Steering Committee Meeting on 27 – 28, November 2019 at Vientiane

Myanmar
Leptospirosis
Preliminary Descriptive Data

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ECOMORE II

AFD
AGENCE FRANÇAISE DE DÉVELOPPEMENT

Institut Pasteur du Cambodge

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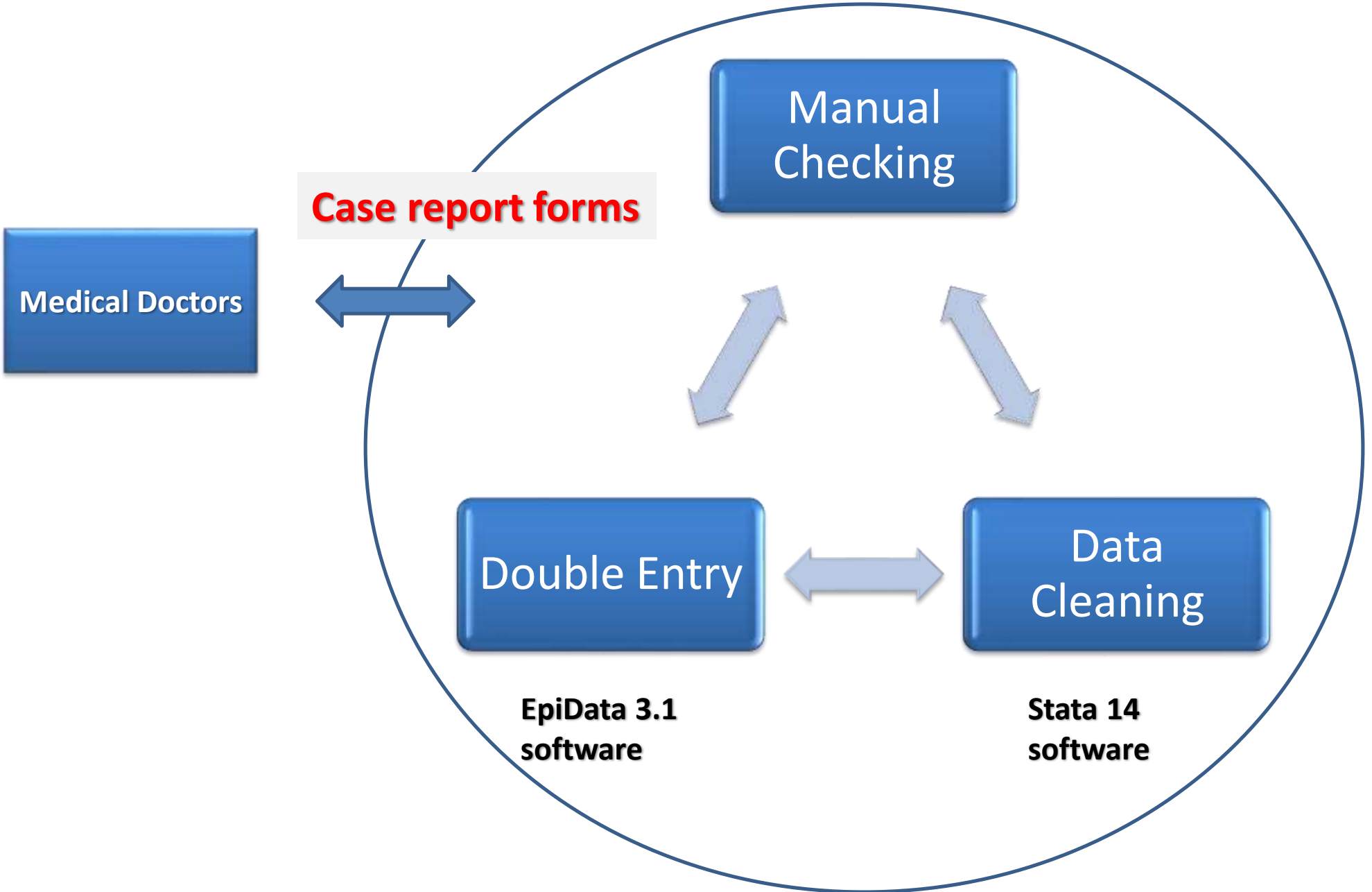
WP Myanmar

Contents

1.Data Management

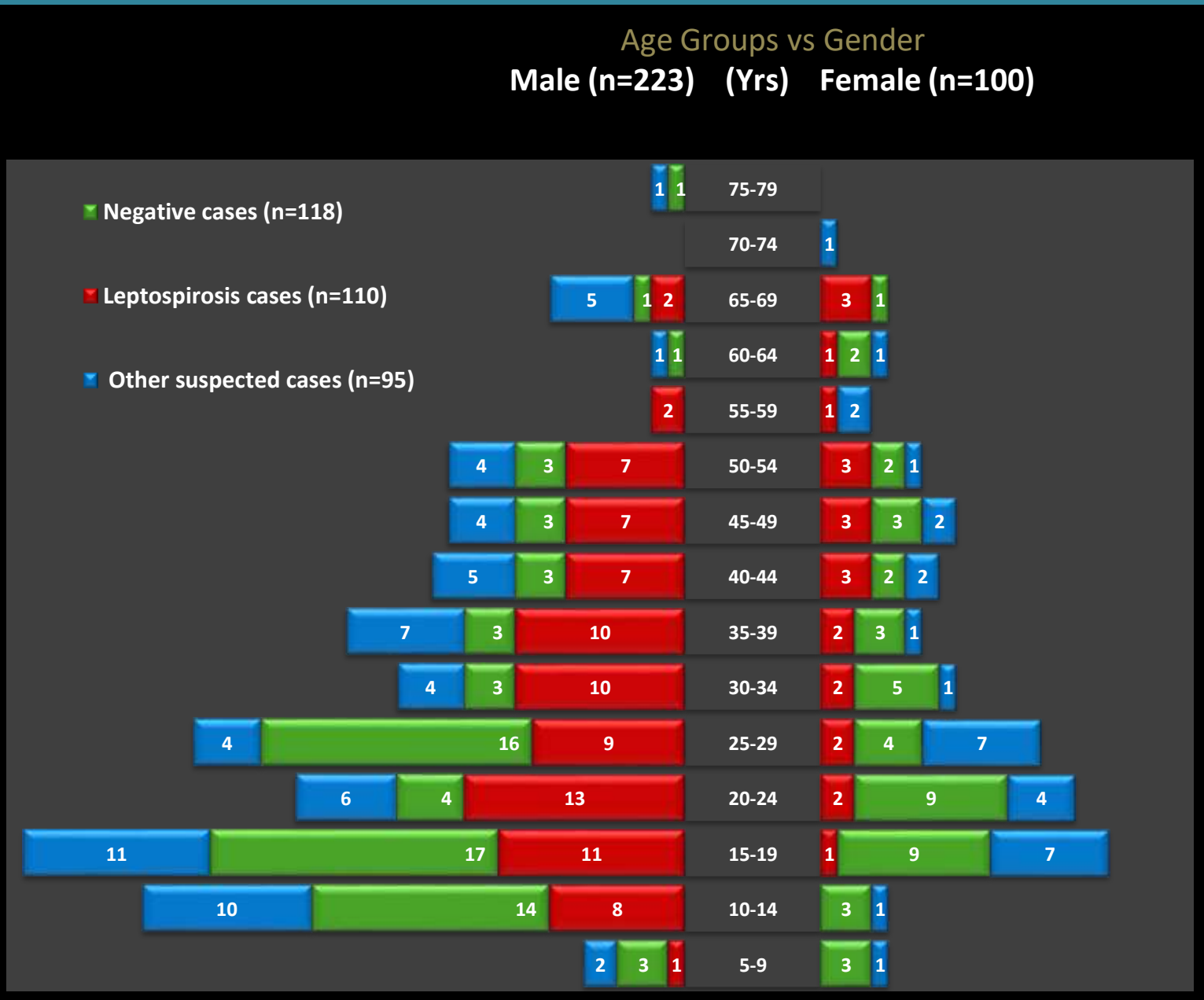


2.**Study sample distribution (n=323)** according to rainfall (2018 September to 2019 September) at 10 hospitals in Yangon

		Month	Total rainfall and / or snowmelt (mm) of Yangon https://en.tutiempo.net/climate/ws-480970.html	Total suspected case	Leptospirosis case (Confirmed/ Probable)	PCR Positive
PILOT	1	2018 September	393	1	1	0
	2	2018 October	198	12	5	1
	3	2018 November	58	9	5	1
	4	2018 December	61	6	2	1
		2019 January	0	Pilot Phase Evaluation		
		2019 February	0			
		2019 March	0			
		2019 April	0			
	5	2019 May	190	8	1	0
	6	2019 June	345	70	12	0
	7	2019 July	527	82	22	3
	8	2019 August	536	67	23	3
	9	2019 September	329	68	39	9
		Total		**323**	**110**	**18**

- With increasing rainfall and by 10 project medical officers at each hospital, suspected cases - can catch more.
- Lepto 34% out of 323 total suspected case
- PCR Positive in every month.

3.Study sample distribution (n=323) according to age and gender within 9 months (2018 September to 2019 September) at 10 hospitals in Yangon



Leptospirosis cases (n=110)

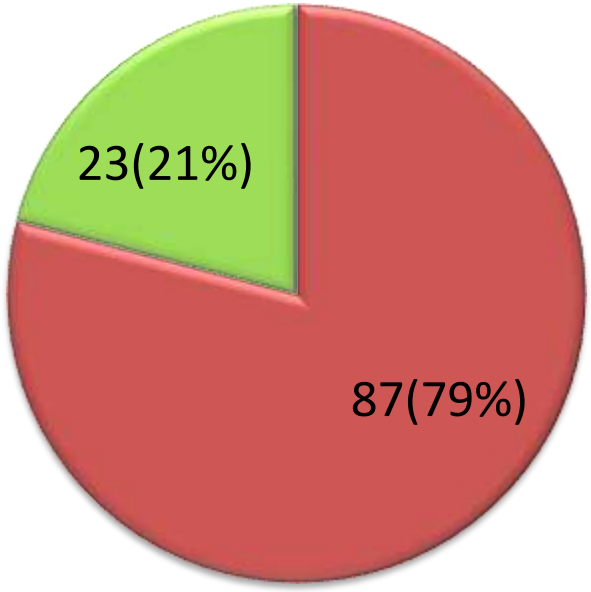
Age in year

Female (n=23)
Mean - 43 (SD 15.3)
Median - 44 (IQR 21)

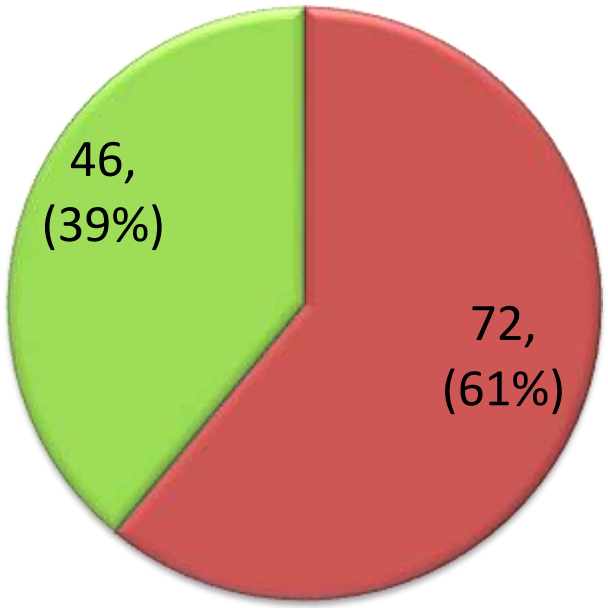
Male (n=87)
Mean - 31.6 (SD 13.7)
Median - 30 (IQR 21)

3.Case distribution (n=228) (according to gender) within 9 months (2018 September to 2019 September) at 10 hospitals in Yangon

Leptospirosis cases (n=110)



Negative cases (n=118)



Male

Female

3.Case distribution (n=228) (according to age within 9 months (2018 September to 2019 September) at 10 hospitals in Yangon

Age Groups (yrs)	Leptospirosis cases	Negative cases
5-9	1	6
10-14	8	17
15-19	12	26
20-24	15	13
25-29	11	20
30-34	12	8
35-39	12	6
40-44	10	5
45-49	10	6
50-54	10	5
55-59	3	
60-64	1	3
65-69	5	2
70-74		
75-79		1
Total	**110**	**118**

Leptospirosis cases (n=110)

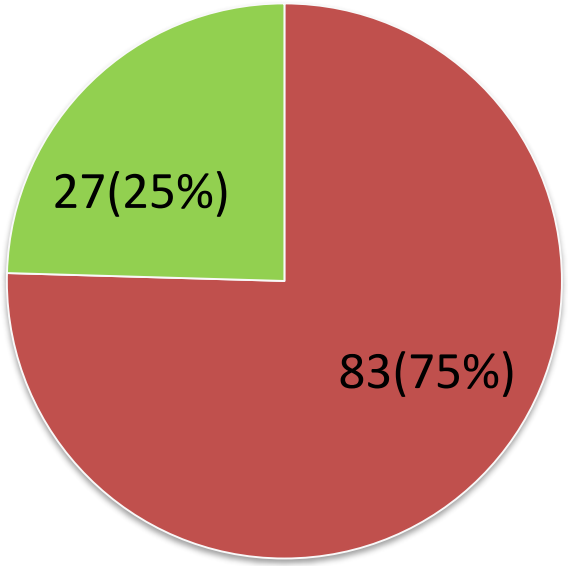
Range 9 – 67
Mean 34.0 (SD 14.7)
Median 33 (IQR 24)

Negative cases (n=114)
(excluded 4 outliers)

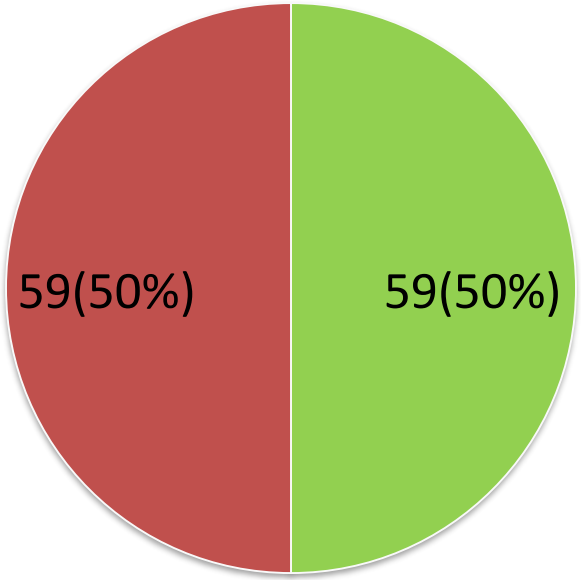
Range 7 – 60
Mean 25.2 (SD 12.6)
Median 23 (IQR 16)

4.According to occupational status in last month

Leptospirosis cases (n=110)



Negative cases (n=118)

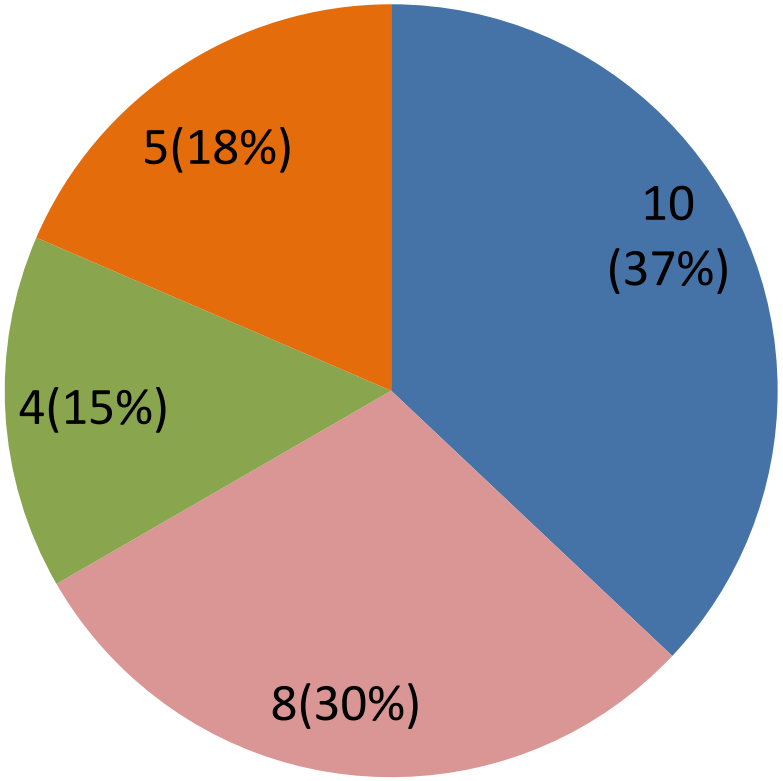


Employed

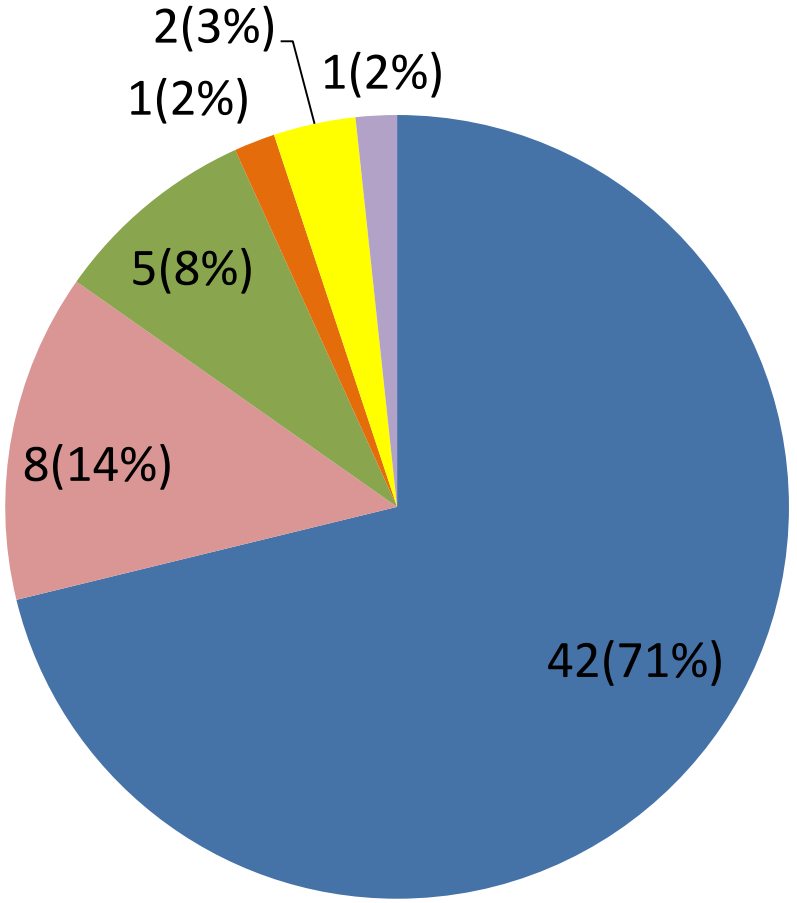
Unemployed

4.According to occupational status in last month

Leptospirosis cases
27 out of 86 (31%)



Negative cases
59 out of 86 (69%)



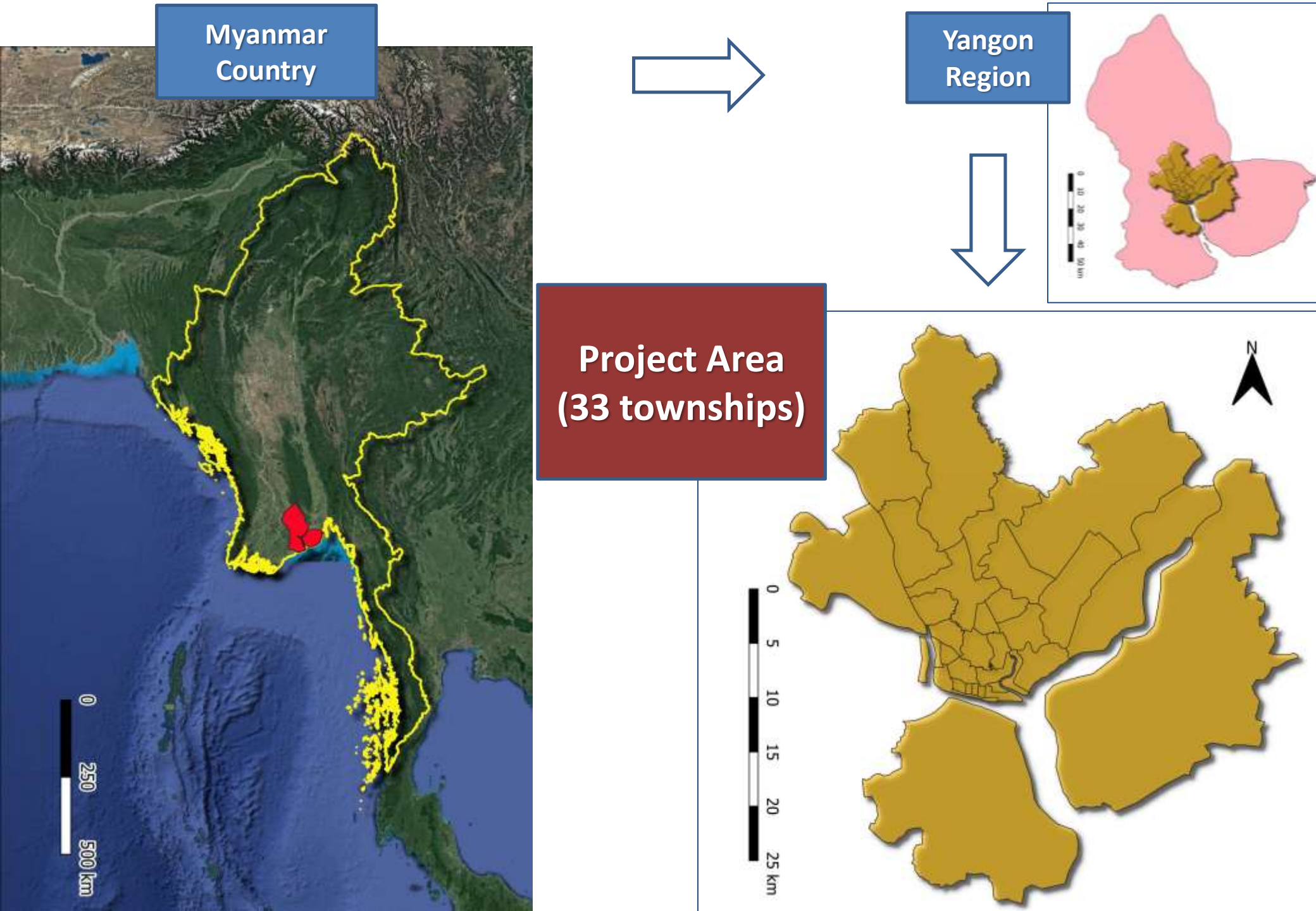
Student
Housewife
Jobless
Retired
Monk/Nun
Child

4.According to occupational status

Employed	Leptospirosis cases 83 out of 142 (58%)	Negative cases 59 out of 142 (42%)	Total (n=142)
Office staff/ factory staff/ shop staff	11	12	23
Accomodation and food service worker	11	10	21
Construction worker	15	5	20
Transportation,storage, manufacturing and craft	15	5	20
General worker	9	4	13
Car/Metal/Electronics	6	3	9
Sewing (Textile)	3	4	7
Selling	4	2	6
Human health professional		5	5
Security/ guard/police	1	3	4
Fishing / fishery worker/ fish seller	2	1	3
Cleaning		2	2
Garden	2		2
Artesian well service		1	1
Forestry worker	1		1
Municipal staff (water distribution)	1		1
Rice and crop farmer	1		1
Translator		1	1
Waste management worker	1		1
Animal stock breeder		1	1
Total	**83**	**59**	**142**

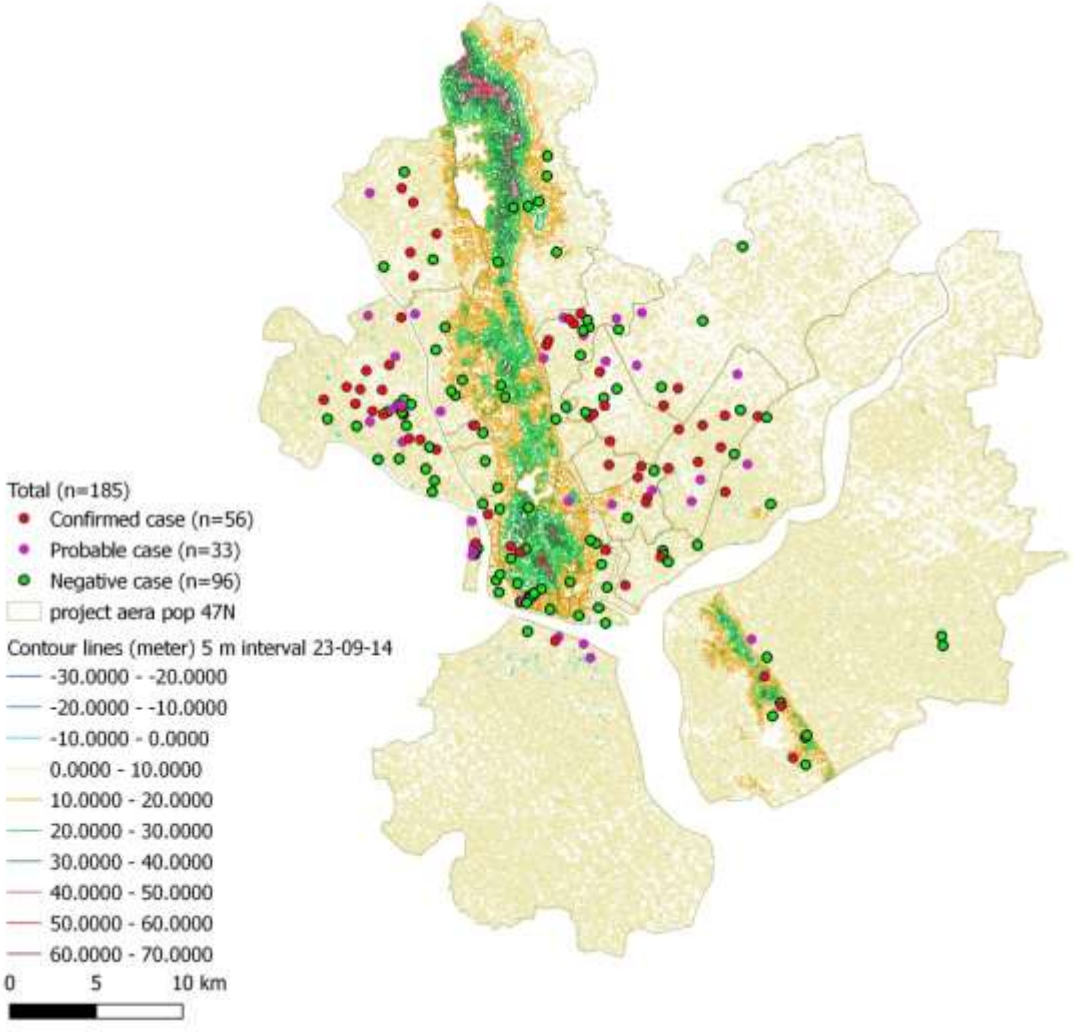
>60%

100%

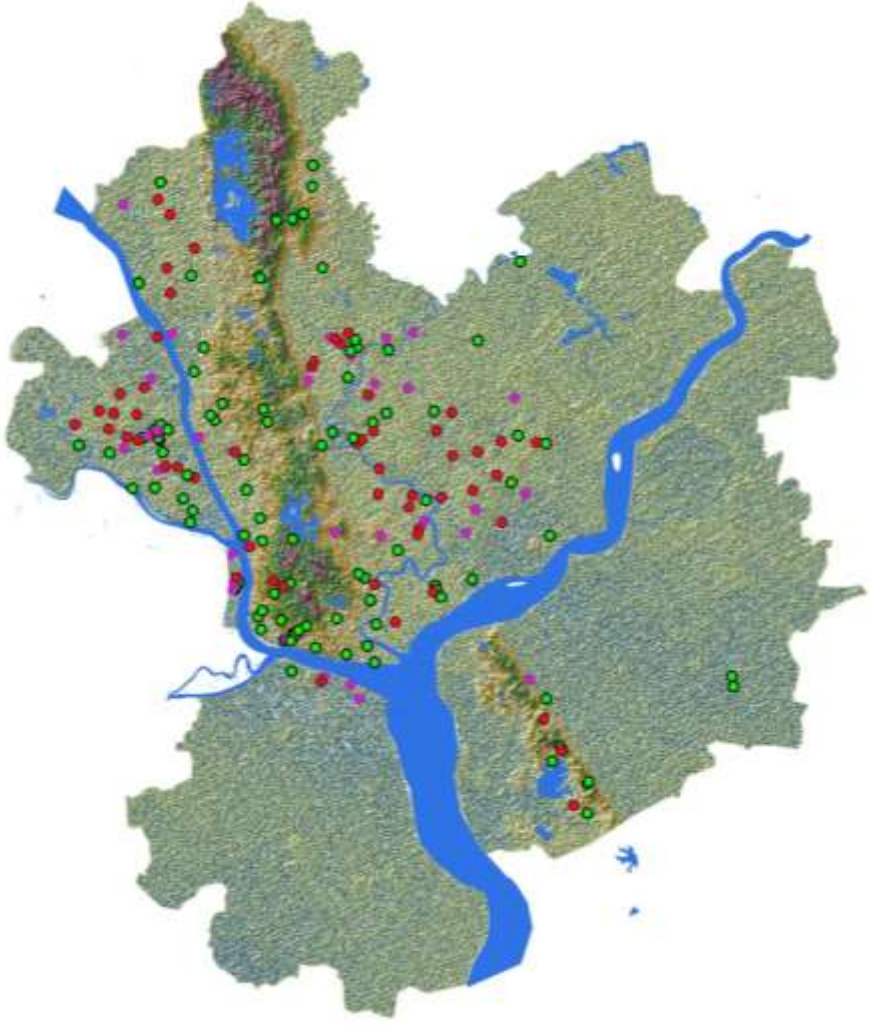

Myanmar
Country
Yangon
Region
Project Area
(33 townships)
N
0
250
500 km
0
5
10
15
20
25 km

5.According to altitude extracted from raster image from usgs.gov as of 23-09-2014

Contour line picture



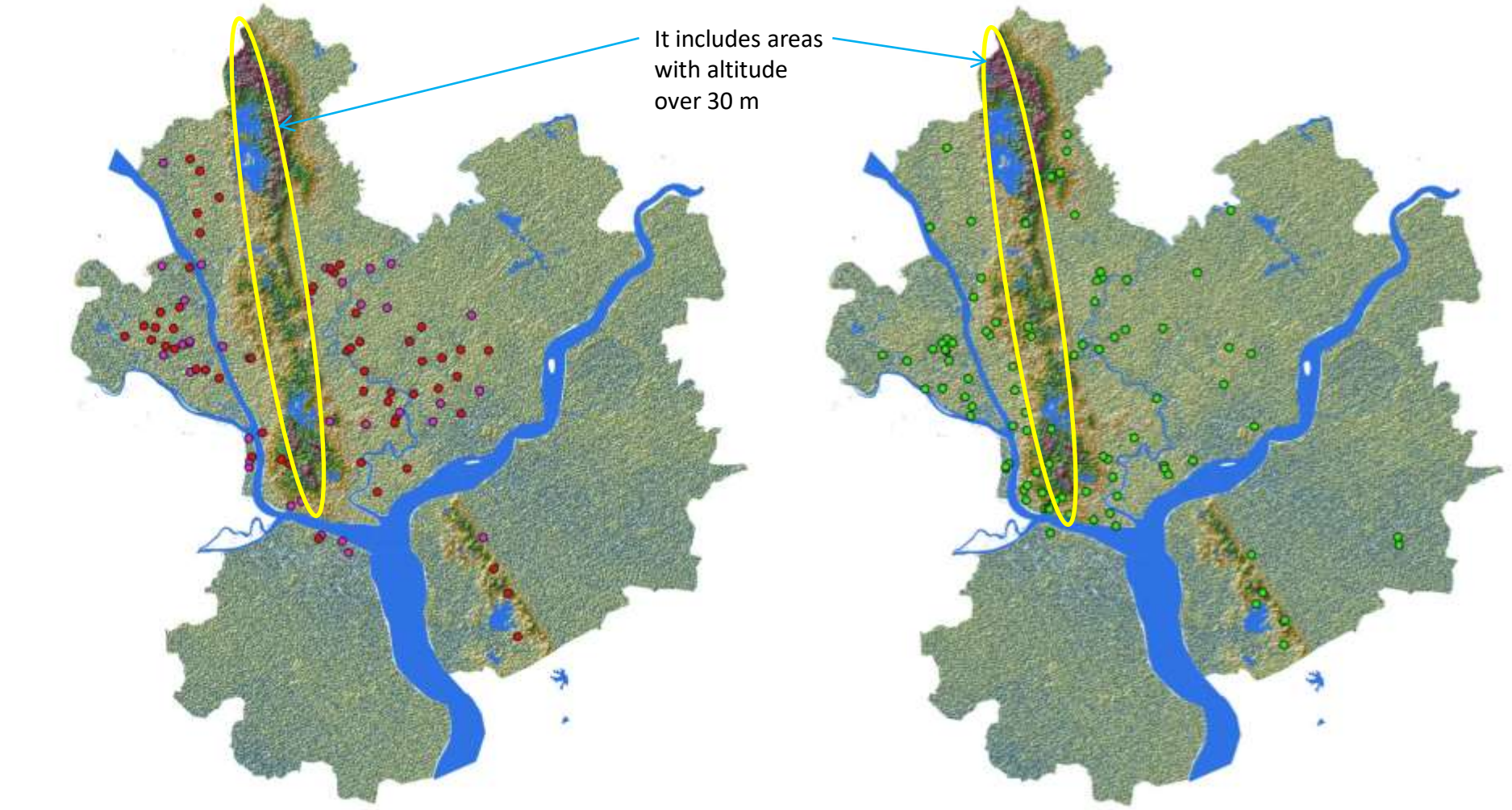
Hillshade and water picture



5.According to altitude extracted from raster image from usgs.gov as of 23-09-2014

Leptospirosis Cases (n=89)

Negative Cases (n=96)



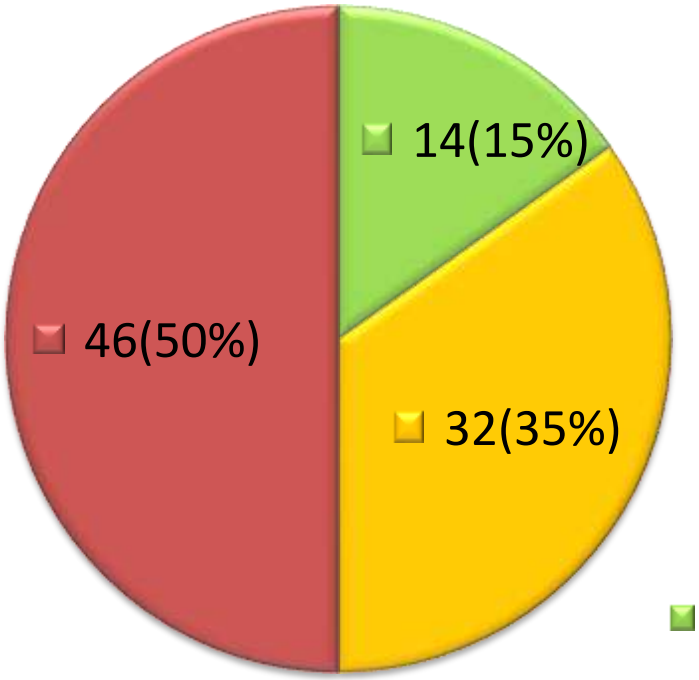
5.According to altitude extracted from raster image from usgs.gov as of 23-09-2014

Altitude in meter	Leptospirosis cases	Negative cases
Smallest	2	4
25th percentile	6	7
50th percentile (Median)	8	10
75th percentile	10	14
Largest	15	26
IQR	4	7
Mean	8.29	11.20
SD	2.53	5.21
Skewness	0.15	0.90
Kurtosis	-0.08	0.46
Observations	83	91

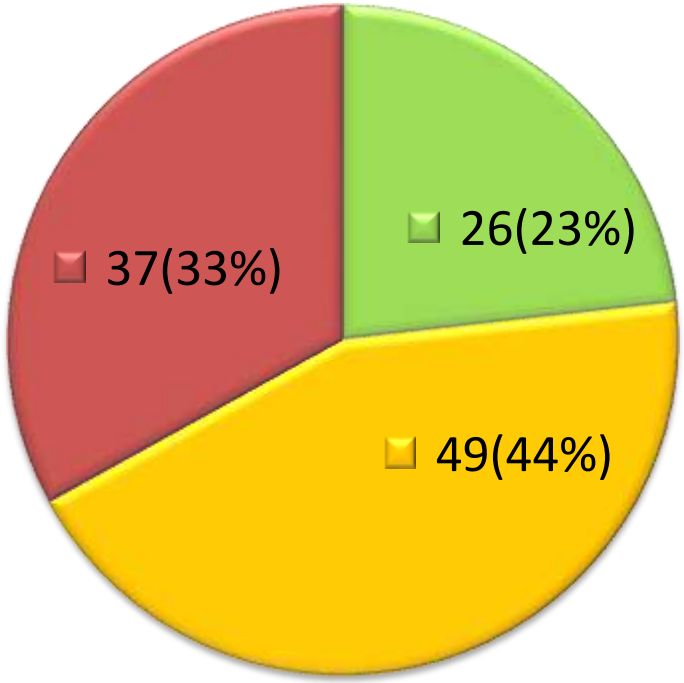
The mean and median altitude of locations of leptospirosis cases are lower than those of negative case.

6.According to flooding

Leptospirosis cases (n=92)



Negative cases (n=112)

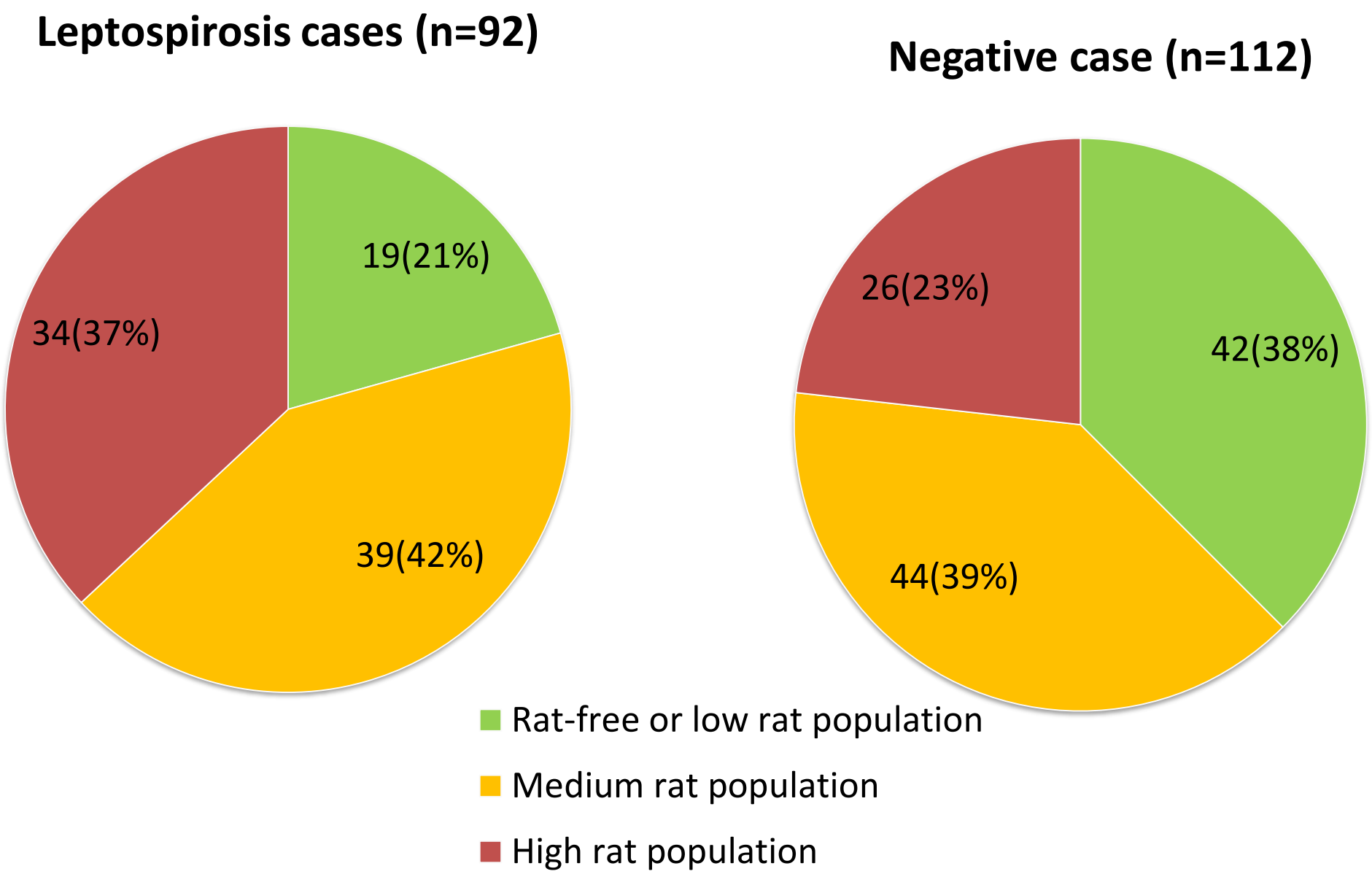


Never flooded

Flooded only for the few heaviest rains

Flooded for most of the rains

7.According to rat population



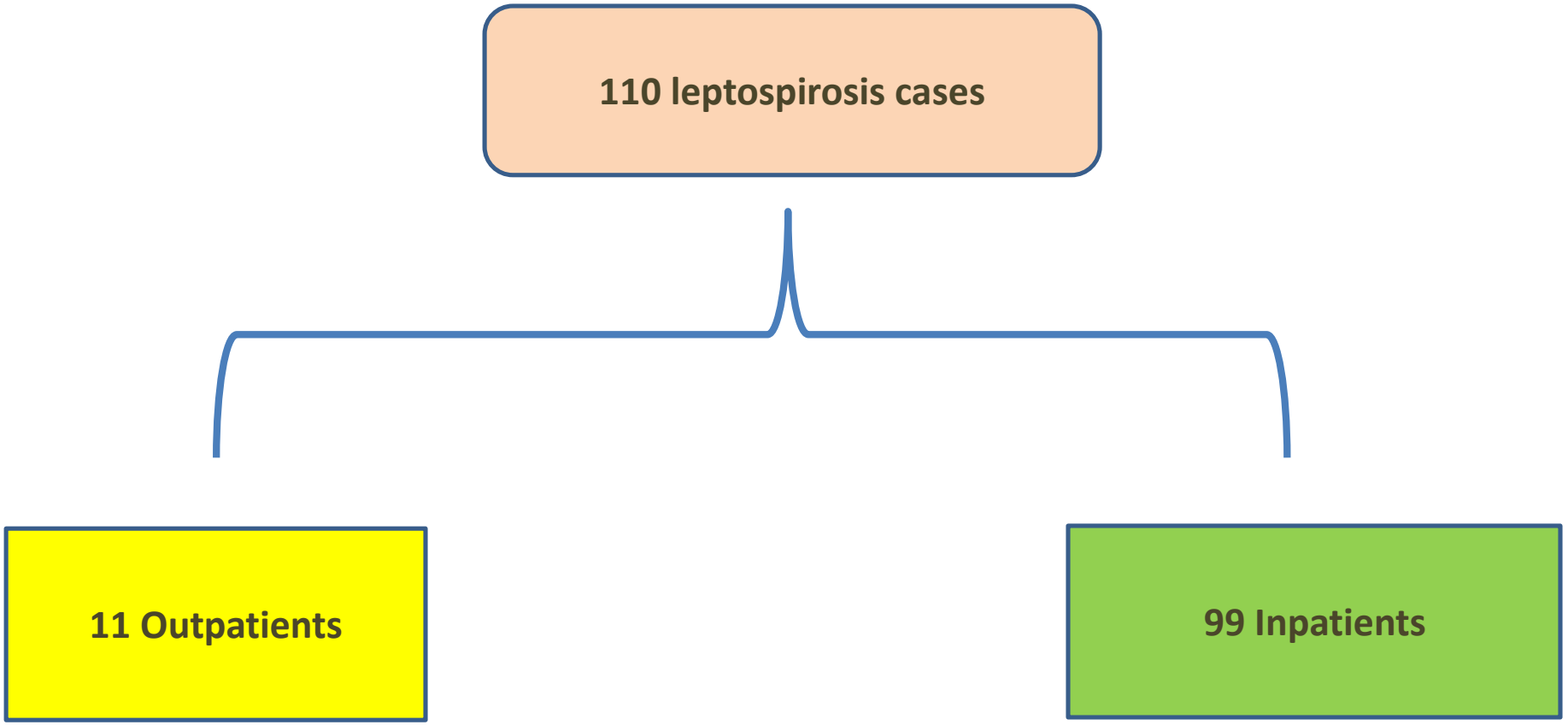
7.According to rat population

Rodent population within the household within the past month	
Evaluation of rodent density: *Choose only one*	[__]$_3$ High rat population *Fresh droppings, tracks, gnawing evident, three or more rats seen at night, one or more in daylight* [__]$_2$ Medium rat population *Old droppings and gnawing common, one or more rats seen by flashlight at night, none during the day* [__]$_1$ Rat-free or low rat population *No sign of rat presence*

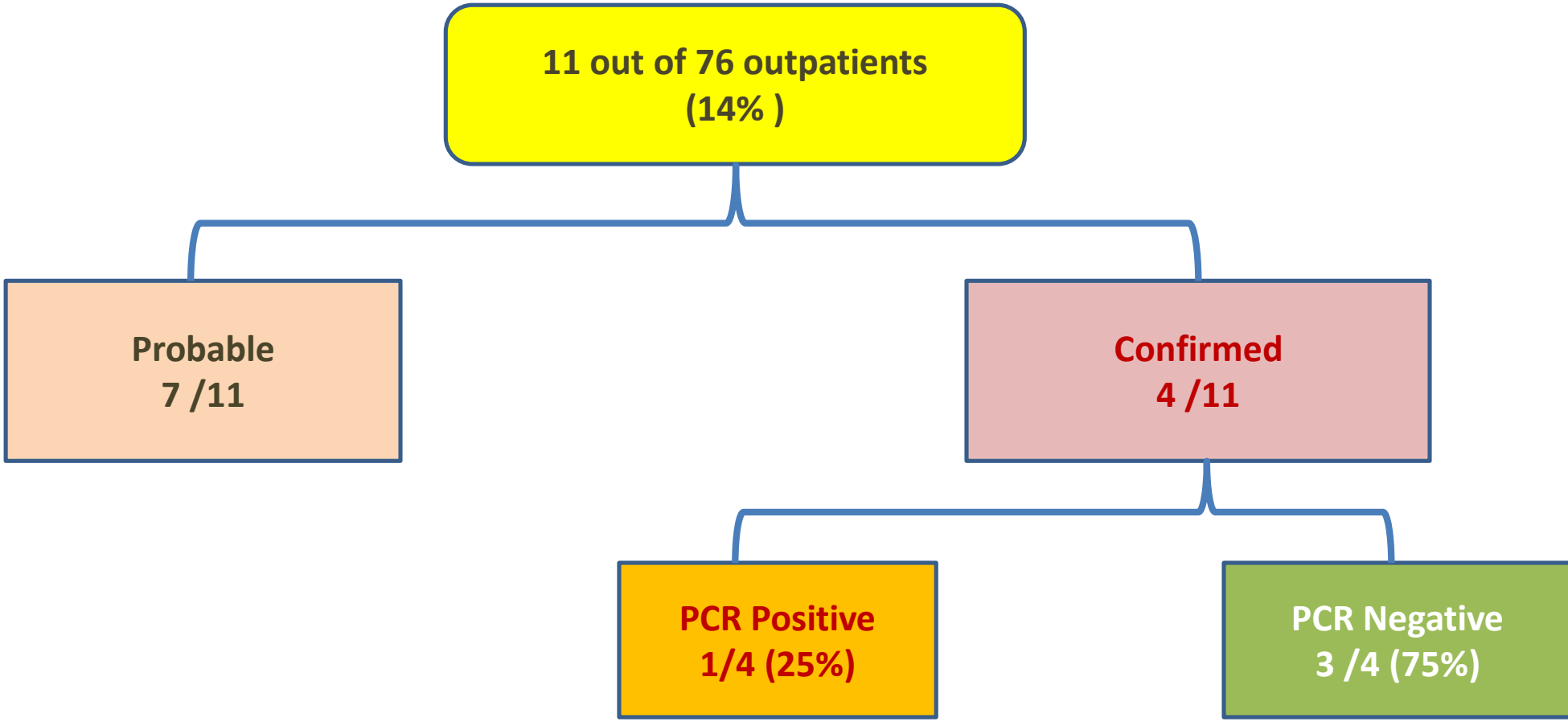
Reference

Monitoring adapted from the US integrated pest management guidelines (Timm et al, 1994)
Timm, R. 1994. Norway Rats. In S. Hygnstrom, R. Timm, and G. Larson, eds., Prevention and Control of Wildlife Damage. Vol 1. Lincoln NB: Univ. Neb. Coop. Ext. pp. B 105-120.

8. Outpatients and inpatients

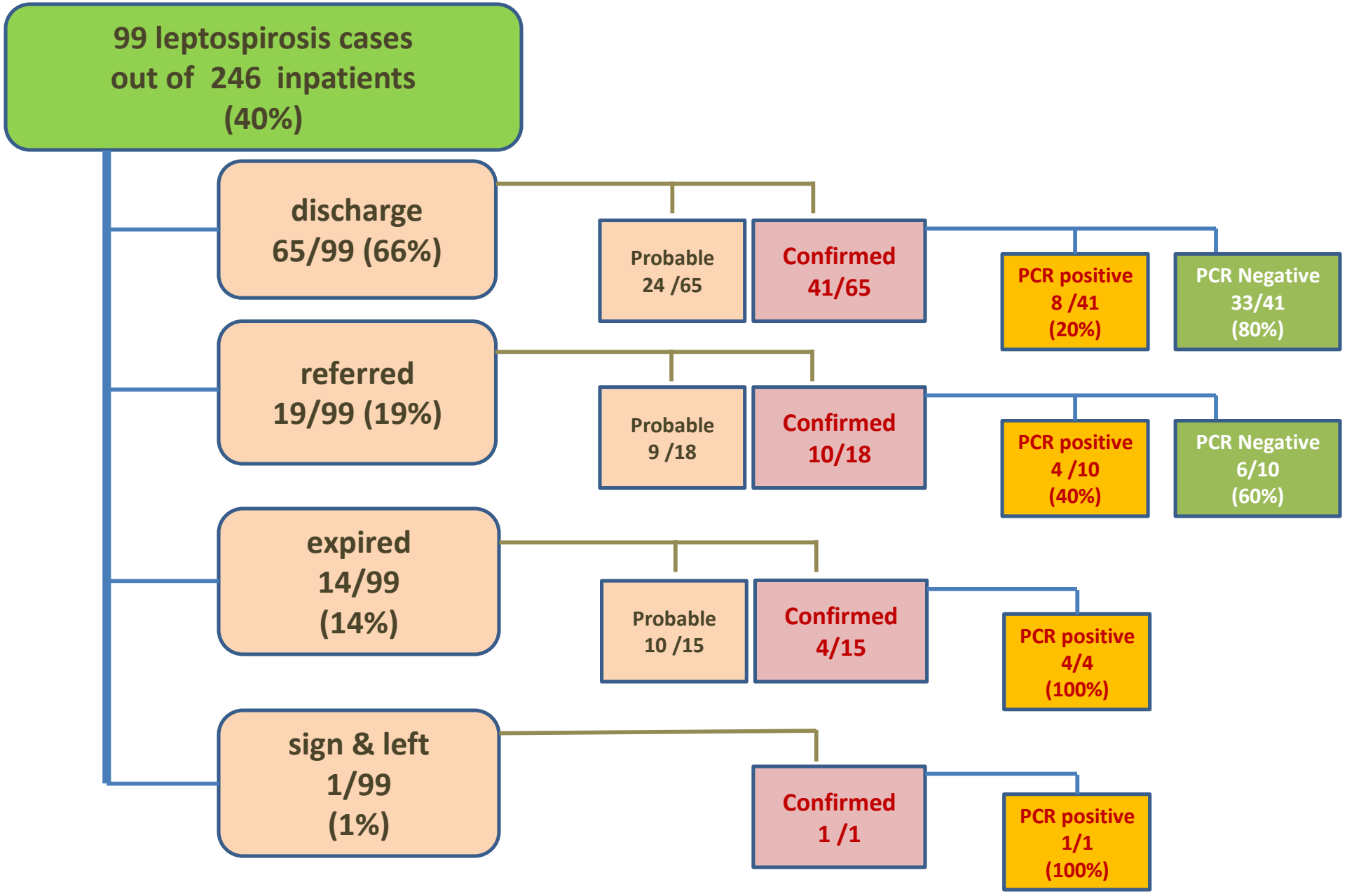


8. Outpatients Leptospirosis Cases (n=11)



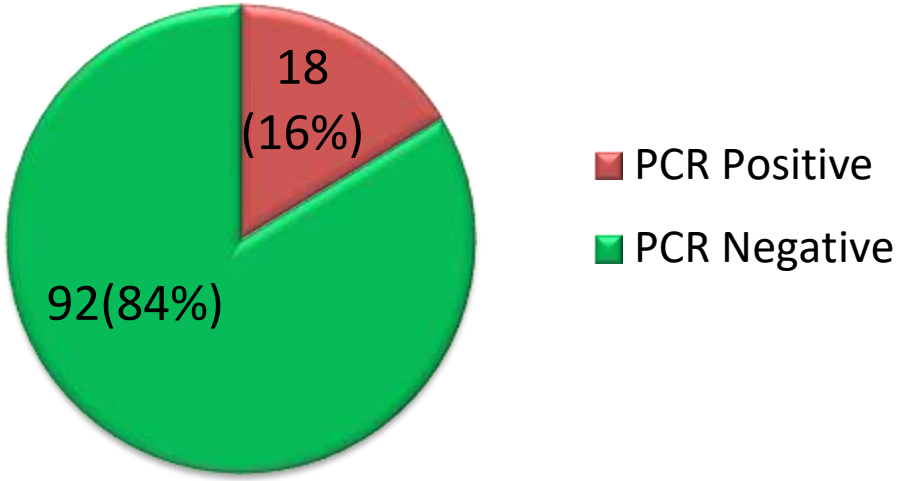
Possibly leptospirosis cases might be still remained in the community.

8.Inpatients Leptospirosis Cases (n=99)

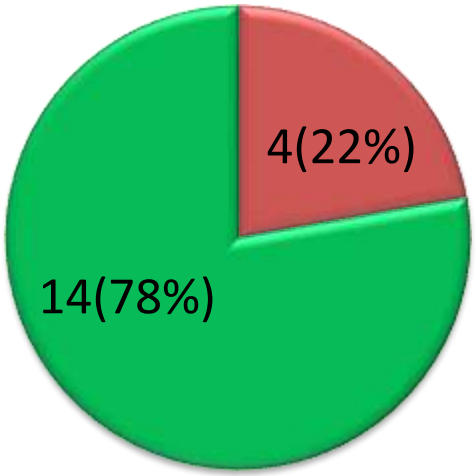


8.PCR Positive Patients

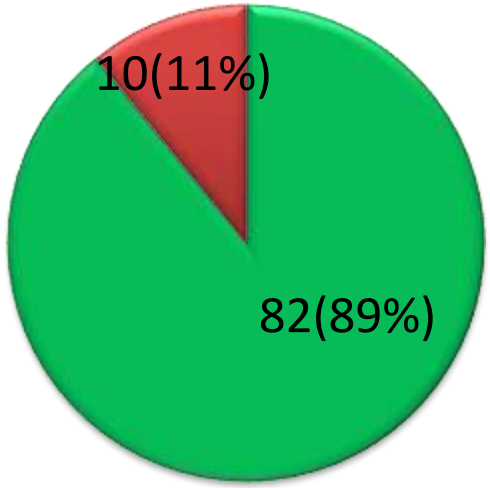
Leptospirosis cases (n=110)



PCR Positive (n=18)



PCR Negative (n=92)



Expired

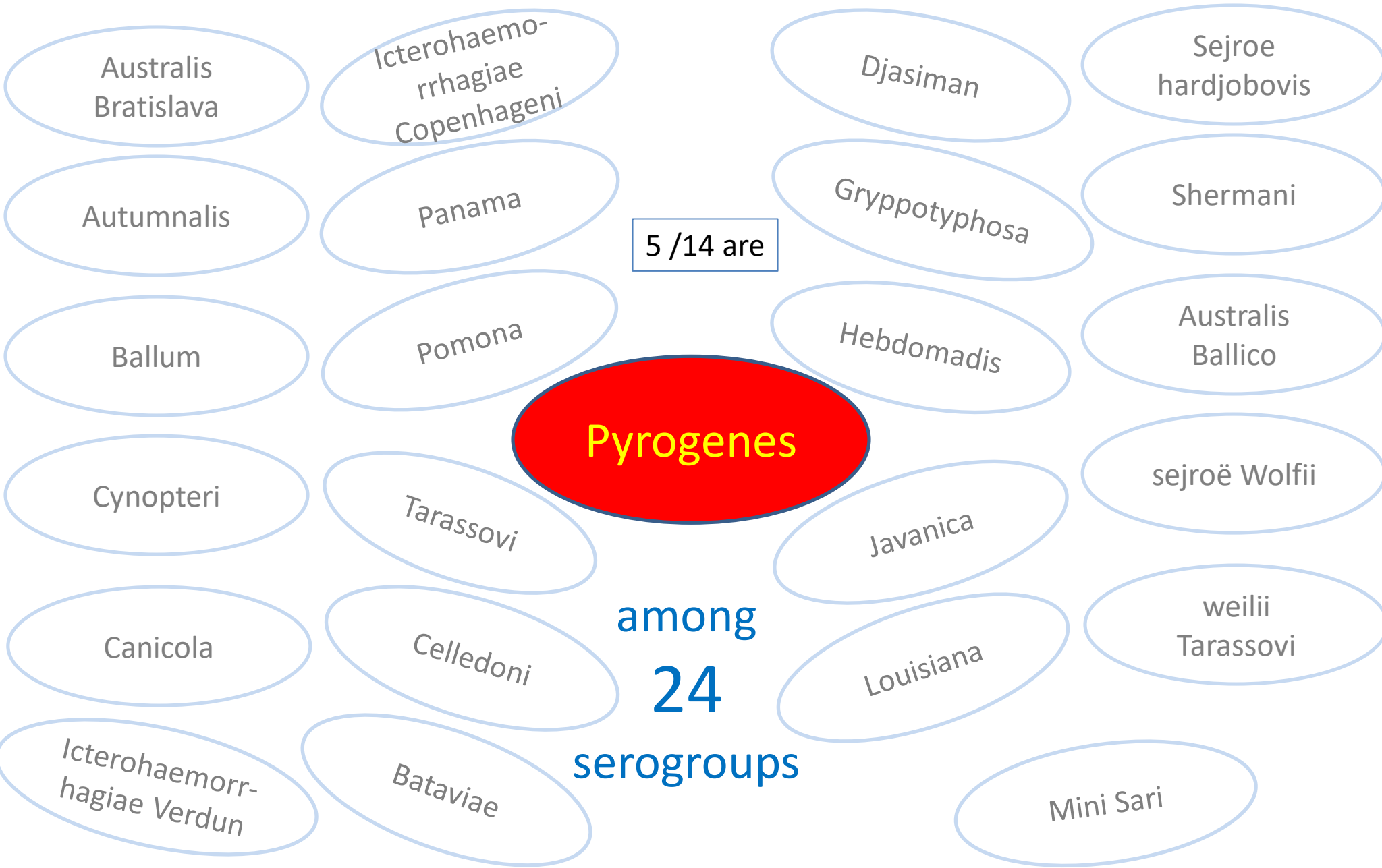
Alive

- **ECOMORE 2 Project is the first study for detecting leptospirosis by PCR in Myanmar .**

- **It proves the needs of PCR technique for early detection of leptospirosis which was missing by ELISA and rapid test kit even if the doctor is interested in time.**

So PCR testing has medical benefits.

9.Preliminary detection of serogroup at IPNC by MAT for 14 samples



10.Future Plan

1. Sending the remaining samples to IPNC for genotyping and MAT
2. Training for Genotyping at IPNC
3. Ongoing Data Management
4. Final Data Analysis in 2020
5. Sharing the findings to local authorities and partners
6. Publications

11.Conclusion

- Effect of Rainfall
- Effect of Age (lepto>neg)(Female>Male) and Gender (Male>Female)
- Effect of Occupation (might have increased risk in jobs related to soil and water)
- Effect of flood and rat (lepto>neg)
- Effect of altitude (neg>lepto)
- Importance of PCR method for early detection
- Pyrogenes serogroup in Myanmar

12.Acknowledgement

- Ministry of Health and Sports, Myanmar
- National Health Laboratory
- Yangon General Hospital
- New Yangon General Hospital
- East Yangon General Hospital
- West Yangon General Hospital
- Yankin Children Hospital
- North Okkalapa General Hospital
- Thingangyun Sanpya Hospital
- Insein General Hospital
- Thanlyin General Hospital
- Hlaing Thar Yar General Hospital
- ECOMORE 2 Team
- Agence Française de Développement
- Institut Pasteur
- Institut Pasteur du Cambodge
- Institut Pasteur International Network

Thank You All !

A young woman in a rice field in Myanmar. Photo by: Bioversity International / CC BY-NC-ND