COVERAGE OF MASS DOG VACCINATION TOWARDS RABIES ELIMINATION IN MAKUENI COUNTY, KENYA.

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Introduction

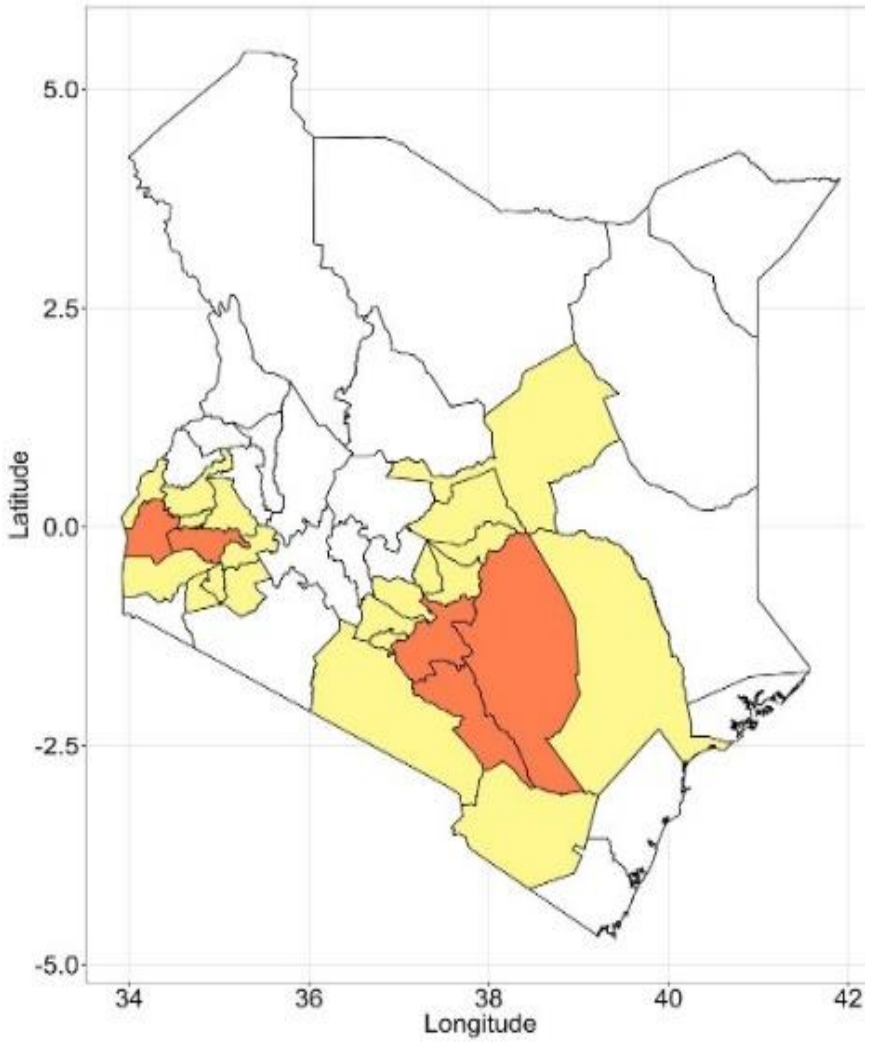
- Kenya National Rabies Elimination Strategic for the elimination of dog-mediated human rabies by the year 2030 launched in 2014.

- The strategy is hinged on four pillars:
  - Mass dog vaccination
  - Timely provision of pre and PEP
  - Strengthening surveillance for rabies cases and response to outbreaks
  - Public health education and awareness on rabies, its prevention and control

Methodology

Study Area

Makueni county was one county selected to pilot the strategic plan for the elimination of human rabies in Kenya by 2030. It has an estimated human population size of 987,653 and an estimated dog population of 125,706 as at 20215.



Dog census

A county-wide dog census was conducted prior to the start of the exercise to support planning and evaluation of coverage

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Methodology continued……

Pilot phase

The county conducted a pilot of the vaccination program in three wards in August 2015 and five wards in December 2015 to test the efficiency of the processes and identify challenges that might affect the implementation of the program.

Planning and coordination

- The mass dog vaccination program was implemented at ward level
- Rabies elimination coordination committees were constituted at county and sub-county
- The 30 wards were divided into three cohorts and vaccinations done in three phases each year to coincide with school holidays when pupils were at home and were expected to participate in presenting the dogs for vaccination.

Methodology continued……

Publicity

- A week before the vaccination dates, a schedule and posters were distributed and placed at market centers.
- Administrators such as chiefs, ward administrators, church leaders and other local leaders were brought on board to support the publicity.
- A public address system mounted on a vehicle was also used once across the area scheduled for vaccination before the vaccination day

Methodology continued……

Vaccinations

- The vaccination campaign used static vaccination points
- Each vaccinator was assigned two vaccination sites each day
- Private sector vaccinators were paid on a casual basis of a daily rate of US$18.5(Kes 2,000) including their transportation costs, while, public service vaccinators were provided with fuel and a lunch allowance of about US$13(Kes 1,400).
- The vaccinators did the vaccination, issuing vaccination certificate and recording. The Sub county teams collated the data and forwarded to the county for final analysis.

Data analysis

- Dog population was estimated using baseline dog census done in 2015 and projected for subsequent years based on a the human: dog ratio using projected human population for 2017
- The vaccination rate was determined by dividing the number of dogs vaccinated by the dog population for each year and expressed as percentage using Rstudio.
- To estimate the cost of mass dog vaccination, costing for all inputs were aggregated per year and divided by the total number of dogs vaccinated to determine cost of vaccinating one dog.

Results

Dog population census

- Conducted in 2015 – **125,706**
  - ➢Males – **62%**
  - ➢Females – **38%**
- Human population 2015 – 987,653
- Human dog population ratio - **8:1**

Pilot mass dog vaccination 2015

- Conducted in 15 wards e.g 3 wards

Ward	Coverage 2015	Coverage 2016
Mbitini	36%	61%
Mtito Andei	19%	42%
Ivingoni/Nzambani	48%	83%

Lessons learnt from the pilot

- Reduce distance between vaccination sites
- Make publicity effective – Posters
- Change from one-person per fixed vaccination to one-person two vaccination points – Reduce cost, reduce dog walking distance, vaccination points closer to more people.

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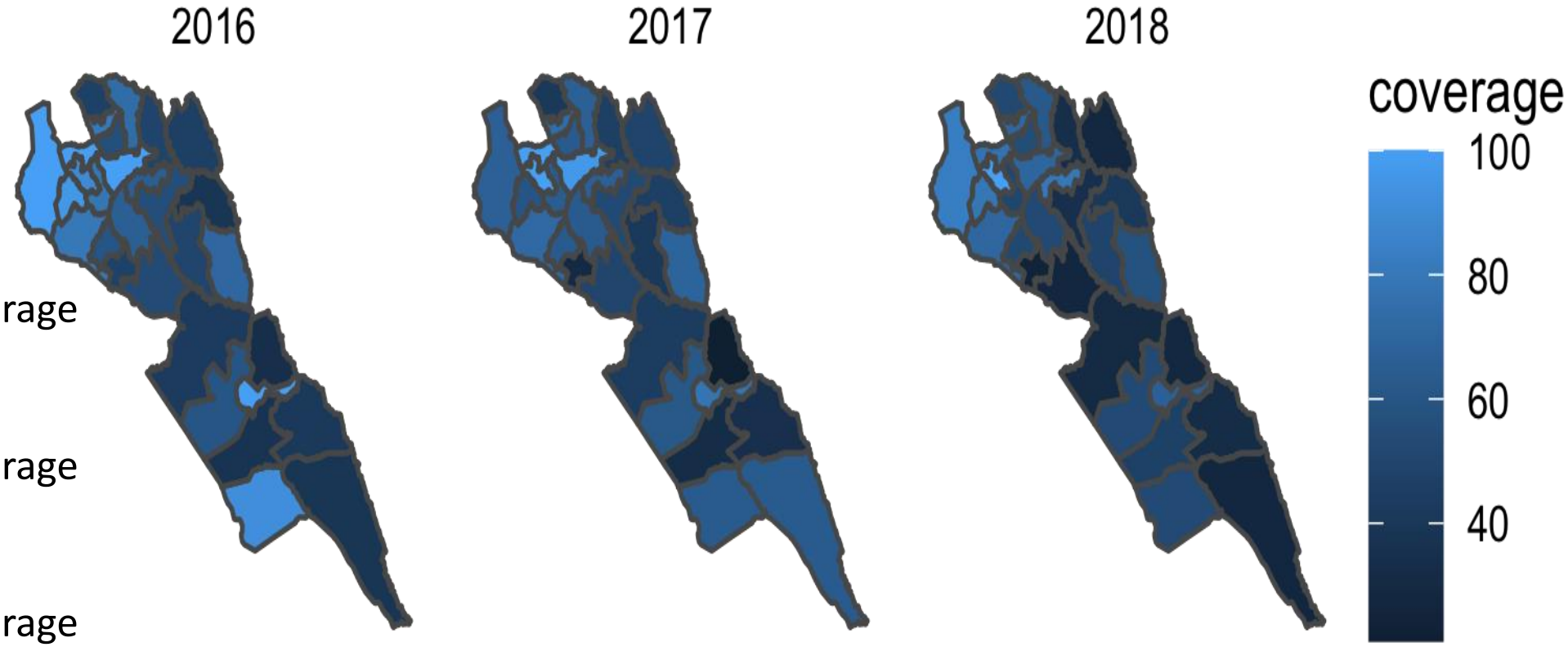
Coverage

- 2016 – 79,409
  - Vaccination coverage **63%**
- 2017 – 79,263
  - Vaccination coverage **60%**
- 2018 – 74,726
  - Vaccination coverage **57%**



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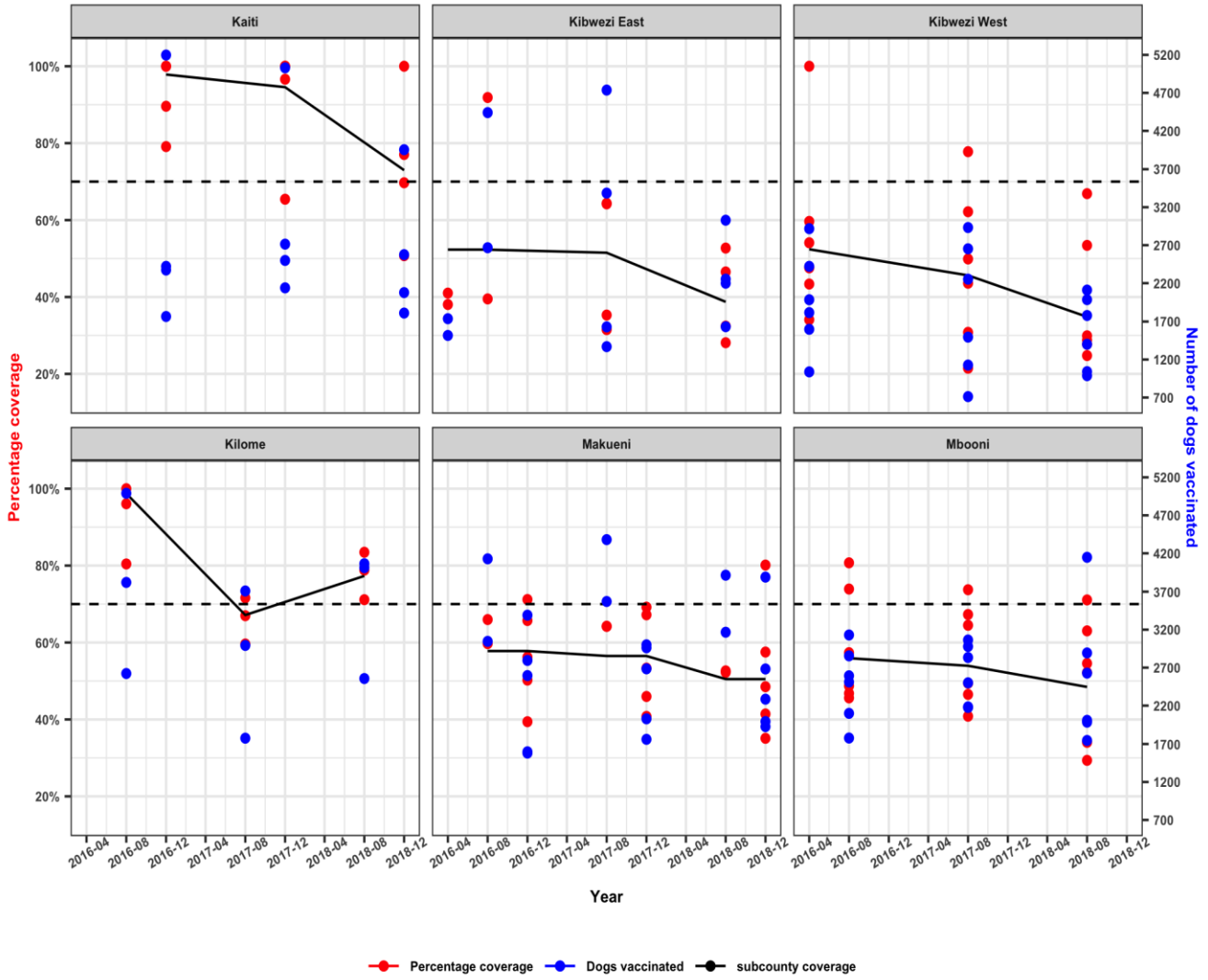
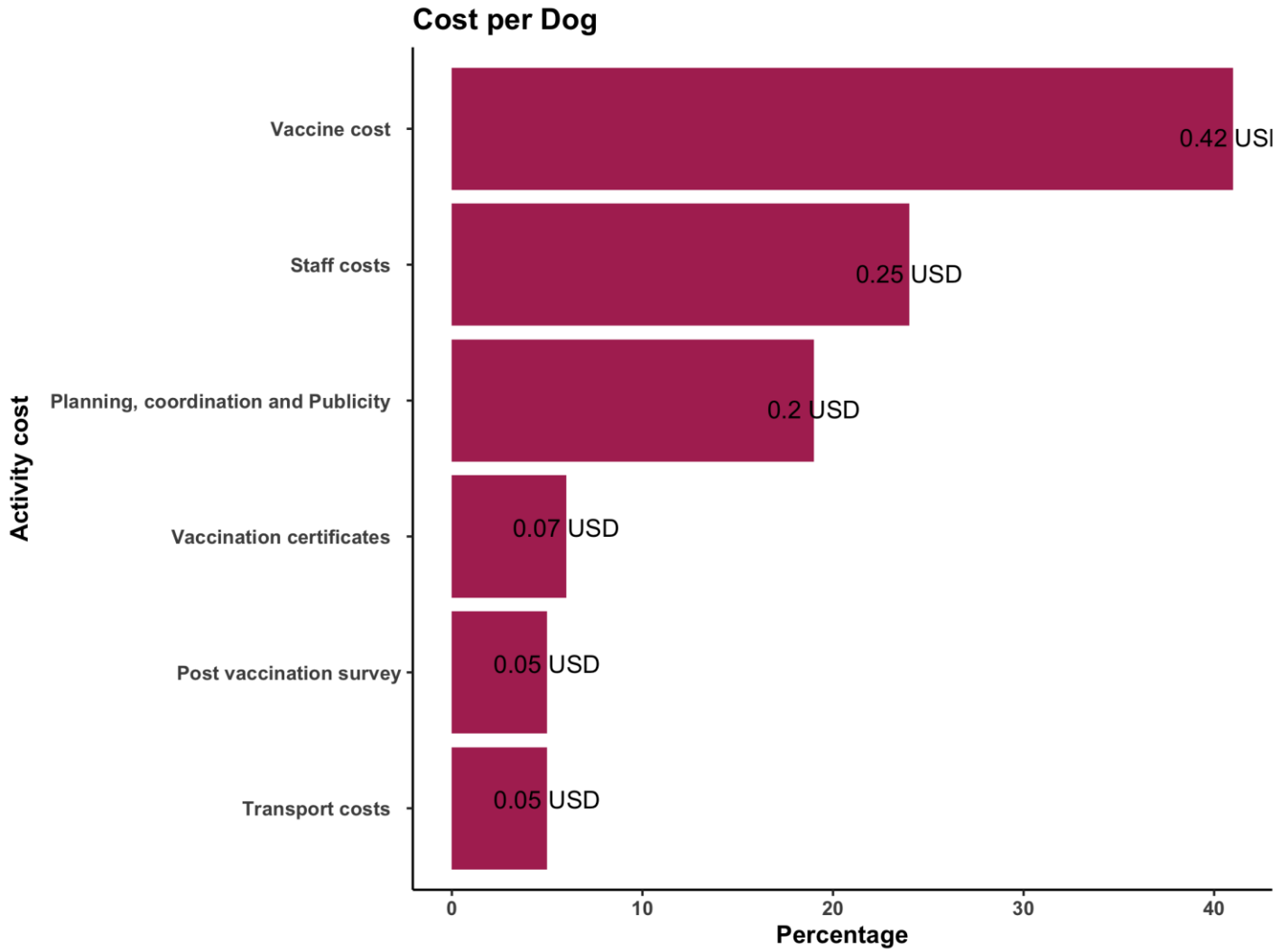
Vaccination coverage per subcounty



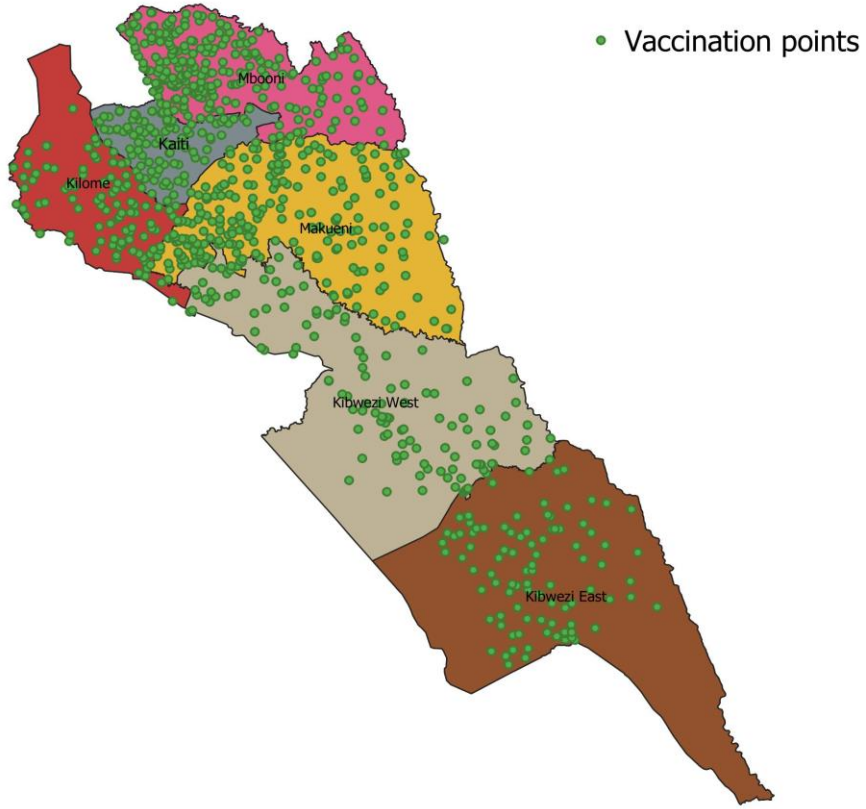
Sub counties	2016	2017	2018
Mbooni	56%	54%	48%
Kilome	99%	67%	77%
Kibwezi West	52%	46%	35%
Kibwezi East	52%	52%	39%
Makueni	58%	57%	50%
Kaiti	98%	95%	73%

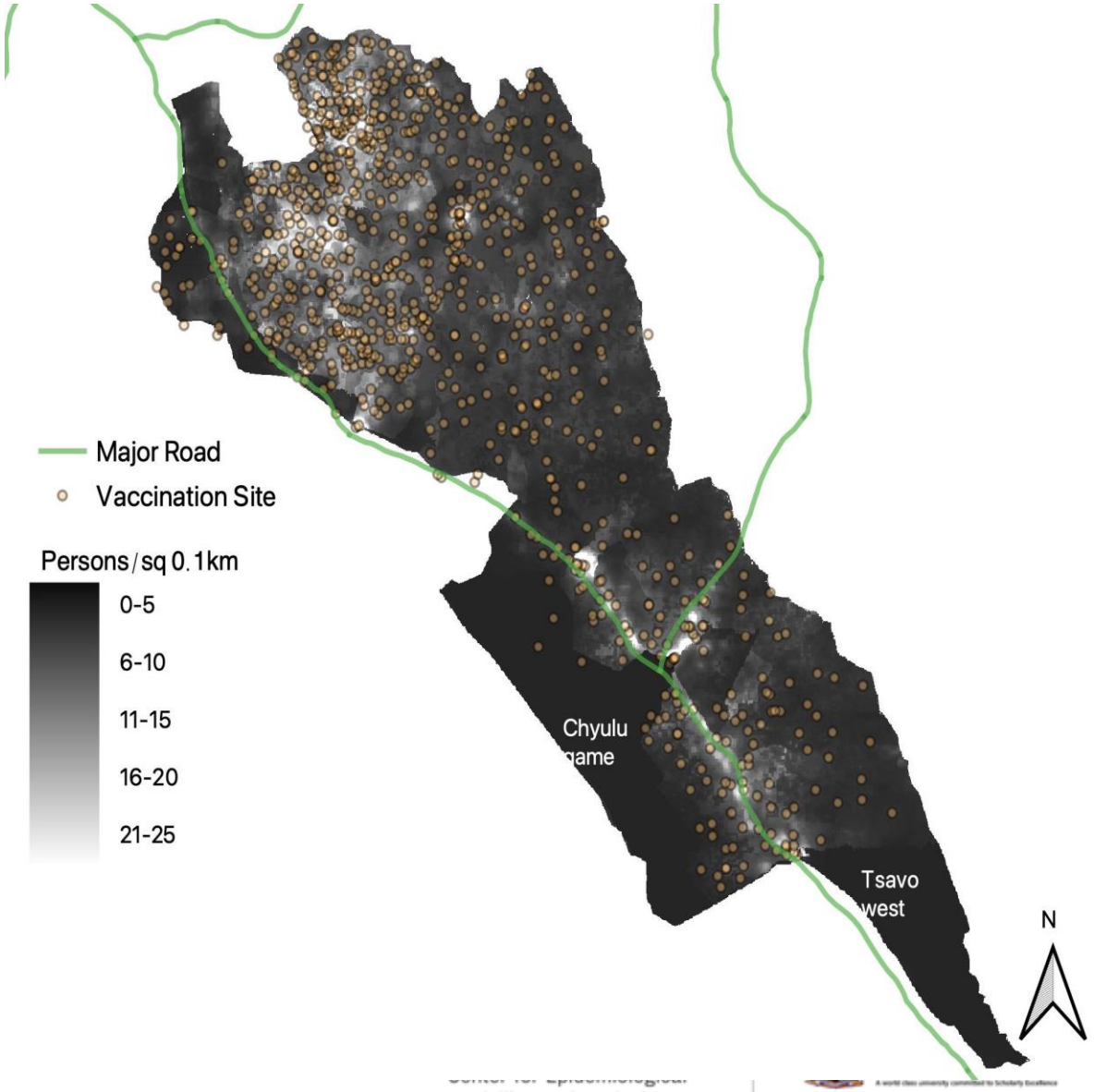
Cost per dog vaccinated



- Total cost per dog – USD 1.04, inclusive of post vaccination survey
- Makueni cost of vaccination 1 dog – USD 0.99
  - Procurement of vaccines - USD 0.42 (40%)
  - Staff cost - USD 0.25 (24%)
  - Coordination and publicity - USD 0.2 (19%)

Vaccination point and human population





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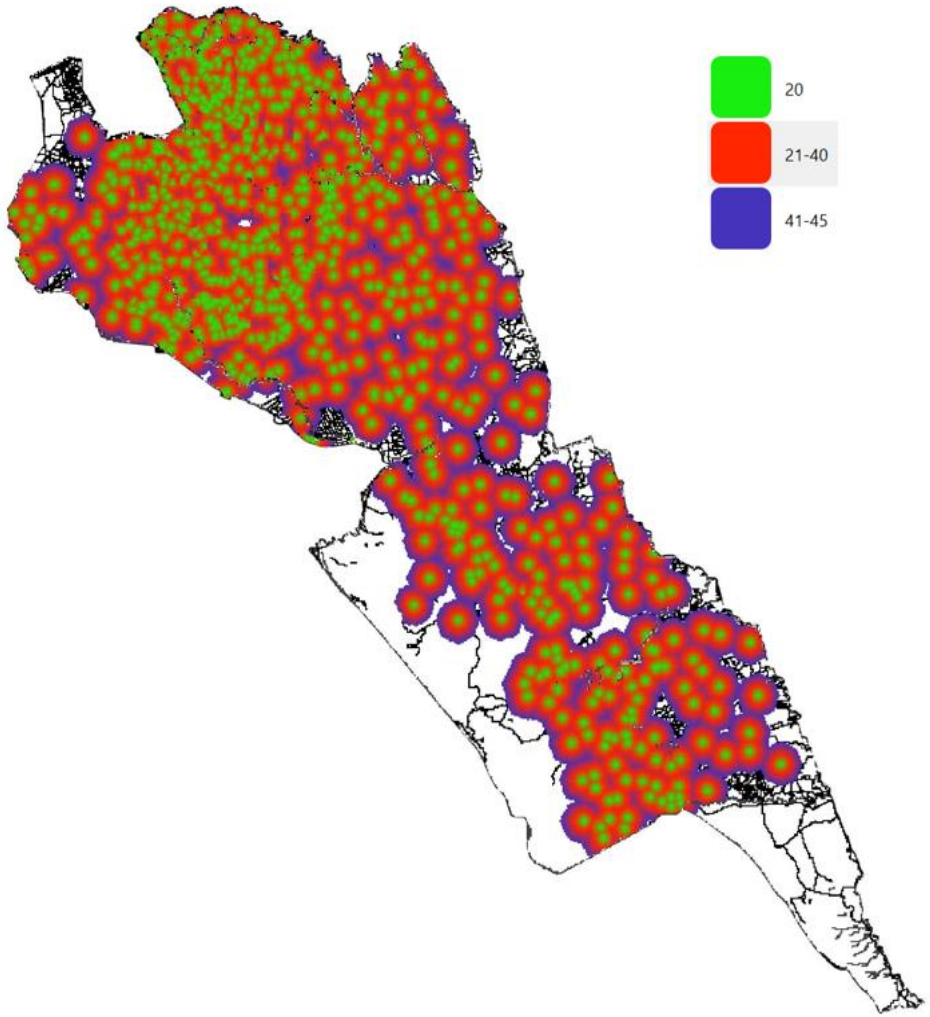
Modelling and Analysis

Time to vaccination point



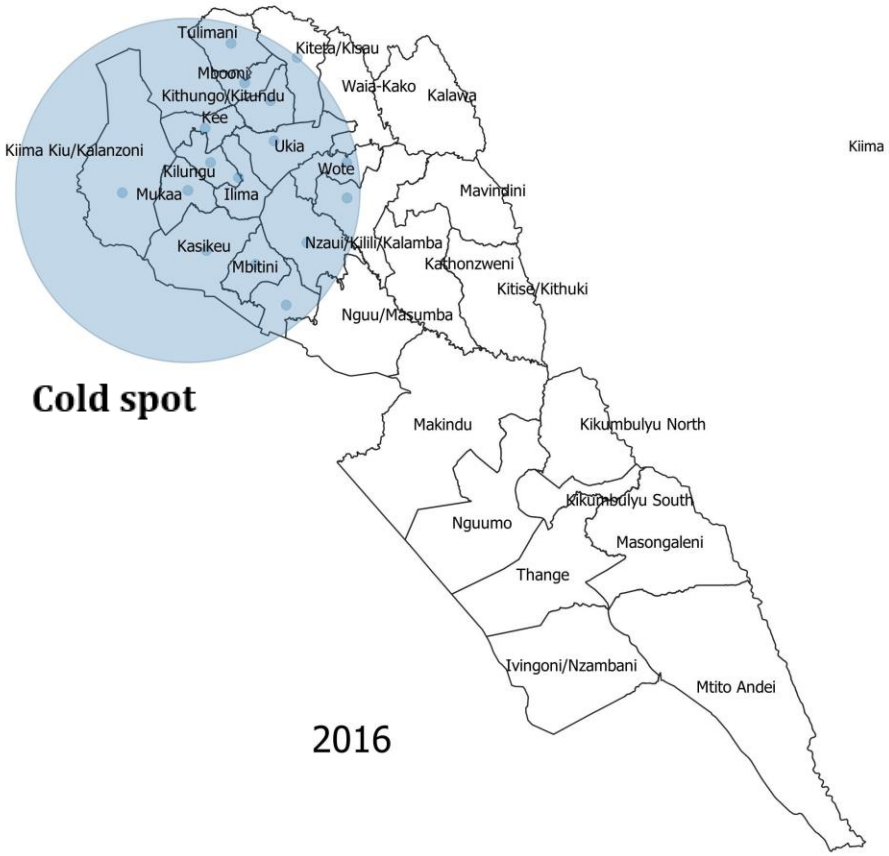
Time taken to vaccination points

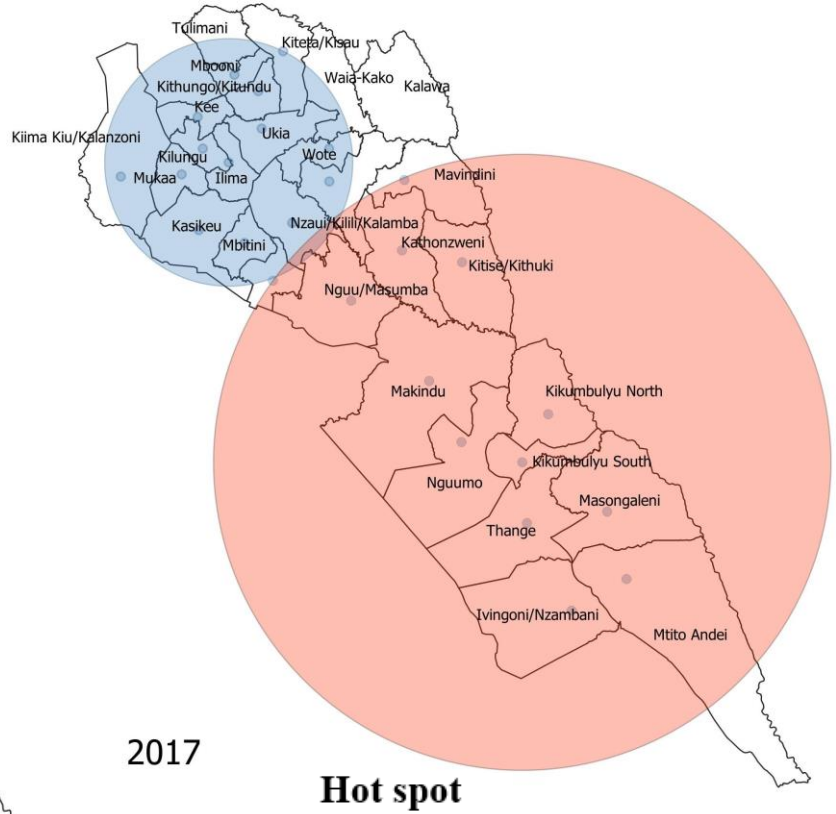
- <20 minutes – 70%
  - 1.7km
  - 86,581 dogs
- Between 21-40 – 28%
  - 3.3km
- Between 41-45 – 2%
  - 3.8km

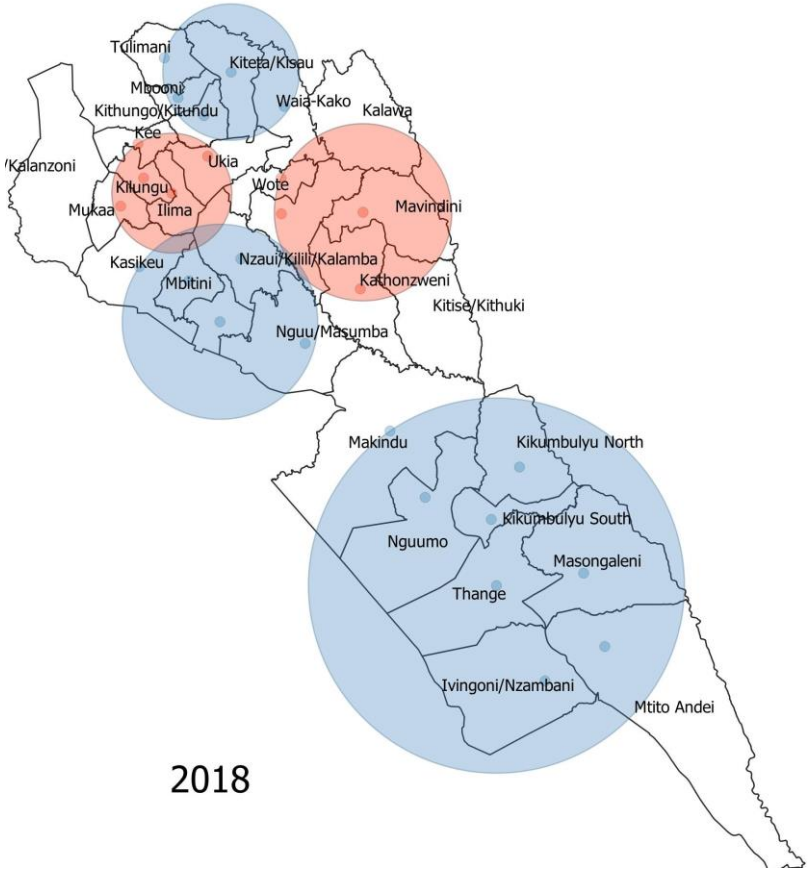
Distance and coverage

- For every 100m increase in distance between vaccination points, coverage is reduced by 1.3% (CI 0.3-2.1)
- Sample positivity rate – 93% (13/14)

Clustering of vaccination coverage







- Identify areas with low vaccination coverage which can help develop priorities for the wards.
- Evidence of geographical disparity in the vaccination coverage.

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Conclusion

- It is possible to conduct a mass dog vaccination by a county government working with partners
- For success, the effort must be sustained throughout the three year period
- Key areas to take care of include the publicity, distance dog has to be walked, timing of the programme, use of personnel

Recommendation

- To achieve elimination in the country, there needs to be coordinated effort throughout the country