**0.1%**	-	-
G. Soft Components (training, research, health promotion)	**13.28**	**0.2%**	**6.37**	**0.1%**

Source: KII with UNICEF and 2017 Effective Vaccine Management (EVM) assessment

Service Delivery Channels: Government-centric and limited collaboration with private sector

- **Majority Public financing and public sector provision -** unchanged mode and manner of delivery by since 1976

PUBLIC SECTOR ⟷ Interaction ?? **PRIVATE SECTOR**

DOH Central

- National strategy
- Manage central procurement and cold chain
- Technical guidance on safe immunization
- Monitoring and surveillance
- Lead supplemental immunization activities

LGUs

- Immunize at primary care facilities
- Safe immunization supplies
- Health staff salary and benefits
- Community-based demand generation
- Local surveillance

Limited or extent of participation unknown for:

- Service delivery
- Financing

*Birth doses of HepB and BCG included in PhilHealth's Newborn Care Package

Recommendations for Consideration in EPI Strategy

Goal	Short-Term (1-2 years)	Medium-Term (3-5 years)
1. Resolve **procurement bottlenecks** that lead to national stockouts	• Source basic vaccines from **UNICEF** • Utilize DBM's **Multi-Year Obligation Authority** • Solve **causes of delays i**n steps of notice of award, contract signing, release of payment	Decide what will be the **stable source of vaccine supply** in the country • UNICEF • importation from other countries • building local capacity to manufacture?
2. Spend on continuous upgrades in **human resources, cold and supply chain,** distribution channels	• **Augment EPI technical staff** at DO-CO and CHDs quantity and skills (e.g. M&E, cold chain, HTA, private sector expert) • Invest **significant resources** in: (a) increasing storage capacity, (b) planning and organizing vaccine distribution, (c) capacity-building of LGUs for existing proven strategies (e.g. catch-up vaccination), (d) health promotion	**Expand service delivery to Private sector** • via PhilHealth and designated PHC physicians • For efficiency, explore DOH as sole procurer, distributing to both public and private providers • Contracting out more parts of the supply chain • Explore **fragile state models**
3. Improve **real-time M&E** systems for better planning, targeting, and needs assessment	• **Address inequities**: focus TA and innovations to LGUs with poor/low coverage and the poor • Start looking at the **timeliness** of vaccination as a performance metric • Invest in **electronic systems** like the "Web-Based Vaccine Inventory Management"	Establish an **electronic immunization registry** • use national ID, real-time head counts for needs assessment • identify population for catch-up vaccination • move away from limitations of NDHS and FHSIS (i.e. public sector only, paper-based reporting of coverage in LGUs)

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