



# Dog population surveys

Dr Maurice Karani  
Worldwide Veterinary Service



# Many hats



Managers

Marketers

Animal carers

Fundraisers

Designers

Lobbyists

Epidemiologists

Educators

Ecologist

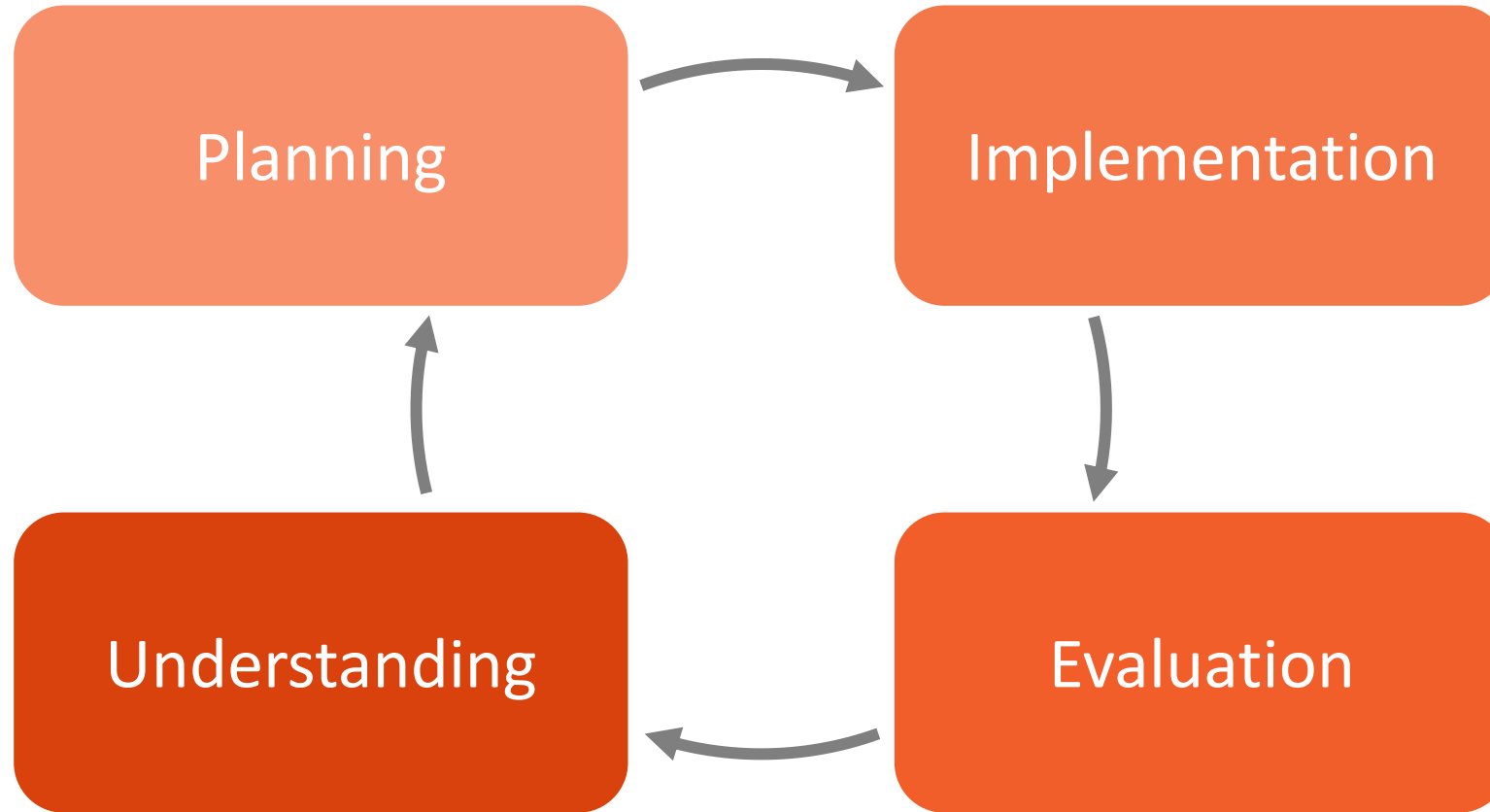
Strategists

Statisticians

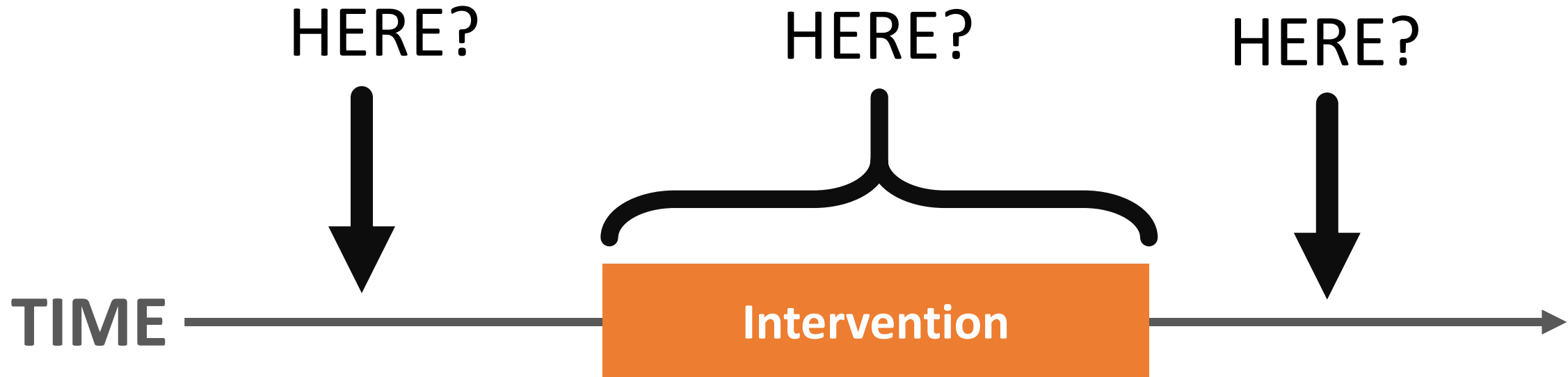
Zero evidence ● — — — — ● — — — — ● Analysis paralysis



# Project evolution



# When should I survey?



# When should I survey?

TIME



## Pre-intervention surveys

- Population enumeration surveys
- Community perception surveys

### Program planning

- Budget
- Strategy / approach
- Number of vaccine doses
- Equipment
- Human resource requirement
- Dog access
- Geographic prioritization

# When should I survey?



## Mid-intervention surveys

- Dog sight surveys / household surveys

### Assess neuter/vaccination coverage

- Evaluates efficacy of catching methods
- Supports campaign refinement
- Enables population estimation
- Provides a summary of the population – sterilization / health

# When should I survey?



## Post-intervention surveys

- Household surveys
- Population enumeration

## Retrospective assessment of the programme

- Perception of the campaign
- Knowledge, attitudes, and practice
- Sterilization/vaccination coverage

# When should I survey?



**If you only do one survey...**

**which would you do?**

# When should I survey?



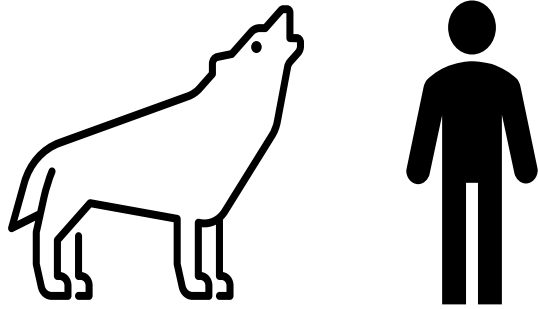
## Post-intervention surveys are AWESOME

Neuter campaign evaluation

Population demographics

Population enumeration

# Modalities



**Human: Dog  
ratio**

**Household surveys**

**Dog-sight surveys**



Household surveys

Direct street counts

Capture recapture methods

Post vaccination survey



# Dog population composition

1

Owned, never roaming



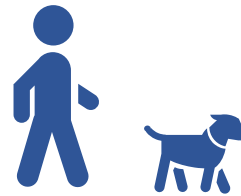
2

Owned, sometimes roaming



3

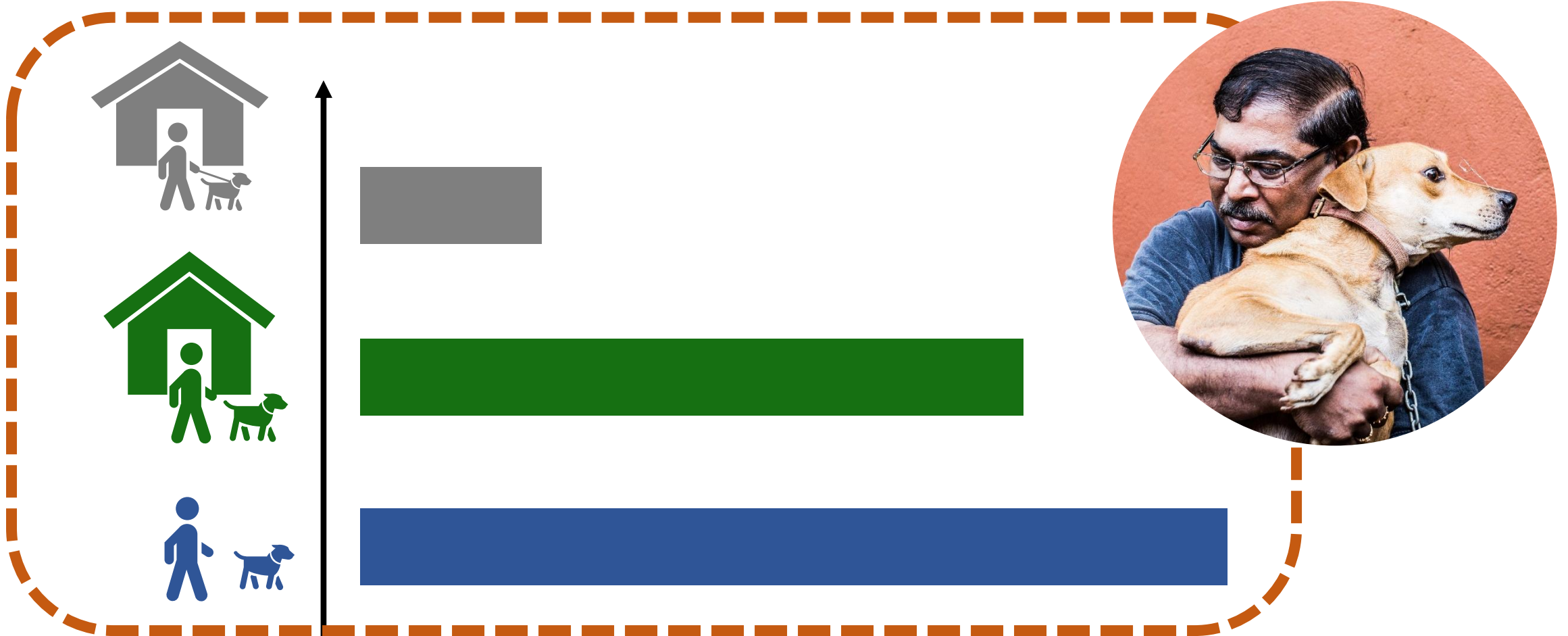
Owned, always roaming



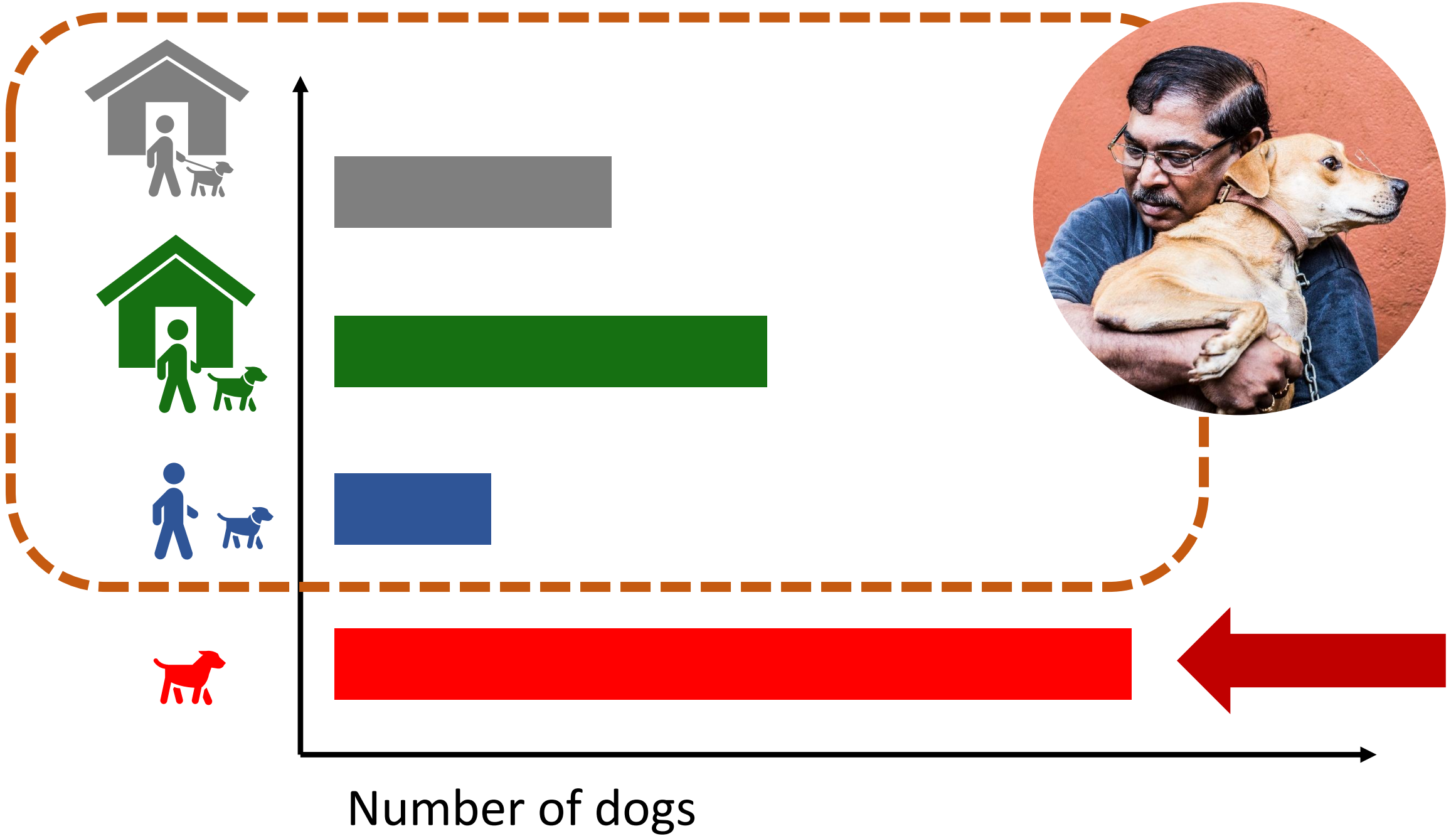
4

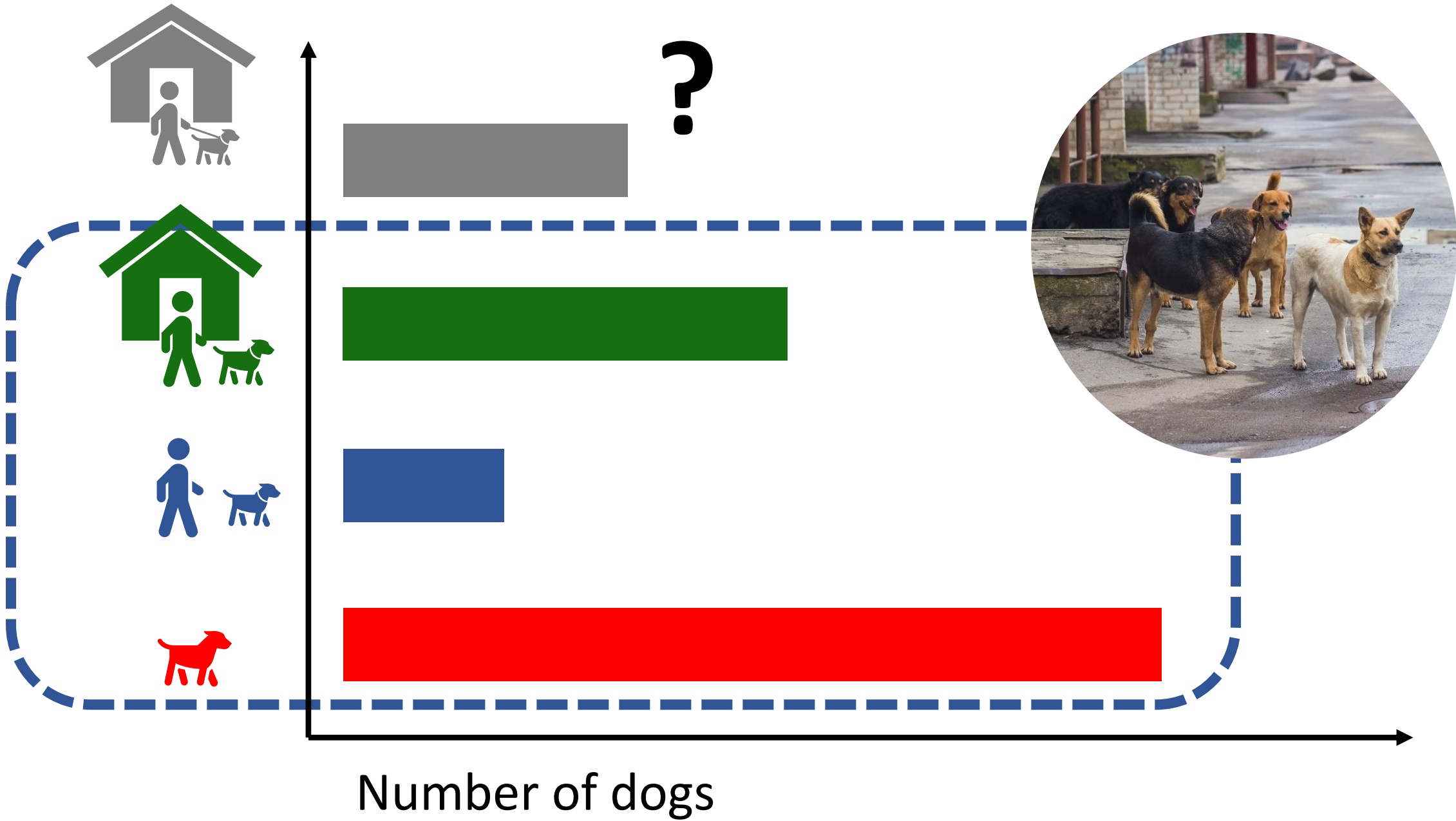
Stray roaming





Number of dogs





Number of dogs

## Survey options:

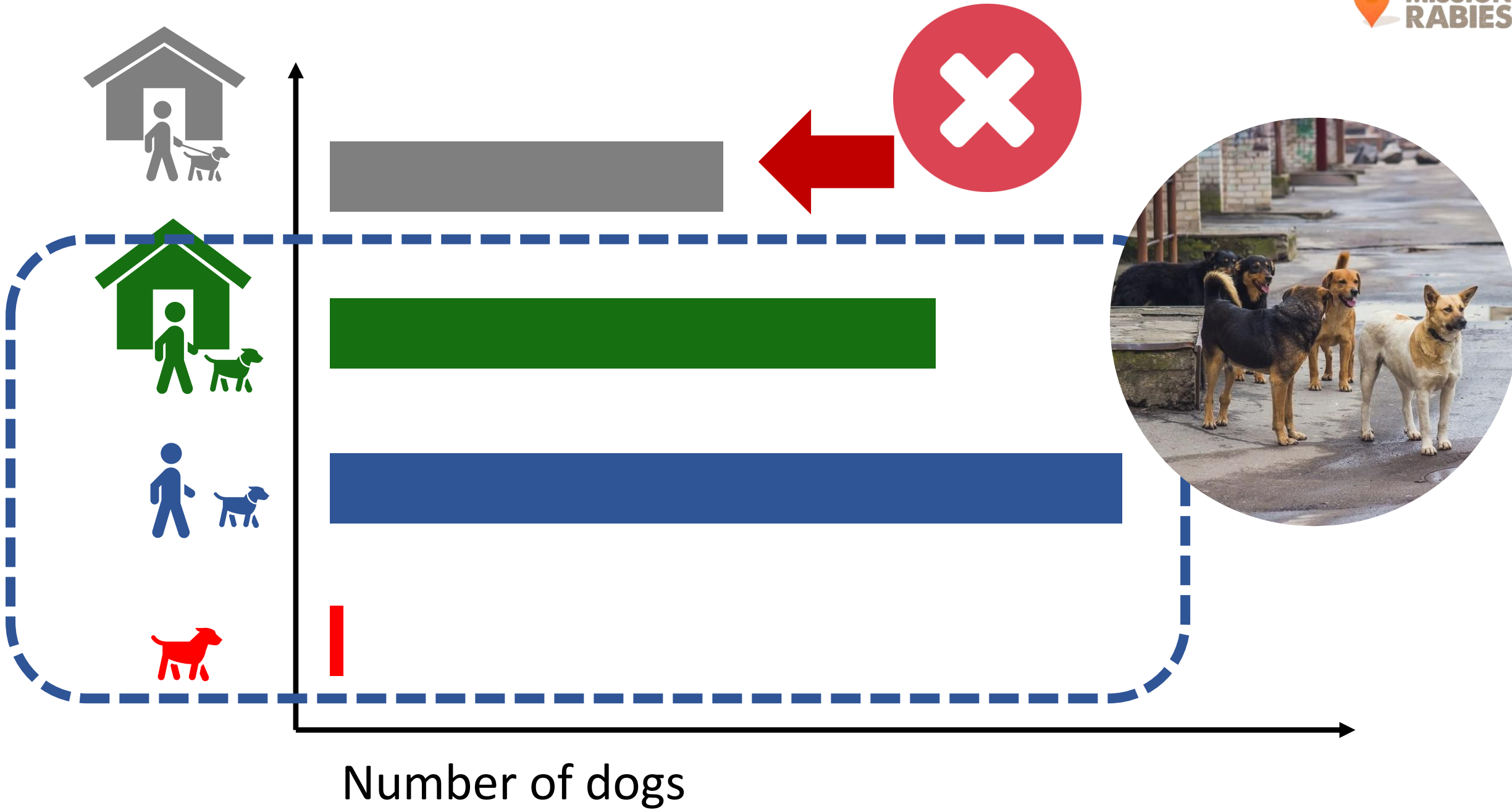


### **Dog-sight surveys**

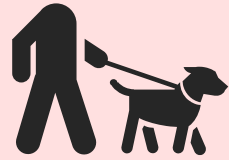
- **Direct street counts**
- **Capture-Mark recapture**

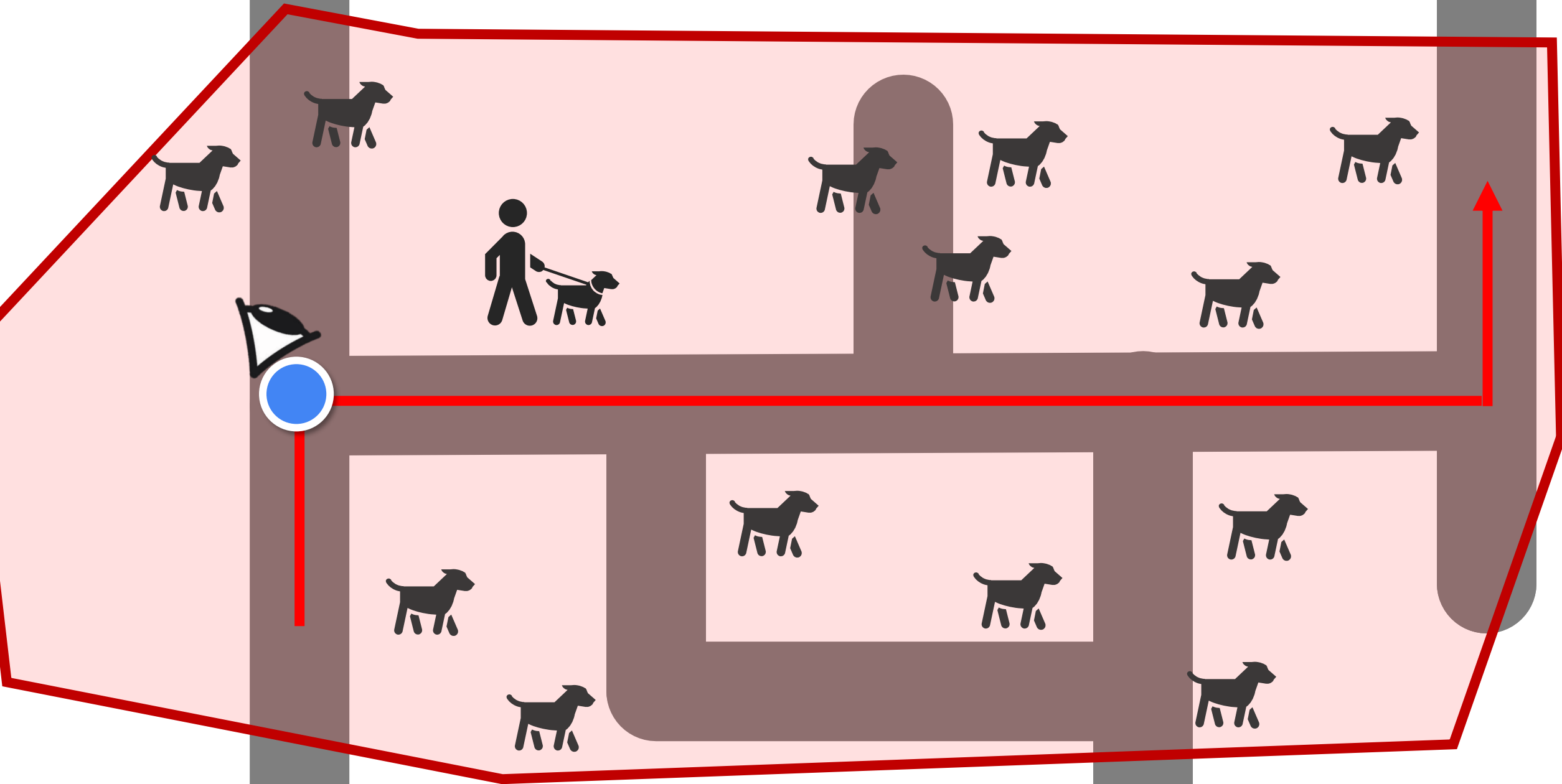


### **Household surveys**

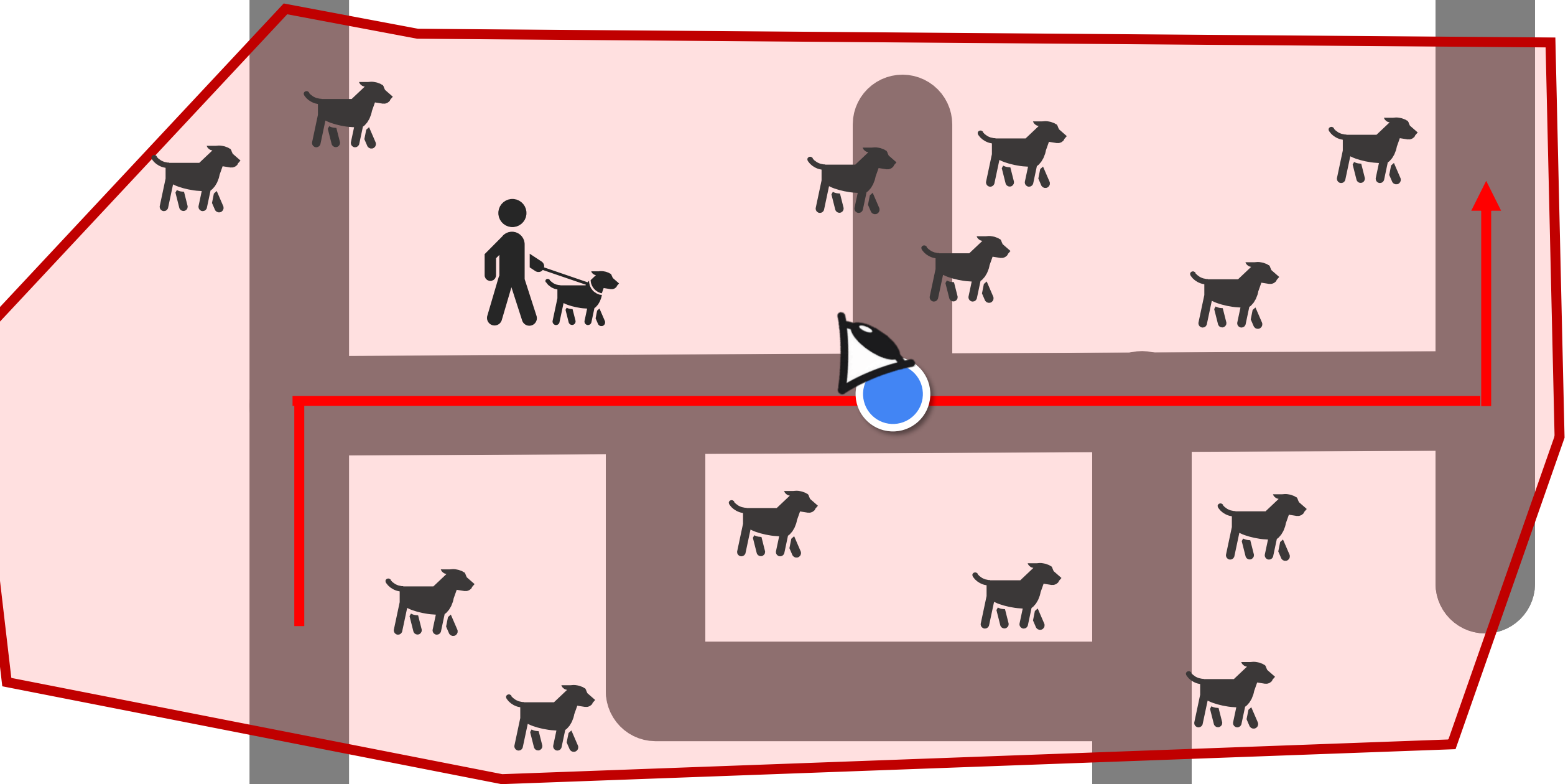


Look down streets  
and record dogs

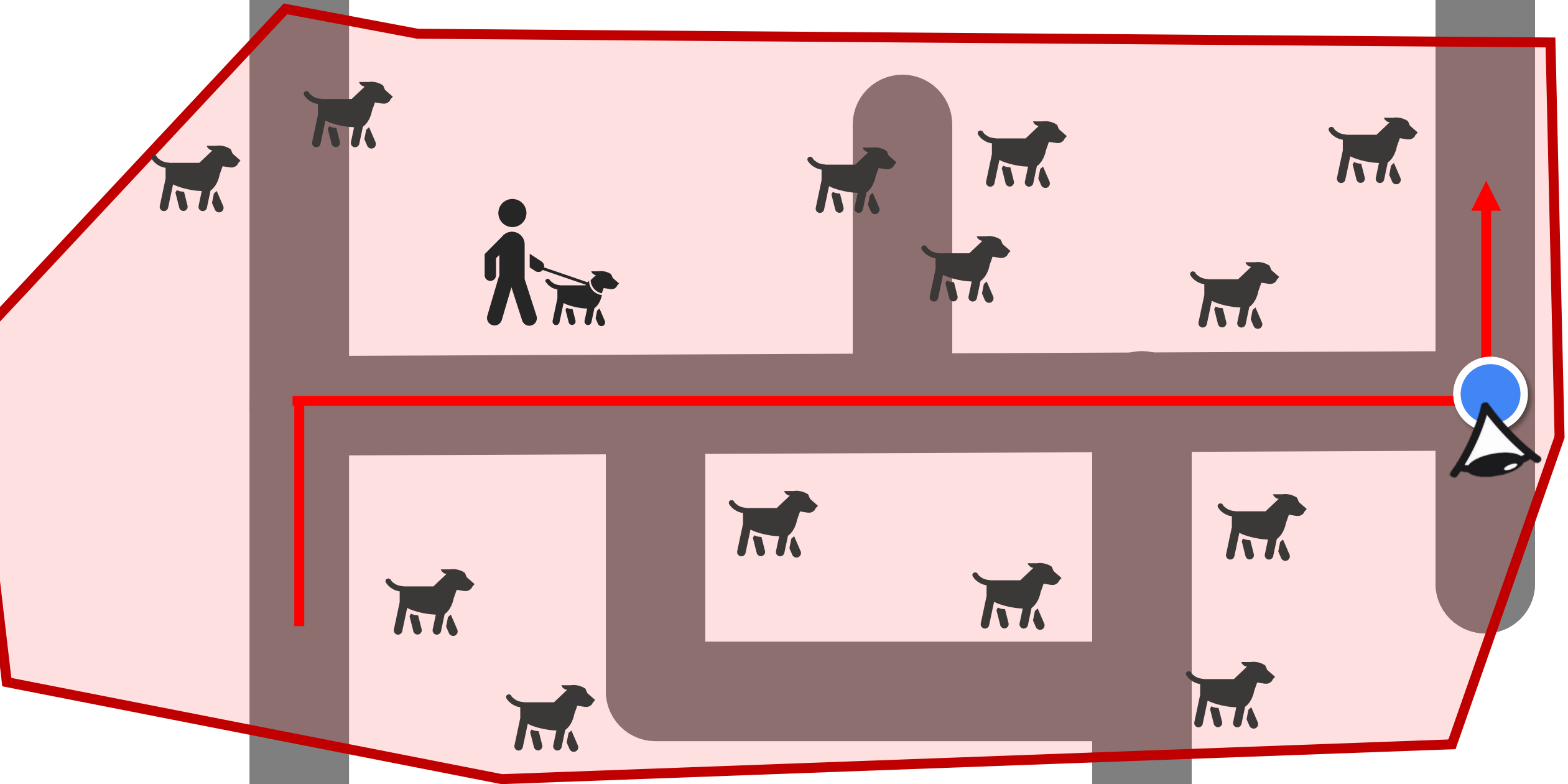


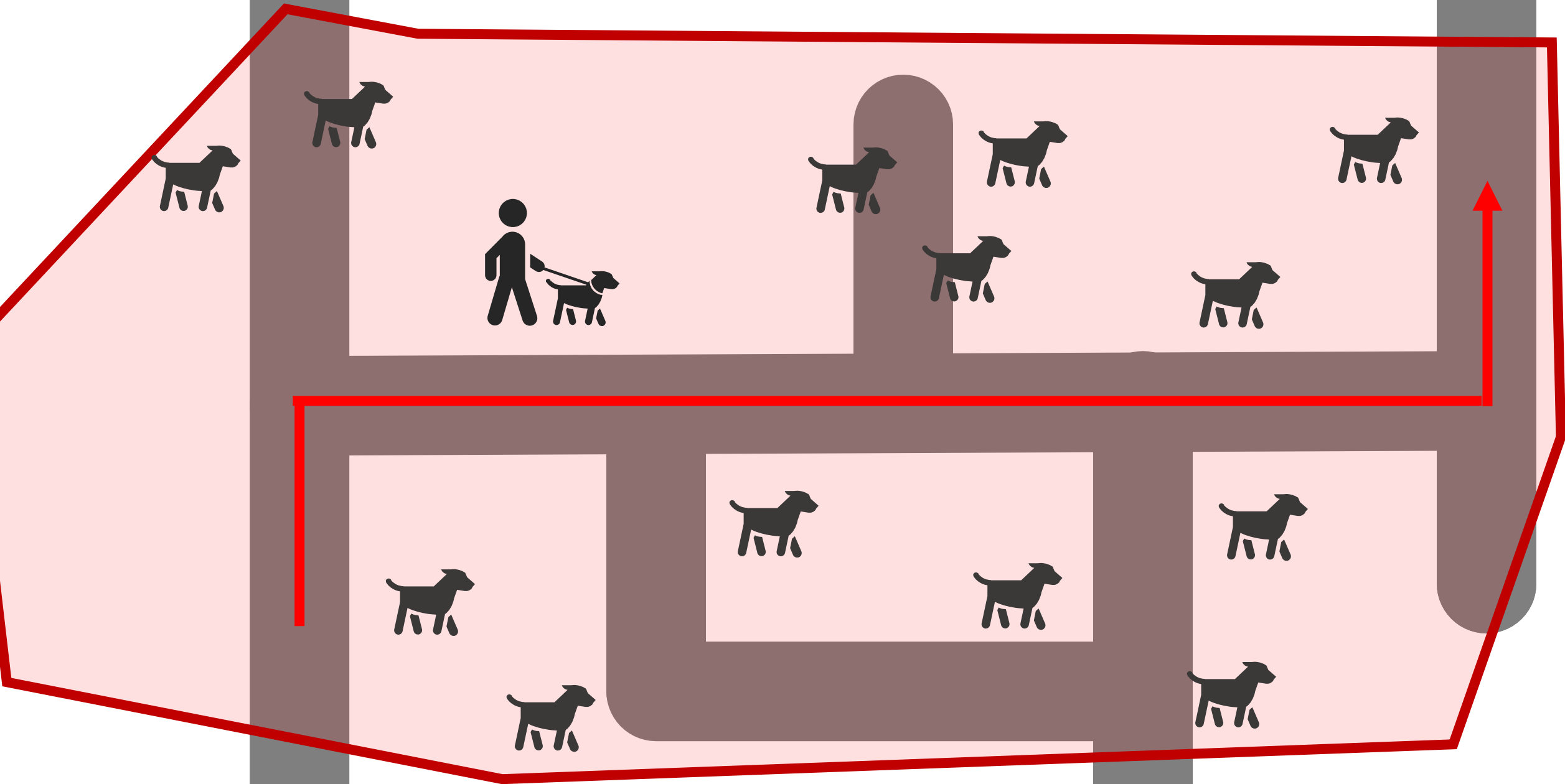












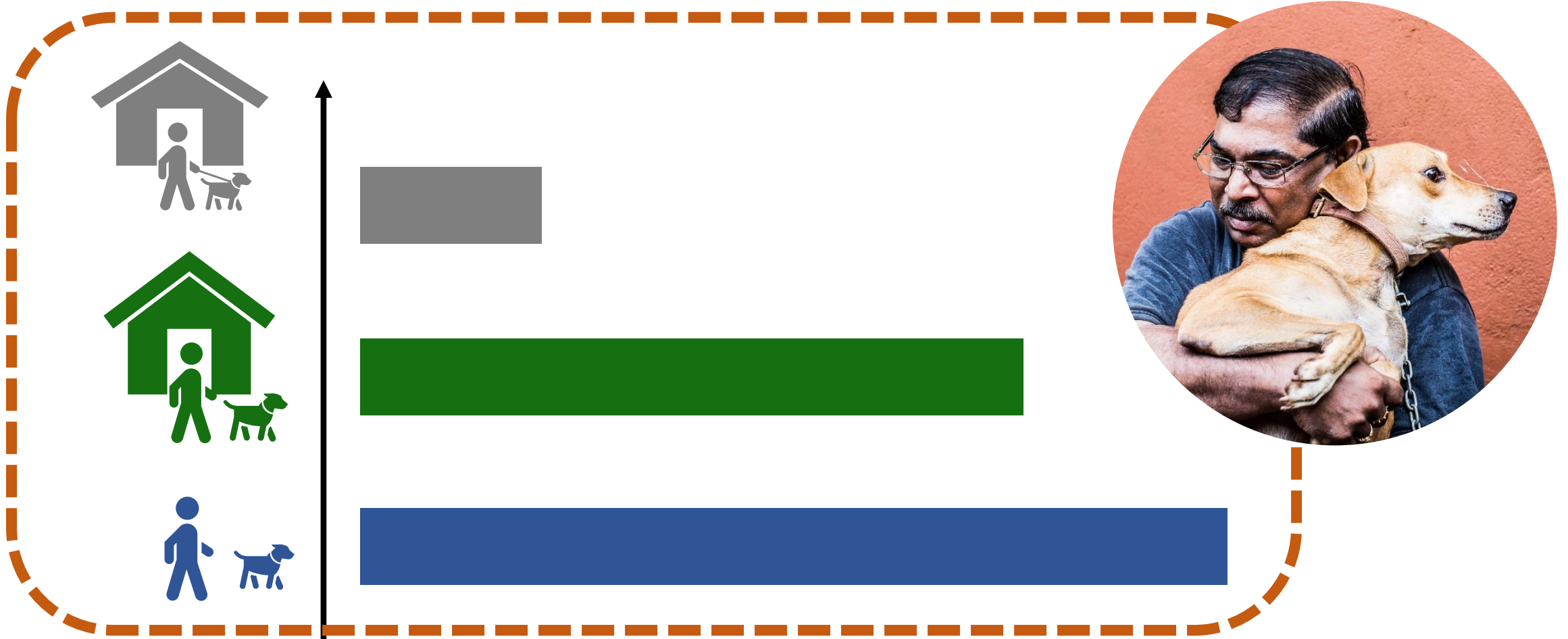
# HOUSEHOLD SURVEYS



# Types of household surveys

- Population estimation
- Knowledge, Attitude and Practices (KAP)
- Post vaccination surveys
- Community perception

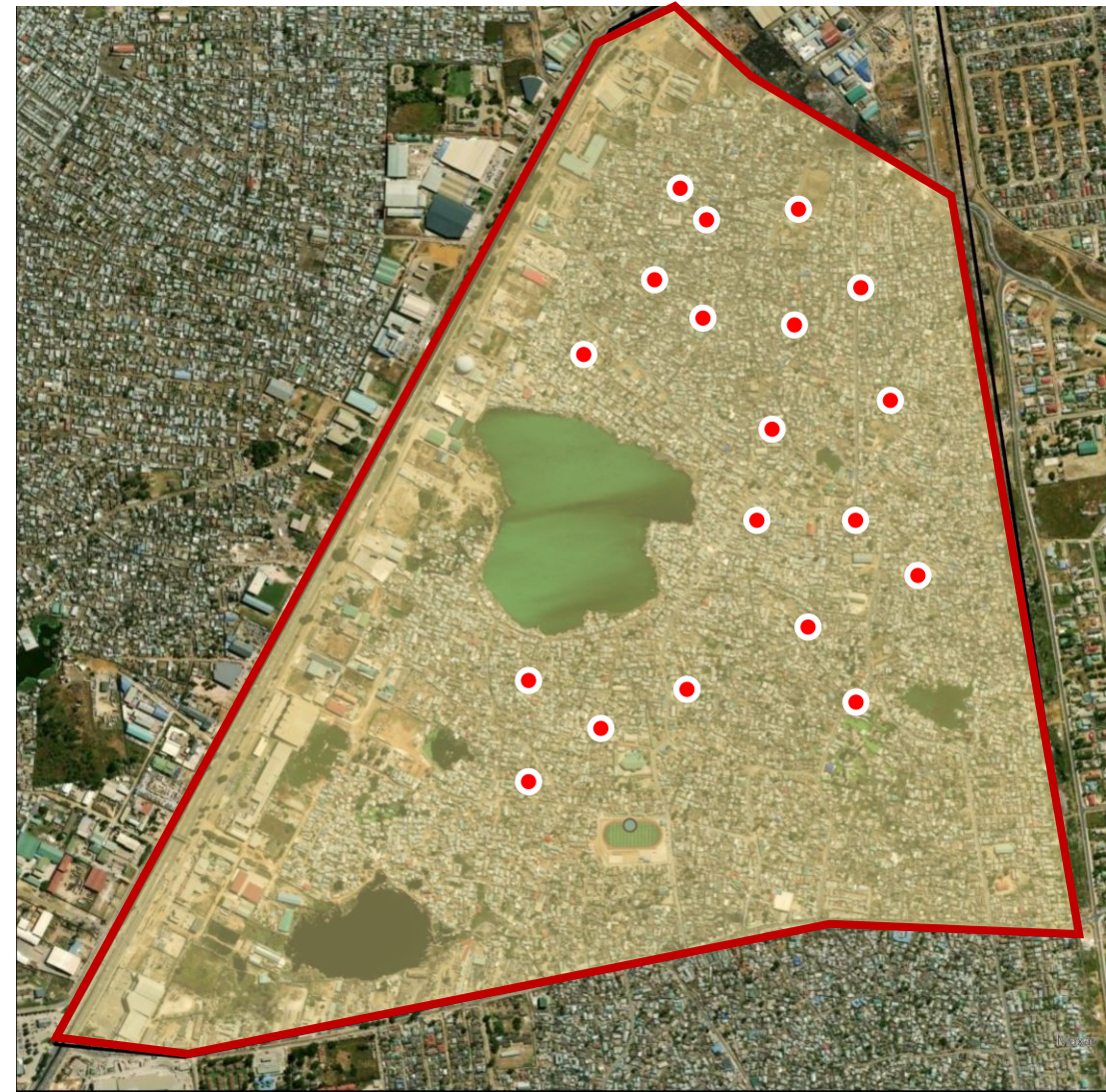




Number of dogs

# Household survey

- Number of households to be surveyed
  - Statistical methods
- Sample should be representative
  - Average needs to reflect the whole population
  - Stratification (human pop, urban, rural, land use)
  - Random selection




# Survey method

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# Household survey

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This sample may not be representative of the whole population

# Household survey

- Number of households to be surveyed
  - Statistical methods
- Sample should be representative
  - Average needs to reflect the whole population
  - Stratification (human pop, urban, rural, land use)
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# Navigating your route



- Start at the edge of the assigned zone
- Pick a direction to walk based on satellite imagery
- Meander in and out along roads
- Zig-zag across the zone
- **Do not walk in a straight line**





H-28|122|13|29-280-2



## Response details

RQ

### Initial response from house

- Consent to take part
- Refused to take part
- No one over 18 home

### Comments





H-281122113129-280-2



RQ

Are they willing to say how many people live there?


Yes

No - declined

Number of adults (18 years and over) living in house

Number of children in household



← H-28 | 122 | 13 | 29-280-2 

RQ

**Do they own any dogs?**

Yes

No


**What age are the dogs? (tick all that apply)**

Adults

Puppies (less than 3 months)

**How many adult dogs are there?**



← H-281122113129-280-2 

**How many of the adults are vaccinated?**

**Are any of the adults sterilised?** RQ

Neutered

Not neutered

Unknown

**How many of the adults are sterilised**



← H-281122113129-280-2



**What age are the dogs? (tick all that apply)**

- Adults
- Puppies (less than 3 months)

RQ

**How many puppies are there?**

RQ

**Are any of the puppies vaccinated?**

- Yes
- Vaccinated by campaign
- Vaccinated elsewhere
- No



RQ

How many of the puppies are vaccinated?

Comments

FINISH



# Calculating human : dog ratio

How many people live in your household?



Do you own a dog?

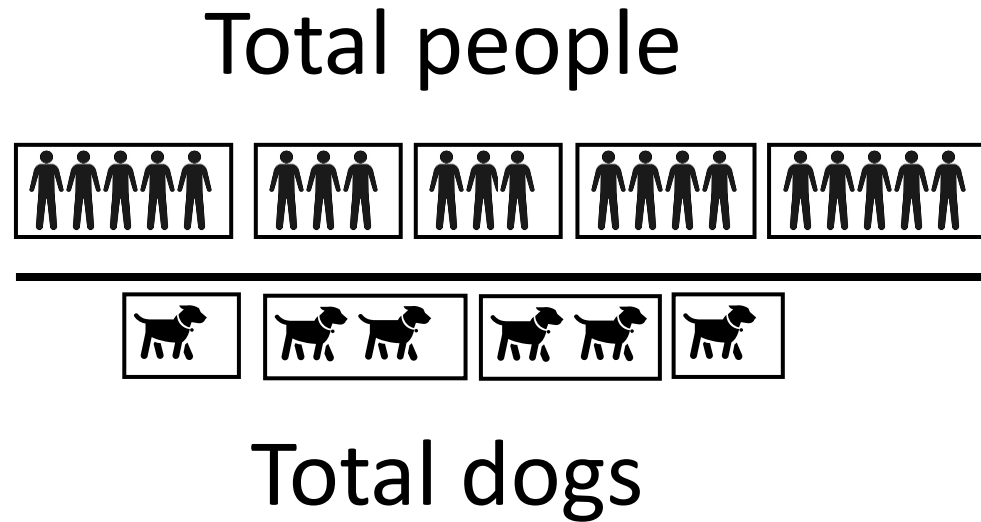
- No
- Yes

How many dogs do you own?



# Calculating human : dog ratio

**Human : dog ratio =  
(HDR)**



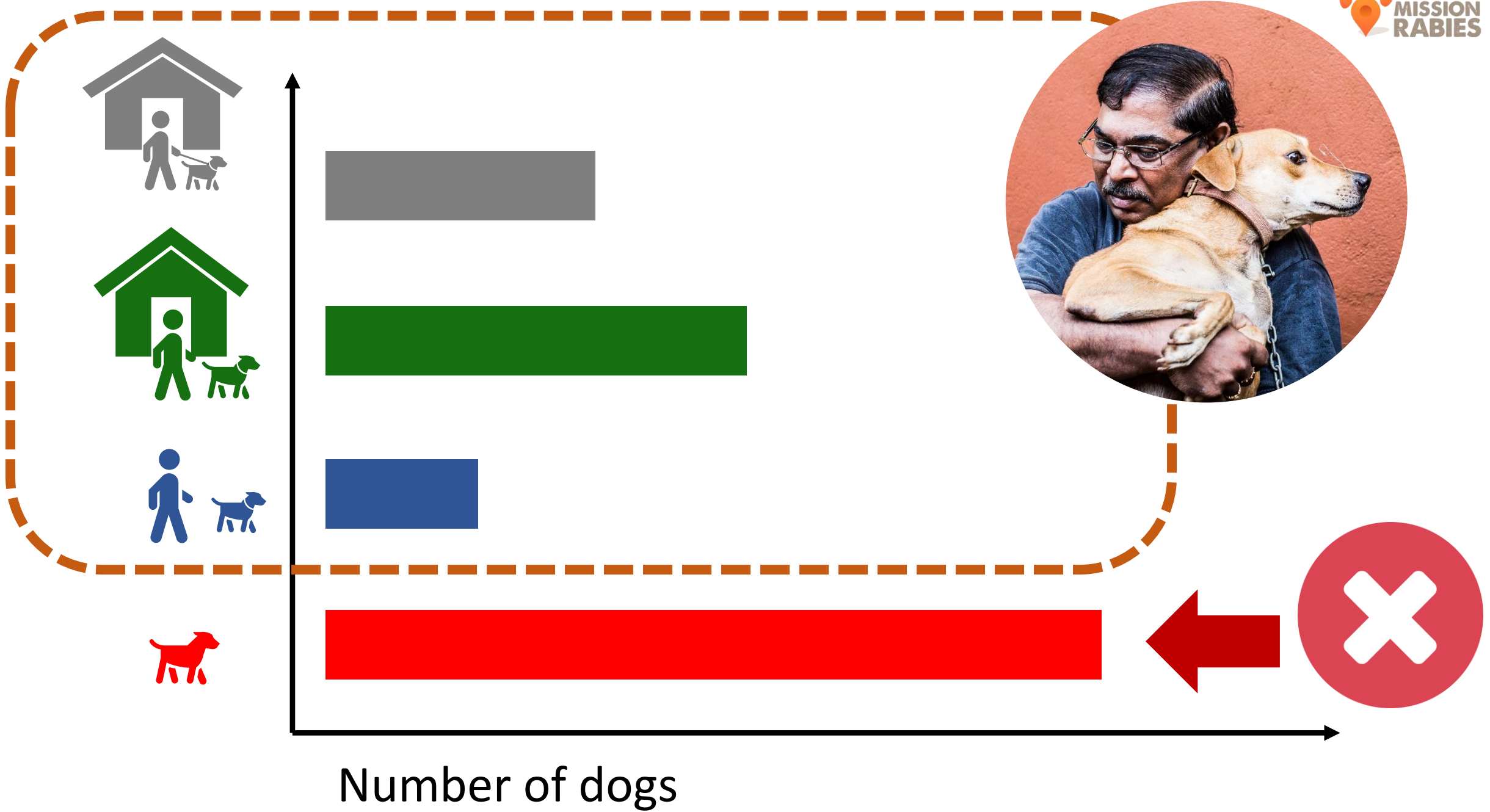
# Calculating human : dog ratio



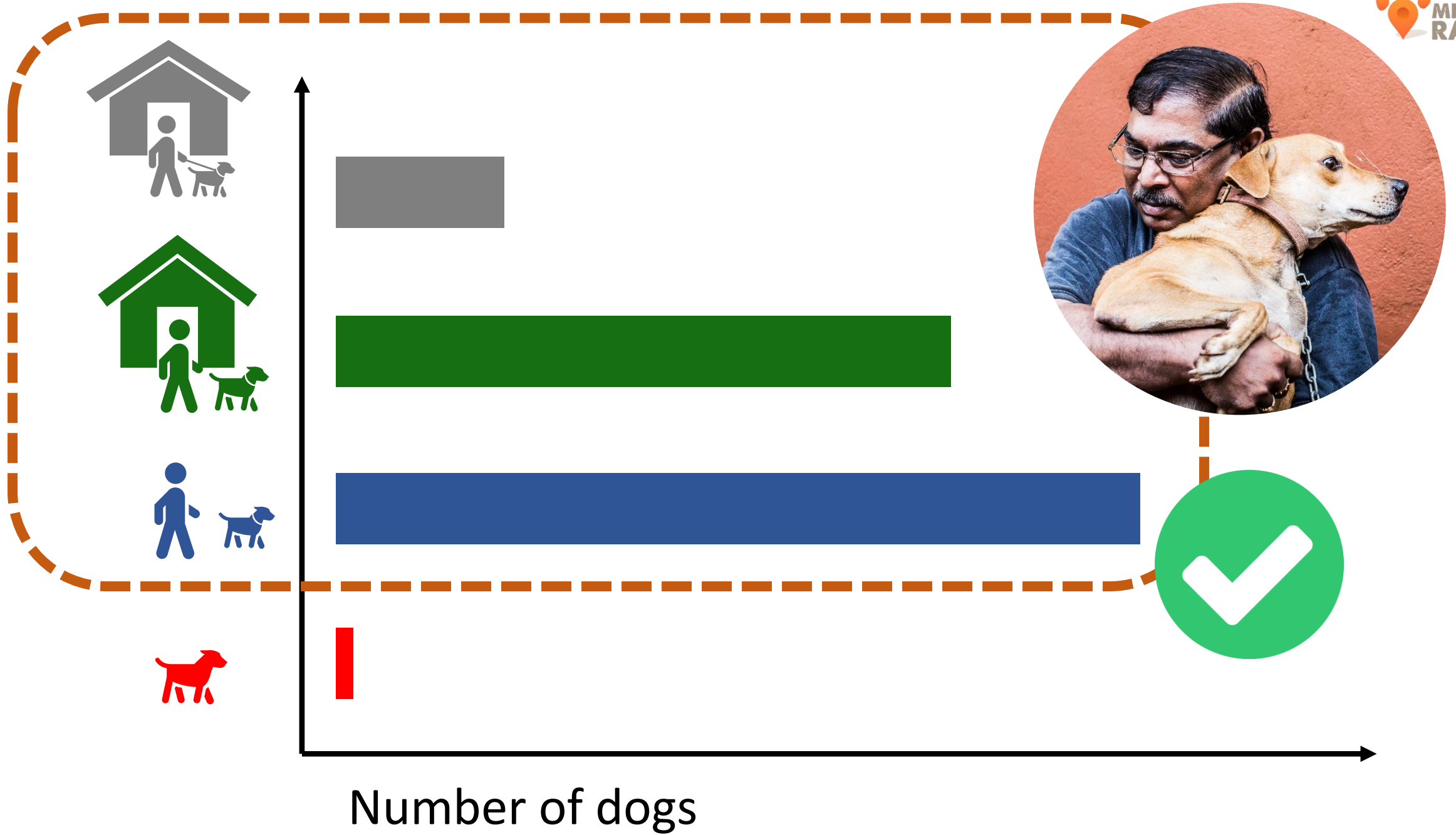
$$\text{Human : dog ratio} = \frac{629 \text{ people in households surveyed}}{65 \text{ dogs in households surveyed}}$$

**(HDR)**

$$\text{HDR} = 9.68$$



Number of dogs



# Applying an HDR



A town with **mostly owned dogs** has a human population of 140,000

**If HDR = 9.68**

$$\text{Total dogs} = \frac{\text{Total people (140,000)}}{\text{HDR (9.68)}} = \mathbf{14,467 \text{ dogs}}$$

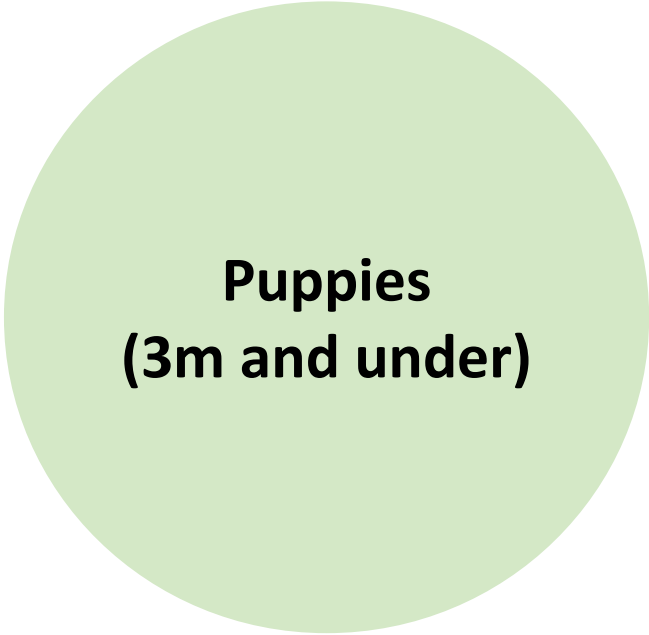
# Survey overview

- Keep surveys simple
- Standardised methods - be consistent across surveys
- Only include relevant questions




# Age categories

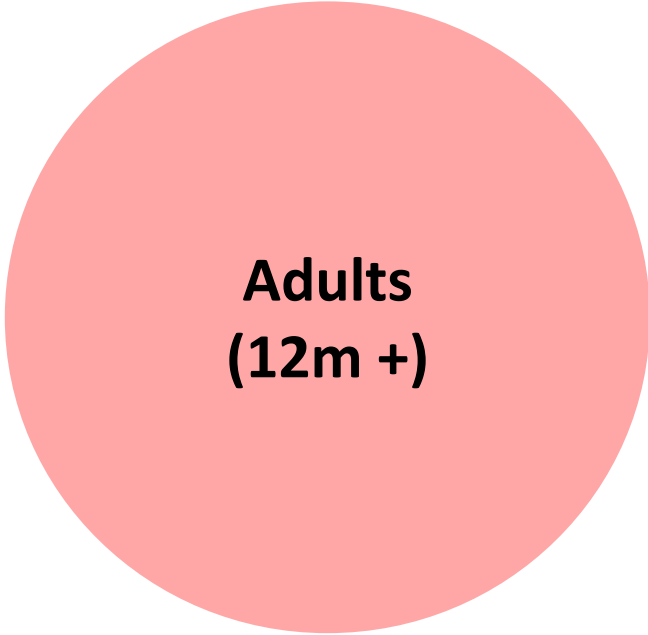
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**Puppies  
(3m and under)**

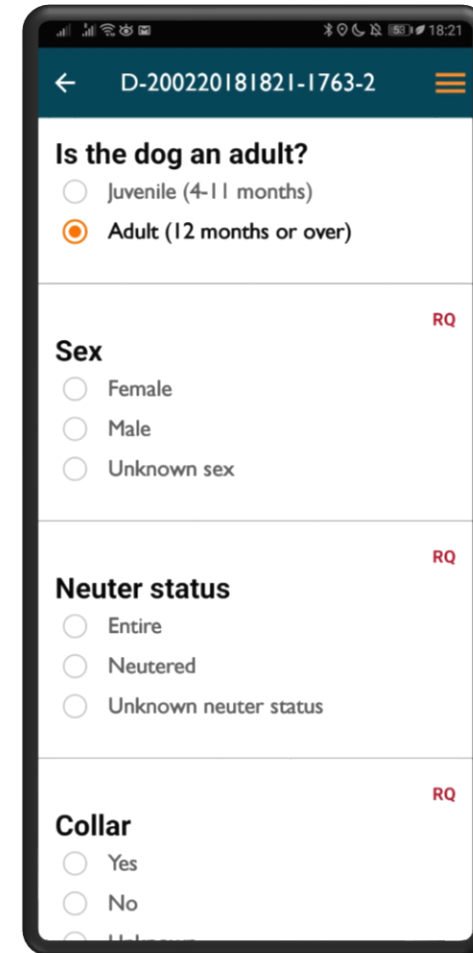
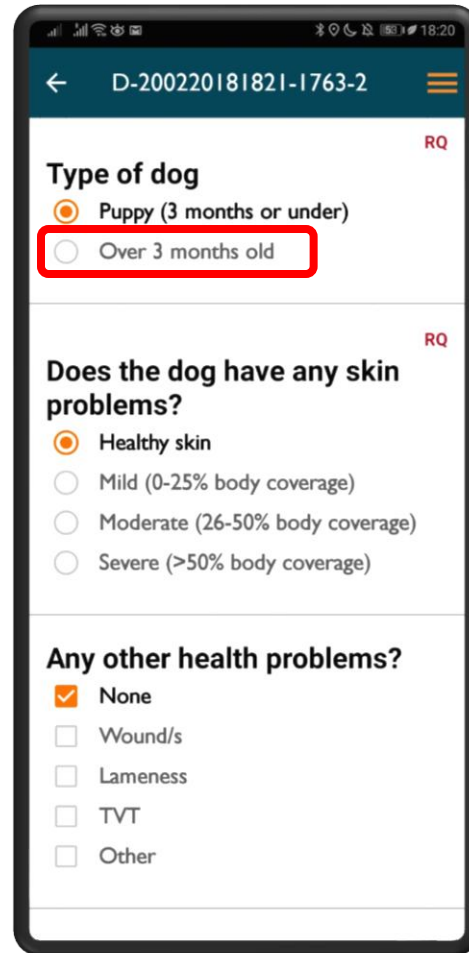
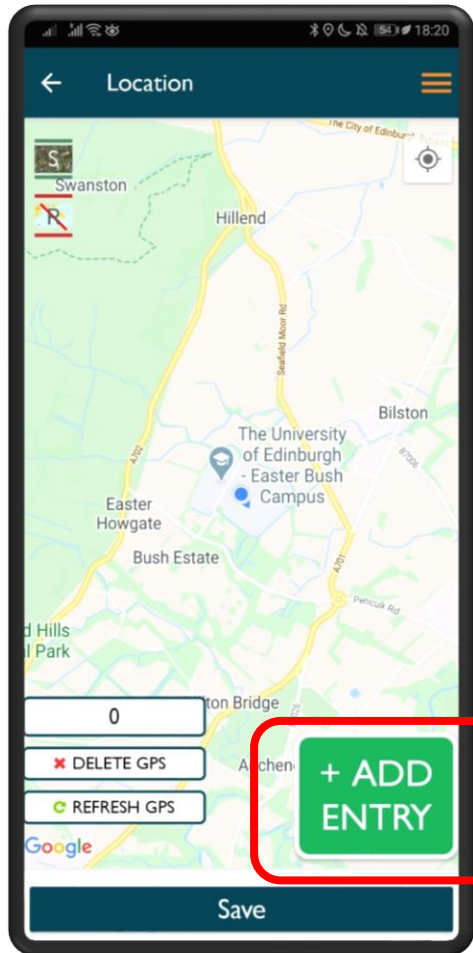


**Juveniles  
(4-11m)**



**Adults  
(12m +)**

# Age categories



Under 3 months

3 months and under

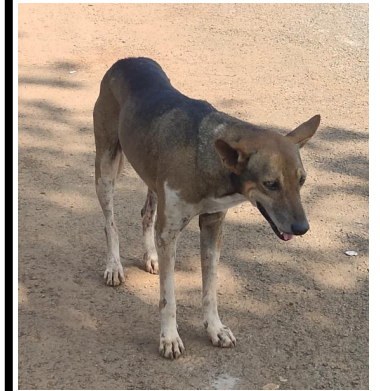
3 months exactly



4-11 months



12 months +



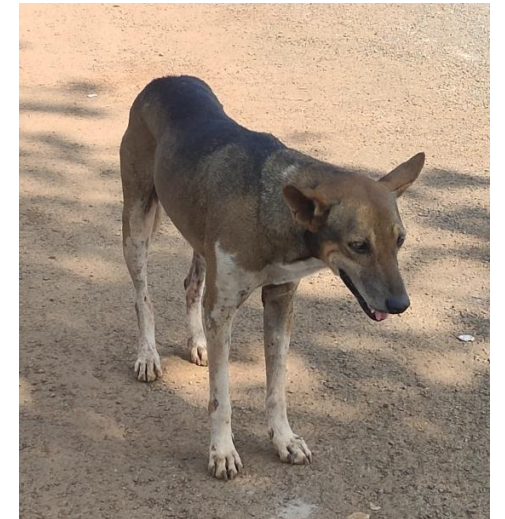
Juvenile (4-11 months)



Younger dogs have:

- less muscle mass than adult dogs
- more 'fluffy' type fur rather than coarse fur of an adult

Adult (12 months +)





All 12 months or over



Under 3 months



4-11 months



Both 12 months or over

4-11 months



- Check the sex of all dogs over 3 months

Male

Female



D-200220181821-1763-2

**Sex** RQ

Female

Male

Unknown sex

**Lactation status** RQ

Yes lactating

Not lactating

Unknown

**Neuter status** RQ

Entire

Neutered

Unknown neuter status

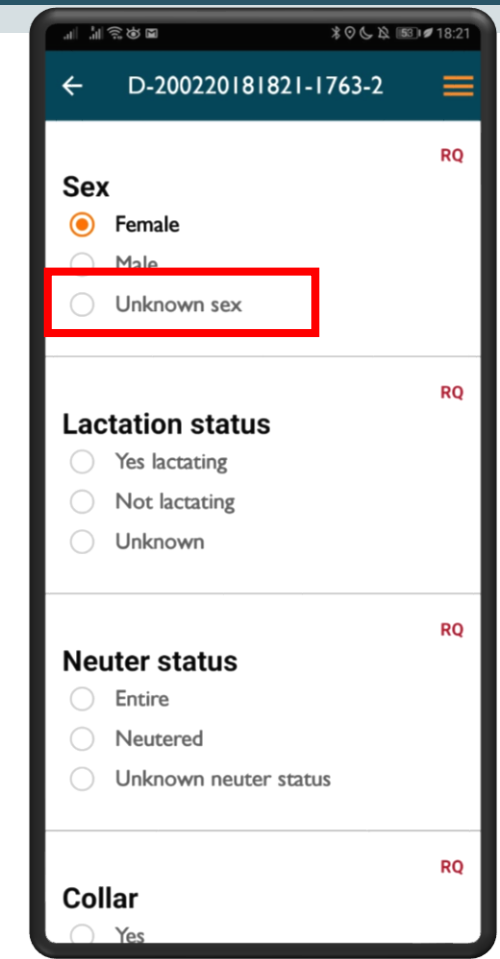
**Collar** RQ

Yes

Collar RQ

Yes

- If you can't tell put **'Unknown sex'**



D-200220181821-1763-2

**Sex** RQ

Female

Male

Unknown sex

**Lactation status** RQ

Yes lactating

Not lactating

Unknown

**Neuter status** RQ

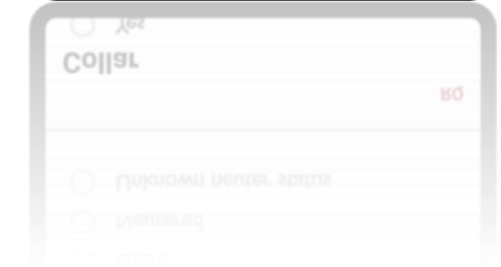
Entire

Neutered

Unknown neuter status

**Collar** RQ

Yes



# Lactating females

- 'Lactation' or 'lactating' mean females providing milk for puppies
- If all teats are large, it indicates she has recently given birth to puppies or soon will
- If female, record if lactating or not



# Lactating females



# Neuter status



# Neuter status

- Check for ear notch to see if they have been sterilised or not

**EAR NOTCH = OPERATED**

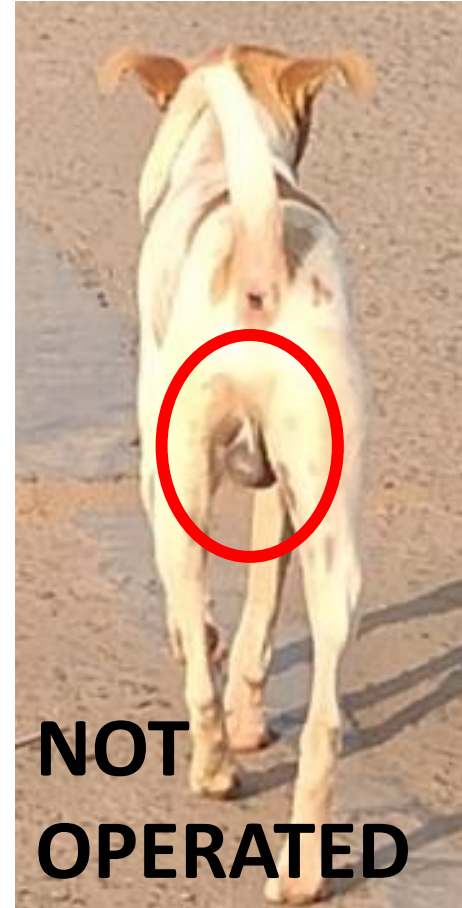


**OPERATED**



# Neuter status

- In males, check for testicles
- If present, he has not been neutered/operated!



Neuter status

- Operated
- Not operated
- Unknown

# Neuter status

- If you can't tell, select  
**'Unknown neuter status'**



Neuter status

- Operated
- Not operated
- Unknown neuter status

# Is this dog neutered?

Neuter status

- Operated
- Not operated
- Unknown neuter status



The ear notch can be on EITHER EAR....  
...so if you can't see both ears, you don't know if  
they are neutered (unless you see  
testicles/penis)



**Thank you!!!**

