



final report

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A national producer survey of sheep husbandry practices

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Abstract

A lack of accurate information regarding current animal husbandry practices within the Australian sheep industry prompted a comprehensive survey of sheep producers across Australia in 2009/10. This work has been followed up 5 years later to see what has changed in the intervening period. A sample of 602 Australian sheep producers were surveyed between October 2015 and April 2016 to collect information regarding animal husbandry practices. The likelihood of producers adopting alternative husbandry practices and using pain relief, in addition to knowledge of codes of practice relating to husbandry practices, were also investigated. The following report provides a summary of the data collected and commentary on important issues. Included is a discussion of the implications of the results for Australian sheep producers and a comparison of this data to relevant data collected in 2009/10. The report concludes with suggestions as to how to best provide information on animal husbandry practices to producers in the future.

Executive Summary

The Meat Industry Strategic Plan 2020(MISP) and the MLA 2020 Strategic Plan identify the need to secure 'consumer and community support' for the red meat industry by demonstrating the continuous improvement of the 'welfare of animals within our care'. To do this, an accurate snapshot of husbandry practices across Australian sheep farms is required regularly. A survey was conducted during 2009/10 to measure the use by sheep producers of various animal husbandry practices and has now been repeated in 2015/16. Inspiring Excellence and Beattie Consulting Services conducted a national telephone survey of 602 sheep producers. These results were compared with the results obtained in 2009/10 to determine what has changed in the intervening five years and to provide a new baseline for animal husbandry practices used by Australian sheep producers.

The survey, which involved interviewing sheep producers with a minimum of 200 breeding ewes, was used to obtain reliable estimates on the frequency and nature of a range of animal husbandry practices. Information was collected via 80 survey questions relating to numerous husbandry practices including joining, weaning, identification, castration, tail docking, the use of drenches and vaccines and time off feed and water prior to transport. In addition, basic demographic information on each survey respondent was captured, as well as producer perceptions towards alternative practices, the use of pain relief and how producers access information relating to animal husbandry practices and animal health issues.

The following report contains much detailed individual property information, and although the statistical confidence level for the total survey was 90%, care should be taken with the interpretation of results from a number of the sheep regions surveyed. This is because the sample size was relatively small in some regions due to the extensive nature of sheep production in these regions and consequently a relatively small number of producers were available for survey.

The average flock size for sheep producers surveyed nationwide was 4,206 head. This ranged from 41% of Tasmanian producers with over 5,000 head to 25% of Tasmanian producers with between 1 and 999 head. The average breeder number nationwide was 2,348 ewes, with 56% of Tasmanian producers running over 2,000 ewes and 24% of Victorian producers running between 1 and 499 ewes. Just over half (55%) of sheep producers surveyed ran mixed operations for both wool and meat sheep, and this was highest in Western Australia (67%). Fifty-five per cent of sheep producer's income on average came from a sheep enterprise, 30% from cropping, 13% from beef and the remainder from other on-farm enterprises. The majority of sheep producers interviewed were male (88%) and 55% were over 55 years of age.

Ewes were joined on average for 9.1 weeks nationally, with half of sheep breeders using pregnancy scanning and a further 31% using scanning to identify single and twin bearing ewes for management purposes. At least half of producers check sheep daily during lambing and almost three quarters use sheltered paddocks or shelter crops at lambing time. Average age of weaning nationally is 14.6 weeks, with Queensland producers weaning lambs later and Western Australian producers weaning them earlier. Half of the producers do not know the average weaning weights of lambs. The national average weaning weight for those who do weigh was 32.6 kg.

Nationally, lambs were permanently identified on farm at an average of 2.8 months of age, which is significantly younger than in 2010. In South Australia, 43% of producers permanently identified lambs at less than two months of age. In comparison, 19% of New South Wales and 11% of Queensland producers permanently identify lambs over six months of age. Nationally, 83% of producers use an NLIS ear tag (non-electronic) and 7% use an electronic NLIS tag for on farm permanent identification. In Western Australia, 90% and 42% of producers use ear marks and visual management tags (non-electronic) respectively to permanently identify sheep on farm.

Male lambs were castrated at 6.7 weeks of age on average across Australia mainly using rubber rings (97% of producers – up on figures from 2010) or a knife / scalpel (3% of producers – down on figures from 2010). In Tasmania, 75% of producers castrated lambs between 1 and 2 months of age. In South Australia, all producers used rubber rings to castrate, while 2-6% of producers from other states used a sharp knife / scalpel to castrate lambs.

All lambs had their tails docked under 6 months of age, with the national average age at docking being 6.5 weeks. The main methods of docking were a gas knife (58% of producers) or rubber rings (36% of producers). In Tasmania, 75% of producers tail docked between one and two months of age, while in Queensland 11% of producers docked at three to six months of age. In South Australia, 75% of producers used a gas knife to dock tails, while 52% of Victorian producers used rubber rings. Just over half of producers dock tails at the third joint so that it covers the ewe's vulvas, and tail stripping is performed by 18% of producers nationally. Over half of producers check lambs the next day after marking (castrated and tail docked) while only 12% of producers do not check lambs at all.

Lamb losses due to marking related complications were reported by a quarter of producers nationally, with an average of 21 lamb losses per producer. Two out of five producers stated that they would be willing to use pain relief for marking if it was available and effective, and the average price they would be prepared to pay per lamb was 57 cents.

The majority of sheep producers vaccinated lambs for clostridial diseases (excluding cheesy gland) (88% of producers). Similarly, national vaccination / treatment rates were high for other diseases / pests such as cheesy gland (53% of producers), endoparasites in lambs (90% of producers) and lice (85% of producers).

In Tasmania, 97% of producers vaccinated lambs and 78% vaccinated adult sheep against clostridial diseases. In Tasmania, 75% of producers vaccinate for cheesy gland compared with 27% in Western Australia. Vaccination against Ovine Johne's Disease (72% of producers in Tasmania), Scabby Mouth (69% of producers in Western Australia) and Arthritis (42% of producers in Western Australia) were regionally specific. Half of all sheep producers surveyed (52%) have a quarantine process to prevent the introduction of disease and weeds (via manure and wool).

Of the sheep producers who shear rams, 71% sedate them prior to shearing, although in Queensland only 12% of producers sedate rams. The vast majority (91%) of sheep producers crutch their sheep, predominantly to reduce fly strike and to keep them clean. Nationally, 74% of producers crutch once a year and 24% crutch twice a year.

Nationally, 96% of producers applied a feed curfew prior to transporting sheep for slaughter. This ranged from 89% of Queensland producers to 100% of Tasmanian producers. The national average feed curfew period on farm was 14.6 hours, with 23% of producers applying a feed curfew of more than 24 hours. In South Australia, 63% of producers who curfew apply a feed curfew of more than 24 hours compared to Tasmania, where 6% of producers who curfew apply a feed curfew of more than 24 hours.

Nationally, 90% of producers applied a water curfew prior to transporting sheep for slaughter. This ranged from 74% of Queensland producers and 98% of South Australian producers. For sheep transported for slaughter, the national average water curfew period on farm was 14.9 hours, with 25% of producers applying a water curfew of more than 24 hours. In South Australia, 66% of producers who curfew apply a water curfew of more than 24 hours compared to Tasmania, where 7% of producers who curfew apply a water curfew of more than 24 hours.

The average time in transit for slaughter stock was 3.7 hours nationally and there were obvious differences between states based on distance travelled to markets. Producers in Queensland, South Australia and Western Australia all have longer transit times for stock compared to the smaller states.

Nationally, 84% of producers applied a feed curfew prior to transporting non-slaughter stock. The national average feed curfew period for non-slaughter stock on farm was 13.3 hours, with 16% of producers who curfew applying a feed curfew of more than 24 hours. In South Australia, 47% of producers who curfew apply a feed curfew of more than 24 hours compared to Tasmania, where no producers apply a feed curfew over 24 hours.

Nationally, 83% of producers applied a water curfew prior to transporting non-slaughter sheep. The national average water curfew period for non-slaughter sheep was 13.4 hours, with 19% of producers who curfew applying a water curfew of more than 24 hours. In South Australia, 48% of producers who curfew apply a water curfew of more than 24 hours compared to Tasmania, where no producers apply a water curfew over 24 hours.

The average time in transit for non-slaughter stock was 3.3 hours nationally, and again there were obvious differences between states based on distance travelled to markets. The producers in the states of Queensland and Western Australia all have longer transit times for their stock compared to the other states.

On average, 69% of all producers surveyed were aware of the *Land Transport Standards and Guidelines* and 56% were aware of the *Sheep Animal Welfare Standards and Guidelines* and / or the Codes of Practice.

MLA's two publications relevant to sheep producers had 54% awareness of '*A producers guide to sheep husbandry practices*' and 60% awareness of '*Is it fit to load*'.

The results of this survey provide a 2016 snapshot that was compared to the baseline of animal husbandry practices across the sheep industry of Australia established in 2010. A tabulated summary

of the main results is provided in Section 6 with comparisons to 2010. The findings from this survey will underpin and help shape industry policy as well as assist in targeting research and extension / education to continually improve animal husbandry practices. Additional information is provided as to the characteristics of the producers surveyed to help target extension in the future. Several recommendations to this end are found in full within the *Conclusions and Recommendations* section of this report and industry bodies will derive more as the report is studied and applied.

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Background

For industry to measure its performance in improving animal welfare, an accurate snapshot of animal husbandry practices across Australian sheep farms is required regularly. A survey was conducted during 2009/10 to measure the use by sheep producers of various animal husbandry practices.

The results of the survey highlighted several issues requiring MLA investment to create awareness and change practices. The sheep husbandry guide and a revised '*Fit to load*' guide were developed and released to address these issues.

A survey conducted in 2015/16 aimed to assess where practices have changed or improved compared to the 2009/2010 survey. This information will provide industry policy makers with the necessary information to make informed decisions about any future changes to animal husbandry practices on farm where animal welfare principles are relevant.

The results and outcomes from this project will be used to guide MLA's development of guidelines and other interventions to enable the industry to improve animal husbandry practices. As the intention was to repeat the survey from 2009/2010 to compare and analyse changes, consistency and repeatability were important elements in the design of the 2015/16 survey.

Project Objectives and Issues

Project Objective

The **objectives** of this project were:

1. To complete a telephone survey of sheep / lamb (including wool) producers from across Australia that provides, on a regional basis:
 - Information on current animal husbandry practices;
 - Changes in animal husbandry practices since the last survey in 2009/2010.
2. To compare the results from the two surveys to identify changes on-farm and their potential drivers.

Additional Details

The survey covered the following ABARES broadacre regions:

1. Far West (NSW);

2. North West Slopes and Plains (NSW);
3. Central West (NSW);
4. Riverina (NSW);
5. Tablelands – Northern, Central and Southern (NSW);
6. Coastal (NSW);
7. Mallee (VIC);
8. Wimmera (VIC);
9. Central North (VIC);
10. Southern and Eastern Victoria (VIC);
11. Cape York and the Queensland Gulf (QLD);
12. West and South West (QLD);
13. Central North (QLD);
14. Charleville – Longreach (QLD);
15. Eastern Darling Downs (QLD);
16. Darling Downs and Central Highlands of Queensland (QLD);
17. South Queensland Coastal – Curtis to Moreton (QLD);
18. North Queensland Coastal – Mackay to Cairns (QLD);
19. North Pastoral (SA);
20. Eyre Peninsula (SA);
21. Murray Lands and Yorke Peninsula (SA);
22. South East (SA);
23. Kimberley (WA);
24. Pilbara and the Central Pastoral (WA);
25. Central and South Wheat Belt (WA);
26. North and East Wheat Belt (WA);
27. South West Coastal (WA);
28. Tasmania (TAS);
29. Alice Springs Districts (NT);
30. Barkly Tablelands (NT);
31. Victoria River District – Katherine (NT); and
32. Top End Darwin and the Gulf of Northern Territory (NT).

The survey of individual properties across Australia within each of the above regions must result in data that is representative of each region.

Issues to be covered in the survey include:

- Background information on each producer, including principal enterprise, location, livestock breeds, etc;
- Current usage of different animal husbandry procedures;
- Number and age of animals undergoing the various animal husbandry procedures;
- Who carries out the various husbandry procedures;
- Advantages and disadvantages of each procedure;
- Attitude or willingness towards use of pain relief during procedures;
- Methods of humane destruction and disposal on farm; and
- Any changes in husbandry practices over the last 5 year in their business
- What, if any, information is used to assist with husbandry practices and from whom is it sourced
- Perceived need for training and education to improve husbandry

Methodology

Sample Design

A sample of 602 sheep / lamb producers were interviewed by telephone by a team of independent agricultural consultants led by Dr Kristy Howard, Inspiring Excellence from October 2015-April 2016.

The aim was to design a sample to achieve a 90% confidence level with a margin of error of 2.5 - 3% for national level data, 5% - 10% for state level data and as close to 10% as possible for regional level data.

The sample was structured and stratified by ABARES broadacre regions and industry to ensure that:

- a. A wide range of production systems were included;
- b. Data could be analysed by each region, each state or territory, northern and southern Australia and nationally;
- c. Results from the project were comparable to the previous survey undertaken in 2010; and
- d. The methodology could be repeated in three to five years time.

The first two requirements were achieved using a four-step process:

1. Meat and Livestock Australia provided the project team with a series of postcodes corresponding to ABARES regions;
2. ABARES 2014 Australian Agricultural and Grazing Industries Survey (AAGIS) data was used to calculate the population estimates of sheep and lamb producers within each Statistical Local Area (SLA - the base spatial unit used by ABARES to collect and disseminate statistics other than those collected from the Population Census) and through summation, the population of sheep and lamb producers within each MLA region;
3. The sample of 638 was then stratified by region based on the outcomes of Step 2.
4. Sample results were then weighted to the regional population as given by ABARES to ensure results were representative.

The last two requirements were achieved by refining the survey questionnaire that was used in 2009/10 in close consultation with MLA and the Sheepmeat Council of Australia. There were a number of questions that after piloting were removed from the previous survey due to being considered redundant or of no added value, and new questions were designed to meet the changing needs of MLA.

The redesigned survey was piloted twice, the first time with 5 representatives from Sheepmeat Council of Australia and the second time with 46 producers from the MLA database. Two pilots were necessary to test the length of the survey and questions with the first pilot survey taking over 45 mins and the second took over 30 mins. The final version of the survey was shortened to achieve the 20 min average survey time required.

While it was possible to achieve a margin of error less than 5% at the national level for sheep and beef samples, it was difficult to achieve the state level target of less than 10% error for some states.

For sheep in QLD, the sample size was relatively small (as there are not many sheep producers left in the state) and there was wide variation in flock sizes in the sample surveyed. In general, flocks were much smaller or much larger than ABARES average population estimates. In Tasmania, flock sizes of farmers interviewed were significantly higher than the ABARES population estimates, thus creating some large outliers in the data. Analysis without these outliers would reduce the error but would then exclude these larger flocks from the analysis so they were left in.

The ABARES regions by state, the final sample and the AAGIS population estimates for each region are summarised in Table 1.

Table 1: ABARE Regions and Sheep Sample

<i>ABARE Region</i>	<i>Pop. est. of sheep producers (AAGIS)</i>	<i>Sample Quota</i>	<i>Interviews Completed</i>	<i>Relative Standard Error (%)</i>
Far West (NSW)	619	33	29	
North West Slopes and Plains (NSW)	1,012	25	22	
Central West (NSW)	2,755	48	41	
Riverina (NSW)	2,476	64	58	
Tablelands – Northern, Central & Southern (NSW)	2,711	31	32	
Coastal (NSW)	27	1	1	
New South Wales	2,600	202	183	6.3
Mallee (VIC)	373	17	17	
Wimmera (VIC)	1,152	28	24	
Central North (VIC)	1,563	29	53	
Southern & Eastern (VIC)	3,123	63	54	
Victoria	6,211	137	148	8.4
Cape York & the Queensland Gulf (QLD)	0	0	0	
West and South West (QLD)	145	5	4	
Central North (QLD)	0	0	0	
Charleville – Longreach (QLD)	123	5	4	
Eastern Darling Downs (QLD)	78	6	4	
Darling Downs & Central Highlands (QLD)	214	8	7	

South Queensland Coastal – Curtis to Moreton	0	0	0	
North Queensland Coastal – Mackay to Cairns (QLD)	0	0	0	
Queensland	560	24	19	19.1
North Pastoral (SA)	280	21	25	
Eyre Peninsula (SA)	756	14	13	
Murray Lands and Yorke Peninsula (SA)	1,472	23	23	
South East (SA)	1,678	45	40	
South Australia	4,186	103	101	7.5
Kimberley (WA)	0	0	0	
Pilbara and the Central Pastoral (WA)	29	4	2	
Central and South Wheat Belt (WA)	2,827	70	61	
North and East Wheat Belt (WA)	1,103	39	34	
South West Coastal (WA)	363	27	22	
Western Australia	4,322	140	119	8.5
Tasmania (TAS)	516	32	32	
Tasmania	516	32	32	23.7
Alice Springs Districts (NT)	0	0	0	
Barkly Tablelands (NT)	0	0	0	
Victoria River District – Katherine (NT)	0	0	0	
Top End Darwin and the Gulf of Northern Territory (NT)	0	0	0	
Northern Territory	0	0	0	0.0
TOTAL	25,395	638	602	3.7

Sample Selection

Producers were selected from the MLA member database that contained 6,140 contact details. The database was sorted based on ABARES region using postal codes and members with complete contact details i.e. contacts needed both a phone number and physical address. Records were selected from this sample frame using an “nth number” random process to shortlist producers for contact.

To ensure the required 638 of producers were surveyed, the following process was followed:

1. At least 1,500 MLA members were selected (short-listed) for interview to allow for refusals and non-respondents.
2. The short-listed producers were sent a letter (by standard post) on behalf of MLA inviting them to participate. These were staggered by region to ensure each was followed up in a timely manner.
3. A team of schedulers followed up each letter with a phone call to schedule a survey timeslot (as nominated by the producer), to engage the producers in the process to get them to agree to

be surveyed. To ensure that the correct target audience was interviewed in regards to animal husbandry practices, respondents were required to have at least 200 breeding ewes on their property or trade at least 200 sheep.

4. A team of agricultural consultants conducted the interviews at the nominated time and date with each producer. This was a unique feature of the way interviews were conducted and yielded many positive comments from producer participants as they appreciated being interviewed by someone who knew about agriculture and the sheep industry and 'spoke their language' i.e. knew the correct terminology, including industry slang.

This process yielded 602 of the required 638 interviews, with the shortfall due mainly to a number of issues around the quality of the MLA database provided. The MLA member database has been constructed and maintained over a number of years with no regular process of updating and verifying producer contact details. As a result, 2,116 producers were required for short-listing to complete the 602 interviews, a response rate of only 28%. Of the 72% of producers that did not take part in the survey, 9% had incorrect or out of date contact details (including deceased); 36% were un-contactable (i.e. did not answer the phone after at least 3 call backs at different times of the day / week); 7% were ineligible i.e. had less than 200 breeding ewes; 7% had retired or were no longer farming; and 15% were too busy or declined to be interviewed.

In addition, some ABARES regions were not represented well by MLA member contacts on the database, so once those contacts were exhausted, there were no more producers to contact. In an effort to overcome the large non-response rate from the MLA database, permission was sought to use the MLA Making More from Sheep (MMfS) database. This database contains contact details, flock and property size for producers that have attended a MMfS event in the last 6 years. Producers who did not want to be contacted for further evaluation purposes were removed (as per MLA's privacy policy). Producers shortlisted from this database were much more likely to participate as their details were more likely to be correct and the producer 'MLA friendly' i.e. disposed to participate in the process.

A number of producers were shortlisted (160) from this database to fill gaps from the MLA member database resulting in 45 interviews from the 602 completed. A comparison was made between responses from the MMfS database and the general MLA database to examine whether it was appropriate to combine the two sources into one population for analysis. The examination showed no real differences, and given very low numbers for some states from the MMfS database it was also considered appropriate that the data be combined to avoid possible convergence problems.

Statistical Analysis

The results presented in this study are derived from a sample survey as opposed to a census survey when all members of a population are captured. These results are used to make inferences about the total population. As with all surveys, results are subject to sampling errors which depends on the sample size (smaller the sample larger the error) and the resultant percentage obtained i.e. a 50% response has a higher error than a 90% response. Where there are small samples taken, such as regional data, estimates thereof should be treated with caution. For this report all data was summarised to state and any testing thereof has been conducted on the summarised data.

A series of key questions were identified for statistical evaluation based on a combination of having sufficient response numbers at the state level to enable evaluation and perceived importance of question results for MLA. Questions common to both surveys were assessed by fitting General Linear Models for the effect of survey year (with adjustment for states). For the 2016 survey, differences between states were also examined by fitting General Linear Models. For questions with only two response categories i.e. Yes or No, the approach used a logit-transformation and binomial distribution, while for 3 or more category questions the approach used a logit transformation and a multinomial distribution. The modelling used is only relevant when a response variable can take one out of a fixed set of possible values (i.e. answer for one response category only). Responses for each category are therefore independent. Thus questions where multiple response categories were allowed were not analysed. All statistical analyses were performed using GenStat (VSN International 2012¹).

All year or state differences presented are at the 5% significance level unless otherwise stated.

Layout of this report

The format of this report is largely based upon the previous survey report by Solutions Marketing and Research Pty Ltd to enable easy comparisons to be made between reports and data sets.

Sheep Results and Discussion

Background to the Analysis

The results and discussion presented in this section summarise the current animal husbandry practices in sheep, for both wool and meat, in Australia, and also qualify a range of attributes and prices that could be considered for use of pain relief and non-surgical husbandry techniques that may be developed. These results also assess awareness of the newly endorsed *Sheep Welfare Standards and Guidelines*, industry Codes of Practice, and MLA publications.

Respondent Demographics

Respondent demographic variables such as region, property size, income, farm type, age and gender are presented in Figures 1 - 8. The purpose of these charts is to provide confidence that the final sample satisfactorily captures the diverse range of demographic characteristics within the sheep industry in Australia.

¹ VSN International (2012) *GenStat for Windows* 15th Edition. VSN International, Hemel Hempstead, UK.

The sample composition for this research project was made up of producers from New South Wales (30%), Victoria (25%), Western Australia (20%), South Australia (17%), Queensland (3%) and Tasmania (5%). This research sample structure is representative of the sheep producer population of Australia ().

Forty-one per cent of those surveyed owned farms that were more than 2,000 hectares in size, with those in Queensland, Western Australia and New South Wales (74%, 61% and 45% respectively) being more likely to be larger properties. Around a third (31%) were between 800 – 1,999 hectares and 27% were less than 799 hectares in size (Figure 2).

Figure 1: Respondent Demographics by State

BASE: All sheep respondents (n = 602)

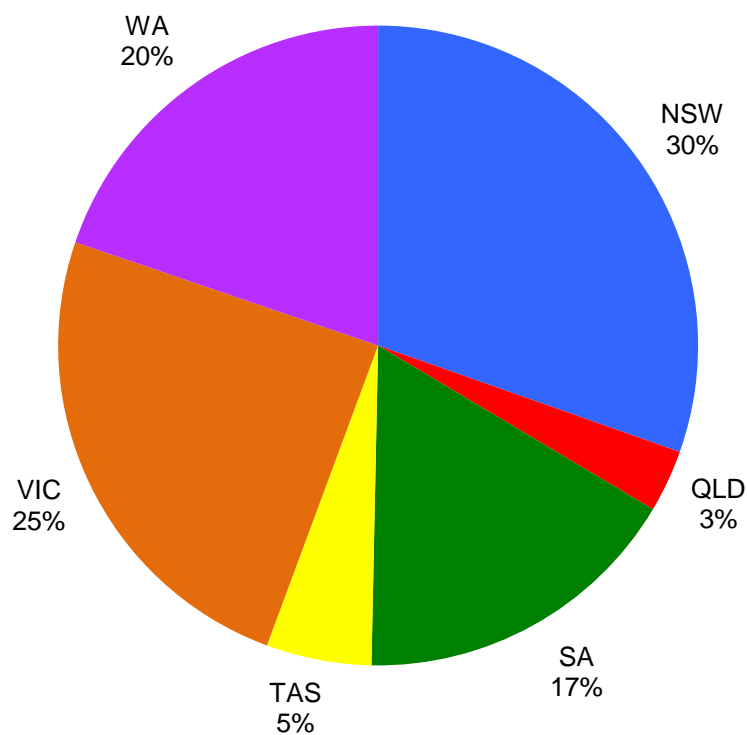


Figure 2: Respondent Demographics - By Property Size (hectares)

BASE: All sheep respondents (n = 602)

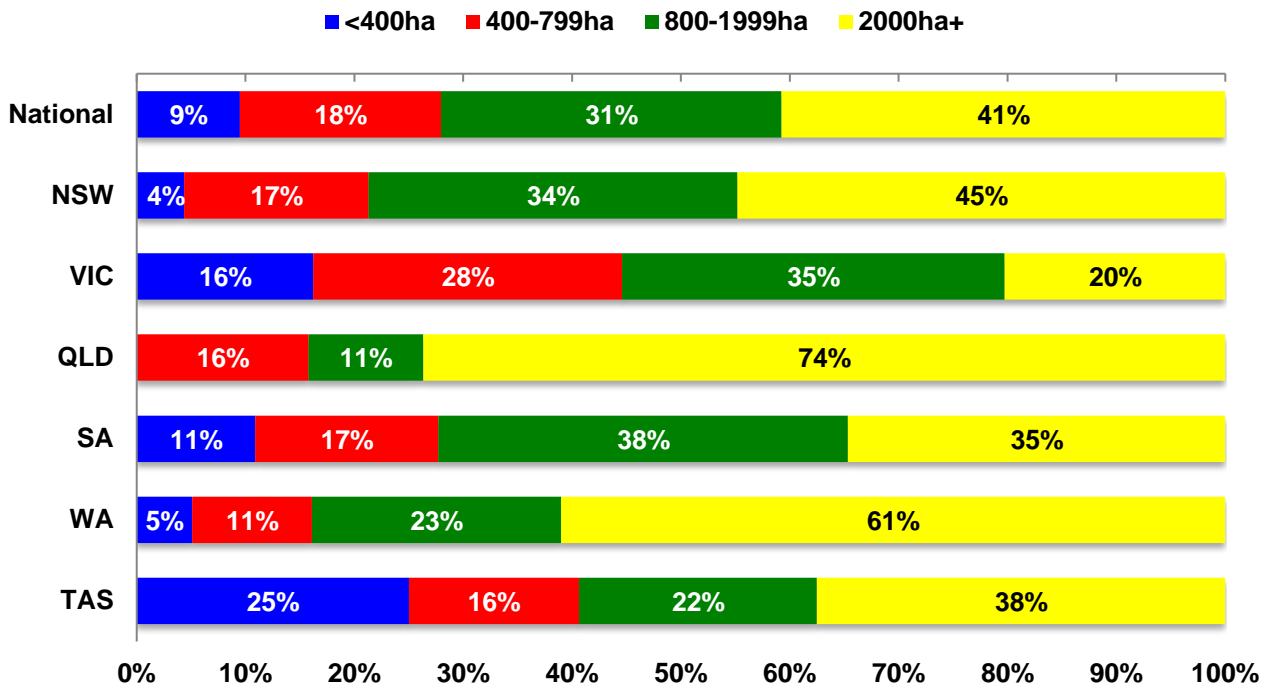


Figure 3: Respondent Demographics - by Income from Sheep

Q: 'Could you tell me in the last financial year, roughly what percentage of your gross property income, that is, only income from your property came from sheep?'

BASE: All sheep respondents (n = 602)

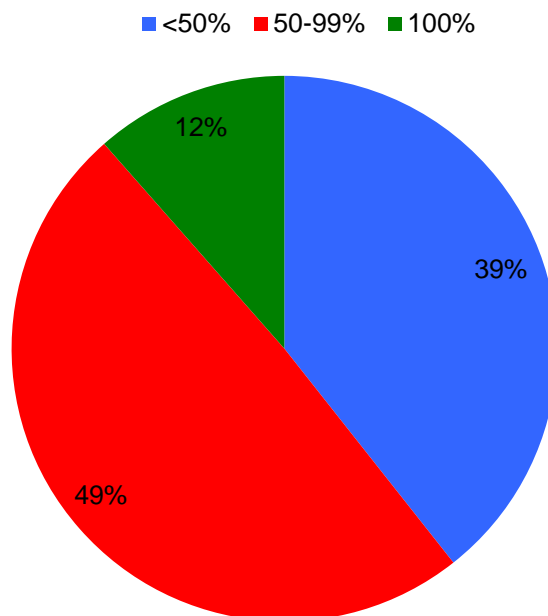


Figure 4: Respondent Demographics by Farm Type

Q: 'Could you tell me in the last financial year, roughly what percentage of your gross property income, that is, only income from your property came from the following activities?'

BASE: All sheep respondents (n = 602)

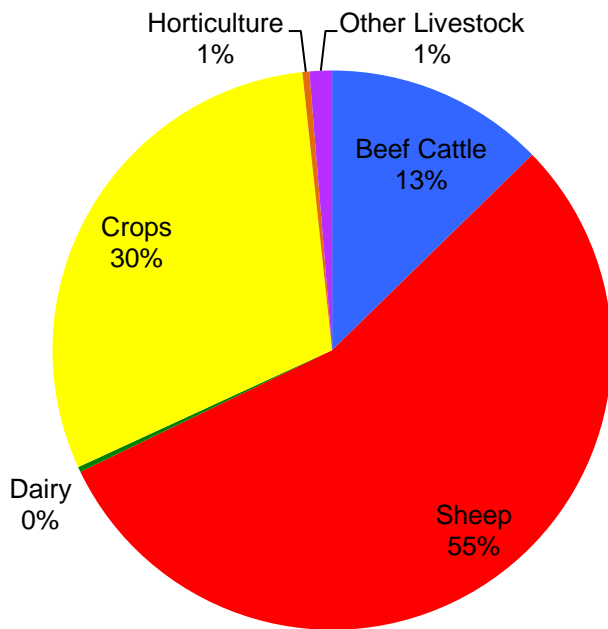


Figure 5: Respondent Demographics - by Education

Q: 'What is the highest level of education you've achieved?'

BASE: All sheep respondents (n = 602)

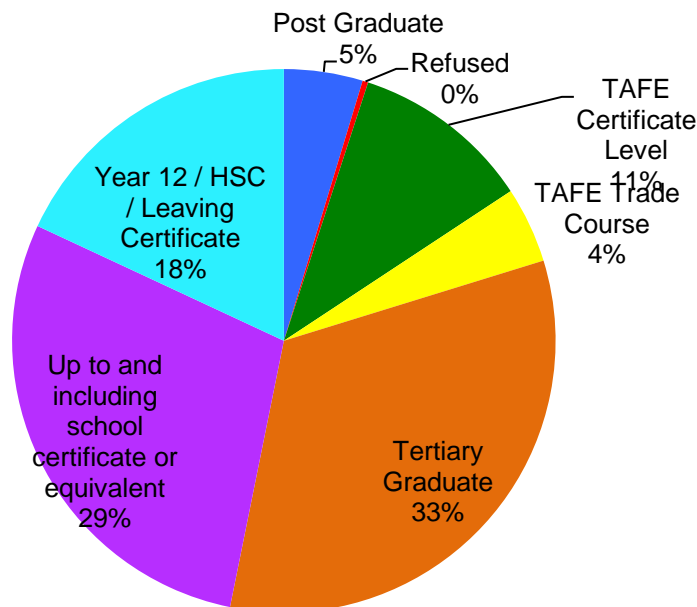


Figure 6: Respondent Demographics - by Age

Q: 'Could you tell me into which of the following age groups you fall?'

BASE: All sheep respondents (n = 602)

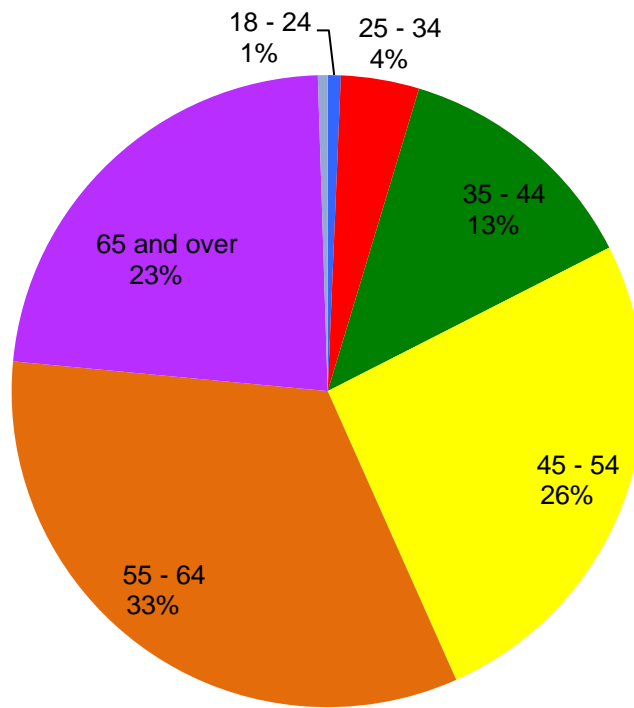


Figure 7: Respondent Demographics - by Gender

BASE: All sheep respondents (n = 602)

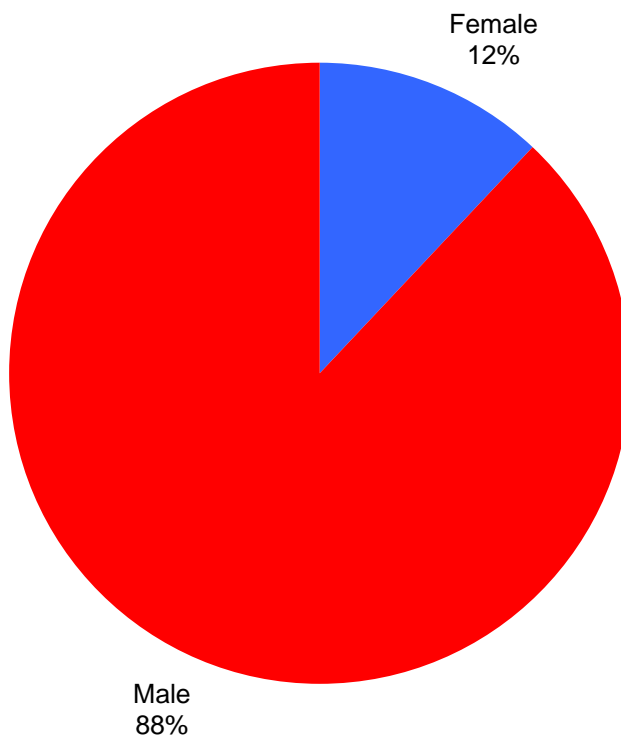
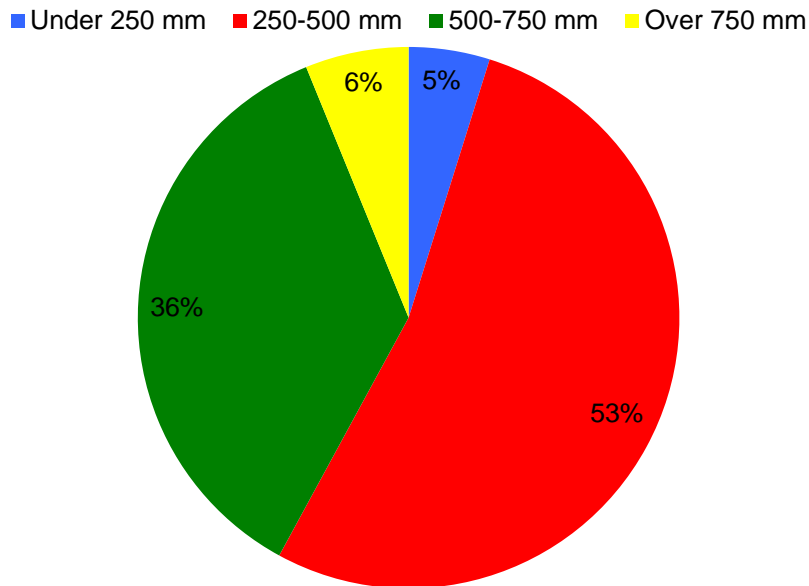


Figure 8: Respondent Demographics - by Rainfall

Q: 'What is your average rainfall?'

BASE: All sheep respondents (n = 602)



Flock Structure

A third of producers (29%) interviewed ran between 1,000 and 1,999 breeding ewes, while one in five producers (20%) ran between 500 – 999 breeding ewes. Two in five (39%) had more than 2,000 ewes (

Figure 9). The average number of breeding ewes was 2,348.

The average flock size was 4,206. Producers in Western Australia and Tasmania were more likely to have more than 5,000 head of sheep (32% and 41% respectively, versus 26% overall) (Figure 10).

Figure 9: Respondent Demographics - by Number of Ewes

Q: 'As at 1st July 2015, how many **Breeding ewes** did you have on your property?'

BASE: All sheep respondents (n = 602)

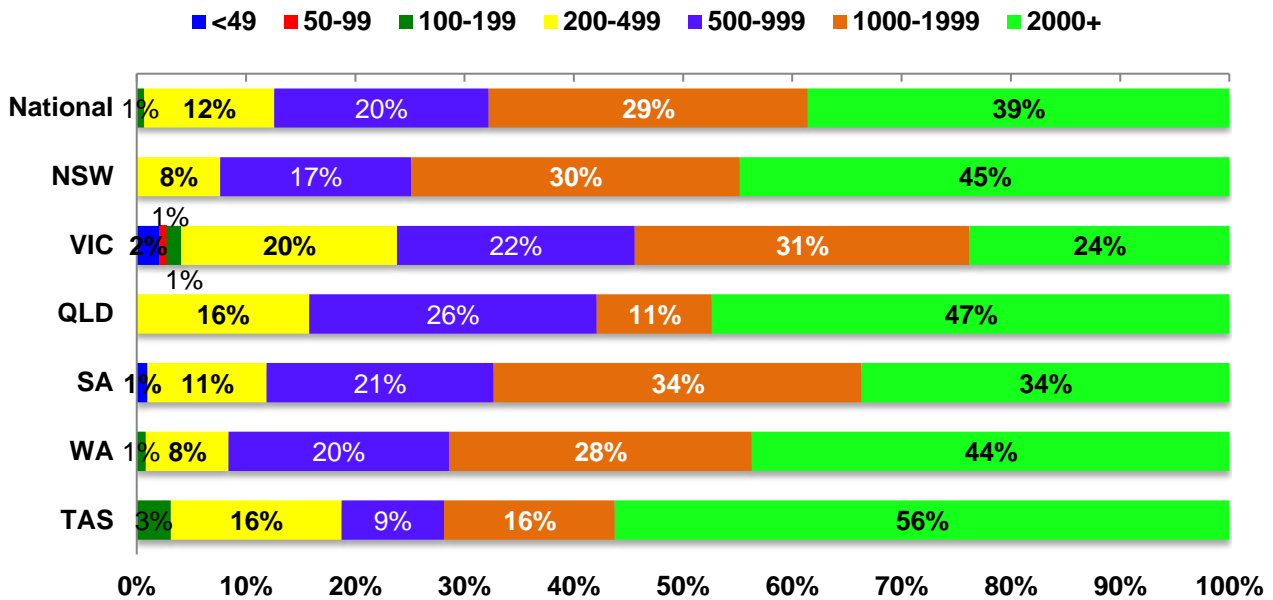
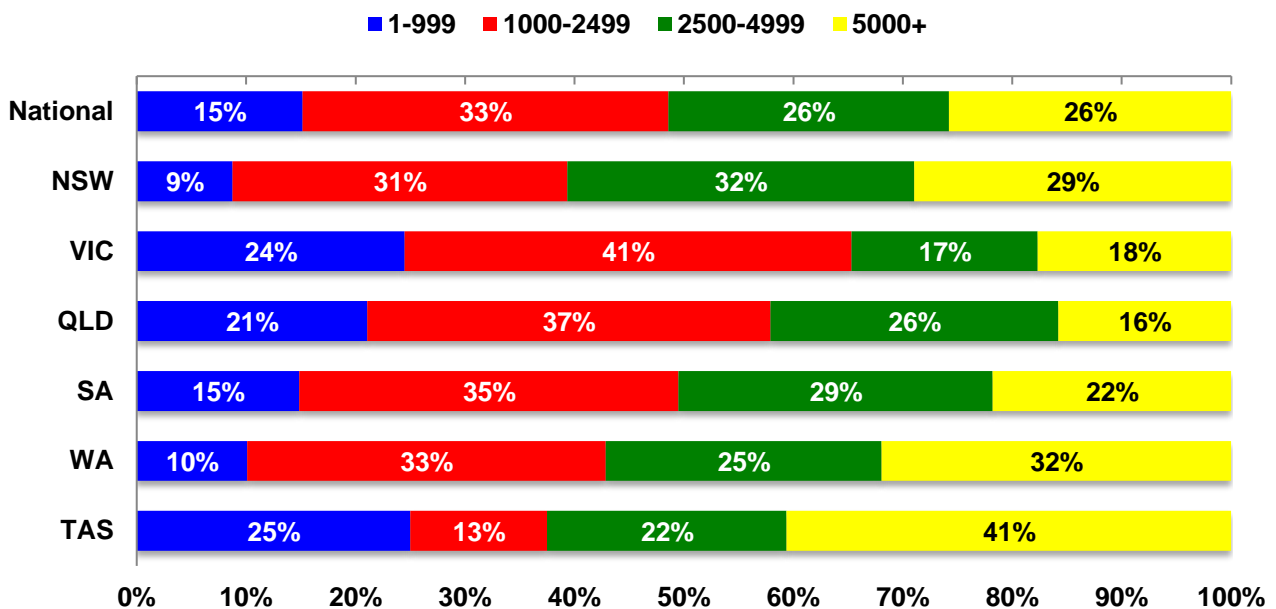


Figure 10: Respondent Demographics - by Flock Size

Q: 'As at 1st July 2015, what is your total **flock size**?'

BASE: All sheep respondents (n = 602)

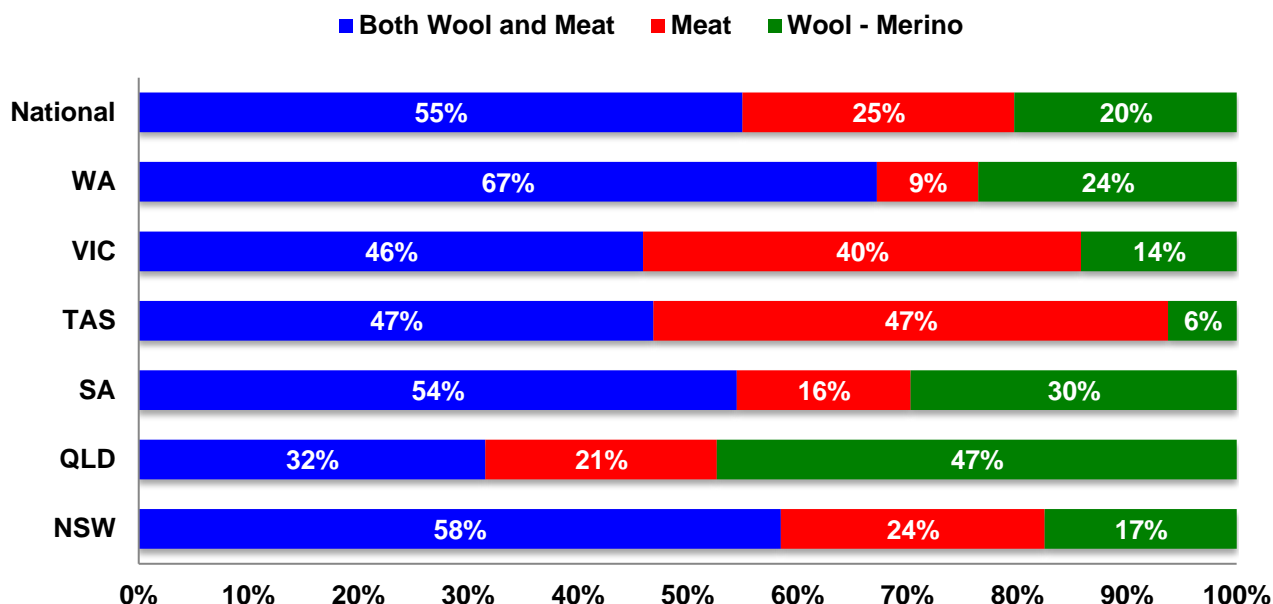


Just over half (55%) of sheep producers surveyed ran mixed operations for the production of both wool and meat, particularly in Western Australia (67%). Producers in the southern states of Victoria and Tasmania were more inclined to be focusing on meat production (40% and 47% respectively, versus 25% overall). Conversely, producers in Queensland were twice as likely to be wool producers (47%, versus 20% overall) (Figure 11).

Figure 11: Respondent Demographics by Flock Type

Q: 'Which of the following best describes your sheep enterprise?'

BASE: All sheep respondents (n = 602)



Joining and Weaning

Five of the 602 producers surveyed traded sheep rather than bred their own. They were not included in the analysis of joining and weaning practices.

The majority of sheep producers joined ewes for between 5 and 10 weeks at a time (79%), with an average joining period of 9.1 weeks. Sheep producers in Victoria and South Australia, and meat sheep specialists were more inclined to have longer joining periods of 11 weeks or more (30%, 31% and 27% respectively) (

Figure 12).

Half of the sheep producers surveyed used pregnancy scanning (50%) with 31% scanning for singles / multiples and the rest (19%) only scanning for wet / dry (Figure 13). More meat only flocks used pregnancy scanning (57%) than meat-wool (49%) and wool only flocks (42%). Significantly more producers from New South Wales (65%) pregnancy scanned ewes compared to those from Western Australia (42%) and South Australia (26%) ($P<0.001$) while significantly more Victorian (54%) producers pregnancy scanned compared to South Australia (26%) ($P<0.001$). The main reasons producers did not pregnancy scan were 'see no benefit' (31%), 'time / labour availability' (17%) and 'impractical in current system' (16%) (Figure 14).

Of the producers who pregnancy scan for singles / multiples, the vast majority (94%) use this information to separate mobs into single / twins and manage them separately. While 32% of Queenslanders scan for singles / multiples, only 67% of them were likely to manage single / twin mobs separately (67%). Whereas in South Australia, Tasmania and Western Australia, all producers who scanned for multiples used this information to separate ewes into mobs for individual management. Meat enterprises had slightly lower figures for separating into mobs for individual management (89%) compared to wool-merino enterprises (94%) and meat-wool enterprises (96%). The main reasons why producers did not separate mobs into singles and twins were 'lack of paddock availability' (40%) and 'see no benefits' (30%) (Figure 16).

Almost three quarters (73%) of producers use sheltered paddocks or sheltered crops during lambing. While a greater proportion of Tasmanian producers (91%) supplied shelter, producers in New South Wales and Western Australia, and producers with larger properties (2000ha or more) were less inclined to supply shelter (68%, 69% and 67% respectively). Producers with under 250mm of annual rainfall more commonly provided shelter for ewes during lambing (79%).

Just over half (55%) of producers check maidens at least once a day during lambing (

Figure 18) and 52% of producers check adult ewes at least once a day (

Figure 19). More producers in Tasmania and Victoria checked maidens (88% and 81%) and adult ewes at lambing (81% and 78%) while in Queensland, it was more common to check lambing maiden ewes (53%) and adult ewes (52%) at least weekly but not daily.

Just under half of the lambs (45%) in Australia were weaned under 14 weeks of age, with an average weaning age of 15.2 weeks (

Figure 20). Significantly more Western Australian producers weaned lambs at different ages to those in Queensland and New South Wales. Nearly two in five (38%) Queensland sheep producers wean lambs over 18 weeks of age while 40% of Western Australian producers wean lambs between 12 and 14 weeks (

Figure 20).

Half of all producers (50%) do not know the average weaning weight of lambs (Figure 21), with this varying by state. Producers in Tasmania were less likely to know average lamb weaning weights (63% do not weigh lambs at weaning) with Queensland and Victorian producers more inclined to know weaning weights (58% and 54% respectively knew their average weaning weights). The average weaning weight for lambs was 32.6 kg nationally.

Figure 12: Weeks for Joining - by State and Enterprise Type

Q: 'In a normal season with average rainfall, how many weeks do you join your rams to your ewes at any one time?'

BASE: All sheep respondents who join ewes (n = 598)

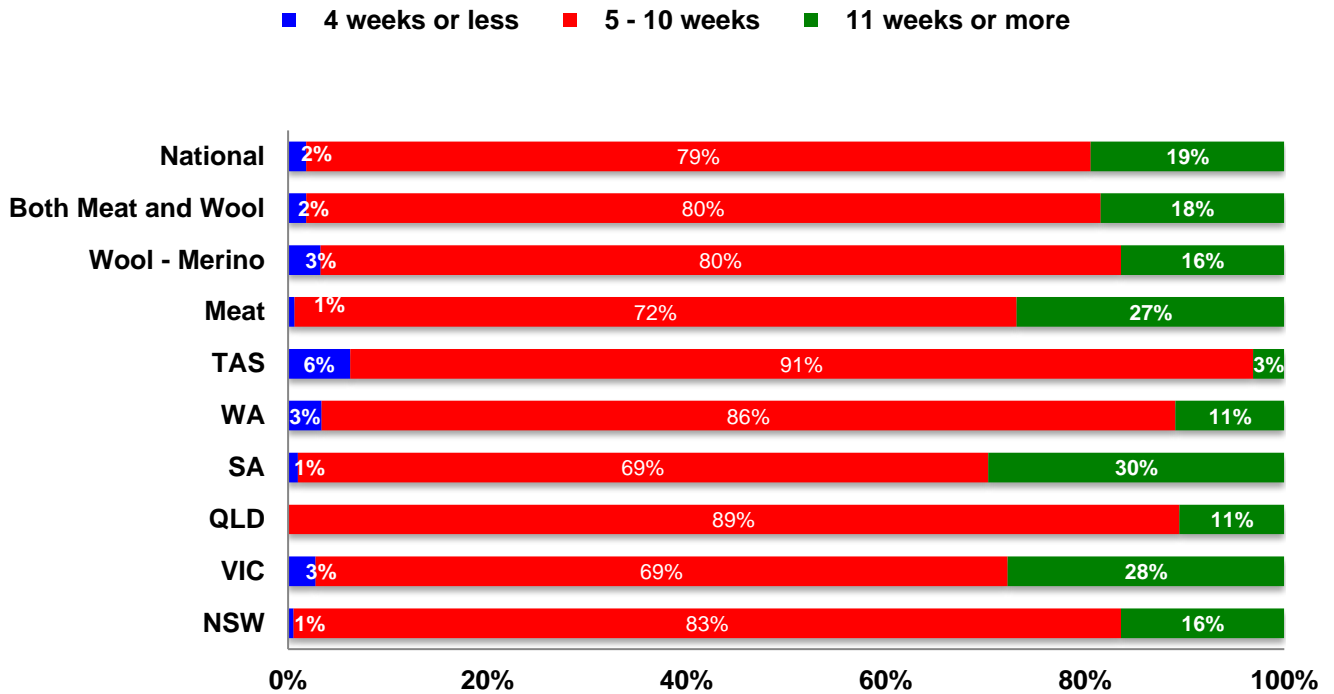


Figure 13: Use of Pregnancy Scanning by State and Enterprise Type

Q: 'Do you pregnancy scan ewes?'

BASE: All sheep respondents who join ewes (n = 598)

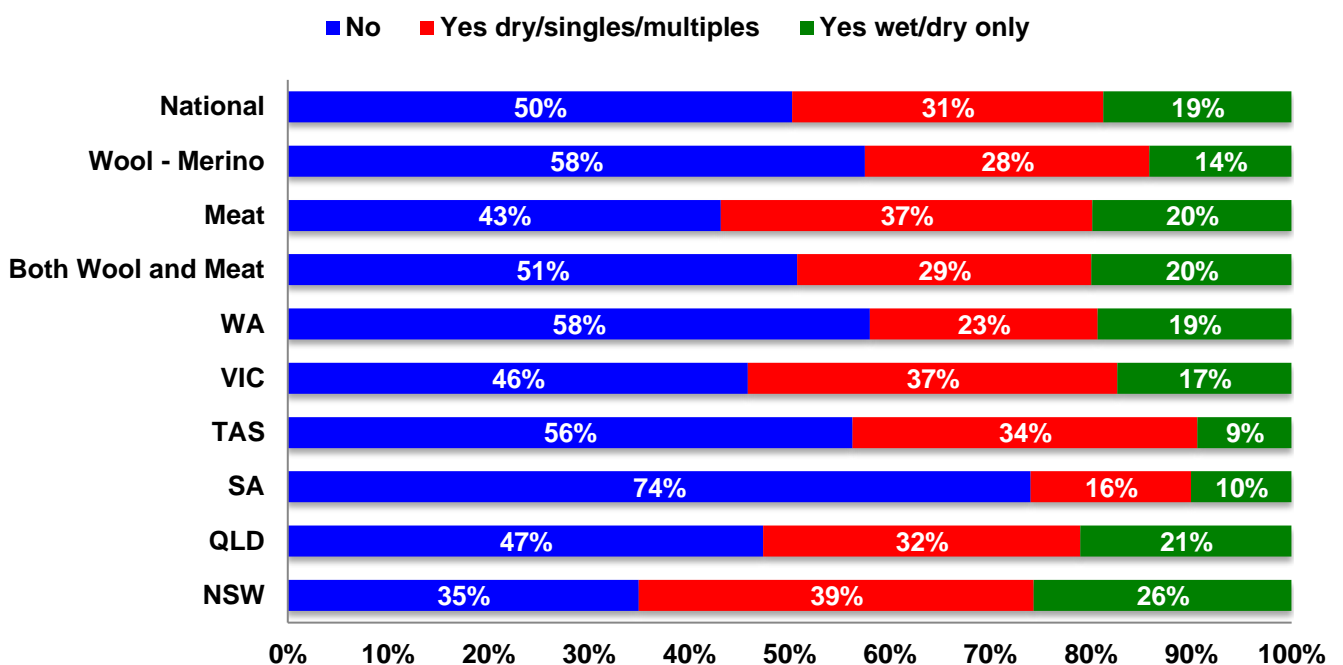


Figure 14: Pregnancy Scanning – Reason why not

Q: 'Why don't you pregnancy scan?'

BASE: All sheep respondents who don't pregnancy scan (n = 300)

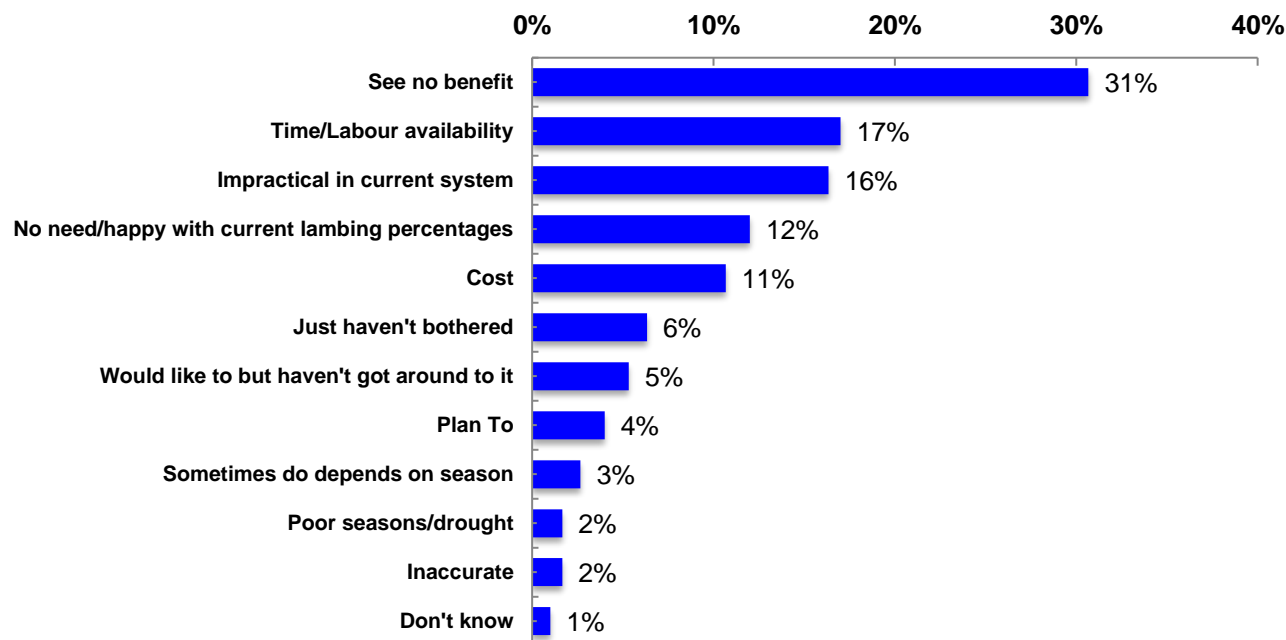


Figure 15: Use of pregnancy scanning data to manage ewes by State and Enterprise Type

Q: 'Do you separate ewes into twin / single mobs to manage separately?'

BASE: Sheep respondents who scan for multiples (n = 185)

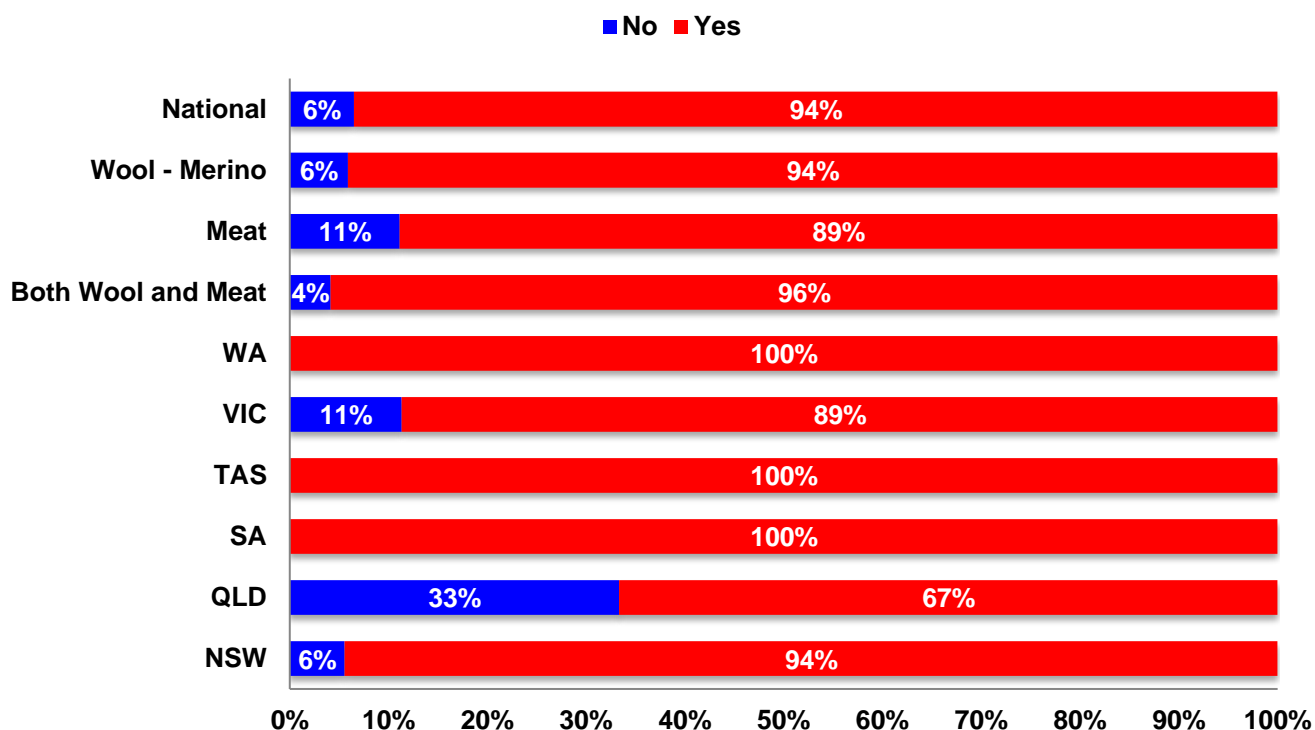


Figure 16: Pregnancy Scanning – Reasons why not separate singles and twins

Q: 'Why don't you separate ewes into twin / single mobs to manage separately?'

BASE: Sheep respondents who single / twin scan and don't separate (n = 12)

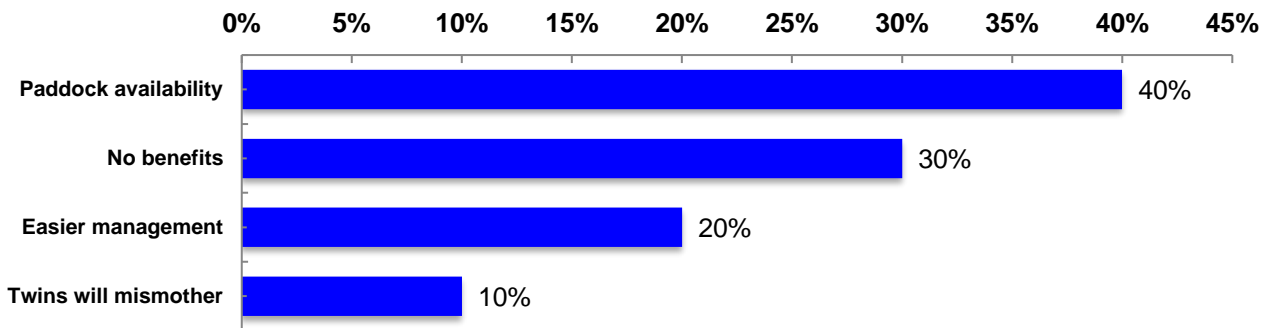


Figure 17: Use of Shelter for Lambing by State and Enterprise Type

Q: 'Do you use sheltered paddocks or shelter crops during lambing?'

BASE: All sheep respondents who join ewes (n = 598)

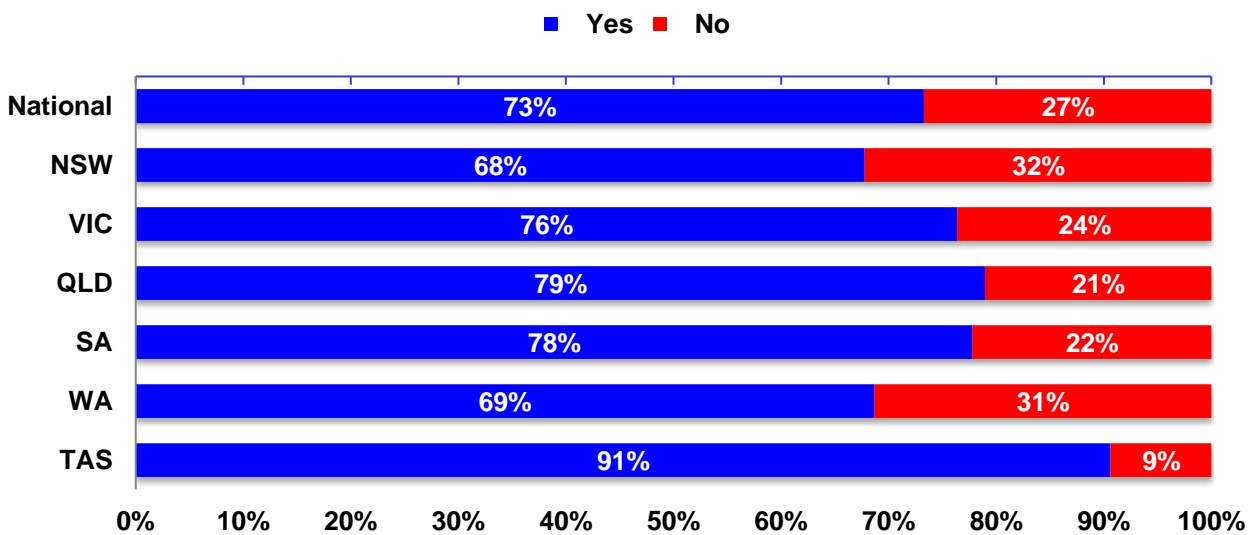


Figure 18: Inspection at Lambing – Maidens

Q: 'How often do you check MAIDENS at lambing?'

BASE: All sheep respondents who join ewes (n = 598)

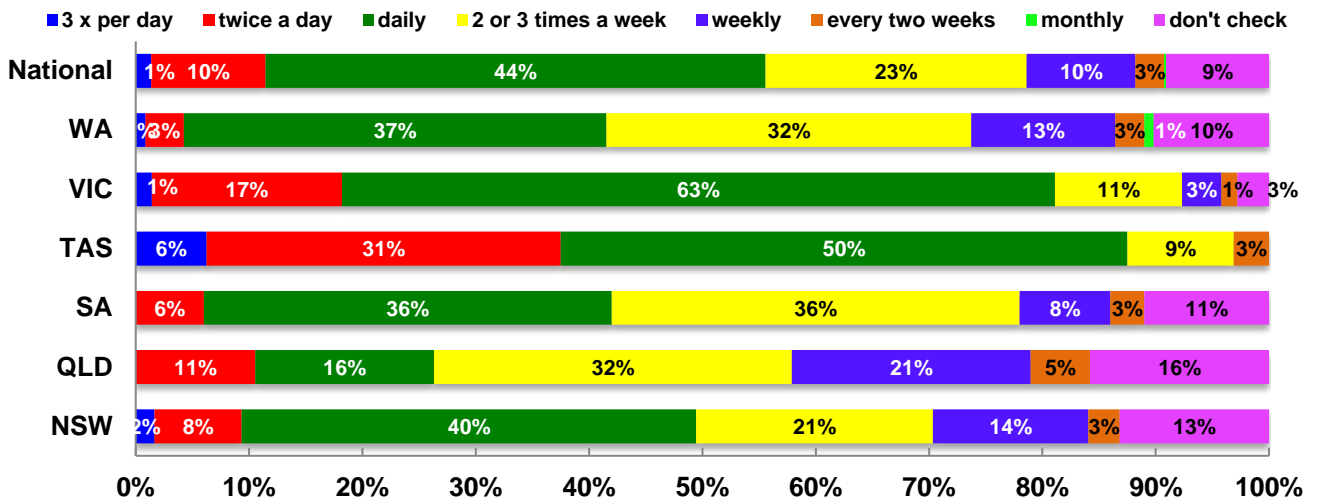


Figure 19: Inspection at Lambing – Adult Ewes

Q: 'How often do you check ADULT EWES at lambing?'

BASE: All sheep respondents who join ewes (n = 598)

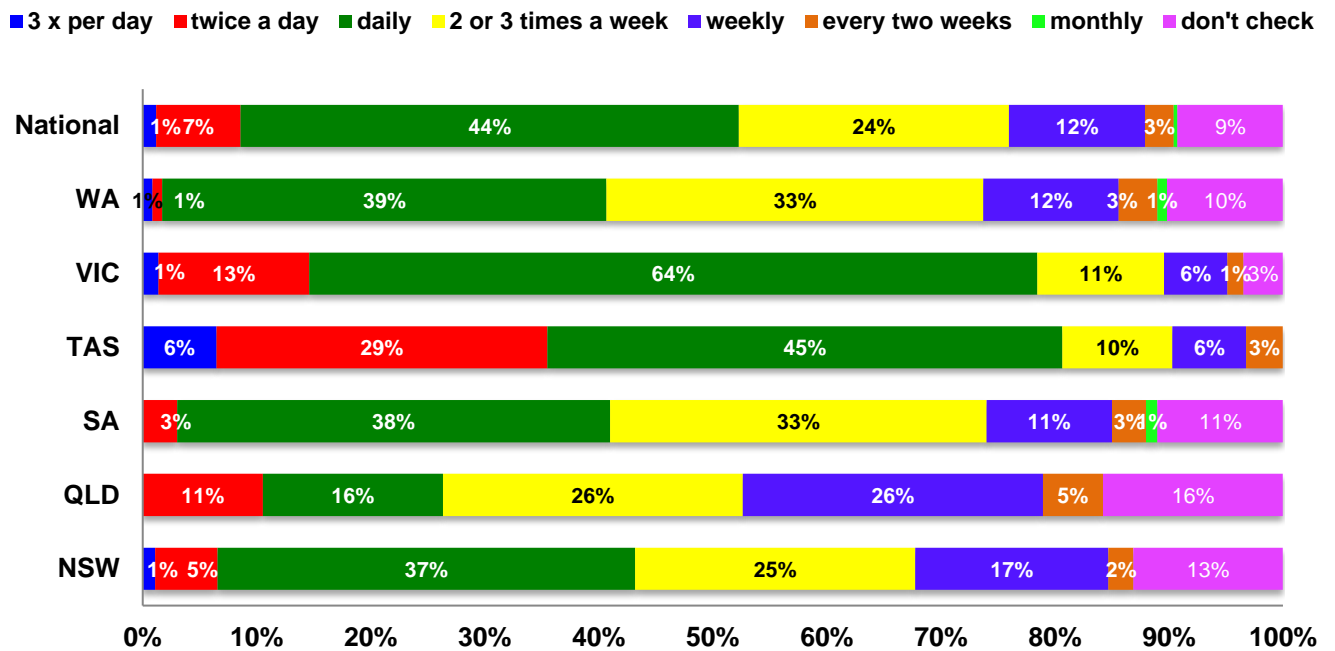


Figure 20: Age at Weaning - by State

Q: 'In normal seasonal conditions, at what age do you normally wean your lambs?'

BASE: All sheep respondents who join ewes (n = 598)

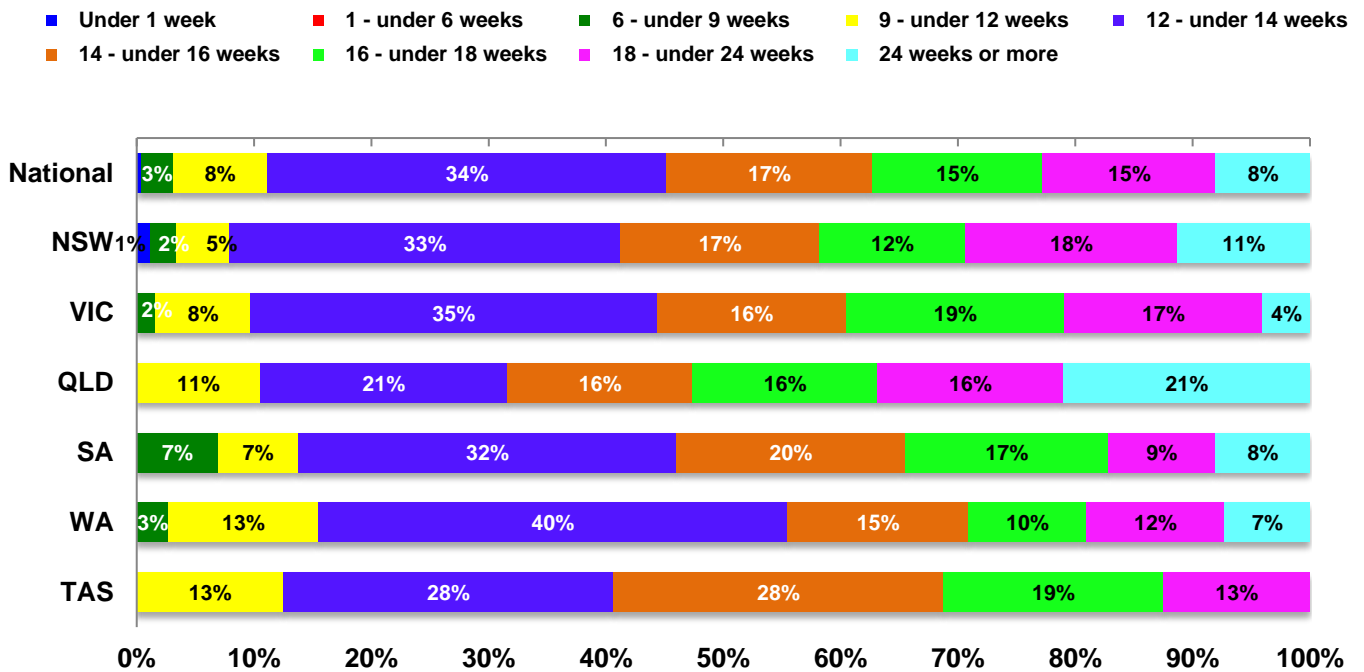
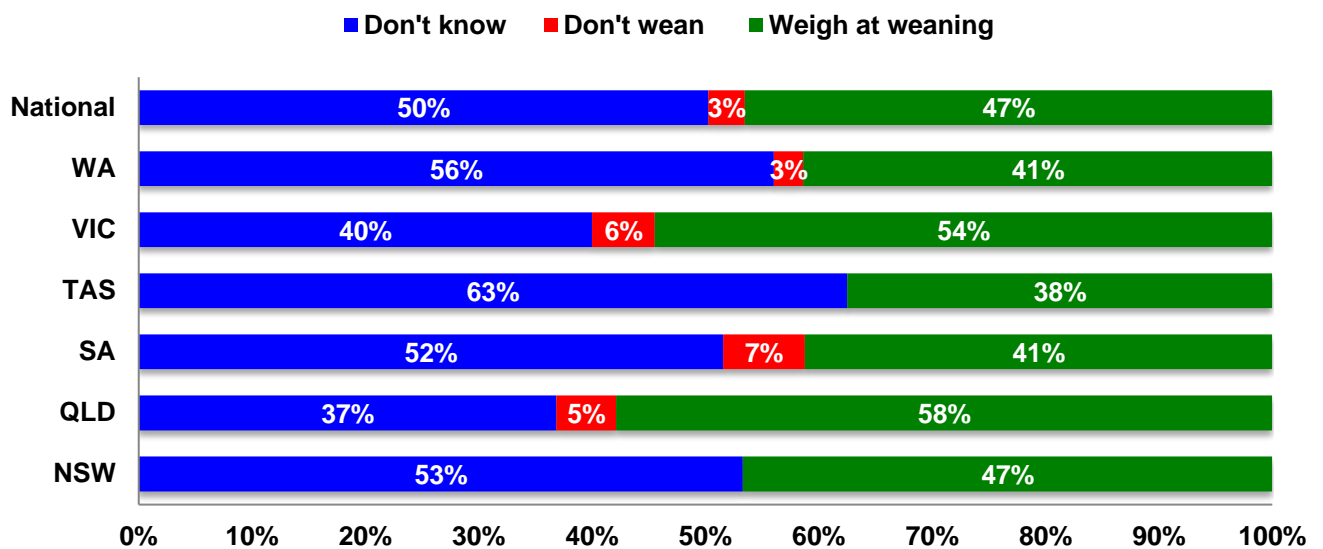


Figure 21: Average weight at weaning

Q: 'In normal seasonal conditions, what is your average weaning weight of lambs?'

BASE: All sheep respondents who join ewes (n = 598)



Identification

It should be noted that this question asked about permanent identification of sheep for on farm management reasons, not for post farm surveillance or monitoring purposes. In practice, some producers will only apply NLIS tags as sheep leave the property to comply with legal requirements.

The average age that lambs received their permanent identification was 2.8 months of age. Producers in New South Wales had a significantly higher age of permanent identification (3.2 months) compared to producers from South Australia (2.3 months) (

Figure 22).

Three quarters (74%) of Australian lambs received a permanent identification prior to 3 months of age. Lambs in South Australia were more likely to be between 1 and 2 months of age (43%) (Figure 23). In comparison, 19% of New South Wales and 18% of Queensland producers permanently identify lambs over 6 months of age.

The NLIS tag (non-electronic) was the most popular means to identify sheep (83%) followed by ear marks (58%), and non-electronic management tags (23%). The use of electronic tags was low, with only 7% of producers using either electronic NLIS or non NLIS electronic tags. The high incidence of NLIS ear tags is not surprising given that they are required before sheep and lambs can leave the property in all states, and they are now being applied at marking and being used as a method of permanently identifying sheep.

Of note regarding the use of various methods of permanently identifying lambs:

- NLIS tags (non-electronic) was higher in Tasmania than other states (94%);
- Ear marks were higher in New South Wales, Queensland and Western Australia (77%, 63% and 90% respectively). This is not surprising in Western Australia where there is a requirement for all sheep over 6 months to have earmarks for property movements / sales.
- Visual management tags (non-electronic) were higher in Western Australia (42%). The comment was that the NLIS tags get lost so earmark and management tags were preferable for permanent identification.

The reasons provided for choice of various identification methods were because it was mandatory (30% of sheep producers), to prove ownership/security (17%), to ID Age / Sex / Sire / twins vs singles / purchased vs bred stock (13%) and 'all I need' referring to use of NLIS ID only (11%) (Figure 25).

Figure 22: Age at Permanent Identification - Average by State

Q: 'At what age, do you permanently identify your sheep?'

BASE: All sheep respondents (n = 602)

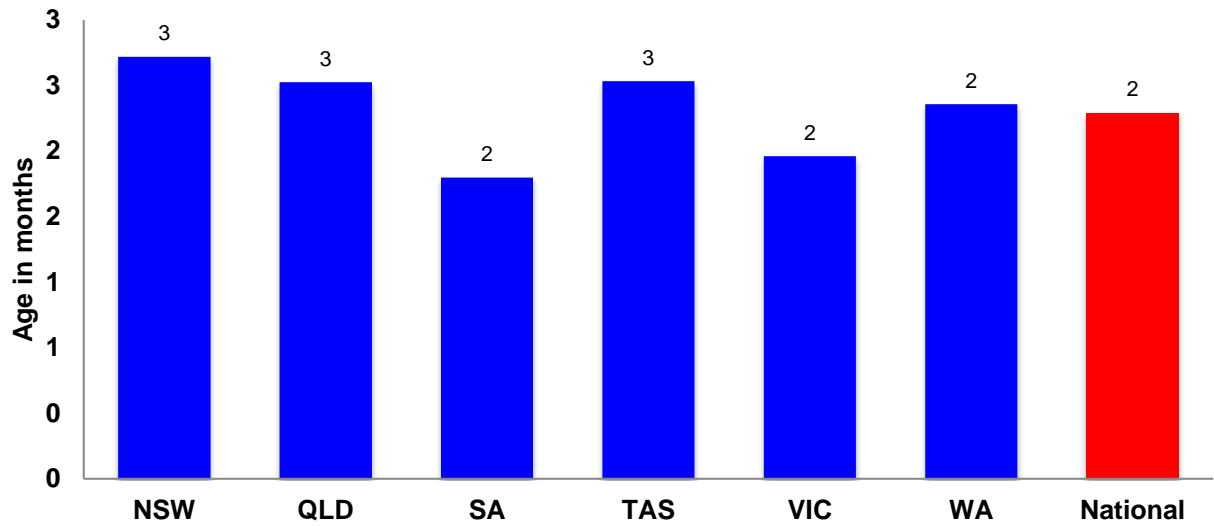


Figure 23: Age at Permanent Identification - by State and Age Group

Q: 'At what age, do you permanently identify your sheep?'

BASE: All sheep respondents (n = 602)

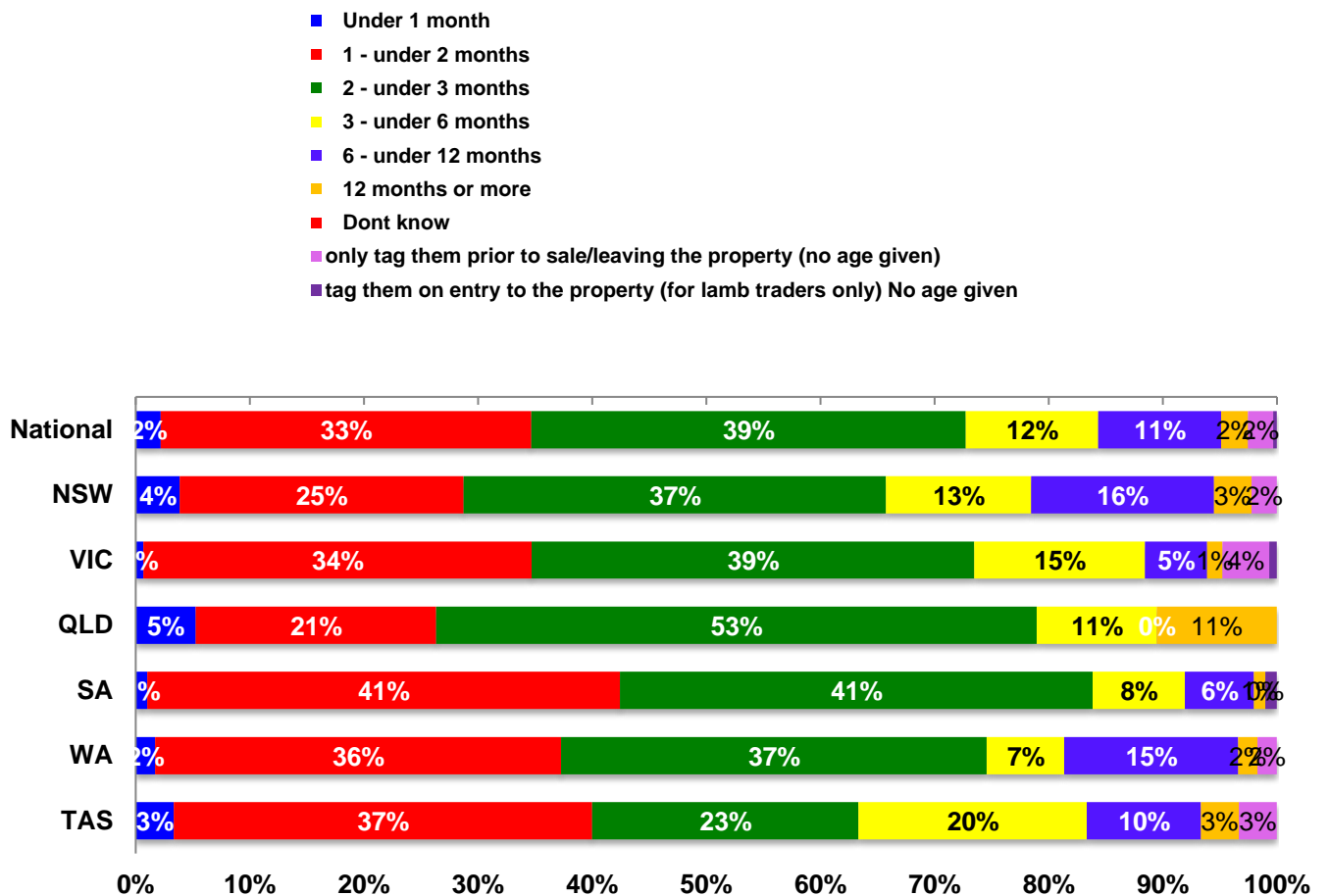


Figure 24: Method of Permanent Identification - by State

Q: 'And how do you permanently identify your sheep?'

BASE: All sheep respondents (n = 602)

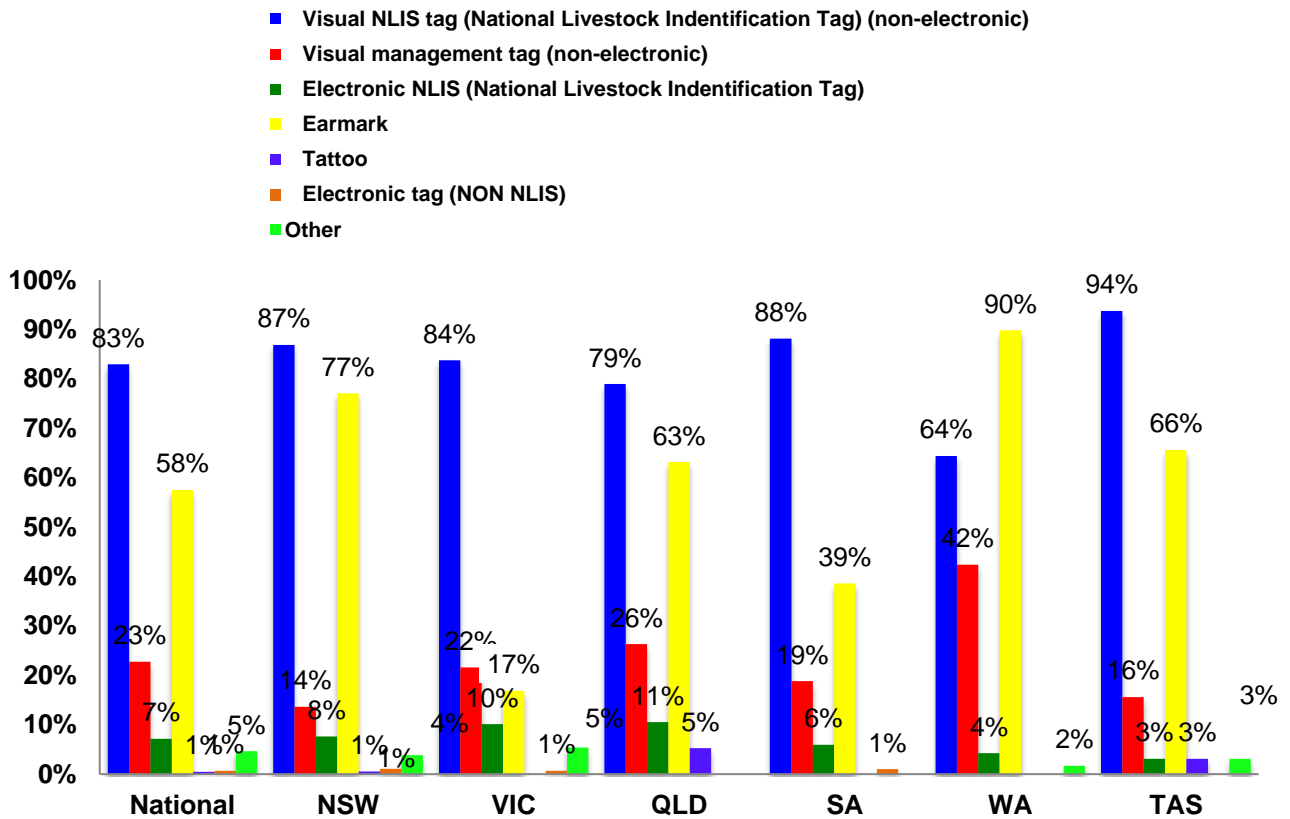
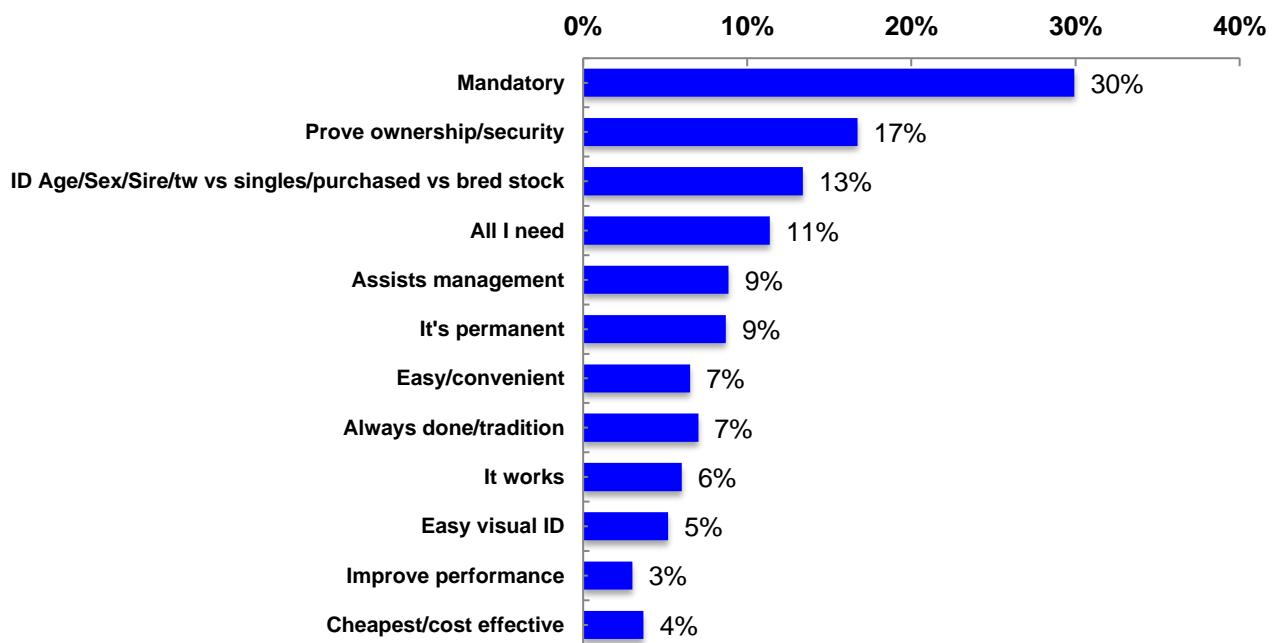


Figure 25: Permanent Identification – Reasons for use

Q: 'Why do you use this to permanently identify your sheep?'

BASE: ALL sheep respondents (n=602)



Marking

Castration

Lambs were castrated at 6.7 weeks of age on average (Figure 26). Age of castration was significantly lower in Tasmania (5.9 weeks) compared to Queensland (7.9 weeks) and Western Australia (6.7 weeks). Of the two respondents that did not castrate, one said it increased productivity and the other was a stud producer so kept all males intact.

Nearly two thirds of male lambs (61%) are castrated under 2 months of age, with 31% being castrated between 2 and 3 months of age (

Figure 27). Only 5% of lambs are castrated over 3 months of age. A greater proportion of Tasmanian producers castrated lambs between 1 and 2 months of age (75%) relative to mainland sheep producers.

Rubber rings (97%) were the preferred castration method for the majority of sheep producers, while only 3% preferred to use a knife / scalpel (Figure 28). Rubber rings were the only method used by producers in South Australia (100%), while for the other states between 2% and 6% of producers still use a knife / scalpel for castration.

None of the producers surveyed used the cryptorchid method of castration.

Figure 26: Average Age at Castration - by State

Q: 'What is the average age that lambs are castrated?'

BASE: All sheep respondents who castrate (n = 596)

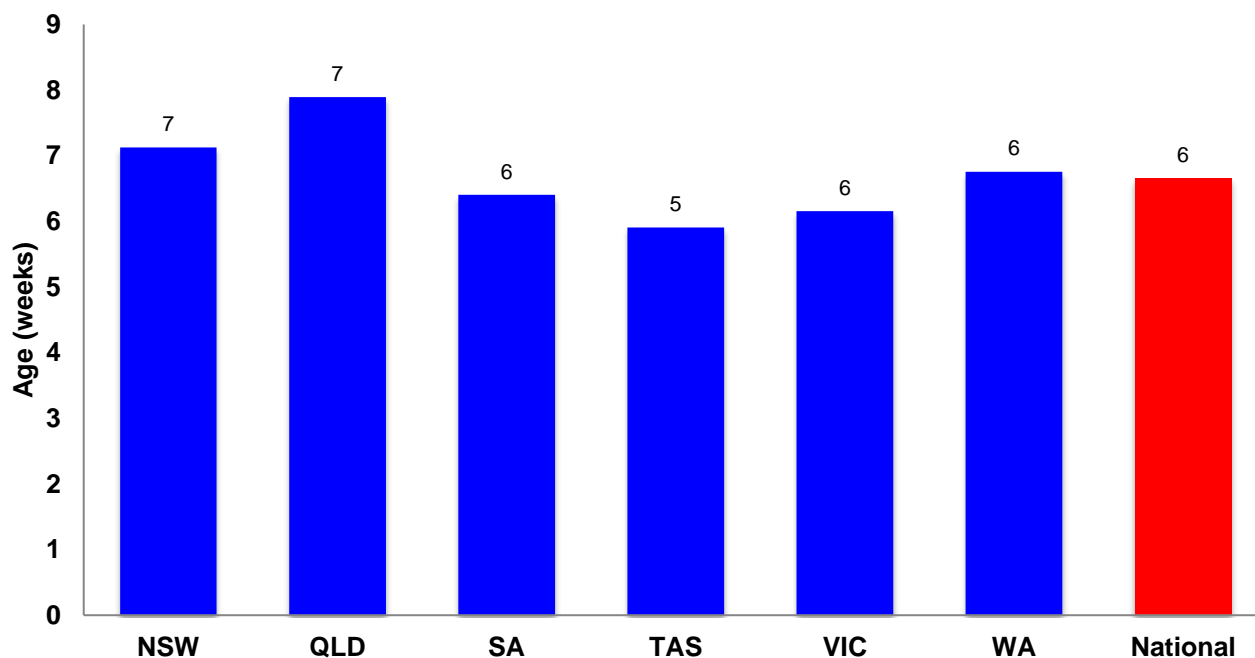


Figure 27: Average Age at Castration - by State - clustered

Q: 'What is the average age that lambs are castrated?'

BASE: All sheep respondents who castrate (n = 596)

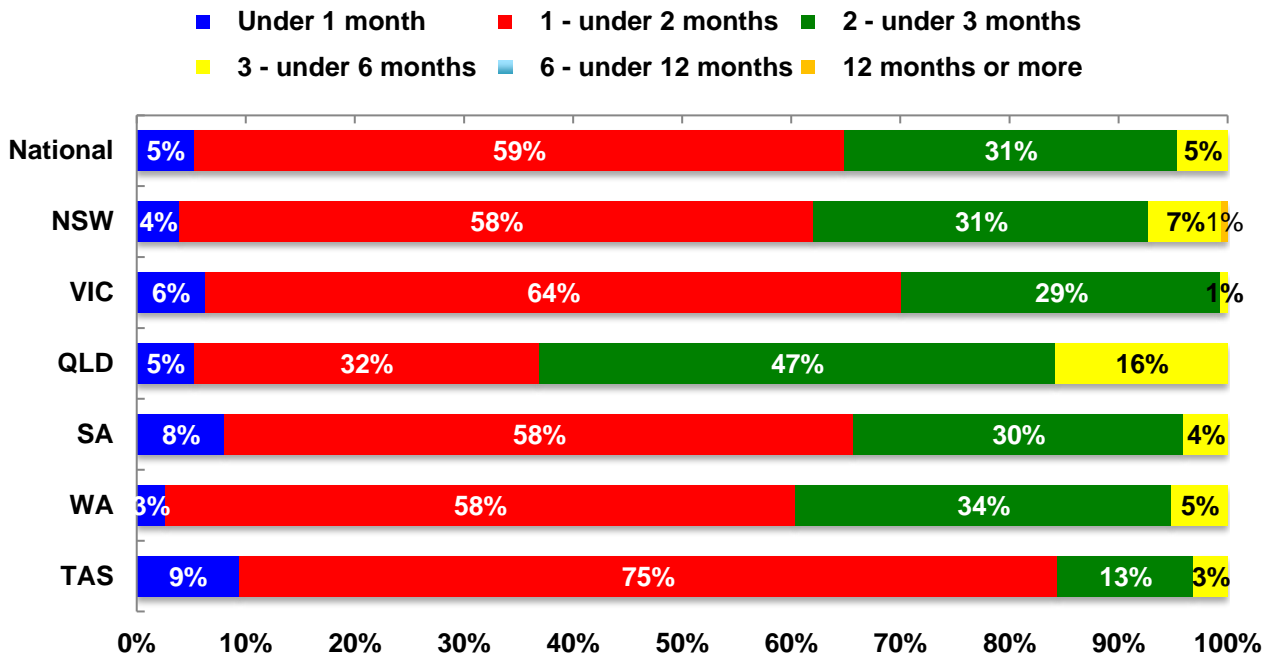
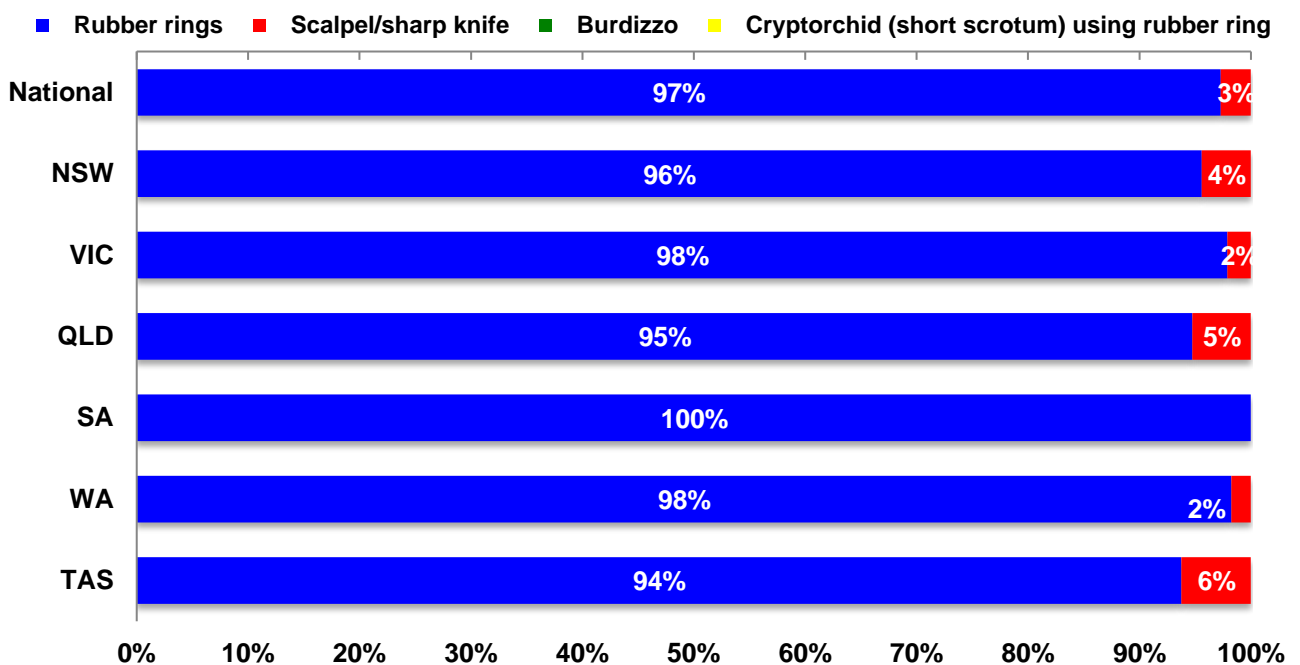


Figure 28: Method Castration - by State

Q: 'And what method of castration did you use to castrate your male lambs?'

BASE: All sheep respondents who castrate (n = 596)



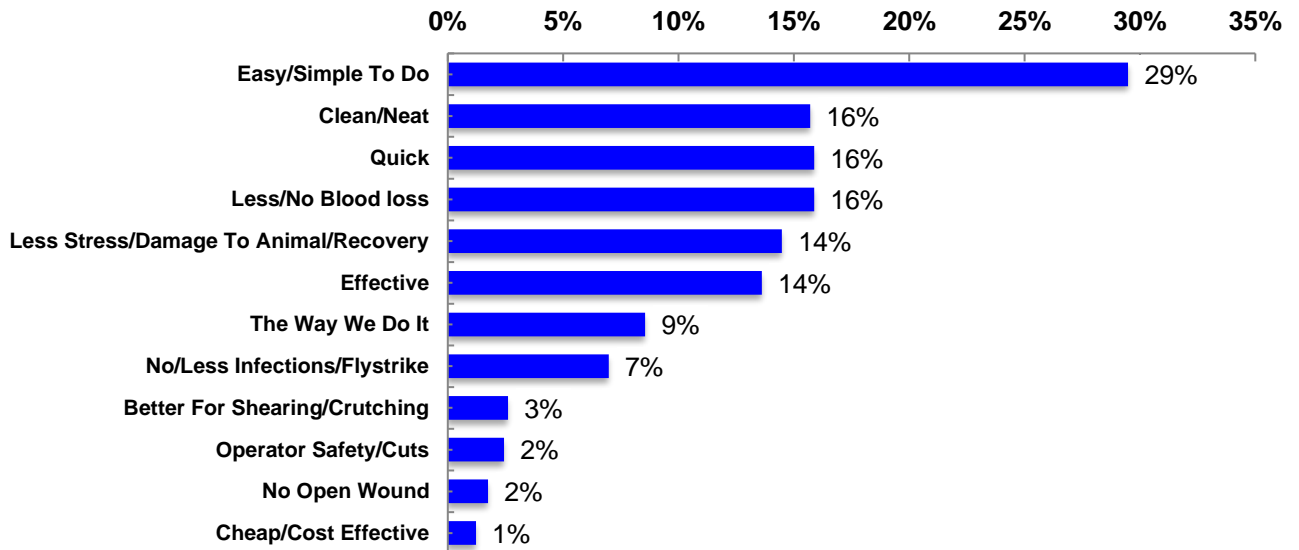
1.1.1.1 Rubber Rings

The reasons producers use rubber rings were: easy and simple to do (29%), clean and neat (16%), less / no blood loss (16%) and quick (16%) (Figure 29).

Figure 29: Reasons for using Rubber Rings

Q: 'Why do you use this method to castrate lambs?'

BASE: All sheep respondents using rubber rings (n = 580)



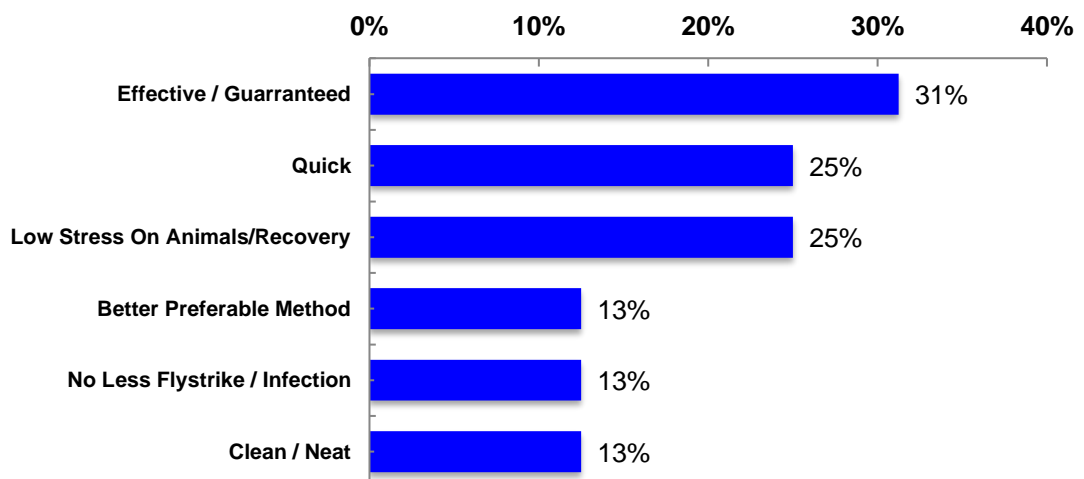
1.1.1.2 Scalpel / Sharp Knife

The perceived advantages of using a scalpel / sharp knife for castration were: effective / guaranteed (31%), quick (25%), and low stress on lambs / recovery (25%) (Figure 30)

Figure 30: Reasons for use of Scalpel / Sharp Knife

Q: 'Why do you use this method to castrate lambs?'

BASE: All sheep respondents using scalpel / sharp knife (n = 16)



Tail Docking

Lambs had their tails docked when they were 6.5 weeks of age on average. Age of tail docking was significantly higher in Queensland (6.9 weeks) compared to all other states. New South Wales had a significantly higher age of tail docking (6.7 weeks) compared to Tasmania (5.8 weeks) and Victoria (6.2 weeks), while age of docking in Western Australia was significantly higher than in Tasmania and Victoria (

Figure 31). One producer did not dock at all as they felt that this increased productivity, and two producers did not dock the tails of wether lambs, but did dock the tails of replacement ewes and sold wether lambs with tails for slaughter.

Two thirds of (66%) sheep producers dock the tails of lambs at under 2 month of age, with a further 29% docking between 2 and 3 months of age (Figure 32). Five per cent (5%) of lambs are tail docked over 3 months of age. A greater proportion of Tasmanian producers dock the tails of lambs between 1 and 2 months of age (75%) compared to mainland sheep producers.

The gas knife / hot iron / knife (58%) and rubber rings (36%) were the preferred methods used by sheep producers to dock the tails of lambs (Figure 33), however there were significant differences between some states regarding choice of tail docking methods. South Australia was significantly different from New South Wales, Queensland and Victoria, while Western Australia was significantly different from both New South Wales and Queensland. In particular, the use of the gas knife was higher in South Australia, Western Australia and amongst wool specialists (75%, 74% and 76% respectively), but was lower in Victoria, Queensland and among sheep meat specialists (45%, 33% and 30% respectively). The use of rubber rings was higher among Victorian, New South Wales and meat sheep specialists (52%, 41% and 61% respectively). The use of a sharp knife was higher in Queensland (28% compared to 6% nationally).

Figure 31: Average Age at Tail Docking - by State

Q: 'What is the average age that lambs are tail docked?'

BASE: All sheep respondents who dock (n = 597)

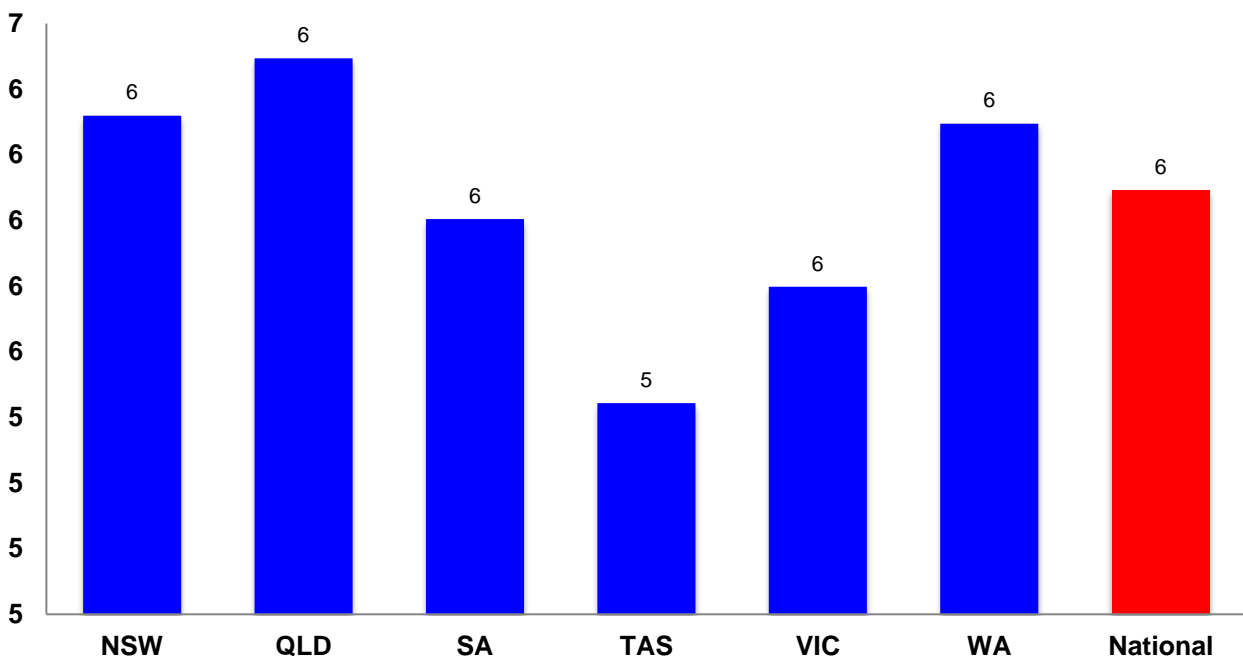


Figure 32: Average Age at Tail Docking - by State in age clusters

Q: 'What is the average age that lambs are tail docked?'

BASE: All sheep respondents who dock (n = 597)

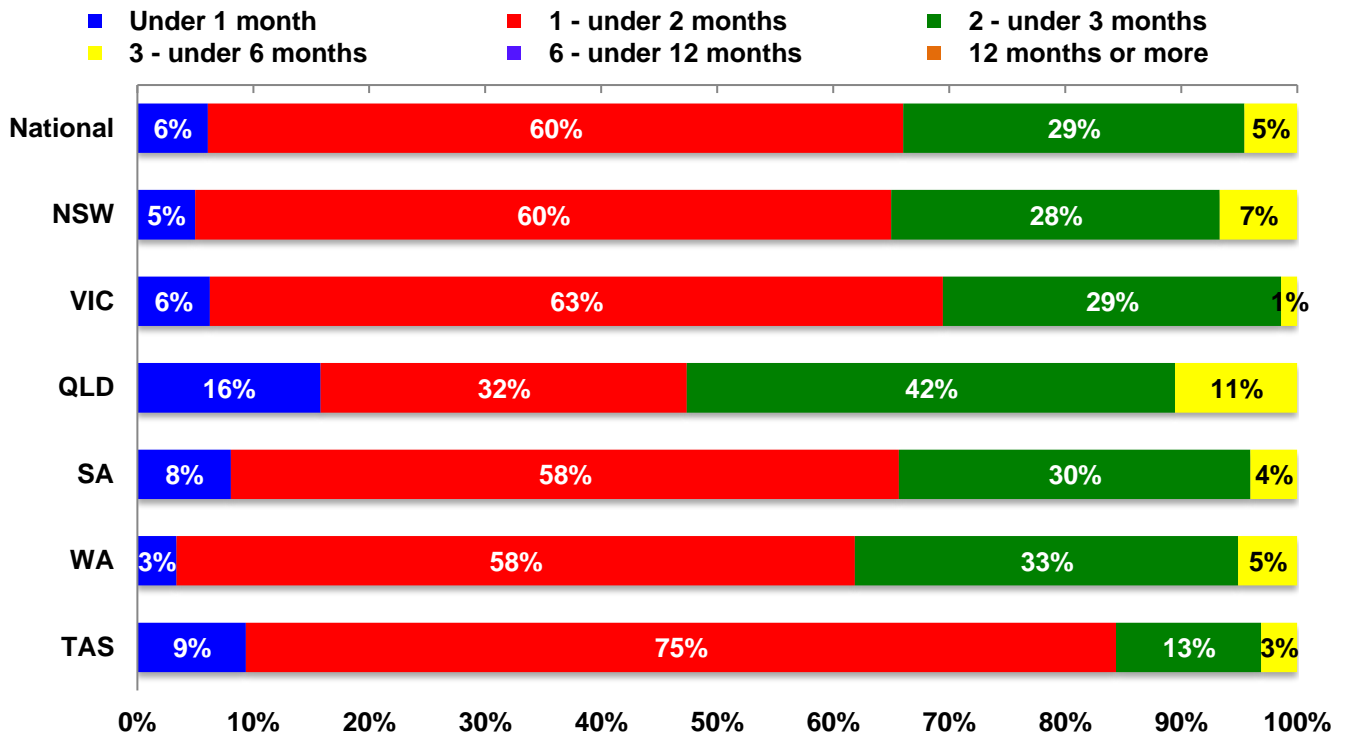
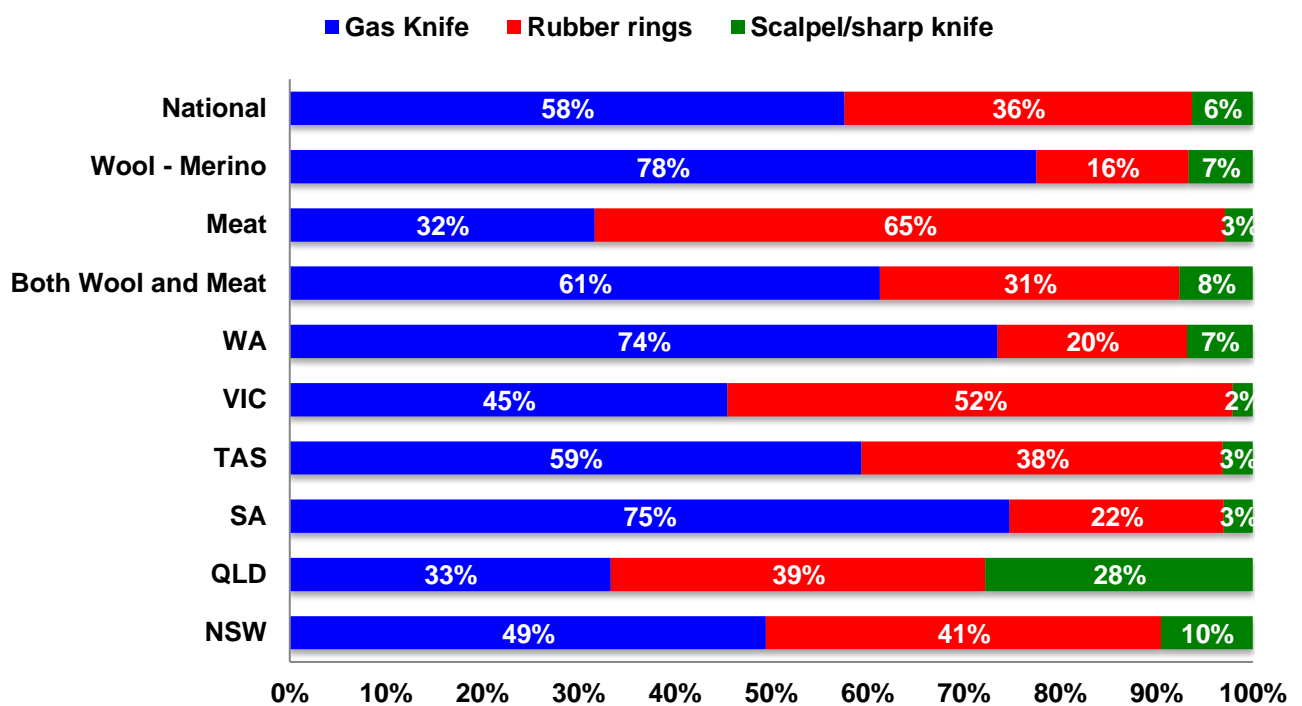


Figure 33: Method of Tail Docking - by State and Industry

Q: 'What method did you use to dock your lambs tails?'

BASE: All sheep respondents who dock tails (n = 597)



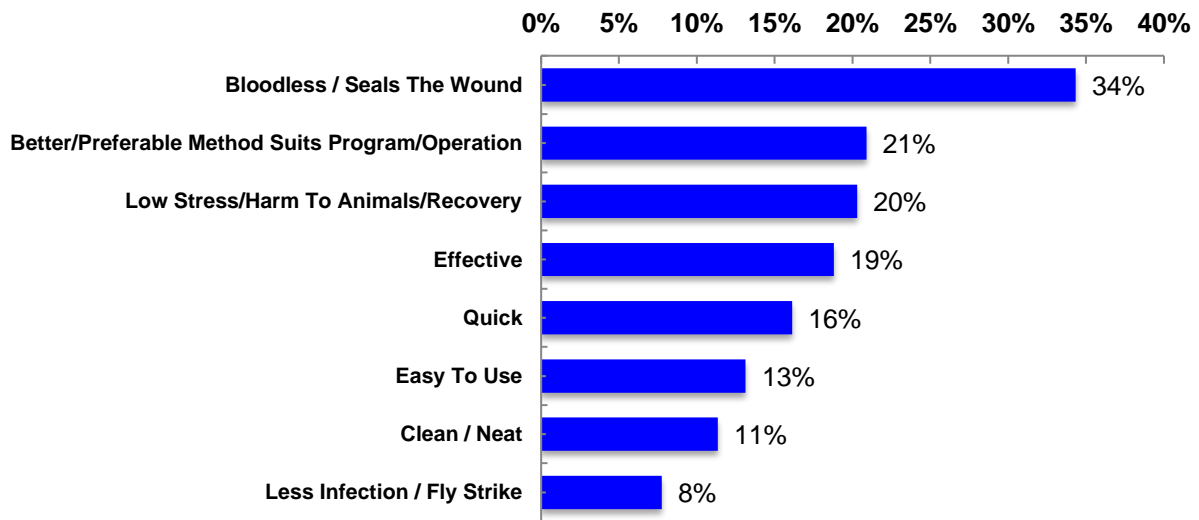
1.1.1.3 Gas Knife to Dock Lambs Tails

The main reasons why producers use a gas knife for tail docking of lambs were: bloodless / seals the wound (34%); better / preferable method / suits program (21%); low stress / less harm to animals / recover well (20%); and effective (19%) (Figure 34).

Figure 34: Reasons to use a Gas Knife for tail docking

Q: 'Can you describe the reasons why you use this method to dock your lambs tails?'

BASE: All sheep respondents using a Gas Knife (n = 344)



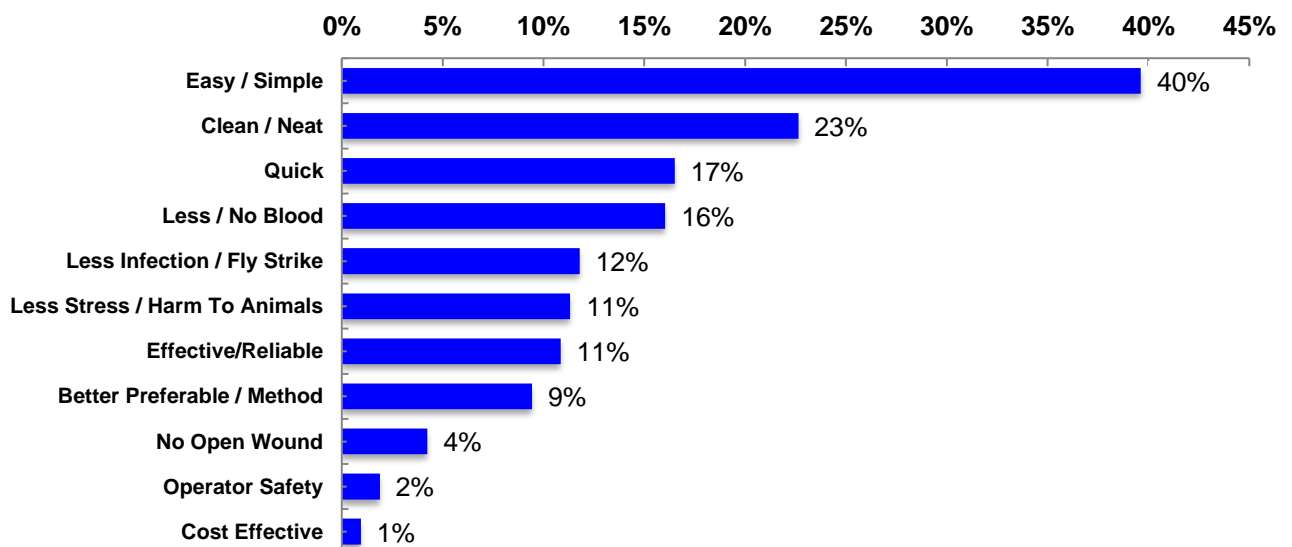
1.1.1.4 Rubber Rings

The main reason why producers use rubber rings for tail docking of lambs were: easy and simple (40%); clean / neat (23%); quick (17%); and less / no blood (16%) (Figure 35).

Figure 35: Reasons to use Rubber Rings for tail docking

Q: 'Can you describe the reasons why you use this method to dock your lambs tails?'

BASE: All sheep respondents using rubber rings (n = 216)



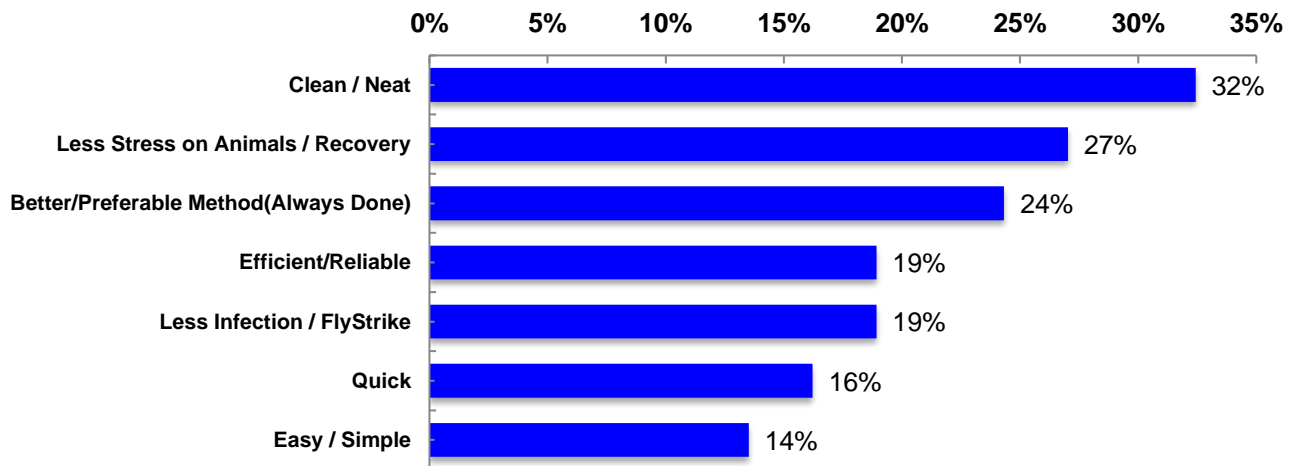
1.1.1.5 Sharp Knife

The main reasons producers use a sharp knife for tail docking of lambs were: clean / neat (32%); less stress on animals / recover well (27%); and better / preferable method (always done) (24%) (Figure 36).

Figure 36: Reasons to use a Sharp Knife for tail docking

Q: 'Can you describe the reasons why you use this method to dock your lambs tails?'

BASE: All sheep respondents using a Sharp Knife (n = 37)



1.1.1.6 Joint of Docking

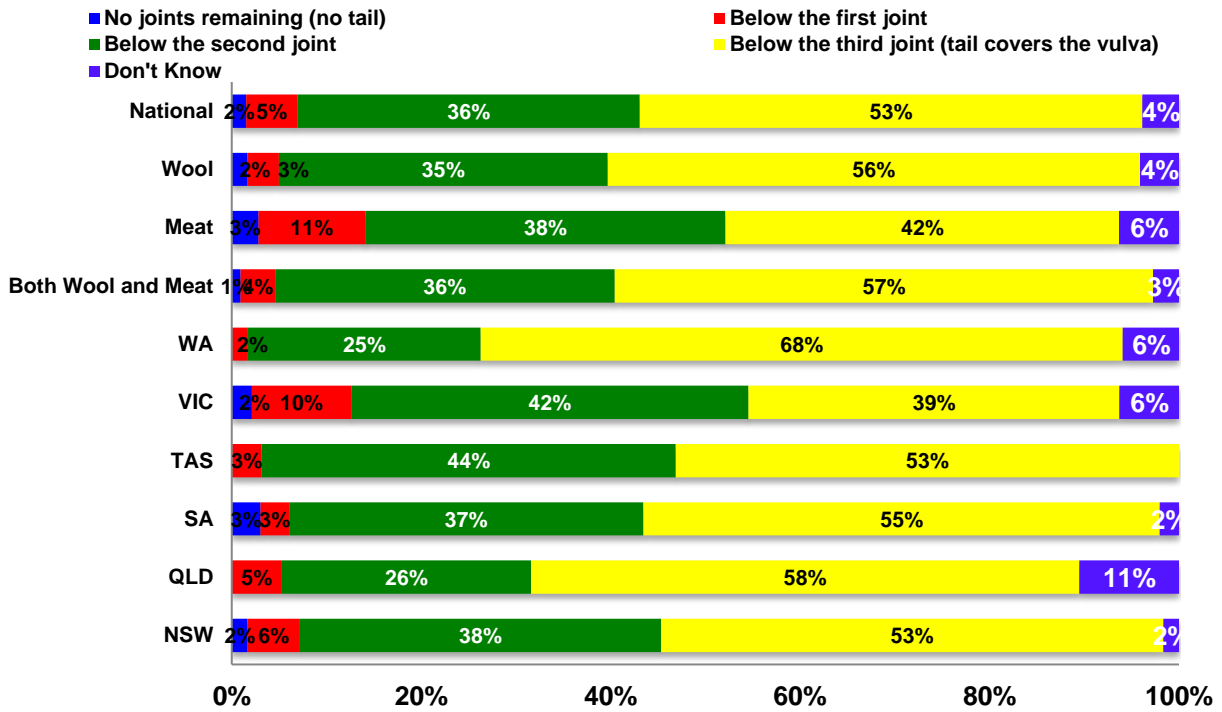
Just over half of all sheep producers (53%) who dock the tails of lambs dock them below the third joint (

Figure 37). A relatively higher proportion of Western Australian producers (68%) dock tails below the third joint while Victoria and meat specialists had relatively lower proportions of producers who dock tails below the third joint (39% and 42% respectively).

Figure 37: Joint of Tail Docking - by State and Industry

Q: 'At which joint is the tail docked?'

BASE: All sheep respondents who dock tails (n = 597)



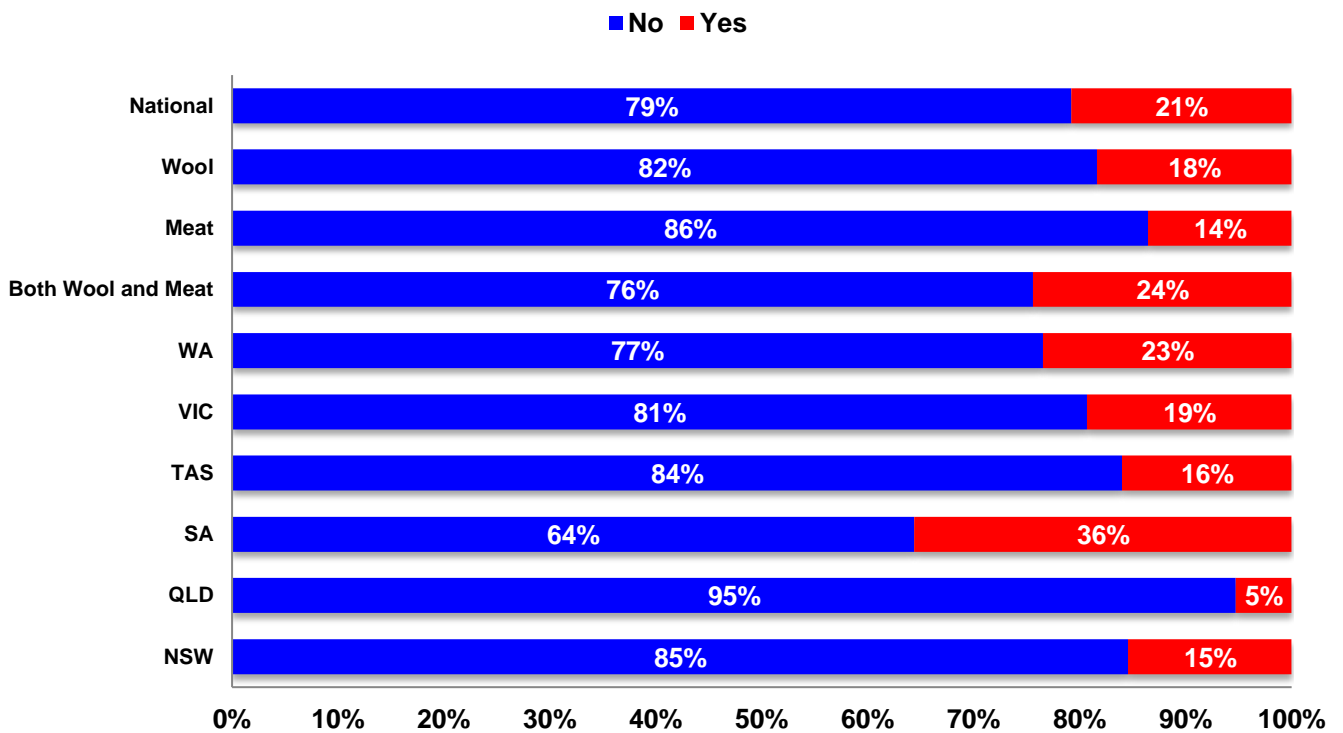
1.1.1.7 Tail Stripping

One in six (18%) sheep producers strip the tails of their lambs at docking rather than mulesing (Figure 38). There was a significant state effect ($P < 0.01$) for responses to this question. In particular, more South Australian producers (36%) stripped tails compared to all the other states, while producers in Queensland, New South Wales and Tasmania (5%, 15%, and 16% respectively) were less inclined to strip tails. The breakdown of producers showed 14% of meat, 18% of wool and 24% of combined meat and wool specialists stripped tails.

Figure 38: Tail Stripping by State and Industry

Q: 'At docking, do you tail strip, but not mules?'

BASE: All sheep respondents who use gas knife to dock tails ($n = 344$)



Inspection Following Marking of Lambs

Producers spent quite a bit of time in the first week following marking to check on lambs. Over half (53%) of producers checked lambs the day following marking, and in particular in Victoria and Tasmania (60% and 66% respectively) (Figure 39). Only 12% of producers do not check their lambs at all following marking, especially in Queensland (21%) (Figure 40).

Figure 39: Inspection following marking

Q: 'When do you check your lambs following marking?'

BASE: All sheep respondents that mark lambs (n = 597)

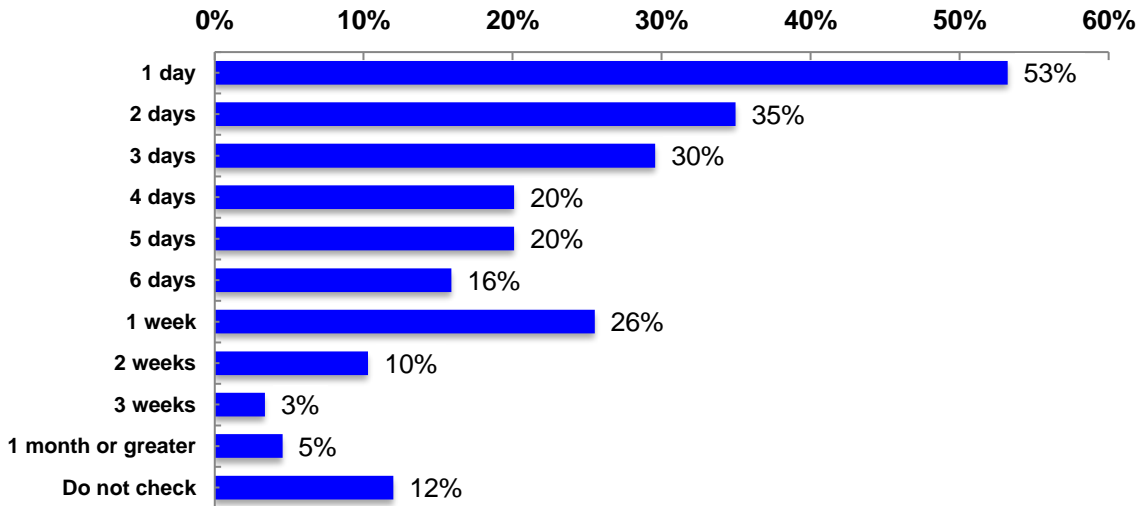
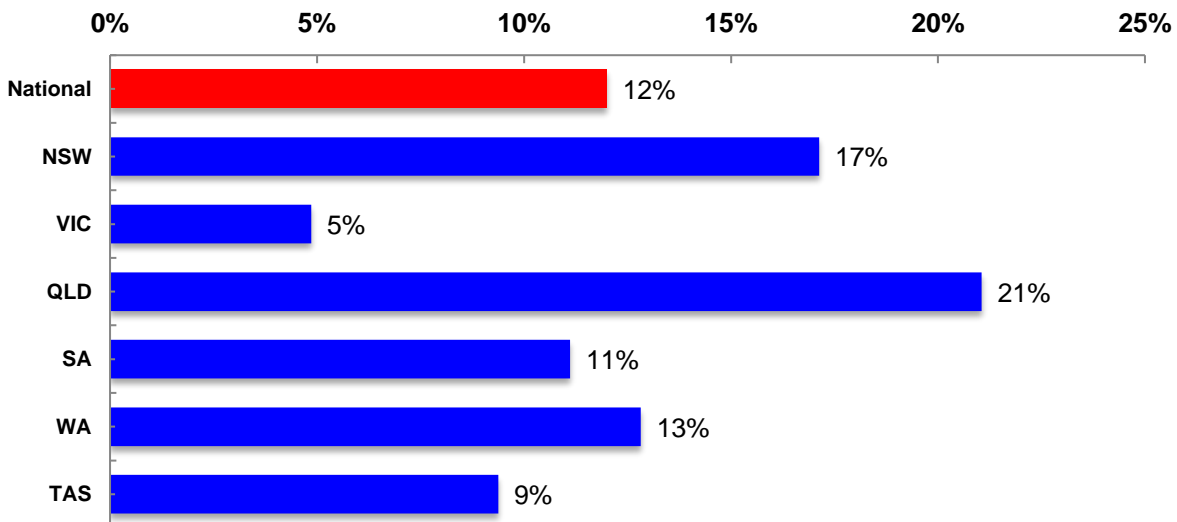


Figure 40: Inspection following Marking - Do Not Check

Q: 'When do you check your lambs following marking?'

BASE: All sheep respondents who do not check lambs following marking (n = 71)



Lamb loss due to marking related complications

One quarter (25%) of sheep producers lose lambs due to marking related complications, 6% didn't know, while the rest were confident they did not lose any lambs due to marking (Figure 41). The average number of lambs lost was 16.3 per year, with New South Wales producers estimating they lost

on average 22 lambs per year and Victorians estimating they only lost on average 5 lambs per year (Figure 42).

Figure 41: Lamb loss due to marking related complications

Q: 'Do you lose lambs due to marking related complications?'

BASE: All sheep respondents that mark lambs (n = 597)

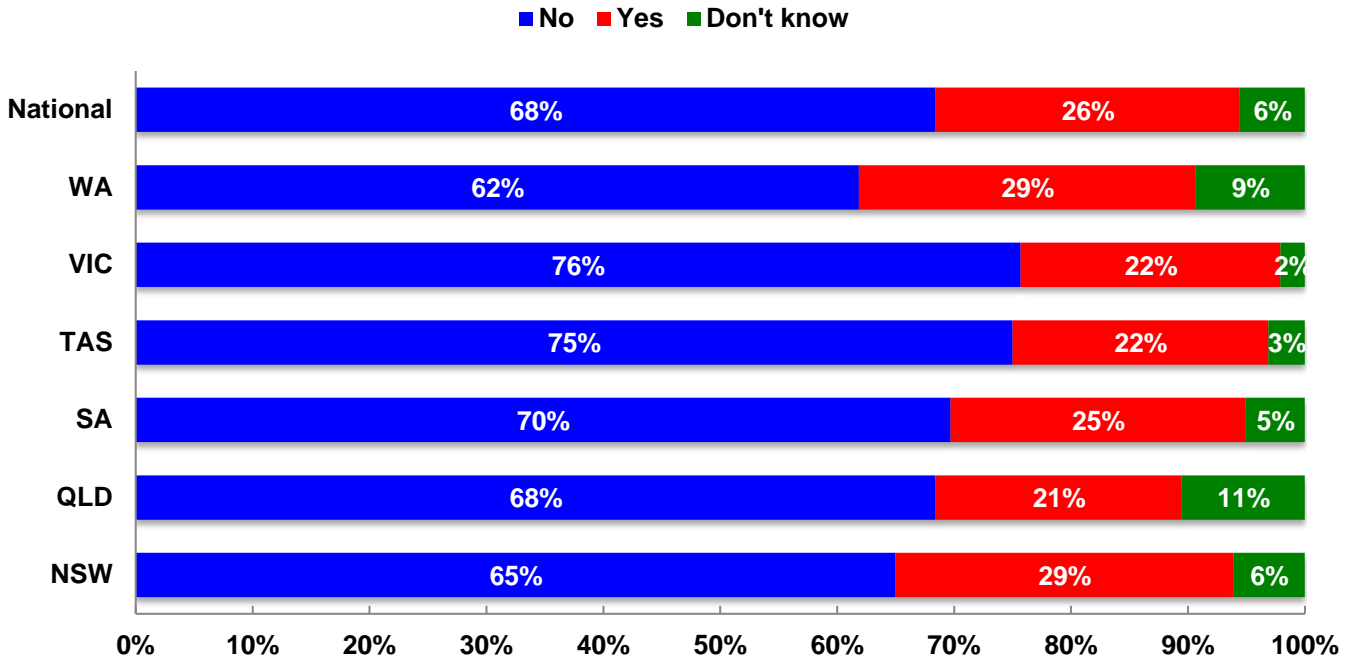
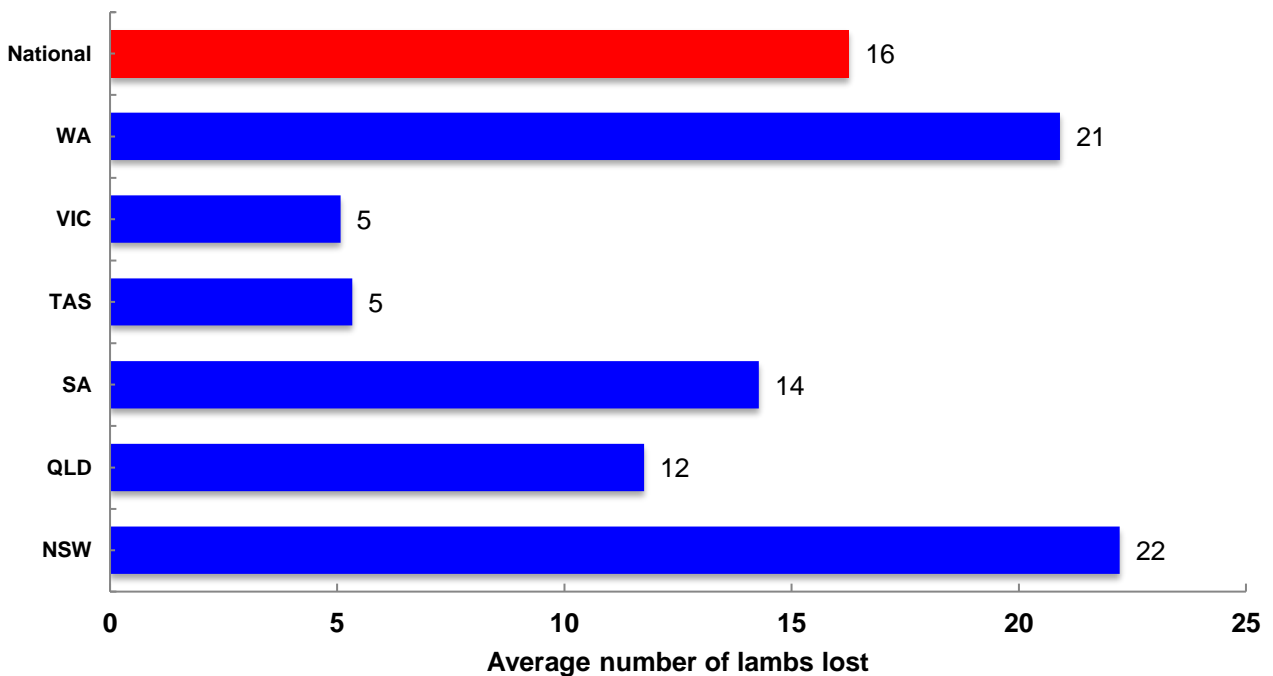


Figure 42: Number of lambs lost due to marking related complications

Q: 'How many lambs do you lose a year?'

BASE: All sheep respondents who lose lambs due to marking related complications (n = 155)



Pain Relief for Tail Docking and Castration of Lambs

Two out of five producers (39%) stated that they would be willing to use pain relief for marking of lambs if such a product was available and effective, and 20% said maybe (Figure 43). Western Australian producers (56%) were significantly more receptive to the use of pain relief compared to Tasmanians (23%) and Victorians (28%). Of those producers who would be willing to use pain relief, the average price that they would be willing to pay was 60 cents per lamb (Figure 43), with 66% of respondents willing to spend under \$1 per lamb (Figure 46).

The proportion of producers willing to use pain relief was significantly higher in South Australia compared to Queensland and Tasmania. Thirty-one percent of respondents already use pain relief for mulesing, with 6% commenting that they found the pain relief used to be ineffective (Figure 44).

Figure 43: Pain Relief - Willing to Use

Q: 'If pain relief was available for tail docking and castration of lambs, would you use it?'

BASE: All sheep respondents who castrate / tail dock (n = 597)

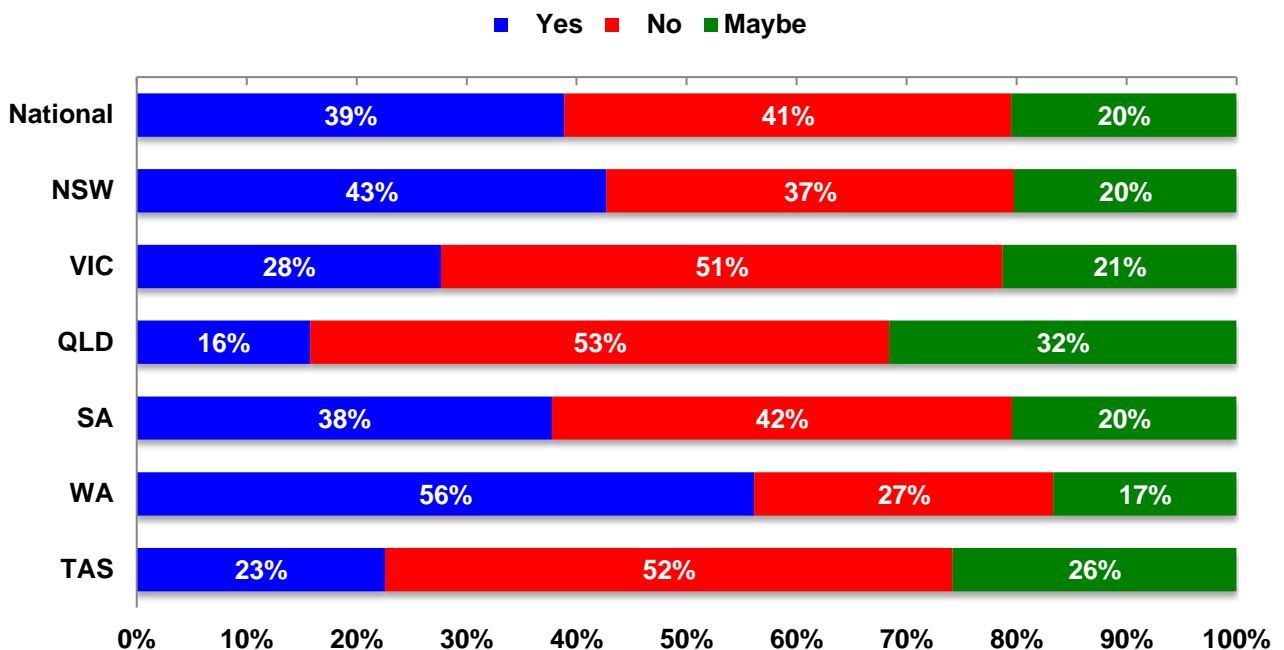


Figure 44: Pain Relief – Already using for mulesing

Q: ‘Comment if already using pain relief’

BASE: All sheep respondents who castrate / tail dock (n = 597)

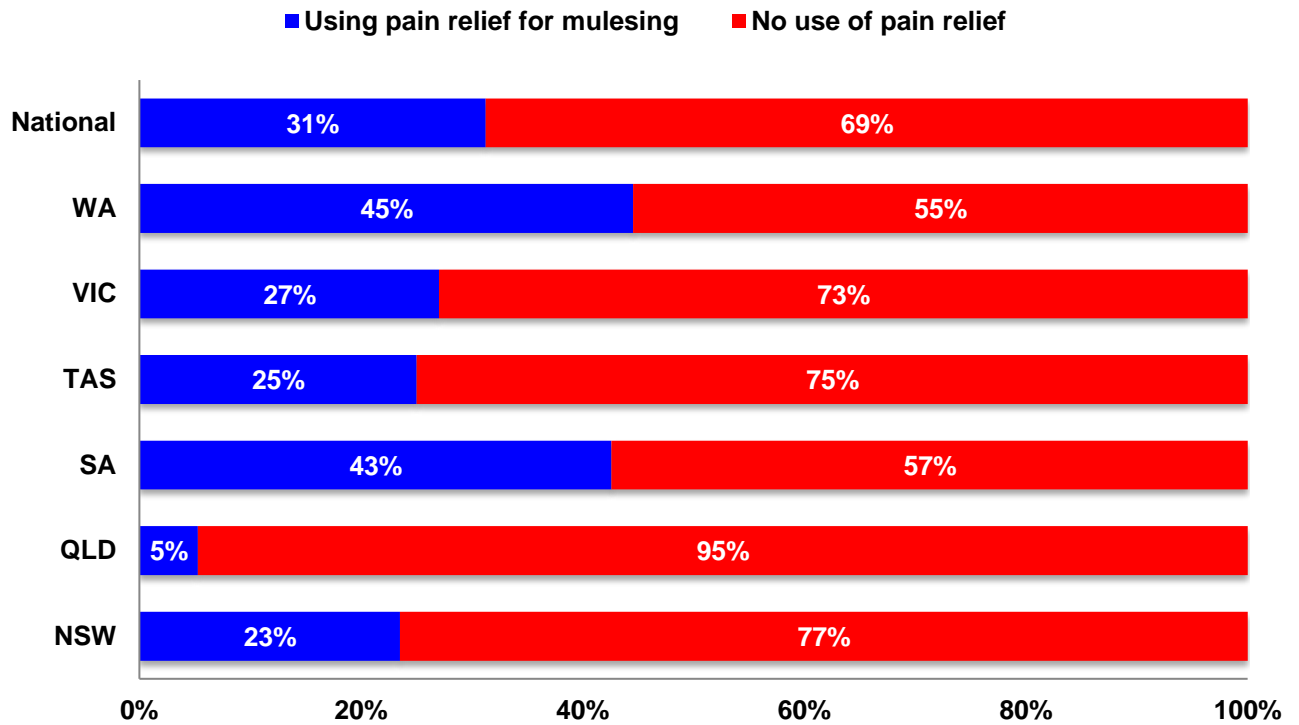


Figure 45: Pain Relief - Willingness to Pay – average price

Q: ‘And how much would you be prepared to spend on pain relief per animal?’

BASE: All sheep respondents willing to or willing to consider using pain relief (n = 225)

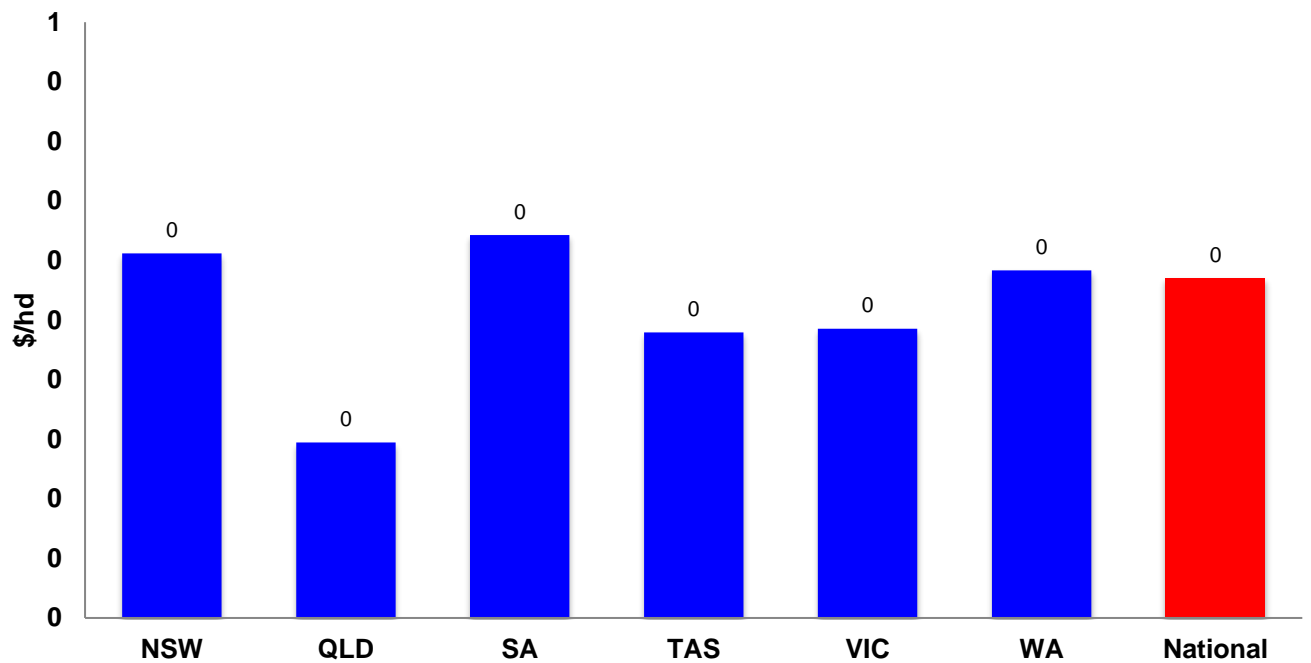
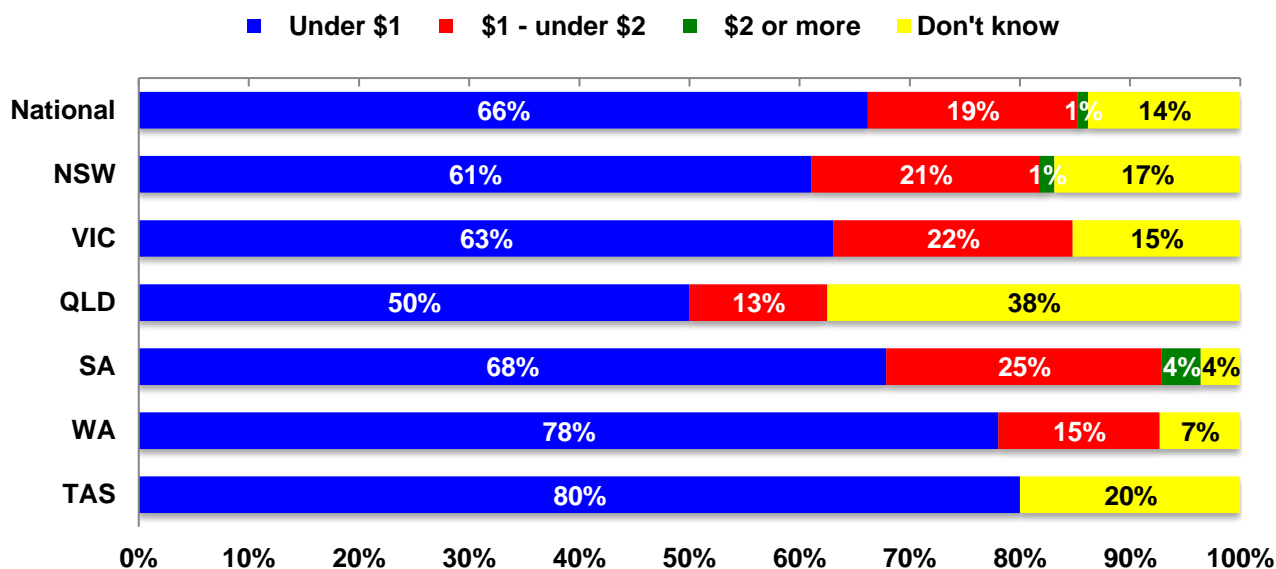


Figure 46: Pain Relief - Willingness to Pay

Q: 'And how much would you be prepared to spend on pain relief per animal?'

BASE: All sheep respondents willing to or willing to consider using pain relief (n = 225)



Drenches / Vaccines

Clostridial Diseases

The vast majority of sheep producers (88%) vaccinate lambs against clostridial diseases, particularly producers in the southern states of Victoria and Tasmania (93% and 97% respectively). Nearly half (45%) of producers vaccinate their hoggets, with those in Tasmania more inclined to (63%) vaccinate relative to other states. Three fifths (59%) of producers vaccinate adult sheep, particularly in Tasmania and South Australia (78% and 73% respectively) (Figure 47). Just under half (42%) of Queensland producers do not vaccinate against clostridial diseases and this result was highly significant ($P < 0.001$).

The majority of producers vaccinate sheep once a year, except for unweaned lambs where 54% producers provide a second vaccination (Figures 48-51). However, only 18% of Queensland give a second vaccination for lambs. Of the adult sheep that receive vaccinations, the vast majority (95%) are vaccinated only once a year (

Figure 51).

The 6 in 1 series of vaccines were the preferred vaccines used, being used by two thirds of sheep producers (64%), and particularly by those in Victoria (80%) and Tasmania (81%). Straight 6 in 1 was the preferred vaccine used by 30% of sheep producers nationally (

Figure 52). Six in 1 +B12 was the preferred vaccine in South Australia (20%, versus 13% nationally) while Tasmanian producers preferred 6 in 1 plus selenium (39% versus 10% overall) and 6 in 1 plus selenium and B12 (23% versus 11% nationally). Five in 1 (24%) was the next most used vaccine and was the vaccine of preference for Queensland sheep producers (45%). The use of the 3 in 1 series of vaccines was 18% nationally but was significantly higher in Western Australia (53%) and South Australia (41%) and non-existent in Tasmania and Queensland.

Despite the vast majority of sheep producers indicating that they vaccinate sheep only once (Figure 48), when asked if they gave their sheep a booster vaccination 6 weeks after the initial vaccination, three quarters (74%) indicated that they did (Figure 53). Queensland sheep producers and meat sheep specialists were less inclined to administer a booster vaccination (82% and 60% respectively).

Figure 47: Clostridial Vaccines - by State

Q: 'In a normal season, do you vaccinate your [stock class] against clostridial diseases, e.g. tetanus, blackleg?'

BASE: All sheep respondents (n = 602)

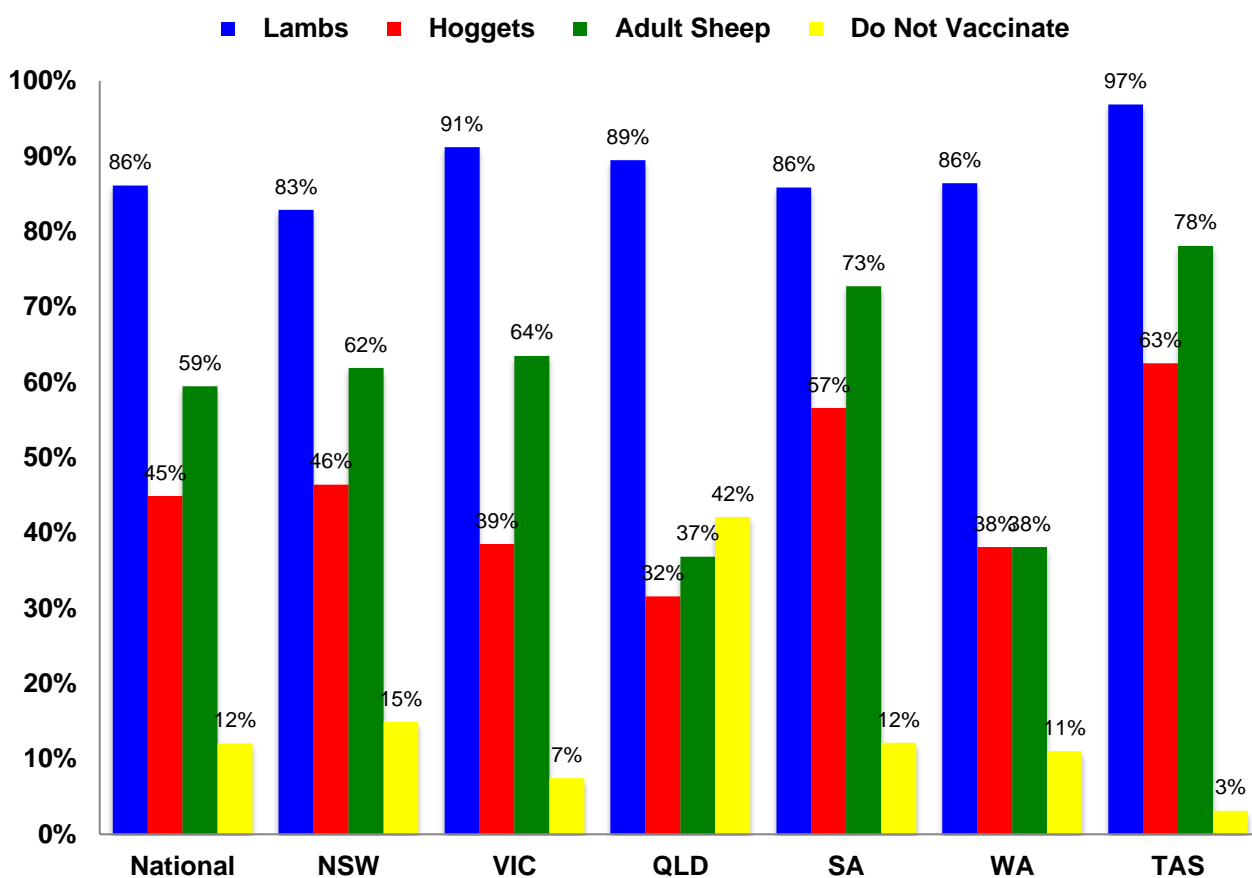


Figure 48: Clostridial Vaccination – Number of Vaccinations Received by Unweaned Lambs

Q: 'How many times a year do you vaccinate your unweaned lambs against clostridial diseases?'

BASE: All sheep respondents who vaccinate their unweaned lambs (n = 517)

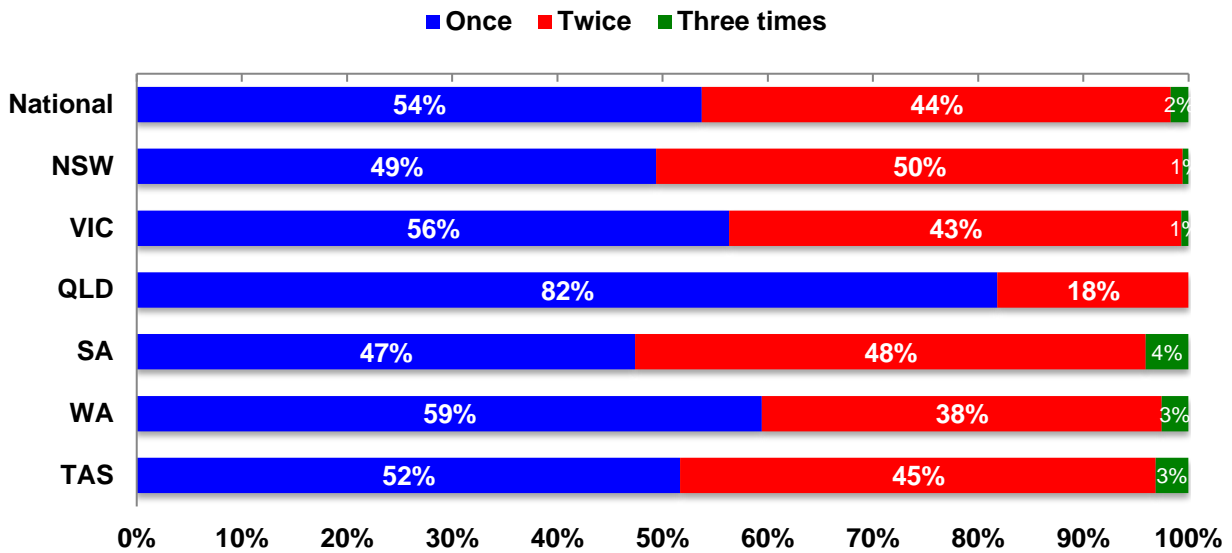


Figure 49: Clostridial Vaccination – Number of Vaccinations Received by Weaned Lambs

Q: 'How many times a year do you vaccinate your weaned lambs against clostridial diseases?'

BASE: All sheep respondents who vaccinate their weaned lambs (n = 312)

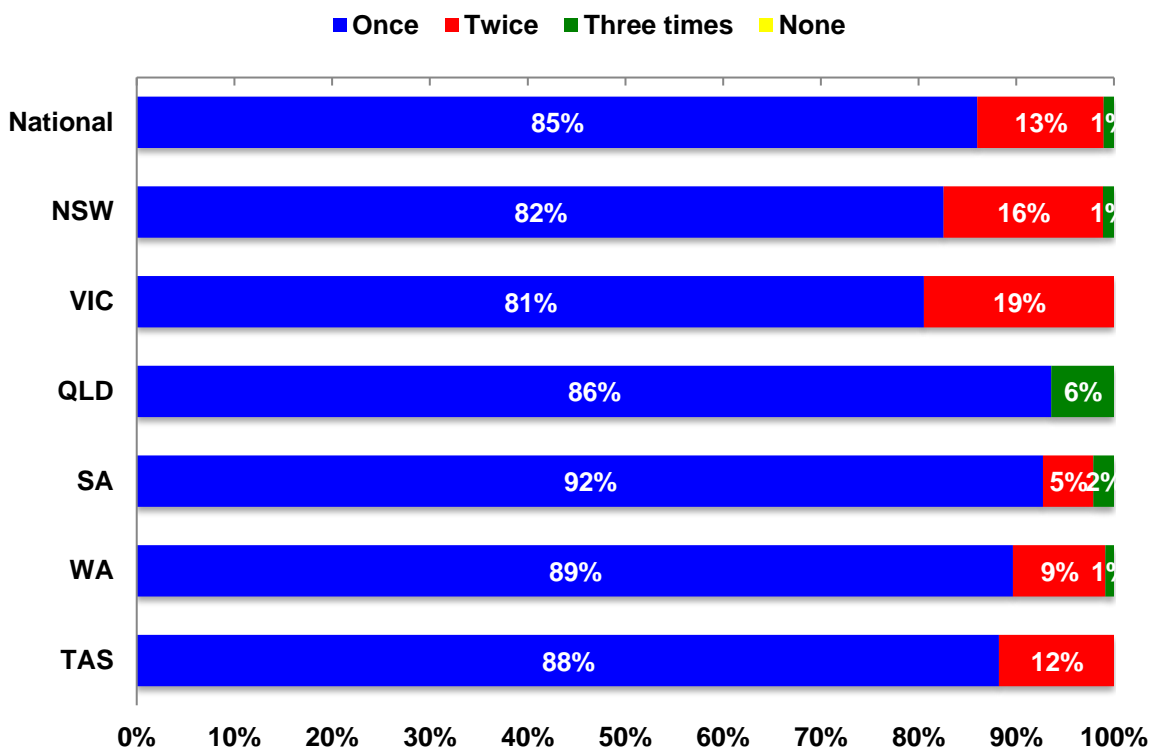


Figure 50: Clostridial Vaccination – Number of Vaccinations Received by Hoggets

Q: 'How many times a year do you vaccinate your hoggets against clostridial diseases?'

BASE: All sheep respondents who vaccinate their hoggets (n = 271)

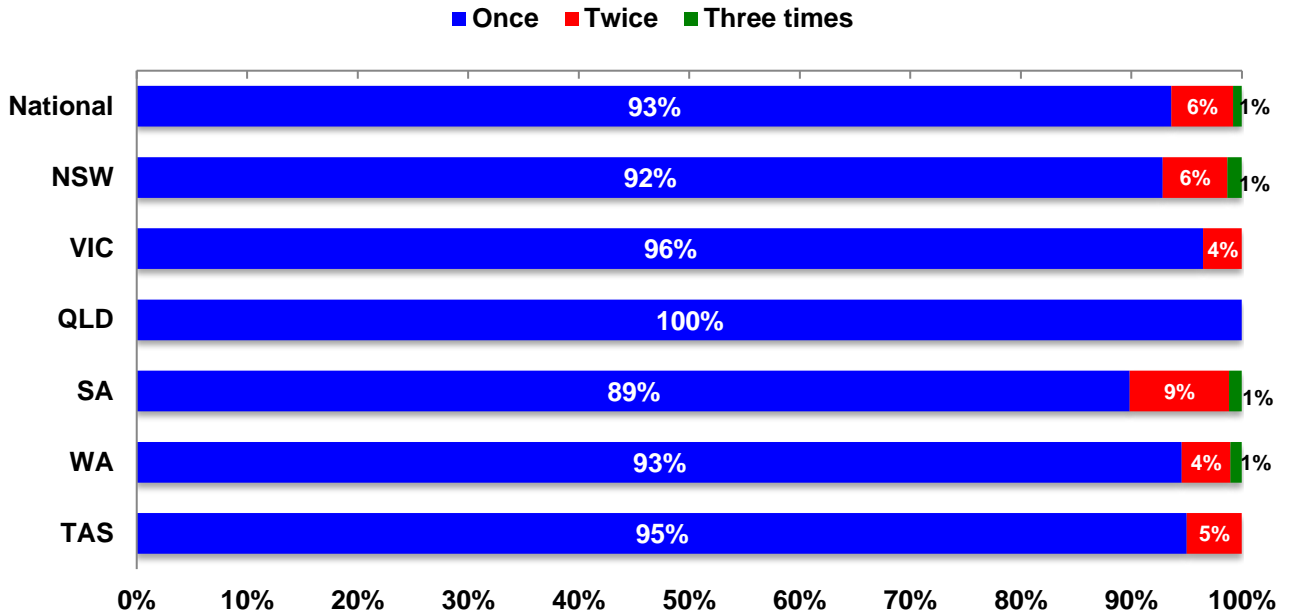


Figure 51: Clostridial Vaccination – Number of vaccinations received by Adult Sheep

Q: 'How many times a year do you vaccinate your adult sheep against clostridial diseases?'

BASE: All sheep respondents who vaccinate their adult sheep (n = 358)

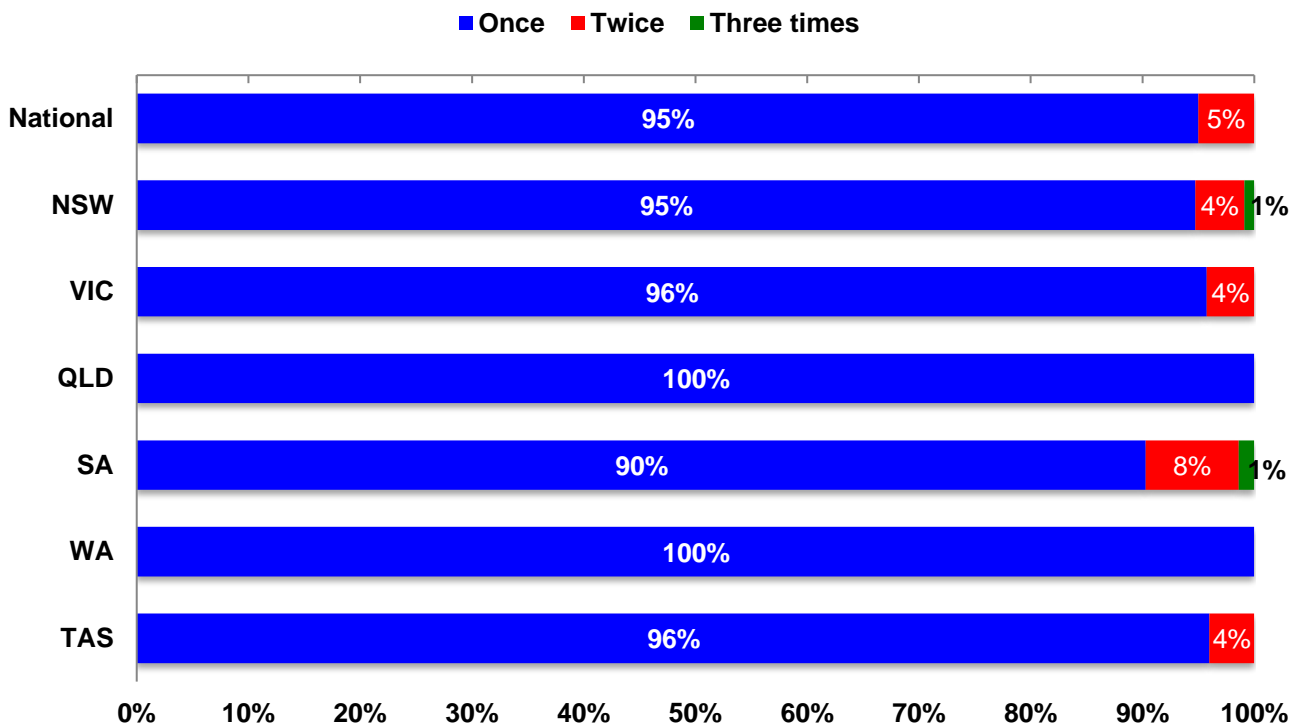


Figure 52: Clostridial Vaccination - Vaccines Used

Q: 'What vaccines against clostridial diseases do you use?'

BASE: All sheep respondents who vaccinate their sheep (n = 528)

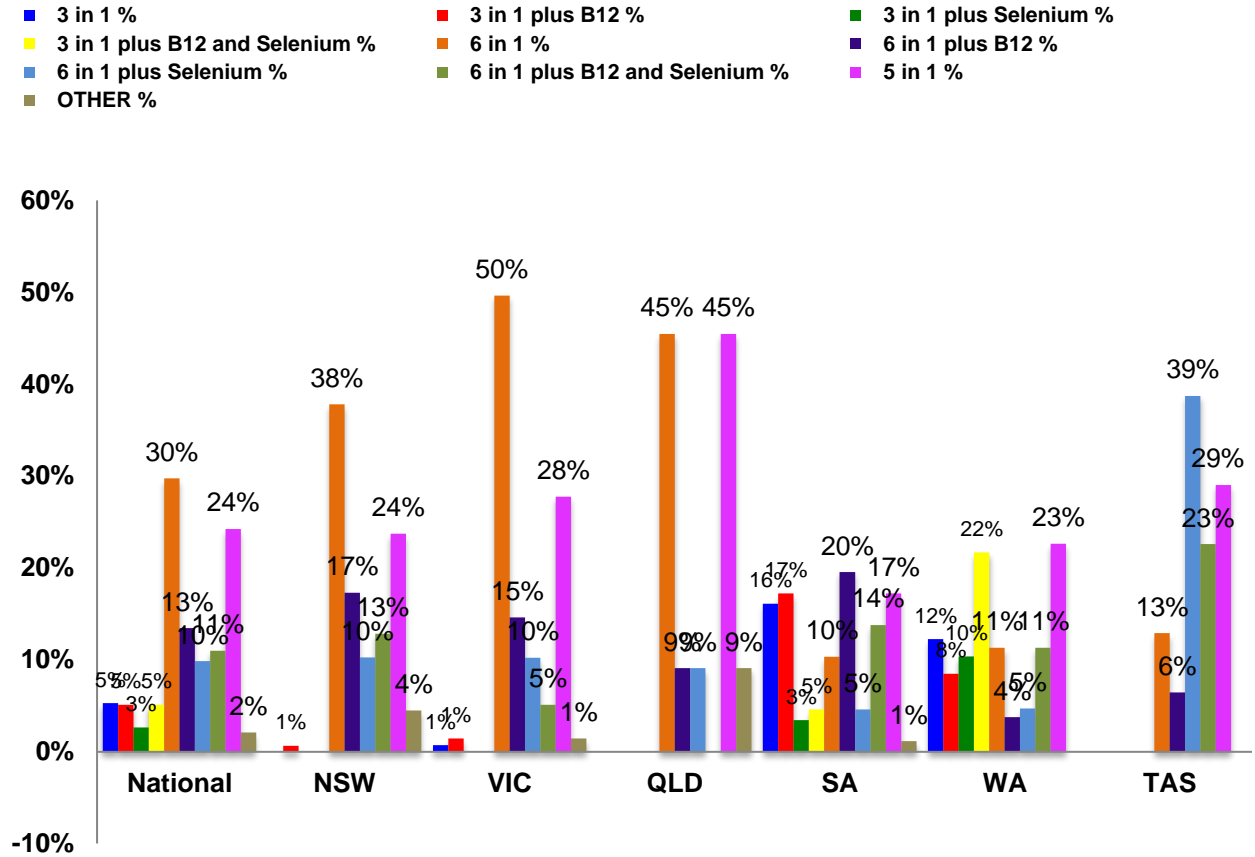
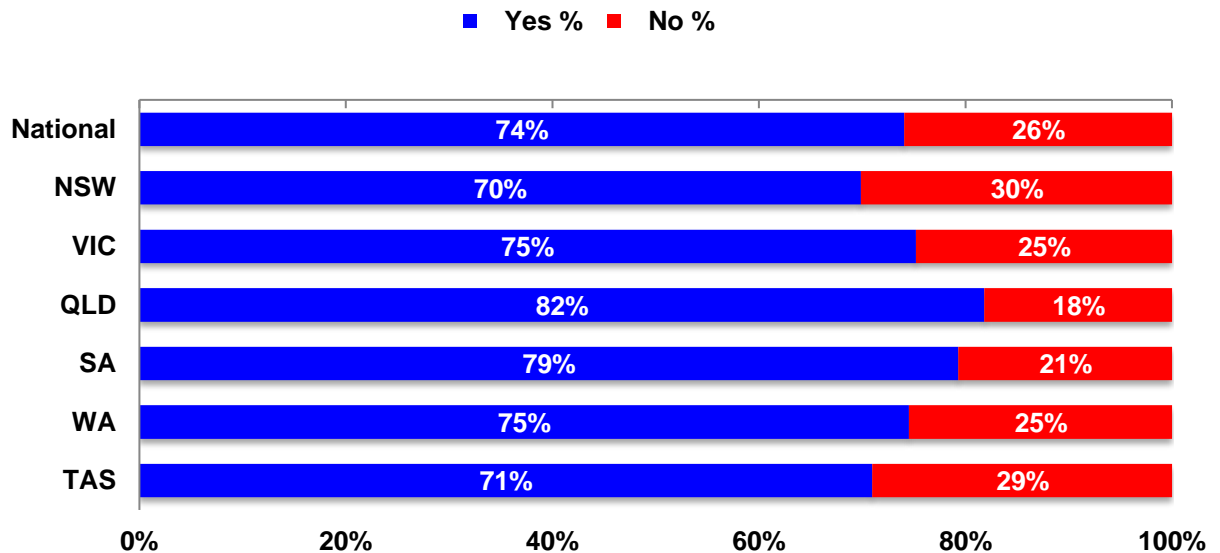


Figure 53: Clostridial Vaccination - Booster Vaccination

Q: 'Do you give a booster vaccination within 6 weeks of the initial dose?'

BASE: All sheep respondents who vaccinate their sheep (n = 528)

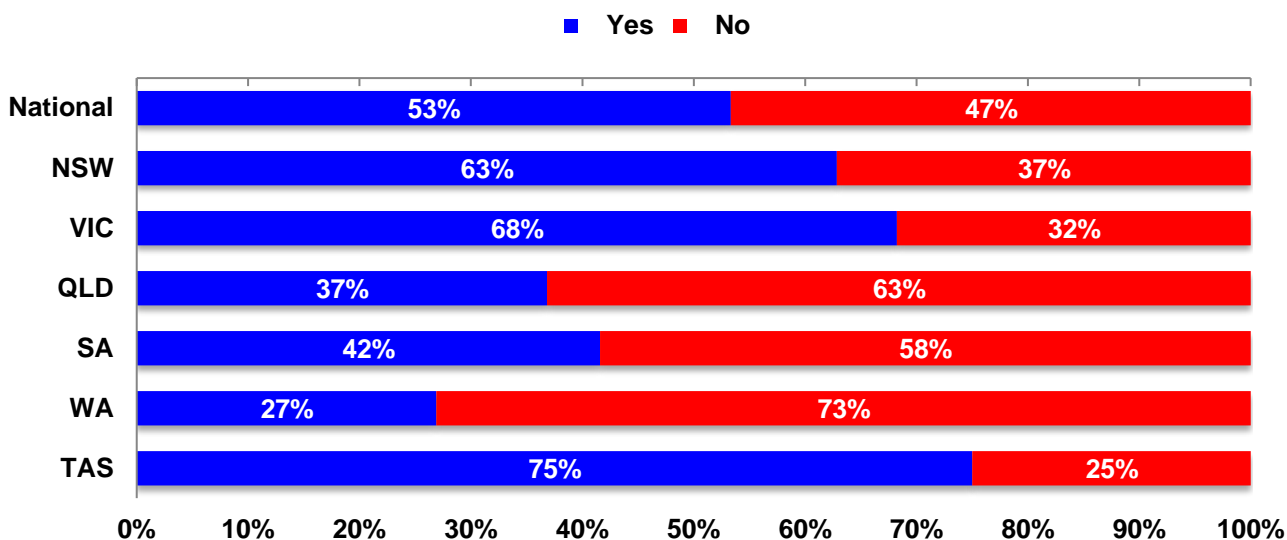


Cheesy Gland (CLA) Vaccines

Just over half (53%) of sheep producers vaccinate against cheesy gland (Figure 54). Tasmanian producers were more likely to vaccinate against cheesy gland (75%), while those in Western Australia were less inclined to (27%).

Figure 54: Cheesy Gland Vaccination – by state

BASE: All sheep respondents who vaccinate their sheep (n = 528)



Ovine Johne's Disease

One third of sheep producers (29%) vaccinate for Ovine Johne's Disease. There was a significant difference between states in vaccination rates at the $P < 0.001$ level. Tasmanian sheep producers were more inclined to vaccinate (72%), compared to those in Queensland, South Australia, and Western Australia (0%, 11% and 11% respectively) (Figure 55).

Nearly two thirds (63%) of sheep producers administered the Gudair vaccine themselves, followed by 22% of producers who had staff members administering the vaccine (Figure 56). In dealing with the OH & S issues associated with the use of the Gudair vaccine, 50% of producers use a special gun / shrouded needle, 22% are very careful and 21% reported that they are experienced and do it themselves to avoid injury to others (Figure 57).

Figure 55: Ovine Johne's Disease

Q: 'In a normal season, do you vaccinate against Ovine Johne's Disease (OJD)?'

BASE: All sheep respondents (n = 602)

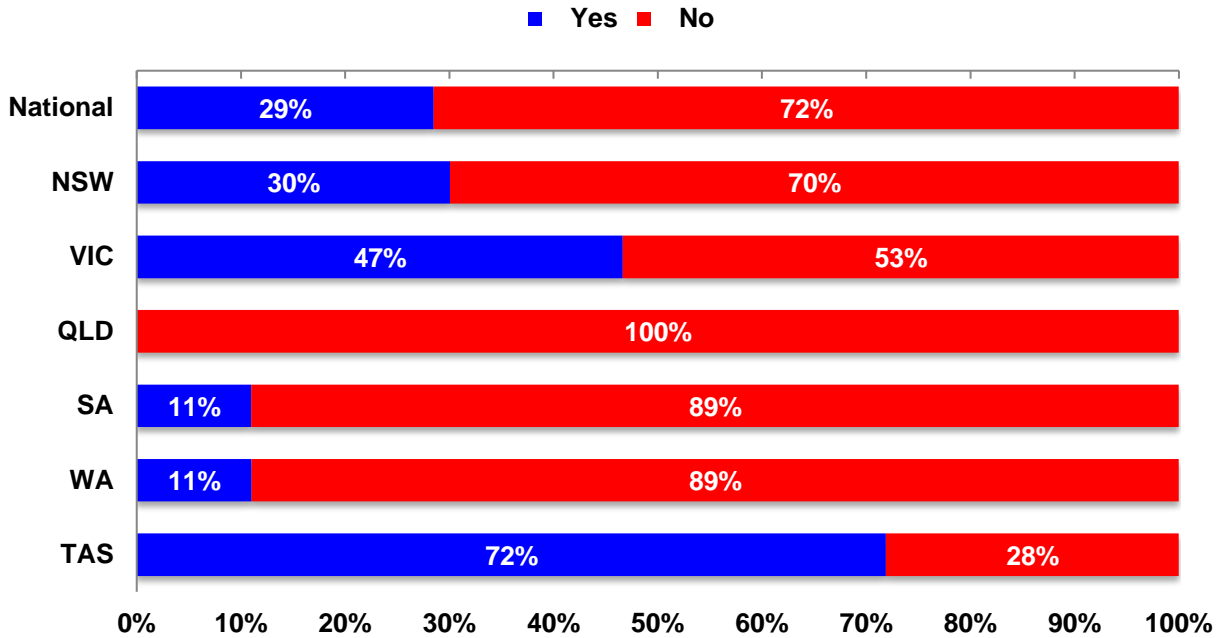


Figure 56: Ovine Johne's Disease - Applicator

Q: 'Who does the vaccination against Ovine Johne's Disease using the Gudair vaccine?'

BASE: All sheep respondents who vaccinate against OJD (n = 171)

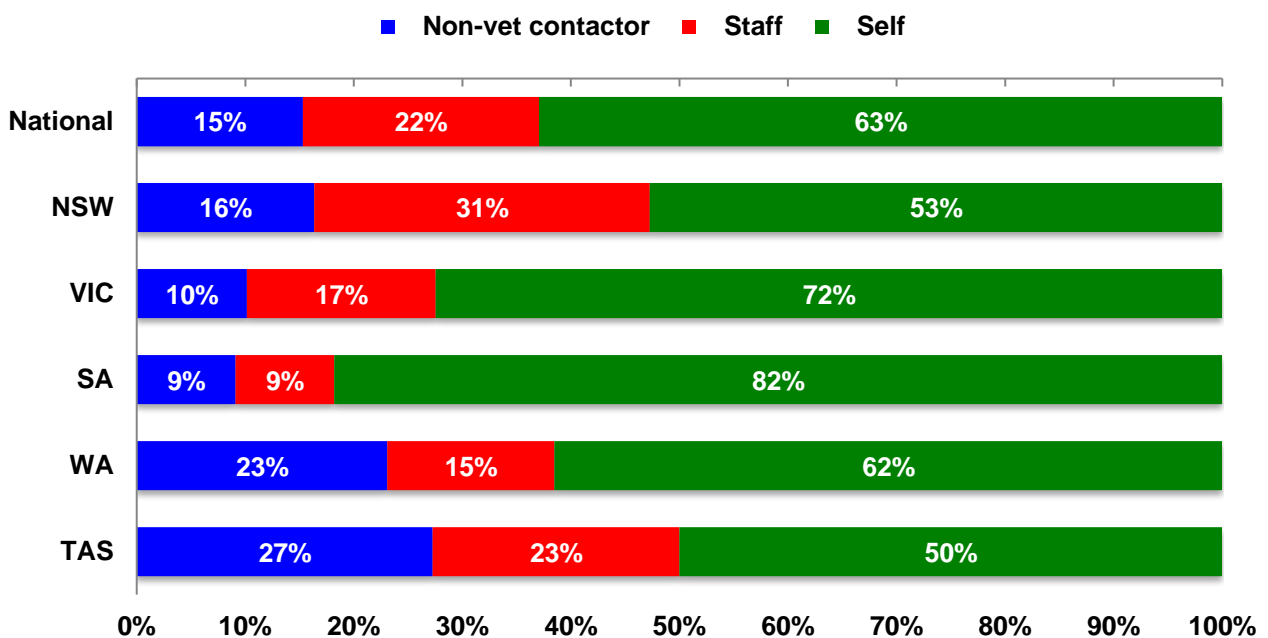
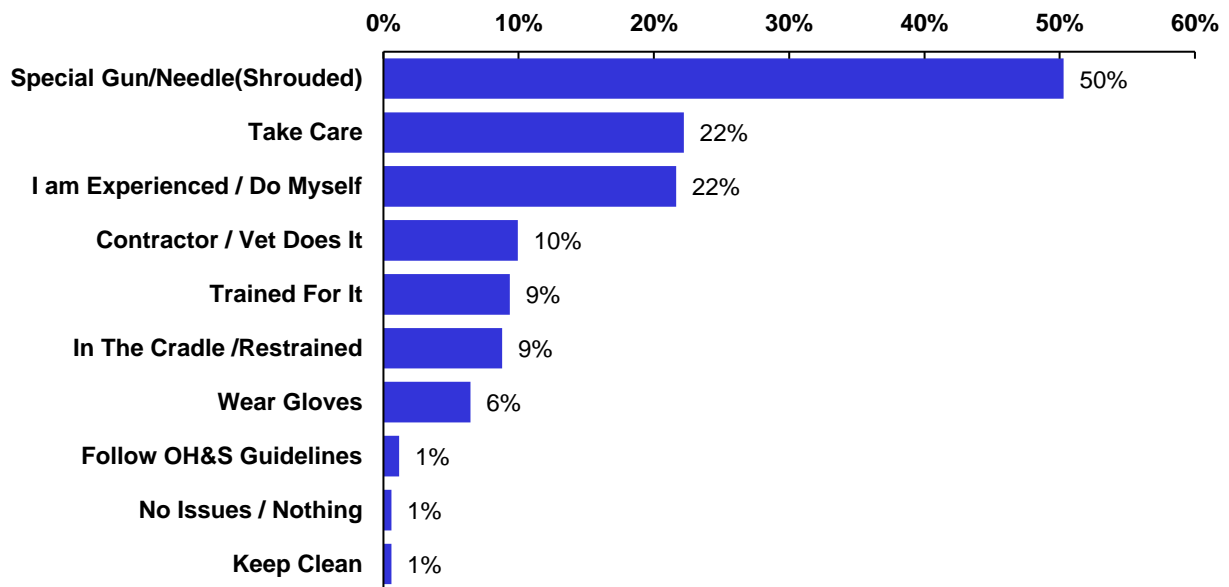


Figure 57: Ovine Johne’s Disease OH & S Issues

Q: ‘How do you deal with OH&S issues when using the Gudair vaccine against Ovine Johne’s Disease (OJD)?’

BASE: All sheep respondents who vaccinate against OJD (n = 171)



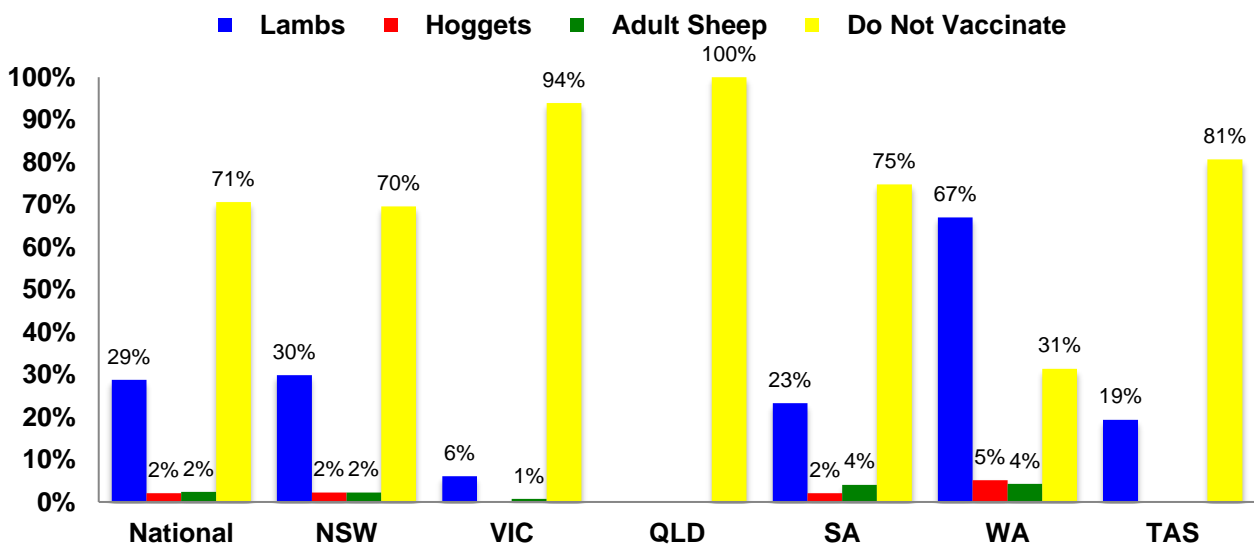
Scabby Mouth

While just over two thirds of all sheep producers (71%) do not vaccinate against Scabby Mouth, there was a significant difference between states ($P<0.001$) (Figure 58). In particular, a greater proportion of sheep producers in Tasmania, Victoria and Queensland did not vaccinate for scabby mouth (81%, 94% and 100% respectively), compared to those in Western Australian where 67% did not vaccinate lambs and 4% did not vaccinate adult sheep.

Figure 58: Scabby Mouth Vaccination

Q: ‘In a normal season, do you vaccinate your [stock class] against Scabby Mouth?’

BASE: All sheep respondents (n = 602)



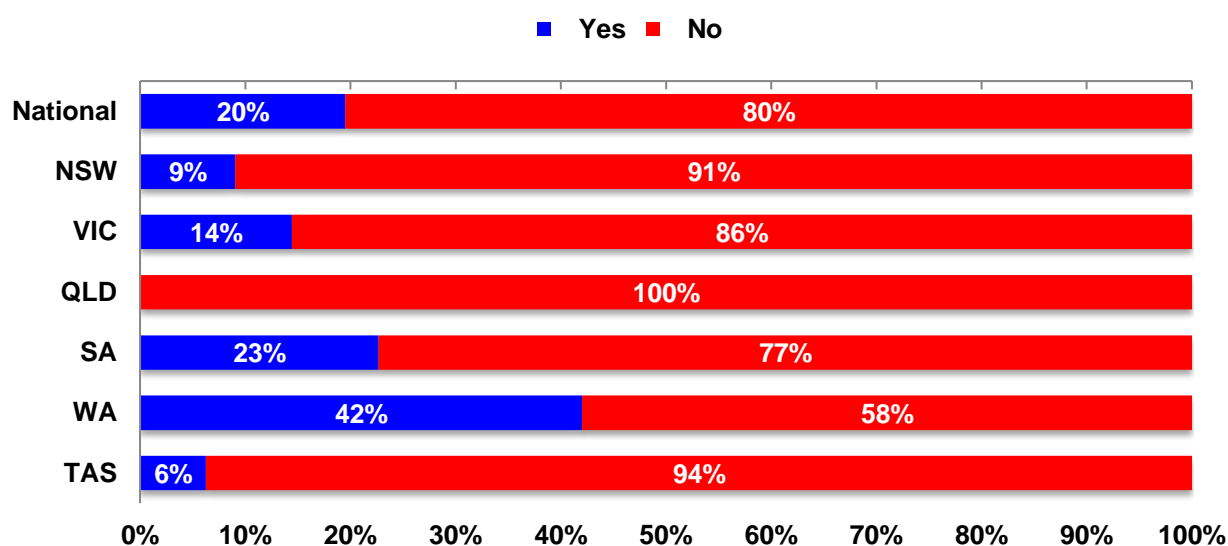
Arthritis

Only one in five (20%) sheep producers vaccinate sheep against arthritis (Figure 59). There was a highly significant difference between states ($P < 0.001$) with a greater proportion of producers in Western Australia vaccinating compared to other states (42%), while no producers in Queensland vaccinated for arthritis.

Figure 59: Arthritis Vaccination

Q: 'Do you vaccinate your sheep for arthritis?'

BASE: All sheep respondents ($n = 602$)



Endoparasiticides

The vast majority (90%) of sheep producers drenched for internal parasites with a highly significant state effect on drenching rates ($P < 0.001$) (Figure 60). In particular, a greater proportion of producers in Victoria (96%) and Tasmania (97%) drenched sheep whereas Queensland and South Australian producers (84% and 79% respectively) were less likely to drench.

The majority (84%) of sheep producers drenched lambs, in particular Tasmanian producers (94%) (Figure 60). One third (33%) of sheep producers drenched lambs once a year, in particular producers in Queensland (43%). Drenching lambs as required (using Faecal Egg Counts) was practiced by 13% of producers. A further third (33%) drenched lambs twice a year, with Western Australian producers (38%) being more inclined to do so. While only one in seven (14%) producers drenched three times a year, over a quarter (21%) of Queensland producers drenched this frequently (Figure 61).

Two thirds (71%) of sheep producers drenched hoggets, in particular Western Australian producers (81%) (Figure 60). Drenching hoggets as required (using Faecal Egg Counts) was practiced by 24% of producers. Just over one third (35%) of producers drenched hoggets once a year, in particular producers in Western Australia (53%). A further 25% drenched twice a year, with Queensland producers (45%) being more inclined to do so. While only one in ten (10%) producers drenched three times a year, over a quarter (20%) of Tasmanian producers drenched this frequently (Figure 62).

The majority (83%) of sheep producers drenched adult sheep, in particular those in Tasmania (97%) (Figure 60). Drenching adult sheep as required (using Faecal Egg Counts) was practiced by 23% of producers. One third (35%) of sheep producers drenched adult sheep once a year, with this practice being more common amongst Western Australian producers (53%). Just under a third (29%) drenched twice a year, particularly those in Tasmania (42%). Only 8% of producers drenched three times a year, with producers in New South Wales and Tasmania (14% and 16% respectively) more likely to drench this frequently relative to other states (Figure 63).

Figure 60: Endoparasiticides

Q: 'In a normal season, do you drench your [stock class] against internal parasites?'

BASE: All sheep respondents (n = 602)

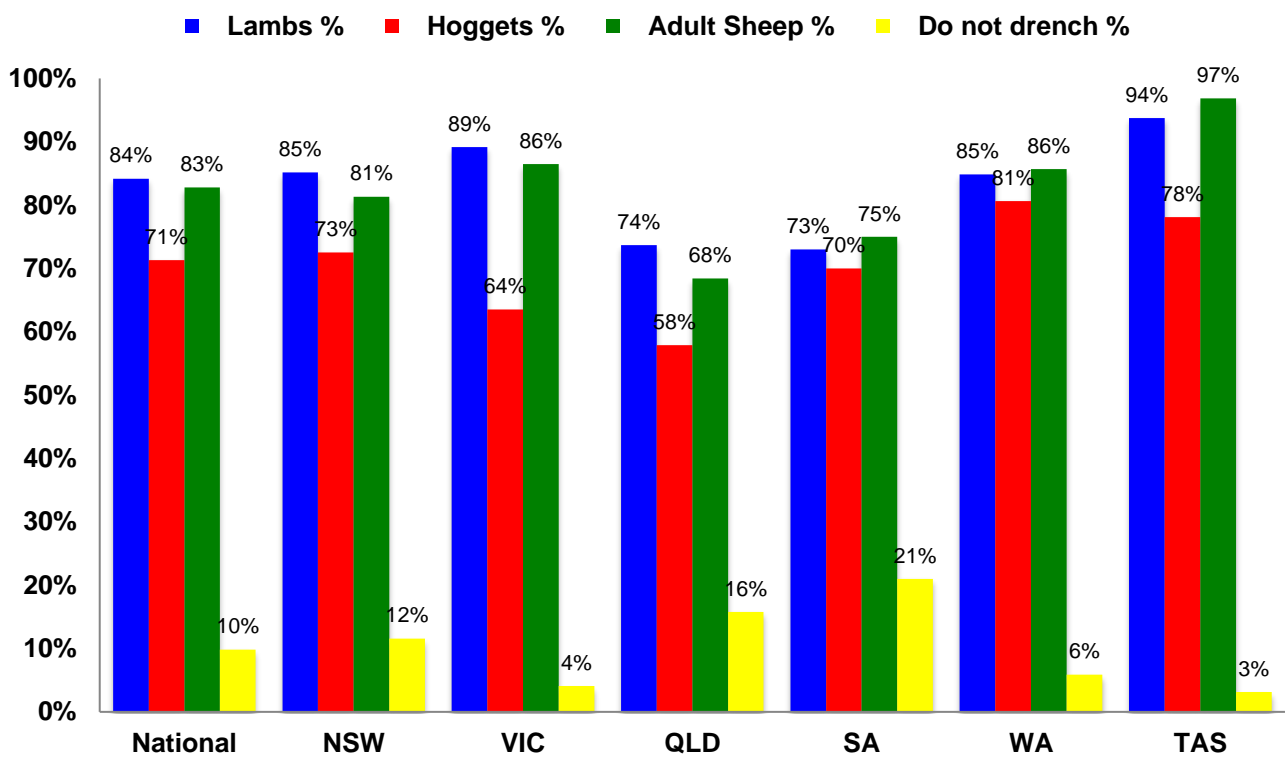


Figure 61: Endoparasiticides - Lambs – Number of Treatments

Q: ‘And how many times in a normal year do you drench your lambs against internal parasites?’

BASE: All sheep respondents who drench their lambs (n = 505)

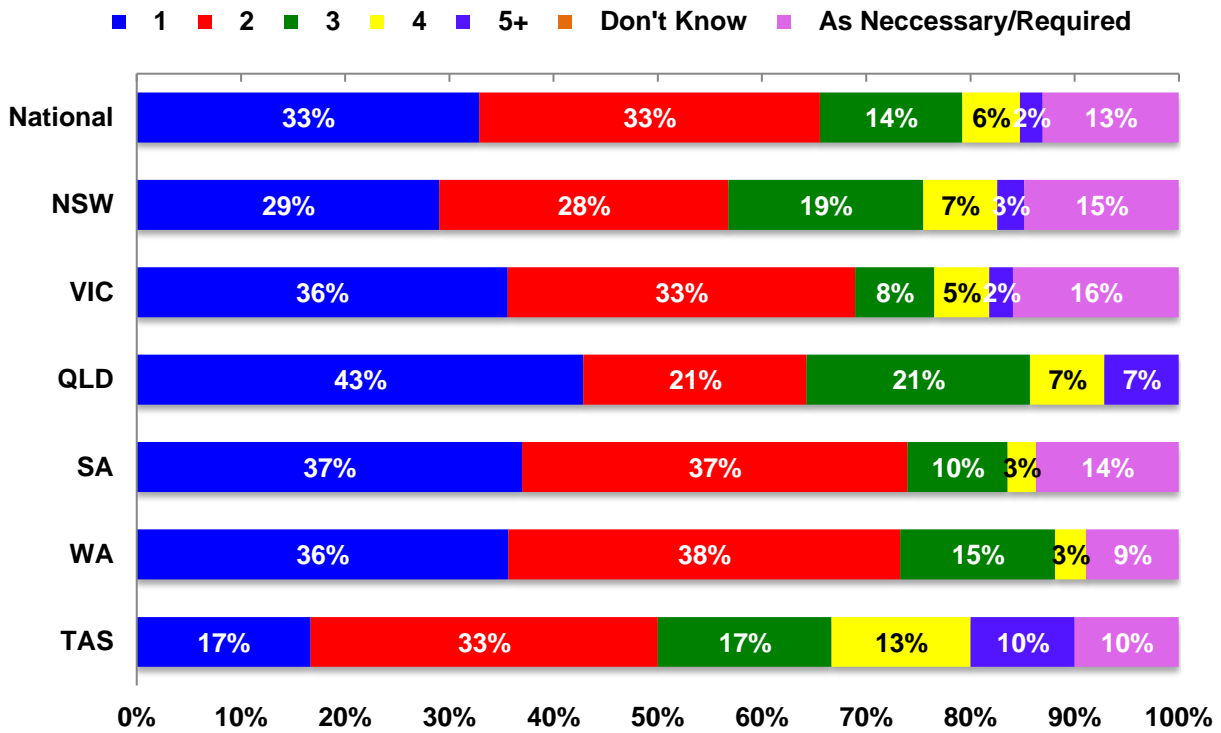


Figure 62: Endoparasiticides -Hoggets – Number of Treatments

Q: ‘And how many times in a normal year do you drench your hoggets against internal parasites?’

BASE: All sheep respondents who drench their hoggets (n = 428)

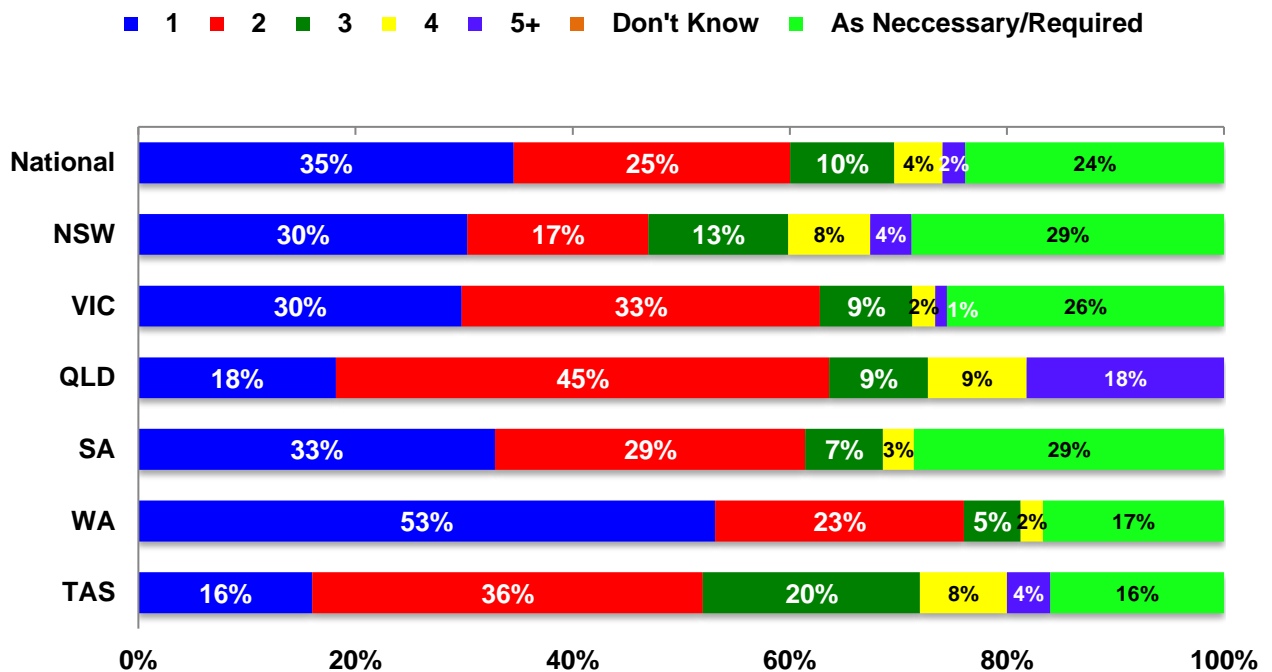
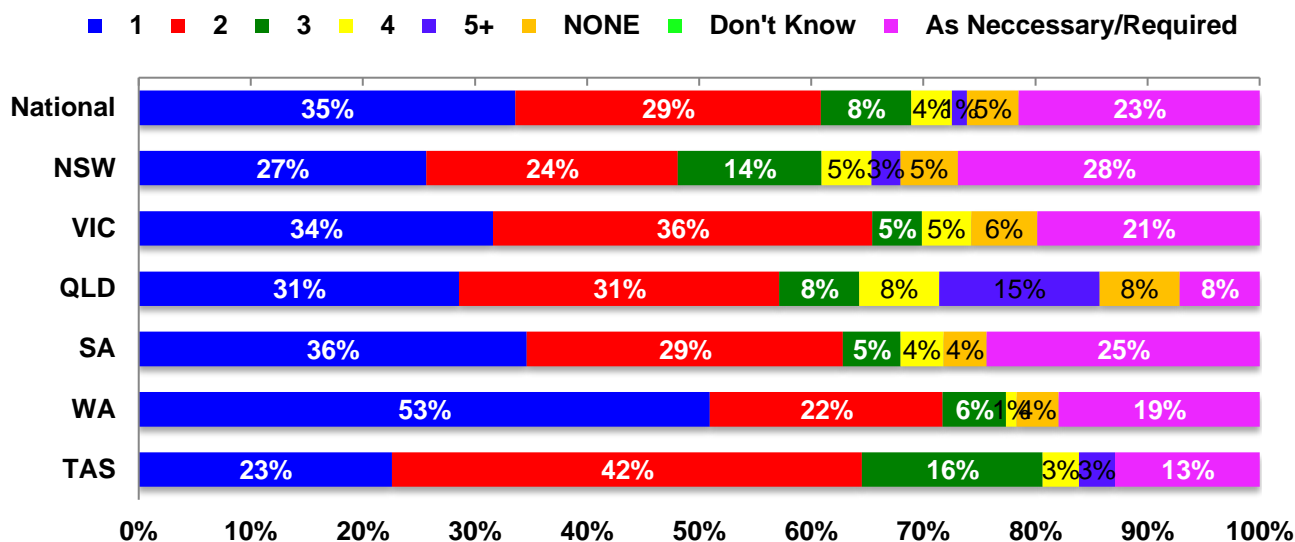


Figure 63: Endoparasiticides - Adult Sheep – Number of Treatments

Q: ‘And how many times in a normal year do you drench your adult sheep against internal parasites?’

BASE: All sheep respondents who drench their adult sheep (n = 497)



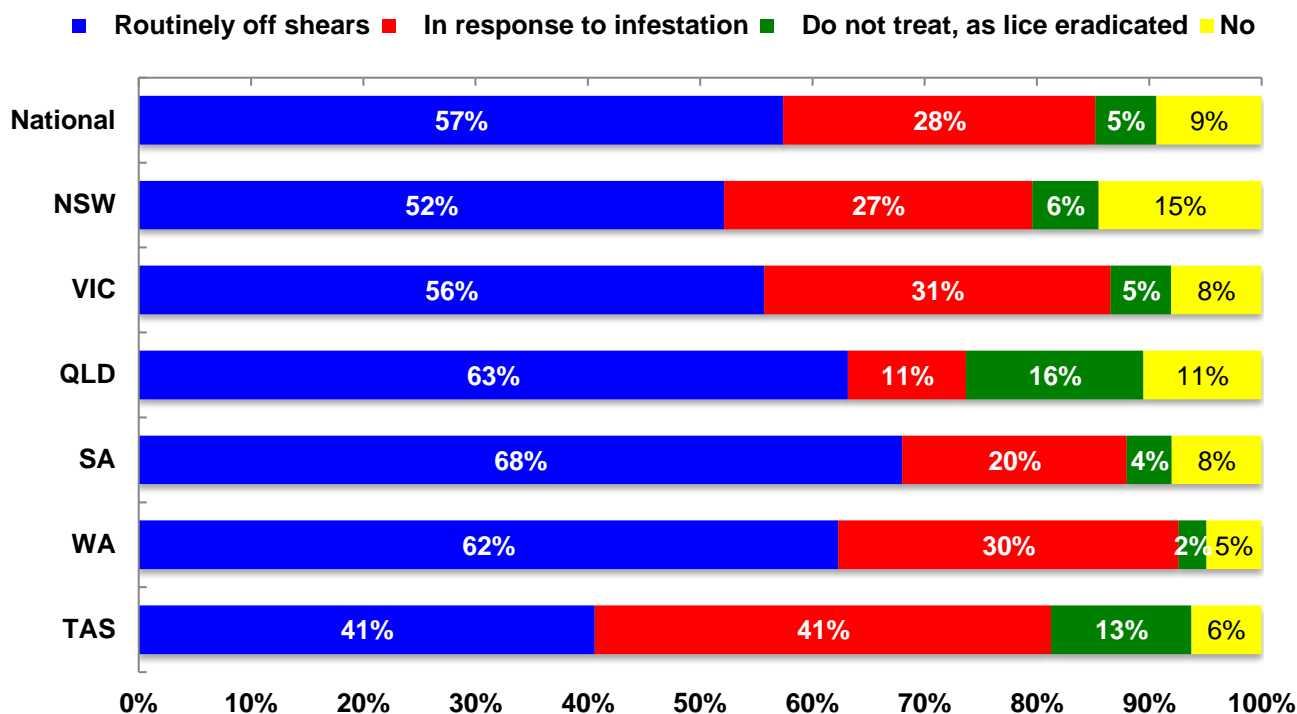
Ectoparasiticides

Only a small proportion (5%) of sheep producers have eradicated lice, and 9% responded that they did not treat for lice at all. While just over half (57%) of sheep producers routinely treat for lice off shears, producers in Tasmania (41%) were less inclined to do so relative to other states. A lower proportion of Queensland producers treated for lice in response to an infestation relative to other states (11% versus 28% overall) (Figure 64). A significantly lower proportion of producers from New South Wales treated sheep for lice compared to producers in South Australia.

Figure 64: Ectoparasiticides

Q: 'Do you treat for lice?'

BASE: All sheep respondents (n = 602)



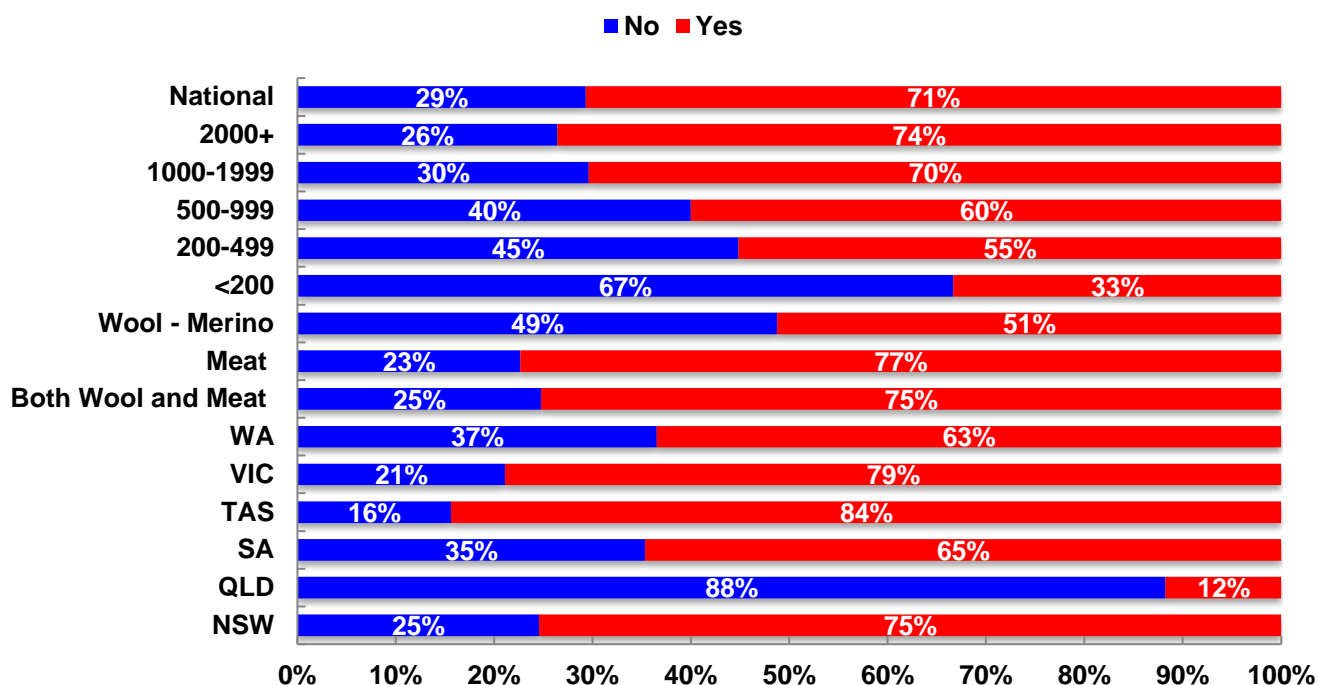
Shearing Rams

Of the sheep producers who shear rams, nearly three quarters (71%) sedate them for shearing (Figure 65). There was a highly significant state effect ($P < 0.001$) with producers in Queensland being the least inclined to sedate rams (12%). An interesting finding was that sheep producers with large flocks of 2,000 or more were more inclined to sedate rams for shearing (74%), while those with small to medium flocks of <200, 200-499 and 500-1000 were less inclined to do so (33%, 55% and 60% respectively). Merino – wool specialists were less inclined to sedate rams (51%) compared to meat and meat-wool sheep specialists (77% and 75% respectively). This finding is most likely due to the fact that meat breed rams are generally bigger and harder to handle than Merino rams.

Figure 65: Ram Sedation

Q: 'Do you sedate your rams at shearing?'

BASE: All sheep respondents who shear rams (n = 580)



Crutching

The vast majority of sheep producers (91%) crutch their sheep, particularly producers who run sheep for both wool and meat (96%) and producers in Tasmania (100%) (Figure 66). There was a highly significant state effect for crutching ($P < 0.001$) with a lower proportion of Queensland producers crutching (32%) and 100% of Tasmanian producers crutching their sheep.

Nearly three quarters (74%) of producers crutched once a year, particularly in New South Wales, Tasmania and Western Australia (83%, 81% and 92% respectively). Sheep producers in Victoria and South Australia were more inclined to crutch twice a year compared to those in other states (39% and 44% respectively, versus 24% overall) (Figure 67). The main reasons provided for crutching were to reduce fly strike (77%); cleaner sheep / wool (66%) and easier birthing (23%) (Figure 68).

Figure 66: Crutching – by state, industry and rainfall

Q: 'Do you crutch your sheep?'

BASE: All sheep respondents (n = 602)

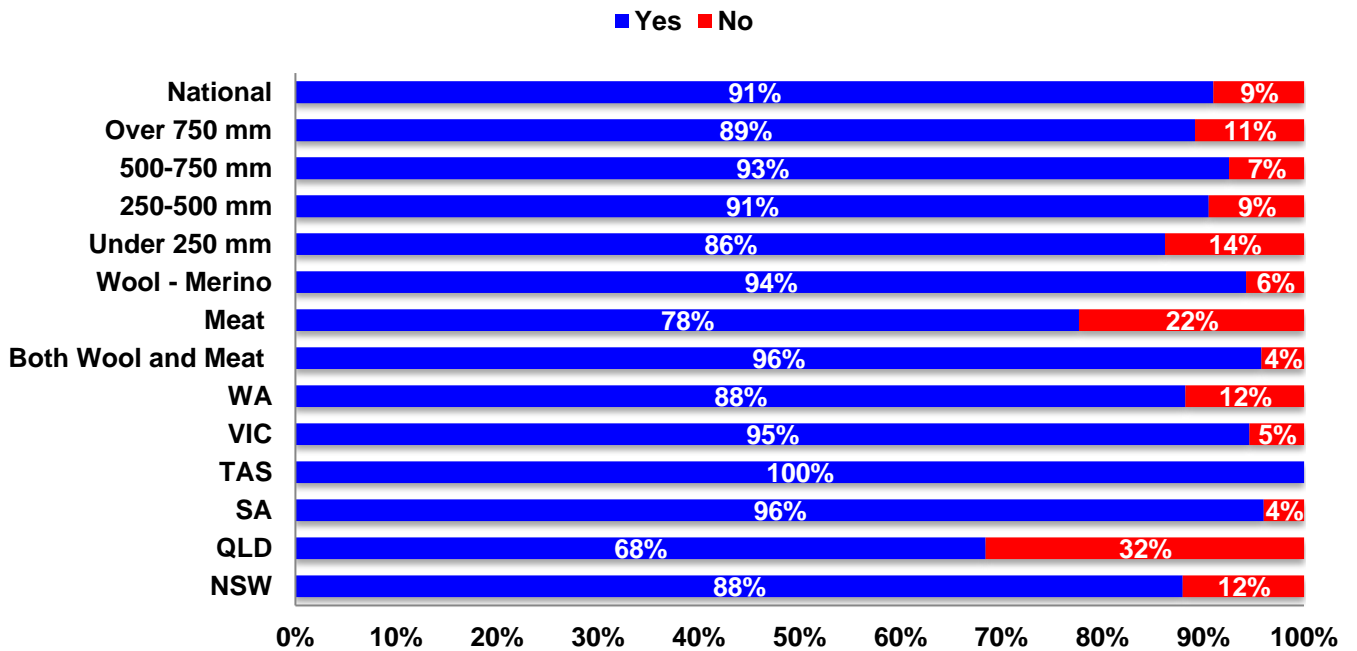


Figure 67: Crutching – how often?

Q: 'How often do you crutch / dag your sheep?'

BASE: All sheep respondents who crutch their sheep (n = 548)

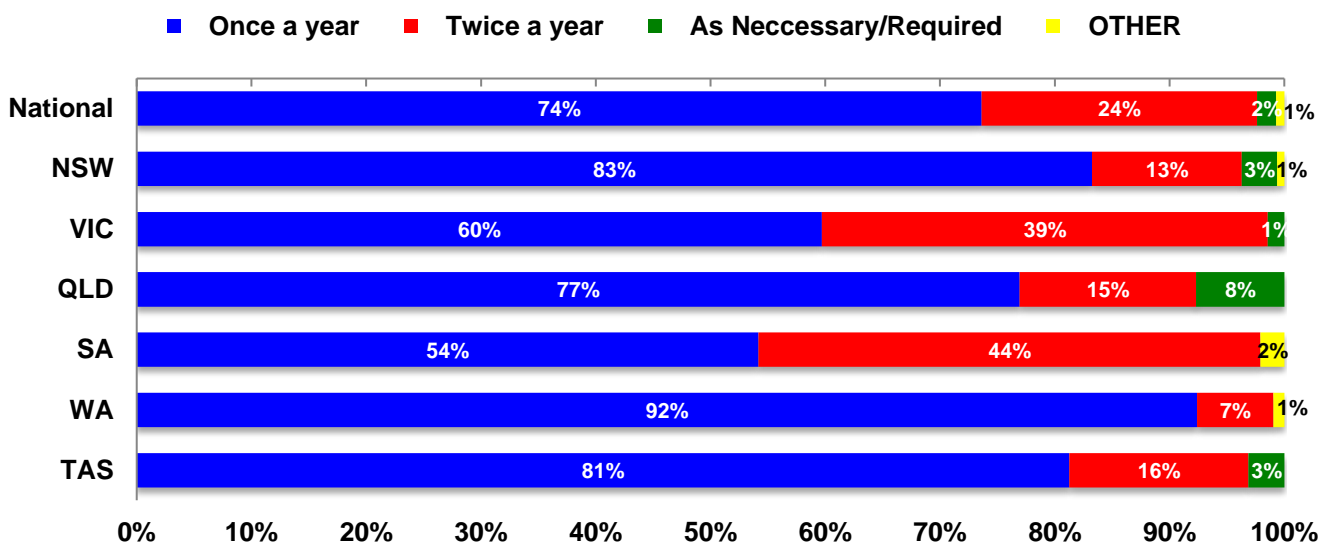
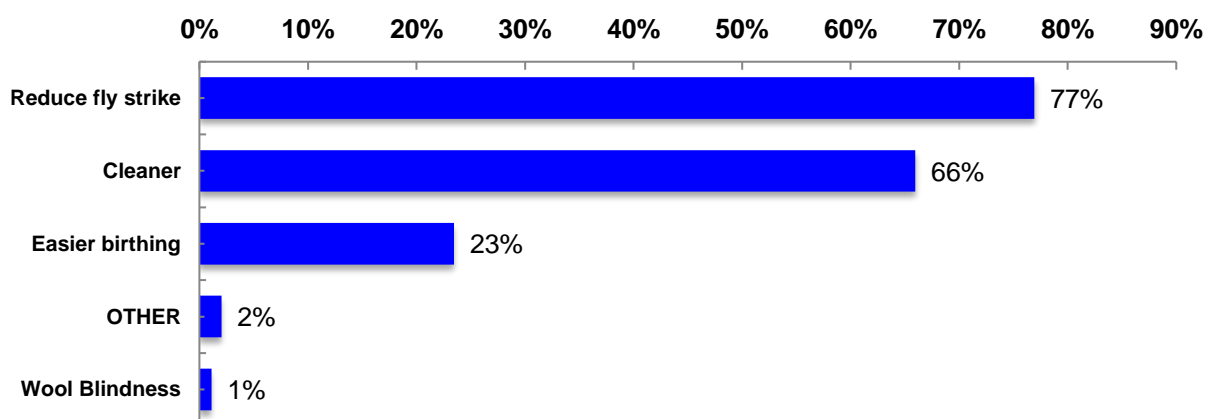


Figure 68: Crutching – why?

Q: 'Why do you crutch / dag your sheep?'

BASE: All sheep respondents who crutch their sheep (n = 548)



Transport of Sheep

Slaughter Stock

1.1.1.8 Feed and / or water Curfew for Slaughter Stock

The vast majority of sheep producers apply a feed (96%) (Figure 69) or water (90%) curfew (Figure 70) prior to the transport of slaughter stock. There was a highly significant state effect for the application of a feed ($P<0.001$) and water curfew ($P=0.001$). Notably, all (100%) producers in Tasmania apply a feed curfew (Figure 69) and nearly all (96%) producers in South Australia apply a water curfew (Figure 70), while New South Wales and Queensland producers are less inclined to apply feed (90% and 89% respectively) and water curfews (84% and 74% respectively).

The main reason behind applying a feed and / or water curfew was that stock travel better (71%), particularly in South Australia (75%) (Figure 71). The main reasons feed and / or water curfews were not applied was because of only needing to travel a short distance (33%) for the feed curfew (Figure 72) and close proximity to the saleyards or abattoir for water curfew (41%) (Figure 73).

The average length of the curfew was 14.6 hours for feed and 14.9 hours for water. Nearly one quarter (23% for feed and 22% for water) of sheep producers applied a feed and / or water curfew of under 12 hours, especially in New South Wales (38% for feed and 34% for water curfews) (Figure 74, Figure 75). Just over half of producers applied a feed curfew (54%) (Figure 74) and a water curfew (53%) (Figure 75) of between 12 and 24 hours, in particular in Western Australia and Tasmania (77% feed/75% water and 77% feed/79% water respectively). Around a quarter of producers (23%) applied a feed and a water curfew (25%) of greater than 24 hours (Figure 74, Figure 75), with those in South Australia more inclined to do so (63% feed and 66% water respectively).

The length of time stock are withheld feed and water was significantly different for producers in South Australia compared to Western Australia, New South Wales, Tasmania and Victoria.

Figure 69: Feed Curfew for Slaughter Stock

Q: 'Before transporting slaughter stock, is a feed curfew applied?'

BASE: All sheep respondents (n = 602)

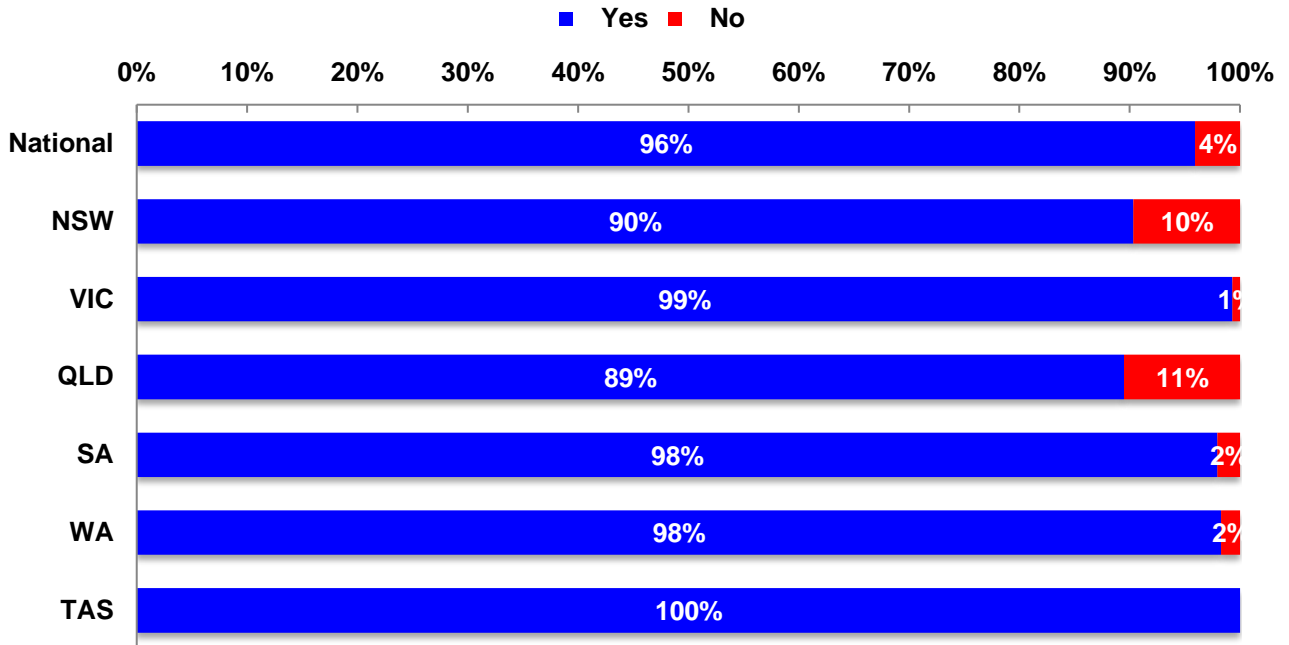


Figure 70: Water Curfew for Slaughter Stock

Q: 'Before transporting slaughter stock, is a water curfew applied?'

BASE: All sheep respondents (n = 602)

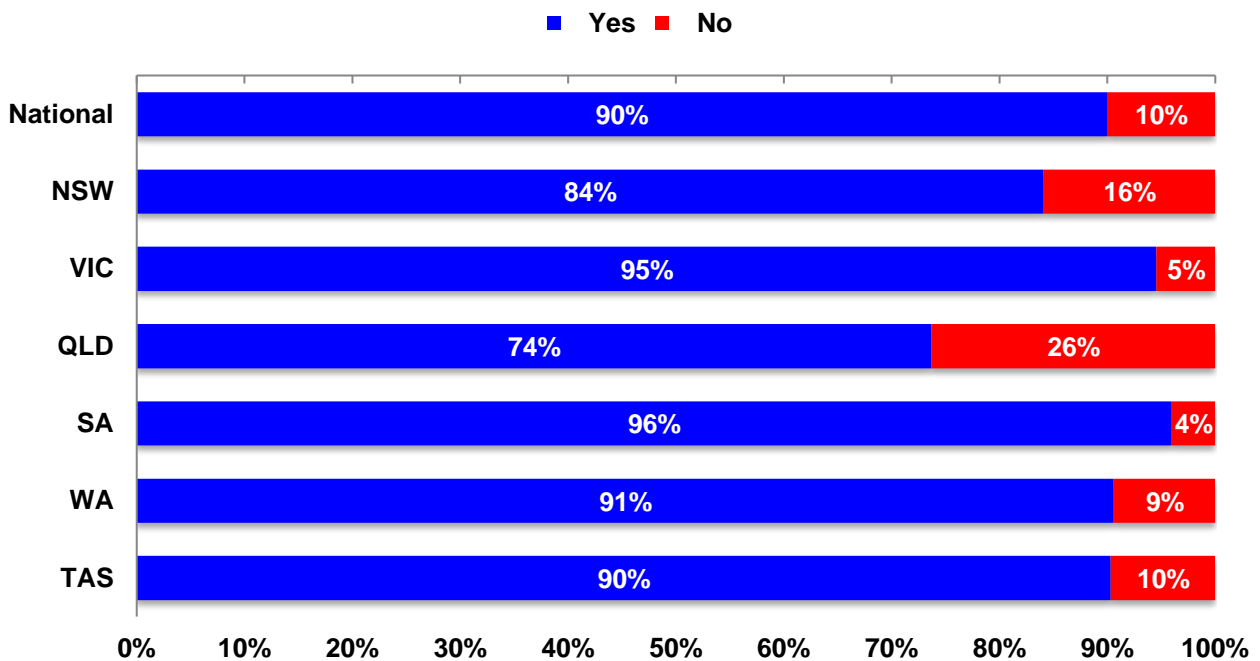


Figure 71: Feed and/or Water Curfew for Slaughter Stock - Why

Q: 'Why do you apply a feed and / or water curfew prior to the transport of slaughter stock?'

BASE: All sheep respondents who apply a feed and / or water curfew (n = 578)

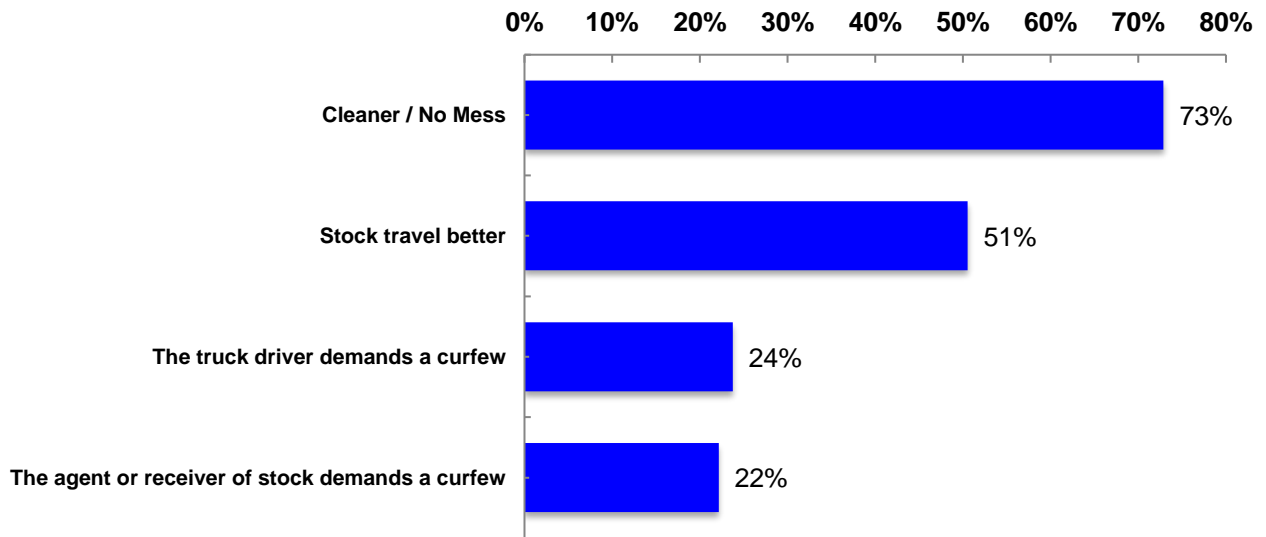


Figure 72: Feed Curfew for Slaughter Stock - Why Not

Q: 'Why don't you apply a feed and/or water curfew prior to the transport of slaughter stock?'

BASE: All sheep respondents who don't apply a feed curfew (n = 24)

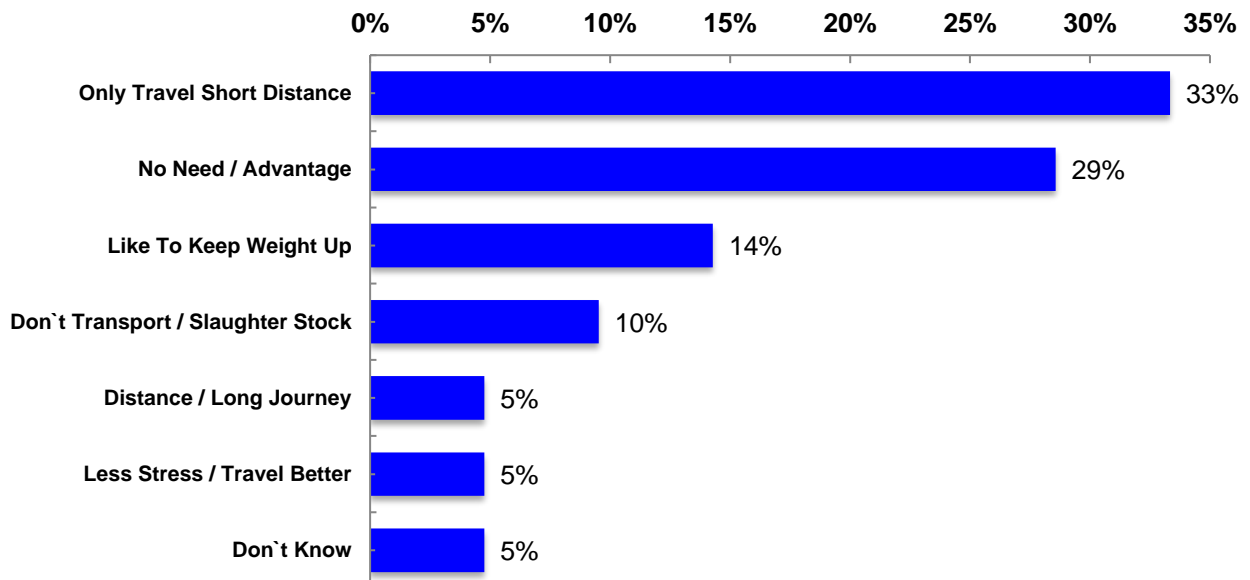


Figure 73: Water Curfew for Slaughter Stock - Why Not

Q: 'Why don't you apply a water curfew prior to the transport of slaughter stock?'

BASE: All sheep respondents who don't apply a water curfew (n=59)

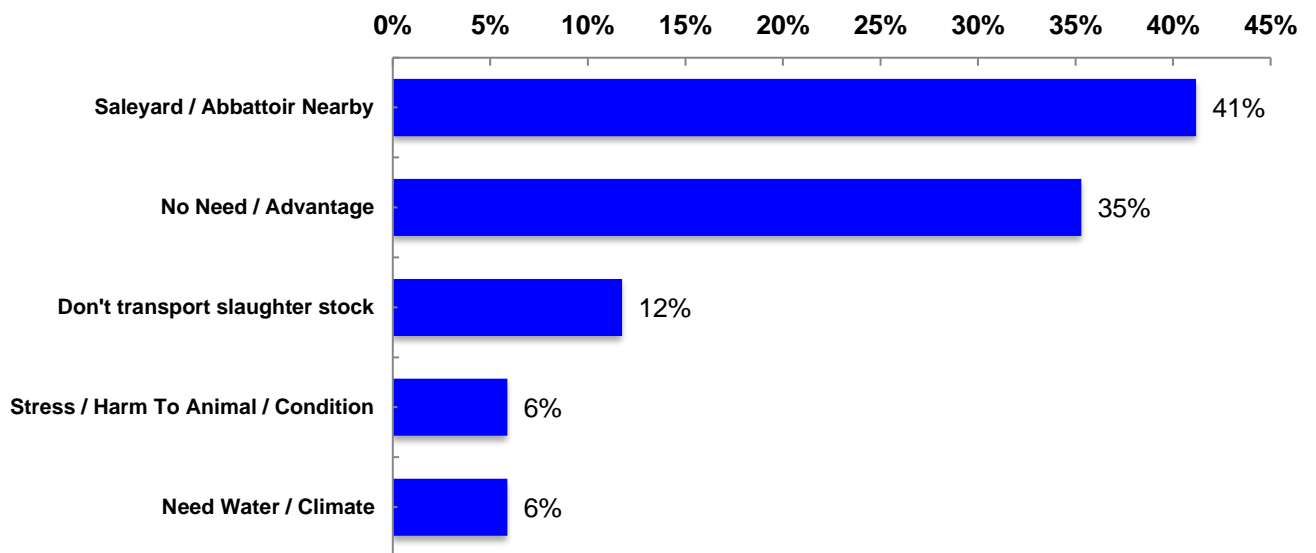


Figure 74: Feed Curfew for Slaughter Stock - How Long

Q: 'How many hours before transport is normal feed curfew applied to slaughter stock?'

BASE: All sheep respondents who apply a feed curfew (n = 578)

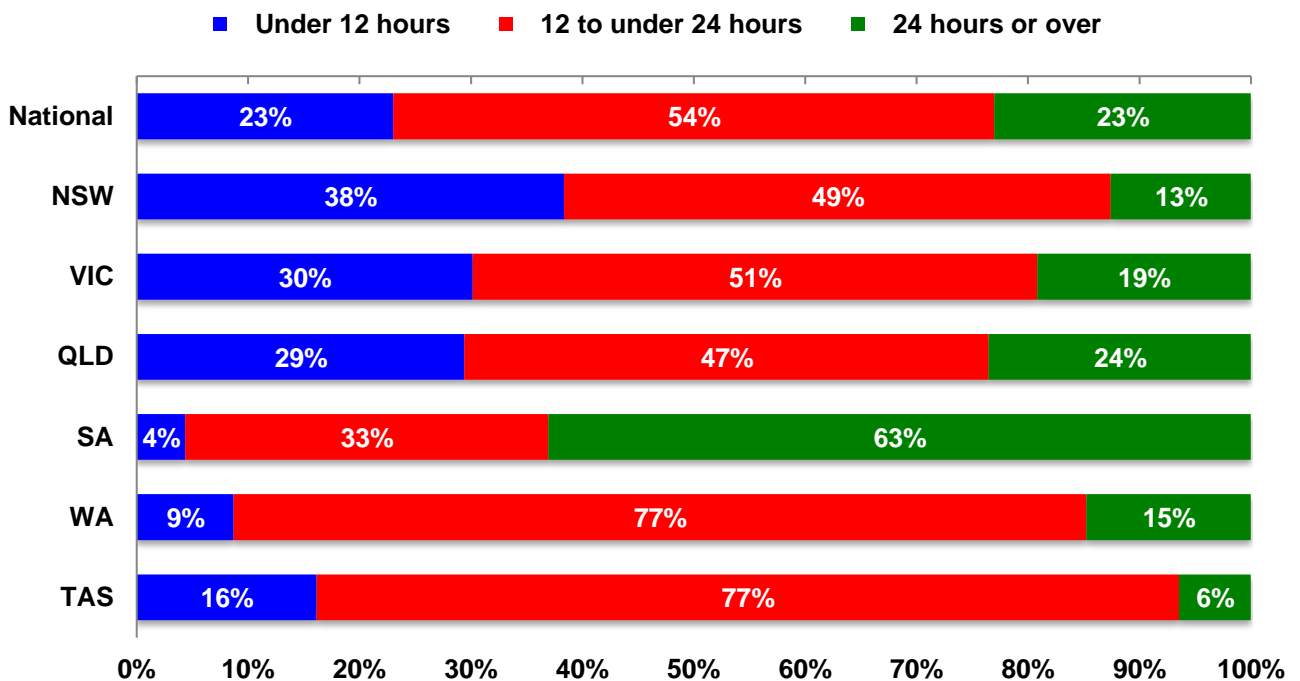
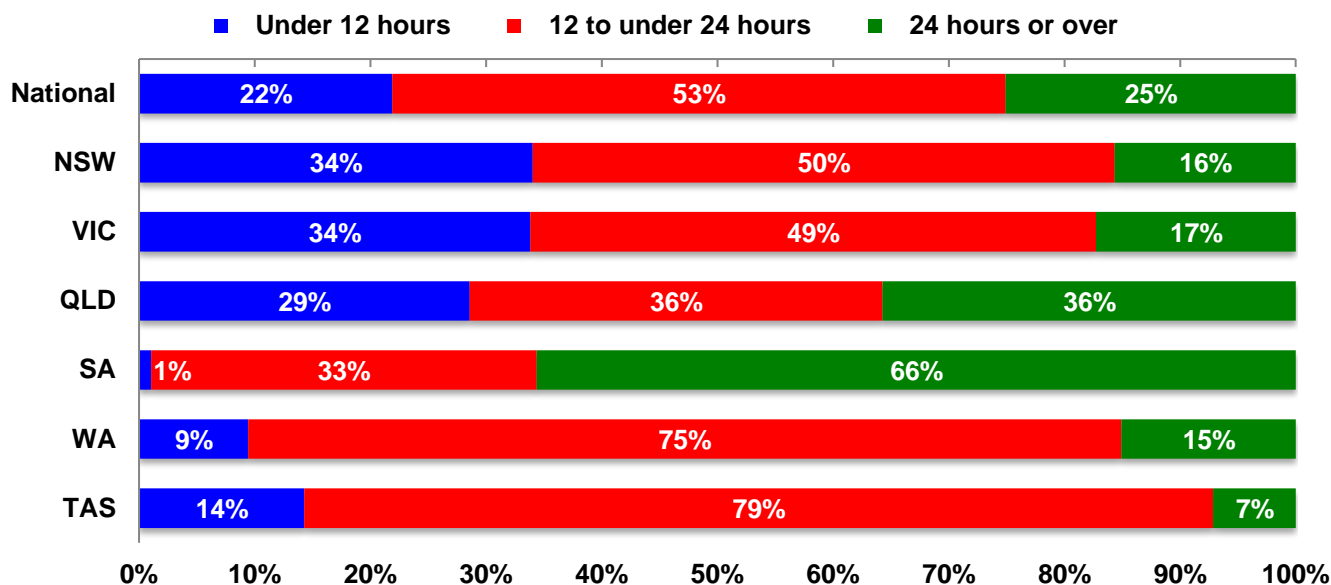


Figure 75: Water Curfew for Slaughter Stock - How Long

Q: 'How many hours before transport is normal water curfew applied to slaughter stock?'

BASE: All sheep respondents who apply a water curfew (n = 543)



1.1.1.9 Transit Time for Slaughter Stock

The average time in transit for slaughter stock was 3.7 hours (Figure 76). There was considerable state variation from this average with slaughter stock from New South Wales in transit for significantly less time than slaughter stock from Western Australia, Victoria, South Australia and Queensland. Slaughter stock from Victoria were also in transit for significantly less time than slaughter stock from South Australia, Queensland, Western Australia, and Tasmania. Slaughter stock from Tasmania were also in transit for significantly less time than slaughter stock from Queensland.

While nearly one third (30%) of producers had stock in transit for less than two hours, this was higher in New South Wales and Victoria (37%, and 44%) reflecting the close proximity to the markets in the smaller states. A fifth (22%) of producers had stock in transit for between two and three hours, particularly in Victoria (29%). A third of producers (34%) transport stock over four hours, in particular in Queensland, South Australia and Western Australia (74%, 54%, and 44% respectively) (Figure 77).

Figure 76: Transit Time – Slaughter Stock - Average

Q: ‘How many hours are slaughter stock in transit before unloading?’

BASE: All sheep respondents (n = 602)

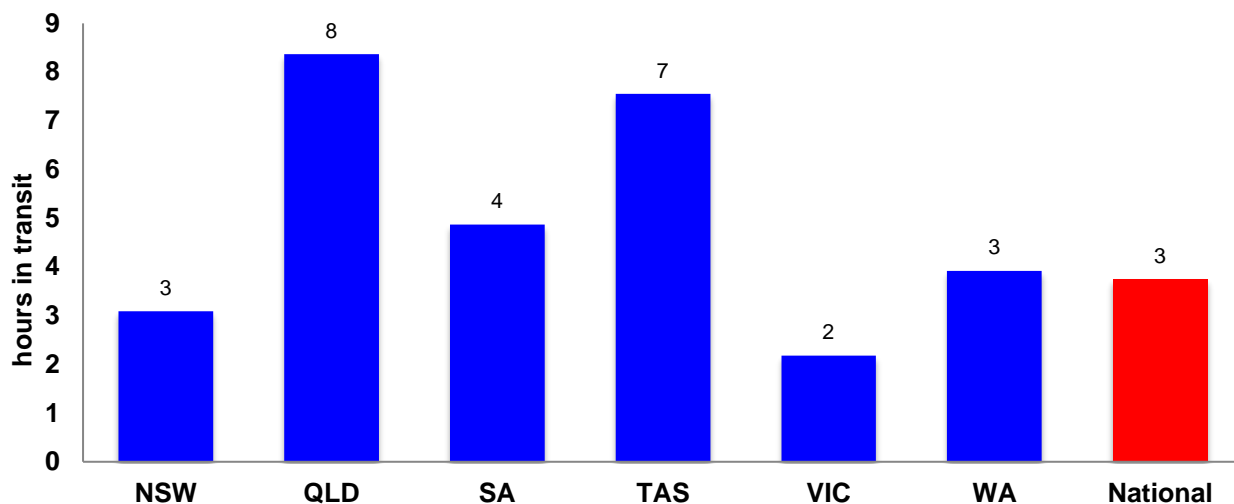
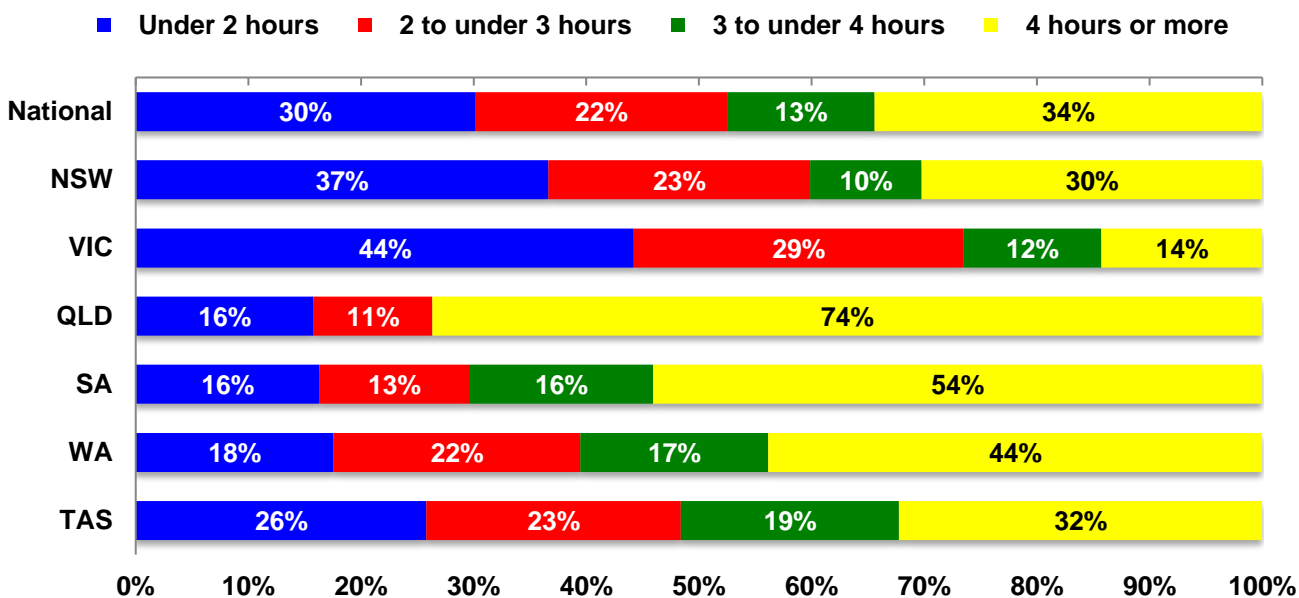


Figure 77: Transit time – Slaughter Stock – by State and time period

Q: ‘How many hours are slaughter stock in transit before unloading?’

BASE: All sheep respondents (n = 602)



Non-slaughter Stock

1.1.1.10 Feed and / or water Curfew for Non-Slaughter Stock

Over fourth fifths of sheep producers apply a feed (84%) (Figure 78) and / or water curfew (83%) prior to the transport of non-slaughter stock (e.g. breeding and trade stock) (Figure 82). Feed curfews were more likely to be applied in Western Australia (92%) and Queensland (92%) (Figure 78). There was a significant state affect for the application of a water curfew to non-slaughter stock with producers in Western Australia (91%) and South Australia (91%) more commonly applying a water curfew, with a lower proportion of producers in Tasmania applying a water curfew (63%) (Figure 82).

The main reasons provided for applying a feed curfew were cleaner / less mess (74%) and stock travel better (63%) (Figure 83).

The average length of the feed curfew was 13.3 hours and 13.4 hours for a water curfew. One quarter of sheep producers applied a feed (25%) and / or water curfew (26%) of under 12 hours (Figure 81, Figure 82). Producers in New South Wales more commonly applied a feed curfew of less than 12 hours (37%) (Figure 81) while a greater proportion of Victorian producers applied a water curfew of less than 12 hours (36%) (Figure 82). Just over half of sheep producers applied a feed (57%) and / or water curfew (56%) of 12 to 24 hours, in particular in Tasmania (86% feed, 83% water). Queensland producers were more inclined to apply a feed curfew of over 24 hours (47% versus 17% overall, Figure 81) and Queensland and South Australian producers were more inclined to apply a water curfew of over 24 hours (33% and 48% respectively, versus 19% overall, Figure 82).

The main reason provided for not applying a feed and/or water curfew for non-slaughter stock was a short distance to travel (65% feed curfew, Figure 83; 63% water curfew, Figure 84).

Figure 78: Feed Curfew Non-Slaughter Stock

Q: 'Before transporting non-slaughter stock, is a feed curfew applied?'

BASE: All sheep respondents who transport non-slaughter stock (n = 367)

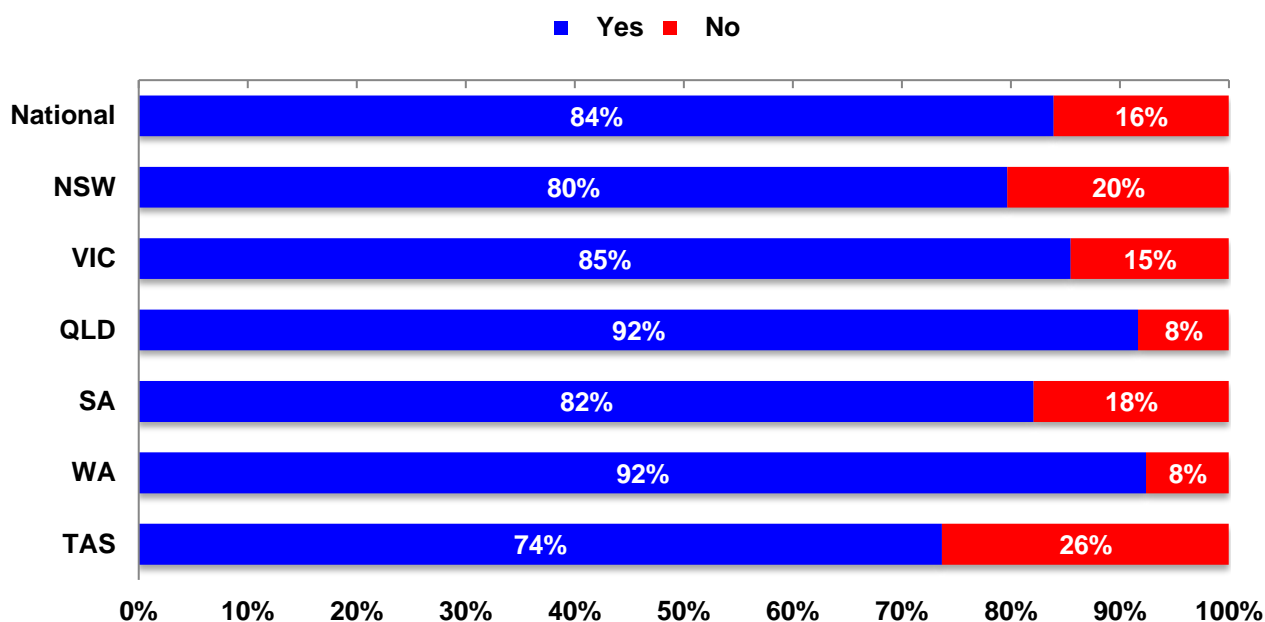


Figure 79: Water Curfew Non-Slaughter Stock

Q: 'Before transporting non-slaughter stock, is a water curfew applied?'

BASE: All sheep respondents who transport non-slaughter stock (n = 367)

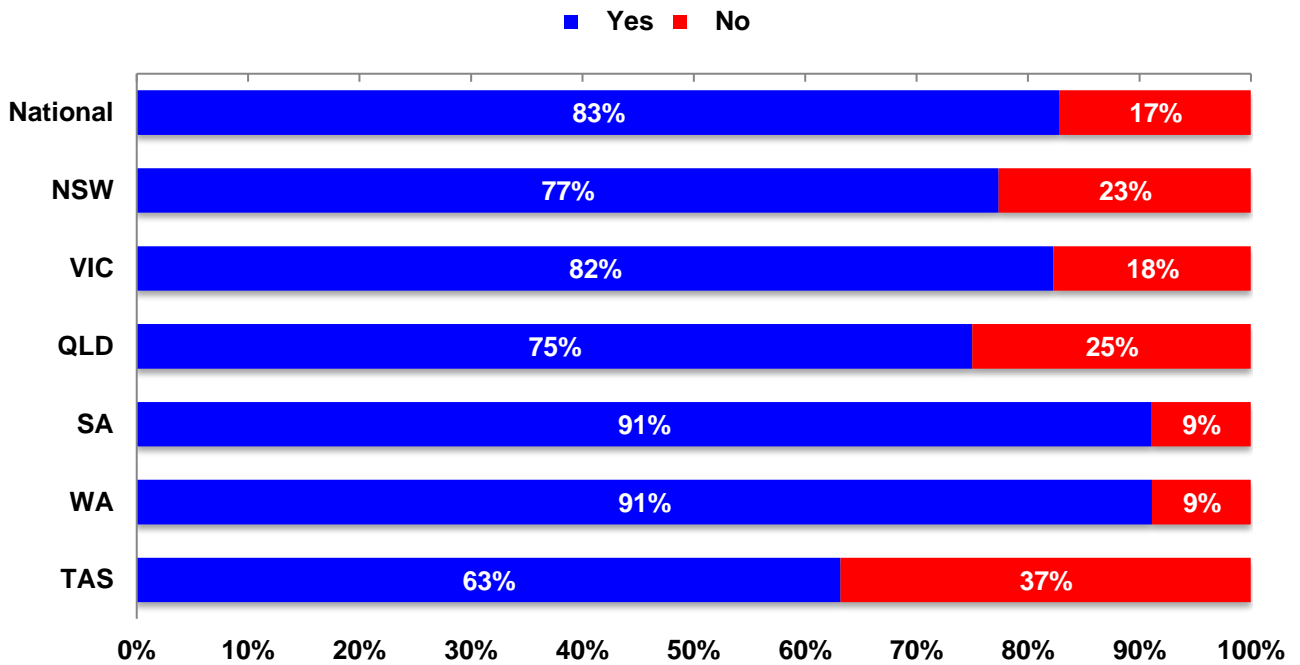


Figure 80: Feed and/or water Curfew Non-Slaughter Stock - Why

Q: 'Why do you apply a feed and / or water curfew prior to the transport of non-slaughter stock?'

BASE: All sheep respondents who apply a feed and / or water curfew (n = 308)

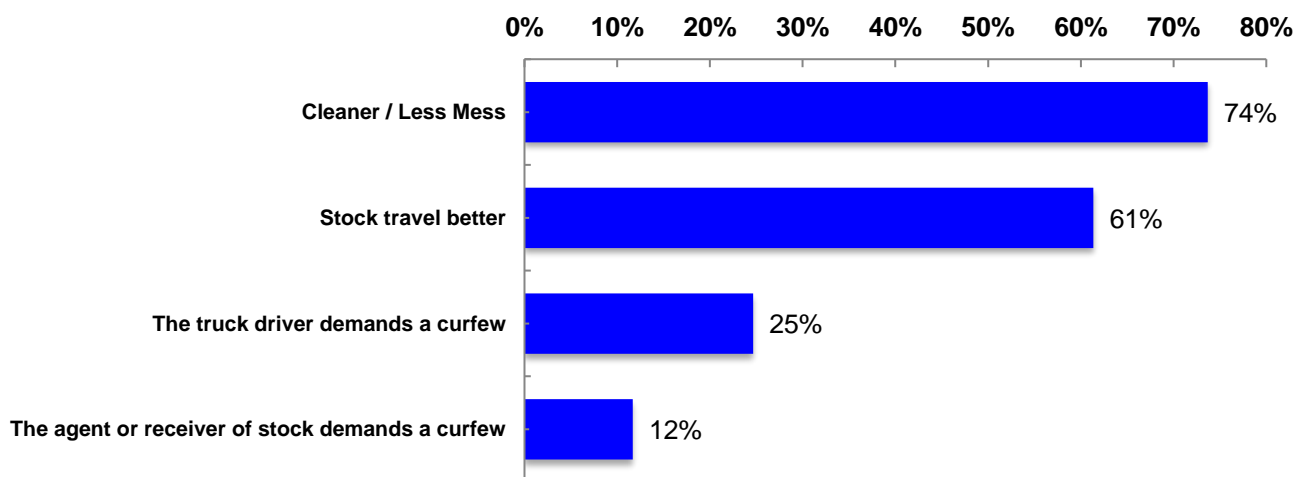


Figure 81: Feed Curfew Non-Slaughter Stock - How Long

Q: 'How many hours before transport is a normal feed and/or water curfew applied to non-slaughter stock?'

BASE: All sheep respondents who apply a feed and / or water curfew (n = 308)

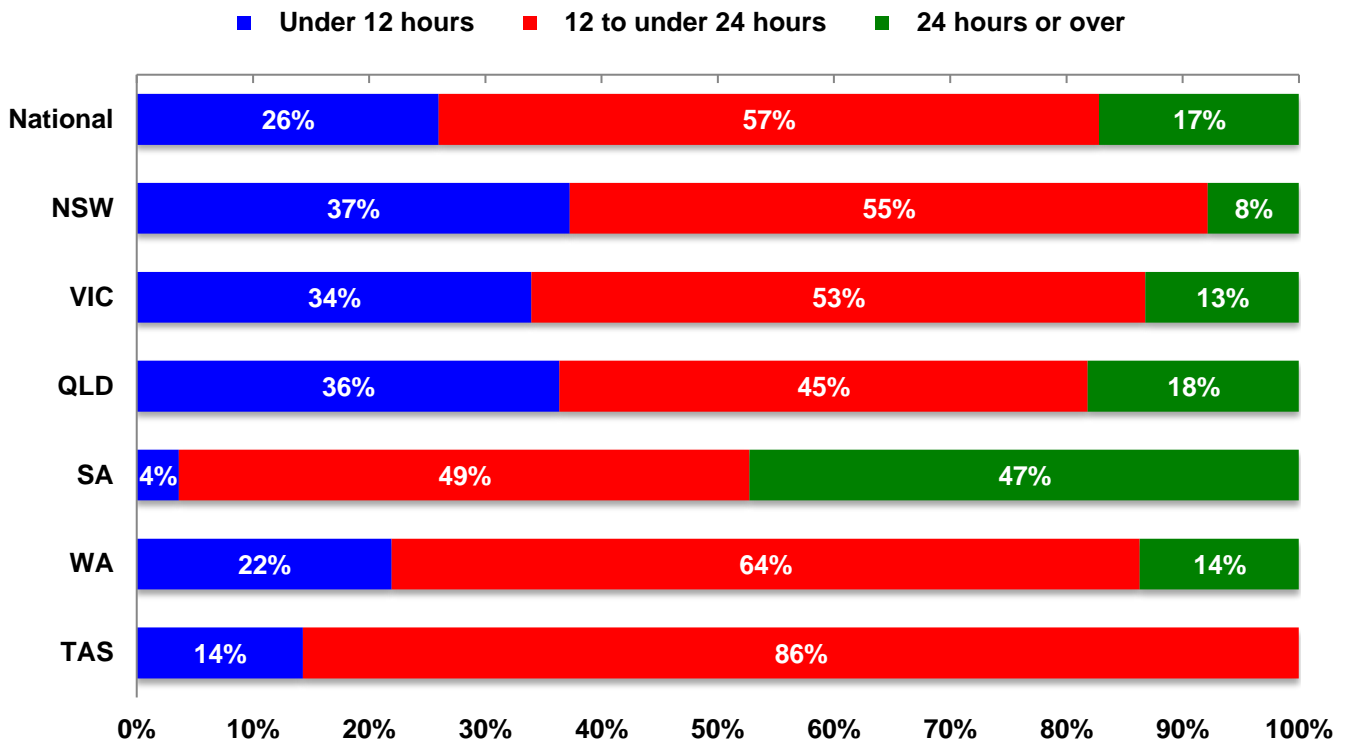


Figure 82: Water Curfew Non-Slaughter Stock - How Long

Q: 'How many hours before transport is a normal feed and / or water curfew applied to non-slaughter stock?'

BASE: All sheep respondents who apply a water curfew (n = 304)

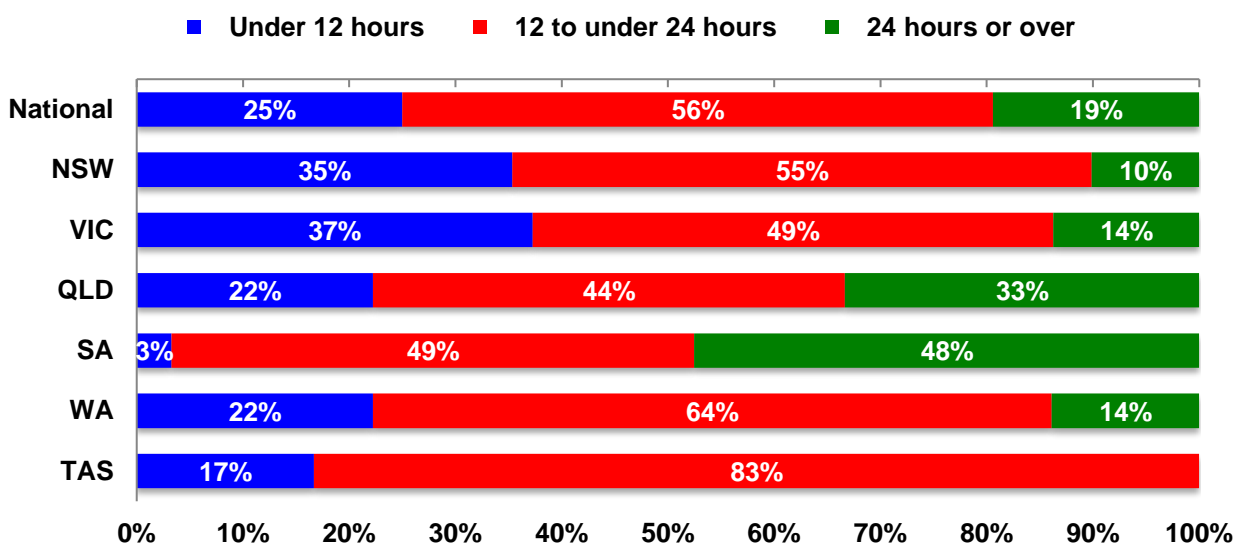


Figure 83: Feed Curfew Non-Slaughter Stock - Why Not

Q: 'Why don't you apply a feed and / or water curfew prior to the transport of non-slaughter stock?'
 BASE: All sheep respondents who don't apply a feed curfew (n = 59)

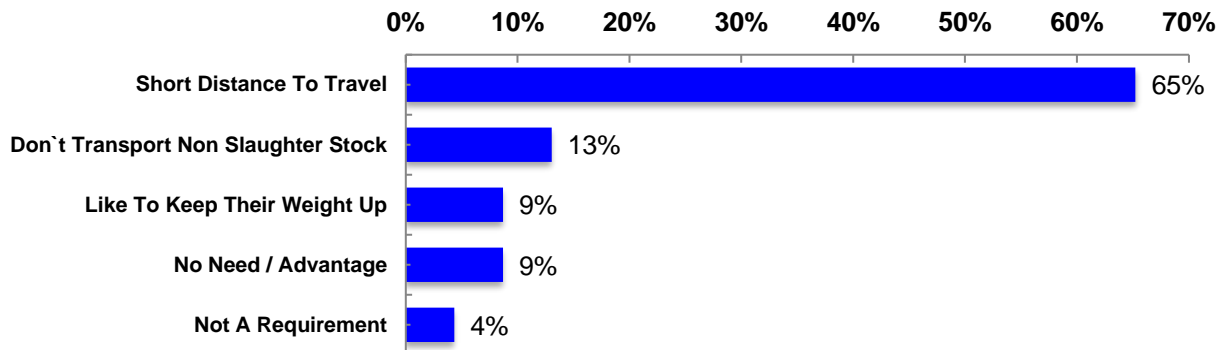
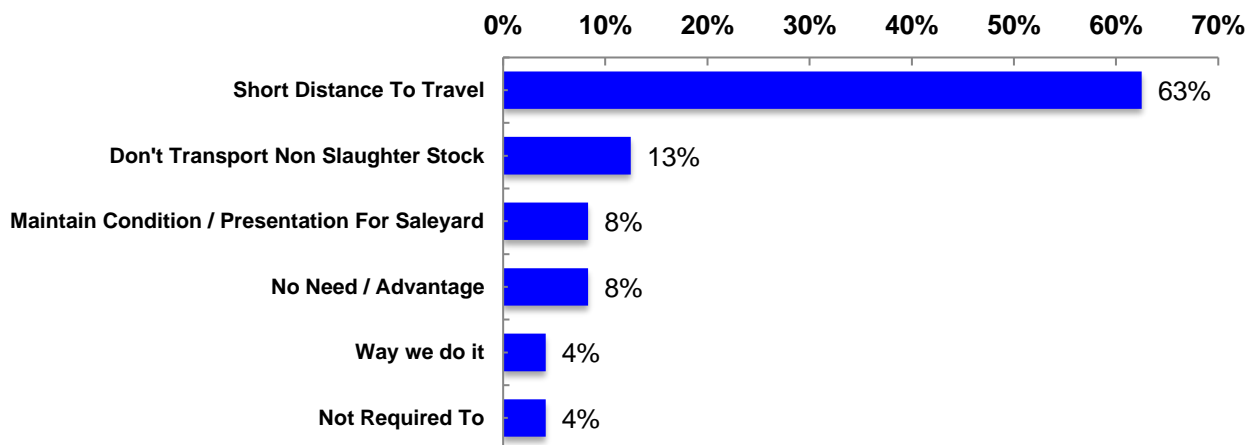


Figure 84: Water Curfew Non-Slaughter Stock - Why Not

Q: 'Why don't you apply a feed and / or water curfew prior to the transport of non-slaughter stock?'
 BASE: All sheep respondents who don't apply a feed water curfew (n = 63)



1.1.1.11 Transit Time for Non-Slaughter Stock

The average time in transit for non-slaughter stock was 3.3 hours (Figure 85). The transit times for non-slaughter stock were significantly different between states. New South Wales transit time was significantly shorter compared to transit times for stock from South Australia and Victoria. Victorian transit times were significantly shorter than for Western Australia and Queensland; and South Australia was significantly different from Queensland.

Two fifths (42%) of sheep producers had stock in transit for less than two hours, particularly in Victoria and amongst meat sheep specialists (59% and 46% respectively). A greater proportion of producers in Queensland and New South Wales (58% and 37%, versus 28% overall) transported sheep for longer than four hours, reflecting the distance to sheep markets in these states (Figure 86).

Figure 85: Transit time for Non-Slaughter Stock - Average

Q: 'How many hours are non-slaughter stock in transit before unloading?'

BASE: All sheep respondents who transport non-slaughter stock (n = 367)

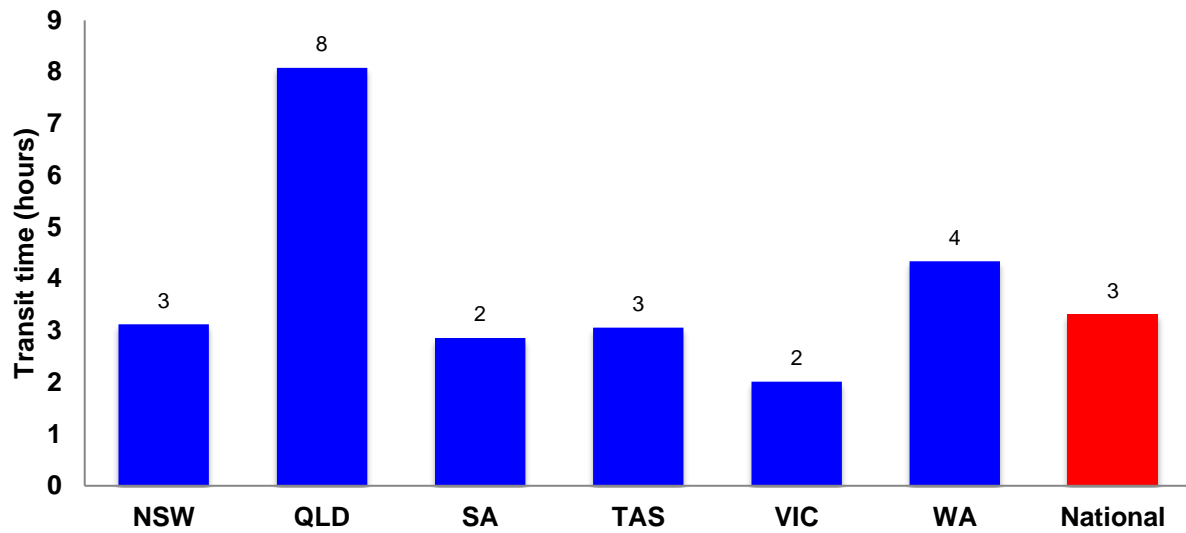
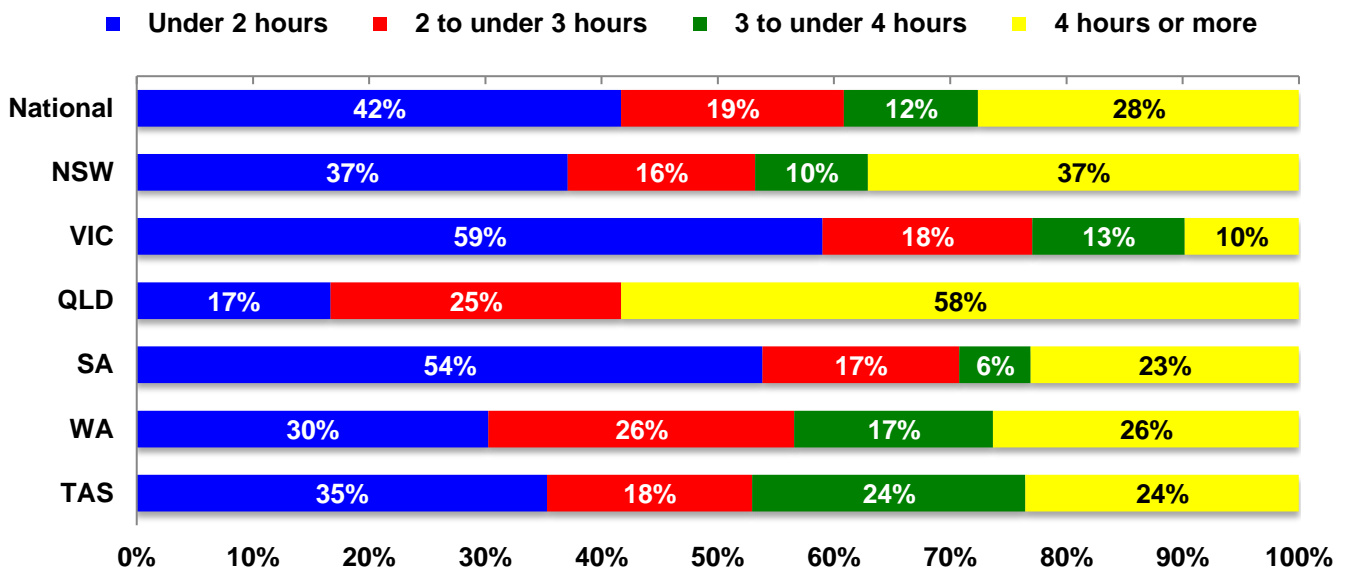


Figure 86: Transit time for Non-Slaughter Stock - by State and Time Period

Q: 'How many hours are non-slaughter stock in transit before unloading?'

BASE: All sheep respondents who transport non-slaughter stock (n = 367)



Destruction and Disposal of Sick and Injured Sheep

The vast majority (73%) of producers shoot injured or sick sheep, particularly those in Queensland (95%) (Figure 87). Queensland sheep producers are more inclined to shoot sick or injured sheep than other states (95%, versus 73% overall) and this was significantly different between Queensland and South Australia and Victoria.

Burial and burning were the main methods of carcass disposal (53% and 19% respectively) (Figure 88). A higher proportion of sheep producers in South Australia and Western Australia tended to bury carcasses (61%, 62%). Tasmanian producers were more inclined to use carcasses for pet food or to dispose of the carcasses by burning (28%) and Queensland producers had a high usage of carcasses as baits for feral animals (33%).

Figure 87: Destruction method by State

Q: 'How do you destroy injured or sick sheep?'

BASE: All sheep respondents (n = 602)

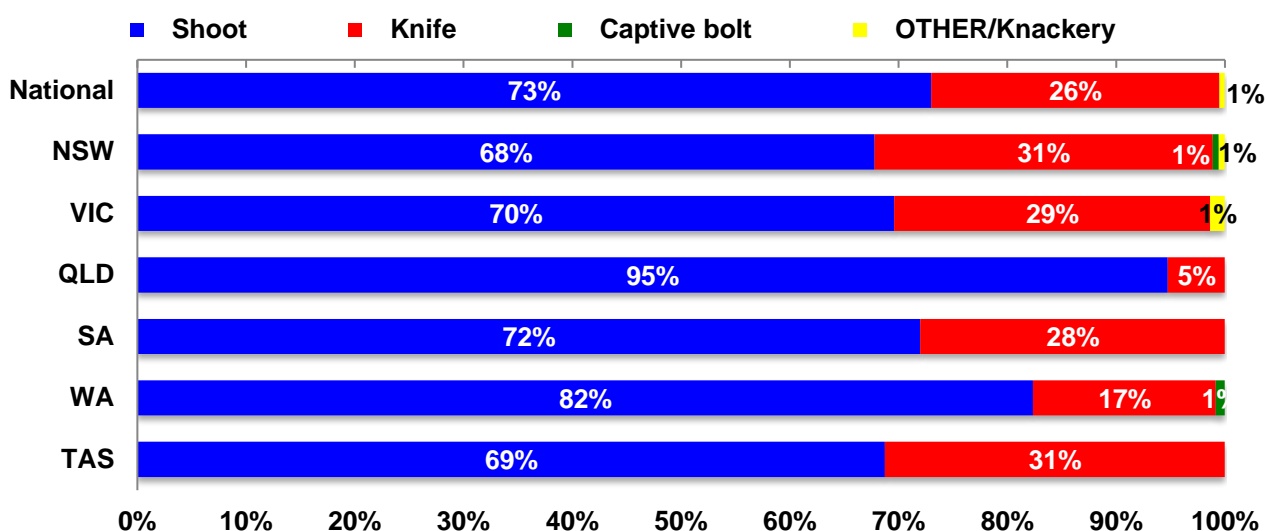
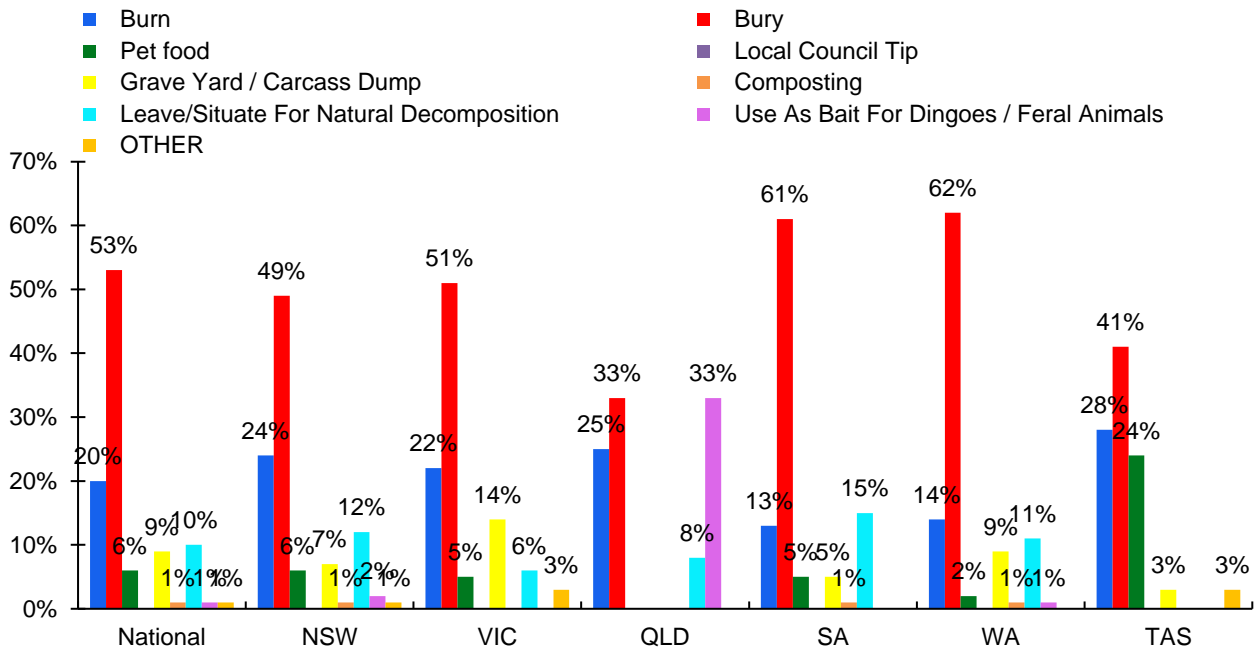


Figure 88: Carcass Disposal by State

Q: 'How do you dispose of the carcasses?'

BASE: All sheep respondents who dispose of carcasses on farm (n = 599)



Wild Predators

Four fifths of producers (80%) have a problem with predators on their property with a significant difference between states observed ($P < 0.001$) (Figure 89). In particular, Tasmania had a low level of predation (25%) and Queensland a high level of predation (95%) relative to other states. Foxes are the main predator that causes stock losses for 90% of producers (

Figure 91) with Tasmania having no foxes or pigs.

Of particular note was the distribution across states where certain predators were an issue:

- Foxes were an issue in Victoria, New South Wales, South Australia and Western Australia (96%, 95%, 90% and 92% respectively);
- Wild dogs / dingoes were an issue in Queensland (56%);
- Pigs were an issue in New South Wales and Queensland (24% and 72% respectively); and
- Crows / eagles were an issue in Tasmania and Western Australia (88% and 57% respectively).

The main control methods for these predators revolved around poisoning, shooting and trapping (Figure 92,

Figure 93,
Figure 94 and *BASE: All sheep respondents with Fox issues (n = 430)*

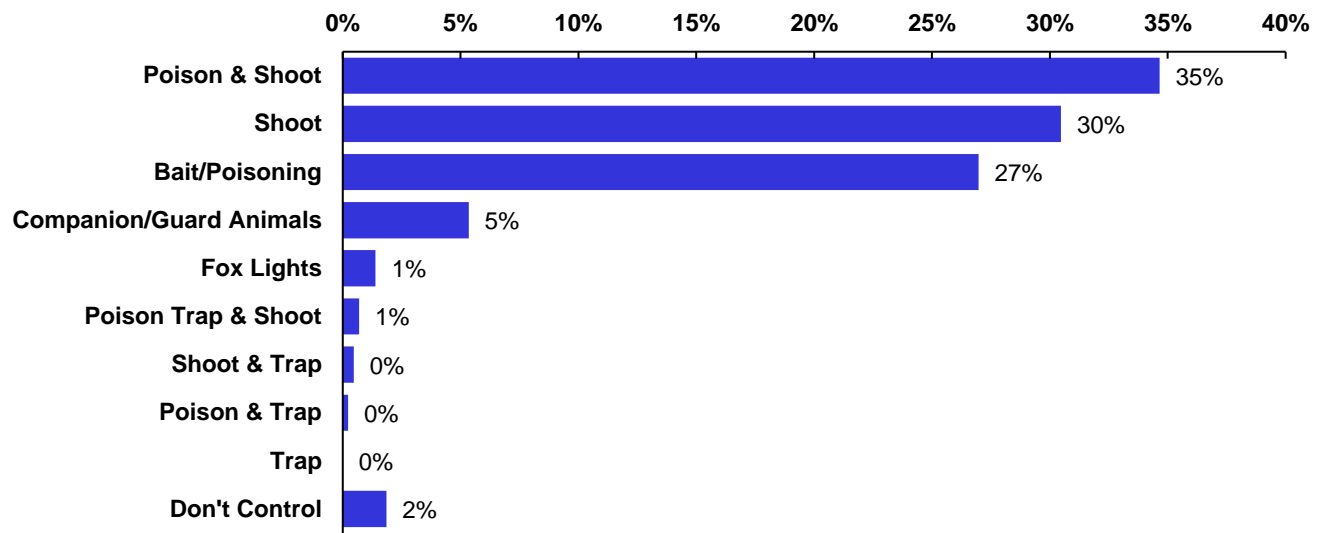


Figure 95). Companion animals and fencing also featured. Most birds are protected so there were limited options for their control.

Two fifths (41%) of producers did not know how many lambs were lost due to predators (Figure 90) with the rest of the producers reporting anything between 1 and 500 lamb or sheep losses per year.

Figure 89: Predators by State

Q: 'Do you have a problem with predators on your property?'

BASE: All sheep respondents (n = 602)

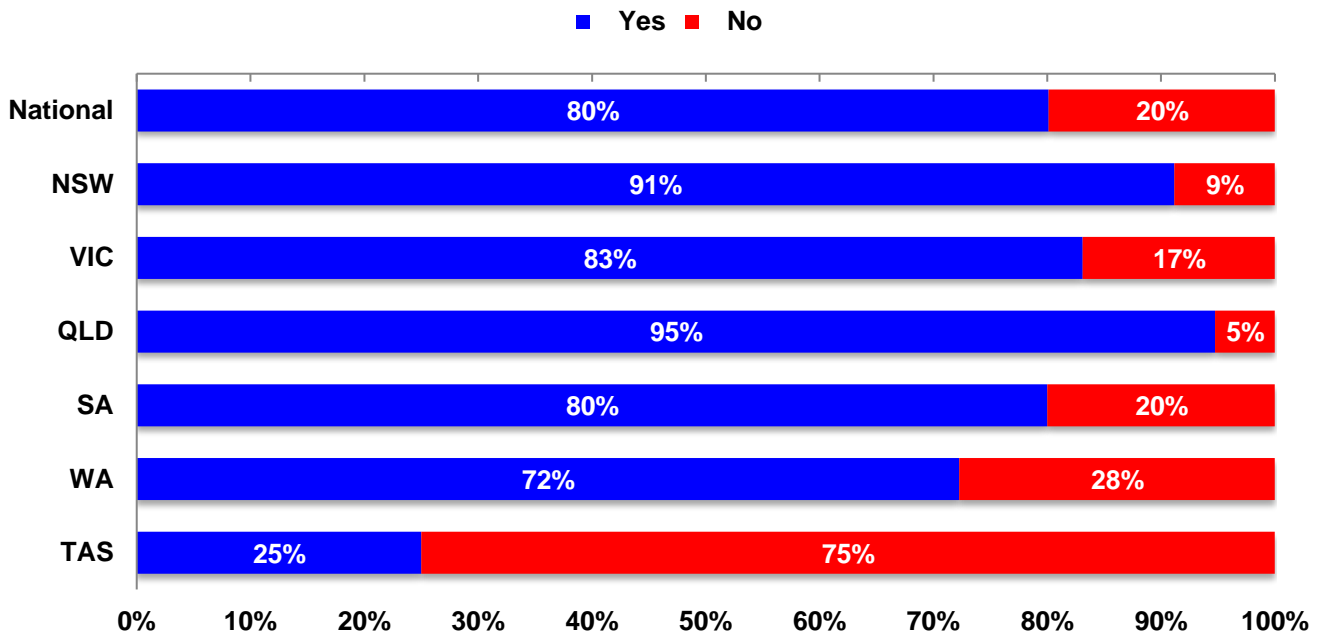


Figure 90: Number of lambs lost due to predators – by state and category

Q: 'How many lambs do you lose a year?'

BASE: All sheep respondents who lose lambs to predators (n = 480)

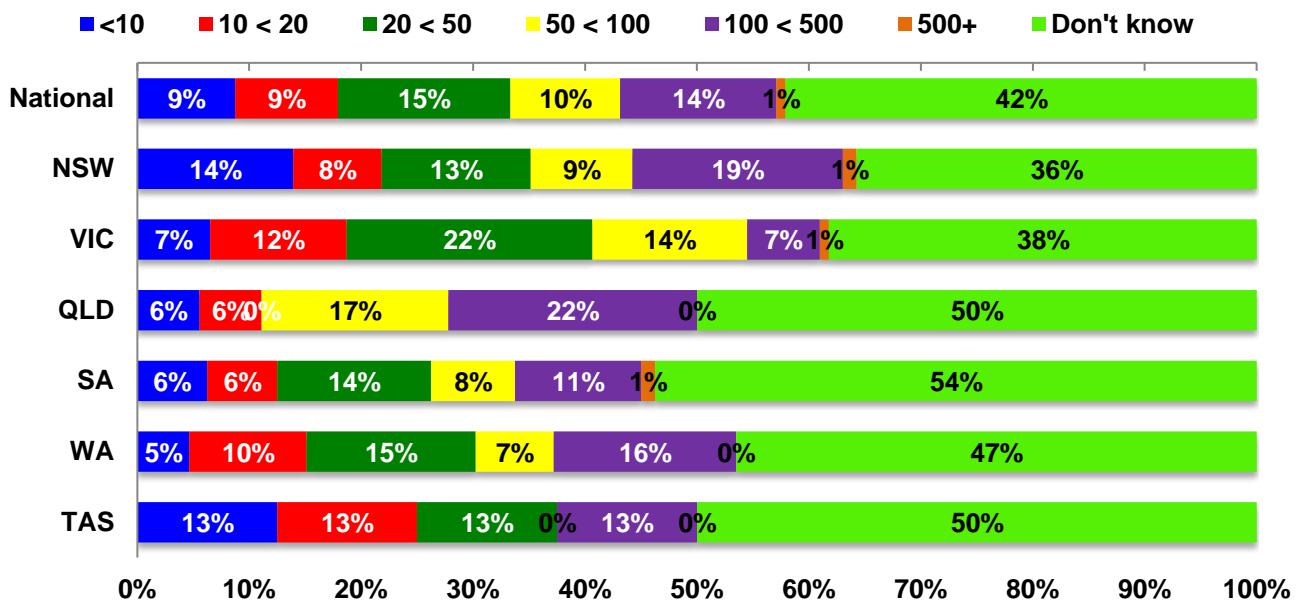


Figure 91: Top Predators by State

Q: 'Name the two most important predators on your property?'

BASE: All sheep respondents who have a problem with predators (n = 480)

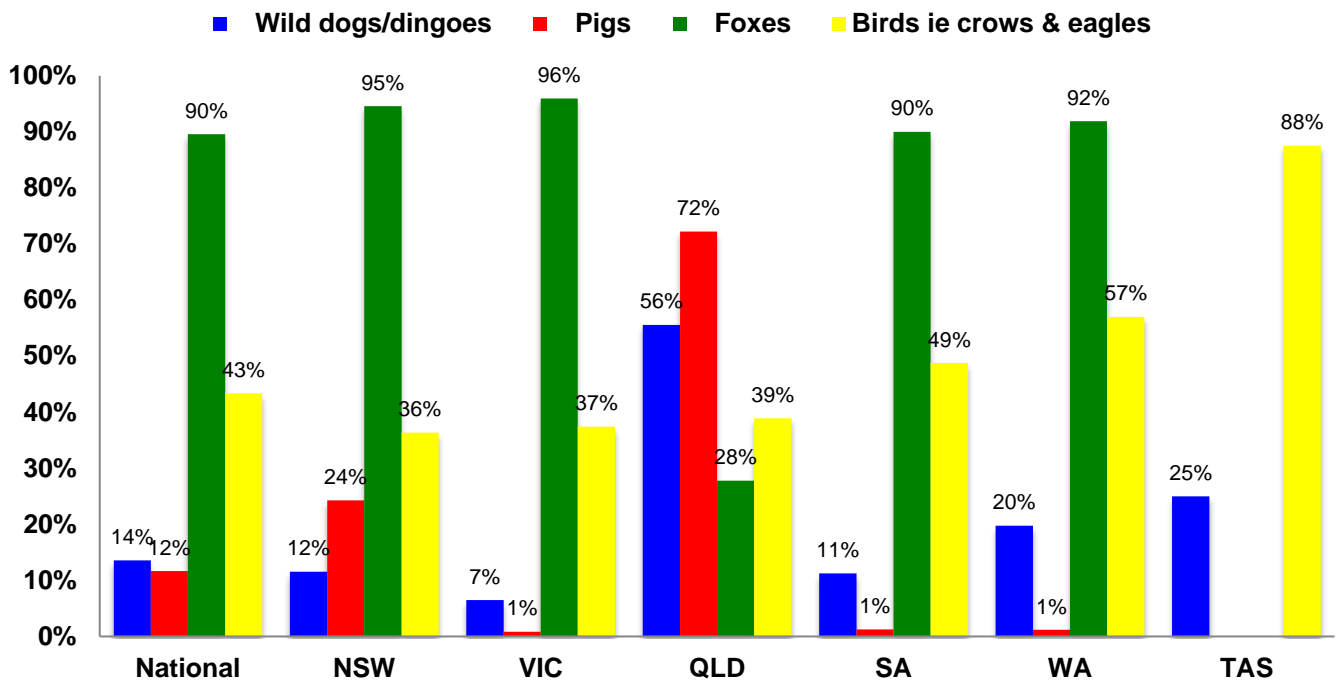


Figure 92: Wild Dogs & Dingos – control methods

Q: 'How do you control Wild Dogs & Dingos on your property?'

BASE: All sheep respondents with Wild Dog & Dingo issues (n = 64)

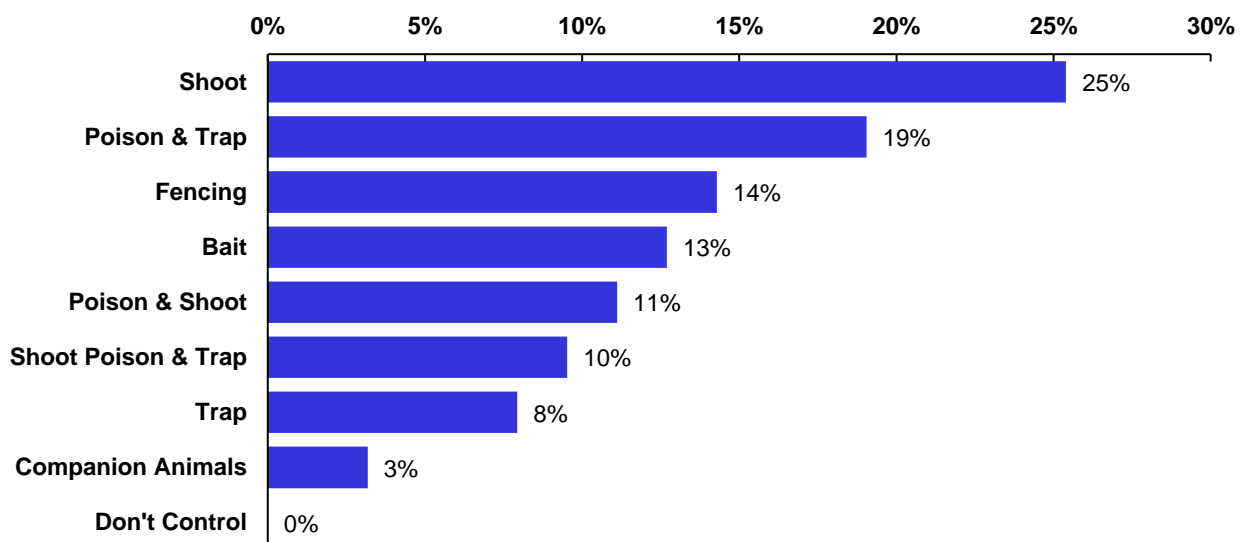


Figure 93: Pigs – Control methods

Q: 'How do you control Pigs on your property?'

BASE: All sheep respondents with Pig issues (n = 56)

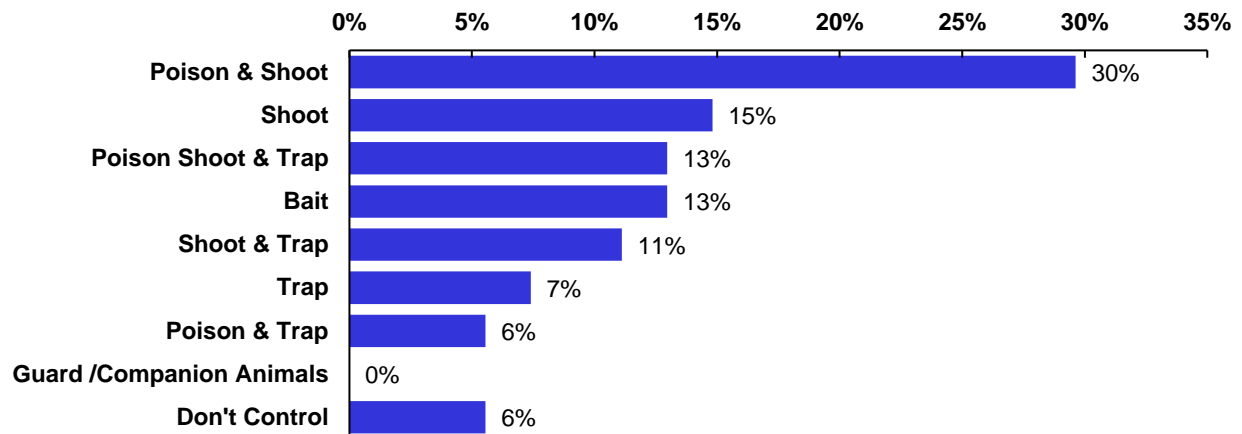


Figure 94: Foxes – Control methods

Q: 'How do you control Foxes on your property?'

BASE: All sheep respondents with Fox issues (n = 430)

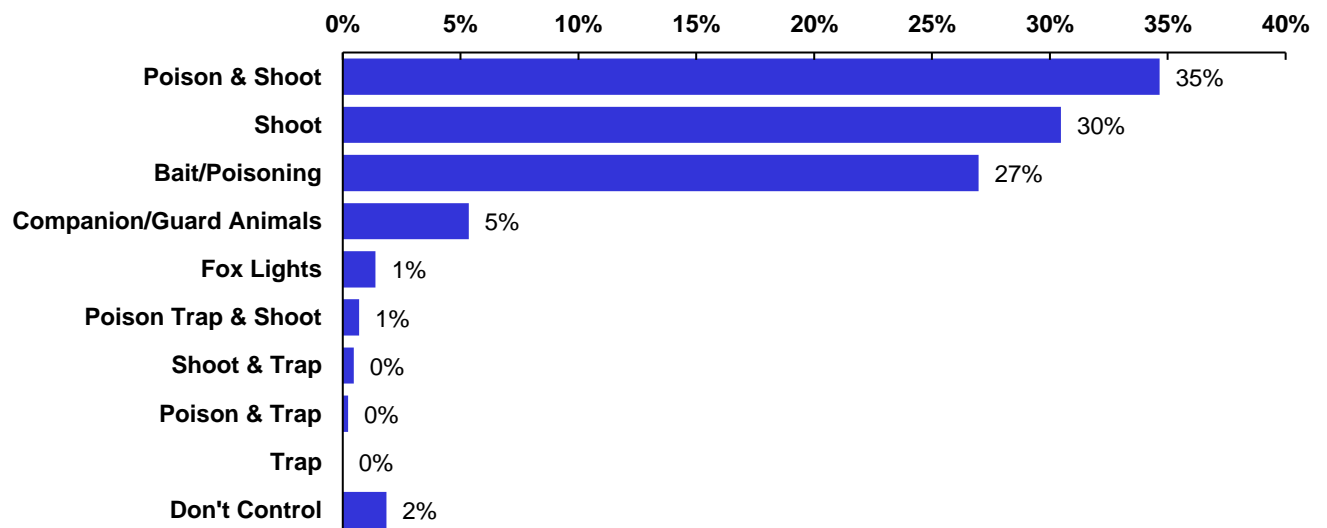
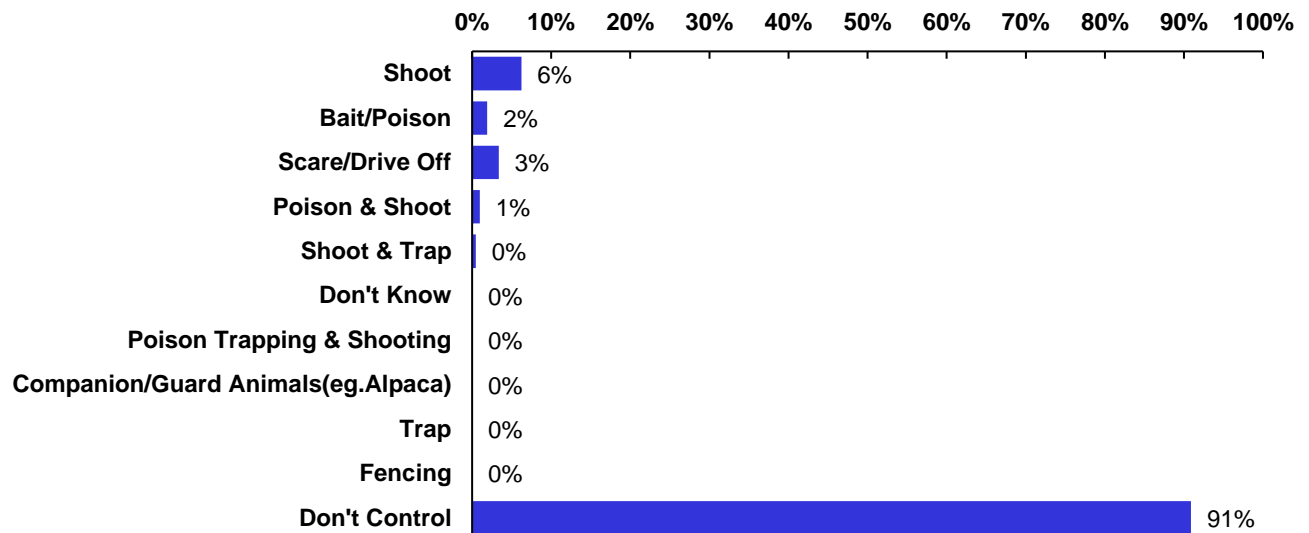


Figure 95: Birds (crows, eagles etc) – Control methods

Q: 'How do you control birds on your property?'

BASE: All sheep respondents with crow issues (n = 208)



Quarantine Measures

Just over half of sheep producers (52%) have a quarantine process for the introduction of new stock, with another 13% having quarantine processes for some classes of stock only (Figure 96). Western Australian producers were least inclined to have a quarantine process (39%) compared to the other states and wool sheep specialists (59%) were more inclined to have a quarantine process than meat sheep specialists (50%). A number of producers (14%) did not require a quarantine process as they ran a closed flock / bred their own replacements. These trends were not statistically significant.

The types of quarantine processes implemented on farm are shown in Figure 97 with isolation / separation used by the majority of producers (88%) followed by drenching on arrival (37%).

Figure 96: Quarantine

Q: 'Do you have a quarantine process for ALL introduced stock?'

BASE: All sheep respondents (n = 602)

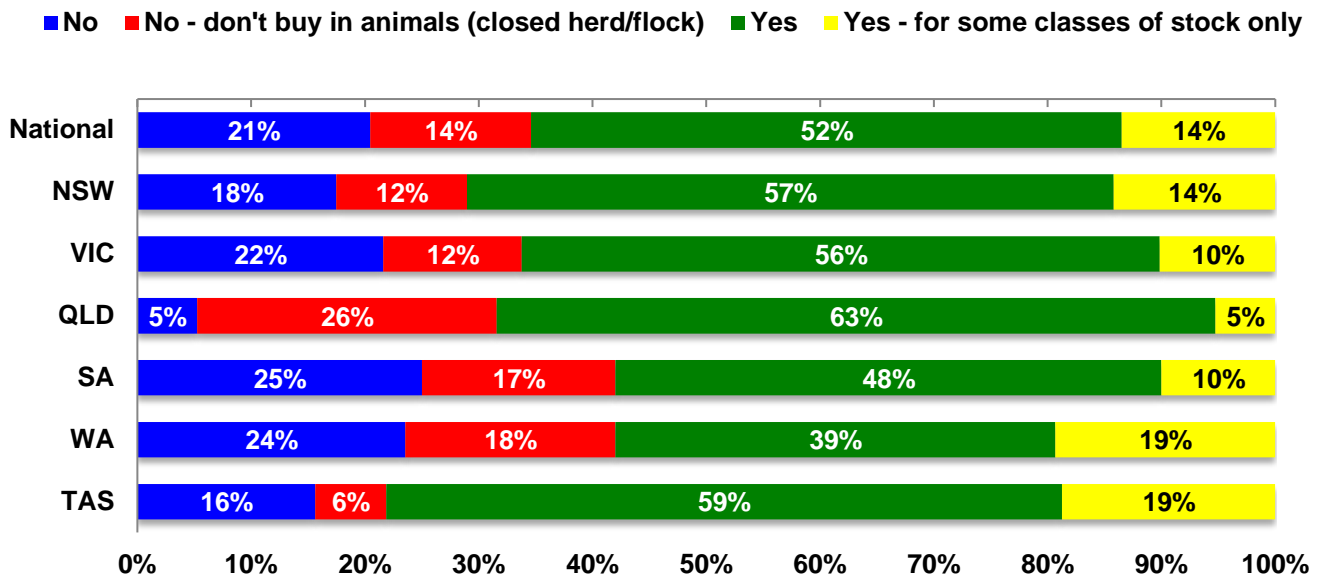
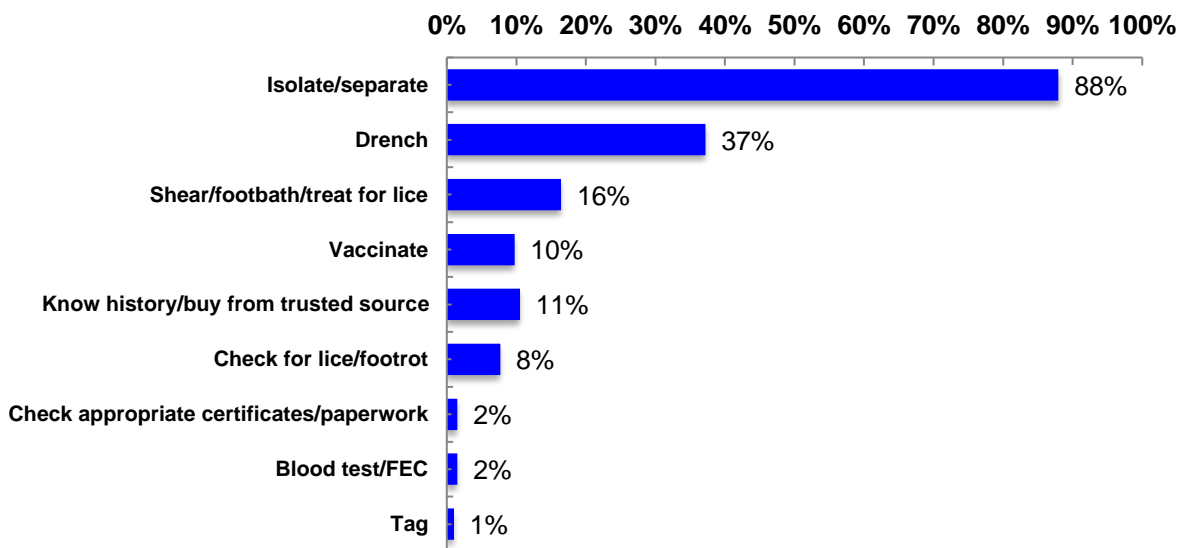


Figure 97: Quarantine - Types of Quarantine Processes Used

Q: 'What is your quarantine process?'

BASE: All sheep respondents with a quarantine process (n = 394)



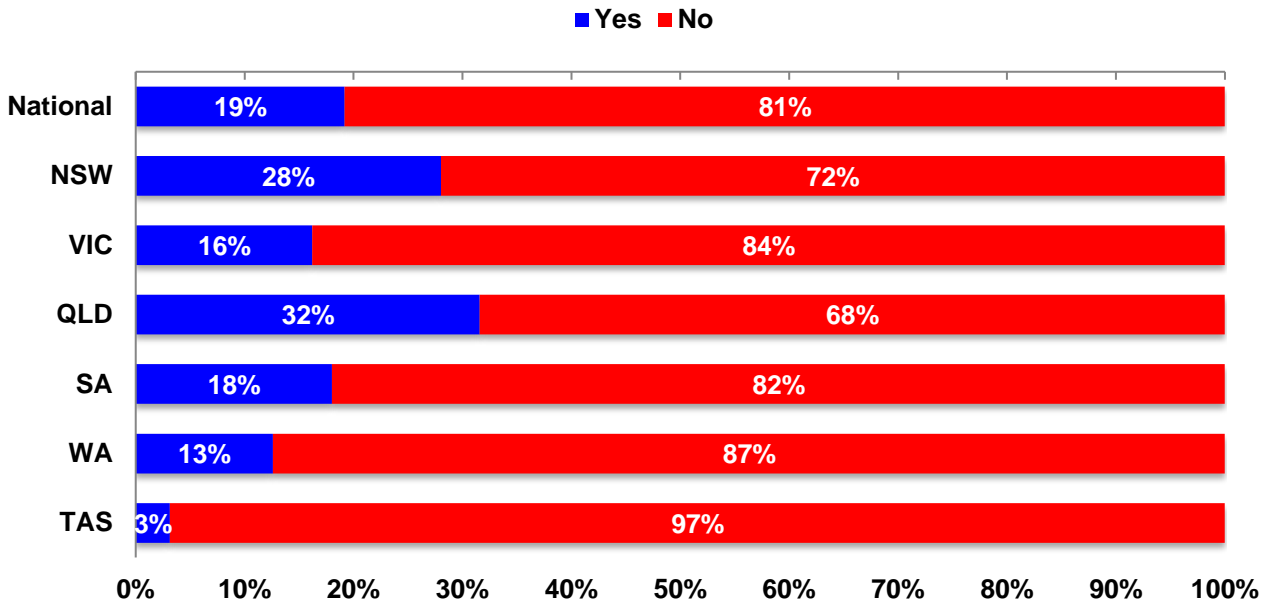
Use of Electric Prodders on Sheep

The vast majority (81%) of sheep producers never use electric prodders on sheep, with Queensland and New South Wales producers most inclined to use prodders (32% and 28% respectively) (Figure 98). There was a highly significant state effect ($P < 0.001$) with a lower proportion of Tasmanian producers using electric prodders relative to other states.

Figure 98: Electric Prodders

Q: 'Are electric prodders used on your sheep?'

BASE: All sheep respondents (n = 602)



Codes of practice and guidelines

Sheep producers were asked a series of questions regarding awareness of industry animal welfare standards and guidelines and MLA publications.

Nearly one third (31%) of sheep producers had not heard of the *Land Transport Standards and Guidelines*, 36% had heard of them but not read them, while the remaining 33% had read them (Figure 99). Producers in Queensland had more commonly heard about them (42%) and read them (53%) while fewer sheep producers in Tasmania had heard of them (38%). One third (32%) of producers had obtained a copy of the *Land Transport Standards and Guidelines* from MLA or the Sheepmeat Council of Australia, while a further 12% had obtained a copy from the internet (Figure 100)

Just under half (44%) of sheep producers were not aware of the new *Cattle and Sheep Welfare Standards and Guidelines* or the existing *Model Codes of Practice*, 36% had heard of them but not read them and 19% had read them (Figure 101). Fewer sheep producers in Tasmania (52%) had heard of the *Cattle and Sheep Welfare Standards and Guidelines* or the existing *Model Codes of Practice* relative to other states, while a greater proportion of producers from Queensland (32%) had read them

relative to producers in other states (Figure 101). These differences between states were not statistically significant. Two fifths (40%) of producers who had obtained a copy of the *Cattle and Sheep Welfare Standards and Guidelines / Model Codes of Practice* had sourced it from MLA or the Sheepmeat Council of Australia, while a further 15% had obtained a copy from the internet (

Figure 102).

Thirty-one per cent of sheep producers use other Codes of Practice or Guidelines in their business (Figure 103) with 44% of producers in Tasmania using these. The range of Codes of Practice or Guidelines is shown in

Figure 104 with MSA accreditation the most used (23%) followed by JBS QA program (18%). Interestingly only 13% of producers identified MLAs LPA program as something they follow in their business, yet all sheep producers are deemed to be compliant.

Just under half (46%) of sheep producers are not aware of MLA's '*A producers guide to sheep husbandry practices*' while 26% have heard of it / seen it but not read it, 17% have read it but don't have a copy and only 11% have a copy and have read it (Figure 105). A greater proportion of sheep producers in Queensland had a copy and had read it (26%) while a greater proportion of producers in Victoria had not heard of it (52%) relative to other states.

The '*Is it fit to load*' publication is more widespread in its awareness. Two fifths of sheep producers (40%) are not aware of MLA's '*Is it fit to load*' while 23% of sheep producers have a copy and have read it (

Figure 106). There was a significant difference in awareness between states. Sheep producers in Queensland and South Australia had more awareness of '*Is it fit to load*' with 53% and 33% respectively having a copy and having read it. A greater proportion of sheep producers in New South Wales (52%) were not aware of this publication and only 14% reported having a copy / read it (

Figure 106).

Thirty per cent of sheep producers had obtained the publication from MLA or the Sheepmeat Council of Australia while a further 11% had obtained a copy from a stock agent or the internet (11%) (Figure 107).

Figure 99: Land Transport Standards and Guidelines – Awareness – by State

Q: 'The industry has developed Land Transport of Livestock Standards and Guidelines – Are you aware of these?'

BASE: All sheep respondents (n = 602)

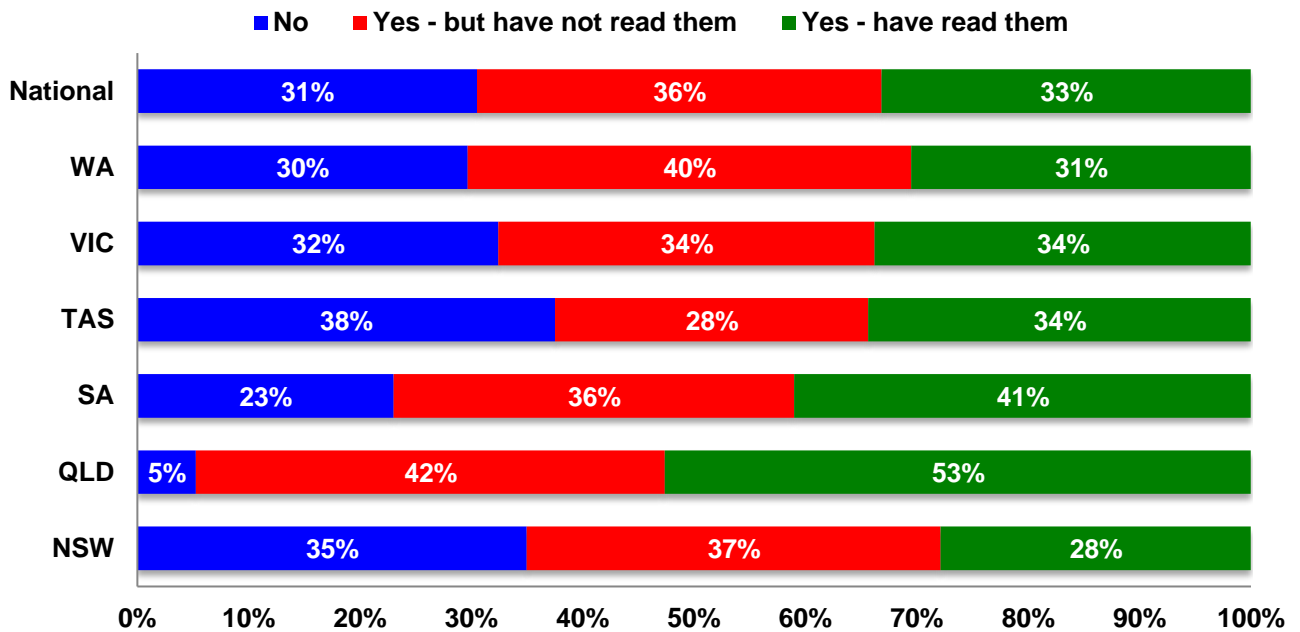


Figure 100: Land Transport Standards and Guidelines – Copy Obtained From?

Q: 'Where did you obtain a copy?'

BASE: All sheep respondents who have a copy (n = 218)

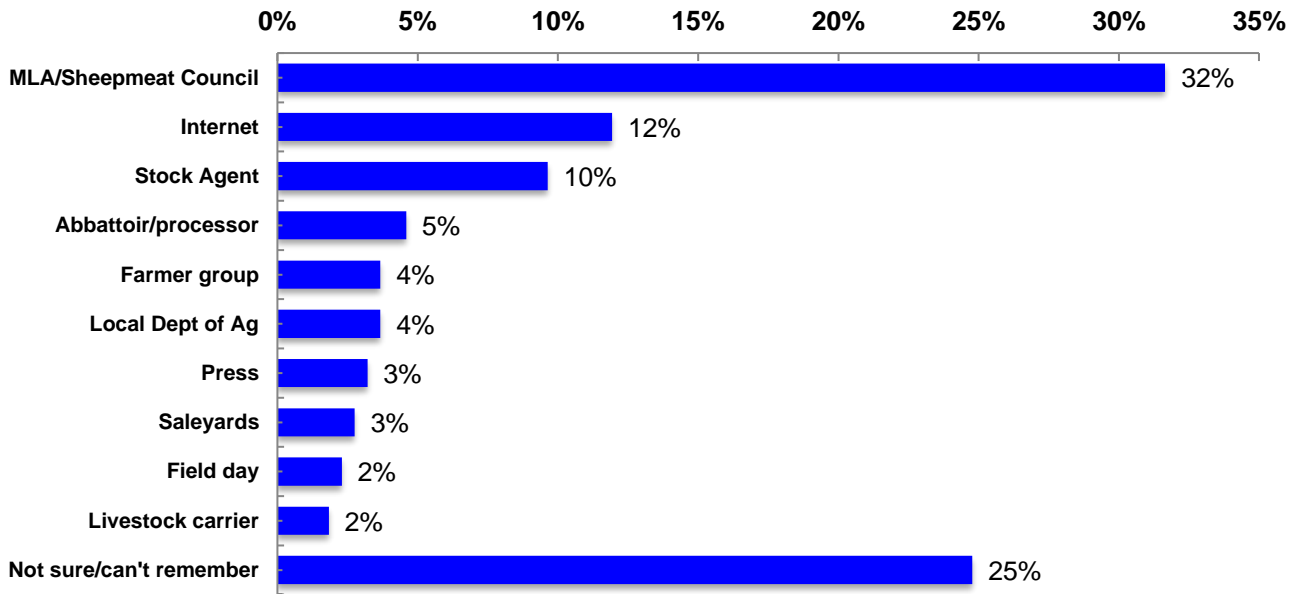


Figure 101: Animal Welfare Standards and Guidelines and Codes of Practice – Awareness – by State

Q: 'The industry has developed Cattle and Sheep Welfare Standards and Guidelines to replace the Model Codes of Practice – Are you aware of either of these?'

BASE: All sheep respondents (n = 602)

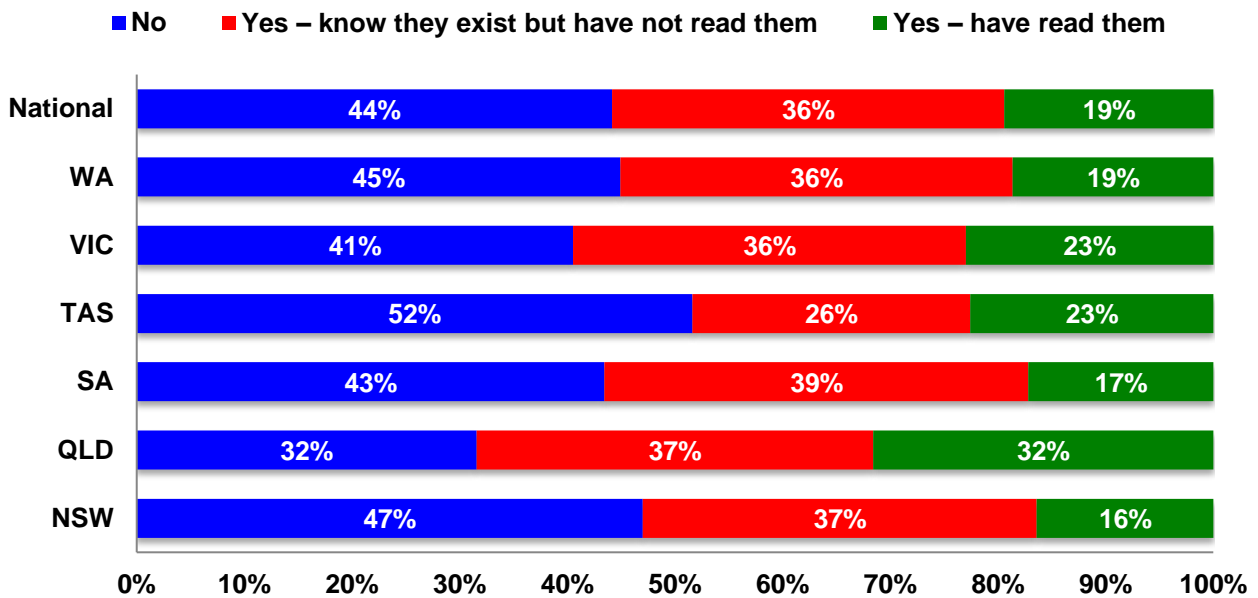


Figure 102: Animal Welfare Standards and Guidelines and Codes of Practice – Copy Obtained From?

Q: 'Where did you obtain a copy?'

BASE: All sheep respondents who have a copy (n = 122)

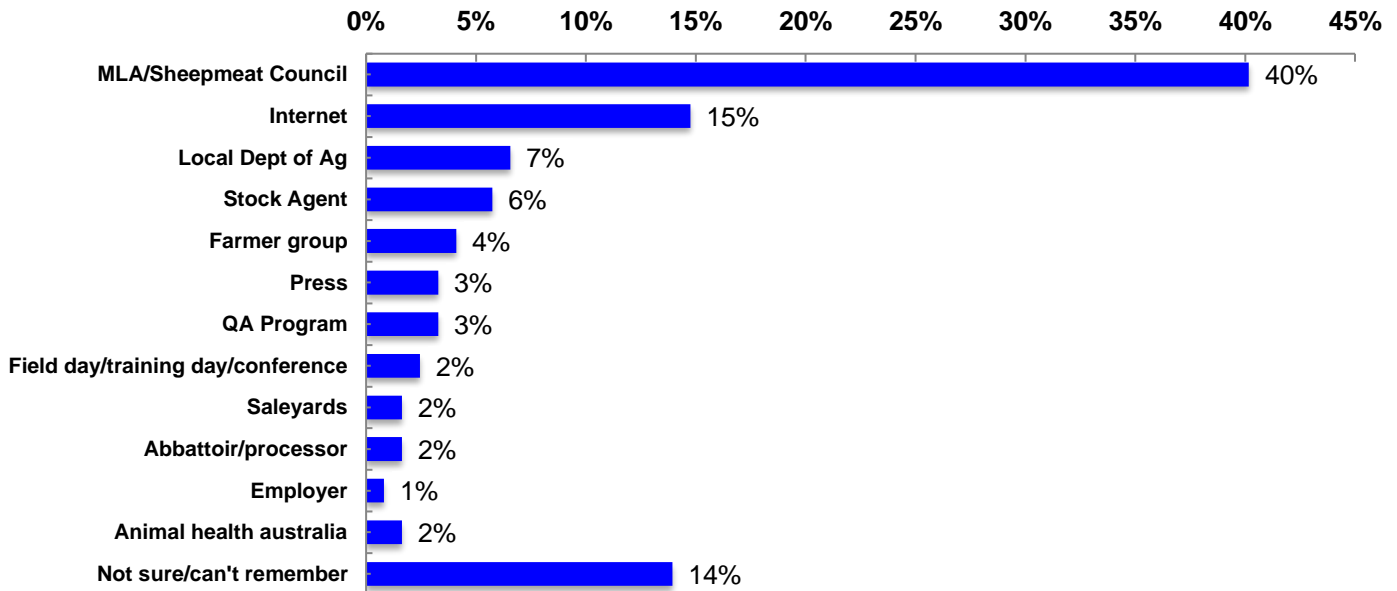


Figure 103: Other Guidelines Used in Business – By State

Q: 'Are there any other Codes of Practice or Guidelines that you use in your business?'

BASE: All sheep respondents (n = 602)

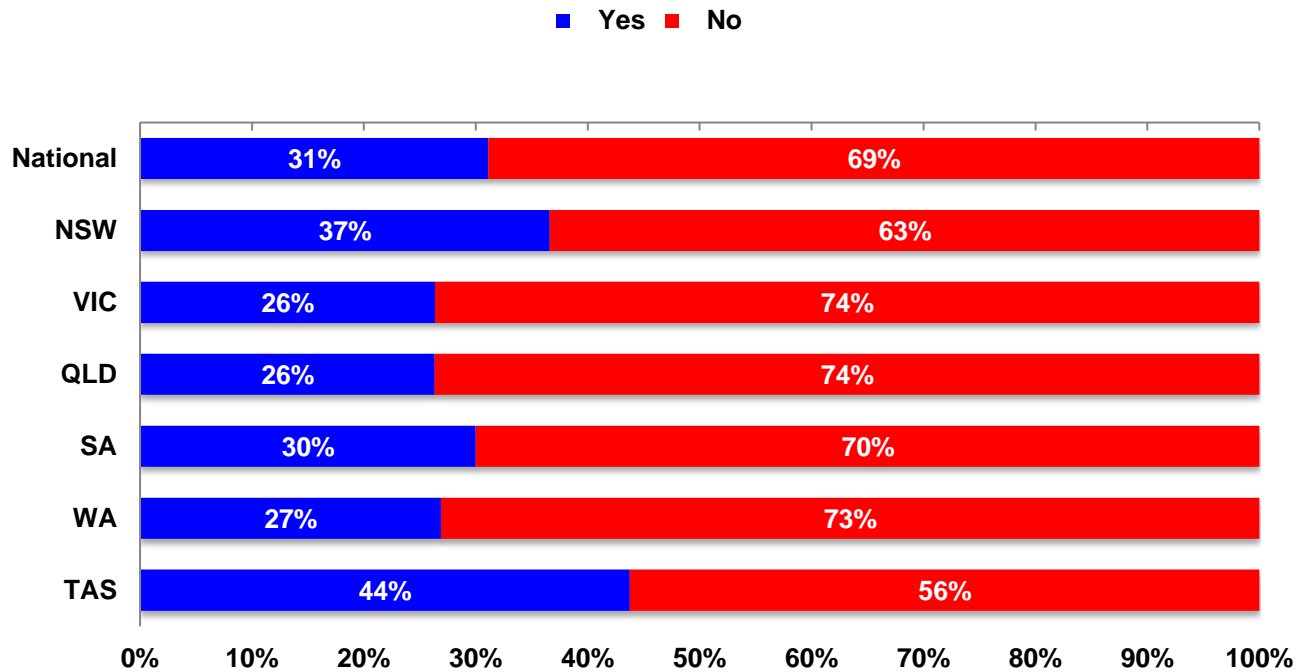


Figure 104: Other Guidelines Used in Business – What?

Q: 'What other Codes of Practice or Guidelines that you use in your business?'

BASE: All sheep respondents who use other guidelines (n = 188)

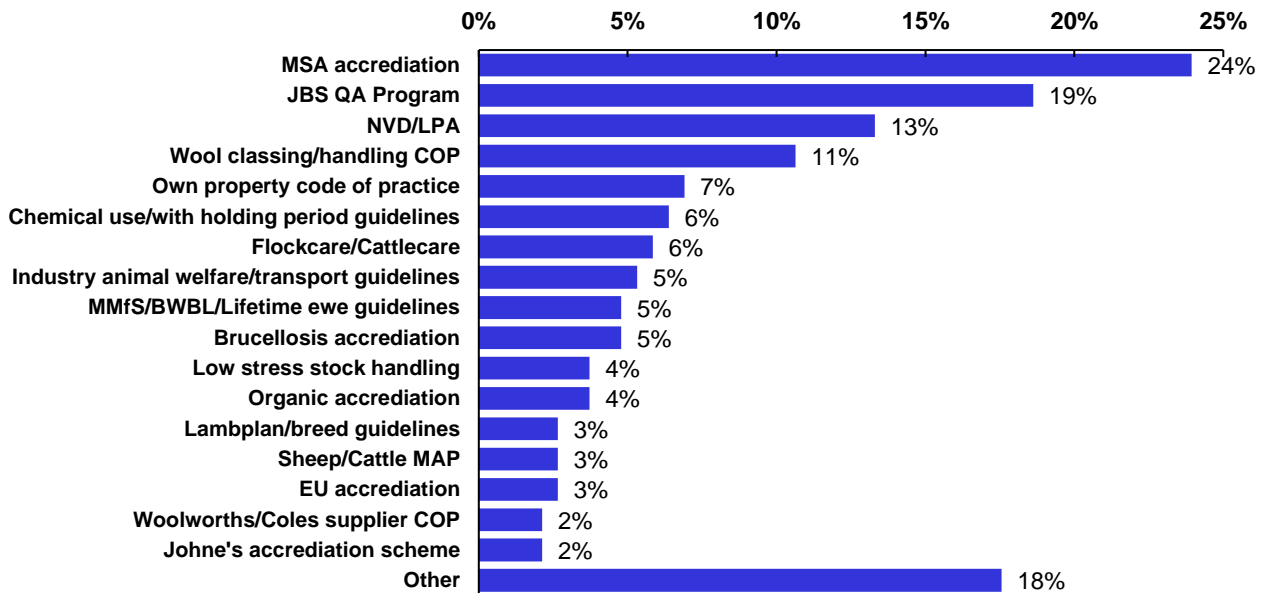


Figure 105: A Producers Guide to Sheep Husbandry Practices – Awareness – by State

Q: 'MLA developed A producers guide to sheep husbandry practices – Are you aware of it?'

BASE: All sheep respondents (n = 602)

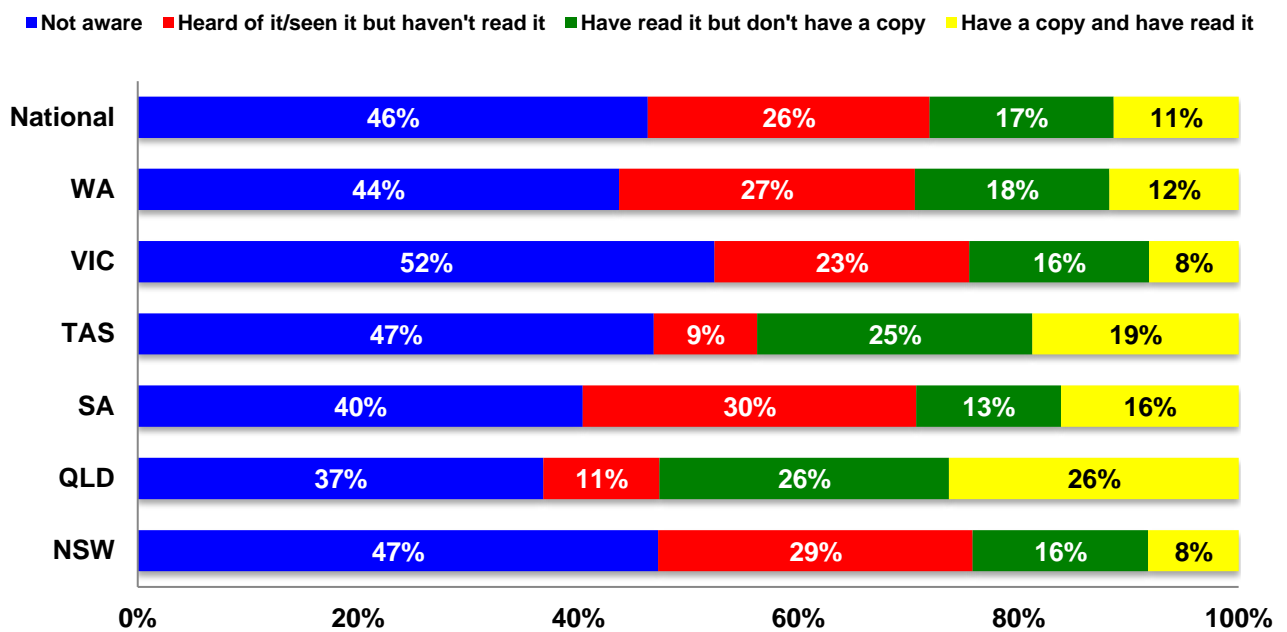


Figure 106: Is It Fit to Load – Awareness – by State

Q: 'MLA developed Is it fit to load – Are you aware of it?'

BASE: All sheep respondents (n = 602)

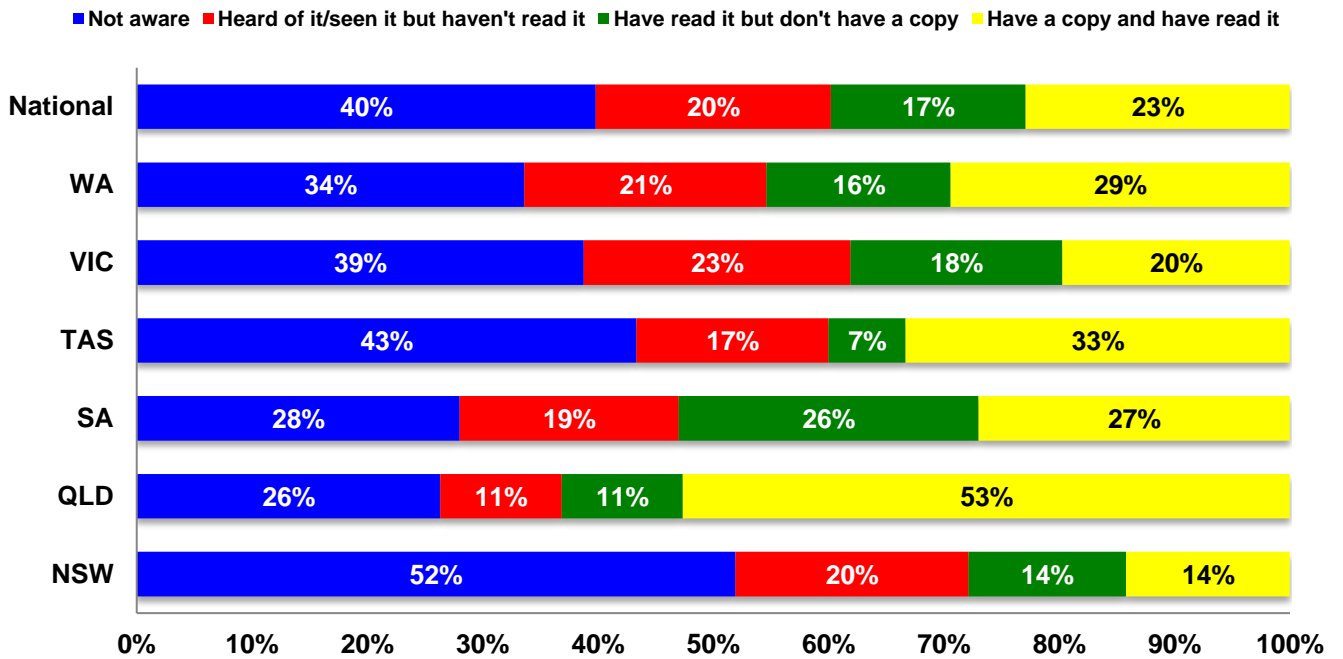
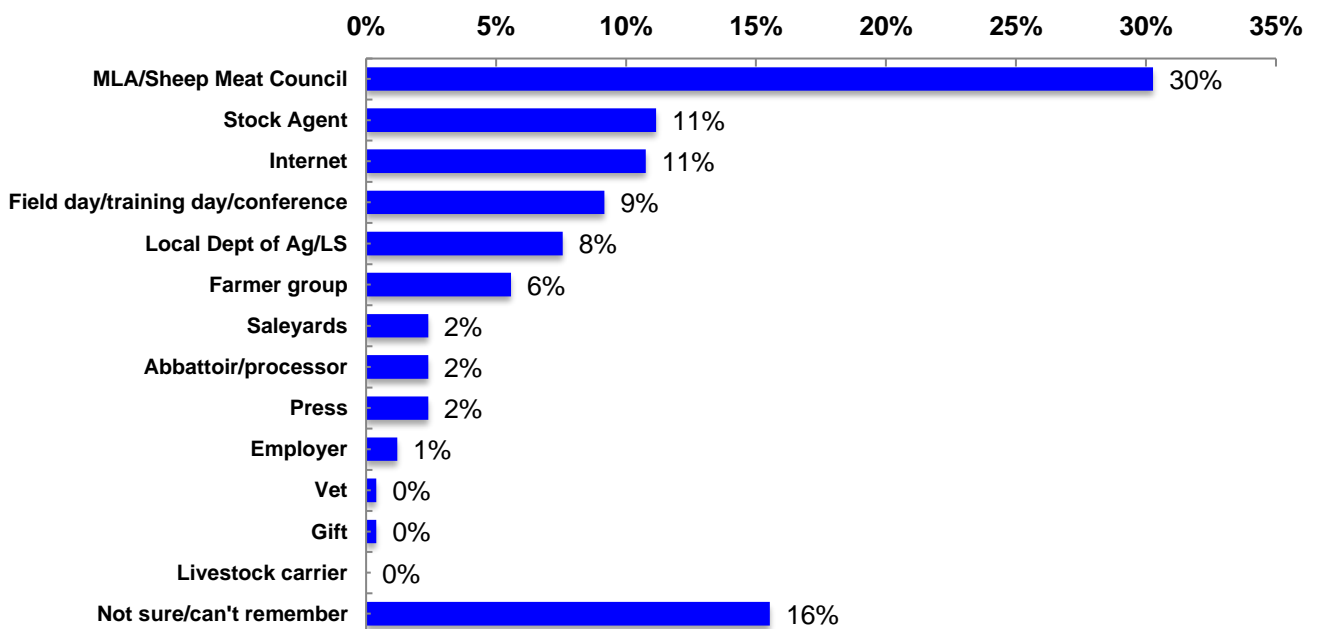


Figure 107: MLA Publications – Copy Obtained From?

Q: 'Where did you obtain a copy?'

BASE: All sheep respondents who have a copy (n = 228)



Training in animal husbandry practices

This question was not worded well in the last survey in 2010. For the 2016 survey, a general question was asked around how producers learnt to undertake the various animal husbandry practices performed on farm as well as what groups they belong to, field days attended and how they seek information regarding animal husbandry practices and issues. Finally, they were asked who the decision makers were on their farm regarding animal husbandry practices.

Most producers have learnt to handle stock and perform the various animal husbandry practices undertaken on farm via informal training (57%), that is someone has shown them or in combination with formal training (30%) (

Figure 108). Producers in Tasmania were more likely to have taught themselves (13% compared to 7% nationally) or learnt from a formal course (9% compared to 6%).

The main training courses revolved around attending field days / workshops / courses (42%), Degree (26%) and Dip/Ass Dip Ag/TAFE course/Ag Cert (11%) (Figure 109).

Two thirds (67%) of the producers surveyed had not attended an event (field day, workshop, meeting etc) that MLA had sponsored in the last 12 months or they didn't know if it was an event sponsored by MLA (6%) (Figure 110). A greater proportion of producers in Queensland and Tasmania had attended an MLA sponsored event (33% and 35% respectively) with 29% of the Tasmanian producers having attended a Making More from Sheep event and 39% of Queenslanders attending another event type that they identified with MLA (Figure 110). A small percentage of producers (2%) had also attended a More Beef from Pastures event in the preceding 12 months.

Two fifths (43%) of the producers surveyed were members of a producer group such as production groups, producer associations and Landcare groups (

Figure 111). Producers from Tasmania were less commonly involved in producer groups (31%) while South Australian and Western Australian producers were more often part of a group (47% and 46% respectively) (

Figure 111). Statistical analysis of state differences showed Tasmania had significantly less producers involved in a discussion group compared with producers from South Australia, Victoria and Western Australia.

Of those producers that were members of discussion groups, most were members of local production groups (57%) (Figure 112). In Victoria, this was most likely to be a BESTWOOL/BESTLAMB group (52%) whereas in South Australia the Ag Bureau featured (23%), and in most states Landcare was also mentioned.

Half of all sheep producers seek information / advice on animal husbandry practices from private vets (50%) followed by the internet (42%), government vets and animal health officers (32%), stock agents (31%) and neighbours / other farmers (27%) (Figure 113). On average sheep producers named 2.8 sources of information relating to animal husbandry / health issues and practices.

Three fifths (58% male, 3% female) of sheep producers said that they were solely responsible for making decisions about animal husbandry practices used (Figure 114). Another one fifth (20% male, 3% female) made decisions with other business partners and family members and 9% made decisions jointly with their spouse / partner (6% male, 3% female).

Figure 108: Training in animal husbandry practices

Q: 'How did you learn to perform the various animal husbandry practices undertaken on farm?'

BASE: All sheep respondents (n = 602)

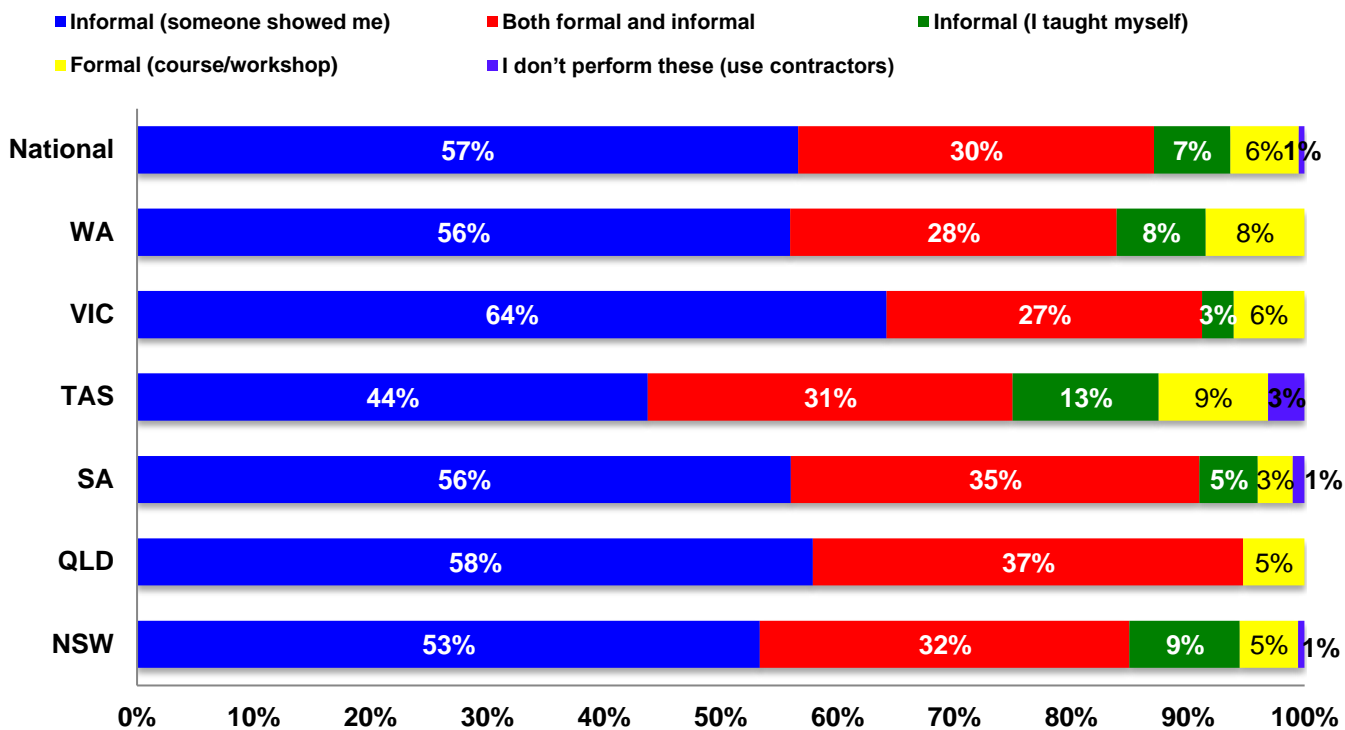


Figure 109: Formal Training

Q: 'What type of training did they receive?'

BASE: All sheep respondents who have undergone formal training (n = 218)

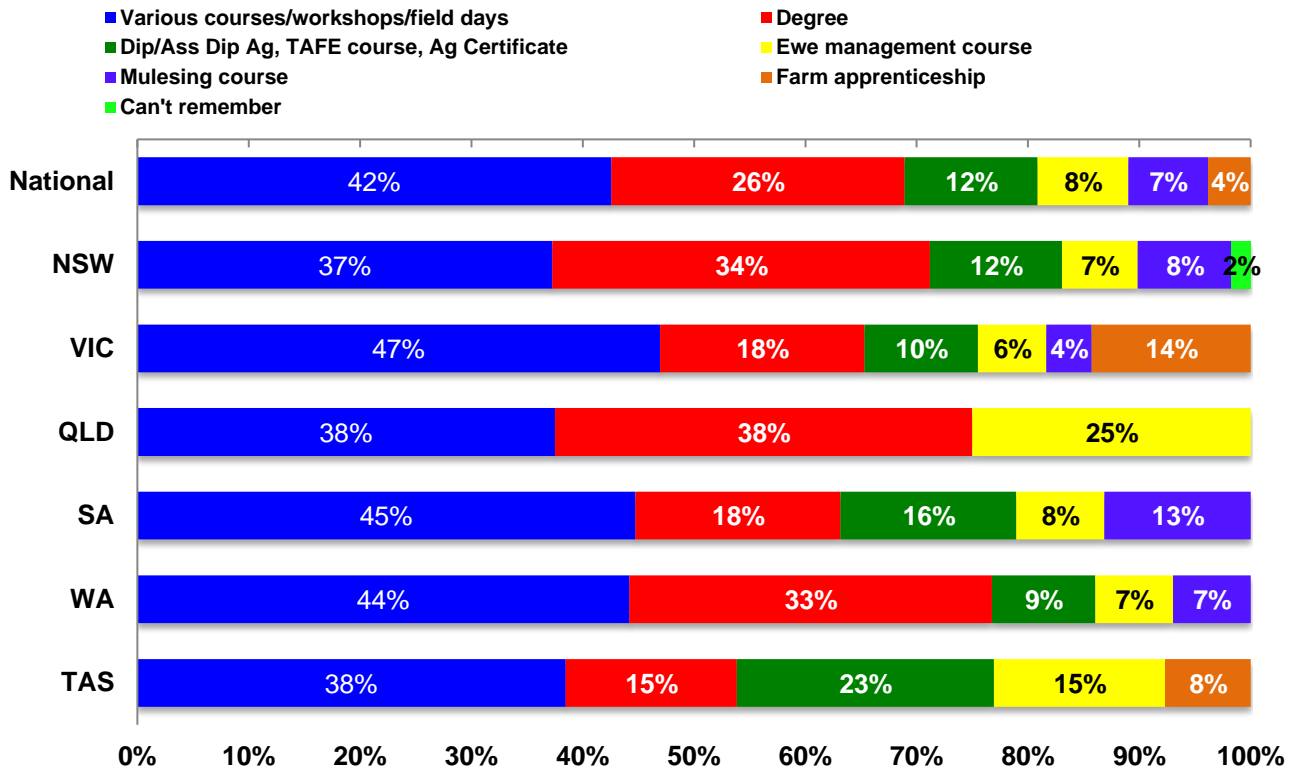


Figure 110: Attendance at MLA events

Q: 'Have you attended a MLA sponsored event (field day / workshop / meeting) in the last 12 months?'

BASE: All sheep respondents (n = 602)

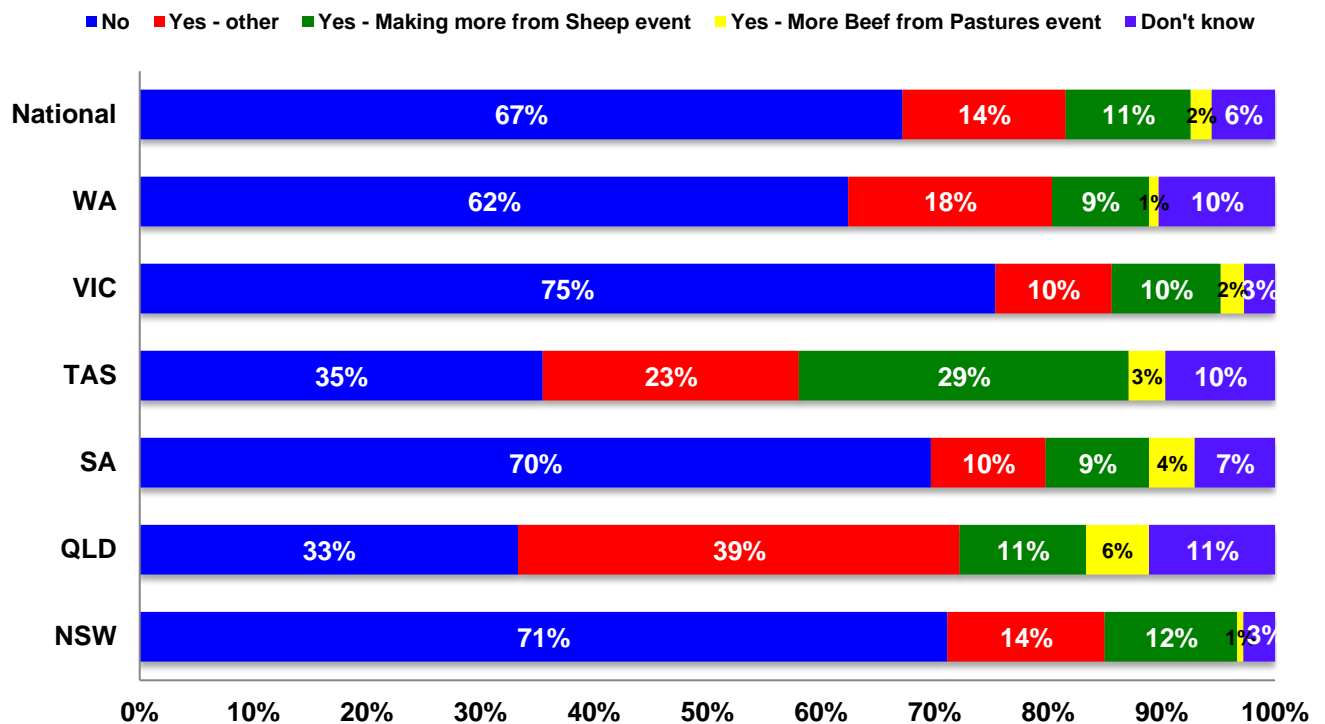


Figure 111: Membership of discussion groups

Q: 'Are you a member of a farmer discussion group?'

BASE: All sheep respondents (n = 602)

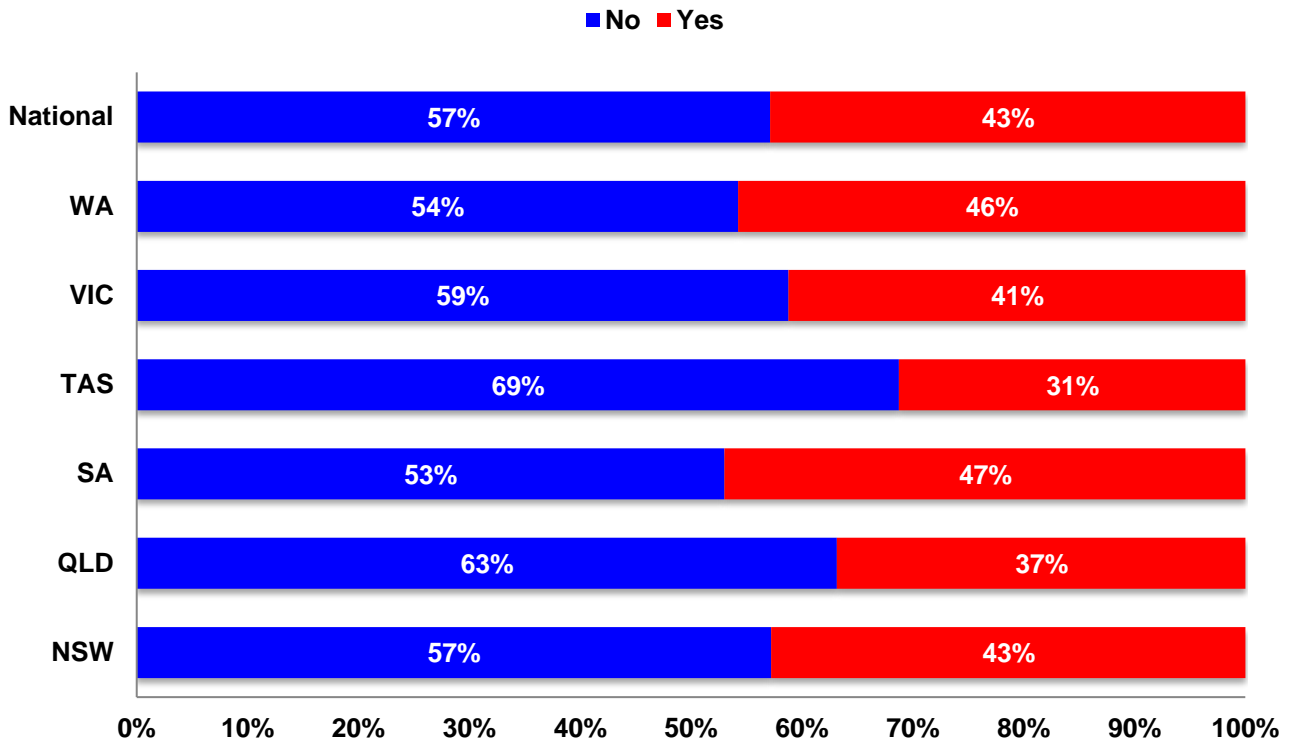


Figure 112: Membership of discussion groups - Type of Group

Q: 'Name of group?'

BASE: All sheep respondents who are group members (n = 258)

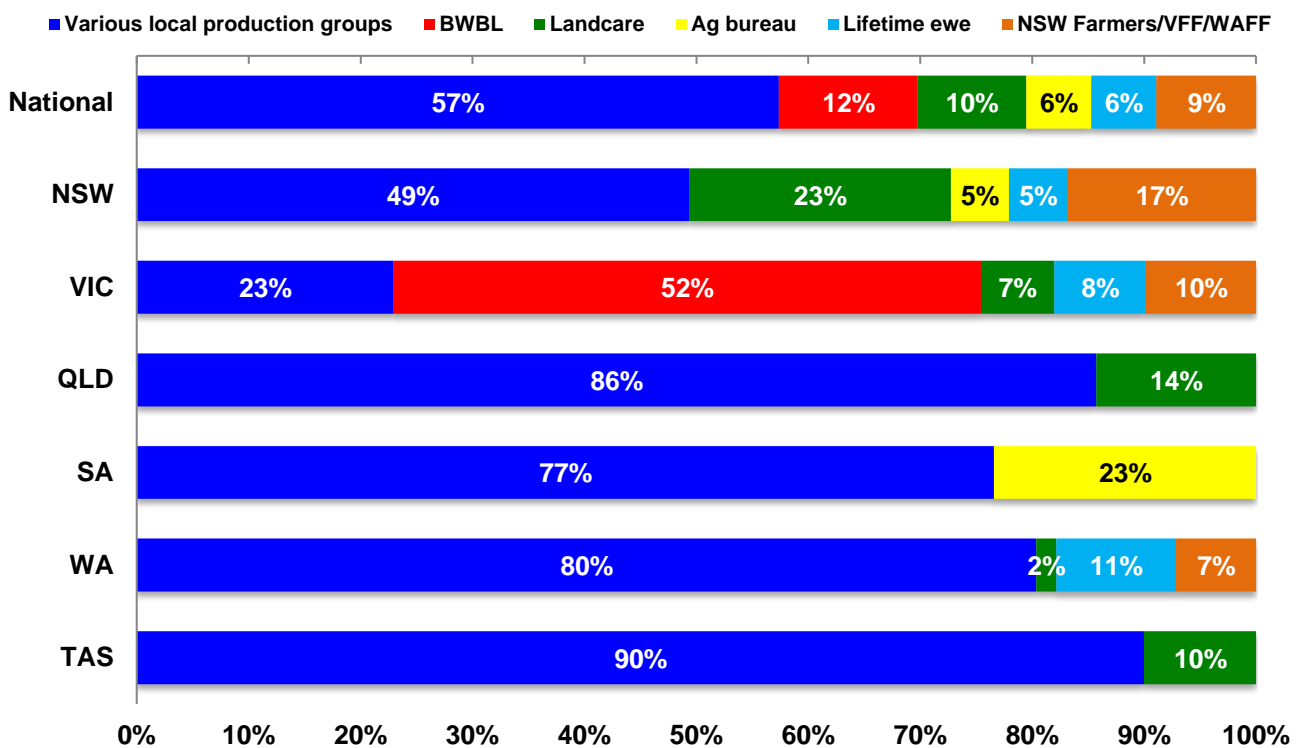


Figure 113: Information seeking

Q: 'Where do you seek / find out information relating to animal husbandry / health issues and practices?'

BASE: All sheep respondents (n = 602)

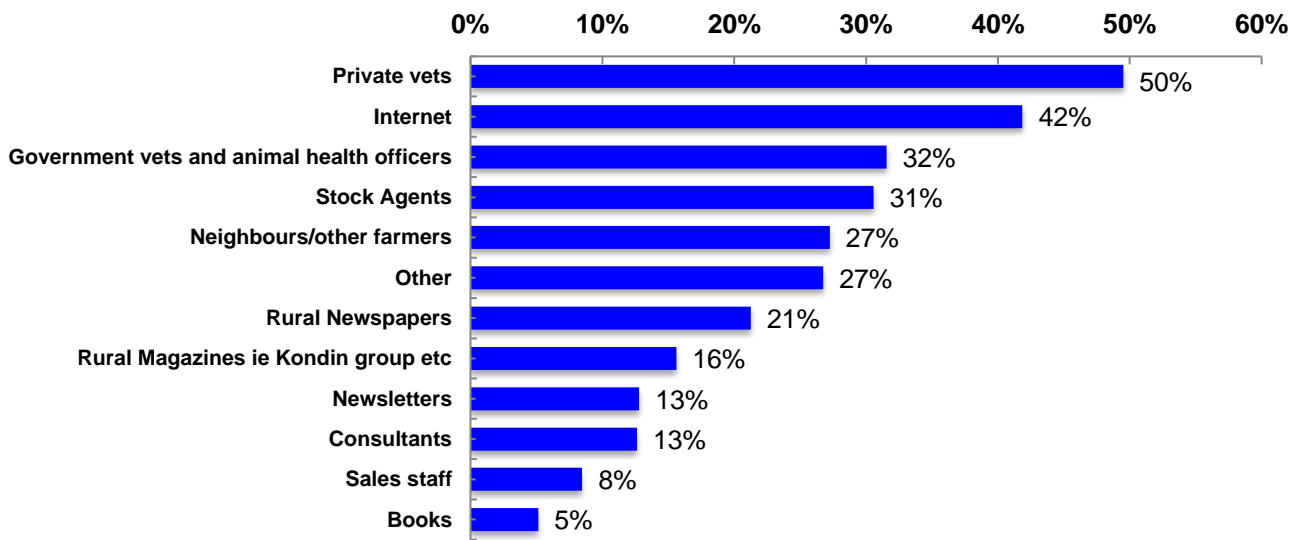
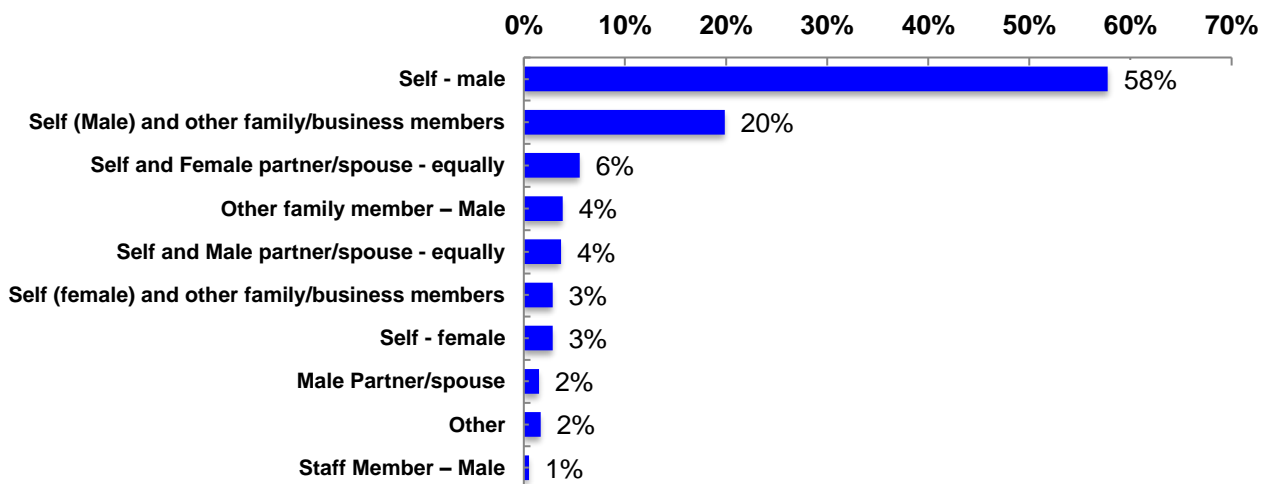


Figure 114: Decision making on farm

Q: 'Who is the main person in your business determining what animal husbandry practices are used on farm'

BASE: All sheep respondents (n = 602)



Comparison with 2010 results

Where possible, comparisons were made between the data collected in 2010 and the data collected in 2016. These results are shown in Tables 2-11 for both years data and mention is made where the difference between years was significant.

Lambs were permanently identified at 3.5 months of age in 2010 and at 2.8 months in 2016 with either non-electronic NLIS tags or management tags and / or an earmark (Table 1). There was no significant difference between years.

Table 2: Identification Methods (multiple responses allowed)

	2010	2016
Average Age	3.5 months	2.8 months
NLIS Tag (non electronic)	57%	83%
NLIS Tag (electronic)	2%	7%
Management Tag (non electronic)	25%	23%
Management Tag (electronic)	2%	1%
Earmark	44%	58%
Tattoo	1%	1%

Male lambs were castrated at 1.9 months of age in 2010 and significantly younger at 6.7 weeks in 2016; predominantly with rubber rings (Table 3). The methods of castration were significantly different between years with rubber rings more popular relative to a knife / scalpel in 2016 than in 2010 and no-one using cryptorchid castration methods in 2016.

Table 3: Castration Methods

	2010	2016
Average Age*	8.1 weeks	6.7 weeks
Knife / Scalpel*	10%	3%
Rubber Rings*	89%	97%
Cryptorchid / Short Scrotum*	1%	0%

* Indicates a significant difference between years

On average, lambs had their tail docked at 1.4 months of age in 2010 and at a significantly younger age of 6.5 weeks in 2016, mainly with a gas knife or rubber rings (Table 4). There was no significant difference between years for method of tail docking.

Table 4: Tail Docking

	2010	2016
Average Age*	6 weeks	6.5 weeks
Gas knife	60%	58%
Rubber ring	34%	36%
Sharp knife	11%	6%
Shears	1%	0%
Hot iron / knife	1%	0%

* Indicates a significant difference between years

Between 41% and 43% of respondents would be willing to pay for the application of a method of pain relief to be used at the time of castration and tail docking respectively. Sheep producers would be willing to pay between \$0.60 and \$1.00 per animal for pain relief during these procedures in 2010 and \$0.57 per animal in 2016 (Table 5).

Table 5: Pain Relief

	2010	2016
Castration:		
Use	41%	39%
Maybe (2016 only)		20%
Pay (per animal)	\$1.00	\$0.57
Tail Docking		
Use	43%	39%
Maybe (2016 only)		20%
Pay (per animal)	\$0.60	\$0.57

Only a fifth of all sheep producers surveyed were aware of Industry Codes of Practice relating to certain animal husbandry procedures (Table 6) in 2010. In 2016, nearly two thirds of producers had heard or read the Land Transport of Livestock Standards and Guidelines and just over half the Cattle and Sheep Welfare Standards and Guidelines.

Table 6: Industry Codes of Practice

	2010	2016
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Castration	21%	56%
Tail Docking	22%	56%
Land transport of Livestock Standards and Guidelines	N/A	69%
Cattle and Sheep Welfare Standards and Guidelines/Model Codes of Practice	N/A	56%

The majority of sheep producers vaccinated or treated stock for Clostridial diseases, endoparasities and lice (Table 7). Vaccinations for Cheesy Gland, Ovine Johne's Disease, Scabby Mouth and Arthritis were regionally specific. There were significant differences in responses between 2010 and 2016 for Cheesy Gland, Ovine Johne's Disease and arthritis vaccinations.

Table 7: Drenches / Vaccines

	2010	2016
Clostridial Vaccines	88%	86%
Cheesy Gland*	60%	53%
Ovine Johne's Disease*	15%	29%
Scabby Mouth	32%	29%
Arthritis*	13%	20%
Endoparasiticides	92%	84%
Lice	88%	85%

* Indicates a significant difference between years

There were statistically significant differences between years for application of a water curfew for both slaughter and non-slaughter stock, but no significant difference between years for application of feed curfews.

The vast majority of sheep producers applied feed and water curfews to slaughter sheep for around 17 hours on average in 2010 and significantly less at around 15 hours in 2016. Over three quarters of sheep producers also applied feed and water curfews to non-slaughter stock (Table 8). Length of water curfew for non-slaughter stock was significantly different between years.

There was no significant difference between years for transit time for slaughter stock and non-slaughter stock, however the state by year analysis showed a significant difference in transit time between years for non-slaughter stock from NSW with a higher average transit time in 2016.

Table 8: Transport

	2010	2016
Slaughter Stock		
Feed Curfew - applied	96%	96%
Feed Curfew - time*	17.1 hours	14.6 hours

Water Curfew – applied*	93%	90%
Water Curfew – time*	16.9 hours	14.9 hours
Average Transport time	3.8 hours	3.7 hours
Non - Slaughter Stock		
Feed Curfew – applied	79%	84%
Feed Curfew – time	12.4 hours	13.3 hours
Water Curfew – applied*	77%	83%
Water Curfew – time*	15.5 hours	13.4 hours
Average Transport time	3.3 hours	3.3 hours

* Indicates a significant difference between years

The majority of sheep producers shoot injured and sick livestock, with burial and fire being the preferred methods of disposal (Table 9 and Table 10).

Table 9: Destruction of Sick / Injured Animals (multiple responses allowed in 2010)

	2010	2016
Shoot	75%	73%
Vet	0%	0%
Knife	40%	26%
Captive Bolt	1%	0%
Other (knackery)	1%	1%

Table 10: Disposal of Sick / Injured Animals (multiple responses allowed in 2010)

	2010	2016
Bury	60%	53%
Burn	33%	19%
Pet Food	12%	6%
Leave / Natural Decomposition	4%	10%
Local Council Tip	1%	0%
Grave yard / Carcass Dump	4%	8%
Use as bait	0%	1%
Other	0%	1%

Foxes were the main predator for sheep producers (

Table 11) in both years of the survey. There was a significant difference between the years with predators in general being less of a problem for producers in 2016 ($P < 0.001$). Crows and eagles were included in the same category in the 2016 survey while the other predators (kangaroos, feral cats and Tassie devils) were not included in the 2016 survey.

Table 11: Wild Predators (multiple responses allowed)

	2010	2016
Foxes	88%	90%
Crows	19%	43%
Eagles / Hawks	21%	
Dingoes	3%	14%
Wild Dogs	7%	
Pigs	7%	12%
Kangaroos	1%	N/A
Feral Cats	1%	N/A
Tassie Devil	0%	N/A
Predators in general being a problem	93%	80%

Conclusions and Recommendations

A quantitative telephone study of 602 sheep / lamb producers across Australia in 2016 examined the extent and nature of certain animal husbandry procedures across the sheep industry.

A number of practices had changed in their use significantly since the first time this survey was undertaken and some have stayed the same. These practices can be considered to be:

1. Dying practices whose use has significantly decreased since 2010;
2. Decreasing practices;
3. Maintaining practices whose use has not altered since 2010; and
4. Emerging or new practices whose use is on the increase or first observed in this survey.

Dying practices

The animal husbandry practices that have decreased since this survey was first undertaken in 2010 are:

1. *Castration using the cryptorchid method of marking.* In 2010 1% of sheep producers castrated ram lambs this way, in 2016 there were no producers who used this technique.
2. *Use of knife or scalpel for castration.* Use of this method of castration has dropped significantly from 10% to 3% in 2016 with rubber rings becoming the only method used for castration in South Australia.

Decreasing practices

1. *Cheesy Gland Vaccination.* The vaccination of sheep for cheesy gland has decreased significantly since 2010 although this might be to do with the way the question was asked this time around (assumed from the type of clostridial vaccine used).
2. *Curfew times for slaughter and non-slaughter stock.* These have decreased significantly from 2010 to 2016 for water and feed by on average 2 hours. There is no discernible explanation for why this has occurred.

Maintaining practices

The practices that have stayed the same in their use between the two surveys are:

1. Tail docking methods
2. Destruction of injured/sick livestock methods
3. Use of clostridial vaccines
4. Scabby mouth vaccination
5. Treatment for Lice (Ectoparasites)
6. Treatment for worms (Endoparasites)
7. Foxes as the main predator
8. Use of tail stripping as a practice
9. Crutching

Emerging practices

The practices that are emerging or increasing in their use are:

1. Castration. Rubber rings as the predominant method of castrating male lambs. The use of rubber rings for castration is increasing presumably because it is easy to use, bloodless and perceived as being more humane.
2. Permanent Identification. NLIS tags – electronic and non-electronic. The use of these as the main form of identification in sheep has increased from 2010 in line with the push for increased traceability in sheep.
3. Ovine Johne's Disease vaccination. This vaccination is on the rise, and significantly more producers are vaccinating for this disease, especially in the southern states of Victoria and Tasmania. Queensland, Western Australia and South Australian producers are still less inclined to vaccinate either in the belief that it is not in their area or could survive in the hotter, drier areas.
4. Arthritis vaccination. Use of this vaccination has increased significantly between the two surveys, especially in Western Australia.
5. Predation. Significantly more producers in 2016 are reporting that predators are having an impact on their flocks. Dingos, wild dogs and birds (eagles / crows) in particular seem to be on the increase.
6. Pregnancy scanning. This question was not asked in the 2010 survey so it is not known if the use of this as a management tool is increasing, however a baseline was established this year for future reference.
7. Checking sheep after marking. The frequency of checking lambs after marking has increased from 2010 to 2016.
8. Ram sedation. In 2010 half (50%) of producers sedated their rams. This has increased significantly to 71% in 2016, especially among producers who breed meat sheep and have bigger rams.
9. Use of electric prodders on sheep. This has increased significantly from 9% of producers who frequently or sometimes used them on sheep in 2010 to 19% of sheep producers using them in 2016, especially for loading sheep.
10. Pain relief. With the advent of Tri-Solfen for mulesing, producers are starting to use this for tail docking as well. Producers in 2016 are more likely (not significant) to consider pain relief than in 2010 but are significantly less likely to pay as much for it for castration as in 2010. However, there are still many producers who currently would not consider using pain relief. The development of new pain relief options, such as Numnuts, may sway some of these producers to consider use of pain relief in the future.
11. Codes of practice. Awareness of Industry Codes of Practice relating to transport and welfare have increased, however while this has improved since 2010, some work is still required to create industry wide awareness.

Recommendations for extension

The demographic information combined with the additional training / information seeking data collected in the 2016 survey provides some useful data as to how sheep producers seek information and learn new skills. The key information gathered shows that:

Most producers (57%) learn how to perform various animal husbandry practices from their family or on the job.

1. When producers do undertake formal learning, it is mostly through field days / workshops / courses (42%). However over two thirds of producers (67%) have not attended an event they identify with MLA in the last 12 months.
2. Two fifths of the members surveyed were members of some sort of producer group, with most of these being local production groups (57%).
3. Private vets (50%) followed by the internet (42); government vets / health officers (31%) and neighbours / other farmers (27%) were producers' main source of information or advice relating to animal health.
4. Over half of producers surveyed reported that they were solely responsible for decision making relating to animal health and husbandry practices, while the rest made these decisions in conjunction with various family or business members.
5. Most producers surveyed were male and over 55.

The results in this section indicate that if MLA wants to influence animal husbandry practices on farms that they need to target:

- Private vets and government vets / health officers and back this up with information on the internet linked to the MLA website.
- Farmer groups directly through using many different delivery methods including field days and workshops, with multiple delivery partners but also considering online learning.
- Multiple farming partners (male / female, offspring, parents, siblings, farm workers / managers) including the younger business members.
- Specific regions depending on the practice.

The results of this project provide an accurate snapshot of current animal husbandry practices and their levels of use within the sheep industry across Australia in 2016. The comparison of these results with those obtained in 2010 allows for the identification of changes on-farm and their potential drivers. This survey also highlights potential areas for consideration in terms of producer willingness to use and pay for pain relief and alternative husbandry procedures in sheep flocks across Australia. These results will inform MLA's R, D & E investments in animal health, welfare and biosecurity and will assist the sheep industry to maintain its social licence to operate.

The project has also provided the sheep industry with an on-going benchmark which will be used to gauge the uptake and effectiveness of any new R & D outputs (vaccines, technologies, etc) and any new Extension & Adoption activities that may be developed for the industry in the future.

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