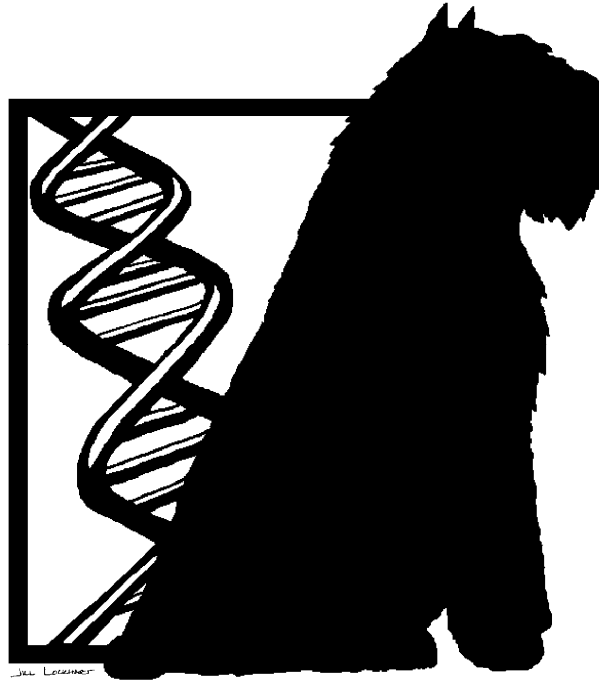


THE 2004 BOUVIER HEALTH SURVEY



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Released August 30, 2005

**Sponsored by
The BOUVIER HEALTH FOUNDATION**

The Survey and other Bouvier Health Foundation Projects are made possible by the commitment of the membership of the ABdFC. The membership of the ABdFC actively commits time to these projects and participates generously in funding the projects. Congratulations to all who made this Survey possible and to all Bouvier lovers who participated in the Survey.

Background

The Bouvier Health Foundation requested a general health survey for bouviers whose owners belong to the American Bouvier des Flandres Club. The purpose was to find possible emerging breed-related health problems, so that concerns and breed problems can be addressed. Previous surveys were used as a basis for the current survey.

Methods

The survey was mailed to all members of the American Bouvier des Flandres Club on October 18, 2005. Names were added to the list of members being mailed surveys. These additional names were given ID numbers that could be distinguished from the original names for the purpose of calculating response rates. Postcard reminders were sent out on December 8, 2004 encouraging owners to return the survey even if it was blank because they no longer owned bouviers. Non-responders were called beginning in April 2005. New copies of the surveys were mailed out to non-responders in June 2005.

Answers from the surveys were compiled into excel spreadsheets under each survey identification number. Then data was sorted into tables for easier analysis. In most cases, variables (i.e. age, sex) were specifically noted in the tables. It should be made clear that 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. 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 1057 bouvier owners and members of the club who responded with information that could be used for the survey results. Originally, 1582 members were sent surveys and as names were added to the mailing list, an additional 79 surveys were mailed. However, 112 of

these were bad addresses, and were not counted. Eleven blank forms were returned, 25 surveys were returned specifying they no longer had bouviers, and there were two unusable returned surveys. Overall, we had a 71% response rate which is moderately 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 and instead simply checking items off. 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 Bouviers; 6) some other unknown reason. The higher the response rate, the more accurate and conclusive the data. The survey includes a total of 3450 Bouviers. The top ten most reported health problems were cancer, stillbirths, sebaceous cysts, hot spots, arthritis, hip dysplasia, hypothyroidism, food allergies, fading puppies, and dermatitis. An overall plot of the health problems surveyed can be found in Graph A-1 in Appendix I.

The first page of the survey was general information about the Bouvier owners and their dogs. The median number of years an individual had owned bouviers was 12.5 years. Most owners currently only had one dog; the maximum number of dogs a person owned was twenty. General information can be found in Table A-2. The most popular activities that these bouviers participated in are pet companion, conformation, and obedience (Table A-3). See also Graph A-2. Owners reported to be most concerned with cancer, hip dysplasia, and heart problems, as seen in Table A-4. This can also be seen in Graph A-3.

There are 2410 living bouviers and 1040 deceased bouviers, for a total of 3450 dogs included in this survey. The average age of living dogs are 5.5 years for males and 6 years for females. The average age at time of death was 10 years for males and 10.5 years for females. The oldest age achieved before death was reported to be 19.5 years for a male and 18 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 failure, accidental, and bloat. 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.

Differences between the sexes were found in eight health problems using our 2% rule and chi-square calculations. Males were more likely to have hot spots and hip dysplasia. Females were more likely to have mammary carcinomas, sebaceous cysts, missing teeth, bladder infections, incontinence, and incontinence from neutering.

Cancer was one of the most reported health problems. See Table B-1. The identified cancers most often reported were lymphoma, mast cell lymphosarcoma, osteosarcoma, and mammary carcinoma. The top 15 most

reported cancers can be seen in Graph B-1. Nineteen percent of the dogs included in the survey had been diagnosed with some form of cancer. There was a significant difference between the sexes reported with mammary cancer. Not surprisingly, female bouviers were 41 times more likely to be diagnosed with mammary carcinoma than males.

Non malignant tumors and cysts (Table B-2) were reported in nineteen percent of the bouviers. Females were 1.3 times more likely to have sebaceous cysts. Skin and hair problems (Table B-3) affected approximately twenty-six percent of the dogs. Sixteen percent had hot spots. Females were 1.3 times more likely to have hot spots than males.

Eye problems affected approximately eleven percent of the dogs surveyed as can be seen in Table B-4. Almost four percent were affected by cataracts. It should be noted that some people were confused of whether their dog had primary or secondary glaucoma. There were also relatively few dogs in each glaucoma group, so age trends cannot be determined. Ten percent of the dogs were reported to have ear problems (Table B-5). The most common ear problems were inner ear infections (4.6%) and chronic external ear infections (3.5%). Problems with the mouth and teeth affected eleven percent of the bouviers (Table B-6). Four percent had missing teeth. Females were almost 2 times more likely to have teeth missing.

Drug reactions occurred in almost five percent of the dogs, as seen in Table B-7. Reactions to anesthesia were the most reported, affecting 1.7% of the population surveyed. Respiratory problems affected less than one percent of bouviers surveyed (Table B-8).

More than twelve percent of the dogs reported autoimmune or immune problems (Table B-9). Almost seven percent had food allergies. The top food allergies noted were beef, corn, and wheat. Graph B-2 shows the top ten food allergies. Inhaled allergies affected almost four percent of the dogs. One percent of the dogs suffered from rheumatoid arthritis.

Endocrine problems, like those listed in Table B-10, affected more than nine percent of the bouviers. Hypothyroidism affected 6.7% of the dogs. Problems with muscles (Table B-11), such as, myopathy and myasthenia gravis affected less than half of a percent.

Twenty-eight percent of the dogs had bone and skeletal problems, as seen in Table B-12. Arthritis affected eleven percent and hip dysplasia affected eight percent. Males were 1.5 times more likely to have hip dysplasia than females. See Graph B-3 to view skeletal problems.

Gastrointestinal tract problems occurred in twelve percent of the bouviers (Table B-13). Impacted anal glands affected 2.6% of the total dogs. Stomach bloat occurred in 1.9%. Liver and spleen problems were noted in one percent of the survey population (Table B-14).

Urinary tract problems affected 12.6% of the total dogs. See Table B-15. More than five percent of the females had experienced at least one bladder infection. Females were 3.9 times more likely to have had a bladder infection than males. Incontinence and incontinence from neutering was 4.0 times and 5.4 times more likely to occur in females than males.

Almost eight percent of the bouviers had experienced a heart problem, as can be seen in Table B-16. Congestive heart failure occurred in 2.2% of the dogs and subvalvular aortic Stenosis (SAS) occurred in 1.3% of the dogs. Seventeen heart murmur grades were recorded; the median grade was 1.7. Heart murmur grades were recorded in cases of SAS, DCM, mitral valve murmurs, PDA, tricuspid valve dysplasia, and murmurs from illness. If a cause was not included with a grade, then it was grouped as an unspecified murmur. Heart problems can be found in Graph B-4. Neurological problems affected 3.7% of the total number of dogs (Table B-17). One and a half percent had experienced a single seizure, and almost one percent had epilepsy.

Reproductive problems occurred more often in females than males. Almost twenty percent of the female dogs were affected, while only six and a half percent of the males were affected. The most common problems in females were pyometras (5.0%), cesarean births (4.9%), and abnormal heat cycles (4.2%); as can be seen in Table C-2. The most common problems in males were mono/cryptorchidism (1.6%) and benign prostatic hyperplasia (1.4%), as seen in Table C-3. Almost twenty-five percent of the total dogs were bred at least once (Table C-1). In the past six years, 702 litters were reported (Table C-4). Litter and puppy problems occurred in 33.5% of the litters, as seen in Table C-5. Stillborn puppies occurred in 17.4% of the litters; and fading puppies occurred in 6.6% of the litters.

Discussion

The response rate was approximately 71%, which was a moderately high rate. Problems encountered included some respondents were 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 bouviers surveyed. Differences between the sexes of more than 2% were found in eight health problems. Males were more likely to have hot spots and hip dysplasia. Females were more likely to have mammary carcinomas, sebaceous cysts, missing teeth, bladder infections, incontinence, and incontinence from neutering. From this survey of 3450 bouviers, the top ten most reported health problems were cancer, stillbirths, sebaceous cysts, hot spots, arthritis, hip dysplasia, hypothyroidism, food allergies, fading puppies, and dermatitis.

Table A-1: Response Rate Information

GENERAL INFORMATION	
Response Rate Information:	
Original Number of Surveys Mailed	1582
Surveys with Invalid Addresses	112
Returned Surveys But No Dogs	25
Returned Blank Surveys	10
Unusable Information	2
Answered Surveys	1004
Response Rate	71%
Additional Number of Surveys Mailed	79
Surveys with Invalid Addresses	0
Returned Surveys But No Dogs	0
Returned Blank Surveys	1
Answered Surveys	53
Response Rate	68%
Total Completed Surveys (Number of Owners Included in Results)	1057
Total Response Rate	71%

Table A-2: General Info On Dogs

Years Owned Bouviers:		
Median		12.5
Maximum		50
Minimum		1
Number of Bouviers Currently Owned:		
Median		1
Maximum		20
Minimum		0
Number of Living Bouviers Included in Survey:		
Male	992	41.16%
Female	1418	58.84%
Total	2410	
Number of Deceased Bouviers Included in Survey:		
Male	472	45.38%
Female	568	54.62%
Total	1040	
Total # of Living & Deceased Dogs Included:		
Male	1464	42.43%
Female	1986	57.57%
Total	3450	

Table A-3: Owner Activities

Number of Owners with Bouviers Involved In:		
Pet Companion	914	86.47%
Conformation	446	42.19%
Obedience	400	37.84%
Herding	196	18.54%
Agility	189	17.88%
Therapy Dog	144	13.62%
Tracking	77	7.28%
Schutzhund	56	5.30%
Ring Sport	18	1.70%

Table A-4: Owner Health Concerns

Number of Owners Concerned with These Health Problems:		
Cancer	630	59.60%
Hip Dysplasia	436	41.25%
Heart	345	32.64%
Arthritis	325	30.75%
Eyes	309	29.23%
Allergies	232	21.95%
Bloat	231	21.85%
Autoimmune	169	15.99%
Thyroid	134	12.68%
Seizures	53	5.01%
Reproduction	37	3.50%

Table A-5: Dog Ages

Age of Living Dogs		
	Male	Female
Median	5.5	6
Maximum	14	16.25
Minimum	0.125	0.08333
Age at Death of Dogs who Died Since 1998		
	Male	Female
Median	10	10.5
Maximum	19.5	18
Minimum	0.25	0.25

Table A-6: Causes of Death

Common Causes of Death		
Cancer	459	44.13%
Old Age	105	10.10%
Heart Failure	69	6.63%
Unknown	67	6.44%
Accidental Death	39	3.75%
Bloat	28	2.69%
Hip Dysplasia	26	2.50%
Kidney Failure	25	2.40%
Euthanized for Unspecified Reason	22	2.12%
Severe Arthritis (Euthanized)	20	1.92%
Stroke	19	1.83%
Autoimmune Deficiency	16	1.54%
Surgical Complications	13	1.25%
Aggressive (Euthanized)	13	1.25%
Liver Failure	12	1.15%
DCM	11	1.06%
Seizures	7	0.67%
AIHA	7	0.67%
Nerve Degeneration	5	0.48%
Pneumonia	5	0.48%
Addison's Disease	5	0.48%
Neurological	5	0.48%
Allergic Reaction	5	0.48%
SAS	4	0.38%
Cushing's Disease	4	0.38%
Bowel Obstruction	4	0.38%
Blood Clot	4	0.38%
Diabetes	3	0.29%
Senile/Dementia (Euthanized)	3	0.29%
Reproductive Problem	3	0.29%
Staph Infection	2	0.19%
Lyme Disease	2	0.19%
Gastrointestinal Illness	2	0.19%
Enlarged Heart	2	0.19%
Degenerative Disc Disease	2	0.19%
Hemorrhagic Diarrhea	2	0.19%
Grave's Disease	1	0.10%
Bartonella	1	0.10%
Intestinal Infection	1	0.10%
Pulmonary Edema	1	0.10%
Whelping Problem	1	0.10%
Ulcer	1	0.10%
Meningitis	1	0.10%
IBD	1	0.10%
Brain Hemorrhage	1	0.10%
Heat Stroke	1	0.10%
Pancreatitis	1	0.10%
Ruptured Spleen	1	0.10%
Impaction	1	0.10%
Degenerative Myopathy	1	0.10%
Blown Disc	1	0.10%
Spondylosis (Euthanized)	1	0.10%
Viral Infection	1	0.10%
Stomach Torsion	1	0.10%
Protein Losing Enteropathy	1	0.10%
Leptospirosis	1	0.10%

Table B-1: Cancer

HEALTH PROBLEMS									
Cancer Types									
	Median Age	Min Age	Max Age	Male	%	Female	%	Total	%
Unknown	10	1	14	44	3.01%	62	3.12%	106	3.07%
Lymphoma	8	1	14	44	3.01%	44	2.22%	88	2.55%
Mast Cell Lymphosarcoma	8	0.67	15	29	1.98%	37	1.86%	66	1.91%
Osteosarcoma	9	2	14	27	1.84%	35	1.76%	62	1.80%
Mammary Carcinoma	8.5	0.67	13	1	0.07%	55	2.77%	56	1.62%
Hemangiosarcoma	10	5	13	18	1.23%	24	1.21%	42	1.22%
Lipoma	8	4	12	8	0.55%	25	1.26%	33	0.96%
Testicular*	8.5	0.8	12	13	0.89%	-	-	13	0.89%
Brain/CNS Tumor	9	0.25	13	10	0.68%	16	0.81%	26	0.75%
Melanoma	10	4	14	7	0.48%	13	0.65%	20	0.58%
Adenocarcinoma	11	5	14	7	0.48%	11	0.55%	18	0.52%
Squamous Cell Carcinoma	9.25	3	12	6	0.41%	8	0.40%	14	0.41%
Fibrosarcoma	8	2	12	6	0.41%	7	0.35%	13	0.38%
Undifferentiated Sarcoma	8	3	14	4	0.27%	8	0.40%	12	0.35%
Histiocytoma	8	4.5	10	4	0.27%	3	0.15%	7	0.20%
Perianal Adenoma	13.5	1	14	2	0.14%	2	0.10%	4	0.12%
Leukemia	5.5	5	9	1	0.07%	2	0.10%	3	0.09%
Synovial Sarcoma	7	6	9	1	0.07%	2	0.10%	3	0.09%
Hemangiopericytoma	9	8	9	3	0.20%	0	0.00%	3	0.09%
Cervical Sarcoma	8	8	8	1	0.07%	1	0.05%	2	0.06%
Papilloma	-	-	-	1	0.07%	0	0.00%	1	0.03%
Other:	9	1	12.5	40	2.73%	25	1.26%	65	1.88%
Stomach	8.5	6.5	11.5	5		8		13	
Liver	9.75	8	11	8		2		10	
Lung	9	1.5	12	5		3		8	
Bladder	11.5	9	11.5	3		2		5	
Prostate*	10.25	8	13	4		-		4	
Neurofibrosarcoma	7.75	6	9.5	2		1		3	
Nasal Passage	12.5	11	13	2		1		3	
Thyroid	9	7	11	1		2		3	
Heart	11	11	11	1		2		3	
Uterine**	6.5	5	8	-		2		2	
Colon	10.5	10	11	2		0		2	
Esophagus	11	8	14	1		1		2	
Urethra	12	12	12	1		0		1	
Mouth	7	7	7	1		0		1	
Pancreas	6	6	6	1		0		1	
Basal Cell	6	6	6	1		0		1	
Adrenal	10	10	10	1		0		1	
Transitional Cell Carcinoma	1	1	1	1		0		1	
Spindle Cell Carcinoma	7	7	7	0		1		1	
Total				277	18.92%	380	19.13%	657	19.04%

*Percentage calculated from total males

**Percentage calculated from total females

Table B-2: Nonmalignant Tumors & Cysts

Nonmalignant Tumors & Cysts						
	Male	%	Female	%	Total	%
Sebaceous Cysts	196	13.39%	346	17.42%	542	15.71%
Polyp	19	1.30%	24	1.21%	43	1.25%
Histiocytoma	8	0.55%	16	0.81%	24	0.70%
Other:	20	1.37%	26	1.31%	46	1.33%
Fatty	3		13		16	
Unspecified	8		4		12	
Lipoma	1		4		5	
Mammary	0		3		3	
Fibroma	2		0		2	
Pilomatrixoma	0		2		2	
Basal Cell Epithelioma	1		0		1	
Hematoma	1		0		1	
Hemangioma	1		0		1	
Leiomyoma	1		0		1	
Trichogranuloma	1		0		1	
Melanocytoma	1		0		1	
Total	243	16.60%	412	20.75%	655	18.99%

Table B-3: Skin & Hair Problems

Skin/Hair						
	Male	%	Female	%	Total	%
Hot Spots	267	18.24%	274	13.80%	541	15.68%
Dermatitis	86	5.87%	99	4.98%	185	5.36%
Seborrhea	22	1.50%	25	1.26%	47	1.36%
Lick Granuloma	16	1.09%	22	1.11%	38	1.10%
Sebaceous Adenitis	13	0.89%	22	1.11%	35	1.01%
Depigmentation	3	0.20%	10	0.50%	13	0.38%
Other:	28	1.91%	19	0.96%	47	1.36%
Hair Loss	11		3		14	
Pyoderma	7		5		12	
Skin Allergies	6		6		12	
Psoriasis/Dry Skin	2		2		4	
Warts	1		0		1	
Skin Tags	1		0		1	
Chronic Demodectic Mange	0		2		2	
Unspecified	0		1		1	
Total	435	29.71%	471	23.72%	906	26.26%

Table B-4: Eye Problems

Eye									
	Median Age	Min Age	Max Age	Male	%	Female	%	Total	%
Cataracts	-	-	-	48	3.28%	80	4.03%	128	3.71%
Glaucoma-Primary	6	0.5	13	18	1.23%	41	2.06%	59	1.71%
Entropion	-	-	-	24	1.64%	28	1.41%	52	1.51%
PPM	-	-	-	18	1.23%	26	1.31%	44	1.28%
Glaucoma-Secondary	6	0.33	10.5	7	0.48%	12	0.60%	19	0.55%
Uveitis	-	-	-	6	0.41%	10	0.50%	16	0.46%
Retinal Dysplasia	-	-	-	5	0.34%	4	0.20%	9	0.26%
Ectropion	-	-	-	6	0.41%	1	0.05%	7	0.20%
Prolapsed 3rd Eyelid	-	-	-	1	0.07%	1	0.05%	2	0.06%
PRA	-	-	-	0	0.00%	2	0.10%	2	0.06%
Other:				20	1.37%	21	1.06%	41	1.19%
Conjunctivitis	-	-	-	8		5		13	
Blind	-	-	-	1		4		5	
Dry Eyes	-	-	-	3		1		4	
Adenoma in Ciliary Body	-	-	-	2		1		3	
Poor Vision	-	-	-	1		2		3	
Growth on Eyelid	-	-	-	0		3		3	
Goniodysgenesis	-	-	-	0		2		2	
SARD	-	-	-	1		0		1	
Calcium Deposits	-	-	-	1		0		1	
Macular Degeneration	-	-	-	1		0		1	
Anophthalmia	-	-	-	1		0		1	
No Pigment in Corner	-	-	-	1		0		1	
Corneal Dystrophy	-	-	-	0		1		1	
Bad Angles	-	-	-	0		1		1	
Blue Lenses	-	-	-	0		1		1	
Total	-	-	-	153	10.45%	226	11.38%	379	10.99%

Table B-5: Ear Problems

Ear						
	Male	%	Female	%	Total	%
Inner Ear Infections	70	4.78%	87	4.38%	157	4.55%
Chronic External Ear Infections	47	3.21%	73	3.68%	120	3.48%
Deafness	18	1.23%	37	1.86%	55	1.59%
Other:	0	0.00%	2	0.10%	2	0.06%
Hematoma	0		1		1	
Chronic Otitis Extrema	0		1		1	
Total	135	9.22%	199	10.02%	334	9.68%

Table B-6: Mouth Problems

Nose/Teeth/Mouth						
	Male	%	Female	%	Total	%
Missing Teeth	39	2.66%	100	5.04%	139	4.03%
Under-bite	55	3.76%	46	2.32%	101	2.93%
Over-bite	35	2.39%	34	1.71%	69	2.00%
Wry Mouth	7	0.48%	9	0.45%	16	0.46%
Parrot Mouth	9	0.61%	5	0.25%	14	0.41%
Other:	27	1.84%	16	0.81%	43	1.25%
Dropped Teeth	5		7		12	
Periodontal Disease	8		3		11	
Crooked Teeth	4		2		6	
Unspecified	4		1		5	
Anterior Crossbite	2		0		2	
Epulis/Fibroma	1		1		2	
Cleft Palate	1		1		2	
Narrow Mouth	1		0		1	
Loose Jowls	1		0		1	
Extra Teeth	0		1		1	
Total	172	11.75%	210	10.57%	382	11.07%

Table B-7: Drug Reactions

Drug Reactions						
	Male	%	Female	%	Total	%
Anesthesia	25	1.71%	34	1.71%	59	1.71%
Vaccine Failure:						
Heartworm	2	0.14%	2	0.10%	4	0.12%
Lyme	1	0.07%	0	0.00%	1	0.03%
Distemper	0	0.00%	1	0.05%	1	0.03%
Unspecified	0	0.00%	1	0.05%	1	0.03%
Vaccine Reaction:						
Unspecified	11	0.75%	23	1.16%	34	0.99%
Rabies	5	0.34%	3	0.15%	8	0.23%
Leptospirosis	3	0.20%	5	0.25%	8	0.23%
Parvo/Distemper	2	0.14%	2	0.10%	4	0.12%
Bordatella	1	0.07%	3	0.15%	4	0.12%
Lyme	3	0.20%	0	0.00%	3	0.09%
Other Drug Reactions:	16	1.09%	28	1.41%	44	1.28%
Unspecified	8		5		13	
Rimadyl	2		3		5	
Advantage	1		2		3	
Frontline	0		3		3	
Metronidazole	1		1		2	
Prednisone	0		2		2	
Chemotherapy	1		0		1	
Sulfonamide	1		0		1	
Sulfur	1		0		1	
Allergy to Drug Capsules	1		0		1	
Cephalosporins	0		1		1	
Cortisone	0		1		1	
Metacam	0		1		1	
Acepromazine	0		1		1	
Baytril	0		1		1	
Derramax	0		1		1	
Ketamine/Morphine	0		1		1	
Myelogram Dye	0		1		1	
Drontal Plus	0		1		1	
Zeniquin	0		1		1	
Panacur	0		1		1	
Aspirin	0		1		1	
Total	69	4.71%	102	5.14%	171	4.96%

Table B-8: Respiratory Problems

Respiratory						
	Male	%	Female	%	Total	%
Pneumonia	8	0.55%	7	0.35%	15	0.43%
Other:	9	0.61%	9	0.45%	18	0.52%
Unspecified Infection	4		1		5	
Laryngeal Paralysis	3		1		4	
Bronchitis	0		3		3	
Bordatella	1		1		2	
Plural Effusion	1		1		2	
Valley Fever (coccidioidomycosis)	0		2		2	
Total	17	1.16%	16	0.81%	33	0.96%

Table B-9: Autoimmune & Immune System Problems

Autoimmune/Immune						
	Male	%	Female	%	Total	%
Inhaled Allergy	52	3.55%	80	4.03%	132	3.83%
Rheumatoid Arthritis	10	0.68%	24	1.21%	34	0.99%
AIHA	7	0.48%	14	0.70%	21	0.61%
Thrombocytopenia	2	0.14%	3	0.15%	5	0.14%
Lupus	0	0.00%	2	0.10%	2	0.06%
Pemphigus	0	0.00%	2	0.10%	2	0.06%
DIC	2	0.14%	0	0.00%	2	0.06%
Food Allergy:	107	7.31%	119	5.99%	226	6.55%
Unspecified	24		43		67	
Beef	18		13		31	
Corn	11		11		22	
Wheat	5		16		21	
Chicken	8		7		15	
Lamb	8		7		15	
Rice	6		6		12	
Soy	3		5		8	
Turkey	4		2		6	
Eggs	3		1		4	
Oats	3		0		3	
Carrots	2		1		3	
Dairy	1		2		3	
Fish	2		0		2	
Peas	2		0		2	
Barley	1		1		2	
Potatoes	1		1		2	
Bananas	1		0		1	
Kelp	1		0		1	
Tea Tree Oil	1		0		1	
Flax Oil	1		0		1	
Duck	1		0		1	
Sorghum	0		1		1	
Pork	0		1		1	
Gluten	0		1		1	
Total	180	12.30%	244	12.29%	424	12.29%

Table B-10: Endocrine System Problems

Endocrine Problems						
	Male	%	Female	%	Total	%
Hypothyroidism	94	6.42%	136	6.85%	230	6.67%
Prostatic Disease*	33	2.25%	-	-	33	2.25%
Pancreatitis	8	0.55%	10	0.50%	18	0.52%
Cushing's Disease	3	0.20%	6	0.30%	9	0.26%
Hyperthyroidism	3	0.20%	5	0.25%	8	0.23%
Addison's Disease	3	0.20%	3	0.15%	6	0.17%
Diabetes	2	0.14%	4	0.20%	6	0.17%
Metritis	0	0.00%	5	0.25%	5	0.14%
Hashimotos Disease	0	0.00%	3	0.15%	3	0.09%
Exocrine Pancreatic Insufficiency	1	0.07%	1	0.05%	2	0.06%
Other:	0	0.00%	1	0.05%	1	0.03%
Protein Losing Enteropathy	0		1		1	
Total	147	10.04%	174	8.76%	321	9.30%

*Percentage calculated from total males

Table B-11: Muscle Problems

Muscle						
	Male	%	Female	%	Total	%
Myopathy	3	0.20%	10	0.50%	13	0.38%
Myasthenia Gravis	0	0.00%	0	0.00%	0	0.00%
Total	3	0.20%	10	0.50%	13	0.38%

Table B-12: Skeletal Problems

Bone/Skeletal						
	Male	%	Female	%	Total	%
Arthritis	173	11.82%	209	10.52%	382	11.07%
Hip Dysplasia	146	9.97%	135	6.80%	281	8.14%
Elbow Dysplasia	51	3.48%	50	2.52%	101	2.93%
ACL Tear/Sprain	34	2.32%	58	2.92%	92	2.67%
Deg. Disc Disease	23	1.57%	26	1.31%	49	1.42%
OCD	17	1.16%	11	0.55%	28	0.81%
Patellar Luxation	5	0.34%	16	0.81%	21	0.61%
Panosteitis	12	0.82%	6	0.30%	18	0.52%
HOD	1	0.07%	1	0.05%	2	0.06%
Total	462	31.56%	512	25.78%	974	28.23%

Table B-13: Gastrointestinal Tract Problems

Gastrointestinal Tract						
	Male	%	Female	%	Total	%
Impacted Anal Glands	40	2.73%	51	2.57%	91	2.64%
Stomach Bloat	34	2.32%	30	1.51%	64	1.86%
IBD	36	2.46%	23	1.16%	59	1.71%
Colitis	33	2.25%	24	1.21%	57	1.65%
Pancreatitis	17	1.16%	22	1.11%	39	1.13%
Stomach Torsion	26	1.78%	13	0.65%	39	1.13%
Enlarged Spleen	11	0.75%	17	0.86%	28	0.81%
GI Ulcer	4	0.27%	4	0.20%	8	0.23%
Liver Infection	0	0.00%	5	0.25%	5	0.14%
Liver Shunt	1	0.07%	1	0.05%	2	0.06%
Megaesophagus	1	0.07%	1	0.05%	2	0.06%
Other:	12	0.82%	11	0.55%	23	0.67%
Acid Reflux	3		2		5	
Bowel Obstruction	2		3		5	
Gastroenteritis	1		3		4	
Sensitive Stomach	3		0		3	
Hemorrhagic Gastroenteritis	1		1		2	
Unspecified	1		0		1	
Gas	1		0		1	
Intussusception	0		1		1	
Giardia	0		1		1	
Total	215	14.69%	202	10.17%	417	12.09%

Table B-14: Liver & Spleen Problems

Liver/Spleen						
	Male	%	Female	%	Total	%
Liver Failure	6	0.41%	15	0.76%	21	0.61%
Hepato/Splenomegaly	5	0.34%	5	0.25%	10	0.29%
Other:	0	0.00%	3	0.15%	3	0.09%
Spleen Removed	0		1		1	
Cirrhosis	0		1		1	
Hepatitis	0		1		1	
Total	11	0.75%	23	1.16%	34	0.99%

Table B-15: Urinary Tract Problems

Urinary Tract						
	Male	%	Female	%	Total	%
Bladder Infection	20	1.37%	107	5.39%	127	3.68%
Vaginitis	-	-	60	3.02%	60	3.02%
Incontinence	11	0.75%	80	4.03%	91	2.64%
Incontinence from Neutering	9	0.61%	76	3.83%	85	2.46%
Bladder stones	17	1.16%	19	0.96%	36	1.04%
Kidney Disease	16	1.09%	15	0.76%	31	0.90%
One Kidney Present	0	0.00%	2	0.10%	2	0.06%
Other:	2	0.14%	2	0.10%	4	0.12%
High Urine pH	1		1		2	
Ectopic Ureter	1		0		1	
Recessed Vulva	-		1		1	
Total	75	5.12%	361	18.18%	436	12.64%

Table B-16: Heart Problems

Heart						
	Male	%	Female	%	Total	%
SAS	16	1.09%	29	1.46%	45	1.30%
Unspecified Murmur Cause	17	1.16%	18	0.91%	35	1.01%
DCM	18	1.23%	13	0.65%	31	0.90%
Mitral Valve Murmur	8	0.55%	18	0.91%	26	0.75%
PDA	1	0.07%	2	0.10%	3	0.09%
Tricuspid Valve Dysplasia	1	0.07%	0	0.00%	1	0.03%
Murmur from Illness	1	0.07%	0	0.00%	1	0.03%
Heart Murmurs (See Above):	Grade					
Number of Recorded Grades	17					
Median	1.7					
Maximum	5.5					
Minimum	1					
	Male	%	Female	%	Total	%
Congestive Heart Failure	40	2.73%	37	1.86%	77	2.23%
Stroke	12	0.82%	22	1.11%	34	0.99%
Ventral Septal Defect	1	0.07%	5	0.25%	6	0.17%
Pulmonary Stenosis	1	0.07%	0	0.00%	1	0.03%
Atrial Septal Defect	1	0.07%	0	0.00%	1	0.03%
Other:	12	0.82%	0	0.00%	12	0.35%
Enlarged Heart	5		0		5	
Unspecified	2		0		2	
Mitral & Aortic Valves Leak	1		0		1	
Atrial Fibrillation	1		0		1	
Thickened Mitral Valve	1		0		1	
Arrhythmia	1		0		1	
Bartonella	1		0		1	
Total	129	8.81%	144	7.25%	273	7.91%

Table B-17: Neurological Problems

Neurological						
	Male	%	Female	%	Total	%
Single Seizure	19	1.30%	33	1.66%	52	1.51%
Epilepsy	16	1.09%	15	0.76%	31	0.90%
Dementia	7	0.48%	9	0.45%	16	0.46%
Nerve Degeneration	5	0.34%	7	0.35%	12	0.35%
Tremors	2	0.14%	2	0.10%	4	0.12%
Wobbler's Syndrome	1	0.07%	2	0.10%	3	0.09%
Myasthenia Gravis	0	0.00%	0	0.00%	0	0.00%
Other:	4	0.27%	4	0.20%	8	0.23%
Vestibular Syndrome	1		2		3	
Pinched Nerve	2		0		2	
Anxiety Attacks	1		0		1	
Fibrocartilaginous Embolism	0		1		1	
Cauda Equina Syndrome	0		1		1	
Total	54	3.69%	72	3.63%	126	3.65%

Table C-1: Bouviers Bred

REPRODUCTION		
Number of Bouviers Bred:		
Male	274	18.72%
Female	570	28.70%
Total	844	24.46%

Table C-2: Female Reproductive Problems

Female Reproductive Problems		
Pyometra	100	5.04%
Cesarean Births	98	4.93%
Abnormal Heat Cycles	83	4.18%
Infertility	38	1.91%
Resorption	33	1.66%
Abortions	10	0.50%
Metritis	9	0.45%
Sterility	2	0.10%
Brucellosis	1	0.05%
Other:	18	0.91%
Mastitis	4	
False Pregnancies	4	
Insufficient Milk	3	
Ovarian Cysts	2	
Small Litters	1	
Incomplete Sexual Differentiation	1	
Benign Vaginal Hypertrophy	1	
Inverted Vulva	1	
Retroverted Uterus	1	
Total	392	19.74%

Table C-3: Male Reproductive Problems

Male Reproductive Problems		
Mono/Cryptorchidism	23	1.57%
Benign Prostatic Hyperplasia	21	1.43%
Low Sperm Count	11	0.75%
Testicular Atrophy	10	0.68%
Abnormal Semen	10	0.68%
Lack of Libido	8	0.55%
Infertility	6	0.41%
Testicular Torsion	3	0.20%
Brucellosis	0	0.00%
Other:	3	0.20%
Undescended Testes	1	
Bleeding from Penis	1	
Blockage/Inability to Ejaculate	1	
Total	95	6.49%

Table C-4: Litters

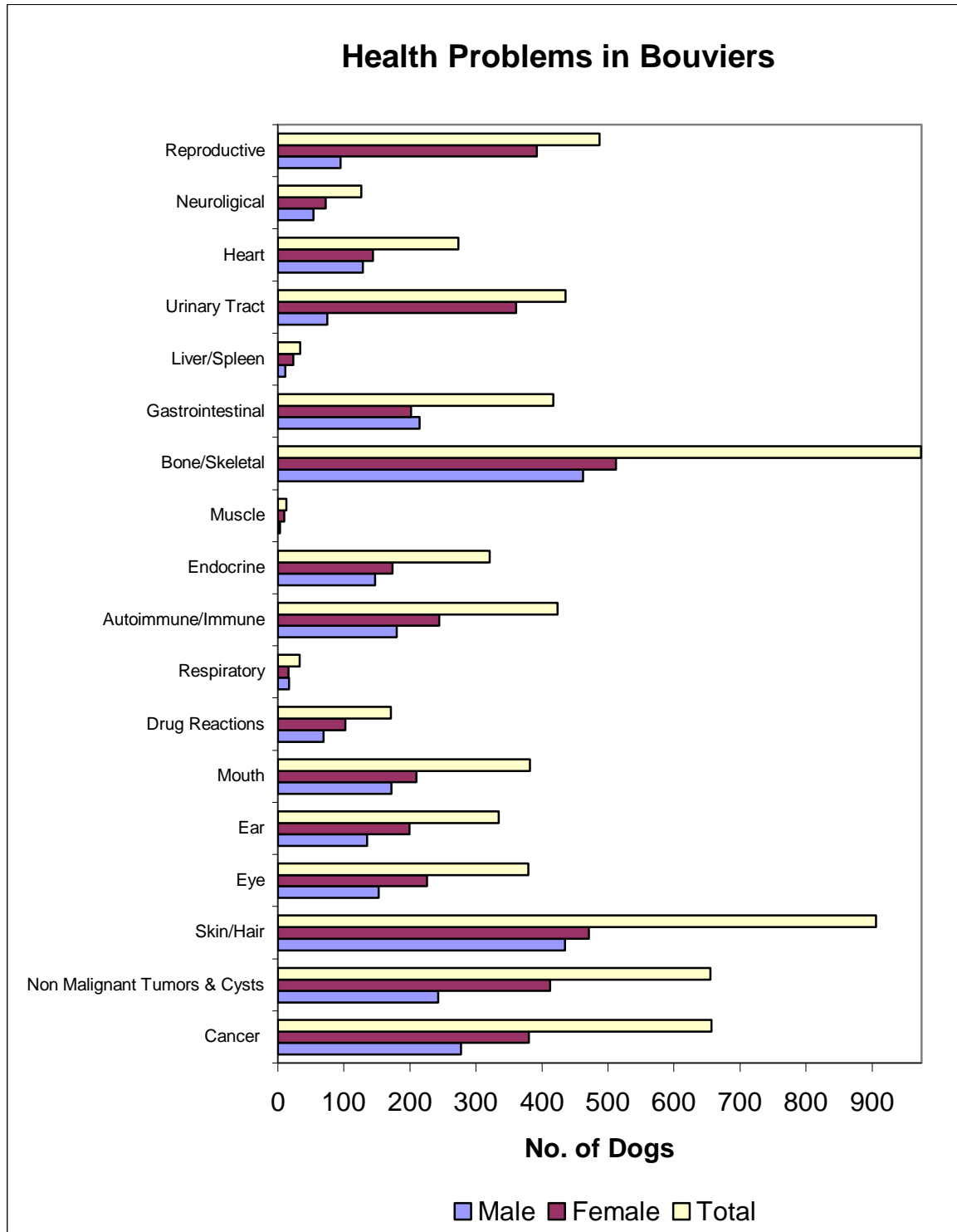
Litters in the Past 6 Years:	
Number of Litters	702

Table C-5: Litter & Puppy Problems

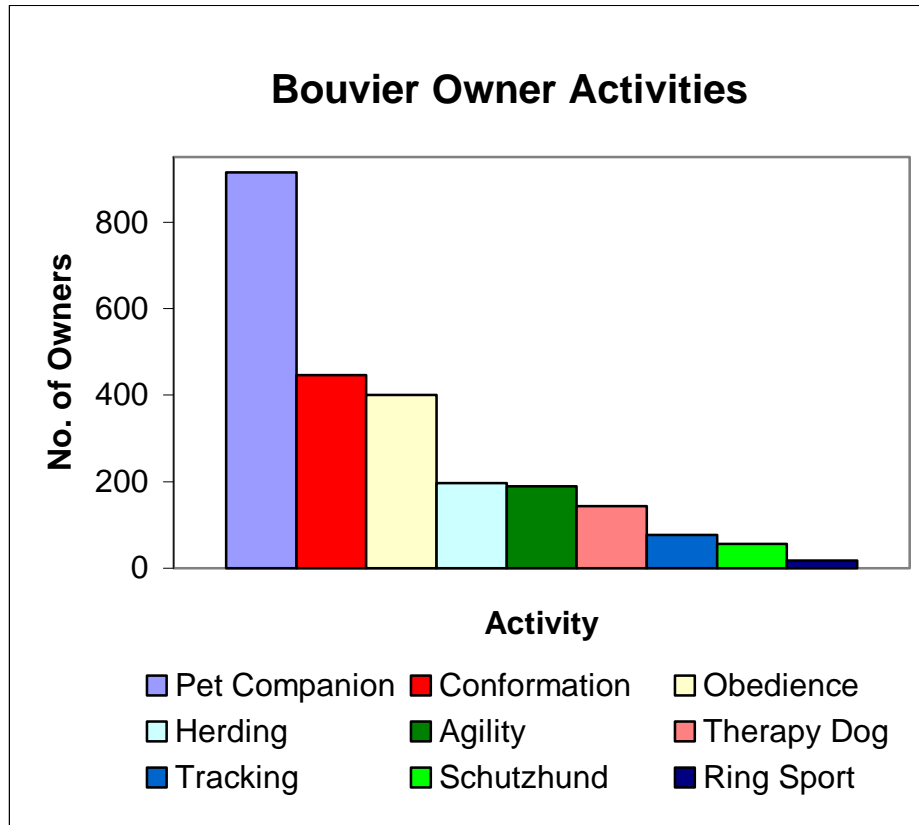
Litter & Puppy Problems			
	# Puppies	# Litters	% Litters
Stillborn	215	122	17.38%
Fading Puppies	113	46	6.55%
Cleft Palates	13	13	1.85%
Swimmers	14	10	1.42%
Missing Organs	6	6	0.85%
Cong. Vertebral Deformity	5	5	0.71%
Hydrocephalus	4	4	0.57%
Missing Bones	4	4	0.57%
Other:	40	25	3.56%
Hernias	11	7	
Entropion	3	3	
Mono/Cryptorchidism	5	2	
HOD	2	2	
Hip Dysplasia	2	2	
Malformed Organs	2	2	
Von Willebrand's Disease	7	1	
Undescended Testes	2	1	
Premature	2	1	
Organs Outside of Body	1	1	
Glaucoma	1	1	
Enlarged Heart	1	1	
Liver Problems	1	1	
Total	414	235	33.48%

Appendix I: Graphs

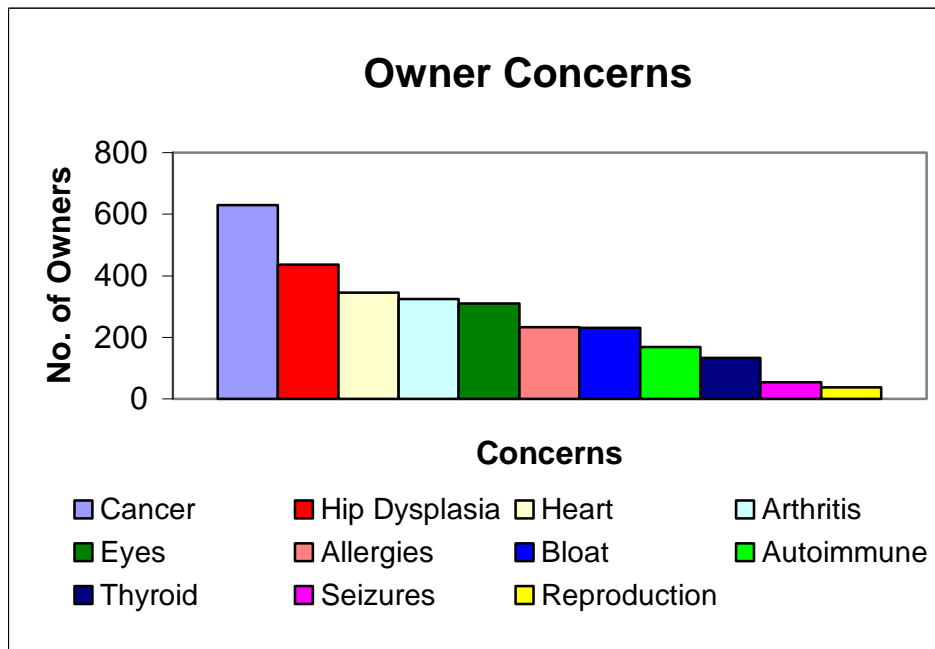
Graph A-1: Health Problems



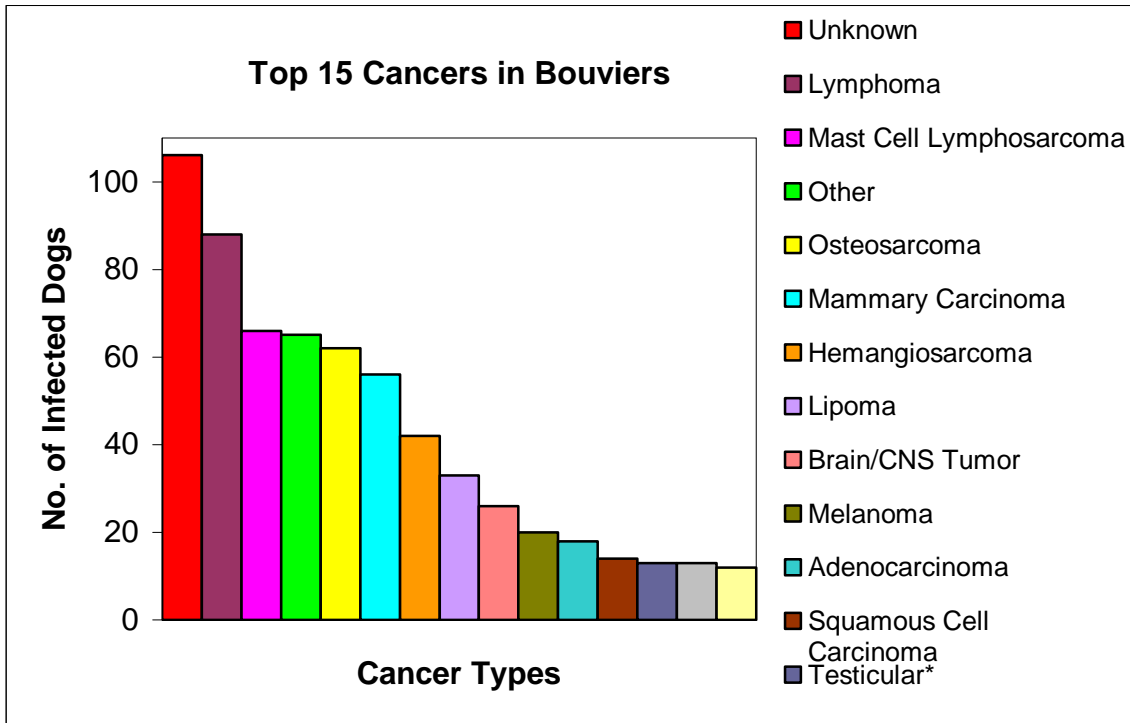
Graph A-2: Owner Activities



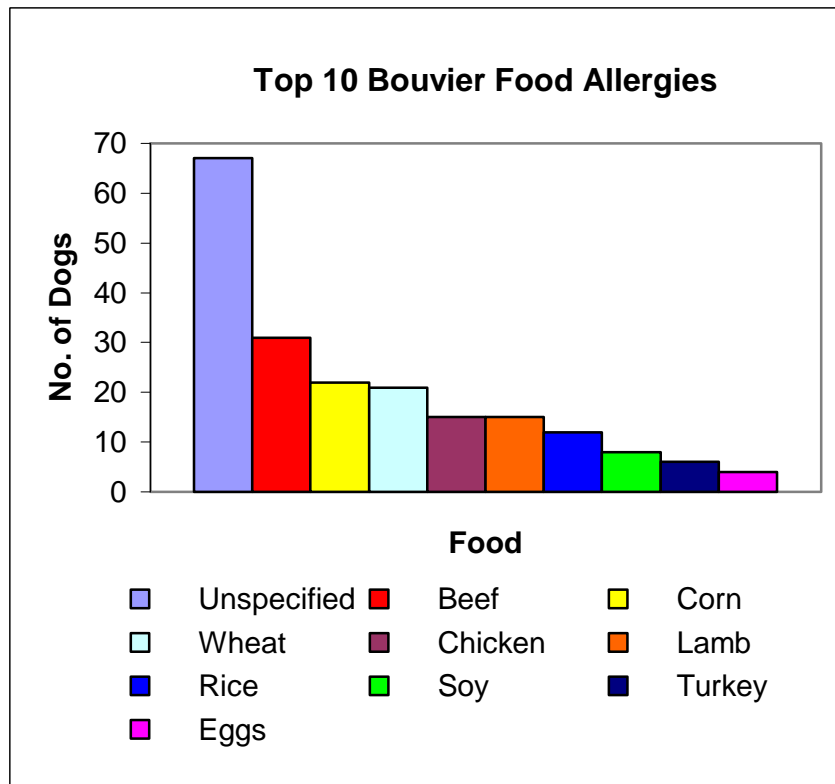
Graph A-3: Owner Concerns



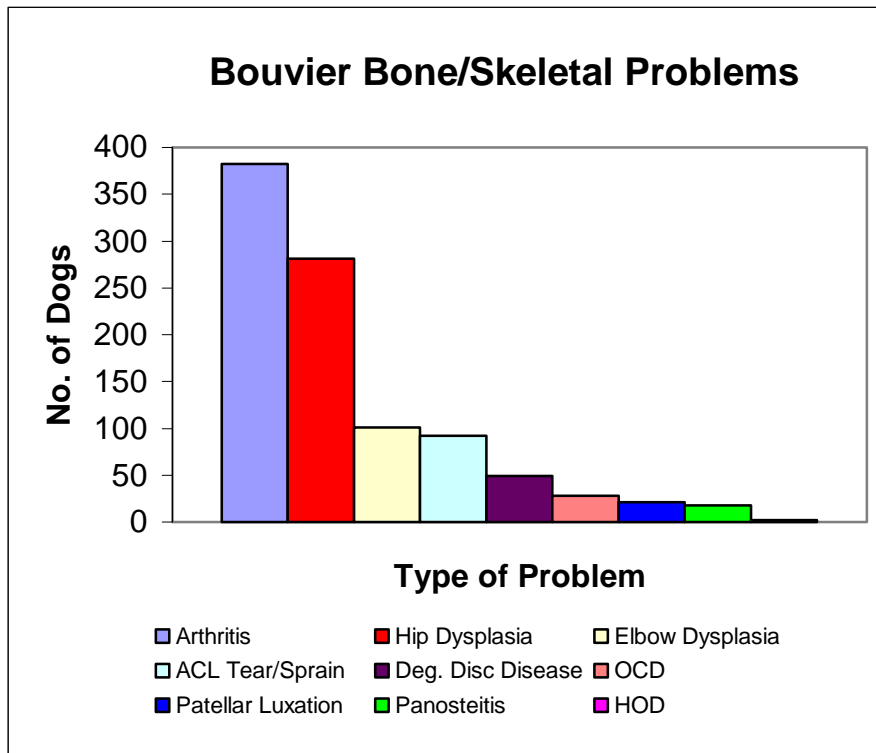
Graph B-1: Top 15 Cancers in Bouviers



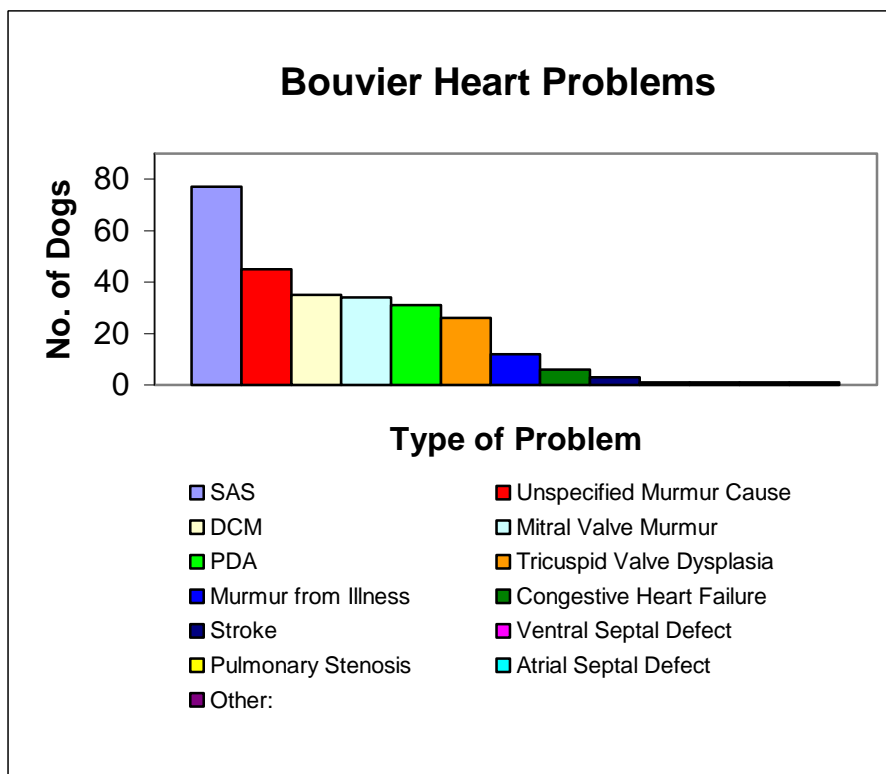
Graph B-2: Top Food Allergies



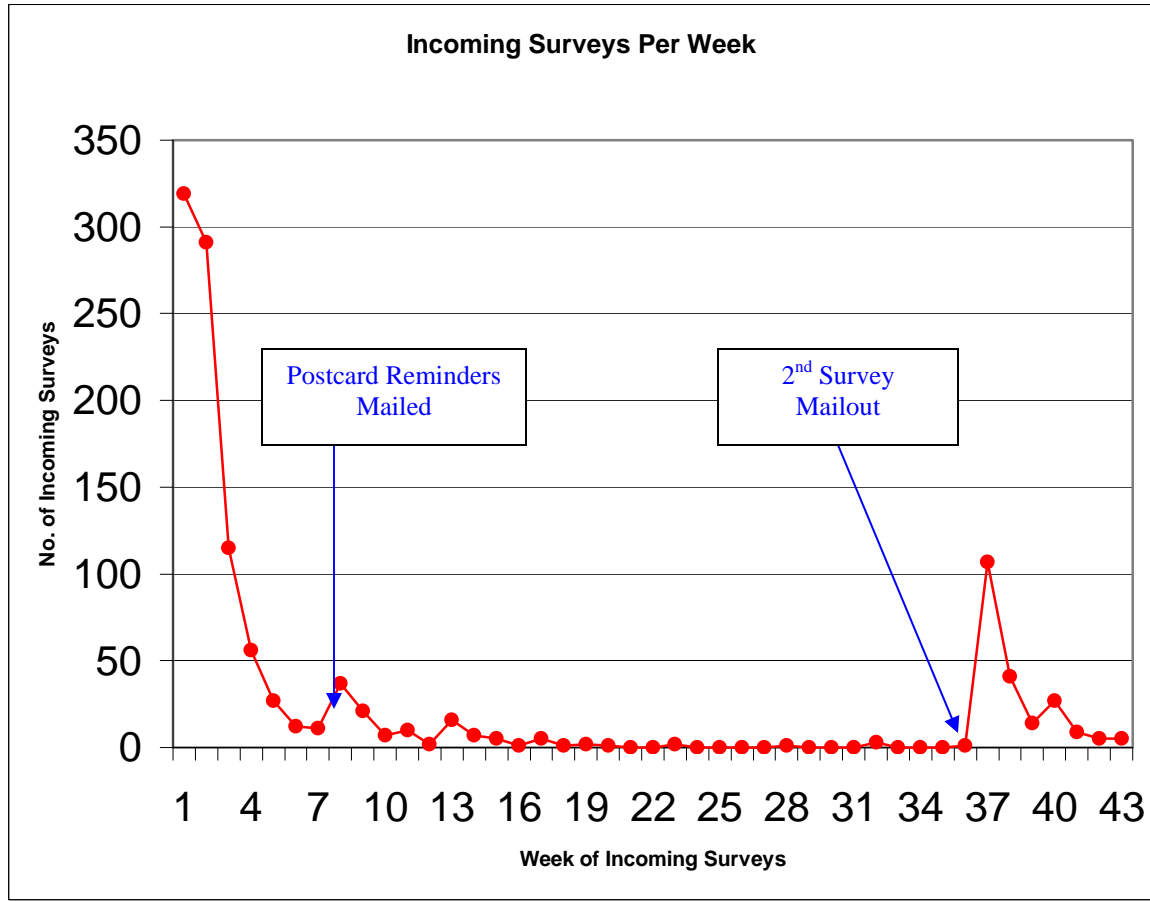
Graph B-3: Skeletal Problems



Graph B-4: Heart Problems



Appendix II: Incoming Surveys Plot



Appendix III: 2 x 2 Tables

Mammary Carcinoma			
	+	-	Total
Female	55	1931	1986
Male	1	1463	1464
Total	56	3394	3450
RR	40.54	CI	(5.62,292.65)
Chi-Sq	38.5	P-value	< 0.0001

Sebaceous Cysts			
	+	-	Total
Female	346	1640	1986
Male	196	1268	1464
Total	542	2908	3450
RR	1.3	CI	(1.11,1.53)
Chi-Sq	10.36	P-value	0.00129

Hot Spots			
	+	-	Total
Male	267	1197	1464
Female	274	1712	1986
Total	541	2909	3450
RR	1.32	CI	(1.13,1.54)
Chi-Sq	12.57	P-value	0.000392

Missing Teeth			
	+	-	Total
Female	100	1886	1986
Male	39	1425	1464
Total	139	3311	3450
RR	1.89	CI	(1.31,2.72)
Chi-Sq	12.26	P-value	0.0004638

Hip Dysplasia			
	+	-	Total
Male	146	1318	1464
Female	135	1851	1986
Total	281	3169	3450
RR	1.47	CI	(1.17,1.84)
Chi-Sq	11.36	P-value	0.000752

Bladder Infection			
	+	-	Total
Female	107	1879	1986
Male	20	1444	1464
Total	127	3323	3450
RR	3.94	CI	(2.46,6.33)
Chi-Sq	38.44	P-value	< 0.0001

Incontinence			
	+	-	Total
Female	60	1926	1986
Male	11	1453	1464
Total	71	3379	3450
RR	4.02	CI	(2.12,7.62)
Chi-Sq	21.54	P-value	0.0000035

Incontinence from Neutering			
	+	-	Total
Female	80	1906	1986
Male	11	1453	1464
Total	91	3359	3450
RR	5.36	CI	(2.86,10.03)
Chi-Sq	35.24	P-value	< 0.0001