

# HDSS and CRVS in rural NE South Africa

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Agincourt HDSS

# Introduction

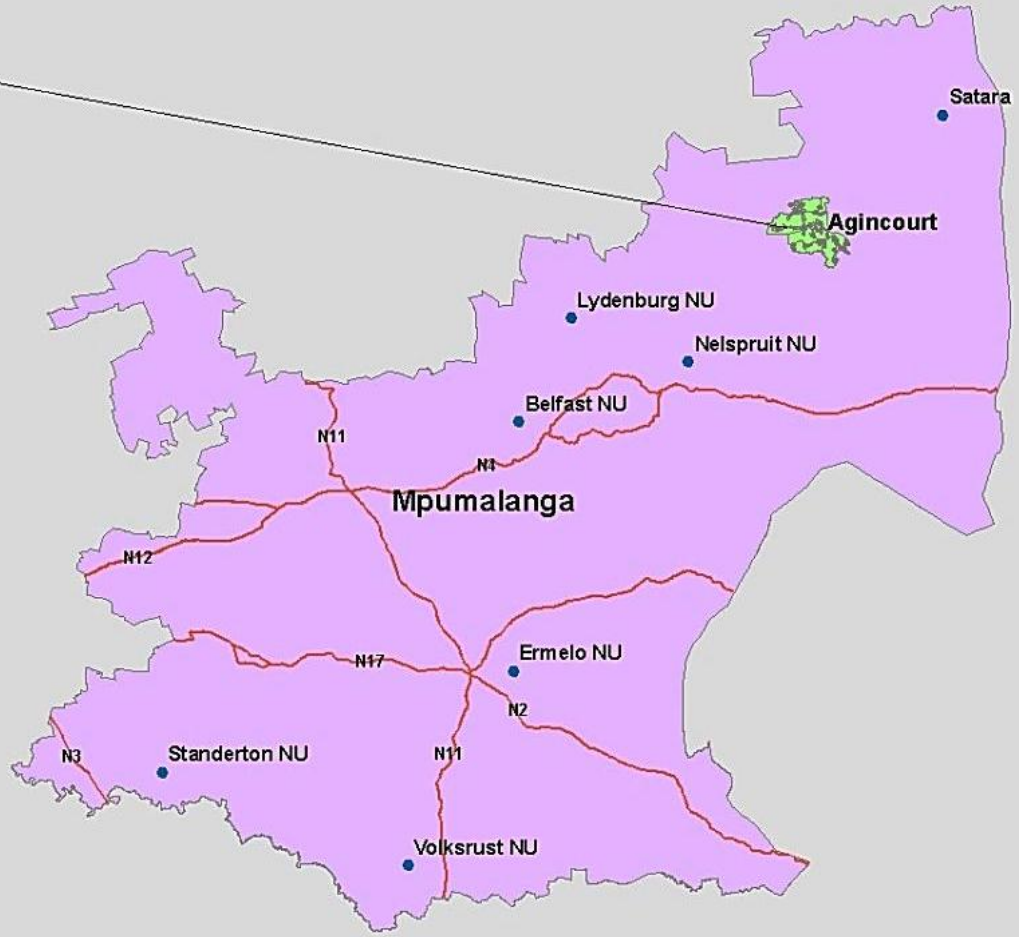
- CRVS is increasingly understood as a core capability needed in LDCs and MDCs to underpin the post-2015 development agenda.
- Initiatives such as “Africa Programme on Accelerated Improvement of Civil Registration and Vital Statistics” (APAI-CRVS).
- Visibility of all persons including the vulnerable and isolated.
- Adequate data for planning of public services (coverage and quality)

# HDSS role in strengthening CRVS

- Assessing coverage
  - E.g. what % of births, deaths, marriages, ID docs covered in the CRVS system
- Assessing quality of data
  - How accurate is the data in the CRVS system

Some examples from the Agincourt HDSS:

# Location of Agincourt HDSS in relation to South Africa



- Sub-Place
- National Road
- Agincourt HDSS
- Mpumalanga Province

Metadata  
Map showing Agincourt in Mpumalanga Province

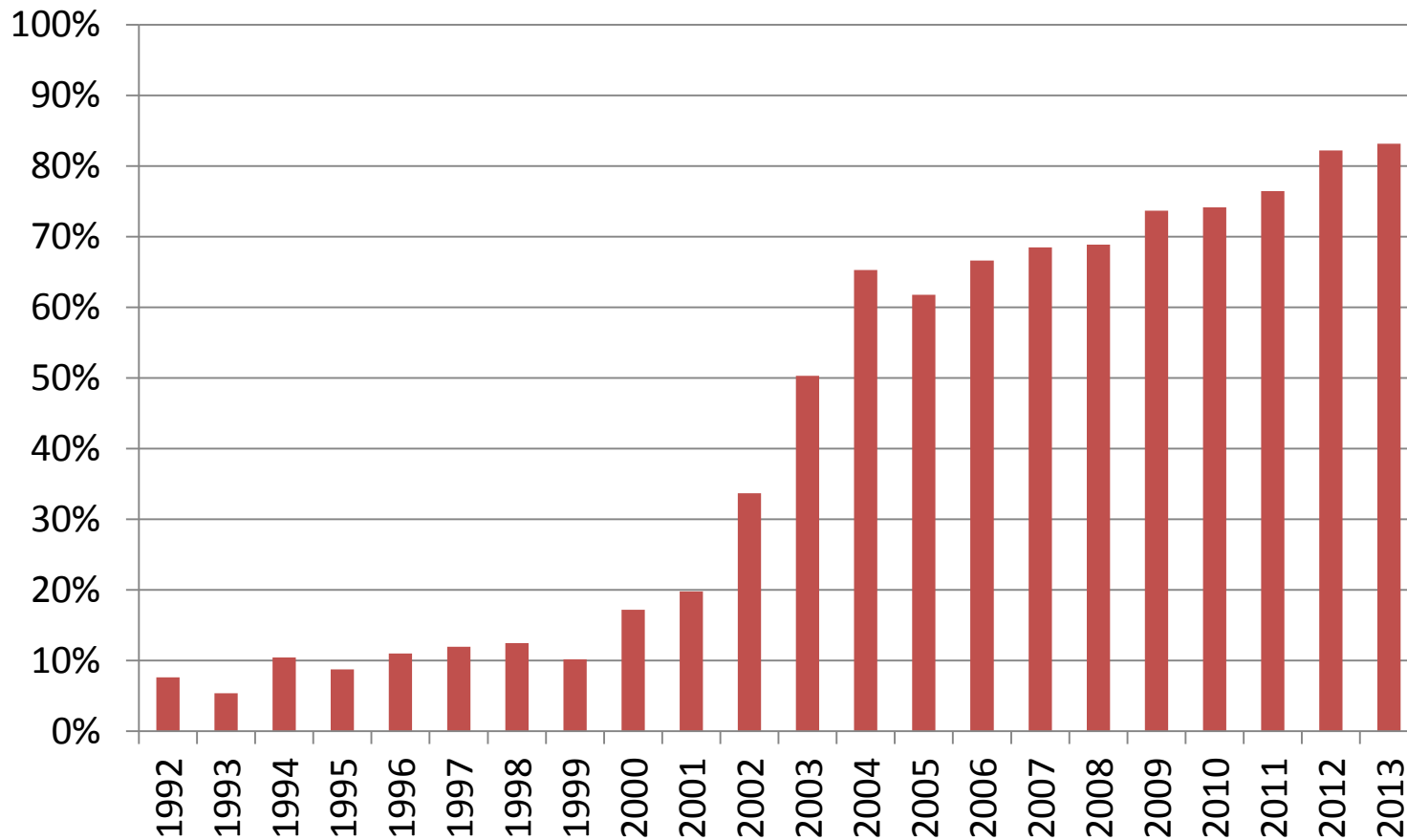
Data source:  
Subplaces:2011, Stats SA  
National Roads: Transport  
Province:2011, Municipal demarcation board



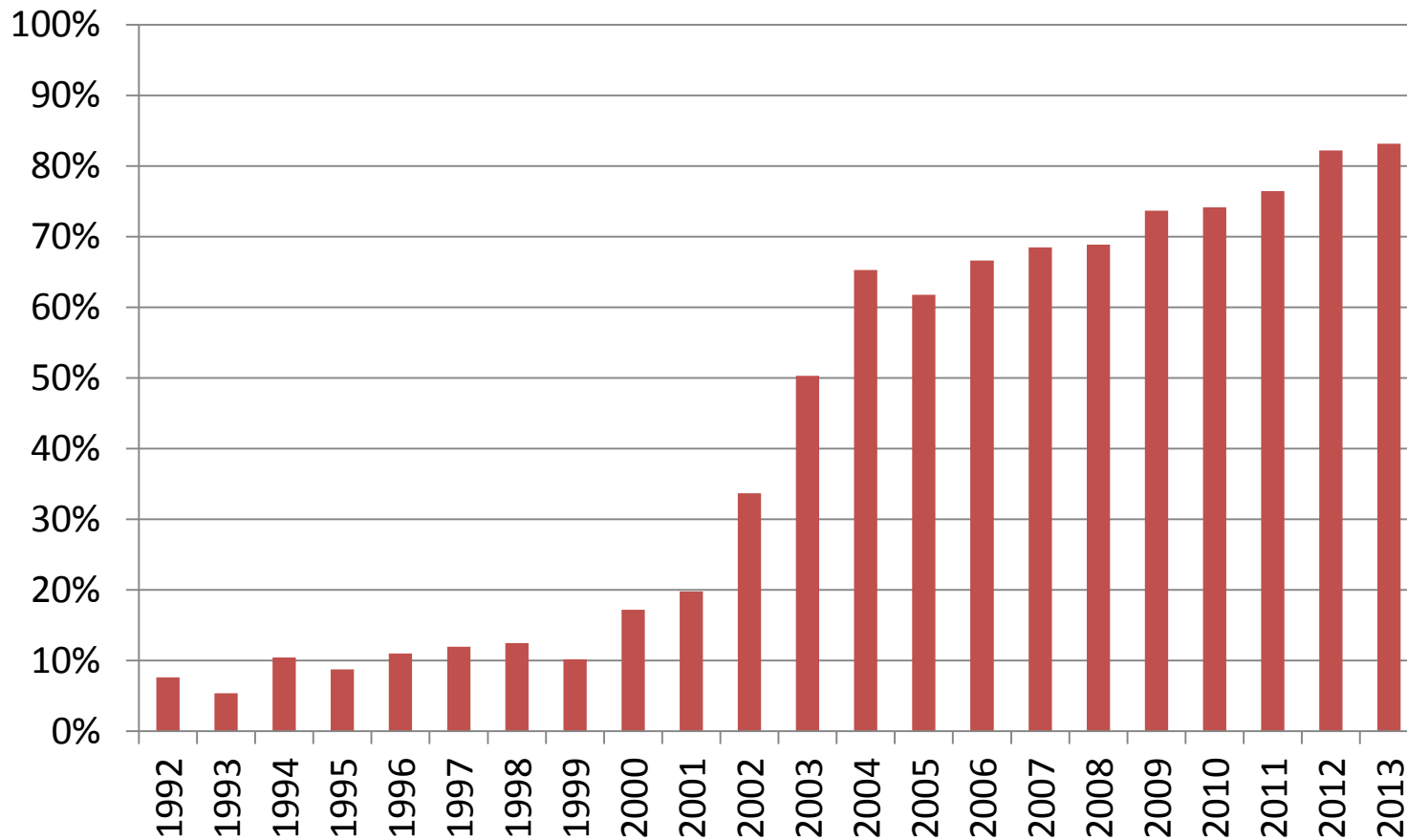
# Assessing coverage of CRVS

- Within the HDSS area:
  - Collect data on % coverage of births, deaths, ID documents, marriages
  - Feeding back to official statistics agencies and relevant government departments

## Percent of births registered by age 1year, Agincourt HDSS



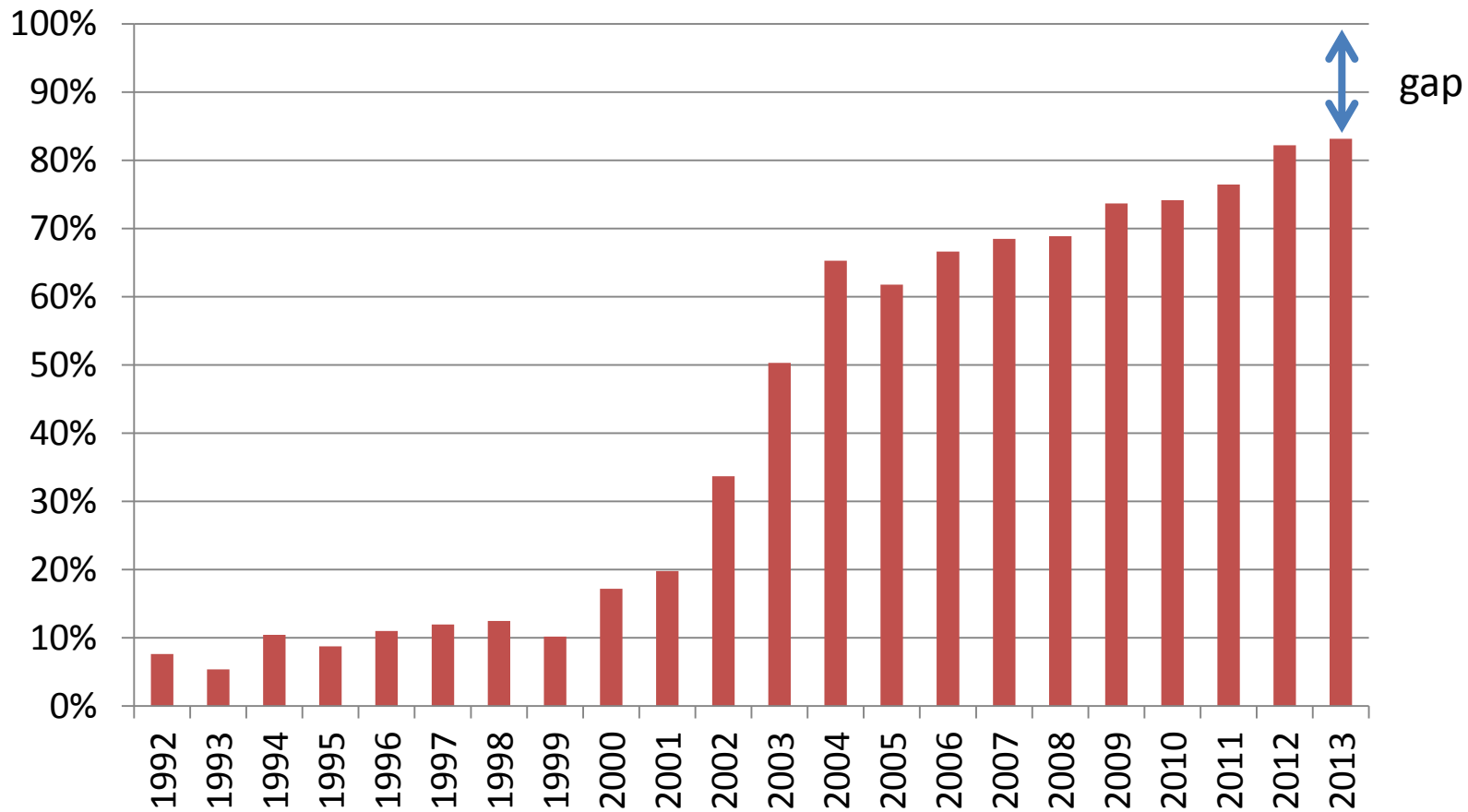
## Percent of births registered by age 1year, Agincourt HDSS



Intervention – infrastructure/ training



**Percent of births registered by age 1year, Agincourt HDSS**

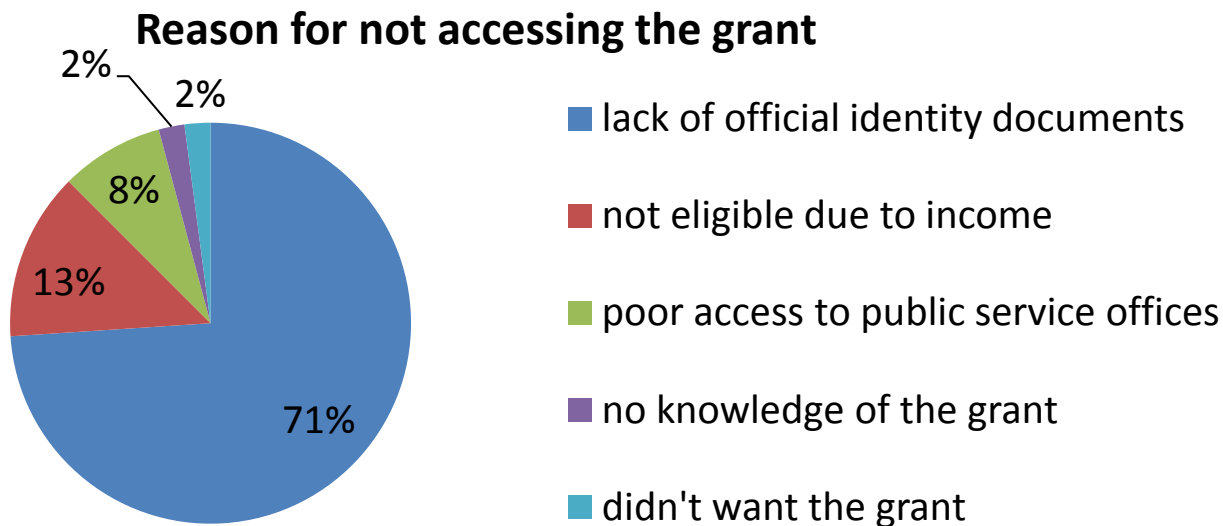
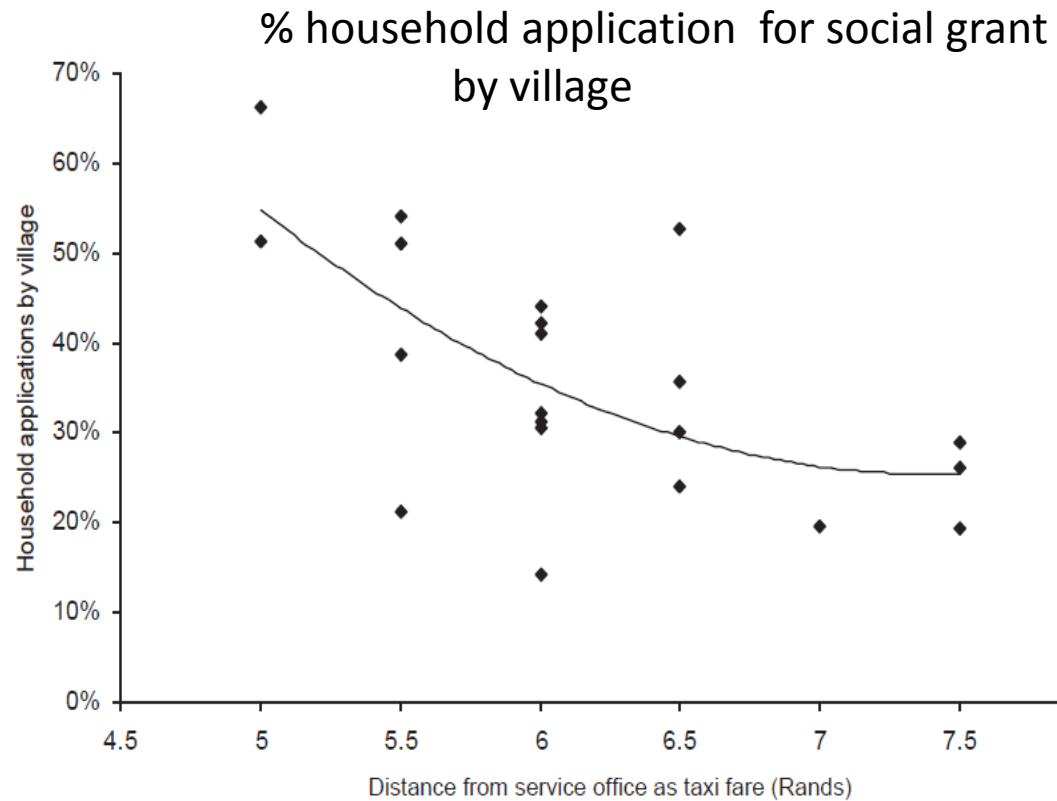




# Determining barriers to coverage

- Analyse socio-economic, cultural, geographic factors associated with non-registration (i.e. who is in the gap?)

Working with  
 Dept. Home  
 Affairs to  
 improve access  
 to ID documents



# Assessing Data Quality Cause of Death

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Original article

# **Record-linkage comparison of verbal autopsy and routine civil registration death certification in rural north-east South Africa: 2006–09**

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Chalapati Rao,<sup>2</sup> Kathleen Kahn,<sup>3,4,5</sup> Paul Mee,<sup>3,4</sup> Stephen Tollman,<sup>3,4,5</sup>  
Alan D Lopez<sup>6</sup> and Theo Vos<sup>7</sup>**

# Assessing data quality – Cause of Death

- Requires linking records in HDSS and CRVS
- Establishing cause of death categories
- Compare matching results with informant-reported death registration
- Using the VA diagnoses as reference,
  - misclassification patterns,
  - sensitivity,
  - positive predictive values and
  - cause-specific mortality fractions

# Matching Records

Common variables used for matching the death records:

- national identity number
- surname,
- sex,
- day of birth,
- month of birth,
- year of birth,
- day of death,
- month of death,
- year of death,
- village name
- institution/venue where the death took place

Matching achieved:  
61% of HDSS deaths

85% reported notification



# Cause of Death agreement

- For the 2264 matched cases, cause agreement was 15% for the WHO list, and 23% for the short list.

## Civil Registration diagnoses

## Verbal Autopsy diagnoses

	Diarrhoea	Tuberculosis	HIV disease	Remaining infectious & parasitic disease	Neoplasms	Diabetes	Meningitis & meningococcal infection	Hypertensive disease	Remaining heart disease	Cerebrovascular disease	Acute lower respiratory infections	Other respiratory disease	Symptoms & ill-defined conditions	External causes	Remaining natural causes	CR total	Positive predictive value %	95% Confidence Interval
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
1 Diarrhoea	20	47	163	23	16	3	10	3	7	10	21	3	10	8	21	365	5.5	3.4 to 8.3
2 Tuberculosis	4	124	139	21	9	2	9	1	7	4	15	0	11	11	11	368	33.7	28.9 to 38.8
3 HIV disease	2	36	73	6	4	0	9	2	1	3	8	0	1	2	9	156	46.8	38.8 to 54.9
4 Remaining infect. & parasitic disease	4	6	17	13	3	0	3	1	1	1	3	0	2	5	6	65	20.0	11.1 to 31.8
5 Neoplasms	1	4	10	10	28	0	0	0	4	3	1	0	3	1	7	72	38.9	27.6 to 51.1
6 Diabetes	3	4	4	2	1	15	0	1	2	7	1	1	1	0	3	45	33.3	20.0 to 49.0
7 Meningitis	2	4	21	4	0	2	15	1	2	1	0	1	1	0	2	56	26.8	15.8 to 40.3
8 Hypertensive disease	7	4	7	6	6	2	4	4	9	4	7	1	1	0	2	64	6.3	1.7 to 15.2
9 Remaining heart disease	4	10	18	7	4	3	0	4	10	8	6	0	4	1	5	84	11.9	5.9 to 20.8
10 Cerebrovascular disease	2	3	10	14	5	3	5	10	4	34	10	1	7	0	3	111	30.6	22.2 to 40.1
11 Acute lower respiratory infections	10	44	118	20	9	2	14	7	7	8	21	1	10	7	15	293	7.2	4.5 to 10.7
12 Other respiratory disease	0	6	31	6	1	1	2	4	1	4	3	4	1	2	6	72	5.6	1.5 to 13.6
13 Symptoms & ill-defined conditions	4	13	15	11	4	1	5	0	3	4	8	0	4	3	4	79	5.1	1.4 to 12.5
14 External causes	1	2	2	1	1	0	4	0	2	2	0	1	7	96	4	123	78.0	69.7 to 85.0
15 Remaining natural causes	5	22	44	15	7	2	4	5	15	6	10	2	5	7	35	184	19.0	13.6 to 25.4
VA total	69	329	672	159	98	36	84	43	75	99	114	15	68	143	133	2137		
Sensitivity %	29.0	37.7	10.9	8.2	28.6	41.7	17.9	9.3	13.3	34.3	18.4	26.7	5.9	67.1	26.3			
95% CI lower level	18.7	32.4	8.6	4.4	19.9	25.5	10.4	2.6	6.6	25.1	11.8	7.8	1.6	58.8	19.1			
95% CI upper level	41.2	43.2	13.5	13.6	38.6	59.2	27.7	22.1	23.2	44.6	26.8	55.1	14.4	74.8	34.7			

# Implications

- data linkage between these sources is possible
- extent and diversity of mis-attribution of HIV deaths
- systematic biases in CR cause-of-death data -  
urgency to improve CR cause-of-death data
- careful interpretation -> to better inform rural health  
prioritization

# In conclusion:

## HDSS impacting on CRVS

- Relationship with official agencies
- Comparison of the known (HDSS) and the registered
- Analysis of non-registration
- Intelligence on quality of CRVS information
- Requires matching datasets – ethical concerns
- Poor quality Cause of Death data
- More HDSS centres, more time-points