Free-roaming dog population surveys

Free-roaming dog population surveys form the foundation for planning, implementing and evaluating humane and effective dog population management programs. They generate the data needed to design targeted interventions and to measure progress over time.

Globally, an estimated 1 billion dogs exist, of which 70-75% are free-roaming.

Free-roaming dog populations include both owned dogs who roam freely and unowned street dogs. Managing these populations is vital for public health, animal welfare and community safety, and is recognized globally as a key priority for governments and animal welfare organizations. Measuring free-roaming dog density over time is one of the most effective ways to track the progress and long-term impact of dog population management programs. This document outlines a simple, proven and internationally recognized approach for monitoring these populations.

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It is impossible to count all of the free-roaming dogs in a city.

Instead, a representative sample is surveyed and used to estimate the total population and its characteristics.

The city is divided into representative survey areas. These might represent existing wards or zones, or are sometimes created based on other factors, such as socioeconomic status.

A survey route is created within each survey area. The survey is then conducted, counting dogs along the route. Each survey is done at least twice to ensure the count is reliable.

Every dog sighted on the survey is recorded, noting their sex, sterilization status and other relevant details. This creates a dataset of all the dogs sighted along the survey route.
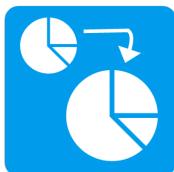
Total area counts are then calculated from the survey data using the fraction of streets surveyed within the area, and a detectability modifier (likelihood of finding dogs during survey) to account for dogs missed or hidden.

Finally, the total counts from each survey area are compiled to establish a total count and comparative data for the entire city. If only certain areas of the city were surveyed, then further extrapolation is applied to generate city-wide estimates.
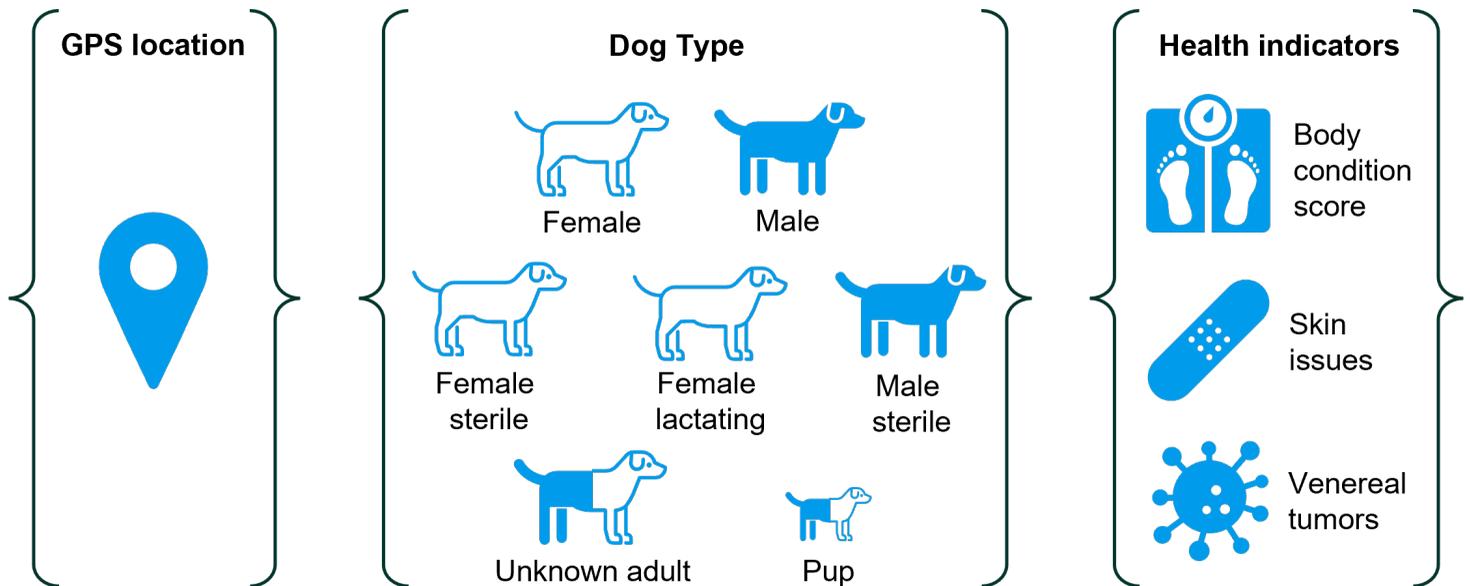
Data collected for each sighted dog during population surveys

GPS location

Dog Type

Health indicators

Female

Male

Female sterile

Female lactating

Male sterile

Unknown adult

Pup

Body condition score

Skin issues

Venereal tumors

Each dog observed is assigned a unique data entry noting their sex, reproductive and health status and other relevant details. The GPS location of each sighting is also recorded.
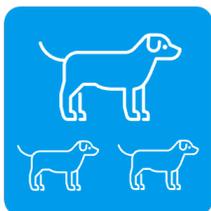
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A range of important metrics can be calculated from the survey data, providing information about the size, composition and specific health characteristics of the street dog population surveyed.
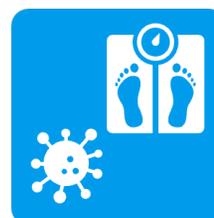
Total population size and density (spatial and per person)
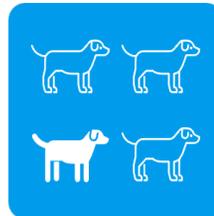
**Sterilization coverage (male, female and overall)**

Reproductive indicators (pup and lactation, sex ratio)

Health indicators and disease frequencies

GPS and repeated surveys: GPS data and survey comparisons show how dog populations are distributed across areas and how those patterns shift over time. Together these spatial and temporal insights help evaluate program effectiveness and guide targeted interventions.
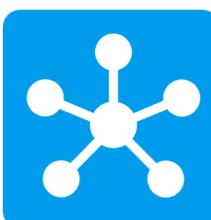
Spatial distribution of population dynamics and characteristics

Temporal changes in population dynamics and characteristics

Survey findings are critical for guiding humane dog population management across multiple domains:

Program planning & execution

- Define the scope and scale of sterilization or vaccination programs.
- Identify hotspots for breeding, disease or low sterilization coverage.
- Schedule interventions to align with reproductive seasonality.
- Use evidence-based targeting to maximize impact and efficiency.

Program evaluation & accountability

- Measure changes in density, sterilization coverage and reproductive activity.
- Demonstrate measurable progress to funders, policymakers and communities.
- Refine strategies annually or seasonally based on real, data-driven insights.

Welfare & public health

- Monitor disease prevalence and body condition of street dogs.
- Identify correlations between dog density and bite incidents.
- Prioritize education, outreach and veterinary support in areas with higher health risks.

Policy, budgeting & decision making

- Provide the scientific evidence needed for budget allocation and expansion of programs.
- Support data-driven policymaking and long-term planning.
- Feed results into predictive models to estimate sterilization rates required for sustainable population control.