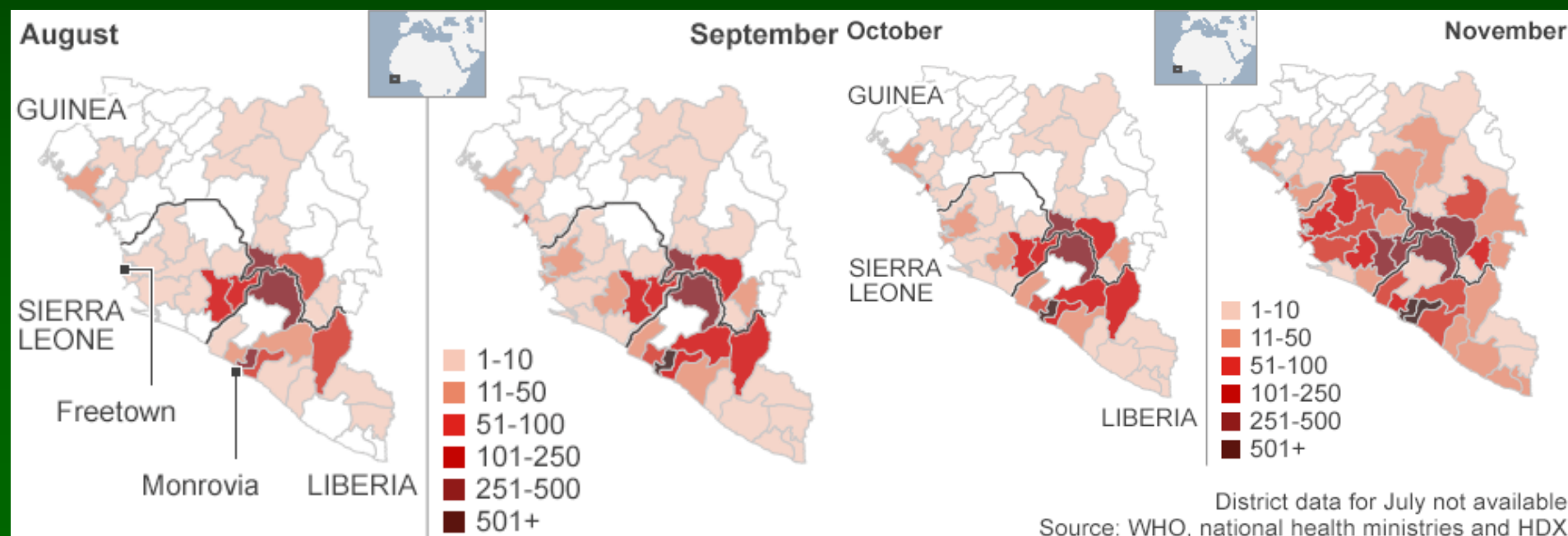
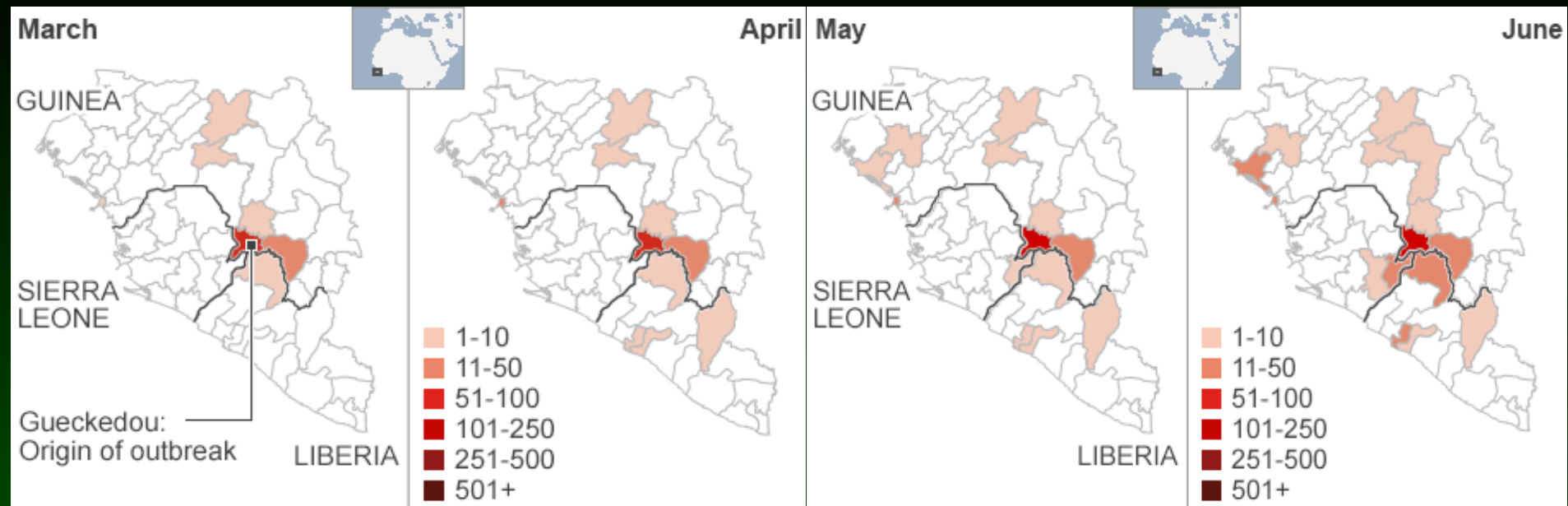


# **Impact of Ebola on health systems, vaccination programmes and health**

Dr James Elston

Field Epidemiology Fellow, Public Health England



District data for July not available  
Source: WHO, national health ministries and HDX

***THE HEALTH SYSTEM: RURAL  
SIERRA LEONE***

# Primary care









# “Secondary care”



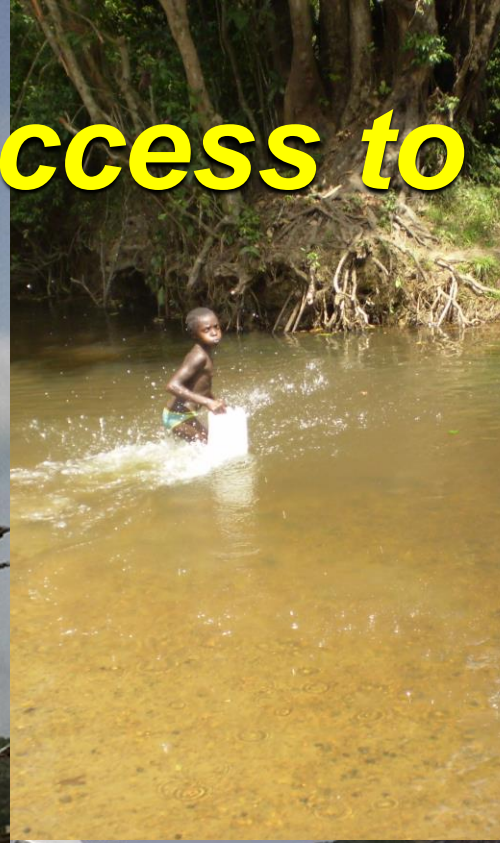
**AT THE GOVERNMENT MOYAMBA**

REGISTRATION FEES	COST RECOVERY SERVICES
1. OPD REGISTRATION - LE. 6,000	
2. CONSULTATION FEES - LE. 4,000	
3. ASSAULT REGISTRATION - LE. 10,000	
4. CONSULTATION ASSAULT - LE. 5,000	
5. CHILDREN > 5 yrs OPD FORMS - LE. 3,000	
6. CHILDREN > CONSULTATION - LE. 4,000	
<b>AMBULANCE SERVICE</b>	
7. AMBULANCE SERVICE PER MILEAGE WITHIN THE DISTRICT - LE. 1,500	
8. AMBULANCE SERVICE PER MILEAGE OUTSIDE THE DISTRICT - LE. 1,000	
<b>ADMISSION</b>	
1. DIRECT ADMISSION - (ADULT) - LE. 15,000	
2. DIRECT ADMISSION - > 5 (CHILDREN) - LE. 10,000	
3. FROM OPD TO WARD - (ADULT) - LE. 10,000	
4. FROM OPD TO WARD - > 5 (CHILDREN) - LE. 7,000	
<b>EXTRA BED FEE</b>	
1. EXTRA BED FEES AFTER 5 DAYS (ADULT) - LE. 2,000 Per Night	
2. EXTRA BED FEES AFTER 5 DAYS > 5 (CHILDREN) - LE. 1,000	
<b>LABORATORY TEST</b>	
1. HB - LE. 5,000	8. SPUTUM (AFB) - FREE
2. MPA - FREE	9. VDRL - LE. 10,000
3. WBC - 5,000	10. SICKLING - LE. 5,000
4. WIDAL - 15,000	11. WBC DIFFERENTIAL - LE. 15,000
5. STOOL - 8,000	12. ERYTHROCYTE SEDIMENTATION RATE (ESR) - LE. 10,000
6. URINE - 8,000	13. FASTING BLOOD SUGAR (FBS) - LE. 15,000
7. HCG - STAIN COST PAID	14. RANDOM BLOOD SUGAR (RBS) - LE. 15,000
<b>SURGERY</b>	
1. SMALL HERNIA - LE. 300,000	
2. MEDIUM HERNIA - LE. 500,000	
3. LARGE HERNIA - LE. 800,000	
4. HYDROCELE - LE. 500,000	
5. APPENDICITIS - LE. 500,000	





# Access to healthcare





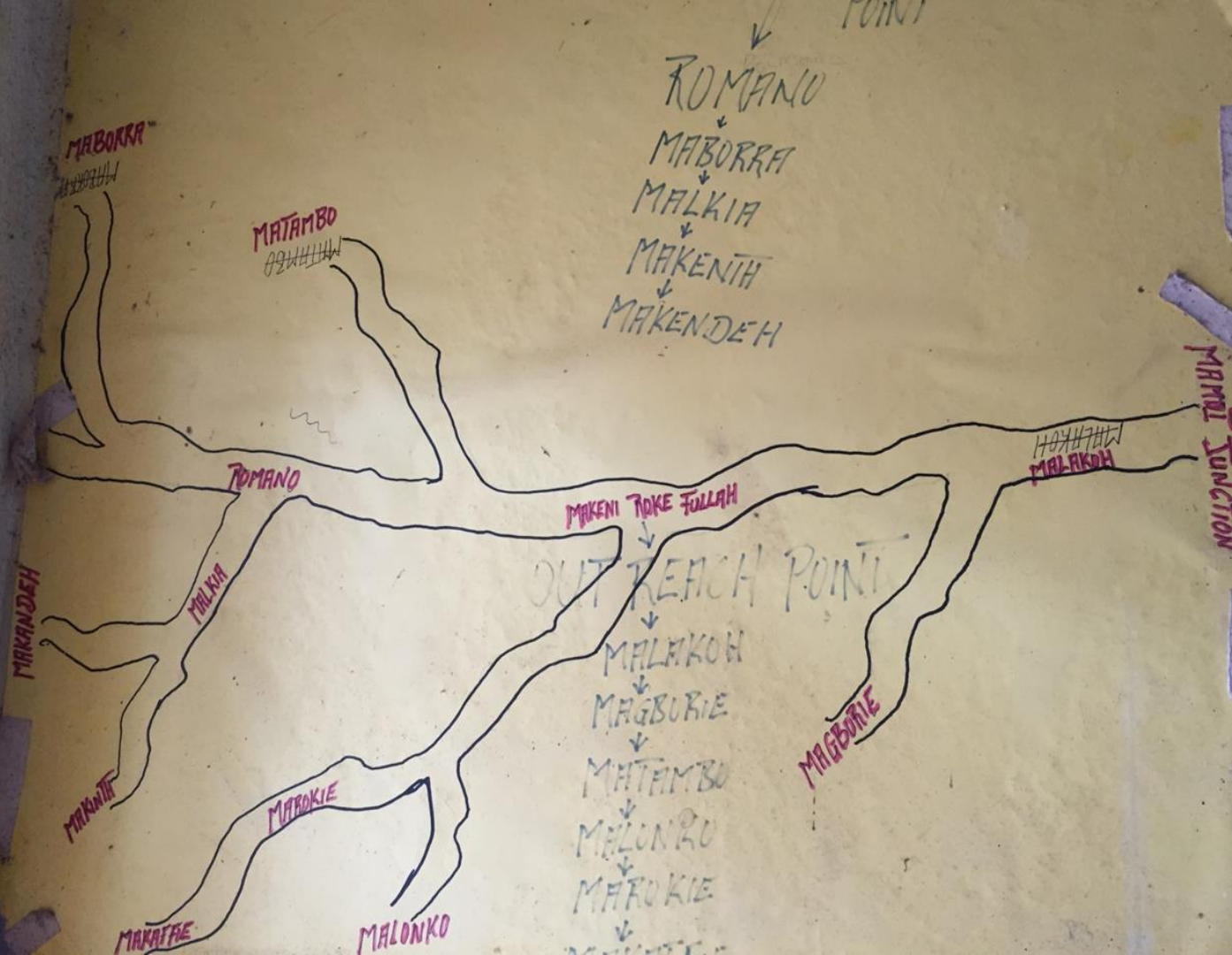
# Vaccination provision

MAKENI ROKE FULLAH MCH

2013

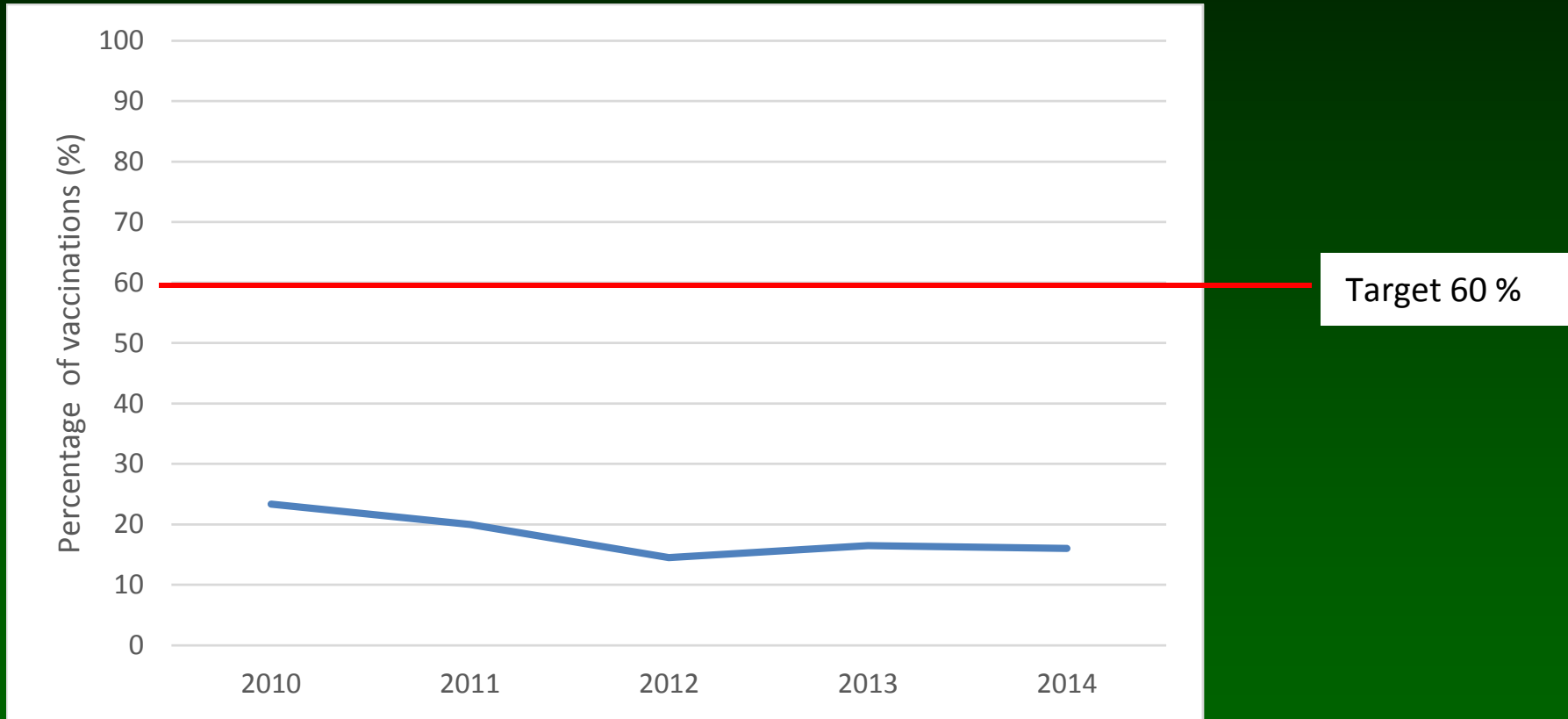
VILLAGES	MILES
MAKENI ROKE FULLAH	PHU Location
MALAKOH	2 Miles
MATAMBO	2 Miles
ROMANO	4 Miles
MABORRA	6 Miles
MALONKO	4 Miles
MAROKIE	5 Miles
MAKAFIE	7 Miles
MAGBORIE	2 Miles
MARENKIN	8 Miles
MALKIA	8 Miles
MAKINTH	9 Miles
MAKENDEH	10 Miles

MAKENI ROKE FULLAH CHARTMENT POPULATION OUT REACH MAP





## *Vaccinations performed by outreach for <1years Moyamba*



***IMPACT OF EBOLA  
OUTBREAK ON THE HEALTH  
SYSTEM***

# ***Healthcare worker infections and deaths***

- HCWs 21-32 times more likely to become infected
- 881 confirmed infections among HCWs
- 513 HCW deaths
  - ~6.9%, 8.1% and 1.5% of the workforce in Sierra Leone, Liberia, Guinea respectively
  - Combined ratio of doctors, nurses and midwives remaining <5 per 10,000

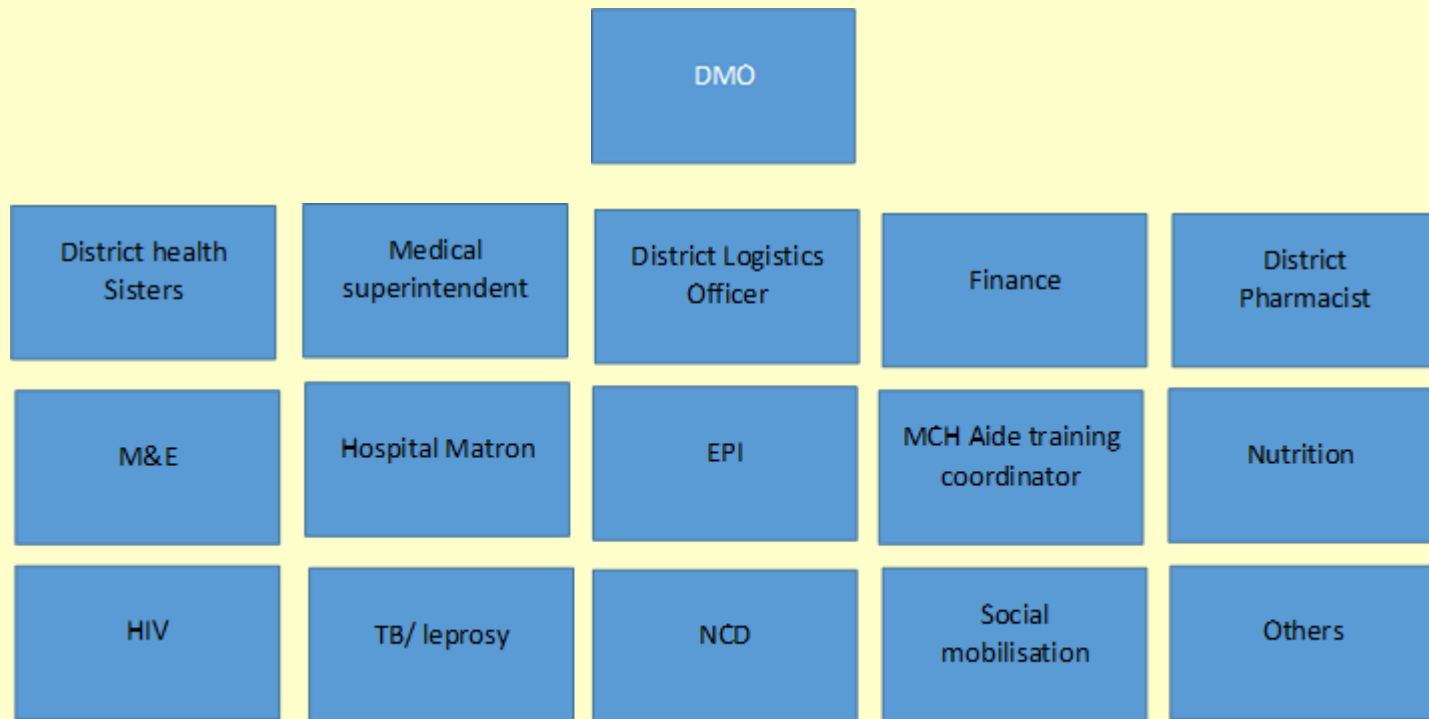
# *Reduced capacity*

- HCWs abandoned posts
- Overwhelming demand
- Closure of facilities
  - 3 largest hospitals in Monrovia Liberia, MSF hospital Sierra Leone, district hospital Guinea
  - 4-62% of primary health facilities closed
- Reduced productivity of HCWs



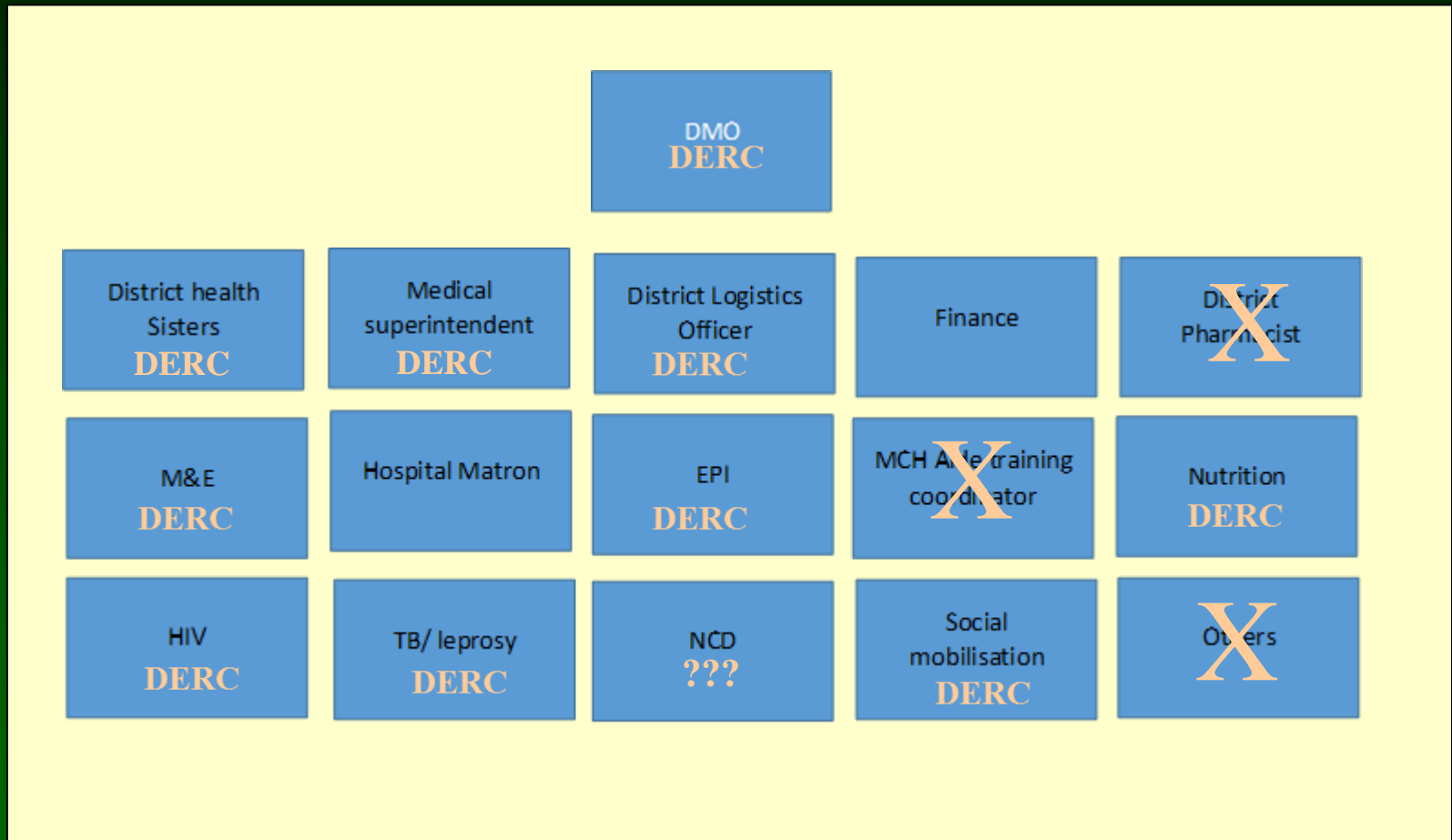
# Resource diversion:

## District Health Management Team



# Resource diversion:

## District Health Management Team



Routine work largely stopped

## **Health workforce Moyamba, pre-Ebola**

	<b>TOTAL</b>
<b>Doctors</b>	<b>2</b>
<b>Registered Nurse (SRN)</b>	<b>7</b>
<b>Registered Midwife</b>	<b>12</b>
<b>Enrolled Nurse (SECHN)</b>	<b>45</b>
<b>Community Health Officer (CHO)</b>	<b>21</b>
<b>Community Health Assistant (CHA)</b>	<b>25</b>
<b>Maternal and Child Health Aide (MCH Aide)</b>	<b>171</b>
<b>Community Health Worker (CHW)</b>	<b>1003</b>

# **Health workforce Moyamaba, February 2015**

	<b>TOTAL</b>
<b>Doctors</b>	<b>2</b>
<b>Registered Nurse (SRN)</b>	<b>7</b>
<b>Registered Midwife</b>	<b>12</b>
<b>Enrolled Nurse (SECHN)</b>	<b>31</b>
<b>Community Health Officer (CHO)</b>	<b>18</b>
<b>Community Health Assistant (CHA)</b>	<b>18</b>
<b>Maternal and Child Health Aide (MCH Aide)</b>	<b>142</b>
<b>Community Health Worker (CHW)</b>	<b>??????</b>



# ***SOCIAL IMPACT OF EBOLA OUTBREAK***



*“They suggested we created Ebola...that we give people Ebola”* Health worker

*“The needles inject Ebola”* Mother focus group

*“People think their organs will be removed”*  
Social mobiliser

*“Nurses will ignore the people out of fear”*  
Member of DERC

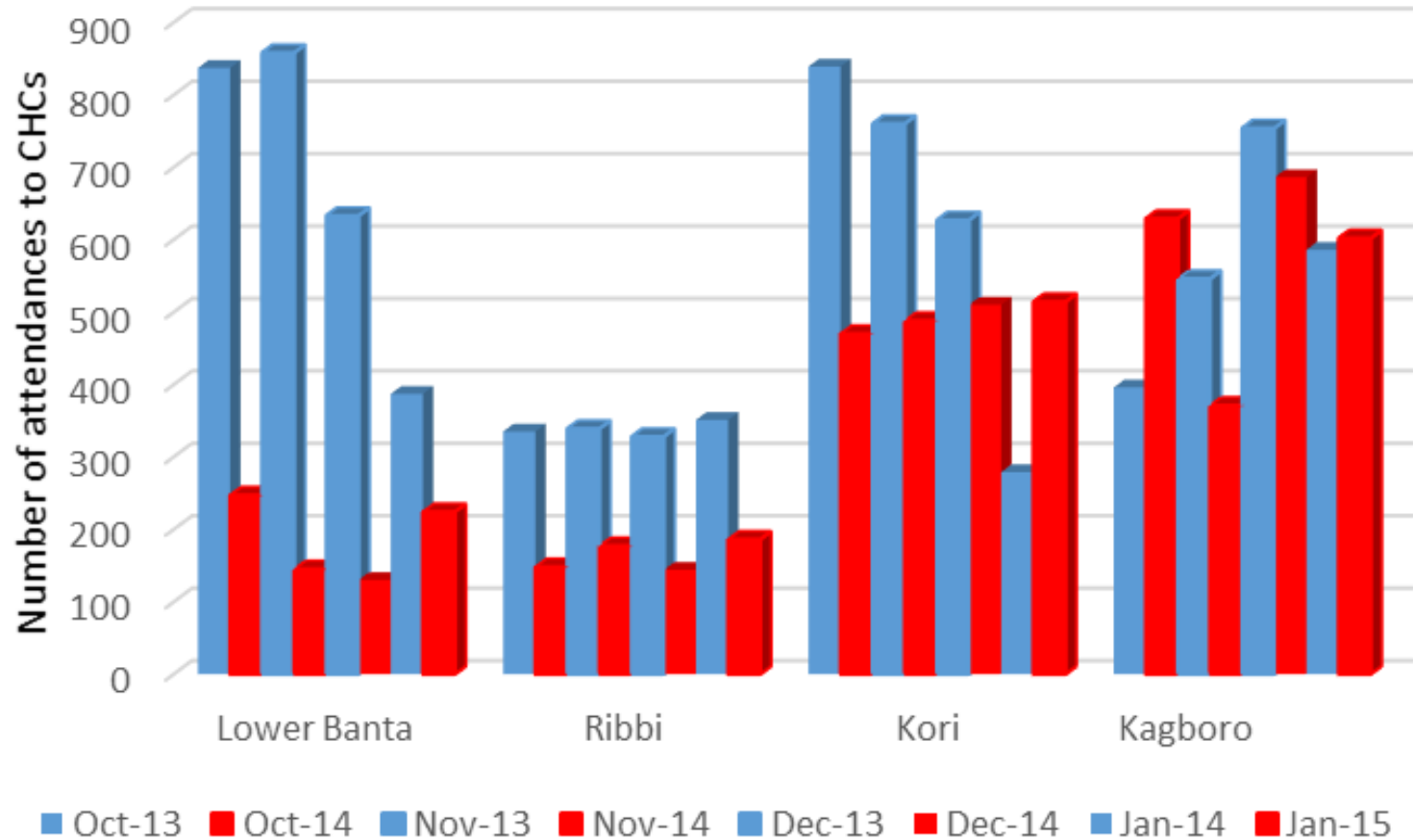
***IMPACT OF EBOLA  
OUTBREAK ON HEALTH  
SYSTEM UTILISATION***



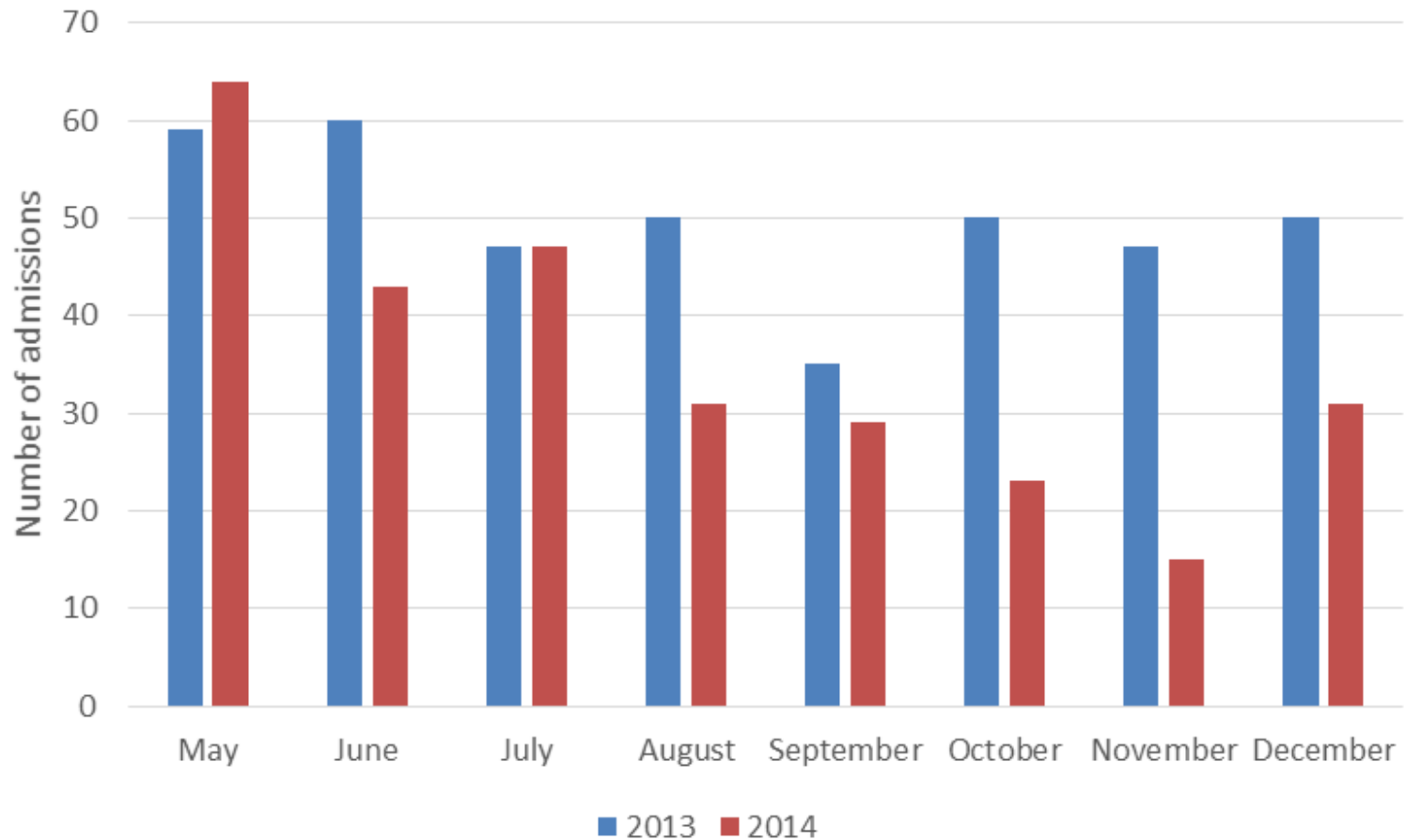
***“Where are the patients?”***



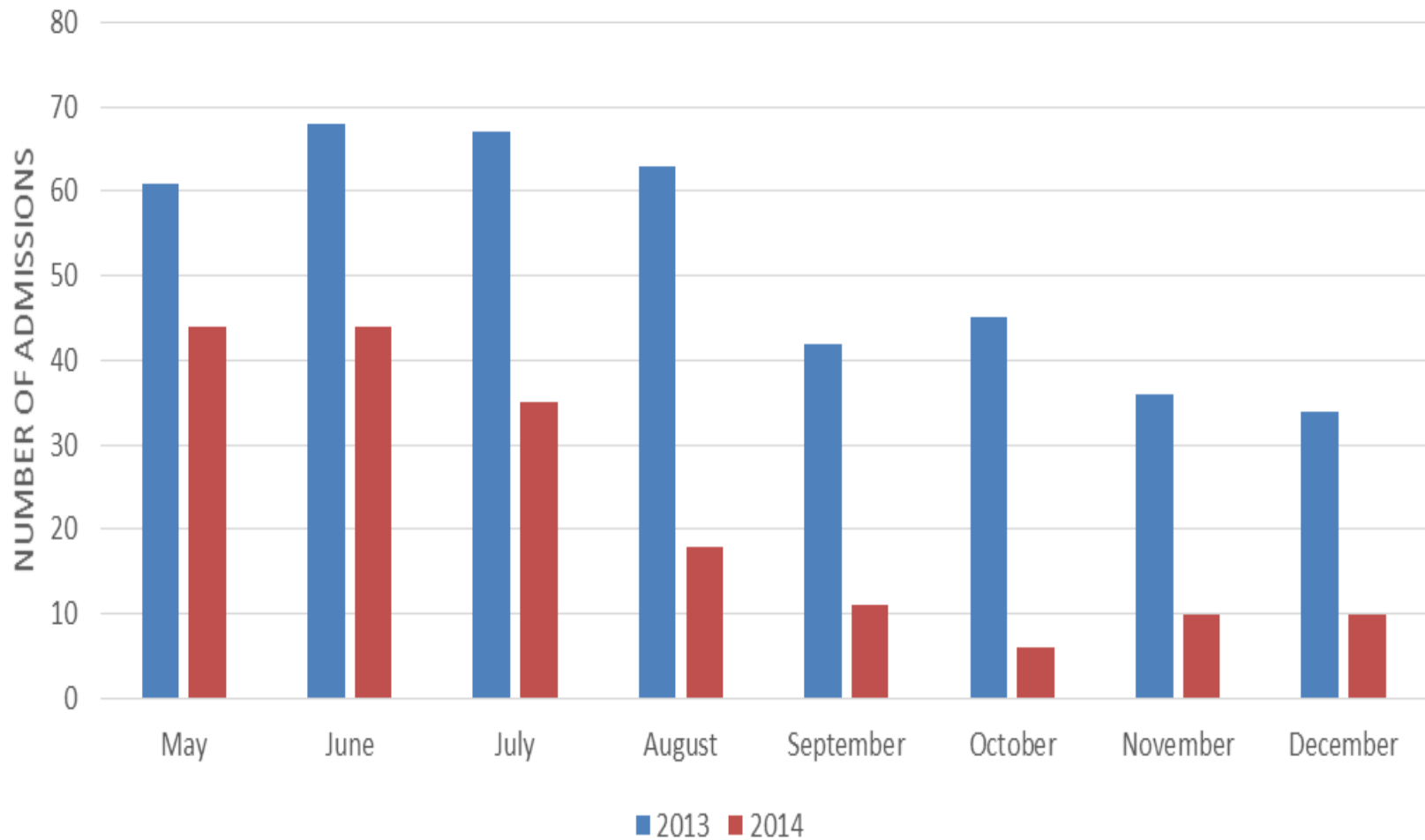
# Health system utilisation



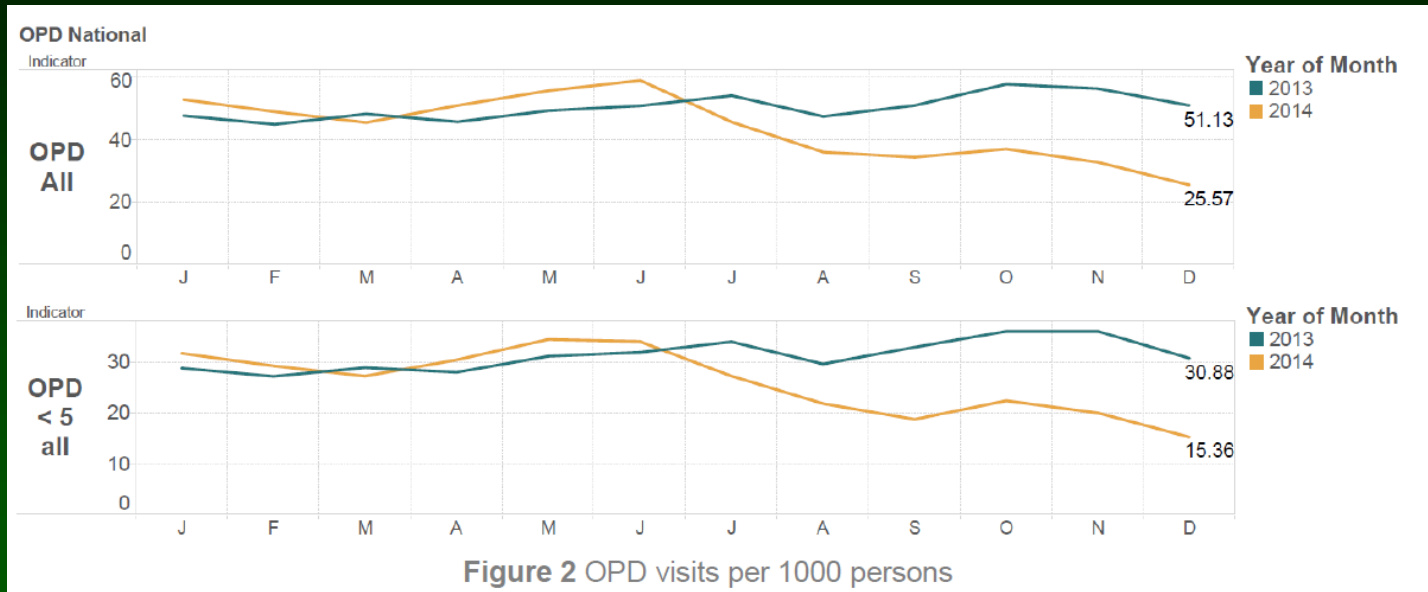
# *Maternity admissions*



# *Paediatric admissions*



# National healthcare utilisation

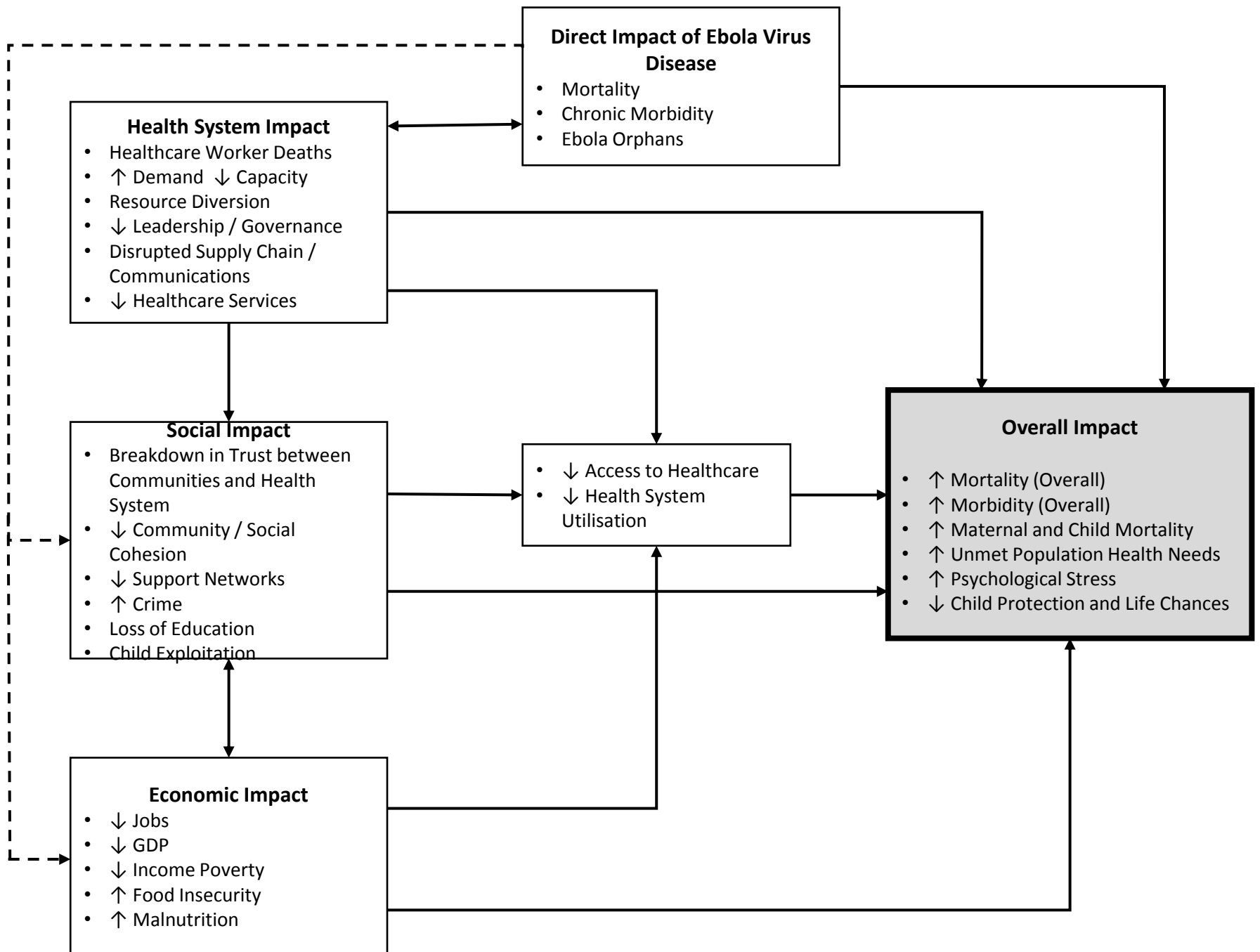


ACAPS Thematic Note: Health Service Utilisation in Sierra Leone

- Outpatient consultations in Sierra Leone halved by December 2014

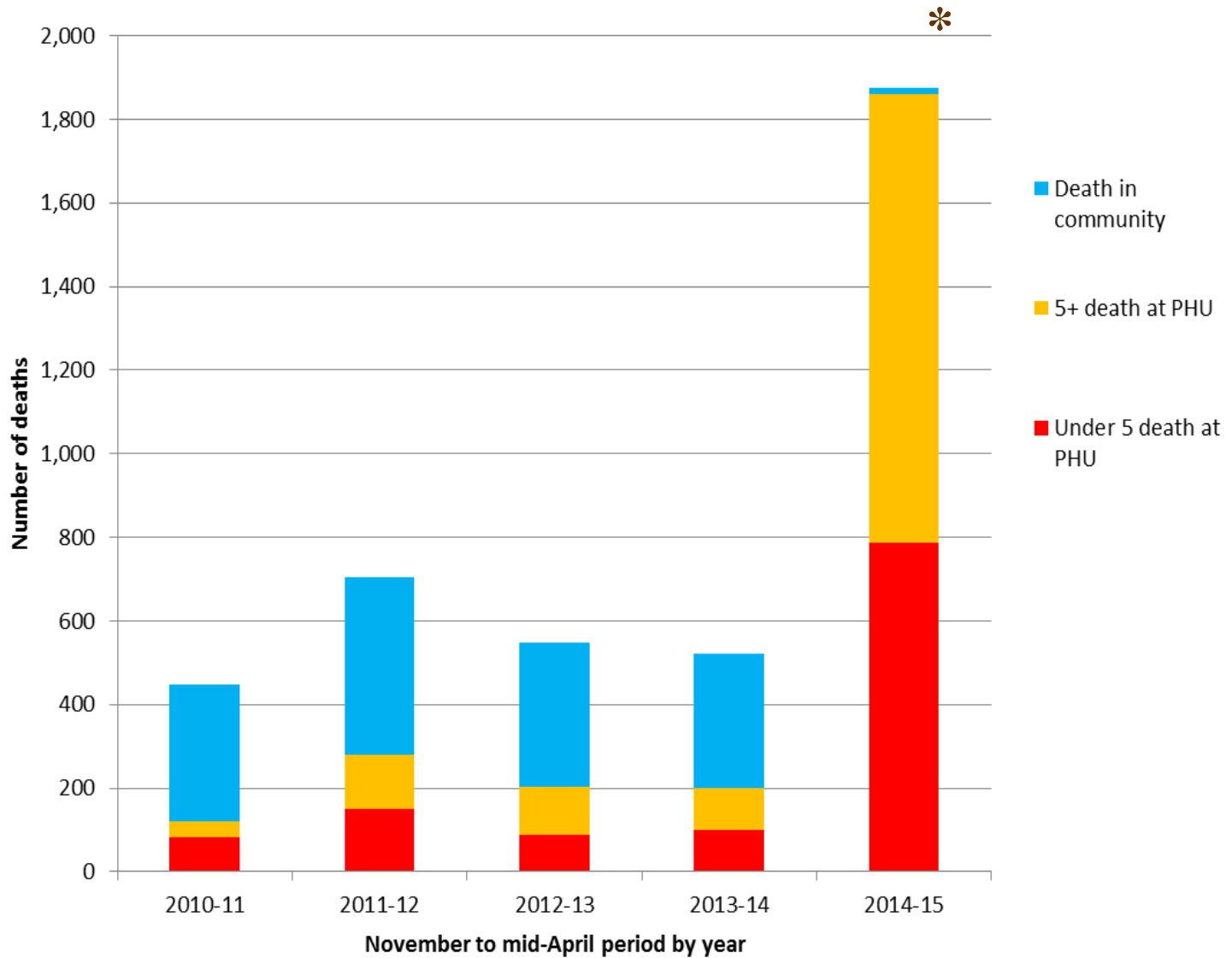
- Liberia: health facility utilisation per capita fell by 59%
- Guinea: health facility consultations and hospital admissions fell by 58% and 54%
- Pregnant women and children most affected
  - 20% reductions in assisted deliveries (40-81% in most Ebola affected areas) SL, Guinea
  - 60% reduction in diarrhoea consultations for children <5years nationally SL

***IMPACT OF EBOLA  
OUTBREAK ON POPULATION  
HEALTH***

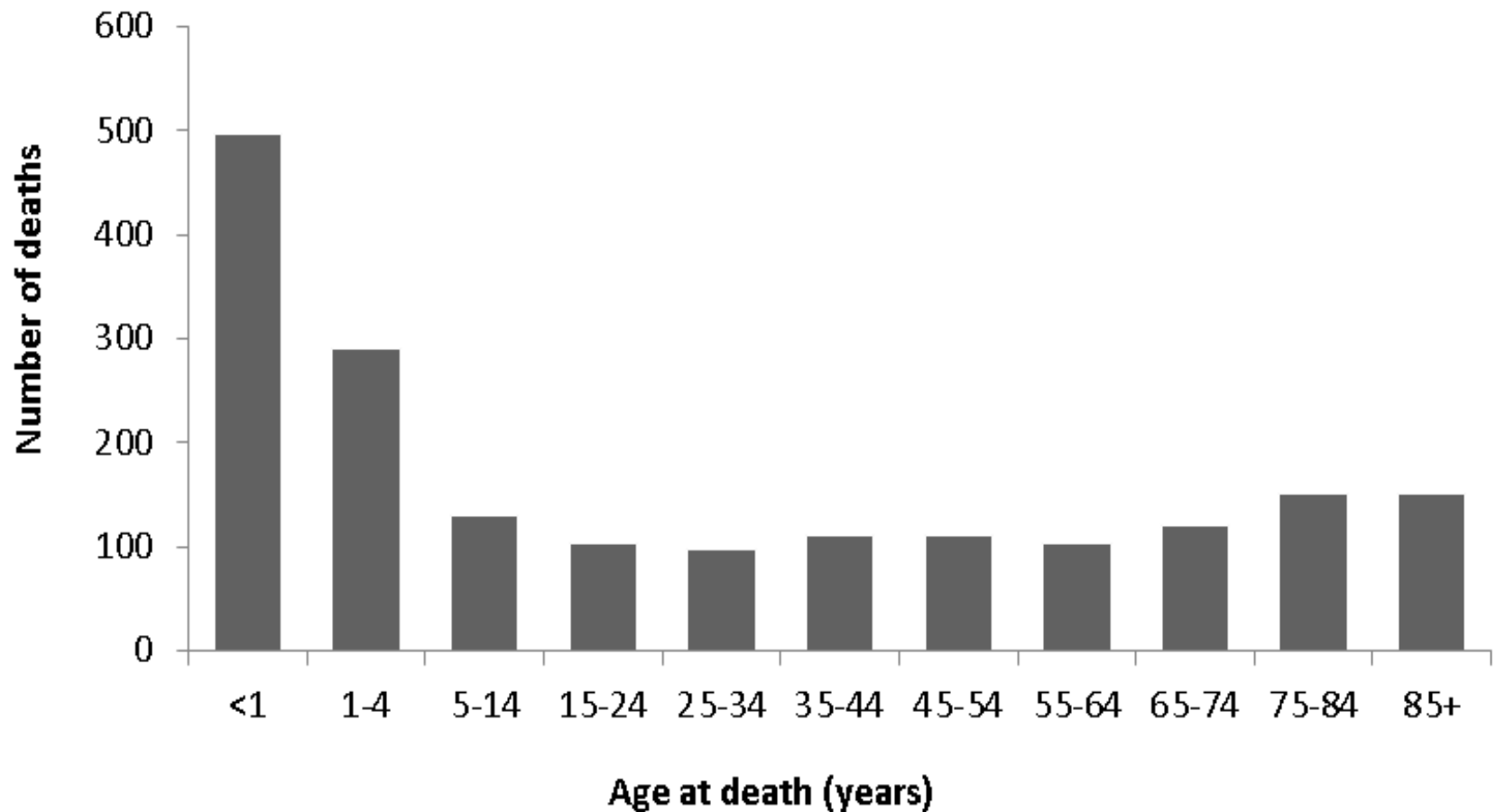




# Reported deaths Moyamba district 2010-15



## ***Age at death Moyamba Nov.14- Apr.15***

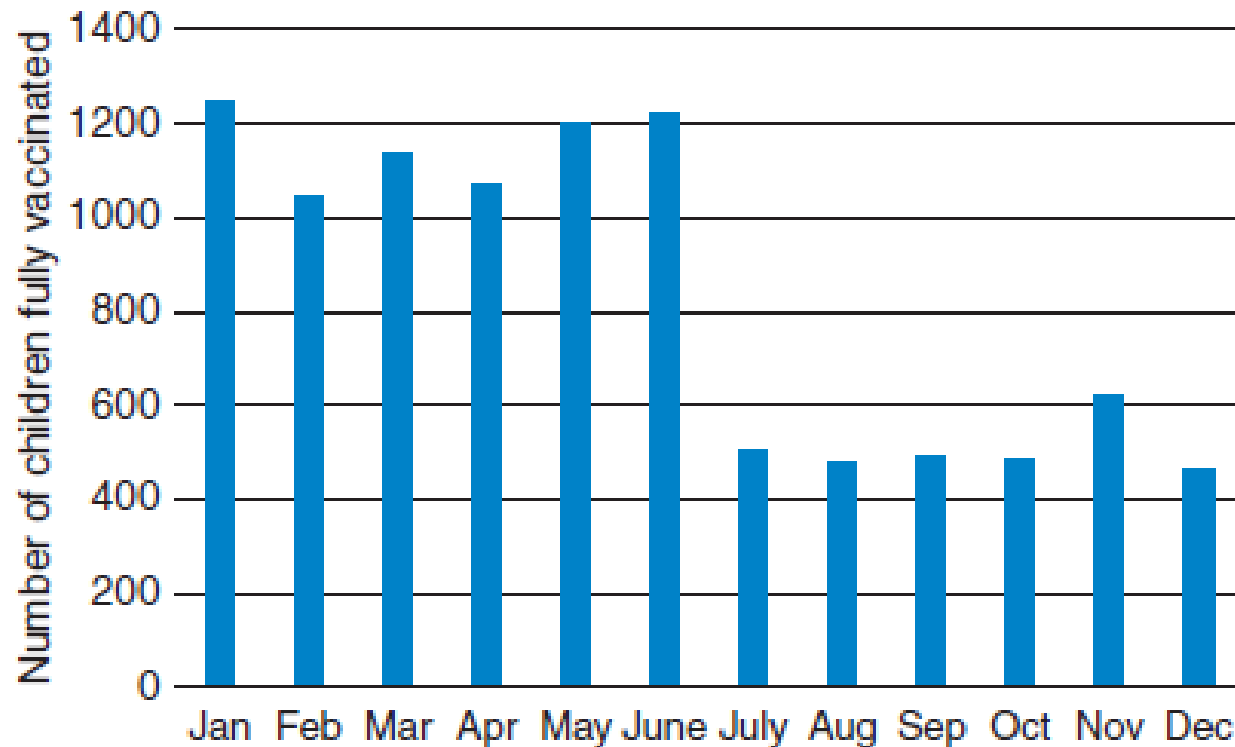


***IMPACT OF EBOLA  
OUTBREAK ON VACCINATION  
PROGRAMMES***

# ***Impact on vaccination programmes***

- Vaccination campaigns suspended
- Community vaccination/ outreach curtailed
- Reduced provision
- Reduced healthcare seeking

# Vaccination coverage



**Fig. 3** Number of children aged <1 years 'fully vaccinated' by month in Koinadugu, 2014.

# Vaccination coverage

## Immunisations National

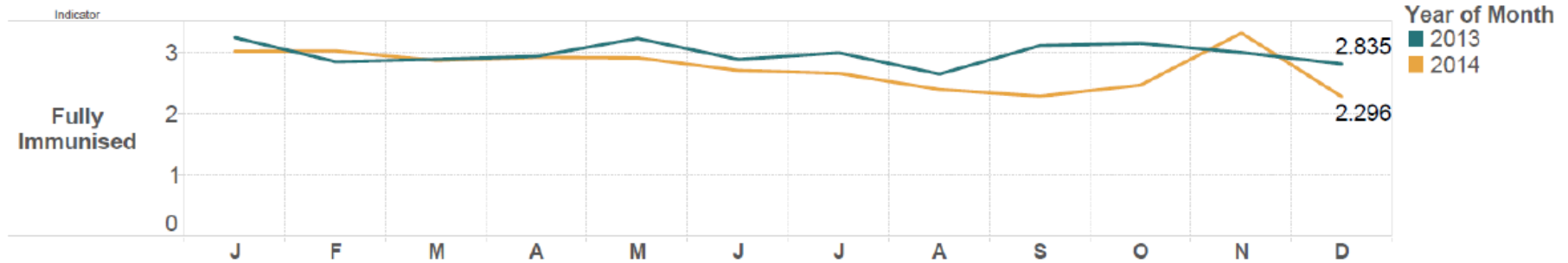


Figure 9 Fully immunised children <1 per 1000 persons

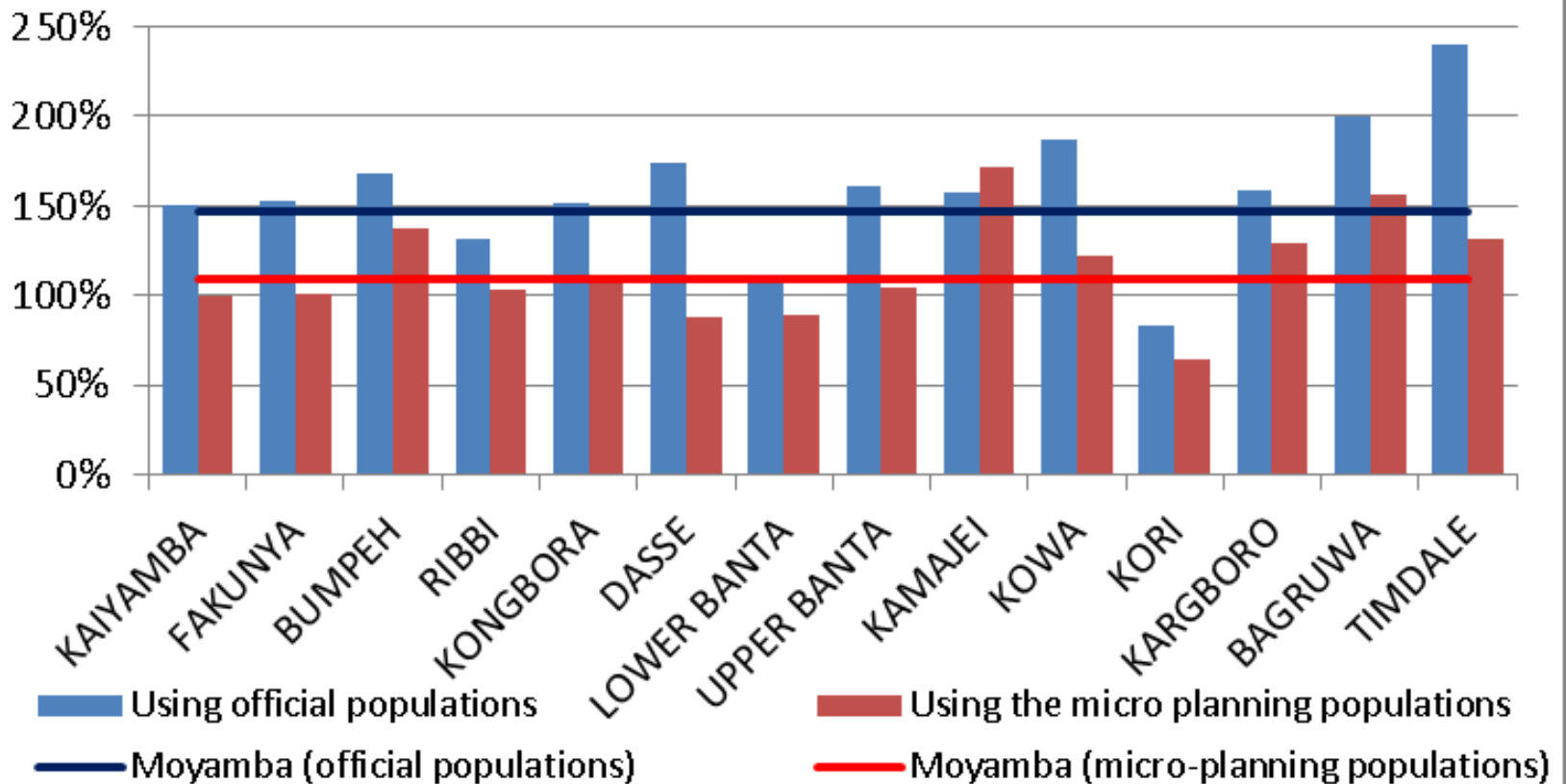
ACAPS Thematic Note: Health Service Utilisation in Sierra Leone

- Uptake of third dose Pentavalent vaccine reduced by 23%, 50% and 30% in Sierra Leone, Liberia and Guinea

***ONGOING CHALLENGES FOR  
DELIVERY OF VACCINATION  
PROGRAMMES***

# 'Optimistic' coverage

Figure 64: Completeness of PCV vaccinations in target populations





# *Implications*

- MoH falsely reassured by coverage data
- Supply of vaccines based on expected population- underestimates need
- Planning compromised

# Actual coverage?

Percentage of children age 12-23 months who received specific vaccines at any time before the survey (according to a vaccination card or the mother's report), and percentage with a vaccination card, by background characteristics, Sierra Leone 2013

Background characteristic	DPT			Polio <sup>1</sup>				Measles	All basic vaccinations <sup>2</sup>	No vaccinations	Percentage with a vaccination card seen	Number of children	
	BCG	1	2	3	0	1	2						3
District													
Kailahun	98.3	95.9	95.9	89.0	97.7	97.0	97.0	91.2	91.3	84.7	1.6	92.6	166
Kenema	97.3	95.4	93.6	83.3	95.1	96.0	93.6	83.2	81.5	75.4	2.0	75.5	269
Kono	99.4	94.3	88.9	80.0	96.9	95.5	87.9	80.0	81.5	73.8	0.6	81.7	131
Bombali	95.9	92.6	88.8	84.2	90.3	95.2	88.8	83.4	76.5	68.9	3.9	80.3	136
Kambia	89.4	90.7	75.5	61.1	80.8	86.2	73.2	59.2	74.6	51.7	6.8	56.0	106
Koinadugu	94.9	92.4	85.4	69.9	80.0	94.3	84.9	69.9	74.3	63.6	3.9	76.1	134
Port Loko	94.1	93.0	85.5	74.0	93.1	92.4	85.5	74.5	72.5	65.1	5.2	72.3	277
Tonkolili	96.3	90.4	81.5	69.5	87.8	93.4	81.9	70.2	71.5	57.3	2.6	75.0	205
Bo	98.5	98.5	97.7	93.4	98.5	97.7	97.7	93.2	84.4	82.3	1.5	86.7	167
Bonthe	96.6	97.2	96.3	80.9	92.3	98.2	96.3	80.9	92.5	77.2	0.9	69.9	62
Moyamba	94.5	92.6	88.3	78.7	90.4	93.4	89.0	80.0	78.4	66.4	4.7	63.5	118
Pujehun	96.5	94.1	92.4	87.1	95.7	94.6	92.9	85.0	79.1	72.8	3.5	84.6	96
Western Area Rural	96.7	96.4	89.6	71.6	92.0	96.4	89.6	71.0	76.7	60.4	3.3	58.4	55
Western Area Urban	91.4	90.1	85.7	68.5	85.9	89.6	85.6	67.7	76.2	55.2	6.3	50.7	246

# ***Distribution***

- Lack of transport to distribute vaccines, fridges and supplies



# *Cold chain interruptions*

- 40-50% of health facilities with working fridge
- Lack of cool boxes for outreach activities





# ***Disincentives to conducting outreach activities***



- Lack of human resources
- Lack of transport
- Financial disincentive
- Safety concerns
- Physically demanding







# ***Vaccination activity***



# *Conclusions*

- Impact of Ebola outbreak on poorly functioning health systems was severe
- Loss of trust and reduced provision led to reductions in healthcare utilisation
- Vaccination programmes compromised and vaccination uptake fell substantially
- Support required for health system rebuilding and for vaccination programmes

# ***Recommendations for vaccination programmes***

1. Conduct mass vaccination activities
2. Conduct social mobilisation activities
3. Address disincentives and capacitate HCWs to conduct outreach
4. Invest in resources ensure the cold chain
5. Mobilise the community workforce
6. Support the MoH to lead EPI services
7. Advocate for a revised population estimate



***Thank you***