



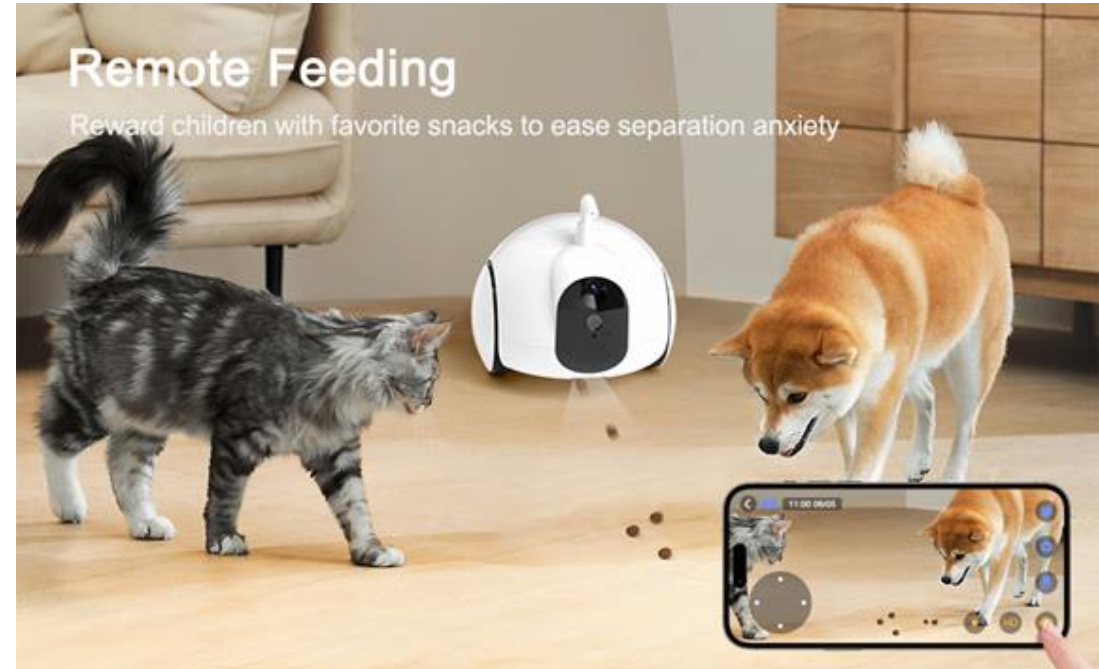
Pet Tech and Animal Welfare: *The Good, The Bad and the Ugly!*

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Pet Tech Industry Size

- Increase in use of Pet Smart devices
- Veterinary wearables expected to reach market value of 3.7 billion by 2026
- Sales likely to grow as demand increases with easy availability offering solutions for problems we didn't know we had!





The Rise in Pet Technology

- Rapid Growth in unregulated products available in pet tech market
- Concern regarding data security and 'attacks'
- Questions regarding animal welfare (is it all positive)
- Ethical concerns regarding the storage and use of pet data (privacy)

Pet Tech Growth Potential

NZ Pet Population (*latest Figures*)

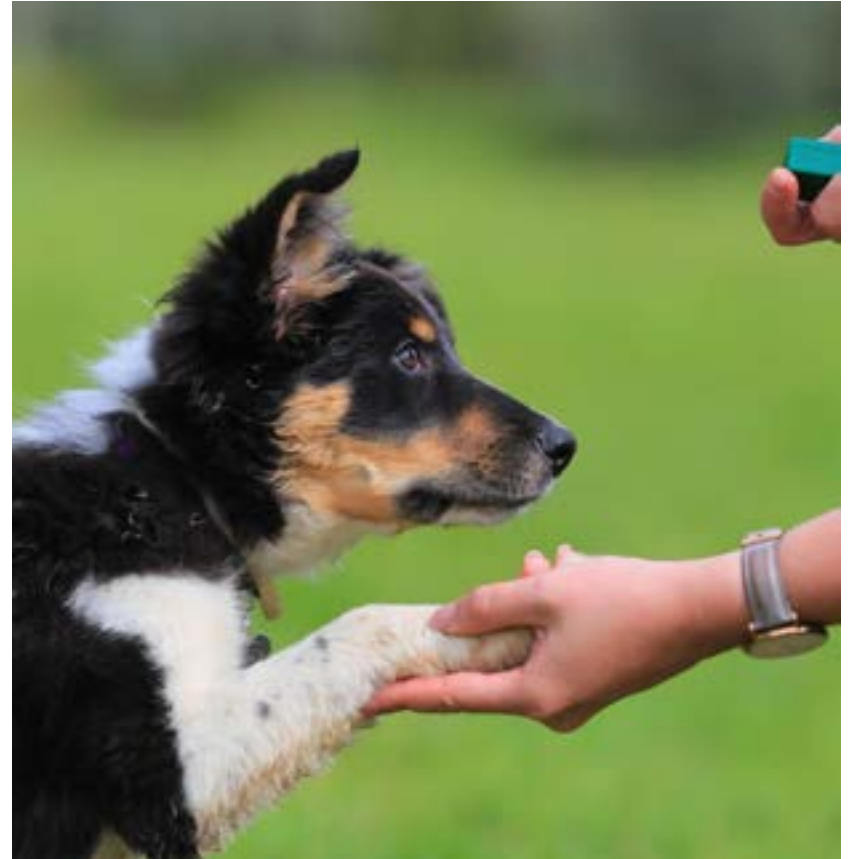
Companion animal type	2024 Household penetration	2024 Estimated population (and range*)
Cat	40%	1,261,000 (1,195,000 - 1,326,000)
Dog	31%	830,000 (780,000 - 885,000)
Horse / Pony	3.4%	106,000 (90,000 - 123,000)
Rabbit**	1.1%	

Base size for household penetration and estimated population: All respondents from 2024 dataset n=2,058 except for horse / pony estimates, which used 2022 dataset n=8,130



THE GOOD - Positives for Our Animals

- Potential for use of smart technology for improving detection, recognition, and management of health and welfare concerns
- Personalised health and behaviour insights – improving pet – owner relationship
- Tracking of food intake, exercise, animal whereabouts, containment
- Potential to provide pet with greater control of environment – more choice – more predictability – **more agency**



THE BAD - Potential Problems

- Over-reliance on technology interfering with human-animal connection (*eg neglecting direct observation and/or technology failure, leading to animal welfare issues*).
- Misuse/Abuse due to lack of regulation/owner awareness of the risks
- Disruption of normal behaviour of the animal – Greater anxiety
- Unclear policies on the use of stored pet data
- Security risks for those using connected devices



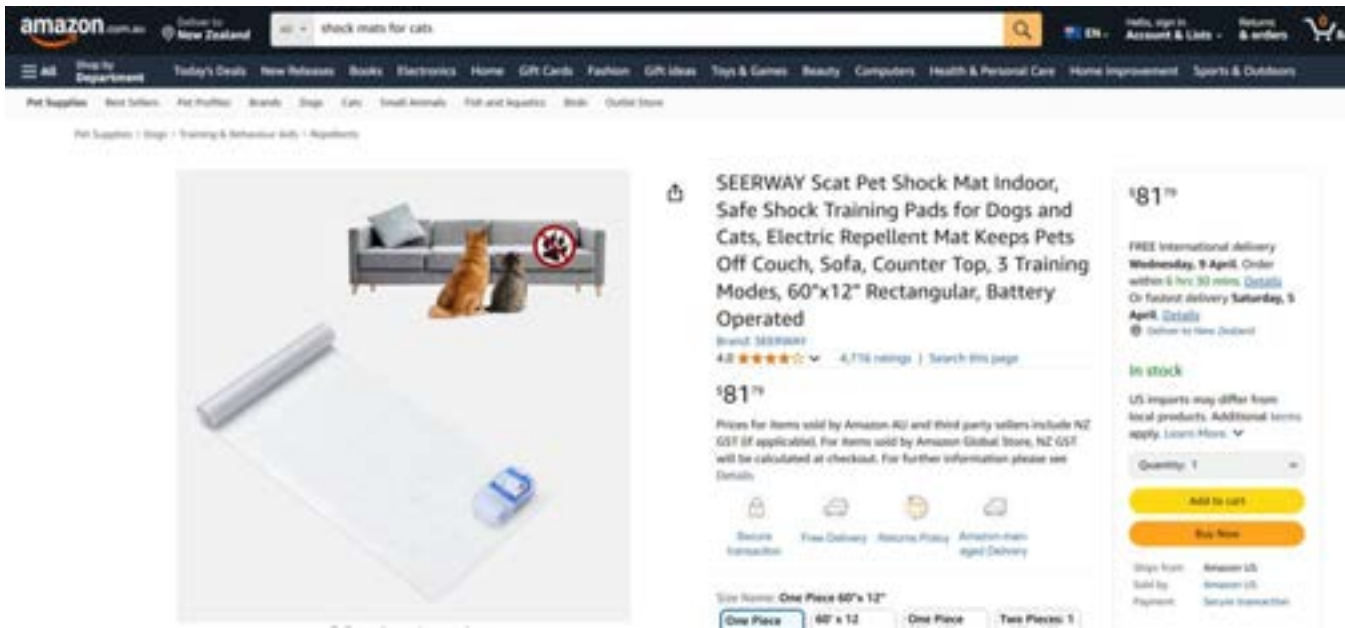
The Ugly

Remote Punishers

- Electric Mats
- Electric Bark Collars
- Shock Collars for Training

- **Electric Containment Systems**
- Freedom fences, Hidden Fences, Electu
- Use of Electric Tape/Wire

- Horse 'motivators' eg jiggers



Uses of Pet Technology?



Identification



Tracing/Containment



Health Monitoring



Home Surveillance



Stimulation



Welfare Assessment

1. Microchip Technology



Companion Animals NZ

Lost pet advice | Found pet advice | Ordering | Implanter TAG | Quarter TAG | About us

Sign in | Register your pet

New Zealand's microchip database for pets

On April 7th 2021, we launched a new look register. Included in the updates to the register was a change to the login process.

Enter your pet's microchip number into our checker below to confirm the status of your account, and how to proceed.

Does your pet number default to 0? Visit our website for more info.

Need a number? [See our TAGs](#)

LOST CAT

Luna

Lost since 26/10/2023 from Auckland Auckland

Microchipped	Yes
Breed	Dom Short Hair
Colour	Tabby and white
Sex	Female

If you find this cat, please call immediately:
Sarah Telling - 0508567873 2

This notice was posted on behalf of a pet owner by LostPet NZ. To confirm the missing animal, please call the number below.

Helping lost pets get home



ID, Health and Traceability



Bio-Thermo[®] microchip

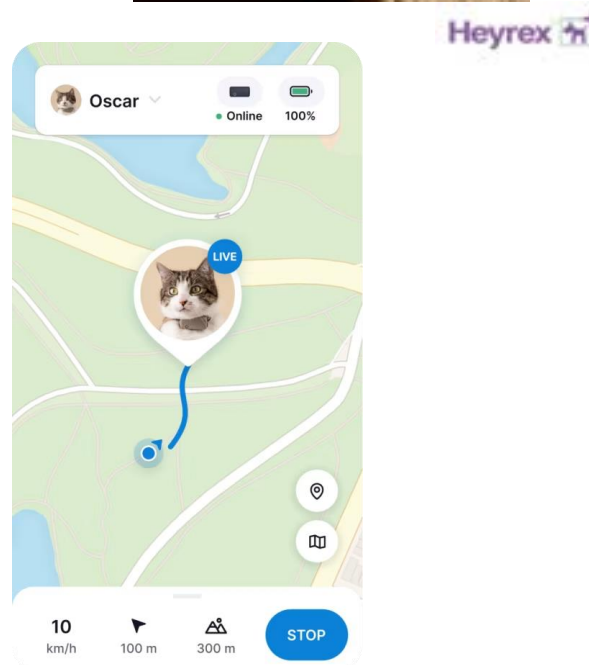


-  Instant Bio-Thermo[®] Records
-  High Temperature Alerts
-  Unique Horse Temperatures



Companion Animal Behaviour Monitors

- Activity
- Type of Activity
- Sleep/Inactivity
- Location
- Alerts
- Maps



Concerns re use of Activity Monitors

Owners' perception of their cats comfort
in wearing monitors/collars

Cats losing monitors (2)

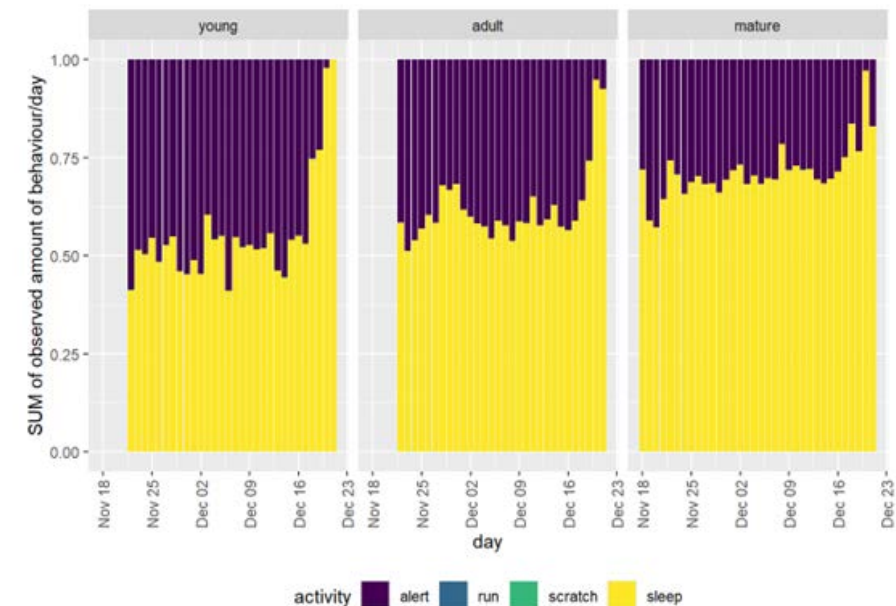
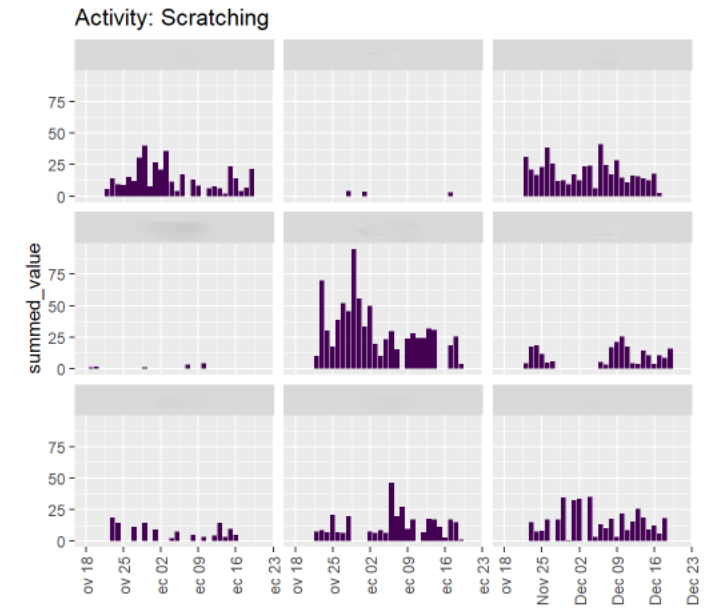
Accuracy of GPS (not precise)

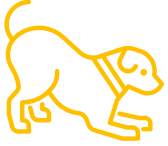
Ability to behave normally

Accuracy of the activity data

A Good Life Research: *Transitioning cats to an indoor lifestyle*

- 16 Cats and Owners recruited
- Followed for first month
- Cat Activity Data Collected via activity Monitor:
 - Scratch duration
 - Sleep duration
 - Alert duration
 - Run duration



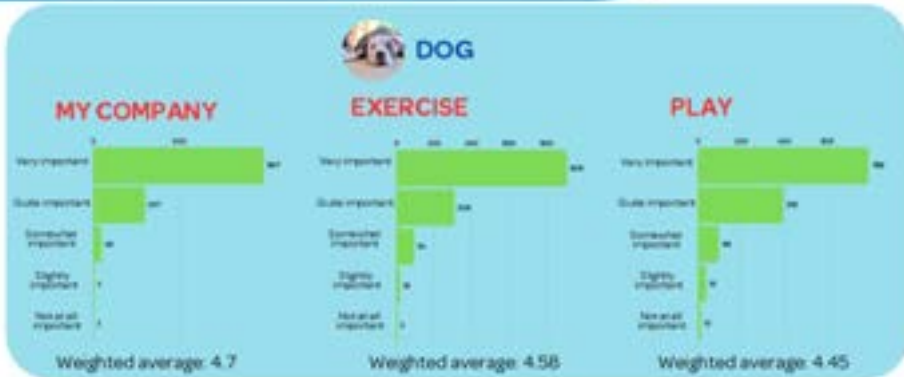


Research tool - AGL New study – ‘Pawsitively Active’



- 28-40% estimates of dog obesity/overweight in NZ
- Food (Intake and Appropriateness)
- **Activity/Exercise**
- **Dog Owner’s underestimate dog’s weight**
- **Average Freq. walks- twice a week**
- **One Welfare HBC project**

Q. How important are the following to your animal’s happiness? (top 3)



Healthy Happy dogs – Healthy Happy People

PerformanceTools Monitors/Apps - Equine



A product listing for EQUIMO horse performance equipment. It features three items with their respective icons and descriptions:

- EQUIMO Tracker**: A small black device. Description: Measure speed, tempo, pulse, speed, acceleration and altitude.
- Heart Rate**: A black strap with a sensor. Description: Real-time heart rate monitor.
- Heart Rate Set**: A black strap with a sensor and a small display. Description: Tracker + Heart Rate monitor.

Each item has a 'Buy' button and a price of \$299.



Beat to Beat HEART ANALYTICS.

A detailed heart rate analytics graph with three sections:

- Precise Heart Rate**: A line graph showing heart rate over time. Description: Visualize activity at maximum heart rate to determine intensity. Measure it in increments of one with every one-minute measurement in the accompanying bar chart. Compare heart rate with workload.
- Speed and Elevation**: A line graph showing speed and elevation over time. Description: How do speed and elevation affect your horse's performance? Analyze each of your horse's training sessions in the combined graph.
- Pace and Regularity**: A line graph showing pace and regularity over time. Description: The pace and the heart's ability to work with the overall effort change in response to performing under different conditions. Make some measurements and see how the training effectiveness from a different angle.

Owner Reassurance eg Remote Observation and Interaction Tools (Surveillance)



Cognitive/Development Tools

eg AI powered pet toys and robotic companions

- **SMART toys**

- Increase activity
- Increase mental stimulation
- Reduce 'Boredom'
- Aid in cognitive development
- Help with Training (if used properly)
- Provide an outlet for highly motivated behaviours
- Support the owner- animal relationship

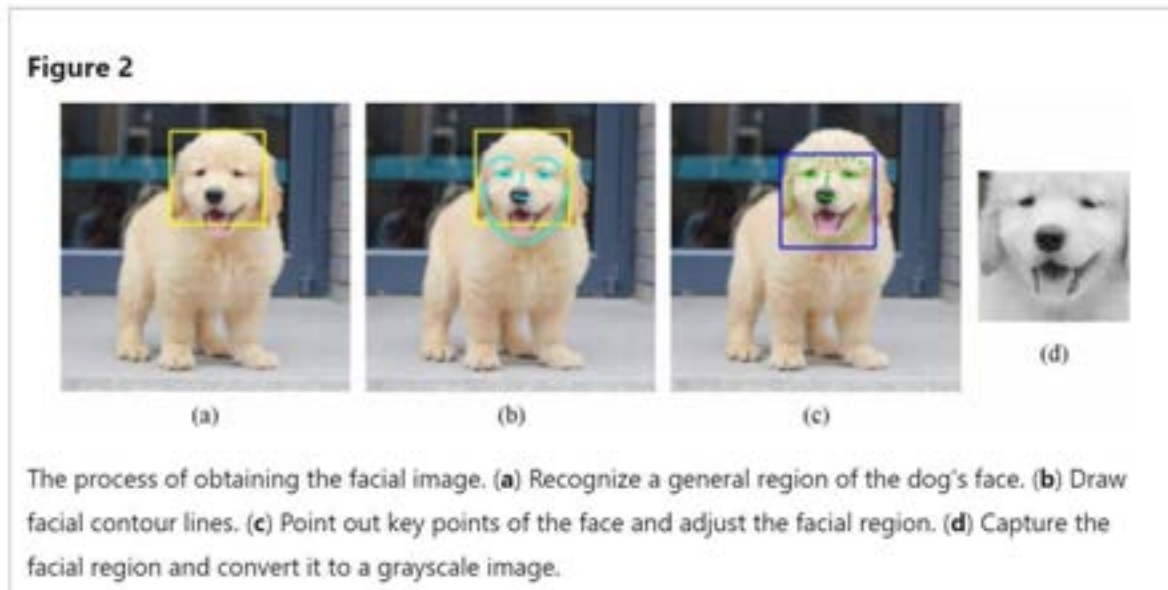
BUT

- Can cause problems for the animal e.g. Frustration, Stress, Competition and Aggression
- May lead to unexpected consequences – eg stereotypic behaviour, lack of social interaction with owners or other animals etc



Tools for Improving Owner –Animal Interactions

e.g. Development of Emotion recognition technology



animals MDPI

Generative AI Meets Animal Welfare: Evaluating GPT-4 for Pet Emotion Detection

Editors: Samantha O'Leary, Angela Guaranta, Mariella Siniavatti

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PMCID: PMC11581719 PMID: 40002174

Simple Summary

Understanding how animals feel is essential for improving their welfare and strengthening their bond with humans. In this study, we explored how GPT-4, an advanced AI tool, can detect emotions in pets by analyzing their pictures. Our research had two main steps. First, we tested the AI tool on a variety of animals like cats and rabbits, but the accuracy was moderate. Then, we focused only on dogs, refining the instructions given to the AI tool, which led to much better results. The AI tool was able to recognize emotions like happiness, sadness, and anger in dogs with high accuracy. By examining how the AI tool explained its predictions, we learned about its strengths and where it struggled, especially with emotions

ON THIS PAGE

- 1. Introduction
- 2. Materials and Methods
- 3. Results
- 4. Discussion
- 5. Conclusions

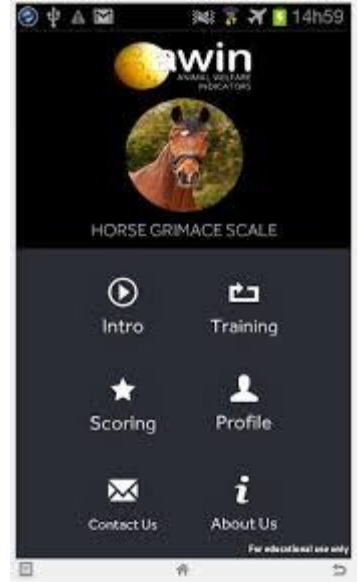


CANZ – A GoodLife Cat to Cat Emotion Study

- Perceptions of intraspecific cat facial signals and ability to predict subsequent behaviors
- Facial Expression of different cat emotions collected during cat to cat interactions -recorded on videos
- Development of a Tool for Cat Owners to better predict/understand their cat's emotional expression



Application/Use of Artificial Intelligence to detect equine emotions – Pain



International Journal of Computer Vision (2023) 131:572–590
<https://doi.org/10.1007/s11263-022-01716-3>



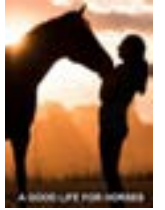
Going Deeper than Tracking: A Survey of Computer-Vision Based Recognition of Animal Pain and Emotions

Sofia Broomé¹ · Marcelo Feighelestein² · Anna Zamansky² · Gabriel Carreira Lencioni³ · Pia Haubro Andersen⁶ · Francisca Pessanha⁷ · Marwa Mahmoud⁴ · Hedvig Kjellström^{1,5} · Albert Ali Salah^{7,8}

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CANZ 'A Good Life' Research Project –

Use of AI to provide objective assessments of equine negative AND positive emotions



WORKSHOP - EQUINE EMOTIONS AND AI

- Experts views regarding affective states and body language
- Building "ground truth"
- Higher consensus on "negative states"

INTERNATIONAL SOCIETY FOR EQUITATION SCIENCE NEW ZEALAND

– AI applied to competition and ridden horses



AUTOMATED INDICATORS → IMPROVE WELFARE S



Potential Size of Security Concern in NZ Pet Tech Market

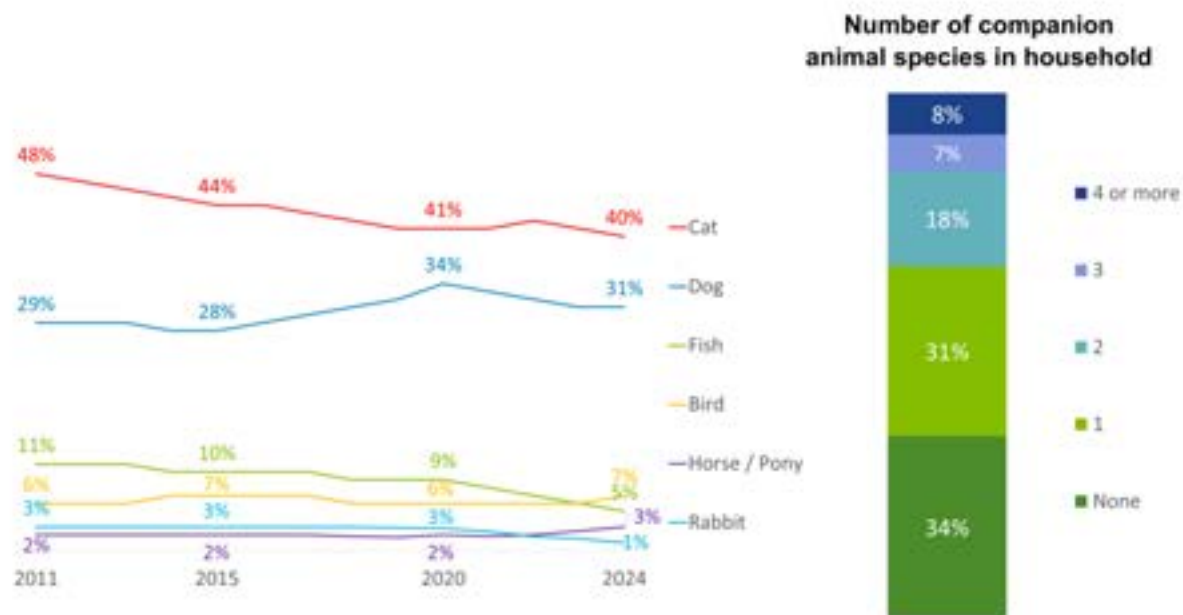
- Two thirds of households have a pet
- Most pet owners take few precautions reduce security or privacy issues with household SMART devices (Scott et al., 2023)

Two thirds of NZ households share their home with a companion animal.

The most common is a cat, 40% of households have a cat, while 31% share their home with a dog.

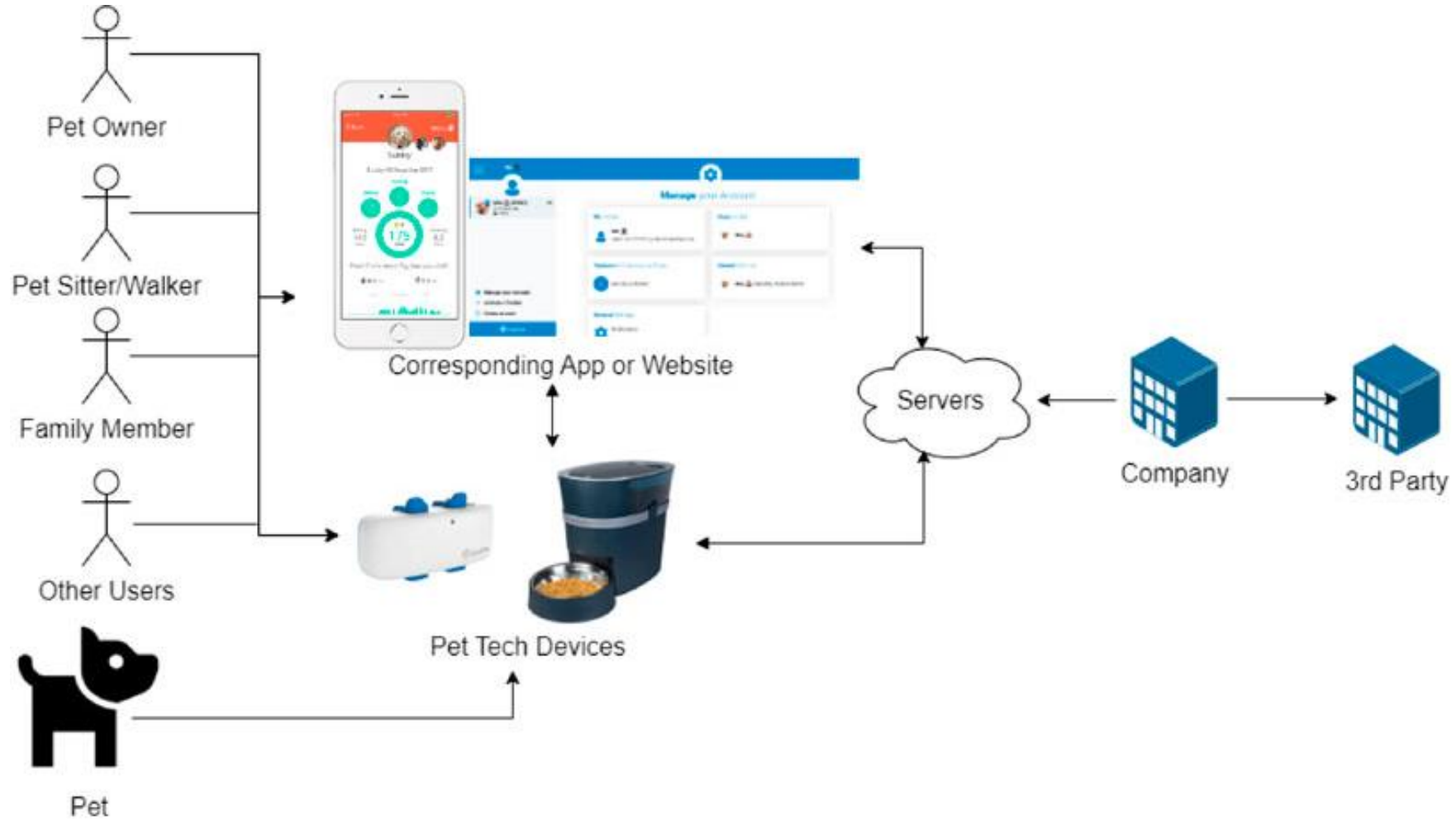
Penetration of companion animals in NZ

CANZ 5



Q. Which of these pets, if any, do you have in your household?

Ecosystem Risk



Future of Pet Technology

Reducing Risks to Animals and their People



Pet Technology should enable owners to provide more choice, opportunities for behavioural diversity, safe living environments, improved monitoring and early detection of problems.



Pet Technology should not present a risk to health and welfare.



Use of Technology should not negatively impact on the animal-guardian bond

- Owners should research before buying and using new technologies
- Ensure there is a positive balance between the use of technology – and owner/animal interaction/care
- Prioritise the animal's welfare over the owner's convenience
- Ensure data practices are transparent and understood
- **Consideration of a Welfare/Safety Regulation for New Animal Technology Products?**

Future of Pet
Technology ?

The Good

The Bad

The Ugly

Main Concerns:

Lack of evidence base (testing) for safety/welfare of many products

Lack of Regulation in relation to products freely available that can cause pain, injury and distress

Lack of Awareness/Control regarding Data Security

Security of End User



FINALLY

Technology - *Replacement Pets* ?

- *Robotic pets may ultimately have a place within the complex relationships that humans have with animals” (Melson et al. 2009)*



A screenshot of a news article from RNZ (Radio New Zealand). The article is titled "Rise of AI and loneliness drives demand for robot pets" and is categorized under "BUSINESS / TECHNOLOGY". It is dated "10:10 am on 8 January 2025" and is written by "Jenny Cal". The article features a video player showing a woman wearing a face mask interacting with a yellow and white robotic dog. The video player has a search bar and a Windows taskbar at the bottom.

Thanks for listening



Shifting the curve

