

# **Connected Pet Products**

## **51-709 Final Report**

Michael Cioffi

Yifei Sun

Pratham Shah

Xinwei Yan



## Table of Contents

Executive Summary	1
Specific Focus	1
SET Factors	2
Pet Connectivity Structure	4
User Research Methods	5
In Person Interviewing	5
Shadowing	6
Scenario Study	6
Stakeholder Map	7
Online Questionnaire	7
Opportunities and Key Insights	9
What's Next	11
References	12
Appendix	13

## Executive Summary

Our group was given the following prompt from Jarden Corporation: “Explore user needs and create concepts for pet products or services focused on increased connectivity between pets and pet parents focusing on play, feeding, exercising, tracking, monitoring, or entertainment.” With that statement in mind, we set out to explore pet products by framing our research plan under the following goals:

*“We hope to understand the situations in which a pet owner needs to communicate with their pet and vice versa, and if the psychological attachment between both parties can affect how owners perform their daily activities with their pets.”*

To discover opportunities and key insights into these goals, our group would first understand which pet markets to target, then outline the SET factors that define that market, and finally compare the SET factors list with the list of results coming from our research methods of interviewing, using a survey, creating a scenario case study, and diagramming a stakeholder’s map.

## Specific Focus

Our project at first included all pets, though secondary sources suggested that the market for dogs would be the best industry to tackle. In order to validate that, we looked at two aspects (A) money and time invested in

	# of US Households who own a pet	Average Annual \$\$ per Household	Dogs	Cats
Bird	6.9 Million	Surgical Vet Visits	\$621	\$382
Cat	45.3 Million	Routine Vet	\$231	\$193
Dog	56.7 Million	Food	\$239	\$203
Horse	2.8 Million	Food Treats	\$65	\$36
Fish (fresh)	14.3 Million	Kennel Boarding	\$327	\$337
Fish (salt)	1.8 Million	Vitamins	\$64	\$77
Reptile	5.6 Million	Grooming	\$61	\$20
Small Animal	6.9 Million	Toys	\$41	\$23

specific pets, and (B) amount of daily interaction with specific pets. The American Pet Products Association estimated that in 2012 alone, the number of households owning a dog was 56.7

million compared to 45.3 million owning a cat, and 14.3 million owning a freshwater fish. In terms of expenses, owners on average spent \$1649/yr on dogs and \$1271/yr on cats, with other pets falling well below the \$1000 mark per year.

Identifying the level of interactivity between owners and their dogs and cats is difficult to prove without talking to owners themselves, as well as professionals in the pet industry and delving into third party sources. On top of having personal conversations with pet store owners and clients at pet service agencies, we drew insight from a survey conducted by the American Humane Association and PetSmart.<sup>1</sup> The survey consisted of 1500 total respondents divided equally into (500) dog owners, (500) cat owners, and (500) non-pet owners. The survey revealed people in general prefer to own dogs over cats and that dogs both require and initiate much more interaction with their owners than cats on a *daily* basis. A more detailed approach regarding our personal conversations and interviews will be discussed in the Methods section of this paper. A combination of the market size and the interactivity between dogs and their owners helped us determine that we should primarily focus on dogs and their owners.

## SET Factors

Secondary sources used in this project used to understand the social, economic, and technological trends in the dog industry were derived from the following sources: American Pet Products Association, American Veterinary Medical Association, American Humane Association, New York Times Company, Wall Street Journal, US Bureau of Labor Statistics, PetSmart Store Group Inc, and Pittsburgh PetConnections Magazine. From them the following SET factors were established:

### ***Social***

- Dog owners have greater self-esteem, were less lonely and tended to be less fearful than people without pets

---

<sup>1</sup> AHA, PetSmart “Keeping Pets (Dogs and Cats) in Homes: A Three-Phase Retention Study”

- Owners treat pets as if they were their children: “Up to 81% of Americans view their pets as family members, and think about their dogs as much as their children. 71% have a photo of their dog in their wallet or phone that they show other people” <sup>2</sup>
- The pet industry has begun to offer healthy pet food in many varieties
- Dog owners care about their dog’s psychological health including avoiding neglect
- Children and the elderly are more likely to be afraid of large pets
- The percentage of dogs obtained from animal rescue centers has increased dramatically
- Owners are using personal dog services more than ever before
- There is a growing tendency or yearning to raise another pet after losing one
- The dog owner community is growing and more social and volunteer events are occurring
- Owners feel responsible to pay for pets’ health care and feel guilty if they cannot do so

### ***Economic***

- “Americans spent a record \$55 billion on pets, more than the GDP of Belarus” <sup>3</sup>
- Annual pet expenditure remained relatively steady even during the recession in the 2000’s
- Both medical bills and food expenses have been the largest portions for dog expenses
- Dog owners are willing to give up housing opportunities to accommodate their pet
- Dog owners are willing to spend more money to aid their sick or even terminally ill dog: “Do whatever you have to do! I love this dog even more than I love my husband!” <sup>4</sup>

### ***Technological***

- Translating dog barks to human understandable format (primarily academic research)<sup>5</sup>
- Stronger social community presences for dogs on the web, such Facebook, Twitter accounts
- Pet surveillance systems in which a video camera can be controlled by a phone app
- Pet exercise or activity monitor that reports any abnormal activities based on collected data
- Automatic pet grooming machines related to hair treatment and nail trimming
- Pet exercise packages that include a set of exercising machines to be done at home

---

<sup>2</sup> Wall Street Journal “Why Pet Dogs Are as Good as Kids”

<sup>3</sup> New York Times “For the Dogs has a Whole New Meaning”

<sup>4</sup> New York Times “Old Dog Needs \$6,000 Surgery. What Do You Do?”

<sup>5</sup> Research is currently being done to record samples of dog barks and the surrounding situations and then correlate similar type of barking to these situations

- Pet cleaning systems related to bathing products and cleaning litters
- GPS tracking collars that help find your dog if it gets lost
- Mobile apps for understanding a dog's activities and its dietary/physical/medical needs
- Pet training system including feeders, clippers, fences, and bark control

## Pet Connectivity Structure

In order to develop an understanding of the problem statement, it is necessary to list out the situations in which pets interact with various environments. After coming with a basic list of these interactions, informal talks were conducted with a few friends who had pets to get a more comprehensive list of interactions carried out by pets. Based on these, we compiled list of pet interactions. Those interactions are divided into 3 categories: (A) between pets and owners (B) between pets together or by themselves (C) between pets and facilities / non-owners.

### (A) Between Pets and Owners

#### Activities

- Daily Care: taking out, cleaning, feeding, sleeping together, nurturing, grooming
- Playtime: Ball tossing, dog toys, verbal talking
- Training: Typical training, teaching orders (verbal communication), pet competition

#### Motivations

- Personal Enjoyment: gifts, hobby collection, branding purposes (i.e. personal "names")
- Social Needs: Habitual (following friends / family), economic (social standing, money)
- Functional Needs: For disabled people (filling a physical void)
- Psychological Needs: Represent different values (companion, child)

### (B) Between Pets Together or by Themselves

#### Initiated by Pet

- Entertainment: Playfulness , fighting/chasing, relaxing, playing with toys, barking

- Mating: Sometimes intentional, sometimes accidental

Initiated by Owners

- Social Hierarchy: Competition (showing off dogs)
- Breeding/Mating: Newborns to sell

### (C) Between Pets and Facilities (Non-Owners)

- Veterinarians
- Day Care Facilities, Dog Sitters
- Rescue Organizations

	Initiated		Beneficial	
	Owner	Pet	Owner	Pet
Feeding	•	•		•
Sleeping (with)	•	•	•	•
Exercising	•	•	•	•
Talking	•		•	
Playing	•	•	•	•
Teaching	•		•	•
Nurturing	•			•
Cleaning	•			•
Socials	•		•	•
Guides		•	•	
Branding	•		•	

## User Research Methods

### In Person Interviewing:

We interviewed three groups of people, all of which were done to help understand what dog owners valued in their pets and daily activities they performed. The three groups were (a) regular family and friend dog owners, (b) pet store managers, and (c) pet expo attendees. There were a total of 9 interviewees, though the type of questions varied according to each group; for



example, pet expo attendees were not given direct interview questions but rather questions from informal conversation. We visited three stores in the Pittsburgh area to conduct interviews: Petagogy, Smiley's Pet Pad, and Petland. The Pittsburgh Pet Expo was held at the David Lawrence Convention Center between November 1-3, 2013.

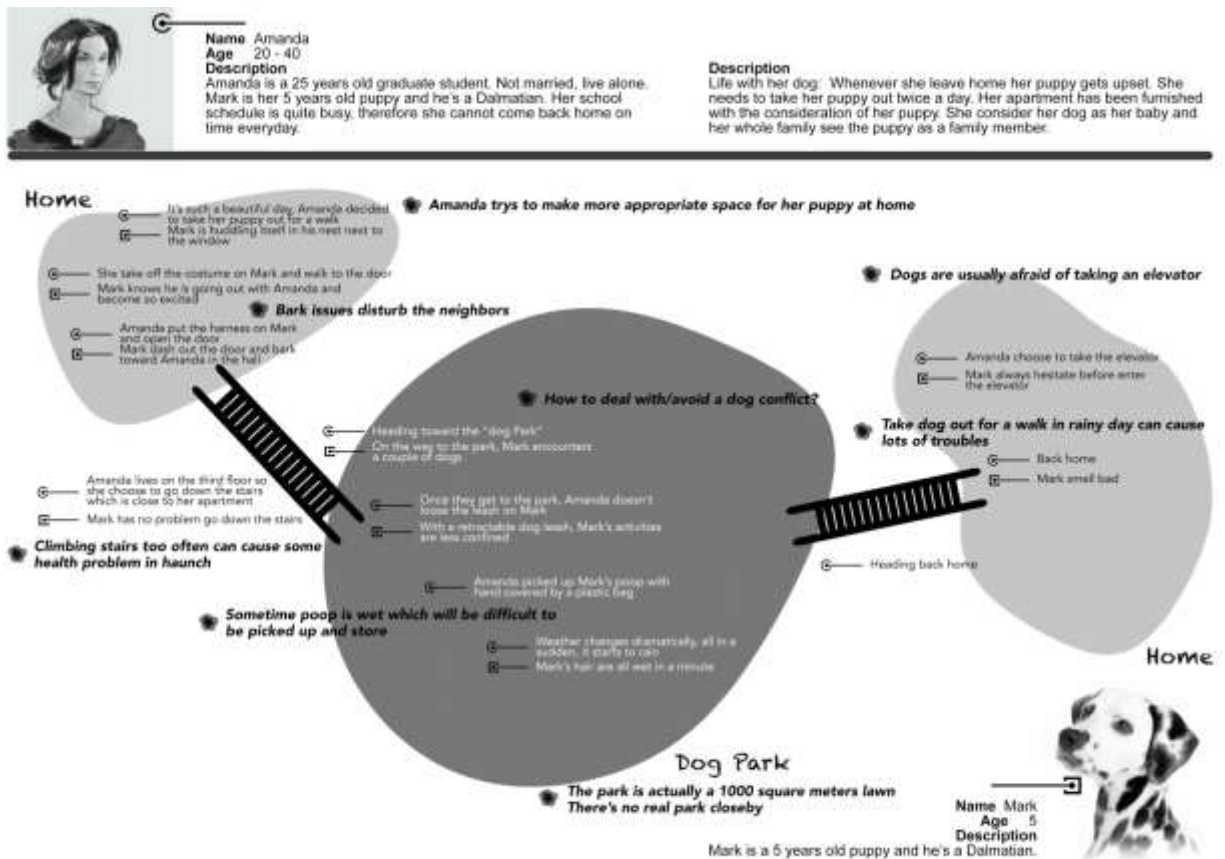
## Shadowing:

In addition to interviewing, our group spent approximately 4 hours with the owner of a Shih Tzu. During the 4 hour shadowing period, a number of different activities were encountered including: grooming, sleeping, walking, and playing.



## Scenario Study:

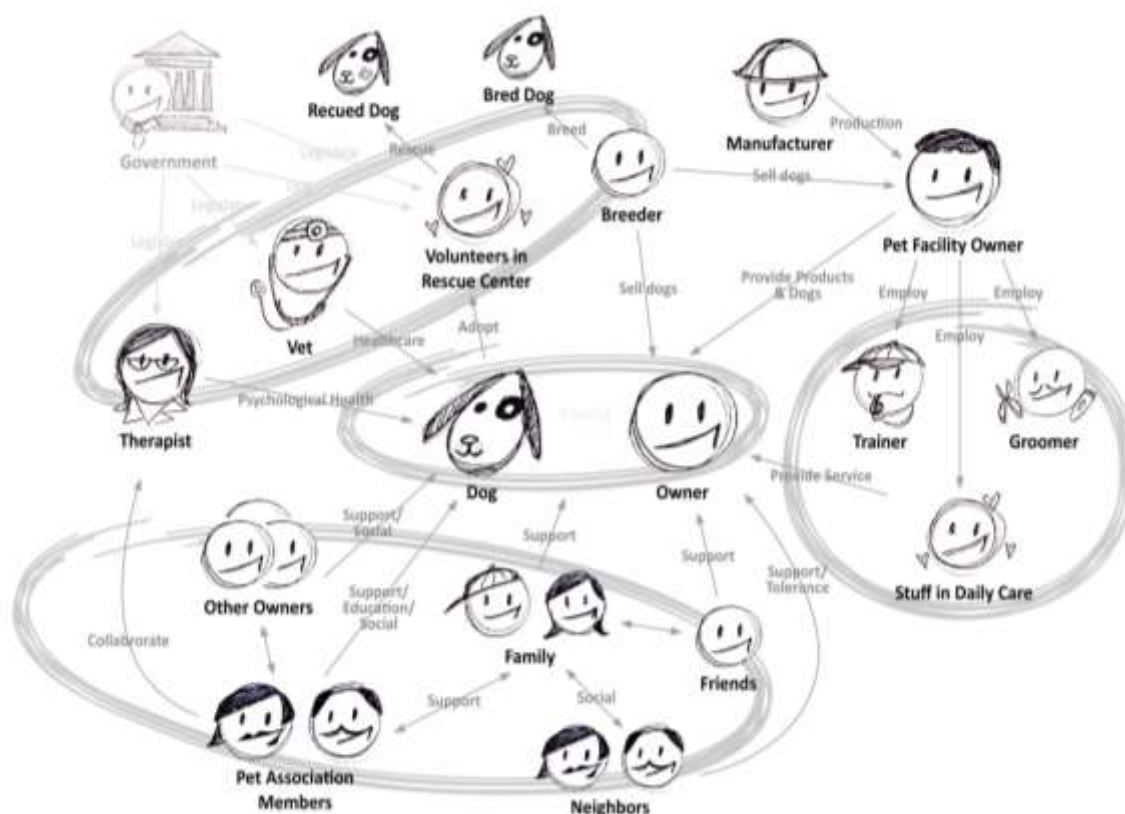
Below is a detailed diagram outlining a scenario study that goes over some issues and pain points related to a day-in-the-life of a dog owner.





## Stakeholder Map:

The stakeholder map helps us identify the entire process of dog ownership. Attached is a diagram map of the players involved in the dog ownership process according to our interviews and research. The primary supply of dogs comes from bred dogs and animal rescue centers.



## Online Questionnaire:

Our group sent out an online questionnaire on November 5<sup>th</sup>. As of November 12<sup>th</sup>, we have received 54 responses from dog owners. The online questionnaire was sent to various owners including those who are friends, pet store managers, animal rescue volunteers, and miscellaneous people we met at the Pittsburgh Pet Expo. To ensure positive responses and keep people engaged, we developed a landing page for our Google Survey located at the temporary URL: <http://goo.gl/jlWrMI>.



Below is the list of questions we had in our questionnaire. This list does not include the multiple choice options. For an extensive view of the questionnaire in proper format, refer to the Appendix.

1. Your Age?
2. Your Gender?
3. What is your marital status?
4. How many dogs do you own?
5. What breed(s) of dog?
6. What was the context of getting your dog and the reason for it?  
*e.g. gift, store purchase, dog rescue center, etc*
7. Rate the amount of time you spend doing each activity with your dog on a weekly basis
8. Among the following, rank how you prioritize your top (3) most important activities with your dog.  
*Only rank (3) that you feel are most important irrespective of amount of time you spend*
9. For your 1st choice, what issues do you usually encounter (if any)?
10. For your 2nd choice, what issues do you usually encounter (if any)?
11. For your 3rd choice, what issues do you usually encounter (if any)?

12. Select the issues here that you tend to worry about with your dog
13. What are you most likely to do if you need to leave your dog by itself?  
*e.g. situations might include going to work, school, or vacation*
14. What actions do you take if your dog gets upset, frantic, or disobedient?  
*e.g. how do you calm it down*
15. If given the technology or money, how would you improve your dog ownership experience  
*e.g. pet grooming machine, dog language translator, dog exercise gym*

## Opportunities and Key Insights

There were several key insights we found by comparing our SET factors with answers given in interviews and the questionnaire so far. Listed here are the common themes:

### > Owners treat their dogs as children, literally speaking

People will (a) sleep with their dog (b) pay exorbitant pet medical bills, and (c) spoil their dog with healthy food and toys. Behaviors like these and others suggest a strong psychological attachment between the owner and his or her dog. There is an opportunity to explore how to enhance that one-to-one bond; for example, relaxation time with your dog, with a focus on comfort level between both parties. Sometimes, owners fear that they are prioritizing their children too much over their dogs; how do they go about balancing that?

### > The adoption process of a dog is extremely relevant to the dog owner

Many users cited the adoption process as being a very important part of their dog ownership experience. Most owners said that they obtained their dog through animal rescue centers. These “beginnings” to the pet ownership experience can influence how the owner treats his or her own pet in terms of medical needs and affection.

### > Owners worry about how to accommodate their pets when the owner is away

Nearly all respondents (interviewees, questionnaire) struggle with the idea of leaving their pet when away or what to do in that situation. Some owners either (a) fear that they are neglecting the pet too much or (b) just want some way to remotely monitor their dog.

**> There is a desire to be able to monitor pets both in activities as well as for location purposes**

Technology today – mainly wearable computer gear – has allowed this to become a part of the dog owner’s so-called “wish list”. Dogs can have a tendency to stray off when not on a leash or even become completely lost. Owners cite a need for dogs to be tracked in these situations

**> Dog cleaning, grooming, and training are tedious processes for the owner when done independently**

Cleaning, grooming, and training are usually conducted by pet facilities. When a dog owner does this by himself or herself, the process can become frustrating and dogs themselves can lack patience as well. How can the owner feel more comfortable with doing these dog “maintenances”?

**> Owner –to-dog communication and vice versa is a pain point for all owners**

Nearly all respondents cited a desire to better communicate with their dogs. Barking is clearly not understandable by humans, so are there dog actions that can suggest certain dog needs (wanting water, need a bathroom break, can I get a treat?)

**> Prioritizing the dog’s play area with limited space**

The owner’s home is also the pet’s home. Playing areas for pets are usually either non-existent or very small. House or apartment size is always an issue so how should owners keep their pets engaged enough with objects to make them feel like they do not need a large space?

**> Walking dogs or bringing them to parks can introduce a lot of unwanted things**

As discovered in our survey, owners prioritize exercising as well as spent a lot of time with their dogs doing it. A simple process of bringing a dog out is usually overshadowed because problems come up like: (a) dogs becoming aggressive (barking, tussling) with other people and dogs (b) dogs tugging on leashes (c) owners not knowing how to stroll a baby carriage and a walk a dog simultaneously (d) owners having their dogs run beside them for jogs

**> Keeping dogs preoccupied while at home**

A change in company policies in the past decade has influenced the new trend of work-from-home. Dog owners who encounter these situations know that it can be difficult at times to have to attend to his/her

dog's needs while working. Reducing the amount of time or effort spent in attending to the dog during work hours can add value for the owner.

#### **> Managing individual dog expenses**

Expenses for dogs can either be very deterministic or can fluctuate a lot. Food and miscellaneous dog accessories are expected and can be easily estimated by the owner. Medical expenses and added maintenance costs can vary greatly over time; one year or one month might be entirely different than another. There is an opportunity to understand these expenses more in depth and explore the possibility of tracking dog expenses electronically such as on a mobile app or service.

#### **> Managing the grief of losing a dog**

The survey by the American Humane Association and PetSmart also gave insights into the behavior of owners who grieve the loss of a dog. Most owners cite that there is a barrier to obtaining another dog after a recent one has passed away. Is there a way to celebrate the previous dog's life and make this transition more easily?

## **Next Steps**

There are rich opportunities to be explored in this pet space, as outlined above. However, our group did not have the time or resources to go more in depth with some topics that we feel we should have covered. Some of those aspects worth considering for future investigation include (1) exploring more in depth the different age groups of owners (2) understanding if there is a technology barrier for dog owners and whether they would purchase one pet product over another, (3) finding inspiration from other pet technology such as cats that might lead to newfound insight, and (4) talking to pet experts and veterinarians about specific dog behaviors. Our group's pet-to-people connectivity structure is strictly for dogs, but the same kind of framework can be extended to any pet. We hope that even if dogs may not be best suited for this project, our research will serve as a guide for future reference.

# References

- "Keeping Pets (Dogs and Cats) in Homes: A Three-Phase Retention Study." American Humane Association, PetSmart 2012.
- "Why Pet Dogs Are as Good as Kids." Wall Street Journal, March 13 2013.  
<http://blogs.wsj.com/speakeasy/2013/03/13/why-pet-dogs-are-just-as-good-as-kids-maybe-a-little-better/>
- "'For the Dogs' Has a Whole New Meaning" New York Times, June 4 2011.  
<http://www.nytimes.com/2011/06/05/business/05pets.html>
- "Old Dog Needs \$6,000 Surgery. What Do You Do? New York Times, March 26 2013.  
<http://www.nytimes.com/2013/03/26/booming/old-dog-needs-6000-surgery-what-do-you-do.html>
- "Beyond the Numbers. Spending on Pets: 'Tails' from the Consumer Expenditure Survey" Bureau of Labor Statistics, May 2013 Volume 2 / Number 16.
- "Animal Behaviorist: We'll Soon Have Devices that Let us Talk with our Pets" Megan Garber, The Atlantic, June 4 2013.  
<http://www.theatlantic.com/technology/archive/2013/06/animal-behaviorist-well-soon-have-devices-that-let-us-talk-with-our-pets/276532/>
- "Scientists Develop Computer that can 'Translate' a Dog's Bark." Daily Mail, a part of Associated Newspapers Ltd, January 16, 2008.  
<http://www.dailymail.co.uk/news/article-508550/Scientists-develop-translate-dogs-bark.html>
- "Dogs are People Too." New York Times, Opinion Article by Gregory Burns, October 5, 2013.  
[www.nytimes.com/2013/10/06/opinion/sunday/dogs-are-people-too.html](http://www.nytimes.com/2013/10/06/opinion/sunday/dogs-are-people-too.html)
- "New Devices Mind Pets While Owner is Away." New York Times, September 13, 2013  
<http://www.nytimes.com/2013/09/12/technology/personaltech/new-devices-mind-pets-while-owners-are-away.html>
- "What Pet Owners Must Do to Get New York Apartments." New York Times, March 29, 2013.  
<http://www.nytimes.com/2013/03/31/realestate/what-pet-owners-must-do-to-get-new-york-apartments.html>

# Appendix

## Online Questionnaire

### Dog Ownership

Thank you for taking this quick survey. It should not take more than 10-15 minutes to complete.

The survey is primarily focused on how you interact with your dog(s) in your daily life.

\* Required



### Dog Owner Background

1. Your Age \*

---

2. Gender \*

*Mark only one oval.*

☐ M

☐ F

3. What is your marital status?

*Mark only one oval.*

☐ Married, with children

☐ Married, no children

☐ Single, with children

☐ Single, no children

4. How many dogs do you own? \*

*Mark only one oval.*

☐ 1

☐ 2

☐ more than 2

5. What breed(s) of dog?

---

6. What was the context of getting your dog and the reason for it? \*

eg: gift, store purchase, dog rescue center, etc

---



---



---



---



---



## Dog Activities



7. Rate the amount of time you spend doing each activity with your dog on a weekly basis \*

Mark only one oval per row.

	0 hrs	1-3 hrs	3-5 hrs	5+ hrs
Feeding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cleaning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grooming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Playtime	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sleeping With	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exercising (walks, parks)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nurturing (treatment, medication)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relaxation (one-to-one)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taking out on a trip	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



8. Among the following activities, rank how you prioritize your top (3) most important activities with your dog

Only rank (3) that you feel are most important irrespective of amount of time you spend on it

Mark only one oval per row.

	1st	2nd	3rd
Feeding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cleaning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grooming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Playtime	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sleeping With	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exercising (walks, parks)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nurturing (treatment, medication)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relaxation (one-to-one)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taking out on a trip	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. For your 1st choice, what issues do you usually encounter (if any)? \*

eg: dog fights with other dogs at park, hair cleaning is messy, etc

---



---



---



---



---

10. For your 2nd choice, what issues do you usually encounter (if any)? \*

---



---



---



---



---

11. For your 3rd choice, what issues do you usually encounter (if any)? \*

---



---



---



---



---



## Dog and Owner Interaction

12. Select the issues here that you tend to worry about with your dog \*

*Check all that apply.*

- ☐ Medical or Insurance Expenses
- ☐ Access and Convenience to Pet Facilities
- ☐ Conflict with Other Dogs
- ☐ Accidental Mating
- ☐ Allergies (house guests, family, friends)
- ☐ Obedience (barking, aggression)
- ☐ Dieting Issues (correct food)
- ☐ Mental Issues (upset, depressed environment, abandon, confinement and etc.)

13. What are you most likely to do if you need to leave your dog by itself? \*

Situations might include going to work, school, or vacation

*Check all that apply.*

- ☐ Turn on television or music
- ☐ Tie to leash or put in a cage
- ☐ Take to a dog daycare
- ☐ Have someone else watch the dog
- ☐ Take the dog to work (if permitted)
- ☐ Other: \_\_\_\_\_

14. What actions do you take if your dog gets upset, frantic, or disobedient?

e.g. how do you calm it down

\_\_\_\_\_

15. If given the technology or money, how would you improve your dog ownership experience

e.g. pet grooming machine, dog language translator, dog exercise gym

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Timeline

