



# Comparison of rural villages livestock herd health scores using a Proportional Odds Model



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## Introduction and objectives

Animal health data obtained through interviews generated valuable information of the local animal health situation.

Data was collected from the Amatole District Municipality (DM) in the Eastern Cape Province, South Africa.

Data was analyzed to provide information on the homogeneity of livestock health condition.

Animal health information was collected through closed questions which addressed the most common issues to be encountered in the area.

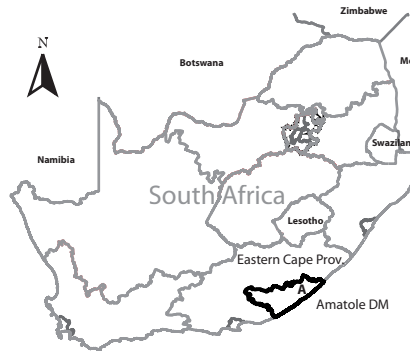
## Material and methods

Questions were designed to allow easy understanding by farmers in the area.

Two health scores were created, one for cattle and one for sheep - goats.

The score aggregated information on the 3 to 4 most common livestock problems in the area, namely:

- tick diseases
- condition loss
- reproductive problems
- internal parasites (only sheep - goats).



The Eastern Cape Province in South Africa.

## Material and methods

Each affirmative answer was recorded with a "1" and answers were added giving one health score per farmer.

Data was summarized per village. A proportional odds model (Dohoo et al., 2010) was used GENMOD - SAS and multiple comparisons between villages were performed.



A farmer with his flock in the Esiqumeni (2) village.

Stat. significantly different villages were recorded at the confidence level dictated by the Bonferroni principle ( $p=0.0023$ ).

## Results

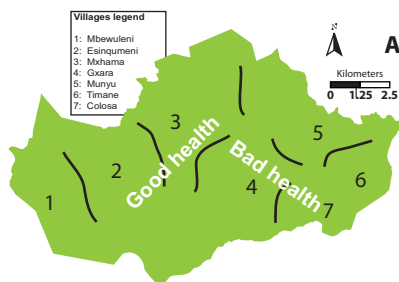
No significant differences were found for cattle ( $p>0.04$ ).

Cattle Health score	Village (Code)														
	Colosa (7)		Esiqumeni (2)		Gxara(4)		Mbewuleni (1)		Munyu (5)		Mxhama (3)		Timane (6)		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
0 Good	0	0.0	29	18.2	11	11.2	15	18.1	23	18.7	34	23.0	6	12.2	118
1 Reg. Good	3	13.0	37	23.3	18	18.4	20	24.1	14	11.4	22	15.0	11	22.5	125
2 Reg. Bad	14	60.9	42	26.4	39	39.8	30	36.1	50	40.7	47	32.0	18	36.7	240
3 Bad	6	26.1	51	32.1	30	30.6	18	21.7	36	29.3	44	30.0	14	28.6	199

Significant differences were found for sheep and goats when comparing the villages Esiqumeni (2) vs. Colosa (7)  $p=0.0007$  and the villages Gxara (4) and Mxhama (3)  $p=0.0009$ .

Sheep and Goats Health score	Village (Code)														
	Colosa (7)		Esiqumeni (2)		Gxara(4)		Mbewuleni (1)		Munyu (5)		Mxhama (3)		Timane (6)		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
0 Good	3	8.1	93	34.1	30	21.3	28	24.4	51	27.4	65	28.3	18	21.7	288
1 Reg. Good	5	13.5	29	10.6	18	12.8	17	14.8	16	8.6	32	14.0	13	15.7	130
2 Regular	5	13.5	40	14.7	32	22.7	19	16.5	31	16.7	45	19.7	13	15.7	185
3 Reg. Bad	12	32.4	55	20.2	31	22.0	27	23.5	47	25.3	48	21.0	26	31.3	246
4 Bad	12	32.4	56	20.5	30	21.3	24	20.9	41	22.0	39	17.0	13	15.7	215

## Discussion



Ward no. 4, Mbashe Local Municipality, Amatole DM

The use of a proportional odds model makes possible to easily compare the villages health status and areas of *good* and *bad* health can be identified.

This preliminary evaluation may help the State Vet. Services (SVS) to determine the causes these differences.

Sheep - goats health status was heterogeneous being two geographical areas identified: one of *bad* and one of *good* health.

Further evaluation of the SVS support activities in these areas and other potential factors that could cause these differences (i.e.: infrastructure) are needed to improve local animal health and reduce poverty in the area.