

# Innovations for immunization: Global, local, or both?

Dr. Orin Levine  
Director, Vaccine Delivery  
Bill & Melinda Gates Foundation  
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# Disclosures

This activity is coprovided by WithinReach and Cardea Services.

Successful completion of this continuing education activity includes the following:

- Attend the entire conference
- Complete an online evaluation at <http://www.surveygizmo.com/s3/3840875/WA-Vaccine-Update-Learner-Evaluation>
- Complete an online certificate request at the link above

If you have any questions about this CE activity, contact Margaret Stahl at [seattle@cardeaservices.org](mailto:seattle@cardeaservices.org) or (206) 447-9538

# Disclosures

Faculty: Orin Levine, PhD

CME Committee: David Couch; Kathleen Clanon, MD; Johanna Rosenthal, MPH; Pat Blackburn, MPH; Richard Fischer, MD; Sharon Adler, MD.

CNE Committee:; Leigh Casey Wallis, MPH; Paul Throne, DrPH, MPH, MSW; Kristen Wilson-Weiberg, BSN, RN; Liz Jaquette, MPH; Mackenzie Melton, MPH, Ginny Cassidy-Brinn, MSN, ARNP.

# Disclosures

Richard Fischer, MD is a member of an Organon speaker's bureau.

Dr. Fischer does not participate in planning in which he has a conflict of interest, and he ensures that any content or speakers he suggests will be free of commercial bias.

None of the other planners and presenters of this CE activity have disclosed any conflict of interest including no relevant financial relationships with any commercial companies pertaining to this CE activity.

There is no commercial support for this presentation

# Acknowledgement

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# Learning Objectives

By the end of this session, you should be able to:

1. Discuss how global immunization programs differ from practices in the United States
2. Describe vaccination delivery systems that are different from those used in the United States



# THE POWER OF VACCINES

- Improve lives of children & communities
- Proven safe & effective
- \$1 spent = \$44 economic & social benefits

A close-up photograph of a woman with dark skin, wearing a black headscarf with pink and white floral patterns. She is holding a young child with dark skin and a pink headband. The child is smiling and looking towards the camera. The woman is looking down at the child. The background is dark and out of focus, showing some indistinct shapes and colors.

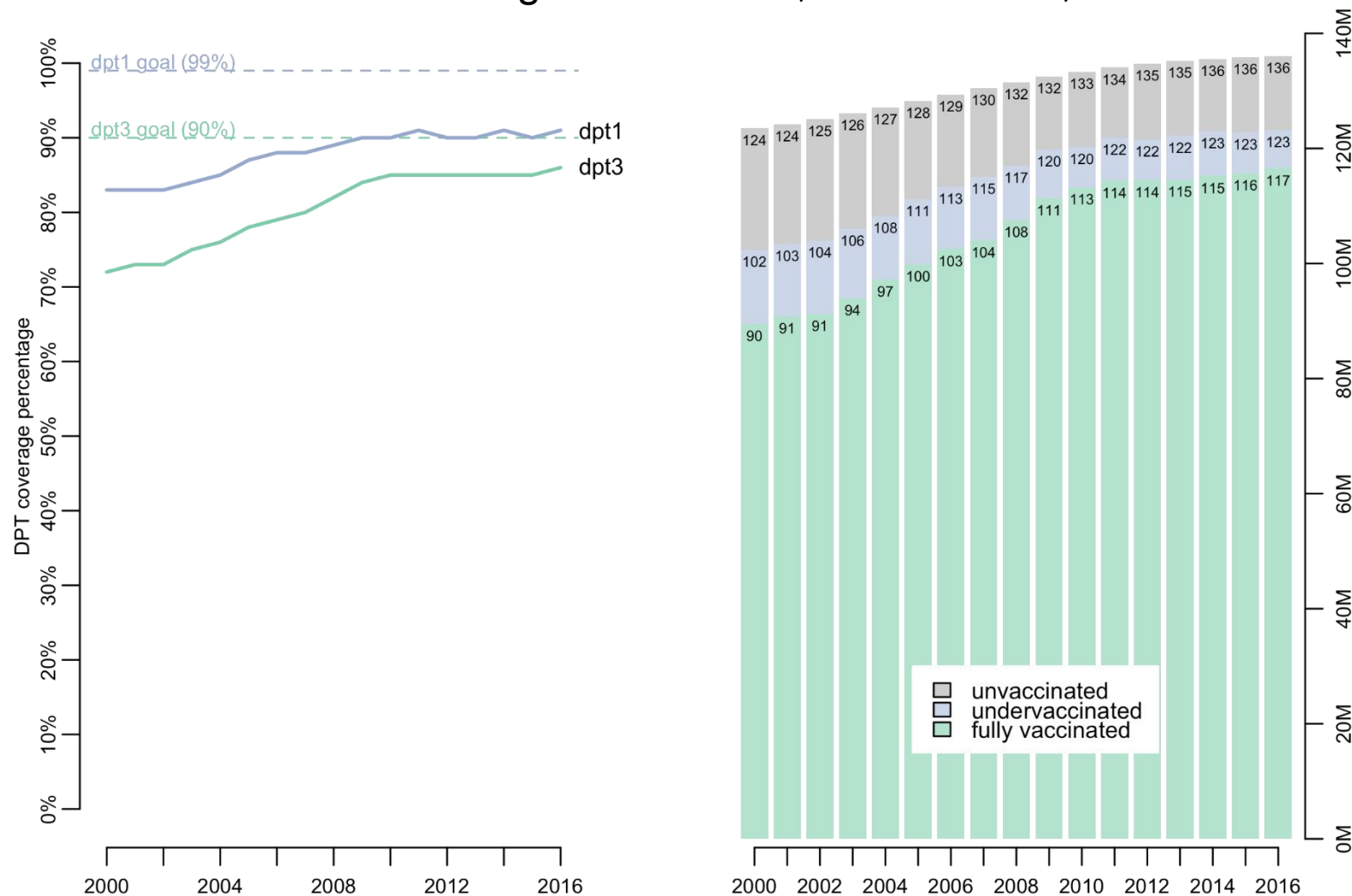
# GREAT PROGRESS

- Smallpox eradicated, and polio nearly so
- 79% reduction in childhood measles
- Reach nearly all kids in 1<sup>st</sup> year of life

# HIGH COVERAGE

>90% of infants get a first dose of life-saving vaccines and nearly all get all 3 doses

DPT1 and DPT3 Coverage and Counts, All Countries, 2000–2016



Source: 2017 WUENIC estimates  
Slide courtesy of Seth Rowley, UW

# SUSTAINING OR STAGNATING?



عربي 中文 English

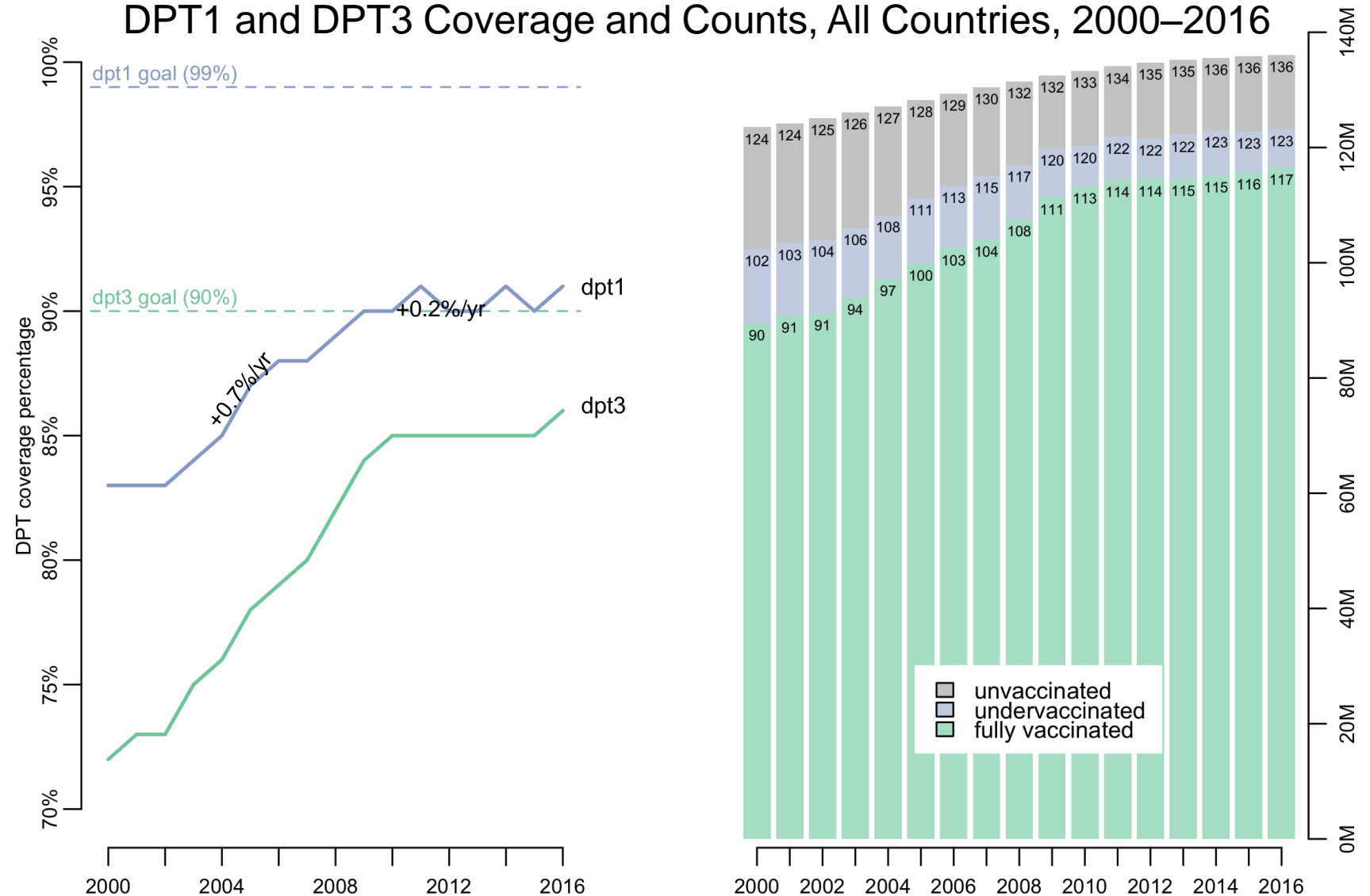
centre Publications Countries Programmes Governance About WHQ

**Immunization, Vaccines and Biologicals**

**Global immunization coverage sustained in the past five years**

Geneva, 15 July 2016

DPT1 and DPT3 Coverage and Counts, All Countries, 2000–2016



Source: 2017 WUENIC estimates  
Slide courtesy of Seth Rowley, UW

# PCV3

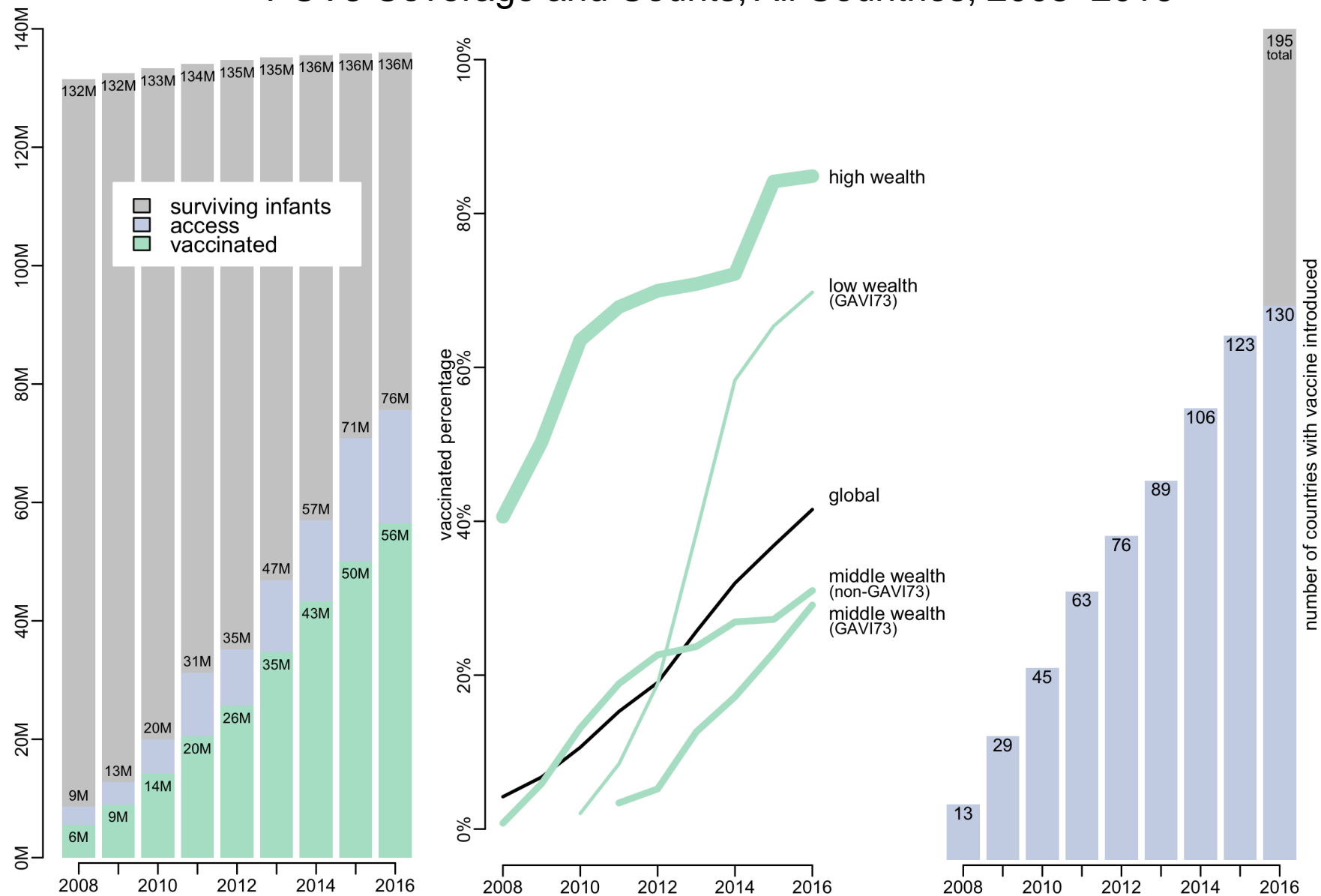
PCV3 coverage has increased steadily over the last 9 years. Vaccination rates in surviving infants have risen from 5% in 2008 to roughly 40%.

Low-wealth GAVI73 countries are approaching rates in high wealth countries.

Middle-wealth (GAVI73 and not) are lagging.

Source: 2017 WUENIC estimates  
Slide courtesy of Seth Rowley, UW

## PCV3 Coverage and Counts, All Countries, 2008–2016



# IMMUNIZATION: A PHOTO SAFARI



# THE DISPENSARY



# THE NURSE



# THE FRIDGE



## A close-up photograph of a Zeal brand mechanical pressure gauge. The gauge has a circular white face with black markings for pressure in PSI (0 to 40) and a blue arc for negative pressure (-10 to -40). A red needle points to approximately -5 PSI. The gauge is mounted on a wall with a black cable hanging from the bottom.

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# THE VACCINE STOCK LEDGER

STOCKING LEVEL (Health Facility / District / Regional / National)									
Vaccine Information						Stock Balance in dooms		Doses Issued	
Lot / Batch No						Expiry Date			
Receipts		Issued		Returned					
Received	VVM Stage (1,2,3,4)	Issued	VVM Stage (1,2,3,4)	Returned	VVM Stage (1,2,3,4)				
	2					124P1001	4/2013	180	
		20	2			124P1002	4/2013	160	
						124P1003	4/2013	150	
		10	2			124P1004	4/2013	157	
			4	9	2	124P1005	4/2013	150	
		9	2			124P1006	4/2013	159	
				7	2	124P1007	4/2013	150	
		9	2			124P1008	4/2013	157	
				7	2	124P1009	4/2013	150	
		7	2			124P1010	4/2013	155	
				5	2	124P1011	4/2013	150	
		5	2	3	2	124P1012	4/2013	157	

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# THE REMINDER

SEND VACCINE BALANCES  
EVERY FRIDAYS

TO THIS NUMBER  
0722450416

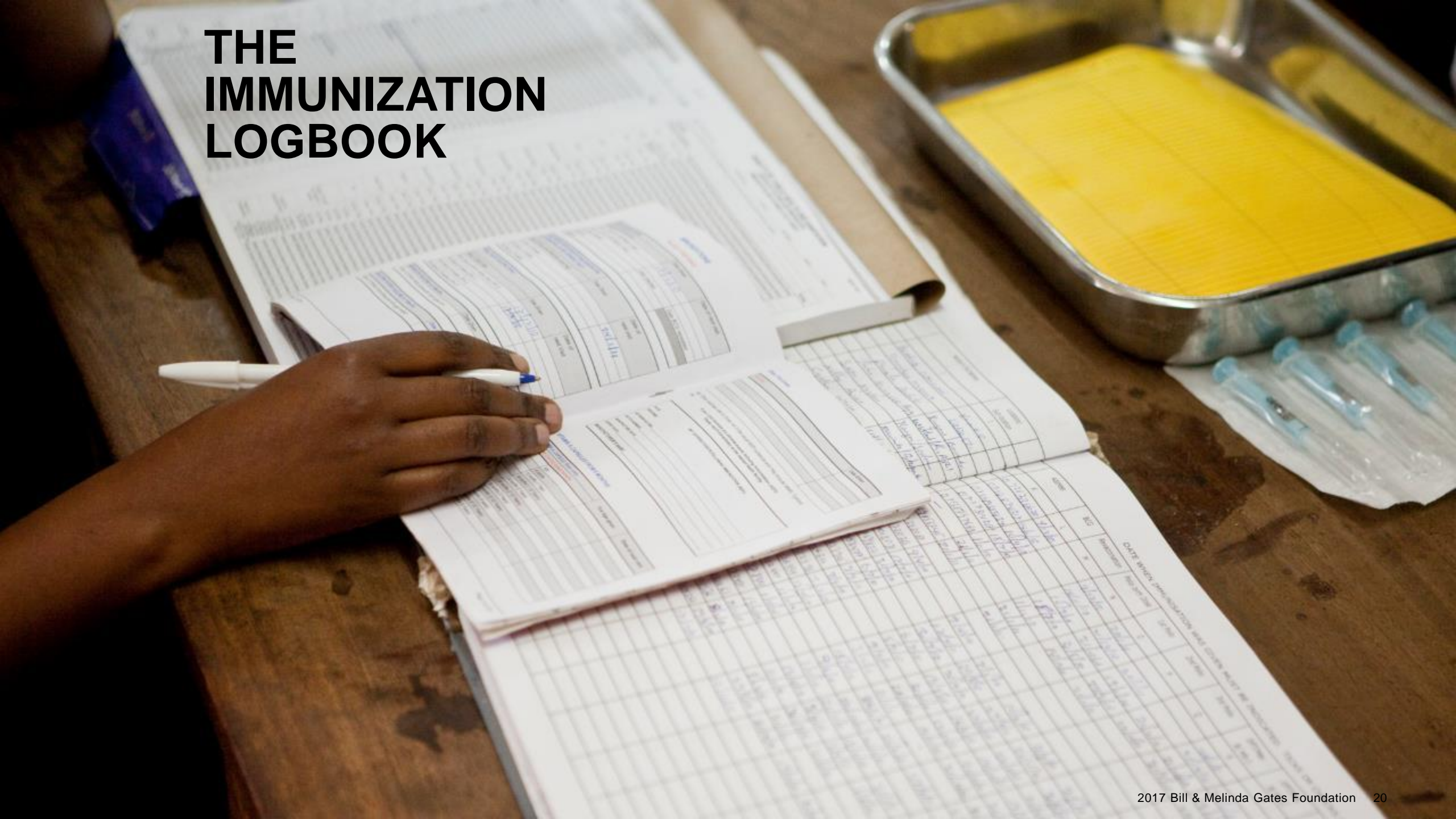
66/6  
52 NB

ARIT TEMPAKA

# THE MAP



# THE IMMUNIZATION LOGBOOK



# THE TALLY SHEET

**NAME** JOHN J. BROWN **DATE** 10-1-54 **AGE** 34 **SEX** M **ETHNICITY** W **RELIGION** C **EDUCATION** H.S. **OCCUPATION** LABORER **RESIDENCE** 1000 1ST ST. N. MINNAPOLIS, MINN.

**ANTHER** 10

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# IMMUNIZATION INNOVATIONS



# Better Immunization Data





## Tanzania interventions

PATH's BID Initiative, the government and healthcare workers identified the following interventions:

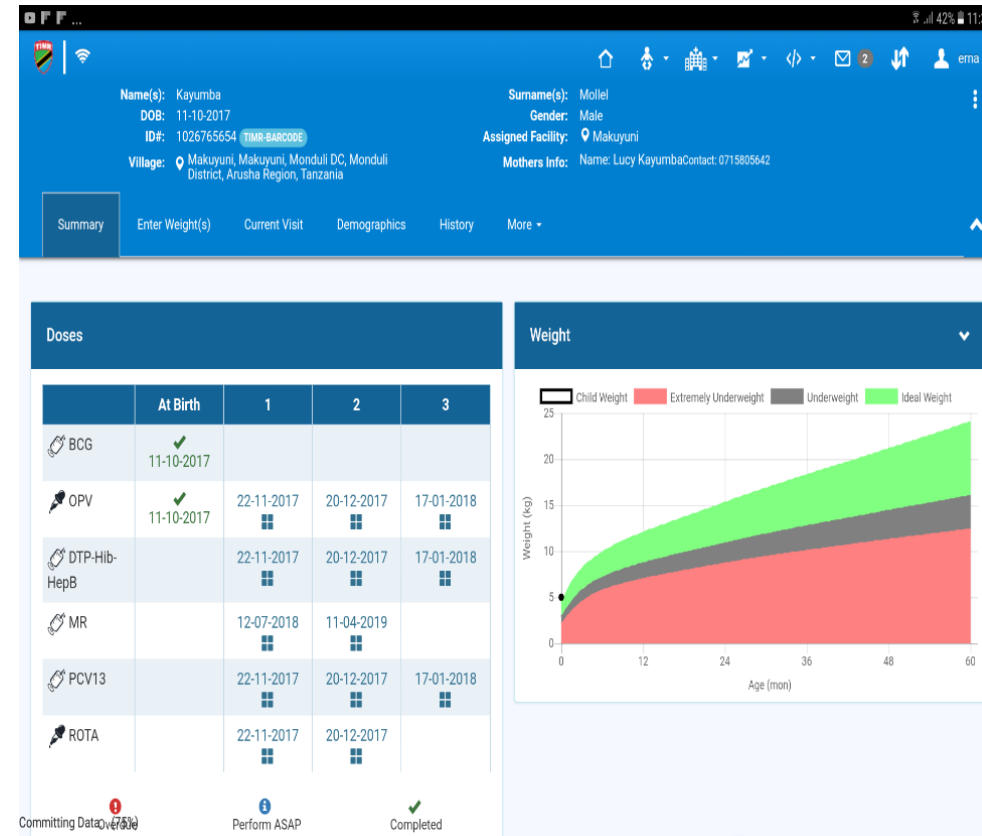
- Electronic immunization registry (EIR) with supply chain information that is integrated with VIMS (Vaccine Information Management System)
- Automated, simplified report generation.
- Barcodes on child health cards and vaccine supplies.
- Targeted supportive supervision for health workers.
- Peer support networks.





## Scenario: Nurse Lucy uses the EIR

- Mama Esther gives birth to a male child Kayumba.
- Lucy registers Kayumba in the EIR.
- Lucy weighs Kayumba and enters his weight into the system. The system performs a weight analysis.
- Lucy will see that vaccines are due (OPV0 and BCG) and administer the vaccines to the child.
- Lucy updates the vaccination information in the system and the system shows when Kayumba is due for his next vaccine (week 6).
- Lucy gives Kayumba's mother the return date.
- District officials can see the performance of the facility at any time.





## Time savings

- Assuming a session with 20 children to vaccinate:
    - 40 minutes saved on searching and recording in paper registers
    - ~1 hour saved on end of session reporting
- +
- Monthly reporting:
    - ~9 hours saved



## Feedback from health workers

*“All you need to do to get a child’s immunization schedule, is to enter the date of birth. Searching is also very easy when you need to update a record. I look forward to work every day for this.” - Jamila Kanyali, a health worker at Kilulu Dispensary in Muheza District.*



*“By reviewing the data, we’re able to retrieve all the children who were due for that vaccine and since the system collects their contact information, it was very easy to get in touch with them. It would be impossible to track them if we were using the old paper system.” - Salome, RCH Nurse in Charge at Meru Hospital.*



- Builds, scales, and supports wireless, cloud-based sensor devices and data analytics
- Enables real-time data
- *ColdTrace*: wireless remote temperature monitoring



- Open-source, cloud-based mobile and web technology
- Tracks entire vaccine supply chain

# World's Largest Immunization Programme



~27M newborns  
~30M pregnant women  
~100M <5 years of age

~27,000 facilities  
(95% sub-district)

>650M doses  
>9M immunization sessions

# Vaccine Supply Chain Management Challenges



No real-time stock visibility



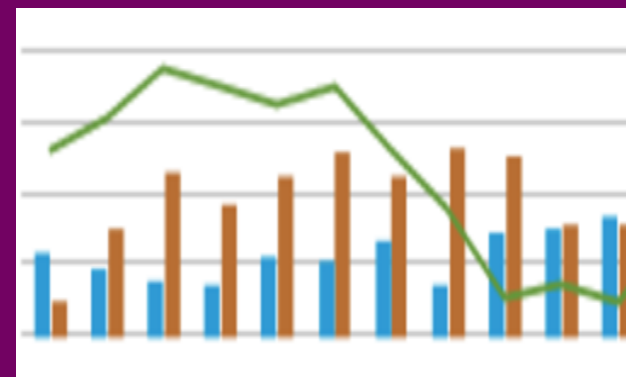
No visibility of storage temperatures



Diverse terrain

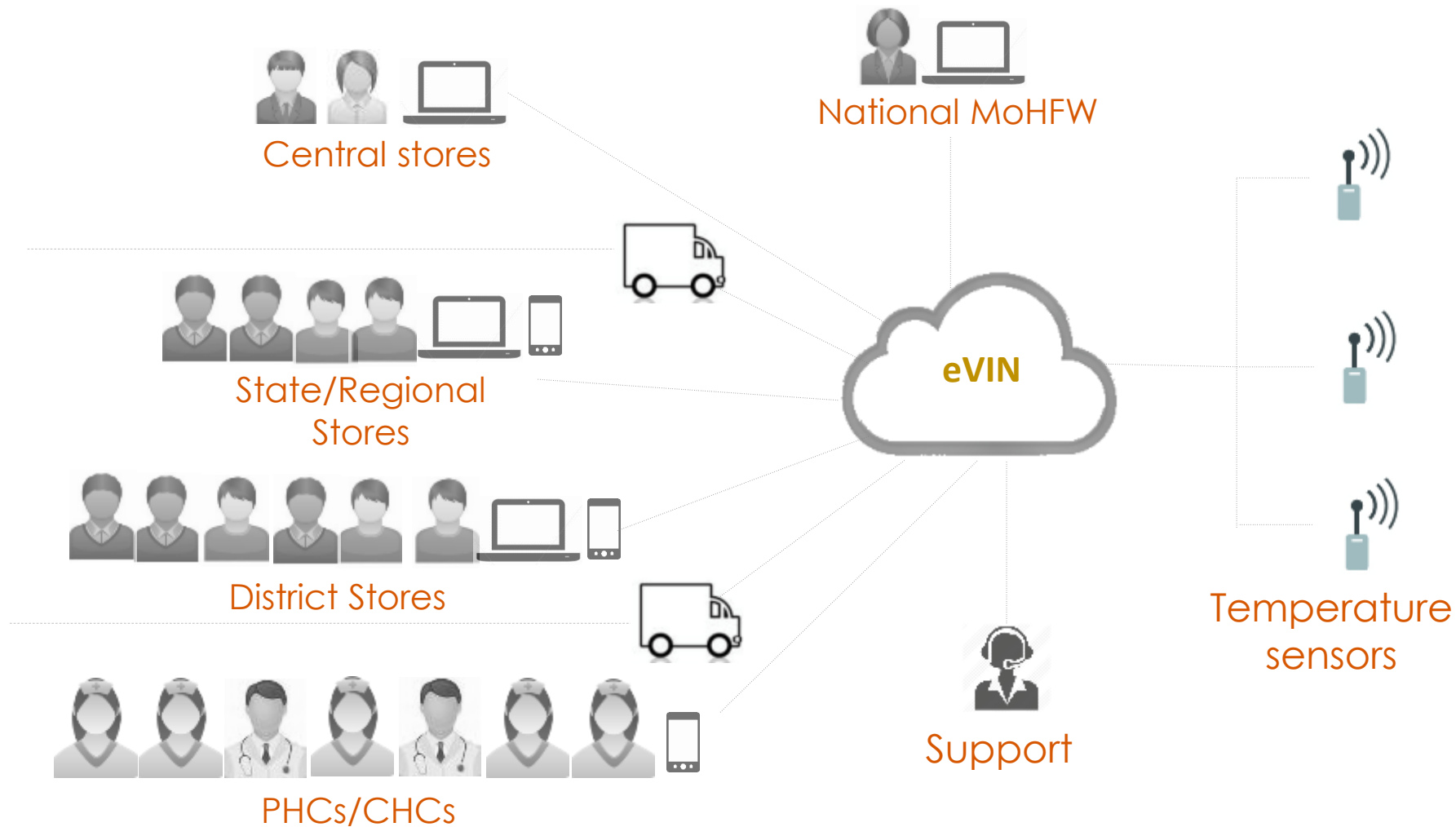


Non-standard record-keeping



Mismatch in demand & supply

# Connecting first through last mile



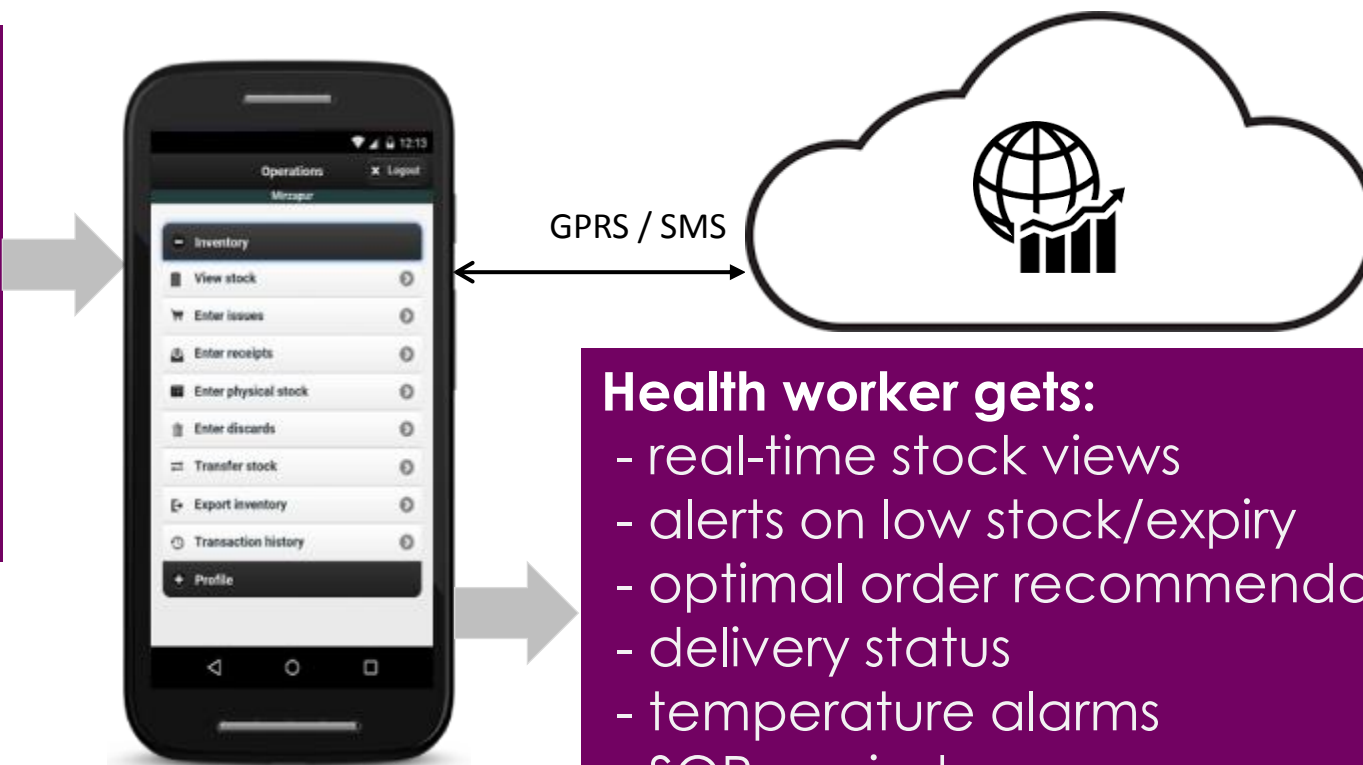
Mobile-cloud technology gives **visibility** into **stock consumption**  
 Enables **optimal decisions** to ensure **stock distribution & availability**

# Empowering Cold-chain Handlers

## Health worker enters:

- issues
- receipts
- stock counts
- discards
- orders

\* Closed and open vials



## Health worker gets:

- real-time stock views
- alerts on low stock/expiry
- optimal order recommendations
- delivery status
- temperature alarms
- SOP reminders
- general announcements

Visibility and analytics at the last mile **for the last mile**

# System Strengthening & Improving Program Governance

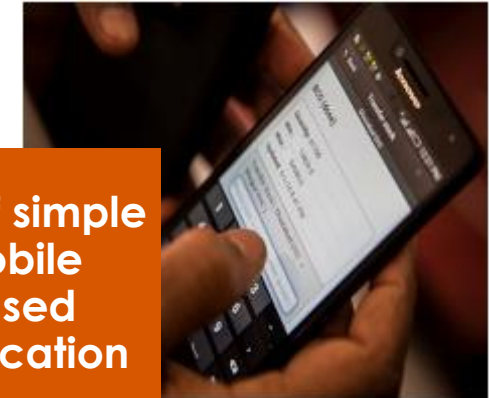
Standardizing  
stock  
keeping and  
distribution  
procedures

वैश्वीय स्टॉक पंजीयन - एकांक एवं विवरण									
क्र.सं.	वस्तु का नाम	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण
1	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण
2	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण
3	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण
4	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण
5	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण
6	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण
7	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण
8	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण
9	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण
10	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण	वैश्वीय स्टॉक	एकक	विवरण

Strengthening  
cold chain HR



Use of simple  
mobile  
based  
application



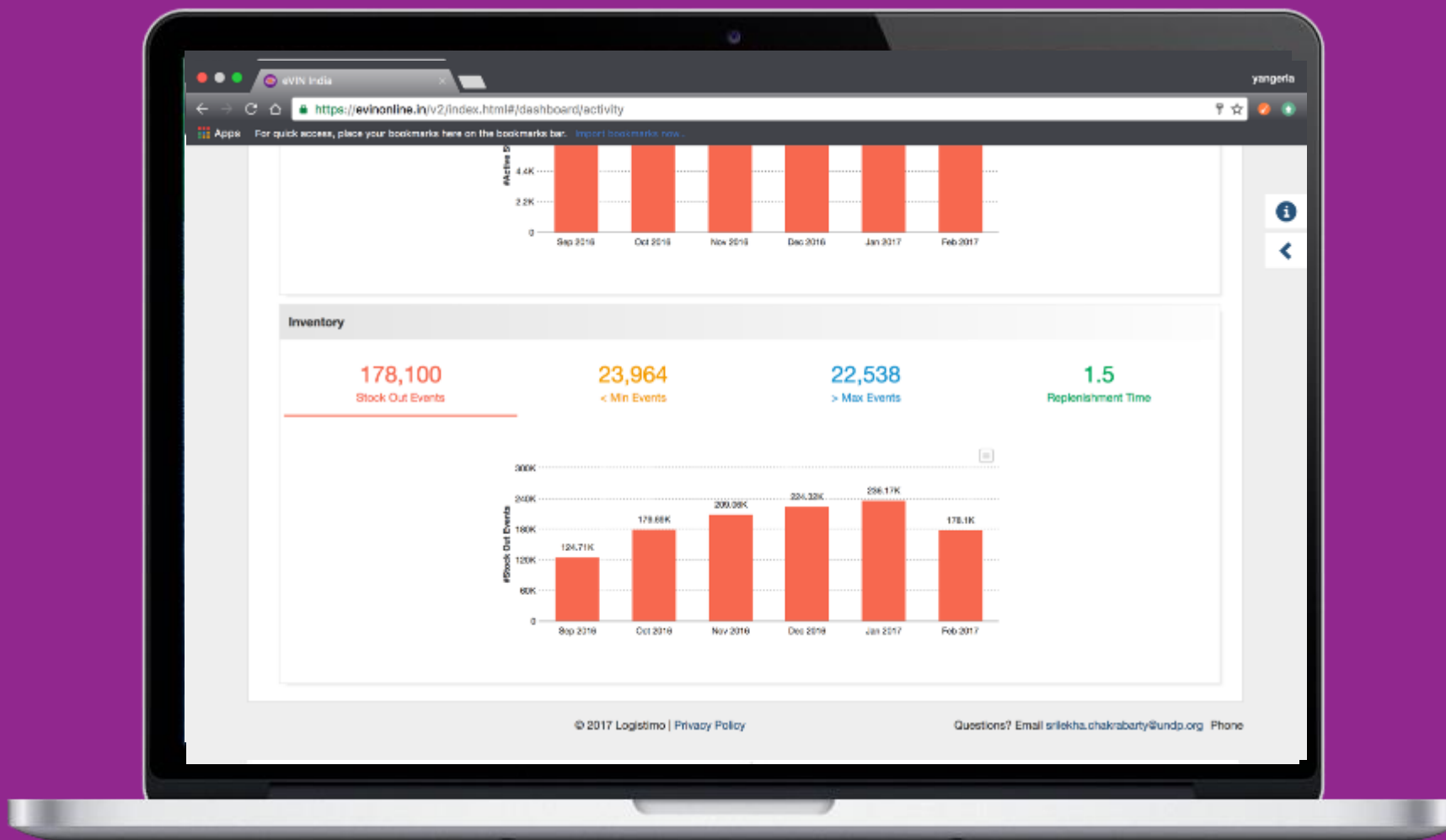
Innovative use  
of technology  
for temp.  
monitoring



Real time  
stock and  
temp visibility



# Real-time Visibility of Vaccine Data



# Data

## Visibility

### Stock

At every store

### Demand

From each store

### Supply

At warehouse & in-transit

### Temperature & Status

Of every cold-chain equipment

## Analytics

### Stock abnormality

Zero stock, < min, > max

### Optimal replenishments

Consumption based forecasting

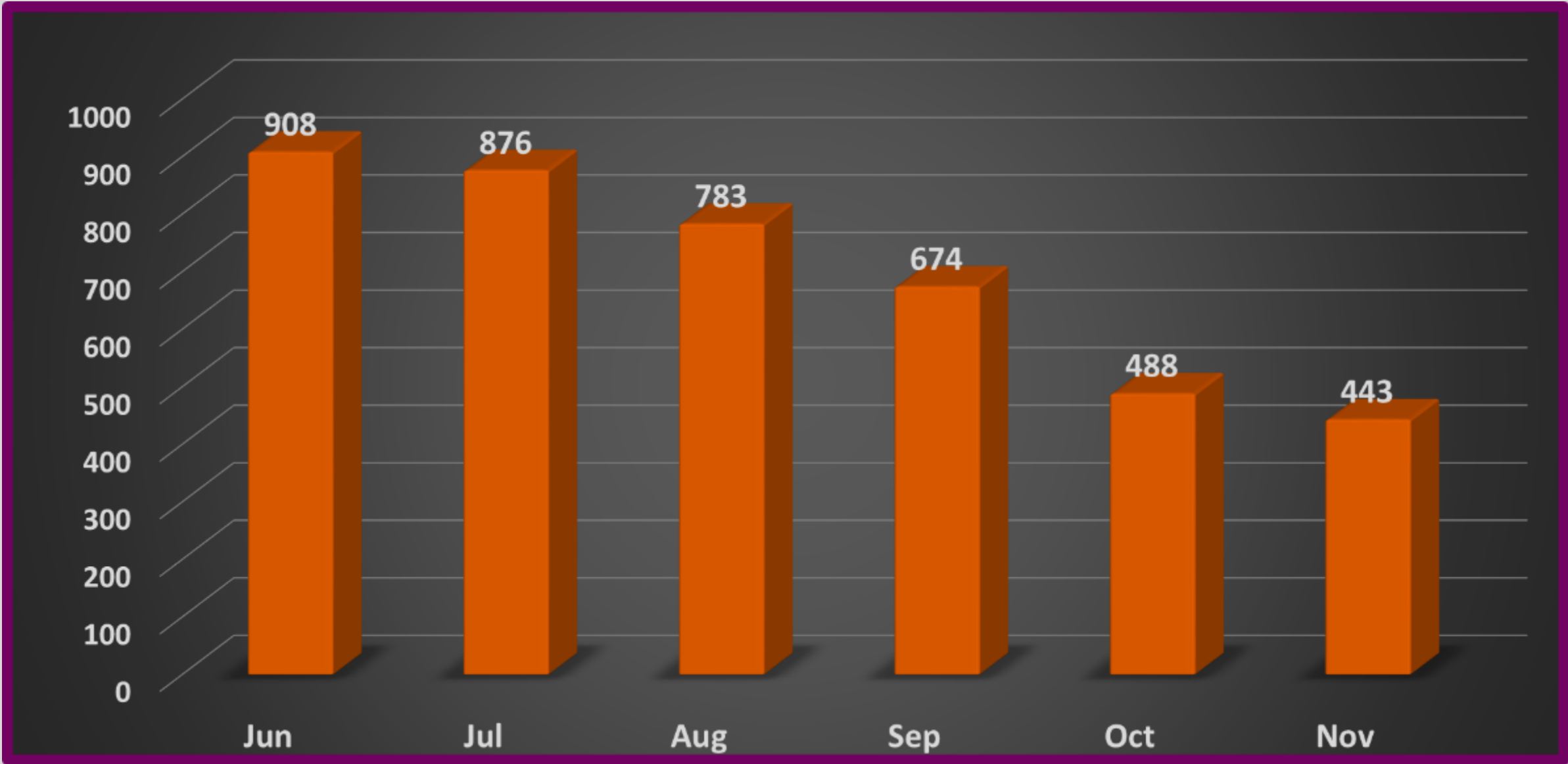
### Trends of nearly “everything”

By time, product, location, ...

### Human Performance

Data quality, response times

# Reduction in Stock-outs by 50%





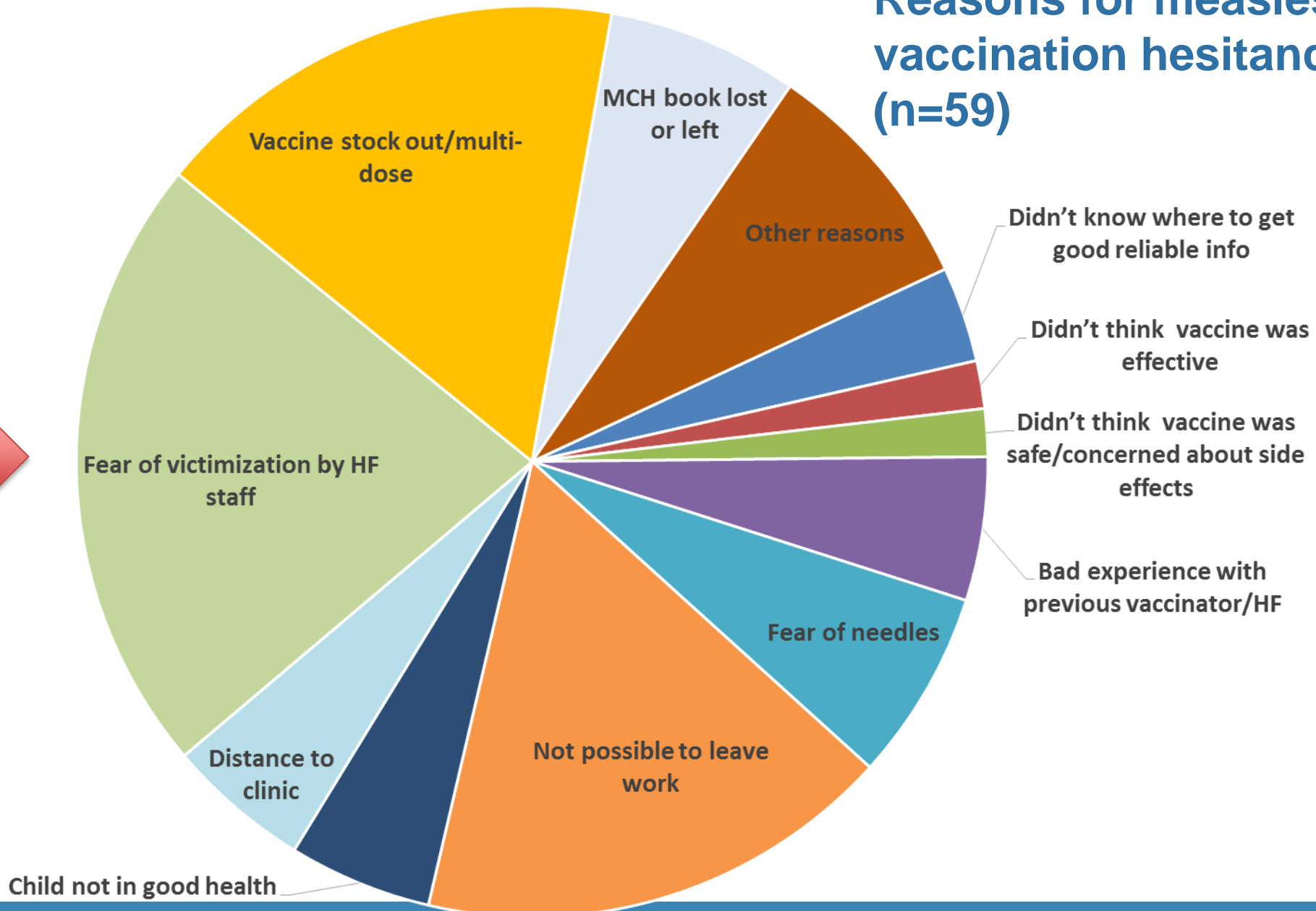
# Metafridge

- Advanced next-gen cold storage device
- Operates on <3hrs of power per day
- Retains 2-8C for up to 5 days without power
- Continuous real-time monitoring, reports, and alerts

# VACCINE HESITANCY



## Reasons for measles vaccination hesitancy (n=59)



A CENTURY OF SAVING LIVES—MILLIONS AT A TIME 1916/2016

# RUMORS, POLITICS & HESITANCY

## Monkey pox vaccine hoax in S/East: We started running without knowing why —Parents, pupils, teachers

ON OCTOBER 18, 2017 8:08 AM / IN [METRO](#), [NEWS](#), [TRENDING](#) / [COMMENTS](#)



By Vincent Ujumadu

AWKA— THE incident that occurred on Wednesday remain a lasting memory in the minds of many school children, their parents and teachers in the South-East geopolitical zone for a long time.

Through the social media, information began to spread that some people in Army uniform had invaded schools in the region and were injecting pupils with Monkey Pox virus for the purpose of depopulating South-East and South-South. Without verifying the authenticity of the information, most parents rushed to their children's schools and demanded to take them home.



File: Parents running away from schools with their wards over alleged deadly Monkey pox vaccination

**CLOSING THOUGHT: WHERE ARE THE OPPORTUNITIES  
FOR LEVERAGING INNOVATIONS, BOTH GLOBAL AND  
LOCAL, TO HELP EACH OTHER?**





**Thank You**