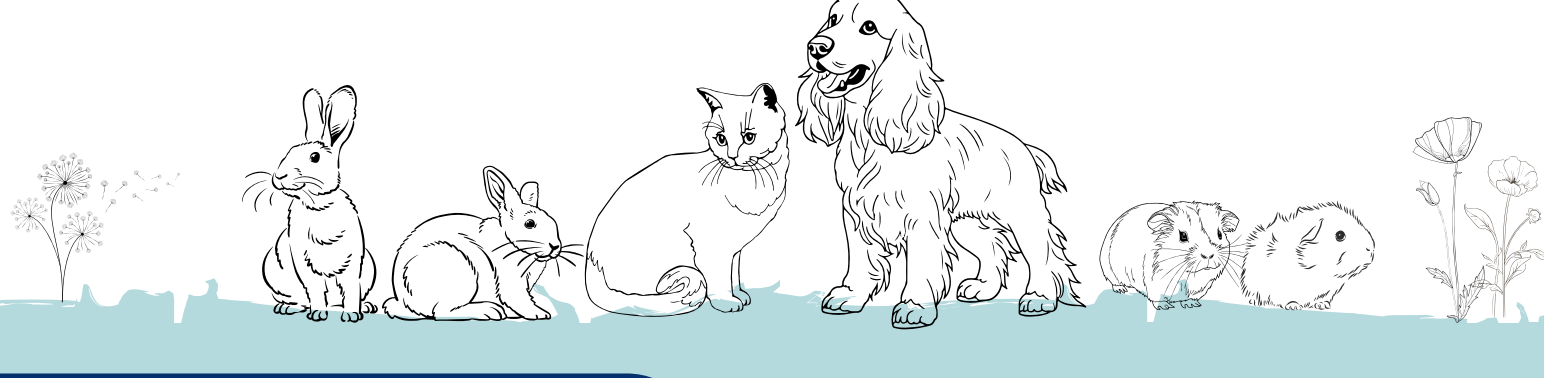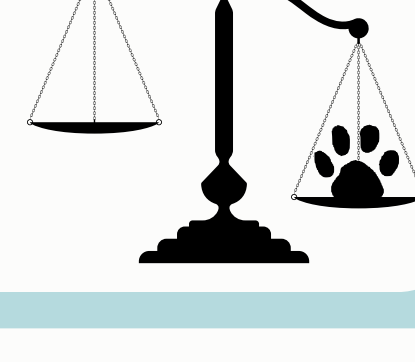# CALCULATION OF STANDARD BODYWEIGHTS
for dogs, cats, rabbits, and guinea pigs

INTRODUCTION

Standard body weights are important for measuring population health in pets. They are an essential component of the calculations used for national monitoring of antibiotic use in animals.

However, the current methods used to obtain these values typically exclude measurements from juvenile animals and only take into account individuals that have reached a stable adult body weight. By assuming all animals are adults, these methods can underestimate the average annual antibiotic use per animal.

This study aimed to develop a prediction modelling approach to improve estimation of mean population body weight in a way that included all ages of dogs, cats, rabbits, and guinea pigs.

METHODS

DATA WERE OBTAINED FROM THE UK VETCOMPASS DATABASE AND INCLUDED BODY WEIGHT MEASUREMENTS FROM :

~ 3 Million Dogs

~ 220,000 Rabbits

~ 62,000 Guinea Pigs

~ 2 Million Cats

**Loess models** were used to determine when **juvenile animals shifted from growth** to **stable adult body weight**

Linear mixed effects models were **developed** to **predict juvenile growth**, aligning predictions with **Loess model observations**

These **predictive models adjusted body weight measurements** recorded in clinical records, **allowing for the inclusion of historical data** to **estimate a snapshot of mean population body weight** on a specified date.

RESULTS

Population mean bodyweight adjusted for juvenile growth
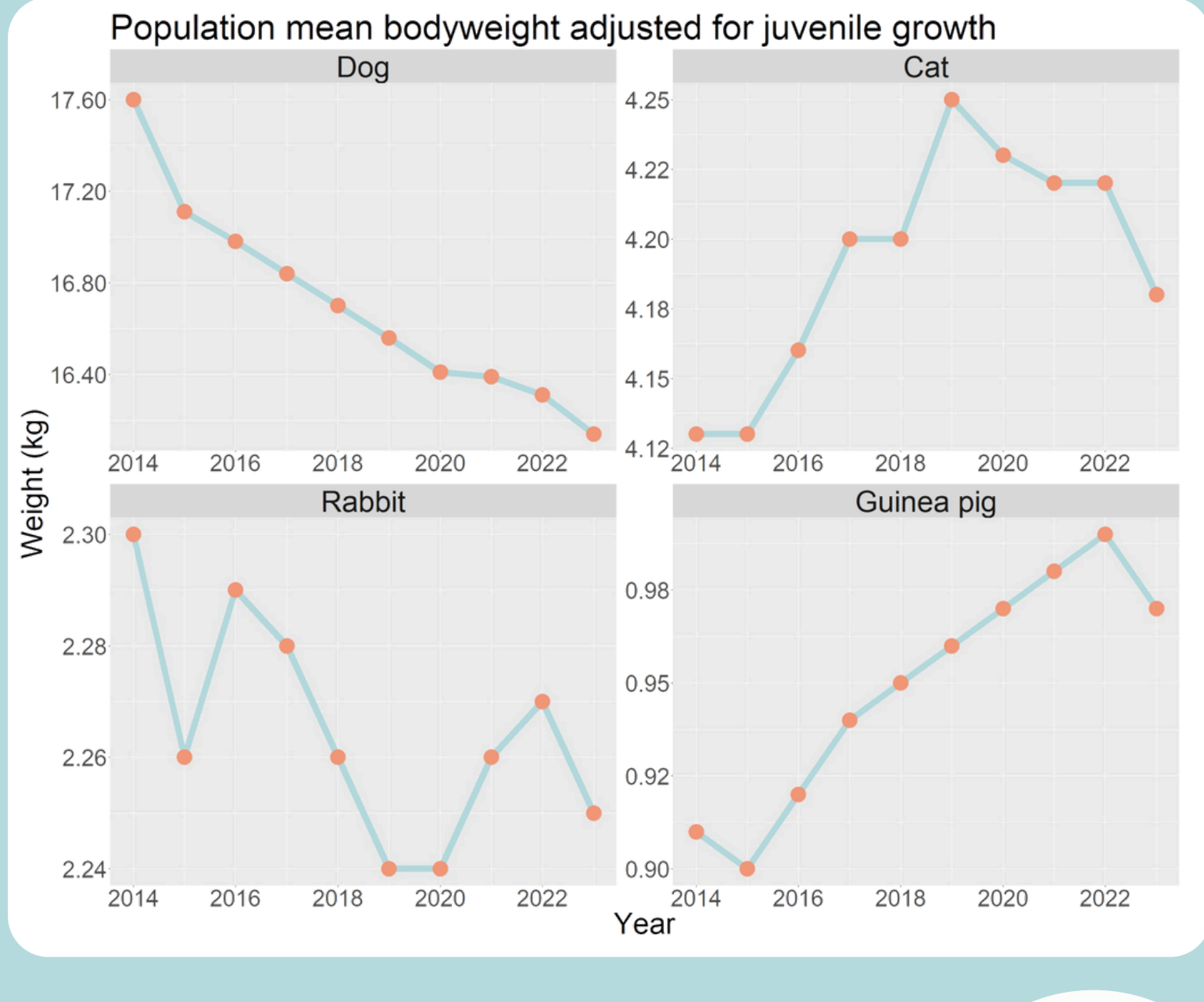
The mean bodyweights of cats, rabbits, and guinea pigs under primary veterinary care in the UK have remained relatively consistent from 2014 to 2023.
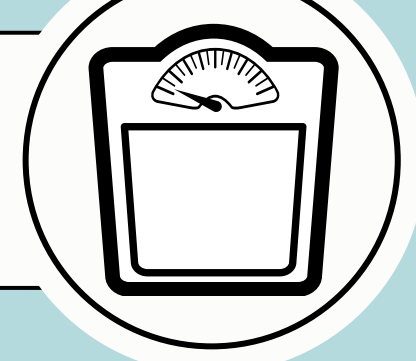
In contrast, there has been a trend towards lower bodyweights in dogs, possibly indicating a shift in owner preferences towards smaller breeds over time.

The 13-month growth period from birth to adulthood observed in this study for rabbits and guinea pigs was significantly longer than previously reported for laboratory populations. This suggests that growth profiles for laboratory strains of these species may differ from the breeds kept as domestic pets.
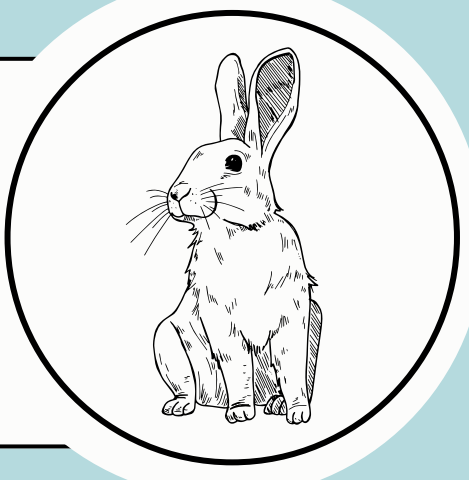
IMPLICATIONS

The model presented in this study offers several advantages:

The inclusion of the entire age range of small companion animals in calculating standard species bodyweight helps improve current methods for reporting national antibiotic use in pets, by increasing the accuracy of estimated use in populations that include patients of various ages.

The standard bodyweights provided here are likely valid for applications related to the population under the care of UK veterinarians, such as:

calculating population-level antibiotic use per animal, determining insurance premiums, monitoring health trends in vet practice, and estimating the carbon footprint of veterinary care

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