

AUSTRALIAN GREAT DANE HEALTH & LIFESTYLE SURVEY 2015



An Australian Great Dane community project

www.australiangreatdanehealthsurvey.com

Project report- Trish Neill
Project logo - Bec Stokes

This report is dedicated to the 1,165 Great Dane dogs from 518 owners who participated and contributed to the 'Australian Great Dane Health & Lifestyle Survey 2015' project.

PAGE INDEX AND PREVALENCE SUMMARY TABLE

PLEASE NOTE: Some small rounding of percentages to 4 decimal places may mean results do not always exactly equal 100% in tables and charts.

TOPIC	Prevalence Percentage of Survey Population of 1,165 dogs.	Page No
Author Introduction		3
Profile of Australia & the Great Dane Community		4 - 5
Project Information		6 - 8
Survey Dog Population Overview data		9 - 15
Temperament & Behaviour		16 - 19
Vaccinations, Flea, Worm, Heartworm & Pet Insurance		20 - 22
Diet & Feeding Regimes		23 - 25
Sterilisation		26
Females: Heat Cycles		27 - 28
Females: Pyometra	7.1%	28
Females: Phantom Pregnancies	25.9%	29
Urinary Incontinence: Males		30
Urinary Incontinence: Males – old age onset	1.3%	
Urinary Incontinence: Males – post-sterilisation	0.3%	
Urinary Incontinence: Females		30 - 33
Urinary Incontinence: Females – old age onset	6%	
Urinary Incontinence: Females – post-sterilisation	3.5%	
Faecal Incontinence	0.8%	33
Prophylactic Gastropexy	8.7%	33 - 36
Bloat/GDV	12.8%	37 - 52
Endocrine Diseases: Addison's, Cushings, Thyroid Imbalances	0.9%	53
Orthopaedic Issues	8.5%	54 - 56
Arthritis	14.7%	57 - 58
Cruciate Ligament Injuries	4%	59 - 60
Heart Issues, specifically DCM	2.7%	61
Cancers	11.3%	62 - 67
Eye Conditions	10.6%	67
Allergies	25%	68 - 73
Anal Glands	18.5%	74 - 76
Other Medical Issues Experienced		77 - 78
Weights		79 - 82
References		83
Appendix One: Statistical Tests		84 - 86
Appendix Two: The Survey Model		87 - 93

AUTHOR INTRODUCTION:

Whilst I am introducing myself as the author of this report, it is purely because this was a passion I wanted to pursue for many years and I became the initiator of the project. The report of the 'Australian Great Dane Health & Lifestyle Survey - 2015' in fact is the culmination of the coming together of an incredible population of generous Great Dane owners in this country! As you read the data collected, no matter where in the world you are, I hope the vigour & enthusiasm of our Australian Great Dane Community is evident.

My name is Trish Neill and I have had dogs for over 30 years and giant dogs for the last 25 years. I live in Perth, Western Australia. In 1990 I got a Great Dane X Rottweiler pup and for every day of his 8 years and 3 months, I lived in terror of a Bloat episode. I would drive up the driveway after work uttering 'please don't have bloated, please don't have bloated' and in all his life, he didn't. After his passing I didn't own a dog again for several years then in 2005, I got TJ, a purebred Dane. I returned to Perth and once again the terror of Bloat rose in my throat.

In the intervening years since Jed had died, I found reference to a risk figure of 41.4% for Great Dane dogs to develop Gastric Dilation Volvulus (GDV). This risk became lodged in my mind and only led to cementing the terror that I would feel on a daily basis. As a result of this I opted to prophylactically gastropexy TJ in the belief that it was a safe and clinically sound procedure, thereby reducing the risk for us. Following TJ's passing, I adopted Luni Tunes via the GDLAWA Rescue Programme who is pictured with me here.



Photo by SAFALI PRODUCTIONS

At the same time in 2005, I joined the Great Dane Lovers Association of Western Australia as a member. Within a year I became the club's Secretary and held several other roles (General Public Contact, Rescue) and I was dealing with hundreds of Great Danes every year. We did, and still do see GDV cases, but over the years I was not seeing the high numbers that one would expect based on the clinical information published. As each year passed, the ex-nurse in me was becoming more devoted to instigating a Prevalence Survey because I felt strongly that we needed more data on higher numbers of dogs and our club environment could achieve this. On average in each year, the club has contact with over 250 purebred Great Dane dog members and another 50 via Rescue & Re-homing including many Great Dane crosses. I talked about this project ad nauseam for many years!

Finally in December 2013, I committed the time needed to do the project and from January – April 2014, gathered comprehensive data on 285 GDLAWA Great Danes, analysed the information and published the 'GDLAWA Incorporated 2014 Health & Lifestyle Survey'. In that population we had an 8.1% prevalence rate for Bloat and/or GDV. In January 2015, a small group of individuals in a FaceBook Great Dane Health Forum asked if I would do the same survey nationally. I said 'yes' and the Australian Great Dane community came together in an extraordinary fashion to culminate in this prevalence report of 1,165 dogs.

These projects rarely happen and can cost an enormous amount in time. In this instance, I was the 'instrument' at play and for prospective readers of this document, a little about me as the project person. I have worked as a nurse for 10yrs and then in medical consumable product sales, onto sales & state management, restructuring work and also management & consulting roles. I am not a scientist although my nursing and graduate management studies have allowed me to understand a little about prevalence data and clinical evidence. I designed the survey questions, conducted every interview by telephone, inputted the data into the master spreadsheet, prepped the data for analysis into raw data tables, and completed the analysis prior to writing this report. Having just one interviewer means the collection process has not been muddled by interpretation or variation. I have also funded the project both in 2014 & 2015 covering my living costs for the many months needed. In the national survey of 2015, donations of \$801 from the Great Dane community covered the telephone call costs of the project. The survey model is outlined in an Appendix and shows how the Australian owners of Great Danes came together to participate in creating this enormous population survey.

The resultant report is proffered to the Great Dane community and interested parties at no charge as we dream of inspiring research work into our breed and helping prospective owners learn about the Great Dane dog from the data of our 1,165 Australian Great Danes.

AUSTRALIA

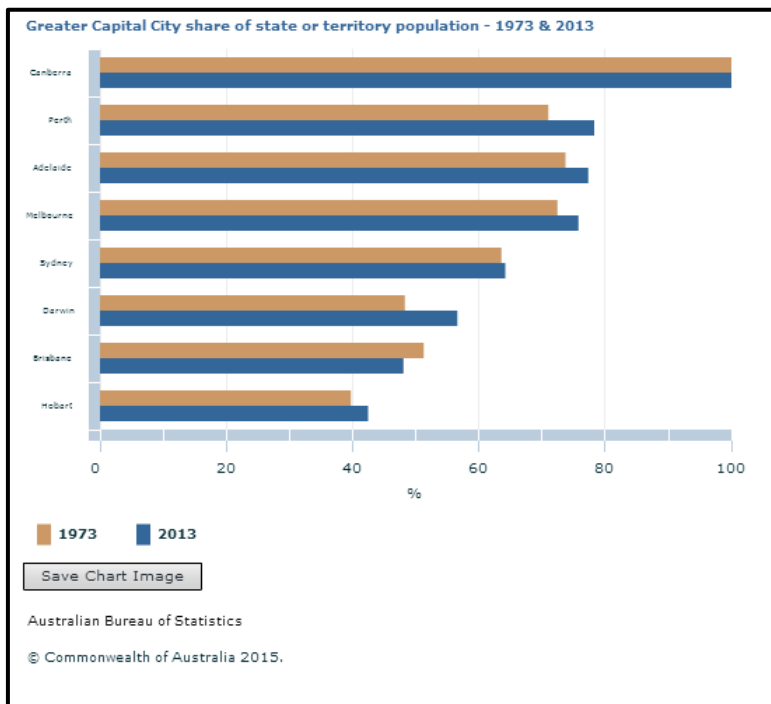
Australia is a large island in the southern hemisphere. We think it is a wonderful place to live!

The current population of the country is an estimated 23,581,000 people spread out across the 7,692 million square kilometres. We are the 6th largest country on the planet in landmass and the lowest, flattest (excluding Antarctica) and driest continent in the world.¹ Visiting each other in Australia across the state lines is not that easy! The east coast of the country is well populated and the road traffic from North Queensland to Victoria is quite busy – for Australia. Travelling east to west though is still an ‘outback adventure’ with a drive from Sydney to Perth across the Nullarbor Plain taking several days to traverse the 3,938 kilometres with very few urban stops along the way. Catching up with each other in this country is not for the faint hearted!



	Population at End of Sept Qtr 2014 - '000	% Contribution to National
New South Wales	7,544.5	32.0%
Victoria	5,866.3	24.9%
Queensland	4,740.9	20.1%
South Australia	1,688.7	7.2%
Western Australia	2,589.1	11.0%
Tasmania	515	2.2%
Northern Territory	246.3	1.0%
Australian Capital Territory	387.1	1.6%
Australia (a)	23,581.0	100%
(a) Includes Other Territories comprising Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands		

² Australian Bureau of Statistics website



³ Australian Bureau of Statistics website

Our population divided into the landmass appears to have roughly three people per square kilometre but in fact the majority of the occupants live in congested sections of the country mainly around the coastline. The western side of Australia and central regions are the least arable across the land and this changes the population spread significantly. This is most evident when comparing a state like Queensland to Western Australia which are the two largest states in the country, and the proportion of the population living within the capital city environment versus regional areas. Around 80% of the residents of WA live in the greater Perth region whilst in Qld, 50-60% of the residents of the state live in the greater Brisbane region.

We are a lonely country and continent compared to the rest of the world but have a developed economic environment with one of the highest pet ownership rates on the planet. The Animal Health Alliance 'Pet Ownership in Australia 2013' document cites pet ownership as 63% across all animals with 39% of all households owning a dog. It estimated that there were 4.2 million dogs in Australia in 2013 although the 'Giant' dog category (dogs over 50kg as adults) made up only 2% of all dogs owned.⁴

This would mean that there were roughly 84,000 dogs in Australia that qualify as 'giant' breeds and in a country where there are many mixed breed dogs it would be hard to quantify what proportion of them was specifically one breed or another. Great Dane dogs are one of around twenty five of the more common breeds that fall into this category in Australia. It is still a novel adventure to walk a Great Dane dog anywhere in Australia. You will be stopped as the general public is not used to seeing 'Scooby Doo' in real life!

THE GREAT DANE COMMUNITY IN AUSTRALIA

Australia does not have a national Great Dane breed club nor does it currently have a National Great Dane Breed Council. The governing body for registered breeders and competitive dog showing is the Australian National Kennel Club (ANKC) and within the country there are only four Great Dane clubs:

- Queensland – Great Dane Society of Queensland
- New South Wales – The Great Dane Club of NSW Inc
- Victoria – The Great Dane Club of Victoria Inc
- Western Australia – Great Dane Lovers Association of WA Incorporated

The Queensland, New South Wales and Victorian clubs are all show/breeder clubs affiliated with the respective State chapters of the ANKC being Dogs Qld, Dogs NSW, Dogs Victoria. The GDLAWA is a pet-social club and whilst some members are breeders or do show their dogs competitively, the club is not affiliated with Dogs West. In the Australian Capital Territory, Northern Territory, Tasmania and South Australia, there are no existing formal Great Dane breed clubs.

There is a natural linkage, network and communications across the nation between the clubs and each of the breed/show clubs also offer some activities and participation for pet owners. There is also a strong network across the nation for the breed specific 'rescue & re-homing' services with Queensland, New South Wales, Victoria and South Australia having organised rescue services as stand-alone entities supported by their state organisations and in Western Australia the GDLAWA runs the breed specific rescue service. There are private persons in the Northern Territory and Tasmania who manage rescue needs as they occur, sometimes with assistance from one of the other states as required. There is a lot of cross-pollination and support between the states amongst the rescue & re-homing services in an admirable manner.

The advent and growth of social media and specifically Facebook has also created many national, state and regional Great Dane groups. From these there are socialisation activities, regular meet-ups, playdates, walks and a support network for owners of the breed.



'Darwin Danes' members at a local walk at the Old Town Hall Ruins in Darwin, Northern Territory. Photo credit – Lisa Hill

THE SURVEY PROJECT

How an Australian community of dog owners came together to build a breed profile.....

The GDLAWA Incorporated 2014 Health & Lifestyle Survey had been designed, conducted and the final report published in April 2014. This report can be viewed from the GDLAWA Incorporated website at www.gdlawa.org.au.

In January 2015 a conversation was initiated by a small group of Great Dane owners about conducting the same survey nationally and as the project leader (Trish Neill) was available to perform this task, it was commenced within a few days. With no national governing body nor a national club, there was no easy way to bring people together other than using social media. Within 8 days of the project being marketed through the Facebook Great Dane specific groups, the Australian community of dog owners committed to the project.

As we had 285 dogs from the GDLAWA population, a target of 200 new dogs was set for the project to proceed. On the interview start date of January 30th 2015, there were already 196 dogs booked to be included. In the subsequent 8 weeks, we gathered a further 880 dogs which added to the 285 GDLAWA dogs meant our prevalence survey was of 1,165 purebred Great Dane dogs.

Full credit must go to the members of the GDLAWA Incorporated for their willingness to participate in the initial survey in 2014. 151 owners of the 285 dogs who willingly shared their data and time, created an important first step for making this project 'idea' become a reality. Without them and their participation, the national survey would not have happened.



'Great Dane Lovers Association of WA' members on a winters walk on the South Perth foreshore, Western Australia.

Photo credit – Caroline Furst

In 2015, with no national body in place and only the GDLAWA report as an image of the goal, Australian owners of Great Dane dogs rushed to participate and make this breed-specific, national survey come to life. The variety of owners across registered and unregistered breeders, current and past pet owners, experienced and 'new to the breed' owners was incredibly vast, but the shared goal of bringing this to life was powerful! Across the world, so few of these projects are undertaken. The Great Dane owners of Australia stepped up in an extraordinary way!

As the project leader and author of the report, I am taking the liberty of ensuring that the efforts and pride of our Australian community are acknowledged!

Despite the fact that 95% of this report will be about 'facts & figures', I am taking a moment to ensure that the Great Dane community of Australia is recognised for what I believe is a unique event.

- We do not have a governing body in Australia as a breed!
- We had 518 owners of 1,165 dogs who said YES to participating.
- Those owners of loved Great Danes gave their time, shared their information, supported the project throughout and donated the call cost and/or donated to the \$801.00 AUD that went to cover the Interviewers call costs.
- There were no grants or any other funding contributed to this project, just owners of dogs making something powerful happen.

When called to action, the Great Dane dog owners of Australia stepped up and created a prevalence survey with an exciting population number to profile our breed. We are proud to share what we created with the world and hopefully help anyone involved in the breed. Australian Great Dane owners are very invested in their dogs and it has now been recorded! We also hope you enjoy the odd photos of life around Australia in the Great Dane community.



'Great Danes ACT' group: Looking down at the nation's old and new Parliament Houses in Canberra, Australian Capital Territory. Photo credit – Belinda Wedgewood



'Brisdane's' group: Beach play date at the Gold Coast, Queensland. Photo credit – Deb Steele

SURVEY OUTLINE

- The survey commenced on January 30th 2015 and the phone surveys were conducted over eight weeks until March 28th 2015.
- **Only purebred Great Danes** were included in this survey to ensure that health related issues specific to the breed could be measured.
- Rescue dogs were included where, the owner had adopted them and had, or does still have them from adoption point for whole of life or to current time.
- Deceased dogs were included where all of the survey questions being asked could be answered.
- The dogs included 'lived' in Australia. Some may have been imported but lived the rest of their lives in this country. This was to create parity for diet, medical treatments and conditions.
- The survey population was randomised simply by **'optional participation'**.
- The survey was conducted by phone interviews where the owners were asked a pre-determined set of questions. Phone interviews were conducted by one person throughout, to avoid variation in interpretation.
- **Questions relating to any 'health issue' required that the issue had been clinically diagnosed.** Issues not clinically diagnosed or outside the list of main questions, were added into the 'Other Health Issues' listing.
- Data collected is 'actual' and may not be a recommended treatment at all. EG: anti-histamines for urinary incontinence. As a non-clinician, the surveyor is presenting the 'actual response' and not varying it by appropriateness.
- The survey goal was to measure as many parameters as possible for this broad-based pet population and present the data in prevalence and percentage form. The origins of the dogs were collected but dog names, owner's names and breeders are not published.
- There were 285 dogs that had already participated in the 2014 GDLAWA Incorporated Survey. One of those was removed as it had not lived its life in Australia. Another GDLAWA dog was interviewed to replace that lost dog.
- Of the remaining 284 dogs there were 187 live dogs and all bar 7 of them were updated for their information for the intervening year since their data was gathered.
- The 7 dogs that were not able to be updated are shown in the survey at the age and stage they were in March 2014.
- The 'survey age' used for reporting is a) the age the dog was when it passed away, or b) the age it was in March 2014 for the seven GDLAWA dogs not updated or c) the current age of the dog as at April 30th 2015.

Once the data collection was completed, the analysis was performed in Excel to derive the prevalence of each lifestyle or health issue. With so many questions, there was also an ability to cross-match data and pull together reciprocal outcomes such as 'age of sterilisation versus incontinence prevalence' and many other issues. Following the analysis component, the report was written and all tables and charts created from the data results presented in this document.

As this project was not conducted by a clinical body, the data analysis is purely 'factual' based on 'what is' rather than 'interpretive'. Whilst the Great Dane community does have members who are scientists or veterinarians, this survey was to be purely a prevalence survey to show the **actual results for the population canvassed**.

For readers of the data, it is important to understand that this population of 1,165 Great Danes shows a specific prevalence percentage for **this population** and may not be a true **'probability'** of having health issues. There are many clinical studies available that show very specific interrogative efforts and may show higher or lower prevalence outcomes.

DOG POPULATION OVERVIEW:

1,165 purebred Great Dane dogs from 518 owners were surveyed.

The state of birth varied from the state of residence as many people buy across state borders within Australia. There is also an element of change brought about by people moving and also a degree of cross-state adoptions for rescue dogs. Importation of dogs into Australia is quite limited as it is very expensive and the quarantine regulations for this country are demanding.

As rescue dogs were included, a small percentage of them had been adopted without any or all background details being known to their current owners. Of the entire population 69.7% were actually purchased as pups or adult dogs and 18.5% were adoptions, either 'rescues' or 're-homes'. For the report purposes, 'rescues' are those that were adopted from a rescue agency or shelter and 're-homes' were those adopted from one private party to another albeit it may have been via an introduction from a rescue organisation.

138 or 11.8% of the dogs were born into their homes.

OWNERSHIP INITIATION	1165	
Born into home	138	11.8%
Purchased	812	69.7%
Rehomes, Private or via Great Dane rescue agencies	100	8.6%
Rescue Adoptions	115	9.9%

DOGS BY STATE OF BIRTH	1165	
QLD	226	19.4%
NSW	359	30.8%
ACT	2	0.2%
VIC	213	18.3%
TAS	19	1.6%
SA	48	4.1%
WA	237	20.3%
NT	3	0.3%
UNKNOWN	38	3.3%
OVERSEAS/IMPORTED	20	1.7%

DOGS BY CURRENT RESIDENTIAL STATE	1165	Contribution % of dogs by State	National Population of People by State
QLD	188	16.1%	20.1%
NSW	306	26.3%	32.0%
ACT	22	1.9%	1.6%
VIC	214	18.4%	24.9%
TAS	28	2.4%	2.2%
SA	61	5.2%	7.2%
WA	343	29.4%	11.0%
NT	3	0.3%	1.0%

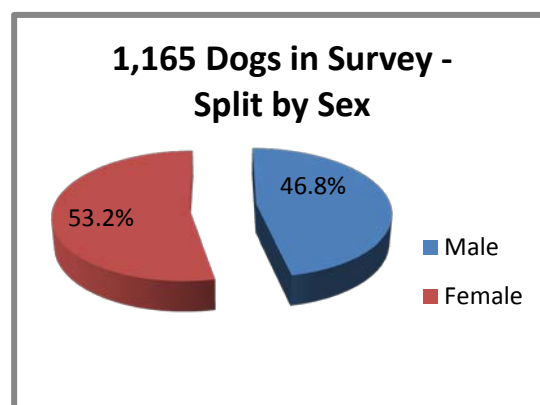
71.6% of all of the dogs in the survey were bred by registered breeders and 21.4% were bred by unregistered breeders. 7% of the 'Rescue or Re-Home' dogs had unknown breeder origins and may be from registered or unregistered breeders. Of the entire population of 1,165 dogs 18.5% or 215 dogs were rescue or re-home dogs.

BREEDER ORIGIN	1165	
Registered Breeder (including some rescue & rehomes)	834	71.6%
Unregistered breeder (including some rescue & rehomes)	249	21.4%
Unknown (Rescue or Rehome - unknown origin)	82	7.0%

ORIGIN OF RESCUE & REHOME DOGS	215	
Registered Breeder Known	79	36.7%
Unregistered Breeder Known	59	27.4%
Unknown Origin	77	35.8%

The population was reasonably evenly split by sex and there were 545 male dogs and 620 female dogs.

There were **at least 305 different origins of dogs** within the 1,165 dog population where this information was known by the owners. Origins were determined by using the different 'prefixes' as stated by the dog owners.



COLOUR	1165	
Black	277	23.8%
Blue	157	13.5%
Blue Fawn	4	0.3%
Blue Harlequin	16	1.4%
Blue Mantle	1	0.1%
Blue Merle	29	2.5%
Blue Merle Mantle	1	0.1%
Brindle	55	4.7%
Brindle Mantle	1	0.1%
Chocolate	1	0.1%
Fawn	287	24.6%
Fawn Mantle	4	0.3%
Fawn Merle	4	0.3%
Fawn Merle Mantle	1	0.1%
Fawnequin	9	0.8%
Harlequin	143	12.3%
Mantle	48	4.1%
Merle	84	7.2%
Merle Mantle	18	1.5%
Merle Pied	1	0.1%
Merlequin	11	0.9%
Pied	3	0.3%
White	10	0.9%

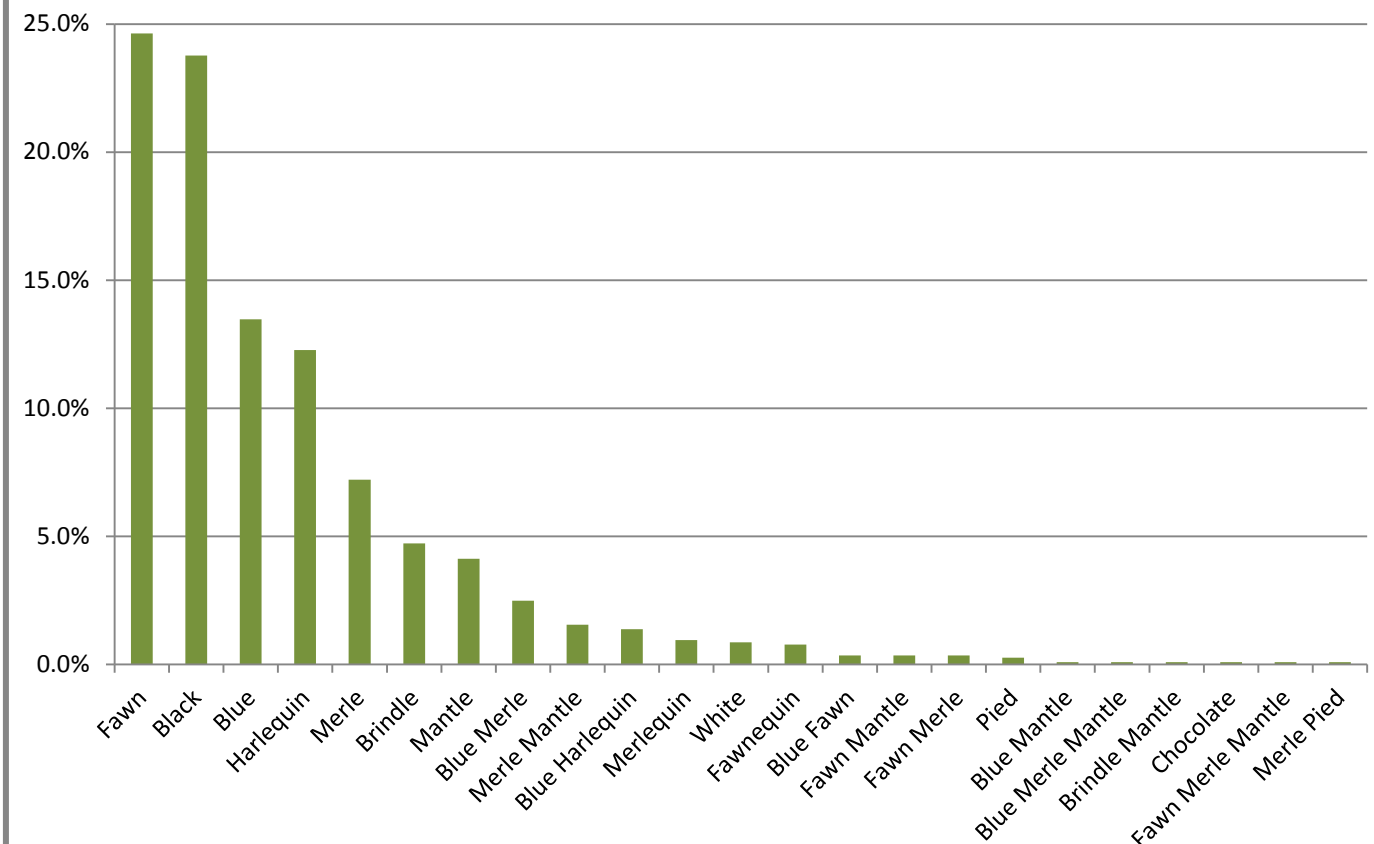
The ANKC Breed Standards for the Great Dane dog in Australia recognises the colours of fawn, brindle, black, blue, harlequin (blue & black) and mantle.

Merles cannot be shown in Australia but are sold on limited registration. In normal circumstances, all merles would be brought together in one group and colours like fawnequins and white would be reallocated.

For the purposes of this particular set of data, we have elected to provide a complete breakdown by actual colours rather than breed standard colours. *It is important to reflect that breeding for colour in this breed is better done with a thorough understanding of the genetics behind it.*

983 or 84.4% of the survey dogs were specifically from the recognised breed standard colours which might indicate that in Australia, we are still breeding against that parameter.

Percentage x Colour of 1,165 Great Danes

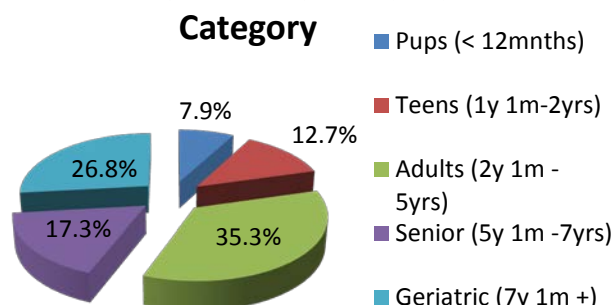


AGE IN SURVEY:

The survey was randomised simply by optional participation and no dog was rejected unless their complete data was not available or their diagnosis was not clinically acquired. It is interesting to know that the randomisation provided an inherent variety of ages across the 1,165 dogs. Deceased dogs were included where all their data was known.

- **925 or 79.4% of the entire population** were over 2yrs old which gives good opportunity for Great Dane specific health issues to have shown if present.
- 400 or 34.3% of the dogs surveyed were deceased but able to contribute their lifestyle and health history.
- Categories were created for the age groups around growth, life and the aging process of the breed and used in some areas of analysis. These were: **Pups:** less than 12mnths, **Teens:** 1yr 1m – 2yrs, **Adults:** 2yr 1m – 5yrs, **Seniors:** 5yr 1m – 7yrs, **Geriatrics:** 7yr 1m+.
- Giant dogs are generally classified as ‘seniors’ from 5yrs old. Our survey population has shown that many live or have lived into an even older category with **over a quarter of the survey dogs being 7yrs+.**
- Less than 2% of the population or 20 dogs, celebrated more than a 12th birthday and it was interesting to note that 70% or 14 of those 20 dogs were under 70kgs.

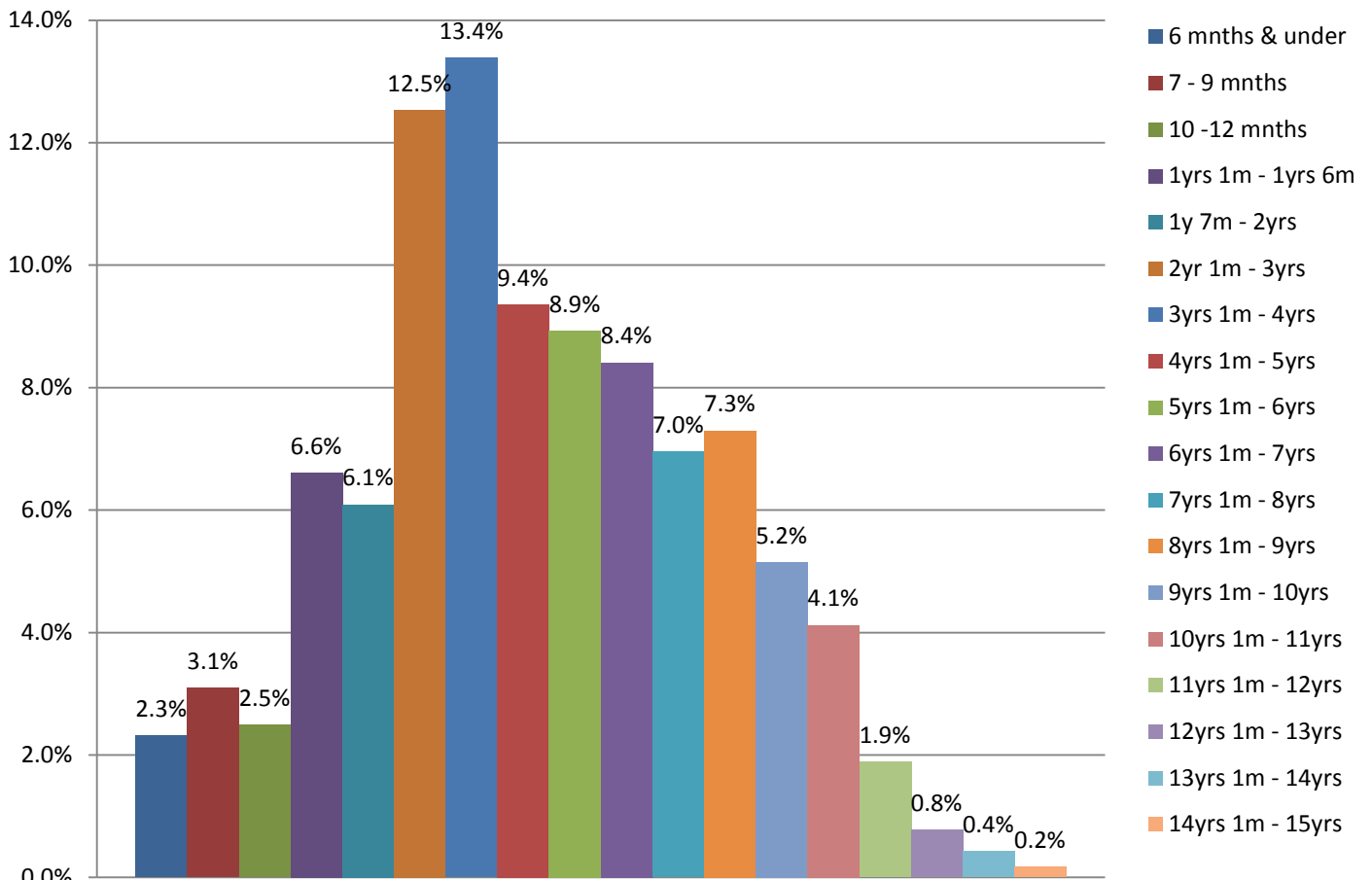
1,165 Dogs - Grouped by Age



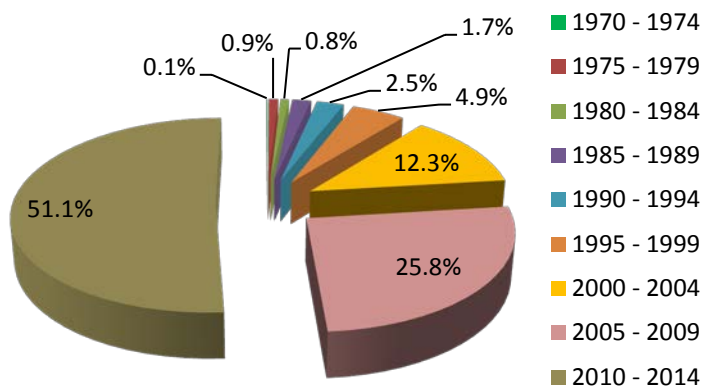
AGE IN SURVEY - With deceased dogs at age of passing	1165		Sterilised Male	Intact Male	Sterilised Female	Intact Female
DECEASED	400	34.3%	134	65	143	58
< 6 months	27	2.3%	1	15	0	11
7 - 9 months	36	3.1%	4	16	5	11
10 -12 months	29	2.5%	6	8	5	10
1yr 1m - 1yr 6m	77	6.6%	17	15	21	24
1y 7m - 2yrs	71	6.1%	32	12	14	13
2yrs 1m - 3yrs	146	12.5%	42	24	41	39
3yrs 1m - 4yrs	156	13.4%	52	20	59	25
4yrs 1m - 5yrs	109	9.4%	44	15	40	10
5yrs 1m - 6yrs	104	8.9%	34	16	37	17
6yrs 1m - 7yrs	98	8.4%	26	5	56	11
7yrs 1m - 8yrs	81	7.0%	31	9	37	4
8yrs 1m - 9yrs	85	7.3%	30	10	36	9
9yrs 1m - 10yrs	60	5.2%	22	7	29	2
10yrs 1m - 11yrs	48	4.1%	18	5	23	2
11yrs 1m - 12yrs	22	1.9%	5	2	14	1
12yrs 1m - 13yrs	9	0.8%	0	0	8	1
13yrs 1m - 14yrs	5	0.4%	1	0	2	2
14yrs 1m - 15yrs	2	0.2%	0	1	1	0
	1165	100.0%	365	180	428	192

- Sterilised dogs in this Table includes 12 dogs who were chemically sterilised at the survey period.
- The period up to 2yrs is broken into smaller periods to show the key growth periods in the breed for this Table.

Current age of dog in survey - total population of 1,165 (Deceased dogs included at age of passing)



1,165 Dogs - Era of Birth

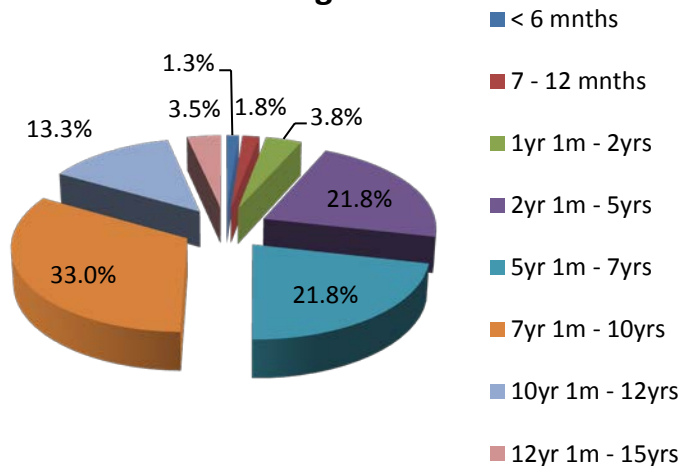


The 1,165 Great Danes of this survey were collected from a wide variety of owners and it created a broad generational realm. There is a 40 year landscape with the earliest born in 1974 and the most recently born dogs in 2014.

89.2% of the population were born since 2000 with just over half of the population being born in the most recent 5 year period.

- **400 or 34.3% of the 1,165 dogs in the survey were deceased** when the project was commenced.
- **6.9% or 27 of these dogs were less than 2yrs old** when they died. 9 of these very young dogs were accidental deaths, 3 were from behavioural issues and the remaining 15 were medical conditions.
- On a positive note, 71.6% of the 400 deceased dogs passed away at ages of 5yrs & 1mnth or older. **Almost three- quarters of the deceased Great Dane dogs were ‘seniors’ or even ‘geriatrics’!** As a breed not seen to have longevity, this is particularly heartening.

400 Deceased Dogs - Age Category of Passing

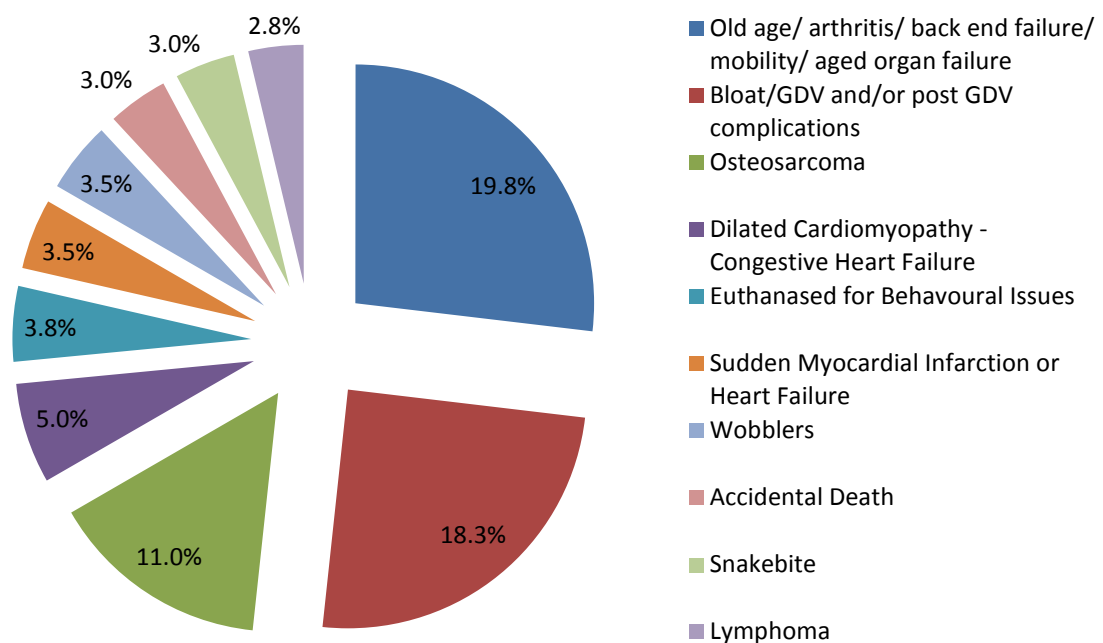


TOP 10 CAUSES OF DEATH:

Of the 400 dogs who were already deceased from the survey population of 1,165, **73.5% or 294 dogs died from one of the ‘Top 10 Causes of Death’**. The most common cause of passing was around mobility and/or function with just under 20% of the 400 dogs. Bloat/GDV took 18.3% and osteosarcoma took 11%. **196 dogs from 400 deceased or 49% were lost to one of 3 things, being mobility/function, Bloat/GDV or osteosarcoma**. Given that lymphoma is a particularly common cancer in dogs, the prevalence of 2.8% or 11 dogs appeared quite low.

In a country like Australia it would not be unusual to see a presence for ‘accidental’ deaths or snakebites as so many of the dogs in this country are around cars and/or in bushy areas.

400 Deceased Dogs - Top 10 Causes of Death (294 of 400 dogs)



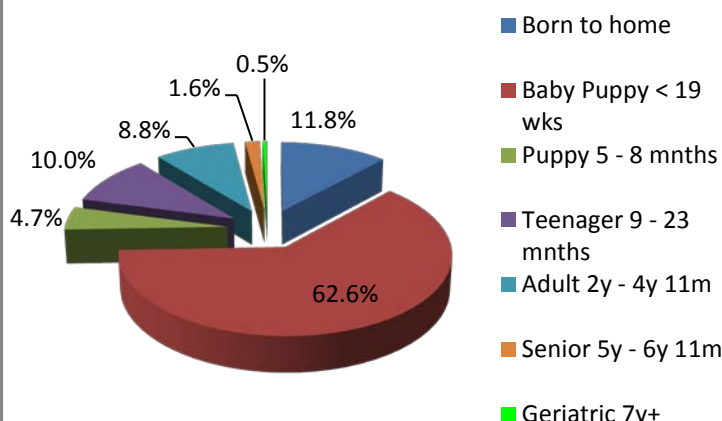
The 400 dogs that were deceased but included in the survey have the 'cause of death' shown in detail below. Some dogs may have also had another condition but lost their life to an alternate cause of death. EG: One lymphoma dog actually passed from kidney failure whilst being palliated.

CAUSE OF DEATH OF DECEASED DOGS	400	
Old age/ arthritis/ back end failure/ mobility/ aged organ failure	79	19.8%
Bloat/GDV and/or post GDV complications	73	18.3%
Osteosarcoma	44	11.0%
Dilated Cardiomyopathy – Congestive Heart Failure	20	5.0%
Euthanased for Behavioural Issues	15	3.8%
Sudden Myocardial Infarction or Heart Failure	14	3.5%
Wobblers	14	3.5%
Accidental Death	12	3.0%
Snakebite	12	3.0%
Lymphoma	11	2.8%
Cerebrovascular Accident (Stroke)/Neurological deficit or damage	9	2.3%
Sudden undiagnosed death	9	2.3%
Cancers of the head & neck (non-bone)	8	2.0%
Brain tumour	6	1.5%
Intra-op / Post-op complications/haemorrhage/infection	6	1.5%
Megaesophagus (Acquired or Congenital and/or complications from ME)	6	1.5%
Spinal cancer/tumours	5	1.3%
Aspiration pneumonia/ pneumonia/ respiratory failure	4	1.0%
Major organ failure	4	1.0%
Non-specific cancer or non-confirmed tumours/cancer	4	1.0%
Stomach cancer	4	1.0%
Epilepsy/Seizures	3	0.8%
Leukemia	3	0.8%
Bowel cancer	2	0.5%
Bowel obstruction/ twisted bowel	2	0.5%
Hip Dysplasia	2	0.5%
Hypertrophic osteodystrophy (HOD)/ Growth Plate Deformity	2	0.5%
Kidney failure	2	0.5%
Liver cancer	2	0.5%
Lung cancer	2	0.5%
Overdose of medication	2	0.5%
Paralysis tick	2	0.5%
Parvovirus	2	0.5%
Pyometra	2	0.5%
Acute Hemorrhagic Gastroenteritis (HGE)	1	0.3%
Anaphylaxis	1	0.3%
Canine renal dysplasia	1	0.3%
Endocarditis	1	0.3%
FCE (fibrocartilaginous embolism)	1	0.3%
Haemachromatosis	1	0.3%
Immune Mediated Poly Arthritis	1	0.3%
Juvenile osteoporosis	1	0.3%
Melanoma	1	0.3%
Salmonella poisoning	1	0.3%
Splenic cancer	1	0.3%
Splenic torsion	1	0.3%
Thyroid cancer	1	0.3%

AGE OF ENTRY INTO HOME:

- 69.7% or 812 dogs were purchased by their owners as pups or adult dogs and a further 18.5% or 215 were adopted as rescue or re-home animals.
- **74.4% of all the survey dogs were in their homes by the age of 5 months.**
- 210 or 18% of the survey population came into their homes from the age of 1yr old. 155 or 73.8% of these 210 dogs were rescue or re-homed dogs.
- The Table below shows the very clear spike at 1-2yrs old where 26% of the rescue or re-homed dogs were adopted.

1,165 Dogs - Age into Home



AGE OF COMING INTO HOME	Total Survey Population 1165	Rescue /Rehomes 215	Percentage of Survey Population (1,165 dogs) by age into home	Percentage of Rescue /Rehomes (215 dogs) by age into home
Born to home (including 1 adoption of a pregnant bitch)	138	1	11.8%	0.5%
5 weeks or less	5	0	0.4%	0.0%
6 weeks	28	1	2.4%	0.5%
7 weeks	44	0	3.8%	0.0%
8 weeks	326	1	28.0%	0.5%
9 weeks	65	0	5.6%	0.0%
10 weeks	79	0	6.8%	0.0%
11 weeks	22	0	1.9%	0.0%
12 weeks	97	4	8.3%	1.9%
13 weeks	8	0	0.7%	0.0%
14 weeks	17	3	1.5%	1.4%
15 weeks	6	1	0.5%	0.5%
16 weeks	29	2	2.5%	0.9%
17 weeks	3	0	0.3%	0.0%
5 months	17	5	1.5%	2.3%
6 months	17	8	1.5%	3.7%
7 months	12	6	1.0%	2.8%
8 months	9	8	0.8%	3.7%
9 months	15	6	1.3%	2.8%
10 months	12	10	1.0%	4.7%
11 months	6	4	0.5%	1.9%
1 yr - 1 yr 11months	83	56	7.1%	26.0%
2 yrs - 2yrs 11months	56	37	4.8%	17.2%
3 yrs - 3yrs 11months	19	16	1.6%	7.4%
4 yrs - 4yrs 11months	27	24	2.3%	11.2%
5 yrs - 5yrs 11months	12	11	1.0%	5.1%
6 yrs - 6yrs 11months	7	6	0.6%	2.8%
7yrs - 7yrs 11months	3	2	0.3%	0.9%
8 yrs - 8yrs 11months	2	2	0.2%	0.9%
9yrs - 9yrs 11months	0	0	0.0%	0.0%
10yrs - 10yrs 11months	1	1	0.1%	0.5%

TEMPERAMENT:

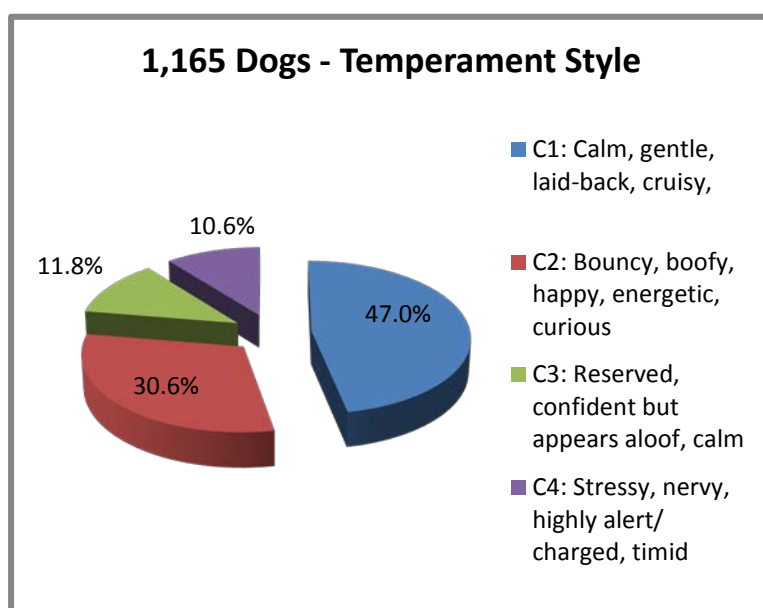
Temperament was one area of the survey that was a subjective category but defined in the interviews by using descriptive terms and a specific set of questions. The author has been exposed to very close contact with hundreds of Great Danes via GDLAWA club membership, roles within the club including training & support and rescue & re-homing, and has physically fostered over 120 Great Danes in 9 years. Using this experience with a variety of dogs, a group of 4 categories were defined to allocate each dog into a parameter of temperament at home in everyday life. There was a separate set of questions surrounding their interactions against situations that might inspire behaviour outside the normal everyday self. Those questions related to:

- Dealing with new or strange humans.
- Dealing with dogs.
- Dealing with sudden noises.
- Dealing with being separated from owners.

AT HOME TEMPERAMENT:

The owners were asked to select ONE category to describe their dog at home and in normal everyday circumstances when key words were read out to them:

- Category 1 – **Couch Potato:** The dog is easy-going, laid-back, cruisy, relaxed, smoochy, confident but chilled. They still play and do 'zoomies' but tend more towards the laid-back level.
- Category 2 – **Energiser Bunny:** The dog is happy, bouncy, confident, curious, cheeky, energetic and lively. The dogs still snooze and relax but are ready to participate at a moment's notice and looking for something to do quite often.
- Category 3 – **Reserved & Poised:** The dog is reserved, wary but not nervous, can be seen as aloof, stands back & watches but confident. The dog plays, does zoomies etc but is more likely to be a 'contained soul'.
- Category 4 – **Nervous Nelly:** The dog is timid, nervy, jumpy, skittish, bit stressy, high strung. The dog plays, is sweet and loving and sleeps like all Danes but tends to be more skittish than others.



The temperament categories are used elsewhere in the report, to cross-match with medical conditions such as Bloat/GDV.

WHAT THE WORLD SEES:

Great Danes are often called the 'gentle giants' of the dog world but some may behave in ways that contradict this description when challenged by certain situations. The survey investigated four of these scenarios where a dog may display behaviours that conflict with them at home or in everyday life.

MEETING NEW PEOPLE:

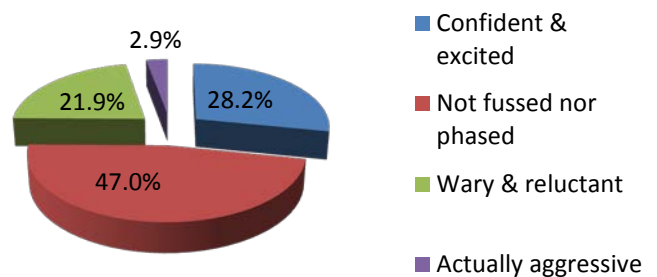
The question posed was: 'When out and about and new people approach and attempt contact with the dog....

- Does the dog push forward, lean in and seek contact?
- Does the dog just hang with the owner in a state of not being fussed nor phased by the approach?
- Does the dog become wary and may even step back, give a growl, duck their head if reached for or appear uncomfortable with the person in their space?

Whilst there were only 3 options given, 34 dogs or 2.9% were described as being 'aggressive' with strangers by their owners.

37 other dogs or 3.2% were described by the owners as 'good' but can be wary of men when first meeting them. Many Danes had a certain 'something' that perturbed them like hats, people wearing Hi-Vis, beards etc.

1,165 dogs - response to strangers approaching when away from home



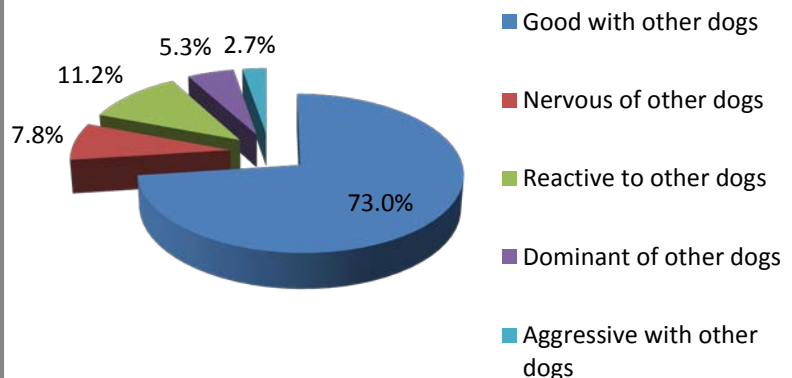
OTHER DOG INTERACTIONS:

The question posed was: 'When meeting new dogs away from home, in an age and sex appropriate manner, is your dog good, nervous of other dogs, reactive, dominant or aggressive with other dogs?'

NB: The wording of 'age appropriate' was defined as Great Dane dogs can vary with their life-phase. Young pups can be quite friendly and open, teenagers can push and be boisterous, adults can be selectively social and seniors can be wary. The term 'sex appropriate' was defined as some dogs when aging, may be better with an opposite sex dog than same-sex.

- **73% or 850 dogs were classed as 'good' with other dogs in an age/sex-appropriate manner.**
- 7.8% or 91 dogs were classed as 'nervous' of dogs by their owners.
- 19.2% or 224 dogs were classed as 'reactive, dominant or aggressive' with other dogs by their owners.

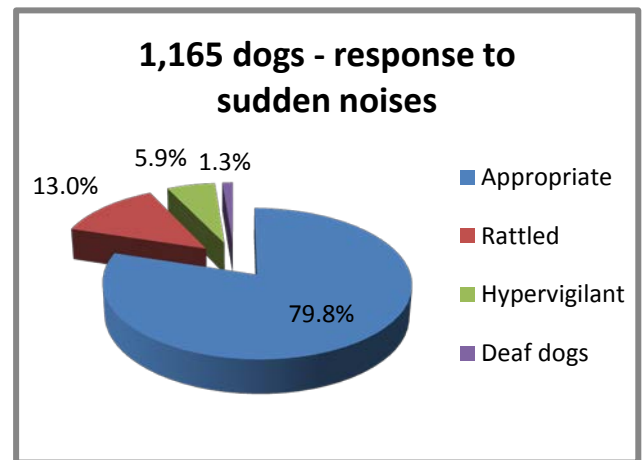
1,165 dogs - dog responses



RESPONSE TO SUDDEN NOISES:

The question posed was: 'When sudden loud noises happen like fireworks, thunder or loud bangs, does the dog react but settle immediately or appear quite rattled or shaken, is clearly nervous and stays that way or is their response hyper-vigilant where they bark and race around and take some time to be called back into a chilled state?'

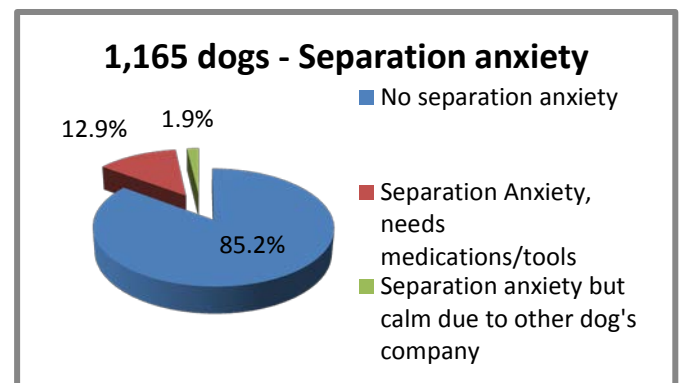
- 15 dogs were deaf or partially deaf and showed little to no response to sudden noises.
- Thunder was the most commonly noted noise that unnerved the dogs but some also had issues with things specifically like vacuum cleaners, smoke alarms and lawn mowers.
- Some of the dogs in the 'appropriate' category were thunder sensitive at times but quite easily calmed and did not remain in a rattled or hyper-vigilant state.



SEPARATION ANXIETY:

The question posed was: 'Does the dog suffer from separation anxiety when separated from the owners to the degree they would display behaviour such as panting, whining, scratching at doors, pacing and be clearly stressed?'

- 85.2% of all the dogs did not suffer clinical separation anxiety according to their owners.
- Whilst the data was not specifically gathered, many homes accommodated the breed by leaving them inside when they were away from home or had someone home a lot.
- **172 or 14.8% of the dogs did suffer separation anxiety.**
- 22 or 1.9% of the dogs were calm at home when the owners were away due to having the company of another dog but struggled if that other dog was away from home when they were alone.



'Logan Danes Group': All at attention on a local walk in Queensland. Photo credit – Dale McMillan

The temperament of each dog and the reactions to external influences are mapped in this table showing the proportions of each temperament 'style' against the external influencers.

TEMPERAMENT STYLES - TO LIVE WITH	1165									
C1: Calm, gentle, laid-back, cruisy,	547	47.0%								
C2: Bouncy, boofy, happy, energetic, curious	357	30.6%								
C3: Reserved, confident but appears aloof, calm	137	11.8%								
C4: Stressy, nervy, highly alert/charged, timid	124	10.6%								
			Couch Potato C1		Energiser Bunny C2		Reserved & Poised C3		Nervous Nelly C4	
TEMPERAMENT BEHAVIOURS - WHAT OTHERS SEE: New People	1165									
New People - steps forward, leans in for the pat	328	28.2%	159	48.5%	149	45.4%	14	4.3%	6	1.8%
New People - doesn't push forward but not wary either	548	47.0%	315	57.5%	140	25.5%	68	12.4%	25	4.6%
New People - steps back when approached, ducks head, may growl	255	21.9%	67	26.3%	60	23.5%	53	20.8%	75	29.4%
New People - Protective even aggressive	34	2.9%	6	17.6%	8	23.5%	2	5.9%	18	52.9%
TEMPERAMENT BEHAVIOURS - WHAT OTHERS SEE: Dog Reactions	1165		C1		C2		C3		C4	
Age appropriate, good with other dogs	850	73.0%	440	51.8%	282	33.2%	87	10.2%	41	4.8%
Nervous of other dogs	91	7.8%	25	27.5%	21	23.1%	18	19.8%	27	29.7%
Reactive to other dogs	130	11.2%	56	43.1%	26	20.0%	12	9.2%	36	27.7%
Dominant of other dogs	62	5.3%	14	22.6%	24	38.7%	18	29.0%	6	9.7%
Dog aggressive	32	2.7%	12	37.5%	4	12.5%	2	6.3%	14	43.8%
TEMPERAMENT BEHAVIOURS - WHAT OTHERS SEE: Noise Response	1165		C1		C2		C3		C4	
Appropriate	930	79.8%	475	51.1%	294	31.6%	106	11.4%	58	6.2%
Rattled	151	13.0%	52	34.4%	29	19.2%	21	13.9%	49	32.5%
Hypervigilant	69	5.9%	13	18.8%	31	44.9%	9	13.0%	16	23.2%
Deaf dogs	15	1.3%	7	46.7%	3	20.0%	1	6.7%	1	6.7%
TEMPERAMENT BEHAVIOURS - WHAT OTHERS SEE: Separation Anxiety	1165		C1		C2		C3		C4	
None	993	85.2%	484	48.7%	307	30.9%	119	12.0%	83	8.4%
Yes, including needing medications/tools	150	12.9%	52	34.7%	41	27.3%	16	10.7%	41	27.3%
Yes if other dog/s not with it	22	1.9%	11	50.0%	9	40.9%	2	9.1%	0	0.0%

VACCINATION REGIMES:

Owners were asked what current vaccination programme they used for their dogs. Some had altered their programme in the dog's life so only the 'current regimes' were collected. Dogs in Australia are generally vaccinated against Canine Distemper, Hepatitis, Parvo Virus along with Parainfluenza & Bordetella to protect against Kennel Cough.

- Titre testing with no vaccination or limited vaccinating was low at 2.7% of the population and 69% of those titre tested dogs were split between Qld & WA.
- The 3yrly vaccination option, with or without an annual Kennel Cough inoculation was 11.2% of the entire population with 36% of those dogs being WA based animals.
- **Annual vaccination regimes with or without Kennel Cough coverage remained the most common practice with 61.5%** of the survey group choosing those after the 'puppy + booster' period was passed.
- For the 'Adhoc' group, some dogs were vaccinated on an 'occasional' basis and some had a regime of alternate years.
- There were 7 dogs not vaccinated based on a past reaction to vaccinations.

CURRENT VACCINATION REGIMES	1165	
Annual + KC	701	60.2%
Annual - no KC	15	1.3%
3yrly + Annual KC	115	9.9%
3yrly vaccinations & no KC	15	1.3%
Puppy Programme in place, dog is up to 15mnths old	123	10.6%
Adhoc Vaccinations	48	4.1%
Not Current + Titre Tested	32	2.7%
No vaccinations since Puppy + 1st Booster	65	5.6%
Stopped vaccinating as an adult or senior	15	1.3%
No vaccinations due to medical reactions	7	0.6%
Not vaccinated at all	29	2.5%

FLEA, WORMING & HEARTWORM REGIMES:

- **292 or 25.1% of all dogs were being given a monthly 'all-in-one' product to treat Fleas, Worms and Heartworm.**
- Of the 292 dogs on a monthly 'all-in-one' treatment the percentage of each state's population using them was:
 QLD – 34% of 188 dogs NSW – 16% of 306 dogs ACT – 13.6% of 22 dogs
 VIC - 18.7% of 214 dogs TAS - 10.7% of 28 dogs SA – 21.3% of 61 dogs
 WA – 35% of 343 dogs NT – 0% of 3 dogs
- **91.8% of these 292 dogs were also on a regular vaccination programme** – Annual vaccinations – 67.5%, 3yrly Vaccinations – 12.3% and Puppy programme – 12%.
- 8.2% of these 292 dogs, or 24 dogs were on adhoc, none or titre testing regimes for vaccinations.

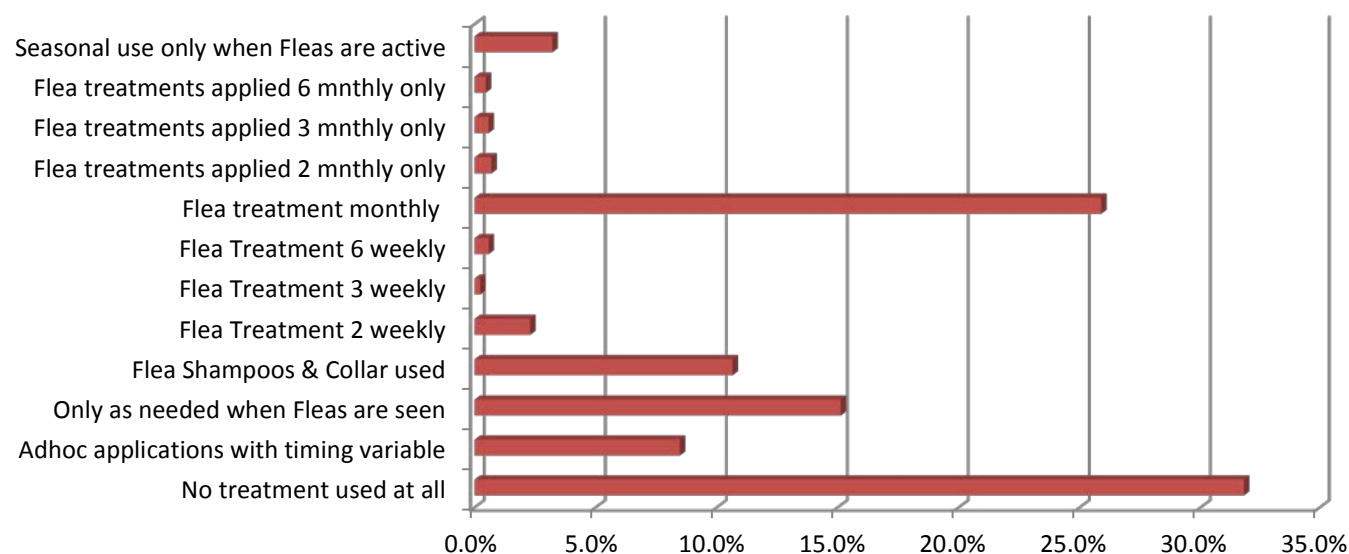
FLEA TREATMENT REGIMES: Dogs NOT on a monthly 'all-in-one' treatment.

25.1% or 292 dogs of the survey population used an 'all-in-one' product for fleas, worms and heartworm on a monthly basis. **The remaining 873 dogs or 74.9% had fleas treated in a variety of ways.**

- 278 or 23.9% of all dogs were not treated for fleas at all.
- 226 or 19.4% of all dogs were treated with a monthly flea treatment which may include tick prevention in some states and may also be combination flea and worming product but **does not include Heartworm.**
- 132 or 11.3% of all dogs were treated only when fleas were noticed.
- A further 28 or 2.4% of all dogs were treated in seasons when fleas were active but not all year round.
- 74 or 6.4% of all dogs were treated on an adhoc basis with timing variable, generally around when it was 'remembered'.
- 93 or 8% of all dogs were treated with regular washes, collars and some powders or topical applications to manage fleas.

NB: Paralysis Ticks are not found in all states of Australia and the question was not included in the original survey so therefore was not included in the national effort.

Flea regimes for non-users of all-in-one products (873 dogs)



23.9% of all survey dogs were not treated for fleas at all. The 'by-state' representation for this segment was:

QLD – 15.4% of 188 dogs

NSW – 16.7% of 306 dogs

ACT – 27.3% of 22 dogs

VIC – 38.8% of 214 dogs

TAS – 57.1% of 28 dogs

SA – 34.4% of 61 dogs

WA – 21% of 343 dogs

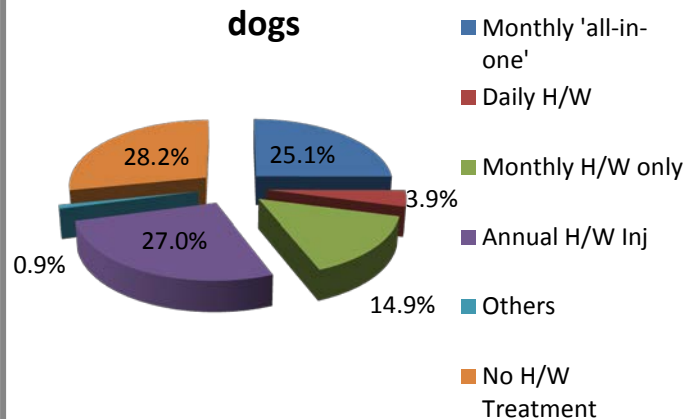
NT – 0% of 3 dogs

HEARTWORM TREATMENTS: Dogs NOT on a monthly 'all-in-one' treatment.

Heartworm presence has varied across Australia for many years with the colder states such as Tasmania, Victoria and some parts of New South Wales having many pet owners who have not treated their dogs for the parasite although this is just starting to change. **For the 873 dogs or 74.9%, in the survey not on a monthly 'all-in-one' treatment** that treats fleas, worms and heartworms, the management of Heartworm varied.

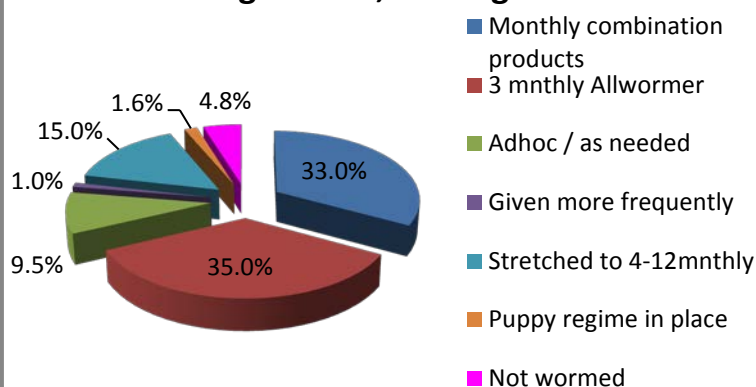
- 328 or 28.2% of all survey dogs were not treated for Heartworm at all.
- **217 or 66.2% of the 328 not-treated dogs resided in Tasmania, Victoria and New South Wales.**
- 314 or 27% of all survey dogs were on an annual injection.
- 174 or 14.9% of all survey dogs were on a monthly heartworm-only treatment.
- 46 or 3.9% of the all survey dogs were on a daily heartworm tablet.
- 11 or 0.9% of all survey dogs were on 'other treatments'. 4 were very young pups and not yet treated, 4 had blood tests annually and treated if needed, 2 were treated 3 monthly and 1 dog was treated 6 monthly.

Heartworm Treatments - 1,165 dogs



WORMING REGIMES: Dogs NOT on a monthly 'all-in-one' treatment.

Allwormer regimes - 1,165 dogs



Generally allwormers are given every 3 months unless an 'all-in-one' or combination product is used. **792 or 68% of all survey dogs were regularly treated for allwormer parasites.**

384 or 33% were given a monthly product which was a combination treatment and may include fleas and/or heartworm.

408 or 35% of dogs were given a 3 monthly treatment of an allwormer specific brand.

1 dog was not treated unless needed but had 6 monthly faecal tests done to determine infestation.

56 dogs or 4.8% were not treated at all with 3 of these dogs having medical reasons for non-worming.

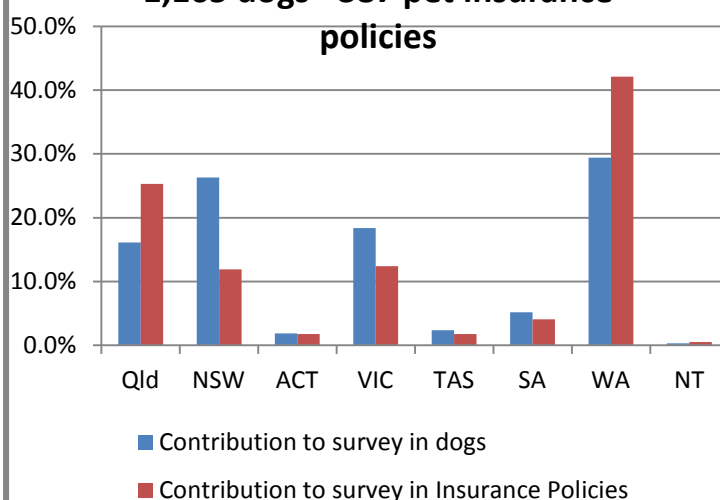
PET INSURANCE:

Pet insurance policies were currently in place for 387 or 33.2% of the 1,165 Great Danes.

67.4% or 261 of the pet insurance policies were in place for dogs residing in Qld or WA. Both States were over-represented on a pet insured dog basis against their contribution by State of total dogs to the survey population.

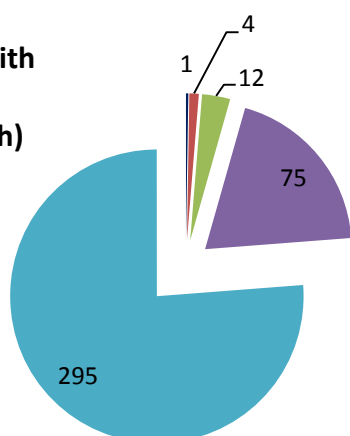
57.4% of all pet insurance policies were opened for pups prior to being 16 weeks old. 89.4% of all policies were opened before the dogs were 3yrs old.

1,165 dogs - 387 pet insurance policies



Pet Insurance: Numbers of dogs with policies by Era (year of dog's birth)

- 1990 - 1994
- 1995 - 1999
- 2000 - 2004
- 2005 - 2009
- 2010 - 2014



Pet insurance for Great Dane dogs has grown significantly as an option in the most recent era since 2010.

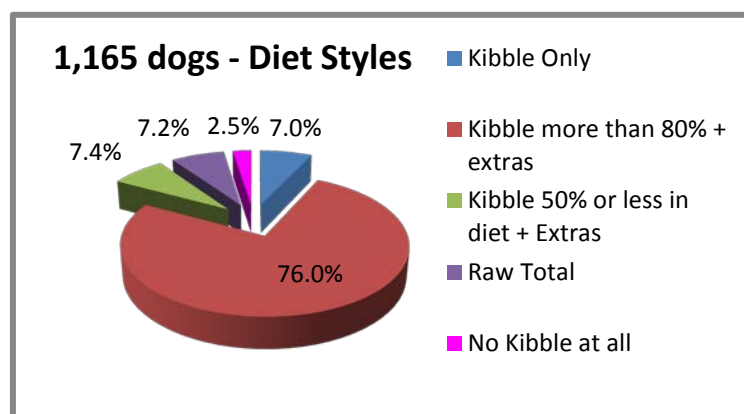
76.2% of all insured dogs had their policies opened in the period 2010 – 2014.

DIET & FEEDING REGIMES:

Participants were asked to describe their current feeding regimes for all dogs surveyed and then the data was broken into 7 descriptive categories. Extras were defined as regular additions to meals such as meats (raw & cooked), table scraps, fish, eggs, yoghurt, bones, commercial foods and other foods. Extras did not include 'treats'.

CURRENT FEEDING REGIMES	1165	
Dry Kibble only	81	7.0%
Dry Kibble with extras added	885	76.0%
Dry Kibble 50% or less + Raw only	44	3.8%
Dry Kibble 50% or less + Homemade/Raw/Commercial	42	3.6%
Raw diet only	84	7.2%
Homemade or Elimination diet with no Dry Kibble used	23	2.0%
Commercial foods only with no Dry Kibble at all	6	0.5%

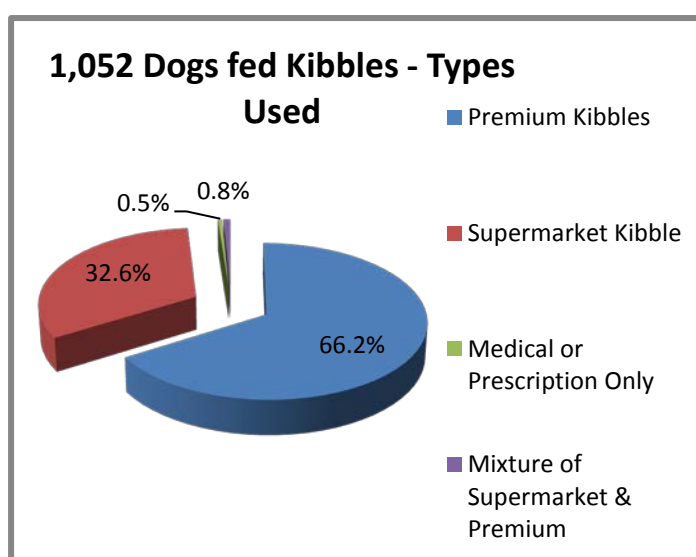
- **Dry Kibble Only:** no extras added.
- **Dry Kibble with Extras:** Kibble forms 80-90% of the diet intake but extras are added to most meals.
- **Dry Kibble 50% or less with Raw Only:** With raw meats making up the remainder of diet.
- **Dry Kibble 50% or less with Extras:** Kibble is used for one meal or for a percentage of not greater than 50% of meals with the remaining half or more being a variety of home-made, raw or commercial products.
- **Raw diet only:** Dogs fed on a total raw diet which may include a prey model diet and no kibble used at all.
- **Home-made or Elimination diet:** No kibble used at all.
- **Commercial foods diet, no Kibble:** Purchased foods used entirely with no dry kibble in diet.



- **83% or 966 of the 1,165 dogs in the survey had dry kibble as the major source of nutrition in their diet.**
- A further 7.4% or 86 dogs had dry kibble included in their diet as a component of up to 50%.
- **113 or 9.7% of the 1,165 dogs did not eat dry kibble at all.**

KIBBLE TYPES:

1,052 or 90.3% of the 1,165 dog population were eating dry kibble in their daily diets. Individual brands were not gathered to be reported upon but owners were asked the brands to allow defining the foods into classifications of premium or supermarket brands. Premium kibbles have the term 'Guaranteed Analysis' in their ingredients panel and are generally available from Vets and Pet Specialty stores (on-line & retail). Supermarket brands do not have the term 'Guaranteed Analysis' in their ingredients panel and will display wording like: Ingredients, Typical Analysis. **Two thirds of all kibble fed dogs were being fed a premium brand of dry food.**



PUPPY GROWTH PERIOD FEEDING:

972 or 83.4% of the 1,165 dogs surveyed came to the owners whilst a puppy or still in the 'growth period' of up to 12 months old. In this age group, most Dane owners are traditionally feeding carefully and consciously around slow, even and stable growth. Participants were asked if they had used a Premium or Supermarket food in an adult or puppy version. As 11.6% of the dogs were adopted at an older age, no information on the feeding regime in the 'under- 12 month' age range was available to the new owners.

PUPPY GROWTH PERIOD	1165	
Premium Puppy	451	38.7%
Supermarket Puppy	102	8.8%
Premium Adult	227	19.5%
Supermarket Adult	185	15.9%
Raw diet used	36	3.1%
Home based diet used with minimal to no kibble	24	2.1%
Commercial foods, no kibble	2	0.2%
Hypoallergenic Prescription	1	0.1%
Unknown -came into home older	135	11.6%
Could not recall	2	0.2%

678 or 58.2% of the dogs were raised on a premium brand of kibble. When measured by 'era' for the 896 dogs born in the last decade of 2005-2014, that number increased to 64.5% raised on premium brands of kibble and changed again when just looking at the 663 dogs born in the last 5 years of 2009 – 2014 where 67.7% were raised on premium brands of kibble. **24 or 66.7% of the 36 raw-raised dogs were born in the last 5 years indicating some new practices coming into the breed.**

FEEDING PRACTICES:

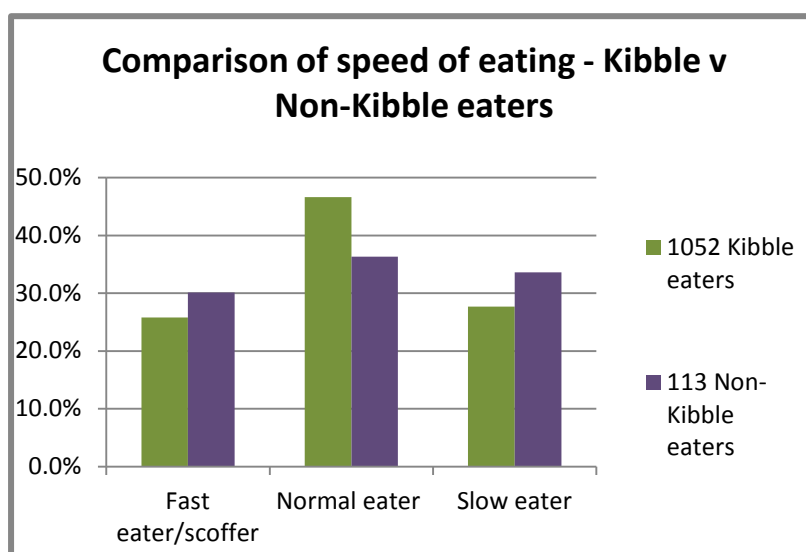
There are a large variety of anecdotal and evidentiary links between eating styles and feeding products/practices and the Great Dane breed. Contrasting articles show or negate links with a predisposition to Bloat/GDV and feeding practices so the opportunity to gather prevalence data on what owners are doing was harnessed in this survey.

Speed of eating was classified into Fast or Scoffer (virtually inhaling without chewing), Normal (chewing at a reasonable pace and relatively interested in food) and Slow (distracted, walks away, chews every morsel).

SPEED OF EATING BY DOG	1165		Male	% of all Males	Female	% of all Females
Fast eater/scoffer	305	26.2%	136	25.0%	169	27.3%
Normal eater	531	45.6%	257	47.2%	274	44.2%
Slow eater	329	28.2%	152	27.9%	177	28.5%
			545		620	

The majority of Great Danes were classified as 'normal speed' eaters by their owners.

Non-kibble fed dogs were more likely to be faster or slower eaters than kibble fed dogs when comparing by percentages between the two groups.



PRE-SOAKING OF KIBBLE:

Owners were asked if they 'pre-soaked' kibble where used, to make it 'pre-swell' prior to eating as this was a commonly advised practice for the breed in years past. If the 113 dogs that are not fed kibble at all in their diet are removed, then **94.6% of the 1,052 kibble users gave the food directly** to the dog. Some owners added extras which may include moisture but they are not actively pre-soaking.

SOAKING OF DRY KIBBLE PRIOR TO FEEDING	1165	
Food is soaked to pre-swell	54	4.6%
Pre-soaked for medical reasons	3	0.3%
Not pre-soaked at all	995	85.4%
Not applicable - no kibble used	113	9.7%

LIMITING EXERCISE & WATER BEFORE AND AFTER MEALS:

The majority of dog owners in this population continue to limit exercise pre and post meals; almost all said they did this in relation to preventing Bloat/GDV. The majority **did not limit water** pre and post meals or exercise although many said they did not usually need to actively limit water post exercise as the dogs came home to rest. Many gave their dogs a drink following exercise at a park/beach and whilst out of the home so water was limited by volume available and owner handling the water level.

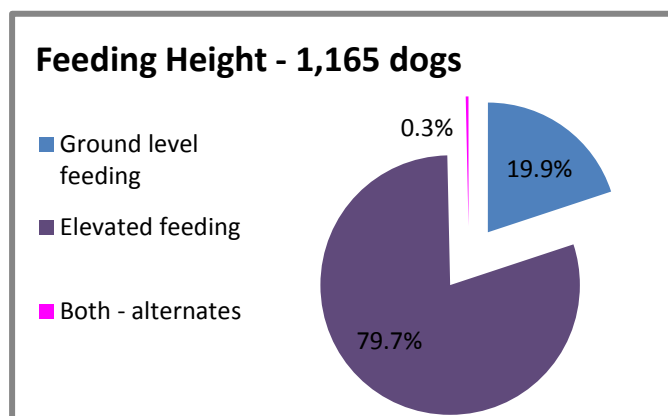
Owners who had dogs that were prone to 'gulping' or drinking large volumes of water after exercise or a meal said they did monitor the dog. Many owners that said 'No' to limiting water in both questions also said they would if they felt a need and there was an awareness or preference to prevent large volume drinking around eating or exercise.

EXERCISE, FOOD & WATER PRACTICES	1,165 dogs	NO		YES	
Limit exercise pre & post meals		166	14.2%	999	85.8%
Limit water pre & post meals		967	83.0%	198	17.0%
Limit water pre & post exercise		788	67.6%	377	32.4%

FOOD BOWL FEEDING HEIGHT:

Food bowl placement for meals has had varied opinions over the years. Many Dane owners have relied on elevating to 'prevent Bloat' and some studies in the past ten years have promoted ground level feeding as less likely to incur Bloat.

- **79.7% of the 1,165 dogs surveyed were fed at an elevated position.**
- Elevated varied from 'knee height' to 'shoulder height'.
- Total raw diet dogs varied between elevated and ground level feeding and depending on the type of meats that meal, some dogs remained eating elevated and some took the bone/meats from the bowl and ate it at ground level themselves.
- Many owners feeding at elevated heights did so for 'comfort' and not solely around the prevention of Bloat.



ELEVATION OR GROUND LEVEL FEEDING	1165		Raw Only	% of Raw Only	Kibble based	% of Kibble Based	Other	% of Other
Ground level feeding	232	19.9%	11	13.1%	211	20.1%	10	34.5%
Elevated feeding	929	79.7%	73	86.9%	837	79.6%	19	65.5%
Both - alternates	4	0.3%	0	0.0%	4	0.4%	0	0.0%
	1165		84	100.0%	1052	100.0%	29	100.0%

STERILISATION:

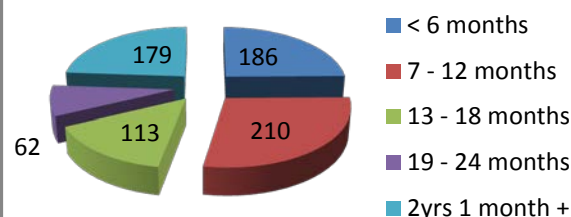
The survey participants included pet owners, breeders and dogs involved in competitive showing. **67% or 781 of the 1,165 dogs were permanently sterilised** with another 12 or 1% with chemical sterilisation in place currently.

STERILISATION	1165		Male	% of all Males	Female	% of all Females
Sterilised	781	67.0%	356	65.3%	425	68.5%
Sterilised Chemically	12	1.0%	9	1.7%	3	0.5%
Not Sterilised	372	31.9%	180	33.0%	192	31.0%
			545		620	

- **396 or 52.8% of the 750 'known age of sterilisation' dogs were sterilised by 12 months of age.**
- Of female Great Danes, there were two clear spikes of sterilisation ages, at the 6 month mark (19.1%) and 13-24 month mark (17.2%). This may reflect a diversity of decision making around sterilising females before and after first heat cycles.
- Similar spikes occurred for male dogs with the 6 month age group (19.1%) and the 13-24 month age group (28.7%).
- 9 male dogs had an undescended testicle removed in the sterilisation process.
- 31 dogs or 4% of the permanently sterilised dog population of 781 dogs in total had an unknown age of sterilisation as it had occurred prior to being adopted into that owner's home.
- Vasectomy is a very recent sterilisation option and in fact only 2 of the male dogs had undergone that procedure. One of the two dogs had a vasectomy initially and then had to undergo a full castration.

Age of Sterilisation - 750 dogs

(31 x unknown age & 12 chemical sterilisations removed)

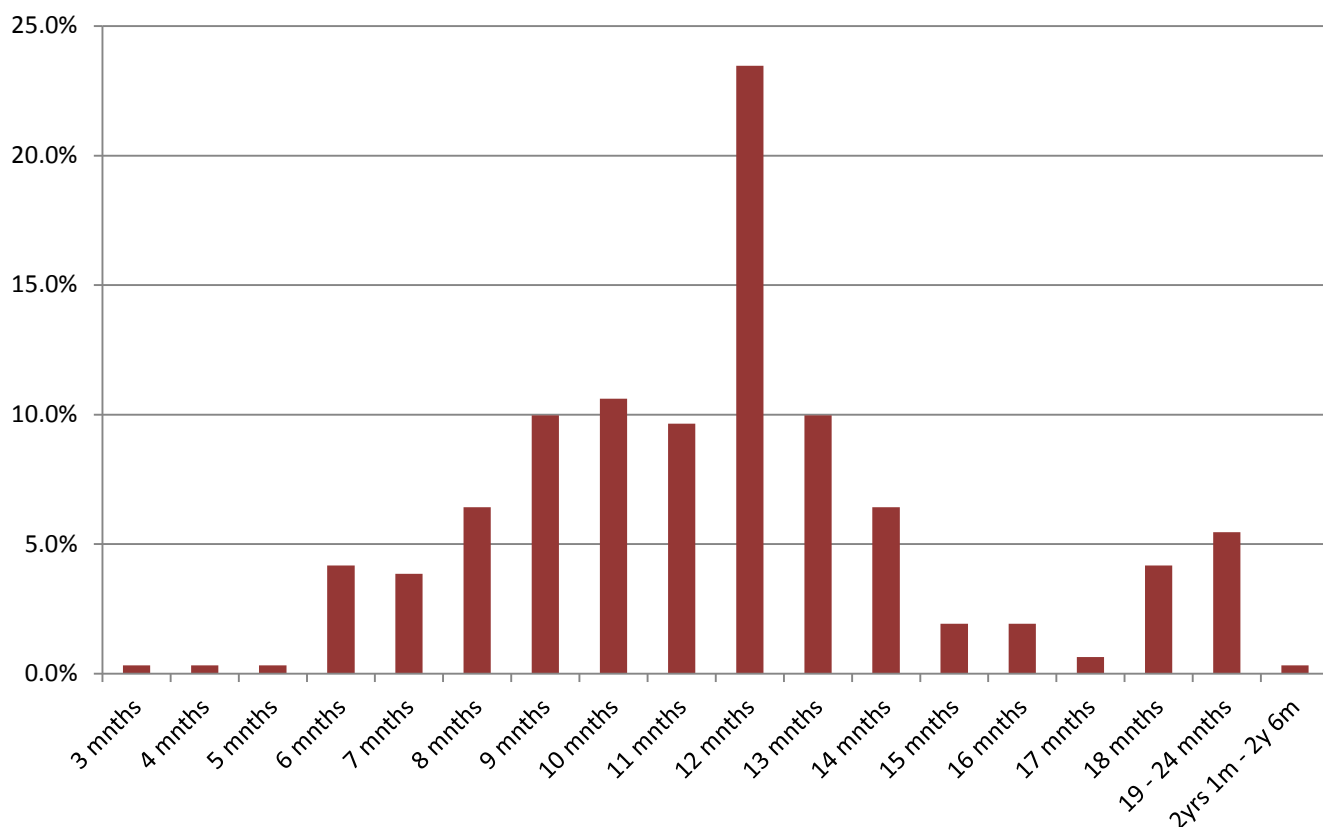


STERILISATION AGES - castration, vasectomy & spey	781		Male	% of all Males	Female	% of all Females
Unknown, sterilised prior to adoption or purchase	31	4.0%	14	3.9%	17	4.0%
3 months & under	7	0.9%	6	1.7%	1	0.2%
4 months	10	1.3%	7	2.0%	3	0.7%
5 months	20	2.6%	9	2.5%	11	2.6%
6 months	149	19.1%	68	19.1%	81	19.1%
7 months	41	5.2%	14	3.9%	27	6.4%
8 months	32	4.1%	13	3.7%	19	4.5%
9 months	40	5.1%	17	4.8%	23	5.4%
10 months	29	3.7%	11	3.1%	18	4.2%
11 months	26	3.3%	15	4.2%	11	2.6%
12 months	42	5.4%	22	6.2%	20	4.7%
1yr 1month - 2yrs	175	22.4%	102	28.7%	73	17.2%
2yrs 1month - 3yrs	64	8.2%	24	6.7%	40	9.4%
3yrs 1month - 4yrs	35	4.5%	14	3.9%	21	4.9%
4yrs 1month - 5yrs	40	5.1%	10	2.8%	30	7.1%
5yrs 1month - 6yrs	23	2.9%	4	1.1%	19	4.5%
6yrs 1month - 7yrs	10	1.3%	3	0.8%	7	1.6%
7yrs 1month - 8yrs	6	0.8%	2	0.6%	4	0.9%
8yrs 1month - 9yrs	1	0.1%	1	0.3%	0	0.0%
	781		356	100.0%	425	100.0%

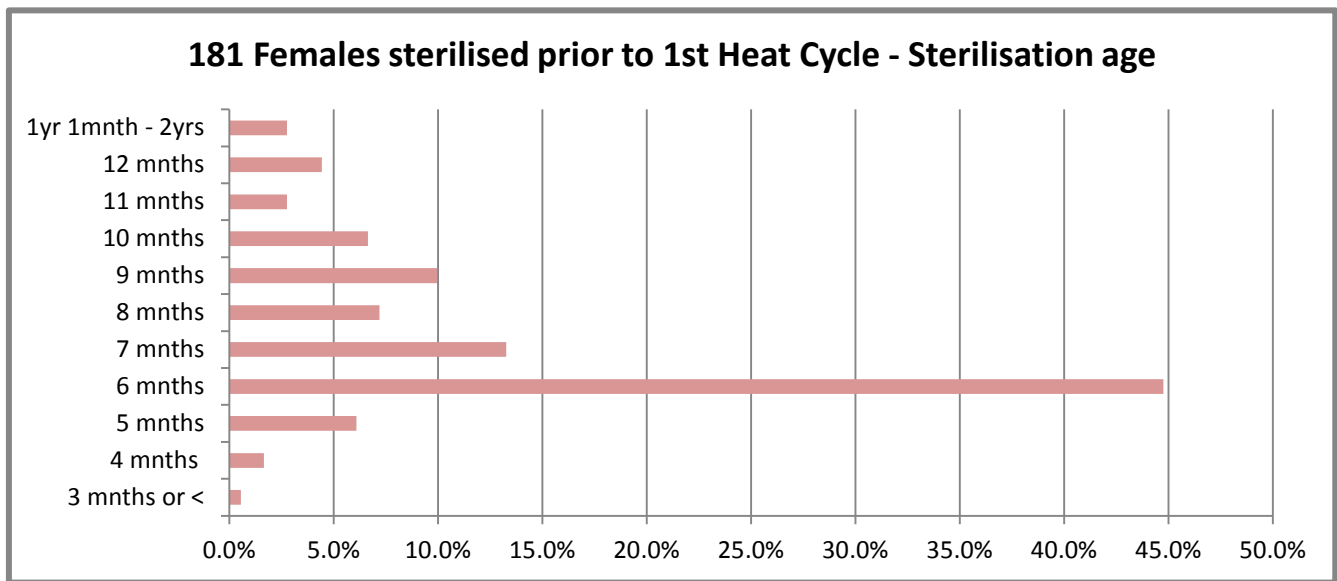
FIRST HEAT CYCLE & AGE	620	
None experienced - sterilised prior to first heat	181	29.2%
Died young - no heat cycle	4	0.6%
Unknown - adopted after that age	91	14.7%
Not yet - still young	33	5.3%
Females with known heatcycles	311	50.2%
3 months	1	0.3%
4 months	1	0.3%
5 months	1	0.3%
6 months	13	4.2%
7 months	12	3.9%
8 months	20	6.4%
9 months	31	10.0%
10 months	33	10.6%
11 months	30	9.6%
12 months	73	23.5%
13 months	31	10.0%
14 months	20	6.4%
15 months	6	1.9%
16 months	6	1.9%
17 months	2	0.6%
18 months	13	4.2%
1y 7mnths - 2yrs	17	5.5%
2yrs 1mnth - 2y 6mnths	1	0.3%

- There were 620 females in the survey population.
- 91 females were adopted after the age of 1st heat cycle and the data was unknown.
- **181 females or 29.2% of the female population had been sterilised prior to a 1st heat cycle occurring.**
- 33 females were still pups and had not yet come into heat nor were sterilised and a further 4 females had died young and prior to experiencing a heat cycle.
- **311 or 50.2% of the female population had experienced a known heat cycle and the ages were gathered.**
- 12 months of age was the most common age of the 1st heat cycle for female Great Danes with 23.5% of all females occurring then.
- **238 or 76.5% of the females that experienced a heat cycle had it occur between the ages of 8-14 months.**

311 Female Great Danes - Age of 1st Heat Cycle



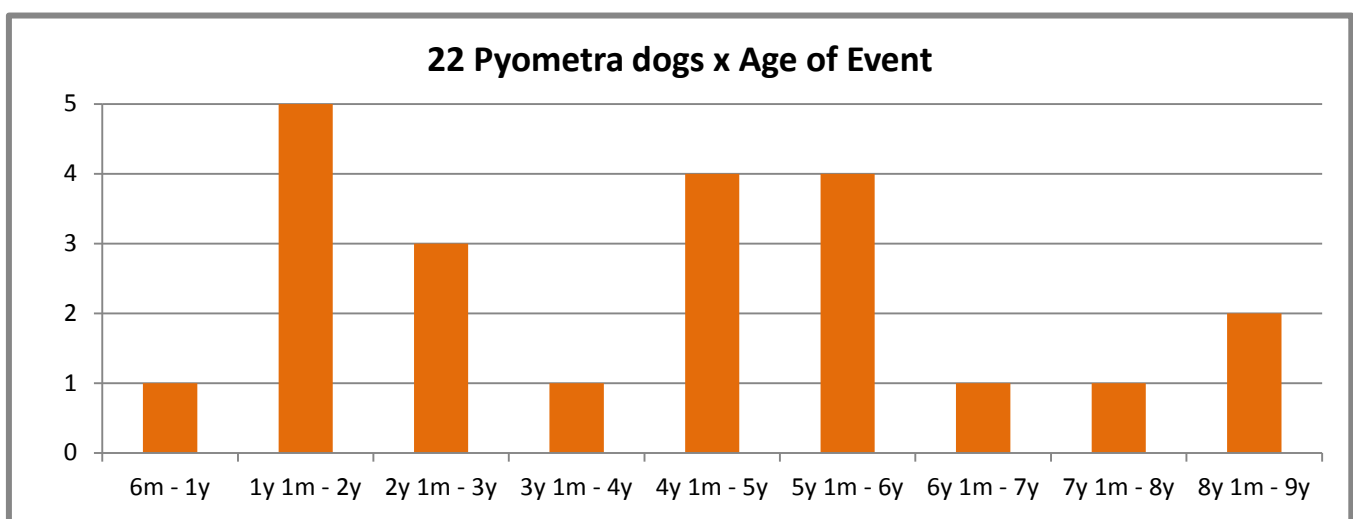
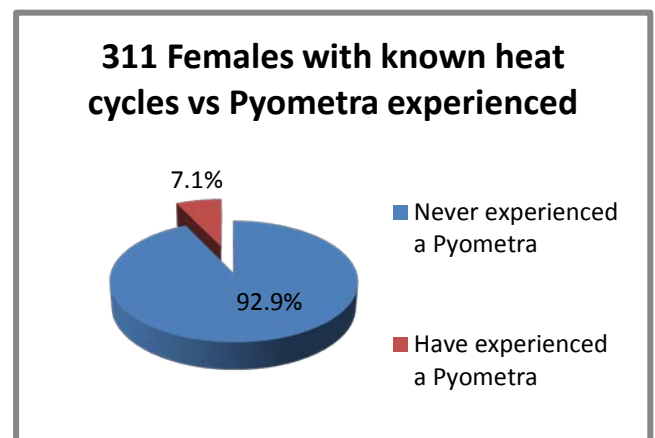
- 181 or 29.2% of all females were sterilised prior to experiencing a first heat cycle.
- Almost half at 44.8% of these females were sterilised at 6 months with a further 30.4% sterilised by 9 months old and having never had a heat cycle.



PYOMETRA:

620 female Great Danes were in the survey population and 192 remain unsterilised. 311 females had experienced a known heat cycle or some/many.

- **22 or 7.1% of females having had heat cycles, experienced a Pyometra.**
- For 16 or 72.7% of the Pyometra sufferers, this was the reason for de-sexing.
- 2 or 9.1% of the 22 Pyometra females died from the condition.
- 14 or 63.6% of the 22 Pyometra females had whelped.
- 7 or 31.8% of the 22 Pyometra females had experienced Phantom Pregnancies.



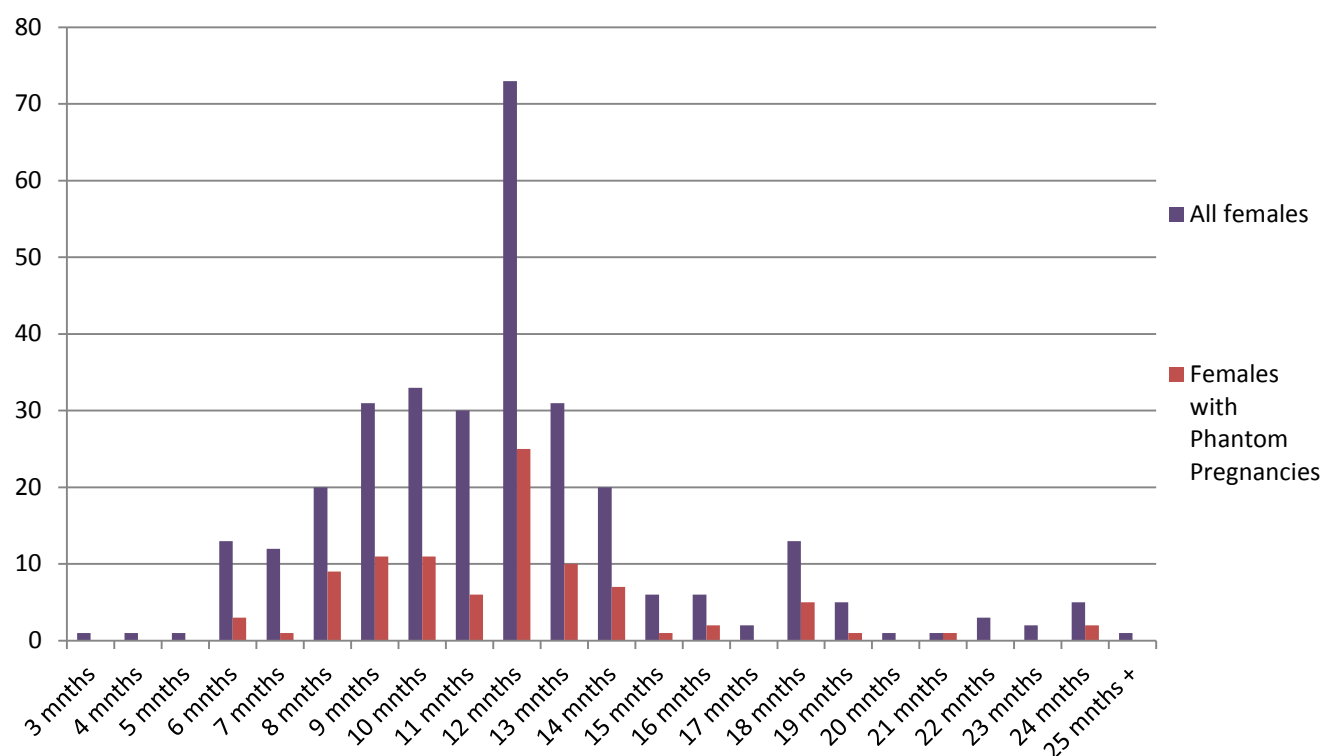
PHANTOM PREGNANCIES:

620 females were in the survey population. 402 of those females had experienced one or more heat cycles and are either sterilised now or remain unsterilised. This number excludes young pups that have not yet experienced a heat cycle at all. This number also includes those females with an unknown 'age of first heat cycle' as they were adopted or purchased later, but they were sterilised as mature adults or remain unsterilised.

PHANTOM PREGNANCY & CYCLE EXPERIENCED	104	
First heat cycle and only once	19	18.3%
First & Second heat cycle only	2	1.9%
First and every cycle subsequent	23	22.1%
Second heat cycle only	20	19.2%
Second and every cycle subsequent	8	7.7%
Second then odd cycles following	2	1.9%
Third heat cycle only	8	7.7%
Third and every cycle subsequent	7	6.7%
Third then odd cycles following	1	1.0%
Fourth heat cycle only	7	6.7%
Fourth and every cycle subsequent	1	1.0%
Fifth heat cycle and every cycle following	2	1.9%
Following Sterilisation	1	1.0%
Occasional heat cycles - no pattern	3	2.9%

- **104 of the 402 females or 25.9% that have experienced a heat cycle, have also experienced one or more phantom pregnancies.**
- 39 or 37.5% of the 104 phantom pregnancy females had also whelped.
- 63 or 60.6% of the 104 phantom pregnancy females went on to be sterilised at some point.
- 1 female experienced a phantom pregnancy 4 months after her sterilisation procedure.
- Of the 104 phantom pregnancy females, 95 had a known age of 1st heat cycle. **25 or 26.3% of the 95 females with a known age of heat cycle had experienced phantom pregnancies by their 1st heat cycle at the age of 12 months.**

311 known-age of first heat cycle females v 95 Phantom Pregnancy females



URINARY INCONTINENCE:

Urinary incontinence was defined by 4 key categories for both males & females:

- Medical – associated with medical conditions and or medications
- Behavioural – Diagnosed by a Vet where no medical reason exists for the incontinence.
- Post-Sterilisation – Appeared following de-sexing and diagnosed by a Vet as linked to the procedure.
- Old-age onset – Sterilised or not, the incontinence begins around limited mobility and other aging processes and occurs when sleeping and/or exertion on rising from laying to standing.

URINARY INCONTINENCE IN MALES:

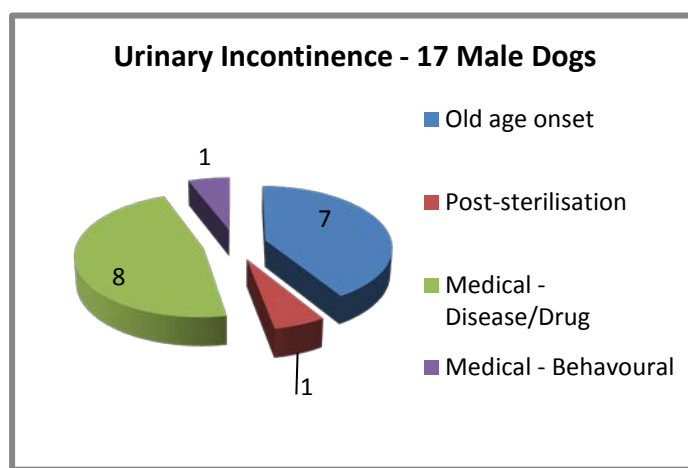
The survey population of 1,165 dogs included 545 males. **528 male dogs or 96.9% of all males had not suffered any form of urinary incontinence.**

- **17 males or 2.7% of the male dog population had suffered some level of urinary incontinence.**

- Old-age onset incontinence occurred for 7 or 41.2% of the 17 male dogs. The youngest age this presented was 7 years and 6 months and the oldest age was 10 years and 7 months.

- 4 of the 7 'old-age onset' urinary incontinence dogs had been sterilised between 6-9 months old and the minimum time lapse from sterilisation until incontinence was 6 years and 9 months passing.

- 3 of the 'old-age onset' urinary incontinence dogs had never been sterilised.
- **1 male dog had been sterilised at 7 years and 3 months and became incontinent of urine post-operatively.**
- 8 of the 17 dogs or 47.1% suffered incontinence related to medical conditions or medications.
- 1 male dog was diagnosed as behaviourally incontinent.



Excluding medical and behavioural urinary incontinence;

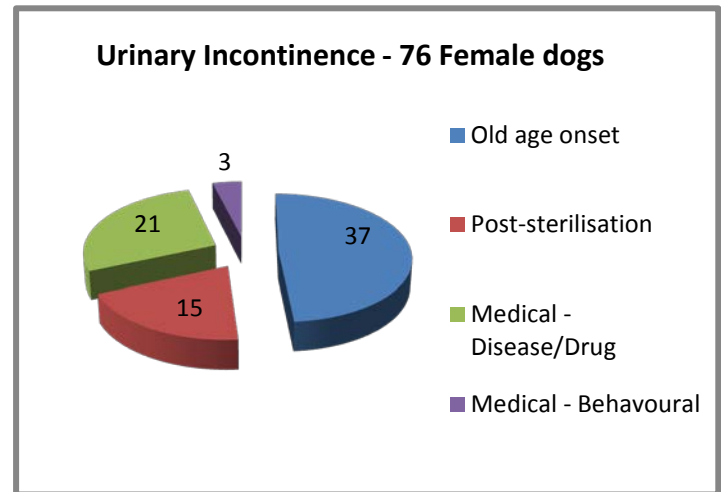
- **1.3% of all male Great Danes (545) exhibited 'old-age onset' incontinence.**
- **0.3% of all permanently sterilised male Great Danes (356) exhibited 'post-sterilisation' incontinence.**

URINARY INCONTINENCE IN FEMALES:

The survey population of 1,165 dogs included 620 females. **544 female dogs or 87.7% of all females had not suffered any form of urinary incontinence.**

URINARY INCONTINENCE - FEMALES	620	
Never suffered any urinary incontinence unless linked to a UTI	544	87.7%
Urinary incontinence by females	76	12.3%
Old age onset	37	6.0%
Post-sterilisation	15	2.4%
Medical reasons (medications, cancers, CCF, allergies, medical condition etc)	21	3.4%
Medical - Behavioural	3	0.5%

- 76 females or 12.3% of the female dog population had suffered some level of urinary incontinence.
- 37 or 48.7% of the 76 female dogs had 'old-age onset' urinary incontinence.
- 15 or 19.7% of the 76 female dogs had 'post-sterilisation' urinary incontinence.
- 21 or 27.6% of the 76 female dogs had medical urinary incontinence related to a diagnosed condition or medications.
- 3 or 3.9% of the 76 female dogs had behavioural urinary incontinence.



PREVALENCE OF FEMALE URINARY INCONTINENCE AND LINK WITH HEAT CYCLE OCCURRENCE AND STERILISATION:

URINARY INCONTINENCE - FEMALES			Sterilised < 6mnths	Sterilised 7 - 11mnths	Sterilised 1yr - 2yrs 11mnths	Sterilised 3yrs - 4yrs 11mnths	Sterilised over 5yrs	Not speyed	Unknown age of spey	Whelped
Old age onset	37	6.0%	10	9	10	2	5	1	0	7
Post-sterilisation	15	3.5%	3	3	5	1	2	0	1	3

Excluding medical and behavioural urinary incontinence;

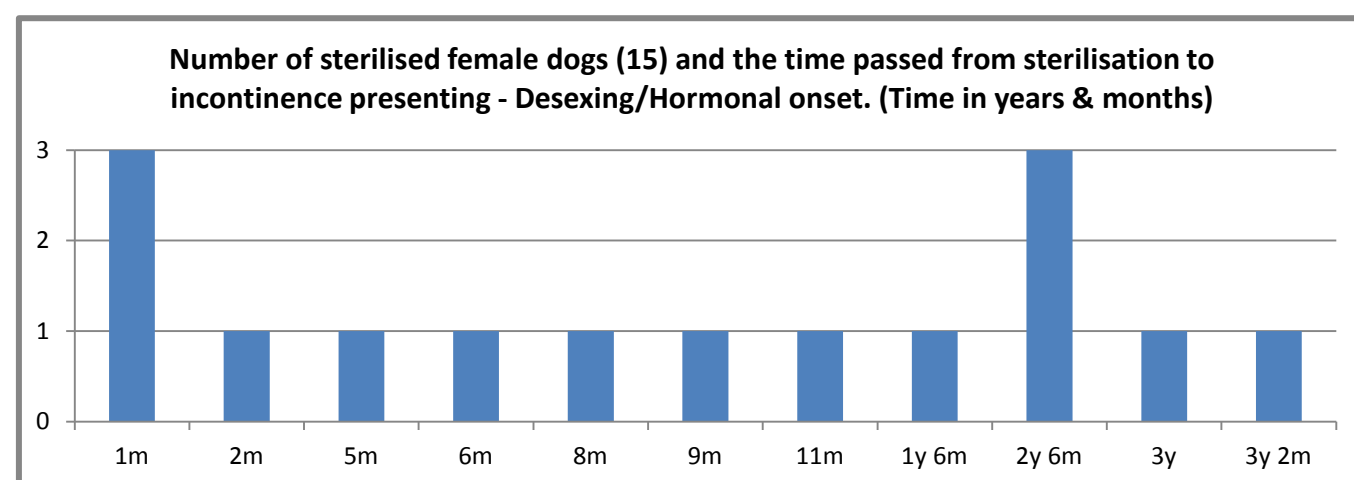
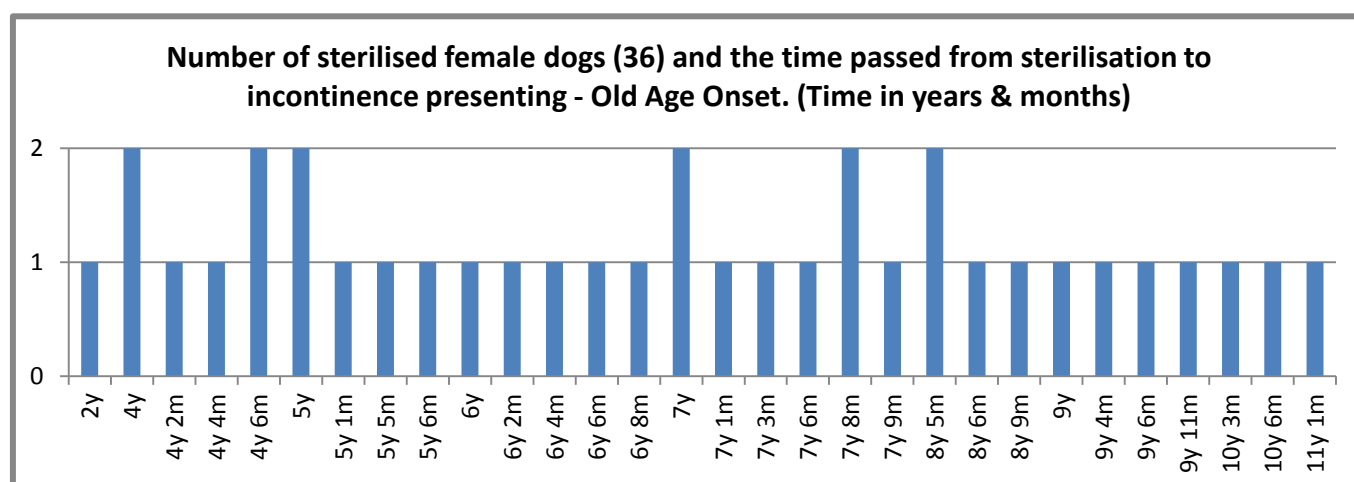
- **6% of all female Great Danes (620) exhibited 'old-age onset' incontinence.**
- **3.5% of all permanently sterilised female Great Danes (425) exhibited 'post-sterilisation' incontinence.**

URINARY INCONTINENCE - LINK TO HAVING A HEAT CYCLE OR NOT	52		Old Age Onset Incontinence	37	Post Sterilisation Onset Incontinence	15
Sterilised before 1st heat cycle	21	40.4%	15	40.5%	6	40.0%
Sterilised after 1st heat cycle	27	51.9%	19	51.4%	8	53.3%
Sterilised but unknown if female had a heat cycle prior	3	5.8%	2	5.4%	1	6.7%
Never sterilised	1	1.9%	1	2.7%	0	0.0%

Females that were sterilised after their first heat cycle display a higher occurrence of both old-age onset and post-sterilisation incontinence, than those that were sterilised before their first heat cycle.

As the survey had gathered dates/ages of sterilisation and onset dates/ages of medical issues, it was possible to show the tenure of time passed for each of the old-age onset and post-sterilisation incontinence dogs from the age of sterilisation to appearance of incontinence.

- **Old-age onset:** The minimum period of time passed from sterilisation age to onset of incontinence was 2 years and the maximum was 11 years & 1 month. **66.7% or 24 females took 6 years or more from age of sterilisation to display issues.**
- **Post-Sterilisation onset:** The minimum period of time passed from sterilisation age to onset of incontinence was 1 month and the maximum was 3 years & 2 months. **60% or 9 females displayed issues within the first year of being de-sexed.**



MANAGEMENT OF URINARY INCONTINENCE:

For the 52 female dogs with old-age onset or post-sterilisation urinary incontinence, a range of management protocols were used.

- The most commonly used medication regime was the use of hormones. The frequency of use for these drugs ranged from a once-off period then never again, through to daily medications given.
- 10 or 66.7% of the 15 post-sterilisation incontinence females were on hormone treatments.** 4 or 26.6% of these females were not on any medications at all and the incontinence was very mild. 1 female was treated with Ural sachets as needed.
- 15 or 40.5% of the 37 old-age onset incontinence females were on hormone treatments.** 18 or 48.6% of this group had no treatments at all and not deemed necessary. The remaining 4 females were treated with anti-histamines, acupuncture or were given Ural sachets.

TREATMENTS FOR FEMALE URINARY INCONTINENCE: OLD AGE & POST-STERILISATION ONSET	52	
No treatment deemed needed - very occasional	21	40.4%
Toileting regime only	1	1.9%
Anti-histamines prescribed	2	3.8%
Once only medication regime used then settled	3	5.8%
Continued, frequent medications (daily, weekly or less frequently but continued)	22	42.3%
Other management - acupuncture, Ural sachets	3	5.8%

MEDICAL URINARY INCONTINENCE IN FEMALES:

- 21 females or 27.6% of the 76 incontinent females had medical conditions that caused or contributed to their urinary incompetence.
- 5 of these females were not sterilised.
- Some of the conditions that these females had were neurological conditions, anatomical deformities, cancers, Dilated Cardiomyopathy and fluid management issues, epilepsy.
- Some of the females had temporary incontinence for a period of time post-operatively which was resolved.
- Some had medication inspired incontinence as a side-effect of drugs being used for other conditions that may be long-term.

FAECAL INCONTINENCE:

- **9 dogs or 0.8% of the entire population had also suffered faecal incontinence.**
- 3 were males and 6 were females.
- 4 of these dogs had medical conditions that the faecal incontinence was ascribed to such as Wobblers Syndrome, spinal injury or anal deformity.
- 5 were old-age onset and the faecal incontinence was occasional, on exertion or when asleep.
- All 9 dogs were 'seniors' with the youngest being 6 years & 2 months old and the oldest being 10 years & 5 months old.

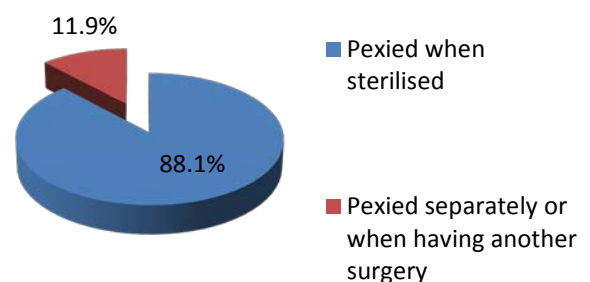
PROPHYLACTIC GASTROPEXY:

Gastropexy is the medical term for the surgical fixation of the stomach which essentially 'anchors it'. The use in dogs is to prevent the torsion element of a Gastric Dilation Volvulus event. Emergency gastropexies are often performed as a life-saving technique in a Gastric Dilation Volvulus experience. Prophylactic gastropexies have been performed on high-risk dogs for almost 20 years and are done on dogs that have never experienced a Bloat or GDV. The variety of techniques are, Circumcostal gastropexy, Belt-loop gastropexy, Incisional gastropexy and Laparoscopic gastropexy

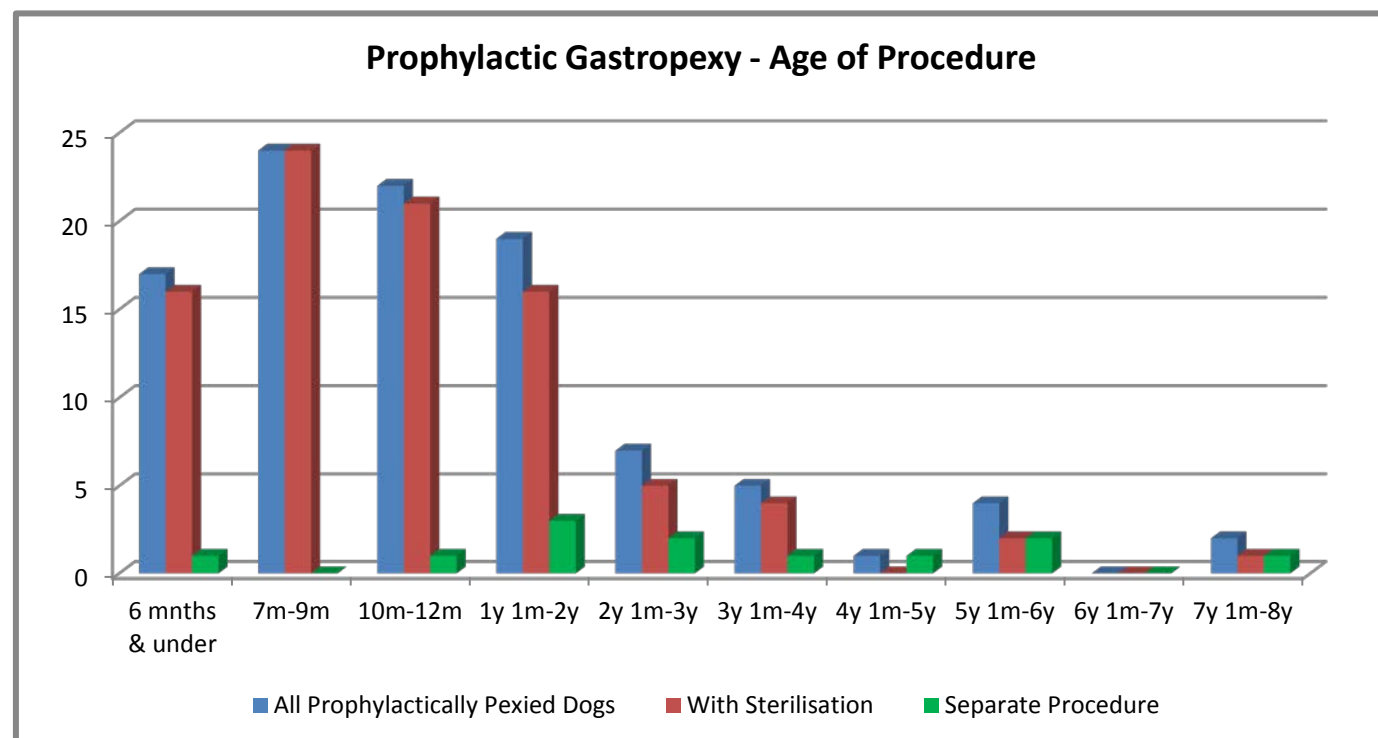
The first prophylactically gastropexied dogs from this Australian population were done in 2003.

- **In this population of 1,165 Great Danes, 101 or 8.7% of all dogs had been prophylactically gastropexied.**
- 89 or 88.1% were prophylactically gastropexied along with their sterilisation procedure.
- A further 22 dogs that were not already sterilised or gastropexied at the time of the survey had owners who were planning to prophylactically gastropexy their dogs when they were sterilised.

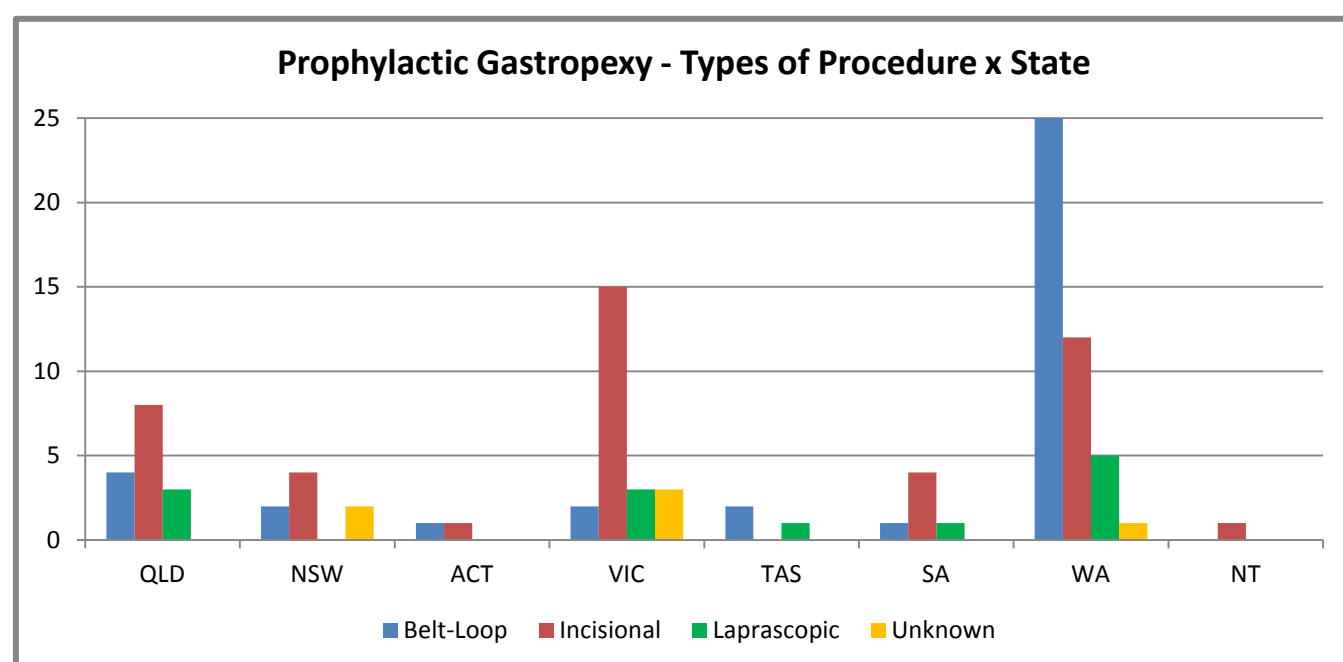
Prophylactic Gastropexy - 101 dogs



82 or 81.2% of all the prophylactically gastropexied dogs were pexied by the age of 2yrs old. Of the 101 dogs prophylactically gastropexied, 65 or 64.4% of them were females and 36 or 35.6% were males. 7 of the dogs were prophylactically gastropexied as 'senior dogs' and were between the ages of 5-8 years old. Many of the dogs that were prophylactically gastropexied as older dogs and often with a separate procedure to sterilisation, had been done when a known close relative has bloated or experienced a GDV and the owners felt they would select this form of safe-guard.



Prophylactic gastropexy is a relatively new option being considered with the first of these dogs gastropexied in 2003 in Australia. 43 or 42.6% of all the prophylactically gastropexied dogs were WA dogs. Of the types of Prophylactic Gastropexy, 45 or 44.6% were Incisional, 37 or 36.6% were Belt-Loop, 13 or 12.9% were Laprascopic and the remaining 6 or 5.9% were dogs where the type of surgery was unknown by the owners.



POST-OPERATIVE RECOVERY:

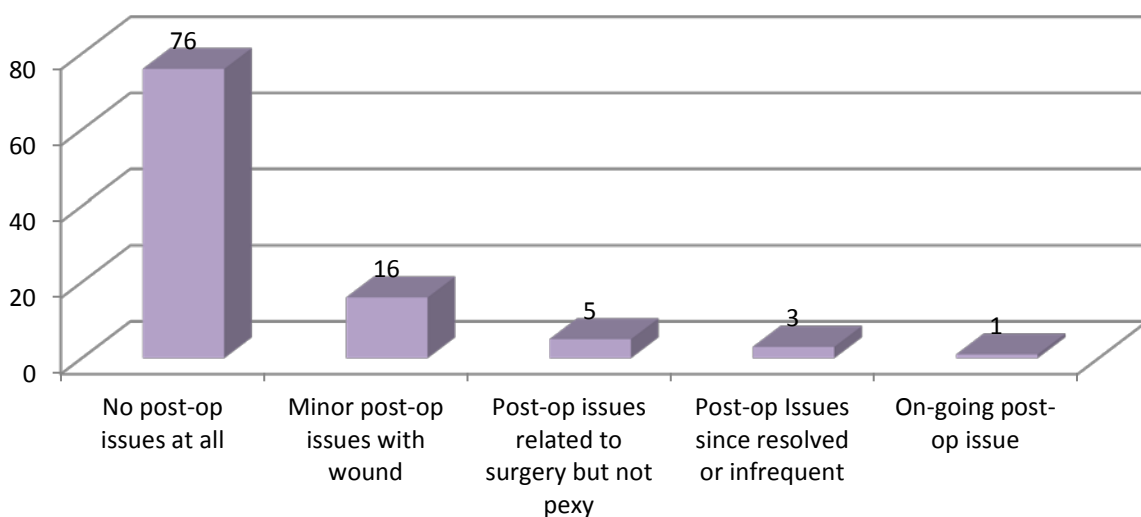
- 76 or 75.2% of all dogs recovered easily & perfectly from their surgery. All of these owners commented on the fact their dogs were well and back to their normal selves immediately.
- 24.8% or 25 dogs had some level of post-op recovery issue, all were related to surgery but the gastropexy itself was fine. Most were linked to minor wound issues but 5 or 5% of all prophylactic gastropexies, had more serious issues (anaesthetic reactions, pain med reactions).
- 1 or 1% of all prophylactically gastropexied dogs had major post-op issues related to surgery. This dog had a range of intra-surgical issues including the diaphragm being nicked, an intra-operative serious burn and surgical sponge being left in-situ.
- **The surgical mortality rate for the 101 dogs that had a prophylactic gastropexy was 0%.**
- **The serious post-op complications rate for the 101 dogs that had a prophylactic gastropexy was 1%.**

As prophylactical gastropexy is still relatively new to Australia and for Great Danes, there is a perception that prophylactically gastropexied dogs have ongoing issues for life with their digestive system.

Of the 101 dogs prophylactically gastropexied, 3 or 3% had temporary issues with vomiting or diarrhoea which have since resolved (2) or settled into an infrequent pattern of regurgitating occasionally, about once a month (1). **A further 1 dog or 1% has continued to have lifelong issues** that were not in place prior to the prophylactic gastropexy surgery and needs frequent small meals to prevent vomiting.

The remaining 96% of all prophylactically gastropexied dog owners reported that the dogs once recovered had no issues or changes with their digestive system.

Prophylactic Gastropexy - Post-op Recovery & ongoing issues: 101 dogs



- 37 or 36.6% of the 101 prophylactically gastropexied dogs have known relatives who have bloated or had a GDV.
- 3 of these dogs with a known relative with Bloat/GDV, went on to have a Bloat/GDV themselves.
- 34 of the remaining 37 dogs with known relatives that have had a Bloat/GDV, and were prophylactically gastropexied, have not gone on to experience a Bloat/GDV despite their risk factor at the time of the survey.

PROPHYLACTIC GASTROPEXY AND BLAOT/GDV EXPERIENCE:

- 6 or 5.9% of the dogs that were prophylactically gastropexied have experienced a Bloat/GDV event after their surgery.
- 4 or 4% of prophylactically gastropexied dogs had a Bloat and did not proceed to Torsion.
- 1 or 1% of the prophylactically gastropexied dogs did proceed to a partial Torsion but the existing incisional gastropexy anchor points held. The gastropexy was extended further down the body of the stomach.
- The other 1 or 1% of the prophylactically gastropexied dogs had a Bloat and the incisional gastropexy did not hold. This dog had not had a Bloat prior to the preventative surgery being done as a senior at age 7 years & six months. The gastropexy held through several bloats until it gave away resulting in torsion. It is worth noting that this dog also had a direct relative with multiple bloats and GDV's that had a **post-bloat gastropexy** done at the same clinic which did not hold in a torsion event.
- **100% of the prophylactically gastropexied dogs, when threatened by Bloat/GDV, lived.**
- 4 of the 6 or 66.7% of the prophylactic gastropexies that were tested by bloat, worked perfectly when challenged by Bloat/GDV.
- Of 101 prophylactically gastropexied dogs only **6 or 5.9% of them have gone on to experience a Bloat and/or GDV which is less than half the prevalence of the non-prophylactically gastropexied dogs discussed in the next section.**

PROPHYLACTIC GASTROPEXY & FURTHER BLOAT/GDV EXPERIENCES	101	Type of Prophylactic Gastropexy			Family History of Bloat/ GDV		
		Incisional	Belt-loop	Laprascopic	Family History of Bloat/ GDV	Family History not known	No Family History of Bloat/ GDV
Had one/some diagnosed Bloat or Gassy experience FOLLOWING Prophylactic Gastropexy with NO PRIOR Bloat/GDV but did not proceed to torsion	4	4%	1	2	1	2	2
Had one/some diagnosed Bloat or Gassy experience FOLLOWING Prophylactic Gastropexy with NO PRIOR Bloat/GDV and went on to further Bloat/GDV and DID experience partial torsion but Prophylactic Gastropexy did hold .	1	1%	1			1	
Had one/some diagnosed Bloat or Gassy experience FOLLOWING Prophylactic Gastropexy with NO PRIOR Bloat/GDV and went on to further Bloat/GDV (multiple) & Prophylactic Gastropexy did NOT hold	1	1%	1		1		



'Greater Western Melbourne Giant Dogs' group - playdate in Melbourne, Victoria. Photo credit – Kylee Noakes

BLOAT AND/OR GASTRIC DILATION VOLVULUS:

Great Dane dogs, as a breed, display an 'above-average' prevalence for having Bloat and/or GDV occur in their lifetime. For many owners, it is one of the greatest fears of loving a Great Dane. Research into the how's & why's of this medical crisis is happening yet there are still no absolutes available. Some owners rely on knowing family history, being prepared to look for the signs and acting quickly, sheer luck and some rely on using the prophylactic gastropexy surgery to gain time and prevention of the torsion component of the GDV experience. For all Great Dane owners, this condition is one that inspires dread!

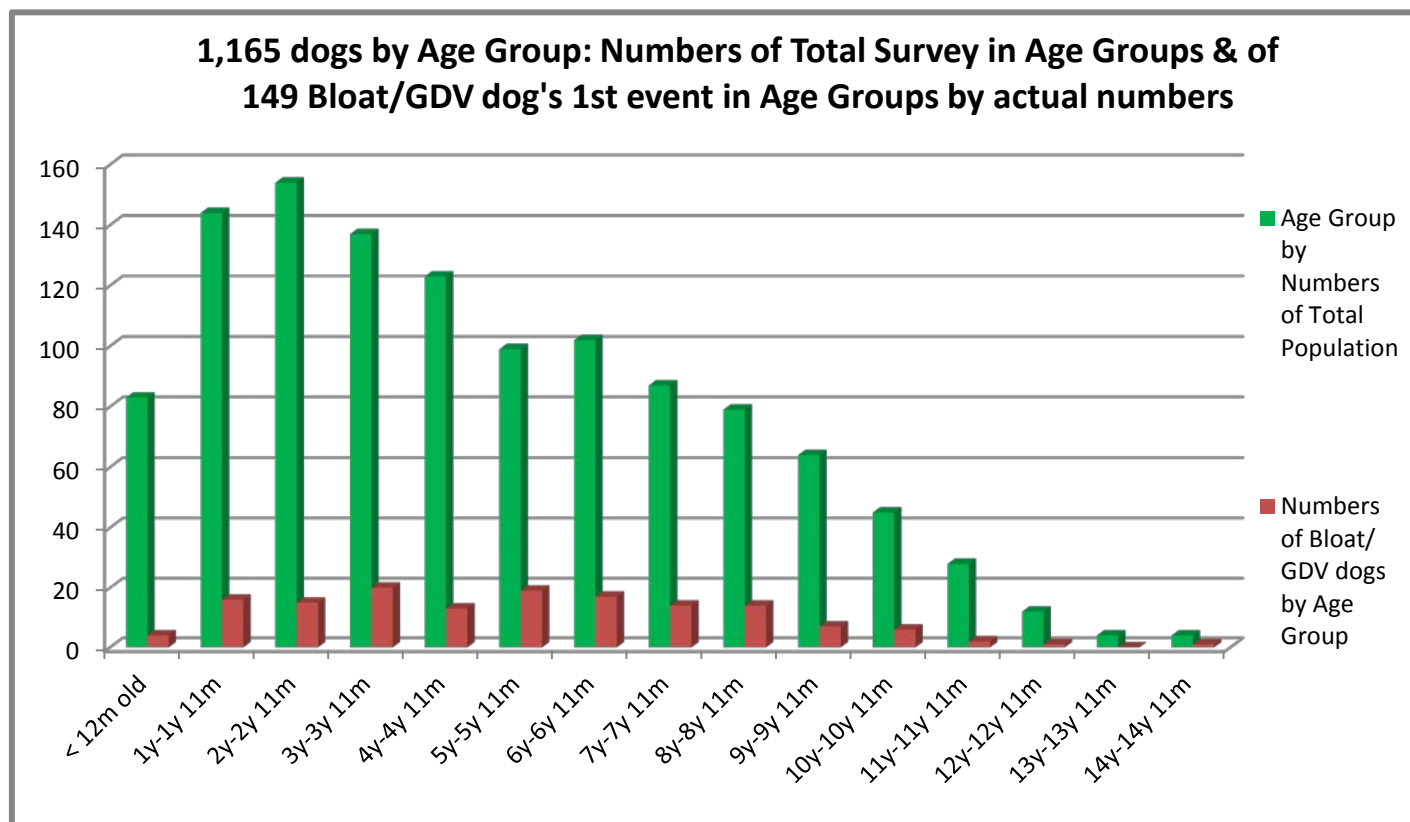
87.2% of all the Great Danes in a 1,165 dog survey had never experienced a Bloat/GDV.

The survey population had 1,165 Great Danes included and of that number, 149 or 12.8% had experienced a Bloat and/or GDV event.

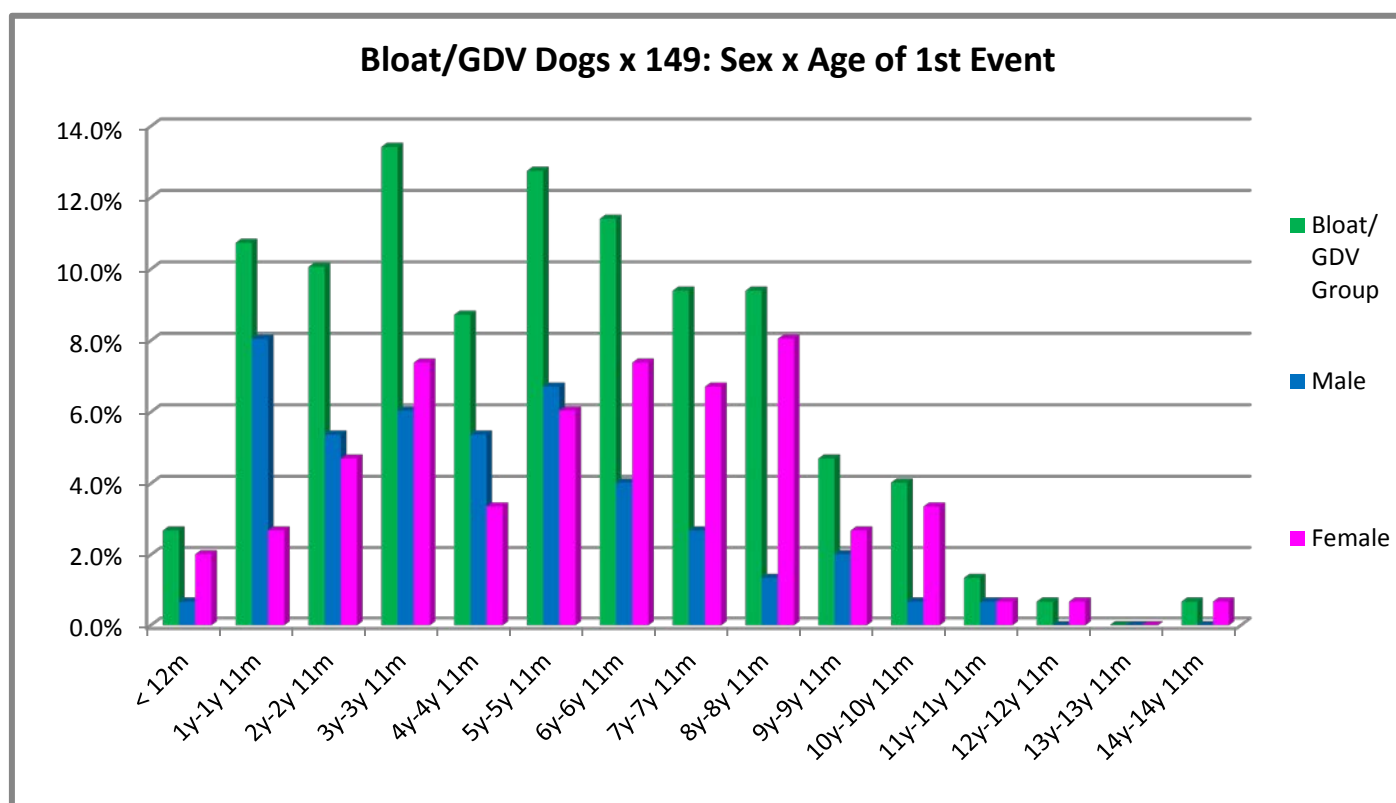
- 23 dogs had experienced Bloat but had not progressed to a GDV. **Bloat only prevalence was 2% of the entire population.**
- 126 dogs had experienced a full GDV event. **GDV prevalence was 10.8% of the entire population.**
- 65 or 43.6% of the 149 Bloat/GDV dogs were male. **With 545 males in the entire survey population, the prevalence of Bloat/GDV for males was 11.9%**
- 84 or 56.4% of the 149 Bloat/GDV dogs were female. **With 620 females in the entire survey population, the prevalence of Bloat/GDV for females was 13.5%.**
- 45.5% of the 149 dogs that had experienced a Bloat and/or GDV were under the age of 5yrs old
- 54.5% of the 149 dogs that had experienced a Bloat and/or GDV were 5yrs old or over.
- Of the 'very geriatric dogs' who experienced a Bloat and/or GDV event, 10 or 6.7% of all Bloat/GDV dogs, were 10yrs old or older. There were 93 dogs in the survey aged 10 years or older so the prevalence of Bloat/GDV in that age segment was 10.8%.
- 7 of the 28 Bloat/GDV dogs that had more than one event were under the age of 2 years old when their first event occurred.
- 2 of these 7 dogs under 2 years of age were 7 months old when they had their first event.

BLOAT AND/OR GASTRIC DILATION VOLVULUS: 149 dogs, age of first event	149	% of Total Bloat/ GDV Group	Bloat Only - No GDV	% of Bloat/ GDV Group	GDV - may have bloated prior to GDV	% of Bloat/ GDV Group	Male	Sex by % of Bloat/ GDV Group of 149 dogs by age group	Female	Sex by % of Bloat/ GDV Group of 149 dogs by age group
Male	65	43.6%	10		55					
Female	84	56.4%	13		71					
< 12mnths old	4	2.7%	2	1.3%	2	1.3%	1	0.7%	3	2.0%
1yr - 1yr 11m	16	10.7%	5	3.4%	11	7.4%	12	8.1%	4	2.7%
2 yrs - 2yrs 11m	15	10.1%	1	0.7%	14	9.4%	8	5.4%	7	4.7%
3 yrs - 3yrs 11m	20	13.4%	7	4.7%	13	8.7%	9	6.0%	11	7.4%
4 yrs - 4yrs 11m	13	8.7%	0	0.0%	13	8.7%	8	5.4%	5	3.4%
5 yrs - 5yrs 11m	19	12.8%	2	1.3%	17	11.4%	10	6.7%	9	6.0%
6 yrs - 6yrs 11m	17	11.4%	1	0.7%	16	10.7%	6	4.0%	11	7.4%
7 yrs - 7yrs 11m	14	9.4%	0	0.0%	14	9.4%	4	2.7%	10	6.7%
8 yrs - 8yrs 11m	14	9.4%	1	0.7%	13	8.7%	2	1.3%	12	8.1%
9 yrs - 9yrs 11m	7	4.7%	2	1.3%	5	3.4%	3	2.0%	4	2.7%
10 yrs - 10yrs 11m	6	4.0%	1	0.7%	5	3.4%	1	0.7%	5	3.4%
11 yrs - 11yrs 11m	2	1.3%	1	0.7%	1	0.7%	1	0.7%	1	0.7%
12 yrs - 12yrs 11m	1	0.7%	0	0.0%	1	0.7%	0	0.0%	1	0.7%
13 yrs - 13yrs 11m	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
14 yrs - 14yrs 11m	1	0.7%	0	0.0%	1	0.7%	0	0.0%	1	0.7%
	149		23	15.4%	126	84.6%	65	43.6%	84	56.4%

Taking all dogs in the survey and splitting them into their respective current age groups with the Bloat/GDV dog population shown alongside them indicates the visual prevalence of Bloat/GDV by age category.



In younger age groups the males generally had a higher prevalence when measuring just the initial event but as the dogs grow older, the females had more 1st time Bloat/GDV experiences for the age categories. This is based on purely recording the actuals found in the population and is not tested for statistical validity.



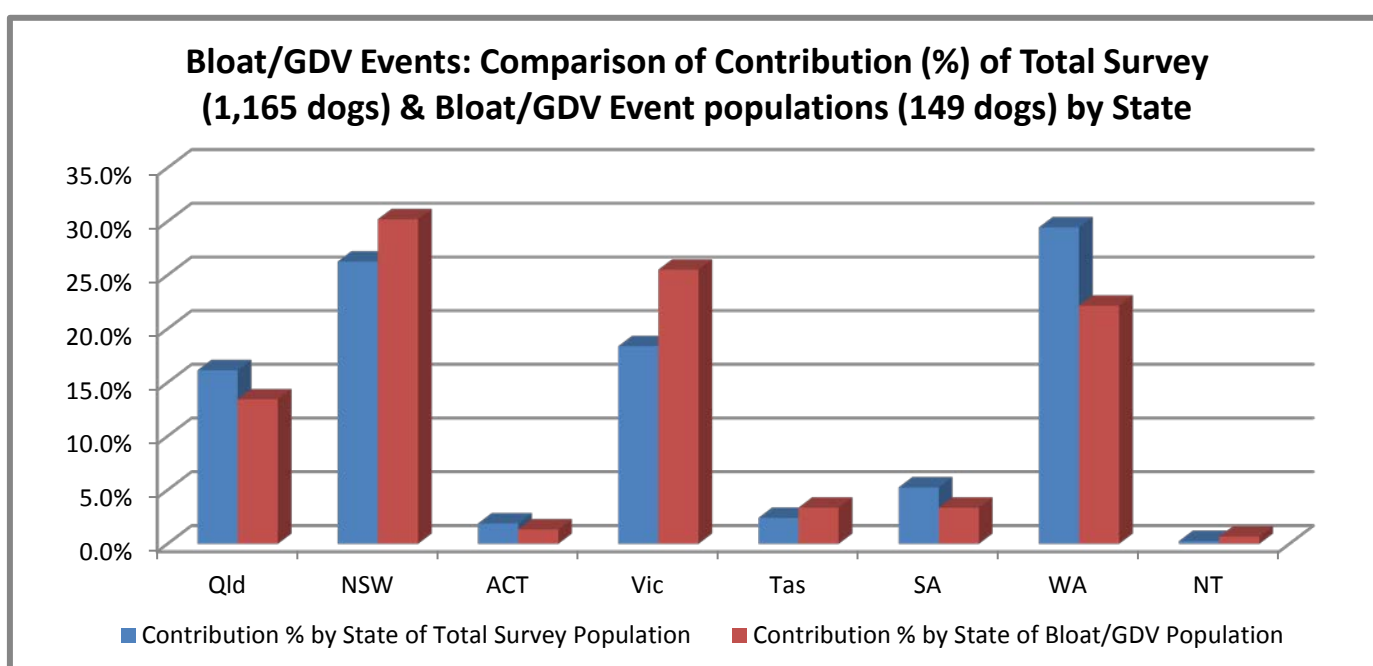
Whilst we had 149 dogs experience a Bloat and/or GDV, 121 or 81.2% experienced ONE event ONCE. **Another 28 dogs between them experienced 81 events.** That number in fact is actually higher as some dogs were bloating weekly but we could not gather individual details on every event for those few dogs.

The diversity in these 149 Bloat/GDV dogs was immense. Some had bloated once, twice or several times prior to a full GDV. Some had a GDV then subsequent bloating. Some did a 'repeat looping' of GDV/Bloat/GDV'. It was difficult to get a full count but we have 149 dogs with a minimum of 202 Bloat/GDV events.

BLOAT AND/OR GASTRIC DILATION VOLVULUS - NUMBER OF EVENTS 149 dogs with 202 known events	One event only	Two events	Three events	Four events	Five events	More than five events	
Bloat GDV Group x 149 dogs	121	15	6	2	0	5	149
% of Bloat/GDV Group	81.2%	10.1%	4.0%	1.3%	0.0%	3.4%	
Bloat Only	17						17
% of Total Bloat/ GDV Group	11.4%						
Bloat x Multiple with no GDV		3	2			1	6
% of Total Bloat/ GDV Group		2.0%	1.3%			0.7%	
Bloat x 1 then GDV separately		6					6
% of Total Bloat/ GDV Group		4.0%					
Bloat x Multiple then GDV or multiple GDV's			1	1		2	4
% of Total Bloat/ GDV Group			0.7%	0.7%		1.3%	
GDV x 1	104						104
% of Total Bloat/ GDV Group	69.8%						
Bloat & GDV x multiple		4	3			1	8
% of Total Bloat/ GDV Group		2.7%	2.0%			0.7%	
GDV then Bloat or Multiple Bloats		2		1		1	4
% of Total Bloat/ GDV Group		1.3%		0.7%		0.7%	

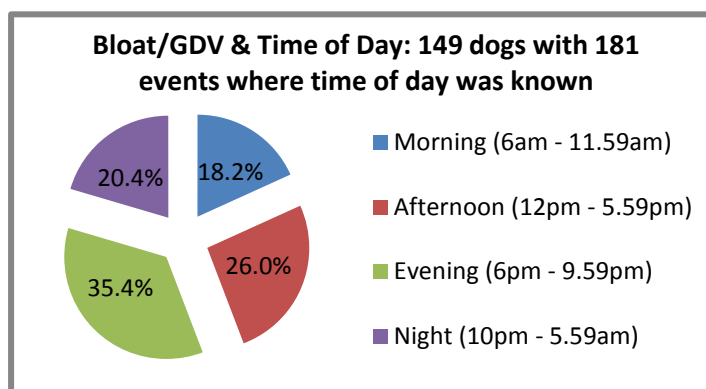
STATE REPRESENTATION IN THE BLOAT/GDV GROUP:

The state contribution of dogs to the survey by population was uneven. Part of this was due to the earlier GDLAWA Health Survey and the numbers of WA dogs already included. NSW, Victoria, Tasmania and the Northern Territory were over-represented by percentage, in the Bloat/GDV population against the total survey population.



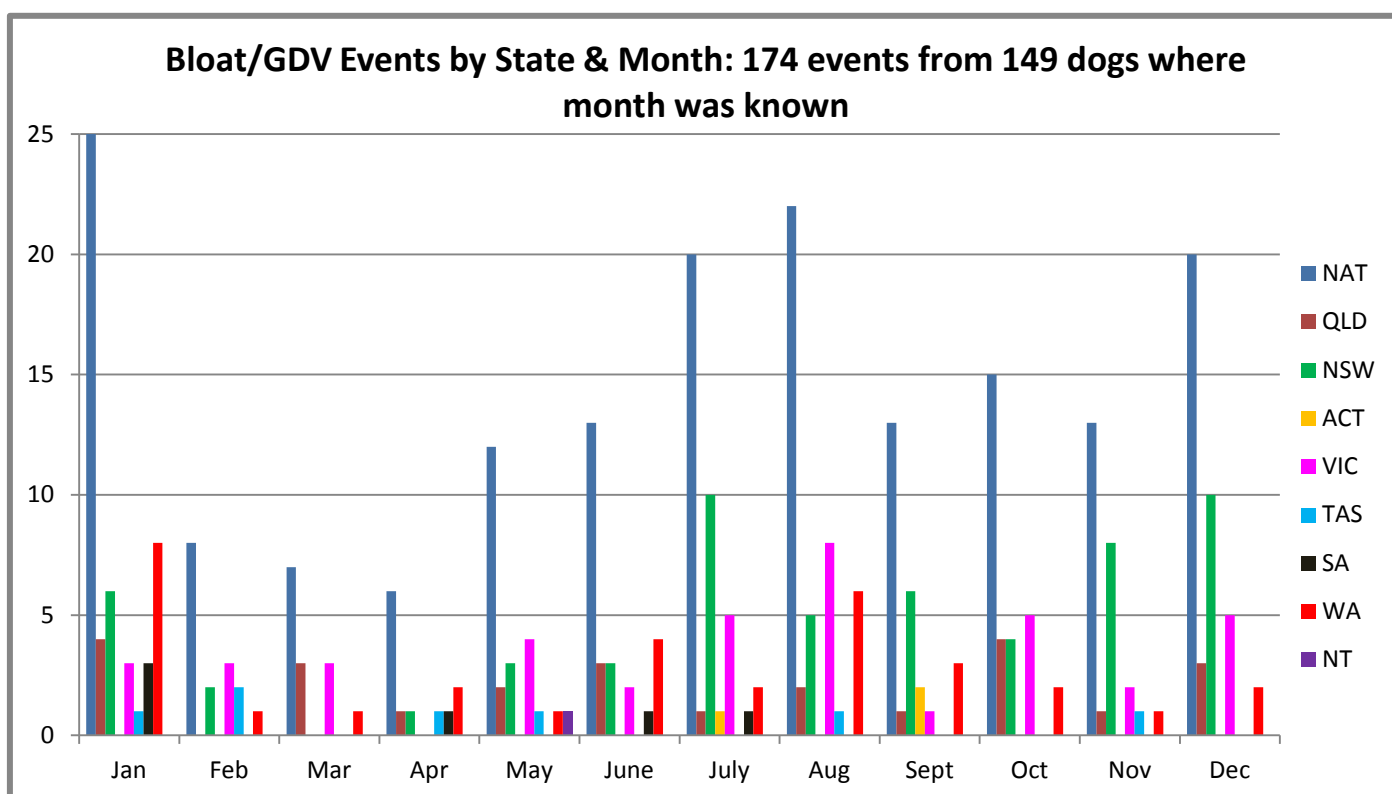
TIME OF THE DAY FOR BLOAT/GDV EVENTS:

- There were 181 Bloat/GDV events where the time of the day was known from the 149 dogs.
- **35.4% occurred in the evening hours and a further 20.4% occurred in the night.** Most Bloat/GDV's were happening when the dogs were at their most relaxed and in safe environments.



MONTH OF THE YEAR FOR BLOAT/GDV EVENTS:

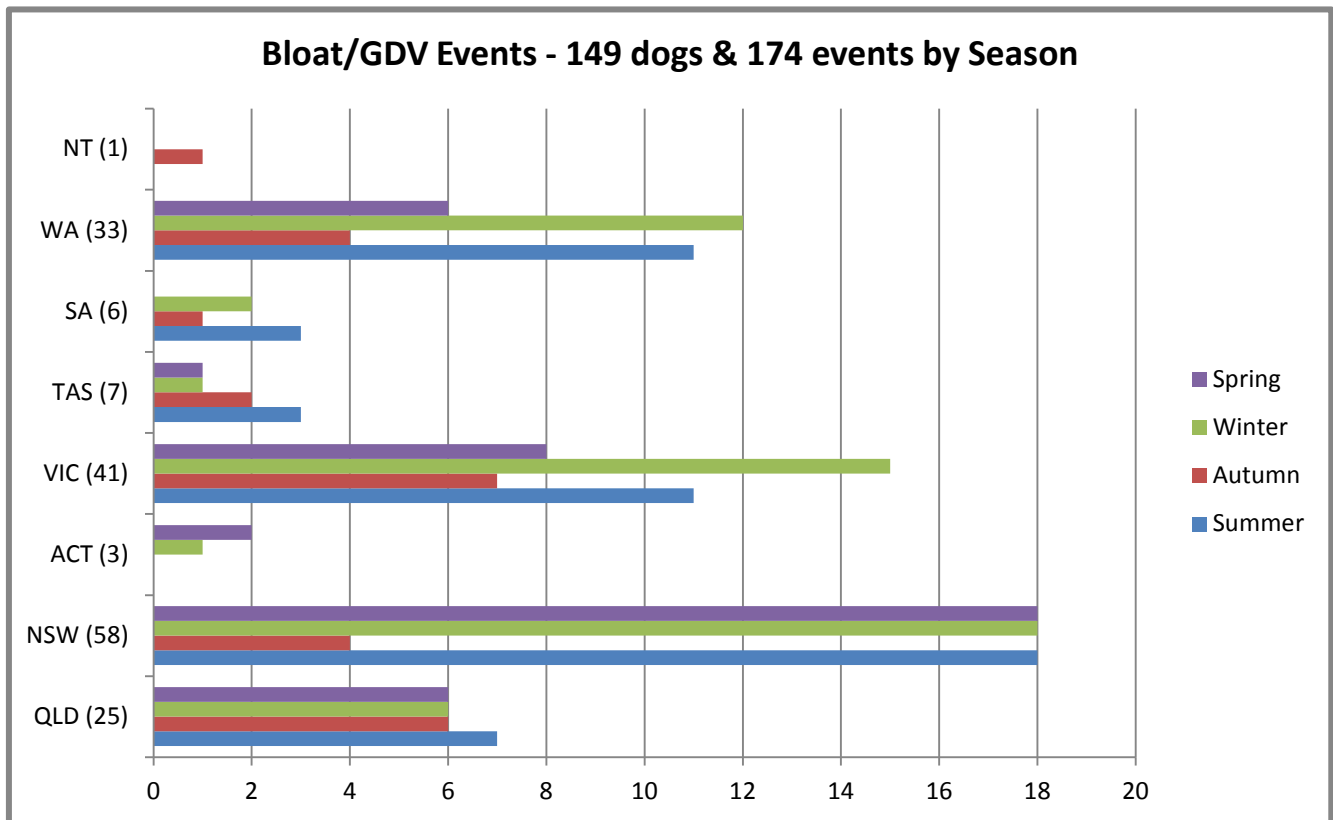
Australia, due to its size is diverse in its climatic seasons with humid, tropical weather in the northern states and cold, wet conditions in the southern regions. Of the 149 dog Bloat/GDV population, there were 174 events where the month was known in detail. Each month was graphed with the 'national' number alongside the numbers by state and may indicate influence by weather or location.



With 174 known-month Bloat/GDV events to measure, some peaks were identified, but not tested for statistical validity.

- January (24), August (22), December (21) and July (20) were the months with the greatest prevalence of occurrence.
- The states & territories with lower dog numbers like the ACT, NT, Tasmania and South Australia had occurrence spread generally across the year.
- Queensland where the temperatures do not vary enormously, generally a warmer state than others, had a spread across all months except February when none occurred. The lowest per month was 1 and the highest per month (Jan & Oct) was 4 events.

- New South Wales had 3 highlight months of January, July and December.
- Victoria had 1 highlight month which was August with 8 events.
- Western Australia had 2 highlight months, January and August.
- When aggregating the month of occurrence into seasons, some state pictures change again. NSW is the clearest example of this. It may be of value to examine the actual regional locations of participants at some point as the weather patterns in large states can vary enormously. EG: Lower NSW is cooler for longer and northern NSW is more akin to the Qld weather patterns.



'Tassie Danes' members on a walk outside the Old Brewery in Hobart, Tasmania.

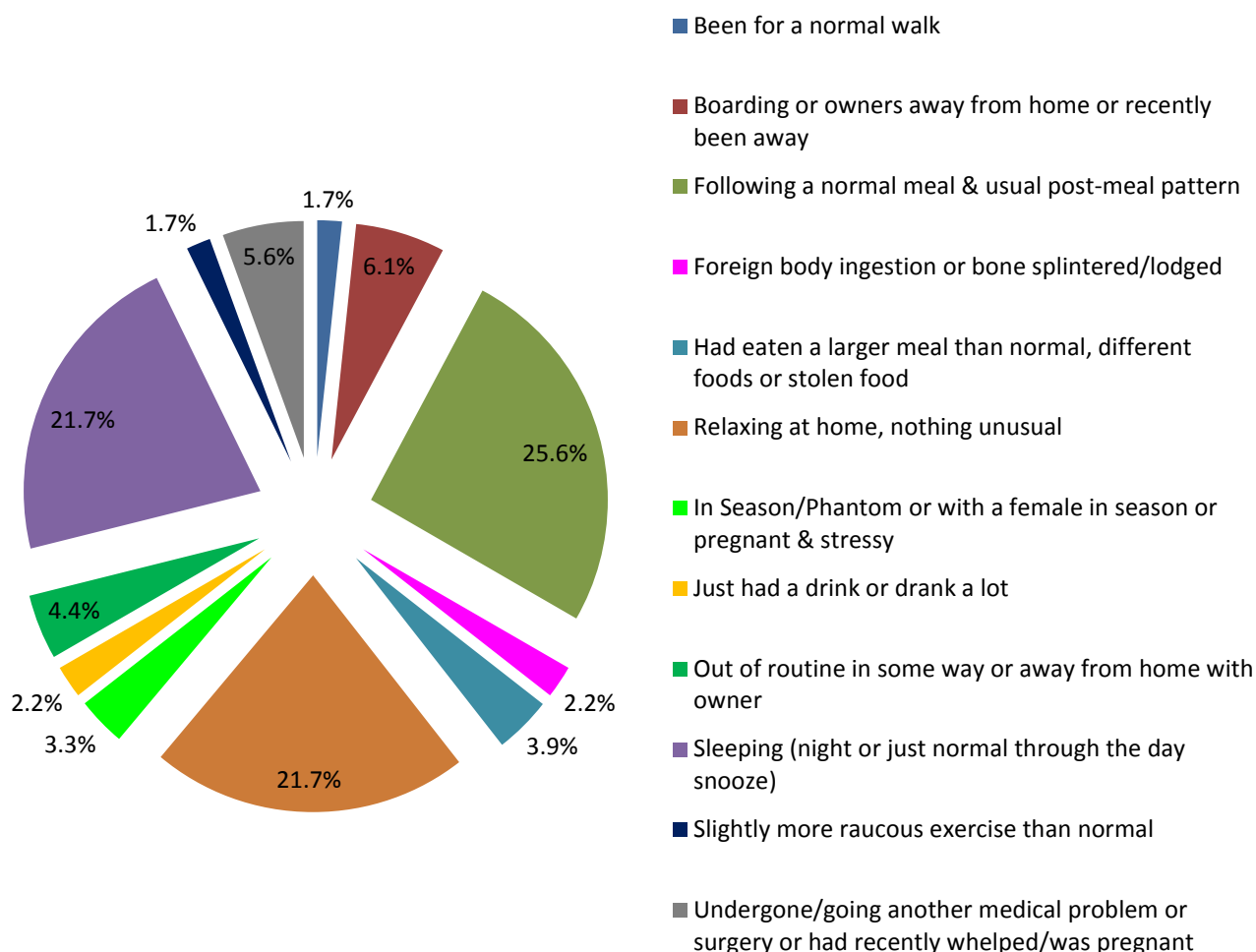
Photo credit – Bec Stokes

ACTIVITY AROUND THE BLOAT/GDV EVENT:

Great Dane owners go to huge lengths to keep their dogs safe from Bloat/GDV! There are so many practices and beliefs around what causes a dog to suddenly bloat and in the gathering of these stories it was clear that most families were shocked by the fact that their dog bloated 'when everything was normal and they had done nothing wrong'. This condition clearly has much for us still to learn. We had 180 detailed Bloat/GDV events to draw 'activity prior to the event' knowledge from:

- 46 or 25.6% of the 180 events happened when the dogs had a normal meal a few hours prior and were in the company of their families.
- 39 or 21.7% of the events occurred when the dogs were relaxed, at home and everything was normal.
- A further 39 or 21.7% of the events happened in the night when the dogs were safe and sleeping.
- 3 or 1.7% of the events happened following a normal, everyday walk with no extra activity.
- **70.7% of the Bloat/GDV events occurred when normal, relaxed, everyday life was underway with no noted stressors at all.**

180 Bloat/GDV Events: What was/had been happening at the time



SYMPTOMS OBSERVED:

Descriptive symptoms were gathered from the owners of the 149 Bloat/GDV dogs with detail around 160 events. The clearest thing from this data is that **there is no clear picture of a Bloat dog**. They mostly show different symptoms but almost all owners 'just knew something wasn't right'!

BLOAT AND/OR GASTRIC DILATION VOLVULUS - SYMPTOMS DISPLAYED: 160 events	160	
Seemed Uncomfortable/ listless/desperate / miserable	38	23.8%
Anxious/nervy	6	3.8%
Clearly unsettled / confused	21	13.1%
Seems to be in pain	16	10.0%
Eating grass	4	2.5%
Trying to vomit/ Dry retching	51	31.9%
Foamy/frothy retching	37	23.1%
Salivating / Drooly / Foamy/ Wet Mouth	59	36.9%
Productive vomit	8	5.0%
Panting	5	3.5%
Whining	4	2.5%
Abdo did not blow up or minimal	50	31.3%
Abdo blew up suddenly	21	13.1%
Abdo tight or hard but not distended much	18	11.3%
Abdo clearly distended and/or hard	72	45.0%
Restless / Pacing	43	28.1%
Head hanging down	28	17.5%
Hunching stance, head lower than shoulders	48	30.0%
Pray-bowing / stretching	8	5.0%
Sphinx position laying	1	0.6%
Trying to defecate	2	1.3%
Wanting owner's attention	6	3.8%
Can't settle, up then down	12	7.5%
Not wanting to move much	9	5.6%
Reluctant to lay down or sit/tense	21	13.1%
Wanting to lay down or on side	10	6.3%
Digging, hiding or moving into an odd place	17	10.6%
Unable to walk at all	5	3.1%
Minimal effect shown	14	8.8%

- Not all dogs indicate Bloat by a swollen abdominal region. **In 93 events or 58.1% of all events, there was clear abdominal distension** however some of the dogs did not distend until actually in a car or at a vet.
- Wet mouths, drooling, foamy or frothy saliva and/or vomit or retching was a very common indicator.
- Words used for the 'demeanour' of the dog were highly descriptive such as desperate, miserable, distressed, afraid, tense, etc. **Most owners even prior to any abdominal changes knew that this was 'scary'**. Some had to push Vets to investigate as the medical staff were looking specifically for swollen abdos.
- It is clear that owners cannot use any one stance as a guideline. Some dogs wanted to lay down only, some did not want to lay down, some were restless and others were 'frozen'.
- Sadly, some dogs were sent home from Vets without investigation only to then continue the GDV event and move into more distress, danger and the 'recognisable symptoms'. For some, that was then too late.



'Sydney/NSW Great Dane Owners': Everyone mastering 'look at the camera' well on a walk in Sydney, New South Wales.

Photo credit – Rebecca Jefferis

MEDICAL MANAGEMENT: BLOAT ONLY.

From a group of 149 dogs that experienced over 202 Bloat and/or GDV events, 23 or 15.4% of the 149 had Bloat only.

BLOAT ONLY OVERVIEW - 23 dogs: Initial Bloat experience & Gastropexy	23		Went on to re-bloat	
Had been previously prophylactically gastropexied & did not torsion	4	17.4%	0	0.0%
Recovered & post-bloat gastropexy performed	10	43.5%	3	33.3%
Recovered & no gastropexy performed on initial Bloat	9	39.1%	3	30.0%

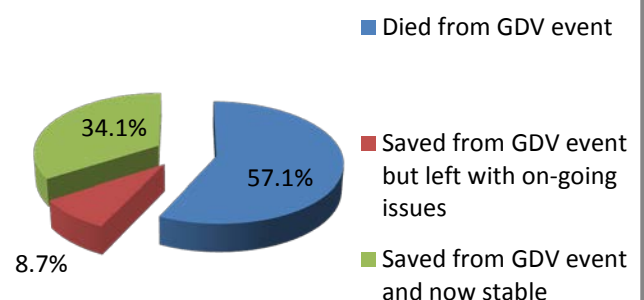
- 4 of the 23 dogs had been prophylactically gastropexied prior to any Bloat experience.
- 10 of the 23 dogs recovered and then had a post-bloat gastropexy performed.
- 3 of these 10 dogs did go on to have one or more further bloats. 1 of these dogs went on to have multiple bloats and some five and a half years later became an Acquired Megaoesophagus dog and was eventually euthanased. 2 of these dogs went on to experience a second Bloat only.
- 9 of the 23 dogs recovered and did not have a gastropexy performed on their initial Bloat event. 3 of these dogs went on to re-bloat. 1 dog was euthanased at a 3rd Bloat event as it had experienced 3 bloats in 3 months and was aged over 11 years old. 1 of these dogs had a second Bloat within 5 weeks and was given a post-bloat gastropexy at that point. The third dog had two further bloats within a year of the first, but did not ever have a gastropexy or torsion and did not bloat again.
- Almost all of the Bloat Only dogs were needled or tubed to release the stomach gas.
- **One dog that did not have a gastropexy at the first bloat and then re-bloated within weeks, was tubed but each time the tube was removed the dog would bloat again so it was given a stomach stoma which was left in place for a week. After resting the stomach, the dog was then given a post-bloat gastropexy and did not have any subsequent bloats at all. Of all the Bloat/GDV episodes, this was a unique approach and avoided the dog being in prolonged medical shock.**

MEDICAL MANAGEMENT: GDV ONLY.

From 149 dogs with over 200 Bloat and/or GDV events, 126 dogs had experienced torsion. The survey gathered an incredible array of journeys and experiences but the Gastric Dilation Volvulus one had the greatest variety and challenge. At the least, this event is physiologically catastrophic and at the worst, it is life-threatening!

- The data around these events, whether it is the first and only GDV or one of some, shows that ultimately for **72 dogs or 57.1% of the 126 who experienced a full GDV, death was the outcome.**
- Whilst 54 or 42.9% of the dogs did live, **only 43 or 34.1% of them lived and went on to be 'normal and stable' dogs again.** Two thirds of the GDV dogs either did not live or were left with life-long issues.
- 73 or 49% of the GDV dogs had major organ damage. For 52 of those dogs their end result was death due this level of medical catastrophe.

126 GDV Dogs - Outcome



GASTRIC DILATION VOLVULUS: 126 dogs with torsion	126	
Euthanased	21	16.7%
Euthanased on 2nd or more GDV event	7	5.6%
Found passed away or died on way to Vets	15	11.9%
Got to Vets, dog died or was euthanased after assessment as too critical	9	7.1%
Surgical efforts made but died in or immediately from event	10	7.9%
Surgical assistance but died within days or a few weeks from event	10	7.9%
Post-op complications or issues but went on to be stable	11	8.7%
Post-op complications & left with on-going medical/lifestyle issues	0	0.0%
No post-op complications or issues and went on to be stable	32	25.4%
No post-op complications but left with ongoing medical/lifestyle issues	11	8.7%

For 88.1% of all these dogs, they had some, through to a lot of medical intervention, some of it to no avail in the end. In a time of great challenge and emotion, many owners have had to spend at least the cost of euthanasia right through to many thousands of dollars.

Of the 149 Bloat/GDV dogs in the survey, 36 or 24.2% had pet insurance cover to help defray these costs.

RE-OCCURRENCE OF BLOAT/GDV FOLLOWING A TORSION EVENT:

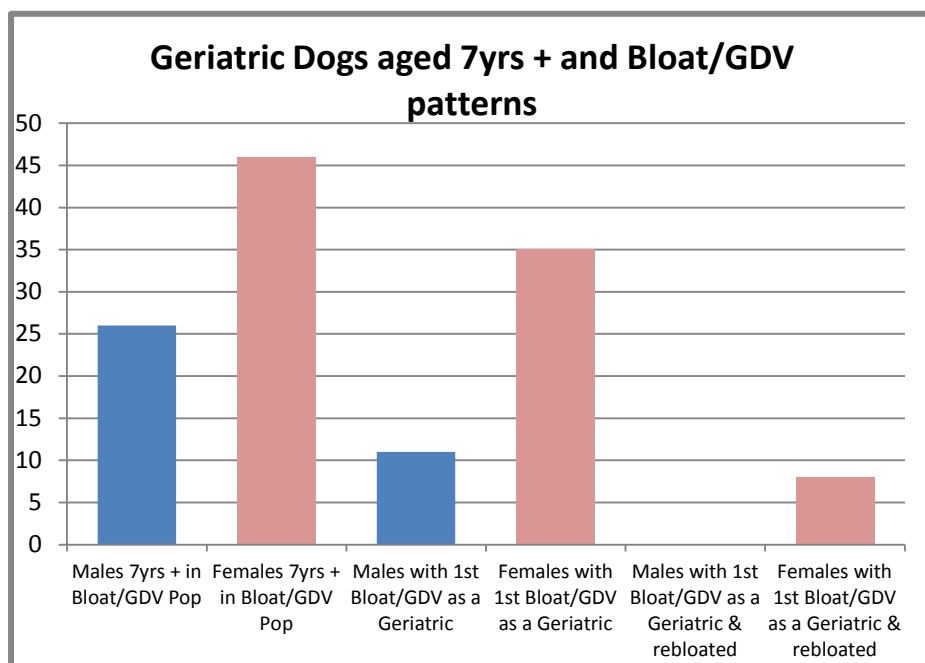
- **54 dogs or 42.9% of the GDV event group lived through the experience.**
- 48 of those dogs did not ever experience another Bloat or GDV in their life at the survey.
- 1 of the 54 dogs did die later from residual issues from their GDV event.

BLOAT/GDV: Re-occurrence in 54 Torsion dogs that lived	54	
Never re-bloated or not yet	48	88.9%
Re-bloated once but not causing death	1	1.9%
Re-bloated multiple times but not causing death	2	3.7%
Re-bloated multiple times causing eventual organ failure & death	1	1.9%
Had further Bloat & Torsion requiring gastropexy repeated x 2	1	1.9%
Had Splenic Torsion although Stomach Gastropexy held	1	1.9%

GERIATRIC DOGS:

Much of the current information available speaks to Bloat/GDV occurring in older dogs and also that these dogs have a high incidence of re-bloating. For this survey population, there were 323 dogs or 27.7% of the whole population that were 'geriatric' or 7 years of age and older.

- 145 or 44.9% of the geriatric dogs were male.
- 178 or 55.1% of the geriatric dogs were female.
- **72 dogs or 22.3% of the Geriatrics were also in the Bloat/GDV group.** 26 males and 46 females in this 'geriatric group' had experienced a Bloat and/or GDV in their lives.
- **11 of those males and 35 of those females experienced their Bloat/GDV as an initial event, in their geriatric years of age 7yrs+.**
- None of the geriatric males that had their 1st event as a geriatric, re-bloated.
- 22.9% or 8 of the 35 geriatric females that had their 1st event in that age group did go on to have more Bloats and/or GDV event.

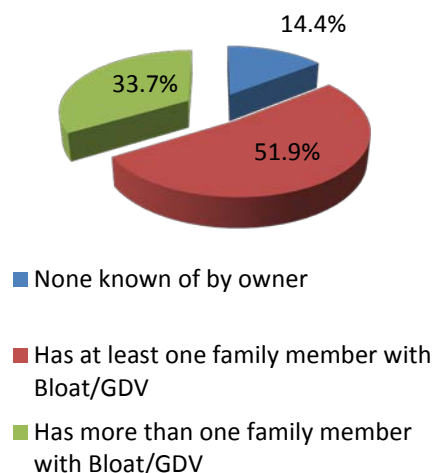


FAMILY LINKS:

From 149 Bloat/GDV dogs, some were rescue or re-homed dogs and some were from breeders where communications had not continued following purchase. There were 104 dogs or 70% of the Bloat/GDV population where owners knew the family background, knew of family members who had bloated or where the survey data showed a family relationship and was able to find relatives that had also bloated.

- 15 dogs or 14.4% of the 104 dogs with known family members did not know of any other family member that had experienced a Bloat/GDV.
- 54 dogs or 51.9% of the 104 dogs with known family members had at least one family member with Bloat/GDV.
- 35 dogs or 33.7% of the 104 dogs with known family members had more than one family member with Bloat/GDV.
- **Where family relatives were known and could be measured, the prevalence of Bloat/GDV being familial in 104 Great Danes who had bloated or experienced a GDV was 85.6%.**

104 Bloat/GDV dogs with Known Families



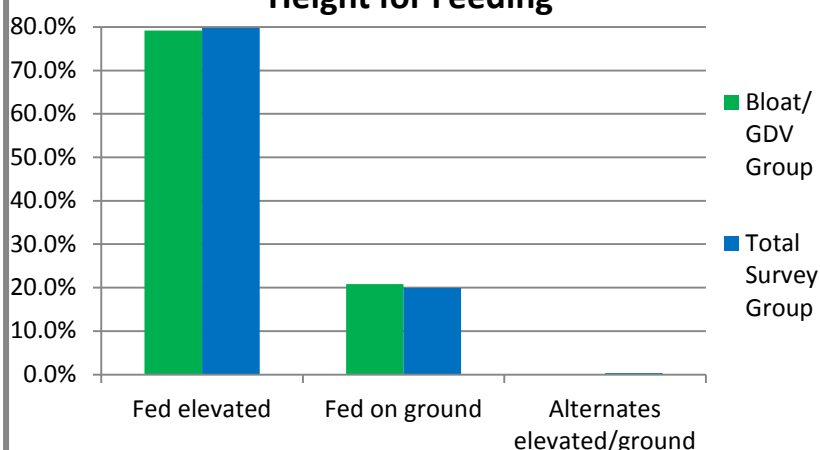
LIFESTYLE PRACTICES & BLOAT/GDV:

As the survey gathered lifestyle practices and temperament along with the realm of health issues, it was possible to cross-match elements of life in sub-set populations such as the Bloat/GDV group. The comparative data for the Bloat/GDV Group against the total survey population is shown in detail in a Table further in this section.

BOWL HEIGHT:

- 79.7% of the entire population of dogs were fed with elevated bowls, 19.9% were fed with bowls at ground level and 0.3% had their bowl height mixed between the two styles.
- 79.2% of the Bloat/GDV population were fed with elevated bowls, 20.8% were fed with bowls on the ground and none of the mixed style dogs had experienced a Bloat or GDV.
- As there are clinical studies around this topic and the decision to elevate or lower feeding bowls, this data point was analysed further.
- SEE APPENDIX ONE on page 84 for the analysis mechanism.
- **When an analysis was run to see whether feeding style impacted how likely the dogs were to bloat, no significant difference was found ($p = 0.766$), telling us that, for Great Danes, there is no difference in the chance of the dog bloating based on whether they are fed from a raised bowl or one at ground level for this population of 1,165 dogs with 149 Bloat/GDV members.**

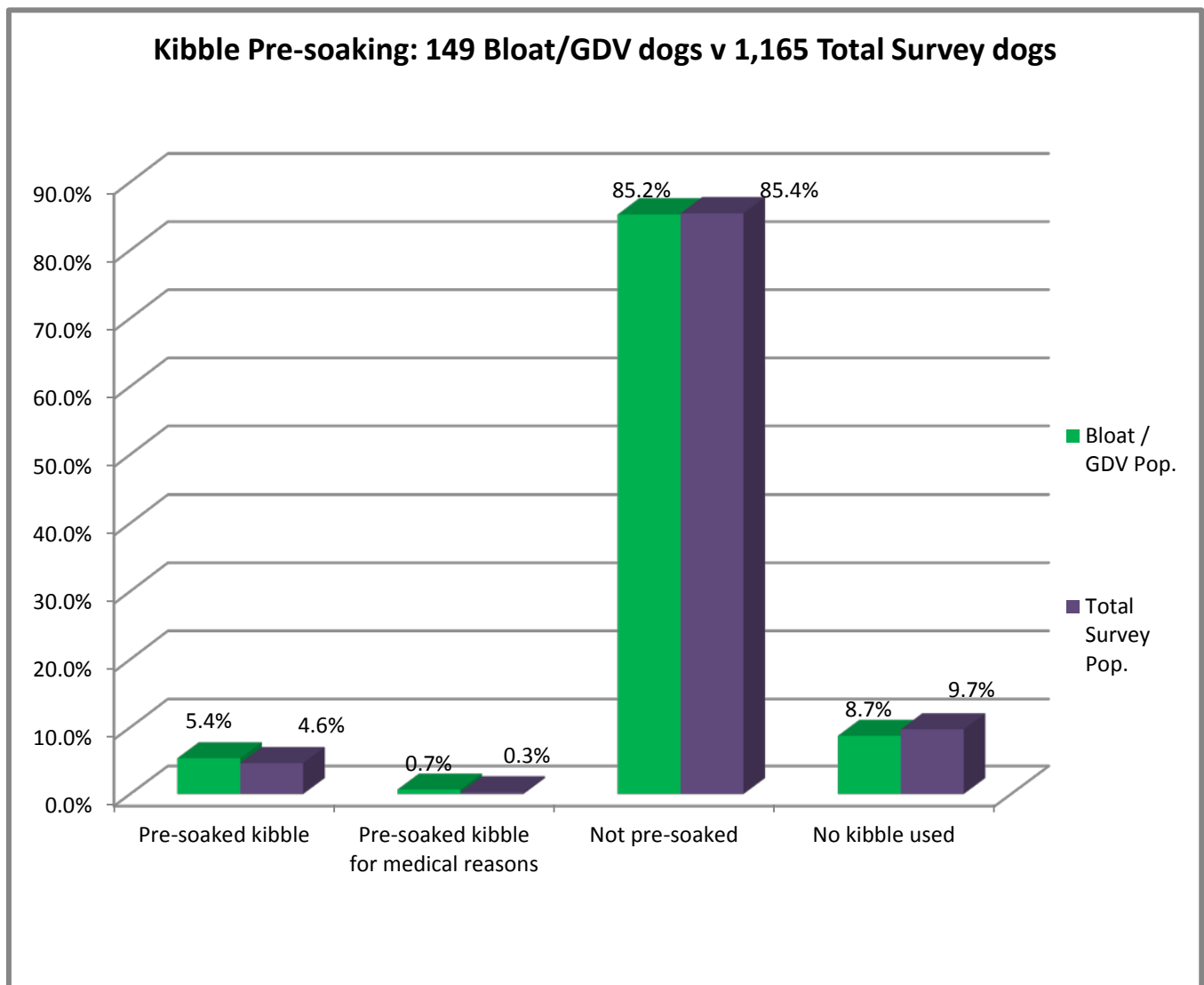
Bloat/GDV Group v Survey Group: Bowl Height for Feeding



PRE-SOAKING OF KIBBLES:

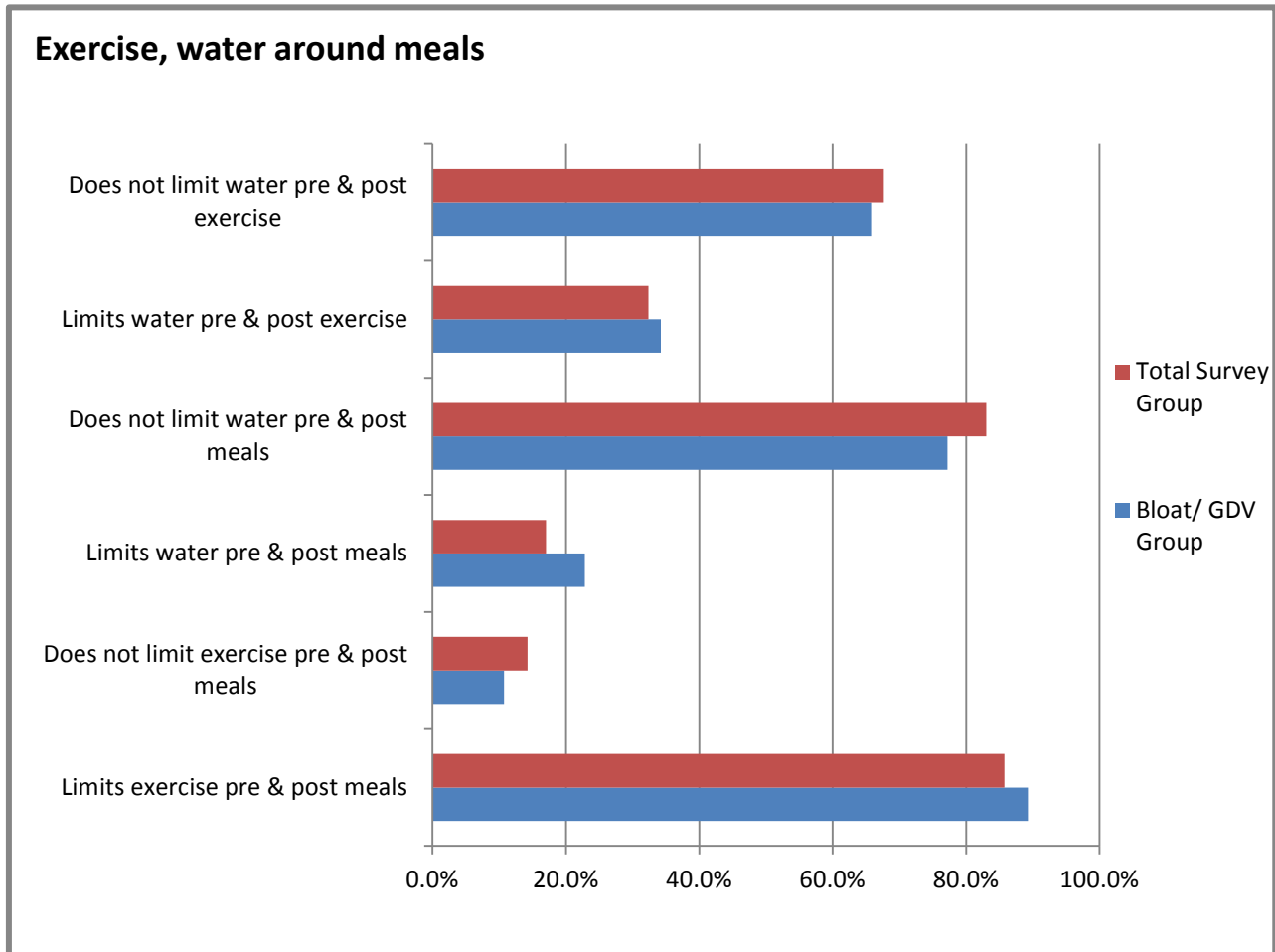
This survey population had very few owners still 'pre-soaking' kibble foods prior to feeding. The premise in past times had been that by pre-soaking the kibble, it had already 'swollen up' with moisture rather than sitting in the dogs stomach. This practice had been advocated around bloat prevention in the past. **Of the 1,165 dogs in the survey only 57 of the 1,052 kibble-fed dogs or 5.2% had their biscuits pre-soaked.** 3 of the 57 dogs had their kibble pre-soaked for other medical reasons.

- The 'pre-soaked' kibble dogs were slightly higher in representation in the Bloat/GDV population than the 'non-soaked' dogs. This element would bear further testing for statistical significance given the low dog numbers in the 'not pre-soaked' populations.



EXERCISE AND WATER LIMITATIONS AROUND MEALS:

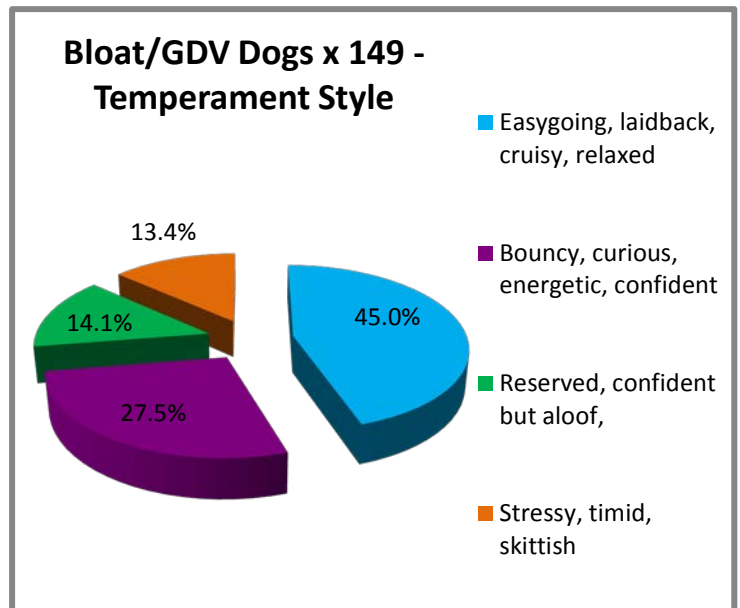
- 85.8% of all dogs in the survey had exercise limited before and after their meals.
- For the Bloat/GDV group dogs, 89.3% of those were limited with exercise around meals yet had still bloated.



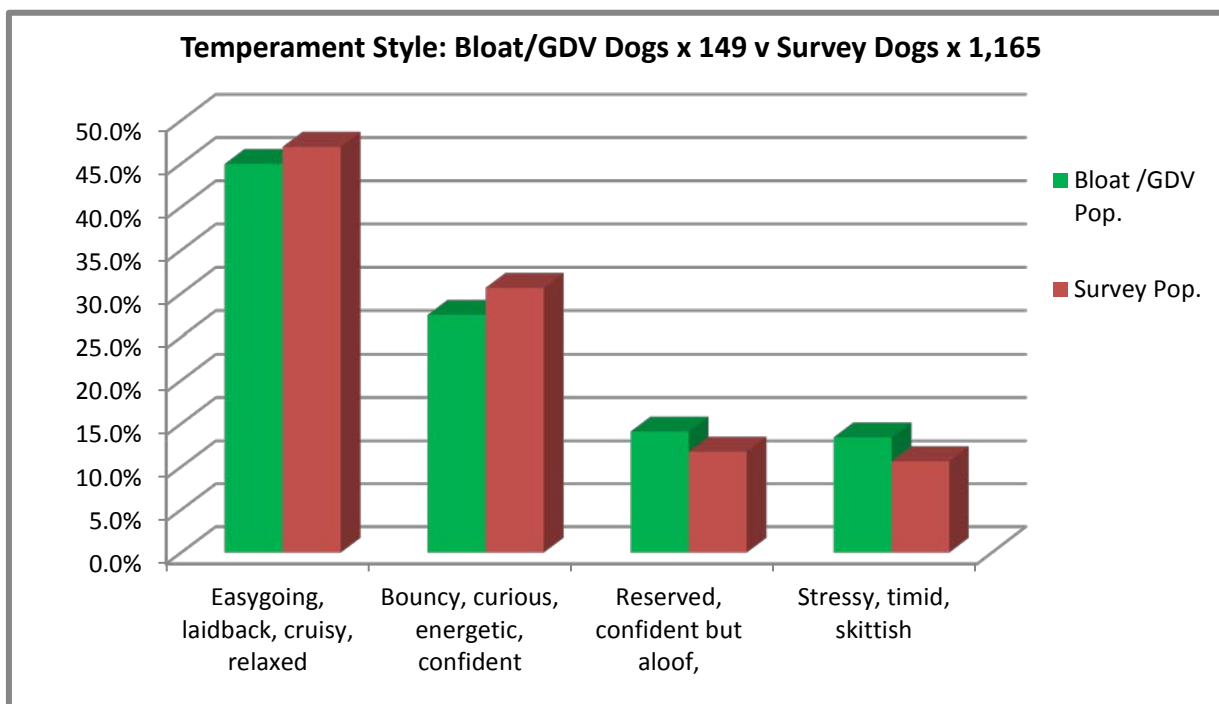
- 83% of dogs did not have water limited before and after meals although most said they would stop the dogs from drinking if they were 'gulping or drinking large volumes'.
- Of the Bloat/GDV group, 77.2% of the dogs did not have water limited around meals and 22.8% did have water limited.
- Only 4 or 2.2% of the 149 Bloat/GDV dogs had 'just had a big drink' prior to their Bloat.
- 67.6% of all dogs in the survey did not have water strictly limited before and after exercise. Most owners again, were conscious of not allowing the dogs to drink copious volumes but allowed access.
- 65.8% of the Bloat/GDV dogs did not have limits on water around exercise.

TEMPERAMENT TYPES:

- Great Danes can be described as a breed that slips into 'stress' and Bloat/GDV has been linked to a more nervous temperament or occurring when in or around stressful events.
- In 180 Bloat/GDV events where details were available of the lead-up situation, only 42 or 23.3% of the Bloat/GDV's happened around 'something different' which could be construed as stressful. **Over three-quarters of the Bloat/GDV events in this population happened when everyday life was underway.**
- 10.6% of the entire survey population or 124 dogs were described by their owners as the 'stressy, jittery' type of temperament.
- For the Bloat/GDV population only 20 or 13.4% of the Bloat/GDV dogs were also this temperament description.
- The 'reserved' temperament dogs with 11.8% prevalence in the entire survey population showed 14.1% prevalence in the Bloat/GDV population.
- 72.5% of all the Bloat/GDV dogs were described as 'confident' by their owners and had been assigned into the easy-going or energetic temperament categories. Both these groups were under-represented in the Bloat/GDV population against their prevalence in the entire survey population by small amounts.**

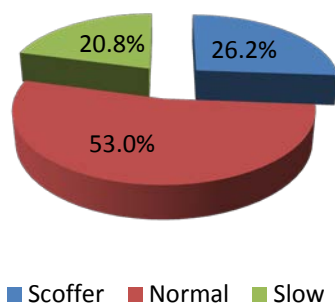


When looking at the temperament style of the Bloat/GDV population against the whole survey population by percentage, there is a slight over-representation of the 'reserved or aloof' and the 'stressy' styles of dog.



SPEED OF EATING:

149 Bloat/GDV Dogs - Speed of Eating

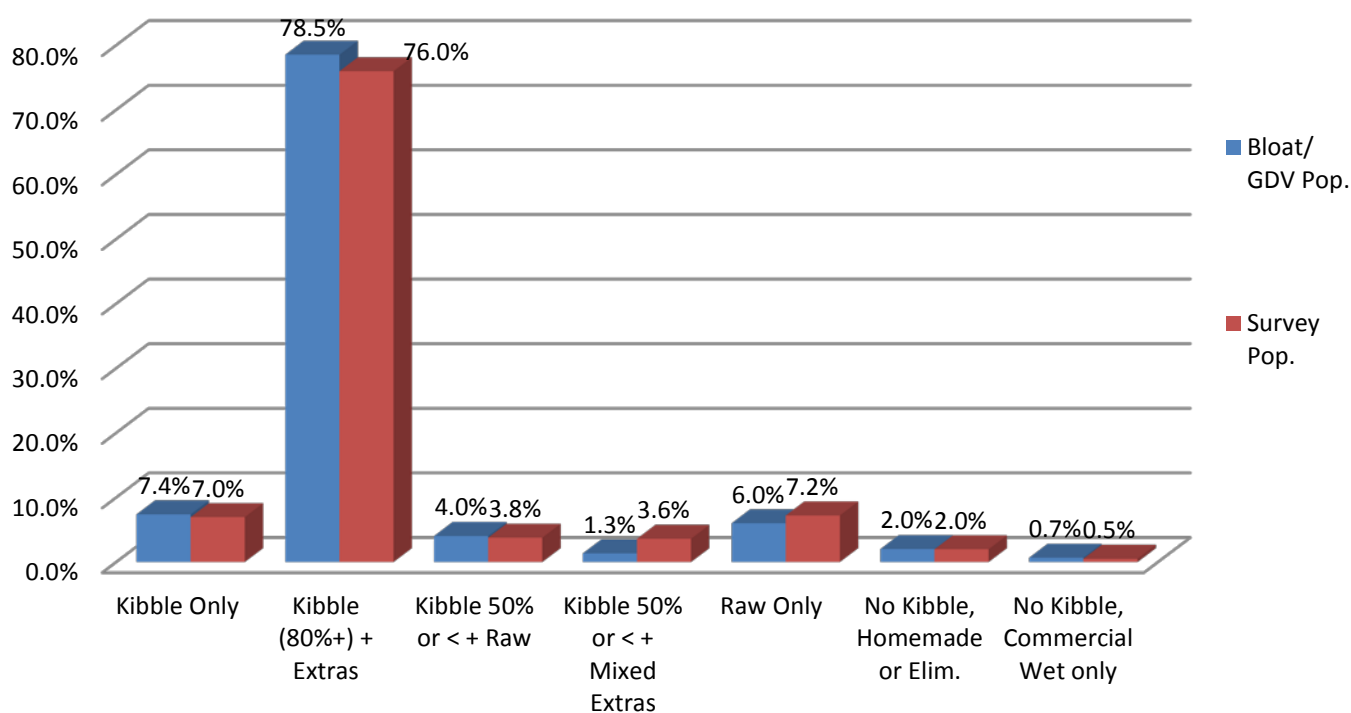


- Great Dane owners with dogs that 'inhale' their food are constantly looking for ways to slow their dogs down when eating because of the risk of Bloat/GDV.
- **Contrary to common perceptions, the majority of Bloat/GDV dogs were normal (53%) or slow (20.8%) in their speed of eating in this population.**
- Only 26.2% of all Bloat/GDV dogs were 'scoffers'. Scoffers in the total survey population were 26.2% as well and may indicate there is no correlation between eating fast and Bloat for this population.
- Of the 39 'scoffers' that also experienced a Bloat/GDV, 24 or 61.5% were females and 38.5% were males.

DIET TYPES:

- 76% of all dogs in the entire survey population were fed a 'Kibble 80% or more + extras' diet. The remaining one quarter of all dogs were fed a variety of diets from total raw, commercial only to a mix of Kibble in different percentages with a variety of extras or not all.
- Comparing the Bloat/GDV population (149) to the entire survey population (1,165), there appears to be little variance between the prevalence of any one group standing out more than the others. This data bears greater statistical testing when possible to establish whether there is any real difference in diet for dogs that go on to endure a Bloat or GDV event.

Bloat/GDV v Diet Style: % of each group - 1,165 dogs in Survey Population and 149 dogs in Bloat/GDV Population



All of the preceding data shown in graphs and discussed is available in pure Table form below around the lifestyle practices of Bloat/GDV dogs in this survey population.

FEEDING POSITIONS OF THE 149 DOGS WITH BLOAT/GDV	149 dogs	% of Bloat/ GDV Group	1,165 dogs	% of Total Survey Group
Fed elevated	118	79.2%	929	79.7%
Fed on ground	31	20.8%	232	19.9%
Alternates elevated/ground	0	0.0%	4	0.3%
KIBBLE PRE-SOAKING: 149 DOGS WITH BLOAT/GDV	149 dogs	% of Bloat/ GDV Group	1,165 dogs	% of Total Survey Group
Pre-soaked kibble	8	5.4%	54	4.6%
Pre-soaked kibble for medical reasons	1	0.7%	3	0.3%
Not pre-soaked	127	85.2%	995	85.4%
No kibble used	13	8.7%	113	9.7%
EXERCISE & WATER LIMITATIONS OF THE 149 DOGS WITH BLOAT/GDV	149 dogs	% of Bloat/ GDV Group	1,165 dogs	% of Total Survey Group
Limits exercise pre & post meals	133	89.3%	999	85.8%
Does not limit exercise pre & post meals	16	10.7%	166	14.2%
Limits water pre & post meals	34	22.8%	198	17.0%
Does not limit water pre & post meals	115	77.2%	967	83.0%
Limits water pre & post exercise	51	34.2%	377	32.4%
Does not limit water pre & post exercise	98	65.8%	788	67.6%
TEMPERAMENT TYPES OF THE 149 BLOAT/GDV DOGS	149 dogs	% of Bloat/ GDV Group	1,165 dogs	% of Total Survey Group
Easygoing, laidback, cruisy, relaxed	67	45.0%	547	47.0%
Bouncy, curious, energetic, confident	41	27.5%	357	30.6%
Reserved, confident but aloof,	21	14.1%	137	11.8%
Stressy, timid, skittish	20	13.4%	124	10.6%
EATING STYLE OF THE 149 BLOAT/GDV DOGS	149 dogs	% of Bloat/ GDV Group	1,165 dogs	% of Total Survey Group
Scoffer	39	26.2%	305	26.2%
Normal	79	53.0%	531	45.6%
Slow	31	20.8%	329	28.2%
DIET TYPE OF THE 149 BLOAT/GDV DOGS	149 dogs	% of Bloat/ GDV Group	1,165 dogs	% of Total Survey Group
Dry Kibble only	11	7.4%	81	7.0%
Dry Kibble with extras	117	78.5%	885	76.0%
Dry Kibble 50% or less + Raw only	6	4.0%	44	3.8%
Dry Kibble 50% or less + Homemade/Raw/Commercial	2	1.3%	42	3.6%
Raw diet only	9	6.0%	84	7.2%
Homemade or Elimination diet with no Dry Kibble used	3	2.0%	23	2.0%
Commercial foods only with no kibble at all	1	0.7%	6	0.5%

GASTROPEXY PERFORMANCE WHEN TESTED BY BLOAT/GDV:

The 'gastropexy' word is applied to 3 main variations of patient in this section of the report;

- 1) **Emergency gastropexy** – performed on patients that have experienced a GDV where torsion has occurred
- 2) **Post-Bloat gastropexy** – performed on patients that have experienced a Bloat and not a torsion. They are recovered or rested from the event, then gastropexied.
- 3) **Prophylactic gastropexy** – performed on patients that have never experienced a Bloat or GDV

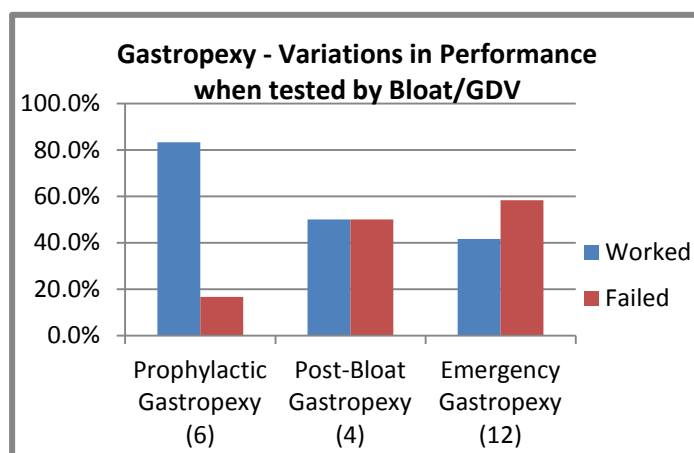
A question posed by some Dane owners is;

“Is it better to wait and save a bloat then proceed with a post-bloat gastropexy, wait and save a torsion and perform an emergency gastropexy or perform a prophylactic gastropexy on a healthy dog that has not experienced a Bloat or GDV?”

- 87 or 58.4% of the dogs that had a Bloat/GDV event had some form of gastropexy. Not all dogs lived post-operatively through their emergency situation.
- 95 other dogs in the survey also had a gastropexy but it was purely prophylactic and had never been tested by a Bloat/GDV experience. Excluding those purely prophylactically gastropexied dogs and focussing only on those who had experienced a Bloat and/or GDV, there is a difference in performance.
- **Each of the gastropexies that were further tested by Bloat/GDV after their construction was analysed into a performance table.**

BLOAT AND/OR GDV - GASTROPEXY SUCCESS OR FAILURE WHEN THREATENED IN DOGS THAT HAVE HAD A BLOAT AND/OR GDV. 75 of 149 Bloat/GDV dogs	75		Worked, Failed or Untested
Prophylactic gastropexy, worked in Bloat events	4	5.3%	W
Prophylactic gastropexy, worked in several bloats then failed in a subsequent GDV	1	1.3%	F
Prophylactic gastropexy, worked in Bloat but needed to be extended further down	1	1.3%	W
Post-Bloat prophylactic gastropexy, untested by any further Bloat or GDV events	7	9.3%	U
Post-Bloat prophylactic gastropexy, worked in one/several Bloats	2	2.7%	W
Post-Bloat prophylactic gastropexy, failed in subsequent GDV (less than 2 weeks post-pey)	1	1.3%	F
Post-Bloat prophylactic gastropexy, worked in several bloats then failed in subsequent GDV	1	1.3%	F
Emergency gastropexy, untested by any further Bloat or GDV events	46	61.3%	U
Emergency gastropexy, worked in subsequent Bloats	4	5.3%	W
Emergency gastropexy, worked in subsequent Bloats but incurred intestinal torsion	1	1.3%	W
Emergency gastropexy, failed in 1 subsequent GDV	6	8.0%	F
Emergency gastropexy, failed in 2 subsequent GDVs	1	1.3%	F

- 6 prophylactic gastropexies were tested by Bloat/GDV. 4 acted effectively, 1 did not tear but needed to be extended further down the stomach body and 1 tore after multiple bloats and allowed torsion. **83.3% of prophylactic gastropexies, when tested worked and prevented torsion.**
- 4 Post-Bloat gastropexies were tested by Bloat/GDV. 2 acted effectively, 1 failed when tested at 10 days old and not healed properly, and 1 tore after withstanding multiple bloats and allowed torsion. **50% of post-bloat prophylactic gastropexies, when tested worked.**
- 12 emergency gastropexies were tested by Bloat/GDV. 5 acted effectively, 7 failed in one further torsion event, 1 failed in 2 further torsion events (and then was found to have been poorly constructed in the 1st and 2nd surgeries) and 1 held the stomach intact but compelled an splenic torsion. **41.7% of emergency gastropexies, when tested worked.**



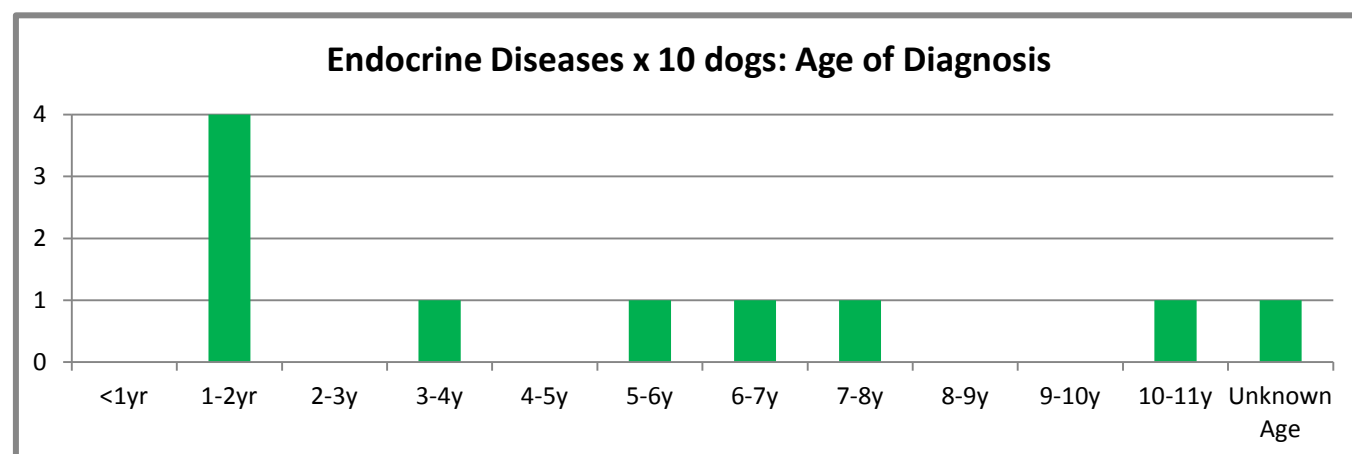
ENDOCRINE DISEASES:

Within the survey population of 1,165 Great Danes, the diagnosed presence of any Endocrine system diseases was extremely low. Participants were asked if their dogs had ever been diagnosed with a Thyroid condition or Addison's Disease (Hypoadrenocorticism) or Cushing's Disease (Hyperadrenocorticism)

- 1,155 dogs or 99.1% of all dogs in the survey had never been diagnosed with an Endocrine condition.
- **Only 10 dogs or 0.9% of the survey population had an Endocrine disease diagnosed.**
- 8 of those 10 dogs had hypothyroidism.
Hypothyroidism had a 0.7% prevalence in the survey group.

ENDOCRINE & THYROID CONDITIONS	1165	
Dogs in Survey with no diagnosed Endocrine or Thyroid Conditions	1155	99.1%
Dogs in Survey diagnosed with an Endocrine or Thyroid Condition	10	0.9%
Hypothyroidism	8	0.7%
Cushings Disease	2	0.2%

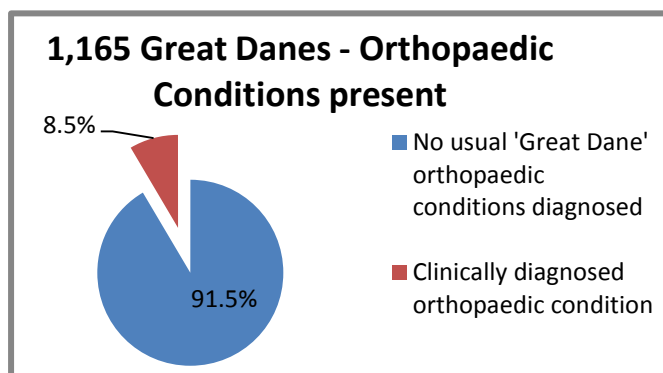
- 2 of those 10 dogs had Cushings Disease. **Cushings Disease had a 0.2% prevalence in the survey group.**
- There were no Addisons Disease diagnosed dogs in the survey group.
- 1 of the 2 Cushing's dogs was euthanased for another reason as the diagnosis was made whilst testing for other conditions. The other Cushings Disease dog was medicated for life.
- Of the 8 Hypothyroidism dogs, 4 or 50% were medicated for life and the other 4 were not medicated.
- Both the Cushings Disease dogs were male.
- 3 of the Hypothyroidism dogs were male and there were 5 females dogs with the condition.
- 5 of the 10 dogs were diagnosed as youths or adults with 4 of these 5 diagnosed in the 1-2 year old age group. The remaining 5 dogs were diagnosed as 'seniors' aged 5 years or older.



ORTHOPAEDIC CONDITIONS:

The Great Dane breed is known for a predisposition for exhibiting a collection of orthopaedic problems, some inheritable and some acquired. The 1,165 dogs surveyed were questioned for clinical diagnosis of the following orthopaedic problems:

- Hip Dysplasia
- Elbow Dysplasia
- Hypertrophic Osteodystrophy (HOD)
- Osteochondritis Dissecans (OCD)
- Panosteitis (Pano)
- Wobblers Syndrome
- Ununited Anconeal Process (UAP)



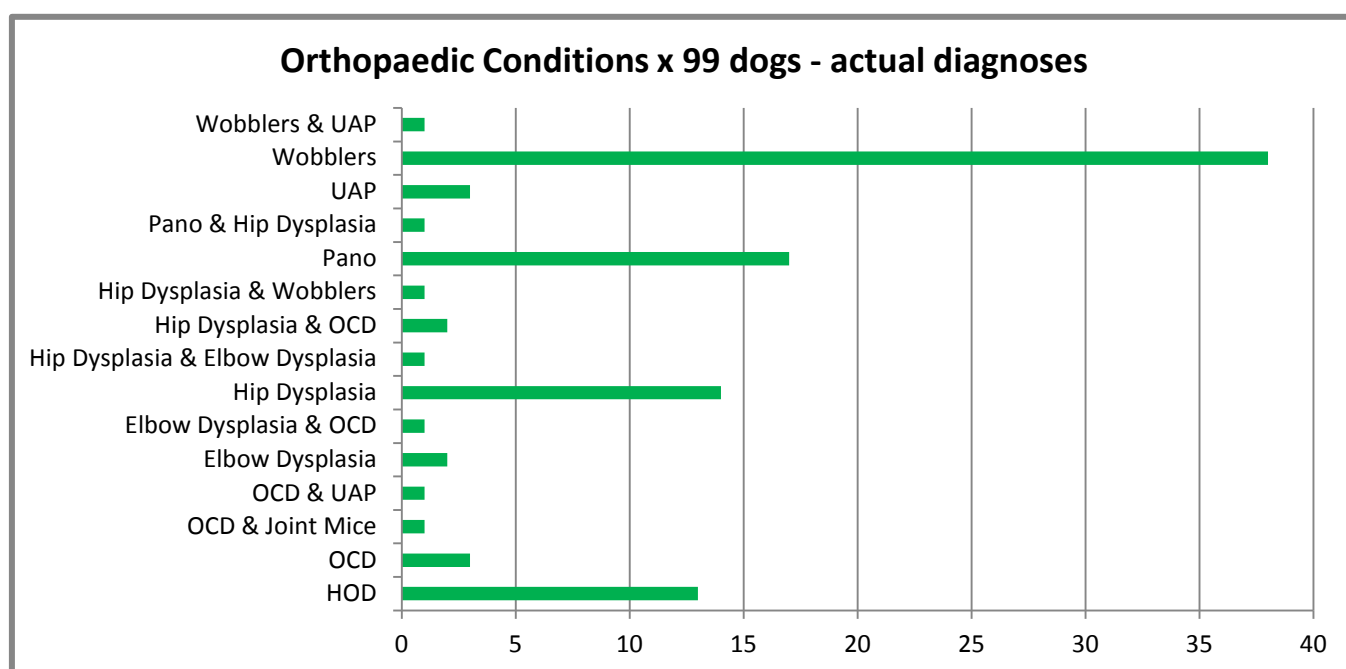
Of the 1,165 dogs surveyed, only 99 or 8.5% had been diagnosed with any of the usual Great Dane orthopaedic conditions although some had more than one condition.

91.5% of the survey population had not been diagnosed with a major orthopaedic condition.

The prevalence by condition is shown below although some dogs had more than one of the conditions diagnosed.

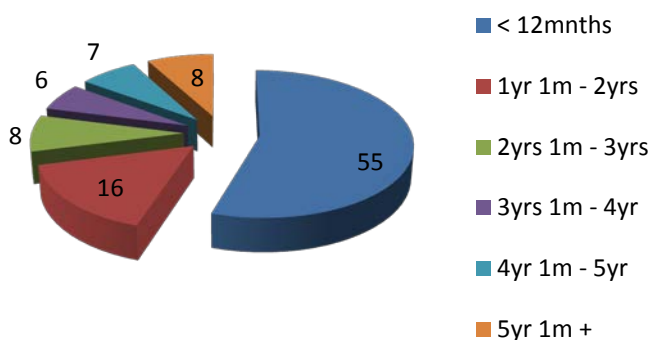
HOD prevalence:	1.1%
Hip/Elbow Dysplasia prevalence:	1.9%
OCD prevalence:	0.7%
Pano prevalence:	1.5%
UAP prevalence:	0.4%
Wobblers prevalence:	3.4%

ORTHOPAEDIC CONDITIONS DIAGNOSED: BY CONDITION, OF TOTAL POPULATION	1165	
HOD	13	1.1%
OCD	3	0.3%
OCD & Joint Mice	1	0.1%
OCD & UAP	1	0.1%
Elbow Dysplasia	2	0.2%
Elbow Dysplasia & OCD	1	0.1%
Hip Dysplasia	14	1.2%
Hip Dysplasia & Elbow Dysplasia	1	0.1%
Hip Dysplasia & OCD	2	0.2%
Hip Dysplasia & Wobblers	1	0.1%
Pano	17	1.5%
Pano & Hip Dysplasia	1	0.1%
UAP	3	0.3%
Wobblers	38	3.3%
Wobblers & UAP	1	0.1%
	99	



- There were 40 dogs or 40.4% of the orthopaedic conditions population that had been clinically diagnosed with Wobbler Syndrome. 2 of those dogs also had another orthopaedic issue diagnosed.
- 28 or 70% of the Wobbler Syndrome dogs were born in the last decade since 2005.
- A further 21 or 21.2% of the Orthopaedic Condition population had Hip or Elbow Dysplasia, with 5 of those dogs having another associated skeletal condition as well. One of the Wobblers dogs also had Hip Dysplasia and is not counted in these 21 dogs.
- 18 or 85.7% of the Hip and/or elbow Dysplasia dogs were born in the last decade since 2005.
- Hip or Elbow Dysplasia and Wobbler Syndrome may require surgery and can be exhaustive in financial and recovery terms.
- OCD & UAP's were less prominent in this orthopaedic issue population but both usually require surgery.

Orthopaedic Conditions x 99 dogs - age of diagnosis

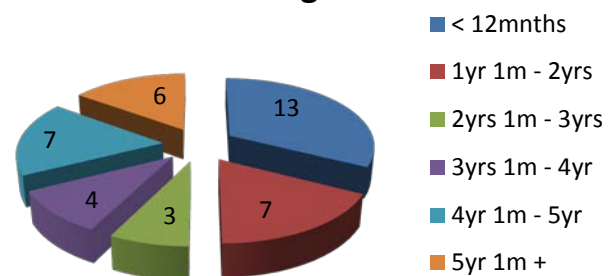


- 55 of the 99 orthopaedic condition dogs or 55.6% were diagnosed by the time they were 12 months old. Giant breeds have the majority of the skeletal growth within that first year of life and it is reasonable that most issues would become evident in that time.
- That figure is skewed by the inclusion of HOD & Pano which have both been attributed to nutritional elements as well and generally will always show up within the first 12 months. 28 of the 55 dogs or 51% diagnosed by 12 months old were HOD or Pano diagnoses.

Wobblers Syndrome presents across many variations and can involve one or more cervical joints. Some of the Wobblers dogs in the survey were not actually diagnosed until older age or when another issue was being investigated and could be called a 'mild Wobblers'. This is borne out by the chart with the age of diagnosis presenting from puppy through to senior years.

20 of the 40 Wobblers dogs or 50% were diagnosed by the time they had turned 2yrs old and each presented with gait affected symptoms.

Wobbler Syndrome dogs x 40 - age of diagnosis



- Of the 40 Wobbler Syndrome dogs only 4 or 10% had surgical correction.
- 5 or 12.5% of the Wobblers dogs were euthanased due to capacity issues.
- The remaining 31 dogs or 77.5% were, or are, being medically managed.

Orthopaedic conditions are impactful on a giant breed such as the Great Dane. Mobility and safety from affected gait are massive challenges with the dog that is long in body, hefty in weight and has height. All of these conditions incur cost associated with diagnosis, ongoing medical management and/or surgical repair. Some of the conditions can lead to arthritic changes which will add to the lifelong expense burden.

- **33 or 33.3% of the 99 dogs with diagnosed orthopaedic conditions were pet insured.**
- **66.7% of the 99 dogs with orthopaedic issues had costs borne by the owner solely.**

ORTHOPAEDIC CONDITIONS: TREATMENT MODALITIES	99	Surgical Treatment	Medically Managed	Euthanased at Diagnosis or soon after
HOD	13		12	1
OCD	3	1	2	
OCD & Joint Mice	1		1	
OCD & UAP	1		1	
Elbow Dysplasia	2	1	1	
Elbow Dysplasia & OCD	1	1		
Hip Dysplasia	14	4	9	1
Hip Dysplasia & Elbow Dysplasia	1		1	
Hip Dysplasia & OCD	2	1	1	
Hip Dysplasia & Wobblers	1	1		
Pano	17		17	
Pano & Hip Dysplasia	1		1	
UAP	3	3		
Wobblers	38	3	30	5
Wobblers & UAP	1		1	
		15	77	7
		15.2%	77.8%	7.1%

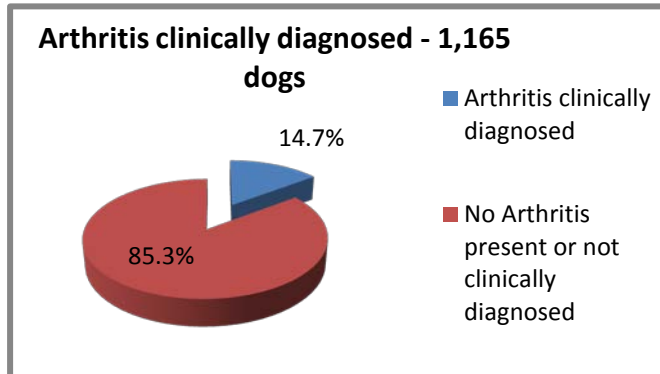
MORTALITY RATE FOR ORTHOPAEDIC CONDITIONS:

- **HOD:** 1 dog was euthanased with severe HOD as a pup.
- **Pano:** 1 dog was euthanased as a young pup when Megaesophagus was diagnosed at the same time as Panosteitis.
- **OCD:** All OCD dogs whether surgically or medically managed, lived.
- **Hip & Elbow Dysplasia:** 1 dog was euthanased on diagnosis as a senior. 1 dog was euthanased as a youth following corrective surgery which was not successful.
- **UAP:** All UAP dogs whether surgically or medically managed, lived. 1 dog had UAP correction but was later diagnosed with Wobblers which was the cause of death.
- **Wobblers:** 14 Wobblers dogs were euthanased from their diagnosis.
 - 8 or 57.1% of these 14 dogs were diagnosed prior to 18 months old. 2 of those 8 dogs lived 3 years + from diagnosis until passing. The other 6 dogs that were diagnosed very young lived less than 13 months after diagnosis.
 - 1 of these 14 dogs that were euthanased due to their Wobblers had surgical intervention and another had gold-bead implantation. The remaining 12 dogs had conservative management.
- **17 of the 99 dogs or 17.2% with diagnosed orthopaedic conditions died due to their condition.**

ARTHRITIS:

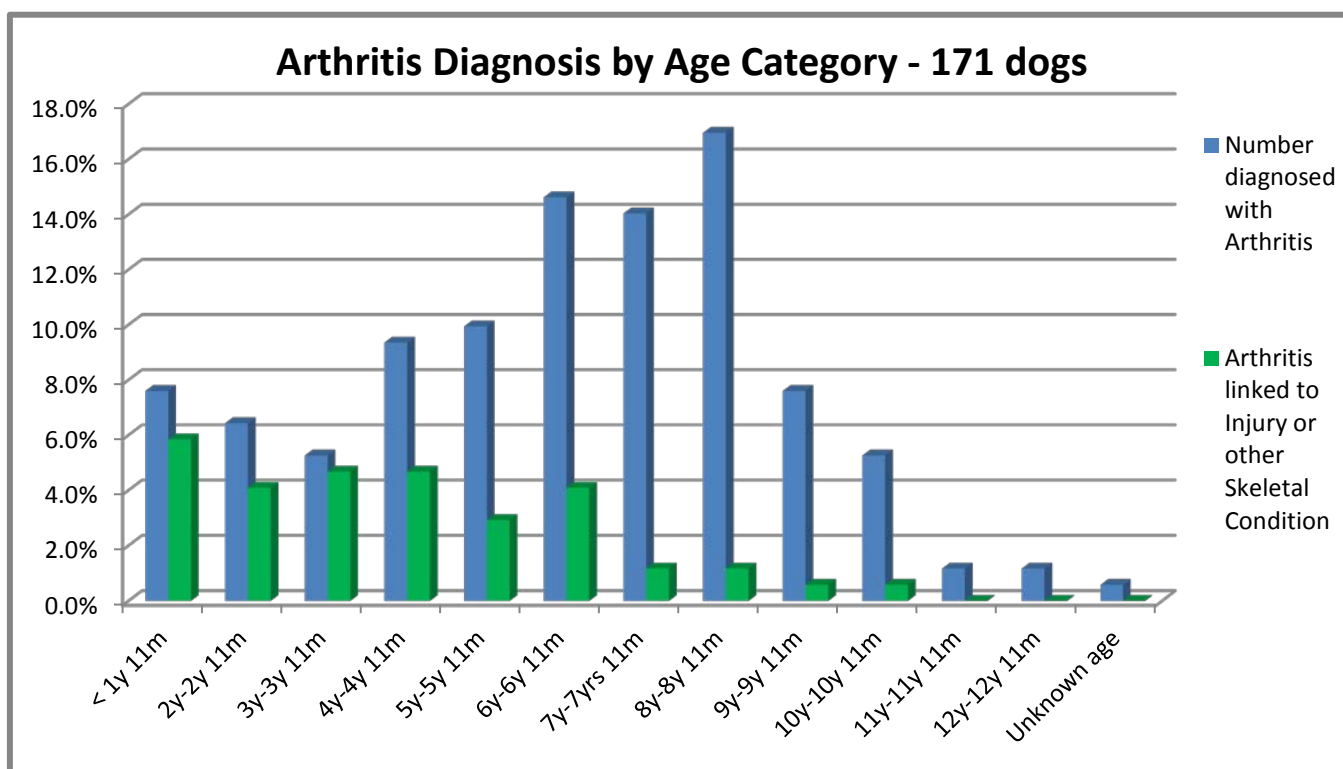
Arthritis can be brought on in Great Danes from injury, wear and tear or from a predisposing orthopaedic condition affecting gait patterns. **In the surveyed population of 1,165 Great Danes, only 14.7% of dogs had been clinically diagnosed with Arthritis**

- Given that the Great Dane breed is a heavy dog and may be considered more at risk of joint issues, it is heartening to see that **less than 15% of the population exhibited arthritis at this time.**
- 79.4% of the entire survey population were over the age of 2yrs old and therefore considered adults.
- 514 dogs or 44.1% were over the age of 5yrs & 1 month and could be considered at the 'at-risk' age group of joint damage or decay as seniors.



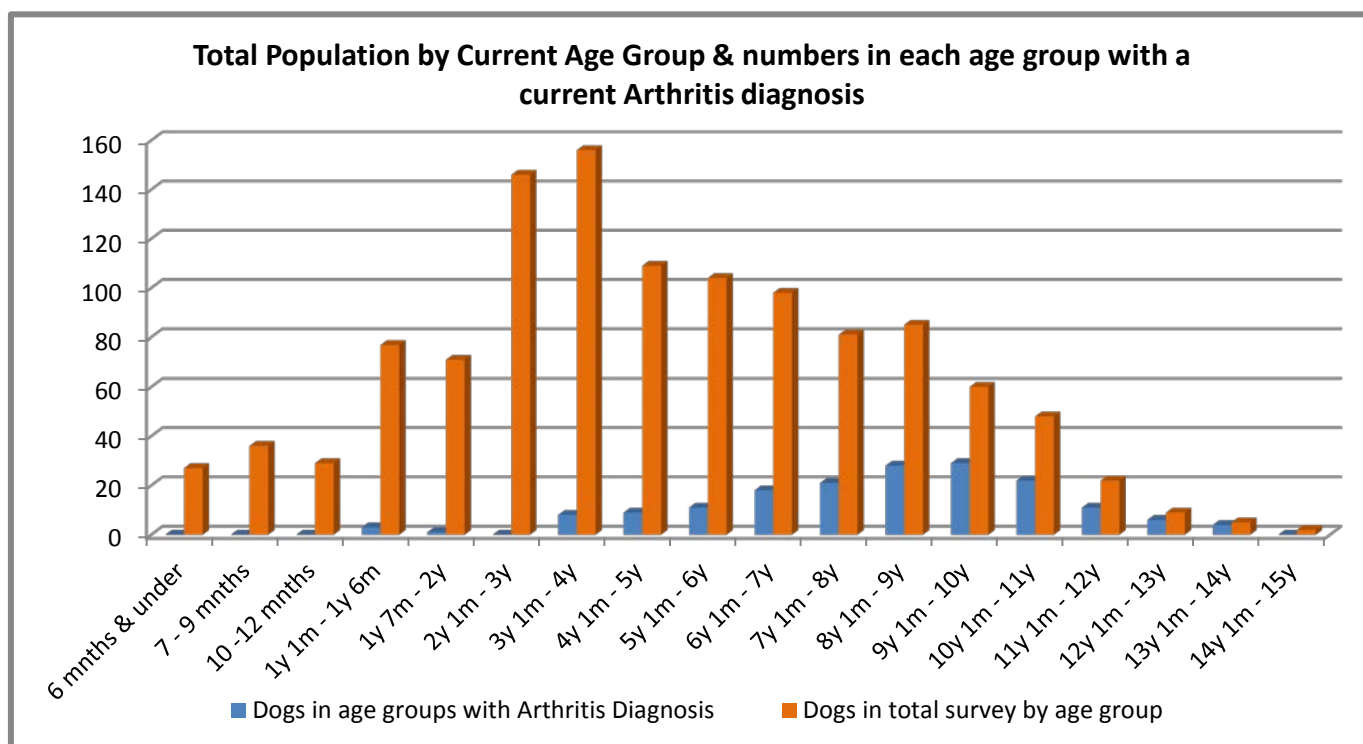
171 dogs or 14.7% of the total survey population had been clinically diagnosed with Arthritis. The age of diagnosis had a big shift based upon whether the degenerative disease was linked back to an Injury (fracture, cruciate tear or other injury) and Other Skeletal Condition (Hip/Elbow Dysplasia, OCD, Spondylitis, UAP, Wobblers).

- Arthritis diagnosed prior to 5 years of age was linked to a predisposing injury or condition in 67.3% of all cases.
- **From 5 years of age and older, only 14.9% of all Arthritis cases were linked to an injury or condition and were more about the aging or degenerative process.**
- 1 dog's age of diagnosis was unknown.



A percentage of the Great Dane breed experiences Arthritis as the dog ages, no matter when it was diagnosed or what links exist to casual effects.

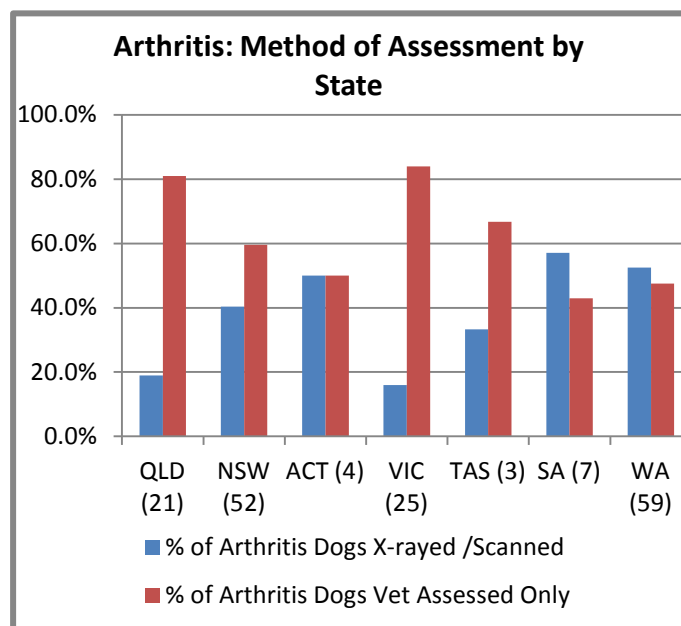
At the survey period, the proportion of each age group with diagnosed Arthritis is shown below. Seniors and geriatrics have increasingly higher proportions of their age group exhibiting the disease. At age 7-9yrs, the percentage of that age group with arthritis sits around 29.5%. For 9+ -12yr old Danes it sits around the 47.7% proportion. The number of dogs over 12yrs was tiny in actual numbers but for them, 62.5% of the age group has an Arthritis diagnosis.



- Of the 171 dogs diagnosed with Arthritis, 39.2% or 67 dogs had been scanned or had x-rays to diagnose. The remaining 104 dogs or 60.8% had been Vet assessed.
- The assessment methods varied between the States.

ARTHRITIS: Treatment Modalities	171	
Cartrophen/Zydax, Other Anti-inflamms and/or pain relief	139	81.3%
Holistic: Diet/ supplements/ acupuncture/ massage/ Bowen)	22	12.9%
No treatments needed yet - very mild	7	4.1%
No treatments - diagnosed alongside serious medical issue and euthanased	3	1.8%

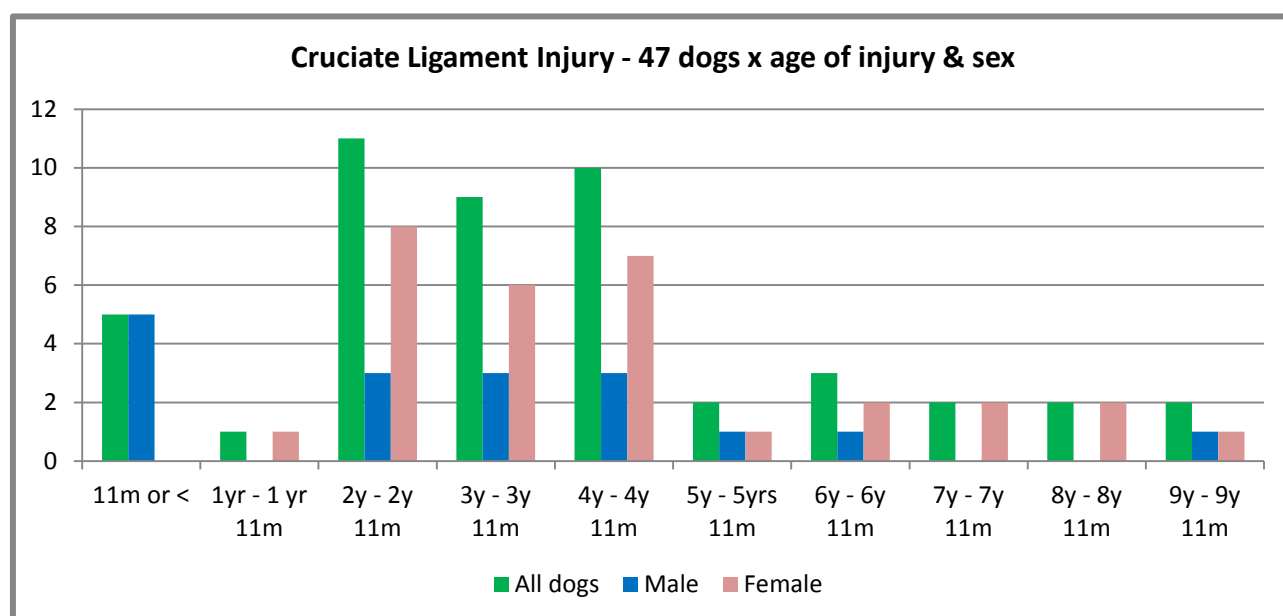
- Treatment regimes for the diagnosed Arthritis dogs varied across medications, supplements, therapies and nothing at all.
- **81.3% of all the 171 dogs were on medication regimes.**
- 12.9% of the dogs were solely on supplements and/or other holistic therapies. Many of the 81.3% of dogs on clinical medications were also being given supplements by their owners with a recent increase in turmeric use.
- **167 or 97.7% of the 171 Arthritic dogs were reported as having it in major load-bearing joints of the legs and back being wrists (carpi), elbows, shoulders, spine, hips, knees (stifles) and ankles (hocks).**
- Of the sexes with Arthritis, 86 or 50.3% were female and 85 or 49.7% were males.



CRUCIATE LIGAMENT INJURIES:

Cranial Cruciate Ligament (CCL) injuries are a challenge for all dogs surgically and for the rehabilitation period, but even more so for Great Dane dogs where size, mobility and even containing for post-op recovery can be challenging.

- **Of the 1,165 dogs surveyed, 96% had never suffered a cruciate injury of any kind.**
- 47 dogs or 4% had injured a cruciate either with a full or partial tear.
- **30 or 63.8% of the cruciate injuries were females which was 4.8% of all females in the survey.**
- **17 or 36.2% of the cruciate injuries were males which was 3.1% of all males in the survey.**
- **26 or 55.3% of the cruciate injury dogs were sterilised at or prior to 12 months old, 18 females and 8 males.**
- 9 or 19.1% of the dogs that had a cruciate injury had never been sterilised.
- 13 or 27.7% of the dogs that suffered a cruciate injury did so as pups or young dogs, being up to the age of 2 years old. **Only 6 or 46.2% of those dogs had already been sterilised at the point of injury.**
- The highest point of injury, for this population was between the ages of 2yrs and 4yrs 11 months old, with 30 or 63.8% of the 47 dogs enduring their injury in this age group.

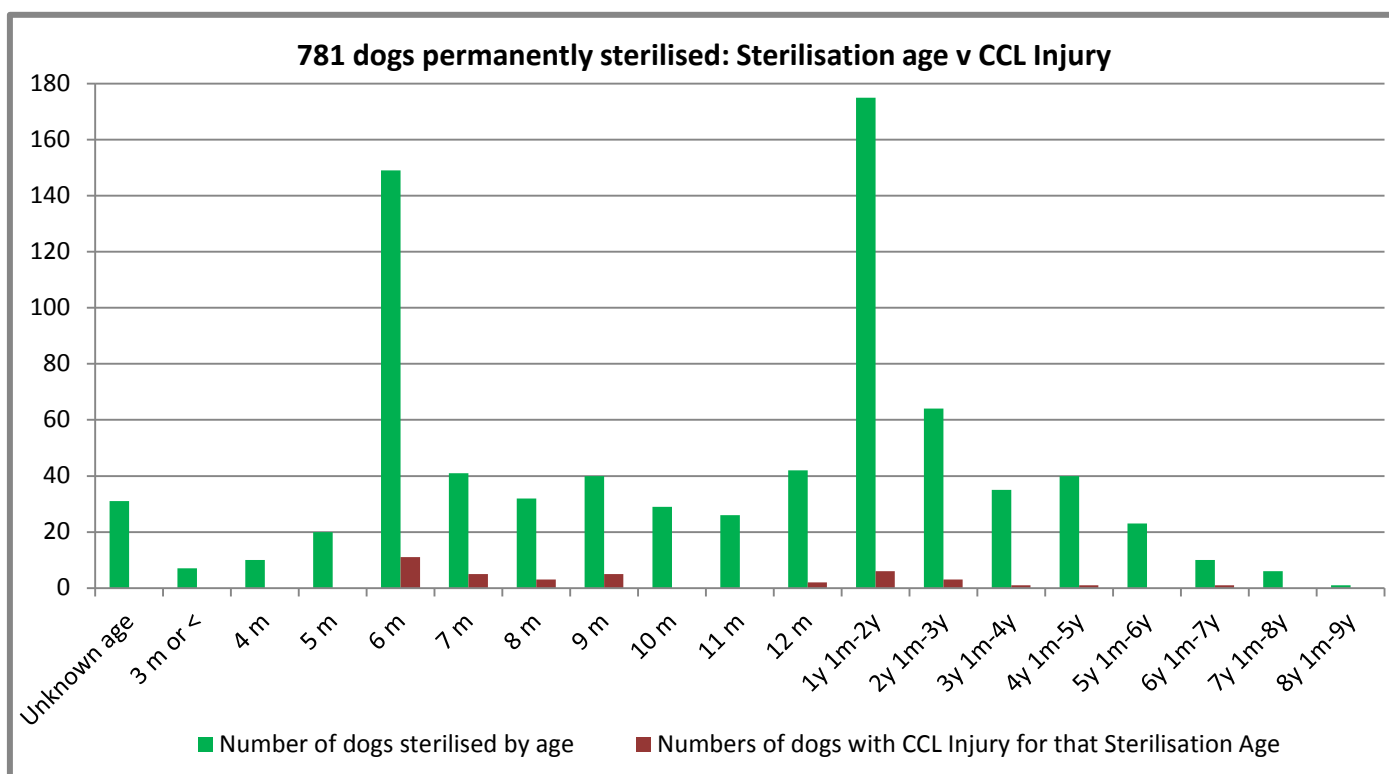


For owners of Great Danes where so little research on the breed specifically exists, an element of interest is the link between sterilisation age and other medical issues. One of those for the breed is the concern of early sterilisation (prior to 14 months) and an increased prevalence of cruciate ligament injuries. The *Slauterbeck et al* paper ('Canine Ovariohysterectomy and Orchiectomy Increases the Prevalence of ACL Injury.' 2004)⁵ is often used in reference to this and cites all dogs as having a 3.48% prevalence with this being 'significantly higher' in females and males undergoing full spay or castration and larger breeds having that risk exacerbated over small to medium sized breeds.

To compare this population of 1,165 dogs against that premise there were 781 dogs permanently sterilised.

- 37 dogs were sterilised prior to turning 6 months old and none had CCL injuries.
- 262 dogs were sterilised in the 6-9 month age groups and **24 or 9.2% of them had CCL injuries.** All CCL injuries for this sterilisation age group were post-sterilisation.
- 97 dogs were sterilised in the 7-12 month age groups and **2 or 2.1% of them had CCL injuries.** Both CCL injuries were post-sterilisation.

- 175 dogs were sterilised in the 13-24 month age group and **6 or 3.4% of them had CCL injuries**. All CCL injuries were post-sterilisation.
- 139 dogs were sterilised in the 2yrs 1mnth – 5yrs age group and **5 or 3.6% of them had CCL injuries**. 2 CCL injuries were post-sterilisation and 3 CCL injuries were pre-sterilisation.
- 40 dogs were sterilised in the 5yrs 1mnth – 10yrs age group and **1 or 2.5% of them had CCL injuries**. That CCL injury was pre-sterilisation.
- 31 dogs were sterilised at unknown ages prior to adoption and none had CCL injuries. 30 of these dogs came into their home at aged 18 months or more and may have been sterilised as teenagers and none had CCL injuries.



TREATMENT MODALITIES:

Cruciate repairs vary according to many more medical criteria than can be addressed in this survey and depends upon prognosis for recovery, accompanying medical conditions, capability to cope with rehabilitation from major orthopaedic surgery and other elements.

- **57.4% or 27 of the 47 dogs, with cruciate injuries were surgically repaired.**
- 34% or 16 of the 47 dogs, with cruciate injuries were conservatively managed without surgical repairs of any kind.
- 4.3% or 2 dogs were euthanased due to a very poor prognosis of recovery.
- 4.3% or 2 of the 47 dogs, died from surgical complications.
- **14.9% or 7 of the 47 dogs subsequently injured the second leg with the longest time from 1st to 2nd leg being 3 years.**
- Of the 43 dogs that lived following their CCL injury and/or surgery, 17 or 39.5% of them had developed arthritis in the injured knee/s and required on-going management.

CRUCIATE LIGAMENT INJURIES - MANAGEMENT OUTCOME	47	
Major cruciate repair - TPLO/TTA/TTO, Surgical Plating	24	51.1%
Other surgical treatment / extracapsular stabilisation	3	6.4%
Conservative management only (may have other complicating issues)	16	34.0%
Put to sleep (may have had other complicating issues or old age)	2	4.3%
Died from complications around surgery	2	4.3%

HEART CONDITIONS:

The most concerning Great Dane heart condition is Dilated Cardiomyopathy (DCM) which is typically an inheritable condition. Heart murmurs are also not unknown in the Great Dane breed.

HEART CONDITIONS	1165	
No known heart issues ever diagnosed	1081	92.8%
Heart Murmur identified	31	2.7%
Heart Murmur identified & Other Heart Diagnosis	3	0.3%
Dilated Cardiomyopathy & Heart Murmur diagnosed	1	0.1%
Dilated Cardiomyopathy & Other Heart Condition diagnosed	1	0.1%
Dilated Cardiomyopathy diagnosed	30	2.6%
Other heart condition diagnosed	18	1.5%

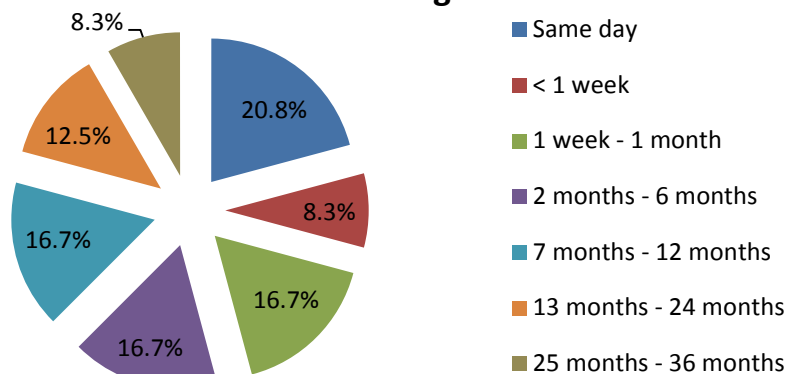
- **92.8% of all Great Danes surveyed did not have any heart issues clinically diagnosed.**
- 35 dogs or 3% of the 1,165 dogs had a heart murmur diagnosed, some along with another heart condition.
- **32 or 2.7% of the 1,165 dogs had DCM diagnosed.** 2 of these dogs also had another heart condition diagnosed.
- 22 or 1.9% of the dogs had 'other' heart issues diagnosed. 2 of these dogs had also been diagnosed with a heart murmur or DCM.
- Other heart conditions included: Arrhythmia, Tachycardia, Endocarditis, leaking heart valve (regurgitation), enlarged, small or misshapen heart, Atrial Fibrillation, Cardiac Infarction, Myxomatous Mitral Valve Degeneration, Systolic Dysfunction, Atrial Fibrillation under anaesthetic and high resting heart rates.

DILATED CARDIOMYOPATHY:

- **The DCM prevalence for this population was 2.7% of all dogs.**
- 1 of the 32 dogs was diagnosed with Juvenile DCM at age 6 months.
- 7 or 21.9% of the DCM dogs were diagnosed between ages 1yr – 4yrs 11 months.
- 9 or 28.1% of the DCM dogs were diagnosed as seniors between the ages of 5yrs – 6yrs 11 months.
- **15 or 46.9% of the DCM dogs were diagnosed as geriatrics between the ages of 7yrs – 10yrs 11 months.**
- 2 or 6.3% of the 32 DCM dogs were being treated as 'pre-clinical' for a period prior to becoming clinical.
- **19 of the 32 DCM dogs or 59.4% were treated with medications to stabilise their cardiac function whilst possible.**
- 1 dog was misdiagnosed and became fatal and 1 dog was not medicated at all.
- 11 dogs were diagnosed when CHF (Congestive Heart Failure) arose and the dogs were in acute phase.

DILATED CARDIOMYOPATHY - AGE OF DIAGNOSIS	32	
< 11mnths	1	3.1%
1yr - 1 yr 11mnths	1	3.1%
2yrs - 2yrs 11mnths	1	3.1%
3yrs - 3yrs 11mnths	2	6.3%
4yrs - 4yrs 11mnths	3	9.4%
5yrs - 5yrs 11mnths	5	15.6%
6yrs - 6yrs 11mnths	4	12.5%
7yrs - 7yrs 11mnths	5	15.6%
8yrs - 8yrs 11mnths	2	6.3%
9yrs - 9yrs 11mnths	6	18.8%
10yrs - 10yrs 11mnths	2	6.3%

DCM dogs: Time passed from diagnosis to death of 24 dogs



- 4 or 12.5% of the 32 DCM dogs are alive currently
- 24 or 75% of the DCM dogs died from their condition.
- 4 or 12.5% of the DCM dogs died from other conditions unrelated to their heart.
- 7 or 29.2% of the 24 DCM dogs died within a week of diagnosis in acute CHF.
- 4 of those 24 DCM dogs died from a Myocardial Infarction.

CANCERS:

From the surveyed population of 1,165 dogs, there was a prevalence of 11.3% or 132 dogs, with a clinically diagnosed Cancer variant.

CANCERS DIAGNOSED	1165	
No cancer variants ever diagnosed	1033	88.7%
Dogs with Cancer diagnosed	132	11.3%
NB: Some dogs had 2 forms of cancer in their life, remission or treated from first variant		

- Some dogs had cancer variants diagnosed more than once in their lives.
- Osteosarcoma led the prevalence stakes with 47 of the 132 dogs (35.6% of all cancer sufferers) having been diagnosed with that cancer form. 2 of the Osteosarcoma dogs had the disease twice in different bones.
- In this population, Osteosarcoma was almost 3 times more prevalent than any other form of cancer.
- **The 3 most common cancer forms diagnosed in this population were;**
 - **Osteosarcoma: 49 diagnoses – all fatal with 1 live dog currently.**
 - **Sarcomas: 17 diagnoses – 1 fatal (intra-operative complications).**
 - **Lymphoma: 12 diagnoses – all fatal.**

- 26 or 19.7% of the 132 cancer dogs had pet insurance cover to assist with costs.
- 54 or 40.9% of the 132 dogs had non-palliative medical care of surgery, chemotherapy or radiotherapy.
- 59 or 44.7% of the 132 cancer dogs were born in the last decade from 2005.
- **23 of those 59 dogs had Osteosarcoma, 10 had Sarcomas, 5 had Lymphoma and 5 had Mast Cell Tumours so the pattern over eras appears repetitive for the breed.**
- 56 or 42.4% of the 132 cancer dogs had known family members with a cancer variant.

CANCERS DIAGNOSED - 132 dogs with 141 Cancer Diagnosis	141 Cancer Diagnosis		Fatal - Cause of Death at Survey	
Osteosarcoma	49	34.8%	48	98.0%
Sarcomas/ Soft Tissue Sarcoma/Carcinoma	17	12.1%	1	5.9%
Lymphoma	12	8.5%	12	100.0%
Mast cell tumours	8	5.7%	0	0.0%
Head & neck cancers - Oesophageal, Nasal, Throat	7	5.0%	6	85.7%
Brain tumour	5	3.5%	5	100.0%
Spinal tumours	5	3.5%	4	80.0%
Mammary cancers	4	2.8%	0	0.0%
Stomach cancer	4	2.8%	4	100.0%
Bowel cancer	3	2.1%	3	100.0%
Melanoma	3	2.1%	2	66.7%
Non-specific cancers or tumours	3	2.1%	3	100.0%
Bladder tumour	2	1.4%	0	0.0%
Leukemia	2	1.4%	2	100.0%
Liver tumour	2	1.4%	2	100.0%
Lung cancer	2	1.4%	2	100.0%
Eye cancers - Sclera, eyelid	2	1.4%	0	0.0%
Splenic cancer	2	1.4%	1	50.0%
Testicular Cancer	2	1.4%	0	0.0%
Adenosarcoma	1	0.7%	1	100.0%
Basal cell carcinoma	1	0.7%	0	0.0%
Chondrosarcoma	1	0.7%	0	0.0%
Gastrointestinal lymphosarcoma	1	0.7%	0	0.0%
Kidney tumour	1	0.7%	1	100.0%
Myxosarcoma & Hemangiosarcoma - Scrotal	1	0.7%	0	0.0%
Prostate cancer	1	0.7%	0	0.0%
	141		97	

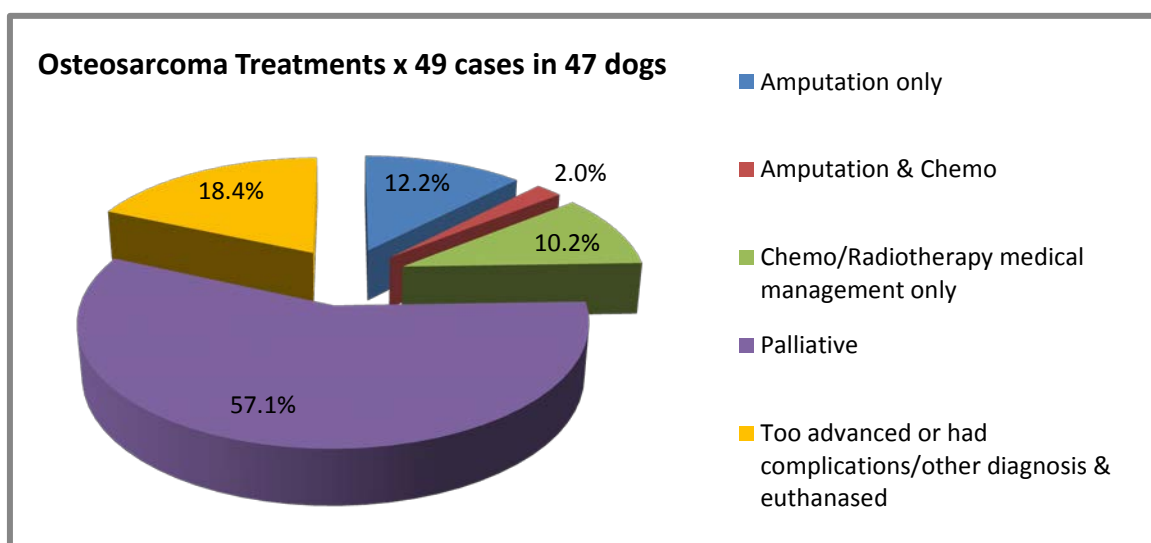
Cancer is more usually diagnosed in older dogs than young ones. In this 1,165 dog population, 36 or 27.3% of the cancer population of 132 dogs, were diagnosed prior to turning 5 years old. **The remaining 96 dogs or 72.7% of the cancer dogs were diagnosed with cancers after the age of 5 years old.** 8 dogs from the cancer population of 132 dogs were treated successfully from their first variant but went on to have a subsequent cancer diagnosis.

Ultimately, cancer caused the death of 95 or 72% of the 132 dogs diagnosed with a form of the disease.

CANCER - AGE OF FIRST DIAGNOSIS OF ANY CANCER VARIANT	132		Euthanased due to poor prognosis	Fatal Despite Treatment	Treated & alive	Died from an unrelated issue	Diagnosed with another cancer, treated & alive	Diagnosed with another cancer & died following treatment	Diagnosed with another cancer & euthanased or died from another condition
11mnths and <	1	0.8%			1				
1yr - 1 yr 11mnths	0	0.0%							
2yrs - 2yrs 11mnths	13	9.8%	2	5	4	2			
3yrs - 3yrs 11mnths	12	9.1%	2	4	5	1		1	
4yrs - 4yrs 11mnths	10	7.6%	1	6	3				
5yrs - 5yrs 11mnths	12	9.1%	2	7	3		1	1	1
6yrs - 6yrs 11mnths	21	15.9%	1	11	4	5	1		
7yrs - 7yrs 11mnths	21	15.9%	2	13	4	2			2
8yrs - 8yrs 11mnths	23	17.4%	4	14	4	1			1
9yrs - 9yrs 11mnths	9	6.8%	4	5					
10yrs - 10yrs 11mnths	8	6.1%	2	3	3				
11yrs - 11yrs 11mnths	2	1.5%	1	1					
8 dogs had varying forms of Cancer diagnosed .			21	69	31	11	2	2	4

OSTEOSARCOMA:

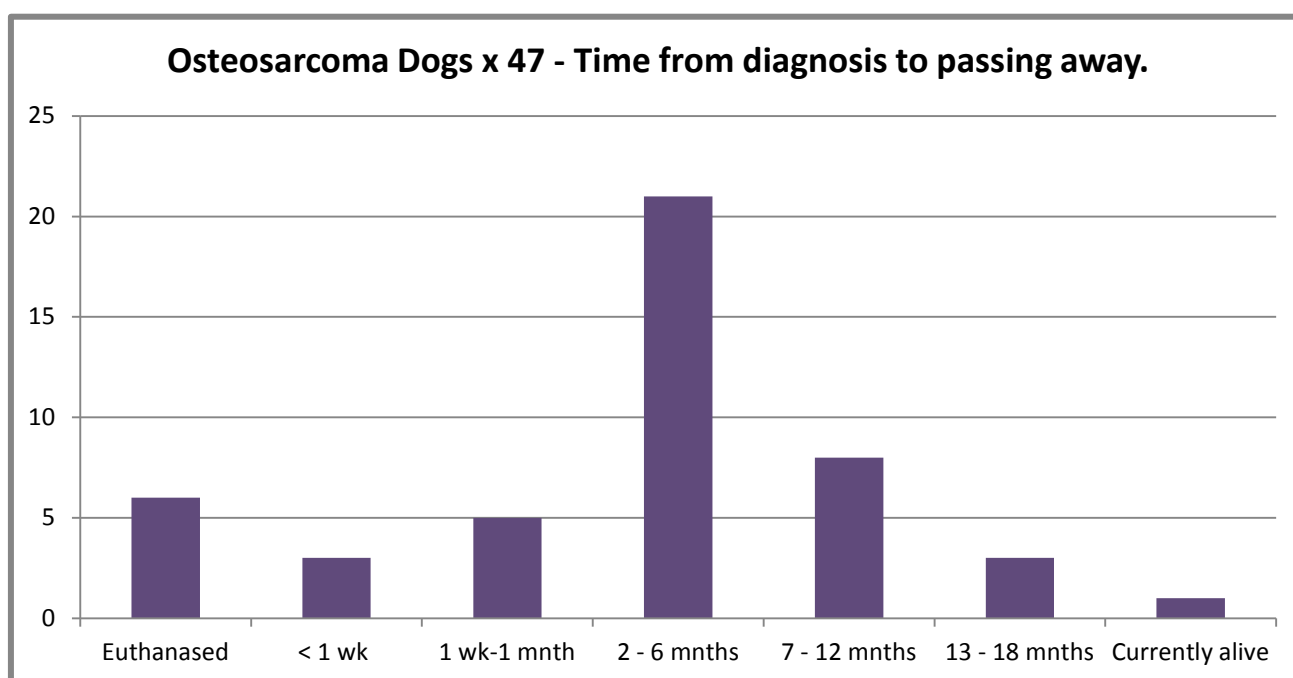
4% of the survey population dogs had been diagnosed with Osteosarcoma. **Of the deceased dogs in the survey Osteosarcoma was the 3rd highest cause of death.** Osteosarcoma is often not identified until it has caused significant bone deterioration or secondaries are established. As a consequence, many dogs diagnosed in the survey were palliated whilst not in pain, or euthanased quickly. 12 or 24.4% of the 49 cases in 47 dogs had active medical treatment including amputation, chemotherapy or radiotherapy.



TIME FROM DIAGNOSIS TO PASSING:

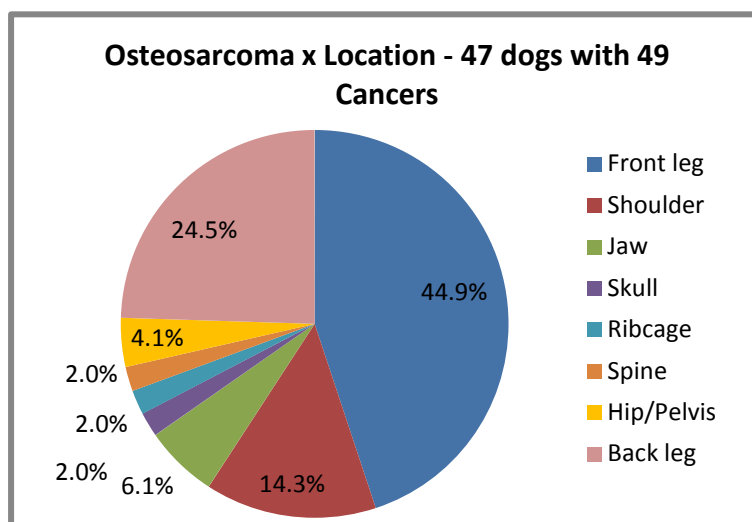
Osteosarcoma does not give a lot of time! Of the 47 dogs diagnosed with osteosarcoma, 35 or 74.5% had less than 6 months from diagnosis until they passed away.

- **21 dogs or 44.7% of the osteosarcoma population lived a period of 2 – 6 months from diagnosis. 3 or 14.3% of these 21 dogs had active treatment such as chemotherapy or radiation.**
- 8 dogs or 17% of the osteosarcoma population lived between 7 – 12 months from diagnosis. 2 of these had an amputation and 1 dog had an amputation and chemotherapy.
- Of the 14 dogs or 29.8% of osteosarcoma dogs that lived less than one month, one dog had an amputation of a leg but died quickly from post-operative complications. Many were diagnosed when the bone was already brittle from the cancer and it was not safe or pain-free.
- 3 dogs or 6.4% lived longer than 12 months. 1 had chemotherapy, 1 had an amputation and the last was palliated with no active treatment.
- 1 dog was currently alive in the survey.
- **The longest living of the osteosarcoma dogs was 15 months from diagnosis.**
- 2 of the 47 dogs had previously had another osteosarcoma diagnosis and both bone regions had been amputated. 1 had an osteosarcoma of a rib and had been treated with chemotherapy successfully then several years later had an osteosarcoma diagnosed in a leg. The other dog had osteosarcoma diagnosed in the jaw and had an amputation and plastic surgery to the area. 18 months later the dog was diagnosed with an osteosarcoma of a leg. In the chart below, these two dogs are counted only for their second osteosarcoma diagnoses.



LOCATION OF OSTEOSARCOMA CANCERS:

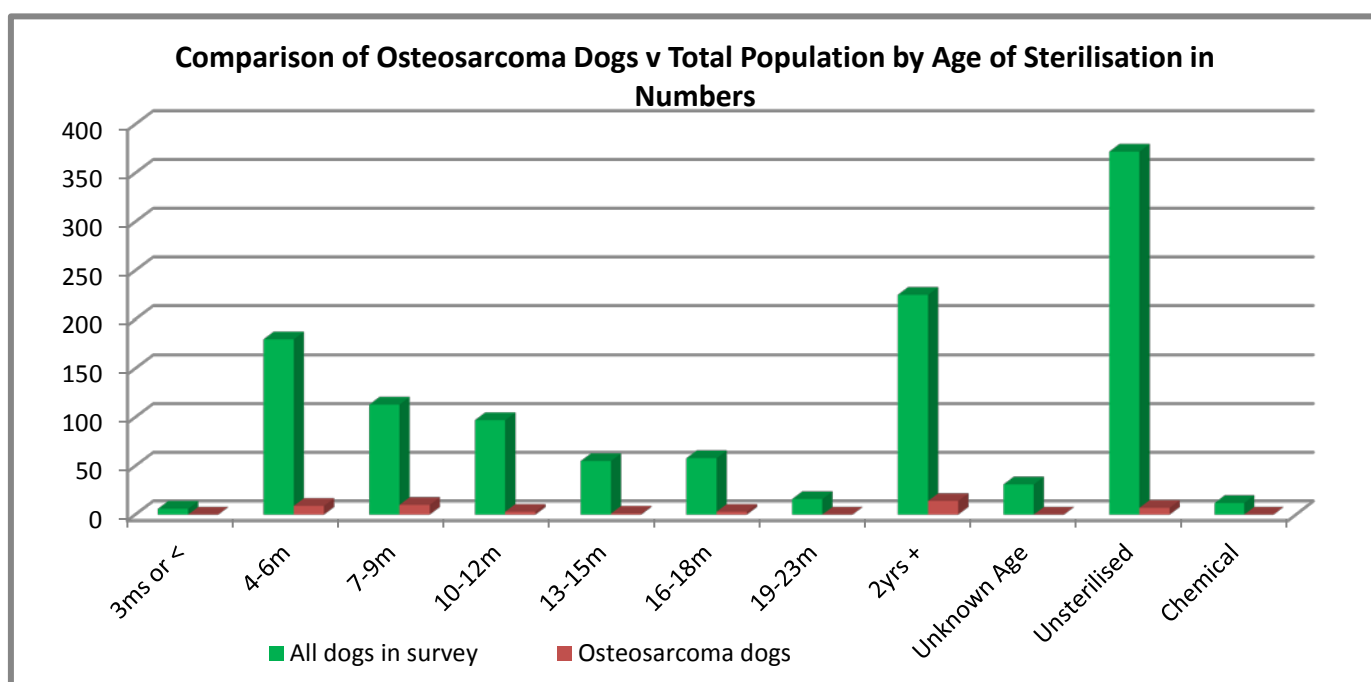
- 47 dogs had 49 Osteosarcoma diagnoses.
- **34 of the Osteosarcomas or 69.4% were bones of the legs.**
- **A further 9 or 18.4% were either shoulders or hips/pelvis.**
- Mobility and weight bearing for Great Danes relies upon legs, shoulders and hips hugely and quality of life is quickly impacted by this disease.
- Osteosarcoma was diagnosed in more females than male dogs. 27 or 57.4% of the Osteosarcoma dogs were female and 20 or 42.6% were male.



CROSS-MATCHING THE OSTEOSARCOMA DIAGNOSIS WITH PRE-DISPOSING FACTORS:

Great Dane owners have very little clinical research on the breed specifically to call upon in assisting them to make decisions around care and practice. It is common for data on other breeds, generally large breed specific, to be utilised when sharing advice. One frequently offered concern is the link between early sterilisation and Osteosarcoma and Great Dane owners are frequently told that sterilising giant breeds young can be a predisposing risk factor for osteosarcoma occurring. There are many clinical reports and articles available that speak to this risk factor.

A study on Rottweilers by *Cooley et al*, (Endogenous gonadal hormone exposure and bone sarcoma risk, Nov 2002) that is often cited followed 683 dogs for over 2yrs and established that Rottweilers sterilised prior to 12 months old had a 'one in four lifetime risk' for developing Osteosarcoma and that the sterilised dogs were more likely to develop the disease than intact dogs of the same breed. ⁶ Visually, the prevalence of Osteosarcoma occurring in Great Dane dogs alongside ages of sterilisation, does not appear to show the same acquisition of Osteosarcoma cancers in this population of Great Dane dogs.



Given this potential predisposition, the Osteosarcoma dogs were cross-matched against other data collected to give a more specific data view of a breed-specific population. Elements considered in the cross-matching were sterilisation age, familial links and body weight.

- **47 or 4% of the 1,165 survey dogs with cancer were diagnosed with Osteosarcoma.**
- 19 or 40.4% of the Osteosarcoma males had been sterilised.
 - 7 were sterilised by 6 months.
 - 5 were sterilised at ages 7-12 months.
 - 1 was sterilised at ages 13 – 18 months.
 - 6 were sterilised over the age of 2 years.
- 21 or 44.7% of the Osteosarcoma females had been sterilised.
 - 2 were sterilised by 6 months.
 - 8 were sterilised at ages 7-12 months.
 - 3 were sterilised at ages 13 – 18 months.
 - 8 were sterilised over the age of 2 years.
- Of the Osteosarcoma diagnosed dogs, 1 male and 6 females or 14.9% were never sterilised.
- **The highest prevalence for Osteosarcoma being diagnosed in any sterilisation sub-set was the 7-12 month group with 6.2% of all sterilised dogs in that age range acquiring the cancer.**
- **For the 27 females with Osteosarcoma, 18 or 66.7% of them had experienced a first heat cycle prior to sterilisation.** Only 9 or 33.3% had been sterilised prior to a first heat cycle.
- The survey collected data to be able to show family links. 12 or 25.5% of the 47 Osteosarcoma dogs had no family contact at all so were unable to be measured.
- 11 or 23.4% of the 47 Osteosarcoma dogs had no known relatives with Osteosarcoma diagnosed.
- 24 or 51.1% of the 47 Osteosarcoma dogs had known family members also diagnosed with that cancer form.
- **In each category of sterilisation age group, 50% or more of the Osteosarcoma dogs also had relatives with the disease except the 7-12 month sterilised dogs where the known familial link was only 38.5% of that sub-group.**
- 23 or 48.9% of the Osteosarcoma dogs had been born in the last decade since 2005. 13 or 56.5% of those dogs had relatives with Osteosarcoma.

OSTEOSARCOMA DOGS: CROSSMATCH STERILISATION AGE & RELATIVES WITH OSTEOSARCOMA	All sterilised dogs	Dogs with Osteosarcoma	% of sterilisation age group with Osteosarcoma	Known family members with Osteosarcoma	% of Osteosarcoma dogs with family members also having Osteosarcoma by age group
Sterilised at 6mnths or <	186	9	4.8%	5	55.6%
Sterilised at 7 - 12mnths	210	13	6.2%	5	38.5%
Sterilised at 13 - 18mnths	113	4	3.5%	2	50.0%
Sterilised over 19mnths, sterilisation age unknown, chemically sterilised or not sterilised	656	21	3.2%	12	57.1%

- 11 or 55% of the 20 male Osteosarcoma dogs had an adult weight of 75kg or more and would be classed as bigger Great Danes.
- 13 or 48.1% of the 27 female Osteosarcoma dogs had an adult weight of 65kg or more and would be classed as bigger Great Danes.

LYMPHOMA:

Lymphoma is often described as one of the most common cancers in canines and there are estimates that approximately 1 in every 15 dogs (ie: about 7%) will acquire the disease. **In this survey population of 1,165 Great Danes there were 12 dogs or 1% diagnosed with Lymphoma.**

- **7 of the 12 Lymphoma dogs or 58.3% had relatives with some form of cancer diagnosed. Of those 7 dogs, 4 of them had a direct relative in the survey that also had Lymphoma.**
- Lymphoma generally appears in 'late adulthood' yet 50% of the survey cases were diagnosed prior to 5 years of age in this population.
- Only 4 or 33.3% of the Lymphoma cases were treated with chemotherapy. 1 dog treated with chemotherapy had an adverse neurological reaction to the main drug in the regime and treatment was stopped after 3 months. The remaining 3 dogs having chemotherapy lived for periods from 7 months – 1 year and 9 months.
- 1 dog was euthanased at diagnosis.
- 7 or 58.3% of Lymphoma dogs were palliated. These dogs lived for periods of 1- 4 months.

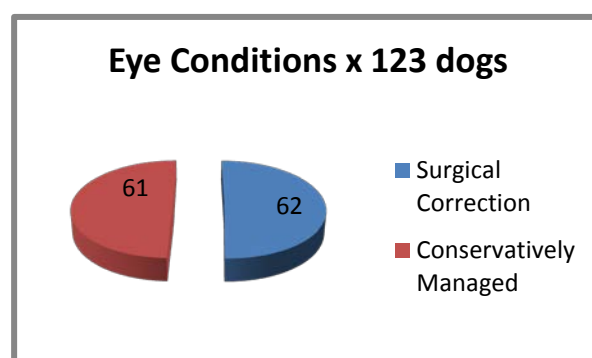
EYE CONDITIONS:

The eye conditions that the Great Dane breed displays most commonly are Entropion, Ectropion and Cherry Eye. All 1,165 dogs in the survey were canvassed for the clinical diagnosis of these conditions or any other eye issues. Visible haw-eyed dogs were not measured in this instance.

1,042 dogs or 89.4% of all survey participants had never had any eye issues diagnosed.

- **123 or 10.6% of the survey population had diagnosed eye conditions.**
- 55 or 44.7% of the eye issue dogs had Entropion, some along with another eye issue.
- 22 or 17.9% of the eye issue dogs had Ectropion, some along with another eye issue.
- 27 or 22% of the eye issue dogs had Cherry Eye, some along with another eye issue.
- Other Eye Issues included: scrolled cartilage, physical deformity, bulging eyes from skull pressure, cataracts, glaucoma, actinic radiation damage, nuclear sclerosis, uveal cysts, positional strabismus, third eyelid issues and distichia.
- **The eye condition that was most commonly surgically corrected was Entropion with 69.1% or 38 dogs of the 55 diagnosed with the issue having had surgery.** 6 of those dogs also had another eye issued corrected at the same time.
- Only 13 or 48.1% of the Cherry Eye dogs had their condition surgically corrected and 6 of those dogs were having another eye issue operated on at the same time. The remaining 14 or 51.9% of Cherry Eye dogs were conservatively managed.
- The remaining 11 dogs that had surgery were for Ectropion (6) and Other Eye Issues (5).

EYE CONDITIONS	1165	
No eye issues diagnosed	1042	89.4%
Dogs with eye issues	123	10.6%
Entropion & Ectropion	2	0.2%
Entropion	48	4.1%
Entropion + another eye issue	2	0.2%
Entropion and Cherry Eye	2	0.2%
Entropion and Cherry Eye + Scrolled Cartilage	1	0.1%
Ectropion	19	1.6%
Ectropion + another eye issue	1	0.1%
Cherry Eye	20	1.7%
Cherry Eye and Scrolled Cartilage	3	0.3%
Cherry Eye + another eye issue	1	0.1%
Other eye issues	24	2.1%

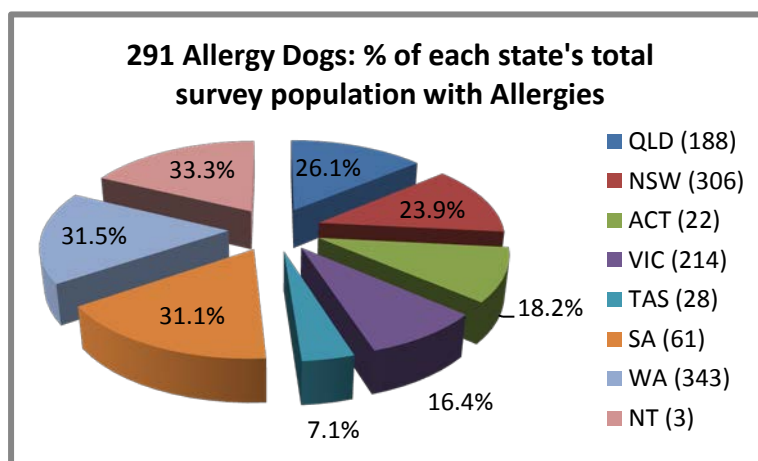


ALLERGIES:

Allergies in all breeds of dogs are a challenge and many require medications. For Great Danes, allergies are not only a bigger physical challenge (washing or applying topical treatments to bigger bodies) but also an expensive problem with animal medicaments being prescribed by kilo of body weight.

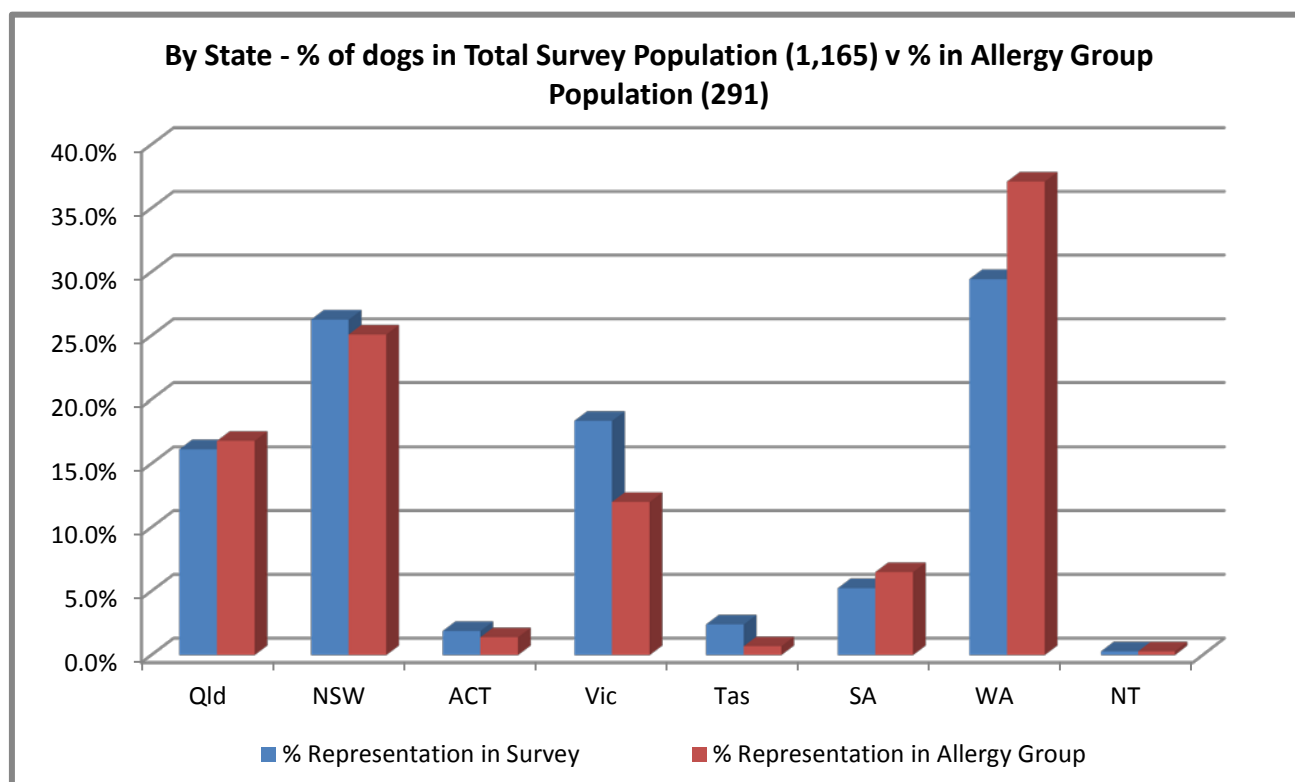
Allergies were the most prevalent health issue in this survey with 291 or 25% of the survey population of 1,165 dogs having a diagnosed allergic response.

In a country like Australia with a vast and varying landscape, the prevalence of allergy responses by state is indicative of the effect of the climate and flora. **States like Western Australia with 343 dogs in the survey and South Australia with 61 dogs in the survey both had just over 31% of their included dogs display allergies.** The more moderate climate states & territories like the ACT, NT, NSW, Victoria and Tasmania had a much lower level or prevalence for their allergy dogs.



The Northern Territory had a small number of dogs (3) in the survey population and 1 of those dogs was also in the Allergy dog population which then shows as a 33.3% actual but is skewed based on very small numbers.

When viewing the contribution percentage to each of the 'total survey population' against the 'allergy group population', it appears that South Australia and Western Australia are over represented by allergy dogs with Queensland showing a smaller level of over-representation. Queensland has a variety of climates and high residential spread through the whole state.

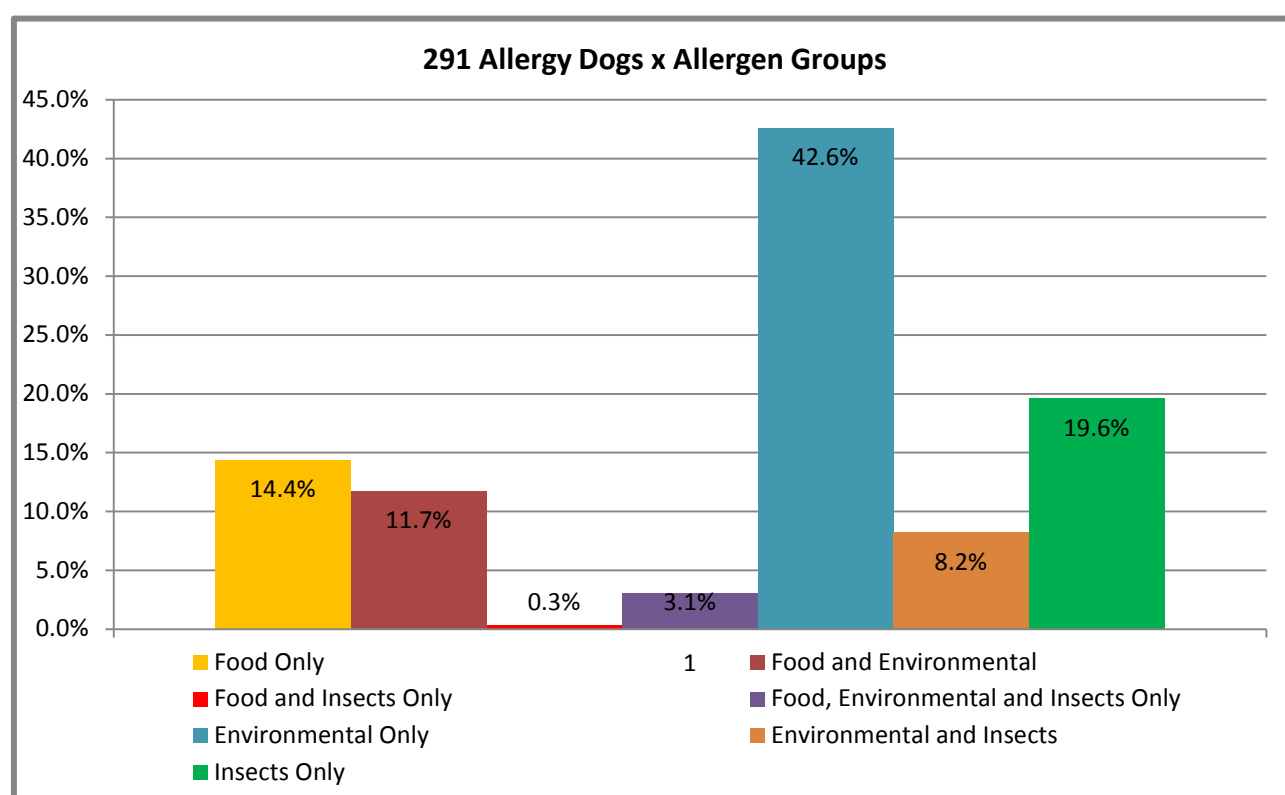


ALLERGEN TYPES:

Of 1,165 Great Danes in the survey there were 291 or 25% who had some level of allergic reaction to something. The allergens were defined into 3 main groups:

- 1) Food reactions – Foods included grains, rice, certain proteins across all forms, dairy. Some dogs had reactions to raw forms of meats and not to cooked or refined and others did better on raw.
- 2) Environmental - This is also called Atopic Dermatitis and is a huge group which includes many grasses, trees, pollens, dust, moulds and more.
- 3) Insects – Included in this group are insect bite responses where they had a severe reaction, Demodex dogs and reactions to contact with fleas, mosquitoes, cockroaches, dust-mites, etc, as would show up in specialised testing.

Some dogs had allergy responses to just one category, some to two or all. **The clear largest agitator was the Environmental Allergy section with 191 dogs or 65.6% of all Allergy dogs** having a negative response to these irritants. Some of the 191 dogs also had issues with Food and/or Insects as well. Each dog was separated into their respective allergen groups and seven groups were created to show those dogs with more than one irritant.

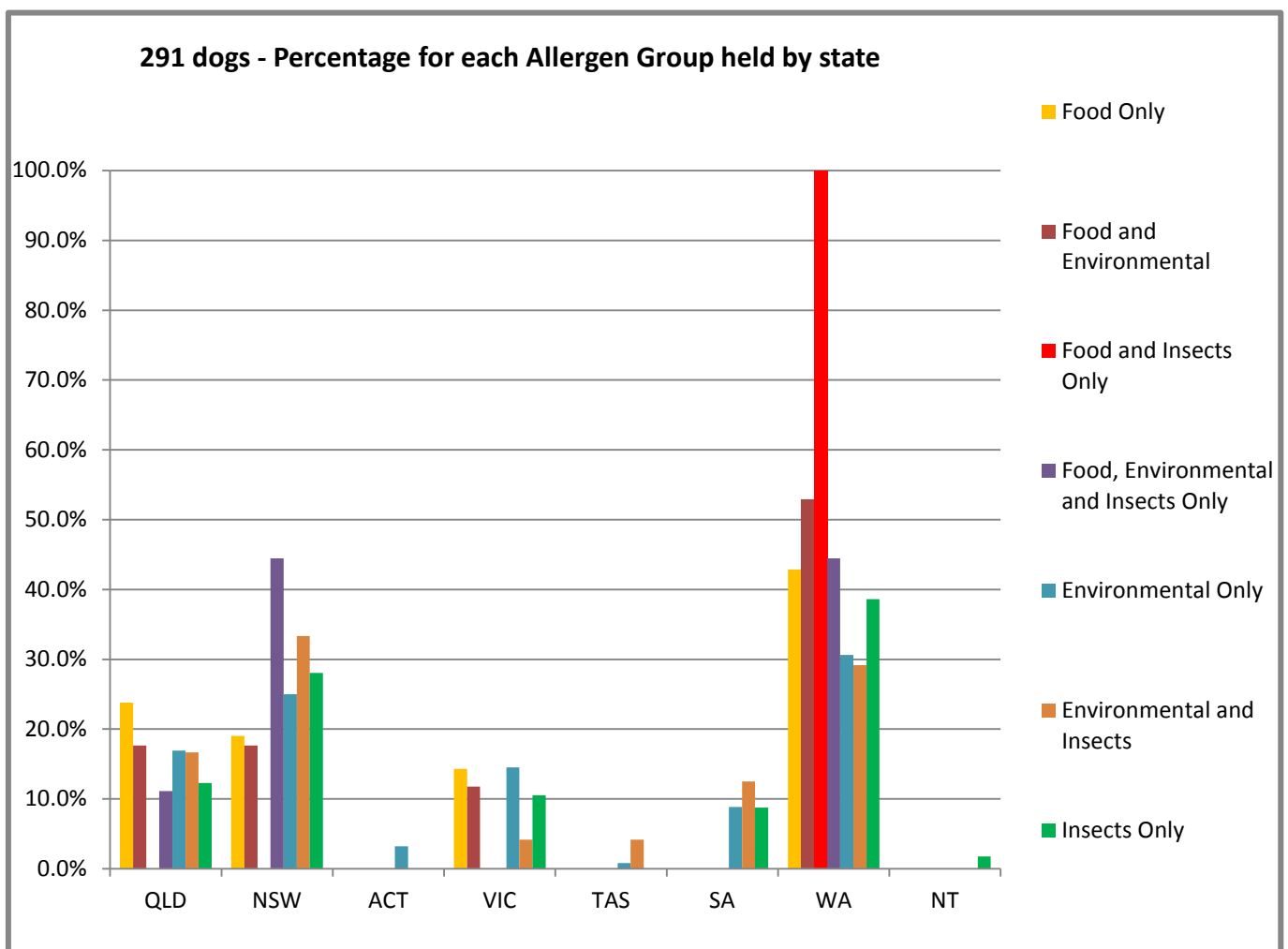


ALLERGY DOGS BY CATEGORY OF ALLERGEN	291		Diet Change Only	Meds Required	QLD	NS W	ACT	VIC	TAS	SA	WA	NT
Food Only	42	14.4%	41	13	10	8		6			18	
Food and Environmental	34	11.7%	1	34	6	6		4			18	
Food and Insects Only	1	0.3%		1							1	
Food, Environmental and Insects Only	9	3.1%		9	1	4					4	
Environmental Only	124	42.6%		113	21	31	4	18	1	11	38	
Environmental and Insects	24	8.2%		24	4	8		1	1	3	7	
Insects Only	57	19.6%		55	7	16		6		5	22	1
			42	249	49	73	4	35	2	19	108	1

- 42 or 14.4% of the allergy dogs were managed with just a diet change.
- **249 or 85.6% of the allergy dogs had to have medications to manage their physiological reactions.**
Medications included injections, oral tablets and topical lotions.
- 138 or 47.4% of the allergy dogs had noticeable seasonal differences in their allergy responses and had periods of the year when the allergic effects were less of an issue.

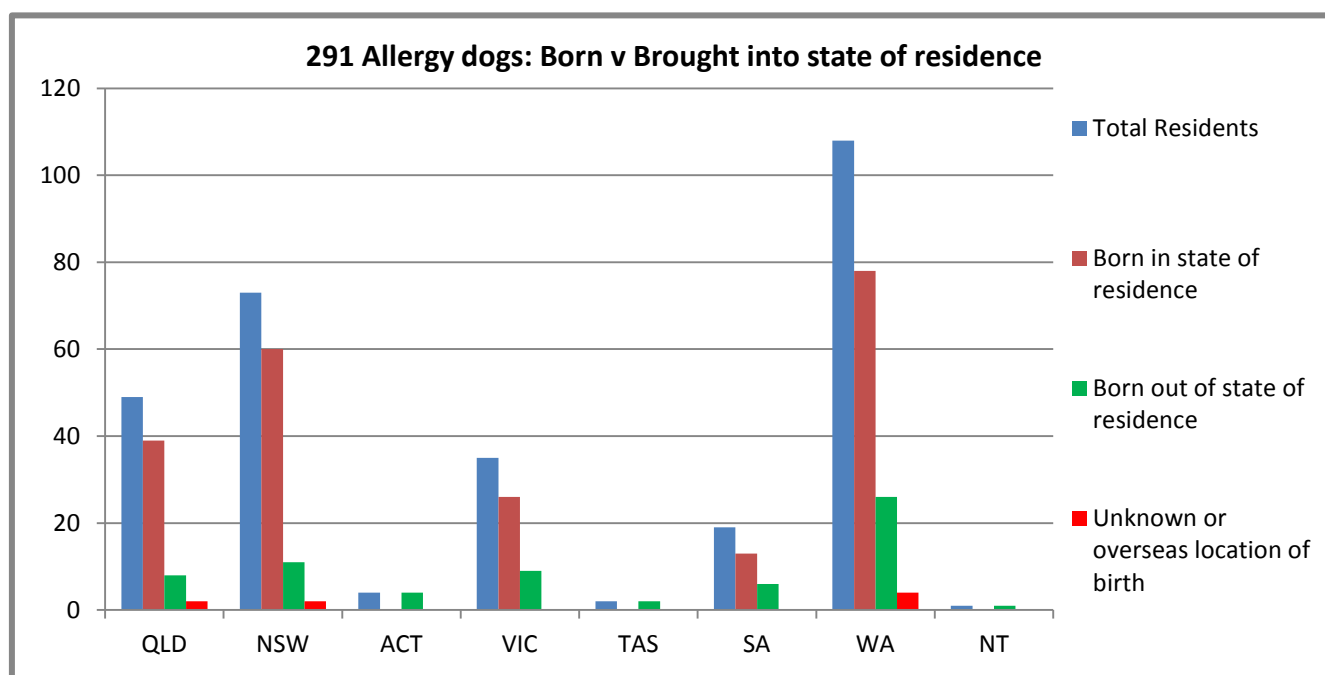
When breaking each of the irritant groups into the proportion of dogs found in each state by allergy group, it became clear that WA holds a unique position across the variety of issues causing allergic responses in dogs.

- 42 Food Only dogs with 42.9% of them in WA.
- 34 Food & Environmental dogs with 52.9% of them in WA.
- 1 Food & Insect dog lived in WA.
- 9 Food, Environmental & Insect dogs with 11.1% in Qld and 44.4% split between NSW and WA.
- 124 Environmental only dogs across all states with the highest proportions in NSW and WA.
- 24 Environmental & Insect dogs across all states with 33.3% living in NSW.
- 57 Insect only dogs across all states with 38.6% in WA.
- 15 of the Insect allergen dogs were Demodex sufferers and 3 of those Demodex dogs also had other allergies.



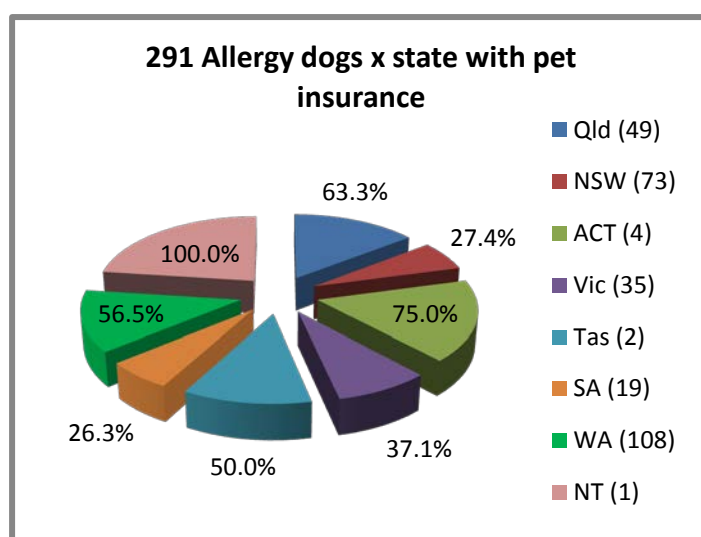
Given the transition of dogs across state borders in Australia the state of residence was measured against the state the allergy dogs were born. A very small number of the allergy dog population were born overseas (2) or were adopted as rescues with the birthplace unknown to the current owners (6).

216 or 74.2% of the allergy dogs live in the state they were born in.



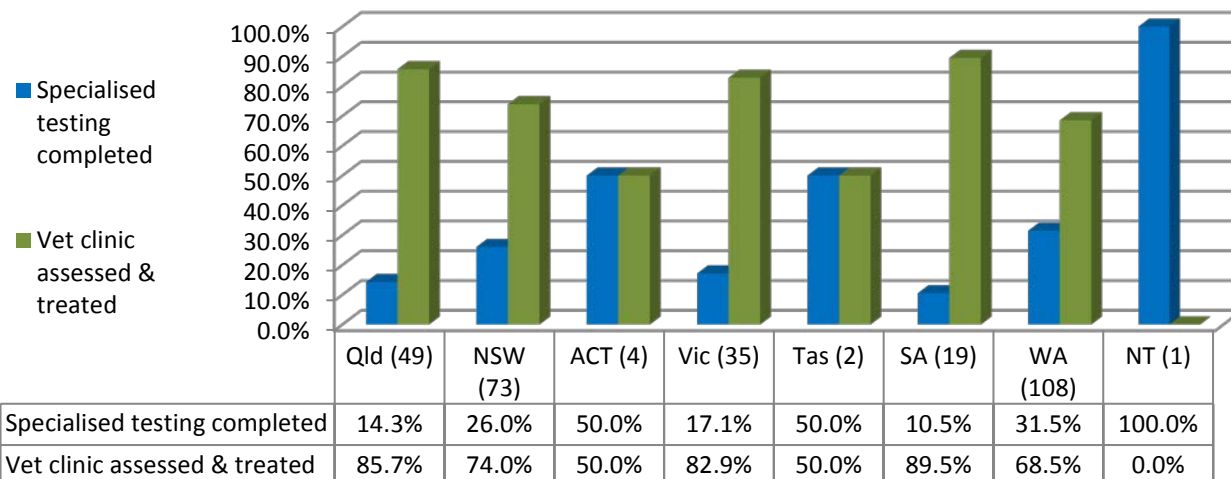
MEDICAL ASSESSMENT FOR ALLERGIES:

- 72 or 24.7% of the allergy dog population had undergone specialised testing to identify irritants.
- 219 or 75.3% of the allergy dogs had not had any specialised testing done. They were vet assessed and most had medical care for their allergic responses based around symptom control.
- The ACT, NT and Tasmania have very small numbers in the allergy dog population and are evenly split between having specialised testing done or not.
- **For the states with large numbers of allergy dogs, NSW and WA dogs were more likely to have had specialised allergy testing completed as shown on the next graph.**



- Location and access to specialised testing services may impact in Australia. As an example Queensland allergy dogs had a higher level of pet insurance cover given the volume of dogs but had less than 15% of those allergy dogs undergoing specialty diagnosis.
- Many of the allergy dogs had not been offered any specialised testing by their Vets and were using medications and management techniques to deal with symptom control.

291 Allergy Dogs - Percentage by state of Type of medical assessment



MEDICATION REACTIONS:

27 dogs or 2.3% of the 1,165 dogs in the survey had also had notable reactions to medications and owners had to be aware of preventing any repeat of that agent being given to their dog.

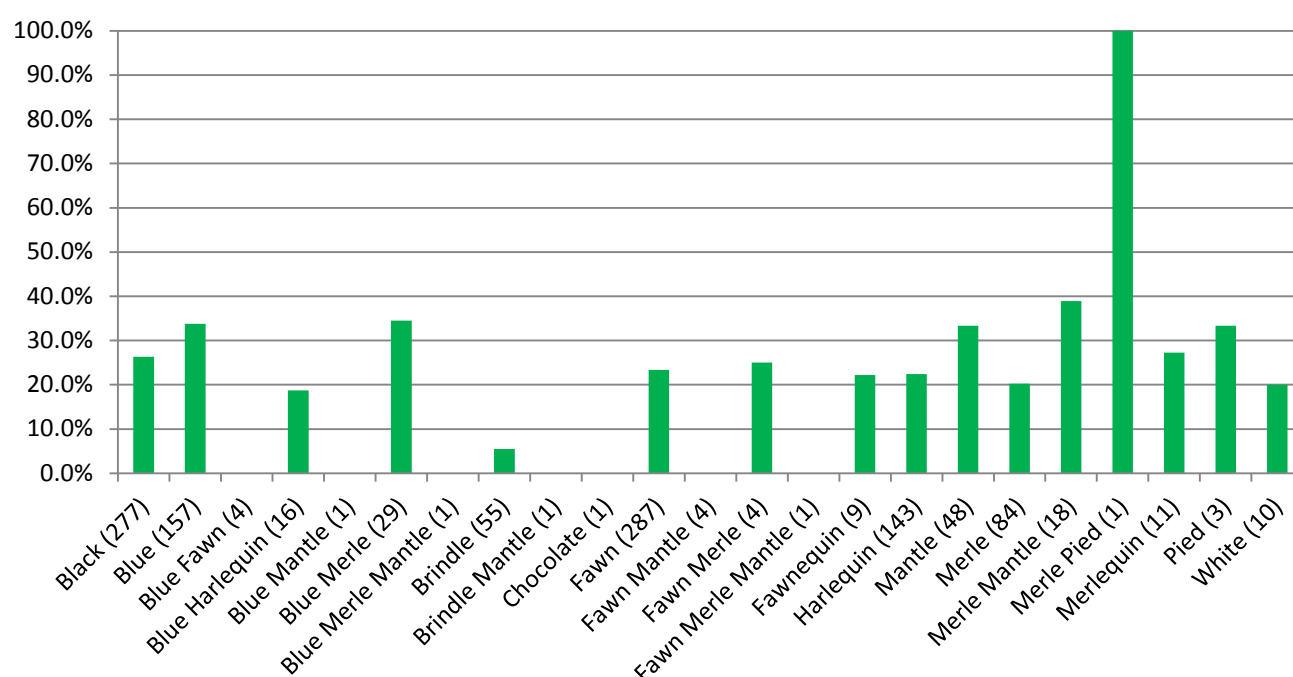
10 of those dogs were also allergy dogs to other irritants.

COAT COLOURS AND ALLERGIES:

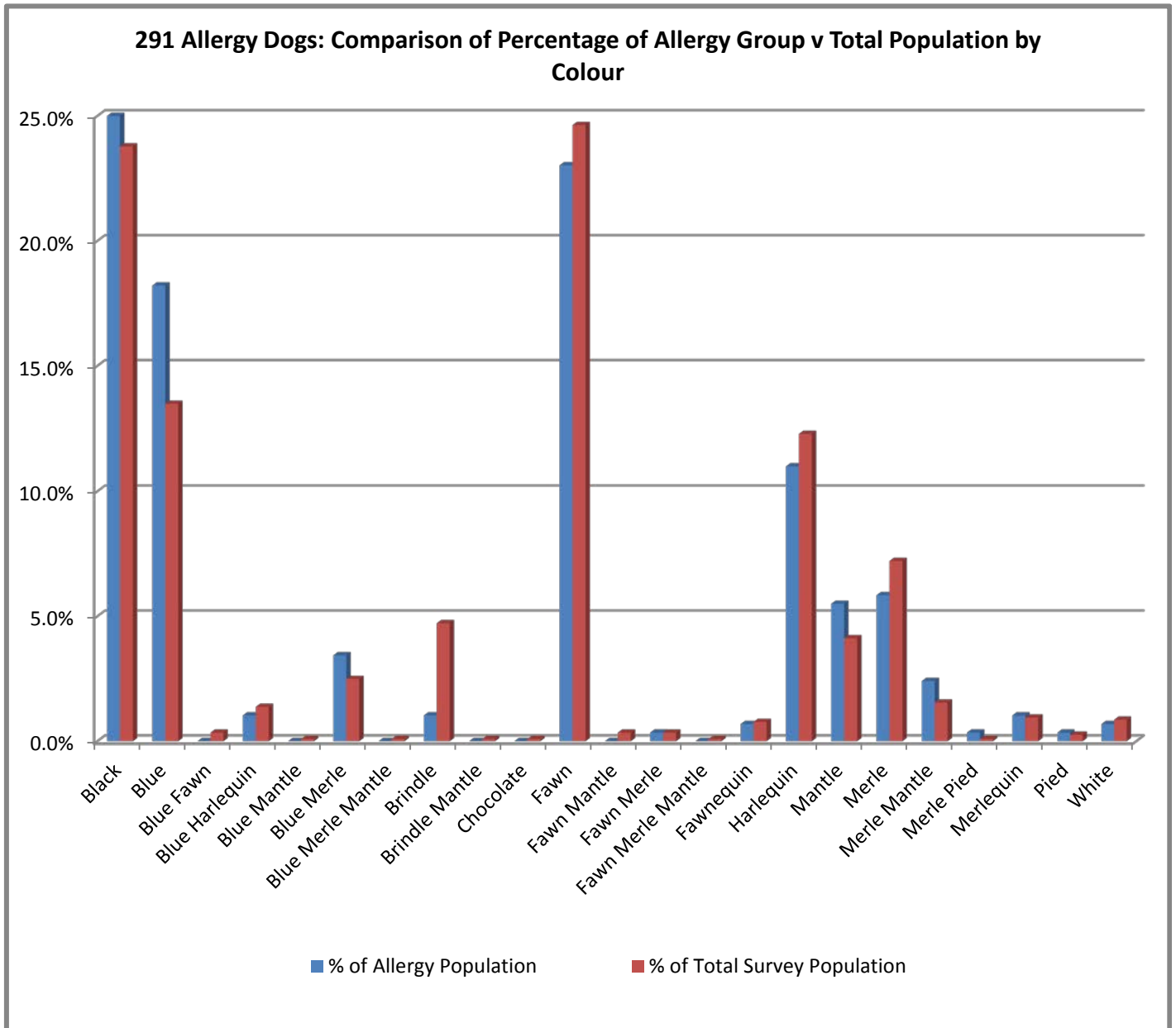
The total survey population was heaviest on Fawns, Blacks and Blues making up 61.9% of the dogs collectively. For the report purposes all of the colour variants have been shown individually.

Excluding the very low in number coat colour dogs, the highest proportion for each colour population showing allergies were the Merle Mantles – 38.9%, Blue Merles – 34.5%, Blues – 33.8% and the Mantles – 33.3%. More than one third of each of those coat colour populations displayed allergies.

1,165 Dogs - Percentage of total dogs x colour with Allergies



- Blues were over-represented in the Allergy population (18.2% of all allergy dogs) versus their presence in the total survey population (13.5%).
- Blacks, Blue Merles, Merle Mantles and Mantles were also over-represented on an allergy percentage for their volume presence in the total survey population.
- The dogs with a lot of 'white' such as the Harlequins, Whites, Pies were mostly under-represented in the allergy population compared to their volume in the total survey population. The only unique variant was the Merlequin group.



ANAL GLANDS:

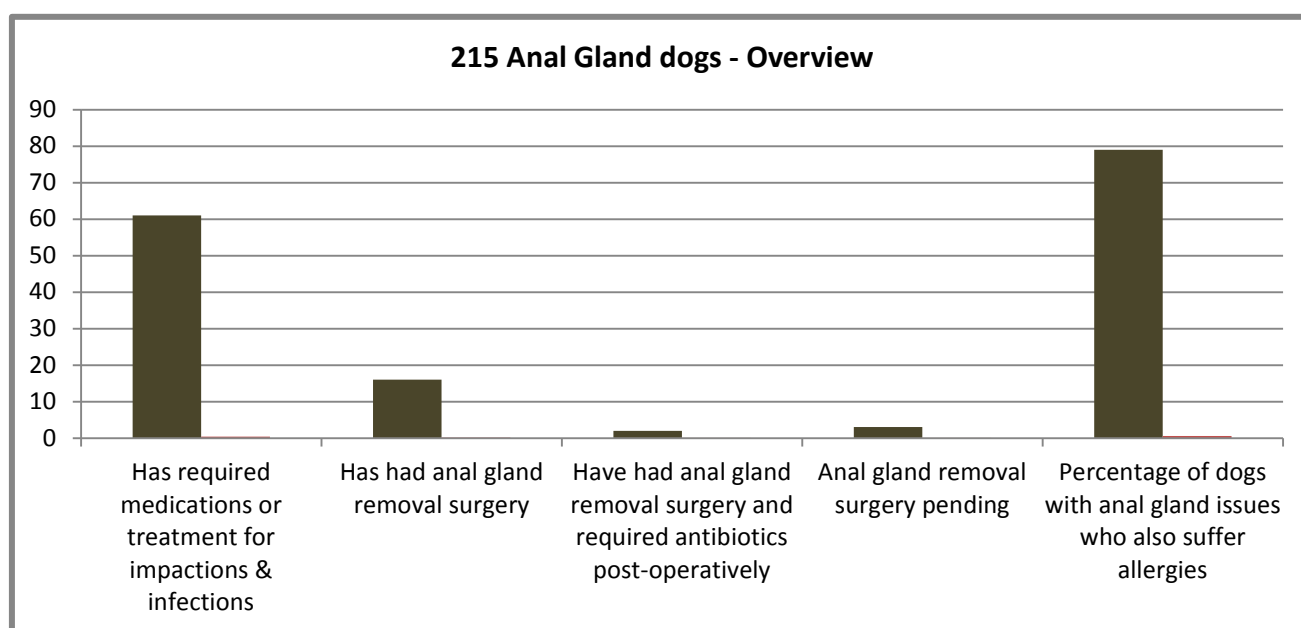
Anal gland issues were questioned for frequency of expression, impaction or infection and whether anal gland removal had occurred for the dogs.

950 or 81.5% of all Great Danes in the survey population had never experienced an anal gland issue in their life.

215 dogs or 18.5% of the survey population had experienced anal gland issues of varying degrees.

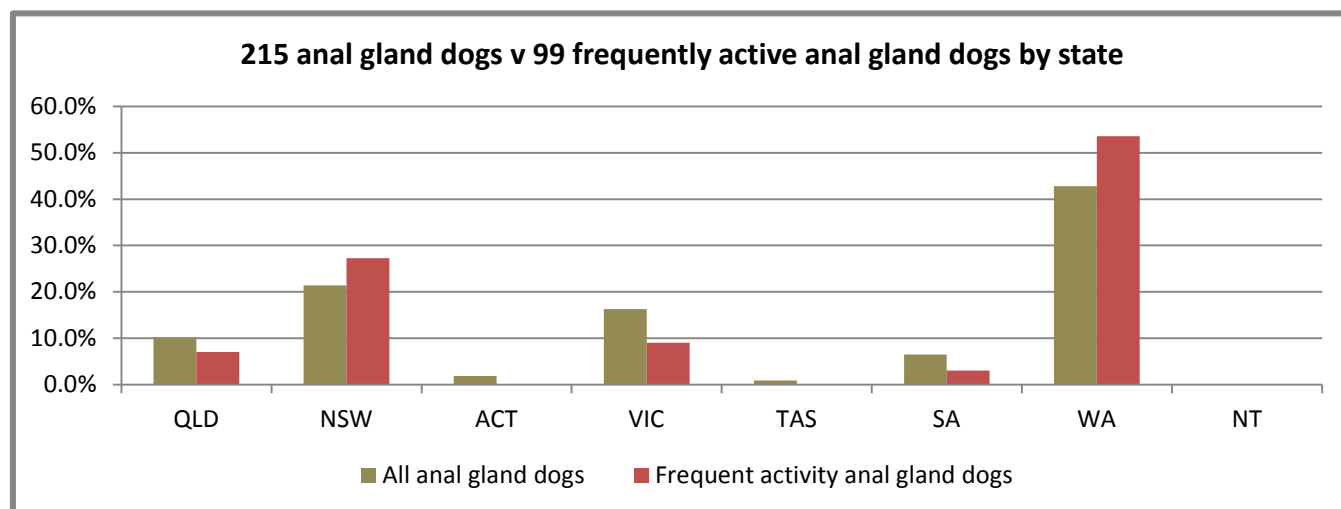
- Some dogs had had periods of frequency with anal gland expression, self-expressed or needing owner/vet assistance and then the anal gland issue settled. Some with change of diet, some with bulking agents, some with surgery such as anal gland removal and others 'just settled'.
- 99 dogs or 46% of anal gland dogs, have predictably frequent anal gland activity which in this analysis is described as being from weekly through to every 4 months.**
- Another 84 dogs have no predictable pattern but do occasionally express their anal glands with or without help.
- 32 dogs or 14.9% of the anal gland dogs self-express and 183 or 85.1% have expression done by their owners or at a vet clinic.
- 61 dogs or 28.4% of the 215 anal gland dogs have had medications or vet care for infections and/or impactions.
- 18 dogs or 8.4% of the anal gland dogs have had anal gland removal surgery due to infections, impactions and ongoing difficulties. 3 more dogs in the survey have surgery pending at this time.**
- Of the anal gland removal dogs, all recovered well from their surgeries except 2 dogs that had to have a course of post-operative antibiotics.

ANAL GLAND EXPRESSION FREQUENCY	215	
Once only in life	38	17.7%
4 or < times in life	24	11.2%
Adhoc (not predictable but not frequently)	4	1.9%
Yearly	6	2.8%
6 monthly or Twice a year	12	5.6%
4 monthly	2	0.9%
3 monthly	21	9.8%
2 monthly	11	5.1%
6 weekly	5	2.3%
monthly in Spring only	1	0.5%
monthly	25	11.6%
2-3 weekly	29	13.5%
Weekly - twice weekly	5	2.3%
Expression associated with impaction or infection only	10	4.7%
Frequently until 12mnths of age	4	1.9%
Occasionally until 12mnths of age	2	0.9%
Frequently until 2yrs of age	1	0.5%
Frequently until 4yrs of age	1	0.5%
One period of frequently in life	14	6.5%



ANAL GLAND DOGS BY STATE:

For this survey population of 1,165 Great Danes, it would appear that WA is the anal gland capital of Australia. The state contributed 29.4% of the dogs to the total survey population yet is contributing 42.8% of the anal gland dogs in total and 53.5% of the 'frequent activity' group of 99 anal gland dogs. WA is also one of the two highest level states with allergy dogs.

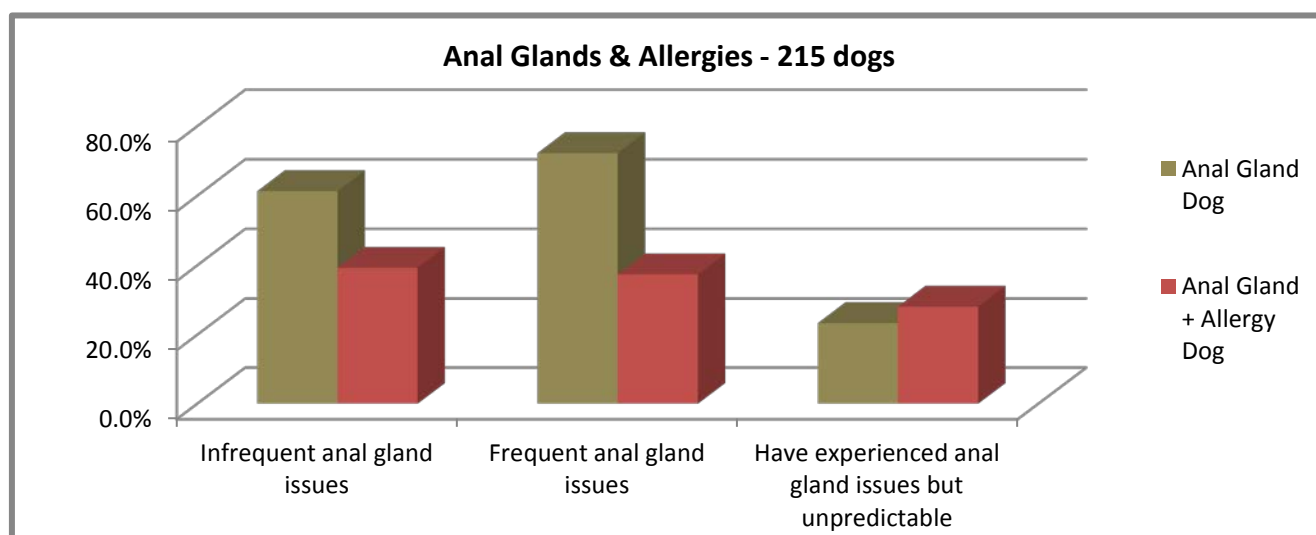


ANAL GLAND ACTIVITY AND ALLERGIES:

79 or 36.7% of all dogs with anal gland activity noted were also members of the allergies population.

Even when breaking the anal gland dogs down into categories of frequency to evaluate the impact of allergy effect upon the dog, it appears that the spread of consequence remains the same.

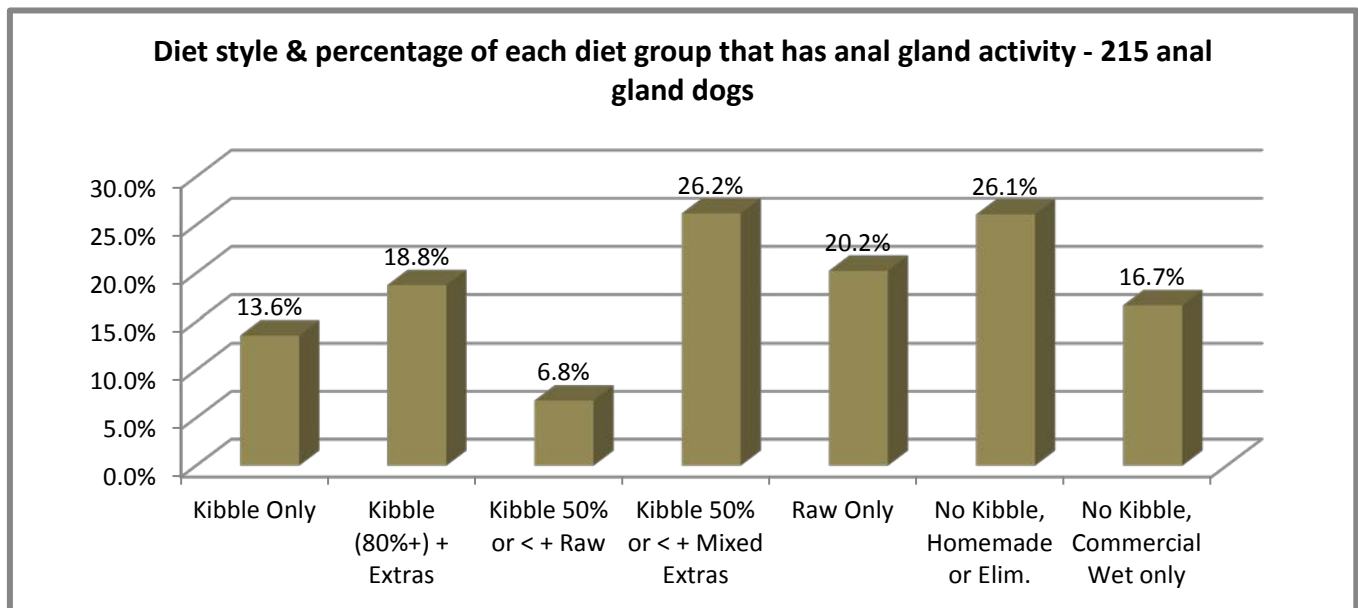
- 39.3% of the 84 'infrequently active' anal gland dogs were allergy dogs.
- 37.4% of the 99 'frequent & predictable' anal gland dogs were allergy dogs.
- 28.1% of the 32 'infrequent but have had' anal gland activity dogs were allergy dogs.
- The presentation of allergies was compared against the presentation of anal gland issues to see if there was a relationship. The analysis found that there was a significant relationship between the two variables, however there is more to the story and allergies only account for a small portion of the equation. More research needs to be done in this area to see what else is causing anal gland issues or a relationship between the two issues. SEE APPENDIX ONE on pages 85 and 86 for the testing process.



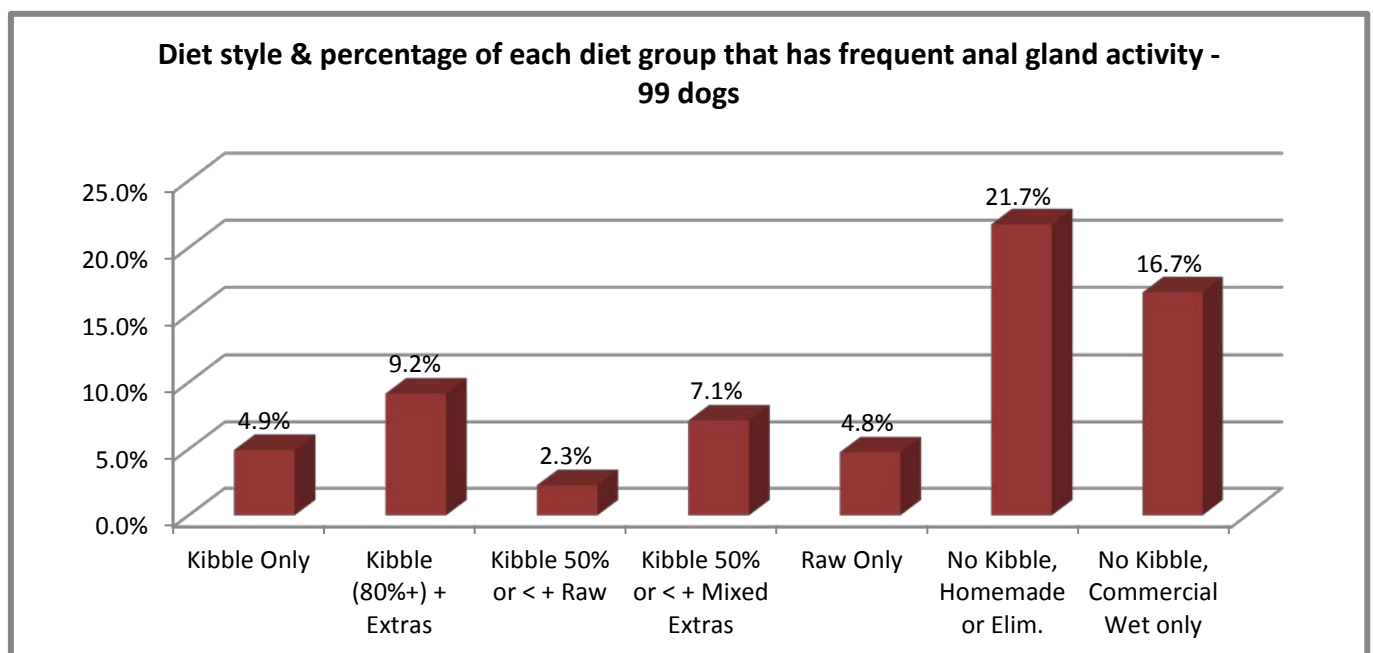
DIET AND ANAL GLANDS:

Diet is commonly one of the first steps that Great Dane owners work on when they encounter anal gland activity with their dogs. Many owners will add elements like raw bone, digestive and bulking aids or stop feeding a particular protein or grain. As we had collected the diet styles for every dog, it was possible to cross-match the anal gland dogs with their respective diet style.

The highest volume of diet style in the whole survey was the 'Kibble 80% + with extras added' with 76% of all dogs fed that style of meal. 18.8% of those 885 'kibble 80% dogs' had anal gland activity. Raw total fed dogs were 7.2% of the total survey population yet 20.2% of those 84 dogs had anal gland activity.



As not all anal gland dogs had frequent or predictable anal gland activity, it was worth looking at each diet style and what percentage of those diets were affected by troublesome anal glands for the specific **'frequent activity' population of 99 dogs**. Once defined by frequency, the picture changed for the diet styles and showed that 5-10% of kibble or raw fed dogs had frequent anal gland activity which is lower than when compared to the larger anal gland population.



OTHER HEALTH ISSUES:

Great Dane owners were asked if their dogs had 'any other medical, not accident or injury, issues outside those that the survey was collecting that were breed specific.

- The survey purpose was to investigate the prevalence of the key breed specific health conditions.
- Along with the propensity for a small group of health issues, Great Danes can demonstrate a variety of other problems just like any dog.
- Only medical issues were collected as accident & injury problems are universal to all dogs.
- Some dogs may have experienced one of these health issues once in their life or many times but they are recorded as 'one dog having had that issue'.
- The clear winners in this category were ear infections with 95 dogs or 8.2% having been treated for them and lipomas, lumps & cysts with 73 dogs or 6.3% having them.
- Hygroma's and Megaoesophagus are not uncommon in the Great Dane breed yet this population showed low prevalence results.

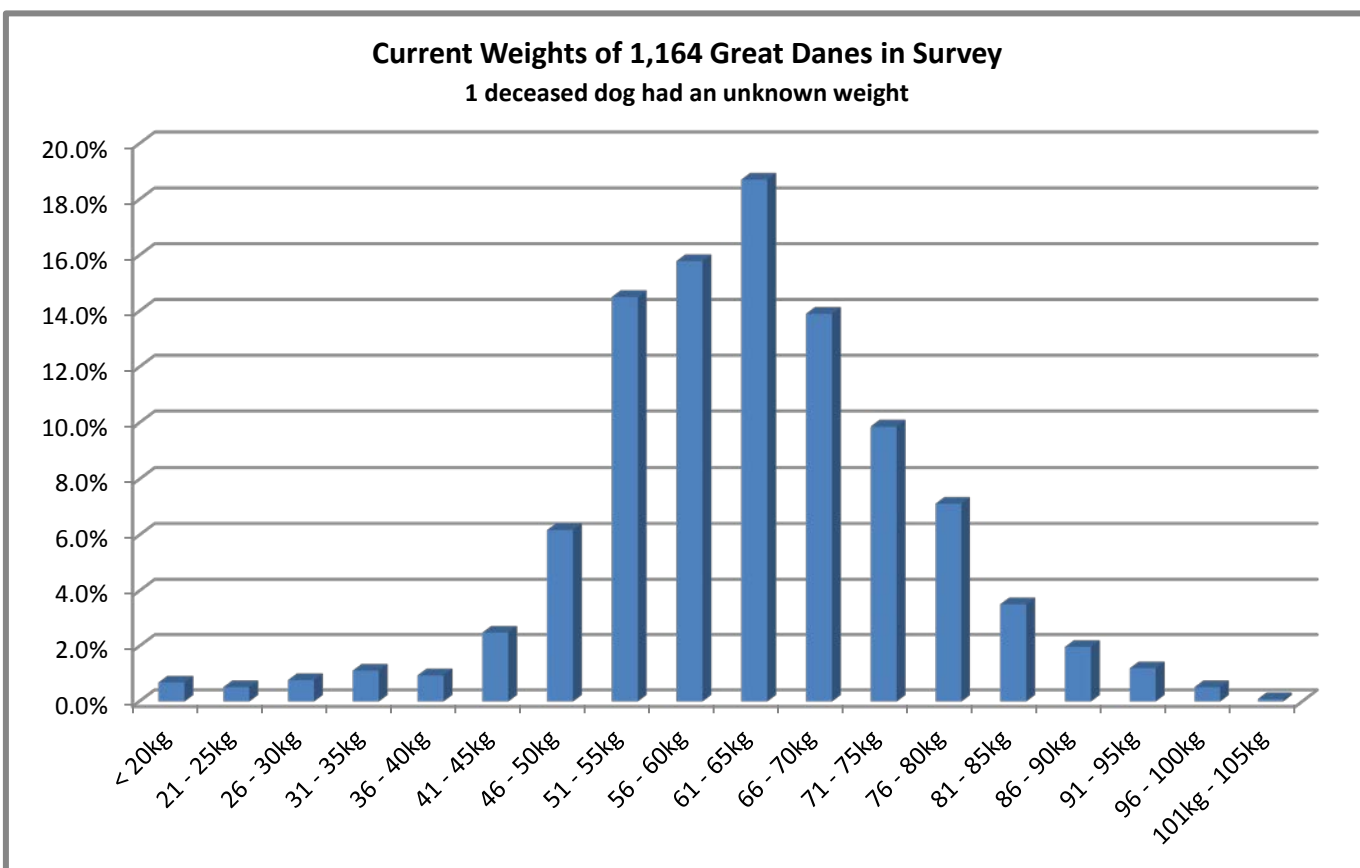
OTHER HEALTH ISSUES - MEDICAL ONLY, NON-INJURY	1165	%
Ear infections	95	8.2%
Lipomas, lumps, cysts	73	6.3%
Skin tags	54	4.6%
Conjunctivitis	42	3.6%
Urinary Tract Infections	34	2.9%
Vaginitis/vulval ulcerations	29	2.5%
Skin reactions - undiagnosed	25	2.1%
Pimples/Pustules/Staph infections	20	1.7%
Pneumonia	18	1.5%
Deafness	15	1.3%
Gait affect undiagnosed	14	1.2%
Hernias	13	1.1%
Irritable Bowel Syndrome	12	1.0%
Tremors	12	1.0%
Dental disease	11	0.9%
Digestive issues	11	0.9%
Seizures	11	0.9%
Hygroma	10	0.9%
Prostatitis	10	0.9%
Undescended testicle	9	0.8%
Megaoesophagus - acquired	8	0.7%
Pancreatitis	8	0.7%
Tonsillitis	8	0.7%
Blindness	7	0.6%
Immune compromised	7	0.6%
Mastitis	6	0.5%
Vulval deformity/inversion	6	0.5%
Warts	6	0.5%
Ataxia	4	0.3%
Bulging/Prolapsed spinal disk	4	0.3%
Cellulitis	4	0.3%
Cerebrovascular accident	4	0.3%
Excessive or fatal bleeding	4	0.3%
Lymphoedema	4	0.3%
Muscular tension	4	0.3%
Papilloma virus	4	0.3%
Parvovirus	4	0.3%

OTHER HEALTH ISSUES - MEDICAL ONLY, NON-INJURY	1165	%
Deformed eye socket/tear ducts	3	0.3%
Epilepsy	3	0.3%
Eye spots	3	0.3%
Fibrocartilaginous Embolism (FCE)	3	0.3%
Foreign body reactions (sutures, injections, etc)	3	0.3%
Gingival hyperplasia/epuli	3	0.3%
Hotspots (superficial pyoderma)	3	0.3%
Intestinal torsion	3	0.3%
Upper Respiratory Tract Infections	3	0.3%
Uterine infection/Metritis	3	0.3%
Alopecia	2	0.2%
Bladder stones	2	0.2%
Deformed hip/pelvis	2	0.2%
Deformed toes/toenails	2	0.2%
Fibroma	2	0.2%
Ingrown hairs	2	0.2%
Kidney disease/ failure	2	0.2%
Laryngeal paralysis	2	0.2%
Lick granulomas	2	0.2%
Hepatic disease	2	0.2%
Osteomyelitis	2	0.2%
Osteoporosis	2	0.2%
Ovarian cysts	2	0.2%
Spinal vertebrae deformities	2	0.2%
Luxating patella	2	0.2%
Tendonitis	2	0.2%
Toxoplasmosis	2	0.2%
Aseptic meningitis	1	0.1%
Aural haematomas	1	0.1%
Blocked mandibular salivary gland	1	0.1%
Brain damage	1	0.1%
Bowel interception	1	0.1%
Carpal Valgus Syndroma	1	0.1%
Cerebellar abiotrophy	1	0.1%
Cervical spasms	1	0.1%
Coeliac Disease	1	0.1%
Colitis	1	0.1%
Corneal ulcers	1	0.1%
Deformed kidney	1	0.1%
Degenerative neuropathy	1	0.1%
Degenerative spinal processes	1	0.1%

OTHER HEALTH ISSUES - MEDICAL ONLY, NON-INJURY	1165	%
Dental overbite	1	0.1%
Discoid lupus erythematosus	1	0.1%
Dry eyes (keratoconjunctivitis sicca)	1	0.1%
Enlarged lymph nodes	1	0.1%
Enlarged prostate	1	0.1%
Ganglions	1	0.1%
Gingivitis	1	0.1%
Hemochromatosis	1	0.1%
Heartworm	1	0.1%
Haemolytic gastroenteritis	1	0.1%
Herniated bowel	1	0.1%
Hookworm	1	0.1%
Immune-mediated Thrombocytopenia	1	0.1%
Immune-mediated Polyarthrits	1	0.1%
Inverted uterus	1	0.1%
Iris colomboma	1	0.1%
Kidney infection	1	0.1%
Lupoid Onchodystrophy	1	0.1%
Megaoesophagus - congenital	1	0.1%
Myasthenia gravis	1	0.1%
Pancreatic abscess	1	0.1%
Paralysis - no definitive diagnosis	1	0.1%
Pemphigus Foliaceus	1	0.1%
Peritonitis	1	0.1%
Pneumothorax	1	0.1%
Primary Orthostatic Tremor	1	0.1%
Pterygium	1	0.1%
Recurring Pyoderma on leg	1	0.1%
Splenic torsion	1	0.1%
Systemic Lupus	1	0.1%
Tear duct atresia	1	0.1%
Tetanus	1	0.1%
Ulcerated mouth	1	0.1%
Urethral-rectal fistula (congenital)	1	0.1%
Urethral deformity	1	0.1%
Valgus Deformity	1	0.1%

WEIGHTS:

For the survey, only current weight was collected from owners as height measurements may have varied depending on the skill of the measurer. There was 1 deceased dog where the owner could not estimate a weight at all so for the remaining 1,164 dogs, our survey population weighed a collective 73,512 kgs!



New South Wales Fun Day: Three legged races with dogs this size? Sydney, NSW. Photo credit – Sacha Packer

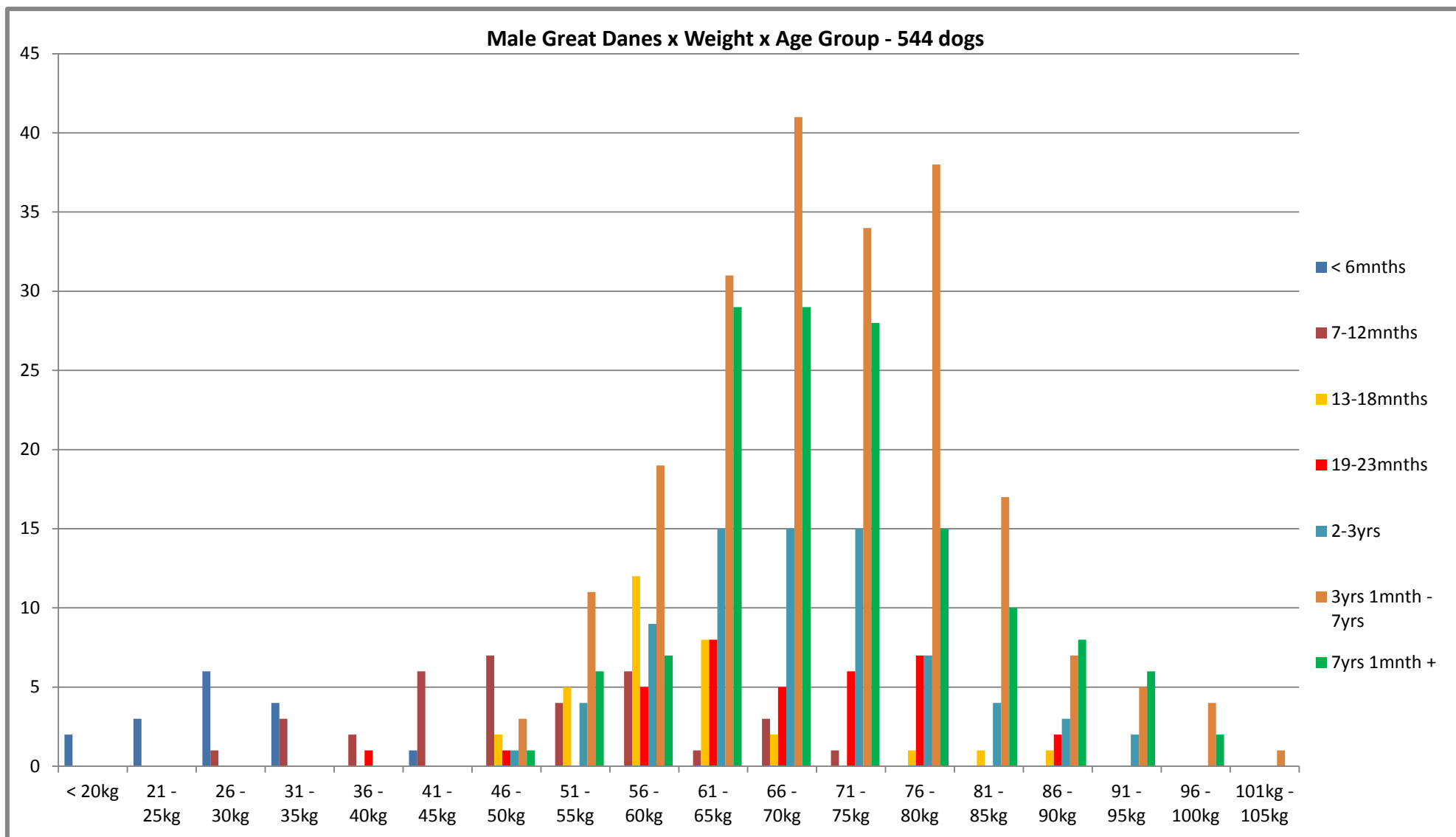
WEIGHT x SEX x AGE GROUP:

The ages and weights have been grouped around the major periods of growth for the Great Dane breed which includes showing that males and females grow into maturity at slightly different rates. A female Great Dane may be at 'adult size' at 18-24 months whereas some males may not hit their 'adult size' until aged 2-3yrs. With the population having such a large proportion of dogs over 7yrs old, the 'geriatric' age group has also been noted separately.

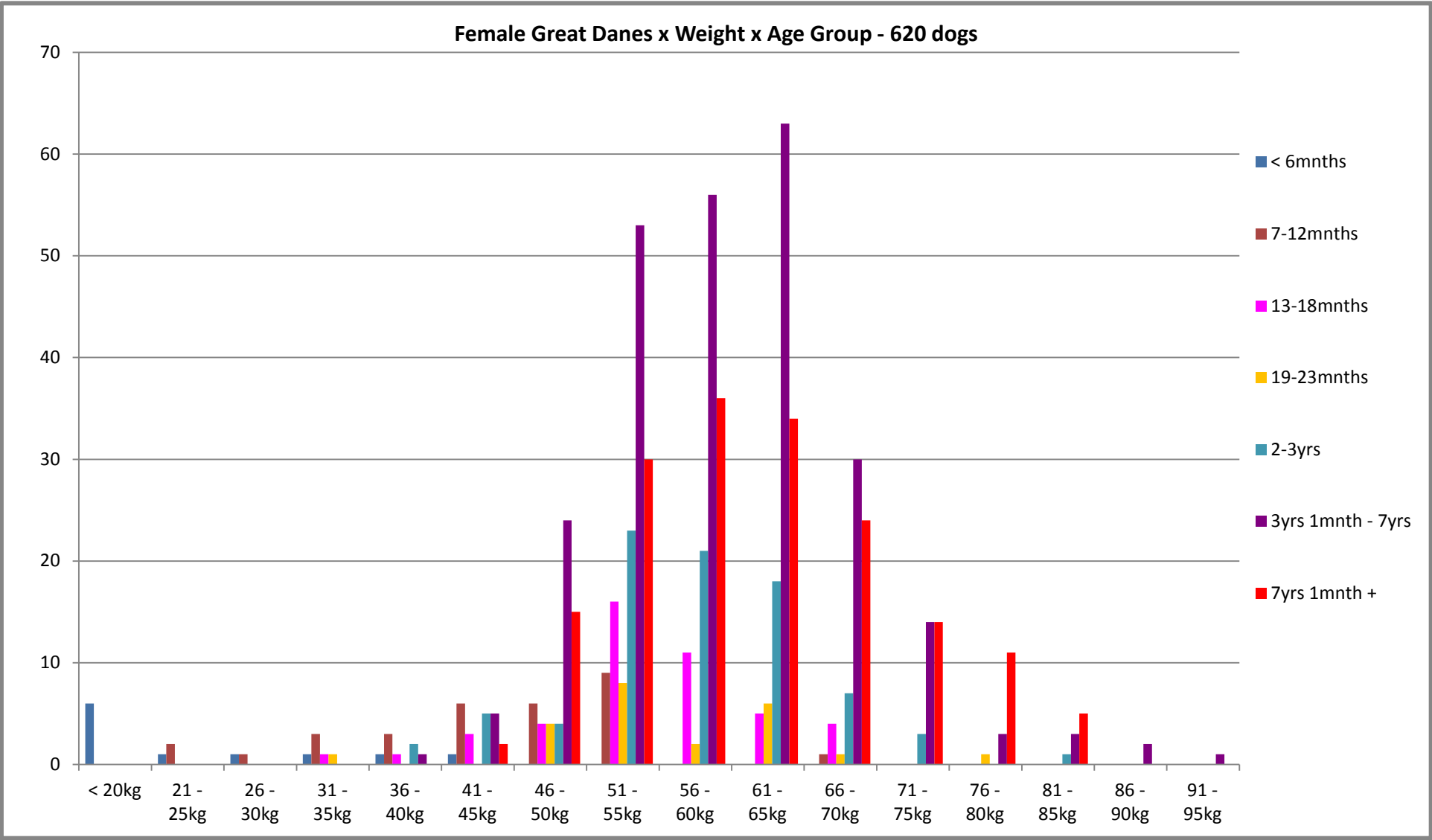
Looking at the graphs that follow from this Table, it is clear that the heavier males and females are lower in numbers as the dog's age.

WEIGHT BY AGE	1164		Male < 6mnths	Female < 6mnths	Male 7-12mnths	Female 7-12mnths	Male 13-18mnths	Female 13-18mnths	Male 19-23mnths	Female 19-23mnths	Male 2-3yrs	Female 2-3yrs	Male 3yrs 1mnth - 7yrs	Female 3yrs 1mnth - 7yrs	Male 7yrs 1mnth +	Female 7yrs 1mnth +
< 20kg	8	0.7%	2	6												
21 - 25kg	6	0.5%	3	1	0	2										
26 - 30kg	9	0.8%	6	1	1	1										
31 - 35kg	13	1.1%	4	1	3	3	0	1	0	1						
36 - 40kg	11	0.9%		1	2	3		1	1			2		1		
41 - 45kg	29	2.5%	1	1	6	6		3				5		5		2
46 - 50kg	72	6.2%			7	6	2	4	1	4	1	4	3	24	1	15
51 - 55kg	169	14.5%			4	9	5	16		8	4	23	11	53	6	30
56 - 60kg	184	15.8%			6		12	11	5	2	9	21	19	56	7	36
61 - 65kg	218	18.7%			1		8	5	8	6	15	18	31	63	29	34
66 - 70kg	162	13.9%			3	1	2	4	5	1	15	7	41	30	29	24
71 - 75kg	115	9.9%			1				6		15	3	34	14	28	14
76 - 80kg	83	7.1%					1		7	1	7		38	3	15	11
81 - 85kg	41	3.5%					1				4	1	17	3	10	5
86 - 90kg	23	2.0%					1		2		3		7	2	8	
91 - 95kg	14	1.2%									2		5	1	6	
96 - 100kg	6	0.5%											4		2	
101kg - 105kg	1	0.1%											1			
			16	11	34	31	32	45	35	23	75	84	211	255	141	171

MALE GREAT DANES WEIGHT X AGE GROUPS:



FEMALE GREAT DANES WEIGHT X AGE GROUPS:



Thank you!

- For reading our Australian Great Dane Health & Lifestyle Survey 2015.
- To the 518 owners of the 1,165 dogs that made this breed specific profile possible.
- To the whole Great Dane community of Australia, some of whom wanted to participate and couldn't but who supported the project as it unfolded and reached this conclusion.
- To the researchers and scientists who may use our prevalence survey to strike a new project from or produce information that will help our breed for all the future Great Dane owners.
- To the dogs we love who are now, have been in the past and those who will be in our futures. You are the reason this project was brought to fruition!



'South Aussie Danes' group: Playdate at the Semaphore Beach, Adelaide. Photo credit – Pam Lalonde

References:

- 1: Australia.gov.au website- <http://www.australia.gov.au/about-australia/our-country/the-australian-continent>
- 2: Australian Bureau of Statistics website: <http://www.abs.gov.au/ausstats/abs@.nsf/mf/3101.0>
- 3: Australian Bureau of Statistics website: <http://www.abs.gov.au/ausstats/abs@.nsf/products/AC53A071B4B231A6CA257CAE000ECCE5?OpenDocument>
- 4: Animal Health Alliance (Australia) 'Pet Ownership in Australia 2013'
- 5: Slauterbeck, J R, Pankratz, K, Xu, K T, Bozeman, S C, Hardy, D M (2004) 'Canine Ovariohysterectomy and Orchiectomy Increases the Prevalence of ACL Injury.'
- 6: D. M. Cooley, B. C. Beranek, D. L. Schlittler, N. W. Glickman, L. T. Glickman, and D. J. Waters, "Endogenous gonadal hormone exposure and bone sarcoma risk," Cancer Epidemiology Biomarkers and Prevention, vol. 11, no. 11, pp. 1434–1440, 2002.

APPENDIX ONE: STATISTICAL VALIDATION TESTING

Statistical testing was performed by **Emma Downie-Mewes, B Soc Sci, B Psy**, on two criteria as reported on Page 46 in the Bloat/GDV section and Page 75 in the Anal Glands section. Supporting material for these two test criteria is shown in this Appendix.

Bloat/GDV v Feeding Style

A one-way between subjects ANOVA was conducted to compare the effect of the feeding style of the dog (whether fed at a ground level, fed from a raised dish or both) and the dependent variable of the incidence of GDV, bloat or no issues. To adjust for a violation in the assumption of normality, the ANOVA was bootstrapped.

There was not a significant effect of feeding style on incidence of bloat at the $p < .05$ level [$F(2, 1162) = 0.266, p = 0.766$].

ANOVA

V10

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.088	2	.044	.266	.766
Within Groups	192.518	1162	.166		
Total	192.606	1164			

Anal Gland v Allergies

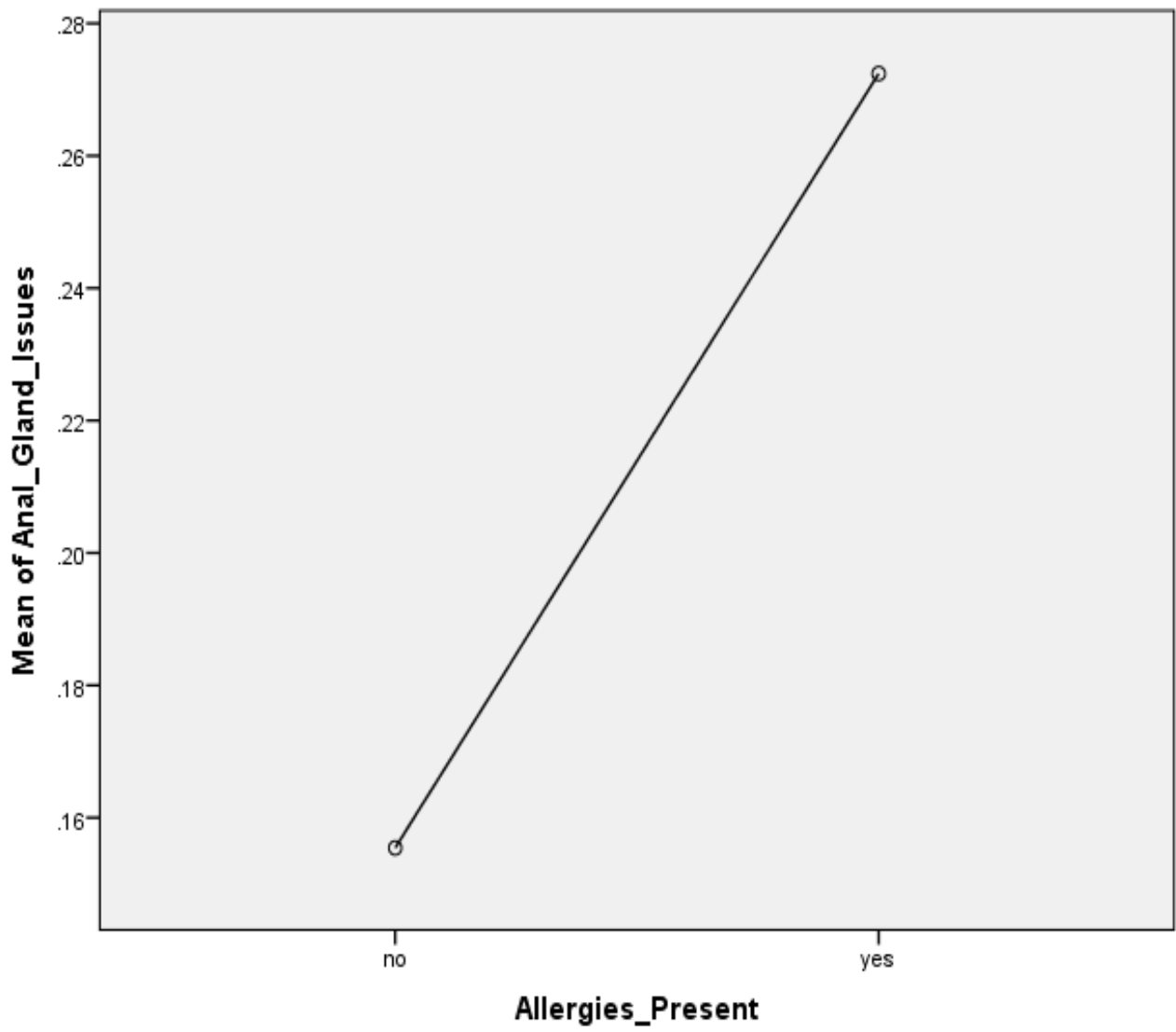
To examine the correlation between the presentation of allergies against anal gland issues in our population, a bootstrapped Pearson Correlation was performed (bootstrapped to adjust for violation of the assumption of normality).

Correlations

			Allergies_Present	Anal_Gland_Issues
Allergies_Present	Pearson Correlation		1	.130**
	Sig. (2-tailed)			.000
	N		1165	1165
	Bias		0	.001
			0	.034
	Bootstrap ^c	Lower	1	.066
		Upper	1	.199
	Pearson Correlation		.130**	1
	Sig. (2-tailed)		.000	
	N		1165	1165
Anal_Gland_Issues	Bias		.001	0
			.034	0
	Bootstrap ^c	Lower	.066	1
		Upper	.199	1
	Pearson Correlation		.130**	1
	Sig. (2-tailed)		.000	

** . Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples



APPENDIX TWO: THE SURVEY MODEL

The 'Australian Great Dane Health & Lifestyle Survey – 2015' was designed to gather a broad amount of information across many health and lifestyle/practice elements. When I initially sat down to design the survey format in 2013, one over-riding driver was my desire to perform the project with telephone interviews rather than as a paper or on-line survey. In past experiences with both, I am aware that participation/return rates are generally low and the data quality in the replies can be variable with people giving limited information or even missing entire question sets. For this survey, I wanted to be able to ensure that:

- Each health issue had been clinically diagnosed.
- We gathered as much information around each health experience as possible including dates.
- There were no gaps in any sections so that any cross-match analysis would be with the complete population versus the same population.

Telephone interviews can be challenging to arrange as it is a commitment of time for the interviewer and participant but it allows the most complete method of data collection, in my opinion.

CREATING A SINGLE SURVEY PORTAL VIA FACEBOOK:

In January 2015 when I was asked to do the survey nationally, I had a short timeframe to operate in if I was going to be able to commit the months needed. I elected to use FaceBook as the platform to recruit participants, make booking arrangements and run the project. I created a Facebook Group titled around the survey name and in the 'About' section put a description of the project and purpose. As confidentiality needed to be guaranteed for the participants, I was the only Administrator of the group and as people requested to join, I would admit them and direct them to the '**Pre-Reading Notes**'.

MARKETING FOR RECRUITS:

The Australian Great Dane community uses and participates in over 25 different Great Dane orientated Facebook groups and/or forums. I joined as many as I could and used them to make contact with Great Dane owners to recruit for the survey. The first posts went out on January 22nd 2015 with a rather long script outlining the project process, the need to participate via telephone interview, my own background, the timelines and a description of the end result (prevalence survey) along with a link to the GDLAWA Survey done in 2014. This initial post is shown below:

AUSTRALIAN GREAT DANE HEALTH & LIFESTYLE SURVEY 2015

Own a Great Dane dog? Can you help by participating in a national survey? Read on please.....

In 2014 the Great Dane Lovers Association of WA (GDLAWA) conducted a Prevalence Survey on GDLAWA member dogs. The survey resulted in gathering data from 285 Great Danes across a broad set of information related to Health & Lifestyle issues. The data was collected, analysed and then a report compiled which is available for viewing at <http://www.gdlawa.org.au/GDLAWA%20Health%20&%20Lifestyle%20...>

"Prevalence or prevalence proportion, in epidemiology, is the proportion of a population found to have a condition (typically a disease or a risk factor or lifestyle issue). It is arrived at by comparing the number of people/dogs found to have the condition with the total number of people/dogs studied, and is usually expressed as a fraction, as a percentage or as the number of cases per XXXX people/dogs." Prevalence Surveys capture a picture of 'what is' and then count those numbers against a total. The outcomes give factual data but can also be used to 'predict' future existences. In the case of dog breed Prevalence Surveys, very few have been done on specific breeds and for the Great Dane it is less than a handful worldwide, with the GDLAWA 2014 Survey being the first in Australia. Capturing a 'picture' of a large population not only gives insights into 'what is' but also allows medical personnel to look at issues in greater depth for research later.

Whilst on the GDLAWA Committee, I was the person who conducted and then analysed and created the GDLAWA Survey final report and I have been approached to continue the project now across the country. I am self-funding the time it will take to conduct the interviews and will then mesh the new data with the already captured numbers to create an "Australian Great Dane Health & Lifestyle Prevalence Survey".

This type of survey would mean that anyone with a 'pure-bred Great Dane' can participate. The dogs do not need to be 'pedigree or papered from a Registered Breeder' but do need to be pure-bred meaning they cannot be a cross with another breed. Apologies to our beautiful crosses but breed specific health issues are way harder to measure when family heritage is across more than one breed. To participate, you would need to be able to answer a wide variety of questions on your dog (living or deceased) and any health issues have to have been clinically diagnosed by Veterinarians. Rescue and Re-homed Great Danes can be included where you have adopted them and have them still with you or had them, for the rest of their lives. The interviews will be conducted by telephone by me, and we would need to plan for 20 mins for a young, healthy dog and up to 45mins for a dog with lots of health issues.

The survey interviews will commence from January 30th 2015 so please, have a quick look at the GDLAWA Survey and if you would be prepared to be involved and give your time to conduct an interview, search for and join the Facebook Group I have created for the survey's appointment planning called Australian Great Dane Health & Lifestyle Survey 2015 at <https://www.facebook.com/groups/1404853446476901/>

In this Group, I will post further information about the actual survey interviews for all participants to read so they know what sort of questions we will be gathering data from. Please only join this Australian Great Dane Health & Lifestyle Survey 2015 Group if you are interested in doing an interview to contribute your dog/dogs. I will be using the membership list to arrange appointments so need it to be viable candidates or I will waste a lot of time contacting people who actually do not want to be involved. The numbers of people who join this Group will also tell us whether we will get enough participation to proceed. This is very important because if there are only another 200 dogs, then the value is not enough for the cost of the time involved. Sorry if that sounds harsh but I am giving up being employed and earning an income to do this so I really need to be as efficient as possible.

This Group will not be a chit-chat Group, it is purely to arrange interviews and share the Interview Calendar time-slots available and act as a 'contact list' if I need to PM anyone. I am hoping to be hectic doing interviews so truly won't have time to be monitoring or managing chit-chat via the Group. I hope everyone can bear with me on that? If you do want to join the Group, have a look at the Survey information and then find that you really can't provide that much info, please do then leave the Group so I am not chasing you up for an interview. If we get enough participants and end up with a Survey Report, it will be shared into all the Facebook Groups for everyone to read.

I will be doing phone interviews all days, evenings and weekends from around Jan 30th – Mar 27th so bar a couple of personal appointments and the occasional loo visit, there should be a timeslot to suit everyone around the nation during the 8 week period. Many thanks in advance for helping the Great Dane community in Australia build a profile of our breed, Trish

From January 26th through to mid-March, I used 'marketing posts' about every week to jog people's memories and continue to gather recruits across the many Facebook groups. Many people in the Great Dane community also cross-shared those posts or prompted their Facebook 'Friends' to participate. I quickly found that using my own dog's photos in these recruitment prompts was much more effective. Dog lovers love dog pictures!



INTERVIEWS:

I pledged 8 weeks and 2 days to conducting the telephone interviews and initially planned half hour timeslots for young and/or healthy dogs and one hour timeslots for older or dogs with health issues. The time frames needed were actually less in general. I would ask each question and type the answer directly into my master spreadsheet as we were speaking, gathering as much detail as was possible. The spreadsheet was broken into a variety of columns and each dog was a row. We gathered:

- Personal details
- Lifestyle practices
- Health issues

While the survey consisted of a large number of questions, not every person completed every question unless they had experienced that particular health issue.

For owners of multiple dogs, I gathered the personal details of each dog first then ran through the question set for all of the dogs and where one/two or more had experience with that issue, would complete the section for that or those dogs then move on. It was possible to interview for 8-10 dogs in an hour to hour and a half in this fashion.

PRE-READING NOTES:

With only 8 days from deciding to proceed until 'Day One' of the phone interviews starting, most of the interviews and participants would need to have a clear outline of what was required to be involved. In the survey Facebook group, I wrote a 'Pre-Reading Notes' post which outlined the survey process, bookings process and also what information they would need to have on hand or be able to provide in the interview. The Pre-Reading Notes post was 'bumped up' within the survey group on Facebook daily to ensure that new members of the group could find it easily especially those using phones. The Pre-Reading Notes being broad and informative saved a lot of time in preventing having to explain the process to each potential candidate every time.

The Pre-Reading Notes are included at the end of this Appendix.

MAKING INTERVIEW BOOKINGS:

Summer in Australia brings a challenge of a variety of timezones with some states having daylight saving in place and others not. As the sole interviewer I was based in Western Australia which put me at 1.5hrs behind the Northern Territory, 2hrs behind Queensland, 2.5hrs behind South Australia and 3 hrs behind New South Wales, Victoria, Australian Capital Territory and Tasmania.

I conducted phone interviews every day, all day for the 8 weeks and 2 days and offered timeslots starting at 7am WA time through to 7pm WA time. The downside of doing this in the daylight saving period was that 7am my time was already 10am for the most populous states but people were incredibly passionate and made time in their days to grab a booking slot.

As I was funding my time for the project, and so many calls were going to be national (STD) or mobile network, I also asked for people to place the call to me where it was possible. Many, many people were able to do this as their contribution to the project costs.



It was imperative that the bookings were made efficiently for a few reasons:

- I was making bookings in between phone calls & interviews so had to be careful not to double-book someone while waiting for their return reply or confirmation.
- As I was on the phone for the data interviews so much of each day, I needed to take and make bookings via sms, email or Facebook Private Message (PM) and not verbally.
- I always needed to know which state the owner was in to work out the time-zone and how many dogs they had and their ages to allow for the correct amount of time for each interview.

As each booking was made into my Excel Appointment Calendar, I would update a Bookings Calendar. The Master Appointment Calendar had names, phone numbers, State, dog numbers and booking details. The Bookings Calendar version that was posted into the survey Facebook group showed no names and each timeslot that was taken was shown in grey as 'Booked'. Lunch breaks or personal times were shown in orange.

The Bookings Calendar was posted as an image every day and Survey Group members could look for the Calendar, check for any 'white' spots, check their State by column and the time of the day and then send an sms or Facebook PM to book that spot. The calendar was posted as several images with one for each week.

Qld Time - 2hrs ahead of WA	Vic/NSW/ACT/Tas Time - 3hrs ahead of WA	SA Time - 2.5hrs ahead of WA	NT Time - 1.5hrs ahead of WA	WA Time	Mar	Mar 9th	Mar 10th	Mar 11th	Mar 12th	Mar 13th	Mar 14th	Mar 15th
9.00	10.00	9.30	8.30	7.00	7.00	Booked	Booked	Booked	Booked		Booked	Booked
					7.30	Booked	Booked	Booked	Booked	Booked	Booked	Booked
10.00	11.00	10.30	9.30	8.00	8.00	Booked	Booked	Booked	Booked	Booked	Booked	Booked
					8.30	Booked	Booked	Booked	Booked	Booked	Booked	Booked
11.00	12.00	11.30	10.30	9.00	9.00	Booked	Booked	Booked	Booked	Booked	Booked	Booked
					9.30	Booked	Booked	Booked		Booked	Booked	Booked
12.00	13.00	12.30	11.30	10.00	10.00		Booked	Booked	Booked	Booked	Booked	Booked
					10.30	Booked	Booked	Booked	Booked	Booked	Booked	Booked
13.00	14.00	13.30	12.30	11.00	11.00	Booked	Booked	Booked	Booked	Booked	Booked	Booked
					11.30	Booked	Booked	Booked	Booked	Booked	Booked	Booked
14.00	15.00	14.30	13.30	12.00	12.00	Booked	Booked	Booked	Booked	Booked	Booked	Booked
					12.30	Booked	Booked	Booked	Booked	Booked	Booked	Booked
15.00	16.00	15.30	14.30	13.00	13.00	Booked	Booked	Booked	Booked	Booked	Booked	Booked
					13.30	Booked	Booked	Booked	Booked	Booked	Booked	Booked
16.00	17.00	16.30	15.30	14.00	14.00	Booked	Booked	Booked		Booked	Booked	Booked
					14.30	Booked	Booked	Booked	Booked	Booked		Booked
17.00	18.00	17.30	16.30	15.00	15.00	Booked	Booked	Booked	Booked		Booked	Booked
					15.30	Booked	Booked	Booked	Booked	Booked	Booked	Booked
18.00	19.00	18.30	17.30	16.00	16.00	Booked	Booked	Booked	Booked	Booked		Booked
					16.30	Booked	Booked	Booked	Booked	Booked		Booked
19.00	20.00	19.30	18.30	17.00	17.00	Booked	Booked	Booked	Booked	Booked	Booked	Booked
					17.30	Booked	Booked	Booked	Booked		Booked	Booked
20.00	21.00	20.30	19.30	18.00	18.00	Booked	Booked	Booked			Booked	
					18.30	Booked	Booked	Booked			Booked	
21.00		21.30	20.30	19.00	19.00	Booked	Booked	Booked	Booked	Booked	Booked	Booked
					19.30							

Unfortunately I could not find a way to allow self-booking without a) risking losing confidentiality for those people who wanted it maintained or b) risking the 5 different time-zones meaning a double booking. EG: someone in NSW booking for 10am their time but someone in Qld booking for 9am their time, which for me in WA...was exactly the same timeslot.

NON-USERS OF FACEBOOK:

Several people contacted me to ask how a friend who was not a Facebook user could participate and I would email the 'Pre-Reading Notes' to those people to pass on to their contacts. We would then connect via email or sms to arrange a booking time

CONFIRMATION OF INTERVIEW:

The day before each interview, the list of participants for that day was sent an sms with a reminder message that 'you are booked to call me or that I would call you at XXam/pm, your time, for the Great Dane Health & Lifestyle Survey'.

Name	Surname	Phone	Landline	Email	State	Local time appt	Appt Time WA Time	Timeslot	Appt Date	Calling me	Dog No
Trish	Neill	FB PM	XXXX XXX XXX		SA	11.30	9.00	1.00	22/02/15	Y	1
Trish	Neill	SMS	XXXX XXX XXX		NSW	18.00	15.00	1.00	18/03/15	Y	1
Trish	Neill	FB PM	XXXX XXX XXX		Qld	17.00	15.00	1.00	11/02/15	Y	2
Trish	Neill	FB PM	XXXX XXX XXX		Vic	13.30	10.30	1.50	22/02/15	Y	2
Trish	Neill	FB PM	XXXX XXX XXX		Qld	13.00	11.00	1.00	28/03/15	N	1
Trish	Neill	FB PM	XXXX XXX XXX	XX XXXX XXXX	Vic	10.30	7.30	2.00	13/03/15	N	8
Trish	Neill	FB PM	XXXX XXX XXX	XX XXXX XXXX	Qld	16.00	14.00	1.00	22/03/15	N	1
Trish	Neill	FB PM	XXXX XXX XXX		Vic	10.00	7.00	2.00	9/03/15	Y	5
Trish	Neill	FB PM	XXXX XXX XXX		NSW	14.00	11.00	0.50	22/03/15	Y	1
Trish	Neill	email			WA	15.00	15.00	1.00	30/01/15	y	2

KEEPING IT ALIVE ON FACEBOOK:

Throughout the telephone survey period, I would post every day with an updated calendar or a celebratory post showing the number we had reached by that point. In between, participants were posting a thank you message and/or pictures of their dogs. **The 'vibe' of the group through the frenetic eight week phone work period was incredibly high.** The dog owners were supporting each other to arrange bookings and applauding each other as the project gained momentum, met targets and then exceeded them. It was actually an overwhelmingly exciting event to be involved in!

Following the completion of the telephone survey period, the Facebook group was kept open and through the subsequent months whilst the data cleansing and analysis was underway, I would post 'titbits' to share with the group. The ownership and involvement amongst the Great Dane community of Australia has been outstanding!

For any other dog breed who wants to complete a broad spectrum prevalence survey and utilise a different approach to gather quality data, from my own experience and the impact and ultimate success shown by the Great Dane breed, I would wholeheartedly suggest using Facebook and considering a telephone method. **Good luck to anyone contemplating this and I am always happy to be contacted to assist if I can.**



TELEPHONE INTERVIEWS - REALLY?

In the initial design of the project I was vehement about pursuing the data collection via telephone interviews and there were certainly a few objections to that method. In my limited experience of surveying in past lives, I have found that paper and on-line forms have too many gaps and/or are never completed. It is hard to analyse to a reality point where there are part-answers missing or total gaps in the information sought. Having now completed a large population survey in this manner, I can whole-heartedly recommend this method. At top level there are around 68 questions with over 120 in total when asking for detail data against events such as a Bloat. Gaining an informative answer to every question x 1,165 subjects gives a superb quality of data.

If you can invest the time, this method will give you a once-in-a-lifetime collection of information around your chosen topic, in my opinion. The Great Dane community of Australia have now proven this!

Hi Great Dane Owners,

Welcome to the Australian Great Dane Health & Lifestyle Survey 2015 Group!

My name is Trish Neill and I am a member of the Great Dane Lovers Association of WA. I am also the immediate Past Secretary (8yrs) and have been Rescue Co-ordinator many times and for most of those 8yrs. In my last year as a Committee Member of the GDLAWA, I conducted a Health & Lifestyle Survey on Great Dane dogs from the current & past membership of the club. That survey included 285 Great Danes, living & deceased, across a phone interview questionnaire of 68 questions.

There is now interest from many Dane owners across Australia to conduct a broader survey and gather the same data from Great Danes around the country. This data would then be combined with the existing GDLAWA information to form an Australian Great Dane Health & Lifestyle Survey based on presenting 'prevalence' figures for the population surveyed. These types of surveys are extremely rare mainly due to the effort involved but can be so valuable in gaining insights into a breed, living practices such as food types, worming, sterilisation ages, health issues and outcomes.

The most efficient way to collect this enormous amount of data is to do telephone interviews and since I did the WA Survey, I have offered to conduct this extension nationally. I have made 6 - 8 weeks available to conduct the phone surveys and will then complete the analysis and reporting when finished.

- The final survey report does not mention people or dog names so whilst your dog might feature in the numbers, individual dogs won't appear as stars.
- As information can be subjective, I have designed the survey to include almost all **objective data points** except Temperament where a weighting scale has been created to be able to assess and slot the dogs into a level of temperament.
- If you have joined this Group and read through the Survey information and decide you are interested in participating, we will need to book a phone call time with myself.
- During the phone interview, I will be plotting your answers into the one Master spreadsheet which at the end of all the interviews will be used by myself to analyse the data and bring the information together into the final Report.
- Given we have so many people/dogs, it would be great to be able to spread the phone survey times across day times as well as evenings and make the best use of the fact that I am dedicating 6-8 weeks to this task, so anyone who works part-time, has holidays booked etc, please consider a daytime appointment?
- **The phone surveys will be conducted strictly between January 30th and March 29th 2015 so please don't leave your booking until the last minute!**
- With the time difference between WA (where I am based) and the rest of the nation, I will be making most days totally available to the survey.
- To cram in any many interviews as possible, we really need to have each person ready when their interview is scheduled to start so if anything changes and you cannot keep that interview, please let me know with as much notice as possible.
- I am donating my time to the survey but the call costs, from my experience last year, do start to run up and any help from **people happy to phone me will be greatly appreciated.**
- **The data is plotted into a Master Spreadsheet and as there will be one person only viewing that data and holding it for the analysis and report, it is important that there is trust. I am happy to pledge that the spreadsheet will not be shared or viewed by any other persons than myself.**

To prepare for the interview and gathering the data, I wanted to give you some idea on the questions we will be asking....

- Pet personal information such as date of birth, age you got the dog, source (breeder/rescue etc), colour, sex, sterilisation date.
- Diet questions such as raw or dry or mixed, pre-moistening of food, feeding high or low, exercise & water limitations or not.
- Sterilisation age & type.
- Prophylactical Gastropexy done or not, type of Gastropexy and follow-up data.
- Bloat & Torsion experience and outcome including whether a Gastropexy post-bloat was completed, when it happened, what was being experienced at the time and outcome.
- Female health issues around phantom pregnancies, pyometra and incontinence plus the treatments experienced.
- Orthopaedic issues such as HOD, Pano, OCD, Wobblers and Arthritis, treatments, experience and outcomes.
- Dilated Cardiomyopathy and treatments and outcomes.
- Eye issues such as Cherry Eye, Ectropion & Entropion and treatments.
- Allergies, experiences and treatments.
- Anal Gland experience including anal gland removal and age.
- Temperament evaluation. This one issue is subjective and we will use a weighted scale to slot dogs into. We are including this because some of the advice in the Dane arena suggests there is a link to sterilisation age/style with health issues etc.

Yes it is a big list but I will ask you the questions in the interview so you don't have to remember all the list stuff, and define the key data that we need to collect as we speak on the phone. We can't collect every nuance thing but if we are putting the time into doing this, it is such a great opportunity to include as much as possible. This type of survey collection isn't done very often

at all because of the man-power to do it. Let's capitalise on our opportunity this year! We will also be including our Great Danes who have already passed away where possible and where full details are known so if you have had Danes before your current one and have enough information to be able to include them, please do so.

We will be asking the same set of questions for **every purebred Great Dane** you have now or have had, so if you can prepare by having ready the following things, this would be so helpful:

- Any medical notes you have. If you don't know the date of a bloat, eye surgery or anal gland removal or something like that and do have time to give a quick call to your vet to get those dates that would be so helpful. In this sort of survey accuracy is key.
- The names of any medications they are on now except antibiotics unless it is part of an allergy programme.
- Vaccination and Sterilisation certificates.
- Any other information that you have about your dog.
- Ideally an idea of their current weight as well would be great!

Once we complete the survey, I will conduct the analysis and prepare a full report of the collected & combined data. The final report will be shared with all Facebook Groups, Great Dane Clubs etc.

So.....would you be interested in helping to build a picture of the Great Dane breed in Australia? If you are happy to book a timeslot for your dog/s, please email, PM or SMS me on:

- Mobile – XXXX XXX XXX
- Email - trishneill@xxxxxxxxx.com.au
- PM via FaceBook - <https://www.facebook.com/xxxx>
- Please give me your mobile and/or landline number and remember to include **your name in every message** as my phone will be running hot and I don't know everyone on Facebook like I did with the GDLAWA.
- State your preferred days/times for the phone booking remembering that we need **20 mins** for a young healthy dog or a blessed old one who has had no health issues and **45 mins** for an older or any dog with health issues.
- Please bear with me if I take an hour or so to reply as I will be juggling the phone interviews with further bookings.
- Please also let me know if you can help out by calling me and carrying that phone call cost? It helps enormously. For anyone who is happy to call me but prefers to use a landline number, I can give that to you when we are arranging the appointment.
- Western Australian people who did not participate in the 2014 Survey are very welcome to join this one and we would love to have your dog's data included.

If you have read through this information and think 'Cripes, all too hard and I can't remember all that stuff' then thank you for considering helping out and please leave the Group so that I am not taking numbers of people into account for surveys, who are actually not able to contribute. Given the limited timeframe and great cost of the project, I really need to be as efficient as possible and greatly appreciate everyone's help to that end.

If you have any questions at all or concerns, please don't hesitate to contact me. Once the phone interviews start, I will not always be readily available by phone but happy to get back to anyone as soon as I can. Thank you in advance for the assistance that you will be giving to the biggest Prevalence Data Collection project for our breed ever undertaken in Australia.

Trish Neill



'Great Dane Lovers Association of WA': Members on a club walk at Nedlands Foreshore, Perth, Western Australia.

Photo credit – Jo Wild