What's Up and Coming in Veterinary Medicine - Part I

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Professor of Practice @ Texas A&M College of Vet Medicine

Slido Overview

My Why

345
346

POKÉMON

About Me

OVC
Ontario Veterinary College
OPUS VETERINUM CIVIBUS

Singularity
UNIVERSITY

LIFELEARN
ANIMAL HEALTH

OVMA
ONTARIO VETERINARY
MEDICAL ASSOCIATION

RCVS
SETTING
VETERINARY
STANDARDS

voyce

VETERINARIANS
WITHOUT BORDERS
VÉTÉRINAIRES
SANS FRONTIÈRES

A&M

AVMA
Our Passion. Our Profession.

catalyst
council
TM

AAVMC
Association of American
Veterinary Medical Colleges

GoFetch Health

Our Agenda

Session 1

Unpacking Current Veterinary Trends & Technologies

Session 2

Evaluating New Models of Care

Session 3

Deep Dive Into Telehealth

STOP

Within 20 years, everything changed

80%

1900

10%

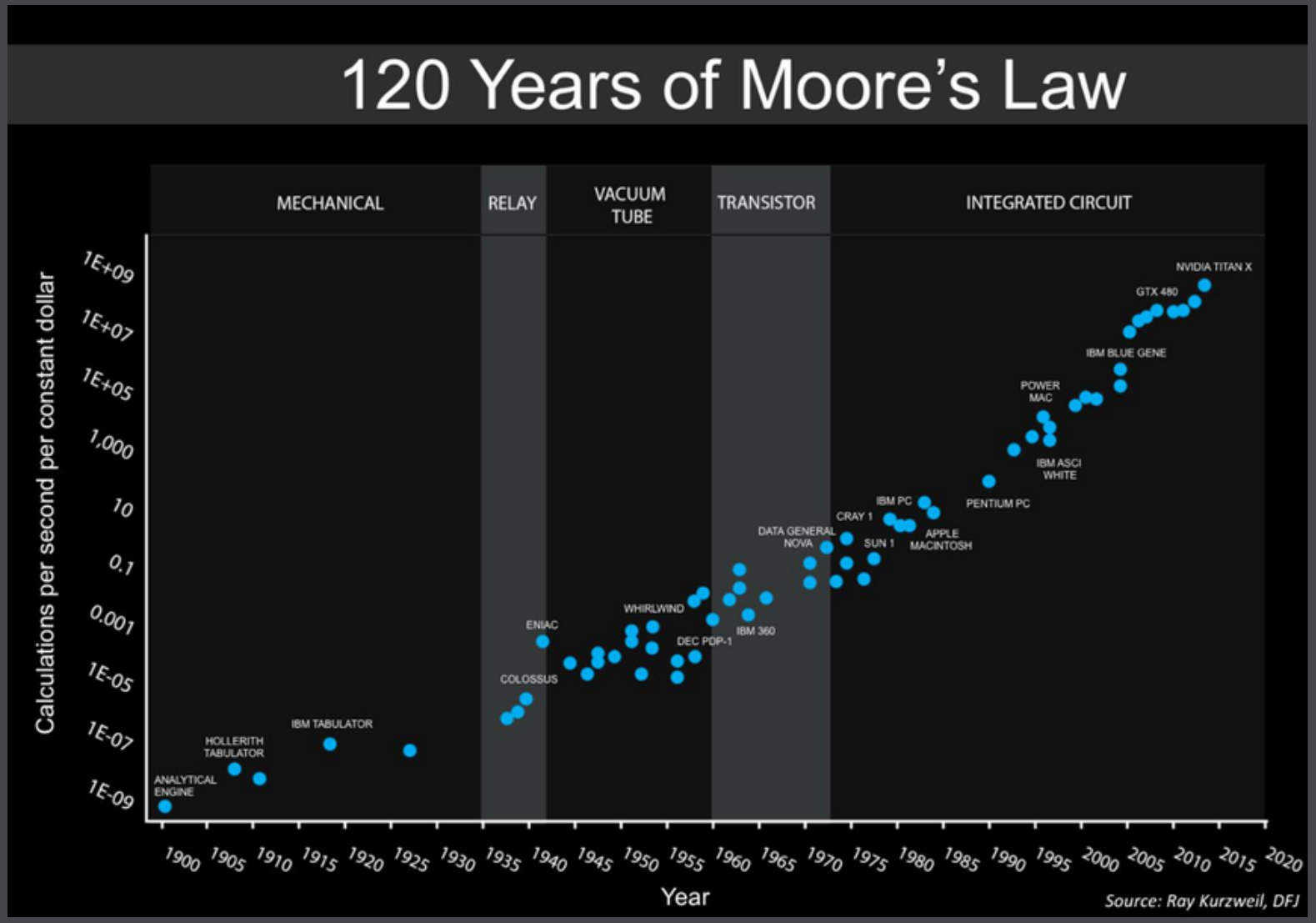
1920

2005
Luca Bruno

2013
Michael Sohn

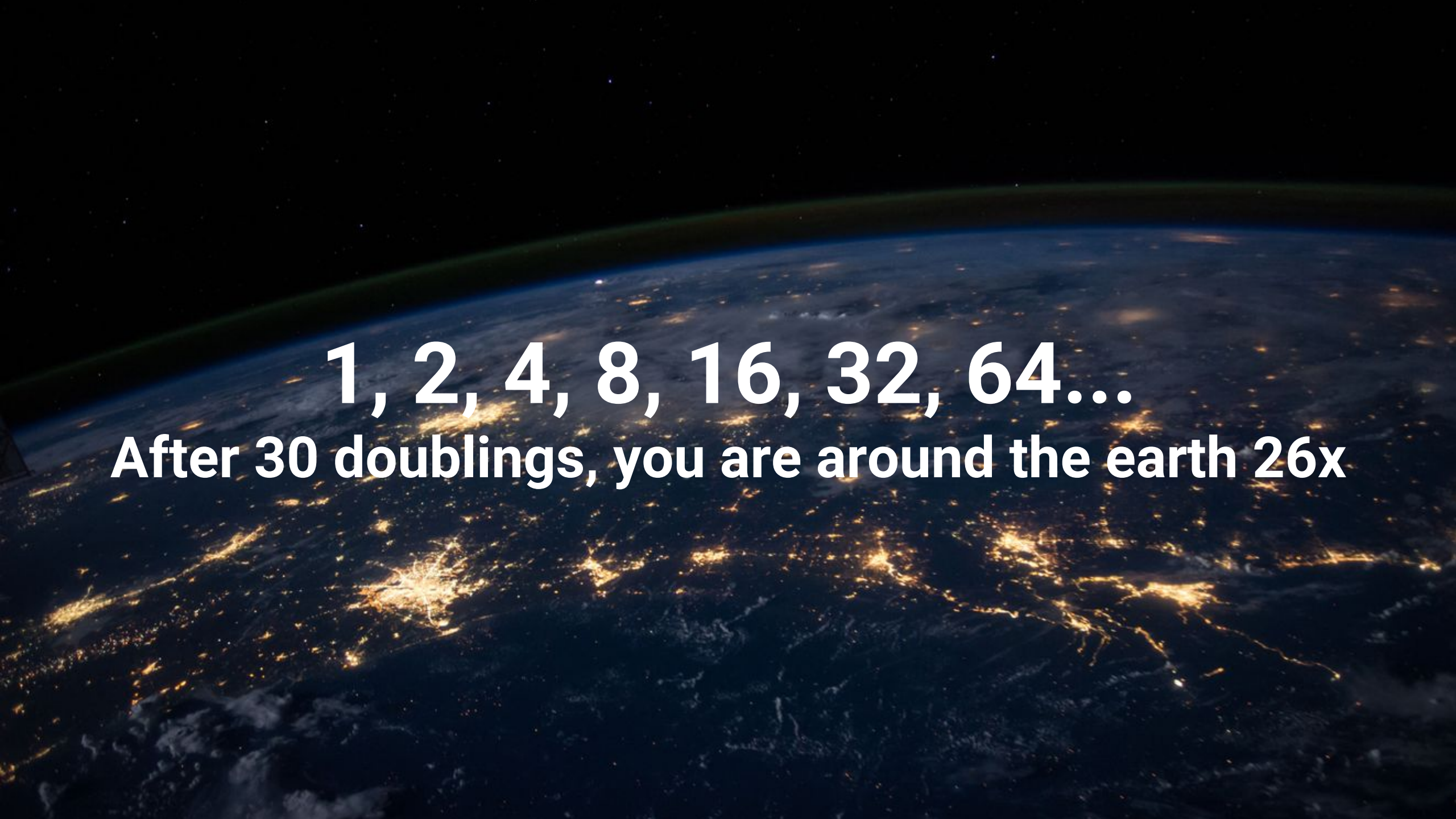
SONY
L-500
watchman
SPORTS

The Exponential Growth of Technology

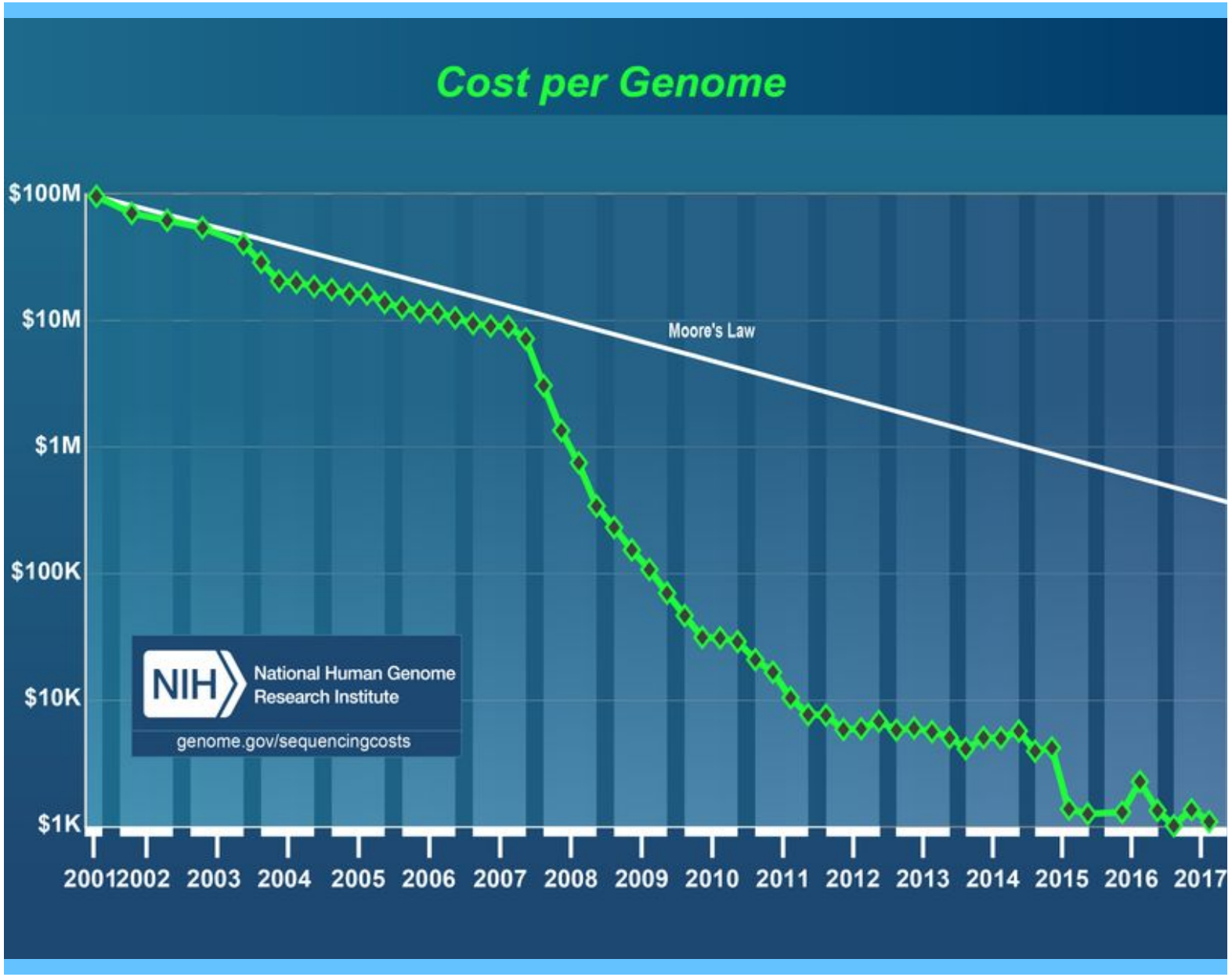


Linear Thinking

30 Steps


1, 2, 4, 8, 16, 32, 64...
After 30 doublings, you are around the earth 26x

The Cost of Sequencing the Human Genome



1996

Kodak

- **Market Cap of $28B**
- **Revenue of $16B**
- **Employees - 140,000**

2012

- Kodak goes bankrupt
- Instagram acquired for $1B
- Employees - 13

“But it was filmless photography, so management’s reaction was, ‘that’s cute—but don’t tell anyone about it.”

Steve Sasson, the Kodak engineer who invented the first digital camera

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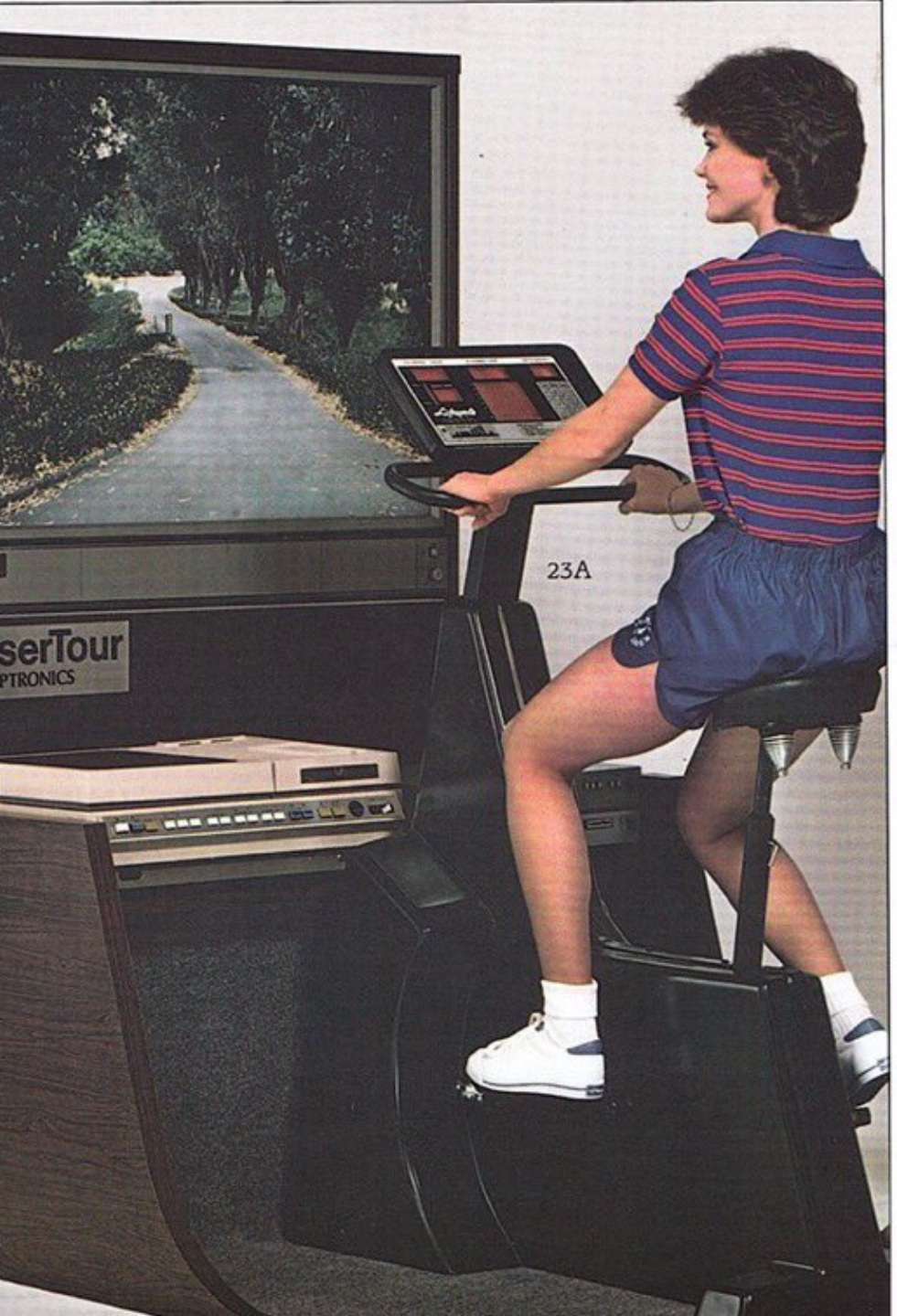
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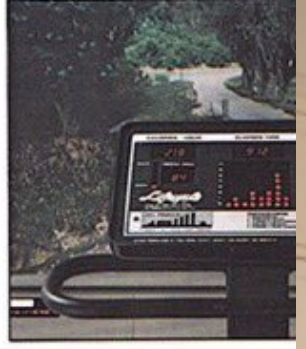
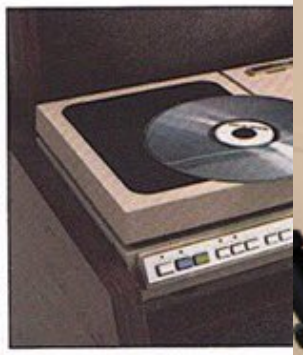
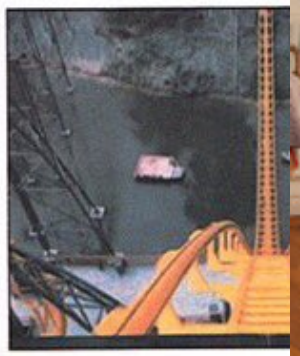






PELOTON

Summary

- Technology improvement is not linear, it is exponential and our world is not built for this
- People often underestimate the rate of improvement especially over a 5-10 year horizon
- This is unlocking new tools and capabilities that were either non-existent or inaccessible to previous generations
- Small teams can have big impact and threaten established ways of work and business

What Does This Mean for Veterinary Medicine?

There will be more change in the next decade than the past 50 years combined

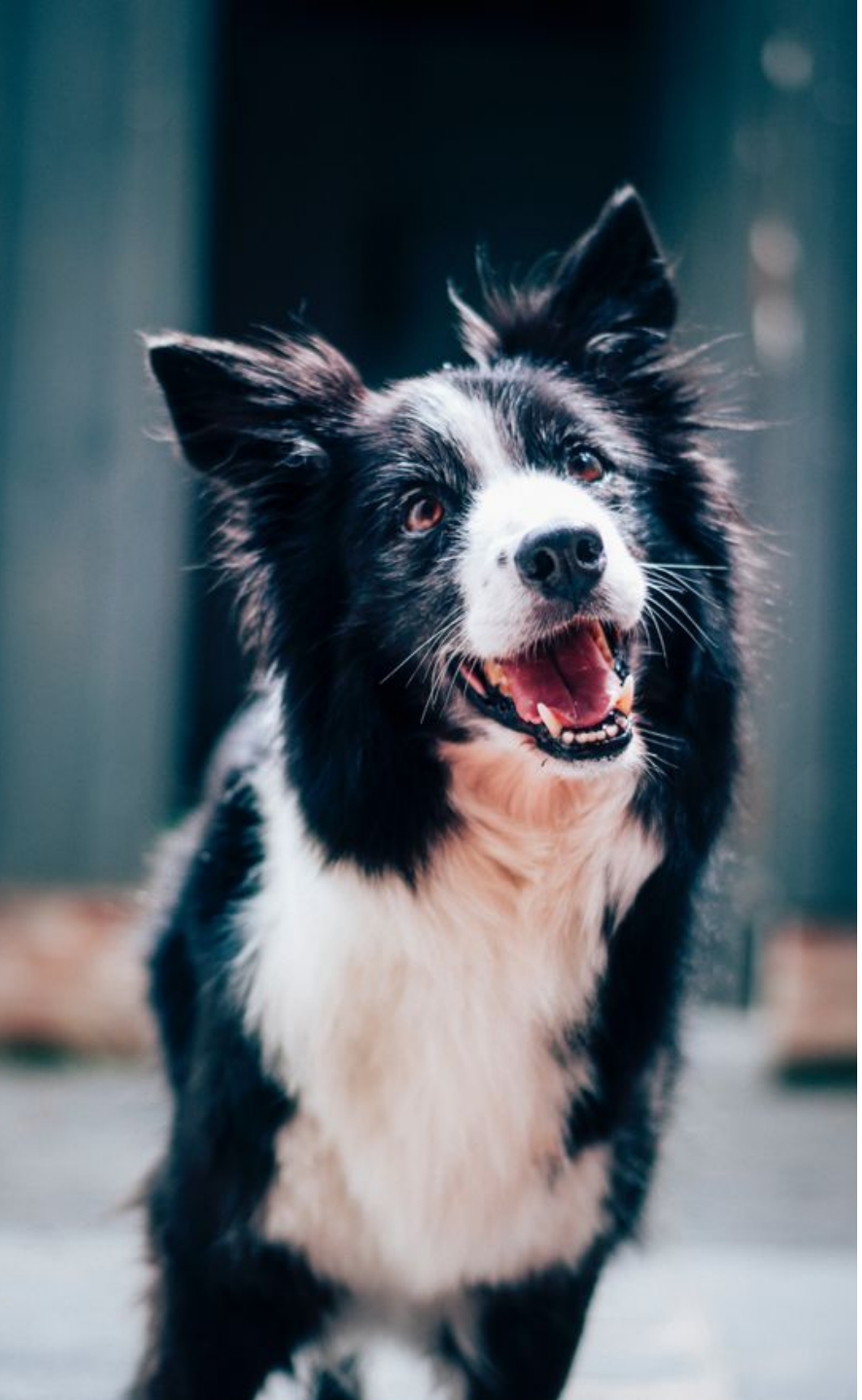
What's Happening?

1. The Pet Parent Generation
2. The Influx of Investment in Pet Care
3. The Explosion of Data
4. The Augmentation of Veterinarians

Part 2

5. Why Care Needs to Evolve
6. New Models of Care Delivery
7. What This Means for Practices

Pet Parent Generation



Our Evolving Relationship with Pets

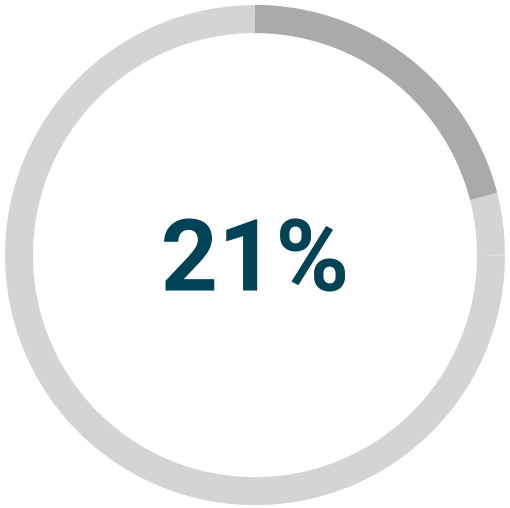
76% I am a “Pet Parent”

65% I have more photos of my dog than my friends or significant other

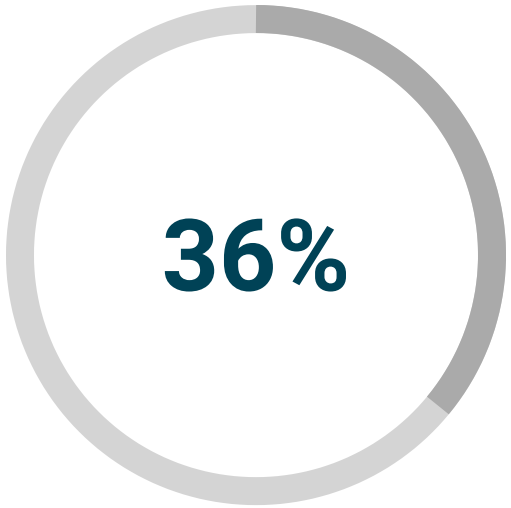
98% My pet is an important member of my family

Source: HABRI & Rover

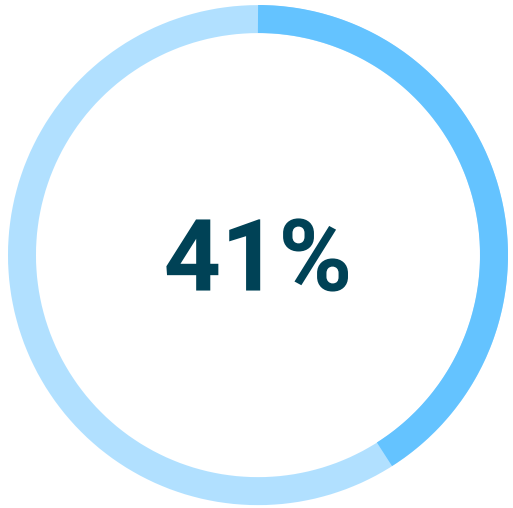
Money is “no object” to me when it comes to my pets



Baby Boomers



Gen X



Millennials

Source : The Human Animal Bond Research Institute (HABRI)

Use of Technology

61%

Have at least one form of smart technology

56%

of pet parents say they have special tech just for their pet

Source: Michelson Found Animals Foundation.

Lindsey Ellefson
@ellefs0n

didn't think I needed to get the new iPhone but then I heard it had pet portrait mode and realized YOU all need me to get the new iPhone

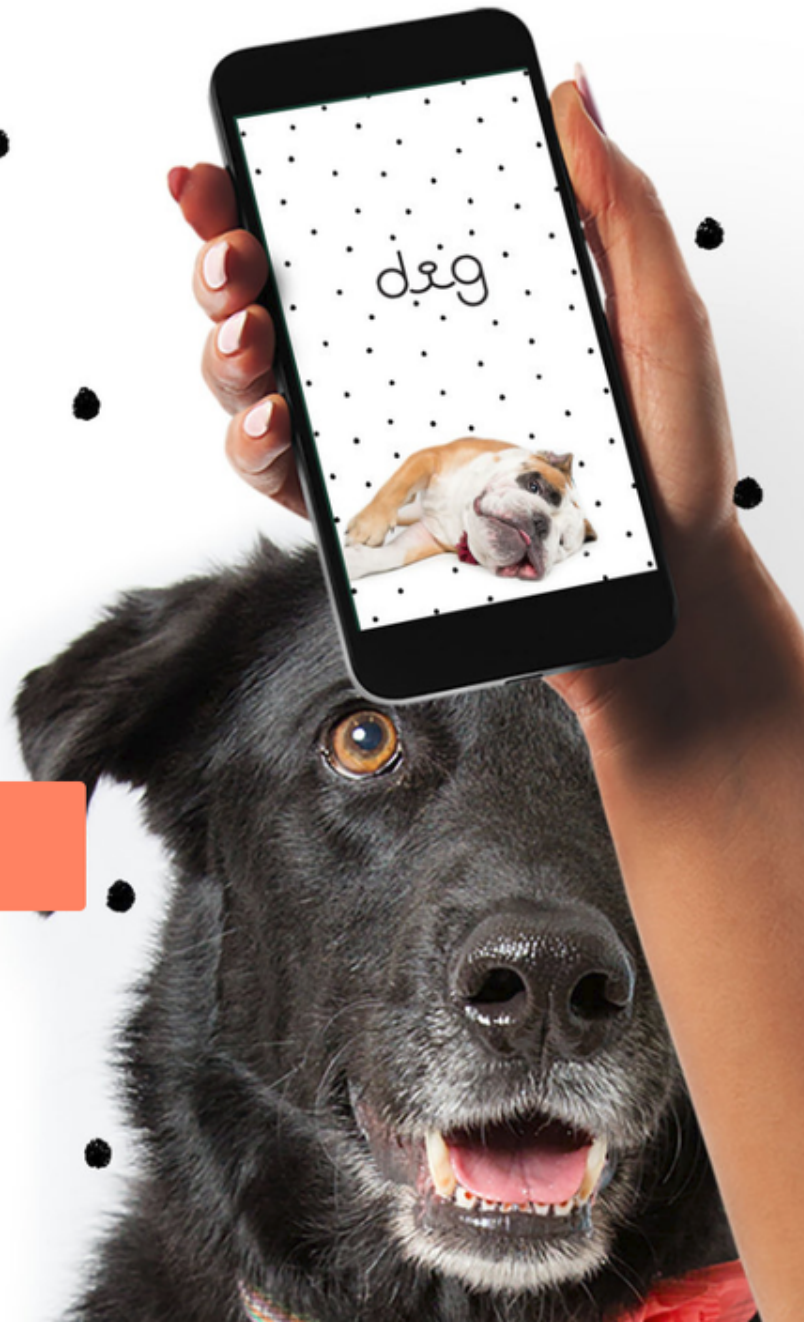
♡ 1,507 11:11 AM - Sep 10, 2019

207 people are talking about this

THE DOG PERSON'S DATING APP

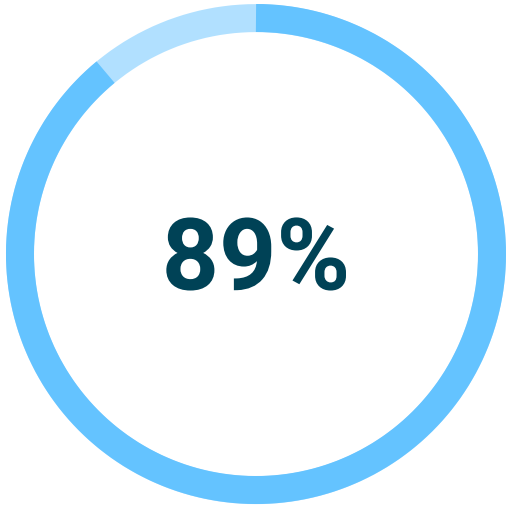
DOWNLOAD ON IOS

DOWNLOAD ON GOOGLE PLAY



Most Trusted Source of Information on Pets

% of Owners that Consider the Veterinarian to be the Most Trusted Source of Information



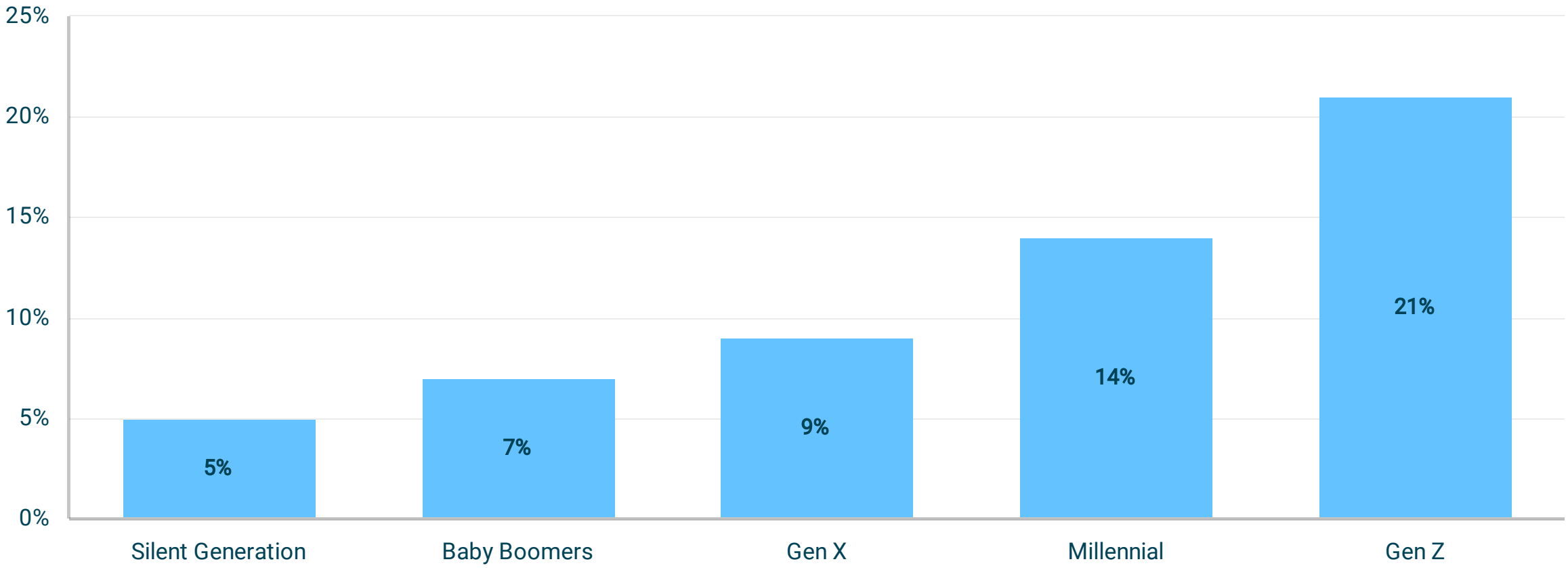
of Pet Owners Age 55 or Older

of Pet Owners Age 18-34

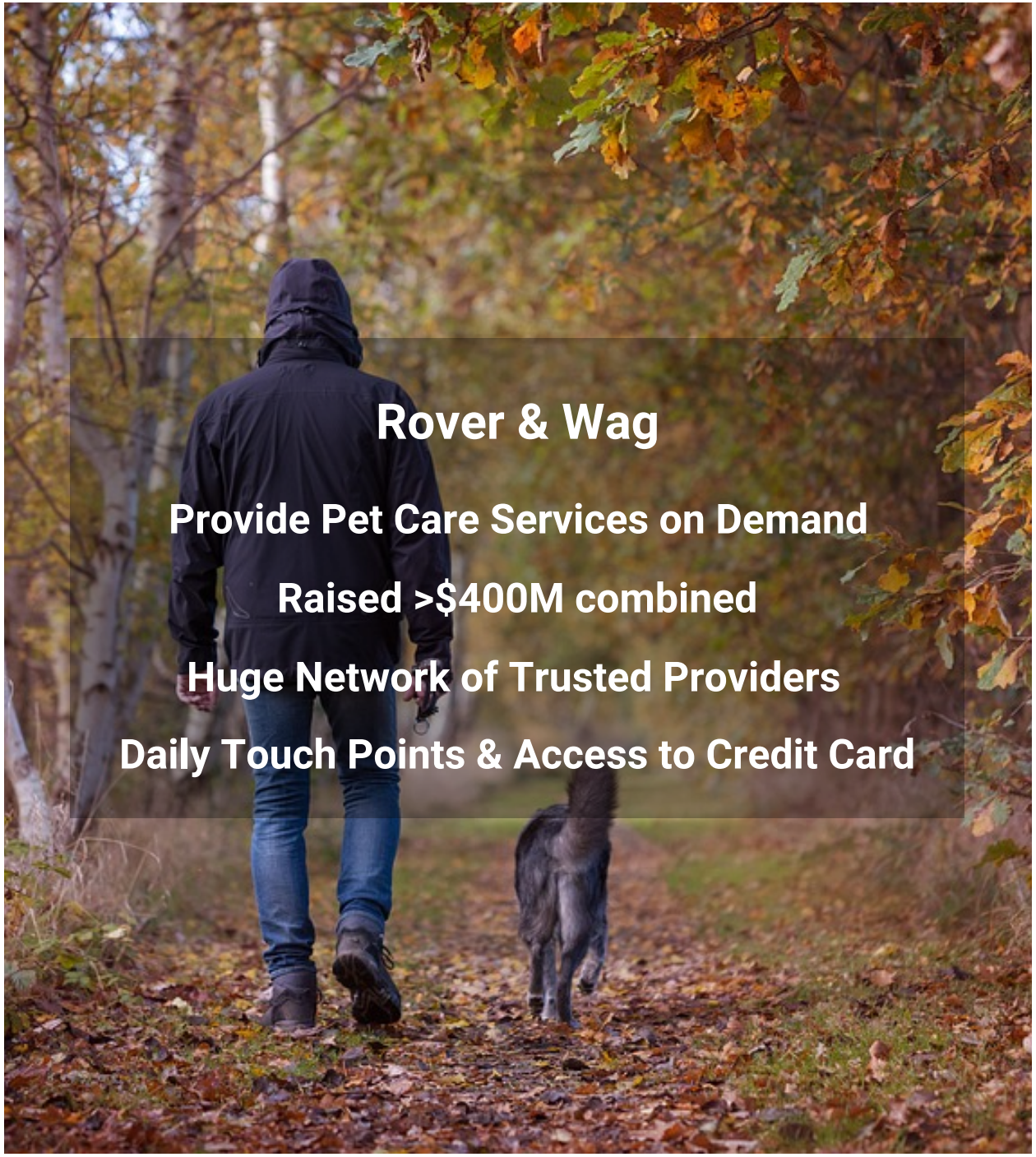
Source: Brakke Consulting: “Pet Health Products: Changing Channels

Early research suggests younger generations are less likely to have a regular veterinarian

2016 U.S. Estimated % of Canine Owners without a Regular Veterinarian (%)



Source: Analysis of AVMA Pet Demographic Survey Data



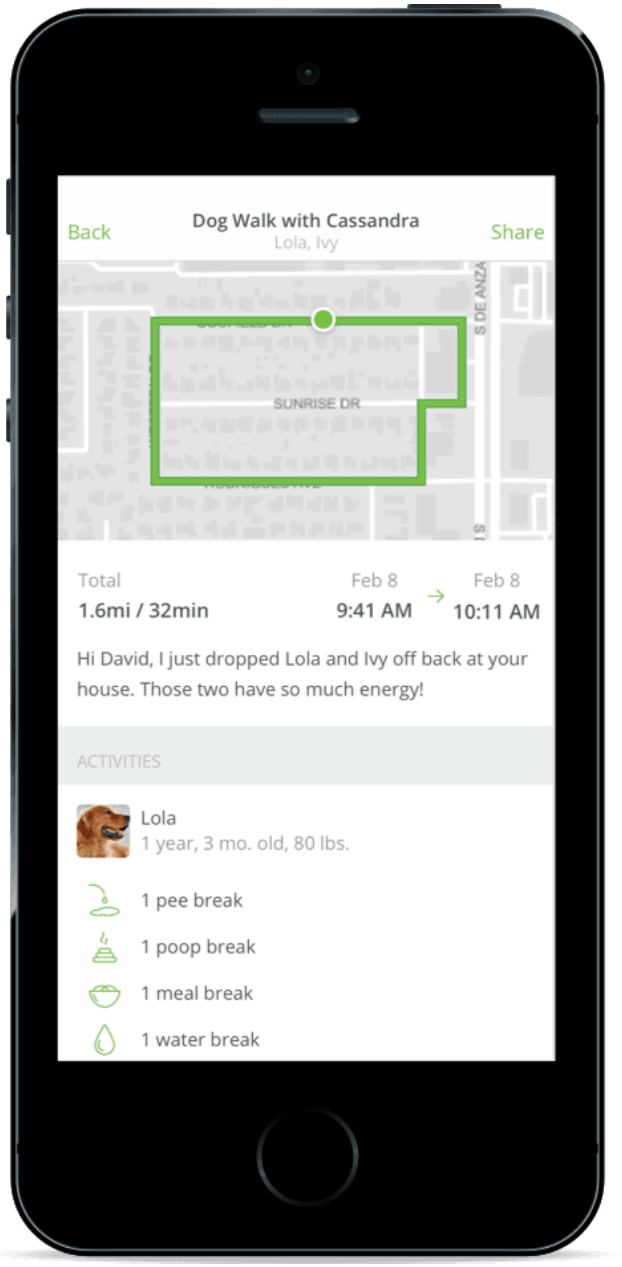
Rover & Wag

Provide Pet Care Services on Demand

Raised >$400M combined

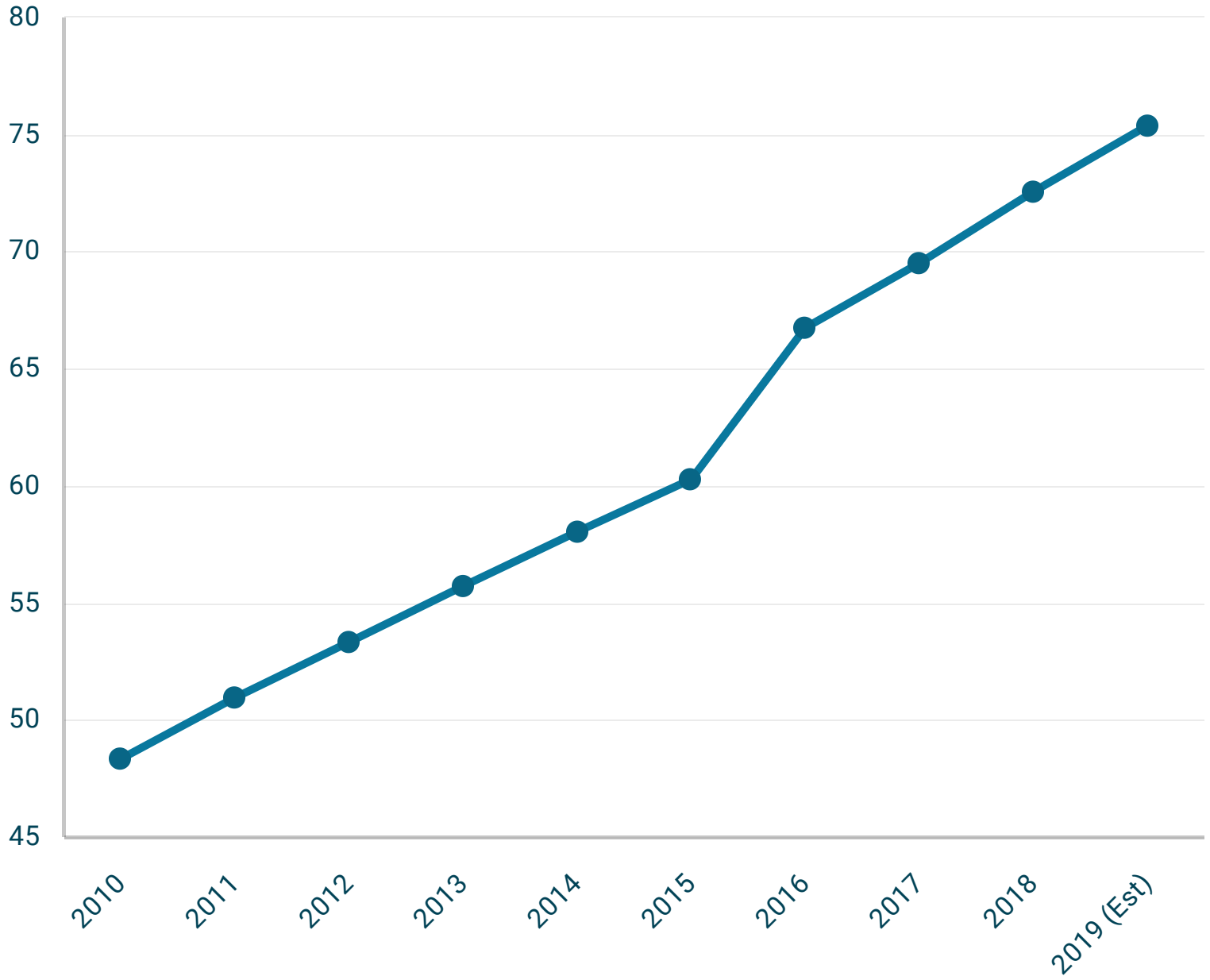
Huge Network of Trusted Providers

Daily Touch Points & Access to Credit Card



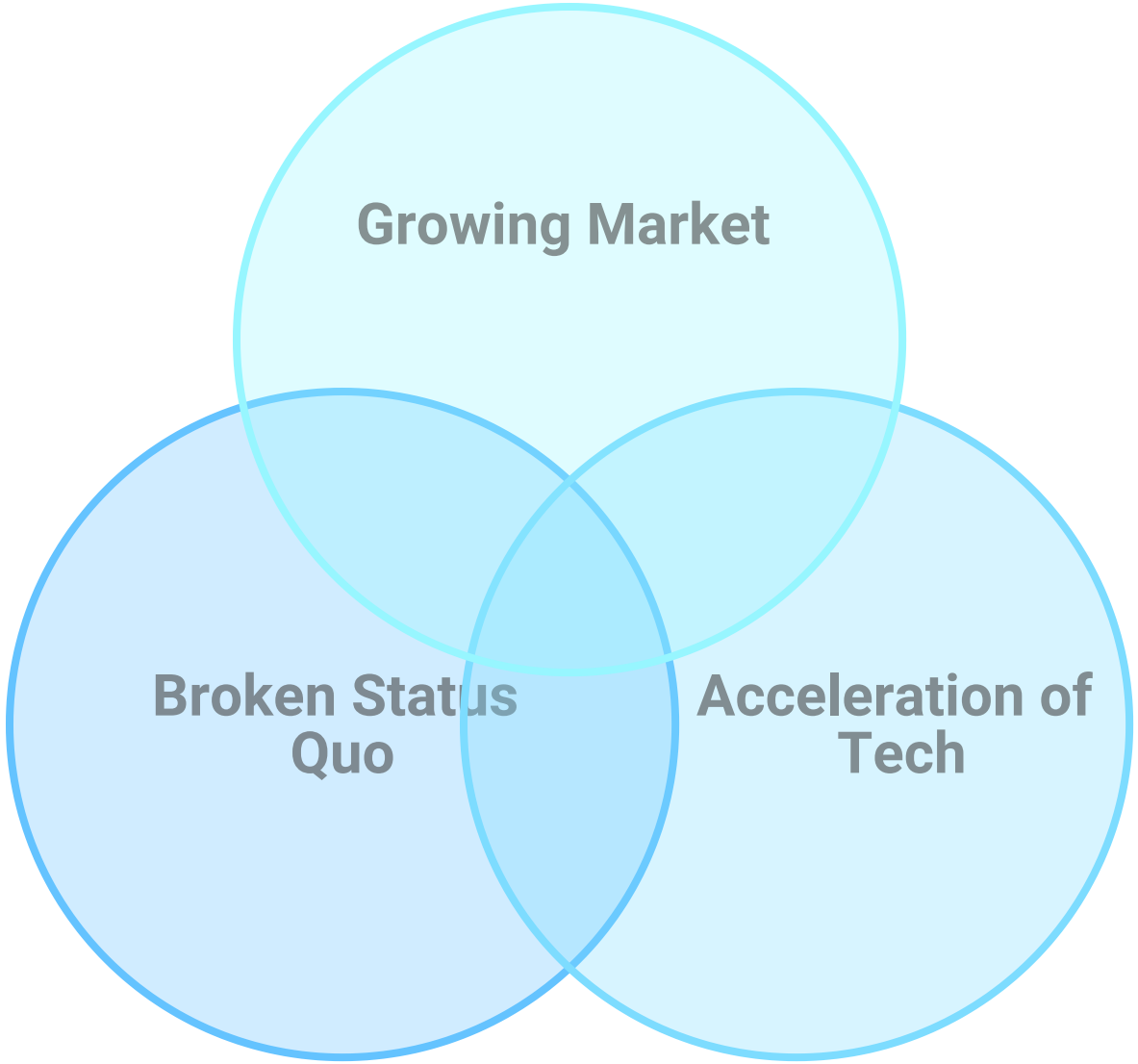
Explosion of Investment in Pet Care

Total U.S. Pet Industry Expenditures (in $B)



Source: American Pet Products Association

The Ingredients for Something Big



“The humanization of pets is one of the greatest investment themes out there”

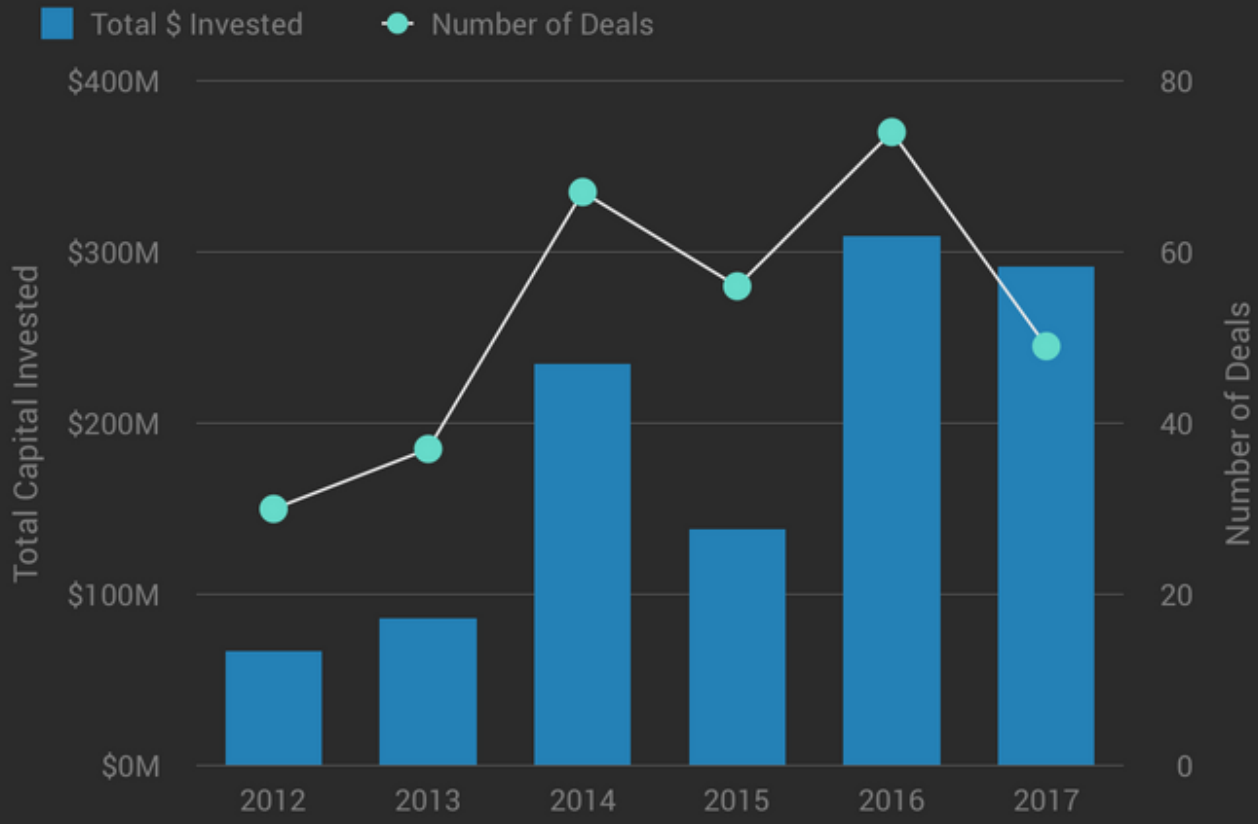
Jim Cramer, CNBC Mad Money, 2017

In the first half of 2018, funding in pet-related startups reached $519.3 million in 2018

78% higher than all of 2017

Worldwide Venture Investment In Pet-Related Technology Startups

Based off data in Crunchbase's "Pet" and "Veterinary" categories, as well as company profiles mentioning "cats," "dogs," and "pets" that weren't in either category, 2012-2017. Dollar volumes based on venture capital rounds of known size; deal volumes are based on the count of all venture rounds.



crunchbase news

Leveraging the Learnings from Human Medicine

Jeffrey Low
@JeffreyLowMD

For every healthcare startup I've seen, I'm now getting pitched the dog version. Sometimes in the same week.

8:43 PM · Mar 20, 2019 · Twitter for iPhone

BEYOND MEAT®

HelloFRESH

fitbit

WILD EARTH

THE FARMER'S DOG

Whistle

New Models from Big Players

Internal Innovation Programs

VCA NEXT

New Venture Funds

Companion Fund ($100M)

Incubator Programs

Leap Ventures

Startup Pitch Competitions

Pet Project

Purina Pet Care Innovation Prize

New Forums for Idea Sharing

From 1 a year to 4x a week

- **Pet Care Hackathon**

  Kinship is sponsoring the first ever pet care hackathon at TechCrunch Distrupt in SF

- **Purina Pet Care Innovation Summit**

  Purina is holding their inaugural Pet Care Innovation Summit in St. Louis

- **Pet Innovation Challenge**

  Factory and New Hope are holding their first Pet Innovation Challenge in Bethelhem, PA

- **Leap Ventures Pitch Competition @ CSU**

  Leap Ventures held a pitch competition at the Veterinary Innovation Summit at Colorado State University in Fort Collins, CO

Recent Acquisitions

Smart Flow
Workflow Optimization System

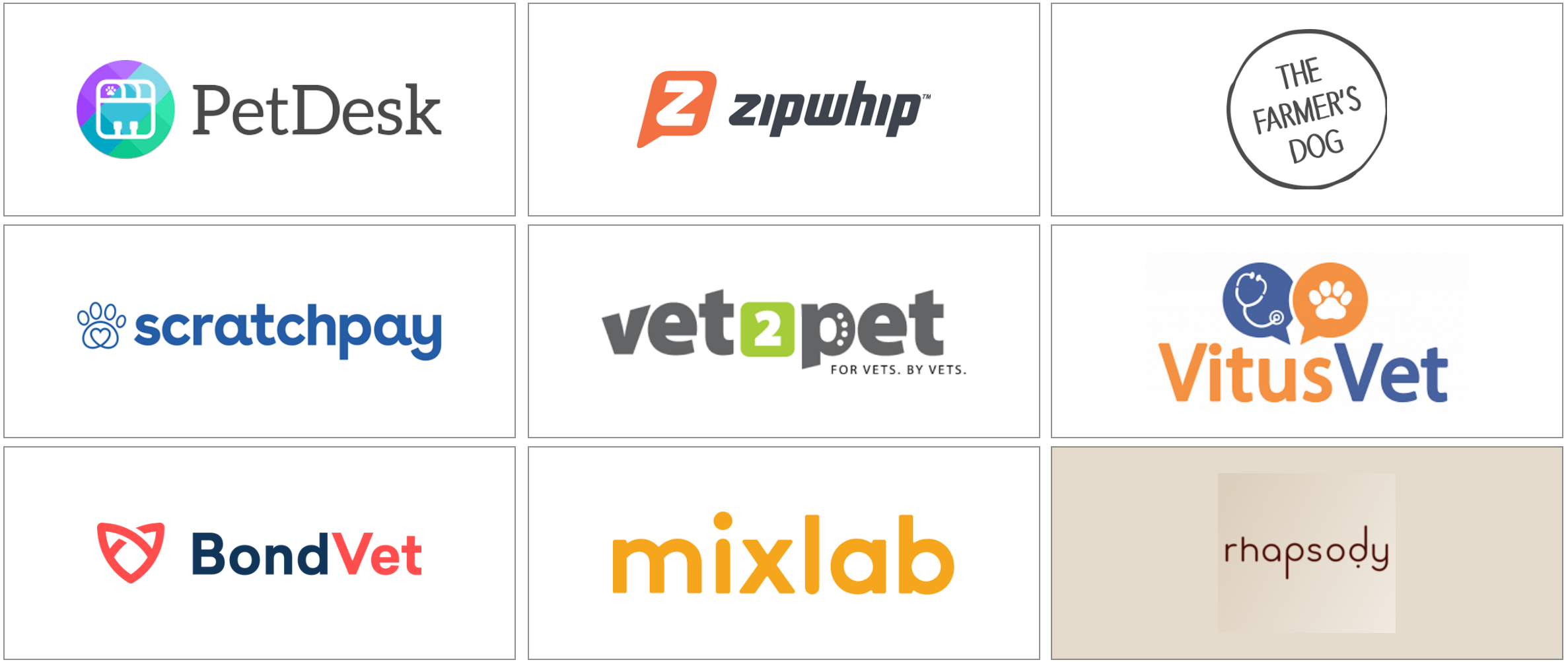
ALLYDVM

eVetPractice

HENRY SCHEIN®
ANIMAL HEALTH

PetInsuranceQuotes.com

Recent Investments



Over 50+ groups actively acquiring practices

12-15% of practices consolidated (50% of specialty market)

AVMA VETERINARY CAREER CENTER SEASONALLY ADJUSTED MONTHLY NUMBER OF JOBS AND APPLICANTS

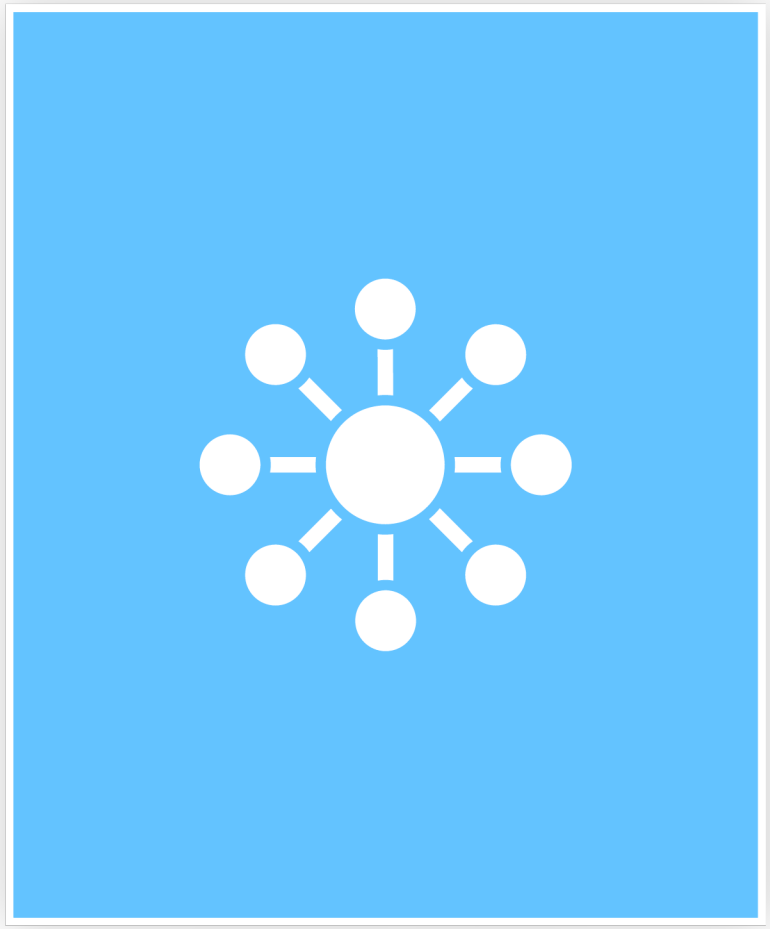
Source: AVMA VCC

As the pace of consolidation increases, veterinary talent will be the most scarce resource

Summary

- There is more capital being deployed into the pet care space than ever before
- Pet care is a multi-faceted opportunity with many businesses being formed outside of traditional health/medical areas
- Traditional incumbents are exploring new models to help discover, support, and acquire new businesses
- This is creating new pathways for people that have an idea to improve our profession

Building Blocks



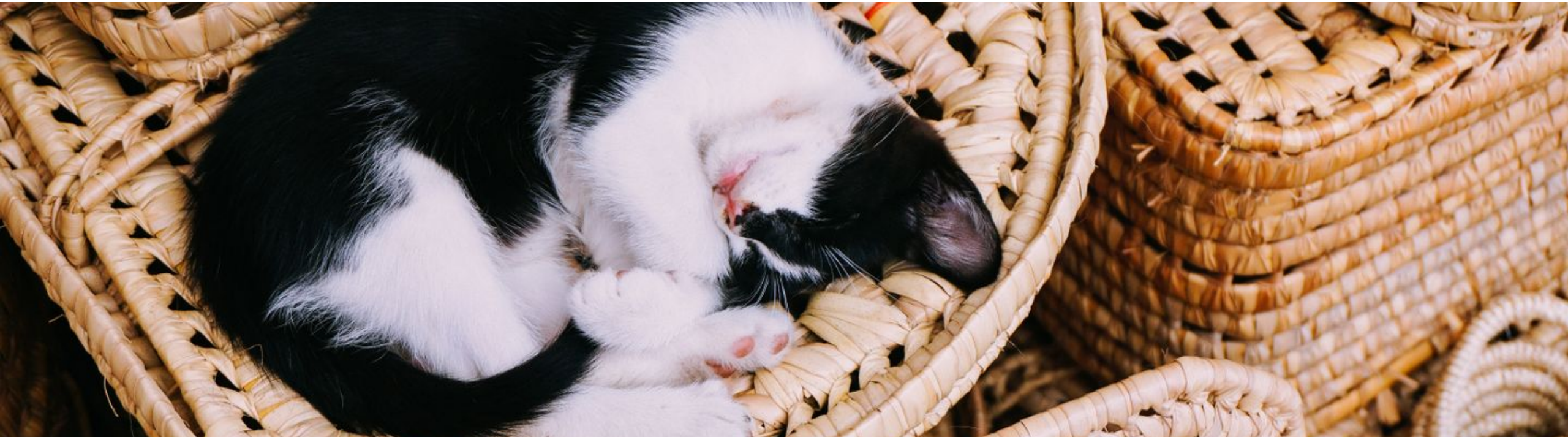
Explosion of Data

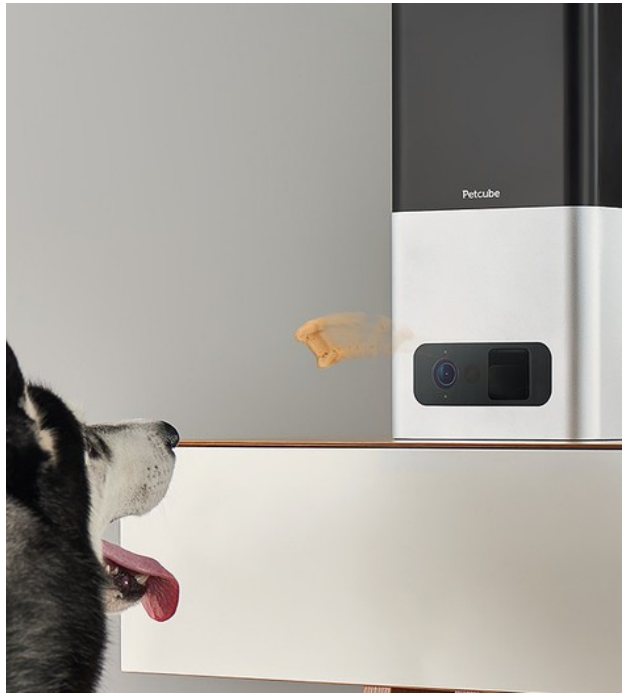
Augmentation of Professionals

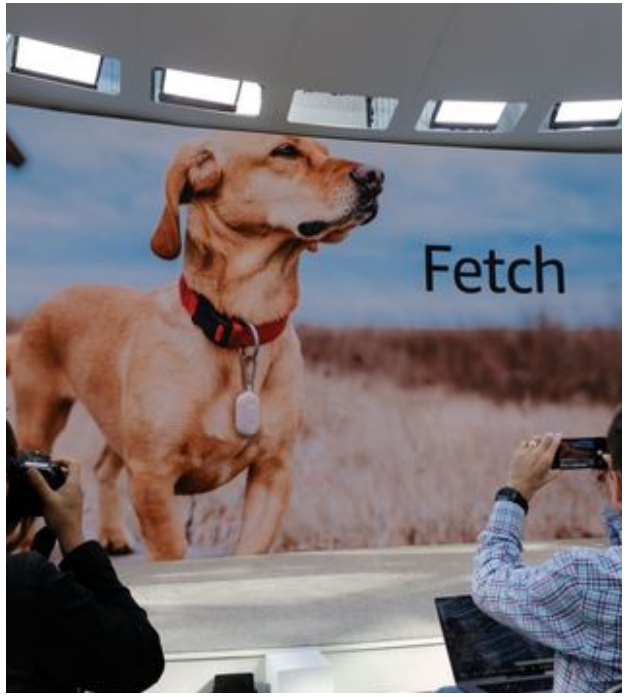
Entablement of New Care Models

0.009%

Amount of time pet owners spend at the veterinary clinic per year



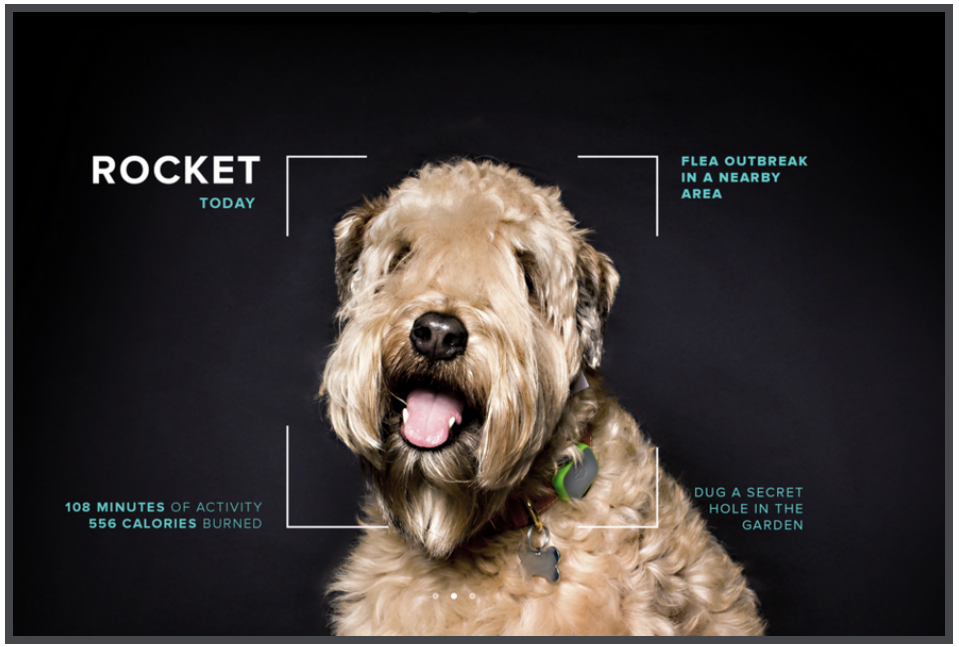

Petcube


Fetch

Petnet
Mittens

PET CUBE
100,000+ Devices
8 Interactions/Week
50 Min/Week
Petcube

Pet Insight Project



- Providing free Whistle devices to Banfield Wellness Plan members
- Combining medical record data + activity tracking to provide new insights
- Target of 200,000 dogs over three years
- 50,000+ enrolled
- Crowd-sourcing data and strengthening algorithms

It's not always positive..

Google Play Review

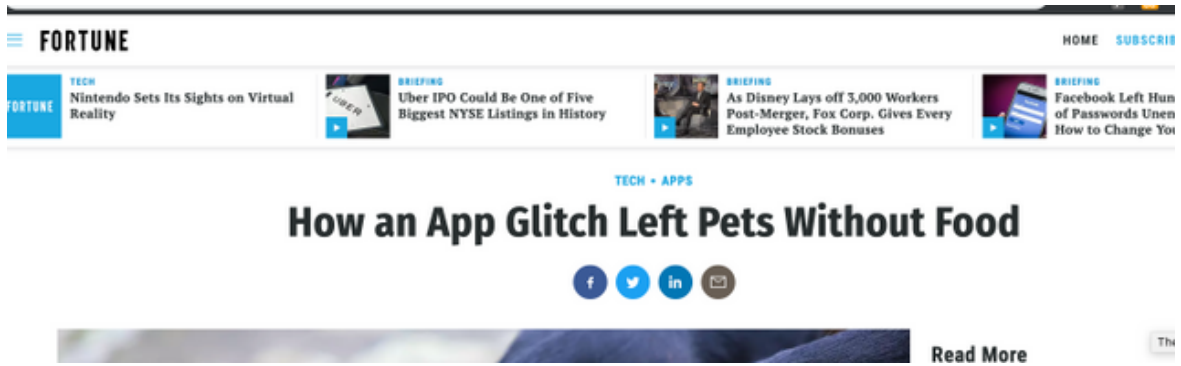
“The software update had an error and now my right shoe won't charge or turn on!!!! To spend $350 on a pair of shoes and not have it work is embarrassing.”

It is still early days for many of the pet devices

- These devices can malfunction or be hacked
- There are still questions about the accuracy of the data
- There is not yet a regulatory framework to guide the accuracy of these devices

No treat for you: pets miss meals after auto-feeding app PetNet glitches

A server issue has taken down PetNet's automatic feeding system for a number of users, leaving many animals without their scheduled meals



These devices will save lives

- Man falls off bike and his knocked unconscious
- Apple Watch detects hard fall and sends location to family
- Apple Watch calls 911 and sends location to EMS
- Gets to hospital in under 30min

OTC Genetic Kits

- **Test for breed and over 150+ health conditions**
- **Available to owners for <$200**

  100K+ already sold
- **Balancing empowering owners with information while providing accurate guidance and support**
- **New fields of genetic counseling being explored**

New Capabilities > New Collaboration > Drive Research

Hill's & Embark

- Evaluating the linkages between DCM, medical history, and genetics
- Actively seeking 1000 dogs for study
- We will see more large scale research collaborations driven by new data sets

Summary

- We are able to generate new types of data that help us understand the breath & depth of health
- In some cases, these are insights that previously required specialized diagnostics or facilities
- In others, this is completely new information that we are seeing for the first time
- As a profession, we will need to play an active role in driving development & oversight of these tools, translating their findings, and applying better pet health

Augmenting Professionals

Making decisions is hard!

Gather as much evidence, data, etc as possible

Synthesize a best course of action

Make trade-offs due to cost, resources, etc

All with patients who can't talk

Medical error is the 3rd leading cause of death

Source: John Hopkins School of Medicine

What do you think it is in our profession?

How often medical information doubles (in days)

50 Years
in 1950

7 Years
by 1980

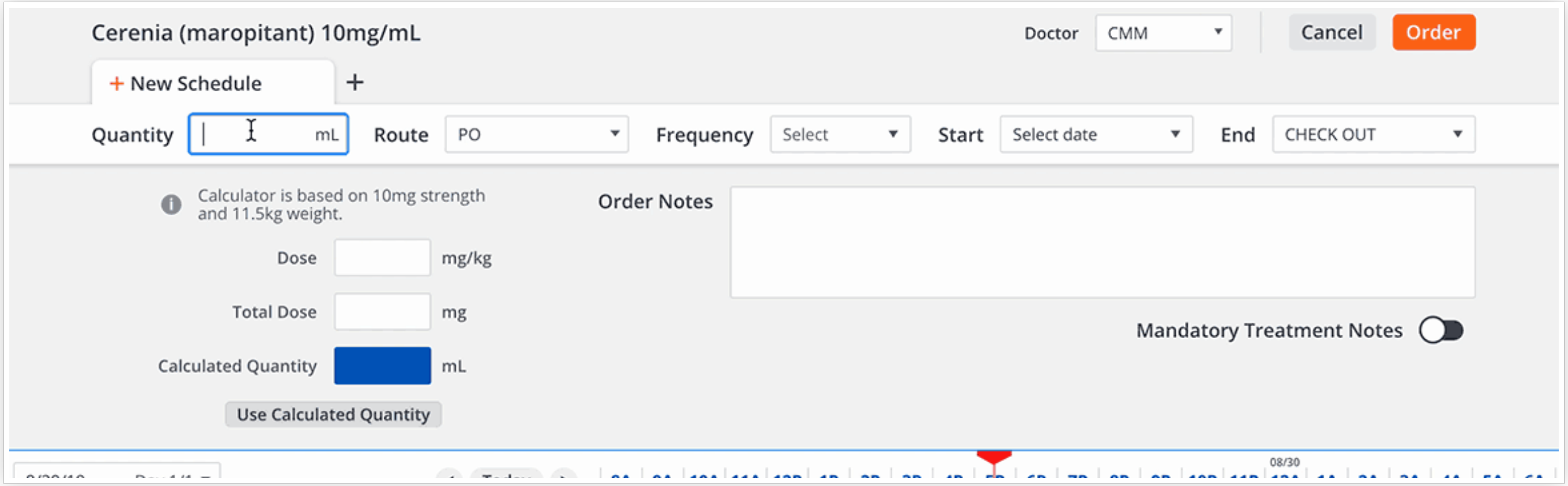
3.5 Years
by 2010

73 Days
by 2020 (est.)

Source: Challenges and Opportunities Facing Medical Education, 2011

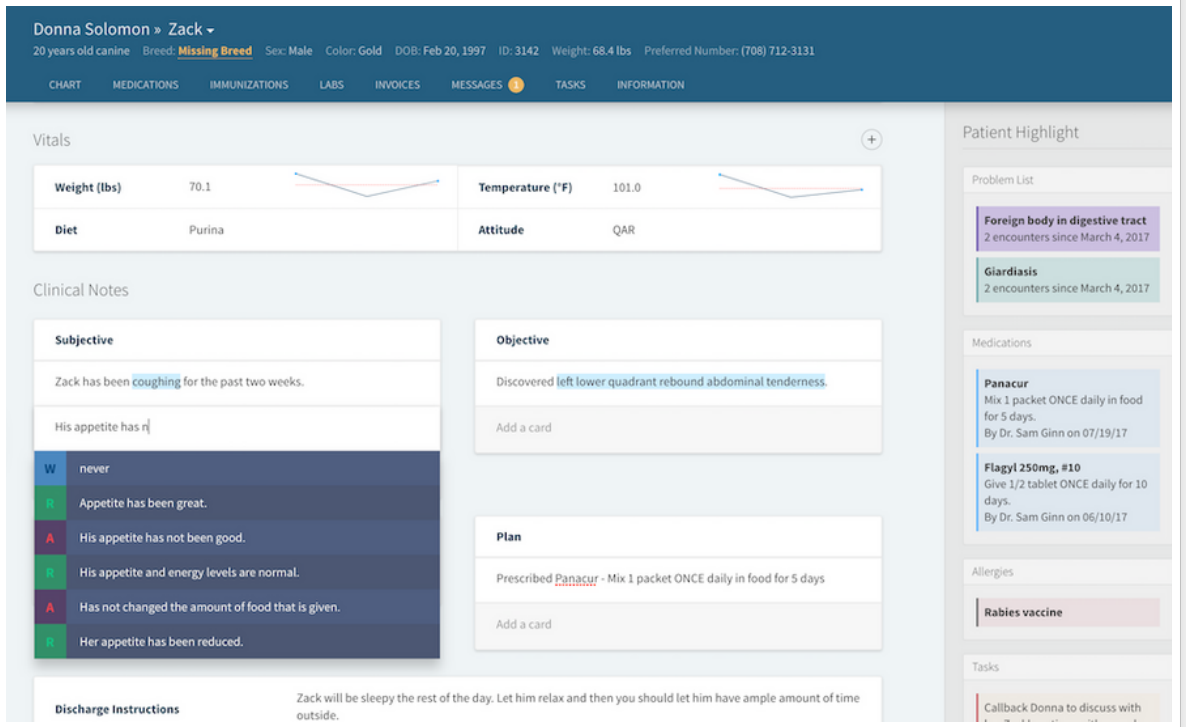
Instinct

- Launched in 2017
- In- Clinic Patient Management
  Powering over 100+ specialty centers
- Includes predictive billing, warning systems, and helps capture missed charges



Vet Spire

- Launched in 2017
- Practice management system focused on improving medical record keeping and reducing time
- Auto-populates notes as you write them
- Categorizes phrases in to problem lists, etc

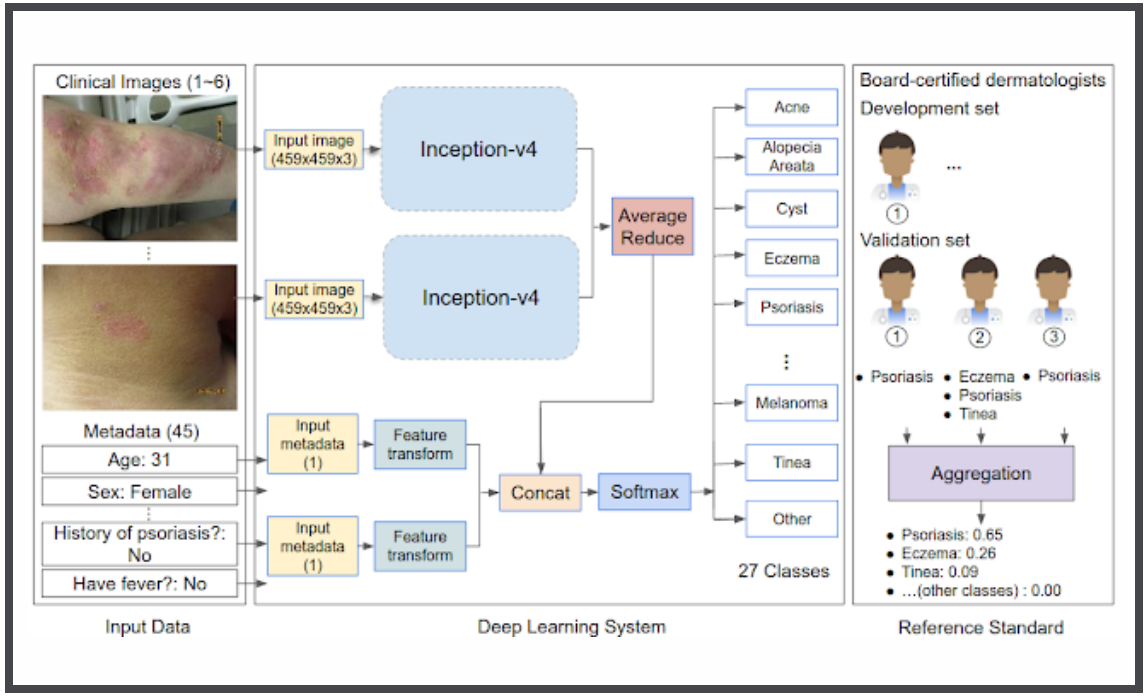


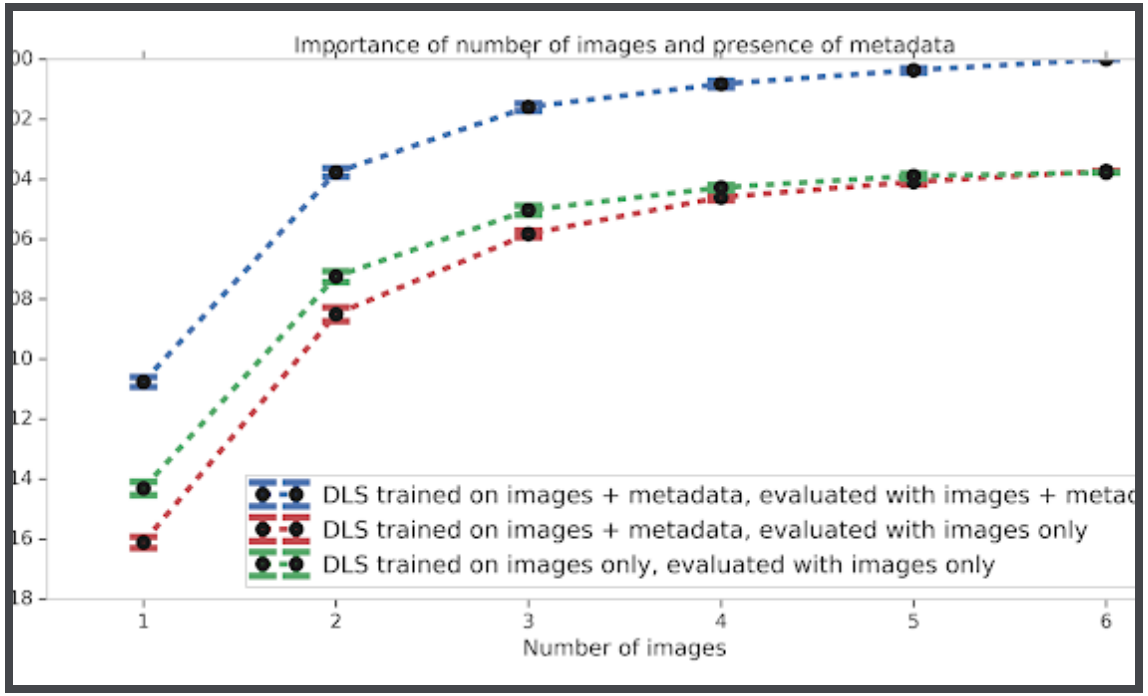
Deep Tag

- A project focused on helping make sense of veterinary clinic records to improve the diagnostic process
- Focused on adding structured medical codes
- Trained algorithms on 100,000 clinical notes
- Will be openly available to general practitioners

Dermatology & Google

- ~25% of all treatments provided to patients around the world are for skin condition (37% have at least 1 skin complaint)
- Used 17,777 de-identified cases from 17 primary care clinics across two states
- The model leveraged over 50,000 differential diagnoses provided by over 40 dermatologists
- Demonstrated a top-3 diagnostic accuracy of 90%, or comparable to dermatologists (75%) and “substantially higher” than primary care physicians (60%) and nurse practitioners (55%).





“This study highlights the potential of the DLS to augment the ability of general practitioners who did not have additional specialty training to accurately diagnose skin conditions.”

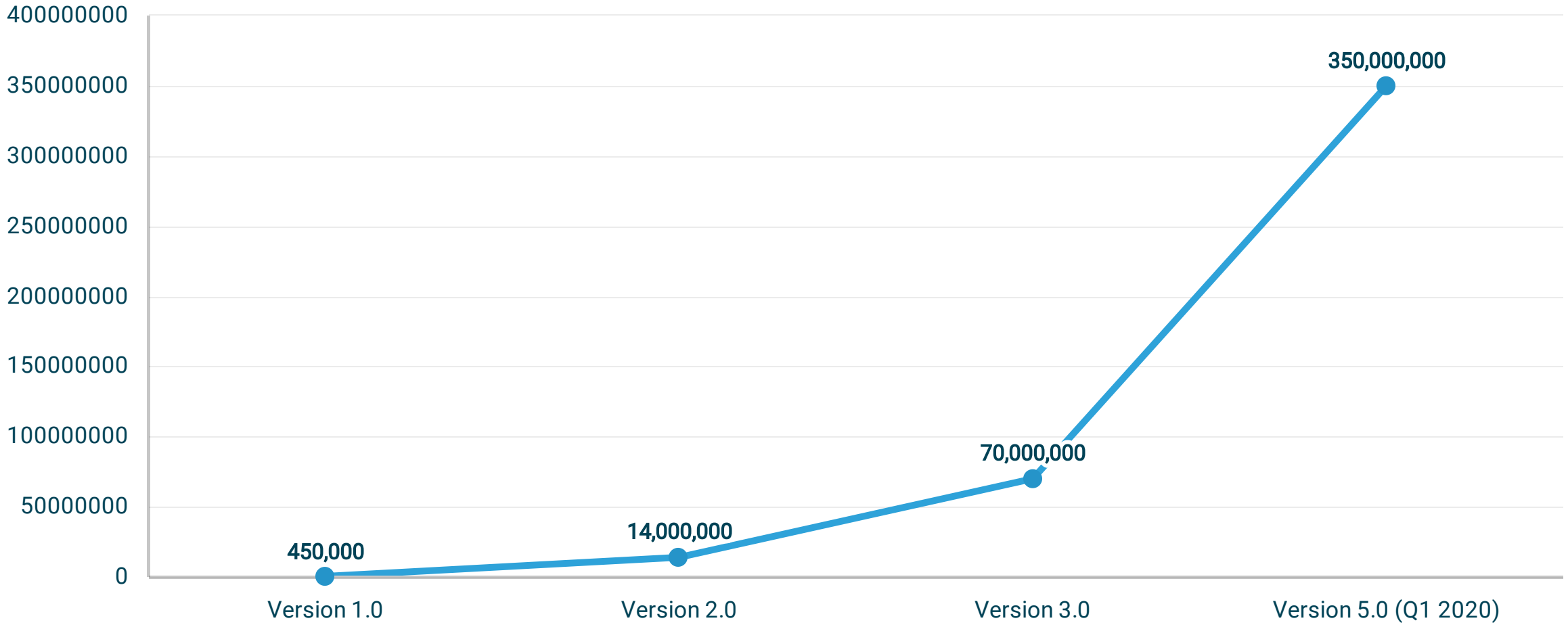
Software engineer Yuan Liu and Google Health technical program manager Dr. Peggy Bu

IDEXX SediVue

- Point-of-care urine sediment analysis
- Use machine vision to “teach” machine to identify abnormalities with every patient
- Leverage 70M+ images to improve outcomes
- Over time, results will be more accurate and quicker

Evolution of IDEXX Sedivue Neural Net

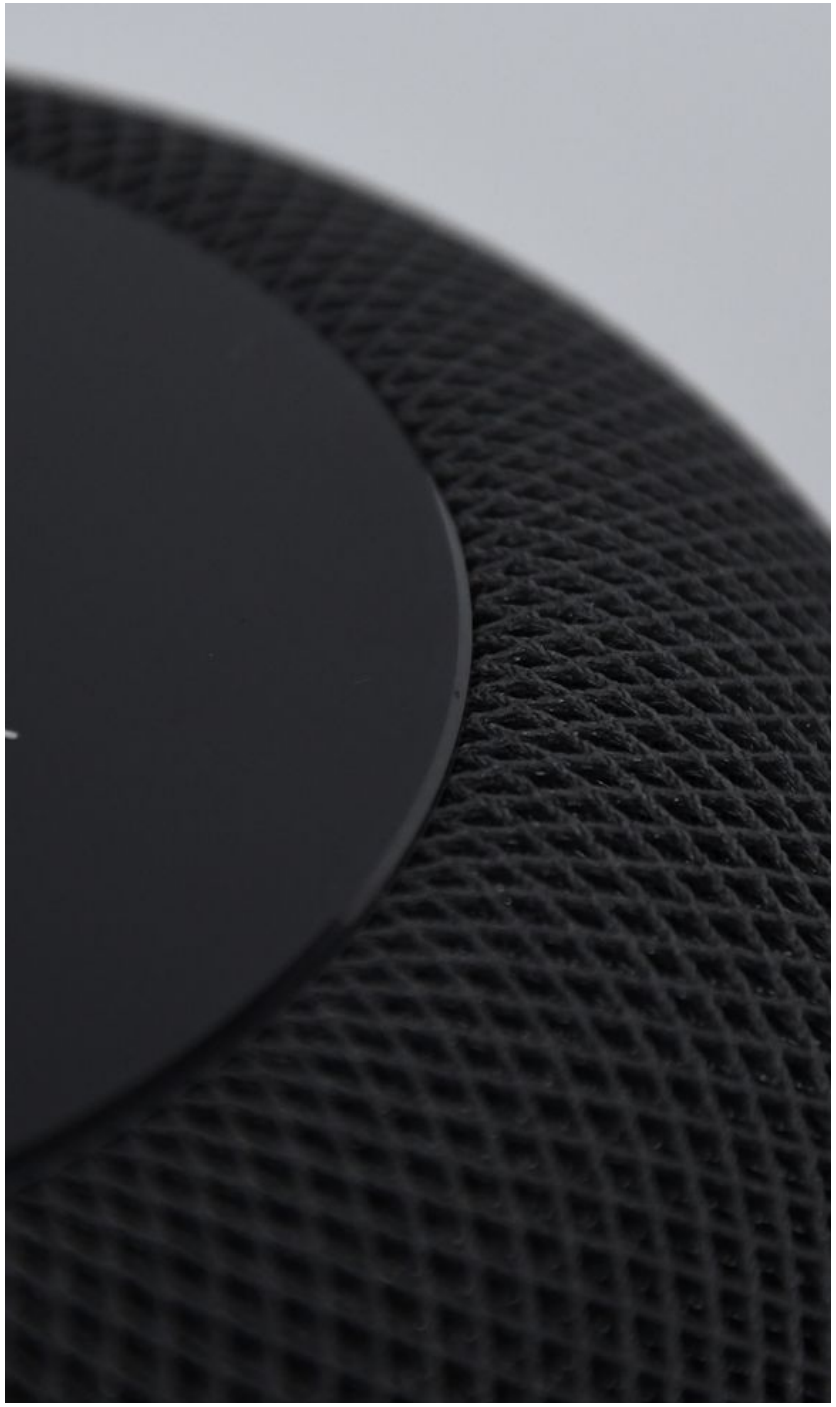
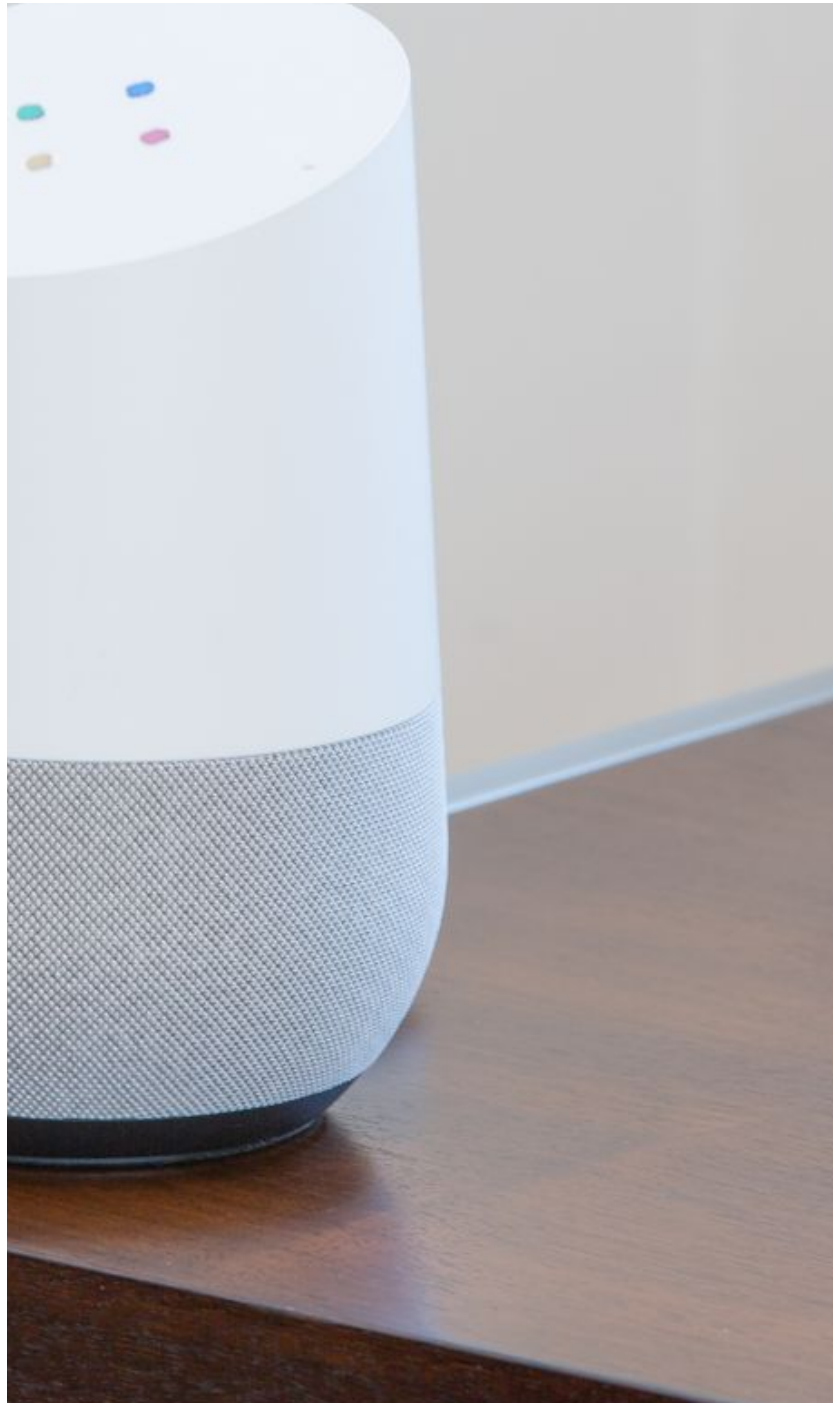
of images in knowledge base



Source: IDEXX

Antech RenalTech

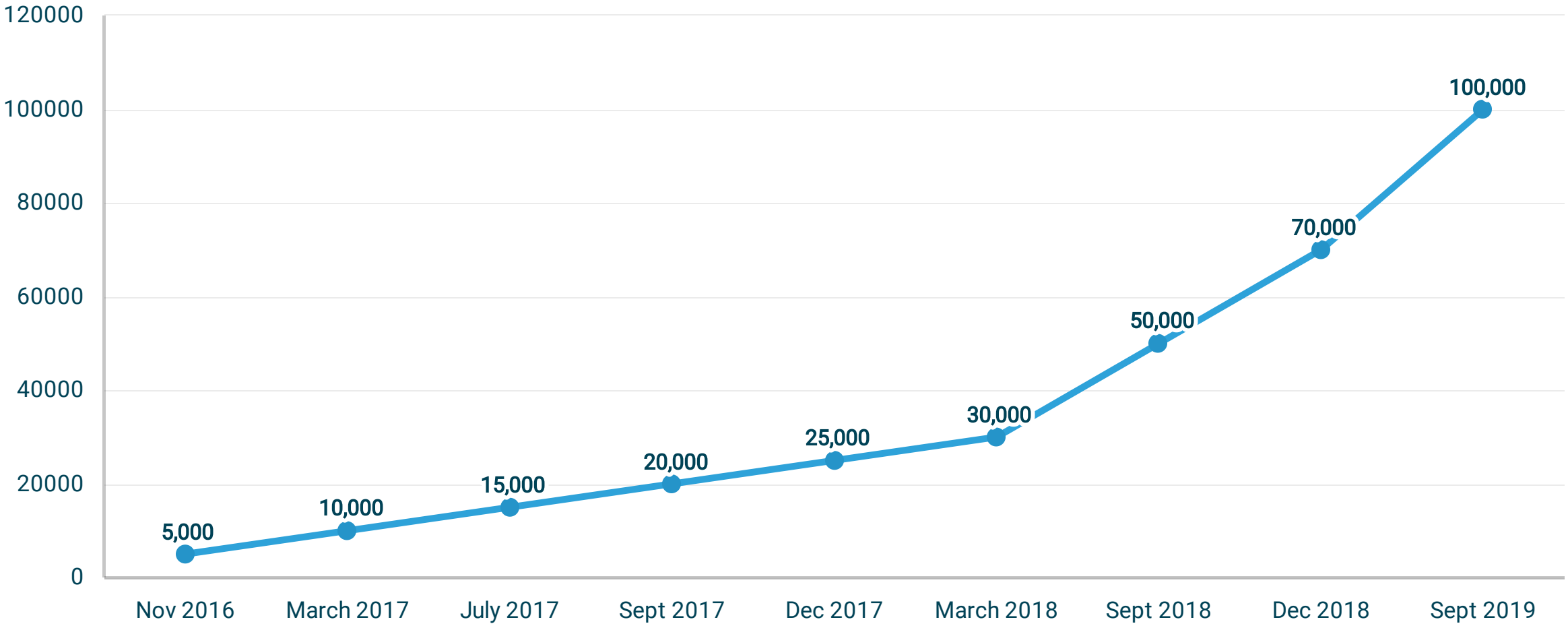
- CKD is the #1cause of death for cats over five and affects 30-40% of all cats over the age of 10
- Leveraged medical data from 150,000 cats over 700K in visits
- Uses common serum and urine diagnostics to predict whether a cat will develop chronic kidney disease in the next 2 years – with greater than 95% accuracy.
- Available free of charge to US veterinarians using Antech

Video

Growth of Alexa Skills

There are now over 70K+ Alexa Skills in the Market



Huge Investment in Voice Technology

Summary

- **It is not possible for you to remember everything**

  And it's not going to get any easier

- **Self-awareness enables you to be open to finding new solutions & building trust with clients**

  How would you feel if your accountant said he did all your numbers in his head?

- **Machine learning will be embedded in workflows to help guide clinical decision making**

- **This will allow individuals to practice with the confidence and support of a “larger team”**

- **We are just getting started**

“That it will ever come into general use, notwithstanding its value, is extremely doubtful; because its beneficial application requires much time and gives a good bit of trouble both to the patient and the practitioner;

because its hue and character are foreign and opposed to all our habits and associations.“