

**CANINE BREED-SPECIFIC RISKS OF FREQUENTLY DIAGNOSED
DISEASES AT VETERINARY TEACHING HOSPITALS**

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Introduction:

Knowledge of the risk of various diseases in specific dog breeds is very useful in developing a differential diagnosis list compatible with clinical signs presented by the patient. Veterinary practice experience provides an impression of breed specific disease frequency that is useful in creating an initial prioritization of the differential diagnosis list. Published case series containing disease frequency data provide a qualitative impression of morbidity and is used to focus attention on specific diseases in specific breeds.

Unfortunately, quantitative canine morbidity data, including incidence rates and relative risk estimates, are sparse compared to those available in human medicine. Population-at-risk denominators are required for calculation of disease-specific and breed-specific incidence rates. Because there is no periodic, standardized census of dogs to provide the population denominator data required for incidence rates, dog population surveys must be conducted within the same time period that the disease reports are being collected¹⁻², or a cohort of initially healthy dogs must be followed over time so that their disease occurrence can be ascertained in order to calculate incidence rates.³ Comparison groups are required for estimates of relative risk, such as Odds Ratio analysis, but they have not been previously used to compare the relative risk of diseases of dog breeds.

Although the frequency of diagnosing various diseases in specific breeds is the most readily available morbidity measurement, it does not answer the question: **What is the risk (odds of diagnosis) of disease X in breed Y as compared to the risk (odds of diagnosis) of disease X in all other breeds of dogs combined? The case-control analytical methodology⁴ uses an Odds Ratio analysis to answer the question posed above. Thus, the calculated Odds Ratio is an approximation of the relative risk, i.e. the estimated risk of disease X in breed Y compared to the risk of disease X in all other breeds combined.**

As explained above, the rank-order of diagnosis frequency does not correspond with the rank order of the Odds Ratio values. The purpose of this monograph is to provide a systematic comparison of the frequency of diagnosis and Odds Ratios for 78 dog breeds. This analysis presents both of these morbidity measurements and serves as a comprehensive source of morbidity data for use by veterinarians, dog owners and breeders, and researchers. Specific applications of this resource are breed-specific differential diagnoses, identification of research needs of specific breeds, development of research hypotheses, and design of research studies.

Source of data:

The source of the breed-specific diagnoses was the Veterinary Medical Database (VMDB)^a maintained at Purdue University. The VMDB, originally called the Veterinary Medical Data Program, began collecting records of all animal diagnoses from two veterinary colleges in April 1965. It was rapidly expanded to include 14 colleges by 1970 and it included 24 colleges in 1995 at the time of the data search, 23 in the United States and one in Canada. Thus, the data were collected over a 30-year time period.

The VMDB was also the data source for a similar relative risk analysis of benign tumors and cancers in domestic animals.⁵ The methodology used in this earlier report compared the disease risk for individual breeds by comparing each breed with all breeds combined. The methodology used in the analysis of frequently diagnosed diseases reported here used a similar approach, except each breed was compared to all other breeds rather than all breeds combined.

Breed:

According to the VMDB coding guide, known pedigreed dogs, and those indistinguishable from a purebred dog in appearance, are coded to that specific breed. For this study, dogs that were examined on separate visits at clinics or hospitals for the same condition were only counted once to avoid duplication. Diagnosis frequency printouts were obtained from the VMDB for 132 dog breeds. Breeds with less than 1,000 total cases were excluded, resulting in 78 breeds included in the quantitative analysis.

Disease nomenclature:

The disorders observed at the participating veterinary teaching hospitals were coded according to the Standard Nomenclature of Veterinary Diseases and Operations (SNVDO).⁶ A SNVDO Coding Supplement⁷ was published and implemented in 1971 and a Second (abridged) Edition⁸ was published in 1975. Diseases are classified according to portions of the body affected (topography) and cause of the disorder (etiology). Some of the recorded cases were based only on clinical examination and some were confirmed by laboratory studies. In the analysis, no attempt was made to distinguish between clinical diagnoses and laboratory confirmed diagnoses. For definitions of diagnostic terms, the reader is referred to standard textbooks and *The Merck Veterinary Manual* (www.merckvetmanual.com).

As the word “nomenclature” implies, SNVDO is an exhaustive collection of commonly used diagnostic terms. Other disease recording systems, such as the International Statistical Classification of Diseases^d, use broader disease groupings and are more amenable to statistical analysis. Because the cases were coded using a nomenclature, it was necessary to combine some nomenclature entries into broader terminology to better reflect the comparative occurrence of various disease categories.

The combined nomenclature categories used in this study were:

Combined Category	Nomenclature Terms
Anal gland disease	Impacted anal sac Fistulous perianal gland
Congenital malformations, other (other than hydrocephalus & patent ductus arteriosus)	Aortic/subaortic stenosis Cryptorchid Ulna malfusion Umbilical hernia
Conjunctivitis	Conjunctivitis Keratoconjunctivitis sicca
Dermal disease, other	Acanthosis nigricans Dermal disease, unspecified Pyoderma
Dermatitis, other (other than seborrheic & allergic dermatitis)	Dermatitis Dermatitis, unknown cause Pruritis
Eye disease, other (other than entropion/extropion, cataract, conjunctivitis, distichia, glaucoma, otitis externa, persistent pupillary membrane, progressive retinal atrophy [PRA])	Ectasia Coloboma Keratitis Hypoplastic choroid Ulcer-cornea Luxated lens Melanosis-cornea Pannus
Heart disease	Cardiomyopathy Heart murmur
Kidney disease	Kidney disease Kidney failure Renal glycosuria
Urinary disease, other (other than kidney disease & urinary calculus)	Cystitis Urinary incontinence Urinary infection

Internal parasites were excluded because many of the specific parasites had small numbers of cases. Also grouping of the internal parasites would have limited value because most dogs have one or more internal parasites in their lifetime.

Selected external parasites were included. Flea infestation was included because of its relation with allergic dermatitis which was also included in the analysis. It was necessary to list flea infestation and allergic dermatitis separately because flea infestation is not the only cause of allergic dermatitis and because flea infestation, but not allergic dermatitis, was among the 10 most frequent diagnoses in some breeds. Demodectic mange was included because it was a frequent diagnosis for several breeds.

Cancer was under-represented in this analysis because this term is a composite of many different types and sites of malignant neoplasms. Thus cancer appears in a breed-specific table only when a specific type of cancer was among that breed's ten most frequently diagnosed diseases. Also, it should be kept in mind that cancer represents a much lower proportion of all morbidity than it represents as a proportion of all mortality.

Data analysis:

Disease frequency: The first step in the analysis was to rank the frequencies of specific diseases categories within each of the 78 breeds. Further analysis was then limited to the 10 most frequent diseases in each breed. The disease name and the number of cases with each of the 10 most frequent diseases appears in the columns 1 and 2, respectively, of each of the 78 breed table.

Odds Ratio: Odds Ratios, 95% confidence intervals and P values were calculated for each top 10 diseases within each breed. These values are presented in table columns 3, 4, and 5, respectively. **When the odds of a diagnosis in breed X equals the odds of that diagnosis in all other breeds, the Odds Ratio equals one. If the odds ratio is greater than one, the odds of a diagnosis is greater in breed X than in all other breeds combined. Conversely, if the Odds Ratio is less than one, the odds of a diagnosis in breed X is less than in all other breeds combined. Because the Odds Ratios are approximations of the relative risk values that would be derived if incidence rates were available, Odds Ratios are commonly used as estimates of relative risk. For example, a specific disease Odds Ratio of 4 in a breed is equivalent to a 4 times greater disease risk in that breed as compared (relative) to all other breeds combined. Conversely, an Odds Ratio of 0.25 is equivalent to that breed having only one-fourth the risk as compared to all other breeds.**

The diseases within each breed table are listed in rank order according to the Odds Ratio values. When the confidence interval of the Odds Ratio does not include one, there is at least 95% confidence that the corresponding Odds Ratio does represent a statistically significant increased or decreased risk. If the confidence interval for a specific disease is greater than one, that disease risk is greater in breed X as compared to all other breeds combined and if the confidence interval is less than one, the risk is less. Determination of statistical significance (P value) was according to the Pearson's chi-square test. In column 5 of the tables; the P values for breed-specific diseases are expressed as greater than (>) or less than (<) 0.01 or 0.05.

By providing both the 95% confidence intervals and the P values, the reader can take into consideration the large number of statistical significance tests performed in the data analysis. Using the 95% confidence intervals, the interpretation of statistical significance of values obtained for breed-specific diseases may be in error 5 % of the time. The reader may use the P values in considering the consequences of possible error in interpreting the results.

Results:

The results are presented in the series of 78 breed specific tables starting on page 8. The table series is entitled “Ten most common diseases’ Odds Ratios (OR) and Confidence Internals (CI) for each of seventy eight dog breeds.”

Discussion:

Interpretation of the results for each breed is far beyond the scope of this monograph. The intent in reporting the results of this analysis as tables without narrative is to allow the information to be applied in a manner most useful to the individual reader, be they veterinarian, dog owner, dog breeder, or researcher. The monograph may serve as a quick reference for breed-specific disease information. For some users of the information, these data may be just a beginning. If one wishes to focus on a specific disease, additional variables such as age and gender of the dog and age of disease onset are but a few that should also be taken into account.

Another consideration is whether the data represents the morbidity of these diseases in the general population of dog breeds. The sources of these data were veterinary teaching hospitals at universities. The patient population served by teaching and research institutional hospitals includes many referrals of more difficult cases from private practitioners. In this sense, the teaching hospital patients are different from both private referral clinics/hospitals and private general veterinary practices. A national morbidity study was conducted in 52 private veterinary practices in 31 states.⁹ Direct comparisons of the data in this monograph and the private practice survey are difficult because the private practice survey used a different disease nomenclatures and they did not report breed-specific disease results. The characteristics of dogs and their frequent diseases diagnosed at referral practices are also thought to be different from those seen at private practices. Data based on a systematic study of differences between the disease frequency/risk and characteristics of these populations are not available.

Footnotes:

^aVeterinary Medical Database (VMDB), Purdue University, West Lafayette, Indiana.

^bInternational Statistical Classification of Diseases, Injuries, and Causes of Death. World Health Organization, Geneva, Switzerland.

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Afghan Hound

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Flea infestation	76	9.12	7.16 - 11.6	<0.01
Fracture	113	8.54	6.99 - 10.43	<0.01
Diarrhea	87	2.08	1.67 - 2.6	<0.01
Hypothyroidism	108	1.80	1.47 - 2.2	<0.01
Dermatitis, seborrheic	82	1.55	1.24 - 1.94	<0.01
Otitis	295	1.16	1.02 - 1.33	<0.05
Dental calculus	114	1.00	0.82 - 1.21	>0.05
Cataracts	131	0.96	0.8 - 1.15	>0.05
Hip dysplasia	87	0.39	0.31 - 0.48	<0.01
Dermatitis, allergic	85	0.25	0.2 - 0.31	<0.01

Airedale Terrier

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Dermatitis, seborrheic	149	2.06	1.74 - 2.44	<0.01
Dermal disease, other	190	1.71	1.47 - 1.99	<0.01
Diarrhea	100	1.58	1.29 - 1.94	<0.01
Dermatitis, allergic	495	1.28	1.15 - 1.42	<0.01
Conjunctivitis	90	0.94	0.76 - 1.17	>0.05
Heart disease	109	0.89	0.73 - 1.08	>0.05
Ruptured cranial cruciate lig.	146	0.89	0.75 - 1.05	>0.05
Flea infestation	107	0.75	0.61 - 0.91	<0.01
Hip dysplasia	212	0.67	0.58 - 0.78	<0.01
Otitis	280	0.66	0.58 - 0.76	<0.01

Akita

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Patellar disease	53	2.38	1.8 - 3.15	<0.01
Dermal disease, other	141	2.26	1.89 - 2.71	<0.01
Ruptured cranial cruciate lig.	172	2.00	1.69 - 2.36	<0.01
Hip dysplasia	253	1.62	1.4 - 1.87	<0.01
Diarrhea	53	1.42	1.07 - 1.88	<0.05
Lame, weak limb	46	1.07	0.8 - 1.44	>0.05
Osteoarthritis	45	1.01	0.75 - 1.37	>0.05
Hypothyroidism	46	0.83	0.62 - 1.12	>0.05
Dermatitis, allergic	153	0.56	0.47 - 0.66	<0.01
Eye disease, other	59	0.36	0.28 - 0.47	<0.01

Alaskan Malamute

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Diarrhea	112	2.05	1.68 - 2.5	<0.01
Hypothyroidism	151	1.95	1.64 - 2.32	<0.01
Obesity	108	1.69	1.38 - 2.06	<0.01
Hip dysplasia	299	1.16	1.02 - 1.33	<0.05
Osteoarthritis	70	1.03	0.81 - 1.32	>0.05
Ruptured cranial cruciate lig.	113	0.89	0.74 - 1.06	>0.05
Lame, weak limb	59	0.89	0.68 - 1.16	>0.05
Dermal disease, other	79	0.73	0.58 - 0.92	<0.01
Flea infestation	88	0.67	0.54 - 0.84	<0.01
Cataract	68	0.34	0.26 - 0.43	<0.01

American Eskimo Dog

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Hypoadrenocorticism-Addisons	30	52.81	35.31 - 78.98	<0.01
Epileptic seizures	36	8.75	6.17 - 12.38	<0.01
Kidney disease	26	8.28	5.53 - 12.42	<0.01
Fracture	22	2.82	1.83 - 4.34	<0.01
Obesity	45	1.77	1.29 - 2.41	<0.01
Dental calculus	72	1.23	0.95 - 1.59	>0.05
Diarrhea	23	0.99	0.65 - 1.5	>0.05
Flea infestation	47	0.92	0.68 - 1.25	>0.05
Dermatitis, allergic	70	0.36	0.28 - 0.47	<0.01
Cataract	26	0.31	0.21 - 0.47	<0.01

Australian Cattle Dog

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Progressive retinal atrophy	70	12.88	9.95 - 16.67	<0.01
Fracture	85	8.78	6.94 - 11.11	<0.01
Lame, weak limb	81	2.37	1.87 - 3	<0.01
Glaucoma	53	2.07	1.56 - 2.75	<0.01
Osteoarthritis	39	1.01	0.73 - 1.4	>0.05
Ruptured cranial cruciate lig.	69	0.81	0.63 - 1.04	>0.05
Cataract	65	0.59	0.45 - 0.76	<0.01
Dental calculus	49	0.53	0.39 - 0.71	<0.01
Flea infestation	38	0.50	0.36 - 0.69	<0.01
Eye disease, other	42	0.28	0.2 - 0.38	<0.01

Australian Shepherd

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Fracture	118	5.79	4.77 - 7.03	<0.01
Tracheobronchitis	118	4.12	3.4 - 4.99	<0.01
Diarrhea	110	1.75	1.44 - 2.12	<0.01
Flea infestation	227	1.72	1.49 - 1.98	<0.01
Obesity	120	1.65	1.37 - 1.99	<0.01
Dermatitis, allergic	446	1.10	0.99 - 1.23	>0.05
Dental calculus	154	0.89	0.76 - 1.06	>0.05
Ruptured cranial cruciate lig.	122	0.72	0.6 - 0.87	<0.01
Cataract	143	0.68	0.57 - 0.8	<0.01
Otitis	123	0.26	0.21 - 0.31	<0.01

Basenji

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Persistent pupillary membrane	284	110.61	92.76 - 131.9	<0.01
Congenital abnormality, other	36	11.74	8.31 - 16.6	<0.01
Kidney (Fanconi syndrome)	46	11.48	8.43 - 15.63	<0.01
Demodectic mange	31	2.07	1.44 - 2.97	<0.01
Hypothyroidism	33	0.77	0.55 - 1.1	>0.05
Dermal disease, other	30	0.54	0.38 - 0.79	<0.01
Dental calculus	30	0.36	0.25 - 0.53	<0.01
Cataract	24	0.23	0.16 - 0.35	<0.01
Diarrhea	28	0.21	0.14 - 0.31	<0.01
Dermatitis, allergic	44	0.18	0.13 - 0.24	<0.01

Basset Hound

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Glaucoma	530	8.03	7.26 - 8.88	<0.01
Urinary disease	175	3.78	3.22 - 4.43	<0.01
Obesity	154	1.25	1.06 - 1.47	<0.01
Conjunctivitis	192	1.23	1.06 - 1.42	<0.01
Dental calculus	267	0.94	0.82 - 1.06	>0.05
Otitis	610	0.91	0.83 - 1	<0.05
Dermal disease, other	162	0.81	0.69 - 0.95	<0.05
Herniated intervertebral disc	287	0.70	0.62 - 0.79	<0.01
Flea infestation	169	0.70	0.6 - 0.82	<0.01
Dermatitis, allergic	327	0.40	0.36 - 0.45	<0.01

Beagle

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Fracture	331	5.74	5.07 - 6.49	<0.01
Tracheobronchitis	373	4.53	4.04 - 5.08	<0.01
Anal gland disease	342	3.09	2.75 - 3.47	<0.01
Obesity	481	2.23	2.02 - 2.45	<0.01
Herniated intervertebral disc	967	1.39	1.3 - 1.5	<0.01
Dental calculus	583	1.10	1.01 - 1.2	<0.05
Flea infestation	385	0.85	0.76 - 0.94	<0.01
Ruptured cranial cruciate lig.	441	0.83	0.75 - 0.92	<0.01
Otitis	1004	0.75	0.7 - 0.81	<0.01
Dermatitis, allergic	427	0.26	0.23 - 0.28	<0.01

Bernese Mountain Dog

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Cancer (malig. histiocytoma)	24	15.07	9.85 - 23.07	<0.01
Congenital abnormality, other	24	9.56	6.28 - 14.57	<0.01
Fracture	40	5.45	3.92 - 7.57	<0.01
Osteochondritis desicans	33	4.40	3.08 - 6.31	<0.01
Osteoarthritis	41	1.58	1.14 - 2.18	<0.01
Hip dysplasia	142	1.51	1.23 - 1.86	<0.01
Lame, weak limb	36	1.41	1 - 1.99	<0.05
Entropion/ectropion	22	0.86	0.56 - 1.33	>0.05
Ruptured cranial cruciate lig.	26	0.41	0.28 - 0.61	<0.01
Dermatitis, allergic	23	0.11	0.07 - 0.16	<0.01

Bichon Frise

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Lacrimal gland hypersecretion	49	171.11	104.59 - 279.96	<0.01
Patent ductus arteriosus	44	13.35	9.65 - 18.47	<0.01
Urinary calculus	107	4.68	3.81 - 5.75	<0.01
Diabetes mellitus	48	3.24	2.41 - 4.35	<0.01
Urinary disease, other	64	2.41	1.87 - 3.12	<0.01
Cataract	240	1.41	1.22 - 1.63	<0.01
Dermal disease, other	92	0.85	0.68 - 1.05	>0.05
Dental calculus	90	0.54	0.44 - 0.67	<0.01
Dermatitis, allergic	240	0.53	0.46 - 0.61	<0.01
Ruptured cranial cruciate lig.	68	0.42	0.33 - 0.53	<0.01

Bloodhound

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Bloat	98	14.32	11.48 - 17.85	<0.01
Entropion/ectropion	164	7.97	6.67 - 9.54	<0.01
Conjunctivitis	98	3.02	2.43 - 3.75	<0.01
Dermal disease, other	43	0.96	0.7 - 1.3	>0.05
Dermatitis, seborrheic	20	0.63	0.41 - 0.99	<0.05
Heart disease	25	0.52	0.35 - 0.77	<0.01
Hypothyroidism	19	0.52	0.33 - 0.82	<0.01
Otitis	86	0.51	0.41 - 0.64	<0.01
Hip dysplasia	60	0.48	0.37 - 0.62	<0.01
Dermatitis, allergic	38	0.19	0.14 - 0.27	<0.01

Border Collie

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Epileptic seizure	60	8.79	6.7 - 11.53	<0.01
Osteoarthritis	74	1.70	1.34 - 2.17	<0.01
Diarrhea	57	1.51	1.15 - 1.98	<0.01
Lame, weak limb	59	1.37	1.05 - 1.79	<0.05
Obesity	59	1.34	1.03 - 1.75	<0.05
Dermatitis, allergic	249	1.01	0.87 - 1.18	>0.05
Flea infestation	80	0.95	0.75 - 1.19	>0.05
Ruptured cranial cruciate lig.	69	0.68	0.53 - 0.87	<0.01
Dental calculus	65	0.61	0.47 - 0.79	<0.01
Cataract	58	0.44	0.34 - 0.58	<0.01

Borzoï

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Cancer (mammary gland)	18	17.06	10.43 - 27.89	<0.01
Bloat	54	13.47	9.91 - 18.31	<0.01
Kidney disease	17	8.14	4.95 - 13.41	<0.01
Fracture	28	5.82	3.91 - 8.66	<0.01
Diarrhea	19	1.26	0.78 - 2.01	>0.05
Lame, weak limb	21	1.23	0.78 - 1.92	>0.05
Hypothyroidism	21	0.94	0.6 - 1.48	>0.05
Dental calculus	25	0.58	0.38 - 0.88	<0.01
Flea infestation	17	0.47	0.29 - 0.77	<0.01
Dermatitis, allergic	20	0.13	0.08 - 0.21	<0.01

Boston Terrier

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Soft palate elongation	211	10.68	9.11 - 12.52	<0.01
Adrenal cortical hyperfunction	333	5.60	4.96 - 6.32	<0.01
Cataract	1299	3.98	3.71 - 4.27	<0.01
Patellar disease	185	2.14	1.84 - 2.49	<0.01
Glaucoma	244	2.12	1.86 - 2.43	<0.01
Eye disease, other	642	1.14	1.04 - 1.24	<0.01
Conjunctivitis	173	0.77	0.66 - 0.9	<0.01
Heart disease	161	0.55	0.46 - 0.64	<0.01
Dermatitis, allergic	301	0.25	0.22 - 0.28	<0.01
Otitis	159	0.13	0.11 - 0.16	<0.01

Bouvier des Flandres

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Osteoarthritis	71	2.81	2.19 - 3.6	<0.01
Obesity	51	1.97	1.47 - 2.62	<0.01
Diarrhea	36	1.57	1.12 - 2.2	<0.01
Hip dysplasia	154	1.57	1.31 - 1.88	<0.01
Lame, weak limb	39	1.50	1.08 - 2.07	<0.05
Hypothyroidism	47	1.42	1.06 - 1.92	<0.05
Ruptured cranial cruciate lig.	70	1.21	0.95 - 1.56	>0.05
Heart disease	33	0.73	0.52 - 1.04	>0.05
Dermatitis, allergic	107	0.66	0.54 - 0.81	<0.01
Otitis	32	0.18	0.13 - 0.26	<0.01

Boxer

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Epileptic seizure	204	7.17	6.12 - 8.4	<0.01
Heart disease	835	3.04	2.8 - 3.29	<0.01
Tracheobronchitis	220	2.74	2.38 - 3.17	<0.01
Demodectic mange	237	2.66	2.32 - 3.05	<0.01
Osteoarthritis	293	1.42	1.25 - 1.6	<0.01
Lame, weak limb	200	0.95	0.83 - 1.1	>0.05
Ruptured cranial cruciate lig.	424	0.90	0.82 - 1	>0.05
Eye disease, other	640	0.88	0.81 - 0.96	<0.01
Hypothyroidism	219	0.81	0.7 - 0.93	<0.01
Dermatitis, allergic	326	0.20	0.18 - 0.22	<0.01

Brittany

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Cancer (mammary gland)	125	28.43	22.83 - 35.4	<0.01
Tracheobronchitis	158	4.10	3.47 - 4.85	<0.01
Osteoarthritis	168	1.69	1.44 - 1.98	<0.01
Obesity	125	1.24	1.03 - 1.49	<0.05
Flea infestation	224	1.19	1.03 - 1.37	<0.05
Dental calculus	253	1.11	0.97 - 1.26	>0.05
Otitis	498	0.91	0.83 - 1.01	>0.05
Hip dysplasia	306	0.71	0.63 - 0.8	<0.01
Dermatitis, allergic	407	0.66	0.59 - 0.74	<0.01
Ruptured cranial cruciate lig.	141	0.61	0.51 - 0.72	<0.01

Bulldog

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Soft palate elongation	461	29.27	25.51 - 33.59	<0.01
Entropion/ectropion	759	4.37	4.03 - 4.75	<0.01
Conjunctivitis	798	3.27	3.02 - 3.55	<0.01
Demodectic mange	287	3.00	2.64 - 3.4	<0.01
Dermal disease, other	690	2.13	1.96 - 2.31	<0.01
Distichia	419	1.48	1.33 - 1.64	<0.01
Ruptured cranial cruciate lig.	398	0.77	0.69 - 0.85	<0.01
Otitis	718	0.52	0.48 - 0.56	<0.01
Dermatitis, allergic	413	0.26	0.23 - 0.28	<0.01
Hip dysplasia	281	0.26	0.23 - 0.29	<0.01

Bullmastiff

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Osteoarthritis	67	3.16	2.44 - 4.08	<0.01
Ruptured cranial cruciate lig.	120	2.80	2.29 - 3.43	<0.01
Dermal disease, other	67	1.98	1.54 - 2.56	<0.01
Entropion/ectropion	41	1.96	1.43 - 2.7	<0.01
Lame, weak limb	36	1.64	1.17 - 2.3	<0.01
Hypothyroidism	36	1.27	0.91 - 1.79	>0.05
Hip dysplasia	91	0.99	0.79 - 1.24	>0.05
Heart disease	33	0.88	0.62 - 1.25	>0.05
Otitis	36	0.25	0.18 - 0.35	<0.01
Dermatitis, allergic	31	0.20	0.14 - 0.29	<0.01

Bull Terrier

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Kidney disease	32	8.16	5.68 - 11.74	<0.01
Dermal disease, other	235	6.71	5.7 - 7.89	<0.01
Fracture	43	4.57	3.34 - 6.25	<0.01
Demodectic mange	32	2.14	1.5 - 3.07	<0.01
Diarrhea	40	1.41	1.02 - 1.95	<0.05
Heart disease	59	1.10	0.84 - 1.44	>0.05
Conjunctivitis	43	1.02	0.74 - 1.39	>0.05
Ruptured cranial cruciate lig.	40	0.52	0.38 - 0.72	<0.01
Dermatitis, allergic	73	0.32	0.25 - 0.41	<0.01
Otitis	40	0.18	0.13 - 0.24	<0.01

Cairn Terrier

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Adrenal cortical hyperfunction	95	2.32	1.88 - 2.86	<0.01
Dermatitis, allergic	792	1.67	1.53 - 1.83	<0.01
Dermatitis, seborrheic	135	1.24	1.04 - 1.48	<0.05
Conjunctivitis	151	1.17	0.99 - 1.38	>0.05
Obesity	107	1.04	0.86 - 1.27	>0.05
Dental calculus	224	0.96	0.83 - 1.1	>0.05
Dermal disease, other	108	0.65	0.53 - 0.79	<0.01
Ruptured cranial cruciate lig.	141	0.60	0.5 - 0.71	<0.01
Cataract	176	0.60	0.51 - 0.7	<0.01
Flea infestation	110	0.54	0.45 - 0.66	<0.01

Chesapeake Bay Retriever

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
PRA	56	8.26	6.26 - 10.89	<0.01
Ruptured cranial cruciate lig.	174	2.01	1.71 - 2.37	<0.01
Distichia	83	1.53	1.22 - 1.92	<0.01
Entropion/ectropion	57	1.40	1.07 - 1.84	<0.05
Lame, weak limb	54	1.28	0.97 - 1.68	>0.05
Hip dysplasia	211	1.27	1.09 - 1.48	<0.01
Hypothyroidism	53	0.97	0.74 - 1.28	>0.05
Cataract	109	0.92	0.75 - 1.12	>0.05
Otitis	175	0.72	0.61 - 0.85	<0.01
Dermatitis, allergic	85	0.29	0.24 - 0.37	<0.01

Chihuahua

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Hydrocephalus	378	62.63	50.86 - 77.13	<0.01
Patellar disease	793	7.91	7.25 - 8.64	<0.01
Tracheal collapse	323	5.57	4.9 - 6.32	<0.01
Heart disease	1126	3.11	2.9 - 3.34	<0.01
Tracheobronchitis	245	2.23	1.95 - 2.55	<0.01
Dental calculus	898	1.51	1.4 - 1.63	<0.01
Obesity	257	0.88	0.77 - 1	>0.05
Ruptured cranial cruciate lig.	239	0.34	0.3 - 0.38	<0.01
Cataract	209	0.23	0.2 - 0.26	<0.01
Dermatitis, allergic	292	0.12	0.11 - 0.14	<0.01

Chow Chow

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Entropion/ectropion	1249	14.64	13.55 - 15.82	<0.01
Alopecia	151	9.34	7.76 - 11.25	<0.01
Persistent pupillary membrane	123	3.89	3.22 - 4.71	<0.01
Glaucoma	167	1.35	1.15 - 1.58	<0.01
Osteoarthritis	177	0.98	0.84 - 1.14	>0.05
Ruptured cranial cruciate lig.	283	0.69	0.61 - 0.79	<0.01
Flea infestation	182	0.51	0.44 - 0.59	<0.01
Dermal disease, other	141	0.47	0.4 - 0.56	<0.01
Dermatitis, allergic	465	0.37	0.34 - 0.41	<0.01
Hip dysplasia	299	0.35	0.31 - 0.4	<0.01

Cocker Spaniel

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Distichia	3581	6.08	5.79 - 6.39	<0.01
Glaucoma	1999	5.73	5.38 - 6.12	<0.01
Dermatitis, seborrheic	2197	3.19	3.02 - 3.37	<0.01
Conjunctivitis	1958	2.06	1.95 - 2.18	<0.01
Cataract	3,947	2.04	1.96 - 2.12	<0.01
Otitis	5956	1.45	1.4 - 1.5	<0.01
Dental calculus	1351	0.59	0.56 - 0.63	<0.01
Flea infestation	1110	0.59	0.55 - 0.63	<0.01
Ruptured cranial cruciate lig.	979	0.43	0.4 - 0.46	<0.01
Dermatitis, allergic	1246	0.17	0.16 - 0.18	<0.01

Collie

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Eye disease, other	10582	31.46	30.11 - 32.87	<0.01
Persistent pupillary membrane	439	4.53	4.01 - 5.12	<0.01
Fracture	267	1.25	1.1 - 1.43	<0.01
Dermatitis, seborrheic	358	0.41	0.36 - 0.45	<0.01
Diarrhea	259	0.37	0.32 - 0.41	<0.01
Flea infestation	423	0.26	0.23 - 0.29	<0.01
Dental calculus	468	0.23	0.21 - 0.25	<0.01
Dermal disease, other	276	0.20	0.18 - 0.23	<0.01
Dermatitis, allergic	968	0.16	0.15 - 0.17	<0.01
Cataract	265	0.10	0.09 - 0.12	<0.01

Dachshund

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Herniated intervertebral disc	13716	57.01	54.4 - 59.75	<0.01
Alopecia	343	4.56	3.91 - 5.32	<0.01
Adrenal cortical hyperfunction	701	1.80	1.65 - 1.97	<0.01
Urinary disease, other	430	0.95	0.86 - 1.06	>0.05
Obesity	665	0.54	0.5 - 0.59	<0.01
Dental calculus	1144	0.37	0.35 - 0.4	<0.01
Hypothyroidism	482	0.29	0.26 - 0.32	<0.01
Dermal disease, other	461	0.21	0.19 - 0.23	<0.01
Heart disease	402	0.17	0.16 - 0.19	<0.01
Dermatitis, allergic	428	0.04	0.03 - 0.04	<0.01

Dalmatian

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Deafness	641	409.34	306.5 - 546.69	<0.01
Urinary calculus	489	9.03	8.11 - 10.06	<0.01
Epileptic seizure	126	4.05	3.34 - 4.9	<0.01
Dermal disease, other	621	2.22	2.03 - 2.43	<0.01
Urinary disease, other	135	1.66	1.39 - 1.98	<0.01
Demodectic mange	132	1.42	1.19 - 1.7	<0.01
Diarrhea	129	0.70	0.59 - 0.84	<0.01
Heart disease	153	0.42	0.36 - 0.49	<0.01
Otitis	456	0.35	0.32 - 0.39	<0.01
Dermatitis, allergic	420	0.27	0.24 - 0.3	<0.01

Doberman Pinscher

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
von Willebrands disease	562	806.44	343.03 - 1894.32	<0.01
Cervicospinal arthropathy	1212	94.93	77.33 - 116.54	<0.01
Demodectic mange	847	3.57	3.28 - 3.89	<0.01
Hypothyroidism	1702	2.51	2.36 - 2.66	<0.01
Diarrhea	572	0.90	0.82 - 0.98	<0.05
Heart disease	1034	0.85	0.79 - 0.91	<0.01
Dermatitis, seborrheic	619	0.75	0.69 - 0.82	<0.01
Lame, weak limb	504	0.66	0.6 - 0.73	<0.01
Dermal disease, other	490	0.36	0.33 - 0.4	<0.01
Herniated intervertebral disc	572	0.17	0.16 - 0.19	<0.01

English Cocker Spaniel

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
PRA	191	45.00	37.8 - 53.58	<0.01
Distichia	167	3.99	3.37 - 4.72	<0.01
Cataracts	177	1.89	1.6 - 2.23	<0.01
Glaucoma	36	1.33	0.95 - 1.86	>0.05
Dermatitis, seborrheic	53	1.29	0.98 - 1.71	>0.05
Conjunctivitis	35	0.70	0.5 - 0.98	<0.05
Otitis	149	0.69	0.58 - 0.82	<0.01
Dental calculus	57	0.63	0.48 - 0.83	<0.01
Dermatitis, allergic	39	0.15	0.11 - 0.2	<0.01
Hip dysplasia	26	0.14	0.1 - 0.21	<0.01

English Setter

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Cancer (mammary gland)	100	36.54	28.93 - 46.15	<0.01
Tracheobronchitis	172	8.18	6.96 - 9.61	<0.01
Flea infestation	206	2.01	1.74 - 2.32	<0.01
Dermatitis, allergic	534	1.91	1.73 - 2.11	<0.01
Osteoarthritis	107	1.88	1.55 - 2.29	<0.01
Hip dysplasia	326	1.49	1.33 - 1.68	<0.01
Otitis	418	1.48	1.33 - 1.65	<0.01
Conjunctivitis	99	1.36	1.11 - 1.67	<0.01
Hypothyroidism	90	1.26	1.02 - 1.56	<0.05
Dental calculus	110	0.06	0.05 - 0.08	<0.01

English Springer Spaniel

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
PRA	401	24.63	21.57 - 28.12	<0.01
Dermatitis, seborrheic	342	1.94	1.73 - 2.17	<0.01
Otitis	1372	1.77	1.66 - 1.89	<0.01
Conjunctivitis	250	1.14	1 - 1.3	<0.05
Flea infestation	295	0.89	0.79 - 1.01	>0.05
Dermatitis, allergic	788	0.78	0.72 - 0.84	<0.01
Cataract	293	0.59	0.53 - 0.67	<0.01
Ruptured cranial cruciate lig.	224	0.56	0.49 - 0.65	<0.01
Dental calculus	215	0.52	0.45 - 0.59	<0.01
Hip dysplasia	382	0.50	0.45 - 0.56	<0.01

Finnish Spitz

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Diabetes mellitus	40	8.07	5.82 - 11.2	<0.01
Epilepsy	27	7.08	4.78 - 10.49	<0.01
Dental calculus	106	2.25	1.81 - 2.78	<0.01
Diarrhea	35	1.76	1.24 - 2.48	<0.01
Obesity	33	1.42	1 - 2.02	>0.05
Flea infestation	58	1.34	1.02 - 1.77	<0.05
Heart disease	37	0.96	0.68 - 1.34	>0.05
Cataract	54	0.83	0.62 - 1.1	>0.05
Dermatitis, allergic	88	0.60	0.48 - 0.76	<0.01
Otitis	31	0.20	0.14 - 0.29	<0.01

Fox Terrier (Wire)

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Glaucoma	350	5.47	4.86 - 6.15	<0.01
Tracheobronchitis	114	2.66	2.19 - 3.22	<0.01
Perianal gland disease	125	2.29	1.9 - 2.75	<0.01
Cataract	351	1.23	1.1 - 1.38	<0.01
Dermatitis, allergic	600	1.00	0.91 - 1.09	>0.05
Dental calculus	240	0.97	0.85 - 1.11	>0.05
Dermatitis, seborrheic	113	0.96	0.79 - 1.16	>0.05
Flea infestation	136	0.64	0.54 - 0.76	<0.01
Otitis	388	0.62	0.56 - 0.69	<0.01
Eye disease, other	159	0.39	0.34 - 0.46	<0.01

German Shepherd Dog

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Perianal gland disease	2143	14.31	13.16 - 15.56	<0.01
Hip dysplasia	6305	2.20	2.13 - 2.27	<0.01
Diarrhea	1430	2.06	1.94 - 2.2	<0.01
Osteoarthritis	1534	1.83	1.73 - 1.95	<0.01
Lame, weak limb	1081	1.18	1.1 - 1.26	<0.01
Eye disease, other	2593	0.74	0.71 - 0.78	<0.01
Flea infestation	1334	0.68	0.64 - 0.72	<0.01
Otitis	3609	0.62	0.59 - 0.64	<0.01
Dermatitis, allergic	3478	0.54	0.52 - 0.56	<0.01
Ruptured cranial cruciate lig.	1145	0.47	0.44 - 0.5	<0.01

German Shorthaired Pointer

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Epileptic seizure	134	16.78	13.85 - 20.33	<0.01
Tracheobronchitis	120	5.49	4.53 - 6.66	<0.01
Demodectic mange	117	4.77	3.92 - 5.79	<0.01
Diarrhea	105	2.16	1.77 - 2.65	<0.01
Lame, weak limb	111	2.02	1.66 - 2.45	<0.01
Ruptured cranial cruciate lig.	207	1.74	1.5 - 2.02	<0.01
Dermal disease, other	102	1.11	0.9 - 1.36	>0.05
Hip dysplasia	116	0.44	0.36 - 0.53	<0.01
Otitis	128	0.35	0.29 - 0.41	<0.01
Dermatitis, allergic	125	0.31	0.26 - 0.38	<0.01

Golden Retriever

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Distichia	1142	1.97	1.85 - 2.11	<0.01
Obesity	865	1.87	1.74 - 2.02	<0.01
Hypothyroidism	1063	1.86	1.73 - 1.99	<0.01
Hip dysplasia	2288	1.17	1.11 - 1.22	<0.01
Heart disease	879	1.07	1 - 1.15	>0.05
Flea infestation	993	1.04	0.97 - 1.12	>0.05
Otitis	2360	0.85	0.81 - 0.89	<0.01
Dermatitis, allergic	2369	0.79	0.76 - 0.83	<0.01
Cataract	944	0.64	0.6 - 0.69	<0.01
Ruptured cranial cruciate lig.	690	0.58	0.53 - 0.62	<0.01

Gordon Setter

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Cancer (lymphosarcoma)	23	15.52	10.09 - 23.88	<0.01
Bloat	32	4.74	3.31 - 6.8	<0.01
Conjunctivitis	71	2.49	1.94 - 3.2	<0.01
Dermatitis, seborrheic	50	1.99	1.49 - 2.67	<0.01
Hypothyroidism	49	1.67	1.25 - 2.25	<0.01
Dermal disease, other	52	1.40	1.05 - 1.86	<0.05
Hip dysplasia	119	1.29	1.05 - 1.58	<0.05
Dermatitis, allergic	85	0.56	0.45 - 0.71	<0.01
Ruptured cranial cruciate lig.	23	0.41	0.27 - 0.62	<0.01
Otitis	43	0.28	0.2 - 0.38	<0.01

Great Dane

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Bloat	1114	43.23	38.7 - 48.28	<0.01
Osteochondritis dissecans	913	22.26	20.1 - 24.66	<0.01
Persistent pupillary membrane	207	3.59	3.07 - 4.19	<0.01
Demodectic mange	269	1.79	1.57 - 2.04	<0.01
Heart disease	572	1.01	0.92 - 1.11	>0.05
Diarrhea	212	0.67	0.58 - 0.77	<0.01
Lame, weak limb	225	0.62	0.54 - 0.71	<0.01
Dermal disease, other	192	0.31	0.26 - 0.35	<0.01
Ruptured cranial cruciate lig.	207	0.22	0.19 - 0.26	<0.01
Hip dysplasia	430	0.22	0.2 - 0.24	<0.01

Great Pyrenees

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Osteochondritis dissecans	65	8.95	6.89 - 11.62	<0.01
Patellar disease	41	2.99	2.17 - 4.11	<0.01
Lame, weak limb	45	1.74	1.28 - 2.36	<0.01
Dermal disease, other	69	1.69	1.32 - 2.18	<0.01
Diarrhea	37	1.60	1.15 - 2.24	<0.01
Ruptured cranial cruciate lig.	83	1.46	1.16 - 1.85	<0.01
Otitis	121	0.81	0.67 - 0.99	<0.05
Hip dysplasia	86	0.76	0.6 - 0.95	<0.05
Flea infestation	32	0.60	0.42 - 0.86	<0.01
Dermatitis, allergic	49	0.27	0.2 - 0.36	<0.01

Greyhound

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Peridontal disease	38	37.32	25.55 - 54.53	<0.01
Fracture	132	9.91	8.15 - 12.06	<0.01
Kidney disease	36	5.42	3.84 - 7.64	<0.01
Dental calculus	197	1.77	1.5 - 2.09	<0.01
Lame, weak limb	89	1.71	1.36 - 2.13	<0.01
Diarrhea	79	1.70	1.35 - 2.16	<0.01
Heart disease	43	0.43	0.32 - 0.59	<0.01
Hypothyroidism	31	0.41	0.29 - 0.59	<0.01
Flea infestation	29	0.24	0.17 - 0.35	<0.01
Eye disease, other	39	0.16	0.12 - 0.22	<0.01

Irish Setter

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Tracheobronchitis	328	2.83	2.51 - 3.18	<0.01
Dermatitis, seborrheic	745	2.51	2.31 - 2.72	<0.01
Dermal disease, other	949	2.18	2.03 - 2.35	<0.01
Hypothyroidism	673	1.87	1.72 - 2.03	<0.01
Flea infestation	658	1.14	1.05 - 1.23	<0.01
Dermatitis, allergic	1761	1.02	0.97 - 1.08	>0.05
Otitis	1546	0.92	0.87 - 0.98	<0.01
Conjunctivitis	276	0.67	0.59 - 0.75	<0.01
Cataract	361	0.38	0.35 - 0.43	<0.01
Hip dysplasia	518	0.36	0.33 - 0.39	<0.01

Irish Wolfhound

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Cancer (osteosarcoma)	80	27.50	21.21 - 35.66	<0.01
Bloat	86	5.52	4.38 - 6.95	<0.01
Osteochondritis dissecans	62	3.65	2.8 - 4.75	<0.01
Heart disease	251	3.43	2.93 - 4.01	<0.01
Urinary disease	34	1.37	0.97 - 1.94	>0.05
Lame, weak limb	52	0.85	0.64 - 1.13	>0.05
Diarrhea	38	0.69	0.5 - 0.96	<0.05
Hypothyroidism	30	0.36	0.25 - 0.52	<0.01
Dermal disease, other	32	0.30	0.21 - 0.42	<0.01
Hip dysplasia	33	0.09	0.06 - 0.13	<0.01

Keeshond

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Epileptic seizure	71	9.36	7.29 - 12.02	<0.01
Dermal disease, other	211	3.18	2.73 - 3.71	<0.01
Urinary calculus	51	2.81	2.11 - 3.73	<0.01
Diarrhea	73	1.74	1.37 - 2.21	<0.01
Hypothyroidism	82	1.34	1.07 - 1.68	<0.05
Obesity	48	0.95	0.71 - 1.27	>0.05
Dermatitis, allergic	260	0.92	0.79 - 1.06	>0.05
Dental calculus	56	0.46	0.35 - 0.6	<0.01
Cataract	59	0.40	0.31 - 0.52	<0.01
Hip dysplasia	79	0.34	0.27 - 0.43	<0.01

Labrador Retriever

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Lame, weak limb	1554	3.24	3.05 - 3.44	<0.01
Ruptured cranial cruciate lig.	2509	2.17	2.07 - 2.28	<0.01
Obesity	1101	1.94	1.81 - 2.07	<0.01
Osteoarthritis	735	1.15	1.06 - 1.24	<0.01
Hip dysplasia	2668	1.05	1 - 1.1	<0.05
Flea infestation	1043	0.83	0.78 - 0.89	<0.01
Otitis	2958	0.83	0.8 - 0.87	<0.01
Dermal disease, other	757	0.71	0.66 - 0.77	<0.01
Dermatitis, allergic	2627	0.66	0.63 - 0.69	<0.01
Cataract	852	0.43	0.4 - 0.46	<0.01

Lhasa Apso

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Conjunctivitis	934	5.62	5.21 - 6.06	<0.01
Dermatitis, allergic	1088	1.19	1.11 - 1.27	<0.01
Cataracts	432	0.92	0.83 - 1.02	>0.05
Distichia	196	0.88	0.76 - 1.01	>0.05
Eye disease, other	499	0.84	0.77 - 0.93	<0.01
Flea infestation	264	0.80	0.7 - 0.9	<0.01
Otitis	714	0.75	0.69 - 0.81	<0.01
Heart disease	214	0.74	0.65 - 0.85	<0.01
Dental calculus	266	0.65	0.58 - 0.74	<0.01
Herniated intervertebral disc	272	0.47	0.41 - 0.53	<0.01

Maltese

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Periodontal disease	104	120.69	82.97 - 175.57	<0.01
Patent ductus arteriosus	128	30.09	23.92 - 37.86	<0.01
Hydrocephalus	104	11.61	9.3 - 14.49	<0.01
Tracheal collapse	185	6.73	5.72 - 7.91	<0.01
Adrenal cortical hyperfunction	130	2.59	2.15 - 3.11	<0.01
Patellar disease	125	1.92	1.59 - 2.31	<0.01
Dental calculus	360	1.30	1.15 - 1.46	<0.01
Heart disease	219	1.04	0.9 - 1.2	>0.05
Cataract	137	0.33	0.28 - 0.4	<0.01
Otitis	220	0.22	0.19 - 0.25	<0.01

Manchester Terrier

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Alopecia	19	10.55	6.58 - 16.89	<0.01
Diabetes mellitus	30	8.81	6.02 - 12.9	<0.01
Demodectic mange	22	3.03	1.96 - 4.69	<0.01
Peiranal gland disease	24	2.92	1.92 - 4.43	<0.01
Heart disease	44	1.75	1.27 - 2.41	<0.01
Dental calculus	43	1.18	0.85 - 1.63	>0.05
Cataract	39	0.86	0.61 - 1.2	>0.05
Dermal disease, other	19	0.71	0.45 - 1.14	>0.05
Dermatitis, allergic	42	0.37	0.27 - 0.52	<0.01
Eye disease, other	21	0.33	0.21 - 0.52	<0.01

Miniature Pinscher

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Fracture	36	8.71	6.09 - 12.46	<0.01
Alopecia	15	8.54	5.03 - 14.5	<0.01
Epileptic seizure	14	5.39	3.13 - 9.29	<0.01
Patellar disease	36	4.87	3.41 - 6.97	<0.01
Demodectic mange	14	1.95	1.13 - 3.35	<0.05
Dental calculus	36	0.99	0.7 - 1.42	>0.05
Obesity	13	0.80	0.46 - 1.4	>0.05
Cataract	34	0.75	0.52 - 1.08	>0.05
Dermal disease, other	14	0.53	0.31 - 0.91	<0.05
Dermatitis, allergic	22	0.17	0.11 - 0.27	<0.01

Newfoundland

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Congenital disease, other	365	102.04	85.49 - 121.79	<0.01
Hip dysplasia	853	2.46	2.26 - 2.68	<0.01
Osteochondritis dissecans	77	2.38	1.89 - 3	<0.01
Osteoarthritis	181	1.67	1.43 - 1.95	<0.01
Heart disease	251	1.44	1.26 - 1.64	<0.01
Ruptured cranial cruciate lig.	320	1.38	1.22 - 1.55	<0.01
Entropion/ectropion	89	0.83	0.67 - 1.03	>0.05
Hypothyroidism	80	0.56	0.44 - 0.69	<0.01
Otitis	136	0.18	0.16 - 0.22	<0.01
Dermatitis, allergic	116	0.15	0.12 - 0.18	<0.01

Norwegian Elkhound

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Kidney disease	58	9.41	7.14 - 12.4	<0.01
Obesity	168	3.55	3 - 4.2	<0.01
Glaucoma	121	3.48	2.87 - 4.21	<0.01
Tracheobronchitis	60	2.78	2.14 - 3.62	<0.01
Hip dysplasia	266	1.30	1.13 - 1.5	<0.01
Lame, weak limb	55	1.03	0.78 - 1.35	>0.05
Dental calculus	100	0.79	0.64 - 0.97	<0.05
Ruptured cranial cruciate lig.	75	0.60	0.48 - 0.76	<0.01
Flea infestation	56	0.52	0.4 - 0.68	<0.01
Dermatitis, allergic	80	0.20	0.16 - 0.25	<0.01

Old English Sheepdog

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Osteochondritis dissecans	143	5.10	4.27 - 6.08	<0.01
Demodectic mange	121	2.67	2.21 - 3.22	<0.01
Diarrhea	187	2.21	1.89 - 2.57	<0.01
Hip dysplasia	707	2.03	1.86 - 2.22	<0.01
Osteoarthritis	143	1.39	1.17 - 1.65	<0.01
Hypothyroidism	112	0.85	0.7 - 1.03	>0.05
Flea infestation	148	0.74	0.62 - 0.87	<0.01
Otitis	388	0.65	0.59 - 0.73	<0.01
Cataract	181	0.61	0.53 - 0.71	<0.01
Dermatitis, allergic	282	0.42	0.37 - 0.47	<0.01

Pekingese

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Perianal gland disease	275	3.03	2.66 - 3.44	<0.01
Eye disease, other	1315	2.55	2.39 - 2.72	<0.01
Herniated intervertebral disc	1225	2.50	2.34 - 2.67	<0.01
Distichia	455	2.02	1.83 - 2.23	<0.01
Conjunctivitis	429	1.89	1.71 - 2.1	<0.01
Flea infestation	252	0.68	0.6 - 0.78	<0.01
Dental calculus	250	0.55	0.48 - 0.63	<0.01
Dermatitis, allergic	558	0.47	0.43 - 0.51	<0.01
Cataract	210	0.38	0.33 - 0.43	<0.01
Otitis	189	0.15	0.13 - 0.18	<0.01

Pointer

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Demodectic mange	135	8.52	7.07 - 10.25	<0.01
Tracheobronchitis	113	7.70	6.31 - 9.41	<0.01
Conjunctivitis	79	1.58	1.25 - 1.99	<0.01
Ruptured cranial cruciate lig.	128	1.52	1.26 - 1.83	<0.01
Flea infestation	97	1.30	1.06 - 1.61	<0.05
Dermal disease, other	75	1.19	0.94 - 1.51	>0.05
Dental calculus	79	0.85	0.67 - 1.07	>0.05
Hip dysplasia	128	0.76	0.63 - 0.91	<0.01
Otitis	100	0.41	0.33 - 0.51	<0.01
Dermatitis, allergic	72	0.27	0.21 - 0.34	<0.01

Pomeranian

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Tracheal collapse	654	11.61	10.4 - 12.96	<0.01
Patent ductus arteriosus	145	10.15	8.12 - 12.69	<0.01
Patella disease	877	6.26	5.73 - 6.83	<0.01
Congenital abnormality, other	145	4.13	3.41 - 5	<0.01
Fracture	163	1.27	1.07 - 1.5	<0.01
Tracheobronchitis	187	1.03	0.89 - 1.21	>0.05
Dental calculus	771	0.71	0.65 - 0.77	<0.01
Heart disease	376	0.46	0.41 - 0.51	<0.01
Obesity	174	0.35	0.3 - 0.41	<0.01
Flea infestation	177	0.16	0.14 - 0.19	<0.01

Poodle, Standard

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
PRA	229	9.71	8.34 - 11.3	<0.01
Tracheal collapse	235	5.92	5.13 - 6.83	<0.01
Cataract	1191	3.10	2.89 - 3.32	<0.01
Adrenal cortical hyperfunction	193	2.72	2.34 - 3.16	<0.01
Dental calculus	619	1.60	1.47 - 1.75	<0.01
Heart disease	426	1.50	1.35 - 1.66	<0.01
Otitis	813	0.81	0.75 - 0.87	<0.01
Ruptured cranial cruciate lig	243	0.58	0.51 - 0.66	<0.01
Hip dysplasia	248	0.29	0.26 - 0.33	<0.01
Dermatitis, allergic	267	0.21	0.19 - 0.24	<0.01

Pug

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Soft palate elongation	182	13.30	11.23 - 15.74	<0.01
Entropion/ectropion	292	2.94	2.59 - 3.33	<0.01
Dermal disease, other	351	2.09	1.86 - 2.34	<0.01
Conjunctivitis	287	2.08	1.83 - 2.35	<0.01
Eye disease, other	629	1.82	1.67 - 2	<0.01
Obesity	174	1.53	1.31 - 1.79	<0.01
Distichia	184	1.25	1.07 - 1.45	<0.01
Otitis	298	0.41	0.37 - 0.47	<0.01
Dental calculus	106	0.37	0.3 - 0.45	<0.01
Dermatitis, allergic	144	0.17	0.15 - 0.21	<0.01

Rottweiler

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Osteoarthritis	723	3.82	3.52 - 4.16	<0.01
Lame, weak limb	647	3.43	3.14 - 3.74	<0.01
Osteochondritis dissecans	207	3.35	2.89 - 3.88	<0.01
Ruptured cranial cruciate lig.	945	2.19	2.04 - 2.36	<0.01
Hip dysplasia	1487	1.94	1.83 - 2.07	<0.01
Entropion/extropion	318	1.53	1.36 - 1.72	<0.01
Diarrhea	234	1.19	1.04 - 1.37	<0.01
Heart disease	212	0.54	0.47 - 0.62	<0.01
Dermatitis, allergic	255	0.15	0.14 - 0.17	<0.01
Otitis	158	0.10	0.09 - 0.12	<0.01

Saint Bernard

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Entropion/ectropion	685	4.64	4.25 - 5.06	<0.01
Fracture	180	3.38	2.89 - 3.96	<0.01
Osteochondritis dissecans	174	3.19	2.72 - 3.75	<0.01
Bloat	156	2.91	2.46 - 3.45	<0.01
Hip dysplasia	1613	2.82	2.65 - 3.01	<0.01
Urinary disease, other	158	2.05	1.74 - 2.41	<0.01
Ruptured cranial cruciate lig.	285	0.63	0.55 - 0.71	<0.01
Flea infestation	184	0.46	0.4 - 0.53	<0.01
Dermatitis, allergic	477	0.35	0.32 - 0.39	<0.01
Otitis	264	0.20	0.17 - 0.22	<0.01

Samoyed

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Diabetes mellitus	182	7.58	6.44 - 8.93	<0.01
Glaucoma	153	1.76	1.49 - 2.08	<0.01
Hip dysplasia	623	1.32	1.2 - 1.45	<0.01
Obesity	158	1.25	1.06 - 1.48	<0.01
Distichia	192	1.19	1.02 - 1.38	<0.05
Osteoarthritis	146	1.14	0.96 - 1.35	>0.05
Hypothyroidism	133	0.81	0.68 - 0.97	<0.05
Flea infestation	146	0.57	0.48 - 0.68	<0.01
Cataract	206	0.55	0.47 - 0.63	<0.01
Dental calculus	153	0.48	0.41 - 0.57	<0.01

Schipperke

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Tracheal collapse	26	5.21	3.48 - 7.81	<0.01
Tracheobronchitis	40	5.21	3.73 - 7.27	<0.01
Demodectic mange	18	1.93	1.2 - 3.11	<0.01
Dental calculus	59	1.32	0.99 - 1.75	>0.05
Obesity	21	1.01	0.65 - 1.58	>0.05
Hypothyroidism	25	0.96	0.64 - 1.45	>0.05
Lame, weak limb	18	0.88	0.54 - 1.41	>0.05
Dermatitis, other	21	0.62	0.4 - 0.97	<0.05
Dermatitis, allergic	77	0.57	0.44 - 0.74	<0.01
Flea infestation	18	0.43	0.27 - 0.69	<0.01

Schnauzer, Giant

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Epileptic seizure	15	9.97	5.89 - 16.91	<0.01
Ruptured cranial cruciate lig.	44	2.44	1.75 - 3.39	<0.01
Dermatitis, seborrheic	22	2.29	1.48 - 3.56	<0.01
Hypothyroidism	25	2.28	1.5 - 3.45	<0.01
Diarrhea	15	1.90	1.12 - 3.21	<0.05
Hip dysplasia	38	1.02	0.72 - 1.44	>0.05
Heart disease	15	0.98	0.58 - 1.66	>0.05
Dental calculus	15	0.69	0.41 - 1.16	>0.05
Dermatitis, allergic	22	0.36	0.23 - 0.56	<0.01
Otitis	16	0.27	0.17 - 0.46	<0.01

Schnauzer, Miniature

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Pancreatitis	527	55.06	44.44 - 68.22	<0.01
Diabetes mellitus	617	10.01	8.94 - 11.2	<0.01
Urinary calculus	870	7.77	7.1 - 8.51	<0.01
Urinary disease, other	842	6.43	5.88 - 7.03	<0.01
Adrenal cortical hyperfunction	515	2.95	2.67 - 3.26	<0.01
Dental calculus	1340	1.22	1.15 - 1.3	<0.01
Dermatitis, seborrheic	474	0.84	0.76 - 0.92	<0.01
Heart disease	614	0.70	0.64 - 0.76	<0.01
Cataract	945	0.62	0.58 - 0.67	<0.01
Dermatitis, allergic	752	0.17	0.15 - 0.18	<0.01

Schnauzer, Standard

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Pancreatitis	101	17.41	13.97 - 21.7	<0.01
Diabetes mellitus	130	10.55	8.72 - 12.76	<0.01
Urinary calculus	106	4.80	3.92 - 5.89	<0.01
Adrenal cortical hyperfunction	94	3.77	3.04 - 4.67	<0.01
Heart disease	197	2.05	1.76 - 2.39	<0.01
Dental calculus	159	1.10	0.93 - 1.3	>0.05
Cataract	156	0.88	0.75 - 1.04	>0.05
Flea infestation	84	0.67	0.54 - 0.84	<0.01
Dermatitis, allergic	219	0.53	0.46 - 0.62	<0.01
Otitis	68	0.16	0.12 - 0.2	<0.01

Scottish Terrier

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Adrenal cortical hyperfunction	234	3.97	3.45 - 4.56	<0.01
Dermal disease, other	513	2.31	2.1 - 2.55	<0.01
Urinary disease, other	115	1.81	1.5 - 2.19	<0.01
Demodectic mange	124	1.73	1.44 - 2.07	<0.01
Dermatitis, seborrheic	254	1.52	1.34 - 1.74	<0.01
Dermatitis, allergic	1057	1.30	1.21 - 1.4	<0.01
Hypothyroidism	121	0.58	0.48 - 0.7	<0.01
Flea infestation	179	0.56	0.48 - 0.65	<0.01
Dental calculus	186	0.47	0.41 - 0.55	<0.01
Otitis	440	0.44	0.4 - 0.49	<0.01

Shar-Pei

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Dermatitis, seborrheic	3891	54.36	51.08 - 57.84	<0.01
Entropion/ectropion	1545	7.47	7 - 7.97	<0.01
Alopecia	107	2.90	2.36 - 3.58	<0.01
Dermal disease, other	726	1.39	1.28 - 1.5	<0.01
Glaucoma	109	0.41	0.34 - 0.5	<0.01
Diarrhea	102	0.31	0.26 - 0.38	<0.01
Dermatitis, allergic	549	0.22	0.2 - 0.24	<0.01
Otitis	420	0.17	0.16 - 0.19	<0.01
Hypothyroidism	74	0.15	0.12 - 0.19	<0.01
Eye disease, other	183	0.13	0.11 - 0.15	<0.01
Dermal disease, other	76	0.12	0.1 - 0.15	<0.01

Shetland Sheepdog

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Kidney disease	310	17.82	15.31 - 20.74	<0.01
Obesity	521	2.38	2.16 - 2.62	<0.01
Dental calculus	755	1.45	1.34 - 1.57	<0.01
Hypothyroidism	394	1.32	1.19 - 1.47	<0.01
Lame, weak limb	286	1.20	1.06 - 1.36	<0.01
Dermatitis, seborrheic	272	1.02	0.9 - 1.15	>0.05
Flea infestation	378	0.79	0.71 - 0.88	<0.01
Dermal disease, other	302	0.75	0.67 - 0.85	<0.01
Heart disease	281	0.67	0.59 - 0.75	<0.01
Dermatitis, allergic	781	0.46	0.43 - 0.5	<0.01

Shih Tzu

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Kidney disease	196	12.10	10.23 - 14.31	<0.01
Distichia	602	3.13	2.86 - 3.42	<0.01
Conjunctivitis	559	2.87	2.61 - 3.14	<0.01
Urinary calculus	171	2.76	2.35 - 3.23	<0.01
Eye disease, other	908	1.73	1.6 - 1.86	<0.01
Heart disease	234	0.80	0.7 - 0.91	<0.01
Dermal disease, other	213	0.75	0.65 - 0.86	<0.01
Dermatitis, allergic	657	0.60	0.55 - 0.66	<0.01
Cataract	267	0.52	0.46 - 0.59	<0.01
Otitis	264	0.23	0.2 - 0.26	<0.01

Siberian Husky

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Epileptic seizure	317	29.32	25.42 - 33.81	<0.01
Diarrhea	272	3.32	2.91 - 3.78	<0.01
Urinary disease, other	113	2.73	2.25 - 3.31	<0.01
Glaucoma	156	2.17	1.83 - 2.56	<0.01
Cataract	480	1.88	1.69 - 2.08	<0.01
Dermal disease, other	128	0.74	0.62 - 0.88	<0.01
Ruptured cranial cruciate lig.	162	0.66	0.56 - 0.78	<0.01
Flea infestation	137	0.65	0.55 - 0.77	<0.01
Otitis	232	0.33	0.29 - 0.38	<0.01
Hip dysplasia	123	0.24	0.2 - 0.29	<0.01

Silky Terrier

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Alopecia	19	8.98	5.61 - 14.39	<0.01
Diabetes mellitus	16	3.76	2.27 - 6.24	<0.01
Tracheal collapse	17	3.53	2.16 - 5.77	<0.01
Adrenal cortical hyperfunction	17	2.17	1.33 - 3.54	<0.01
Cataract	81	1.76	1.36 - 2.27	<0.01
Dental calculus	47	1.09	0.8 - 1.49	>0.05
Diarrhea	17	1.01	0.62 - 1.65	>0.05
Heart disease	19	0.58	0.36 - 0.92	<0.05
Dermatitis, allergic	58	0.44	0.33 - 0.58	<0.01
Flea infestation	16	0.41	0.25 - 0.68	<0.01

Soft Coated Wheaten Terrier

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Kidney disease	24	10.68	7.02 - 16.26	<0.01
Urinary disease, other	23	3.07	2.01 - 4.69	<0.01
Dermal disease, other	78	3.03	2.36 - 3.89	<0.01
Dermatitis, allergic	129	1.34	1.08 - 1.65	<0.01
Diarrhea	20	1.21	0.77 - 1.91	>0.05
Dental calculus	40	0.91	0.66 - 1.27	>0.05
Lame, weak limb	12	0.62	0.35 - 1.11	>0.05
Hypothyroidism	12	0.48	0.27 - 0.86	<0.05
Heart disease	15	0.46	0.27 - 0.77	<0.01
Otitis	27	0.21	0.14 - 0.32	<0.01

Vizsla

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Diarrhea	32	2.15	1.5 - 3.08	<0.01
Lame, weak limb	33	1.95	1.37 - 2.78	<0.01
Hip dysplasia	89	1.31	1.04 - 1.65	<0.05
Conjunctivitis	28	1.24	0.85 - 1.82	>0.05
Dental calculus	48	1.21	0.9 - 1.63	>0.05
Dermal disease, other	31	1.11	0.77 - 1.6	>0.05
Otitis	91	0.97	0.77 - 1.22	>0.05
Heart disease	27	0.92	0.63 - 1.36	>0.05
Ruptured cranial cruciate lig.	33	0.84	0.59 - 1.19	>0.05
Dermatitis, allergic	44	0.39	0.28 - 0.53	<0.01

Weimaraner

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Bloat	84	6.19	4.93 - 7.78	<0.01
Urinary disease, other	81	4.18	3.32 - 5.26	<0.01
Tracheobronchitis	72	3.60	2.83 - 4.59	<0.01
Diarrhea	85	2.00	1.6 - 2.5	<0.01
Distichia	110	1.76	1.44 - 2.14	<0.01
Conjunctivitis	84	1.31	1.05 - 1.64	<0.05
Otitis	266	0.99	0.86 - 1.14	>0.05
Dental calculus	75	0.62	0.49 - 0.78	<0.01
Hip dysplasia	123	0.55	0.45 - 0.66	<0.01
Dermatitis, allergic	126	0.37	0.31 - 0.45	<0.01

Welsh Corgi, Cardigan

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Urinary disease, other	38	5.35	3.82 - 7.49	<0.01
Urinary calculus	28	4.14	2.82 - 6.1	<0.01
Lame, weak limb	54	3.21	2.41 - 4.28	<0.01
Herniated intervertebral disc	91	1.70	1.34 - 2.14	<0.01
Obesity	31	1.69	1.17 - 2.44	<0.01
Dental calculus	53	1.27	0.95 - 1.7	>0.05
Flea infestation	26	0.71	0.48 - 1.06	>0.05
Cataract	30	0.55	0.38 - 0.81	<0.01
Eye disease, other	30	0.43	0.3 - 0.63	<0.01
Dermatitis, allergic	28	0.21	0.15 - 0.31	<0.01

Welsh Corgi, Pembroke

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Persistent pupillary membrane	40	9.01	6.48 - 12.52	<0.01
Urinary disease, other	65	7.34	5.64 - 9.57	<0.01
Urinary calculus	37	4.20	3 - 5.89	<0.01
Obesity	43	1.80	1.31 - 2.46	<0.01
Diarrhea	35	1.67	1.18 - 2.36	<0.01
Dental calculus	83	1.57	1.24 - 1.99	<0.01
Cataract	59	0.86	0.66 - 1.13	>0.05
Herniated intervertebral disc	60	0.74	0.56 - 0.97	<0.05
Eye disease, other	40	0.43	0.31 - 0.6	<0.01
Dermatitis, allergic	31	0.17	0.12 - 0.25	<0.01

Yorkshire Terrier

	No. cases	Odds Ratio (OR)	Confidence Interval	P value
Portal caval shunt	392	293.32	196.07 - 438.81	<0.01
Tracheal collapse	910	36.73	32.82 - 41.1	<0.01
Patellar disease	815	7.86	7.2 - 8.59	<0.01
Diabetes mellitus	208	3.45	2.96 - 4.01	<0.01
Urinary calculus	234	2.21	1.92 - 2.54	<0.01
Conjunctivitis	395	1.02	0.91 - 1.13	>0.05
Cataract	539	0.59	0.54 - 0.65	<0.01
Obesity	183	0.56	0.49 - 0.66	<0.01
Ruptured cranial cruciate lig.	268	0.35	0.31 - 0.4	<0.01
Dermatitis, allergic	378	0.14	0.12 - 0.15	<0.01