



The effect of vitamin A provided in campaign may depend on vaccination status: Observational study from Guinea-Bissau



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WHO recommends

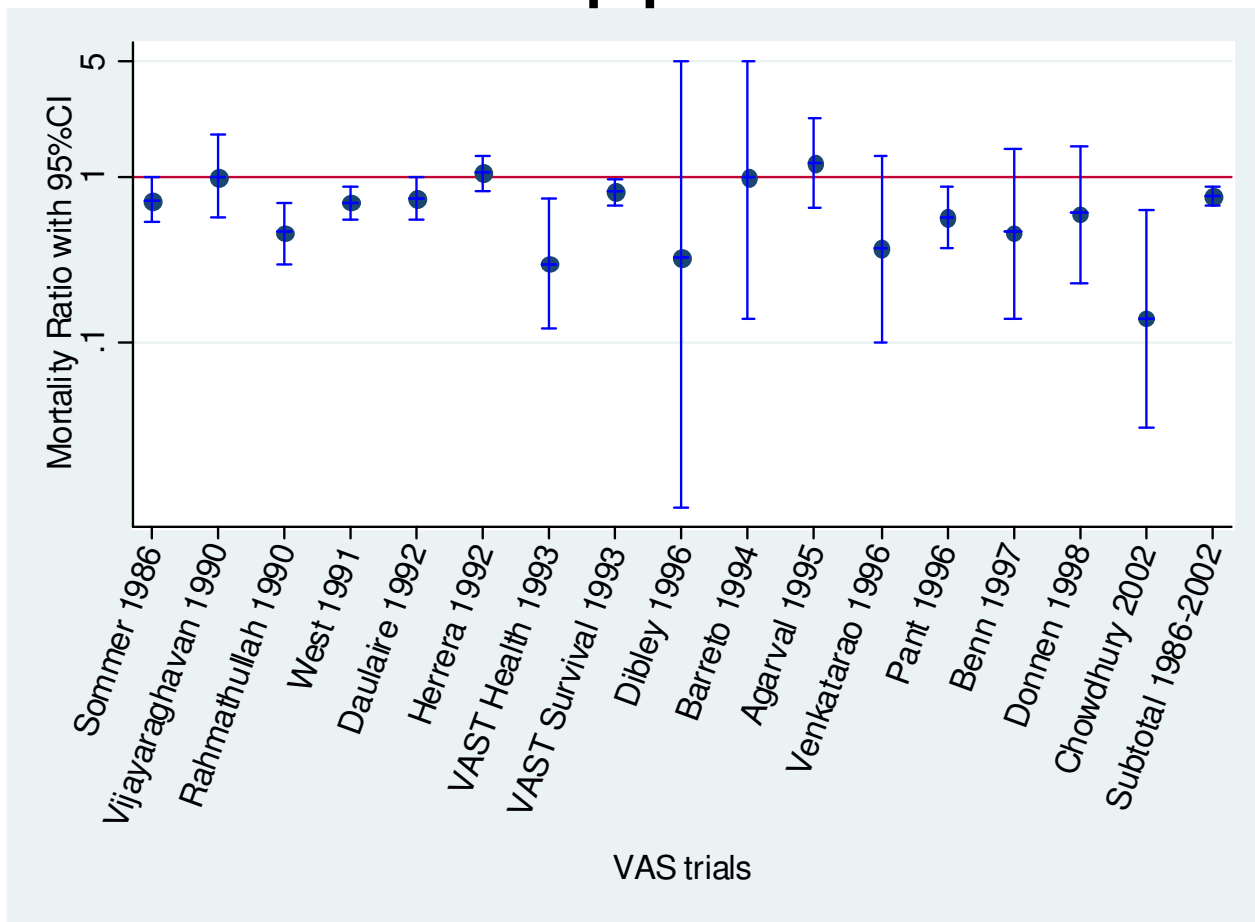
Guideline:

**Vitamin A
supplementation in
infants and children
6–59 months of age**

Target group	Dose
Infants 6 to 11 months	100 000 IU
Children 12 to 59 months	200 000 IU

Every 4-6 months in areas where Vitamin A deficiency is a public health problem

Vitamin A supplementation (VAS)



VAS to children after 6 months of age reduces overall mortality by 24%

Cochrane meta-analysis, Imdad 2010



BMJ, August 2011

Implications for future research

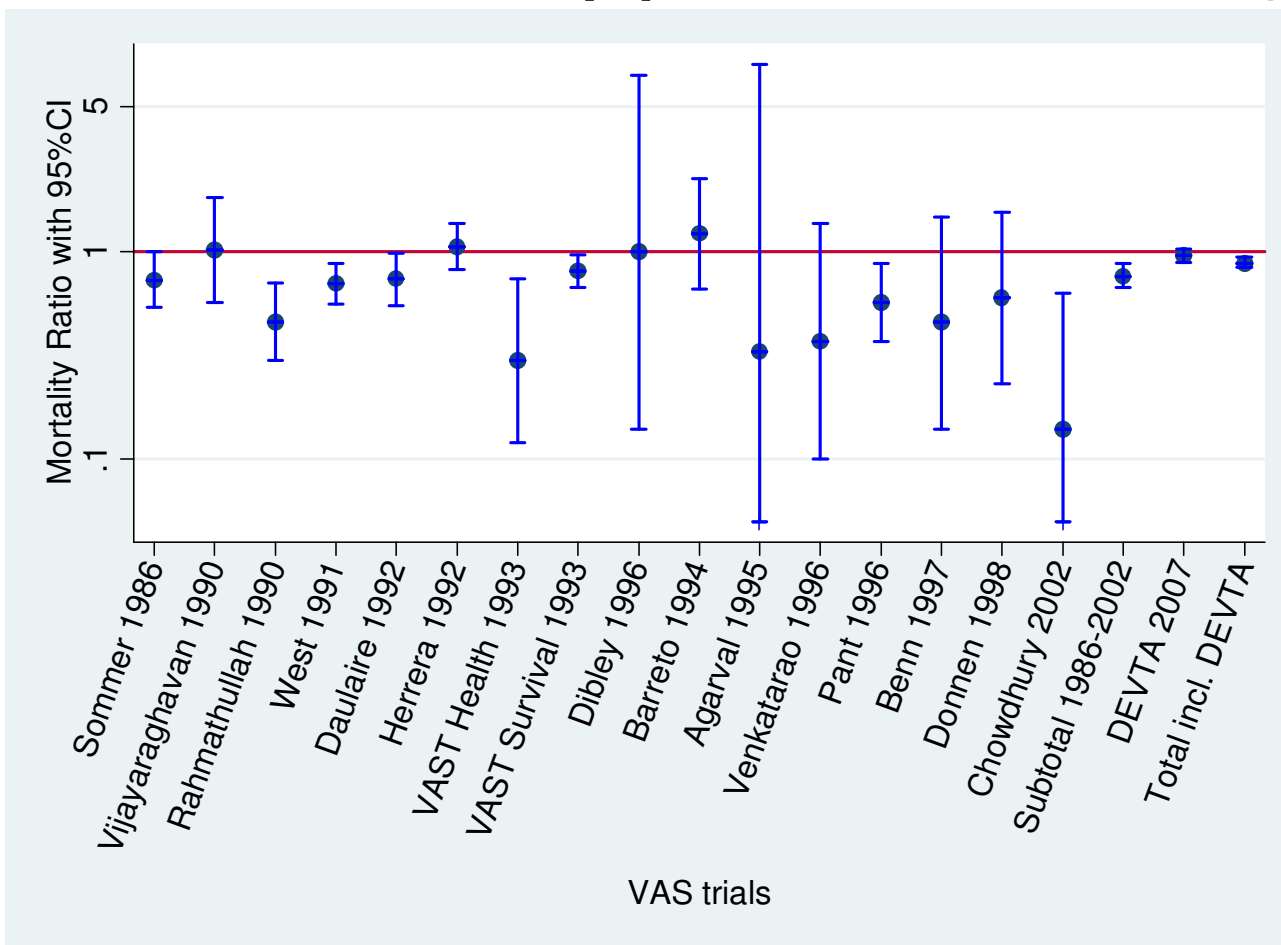
The effectiveness of vitamin A supplementation is so well established that further placebo controlled studies are not required.



Mayo-Wilson E et al. *BMJ* 2011; 343:d5094.



Vitamin A supplementation (VAS)

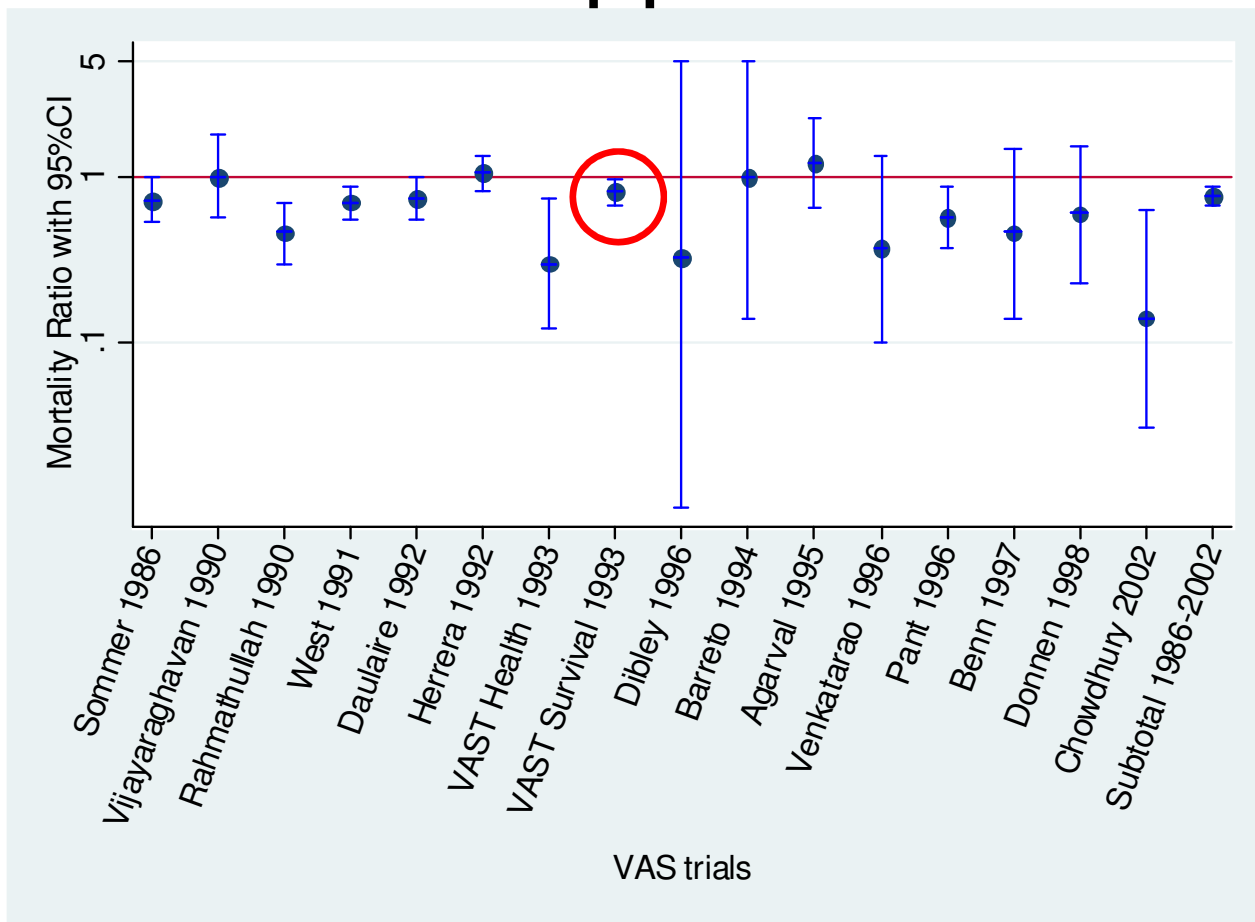


DEVTA trial: VAS or placebo to 1,000,000 children

No benefit of VAS: MRR: 0.96 (95%CI: 0.88-1.05)



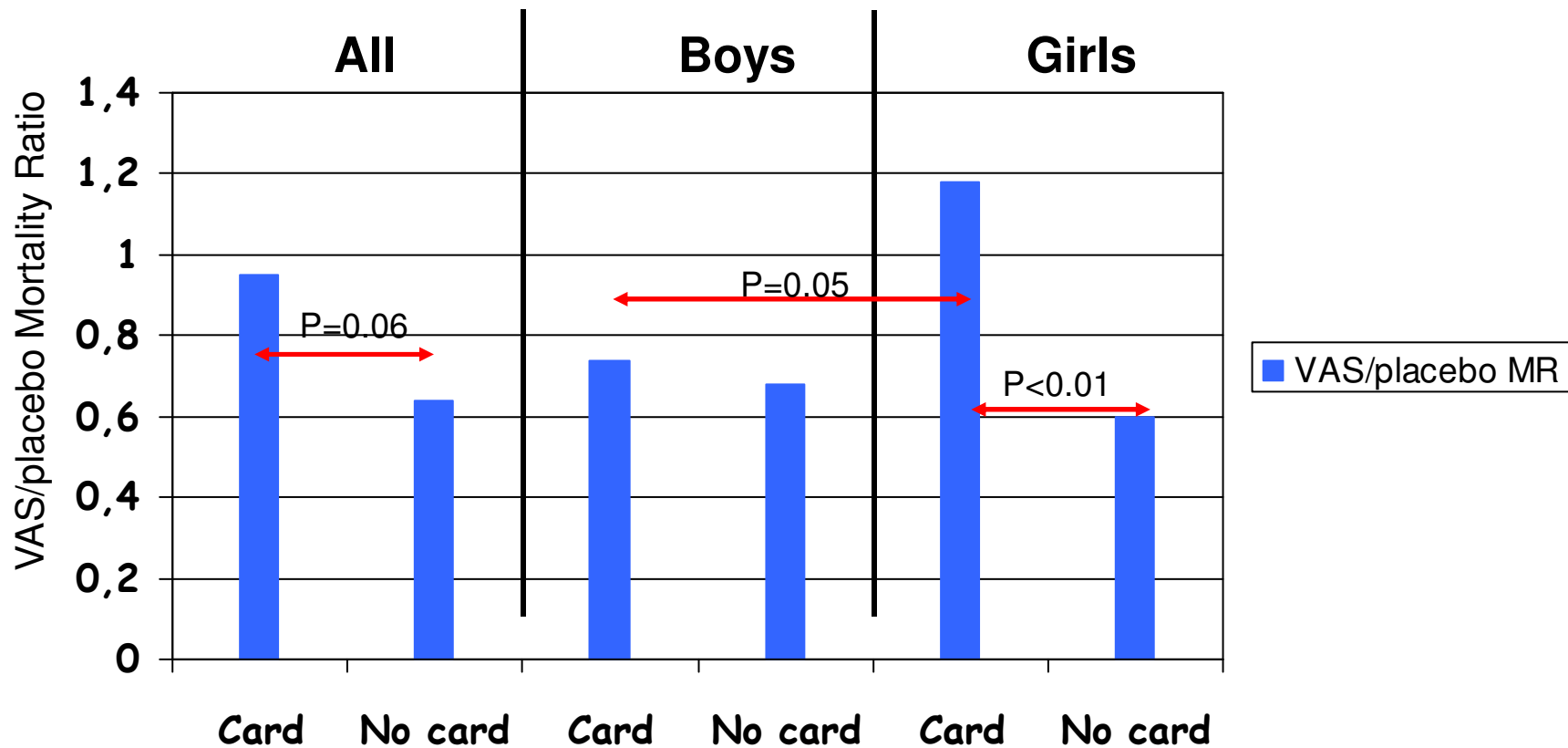
Vitamin A supplementation (VAS)



Ghana VAST: MRR 0.81 (0.68-0.98)

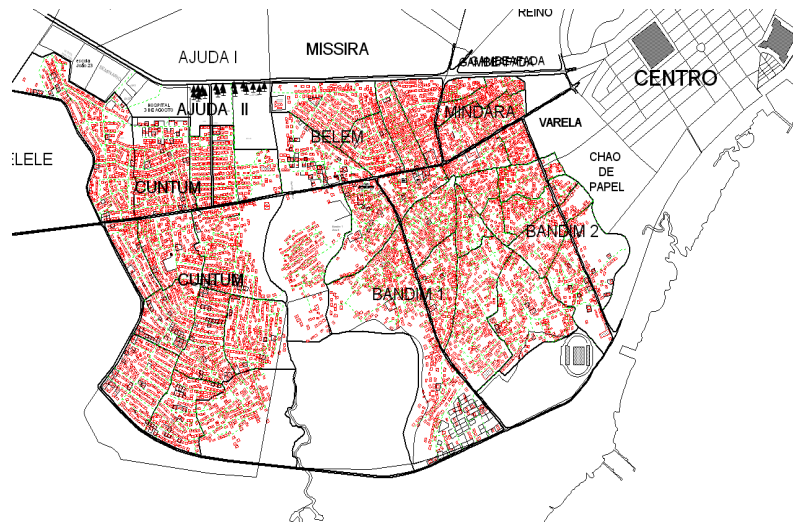


Ghana VAST, reanalysis



The VAS effect differed in children with (N=6,656) and without (N=5,066) a health card (P=0.06) - due to differential effect of VAS in girls (P<0.01)

Setting



- Two VAS campaigns in urban Guinea-Bissau
 - December 2007
 - June 2008
- Prospective follow up of all children 6-36 months

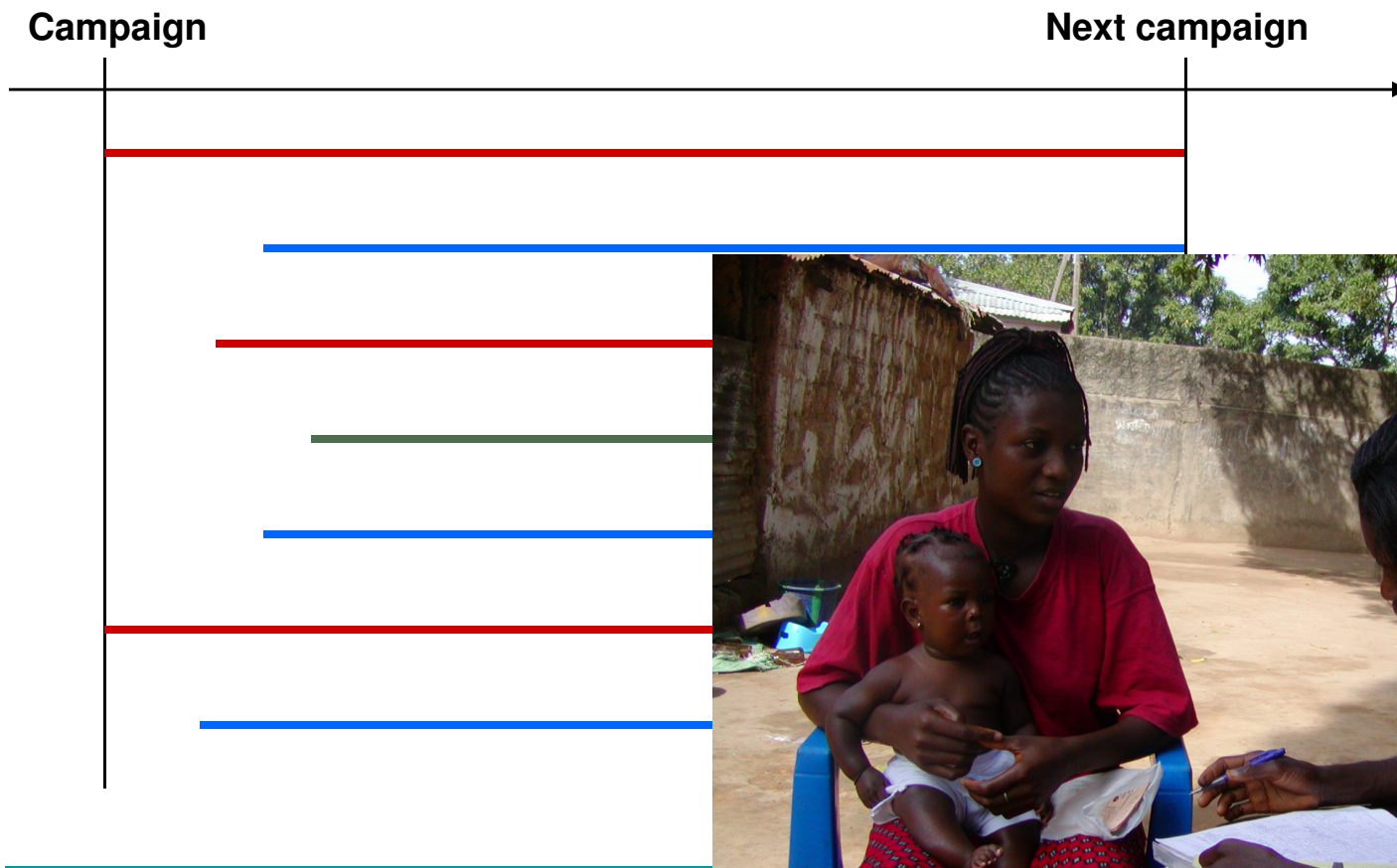
Methods

Campaign

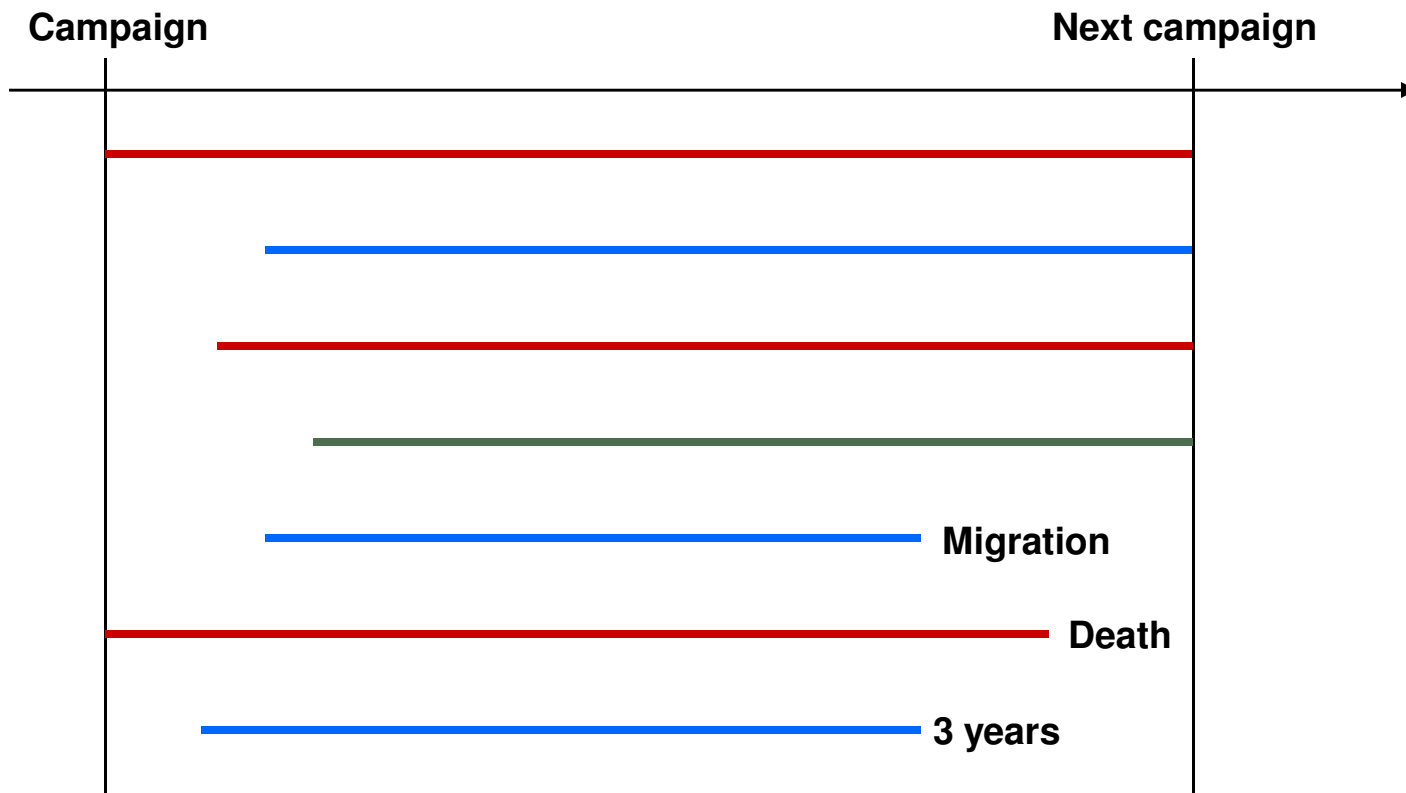
Next campaign



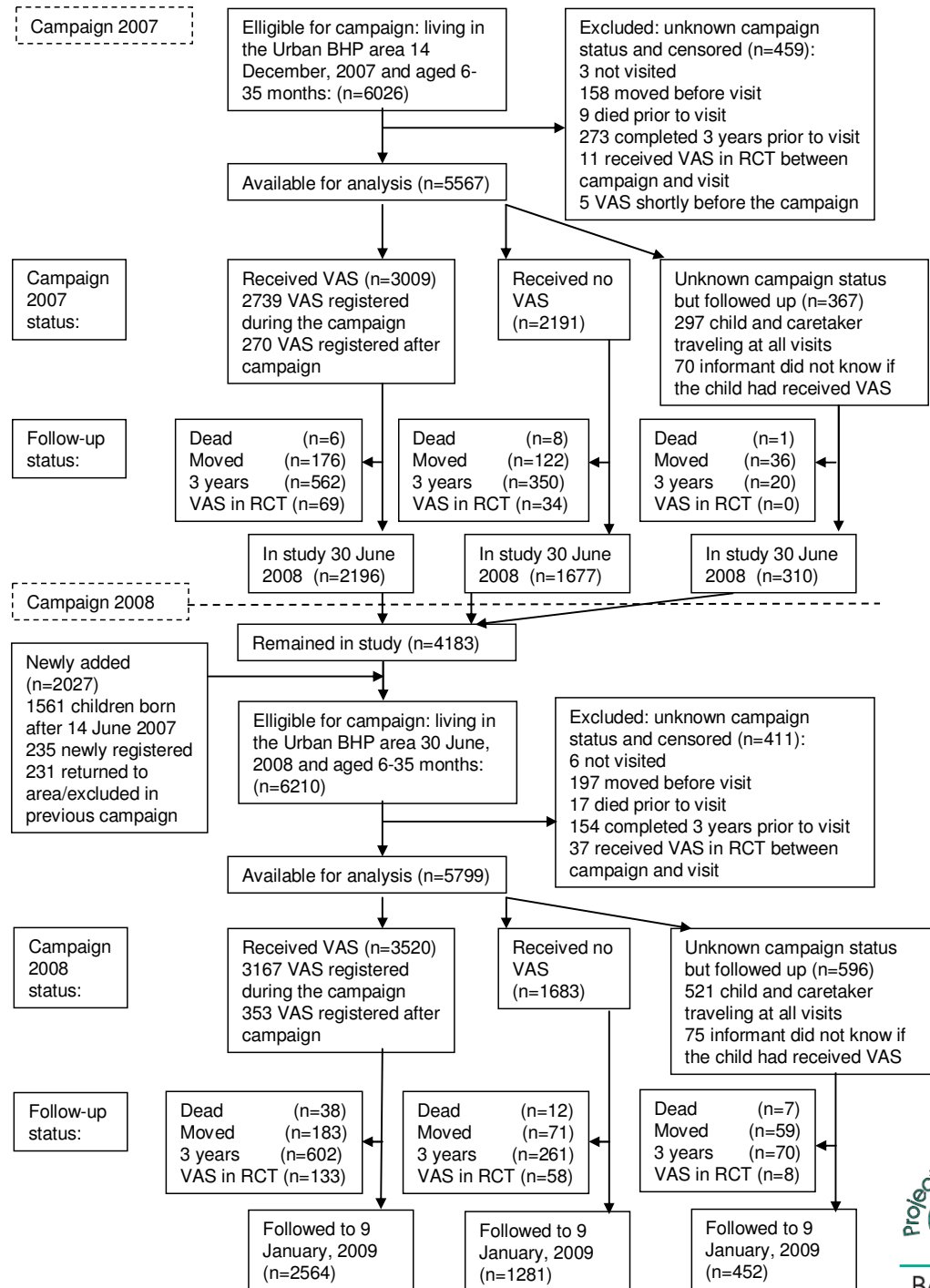
Methods



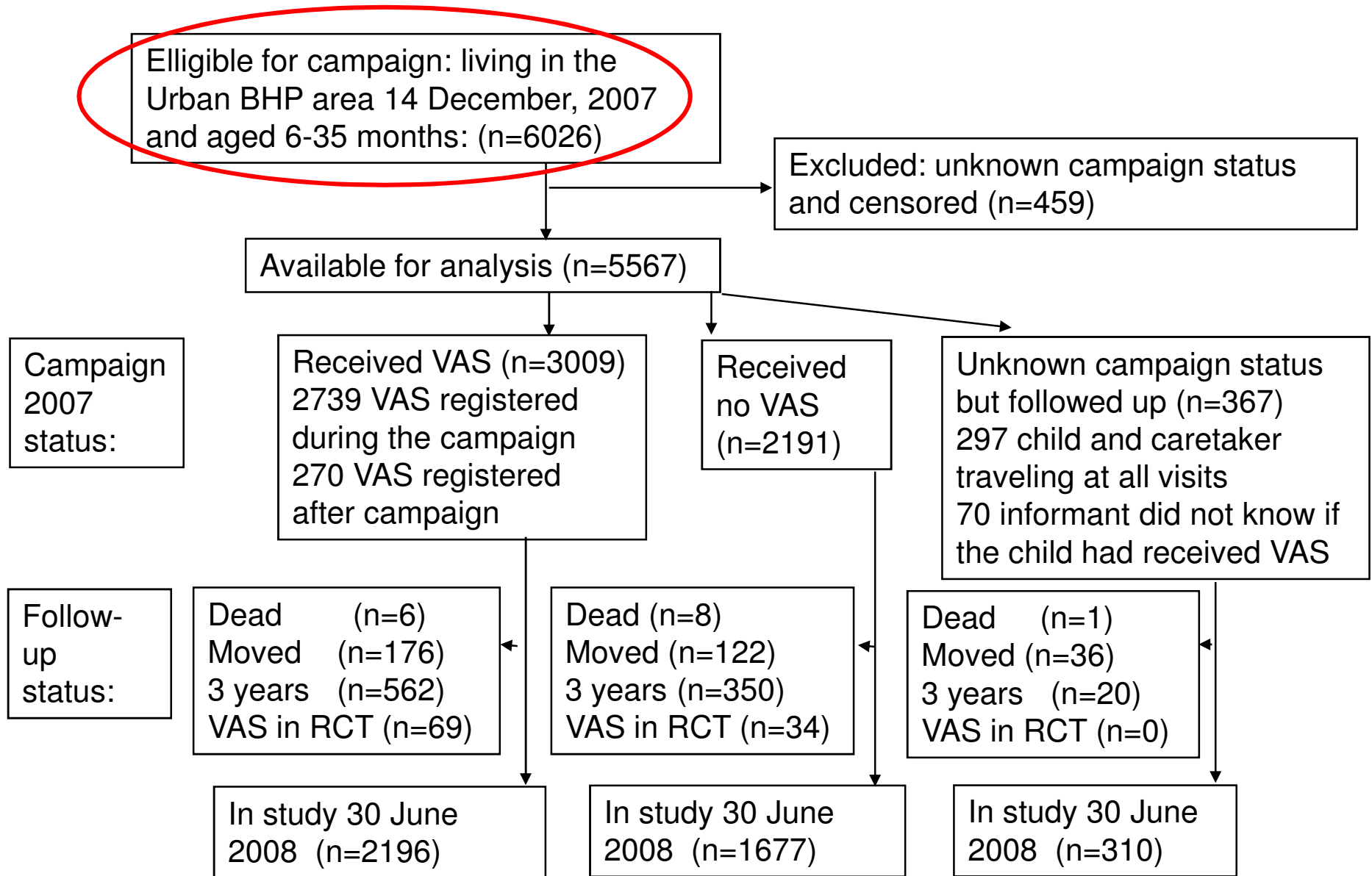
Methods



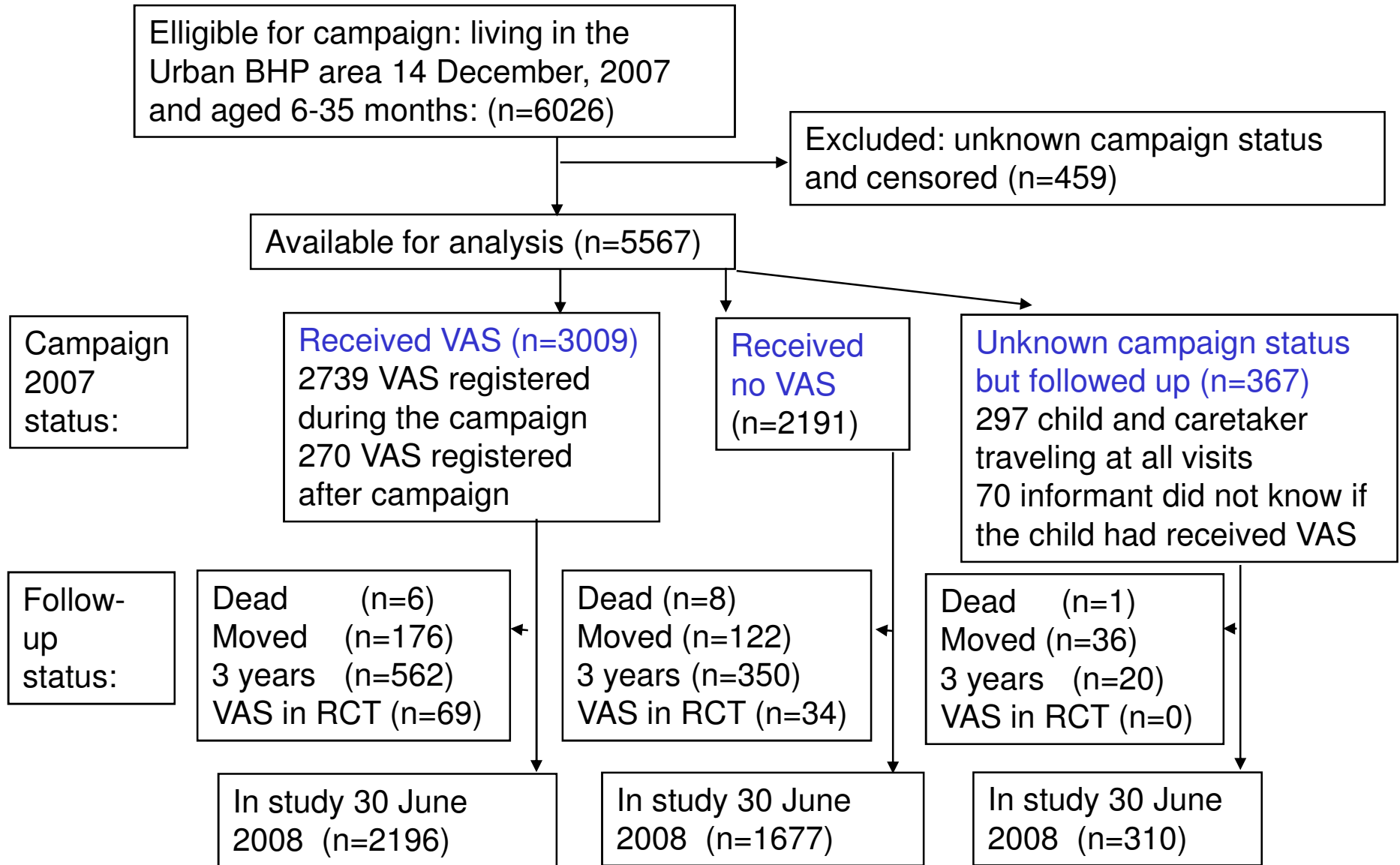
Methods



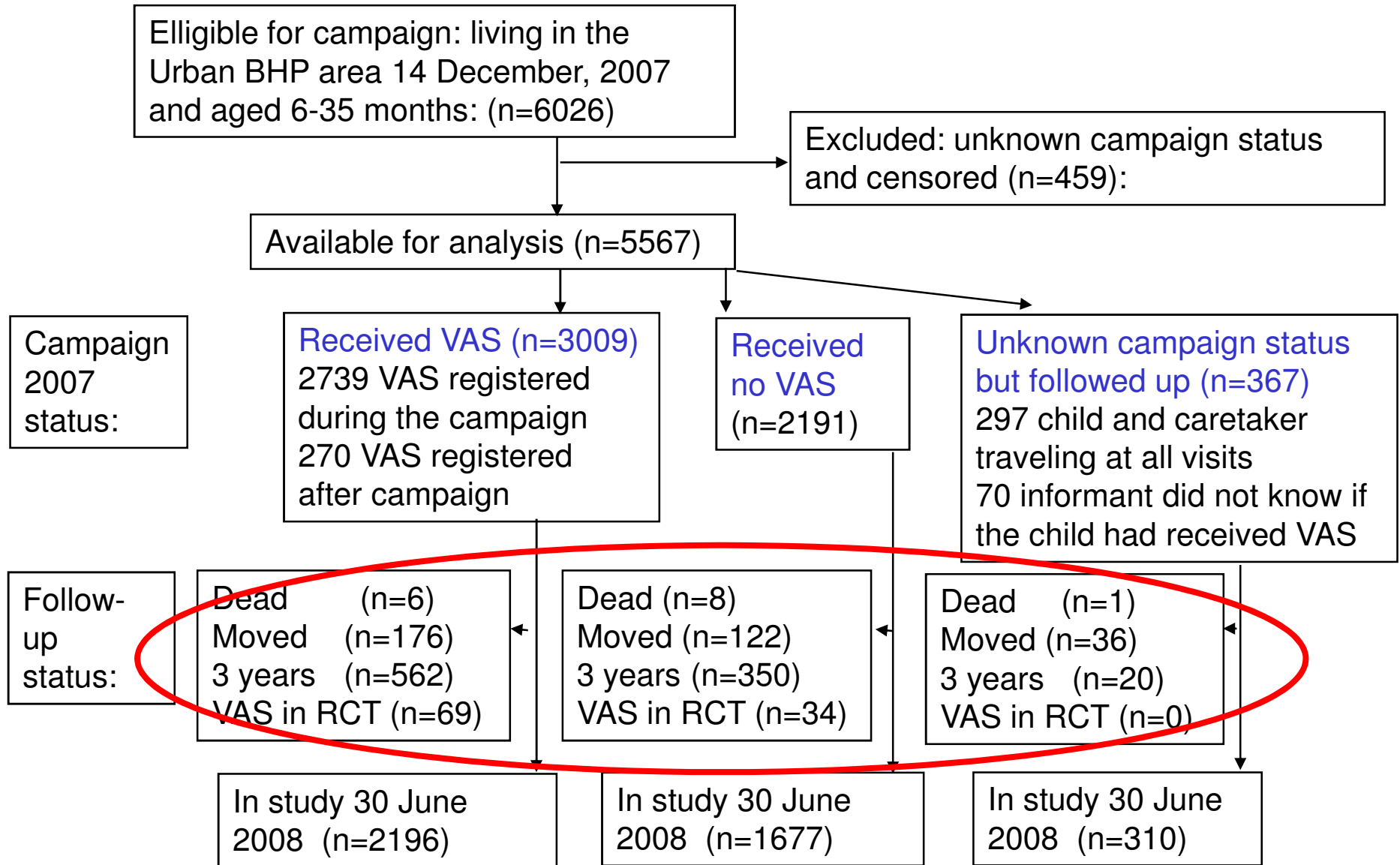
Methods -2007



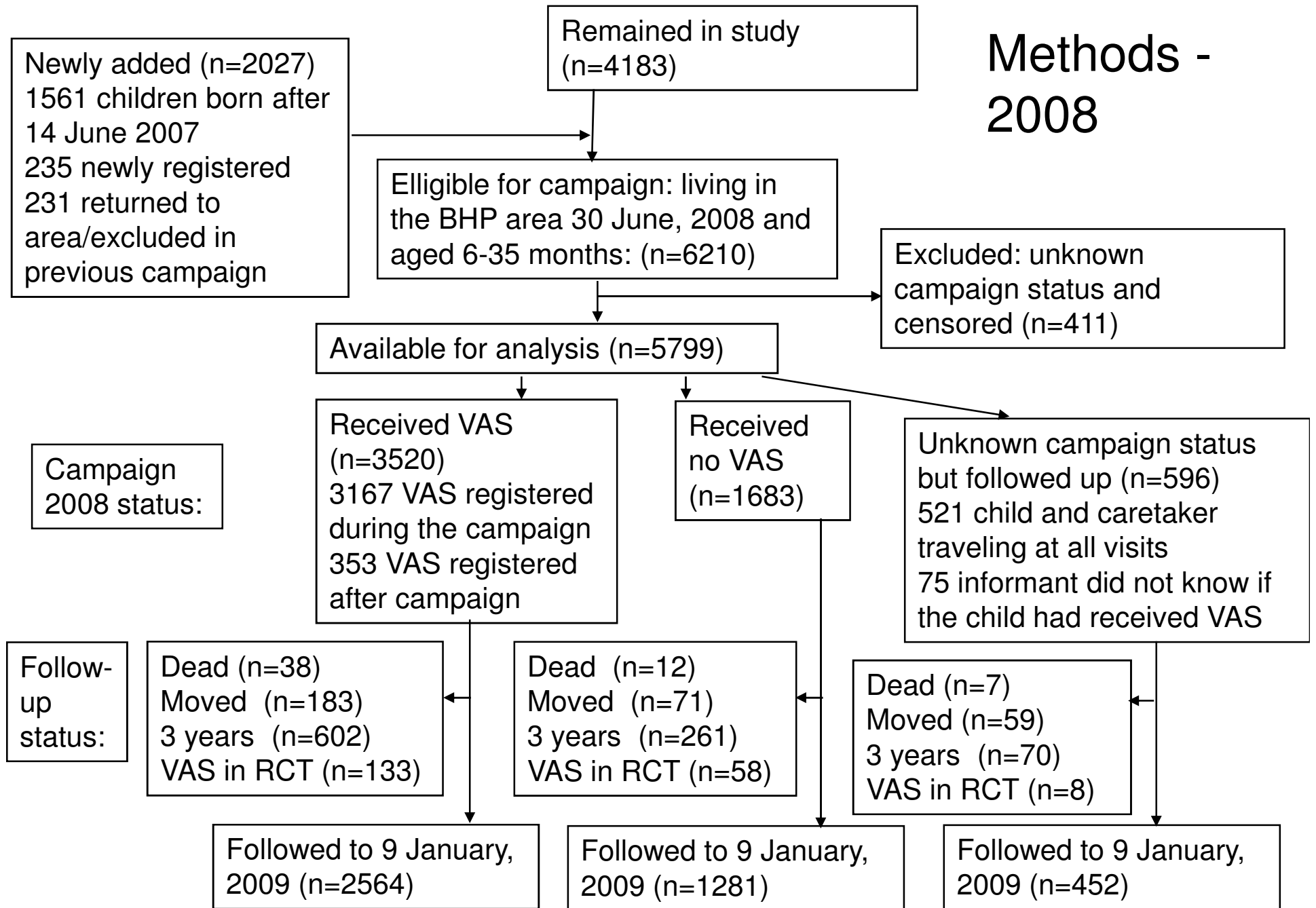
Methods -2007



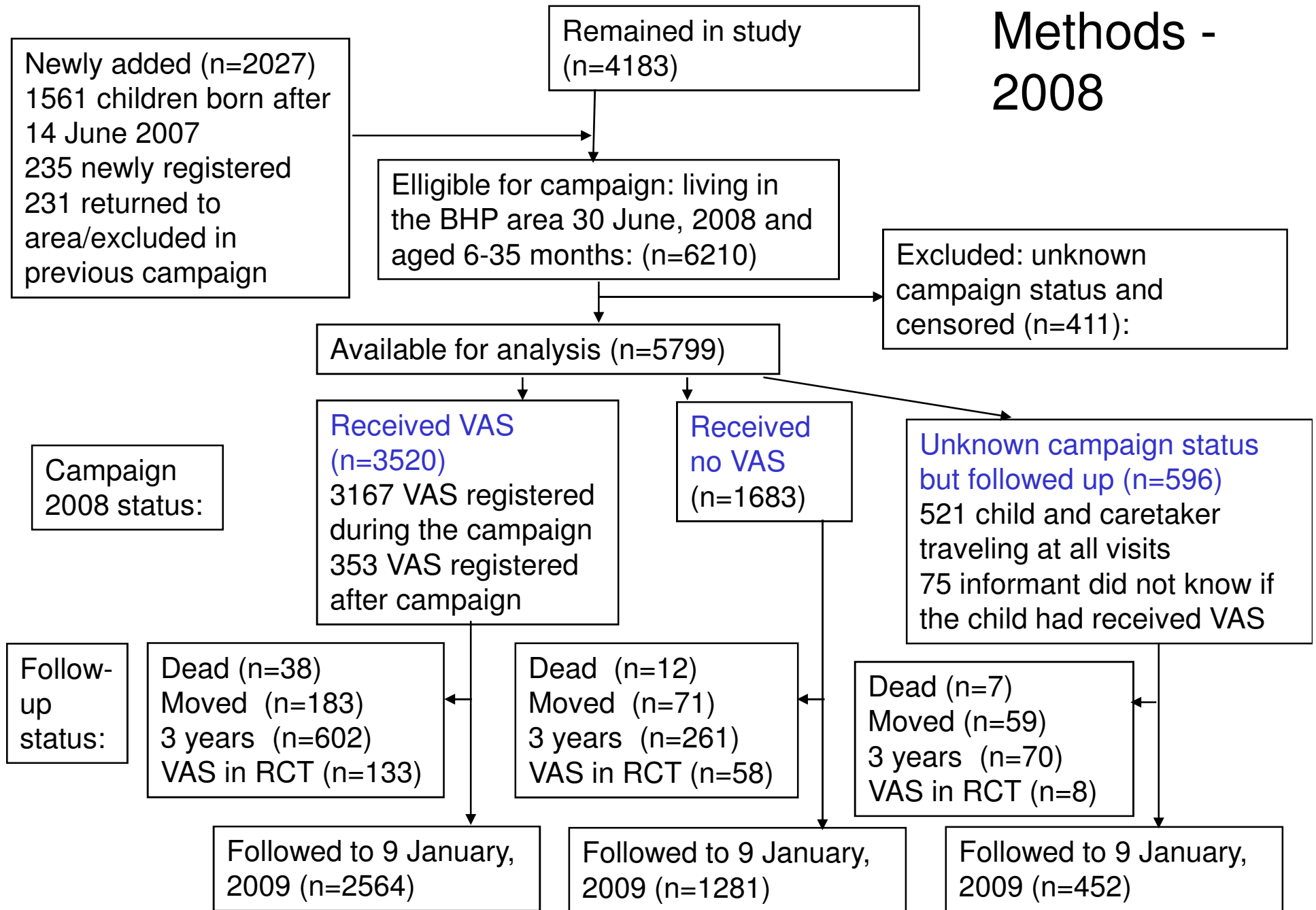
Methods -2007



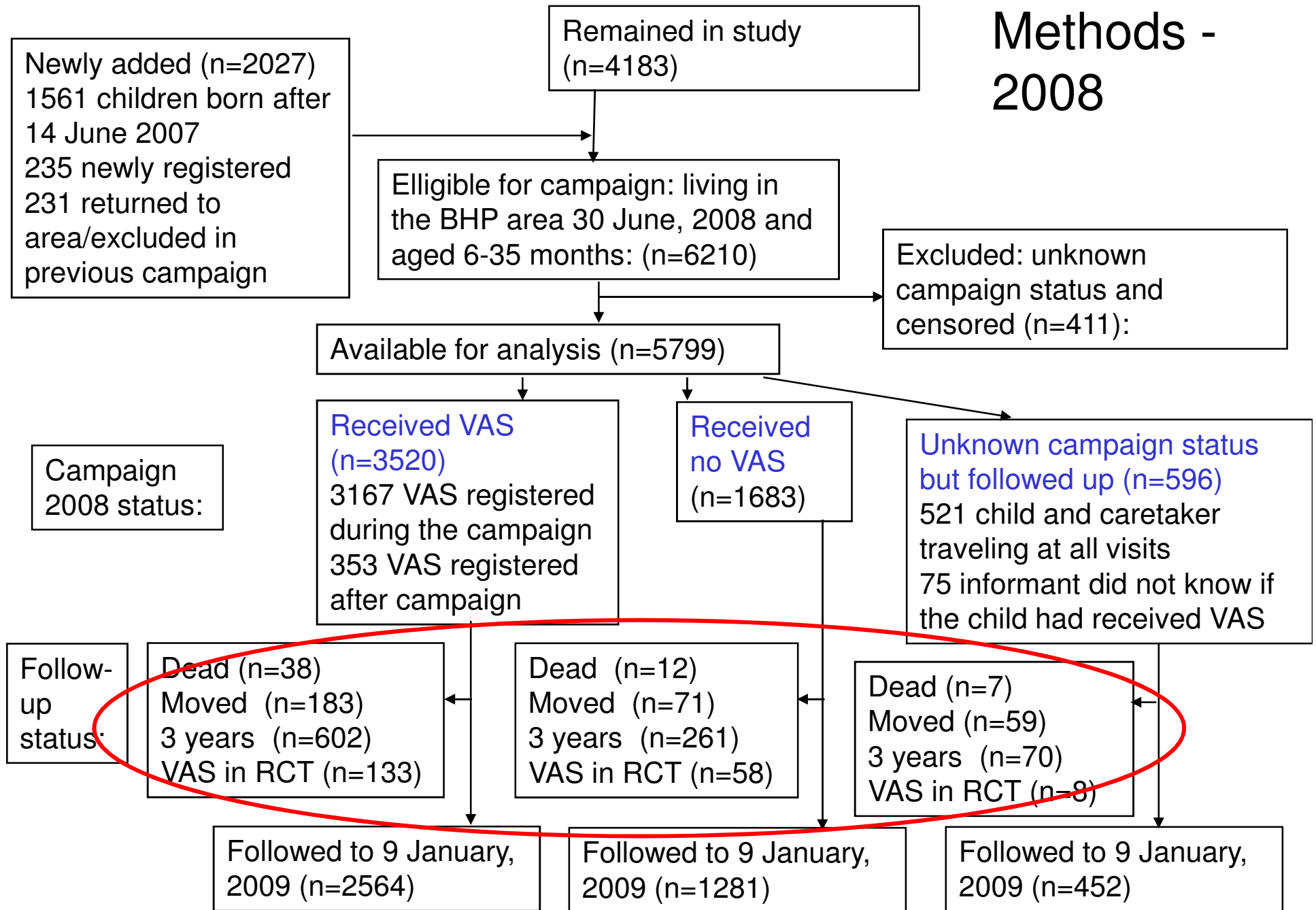
Methods - 2008



Methods - 2008



Methods - 2008



Results - background

	2007			2008		
	VAS	No VAS	P for diff. dist.	VAS	No VAS	P for diff. dist.
Number	3009	2191		3520	1683	
Sex (Male) ^a	1514 (50)	1096 (50)	0.84	1780 (51)	861 (51)	0.69
Age at campaign / months (median (interquartile range))	20.0 (12.5-27.1)	19.6 (12.5-26.3)	0.10	19.5 (12.7-27.4)	19.5 (12.6-27.2)	0.47
Vaccine information						
Seen vaccination card ^a	2700 (90)	1765 (81)	<0.001	3088 (88)	1259 (75)	<0.001
Last vaccine at the time of the campaign						
BCG / unvaccinated	13 (0)	11 (1)	0.05	18 (1)	15 (1)	0.23
OPV	606 (22)	352 (20)		760 (25)	306 (24)	
MV	927 (34)	604 (34)		923 (30)	361 (29)	
DTP	1095 (41)	736 (42)		1311 (42)	540 (43)	
DTP+MV	62 (2)	62 (4)		76 (2)	37 (3)	

Results - background

		2007			2008		
		VAS	No VAS	P for diff. dist.	VAS	No VAS	P for diff. dist.
Socio-economic background							
Electricity in the household				0.91			0.09
	Yes	854 (28)	634 (29)		1000 (28)	519 (31)	
	No	2130 (71)	1539 (70)		2507 (71)	1154 (69)	
	No information	25 (1)	18 (1)		13 (0)	10 (1)	
Bathroom				0.72			0.06
	Inside the house	417 (14)	322 (15)		495 (14)	276 (16)	
	Outside the house	2560 (85)	1850 (84)		3007 (85)	1395 (83)	
	None	1 (0)	1 (0)		0 (0)	1 (0)	
	No information	31 (1)	18 (1)		18 (1)	11 (1)	
Type of roofing				0.50			0.26
	Straw	122 (4)	75 (3)		119 (3)	48 (3)	
	Hard	2862 (95)	2098 (96)		3389 (96)	1625 (97)	
	No information	25 (1)	18 (1)		12 (0)	10 (1)	

Results - background

		2007			2008		
		VAS	No VAS	P for diff. dist.	VAS	No VAS	P for diff. dist.
Socio-economic background							
Maternal education				0.003			<0.001
	Any	1988 (66)	1354 (62)		2386 (68)	1000 (59)	
	None	791 (26)	627 (29)		837 (24)	497 (30)	
	No information	230 (8)	210 (10)		297 (8)	186 (11)	
Ethnic group				<0.001			<0.001
	Pepel	985 (33)	634 (29)		1067 (30)	456 (27)	
	Fula/Mandinga	602 (20)	619 (28)		759 (22)	534 (32)	
	Manjaco/Mancanha	627 (21)	380 (17)		703 (20)	269 (16)	
	Other	795 (26)	558 (25)		991 (28)	424 (25)	

Results – Mortality

	Rate per 1000 PYRS (Deaths / PYRS)	Adjusted Mortality Rate Ratio (95% CI)*		
		All	Boys	Girls
All				
VAS	15.3 (44 / 2873)	0.78 (0.46-1.34)	0.73 (0.37-1.43)	0.89 (0.37-2.14)
No VAS	15.9 (20 / 1260)	1 (ref)	1 (ref)	1 (ref)
No information	32.5 (8 / 227)	2.10 (0.75-5.89)	1.96 (0.59-6.57)	2.35 (0.53-10.4)

Results

	Rate per 1000 PYRS (Deaths/PYRS)	Adjusted Mortality Rate Ratio (95% CI)*		
		All	Boys	Girls
2007				
VAS	4.4 (6 / 1352)	0.38 (0.13-1.10)	0.52 (0.15-1.79)	0.16 (0.02-1.59)
No VAS	10.9 (8 / 731)	1 (ref)	1 (ref)	1 (ref)
2008				
VAS	24.4 (38 / 1521)	1.02 (0.53-1.96)	0.86 (0.38-1.96)	1.32 (0.44-3.94)
No VAS	21.7 (12 / 529)	1 (ref)	1 (ref)	1 (ref)
P for same effect of VAS in 2007 and 2009		0.12	0.50	0.11

Results

	Campaign information	Rate / 1000 PYRS (Deaths/PYRS)	MRR (95%CI)*	Boys: MRR (95%CI)	Girls: MRR (95%CI)
Last received vaccine before the campaign					
OPV	VAS	14.1 (8 / 569)	P=0.09	P=0.05	P=0.19
	No VAS	0 (0 / 203)			
MV	VAS	11.3 (10 / 882)	0.34 (0.14-0.85)	0.31 (0.10-0.96)	0.41 (0.09-1.85)
	No VAS	26.9 (9 / 335)			
DTP	VAS	20.1 (21 / 1041)	1.29 (0.52-3.22)	1.37 (0.39-4.93)	1.21 (0.33-4.43)
	No VAS	14.5 (6 / 414)			
DTP+ MV	VAS	16.5 (1 / 61)	0.21 (0.02-2.30)	0	NA
	No VAS	63.3 (2 / 32)			

*Adjusted for sex, campaign, ethnicity and maternal education

Results

	Campaign information	Rate / 1000 PYRS (Deaths/PYRS)	MRR (95%CI)*	Boys: MRR (95%CI)	Girls: MRR (95%CI)
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Test of different effect of campaign participation: MV vs OPV: $p=0.02$; MV vs. DTP: $p=0.04$



*Adjusted for sex, campaign, ethnicity and maternal education



Results

	Campaign information	Rate / 1000 PYRS (Deaths/PYRS)	MRR (95%CI)*	Boys: MRR (95%CI)	Girls: MRR (95%CI)
Last received vaccine before the campaign					
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Test of different effect of campaign participation: MV vs OPV: $p=0.02$, **MV vs. DTP: $p=0.04$**

*Adjusted for sex, campaign, ethnicity and maternal education



Discussion

- The benefit of VAS may be less than assumed
- The effect may vary with season – in line with a previous study from Bissau, VAS may be beneficial in the dry season but not in the rainy season.
- The effect may vary by vaccination status. VAS provided after DTP did not reduce mortality.

Conclusion

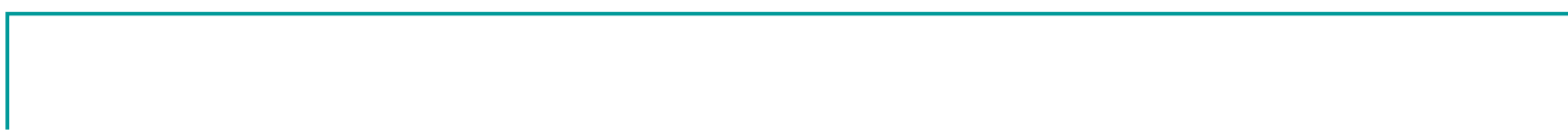
- The effect of VAS may depend on the vaccination profile in the population
- The potential interactions between VAS and vaccines require further investigation

Acknowledgement

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Thank You!



INDEPTH Network

