

## APPENDIX 1.

### The BELGIAN SHEPHERD DOG HEALTH SURVEY 2019 OUTCOMES

#### NOTES:

The Belgian Shepherd Dog Health Survey 2019 was undertaken as part of a Belgian Shepherd Dog Club of Queensland (BSDCQ) Grant awarded for 2019 -2020, entitled 'Future Directions: The current health status of the Belgian Shepherd Dog (BSD) within Australia.'

The purpose of the project was two-fold; to ascertain the current health status of the BSD within Australia, and to identify the frequency of any health and possible genetic issues within the BSD. This would enable breeders to make informed choices about their breeding, and breed clubs to develop any health plans (if required) to address identified health issues.

The BSD Health Survey was conducted between August and November, 2019, using the web based survey platform 'SurveyMonkey'. Electronic and paper versions of the survey form were available for those who did not wish or were unable to employ the web version. No responses were submitted in this format.

The survey was advertised by the BSDCQ, Dogs Queensland, and several other State canine bodies; it was heavily promoted on breed discussion lists within social media.

In total, **520 surveys** were completed. Some respondents did not complete all sections of the survey, therefore the number of responses is indicated within each section.

For the purposes of this survey, 'BSD' refers to a Belgian Shepherd Dog, regardless of gender. When gender was pertinent 'male' or 'female' was used.

The data remains confidential to the report writer and will not be shared with any other parties in its raw format.

\*Percentages have been rounded up to 100%.

#### SURVEY QUESTIONS AND RESPONSES

1. Please create a code for your BSD: This is for the researchers use only and is to help to avoid duplication of health data - it will not be used as part of any reports. Please create a code using the first and last letters of your BSD's call name, and the last two numbers of the year of its birth. For example, Reba born in 2015 will be 'RA15'. Please insert this code into the comment box below.

**1.1 518 Completed**

**1.2 2 Skipped**

2. Is your BSD registered as a pure-bred dog?

ANSWER	%	Number
Yes with the ANKC	75.96	395
Yes with another register	2.11	11
No	2.50	13
Unknown	2.11	11
Skipped	17.31	90
	<b>100 *</b>	<b>520</b>

3. Are you the dogs:

ANSWER	%	Number
Breeder	37.89	197
Breeder/owner	8.27	43
Current owner	45.38	236
Former owner	8.46	44
Skipped	0.00	0
	<b>100</b>	<b>520</b>

4. What variety is your BSD?

ANSWER	%	Number
Groenendael	34.43	179
Tervueren	25.19	131
Malinois	6.15	32
Laekenois	2.88	15
Skipped	31.35	163
	<b>100</b>	<b>520</b>

5. Sex of your BSD?

ANSWER	%	Number
Male	46.35	241
Female	53.65	279
Skipped	0.00	0
	<b>100</b>	<b>520</b>

6. Is your BSD de-sexed?

ANSWER	%	Number
Yes	62.31	324
No	37.69	196
Skipped	0.00	0
	<b>100</b>	<b>520</b>

## 7. Age of BSD

ANSWER	%	Number
Under 12 months	2.12	11
1-4 years	24.80	129
5-10 years	18.46	96
Over 10 years	7.69	40
Deceased	40.96	213
Unknown	0.00	0
Skipped	5.96	31
	<b>100*</b>	<b>520</b>

## 8. Has your BSD suffered any ailments in the past 12 months that have resulted in a vet visit?

ANSWER	%	Number
No	80	416
Yes	19.81	103
Unknown	0.19	1
Skipped	0.00	0
	<b>100</b>	<b>520</b>

## 9. Has your BSD ever had an adverse reaction to any form of medication or treatment (for example, preventative medication or anaesthetics)?

ANSWER	%	Number
No	96.15	500
Yes	3.85	20
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>520</b>

### 9.1 Comments

PRODUCT	%	Number
Anaesthesia	20	4
Advantage/Advantix	15	3
C5 vaccine	10	2
Comfortis	5	1
Frontline	5	1
Nexgard	5	1
Bravecto	5	1
Simparico	5	1
Nextra	5	1
Epilepsy medication	5	1
Chemotherapy	5	1
Methadone	5	1
Tick tablets	5	1
Antibiotics	5	1
	<b>100</b>	<b>20</b>

**Note:** Some dogs experienced multiple adverse reactions

**10. ALLERGIES:** Has your BSD ever been diagnosed with an allergy disorder by a veterinarian?

ANSWER	%	Number
No	95.19	495
Yes	4.62	24
Unknown	0.00	0
Skipped	0.19	1
	<b>100</b>	<b>520</b>

**10.1** Comments

CONDITION	%	Number
Unknown	33.33	8
Food	20.83	5
Multiple	16.67	4
Fleas	16.67	4
Grass	8.33	2
Bees	4.17	1
	<b>100</b>	<b>24</b>

**11.0 SKIN:** Has your BSD suffered from any skin disorders (for example, allergy related (eg seasonal, food), autoimmune, lick granuloma, demodectic mange)?

ANSWER	%	Number
No	91.54	476
Yes	8.27	43
Unknown	0.00	0
Skipped	0.19	1
	<b>100</b>	<b>520</b>

**11.1** Comments

CONDITION	%	Number
Unknown	32.56	14
Food	13.95	6
Fleas	11.63	5
Hotspots	9.30	4
Multiple	6.98	3
Demodectic mange	4.65	2
Seasonal	4.65	2
Shampoo	4.65	2
Grass	4.65	2
Possible 'Mucocutaneous Pyoderma'	2.33	1
Lupus	2.33	1
Skipped	2.33	1
	<b>100*</b>	<b>43</b>

**12. MUSCULOSKELETAL** a) Has your dog ever suffered from a serious or persistent condition affecting the bones, muscles or joints (including the jaws)? Please tick all relevant.

CONDITION	%	Number
No	81.92	426
Other	5.38	28
Osteoarthritis	2.88	15
Hip dysplasia	1.92	10
Anterior cruciate ligament tear	1.35	7
Elbow dysplasia	0.58	3
Degeneration of the shoulders	0.38	2
Osteochondrosis	0.19	1
Muscular dystrophy	0.00	0
Patellar luxation	0.00	0
Unknown	2.12	11
Skipped	3.27	17
	<b>100*</b>	<b>520</b>

**12.1 Comments**

CONDITION	%	Number
Unknown	53.57	15
Accident causing #	14.28	4
Masticatory Muscle Myocitis	3.57	1
Bulging discs	3.57	1
Hemivertebrae	3.57	1
Spondylosis	3.57	1
Spine spasms	3.57	1
Shallow hips	3.57	1
Growth disorder	3.57	1
Shoulder OCD bilateral	3.57	1
Malocclusion overbite	3.57	1
Skipped	0.00	0
	<b>100*</b>	<b>28</b>

**13.0** Has your dog been examined for hip and elbow dysplasia? If so, please provide the details of the scheme, score and grade. Please state N/A if your dog has not been examined.

ANSWER	%	NUMBER
Yes	34.81	181
Not examined	55.19	287
Unknown	1.92	10
Skipped	8.08	42
	<b>100</b>	<b>520</b>

**13.1** Type of scheme

SCHEME	%	NUMBER
AVA/ANKC (CHEDS)	55.8	101
PennHIP	3.31	6
OFA	1.10	2
PUPSCAN PROJECT	0.55	1
NZVA scheme	0.55	1
Unknown	20.44	37
Skipped	18.23	33
	<b>100*</b>	<b>181</b>

**Note:** The Australian Veterinary Association (AVA) and the Australian National Kennel Council Ltd (ANKC) jointly established the Canine Hip and Elbow Dysplasia Scheme (CHEDS) in January 2000, and since that time the AVA has been responsible for administering the scheme from its Canberra office. The AVA has now ceased participation in the scheme, and ANKC Ltd became the sole manager of the scheme on 30 April, 2016.

**14. EYES:** Has your BSD ever suffered from a serious or persistent eye condition?

ANSWER	%	NUMBER
No	95.96	499
Yes	4.04	21
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>520</b>

**15.** If your dog has been examined under the Australian Veterinary Association - Australian Canine Eye Scheme (ACES), what was the outcome?

CONDITION	%	NUMBER
Not examined	60.19	313
Normal	29.23	152
PPM's (persistent pupillary membrane)	2.50	13
C ataracts	1.15	6
Chronic superficial keratitis (pannus)	0.38	2
Entropion	0.00	0
Progressive retinal atrophy	0.00	0
Retinal dysplasia	0.00	0
Unknown	2.69	14
Skipped	3.85	20
	<b>100*</b>	<b>520</b>

**16. HEARING:** Has your BSD ever experienced any hearing disorders (for example, deafness in one or both ears, chronic ear infections)?

ANSWER	%	NUMBER
No	95.77	498
Yes	4.04	21
Skipped	0.19	1
	<b>100</b>	<b>520</b>

**16.1 Comments**

CONDITION	%	NUMBER
Age related hearing loss	42.86	9
Congenital	23.81	5
Infection	23.81	5
Unknown	9.52	2
Skipped	0.00	0
	<b>100</b>	<b>21</b>

**17. NERVOUS SYSTEM:** Has your BSD ever suffered from a serious or persistent nervous system condition (for example, seizures, vestibular syndrome, degenerative myelopathy)? If your dog has had seizures, please provide the age of the first observed seizure, the approximate number of seizures observed and/or frequency (eg. one every two months) and if medication has been prescribed by your vet.

ANSWER	%	NUMBER
No	89.42	465
Yes	10.19	53
Unknown	0.38	2
Skipped	0.00	0
	<b>100*</b>	<b>520</b>

**17.1 Comments**

CONDITION	%	NUMBER
Epilepsy (vet diagnosed)	28.30 <i>*2.88</i>	15
Epilepsy (owner diagnosed or unknown)	7.55 <i>*0.77</i>	4
One or two seizures only noted	15.09 <i>*1.54</i>	8
Seizures at birth -euthanised	3.77 <i>*0.38</i>	2
Idiopathic vestibular disease	20.75	11
Exercise induced collapse	13.20	7
Neuropathy or myelopathy	3.77	2
Heat related	3.77	2
Congenital brain malformation	1.89	1
Dizzy spells	1.89	1
Unknown	0.00	0
Skipped	0.00	0
	<b>100*</b>	<b>53</b>

*(2.88% + 0.77% + 1.54% + 0.38% of 520 BSD's = 5.6%)*

**18.0 DIGESTIVE SYSTEM:** Has your BSD ever suffered from a serious or persistent gastrointestinal disorder (including the mouth and teeth, for example, gastritis, reflux, malabsorption)?

ANSWER	%	NUMBER
No	94.42	491
Yes	5.58	29
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>520</b>

**18.1 Comments**

CONDITION	%	NUMBER
Canine gastric dilation (Bloat)	10.34	3
Pancreatitis	10.34	3
Malabsorption	10.34	3
Reflux	10.34	3
Liver disorder	6.90	2
Anorexic	6.90	2
Sensitive stomach	6.90	2
Twisted bowel	6.90	2
Infection	3.45	1
Irritable bowel	3.45	1
Stomach cancer	3.45	1
Teeth	3.45	1
Obesity	3.45	1
Unknown	13.79	4
Skipped	0.00	0
	<b>100</b>	<b>29</b>

**19. LIVER:** Has your BSD ever been diagnosed with a liver disorder?

ANSWER	%	NUMBER
No	98.08	510
Yes	1.92	10
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>520</b>

**19.1 Comments**

CONDITION	%	NUMBER
Liver deformity at birth	50	5
Cholangiopathy	10	1
Cancer of liver	10	1
Enzyme issues	10	1
Old age liver problems	10	1
Unknown	10	1
Skipped	0.00	0
	<b>100</b>	<b>10</b>



**20. KIDNEY/URINARY:** Has your BSD ever been diagnosed with a kidney or urinary tract disorder (for example, infections, chronic renal disease, kidney stones)?

ANSWER	%	NUMBER
No	95.96	499
Yes	3.65	19
Unknown	0.00	0
Skipped	0.38	2
	<b>100*</b>	<b>520</b>

**20.1 Comments**

CONDITION	%	NUMBER
Urinary tract infection	47.37	9
Kidney failure	15.79	3
Kidney disease	10.53	2
Renal dysplasia	5.26	1
Cancer of kidneys	5.26	1
Incontinence (age related)	5.26	1
Incontinence (spay related)	5.26	1
Urolithiasis	5.26	1
Unknown	0.00	0
Skipped	0.00	0
	<b>100*</b>	<b>19</b>

**21. HORMONAL (ENDOCRINE):** Has your BSD ever been diagnosed with a hormonal (endocrine) condition (for example, thyroid, diabetes, Cushings syndrome or Addison's disease)?

ANSWER	%	NUMBER
No	97.31	506
Yes	2.69	14
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>520</b>

**21.1 Comments**

CONDITION	%	NUMBER
Addison's disease	57.14	8
Hypothyroidism	14.28	2
Thyroid disease (non specified)	7.14	1
Hyperadrenocorticism	7.14	1
Polycyclic Ovary Syndrome	7.14	1
Cryptorchid	7.14	1
Unknown	0.00	0
Skipped	0.00	0
	<b>100*</b>	<b>14</b>

**22. CANCER:** Has your BSD ever been diagnosed with any type of cancer (for example, stomach, haemangiosarcoma, osteosarcoma, mammary)?

ANSWER	%	NUMBER
No	87.88	457
Yes	11.54	60
Unknown	0.00	0
Skipped	0.58	3
	<b>100</b>	<b>520</b>

**22.1 Comments**

CONDITION	%	NUMBER
Stomach	28.33	17
Mammary	15	9
Lymphoma	15	9
Osteosarcoma	11.67	7
Lung	6.67	4
Anal	5	3
Heart	3.33	2
Thyroid	3.33	2
Testicular	3.33	2
Mast cell tumour lip	1.67	1
Pancreatic	1.67	1
Nasal	1.67	1
Unknown	3.33	2
Skipped	0.00	0
	<b>100</b>	<b>60</b>

**23. BLOOD/LYMPHATIC DISORDERS:** Has your BSD ever been diagnosed with a blood or lymphatic disorder (for example, leukaemia, anaemia, a platelet abnormality)?

ANSWER	%	NUMBER
No	95.77	498
Yes	4.23	22
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>520</b>

**23.1 Comments**

CONDITION	%	NUMBER
Lymphoma	68.18	15
Leukaemia	9.09	2
Neutropenia	4.54	1
Immune-mediated Haemolytic Anaemia	4.54	1
Angiomatosis	4.54	1
Thrombocytopenia	4.54	1
Unknown	4.54	1
Skipped	0.00	
	<b>100*</b>	<b>22</b>

**24. CARDIOVASCULAR:** Has your BSD ever suffered from a serious or persistent cardiac condition (for example, heart murmur, degenerative valve disease, cardiomyopathy)?

ANSWER	%	NUMBER
No	98.08	510
Yes	1.92	10
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>520</b>

**24.1** Comments

CONDITION	%	NUMBER
Heart murmur	30	3
Cancer of heart	30	3
Patent ductus arteriosus (hole in heart)	20	2
Cerebral Vascular Accident	10	1
Cardiomyopathy	10	1
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>10</b>

**25.** If your BSD has completed health screening by a specialised veterinary cardiologist for evidence of cardiac disease, please provide the outcome here. Please state N/A if your dog has not been screened.

ANSWER	%	NUMBER
Not screened	84.23	438
Screened: No auscultatory evidence of cardiac disease	3.46	18
Patent ductus arteriosus (hole in heart)	0.38	2
Unknown	0.00	0
Skipped	11.92	62
	<b>100*</b>	<b>520</b>

**26. RESPIRATORY:** Has your BSD ever been diagnosed with any respiratory disorder (for example, pneumonia, laryngeal paralysis)?

ANSWER	%	NUMBER
No	98.08	510
Yes	1.92	10
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>520</b>

**26.1** Comments

CONDITION	%	NUMBER
Cancer of lungs	40	4
Partial laryngeal paralysis and Megaoesophagus	10	1
Bronchitis	10	1
Pneumonia	10	1
Unknown	30	3
Skipped	0.00	0
	<b>100</b>	<b>10</b>

**27.** Was your BSD diagnosed by a veterinarian as suffering from a neonatal defect (for example, a cleft palate, an umbilical hernia)?

ANSWER	%	NUMBER
No	97.30	506
Yes	2.70	14
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>520</b>

**27.1** Comments

CONDITION	%	NUMBER
Umbilical hernia	42.86	6
Rear dew claws	14.28	2
Kink in tail	14.28	2
Dermoid cyst eye	7.14	1
Growth disorder	7.14	1
Blind nipple	7.14	1
Unknown	7.14	1
Skipped	0.00	0
	<b>100*</b>	<b>14</b>

28. Has your BSD ever been used for breeding purposes as a sire or dam?

ANSWER	%	NUMBER
No	72.50	377
Yes	27.50	143
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>520</b>

28.1 Litter sizes

NUMBER OF PUPS	NUMBER OF LITTERS
1	26
2	12
3	12
4	16
5	22
6	37
7	26
8	13
9	13
10	6
11	1
12	1
<b>Total number of litters</b>	<b>185</b>

29. REPRODUCTION (FEMALE) Has your BSD ever suffered from any disorder of the reproductive system (for example, mastitis, false pregnancy, pyometra)?

ANSWER	%	NUMBER
No	47.88 90.21%	249
Yes	5.19 9.78%	27
Not applicable – Male	46.35	241
Skipped	0.58	3
	<b>100</b>	<b>520</b>

29.1 Comments

CONDITION	%	NUMBER
Pyometra	51.85	14
Mastitis	18.52	5
Ovarian cysts	11.11	3
False pregnancy	7.41	2
Blind nipple	3.70	1
POCS	3.70	1
Unknown	3.70	1
Skipped	0.00	0
	<b>100*</b>	<b>27</b>

**30. REPRODUCTION (MALE):** Has your BSD ever suffered from any disorder of the reproductive system (for example, undescended testicles, prostate problems, sterility)?\* Please describe undescended testicles as monorchid (only one testicle present in the scrotal sac) or cryptorchid (neither testicle present in the scrotal sac).

ANSWER	%	NUMBER
No	36.35 80.77%	189
Yes	8.65 19.23%	45
Not applicable - female	53.65	279
Unknown	0.00	0
Skipped	1.35	7
	<b>100</b>	<b>520</b>

**30.1 Comments**

CONDITION	%	NUMBER
Monorchid (unilateral cryptorchid)	57.78	26
Cryptorchid	11.11	5
Prostate	20	9
Low sperm count	4.44	2
Sterile	4.44	2
Testicular cancer	2.22	1
Unknown	0.00	0
Skipped	0.00	0
	<b>100*</b>	<b>45</b>

**31.0 TEETH:** Does your BSD have all of its teeth?

ANSWER	%	NUMBER
Yes	89.81	467
No	8.65	45
Unknown	0.00	0
Skipped	1.54	8
	<b>100</b>	<b>520</b>

**31.1 Comments**

NUMBER TEETH MISSING	TYPE	%	NUMBER
1	Lower PM2	13.33	6
2	Lower PM2	17.78	8
3	Lower PM2	2.22	1
4	Lower PM2	8.89	4
1	Upper PM2	8.89	4
2	Upper PM2	2.22	1
1	Lower PM1	6.67	3
2	Incisors	4.44	2
3	Incisors	2.22	1
Extra PM	One	2.22	1
Extractions (injury/old age etc...)		13.33	6
Other		17.78	8
Skipped		0.00	0
		<b>100*</b>	<b>45</b>

**32. BITE:** Which of the following best describes your BSD's bite?

ANSWER	%	NUMBER
Scissor	75.38	392
Level	18.46	96
Undershot	2.88	15
Overshot	0.96	5
Wry or open	0.00	0
Unknown	0.00	0
Skipped	2.30	12
	<b>100*</b>	<b>520</b>

**33. GENETIC ANALYSIS DNA PROFILE:** Has your BSD been DNA health tested?

ANSWER	%	NUMBER
Yes	15.38	80
No	80.38	418
Unknown	4.03	21
Skipped	0.19	1
	<b>100*</b>	<b>520</b>

**34.** Has your BSD completed any other health test in it's lifetime not previously described?

ANSWER	%	NUMBER
Yes	5.38	28
No	93.66	487
Unknown	0.00	0
Skipped	0.96	5
	<b>100</b>	<b>520</b>

**34.1** Comments

ANSWER	%	NUMBER
Full blood works	31.43	11
Thyroid	28.57	10
Liver function	17.14	6
Neospora	17.14	6
Von Willebrand	2.86	1
Heart worm	2.86	1
Unknown	0.00	0
Skipped	0.00	0
	<b>100</b>	<b>35</b>

**35. OTHER:** Has your BSD been treated for any other health problems in its lifetime (These might be hereditary, congenital, or acquired)?

ANSWER	%	NUMBER
No	90.96	473
Yes	8.46	44
Unknown	0.00	0
Skipped	0.58	3
	<b>100</b>	<b>520</b>



### 36. Descriptions of BSDs' Temperament

Loyal x 27	Gentle x21	Calm x 33	Sweet x 25	Friendly x 71	Happy x 27	Faithful x 2
High drive x 29	Alert x 3	Nervous x 18	Clever x 1	Sociable x 5	Aggressive x 14	Beautiful x 7
Bold x 4	Energetic x 14	Funny x 2	Demanding x 1	Shy x 18	Protective x 35	Willing x 14
Needy x 2	Playful x14	Scared x 6	Outgoing x 20	Stable x 13	Eager to please x 11	Reactive x 8
Cheeky x 5	Highly strung x 2	Aloof x 5	Confident x 19	Stable x 13	Calm x 33	Resilient x 1
Trainable x 6	Noisy x 2	Stressy x 2	Submissive x 3	Wary x 11	Cautious x 7	Suspicious x 1
Soft x 3	Sook x 3	Dominant x 1	Geeky x 1	Mad x 1	Placid x 7	Timid x 9
Loving x 64	Low drive x 2	Lovable x 3	Goofball x 1	Solid x 2	Eccentric x 2	Wary x 18

### 37. Has your BSD ever exhibited any of the following?

BEHAVIOUR	%	NUMBER
None of the above	<b>55.38</b>	288
Stranger directed aggression		29
Owner directed aggression		7
Stranger directed fear		42
Non-social fear (for example, sudden or loud noises; in heavy traffic; in response to strange or unfamiliar objects; during thunderstorms; when first exposed to unfamiliar situations; in response to wind or wind-blown objects)		122
Dog directed aggression		43
Dog directed fear		25
Timidity		61
Phobias		22
Obsessive behaviours		22
Separation related behaviours		55
Skipped		9

**Note:** Dogs exhibited multiple behaviours

38. If your dog is deceased (or has been euthanised) please describe the age and cause of death (or reason for euthanasia). Otherwise please state N/A.

ANSWER	%	NUMBER
Living	52.69	274
Deceased	40.96	213
Unknown	0.00	0
Skipped	6.35	33
	<b>100</b>	<b>520</b>

### 38.1 Cause of death

CAUSE OF DEATH	%	NUMBER
Old age/complications of	42.25	90
Cancers (all types)	25.82	55
Snake bite/complications from	5.63	12
Accident	3.75	8
Cerebral Vascular Accident	3.75	8
Euthanised as pup (various causes)	2.35	5
Epilepsy	2.35	5
Euthanised behaviour problem	1.41	3
Twisted stomach/bowel	1.41	3
Canine Gastric Dilation Bloat	1.41	3
Liver disease	0.94	2
Kidney disease	0.94	2
Shooting	0.94	2
Complications of vestibular disease	0.94	2
Addisons disease	0.94	2
Missing presumed deceased	0.94	2
Hip dysplasia/spinal stenosis	0.47	1
Renal dysplasia	0.47	1
Infection	0.47	1
Poisoning	0.47	1
Dog attack	0.47	1
Paralysis	0.47	1
Megaoesophagus	0.47	1
Arthritis/spondylosis spine (severe pain)	0.47	1
Cardiomyopathy	0.47	1
	<b>100</b>	<b>213</b>