

**The 2005 Portuguese Water Dog Health Survey:**  
Final Report

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## **Background**

The Portuguese Water Dog Club of America requested a general health survey. Owners belonging to the Portuguese Water Dog Club of America, Portuguese Water Dog Club of Canada, regional clubs, or registered breeders were included. The purpose was to find possible emerging breed-related health problems, so that concerns and areas of interest can be addressed. Previous dog health surveys were used as a basis for the current survey.

## **Methods**

On October 21, 2005, the survey was mailed to all members of the Portuguese Water Dog Club of America, regional clubs, and breeders. Additionally, during the week of December 5, 2005, the survey was mailed to the members of the Portuguese Water Dog Club of Canada. All names on the mailing list were given ID numbers in order to keep responses confidential. Postcard reminders were sent out to the Portuguese Water Dog Club of America on May 22, 2006 and an additional survey was sent to members of the Portuguese Water Dog Club of Canada on July 10, 2006 encouraging owners to return the survey even if it was blank because they no longer owned PWDs. A graph of the incoming survey per week can be seen in Appendix I. Various incomplete, illegible, or incomprehensible responders were called beginning in May 2006 to clarify responses when possible. New copies of the surveys were mailed out to non-responders July 13, 2006.

Answers from the surveys were compiled into excel spreadsheets under each survey identification number. Ages are in years, except when noted.

When results showed more than a 2% difference between male and female dogs in any particular health category, then a chi-square test was used to analyze the data (except for female only and male only diseases). Two percent was chosen as a large enough difference to be biologically or clinically important. If the resulting p-value was less than or equal to 0.05, then it was considered statistically significant. Having a statistically significant p-value indicates a difference between the sexes and the frequency of these health problems.

## **Results**

There were a total of 1700 Portuguese water dog owners and members of the club who responded with information that could be used for the survey results. Originally, 2010 members of the PWDCA were sent surveys and an additional 231 surveys were mailed to the members of the PWDCC for a total of 2241 original surveys mailed out. However, 22 of these were bad addresses, and were not counted. Two blank forms were returned, 12 surveys were returned specifying they no longer had PWDs, and there were two unusable returned surveys. Overall, we had a 77% response rate which is high. Information about the response rate can be found in Table A-1. The two returned surveys that were not usable had been answered in an uninterpretable manner, such as, having multiple dogs but not specifying the number of dogs afflicted by an illness or having multiple dogs that possibly did not reside with the owner. Possible reasons as to why the rest did not reply cannot be certain. Reasons could include: 1) too time consuming; 2) too many dogs to include; 3) too many health problems; 4) very few or no

health problems; 5) have not recently owned PWDs; 6) some other unknown reason. The higher the response rate, the more accurate and conclusive the data is. The survey includes a total of 3547 living and deceased PWDs.

The first page of the survey was general information about the Portuguese water dog owners and their dogs. The median number of years an individual had owned PWDs was 6 years. Most owners currently only had one dog; 15 was the maximum number of dogs a person owned. General information can be found in Table A-2. The most popular activities that these PWDs participated in are pet companion, conformation, and obedience (Table A-3). See also Graph A-1 in Appendix II. Owners reported to be most concerned with cancer, Addison's disease, and cardiomyopathy along with juvenile dilated cardiomyopathy, as seen in Table A-4. This can also be seen in Graph A-2.

There were 2886 living PWDs and 661 deceased PWDs, for a total of 3547 dogs included in this survey. The median age of living dogs was four years for both males and females. The median age at time of death was 10 years for males and 11 years for females. The oldest age achieved before death was reported to be 16 years for a male and 17 years for a female. Information regarding the age of dogs can be found in Table A-5. The most common causes of death included cancer, old age, heart problems, accidental death, and kidney disease. Old age is a general term; however, an exact cause of death was not noted. Table A-6 has a complete list of causes of death.

The top ten most reported individual health problems (Appendix III) were sebaceous cysts (10%), hip dysplasia (6.9%), arthritis (6.5%), dietary allergies (6.2%), cataracts (5.9%), chronic ear infections (5.4%), contact dermatitis (4.9%), recurring urinary infections (4.7%), hypothyroidism (4.3%), and lipomas (3.9%). An overall plot of the health problems surveyed can be found in Graph A-3 in Appendix II. The top five temperament and behavior problems included biting a human, biting another dog, dog-dog aggression, noise phobias, and shyness. A graph of the top temperament problems can be seen in Graph A-4 in Appendix II.

Differences between the sexes were found in seven health problems and four temperament and behavior problems using a two percent rule and chi-square calculations. Males were more likely to have hip dysplasia, contact dermatitis, and dietary allergies whereas females were more likely to have incontinence after spay, recurring urinary infections, umbilical hernias, and mammary tumors. In addition to these health problems males were more apt to bite a human, be aggressive towards people and other dogs, and have extreme guarding behavior. Odds ratios (OR) were also calculated to give information on how much more likely one sex was to have the problem than the other (Appendix III).

Temperament and behavior was the most reported health category. See Table B-1. The identified behaviors most often reported were dog-dog aggression, noise phobias, shyness, and biting a human. The most reported temperament problems can be seen in Graph A-4. About 47% of the dogs included in the survey were considered to have some type of temperament or behavior problem. Of the 3547 dogs surveyed only 11% had a behavior consult. There was a significant difference between the sexes reported with males biting people, having more aggression towards humans and other dogs, and extreme guarding behavior. Males showed

aggression towards people three times more than females. In addition, males were 1.5 times more likely to be diagnosed with a temperament or behavior problem than females.

Skin and hair problems (Table B-2) were reported in over 20% of the Portuguese water dogs. Sebaceous cysts were the most reported health problem affecting at least ten percent of dogs. Allergies (Table B-3) impacted approximately 19% of the dogs surveyed with six percent having dietary allergies. Males were 1.6 times more likely to be diagnosed with dietary allergies than females. In addition, males were 1.7 times more likely to have contact dermatitis than females with almost five percent of the dogs affected.

Bone and skeletal problems affected approximately 17% of dogs surveyed as can be seen in Table B-4. Almost seven percent were affected by hip dysplasia. Male dogs were 1.4 times more likely than females to be diagnosed with hip dysplasia. Arthritis was the third most reported health problem affecting Portuguese water dogs with a median age of nine but occurring as young as seven months of age.

Almost to 13% of dogs were reported having eye problems (Table B-5). The most common eye problem was cataracts which affected six percent of the males and six percent of the females that participated in the survey. Cataracts were also one of the top five health problems reported with a median age of onset at ten years old. On the positive side, more than 20% of the owners had at least one dog in their house that was CERF evaluated.

Cancer occurred in about 12% of the dogs surveyed. The identified cancer most often reported was hemangiosarcoma, which occurred between four and 15 years old. On the other hand, lung cancer occurred between ten and 14 years old. Owners reported lymphosarcoma and osteosarcoma in dogs ranging in age from about two years to 13 years old. A list of all the cancers reported can be seen in Table B-6. Mammary tumors were the only difference between males and females because only females were diagnosed as positive even though this cancer can occur in males.

Twelve percent of dogs in the survey were affected with kidney and urinary tract problems. See Table B-7. Recurring urinary infections and incontinence after spay were the highest reported kidney and urinary tract problems along with having a large difference between males and females. Females were 4.8 times more likely than males to have recurring urinary infections.

About ten percent of the dogs were reported to have ear problems (Table B-8). The most common ear problem had to do with chronic ear infections which occurred in over five percent of the population surveyed. This number could possibly be closer to six percent, however, since many owners classified ear infections as occasional, meaning one or two infections, but not chronic.

Eight percent of the population surveyed had gastrointestinal problems. Roughly about the same percent were affected with mouth problems. Inflammatory bowel disease impacted about two percent of the population. It occurred in dogs as young as two months and as old as 15 years. Gastrointestinal and mouth problems can be seen in Table B-9 and B-10 respectively.

Nearly eight percent of males and seven percent of females were affected with endocrine problems. See Table B-11. Hypothyroidism was the most diagnosed endocrine problem with the median age of onset occurring at five years of age but ranging from six months to 13 years. Close to two percent of the population had Addison's disease occurring at a median age of four but ranging from one year to 13 years of age.

Heart and circulatory problems, like those listed in Table B-12, affected more than three percent of the population. Heart murmurs were the highest reported health problem. Heart problems, including congestive heart failure and cardiomyopathy, were the third most common cause of death.

Roughly three percent of Portuguese water dogs had hernias as seen in Table B-13. There was a significant difference in umbilical hernias between males and females, with females 2.8 times more likely than males to have one.

Neurological problems affected two percent of the dogs surveyed. Epilepsy or seizures affected almost two percent of the population, seen in Table B-14, with the median age of onset at four years of age. Epilepsy was diagnosed as young as two or three months up to 15 years of age. Other neurological problems include one or two seizures, stroke, and problems after receiving vaccine shots, along with some other diseases listed. Autoimmune diseases affected a little over one percent of the population surveyed (Table B-15).

Less than one percent of the population was impacted by liver or spleen problems, respiratory problems, or blood problems. These problems can be seen in Table B-16, B-17, and B-18 respectively. There were no significant differences between males and females.

Reproductive problems occurred more often in females than males. Almost 61% of females bred were affected, while only 18% of males bred were affected. The most common problems in females were failure to conceive (11%), unplanned cesarean births (11%), and difficulty whelping (9%) as can be seen in Table C-2. The most common problems in males were prostatic disease (6%), sub-fertile/infertile (5%), and abnormal semen (4%), as seen in Table C-3. Twenty-three percent of the total dogs were bred at least once (Table C-1). In the past five years, 1108 litters were reported (Table C-4). Litter and puppy problems occurred in 40% of the litters, as seen in Table C-5. Undescended testicles occurred in 10% of the litters, and fading puppies occurred in 10% of the litters.

Most owners (26%) characterized their Portuguese water dogs as moderately active. See Table B-19. If more than one activity level was checked off for a dog, the highest level of activity was recorded. If an owner checked off multiple activity levels for many dogs, the average activity level was noted. In addition 35% believe one to three hours of exercise is ideal for their dogs in a 24 hour day.

Over 21% of the owners had at least one dog in their house that was vaccinated between six to eight weeks as a puppy, which can be seen in Table B-20. Thirty-two percent of owners had at least one dog who was vaccinated yearly. Close to ten percent of owners used titers to determine the need to vaccinate.

## **Discussion**

The response rate was approximately 77%, which was a high response rate. Problems encountered included some respondents being unfamiliar with medical terms, some found the instructions confusing, and some checked off conditions but did not specify the number of dogs affected. Cancer was the health problem that owners were most concerned about, and cancer was the number one cause of death in Portuguese water dogs surveyed. Differences between the sexes of more than two percent were found in six health problems and four temperament problems. Males were more likely to have hip dysplasia, contact dermatitis, and dietary allergies whereas females were more likely to have incontinence after spay, recurring urinary infections, and mammary tumors. In addition to these health problems males were more apt to bite a human, be aggressive towards people and other dogs, and have extreme guarding behavior. From this survey of 3547 dogs and 1700 owners, the top ten most reported health problems were sebaceous cysts, hip dysplasia, arthritis, dietary allergies, cataracts, chronic ear infections, contact dermatitis, recurring urinary infections, hypothyroidism, and lipomas.

Table A-1: Response Rate Information

<b>GENERAL INFORMATION</b>	
<b>Response Rate Information:</b>	
Original Number of Surveys Mailed to PWDCA and PWDC of Canada	2241
Surveys with Invalid Addresses	22
Returned Surveys But No Dogs	12
Returned Blank Surveys	2
Unusable Information	2
Answered Surveys	1700
Viable Respondent Contacts	2217
<b>Total Completed Surveys (Number of Owners Included in Results)</b>	<b>1700</b>
<b>Total Response Rate</b>	<b>77.8%</b>

Table A-2: General Information on Dogs

<b>Years Owned PWD:</b>	
Median	6
Maximum	35
Minimum	<1

<b>Number of Living PWD Included in Survey:</b>	<b>TOTAL:</b>	<b>%:</b>
Male	1209	42%
Female	1677	58%
<b>Total</b>	<b>2886</b>	

<b>Number of Deceased PWD Included in Survey:</b>		
Male	291	44%
Female	370	56%
<b>Total</b>	<b>661</b>	

<b>Total # of Living &amp; Deceased Dogs Included:</b>		
Male	1500	42%
Female	2047	58%
<b>Total</b>	<b>3547</b>	

Table A-3: Owner Activities

<b>Number of Owners with PWD Involved In:</b>		
Pet Companion	1487	87%
Conformation	687	41%
Water Trials	402	24%
Obedience	668	39%
Rally Obedience	219	13%
Agility	513	30%
Therapy Dog	311	18%
Tracking	106	6.2%
Other	89	5.2%
Walking/Jogging	3	
Swimming/Boating	10	
Freestyle	1	
Fly ball	9	
Hunting	2	
Search & Rescue	5	
Carting/Drafting/Driving	4	
Breeding	9	
Kayaking	2	
Sledding	2	
Hiking	4	
Service dog	4	
Non-competitive Water Work/CGC	7	
Recreation	1	
FEMA	1	
Trick training	1	
Dog School	1	
Herding	1	
4H	1	
Grooming/Boarding in Home	1	
Country Inn "Greeters"	1	
Work in Field to Find Trails	1	
Canine Good Neighbor	2	
Cancer Detection	2	
Companion for Autistic Child	1	
Goes with Owner (work/shopping/nursing home)	3	
Some Dance	1	
Competition	1	
Tricks for Fun Backstage at Opera Concerts	1	
Air Scenting	1	
Endurance	1	
Fetch	2	

Table A-4: Owner Health Concerns

<b>Number of Owners Concerned with These Health Problems:</b>		<b>TOTAL:</b>	
Cancer		421	25%
Addison's Disease		372	22%
Cardiomyopathy/JCM (JDCM)		243	14%
Allergies		179	11%
Hip Dysplasia		173	10%
Temperament and Behavior		94	5.5%
Inflammatory Bowel Disease		80	4.7%
Hemangiosarcoma		64	3.8%
Progressive Retinal Atrophy		60	3.5%
Other Eye Problems		55	3.2%
Skin/Coat Problems		53	3.1%

Table A-5: Ages of Living and Deceased Dogs

<b>Age of Living Dogs</b>		
	Male	Female
Median	4	4
Maximum	17	16
Minimum	2 mo.	2 mo.
<b>Age at Death of Dogs who Died Since 1999</b>		
	Male	Female
Median	10	11
Maximum	16	17
Minimum	2 mo.	< 1 mo.

Table A-6: Causes of Death

<b>Common Causes of Death</b>		
Cancer	313	47%
Hemangiosarcoma	91	
Lymphosarcoma	41	
Old Age/Natural Death	65	9.8%
Heart Problems	34	5.1%
JCM/Cardiomyopathy	8	
CHF	10	
Accidental/Trauma	26	3.9%
Kidney Disease/Problems	23	3.5%
Gastrointestinal Problems	20	3.0%
IBD	14	
Hemorrhagic Gastritis	2	

Unknown	18	2.7%
Autoimmune Disease	15	2.3%
Euthanized	13	2.0%
Euthanized for Biting/Temperament/Aggression	10	1.5%
Addison's Disease	11	1.7%
Liver Disease Problems	9	1.4%
Fire	7	1.1%
Stroke	5	0.76%
Spinal Disease/Problems/Paralysis	5	0.76%
Diabetes	4	0.61%
Aggression	3	0.45%
Disc Problems	3	0.45%
Epilepsy	3	0.45%
Hip Dysplasia	3	0.45%
Infection	3	0.45%
Megaesophagus	3	0.45%
Poisoned	3	0.45%
Aneurism	2	0.30%
Internal Bleeding	2	0.30%
Laryngeal Paralysis	2	0.30%
Lyme Disease	2	0.30%
Pneumonia	2	0.30%
Reaction to Medicine/Vaccine	2	0.30%
Spider Bite	2	0.30%
Spleen Ruptured/Exploded	2	0.30%
Abdominal Bleeding	1	0.15%
AGG	1	0.15%
ALL	1	0.15%
Allergic to Sulfur	1	0.15%
Arthritis pain	1	0.15%
Back Pain	1	0.15%
Bladder	1	0.15%
Blind, Deaf, Incontinent	1	0.15%
Bloat Related Heart Attack	1	0.15%
Body Shut Down	1	0.15%
Bowel Obstruction	1	0.15%
Broken Leg	1	0.15%
Canine Toxic Shock Syndrome	1	0.15%
Heart and Kidney Problems	1	0.15%
Complications from Surgery	1	0.15%
Cognitive Dysfunction	1	0.15%
Cushing's Disease	1	0.15%
CVD	1	0.15%
GDV	1	0.15%
General Deterioration	1	0.15%
Lepto	1	0.15%
Loss of Protein	1	0.15%
Lymphangectasia	1	0.15%

Nervous System Failure	1	0.15%
Parvo	1	0.15%
Postsurgery Blood Clot	1	0.15%
Pulmonary Thrombosis	1	0.15%
Pyometra	1	0.15%
Spinal Meningitis	1	0.15%
Thrombocytopenia	1	0.15%
Valley Fever	1	0.15%
Vet Error	1	0.15%
Viral Papillomas in Mouth and Throat	1	0.15%
Missing	13	2.0%

Table B-1: Temperament and Behavior Problems

<b>Temperament/Behavior</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Aggression Towards People	84	5.6%	37	1.8%	121	3.4%
Bitten a Human	122	8.1%	68	3.3%	190	5.4%
Bitten Another Dog	82	5.5%	102	5.0%	184	5.2%
Dog-Dog Aggression	165	11%	96	4.7%	261	7.4%
Extreme Guarding Behavior	70	4.7%	55	2.7%	125	3.5%
Fear Aggression	62	4.1%	58	2.8%	120	3.4%
Noise Phobias	111	7.4%	139	6.8%	251	7.1%
Mindless Barking	49	3.3%	54	2.6%	103	2.9%
Shyness	74	4.9%	128	6.3%	202	5.7%
Other:	46	3.1%	48	2.3%	95	2.7%
Separation Anxiety	7		13		20	
Barking (not mindless)	5		3		8	
Jumps	3		3		6	
Protective	3		2		5	
Submissive Urination	0		5		5	
Territorial Dominance	4		0		4	
Dominant over Other Dogs	1		2		3	
Fear of Children	2		1		3	
More Aggressive Together/Don't Get Along	2		1		3	
Afraid of the Dark	1		1		2	
Coprophagia	0		1		1	
Dislike of Yellow Dogs or Goldens	1		1		2	
Easily Excited	1		1		2	
Food Aggression/Obsession	2		0		2	
Trauma Induced Fear of Dogs/Cautious Meeting New Dogs	1		1		2	
Very Talkative	2		0		2	
"Funny Piece" to Temperament	1		0		1	

Attention Deficit	1		0		1	
Car Anxiety	0		1		1	
Cobbing & Itching	0		1		1	
Compulsive Licking or Chewing	0		1		1	
Craves Attention; Very Loving	0		1		1	
Destructive Chewing	1		0		1	
Fear of Cooking in the Kitchen	0		1		1	
Female is Nuts	0		1		1	
Hyperactive Panting	1		0		1	
Lacks Confidence	0		1		1	
Maternal Aggression	0		1		1	
Motion Sickness in Car	1		0		1	
Obsessive Compulsive Disorder	1		0		1	
Other Growling	1		0		1	
Prey Aggression	0		1		1	
Scared of Cats	1		0		1	
Sniffs Groin	1		0		1	
Spinning	0		1		1	
Suspicious of Others	0		1		1	
Touch Sensitive	-		-		1	
Tries to Eat Paper Towels, etc.	0		1		1	
Very Picky Eater	1		0		1	
Unspecified	1		1		2	
<b>Total</b>	<b>865</b>	<b>58%</b>	<b>785</b>	<b>38%</b>	<b>1650</b>	<b>47%</b>
<b>Behavioral Consultation?</b>	<b>Yes</b>	<b>%</b>	<b>No</b>	<b>%</b>		
	380	11%	806	23%		

Table B-2: Skin and Hair Problems

<b>Skin/Hair</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Follicular Dysplasia	8	0.53%	14	0.68%	22	0.62%
Hair Loss	22	1.5%	32	1.6%	54	1.5%
Improper Coat	11	0.73%	13	0.64%	24	0.68%
Lipoma/Fatty Tumors	59	3.9%	79	3.9%	138	3.9%
Sebaceous Cysts	151	10%	213	10%	364	10%
Viral Papilloma (warts)	37	2.5%	43	2.1%	80	2.3%
Other:	24	1.6%	26	1.3%	50	1.4%
Dry and/Itchy Skin	5		11		16	
Chronic Staph Infections	2		1		3	
Growth/Cysts on Paw/Toes	0		3		3	
Hair Loss	2		1		3	
Fungal and/Yeast Infections	1		1		2	
Hot Spots	2		0		2	
Seborrhea	1		1		2	
Small Bumps	1		1		2	
Small Cysts	0		2		2	
Collagenous Nevus	1		0		1	
Erythema Multifocida	1		0		1	
Harsh Brittle Coat	1		0		1	
Hemangiomas	1		0		1	
Lick Granuloma	1		0		1	
Licks Front Leg if Hair Not Kept Short	1		0		1	
Loss of Luster; Early Grey	1		0		1	
Loves to Self-Groom	0		1		1	
Nail Like Growth on Tail	0		1		1	
Non-pigmented eyelid and pigmented area of Tongue	1		0		1	
Occasional Skin Rash	0		1		1	
Sarcoptic Mange	1		0		1	
Skin Tags	1		0		1	
Trichoepithelioma	0		1		1	
Unspecified	0		1		1	
<b>Total</b>	<b>312</b>	<b>21%</b>	<b>420</b>	<b>21%</b>	<b>732</b>	<b>21%</b>

Table B-3: Allergies

<b>Allergies</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Contact Dermatitis	94	6.3%	78	3.8%	172	4.9%
Dietary	116	7.7%	103	5.0%	219	6.2%
Flea	53	3.5%	51	2.5%	104	2.9%
Inhalant	58	3.9%	62	3.0%	120	3.4%
Other	36	2.4%	34	1.7%	71	2.0%
Unknown	8		10		19	
Reaction to Vaccines and/Vet Medicine	6		5		11	
Environmental	3		4		7	
Itchy Feet/Chews on Feet	3		4		7	
Chronic Itchy Skin	1		2		3	
Hot Spots	2		1		3	
Mold and/Dust	1		2		3	
Chronic Staff Infection	1		1		2	
Eyes	1		1		2	
Allergic Bronchitis	0		1		1	
Dermodex	1		0		1	
Everything	1		0		1	
Grass, Mold, Dust, Vaccinations	1		0		1	
Greenies and Raw Potatoes	0		1		1	
Mange	1		0		1	
Mild Biting at Anal/Vaginal Area	0		1		1	
PDS Suture Material	0		1		1	
Reaction to Mosquito Bites	1		0		1	
Road Salt	1		0		1	
Shampoo	0		1		1	
Stress Causing Neurodermatitis	1		0		1	
Tick Allergy	1		0		1	
Unspecified Dermatitis – poss inhalent	1		0		1	
Vet Medicine and Shampoo	1		0		1	
Unspecified	1		1		2	
<b>Total</b>	<b>357</b>	<b>24%</b>	<b>328</b>	<b>16%</b>	<b>686</b>	<b>19%</b>

Table B-4: Bone/Skeletal Problems

<b>Bone or Skeletal</b>							
	<b>Median Age</b>	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Arthritis	9	107	7.1%	122	6.0%	229	6.5%
Elbow Dysplasia	-	3	0.20%	7	0.34%	10	0.28%
Hip Dysplasia	-	120	8.0%	123	6.0%	243	6.9%
Hypertrophic Osteodystrophy	-	0	0.0%	0	0.0%	0	0.0%
Osteochondritis Dissecans (OCD)	-	5	0.33%	1	0.05%	6	0.17%
Panosteitis	-	5	0.33%	4	0.20%	9	0.25%
Polyarthritis	-	4	0.27%	2	0.10%	6	0.17%
Spondylosis	-	8	0.53%	9	0.44%	17	0.48%
Transitional Vertebrae	-	13	0.87%	21	1.0%	34	0.96%
Other:	-	27	1.8%	15	0.73%	42	1.2%
Cruciate Ligament Tear		4		1		5	
Progressive Paralysis of Hind Legs/Spine		1		3		4	
Sore/Weak Shoulder		2		2		4	
Severe Back/Disc Problems		3		3		6	
Knee Subluxation/Knee Blew Out		1		1		2	
Limp		2		0		2	
Biceps Tenosynovins		1		0		1	
Broken Leg		1		0		1	
Ca Deposits		1		0		1	
Crooked Toenail		1		0		1	
Fibro-Cartilaginous Embolism		1		0		1	
Fibrocartilaginous Stenosis		1		0		1	
Injured Growth Plate		0		1		1	
Large Dew Claws		0		1		1	
Narrow bone		1		0		1	
Nodular Fascitis		1		0		1	
Slowing Down		0		1		1	
Small Stature		1		0		1	
Spinal Meningitis		0		1		1	
Spinal Myelopathy		1		0		1	
Sprain		1		0		1	
Stifle Joint Replacement		1		0		1	
Structurally Poor Shoulders		0		1		1	
Swollen Tail at Buttocks		1		0		1	
Tibia Slant		1		0		1	
<b>Total</b>		<b>292</b>	<b>19%</b>	<b>304</b>	<b>15%</b>	<b>596</b>	<b>17%</b>

Table B-5: Eye Problems

Eye							
	Median Age	Male	%	Female	%	Total	%
Cataracts	10	83	5.5%	126	6.2%	209	5.9%
Distichiasis	-	17	1.1%	24	1.2%	41	1.2%
Ectropion	-	3	0.13%	3	0.00%	6	0.17%
Entropion	-	4	0.27%	5	0.24%	9	0.25%
Glaucoma	12	2	0.13%	2	0.10%	4	0.11%
Keratoconjunctivitis sicca	-	18	1.2%	25	1.2%	43	1.2%
Microphthalmia	-	0	0.00%	1	0.05%	1	0.03%
Persistent Pupillary Membrane	-	25	1.7%	31	1.5%	56	1.6%
Progressive Retinal Atrophy	-	18	1.2%	21	1.0%	39	1.1%
Other:		18	1.3%	27	1.5%	51	1.4%
General Infection/Redness		4		4		8	
Goopy Eyes/Discharge		3		3		6	
Conjunctivitis		2		4		6	
Blindness/Losing Sight		1		3		4	
Clogged or Absent Tear Duct		1		2		3	
Acute Uveitis		1		1		2	
Iris Atrophy		0		2		2	
Muscle Atrophy		1		1		2	
Lower Eyeball Pressure		1		0		1	
"Iris to Iris"		-		-		1	
"Nuclear Sclerosing"		1		0		1	
Allergia (runny eyes)		0		1		1	
CI		1		0		1	
Cloudy Eyes		1		0		1	
Corneal Ulcers		-		-		1	
Eye Ruptured		0		1		1	
Hyaloid Artery Present		0		1		1	
Meibomian Gland Cyst		0		1		1	
Nictating Membrane		0		1		1	
Optic Nerve Damage		1		0		1	
Raised Iris Mass		0		1		1	
SARDS		0		1		1	
<b>Total</b>		<b>188</b>	<b>13%</b>	<b>265</b>	<b>13%</b>	<b>459</b>	<b>13%</b>
<b>CERF Evaluated?</b>	<b>Yes</b>	<b>%</b>	<b>No</b>	<b>%</b>			
	717	20%	307	9%			

Table B-6: Cancer Types

<b>Selected Cancers</b>							
	<b>Median Age</b>	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Brain/CNS Tumor	-	9	0.60%	11	0.54%	20	0.56%
Hemangiosarcoma	10	53	3.5%	58	2.8%	111	3.1%
Lung Cancer	11.5	5	0.33%	10	0.49%	15	0.42%
Lymphosarcoma	1	27	1.8%	31	1.5%	58	1.6%
Mammary Tumor	-	0	0.00%	51	2.5%	51	1.4%
Mast Cell Tumor	-	14	0.93%	25	1.2%	39	1.1%
Melanoma	-	6	0.40%	8	0.39%	14	0.39%
Osteosarcoma	8	4	0.27%	6	0.29%	10	0.28%
Prostatic Tumors	-	1	0.07%	-		1	0.03%
Squamous Cell Carcinoma	-	2	0.13%	5	0.24%	7	0.20%
<b>Other:</b>	-	49	3.3%	63	3.1%	113	3.2%
Spleen Tumors/Cancer		6		5		11	
Heart Tumor		2		6		8	
Liver Tumors/Cancer		2		5		7	
Pancreatic Tumors/Cancer		4		2		6	
Spleen and Liver Tumors/Cancer		3		2		5	
Stomach Cancer		2		3		5	
Mouth and Jaw Tumors/Cancer		3		1		4	
Adenocarcinoma		1		2		3	
Adrenal Mass/Cancer		2		1		3	
Tumor/Growth on or next to Kidney		0		3		3	
Basal Cell Tumor/Carcinoma		2		0		2	
Bladder Cancer		0		2		2	
Growth on Spleen		1		1		2	
Histocystitis		0		2		2	
Histiocytic Sarcoma/Linear Round Cell Tumor		1		1		2	
Mass on Hip		1		1		2	
Spindle Cell Sarcoma/Cancer		0		1		2	
Thyroid Cancer		1		1		2	
Abdominal Tumors		1		0		1	
Abdominal Tumors and Liver Cancer		1		0		1	
Acute Lymphocytic Leukemia		0		1		1	
Anal Gland Cancer/Anal Sac Carcinoma		0		2		2	
Astrocytic Myosarcoma		0		1		1	
Bronchiogenic Carcinoma with Hemorrhage in Lungs		1		0		1	
Cancer in Body Cavity		1		0		1	
Colon Cancer		0		1		1	
Dermatofibroma on Tail		1		0		1	
Fatty Mass on Top of Spine		1		0		1	

Fibroma		0		1		1	
Gastrointestinal Tumors		0		1		1	
Hemangiofibroma		1		0		1	
Hemangioma		0		1		1	
Hemangiopericytoma		0		1		1	
Large Intestine Tumor		0		1		1	
Liver and Heart Cancer		0		1		1	
Liver Lymphoma		1		0		1	
Lymphoblastic Leukemia		0		1		1	
Malignant Schwannoma of Sciatic Nerve		1		0		1	
Mass Near Rectum and Stomach Area		1		0		1	
Myeloma		0		1		1	
Myxosarcoma of Spleen and Liver		0		1		1	
Neoblastic Lymphoma		1		0		1	
Neurosarcoma		0		1		1	
Neurosheath Tumor on Chest		0		1		1	
Ovarian Cancer		-		1		1	
Plasma Cell Tumor		0		1		1	
Renal Tumor		0		1		1	
Spinal Tumor		0		1		1	
T Cell Lymphoma		1		0		1	
Throat Cancer		0		1		1	
Toe/Nail		0		1		1	
Tumor on Leg		0		1		1	
Undifferentiated		1		0		1	
Urinary Tract Cancer		1		0		1	
Unknown/Tumors Unspecified		4		1		5	
<b>Total</b>		<b>170</b>	<b>11%</b>	<b>268</b>	<b>13%</b>	<b>439</b>	<b>12%</b>

Table B-7: Kidney/Urinary Tract Problems

<b>Kidney/Urinary Tract</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Bladder Stones	44	2.9%	29	1.4%	73	2.1%
Chronic Renal Failure	8	0.53%	16	0.78%	24	0.68%
Incontinence Before Spay	0	0.00%	17	0.83%	17	0.48%
Incontinence After Spay	0	0.00%	100	4.9%	100	2.8%
Juvenile Renal Dysplasia	0	0.00%	1	0.05%	1	0.03%
Recurring Urinary Infections	23	1.5%	142	6.9%	165	4.7%
Other	24	1.6%	19	0.93%	43	1.2%
Incontinence	11		3		14	
Crystals	3		5		8	
Bladder Infections/Occasional UTI	4		4		8	
Kidney Stones	1		1		2	
Urinary and Kidney (Blood)	0		2		2	
Abnormal Attachments of Bladder and Ureters	1		0		1	
Bladder Diverticulum Repaired	0		1		1	
Bright Yellow Urine	1		0		1	
Congenital Renal Dysplasia	0		1		1	
Difficulty Urinating	1		0		1	
Diluted Urine	1		0		1	
Hematoma	1		0		1	
Loose Labia	-		1		1	
Recurring Vaginitis Infection	-		1		1	
<b>Total</b>	<b>99</b>	<b>6.6%</b>	<b>324</b>	<b>16%</b>	<b>423</b>	<b>12%</b>

Table B-8: Ear Problems

<b>Ears</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Chronic Infection	86	5.7%	107	5.2%	193	5.4%
Deafness	39	2.6%	48	2.3%	87	2.5%
Other	45	3.0%	22	1.1%	71	1.9%
Occasional Ear Infections	16		4		22	
Yeast/Yeast Infections	9		7		16	
Vestibular Problems/Disease (Vestibulitis)	4		2		6	
Hematomas/Aural Hematomas	5		0		5	
Infection When Gets Wet	2		2		4	
Diminished Hearing	0		3		3	
Hairy Ears	3		0		3	
Discharge	1		1		2	
Ear Irritation	0		1		1	
Frequent Cleaning	1		0		1	
Ingrown Hair Follicle	1		0		1	
Itchy Ears	1		0		1	
Narrow Canal	1		0		1	
Sensitivity to Hair/Wax Buildup	0		1		1	
Small Pocket of Blood on Inner Ear Flap	1		0		1	
Vestibular Disease – Labarynthitis	0		1		1	
<b>Total</b>	<b>170</b>	<b>11%</b>	<b>177</b>	<b>8.65%</b>	<b>349</b>	<b>9.8%</b>

Table B-9: Gastrointestinal Problems

<b>Gastrointestinal</b>							
	<b>Median Age</b>	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Chronic Colitis	-	21	1.4%	8	0.39%	29	0.82%
Chronic vomiting	-	24	1.6%	9	0.44%	33	0.93%
Gastric Volvulus (GDV)	-	2	0.13%	1	0.05%	3	0.08%
Bloat	-	4	0.27%	2	0.10%	6	0.17%
Hemorrhagic gastritis	-	6	0.40%	4	0.20%	10	0.28%
Intestinal lymphangietasia	-	3	0.20%	5	0.24%	8	0.23%
Inflammatory bowel disease	5	32	2.1%	43	2.1%	75	2.1%
Megaesophagus	-	5	0.33%	2	0.10%	7	0.20%
Pancreatic disease	-	16	1.1%	19	0.93%	35	0.99%
Protein losing enteropathy	-	9	0.60%	5	0.24%	14	0.39%
Other:	-	29	1.9%	26	1.3%	56	1.6%
Vomitting and/or Diarrhea		10		5		15	
Anal Gland Issues/ Infection/Irritation		1		4		5	
Sensitive Stomach/Stomach Distress		2		3		5	
Diarrhea, Sensitive Stomach, and/Inflamed Anal Glands		2		1		4	
Occasional Colitis/Sensitive Colon		2		1		3	
Acid Reflux/Acid Indigestion		3		0		3	
Belches		1		1		2	
Constipated		1		1		2	
Eat Anything		0		2		2	
Parvo		0		2		2	
Acute Abdomen		1		0		1	
Bacterial Infection		0		1		1	
Bowel Obstruction from Eating Toy		1		0		1	
Defect in Swallowing		0		1		1	
Giardia		0		1		1	
Huge Appetite		1		0		1	
Intestinal Blockage		0		1		1	
Intussusception		0		1		1	
Lots of Gas		0		1		1	
Part of Intestines Removed		1		0		1	
Picks Up Bacteria Easily		1		0		1	
Severe Idiopathic Gastrointestinal Upset		1		0		1	
Unspecified		1		0		1	
<b>Total</b>		<b>151</b>	<b>10.07%</b>	<b>124</b>	<b>6.06%</b>	<b>276</b>	<b>7.78%</b>

Table B-10: Mouth Problems

<b>Mouth</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Base Narrow Canines	8	0.53%	19	0.93%	27	0.76%
Cleft palate	1	0.07%	2	0.10%	3	0.08%
Missing Teeth	14	0.93%	19	0.93%	33	0.93%
Overshot jaw (parrot mouth)	8	0.53%	16	0.78%	24	0.68%
Undershot jaw	45	3.0%	87	4.3%	132	3.7%
Wry mouth	4	0.27%	7	0.34%	11	0.31%
Other	22	1.5%	21	1.0%	45	1.2%
Crooked/Misaligned/Broken Teeth	7		4		12	
Teeth Pulled/Extracted	1		3		4	
Delayed Eruption of Tooth	1		2		3	
Extra Teeth	1		1		2	
Malocclusion	0		2		2	
Unhooked	1		1		2	
Baby Teeth Still Intact/Need to be Pulled	1		1		2	
Crowded Incisors	0		1		1	
Double Lower Canine	0		1		1	
Enamel Hypoplasia	0		1		1	
Grinding Teeth	1		0		1	
Hypocalcification	0		0		1	
Impacted Lower Central Incisor	0		1		1	
Lip Fold Pyoderma	1		0		1	
Low Grade Infection of Lips	1		0		1	
Lower Incisors Dropping	1		0		1	
Narrow Jaw, Excess Saliva, Trench Mouth	1		0		1	
Periodontal Disease	1		0		1	
Recurrent Salivary Gland Infection	1		0		1	
Sensitive Back Teeth, Tartar Buildup	1		0		1	
TMJ	0		1		1	
Tooth Decay	1		0		1	
Tooth Grew into Palate; Had to Wear Braces	0		1		1	
Top Molars coming in Perpendicular	0		1		1	
Warts in Lower Lip	1		0		1	
<b>Total</b>	<b>102</b>	<b>6.8%</b>	<b>171</b>	<b>8.35%</b>	<b>275</b>	<b>7.7%</b>

Table B-11: Endocrine Problems

<b>Endocrine</b>							
	<b>Median Age</b>	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Addison's Disease	4	21	1.4%	39	1.9%	60	1.7%
Cushing's Disease	12	6	0.40%	14	0.68%	20	0.56%
Diabetes	3.5	4	0.27%	7	0.34%	11	0.31%
Hypothyroidism	5	78	5.2%	74	3.6%	152	4.3%
Parathyroidism	-	0	0.00%	5	0.24%	5	0.14%
Other:	-	6	0.40%	3	0.15%	9	0.25%
Carrier for Addison's Gene		0		2		2	
Possible Addison's		2		0		2	
Thyroid Condition		1		1		2	
Diabetes Ininsipidus		1		0		1	
Thyroiditis		1		0		1	
Undescended Testicles		1		0		1	
<b>Total</b>		<b>115</b>	<b>7.7%</b>	<b>142</b>	<b>6.9%</b>	<b>257</b>	<b>7.3%</b>

Table B-12: Heart/Circulatory Problems

<b>Heart/Circulatory</b>							
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>	
Atrial Septal Defect	2	0.13%	0	0.00%	2	0.06%	
Cardiomyopathy	15	1.0%	7	0.34%	22	0.62%	
Juvenile Dilated Cardiomyopathy	7	0.47%	7	0.34%	14	0.39%	
Patent Ductus Arteriosus	1	0.07%	1	0.05%	2	0.06%	
Pulmonic Stenosis	3	0.20%	2	0.10%	5	0.14%	
Tetralogy of Fallot	2	0.13%	0	0.00%	2	0.06%	
Murmur	29	1.9%	29	1.4%	58	1.6%	
Other	8	0.53%	10	0.49%	19	0.54%	
Congestive Heart Failure	3		5		8		
Irregular Heartbeat	4		1		5		
Heart Blockage	0		2		2		
Carrier of JDC	1		0		1		
High Blood Pressure	-		-		1		
PRAA	0		1		1		
Ventricular Septal Defect	0		1		1		
<b>Total</b>	<b>67</b>	<b>4.5%</b>	<b>56</b>	<b>2.7%</b>	<b>124</b>	<b>3.5%</b>	

Table B-13: Hernias

<b>Hernias</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Body Wall	0	0.00%	4	0.20%	4	0.11%
Diaphragmatic	0	0.00%	3	0.15%	3	0.08%
Inguinal hernia	2	0.13%	3	0.15%	5	0.14%
Peritoneal-pericardial	0	0.00%	1	0.05%	1	0.03%
Umbilical hernia	20	1.3%	75	3.7%	95	2.7%
Other:	1	0.07%	1	0.05%	2	0.06%
Hernia from Birth (unknown type)	0		1		1	
Incisional Hernia	1		0		1	
<b>Total</b>	<b>23</b>	<b>1.5%</b>	<b>87</b>	<b>4.3%</b>	<b>110</b>	<b>3.1%</b>

Table B-14: Neurological Problems

<b>Neurological</b>							
	<b>Median Age</b>	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Epilepsy/seizures	4	31	2.1%	29	1.4%	60	1.7%
Other	-	6	0.4%	6	0.29%	12	0.34%
Partial or One Seizure		2		1		3	
Neurologic Episodes after Vaccine Shots		1		1		2	
Stroke		1		1		2	
Canine Dementia/Alzheimer's Disease		0		2		2	
Increased Breathing and Trembling due to Fear		0		1		1	
Jaw Paralysis		1		0		1	
Twitches Head and Body		1		0		1	
<b>Total</b>		<b>37</b>	<b>2.5%</b>	<b>35</b>	<b>1.71%</b>	<b>72</b>	<b>2.0%</b>

Table B-15: Autoimmune Diseases

<b>Autoimmune Disease</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Immune-Mediated Hemolytic Anemia (IMHA)	4	0.27%	15	0.73%	19	0.54%
Lupus	3	0.20%	2	0.10%	5	0.14%
Symmetrical Lupoid Dystrophy	0	0.00%	0	0.00%	0	0.00%
Other:	8	0.53%	13	0.64%	21	0.59%
Myasthenia Gravis	2		2		4	
Lyme Disease	1		2		3	
Lost Muscle Use in Head and Jaw	2		1		3	
Glomerulonephritis	1		1		2	
"Wasting" Disorder; can't use/keep protein	1		0		1	
Autoimmune Disease	0		1		1	
Autoimmune-Mediated affecting Liver	0		1		1	
Low WBC Count	0		1		1	
Pemphigus Foliaceus	1		0		1	
Stopped Producing Red and White Cells	0		1		1	
Thrombocytopenia	0		1		1	
Viral Attack of CNS	0		1		1	
Unspecified	0		1		1	
<b>Total</b>	<b>15</b>	<b>1.00%</b>	<b>30</b>	<b>1.47%</b>	<b>45</b>	<b>1.27%</b>

Table B-16: Liver and Spleen Problems

<b>Liver/Spleen</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Hepatic shunt	3	0.20%	1	0.05%	4	0.11%
Other:	12	0.80%	14	0.68%	22	0.62%
Liver failure	1		4		5	
Enlarged spleen and/liver	3		1		4	
Splenectomy	3		1		4	
Cirrhosis of the liver	0		2		2	
Hepatitis	1		1		2	
Ruptured spleen	1		1		2	
Abscess on Liver	0		1		1	
Excessive liver count on blood panel	0		1		1	
Increased bilirubin in urine	1		0		1	
Liver congestion	1		0		1	
Primary lymphodema	-		-		1	
Siderofibrosis	1		0		1	
Underactive Spleen	0		1		1	
Unspecified	0		1		1	
<b>Total</b>	<b>15</b>	<b>1.0%</b>	<b>15</b>	<b>0.73%</b>	<b>26</b>	<b>0.73%</b>

Table B-17: Respiratory Problems

<b>Respiratory</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Elongated soft palate	1	0.07%	0	0.00%	1	0.03%
Other:	11	0.73%	6	0.29%	18	0.51%
Laryngeal Paralysis	2		1		3	
Pneumonia	1		1		2	
Chronic Rhinitis	0		1		1	
Excessive Panting	1		1		2	
Chylothorax – Idiopathic	-		-		1	
Collapsing Trachea	1		0		1	
COPD	1		0		1	
Peribronchia Infiltrates Central Bronchiectasis	1		0		1	
Pulmonary Thrombosis	1		0		1	
Spots on Lungs, Difficulty Breathing	1		0		1	
Tracheal Injury	1		0		1	
Valley Fever	0		1		1	
Unspecified	1		1		2	
<b>Total</b>	<b>12</b>	<b>0.80%</b>	<b>6</b>	<b>0.29%</b>	<b>19</b>	<b>0.54%</b>

Table B-18: Blood Problems

<b>Blood</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
von Willebrand's Disease	0	0.00%	0	0.00%	0	0.00%
Other Clotting Disorder	0	0.00%	2	0.10%	2	0.06%
Other	1	0.07%	2	0.10%	3	0.08%
Carrier for a Clotting Disorder	0		1		1	
Hemophilia Carrier	0		1		1	
Lyme Disease	1		0		1	
<b>Total</b>	<b>1</b>	<b>0.07%</b>	<b>4</b>	<b>0.20%</b>	<b>5</b>	<b>0.14%</b>

Table B-19: Activity Levels

<b>Activity</b>		
	<b>Total</b>	<b>%</b>
Very Active	646	38%
Moderately Active	912	54%
Calm or Sedate	96	6%
<b>Total</b>	1654	98%
Number Missing	46	

<b>Exercise</b>		
	<b>Total</b>	<b>%</b>
Less Than an Hour	144	8%
One to Three Hours	1256	74%
More Than Three Hours	208	12%
More Than I Can Provide	45	3%
<b>Total</b>	1653	97%
Number Missing	47	

Table B-20: Vaccine Information

<b>Age 1<sup>st</sup> Vaccine Administered to at Least One Dog in the House</b>							
	<b>Total</b>		<b>%</b>				
<6 Weeks	282		17%				
6-8 Weeks	767		45%				
9-12 Weeks	114		7%				
>12 Weeks	30		2%				
Don't Know	490		29%				
<b>Total</b>	1683		100%				
Number Missing	17						
<b>Vaccinate Yearly?</b>	<b>Yes</b>	<b>%</b>	<b>No</b>	<b>%</b>	<b>Total</b>		
	1152	67.76%	448	26.35%	1600		
Number Missing	100						
<b>Use Titrers?</b>	<b>Yes</b>	<b>%</b>	<b>No</b>	<b>%</b>	<b>Don't</b>	<b>%</b>	<b>Total</b>
	346	20.35%	991	58.29%	46	2.71%	1383
Number Missing	317						

Table C-1: Portuguese Water Dogs Bred

<b>REPRODUCTION</b>		
<b>Number of PWD's Bred in the Last 5 Years:</b>		
Male	234	16%
Female	583	28%
<b>Total</b>	<b>817</b>	<b>23%</b>

Table C-2: Female Reproductive Problems

<b>Female Reproductive Problems</b>	<b>Of 583</b>	
Abortion/Resorption	44	7.6%
Difficulty Whelping	50	8.6%
Failure to Conceive	65	11%
Irregular Heat Cycles	43	7.4%
Mastitis	32	5.5%
Primary Uterine Inertia	14	2.4%
Pseudohermaphroditism	0	0.00%
Pyometra	24	4.1%
Unplanned C-section	62	11%
<b>Other:</b>	<b>21</b>	<b>3.6%</b>
False Pregnancy	2	
Planned C-Section	2	
Allergy to PDS Sutures – Resorbed Litter	1	
Bacterial Infection in Milk	1	
Breech Birth	1	
Ca Imbalance	1	
Caked Breasts During Lactation, Placenta Separated	1	
Cancerous Tumor	1	
Daily Progesterone During Pregnancy After Resorbed 1 Pup	1	
Difficulty Eating	1	
Early Labor	1	
Eclampsia	1	
Encapsulated Ovaries	1	
Killed and ate puppies	1	
Post Delivery UTI	1	
Prolapse Vagina and Vaginal Hyperplasia	1	
Silent Heat	1	
Unable to Breed due to Vaginal Structure	1	
Uterine Torsion	1	
Uterus Tumor and Cyst	1	
<b>Total</b>	<b>355</b>	<b>60.9%</b>

Table C-3: Male Reproductive Problems

<b>Male Reproductive Problems</b>		<b>Of 234</b>	
Abnormal Semen	9	3.9%	
Lack of Libido	4	1.7%	
Subfertile/Infertile	11	4.7%	
Prostatic Disease	15	6.4%	
Pseudohermaphroditism	0	0.00%	
Other:	4	1.7%	
Bread 1 Puppy with Hip Dysplasia	1		
Difficulty with Insertion	1		
Improper Coat	1		
Monorchid (not bred)	1		
<b>Total</b>	<b>43</b>	<b>18%</b>	

Table C-4: Litters

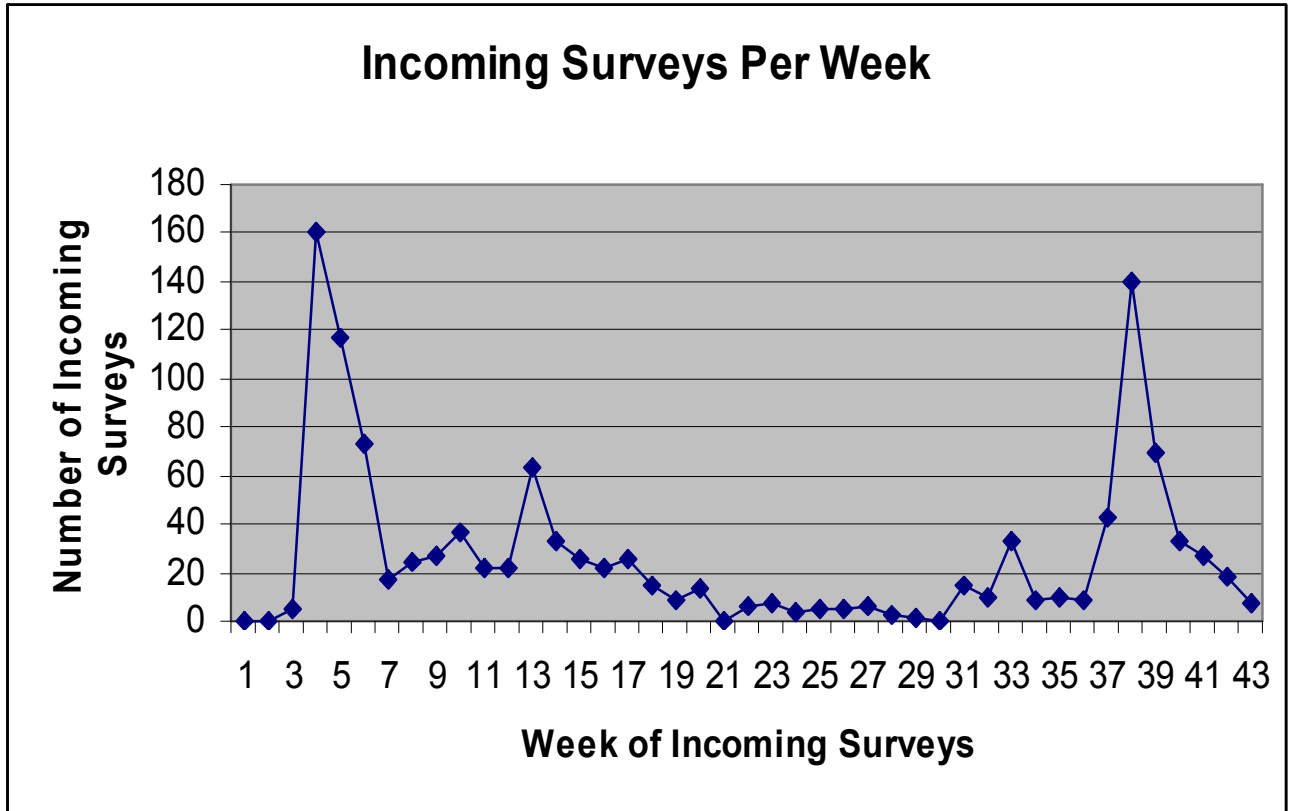
<b>Litters in the Past 5 Years:</b>	
	<b>Total</b>
Number of Litters	1108

Table C-5: Puppy Problems

<b>Litter &amp; Puppy Problems</b>			
	<b>#Litters</b>	<b>#Pups</b>	<b>% of Total Litters</b>
Cleft Palate	25	36.5	2.3%
Gangliosidosis	4	7	0.36%
Heart Murmur	17	16	1.5%
Juvenile Dilated Cardiomyopathy	10	21	0.90%
Neurological Disease	5	5	0.45%
Fading Puppy	108	166	9.8%
Swimmer Puppy	13	14	1.2%
Undescended Testicles	114	139	10%
Unthrifty, Small	34	52	3.1%
Walrus or Water Puppies	5	8	0.45%
Other:	110	110	10%
Stillbirths	56	27	
Puppies Died Post Whelp	3	21	
Bacterial Infection	2	11	
Improper Coat	4	6	
Alveolar Dysplasia/Immaturity	2	4	
Intestines on Outside of Body	3	4	
Umbilical Hernia	3	4	
Addison's Disease	3	2	
Bad Bite	1	2	

Breech Birth	2	2	
Club Foot	2	2	
Hemophilia	1	2	
Megaesophagus	3	2	
Possible Juvenile Dilated Cardiomyopathy	1	2	
Stuck in Canal (oxygen deprived)	2	2	
Undershot Jaw	3	2	
Anasarca Puppies	-	-	
Anesthesia Complications During Spay	1	1	
Both Male and Female Reproductive Parts	1	1	
Cataracts	1	1	
Deaf in One Ear	1	1	
Defect in Swallowing Mechanism	-	-	
Dextrocardia	1	1	
Extensive Surgery on Joints	1	1	
Frequent UTI (bladder surgery required)	1	1	
Gastrointestinal Problem	1	1	
Inverted Vulva	1	1	
Late Descending Testicles	1	-	
Liver Shunt	1	-	
Overbite	-	-	
Pectis Excavatum	1	1	
Pigment Missing on Inner Eyelid	-	-	
Puppies Died During C-Section	-	-	
Puppy Died After Delivery	1	1	
Puppy too Chilled to Revive After C-Section	1	1	
Soft Palate Problems	2	-	
Tetralogy of Fallot	1	1	
Ventricular Septal Defect	1	1	
Water on Brain and Heart Murmur	1	1	
<b>Total</b>	<b>445</b>	<b>574.5</b>	<b>40%</b>

# Appendix I: Incoming Surveys Plot



Week 1 - Initial mailout to the PWDCA

Week 6 - Initial mailout to the PWDCC

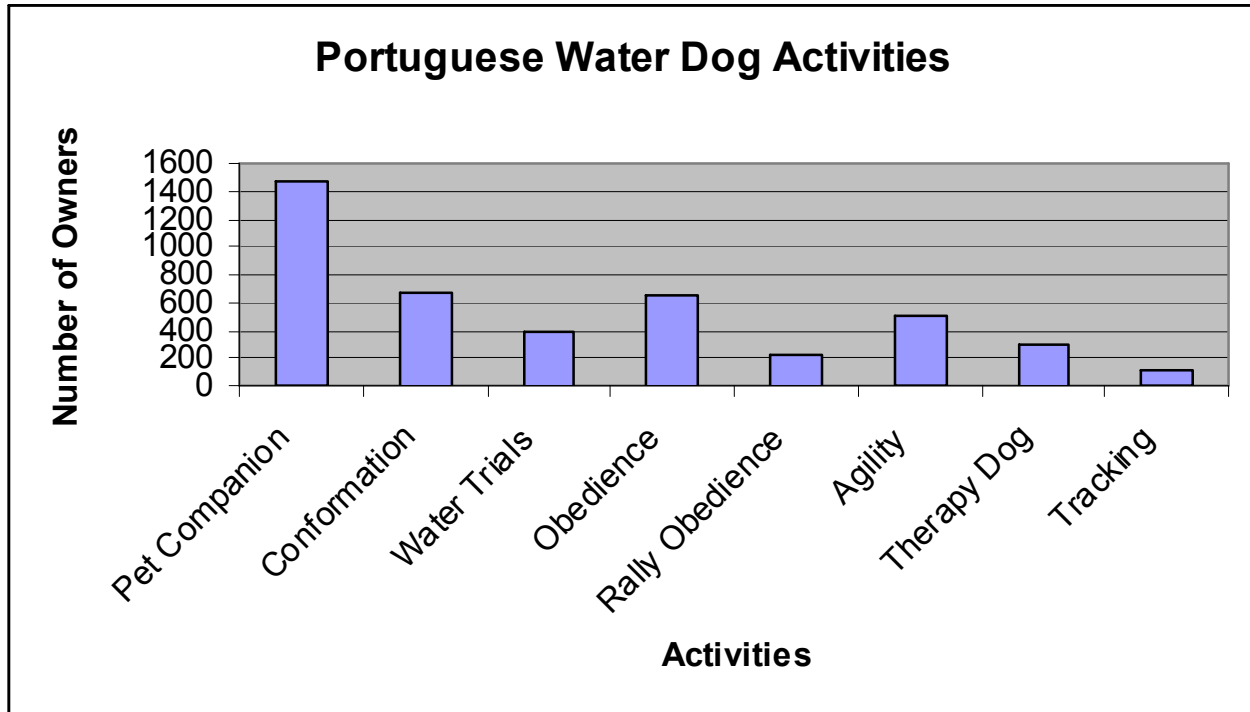
Week 30 - Postcard reminders sent out to the PWDCA

Week 37 - Final mailout sent to both the PWDCA and PWDCC

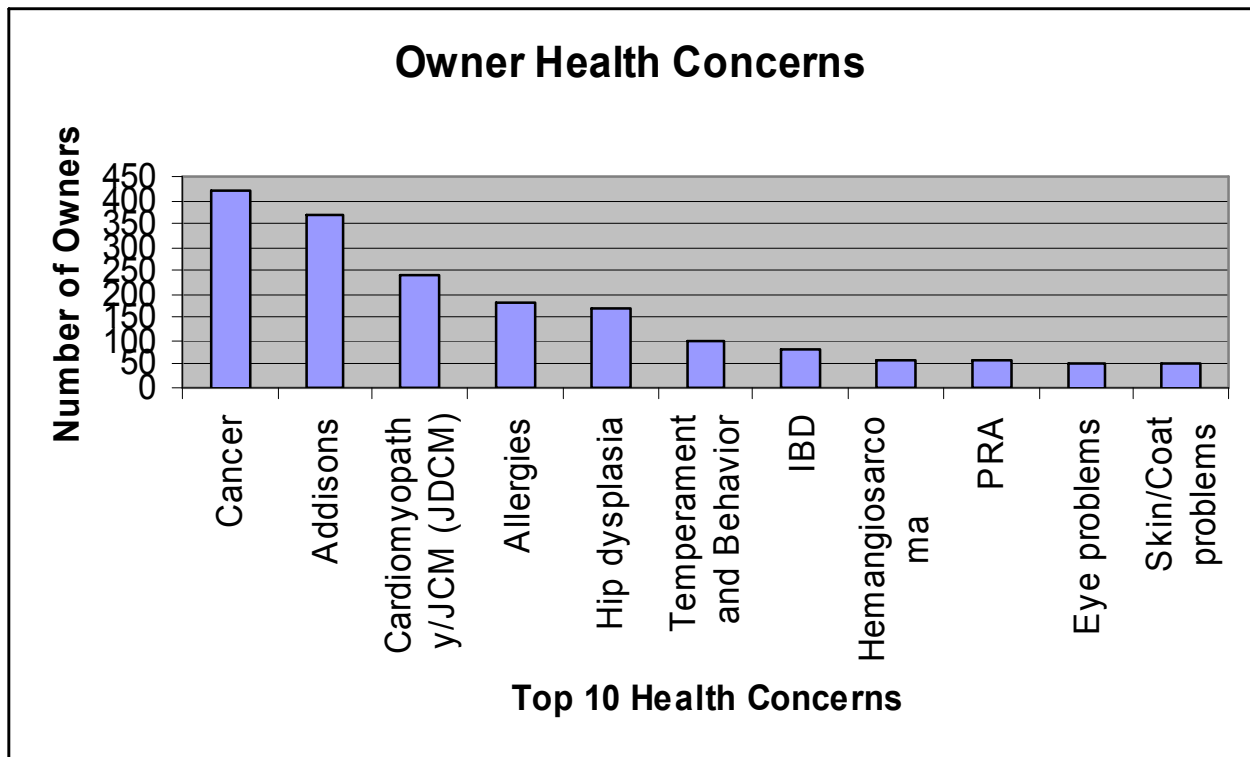
# Appendix II

## Graphs

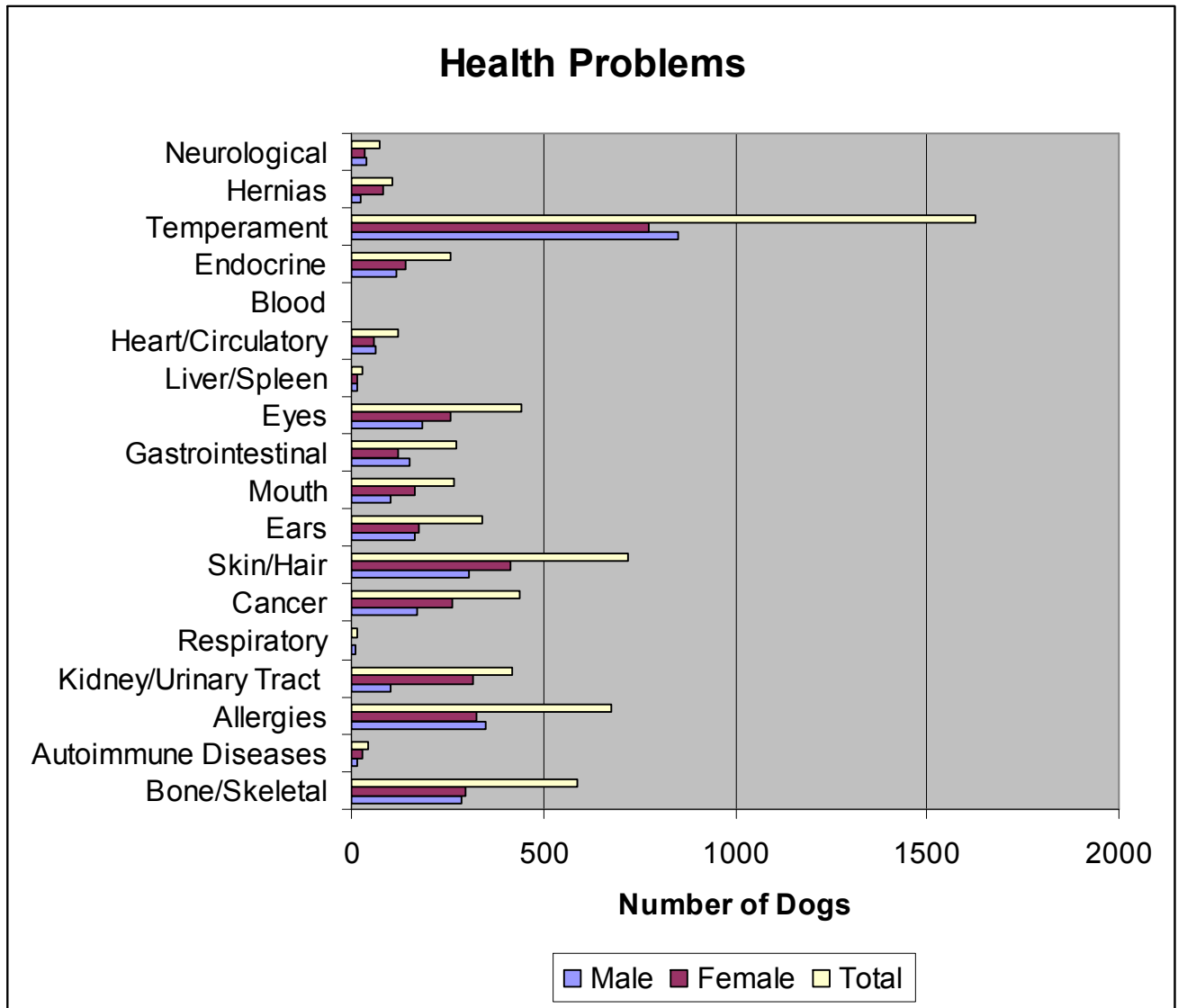
Graph A-1: Owner Activities



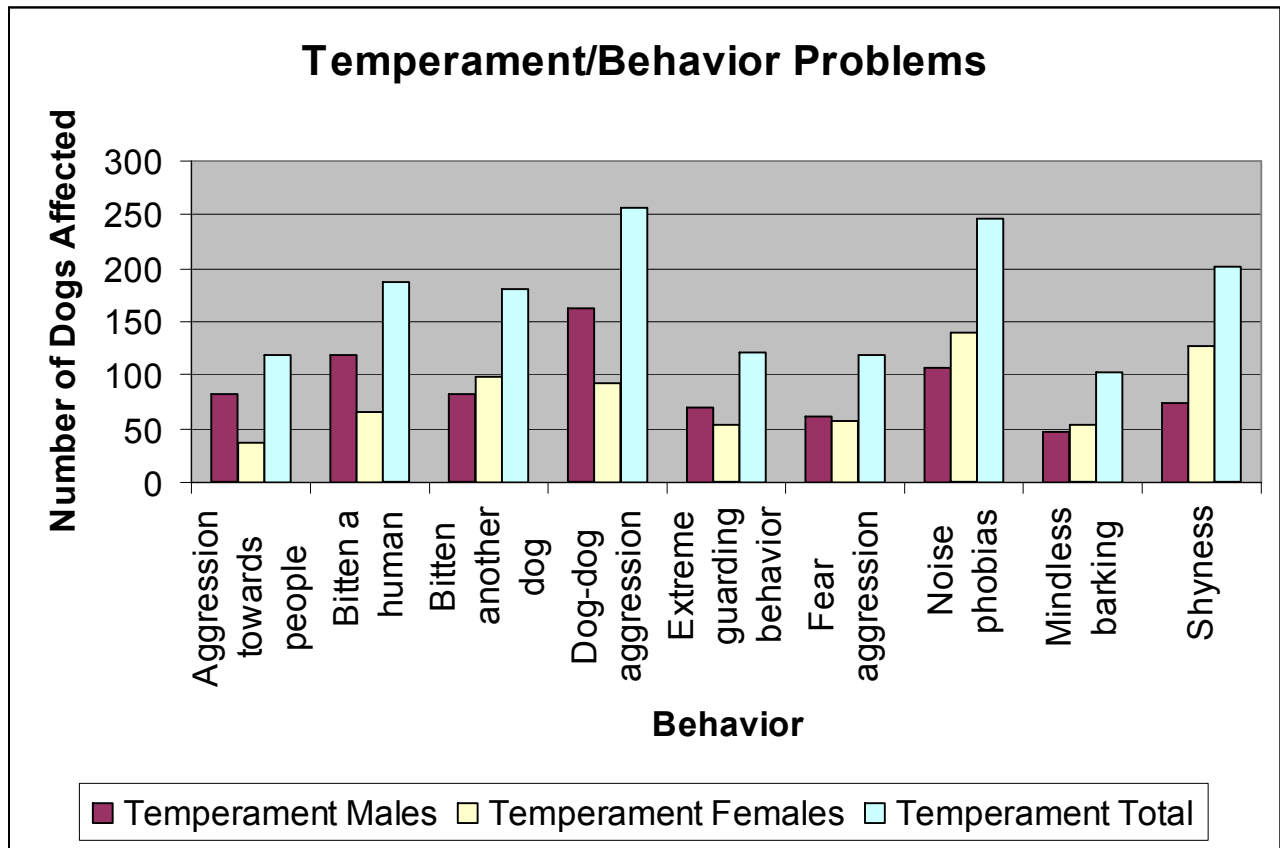
Graph A-2: Owner Concerns



Graph A-3: Health Problems



Graph A-4: Temperament/Behavior Problems



# **Appendix III**

## 2X2 Tables

<b>Aggression Towards People</b>			
	<b>+</b>	<b>-</b>	<b>Total</b>
<b>Male</b>	84	1416	1500
<b>Female</b>	37	2010	2047
<b>Total</b>	121	3426	3547
<b>OR</b>	3.2	<b>CI</b>	(2.2, 4.8)
		<b>P-Value</b>	<0.0001

<b>Bitten a Human</b>			
	<b>+</b>	<b>-</b>	<b>Total</b>
<b>Male</b>	122	1378	1500
<b>Female</b>	68	1979	2047
<b>Total</b>	190	3357	3547
<b>OR</b>	2.6	<b>CI</b>	(1.9, 3.5)
		<b>P-Value</b>	<0.0001

<b>Dog-Dog Aggression</b>			
	<b>+</b>	<b>-</b>	<b>Total</b>
<b>Male</b>	165	1335	1500
<b>Female</b>	96	1951	2047
<b>Total</b>	261	3286	3547
<b>OR</b>	2.5	<b>CI</b>	(1.9, 3.3)
		<b>P-Value</b>	<0.0001

<b>Extreme Guarding Behavior</b>			
	<b>+</b>	<b>-</b>	<b>Total</b>
<b>Male</b>	70	1430	1500
<b>Female</b>	55	1992	2047
<b>Total</b>	125	3422	3547
<b>OR</b>	1.8	<b>CI</b>	(1.2, 2.5)
		<b>P-Value</b>	0.0016

<b>Contact Dermatitis</b>			
	<b>+</b>	<b>-</b>	<b>Total</b>
<b>Male</b>	94	1406	1500
<b>Female</b>	78	1969	2047
<b>Total</b>	172	3375	3547
<b>OR</b>	1.7	<b>CI</b>	(1.2, 2.3)
		<b>P-Value</b>	0.0008

<b>Dietary Allergies</b>			
	<b>+</b>	<b>-</b>	<b>Total</b>
<b>Male</b>	116	1384	1500
<b>Female</b>	102	1945	2047
<b>Total</b>	218	3329	3547
<b>OR</b>	1.6	<b>CI</b>	(1.2, 2.1)
		<b>P-Value</b>	0.0008

<b>Recurring Urinary Infections</b>			
	<b>+</b>	<b>-</b>	<b>Total</b>
<b>Female</b>	142	1905	2047
<b>Male</b>	23	1477	1500
<b>Total</b>	165	3382	3547
<b>OR</b>	4.8	<b>CI</b>	(3.1, 7.5)
		<b>P-Value</b>	<0.0001

<b>Hip Dysplasia</b>			
	<b>+</b>	<b>-</b>	<b>Total</b>
<b>Male</b>	120	1380	1500
<b>Female</b>	123	1924	2047
<b>Total</b>	243	3304	3547
<b>OR</b>	1.4	<b>CI</b>	(1.0, 1.8)
		<b>P-Value</b>	0.0204

<b>Umbilical Hernias</b>			
	<b>+</b>	<b>-</b>	<b>Total</b>
<b>Female</b>	75	1972	2047
<b>Male</b>	20	1480	1500
<b>Total</b>	165	3382	3547
<b>OR</b>	2.8	<b>CI</b>	(1.7, 4.6)
		<b>P-Value</b>	<0.0001