

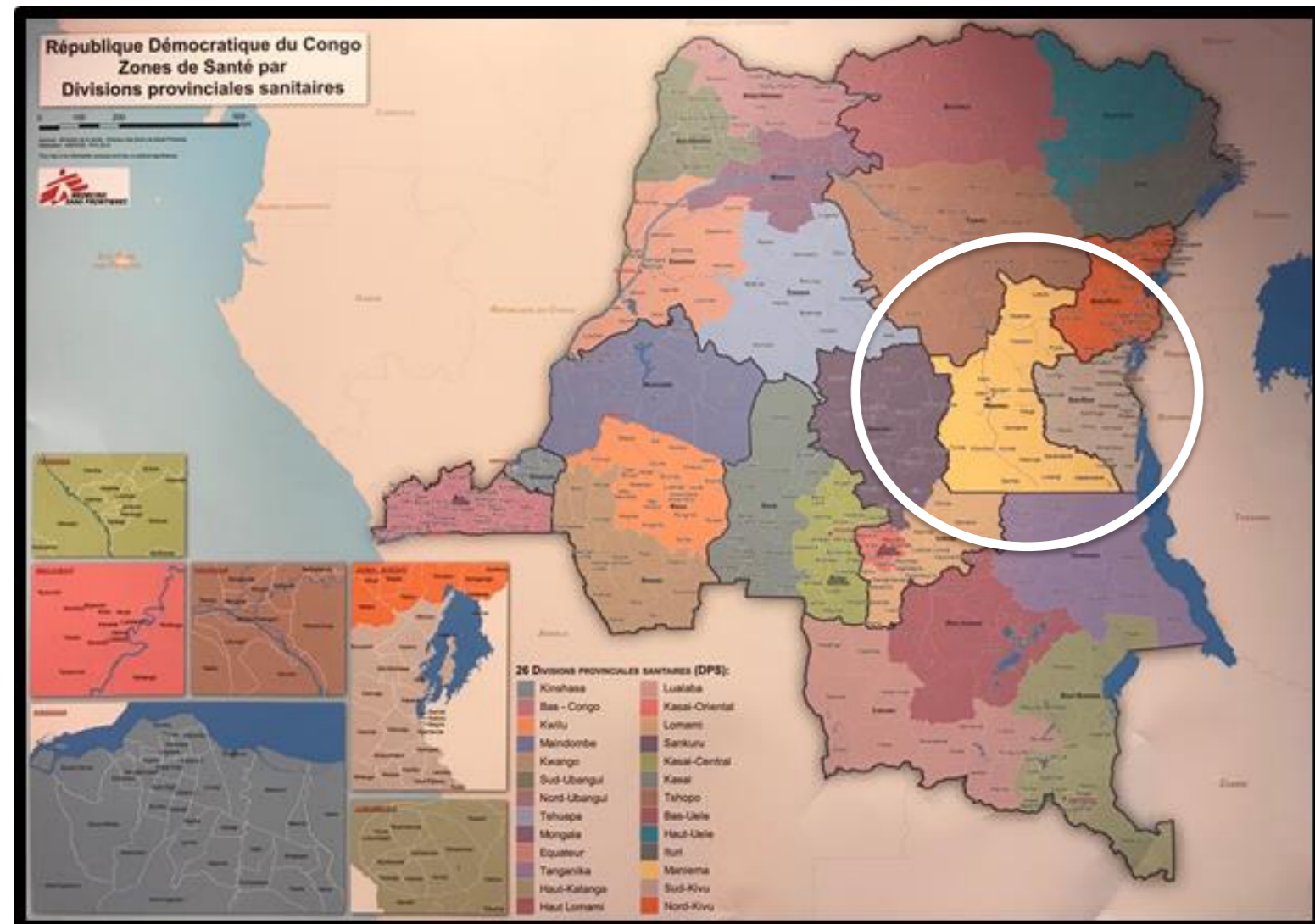
FIELD CHALLENGES TO MEASLES ELIMINATION IN THE DEMOCRATIC REPUBLIC OF CONGO

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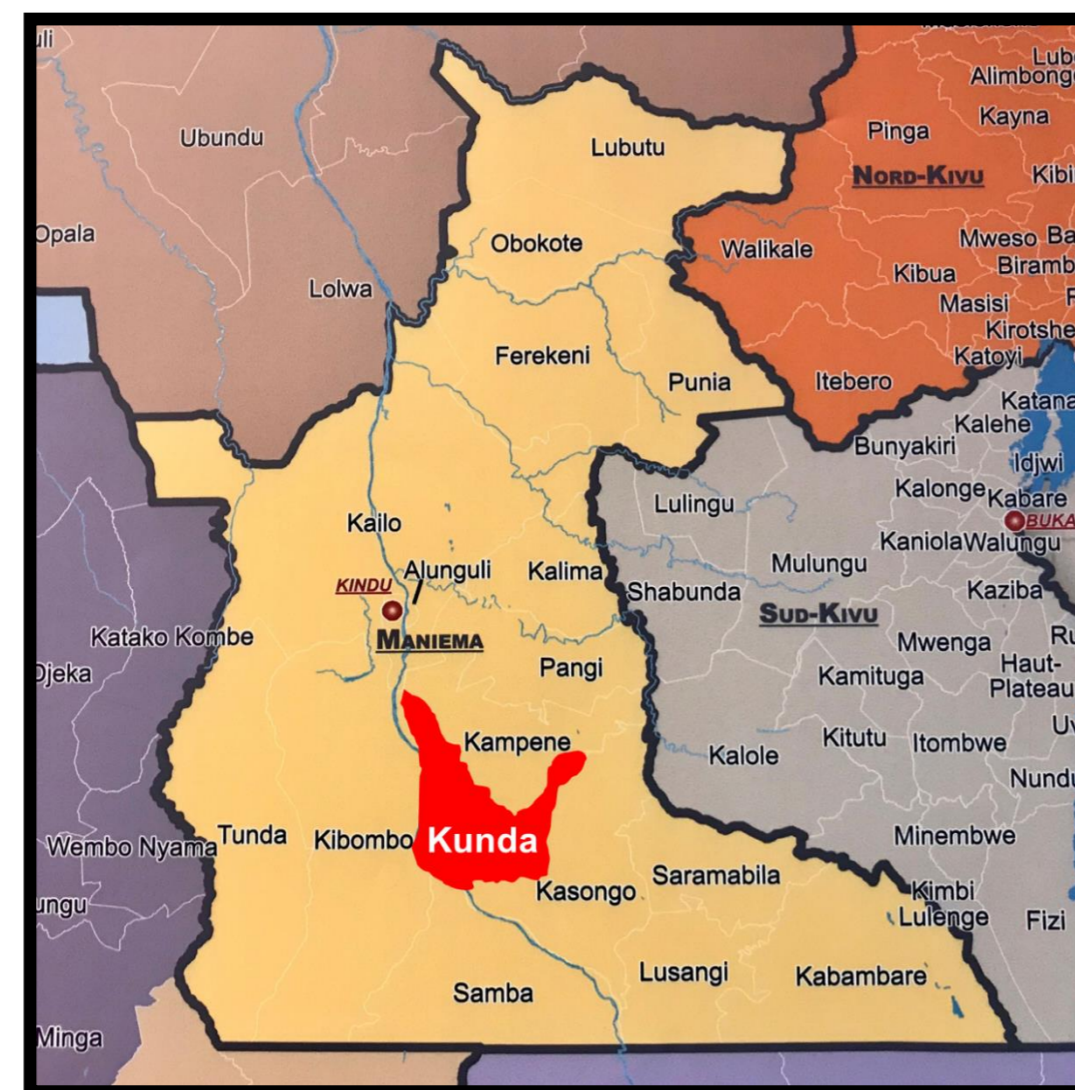
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INTRODUCTION

- Morbillivirus, responsible for causing measles, is extremely contagious
 - Vaccine effectiveness only 80-95% with one dose
 - 90-95% population vaccinated for herd immunity
- Democratic Republic of Congo (DRC):
 - Measles elimination goal by 2020
 - Current strategy: 2 doses measles containing vaccine (MCV; single antigen)
 - MCV1 – Routine vaccination at 9 to 11 months of age
 - MCV2 - Supplementary immunization activities (SIA)
 - 2009: Historic low in reported measles cases
 - 2010 to present: Rebound in measles cases with epidemics



Maniema Province
Province in southeast DRC
18 health zones, including Kunda

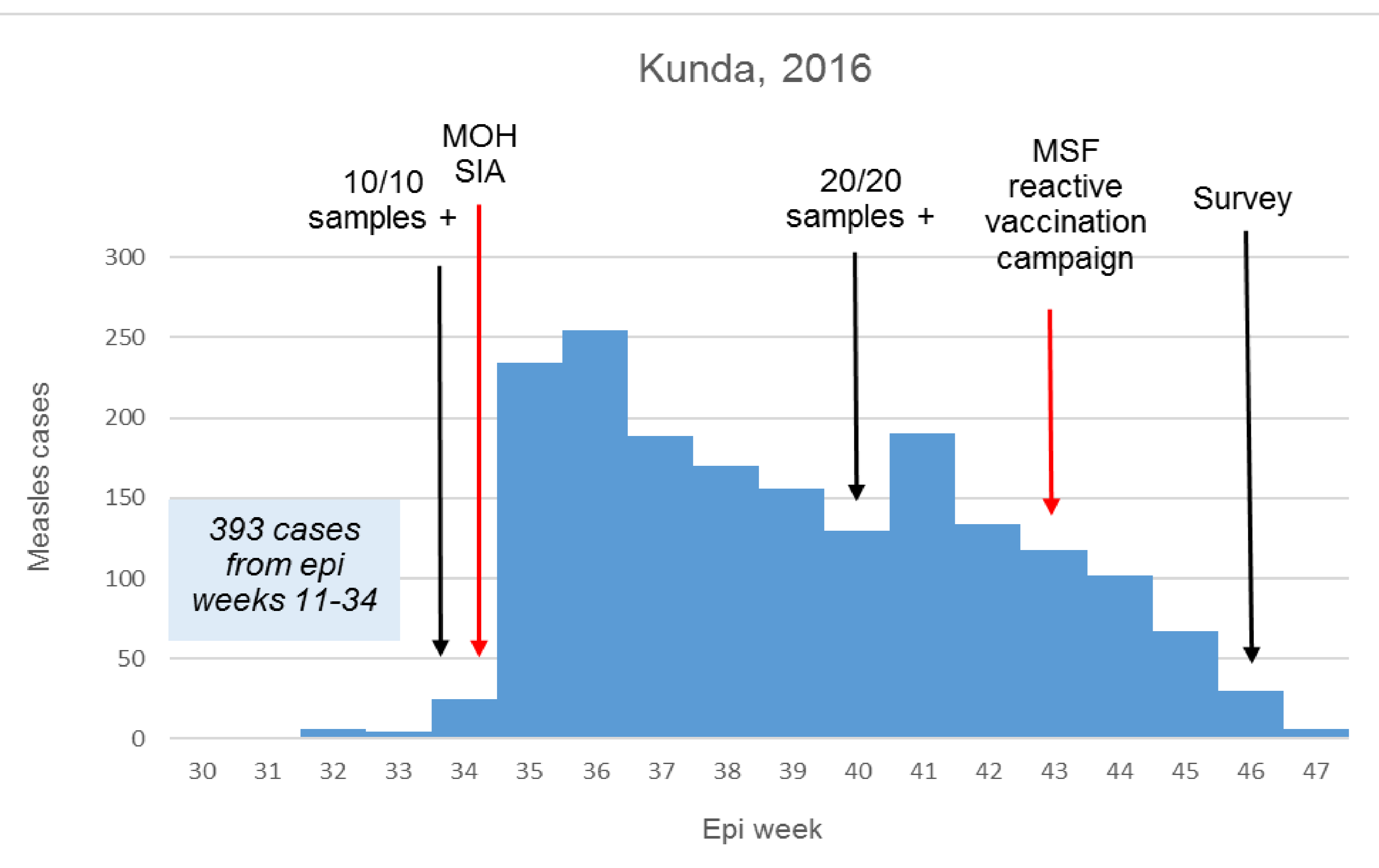


Kunda health zone
~1/4 million inhabitants
30 health areas (rural; semi-urban)
Limited access to health care
Population displacement

Administrative vaccine coverage of Maniema Province

Year	Administrative vaccine coverage	Age group
2013	100.7%	6 months < 15 years
2014	107.8%	6 months - 10 years
2016	99.9%	6 months ≤ 59 months

Sources : (2013 & 2014) Plan pluriannuel complet du PEV de la République Démocratique du Congo, 2015-2019, Ministère de la Santé, Novembre 2014; (2016) Rapport technique de la campagne de suivi contre la rougeole dans la province du Maniema organisée du 30 août au 3 septembre 2016, par le Poste de commandement du CPC Maniema, Septembre 2016



AIM

- Main objective: Assess the measles vaccine coverage (VC) of the 2016 MSF reactive vaccination campaign in Kunda
- Secondary objectives: Assess the measles VC of the 2016 MOH SIA in Kunda; Assess measles vaccine effectiveness (VE) of the 2016 MOH SIA in Kunda

METHODS

- Cross-sectional cluster survey, stratified by:
 - Type of health area: Semi-urban (Bikenge), or Rural (Kabonga, Kapuri, Kasubi, Mbutu, Mwema Mingana)
 - Age: 6 ≤ 59 month; 5 < 15 years
- Expected VC of 90% (precision 5%; α 5%; cluster effect 4)
 - Minimum 602 children per strata
 - 30 clusters of 27 households (810 households) per strata
 - Non-response of 10%
 - Household size 5
 - Population: 18% 6 ≤ 59 months, 50% < 15 years
- Included all children 6 months < 15 years in household
- Retrospective cohort analysis
 - VE = 100 * (1 - [incidence vaccinated / incidence non-vaccinated])
 - Crude and adjusted (age, sex)
 - Cases between 2016 SIA and MSF vaccination campaigns
- All analyses
 - Accounted for sampling design (including weighting)
 - Included age groups targeted by vaccination campaigns

RESULTS

Survey demographics, Kunda 2016

	N	%
Semi-urban (30 clusters, 804 households)		
6 ≤ 59 months	1145	47
5 < 15 years	1319	52
Total	2464	100
Rural (30 clusters, 791 households)		
6 ≤ 59 months	1158	42
5 < 15 years	1613	58
Total	2771	100

VC of 2016 MSF and MOH campaigns, Kunda

	N	Vaccinated with card		Vaccinated with or without card	
		% (n)	% (n)	95 CI%	Design effect
MSF reactive vaccination campaign					
Semi-urban	2463	94.3 (2286)	99.1 (2427)	98.2 – 99.6	3.7
Rural	2775	97.5 (2706)	98.8 (2742)	96.5 – 99.6	7.3
MOH SIA					
Semi-urban	1053	34.1 (281)	81.6 (842)	76.5 – 85.7	4.7
Rural	1081	43.2 (466)	91.0 (976)	84.9 – 94.7	5.5

Cumulative measles incidence (CMI) and field VE of 2016 MOH SIA, Kunda

SIA vaccination status*	N	CMI October 2016		Field VE of SIA			
		n	CMI%	Crude VE%	Adjusted (age and sex) VE%	95% CI	
Semi-urban	Vaccinated	842	36	4.5	57.3	55.9	8.5 – 78.8
	Not vaccinated	211	19	10.4			
Rural	Vaccinated	977	8	0.7	80.5	77.7	0 – 96.9
	Not vaccinated	104	4	3.8			

*With or without card

Moment of MCV vaccination, Kunda

	N*	≥ one dose prior 2016	First dose 2016 SIA	First dose 2016 MSF	Not vaccinated
		%	%	%	%
Semi-urban					
9 ≤ 59 months	974	62.2	26.8	10.6	0.4
5 < 15 years	1103	62.5	0.0	37.4	0.1
Total	2077	62.4	12.5	24.9	0.2
Rural					
9 ≤ 59 months	1029	83.3	12.2	4.5	0.1
5 < 15 years	1413	85.9	0.0	14.1	0.0
Total	2442	84.7	5.1	10.1	0.1

*13% of respondents "did not know" if MCV had been administered prior to 2016

DISCUSSION AND CONCLUSION

- Combined VC and VE survey
 - Sample size appropriate for VC
 - Wide confidence intervals for VE
- VC differs between semi-urban and rural areas
 - 2016 MOH SIA suboptimal in semi-urban area for preventing the epidemic
- VE point estimates of the 2016 SIA were below standard in semi-urban area
- Combination of suboptimal VC and VE exacerbates risk of epidemics
- Despite joint efforts, elimination of measles remains a challenge
- 2 dose strategy imperative
- Way forward:
 - Understand why some children remain unvaccinated despite multiple opportunities
 - Develop vaccination strategies tailored to urban contexts
 - Further investigation and documentation of field VE and its determinants