NSHMP

National Sheep Health Monitoring Project

ANNUAL REPORT 2019-20

CONTENTS

EXECUTIVE SUMMARY

The National Sheep Health Monitoring Project (NSHMP) operated throughout 2019-2020 in 10 abattoirs around the country. Meat inspectors inspected 9,455,621 sheep in over 40,000 lines from 9,013 Property Identification Codes for up to 20 animal health conditions.

This report contains a basic analysis of the data from the project, including 15 of the monitored conditions (five had insignificant levels of incidence), thus providing a snapshot of the health of a significant proportion of the Australian sheep flock.

Of the conditions monitored in the 2019-2020 financial year (FY), bladder worm, cheesy gland and nephritis recorded the highest levels of incidence in inspected sheep throughout Australia (Table 1).

Table 1. The percentage of inspected sheep that were affected by each of the listed conditions in the 2017-20 FYs.

	PERCENTAGE OF ANIMALS AFFECTED		
	17/18	18/19	19/20
Arthritis	1.1	0.9	0.6
Bladder worm	3.9	3.5	3.6
Cheesy gland	1.8	3.7	2.5
Dog bite	0.03	0.03	0.03
Grass seed	0.9	0.4	0.3
Hydatids	<0.01	<0.01	<0.01
Knotty gut	0.1	0.3	0.2
Liver fluke	0.5	1.1	0.6
Lungworm	4.2	2.3	0.8
Nephritis	1.7	2.4	2.8
Pneumonia	0.9	0.5	0.3
Pleurisy	3.0	2.8	1.8
Sarcocystosis	0.5	0.5	0.3
Measles	1.2	1.5	1.3
Vaccination lesions	1.0	1.1	1.14

OBJECTIVES OF THE NSHMP

- To monitor sheep for a range of significant animal health diseases and conditions which reduce productivity in the sheep value chain or can impact market access.
- To facilitate feedback to producers through state departments and the Livestock Data Link (LDL) about the diseases and conditions occurring in their flock.
- To explore options for a comprehensive and cost-effective animal disease monitoring/surveillance system and post-mortem inspection service.
- To provide accurate and timely animal health information as a driver for:
  - » further improvements in Australia's animal health status, and the management of human health risks
  - » maximising market access
  - » improving profitability
  - » informing future investment into research and development (R & D)
  - » enhancing productivity within the sheep value chain by improving the quality of product entering the chain and therefore reducing wastage

LOCATION OF PARTICIPATING ABATTOIRS

A total of 10 abattoirs participated in data collection in 2019-2020 (some part-time) and provided national coverage of the significant sheep producing regions of Australia (Table 2).

In SA the inspection is through the Enhanced Abattoir Surveillance program (EASP), with additional funding by the Sheep Industry Fund and managed by PIRSA

Table 2. Abattoirs participating in the NSHMP July 2019 – June 2020

STATE	ABATTOIR
New South Wales	Cowra, Dubbo, Gundagai, Tamworth
South Australia	Lobethal (through the EASP)
Tasmania	Cressy
Victoria	Ararat, Geelong*, Brooklyn*
Western Australia	Narrikup

*Abattoirs participating part-time in the project.

NUMBER OF SHEEP INSPECTED

The total number of sheep inspected in 2019-20 has increased from previous years, as has the number of lines inspected. However, the number of PICs that had sheep inspected declined slightly compared to 2018-19.

The total number of sheep inspected in 2019-2020 was 9,455,621.

Table 3. Total number of sheep, properties (PICs) and lines inspected in Australia over the past three FYs.

	2017-2018	2018-2019	2019-2020
Number inspected	6,975,855	8,682,967	9,455,621
PICs	8173	9581	9013
Lines	29,540	39,935	40,786

SOURCE OF SHEEP

Sheep were sourced from all Australian states. Of the nearly 9.5 million sheep inspected during 2019-2020, 57% were from NSW, 15% from Western Australia, 14% from South Australia, 10% from Victoria and 4% from Tasmania. The number of sheep and lambs inspected from each state (for most diseases and conditions) is provided in Table 4.

The total number of lines inspected in 2019-20 was 40,786.

Table 4. Total number of sheep, properties (PICs) and lines inspected from each state over the 2019-2020 FY.

STATE	NO. OF SHEEP INSPECTED	NO. OF LINES INSPECTED	NO. OF PICS INSPECTED
NSW	4,236,725	18,313	2,412
Qld	221,955	834	240
SA	1,678,548	8,540	2,745
Tas	527,272	3,426	574
Vic	1,351,070	4,904	1,277
WA	1,440,051	4,769	1,765
Total	**9,455,621**	**40,786**	**9,013**

NSHMP MEAT INSPECTION

Carcasses and viscera are examined grossly by certified meat inspectors. Laboratory confirmation of conditions is not utilised, except for ovine Johne's disease. The presence or absence of pathology consistent with diseases and conditions is recorded by inspectors.

Responsibility for product disposition for market access and food safety rests with the on-plant veterinarian and company management.

NSHMP PRODUCER FEEDBACK

All producers now have online access to feedback via the Livestock Data Link (LDL). Once producers log on, they have access to information about lines of sheep they have consigned to participating abattoirs, as well as prevention methods and tools to help manage any conditions affecting their flock. Feedback from the NSHMP is returned in some states directly to producers by the relevant Department of Primary Industries/Agriculture.

www.ldl.mla.com.au

RESEARCH AND DEVELOPMENT ACTIVITIES UTILISING DATA

In 2019-2020 the data from the NSHMP was utilised by:

- Herd Health Pty Ltd in developing a cost benefit analysis tool for producers to make better decisions about their on-farm control programs for diseases monitored in the NSHMP. The MLA-funded report has been finalised, with the sheep health tool (calculator) still to be completed.

ANIMAL HEALTH INFORMATION

- This report contains a 'snapshot' of the health of the Australian sheep flock for the 2019-20 FY using data collected through the NSHMP. Summary data sets from previous years has been utilised for some conditions to provide a comparison.
- The data collected by the NSHMP is stored in the Endemic Disease Information System, hosted by Animal Health Australia.
- Each state department of Primary Industries/Agriculture has access to its own state data which can be used for further detailed analysis.
- The NSHMP collects information on 20 conditions:
  - » Arthritis
  - » Bladder worm
  - » Caseous lymphadenitis (CLA, cheesy gland)
  - » Dog bites
  - » Grass seeds
  - » Hydatids
  - » Knotty gut
  - » Liver fluke
  - » Pleurisy
  - » Pneumonia
  - » Sarcocytosis
  - » Sheep measles
  - » Vaccination lesions
  - » Lung worm
  - » Rib fractures
  - » Bruising
  - » Cirrhosis
  - » Nephritis
  - » Fever/Septicaemia
  - » Johne's disease (only on request by the producer)
- Summary information on these diseases is found in this report except for rib fractures, bruising, cirrhosis, and fever/septicaemia as insignificant levels were recorded for these conditions.
- Johne's disease is not included in this report, as numbers of sheep inspected for it have been significantly lower than for the other conditions.
- For the purpose of this analysis the information has been obtained from direct (vendor consigned) and indirect (saleyard or mixed in transportation) lines. Ages of sheep are recorded in this report as all inspected animals are greater than two years (which includes some mixed age lines), and less than two years of age (mostly lamb). Analysis is at the animal level or by property identification code (PIC) level.

ARTHRITIS

Arthritis in sheep is usually caused by a bacterial infection of the joints. It usually occurs in young sheep when bacteria localise in the joints after entering the body through the umbilical cord (navel ill) or any wound (e.g. at lamb marking). Arthritis causes lameness and a reduced growth rate.

Carcases affected with arthritis undergo trimming of affected joints and may possibly be condemned if multiple joints are affected.

The percentage of total animals and <2yr sheep reported to have arthritis has declined slightly compared with previous years (Table 5), however, the percentage of PICs with at least one affected sheep appears stable. Figure 1 also shows that Vic and WA have a greater than 50% of inspected PICs affected, NSW, Qld and SA have approximately 30% affected, and Tas has the lowest affected PICs at approximately 20%.

South Australia and Victoria recorded the highest percentages of affected animals at 0.8% and 0.9% respectively, followed by NSW and WA at 0.5% and Qld and Tas at 0.3%.

Table 5. The number of sheep inspected and affected by arthritis during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,682,967	9,455,621
Total animals affected	73,686 = 1.1%	77,089 = 0.9%	60,281 = 0.6%
Total <2yr animals affected	19,853 = 0.3%	18,189 = 0.2%	14,662 = 0.1%

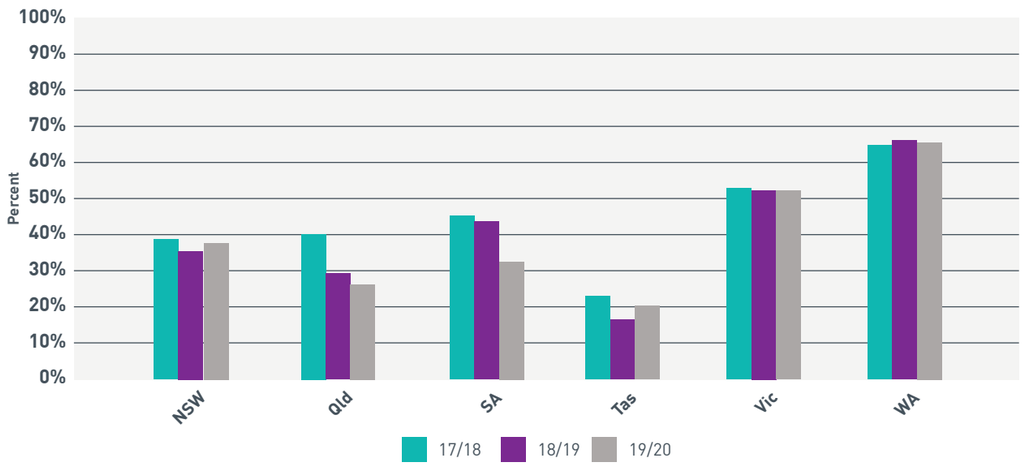

Figure 1. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

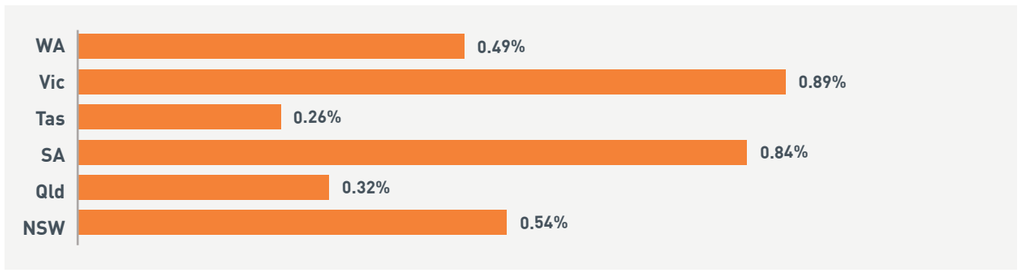

Figure 2. The percentage of animals inspected in each state that were affected in 2019-20.

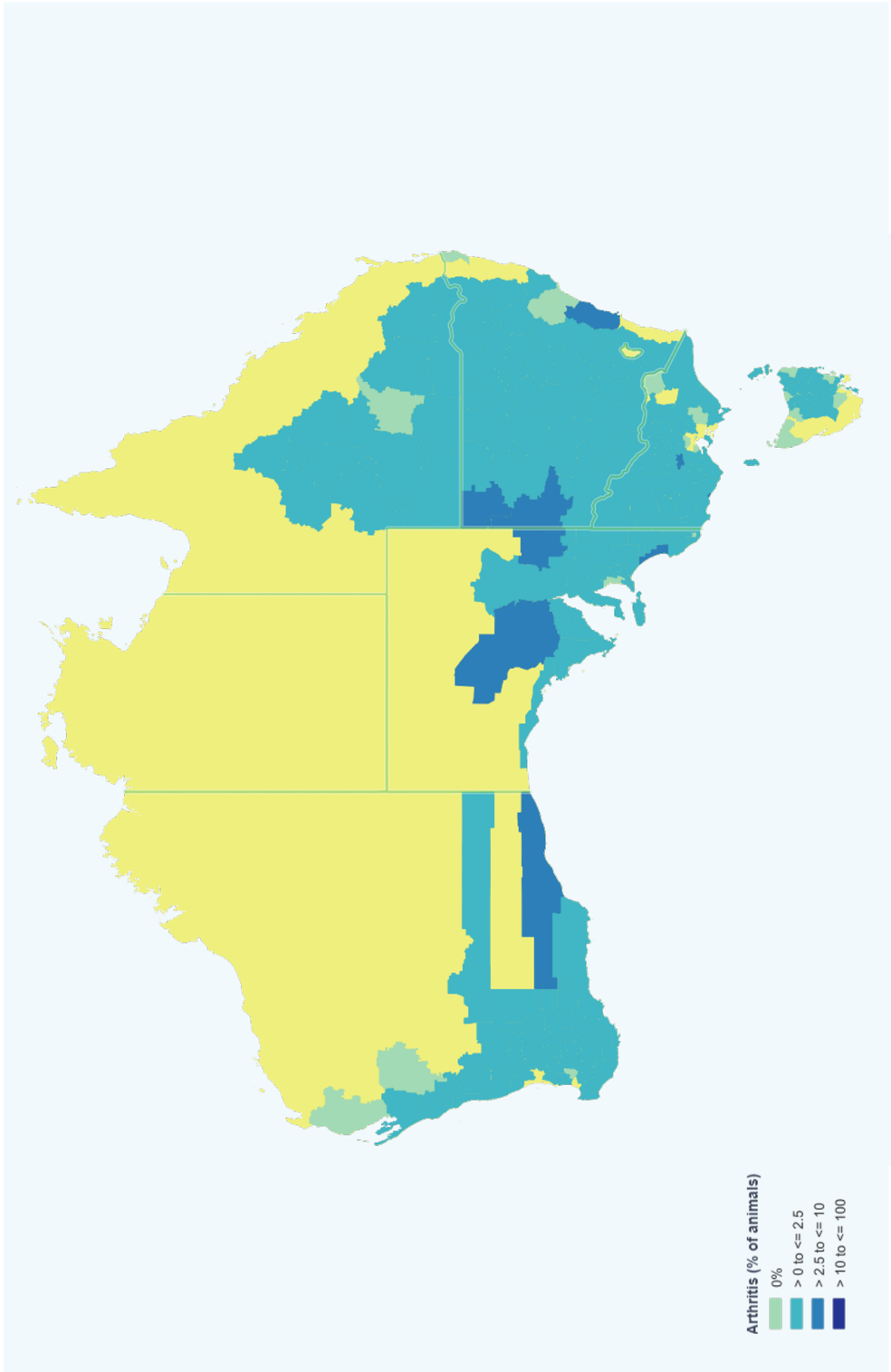

Figure 3 Percentage of sheep affected by arthritis in each LGA in 2019-20.

BLADDER WORM

Bladder worms are infective cysts from the dog tapeworm *Taenia hydatigena* and are found in the liver and the abdominal cavities of sheep. Bladder worm has little or no effect on sheep health or production, but occasionally heavy infections can predispose sheep to the fatal bacterial infection, Black disease.

Affected carcasses usually have livers trimmed or are condemned.

Bladder worm was the most commonly reported condition during 2019-2020. All states apart from Qld and Vic had 40% or more of PICs with inspected sheep with at least one affected animal recorded, suggesting it is a relatively widespread problem. However, the percentage of affected sheep is relatively unchanged compared to previous years.

When observing the percentage of inspected animals that were affected by state, bladder worm appears to be a greater problem for SA compared to other states.

Table 6. The number of sheep inspected and affected by bladder worm during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,682,778	9,455,621
Total animals affected	273,807 = 3.9%	301,815 = 3.5%	343,382 = 3.6%
Total <2yr animals affected	70,391 = 1.0%	123,430 = 1.4%	91,574 = 1.0%

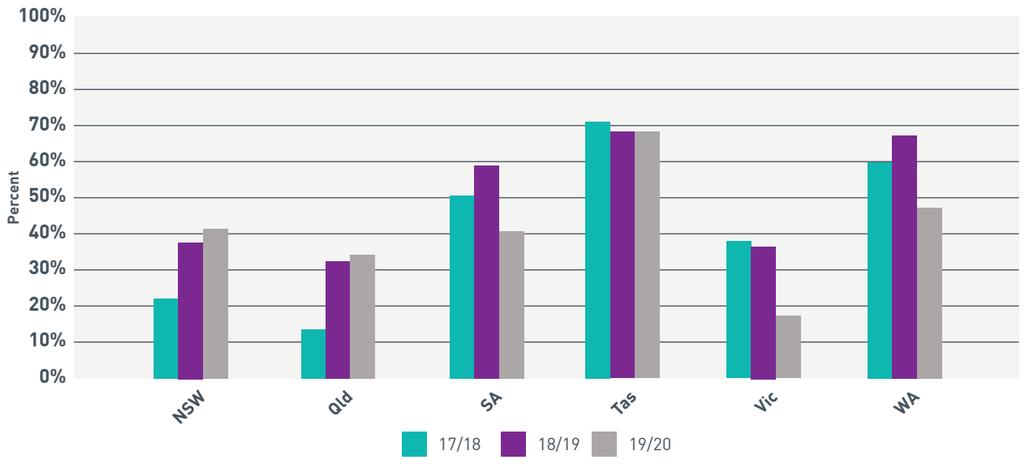

Figure 4. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

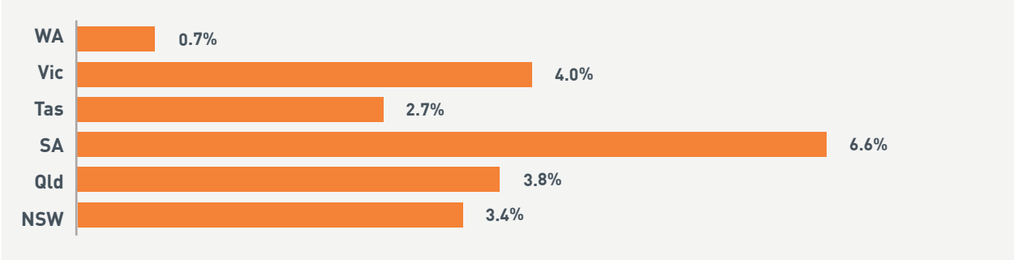

Figure 5. The percentage of animals inspected in each state that were affected in 2019-20.

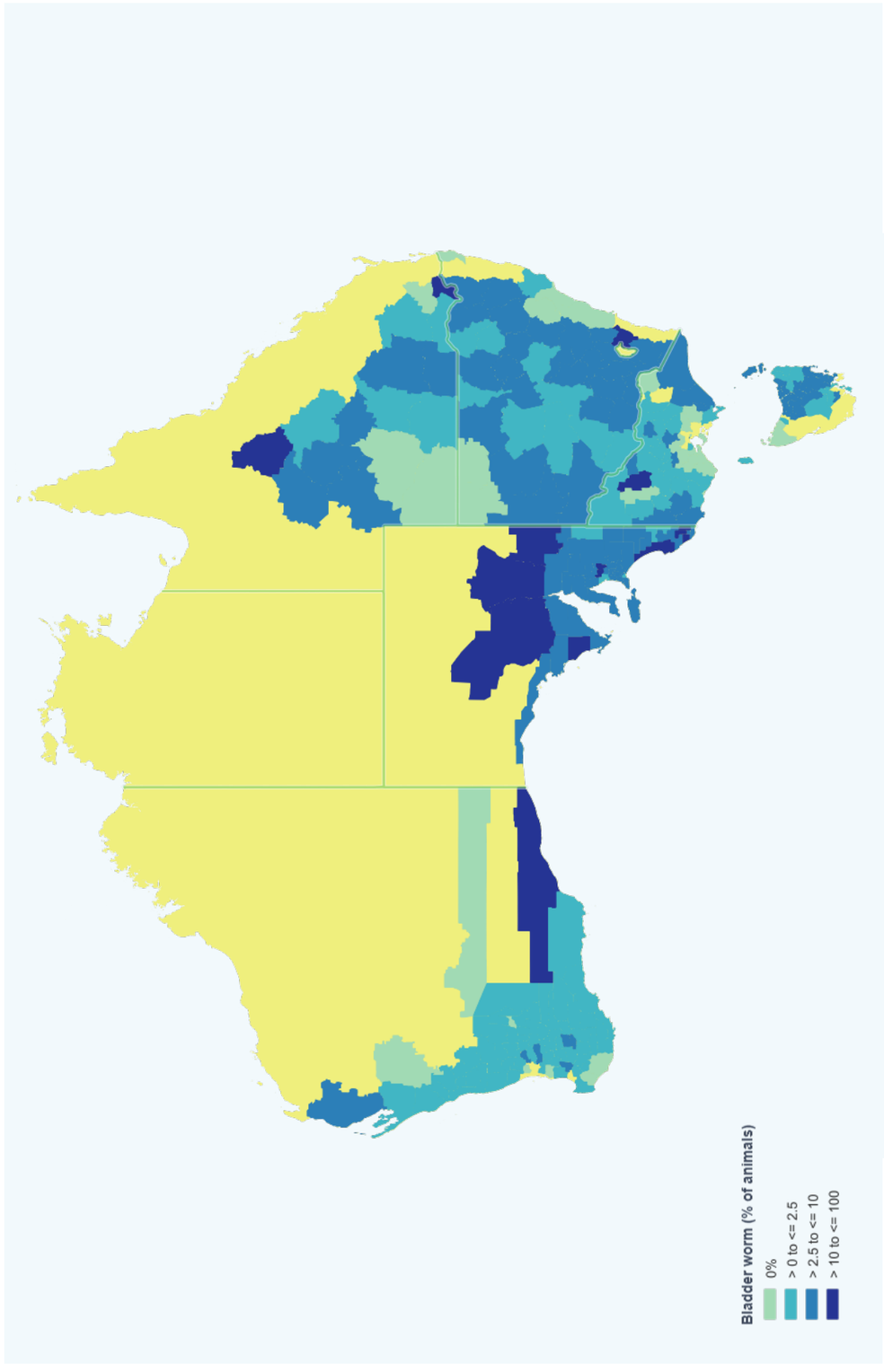

Figure 6 Percentage of sheep affected by bladder worm in in each LGA in 2019-20.

CHEESY GLAND

Cheesy gland (or caseous lymphadenitis – CLA) is a bacterial disease that results in the formation of lymph node abscesses throughout the body. Most commonly these abscesses are superficial, but they can also be found in the lungs, liver, spleen and kidneys. The abscesses are initially puss filled, which over time dries and becomes "cheesy" progressing to multi-layered capsules resembling "onion rings".

CLA causes a decrease in wool production, wool contamination, chronic infection which causes ill thrift, emaciation and can affect reproductive performance.

CLA can result in a decrease in carcase weight and increased carcase trimming at the abattoirs.

The occurrence of CLA has varied over time, showing no trend of increasing or declining. It appears to be relatively widespread among inspected PICs in WA, Vic and Qld, and to a lesser extent in NSW and SA. CLA only appears in relatively small numbers of sheep and PICs in Tas. The percentage of affected animals at a state level is highest for Qld at 6% followed by Vic at 4.2%.

Table 7. The number of sheep inspected and affected by cheesy gland during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,682,967	9,455,621
Total animals affected	126,109 = 1.8%	323,749 = 3.7%	238,839 = 2.5%
Total <2yr animals affected	7,955 = 0.1%	49,660 = 0.6%	18,633 = 0.2%

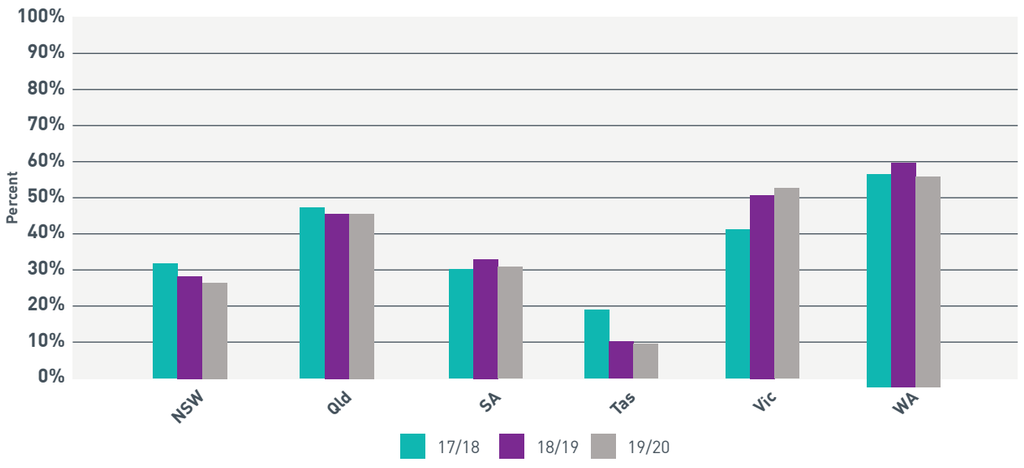

Figure 7. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

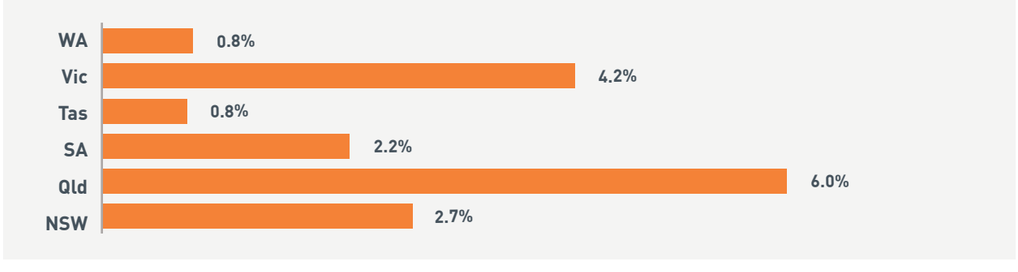

Figure 8. The percentage of animals inspected in each state that were affected in 2019-20.

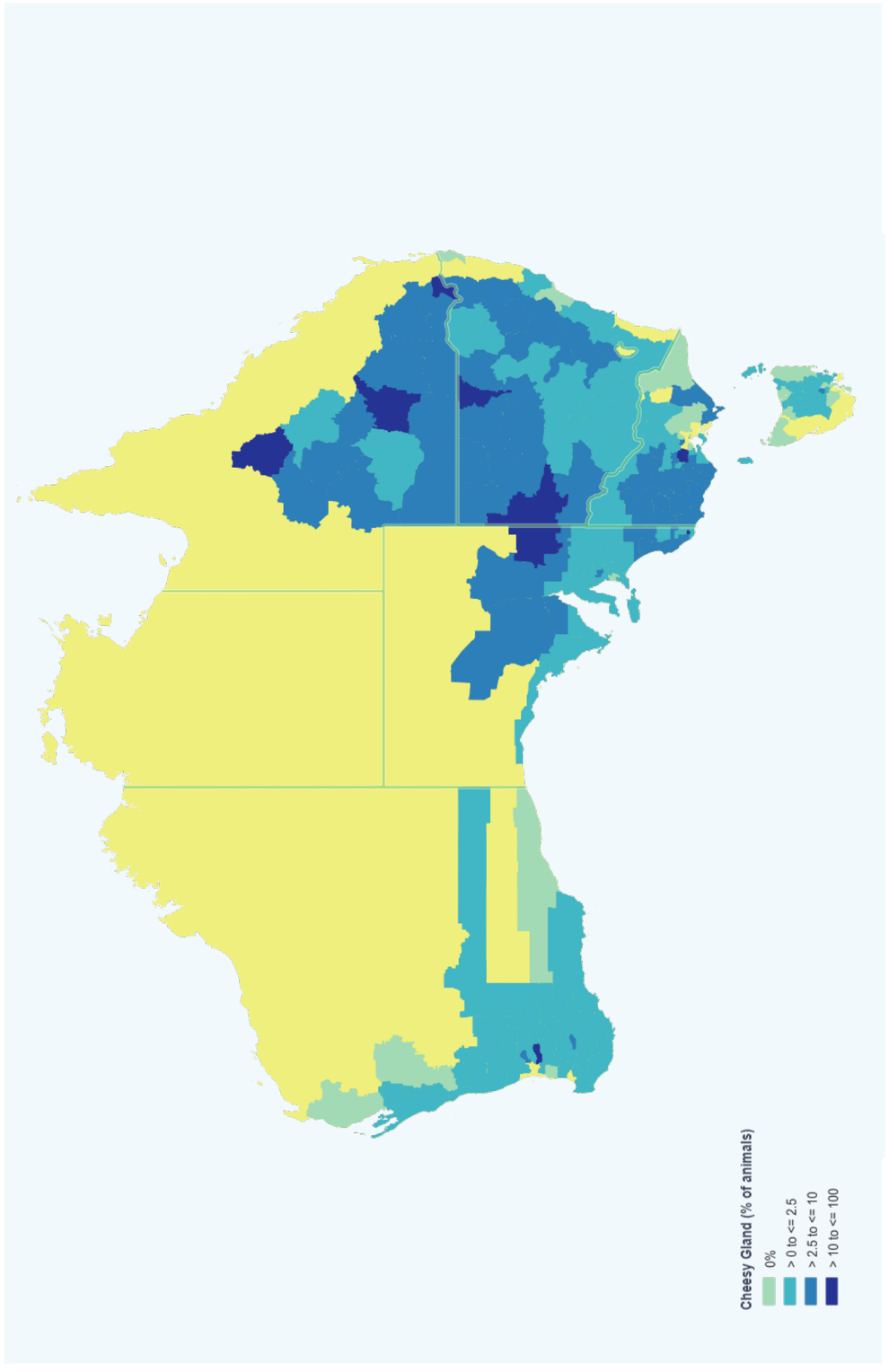

Figure 9 Percentage of sheep affected by CLA in in each LGA in 2019-20.

DOG BITES

Dog bites occur as a result of un-muzzled or incorrectly muzzled dogs with access to sheep, either in the paddock, yards or during transport. Abattoirs require dogs to be muzzled at all times. Dog bites usually occur in the hind quarters, but also can occur on the face or along the back. The Australian Animal Welfare Standards and Guidelines for Sheep states: 'A person in charge of a dog that habitually bites sheep must ensure the dog is muzzled while working sheep'.

Carcases of sheep with dog bites are usually trimmed to the nearest joint which may be the entire hind leg, resulting in a significant reduction in dressed weight. Occasionally whole carcases are condemned when wounds are infected and the animal is showing evidence of septicaemia (blood poisoning).

The occurrence of dog bites in inspected sheep is very low and has remained relatively unchanged over the past three inspection years. The number of PICs that had at least one affected sheep is very low across all states (except WA), as is the percentage of affected sheep per state, indicating that there is only a select few properties across Australia where dog bites are an issue.

Table 8. The number of sheep inspected and affected by dog bites during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,682,174	9,455,621
Total animals affected	2,286 = 0.03%	2,781 = 0.03%	2,571 = 0.03%
Total <2yr animals affected	1,189 = 0.02%	1,453 = 0.02%	1,489 = 0.02%

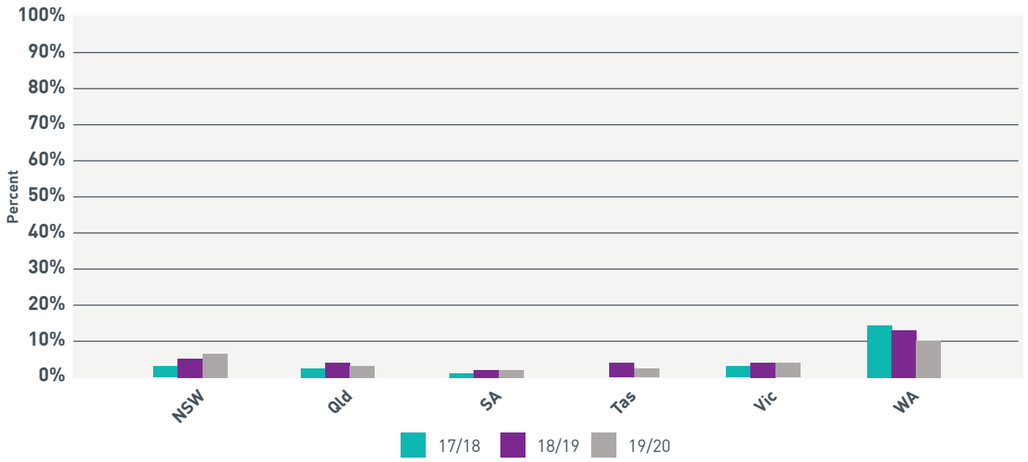

Figure 10. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

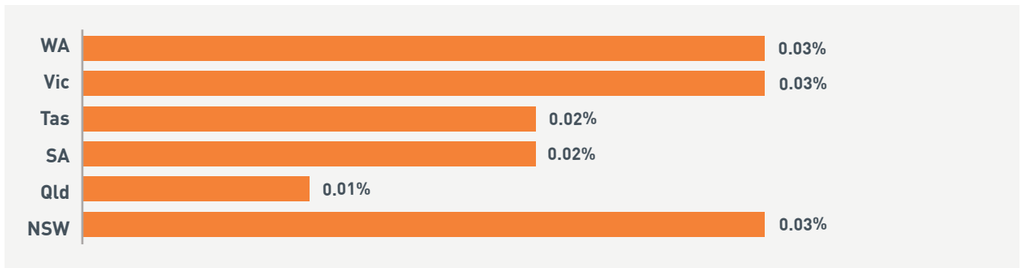

Figure 11. The percentage of animals inspected in each state that were affected in 2019-20.

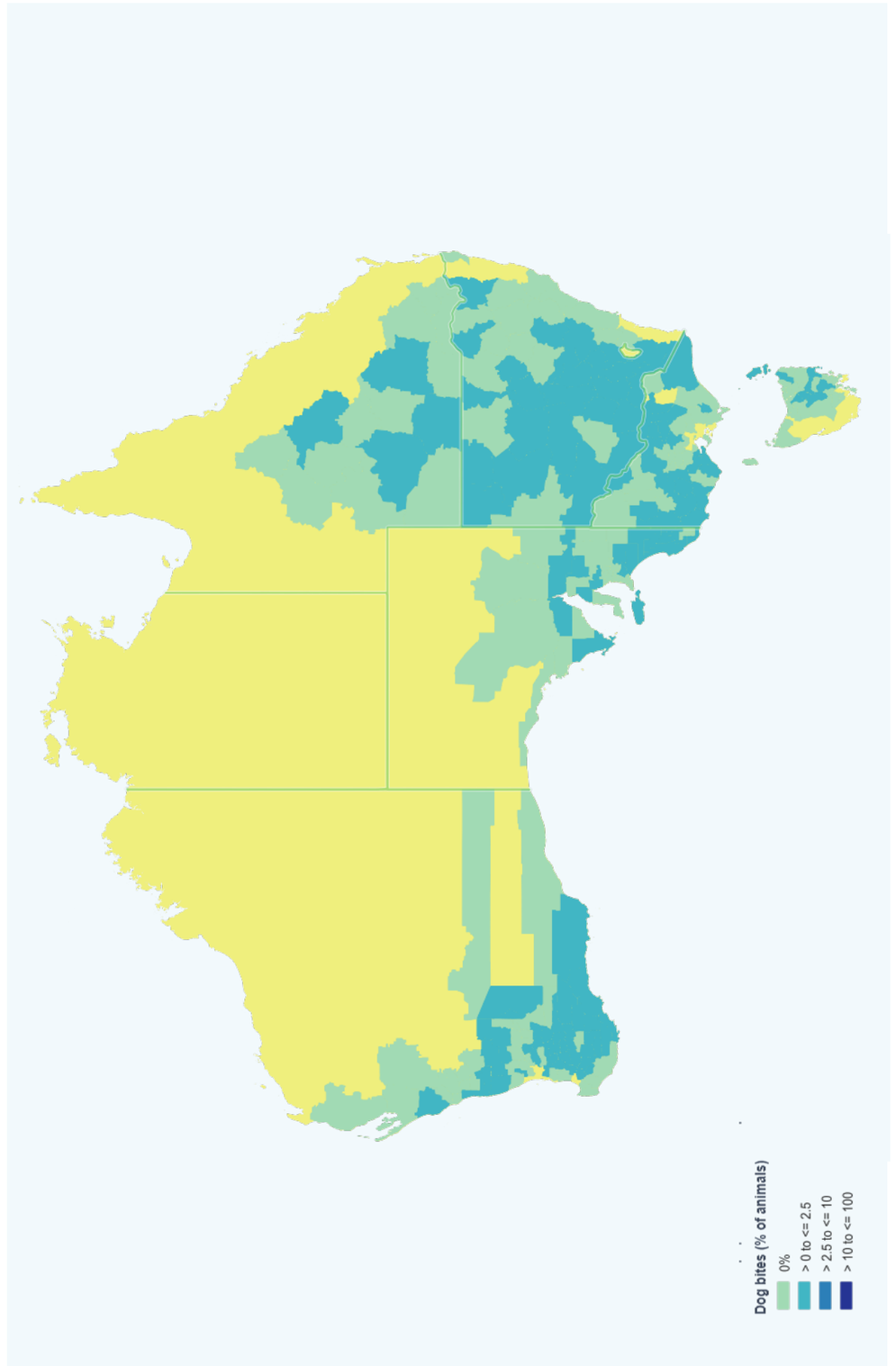

Figure 12 Percentage of sheep affected by dog bites in each LGA in 2019-20.

GRASS SEEDS

Grass seeds embedded in the carcase due to spear, brome, barley, silver and Chilean needle grasses cause weaner ill thrift, infections and/or death, reduction in wool production and wool value.

Grass seeds also cause trimming of the carcase and a decrease in meat and skin value.

The numbers of sheep carcasses affected by grass seeds has been in gradual decline both at the animal level, and also at the PIC level for the majority of states inspected over the 2017-20 period. There appears to be more properties impacted by grass seeds in WA. However, overall, most states have only a very small number of PICs affected by grass seeds. When looking at animals affected per state, SA has approximately six times the proportion of sheep affected compared to other states in 2019-20.

Table 9. The number of sheep inspected and affected by grass seeds during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,682,111	9,455,621
Total animals affected	60,919 = 0.9%	30,795 = 0.4%	25,932 = 0.3%
Total <2yr animals affected	51,350 = 0.7%	19,783 = 0.2%	20,197 = 0.2%

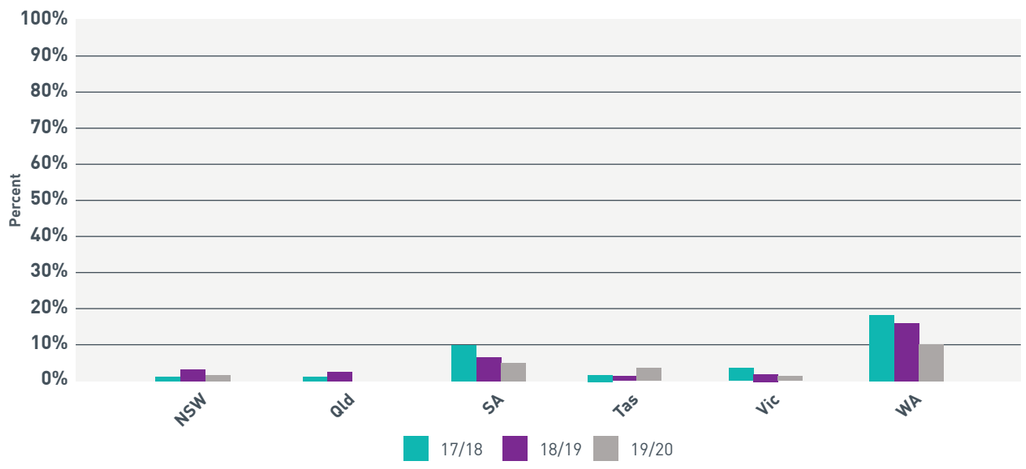

Figure 13. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

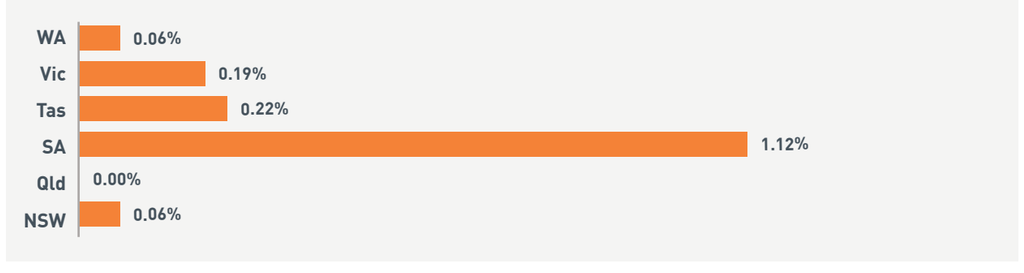

Figure 14. The percentage of animals inspected in each state that were affected in 2019-20.

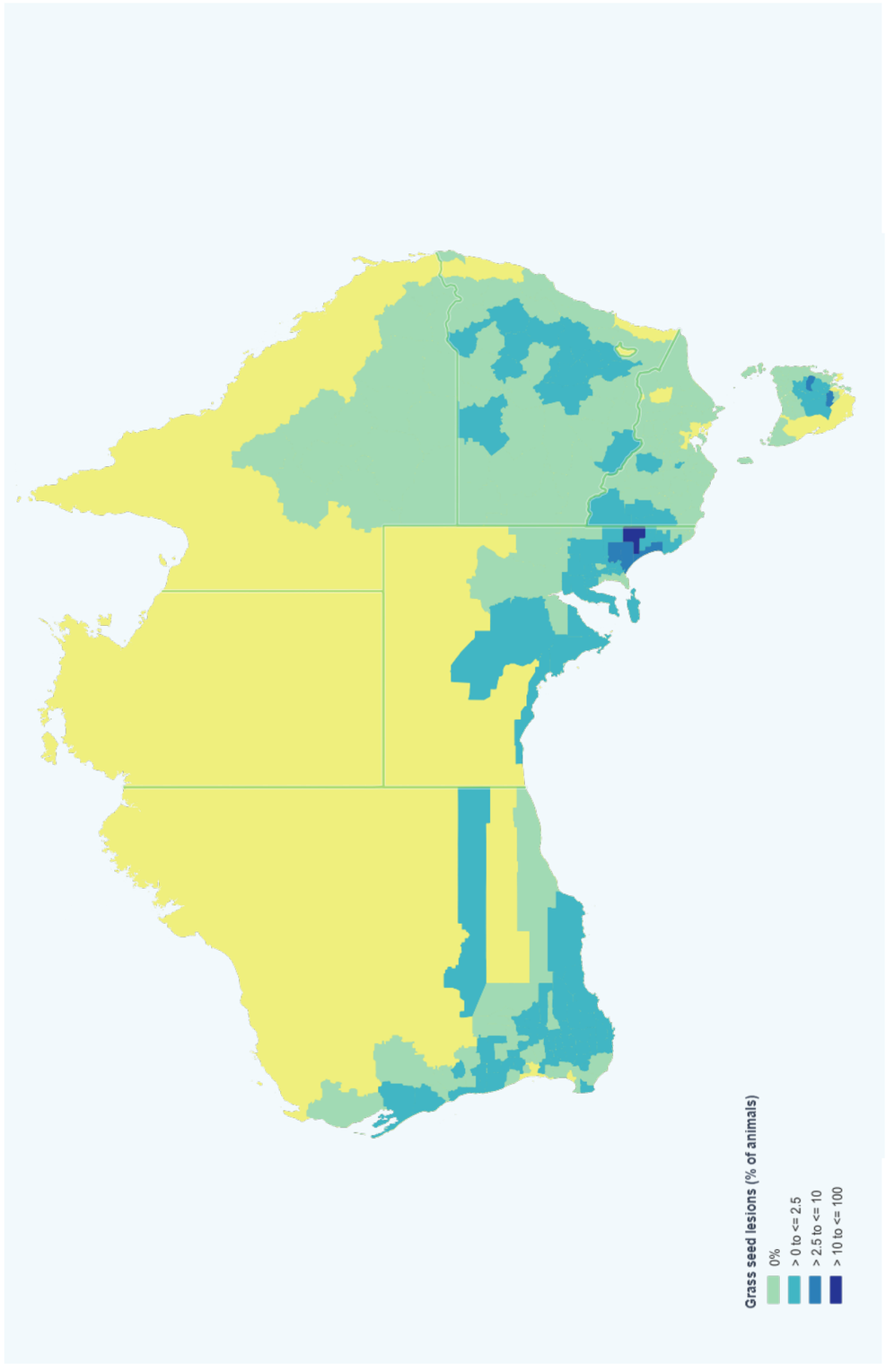

Figure 15 Percentage of sheep affected by grass seeds in each LGA in 2019-20.

HYDATIDS

Hydatids are the large cysts from the dog hydatid tapeworm (*Echinococcus granulosus*) which develop mainly in the liver and/or lungs of infected sheep.

If infected, sheep organs will be condemned at the abattoir.

Very low numbers of hydatid affected animals were reported, with the greatest number coming from NSW. Numbers appear to have been declining over the past 3 years, with numbers of affected sheep during 2019-20 being too small to report (figure 17). The small numbers of affected animals are from less than 1% of PICs in each state in 2019-20.

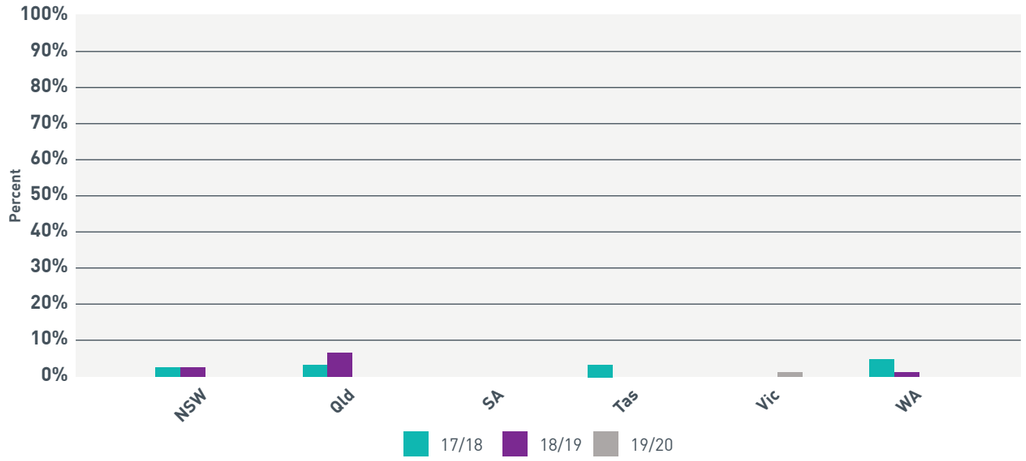

Figure 16. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

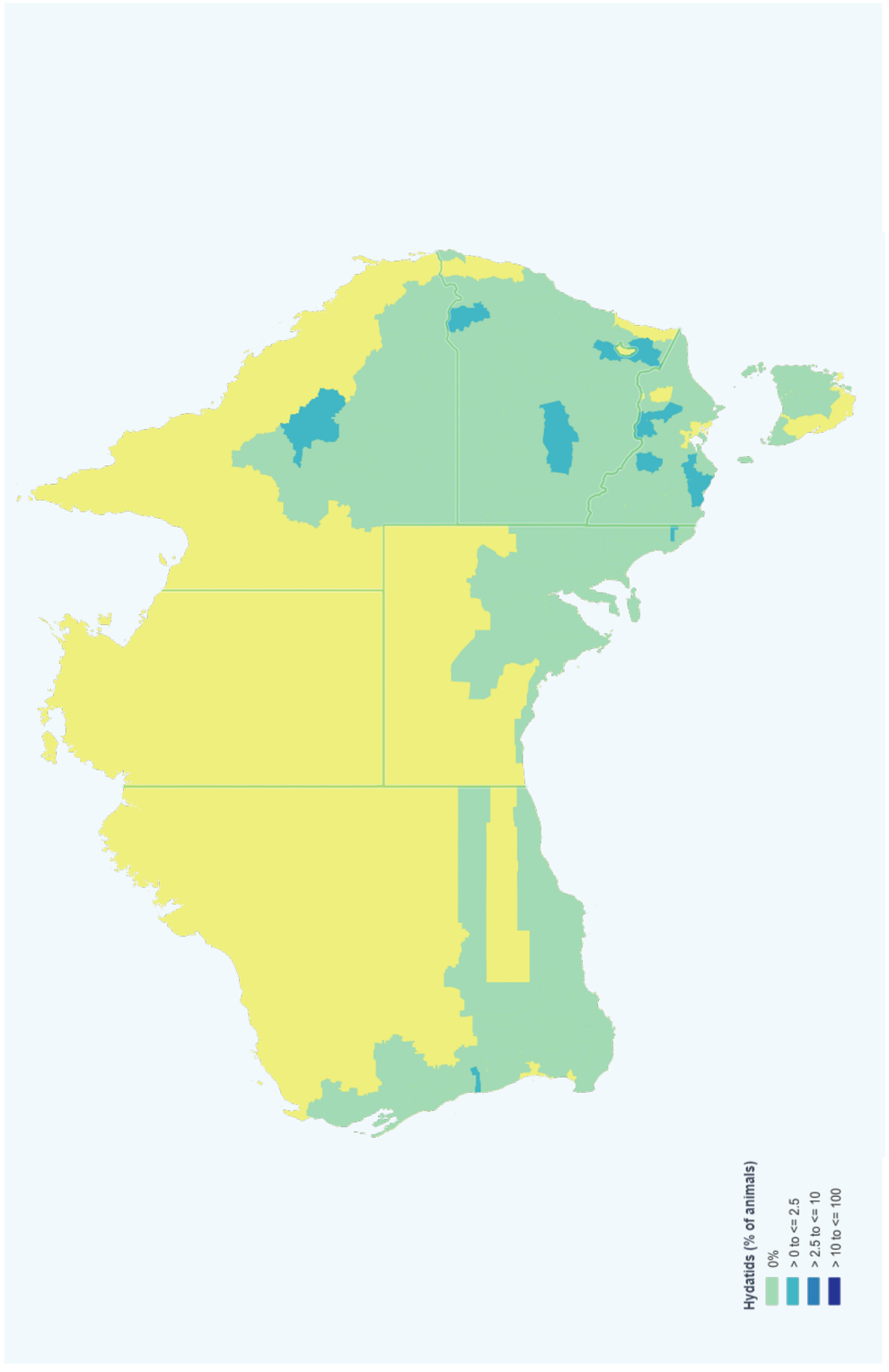

Figure 17 Percentage of sheep affected by hydatids in each LGA in 2019-20.

KNOTTY GUT

Knotty gut (also called pimply gut) is a condition of the intestines caused by the larval stage of the nodule worm (*Oesphagostomum columbianum*). These lesions can range from small gritty lesions 2-3mm in diameter, to pea sized cysts. Nodule worm eggs and larvae are particularly sensitive to cold weather and drying out, so tend to only exist in areas with predominately summer rainfall.

Affected intestines are unsuitable for sausage casings.

Knotty gut was reported in a low percentage of inspected sheep, mostly from Qld and SA, with no reported cases from WA. The percentage of affected sheep appears to be relatively consistent over the three years observed and is only present on a small number of PICs.

Table 10. The number of sheep inspected and affected by knotty gut during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,682,111	9,455,621
Total animals affected	9,190 = 0.1%	26,092 = 0.3%	19,252 = 0.2%
Total <2yr animals affected	1,621 = 0.02%	5,262 = 0.06%	6,141 = 0.06%

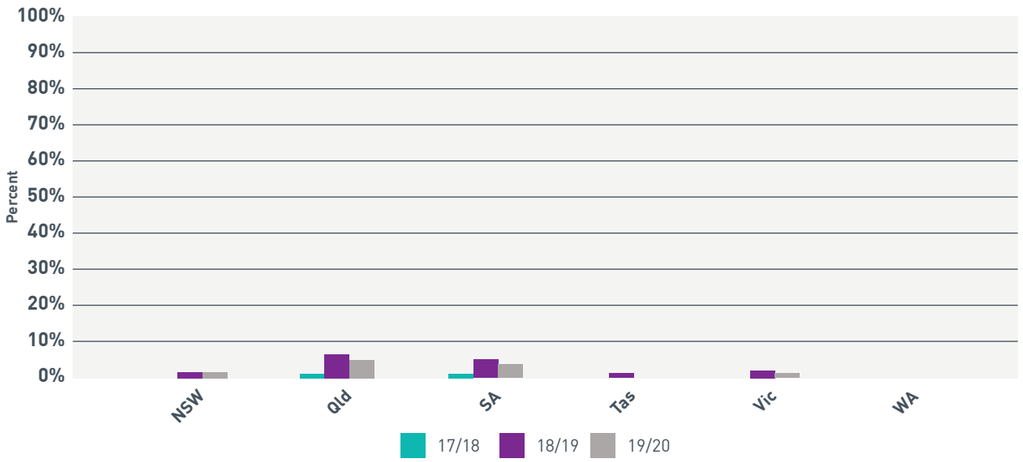

Figure 18. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

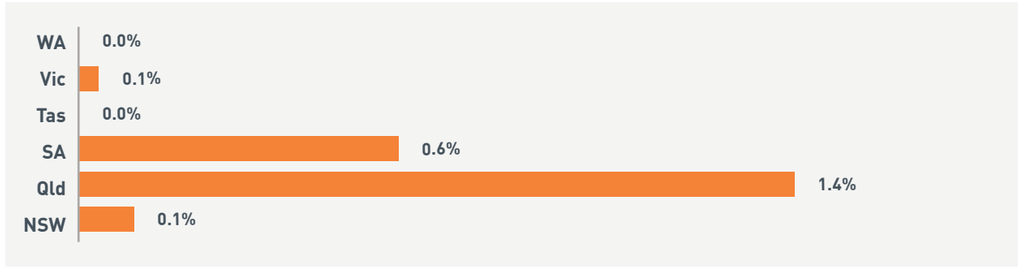

Figure 19. The percentage of animals inspected in each state that were affected in 2019-20.

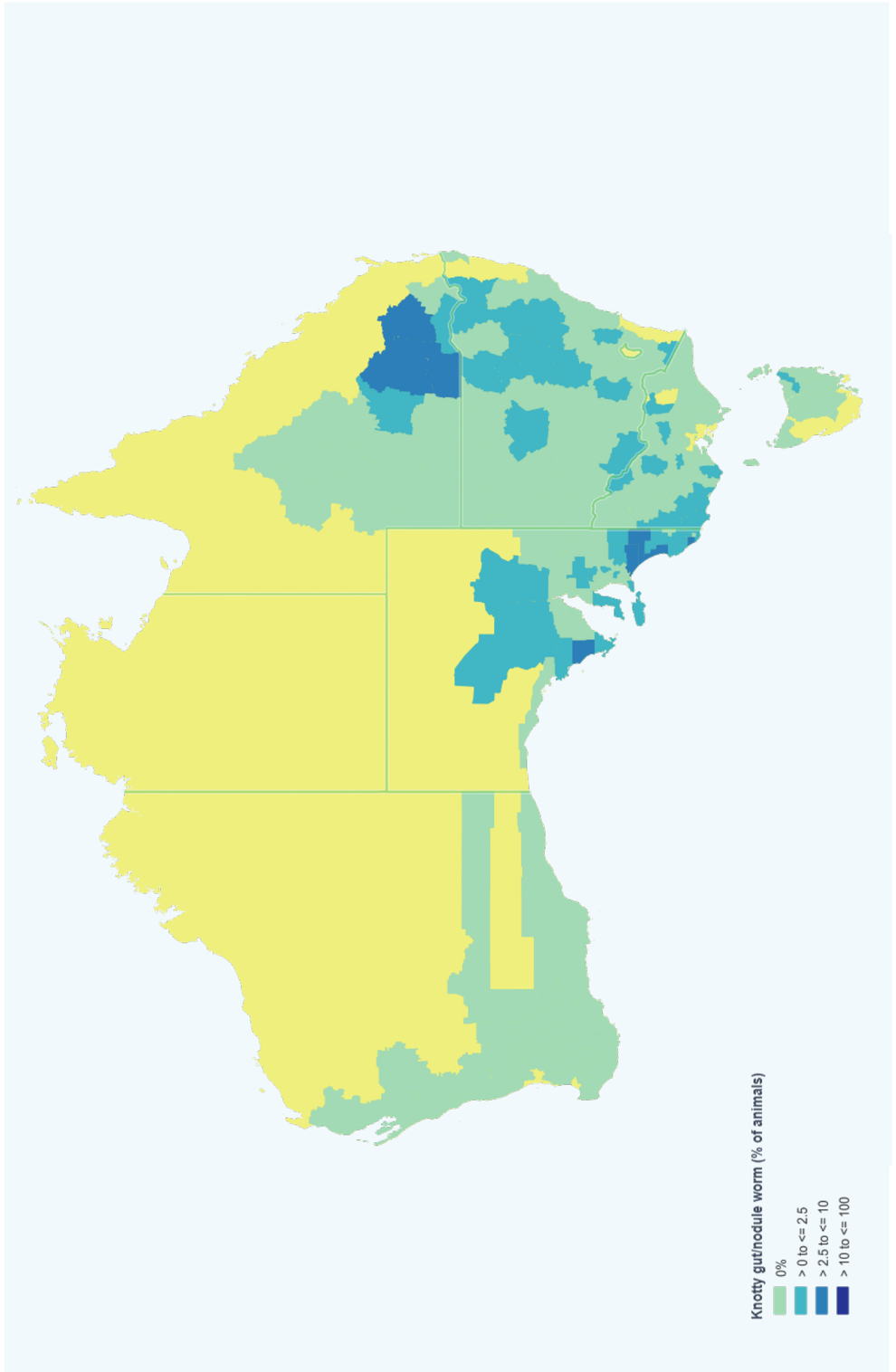

Figure 20 Percentage of sheep affected by knotty gut in each LGA in 2019-20.

LIVER FLUKE

Liver fluke are large, flatworm parasites that infect sheep and cattle in high rainfall areas and irrigated areas of eastern Australia. A permanent water source and specific snails are required for the liver fluke life cycle to occur.

Affected livers are condemned at abattoirs and in some cases, whole carcases can be condemned.

Liver fluke appeared to have a temporary increase in occurrence in 2018-19, returning to approximate prior levels in 2019-20. SA and WA have very low to no affected sheep and NSW recorded the greatest percentage of affected sheep and affected PICs (see Figures 20 & 21).

Table 11. The number of sheep inspected and affected by liver fluke during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,680,359	9,455,521
Total animals affected	33,270 = 0.5%	96,359 = 1.1%	60,497 = 0.6%
Total <2yr animals affected	18,864 = 0.3%	50,035 = 0.6%	22,133 = 0.2%

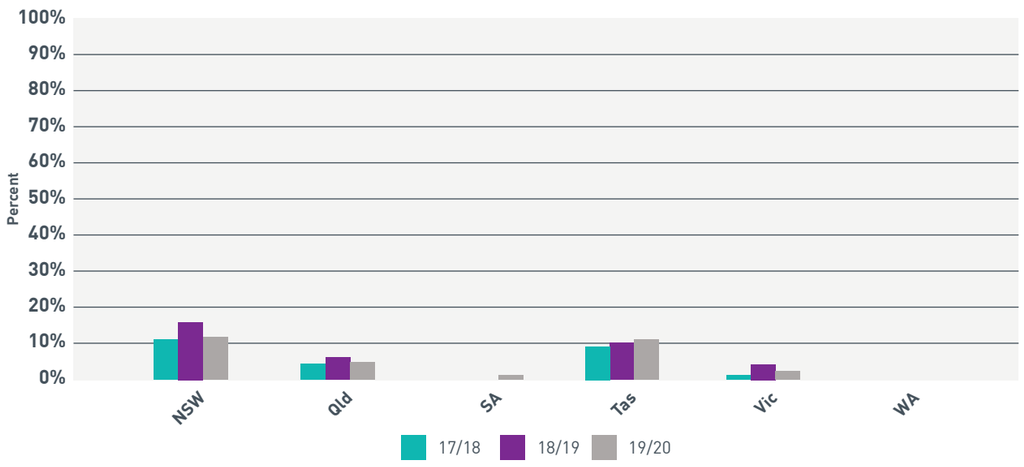

Figure 21. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

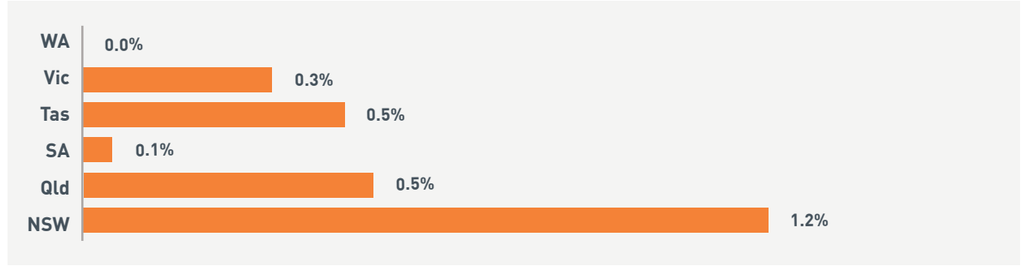

Figure 22. The percentage of animals inspected in each state that were affected in 2019-20.

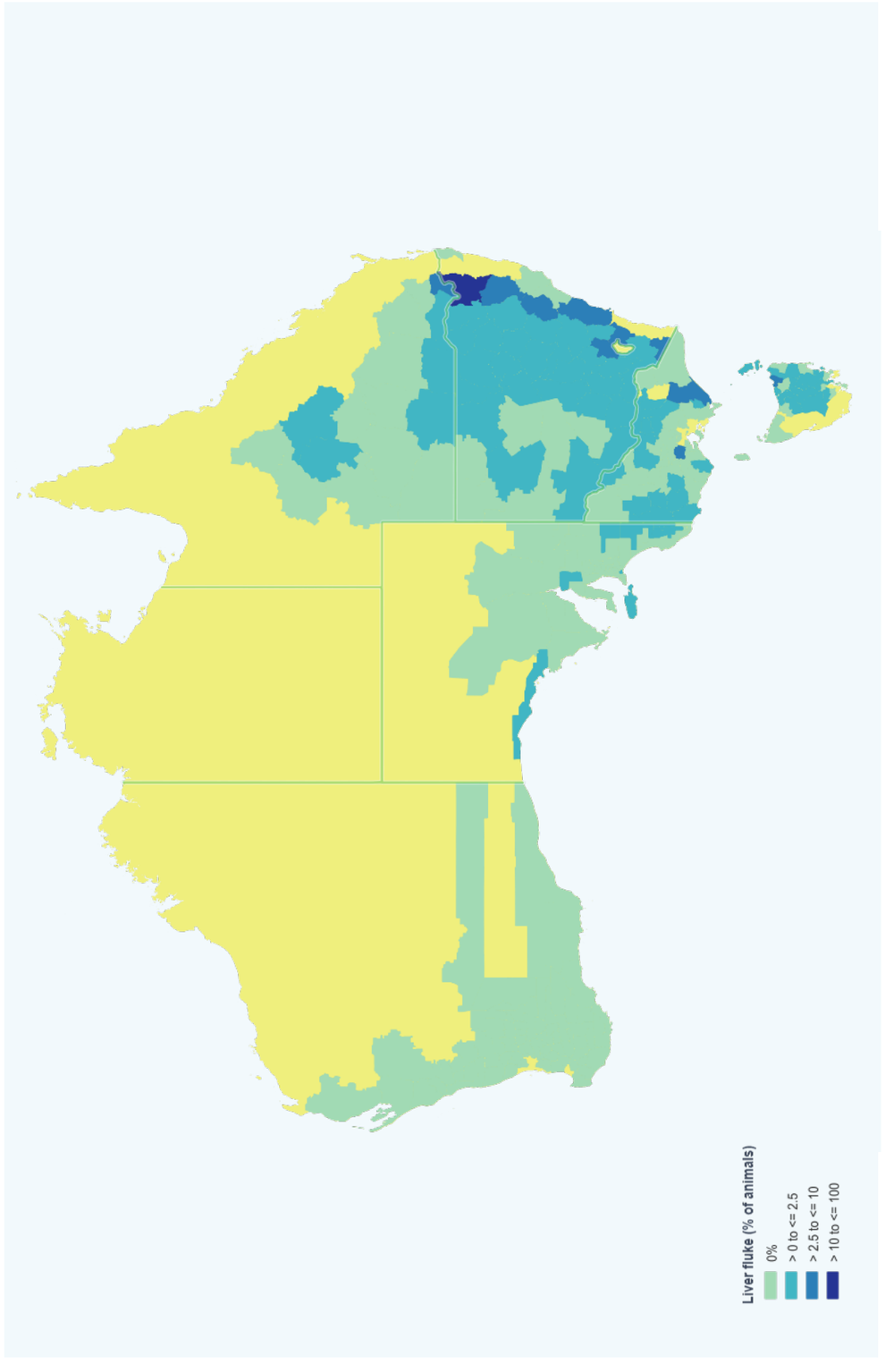

Figure 23 Percentage of sheep affected by liver fluke in each LGA in 2019-20.

LUNGWORM

Lungworm is a condition caused by the ingestion of the lungworm, *mulleurius capillaris*, that develop in the tissue of the lungs. This species of lungworm has a lifecycle that includes snails and is different from the one that inhabits the bronchi. Lungworm has no impact on sheep health or productivity.

At the abattoir, lungs of infected sheep are condemned.

Lungworm has been declining in occurrence over the past three years, recording just 0.8% of inspected sheep being affected. Occurrence of lungworm appears to be almost exclusive to SA, with very small numbers appearing in sheep from Vic and WA.

Table 12. The number of sheep inspected and affected by lungworm during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,680,359	9,455,521
Total animals affected	292,850 = 4.2%	200,159 = 2.3%	76,171 = 0.8%
Total <2yr animals affected	178,071 = 2.6%	60,712 = 0.7%	28,927 = 0.3%

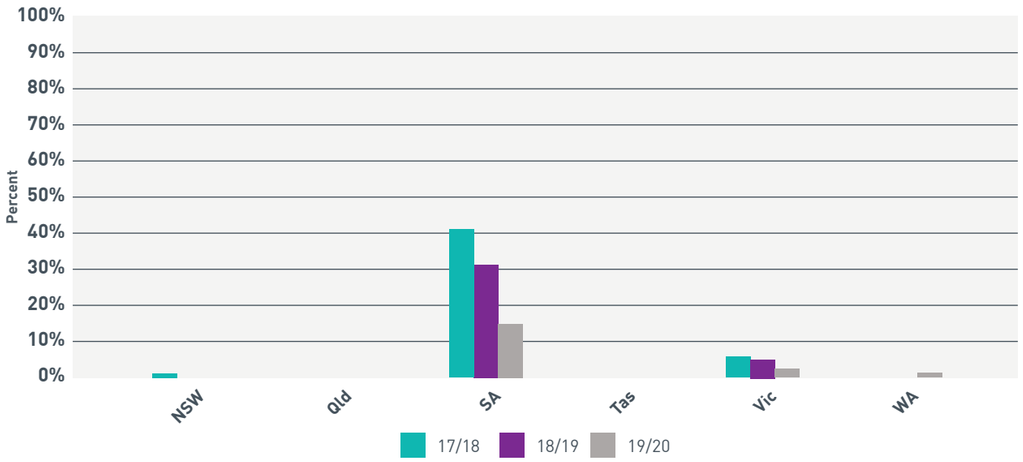

Figure 24. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

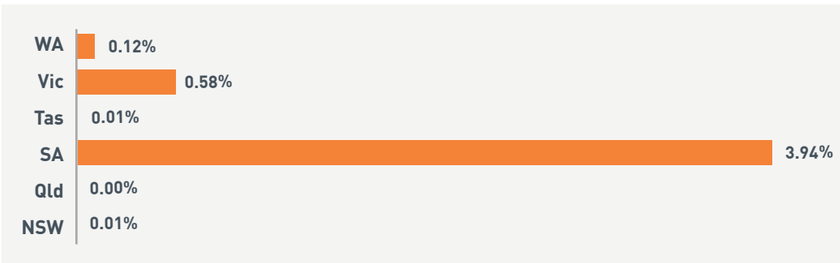

Figure 25. The percentage of animals inspected in each state that were affected in 2019-20.

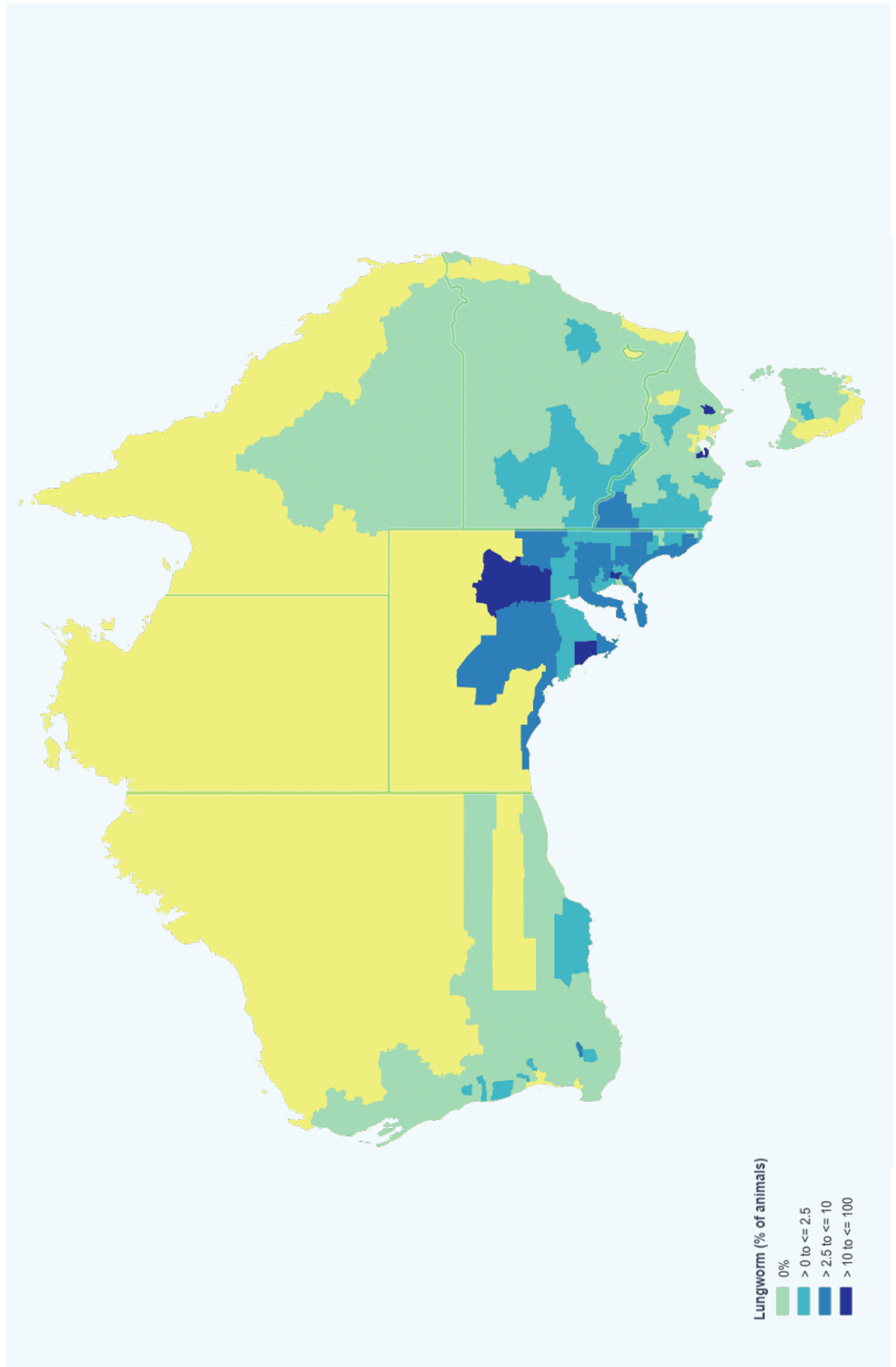

Figure 26 Percentage of sheep affected by lungworm in each LGA in 2019-20.

NEPHRITIS

Nephritis is caused by an infection that has reached and impacted the kidneys causing damage and inflammation. It is more commonly reported in lambs and is not normally associated with any clinical signs, although can reduce the growth and performance of lambs.

Affected kidneys are condemned, and in rare severe cases where kidney failure has occurred, whole carcass condemnation may occur.

Nephritis appears to be the only condition that has been gradually increasing in occurrence nationally in inspected sheep over the last three years, although levels have declined in SA. It is somewhat widespread in PICs located in NSW, and to a lesser extent in Qld and SA. Nephritis has also been reported in WA and Tas in very low levels.

Table 13. The number of sheep inspected and affected by nephritis during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,817,944	8,135,880	9,455,521
Total animals affected	115,292 = 1.7%	437,341 = 2.4%	260,168 = 2.8%
Total <2yr animals affected	<0.01%	<0.01%	<0.01%

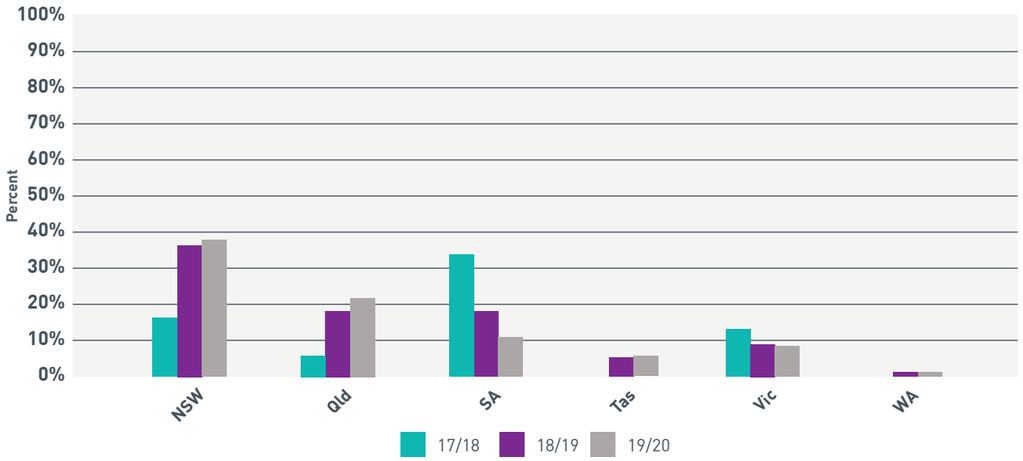

Figure 27. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

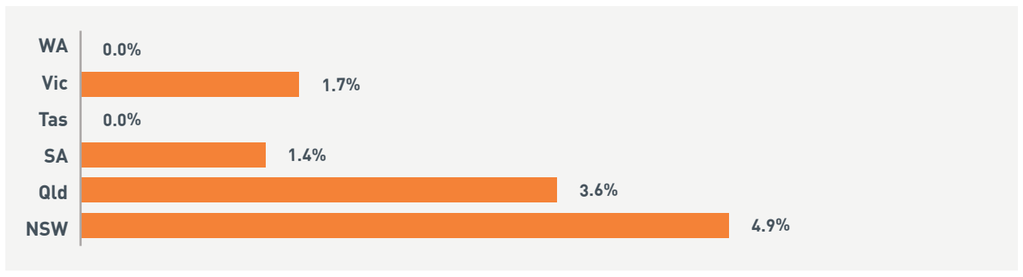

Figure 28. The percentage of animals inspected in each state that were affected in 2019-20.

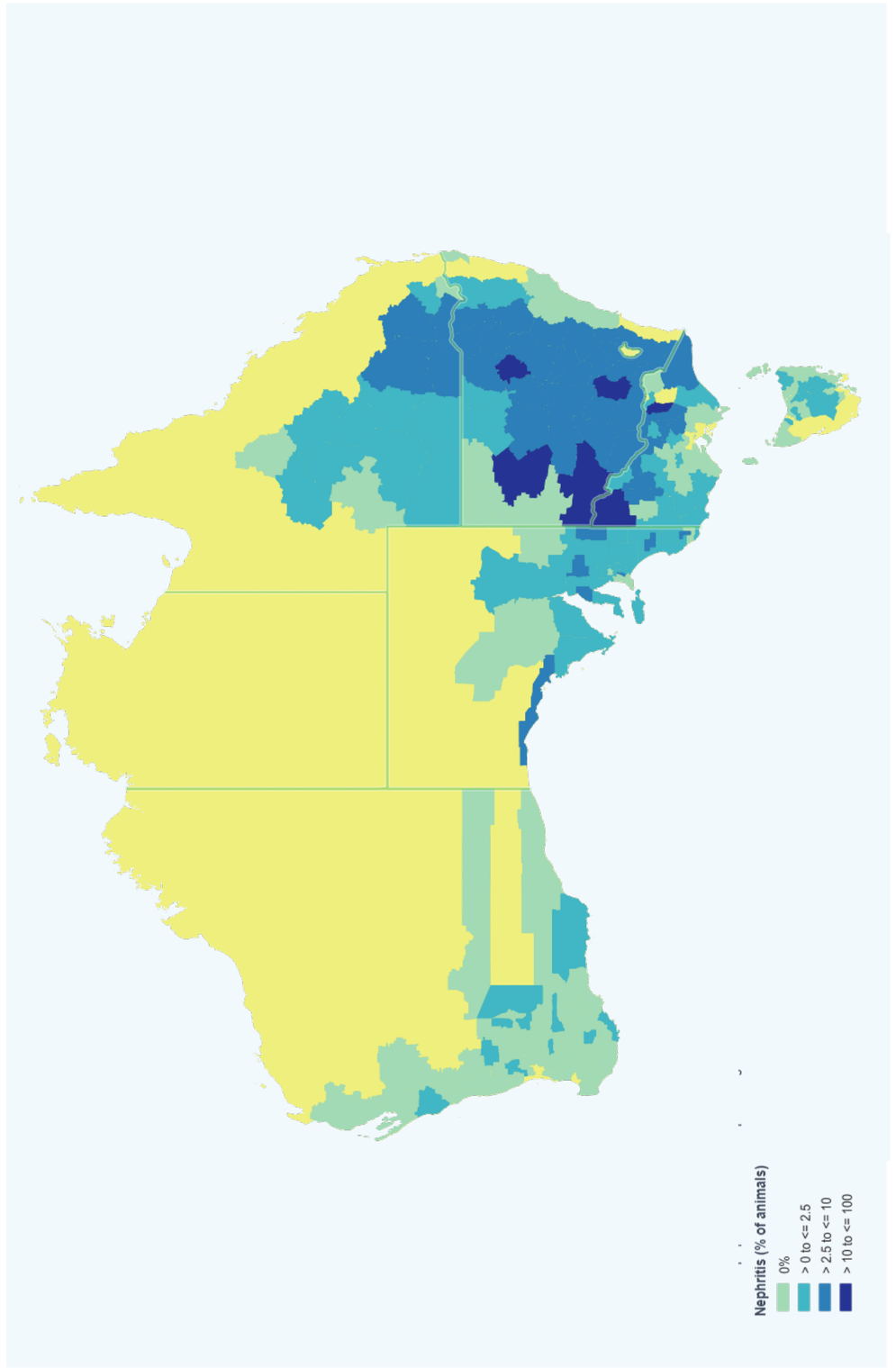

Figure 29 Percentage of sheep affected by nephritis in each LGA in 2019-20.

PNEUMONIA

Pneumonia in sheep is the infection and inflammation of the lungs. Pneumonia is initially caused by an infection with a bacterium (such as a mycoplasma) or virus, or sometimes lungworm, with secondary bacterial invasion of the damaged lungs. The disease can be limited to isolated cases or can result in outbreaks of disease typically in weaners over summer and is often called "summer pneumonia". Production losses can be seen on farm with affected lambs being on average 3 kg lighter.

Lungs will be condemned and any surrounding affected tissue would be trimmed.

Pneumonia levels across Australia have been slowly declining over the past three years and it has been identified at low levels in all states. NSW and SA have recorded the highest levels of pneumonia, with WA and Qld recording very low number of affected sheep.

Table 14. The number of sheep inspected and affected by pneumonia during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,680,359	9,455,521
Total animals affected	59,517 = 0.9%	45,361 = 0.5%	26,855 = 0.3%
Total <2yr animals affected	51,179 = 0.7%	25,278 = 0.4%	23,732 = 0.3%

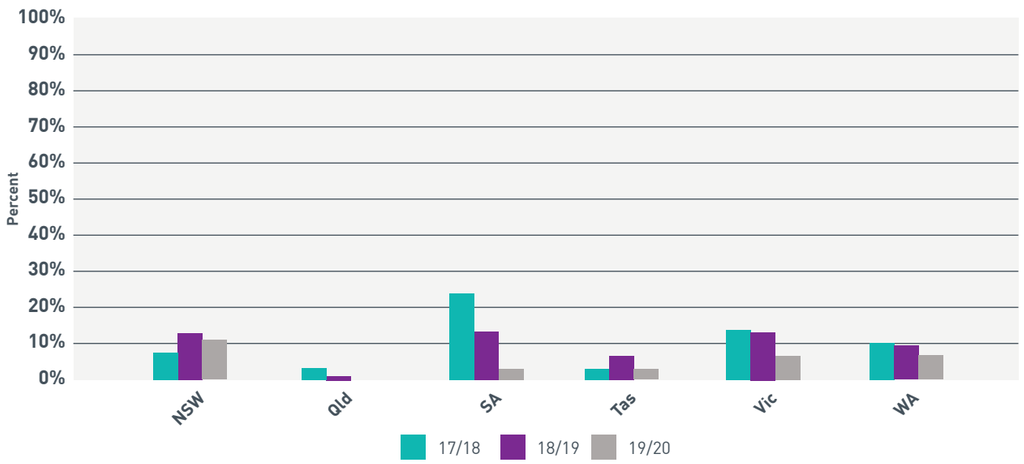

Figure 30. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

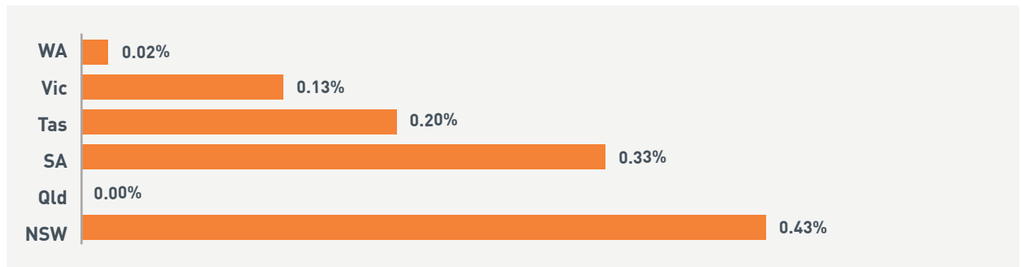

Figure 31. The percentage of animals inspected in each state that were affected in 2019-20.

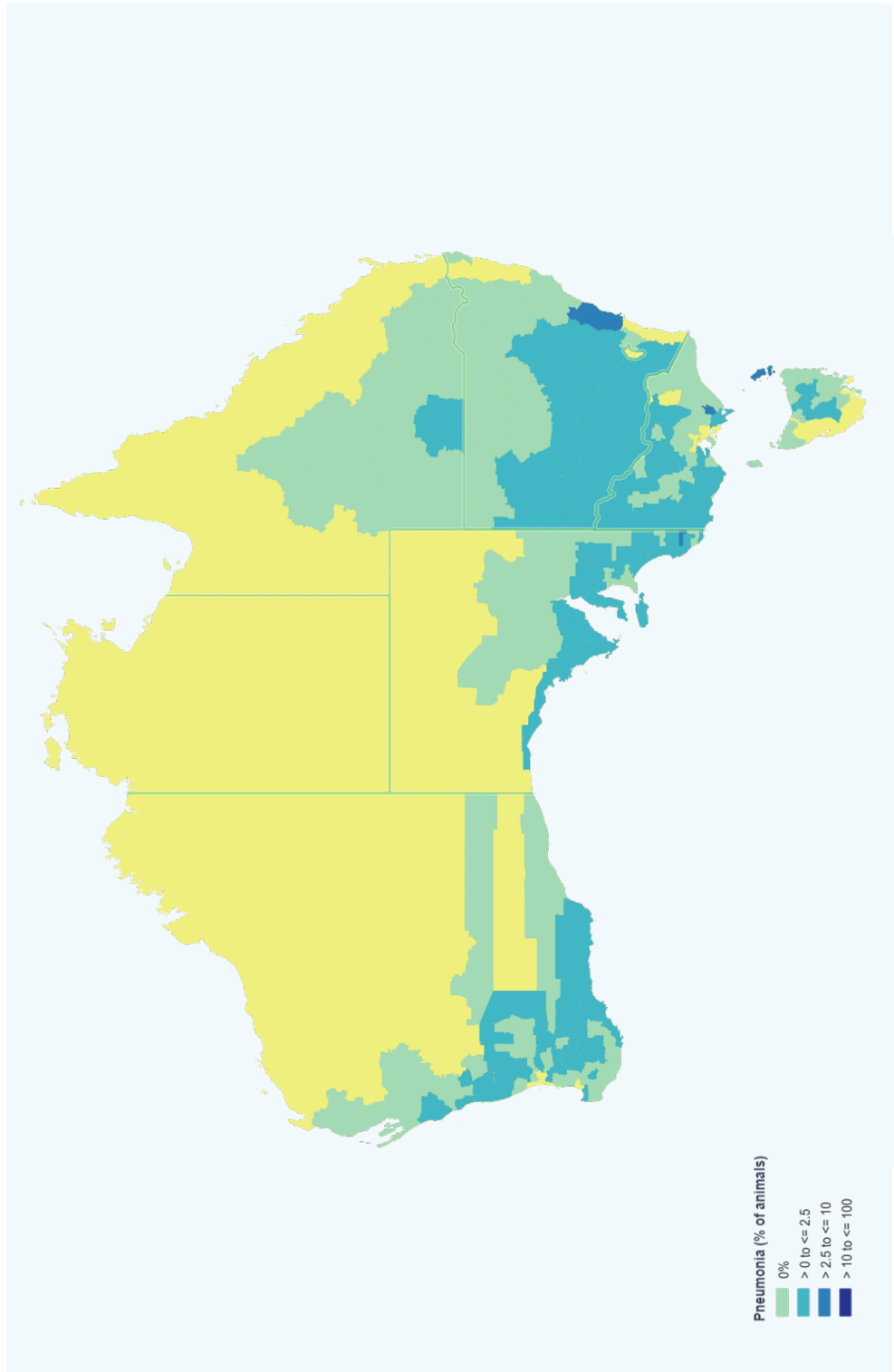

Figure 32 Percentage of sheep affected by pneumonia in each LGA in 2019-20.

PLEURISY

In severe cases of pneumonia, infection can extend to the outer layer of the lung, the pleura, causing a disease called pleurisy. This can cause adhesion of the lungs to the chest wall as the infection spreads in the sheep.

Affected carcasses will require additional trimming compared to pneumonia which can include damage to the valuable rib rack, significantly de-valuing the carcass.

Pleurisy has declined in the percentage of affected sheep compared to previous years. However, it is fairly widespread among PICs in all states, and impacts a similar proportion of sheep from each state, where numbers of affected sheep are slightly higher in Vic and SA compared to other states.

Table 15. The number of sheep inspected and affected by pleurisy during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,680,359	9,455,521
Total animals affected	206,290 = 3.0%	242,288 = 2.8%	168,982 = 1.8%
Total <2yr animals affected	66,527 = 1.0%	80,693 = 0.9%	38,593 = 0.4%

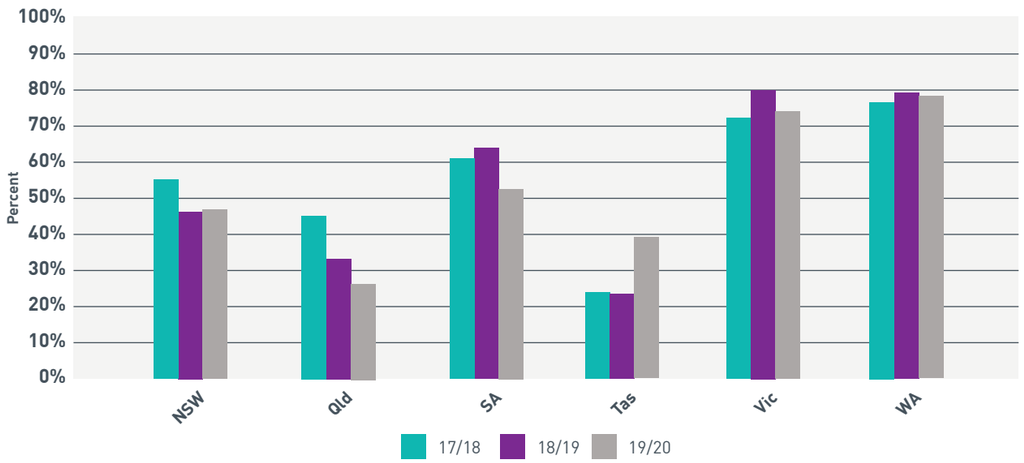

Figure 33. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

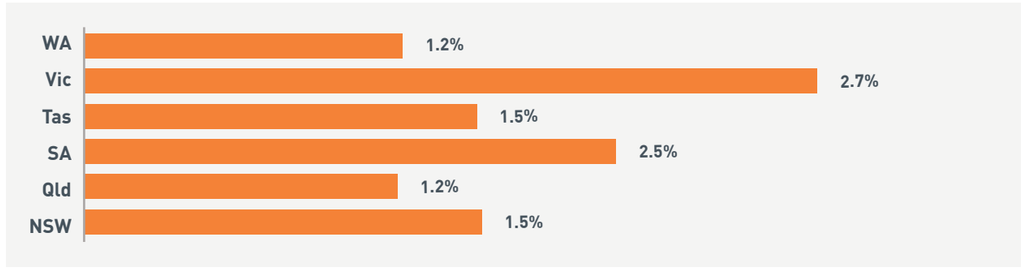

Figure 34. The percentage of animals inspected in each state that were affected in 2019-20.

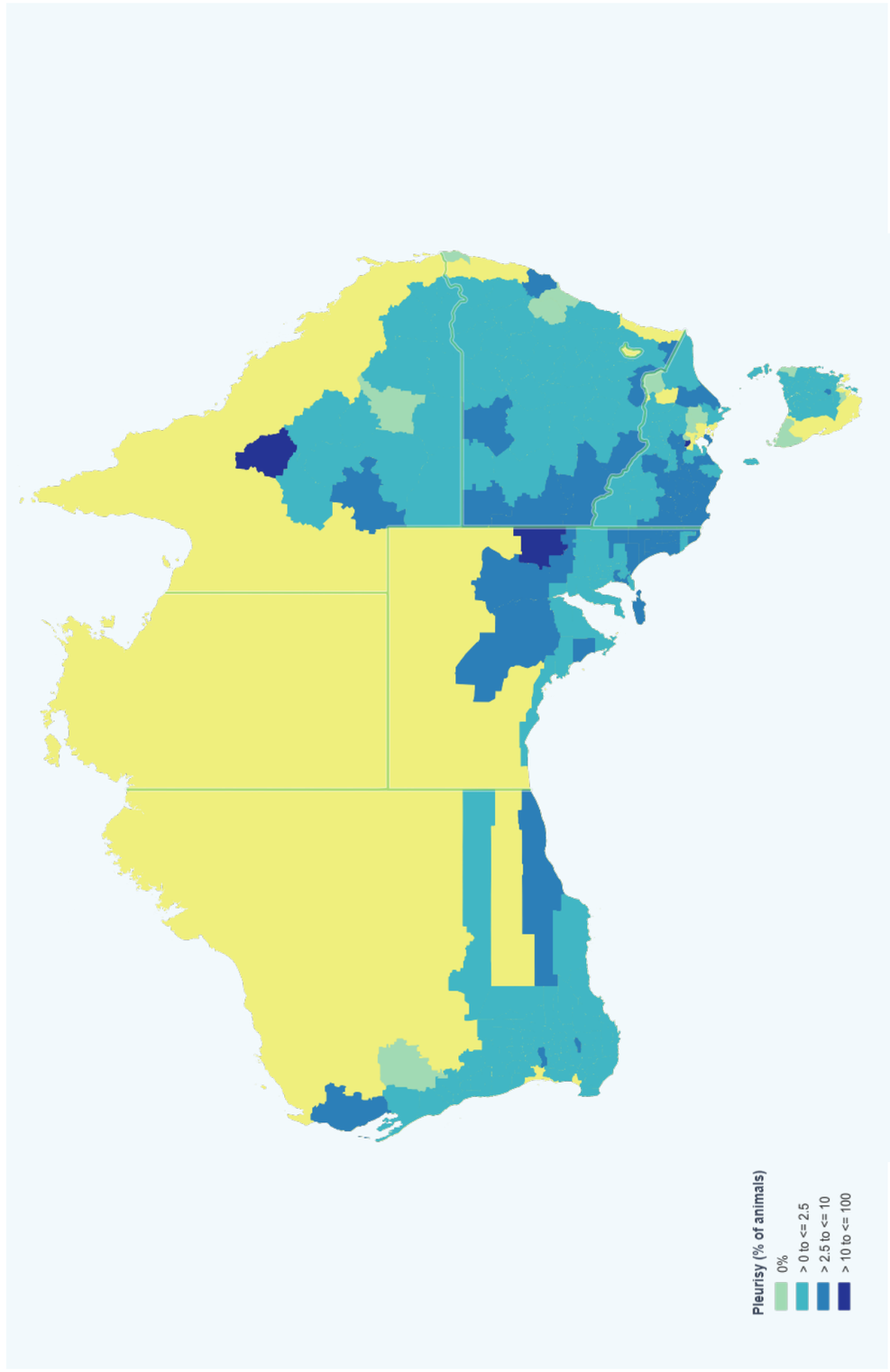

Figure 35 Percentage of sheep affected by pleurisy in each LGA in 2019-20.

SARCOCYSTOSIS

Sarcocystis is a single cell parasite with a sheep-cat life cycle. Cats become infected when they eat infected sheep meat, often through scavenging carcasses. The parasite develops in the intestines of the cat and they produce large quantities of microscopic spores in their faeces. The life cycle continues when sheep ingest these spores on pasture or feed, eventually localising and developing into cysts in the muscle. Sarcocystosis has no impact on sheep health or productivity.

At the abattoirs, infected carcases will undergo trimming while heavily infected carcases will be condemned.

The occurrence of sarcocystosis in sheep appears to have slightly declined further from already low numbers. It appears to impact more properties in Tas and WA, however, is more isolated to a smaller number of inspected properties in other states. At the sheep level, Tas has recorded the greatest percentage of sheep affected.

Table 16. The number of sheep inspected and affected by sarcocystis during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,680,359	9,455,521
Total animals affected	32,545 = 0.47%	40,749 = 0.47%	30,508 = 0.32%
Total <2yr animals affected	1,199 = 0.02%	1,126 = 0.01%	1,114 = 0.01%

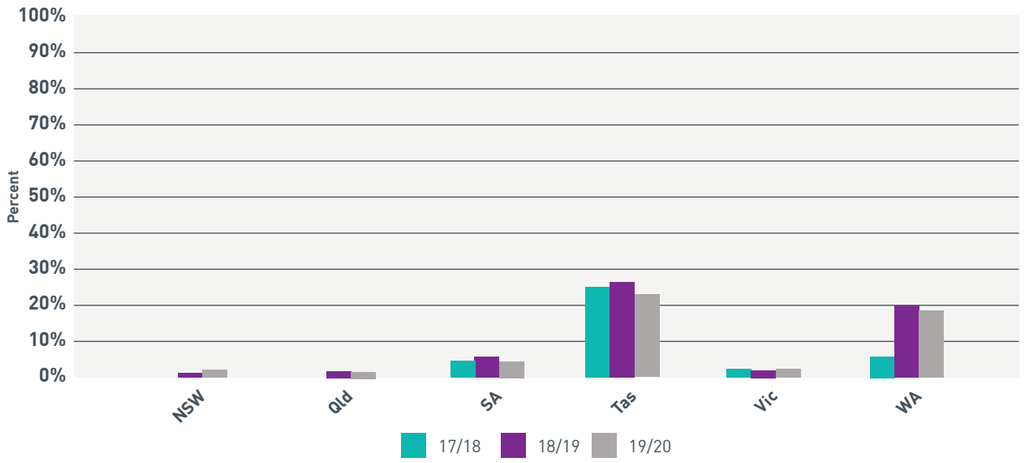

Figure 36. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

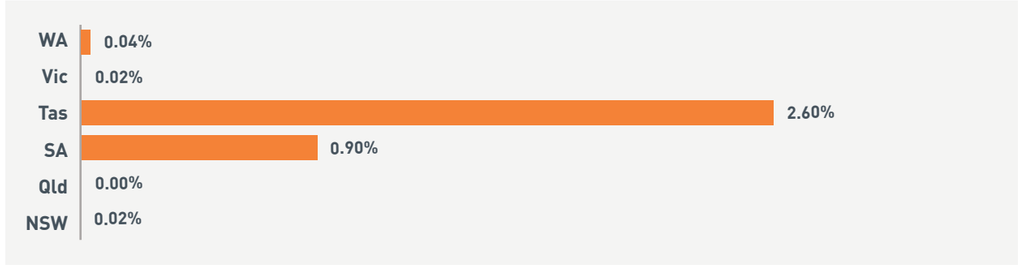

Figure 37. The percentage of animals inspected in each state that were affected in 2019-20.

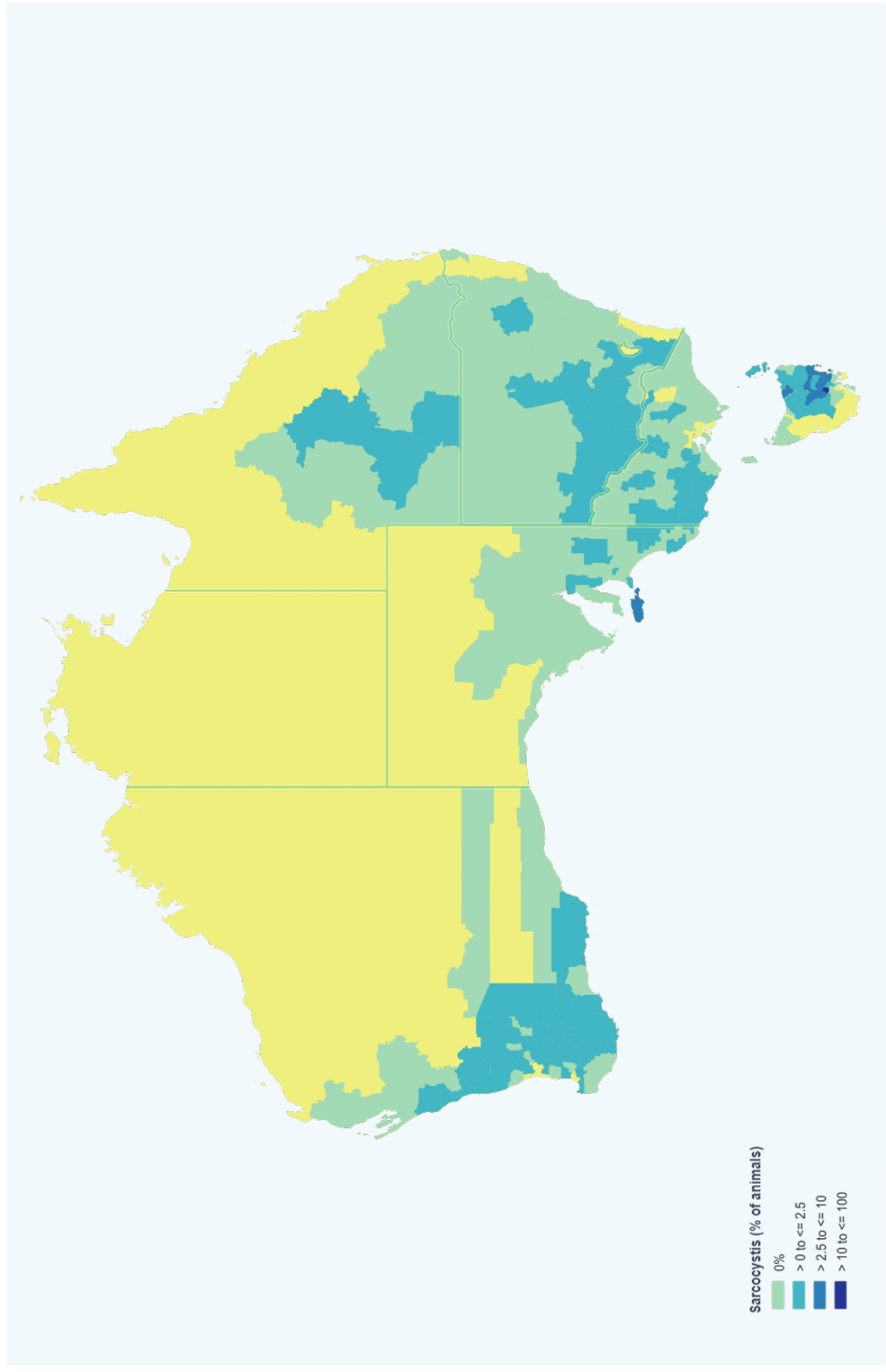

Figure 38 Percentage of sheep affected by sarcocystosis in each LGA in 2019-20.

SHEEP MEASLES

Sheep measles (*Cysticercus ovis*) are infective cysts from the dog tapeworm Taenia ovis, found in the muscles of sheep and goats.

Sheep measles causes trimming, downgrading and condemnation at abattoirs.

The occurrence of sheep measles appears to be reasonably consistent over the last few years, with a slight increase in 2018-19. It is relatively widespread among PICs from all states, with over 80% of PICs recording at least one affected sheep in Tas, which also recorded the highest proportion of inspected sheep affected.

Table 17. The number of sheep inspected and affected by sheep measles during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,680,359	9,455,521
Total animals affected	85,591 = 1.23%	132,378 = 1.53%	118,778 = 1.26%
Total <2yr animals affected	25,795 = 0.37%	44,103 = 0.51%	40,229 = 0.43%

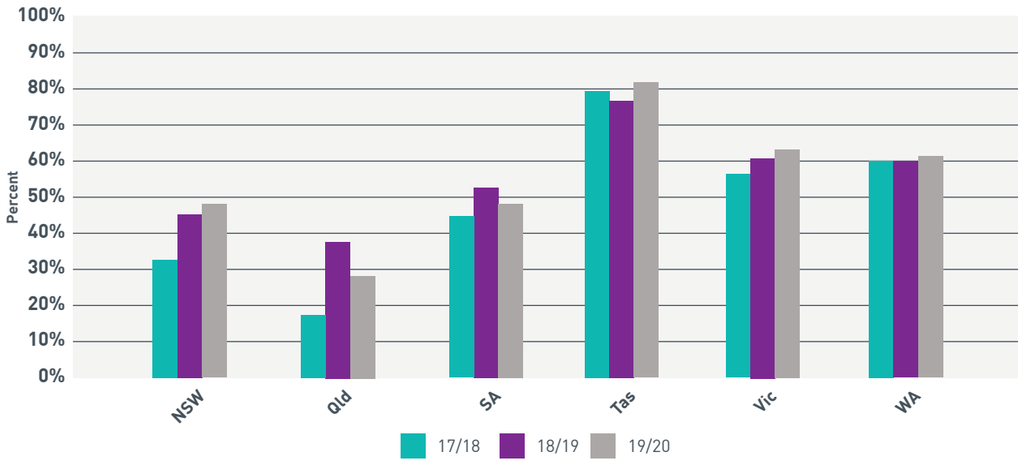

Figure 39. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

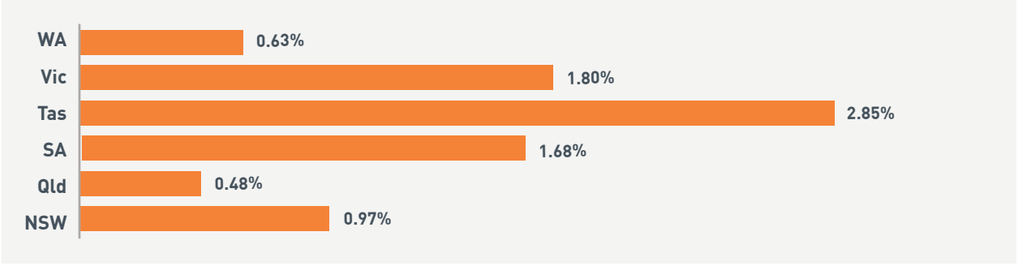

Figure 40. The percentage of animals inspected in each state that were affected in 2019-20

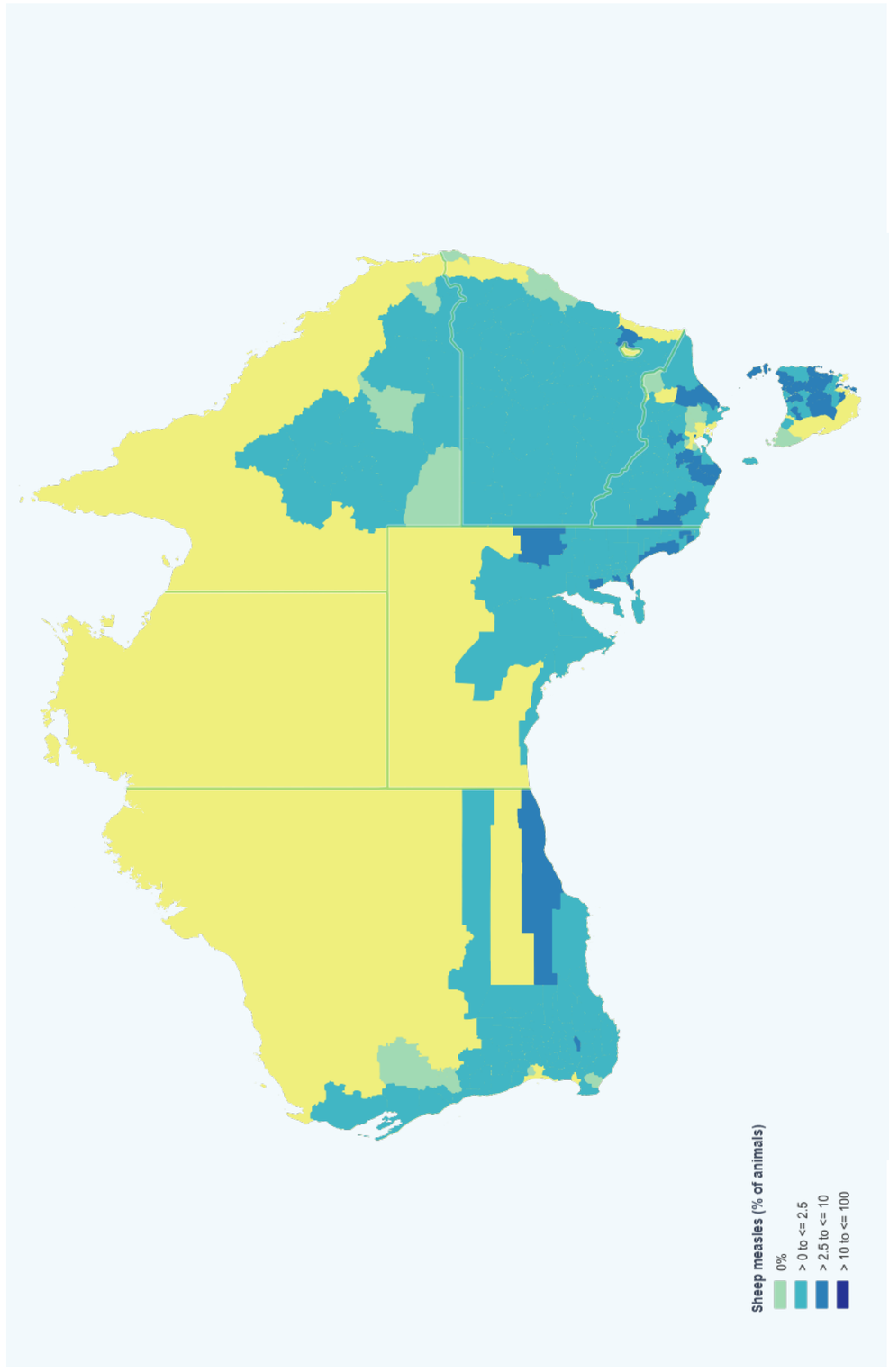

Figure 41 Percentage of sheep affected by sheep measles in each LGA in 2019-20.

VACCINATION LESIONS

Vaccination lesions can be caused by improper technique, poor hygiene or using a contaminated vaccine. The accidental introduction of bacteria or dirt with the vaccine results in infection which can lead to abscess formation.

The percentage of sheep with vaccination lesions has recorded a slight increasing trend over the past three years. This trend can be seen in all states (except Qld), where the percentage of PICs with at least one affected sheep was greatest (or close to) in the 2019-20 FY. Tas, followed by SA and Vic has recorded the highest percentage of individual sheep presenting with vaccination lesions.

At the abattoir, vaccination lesions are trimmed from the carcase.

Table 18. The number of sheep inspected and affected by vaccination lesions during 2017-20.

	2017-2018	2018-2019	2019-2020
Total animals inspected	6,975,855	8,680,359	9,455,521
Total animals affected	69,529 = 1.00%	95,661 = 1.10%	107,437 = 1.14%
Total <2yr animals affected	37,658 = 0.54%	52,540 = 0.61%	57,925 = 0.61%

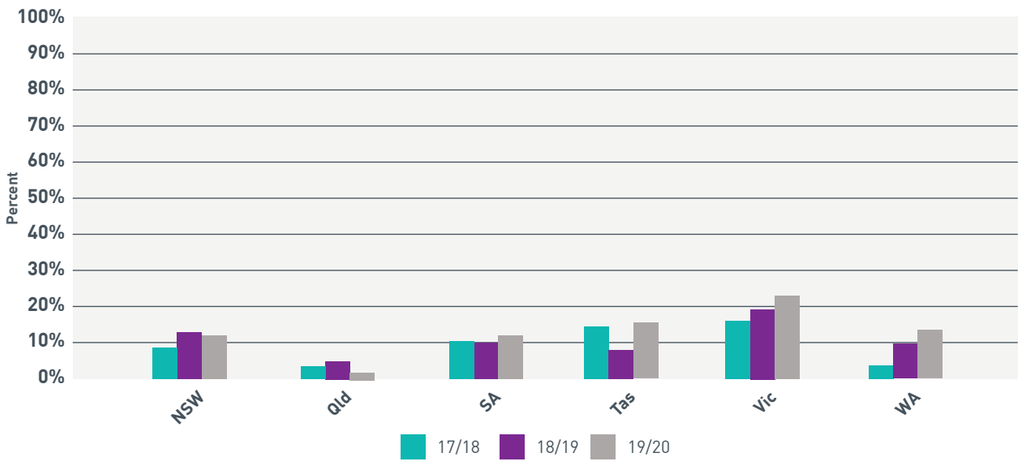

Figure 42. The percentage of PIC's inspected in each state that had at least one affected animal in 2017-20.

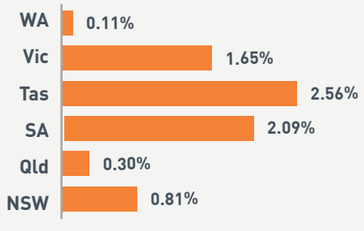

Figure 43. The percentage of animals inspected in each state that were affected in 2019-20

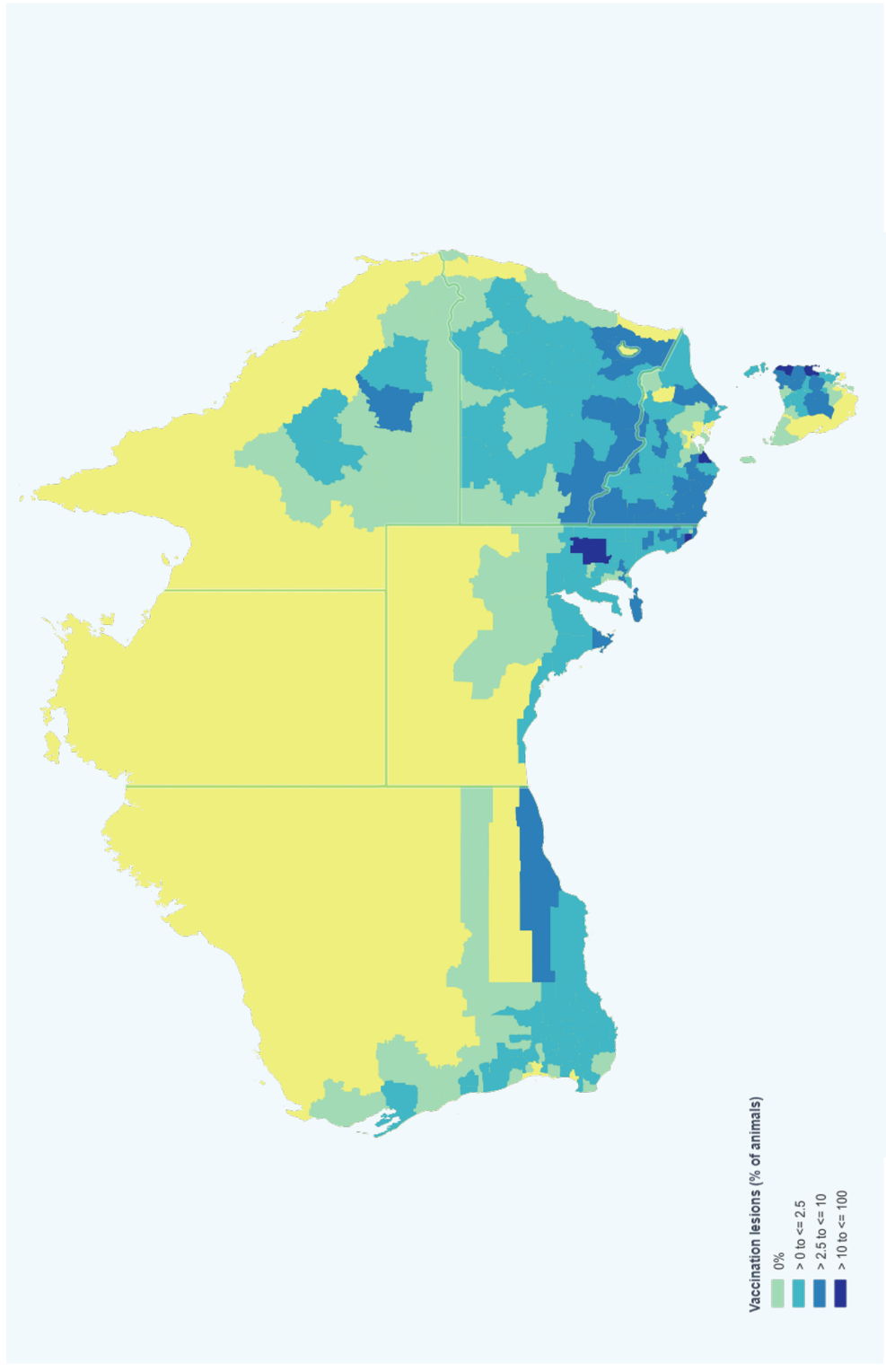

Figure 44 Percentage of sheep affected by vaccination lesions in each LGA in 2019-20.

STATE CONTACTS

STATE	NAME	ORGANISATION	NUMBER
New South Wales	Dr Paul Freeman	NSW Department of Primary Industries	02 6626 1214
South Australia	Dr Nigel Baum	Department of Primary Industries and Regions, SA	08 8842 6222
Tasmania	Dr Marianne Hevern	Department of Primary Industries, Parks, Water and Environment	0436 813 016
Victoria	Dr Alison Lee	Department of Economic Development, Jobs, Transport and Resources	03 5561 9927
Western Australia	Dr Anna Erickson	Department of Primary Industries and Regional Development	08 9881 0211
Queensland	Dr Louise Mullemeister	Department of Agriculture and Fisheries	07 4688 1470

INDUSTRY CONTACTS

INDUSTRY	EMAIL
Sheep Producers Australia	admin@sheepproducers.com.au
WoolProducers Australia	admin@woolproducers.com.au

AHA acknowledges the participating plants and MINTRAC for helping coordinate the data collection and upload of data to EDIS.

Animal Health Australia - aha@animalhealthaustralia.com.au