

# **Pet Tech and Biopharma: The future for preventative health care**

**Dr Jon Bowen MRCVS**





# Introduction

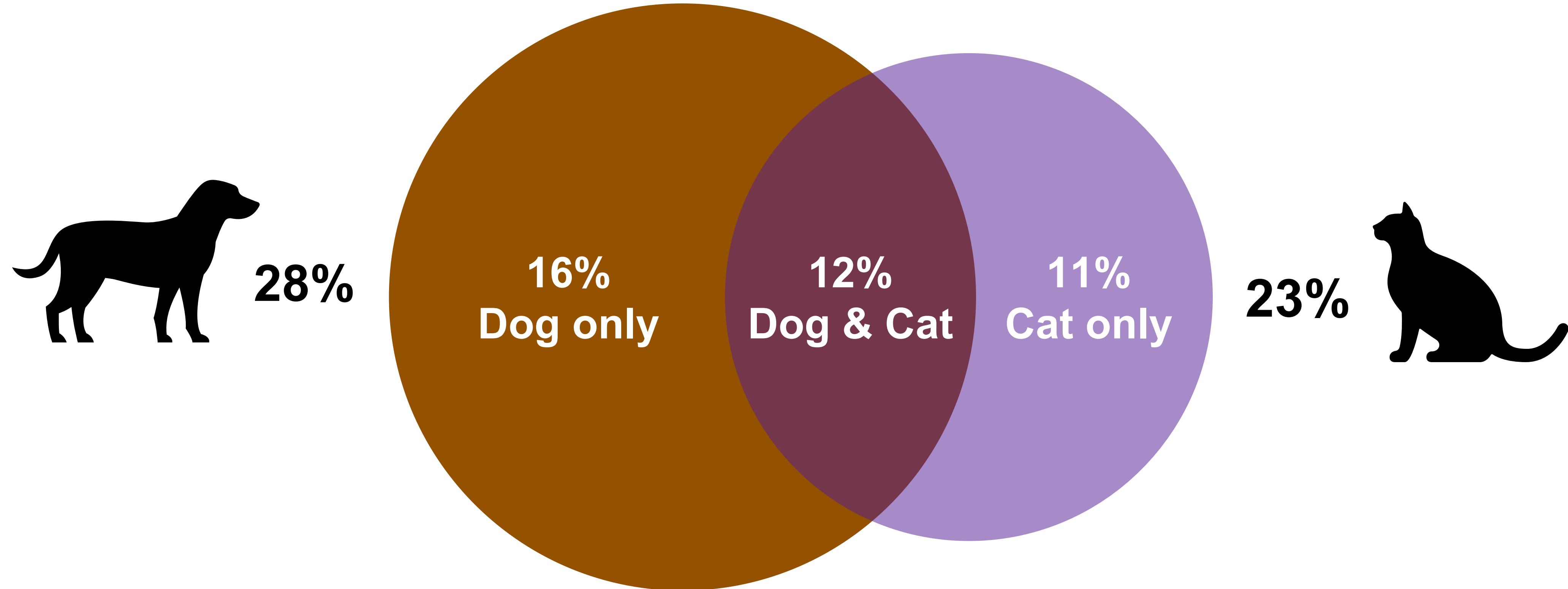
# Introduction

- **A changing world:**
  - ▶ Drivers for change
- **A problem of information:**
  - ▶ What owners can't tell us
- **How could pet tech help?**

# A changing world

# A changing world

**Many existing pet owners purchased or adopted a pet during the pandemic (US data)**





# A changing world

| First time owners     |     |
|-----------------------|-----|
| Gender                |     |
| Male                  | 67% |
| Female                | 33% |
| Age/generation        |     |
| 18-25 Gen Z           |     |
| 26-40 Millennials     |     |
| 41-55 Gen X           |     |
| 56-70 Baby Boomers    |     |
| 71+ Silent Generation |     |

RESEARCH ARTICLE

Highly Educated Men Establish Strong Emotional Links with Their Dogs: A Study with Monash Dog Owner Relationship Scale (MDORS) in Committed Spanish Dog Owners

Paula Calvo<sup>1,2☉\*</sup>, Jonathan Bowen<sup>1,3☉</sup>, Antoni Bulbena<sup>1,2,4‡</sup>, Adolf Tobeña<sup>1‡</sup>,  
Jaume Fatjó<sup>1,2☉</sup>

71%  
24%  
5%

Owner demographics have changed

Many new first time

To keep  
me  
company  
39%

To help me  
be more  
social  
37%

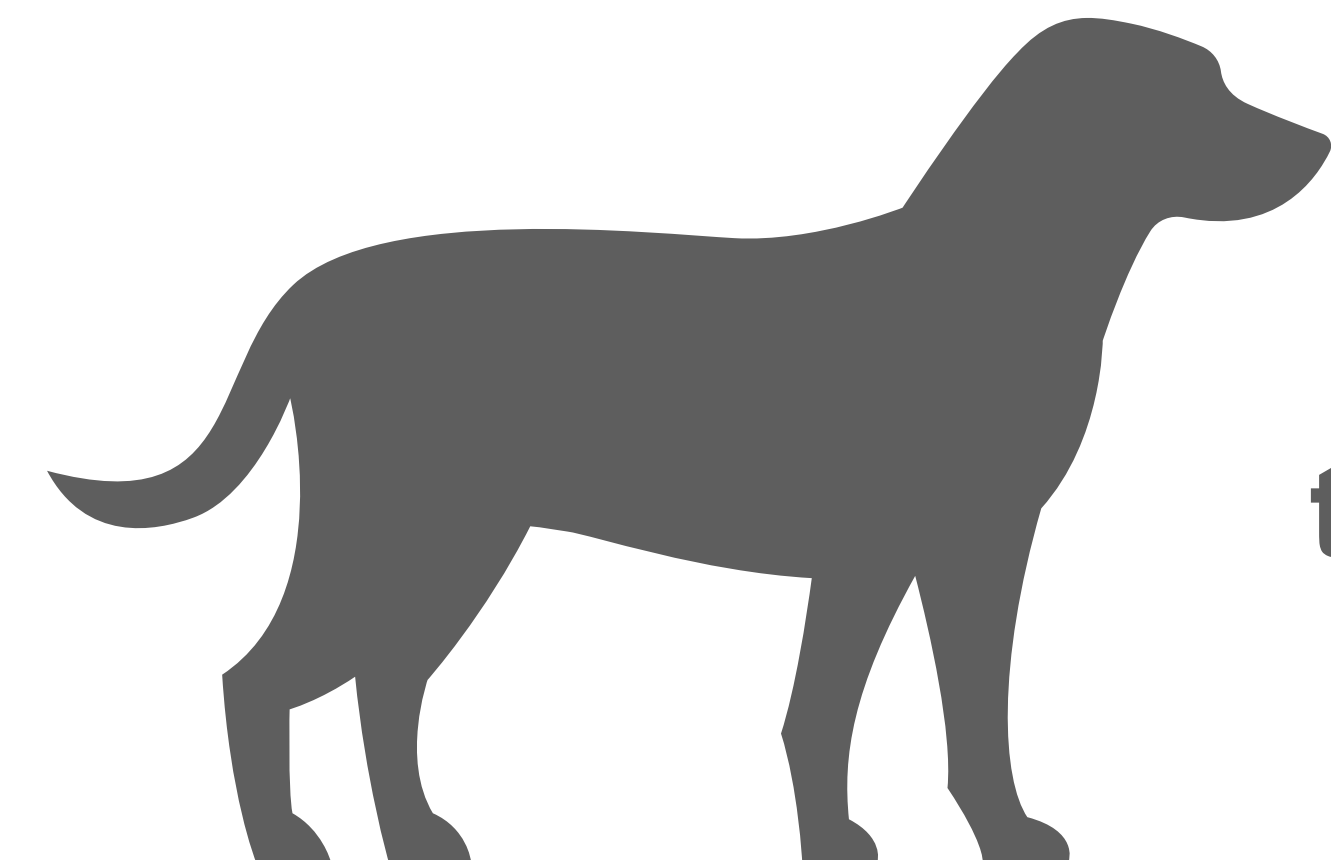


# A changing world

## The bond with pets is changing

77% of pet owners claim to have a strong bond with their pets\*

55% claim that COVID has strengthened their bond with their pets\*



+45%

My dog helps  
me get  
through  
tough times

+49%

How often do  
you hug your  
dog?

+52%

My dog  
provides me  
with constant  
companionship

+62%

How often do  
you play  
games with  
your dog?

People who have a strong bond with their pets take  
them to the vet twice as often as those with a weaker bond\*

\*APG/O'Hara 2021 study for UVSA

vetbonds



2020

The effects of the Spanish COVID-19 lockdown on people, their pets, and the human-animal bond

Jonathan Bowen, Elena Garcia, Patricia Darder, Juan Arguelles, Jaume Fatjo

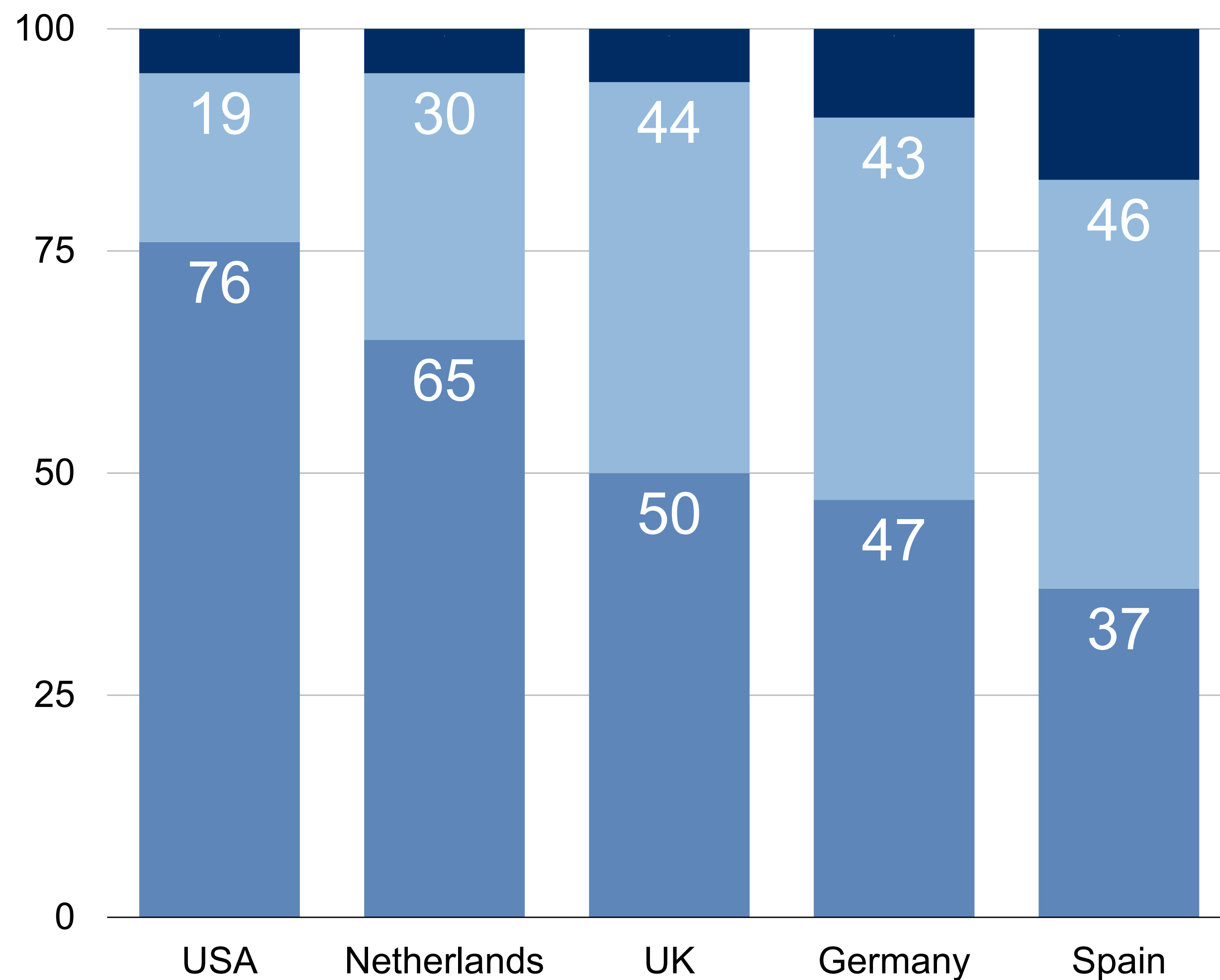
frontiers  
in Psychiatry

2021



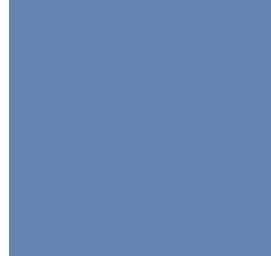
The Value of Companion Dogs as a Source of Social Support for Their Owners: Findings From a Pre-pandemic Representative Sample and a Convenience Sample Obtained During the COVID-19 Lockdown in Spain

Jonathan Bowen<sup>1,2</sup>, Antonio Bulbena<sup>1,3</sup> and Jaume Fatjó<sup>1,3\*</sup>

# A changing world



## Veterinary clinics are busier

-  We now have fewer clients than before the pandemic
-  We now have the same number of clients as before the pandemic
-  We now have more clients than before the pandemic



# A changing world

## Attitudes toward veterinary services are changing

I trust my veterinarian entirely: **67%**

I take my pet in for regular vet check-ups even if they are not ill: **58%**

I see my vet as the authority on my pet's health: **58%**

I am willing to pay more for my vet's advice because they are an expert: **53%** ●

During COVID my trust for my vet has increased: **39%** ●

Post-COVID I will check with my Veterinarian which services are really essential: **39%**

Post-COVID, I plan to be more self-reliant than in the past when caring for my pets: **36%** ●

Post-COVID, I will buy routine medications online and administer them myself: **33%** ●

Post COVID, I expect to still have curbside services: **32%** ●



# A changing world



**More pets,  
stronger  
bonds**

**Greater  
use of vet  
services**

**Shifting  
owner age  
demographic**

**Clients  
more self-  
reliant**

**High client  
expectations**

**Desire for  
convenience**



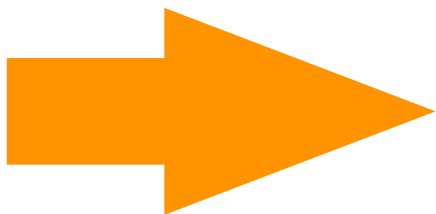
# A problem of communication



# A problem of communication

Good clinical skills and communication are associated with higher customer satisfaction in the veterinary clinic

After the consultation I know how my pet's illness will be treated  
After the consultation I know how my pet's illness will affect it in the future  
The veterinarian gave my pet a thorough clinical examination  
The veterinarian is well qualified  
The staff only give advice about things they know about  
During the consultation, the veterinarian is focussed on the problem with my animal  
The veterinarian is knowledgable about my kind of pet  
The staff listen to my concerns  
The staff are friendly  
The veterinarian is caring  
It is easy to travel to the clinic  
It is easy to get an appointment when I need one  
The veterinarian is approachable  
Appointments times are flexible  
The staff remember my pet  
Medication reasonably priced  
I can keep my pet away from other people's pets in the waiting room  
Tests reasonably priced (e/g/ radiography and blood tests)  
Emergency services reasonably priced  
Appointments run to time so I don't have to wait too long



| P value                 |          |
|-------------------------|----------|
| Spearman r (two-tailed) |          |
| 0.32                    | < 0.0001 |
| 0.29                    | < 0.0001 |
| 0.27                    | < 0.0001 |
| 0.27                    | < 0.0001 |
| 0.26                    | 0.0002   |
| 0.25                    | 0.0002   |
| 0.22                    | 0.0014   |
| 0.22                    | 0.0016   |
| 0.19                    | 0.0074   |
| 0.18                    | 0.011    |
| 0.18                    | 0.0112   |
| 0.15                    | 0.0272   |
| 0.14                    | 0.0437   |
| 0.12                    | 0.0913   |
| 0.12                    | 0.0997   |
| 0.11                    | 0.1126   |
| 0.10                    | 0.1386   |
| 0.06                    | 0.3943   |
| 0.04                    | 0.5624   |
| 0.04                    | 0.5792   |



# A problem of communication

**However, we can only ever be  
as good as the information we receive**

## **An example of potential problems: Hydration in cats**

A panel of 201 veterinarians in the US & UK ranked a change in water consumption as the sign of greatest concern in middle-aged and older cats\*

**51%** of vets indicated that it is difficult or very difficult **to** get reliable information from cat owners to support an accurate diagnosis\*

**68%** of cat owners indicated **they** couldn't give the veterinarian an accurate answer about how much their cat drinks each day\*\*



# A problem of communication

Cat owners were also poor at identifying signs of dehydration in their cats, even when their cats have renal disease or diabetes

% of owners who FAILED to correctly identify sign

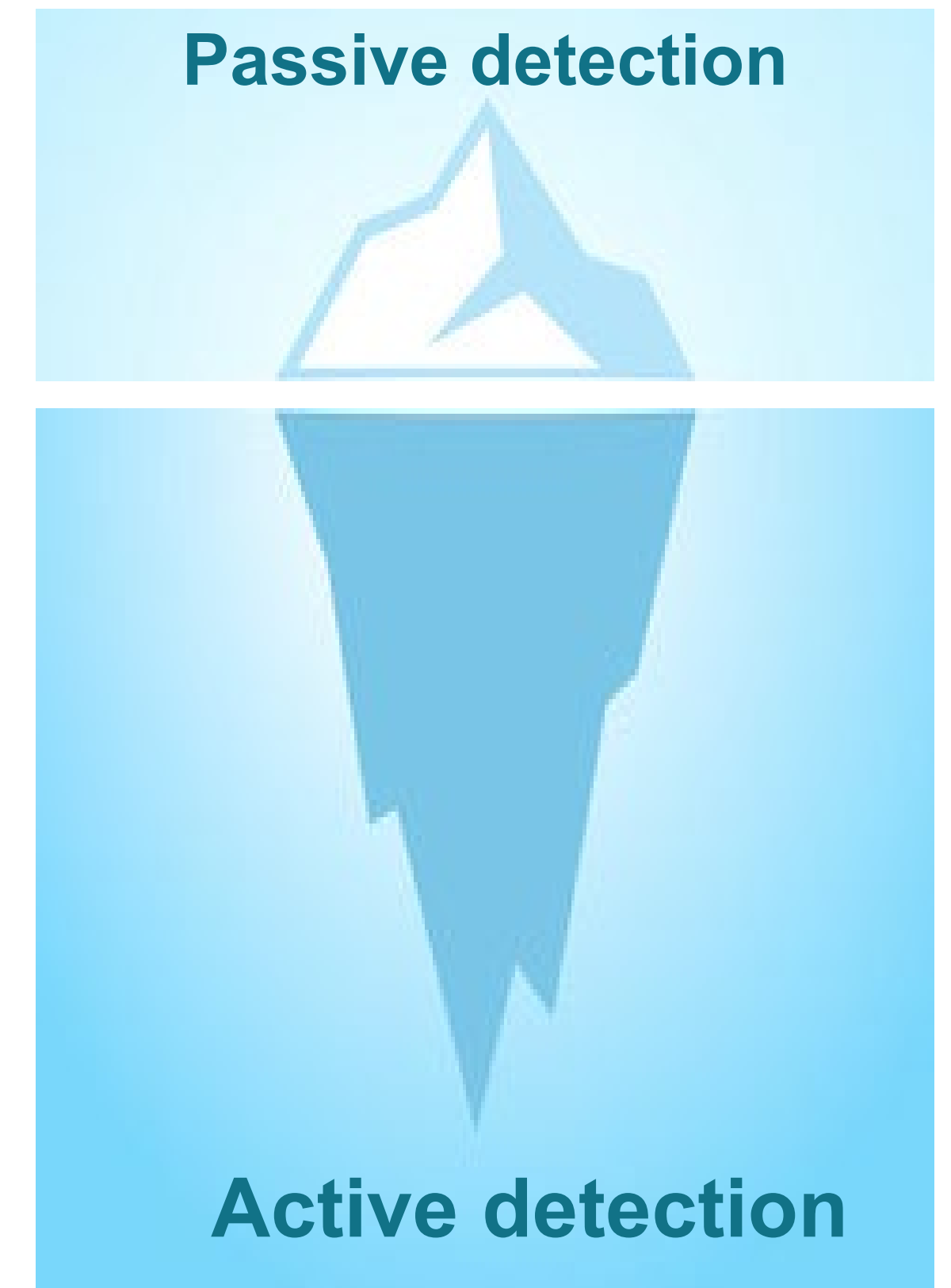
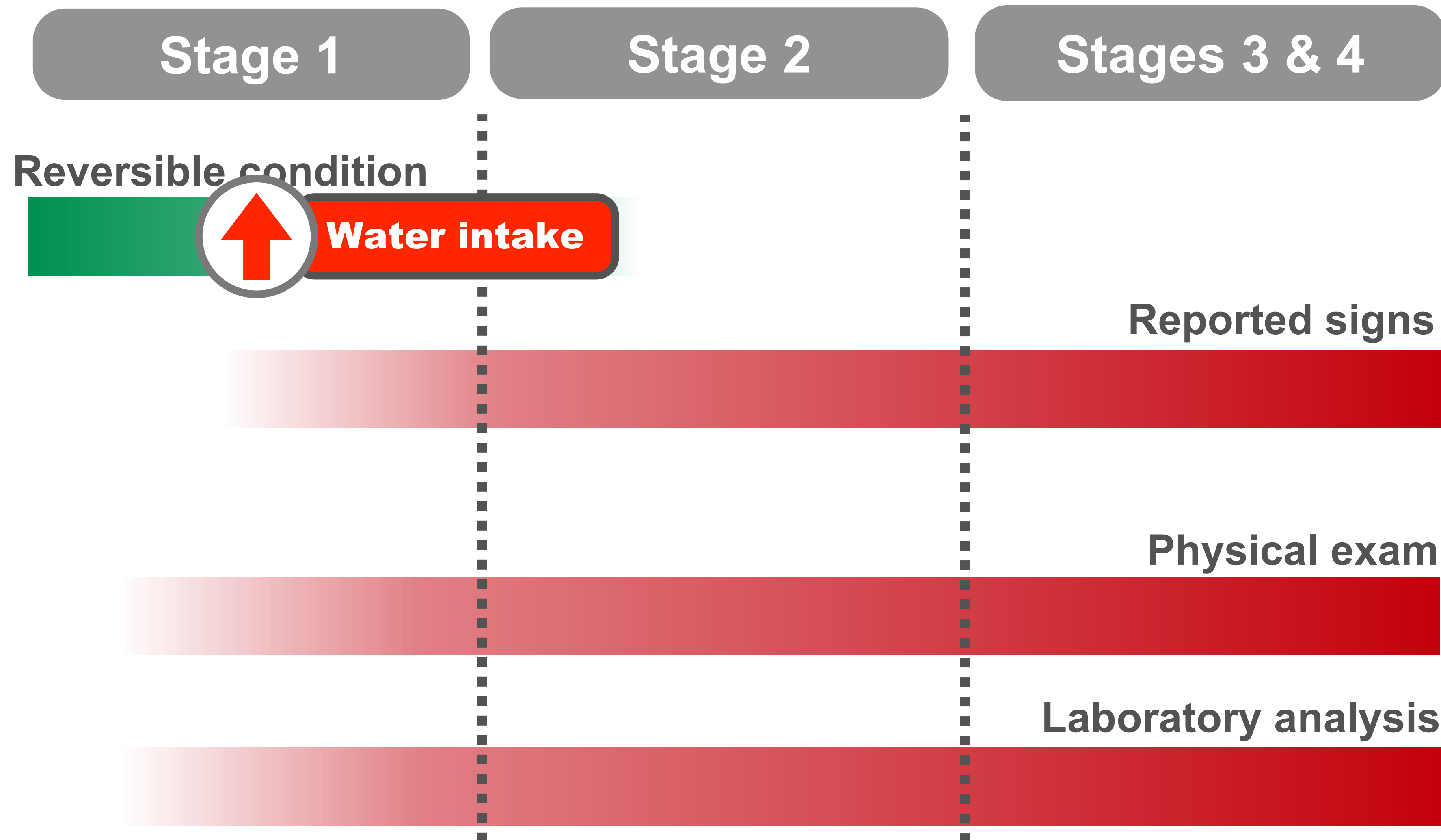
All cats

Cats with diabetes or renal disease

|                           |      |      |
|---------------------------|------|------|
| Pale gums                 | 59.3 | 61.1 |
| Loss of appetite          | 55.8 | 53.7 |
| Increased thirst          | 55.5 | 44.5 |
| Sunken eyes               | 55.1 | 53.7 |
| Skin tenting              | 53.5 | 33.9 |
| Poorly groomed coat       | 48.9 | 48.9 |
| Panting                   | 48.1 | 59.7 |
| Dry, tacky gums and mouth | 31.8 | 32.4 |
| Listlessness/lethargy     | 20.2 | 19.7 |

# A problem of communication

## Evolution of Chronic Kidney Disease in Cats





# A problem of communication

The diagram consists of five seven-pointed stars arranged in two rows. The top row has two teal stars, and the bottom row has three red stars. The teal stars represent positive outcomes or goals, while the red stars represent communication problems or barriers. The text in the teal stars is white, and the text in the red stars is white.

**Quality of  
clinical  
skills  
drives  
satisfaction**

**Satisfied  
clients are  
more loyal  
& adherent**

**We only see  
cases when  
clients  
recognise a  
problem**

**Clients may  
not notice  
signs of  
illness early  
enough**

**The quality of  
information  
from clients  
can be poor**

# How could pet tech help?



# How could pet tech help?

- Providing insights into the needs of animals, so that we can improve their wellbeing (preventative health)
- Detecting hidden patterns of behaviour (& behavioural change) associated with disease in population-level data.
- Identifying & monitoring personalised patterns of behaviour (& behavioural change) in individual longitudinal data.
- Providing more accurate information for diagnostic purposes.
- Processing & presenting data in more informative ways (e.g. generating automatic alerts and reminders for owners & vets).

# How could pet tech help?

**Using data collected from cats using connected cat-doors, feeders & drinkers, we can start to build an accurate picture of cat's daily lives**

- When do cats most need to be active (e.g. outdoors)?**
- When do cats most need to eat?**
- How do these patterns vary during the year and between individuals?**



# How could pet tech help?

**About 19% of cats were outdoors, on average, at any given time of day\***

**Typically the cats ate 4.2 meals per day on average\***

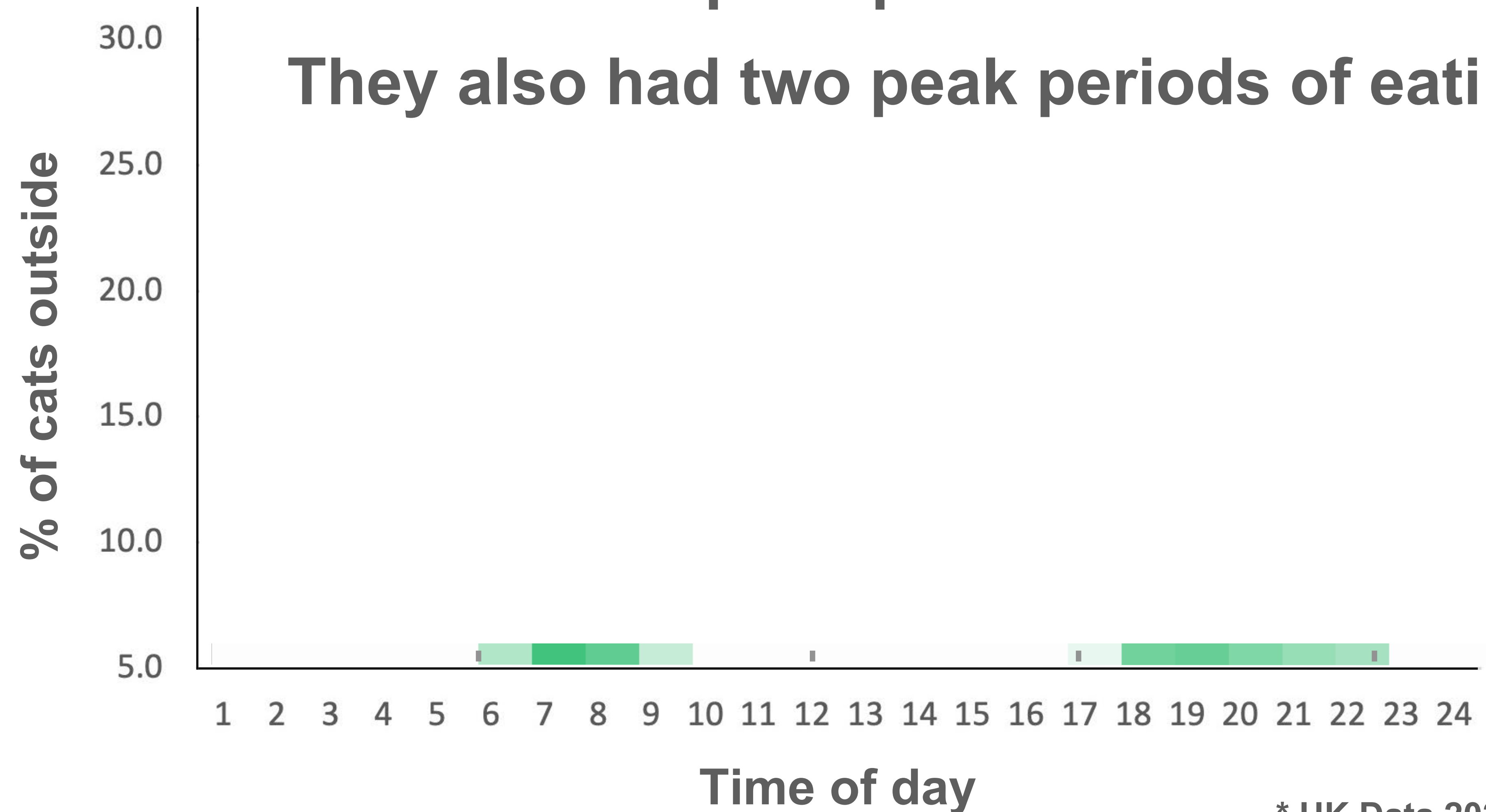
**There were patterns to when cats were active and eating, which varied seasonally**

**\* UK Data 2021, Sure Petcare**

# How could pet tech help?

Cats had two peak periods of outdoor activity

They also had two peak periods of eating

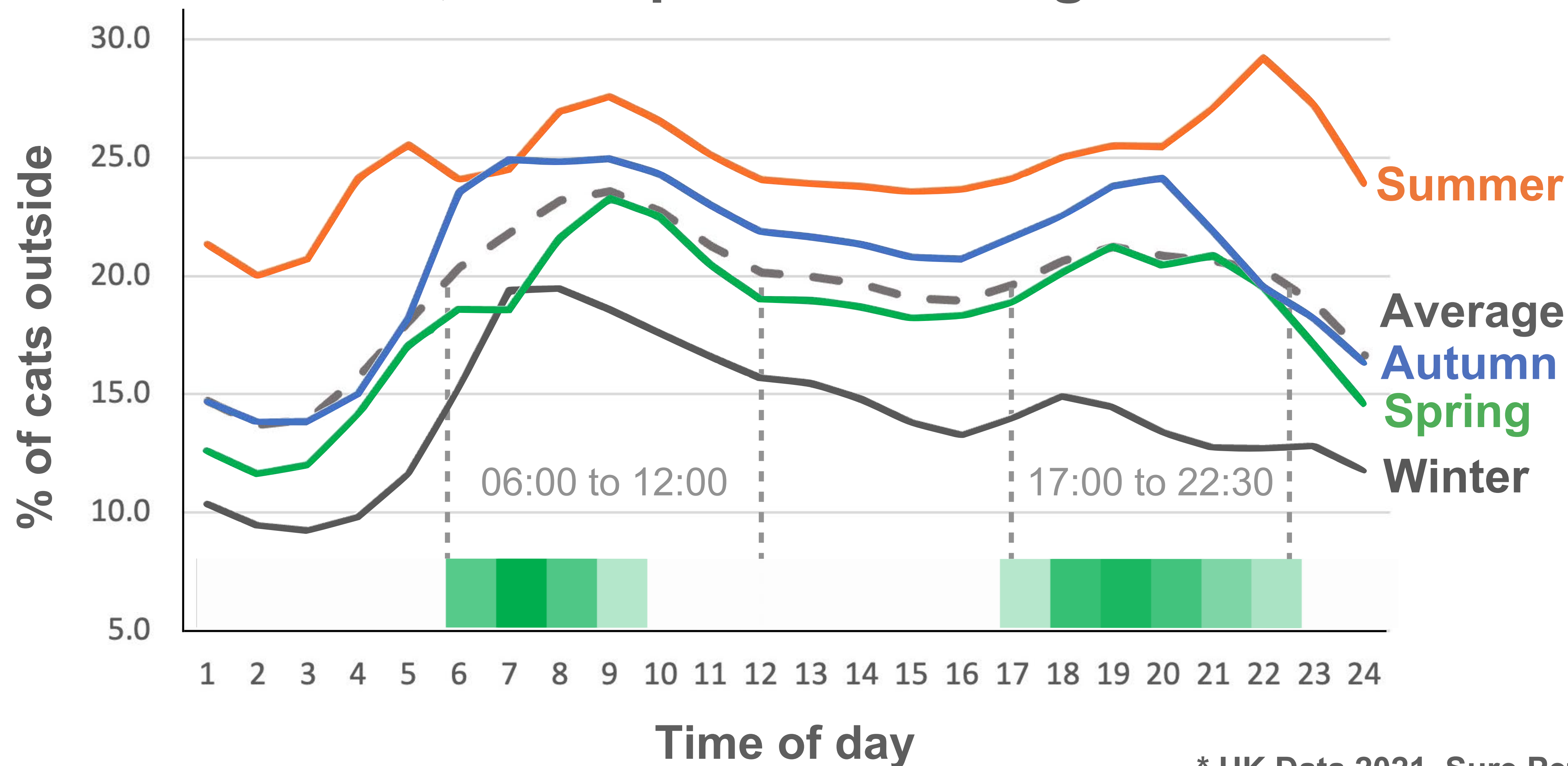


\* UK Data 2021, Sure Petcare



# How could pet tech help?

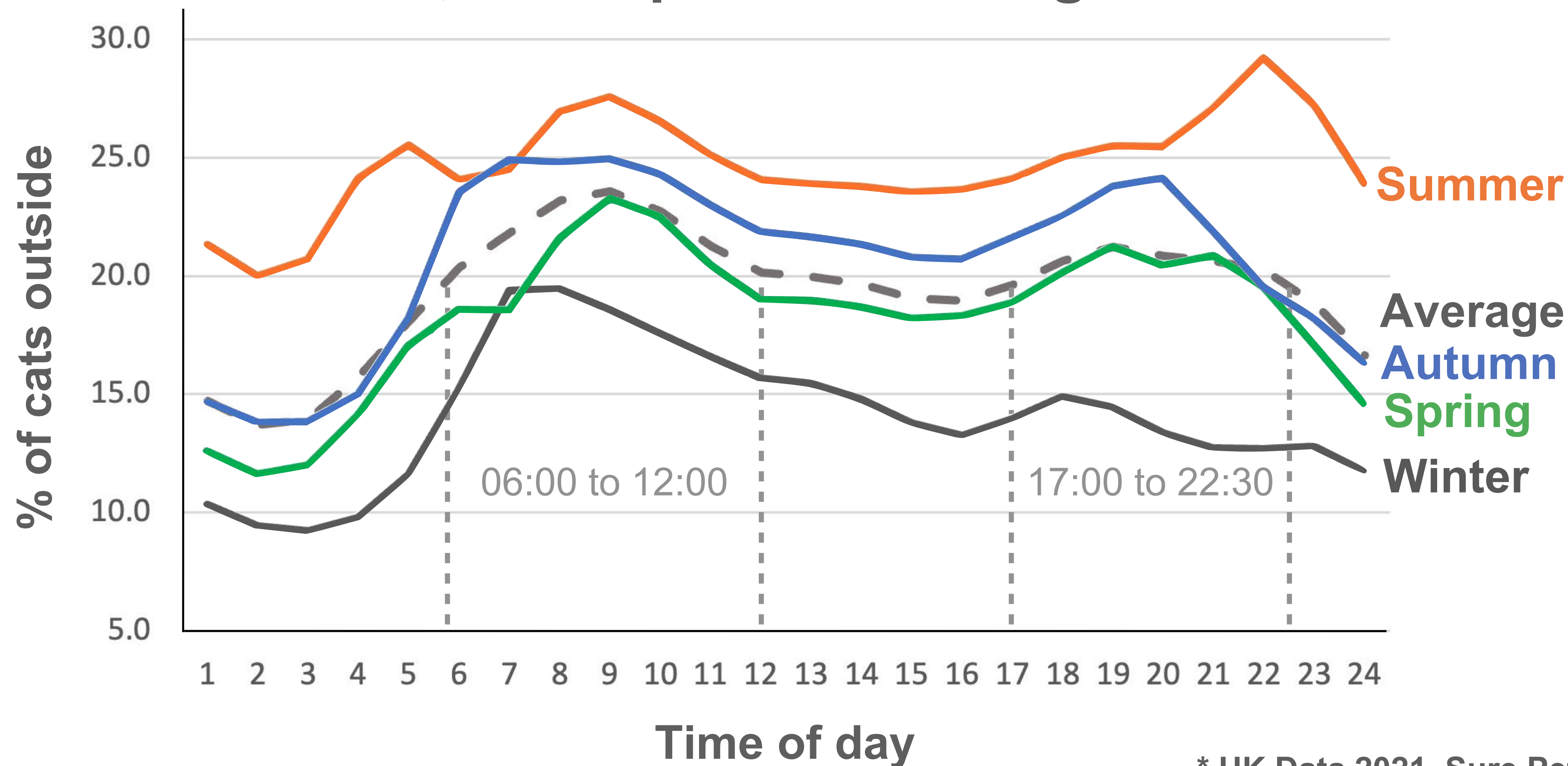
However, these patterns changed with the seasons



\* UK Data 2021, Sure Petcare

# How could pet tech help?

However, these patterns changed with the seasons



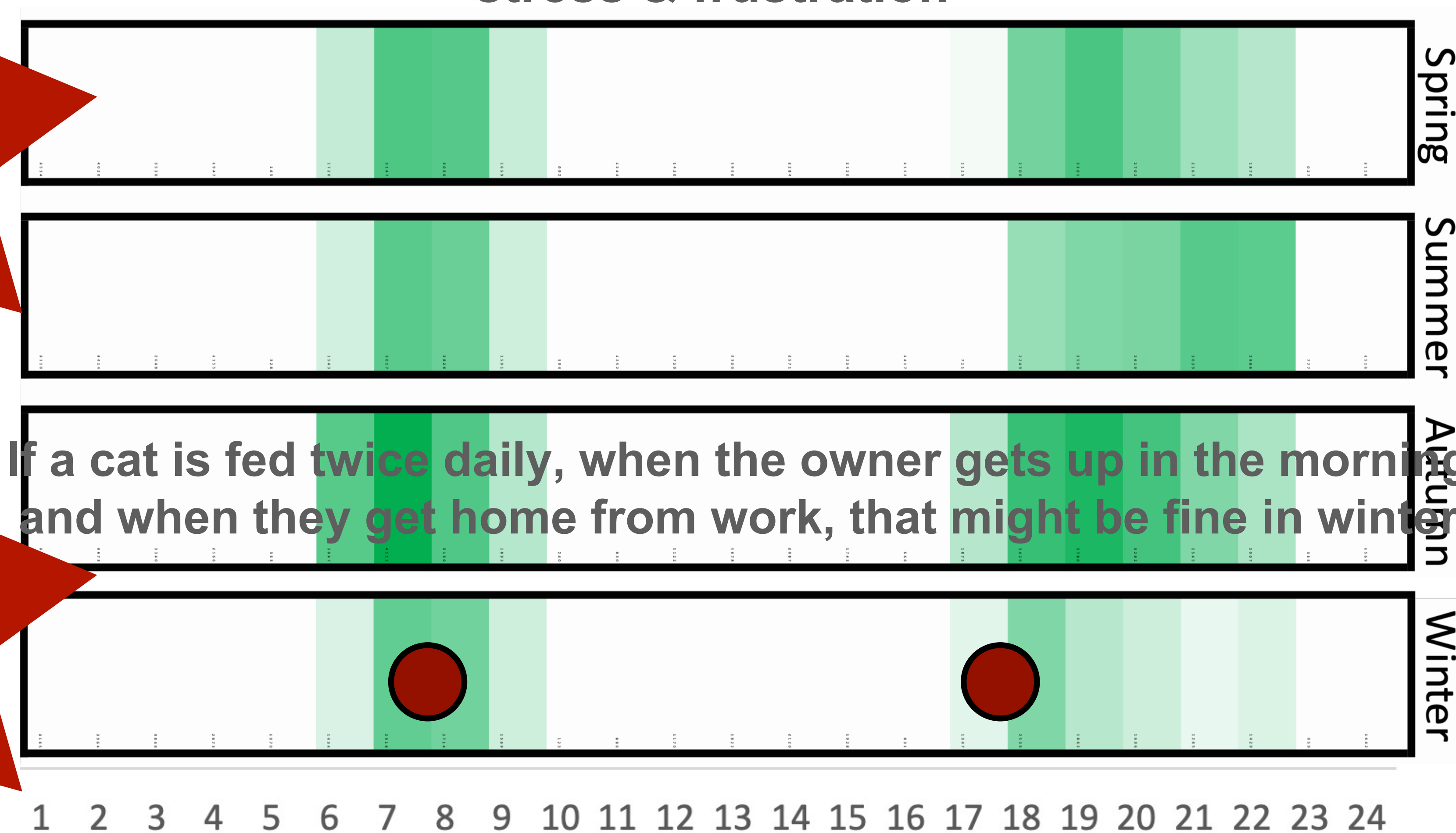
\* UK Data 2021, Sure Petcare



But it doesn't match with when the cat needs to eat during other seasons of the year, & will lead to hunger, stress & frustration

22% of cats are fed on-demand\*\*

33% of cats are meal-fed\*\*



\*\* UK Data 2013, Sure Petcare

\* UK Data 2021, Sure Petcare

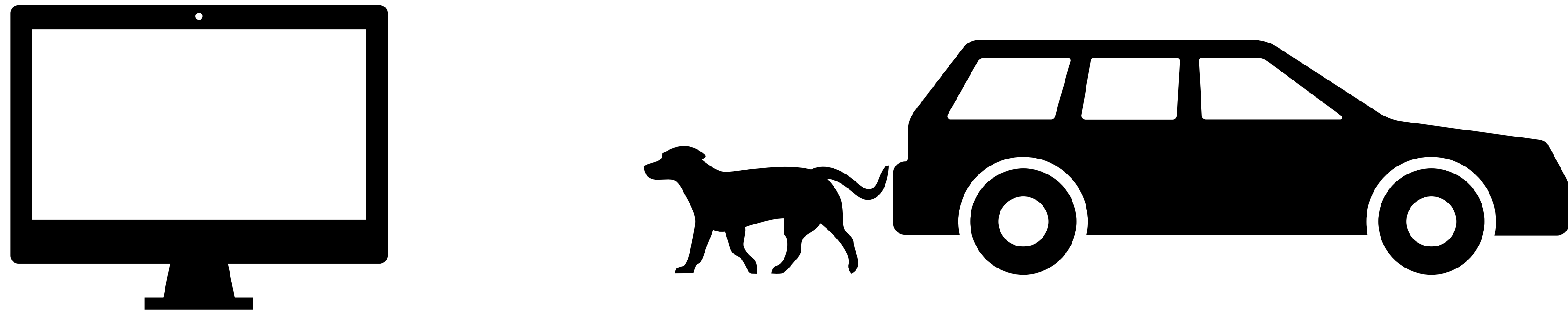
# How could pet tech help?

- **This data is becoming very detailed, so we can see how likely it is for cats to be active, eating or drinking at any time of day throughout the year**
- **It could be used to understand whether an individual cat's feeding, drinking or activity pattern is unusual.**



# How could pet tech help?

**Clients expect to continue with some of the remote services they became accustomed to during the pandemic:**



**But the same drivers of satisfaction remain:**

After the consultation I know how my pet's illness will be treated

After the consultation I know how my pet's illness will affect it in the future

The veterinarian gave my pet a thorough clinical examination

The veterinarian is well qualified

The staff only give advice about things they know about

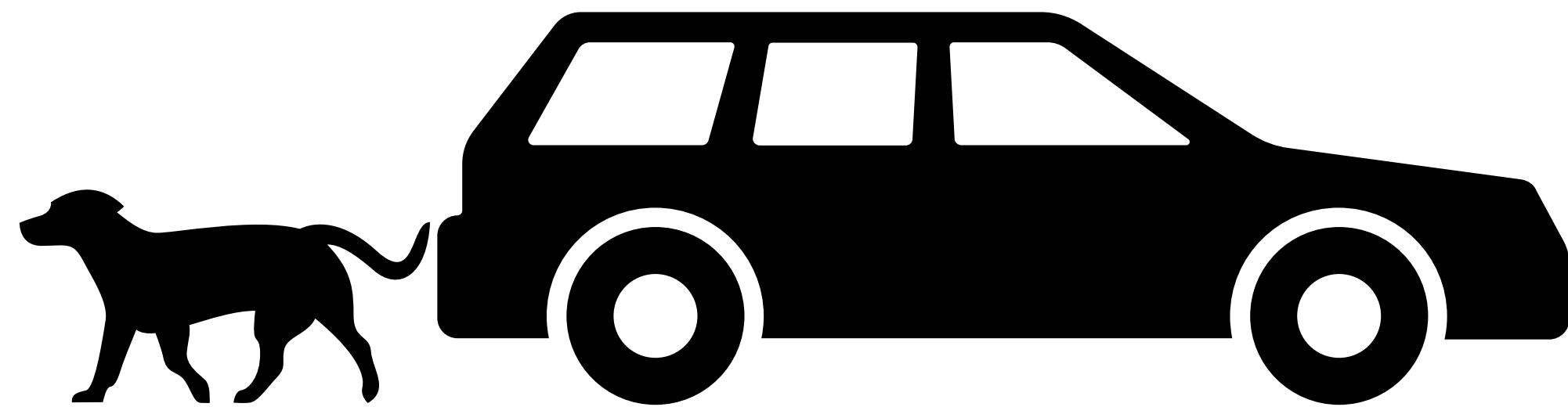
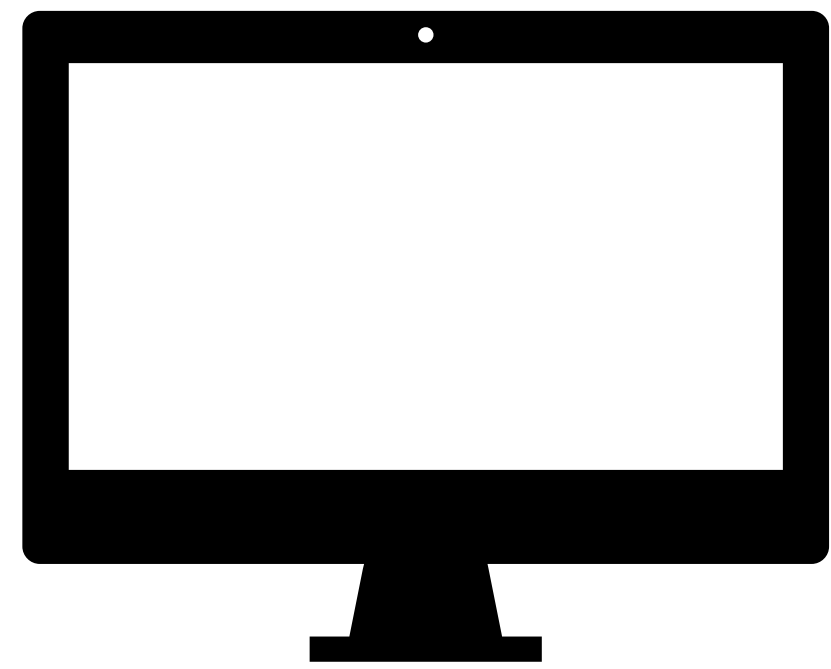
During the consultation, the veterinarian is focussed on the problem with my animal

The veterinarian is knowledgeable about my kind of pet

The staff listen to my concerns

# How could pet tech help?

**Clients expect to continue with some of the remote services they became accustomed to during the pandemic:**



**Pet Tech  
can enhance  
services:**

More  
accurate  
information

Health  
monitoring

Early  
detection

# How could pet tech help?



**Daily food consumption**



**Daily water consumption**



**Activity**



**Activity, behaviour classification**



**Activity, behaviour classification**



# How could pet tech help?

**When used together, connected products enable us to:**

- Personalise & contextualise information about clinical indicators like activity, & water & food consumption
- Employ pattern recognition for early disease detection or monitoring
- Provide more sophisticated & reliable alerts

Daily food consumption  
Meal times  
Meal size

Meal frequency  
Meal duration  
Interval between meals  
Meal size variation

Daily consumption variation  
Meal time variation  
Peak feeding times

Daily water consumption  
Drinking times  
Drink volume

Drinking frequency  
Drinking duration  
Interval between drinks  
Drink volume variation  
Daily consumption variation  
Drink time variation  
Peak drinking times

Indoor/outdoor times  
Indoor/outdoor duration

Indoor/outdoor frequency  
Indoor/outdoor interval  
Indoor/outdoor times

Activity  
Behaviour detection

Sequences of behaviour  
Patterns of activity  
Quality of rest  
Reaction to stimuli  
Indicators of stress

# How could pet tech help?

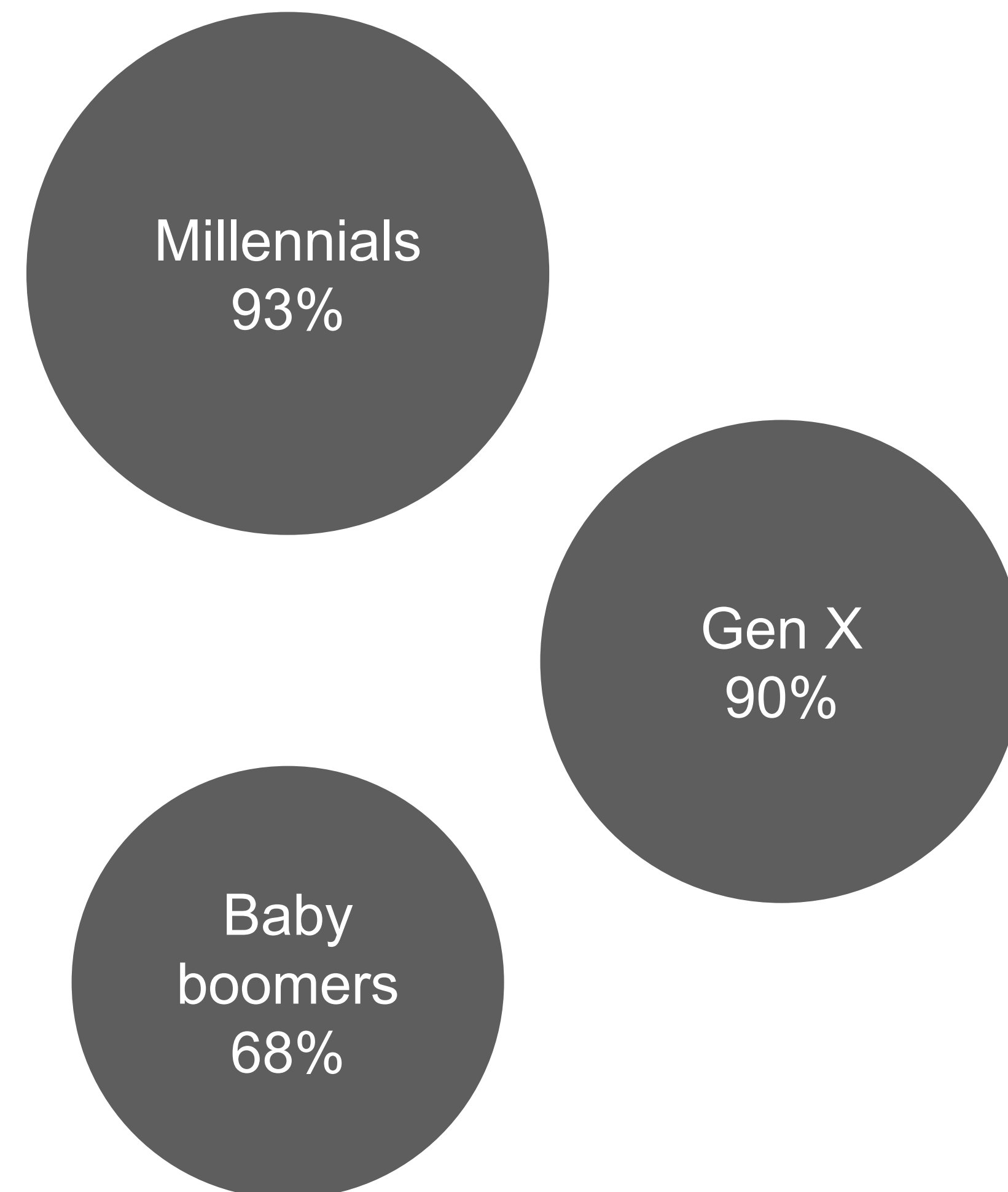
## Are clients ready?

Smartphones provide the accessible computing power & internet access needed for pet monitoring technologies.

On average, smartphone ownership is approximately 76% for the EU & advanced economies\*

Use of wearables is accelerating, particularly among Millennials\*

## Smartphone ownership (USA)\*



# How could pet tech help?

## Are veterinarians ready?

When asked “In a perfect world, how would you prefer a cat’s health information be presented to you during a consultation?”, vets showed an interest in new forms of data presentation

|  | %<br>ranking<br>1 or 2 |
|--|------------------------|
| Verbally   | 72.1                   |
| Information recorded on paper, e.g., diet diary (written or printed)           | 37.8                   |
| Sharing data with you directly using software or an app into practice software | 34.8                   |
| Send electronic files to the practice (data, videos or pictures)               | 30.8                   |
| Showing you data on a smart device that has been collected using an app        | 24.4                   |

83% said that they would find it useful if they could receive automated alerts notifying them of significant changes in a client’s pet’s behaviour (e.g. eating & drinking).

\*n=201 veterinarians, data obtain from Sure Petcare survey 2021.



# Conclusions

# Conclusions

- The pandemic has accelerated changes:
  - Uptake of pet ownership, especially by Millennials
  - Requirement for virtual & drop-off services
- It could be difficult for veterinary clinics to satisfy the dual needs for convenience and clinical service quality
- Technology provides a way to meet both demands
- The timing is right because we & our clients are ready.



# Thanks for listening



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