

2017 Merino Husbandry Practices Survey Final Report

Updated 27th February 2019



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1. Executive Summary

Background

- AWI invests heavily in on-farm research and development to improve the profitability and sustainability of growing wool. Having an accurate understanding of producers' practices in their wool enterprises is essential to identify gaps, needs and future direction of funding for research and development.
- While a number of surveys have been conducted in the past by different organisations, these have not provided the detailed information needed for Merino husbandry practices.
- AWI therefore required an extensive survey of Merino producers to benchmark current practices and monitor future changes.

Research Objective

- To collect comprehensive benchmark data on the animal husbandry practices of Merino sheep producers undertaken in 2017 to allow comparisons between Merino types, states, regions, enterprise size and mulesed and non mulesed Merino enterprises.

Methodology

- A 25 minute telephone survey of 1,200 Merino sheep producers was conducted in February to April 2018.
- Data was weighted to the population of Merino breeding ewe producers by region and flock size based on ABS 2015/16 Census data to ensure results were representative of the Merino industry structure.

Shearing and Crutching

- 84% of producers are shearing every 12 months with SA more likely to shear twice per year
- Average staple length nationally was 92.2 mm with TAS (96 mm) significantly longer than the average
- Average fleece weight was 5.4 kg with SA significantly higher at 5.9 kg and TAS significantly lower at 4.8 kg
- 67% of producers are choosing to crutch only once per year with VIC and SA more likely to choose twice per year (37% and 39%).
- 56% of producers shearing twice per year are unlikely to crutch at all

Joining and Scanning

- On average, ewes are joined to rams for 7.9 weeks, with smaller flock sizes of 250 or less joining longer (9.9 weeks) compared to larger producers of 2,000+ joining shorter (7 weeks)
- Maiden ewes are joined at a ram ratio of 2.1% with both NSW and VIC using less rams (1.9%) and the largest flock size of 2,000+ raising the joining rates to 2.2%
- Mixed ewes are joined at a ram ratio of 2.0% with QLD, SA and WA using a higher rate of 2.2%
- 78% of producers are choosing to buy rather than breed their rams with WA and larger producers of 2,000+ more likely to breed their own rams (30% and 42% respectively)
- 46% of producers are pregnancy scanning their ewes, with higher adoption (66%) amongst larger producers (2,000+ ewes)

Lamb Marking and Vaccination

- The average youngest lamb being marked is 3.8 weeks old with the shorter joining periods of 4 weeks or less more likely to have younger lambs
- Marking percent for maidens is 79% and mixed 93% with the largest producers having the best performance at 81% and 97% for maiden and mixed ewes respectively
- 56% of producers are doing a pre-lambing vaccination with SA leading at 72%
- Virtually all producers are vaccinating their ewes (93%) and wethers (92%) at marking
- Producers leading choice for vaccination is 6 in 1 with 41% of ewes and 40% of their wethers being vaccinated with 6 in 1
- 70% of producers are vaccinating at weaning with QLD and TAS the lowest adoption at 23% and 50% respectively
- 49% of producers are vaccinating at all three stages (pre-lambing, marking and weaning)

Weaning

- The average oldest age of lambs being weaned is 16.9 weeks with the majority (35%) weaning at between 14-17 weeks
- Maiden ewes have a weaning rate of 78% and mature ewes 94% with the latter having a greater proportion of producers being able to achieve at least 100% weaning rates

Mulesing

- The majority of producers are choosing to mules their lambs with 63% of wethers and 70% of ewes mulesed in 2017. The lowest adoption was in QLD and TAS
- Producers preferred to mules at marking with 96% of wethers and 95% of ewes done at this time
- Pain relief was chosen by the majority of producers with 84% of using pain relief for wethers and 83% using pain relief for ewes
- 99% of producers using pain relief are mulesing with Tri-Solfen. The product's effectiveness and ready availability were the main drivers
- 57% of producers used contractors for mulesing and of that 57%, around half were accredited mulesing operators (55%)

Tail Docking and Castration

- The Hot knife method was the preferred method for docking for producers with ewes (68%) and wethers (67%) docked with this practice. For non mulesed lambs, the majority of producers were tail docking ewes and wethers with rings (61% and 55% respectively)
- Producers chose the Hot knife method for their ewes (72%) and wethers (71%) as they saw it as a bloodless technique
- Average tail length from all producers surveyed showed that their ewes at 2.5 joint was slightly longer than their wethers at 2.4 joint
- Virtually all producers (95%) used rings to castrate their wethers
- 42% of producers used pain relief for docking and castration

Flystrike and Drenching

- On average 1% of mixed age ewes are getting breech strike with producers waiting till 0.8% of the flock are struck before performing fly protection
- On average mixed ewes are drenched 1.9 times and young ewes 2.2 times per year with those producers performing egg counts drenching more often (2.1 times for mixed ewes and 2.5 times for young ewes)
- 41% of producers are performing faecal egg counts with Gippsland and Western Vic regions having the largest regional adoption of 67% and 60% respectively

Sheep Sales and Communication

- CFA's on average are sold at 6.2 years, wethers 1.7 years and young ewes 1.3 years
- Producers chose to send CFA's and wethers mostly to Restocker saleyards (56% and 48% respectively) however young classed out ewes often were retained for use in prime lamb production (42%)
- 55% of producers have heard of the Flyboss website and of that proportion, 53% visited the site
- 55% of producers have heard of the Liceboss website and of those producers aware of the site, 57% of them actually visited it
- The most widely known site of all the boss sites was Wormboss which had an awareness of 64%. 59% of those aware of the site had visited the site

Additional Analysis

- Detailed cross tabulations of all questions have been provided in Excel for a range of demographic variables including:
 - State
 - Region
 - Micron
 - Body wrinkle
 - Mules and non mules ewes and wethers
 - Respondent age
 - Respondent gender
- The de-identified raw data has also been provided to AWI to allow AWI to conduct additional analysis of the data if needed

Future Research

- It is recommended that the survey be repeated in two year's time which will allow sufficient time for any industry extension to be implemented and for practice change to occur
- Where possible, the questions should remain consistent with the 2018 study. If questions need to be added to address new issues, then lower priority questions from the 2018 survey should be removed. This will keep the survey at 25 minutes, minimising respondent burden and maximising response rates
- It is also recommended that a subsample of respondents from the 2018 survey be included in the 2020 survey. This will allow both longitudinal and cross sectional analysis of practice change over the period

2. Methodology and Sampling

Methodology



Methodology: CATI surveys



Duration: 25 minute non-incentivised interviews
Some questions were removed after the pilot phase due to questionnaire length



Sample : 1,200 Merino producers

- 6 States
- 26 Regions
- 4 Flock size categories



FARM's Rural Database of Sheep producers



Fieldwork was conducted in February to April 2018

Questionnaire



- The questionnaire consisted of 73 questions (excluding screening questions). Most questions were closed however there were a number of open ended questions and “Other (Specify)” options where relevant
- Demographic information was also collected to assist in analysis and interpretation of the results. Variables included:
 - State
 - MLA Region (as used for the AWI MLA Wool and Sheepmeat Survey)
 - Flock Size
 - Micron
 - Body wrinkle
 - Respondent age
 - Gender

Interviewing



- 1,200 producers interviewed by telephone
- Respondents had to be the primary decision maker regarding their 2017 sheep husbandry practices, have a sheep flock of either Merino Poll, Merino Horn or Merino Dohne
- Fieldwork was conducted in February to April 2018
- Predominantly evening interviewing but daytime shifts were run for call backs
- Field work was conducted by FARM (Fairfax Agricultural Research and Marketing) using their database of over 100,000 rural producers

Interview Length

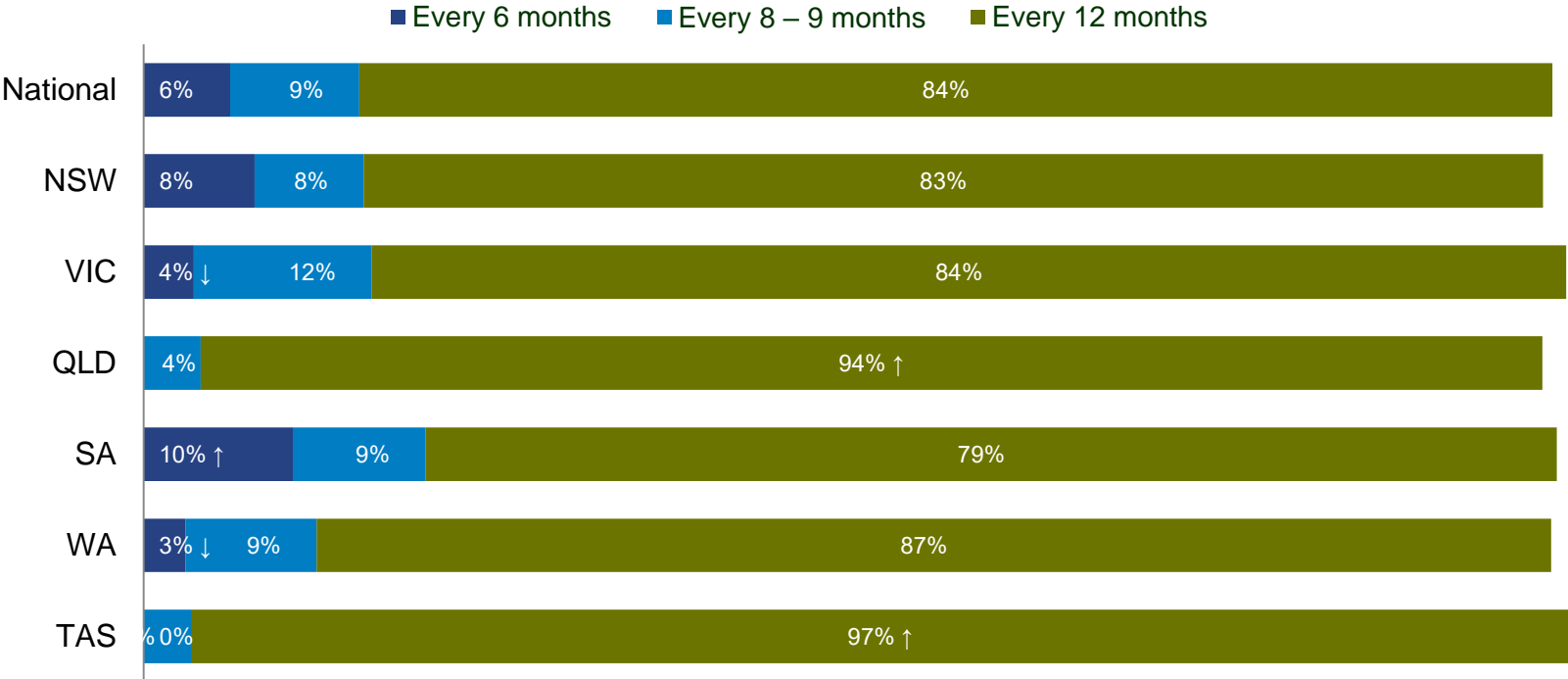
The questionnaire took 25 minutes to administer

3. Shearing

The vast majority of producers were shearing once a year however, SA had a greater occurrence of shearing twice a year



Breeding Ewes Shearing Frequency



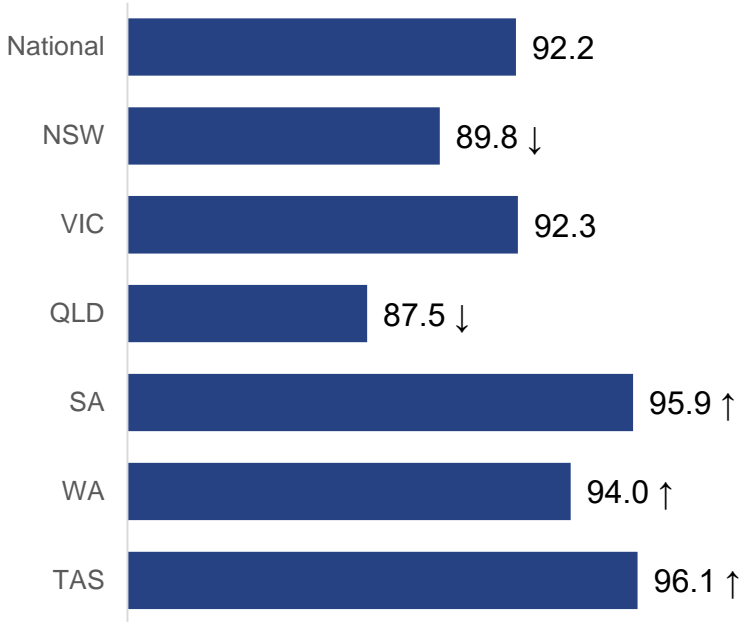
Q6: How often do you shear your Merino breeding ewes?

*Graph excludes other and don't know results

The average staple length for adult ewes varied state to state with SA, WA and TAS significantly longer than the national average

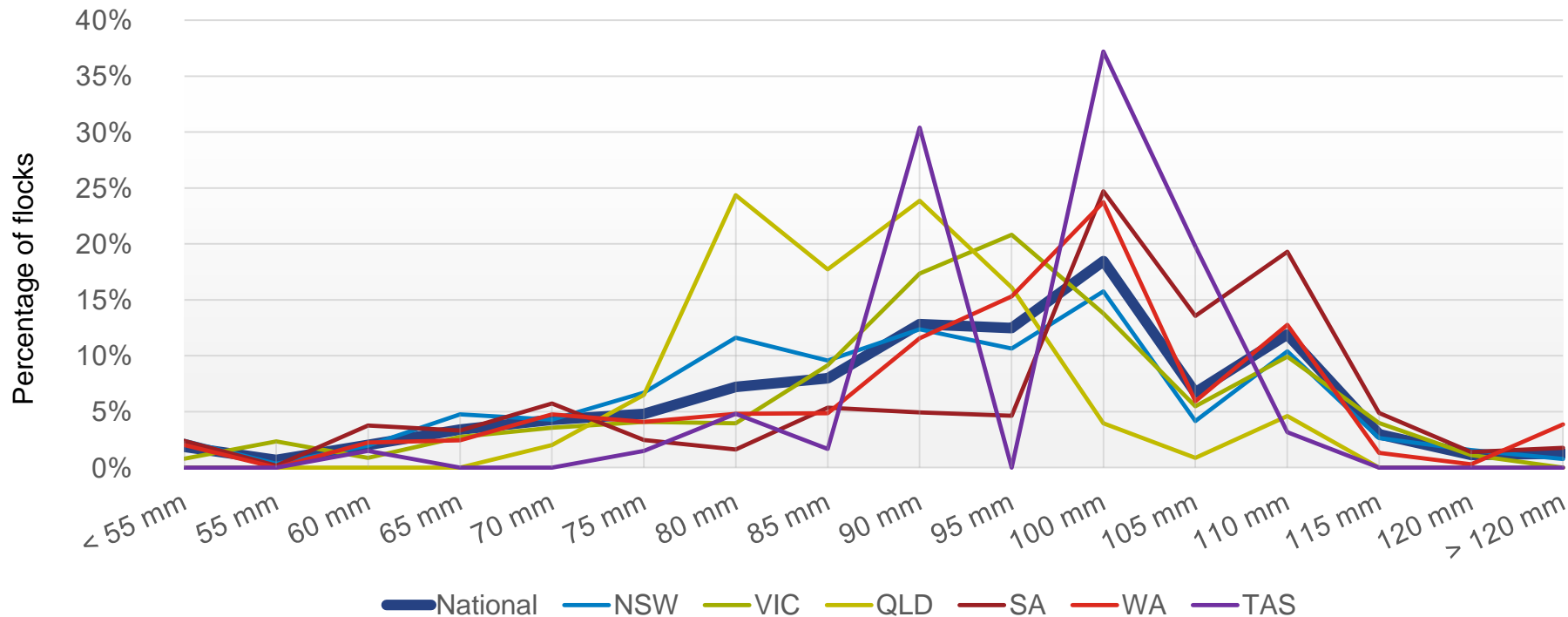


Average adult ewe staple length



Q7: In a normal season, what is your adult ewe staple length at each shearing?

In 4/6 states the most frequent average adult ewe staple length was 100 mm



Q7: In a normal season, what is your adult ewe staple length at each shearing?

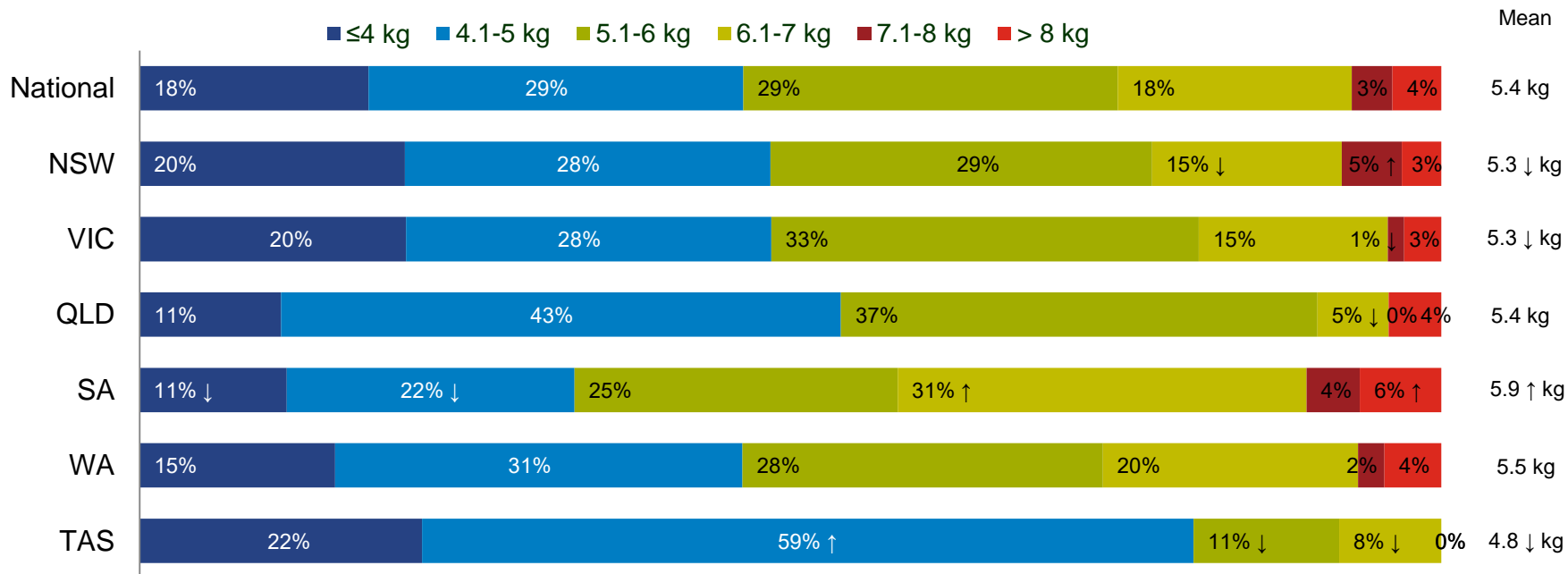
Average kg wool cut per head was consistent across states, with the majority of fleece weights from 4.1 – 6.0 kg



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Average kg/head of wool from ewes



Validation: AWI / MLA Wool and Sheepmeat Survey: October 2017 – expected kg wool / hd for Merino ewes 5.4 kg; February 2018 4.9 kg

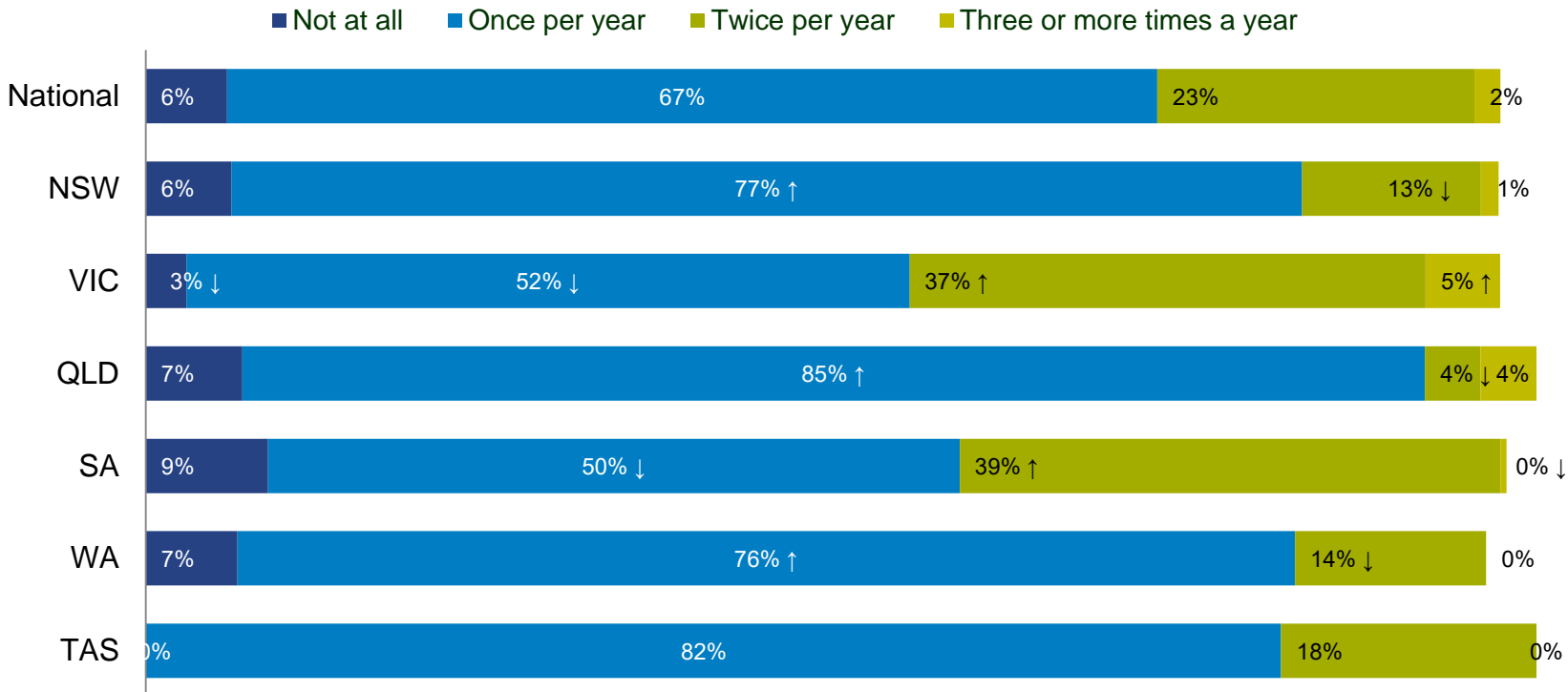
Q8: In a normal season, what is the average kilograms of wool cut per head for your joined Merino ewes?

4. Crutching

Crutching once per year remains standard. However, VIC and SA are leading a trend for double crutching



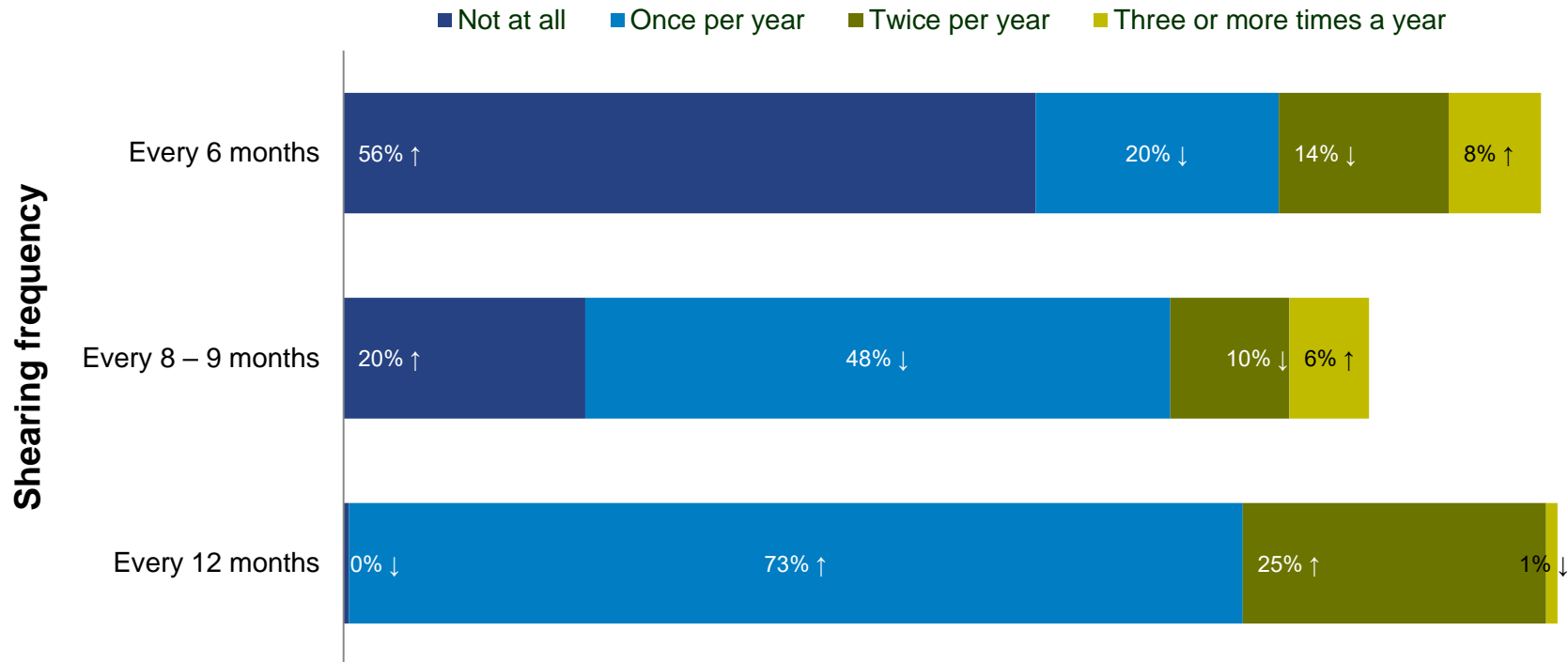
Crutching frequency



Q9: How often do you crutch your mixed aged ewes?

Farmers not crutching their sheep are most likely to have moved to shearing twice per year

Crutching frequency vs Shearing frequency



Q9: How often do you crutch your mixed aged ewes?

Q6: How often do you shear your Merino breeding ewes?

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*Graph excludes other and don't know results

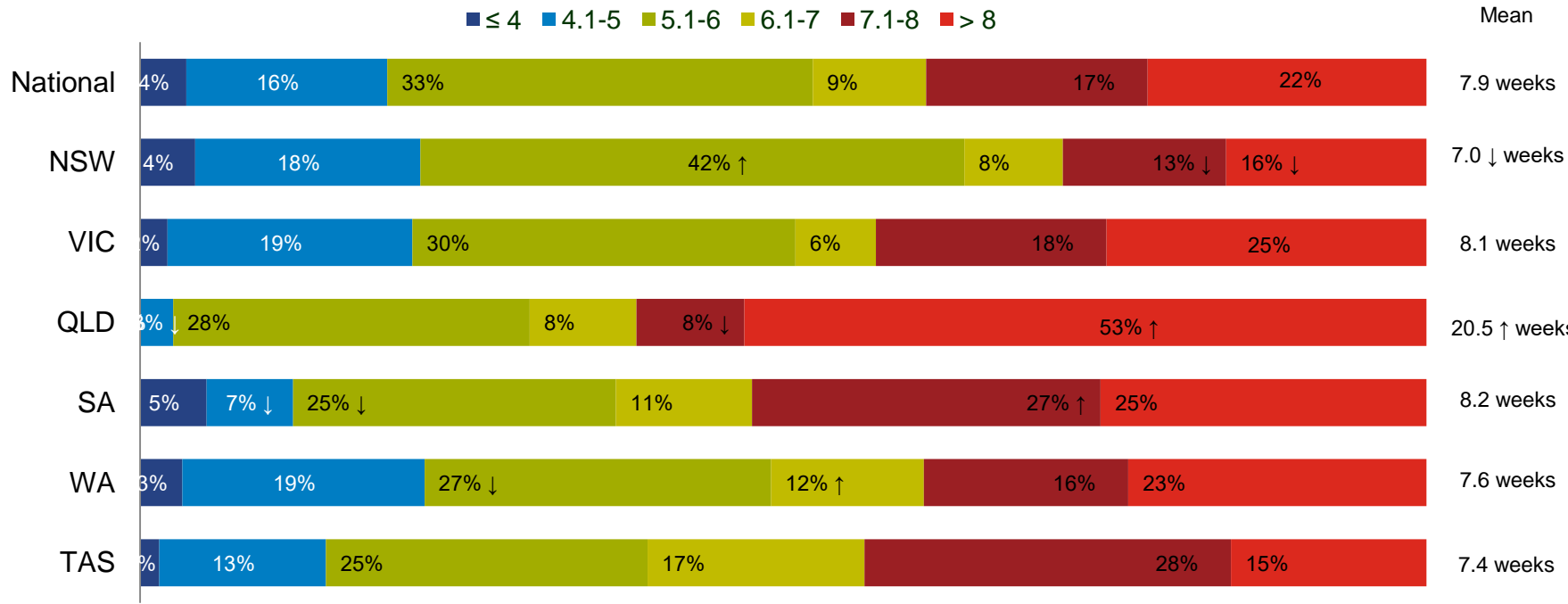
Base: All respondents: n = 1200

5. Joining and Scanning

The number of weeks ewes are joined fell predominately in the 5.1 to 8 weeks plus range with QLD producers more likely to join for significantly longer periods compared to other states



Number of weeks ewes joined to rams

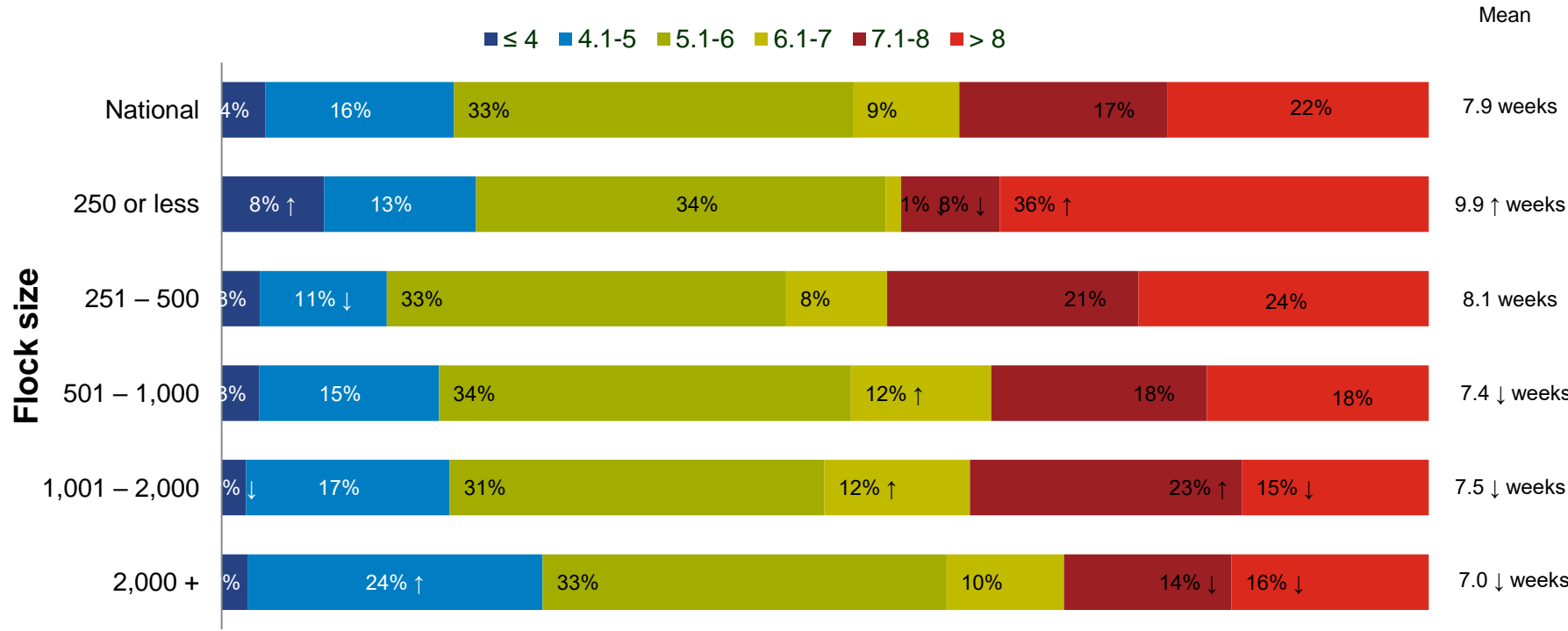


Q10: How many weeks do you join your Merino ewes to your Merino rams?

The duration of joining is reasonably consistent across the range of flock sizes, however, smaller producers tend to join for longer



Weeks ewes joined to rams by flock size



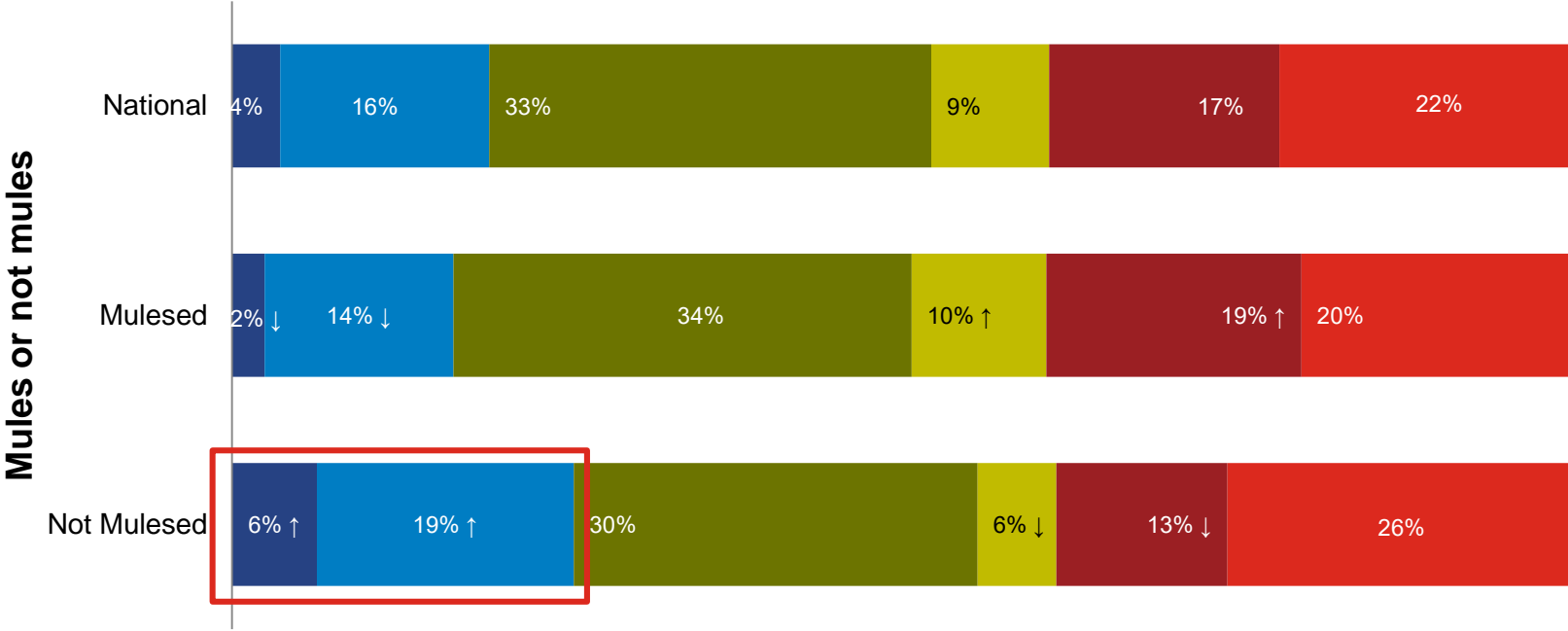
Q10: How many weeks do you join your Merino ewes to your Merino rams?
 S6 Total number of Merino breeding ewes
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Producers not mulesing their ewes were more likely to join for shorter periods



Number of weeks ewes joined to rams

■ ≤ 4
 ■ 4.1-5
 ■ 5.1-6
 ■ 6.1-7
 ■ 7.1-8
 ■ > 8

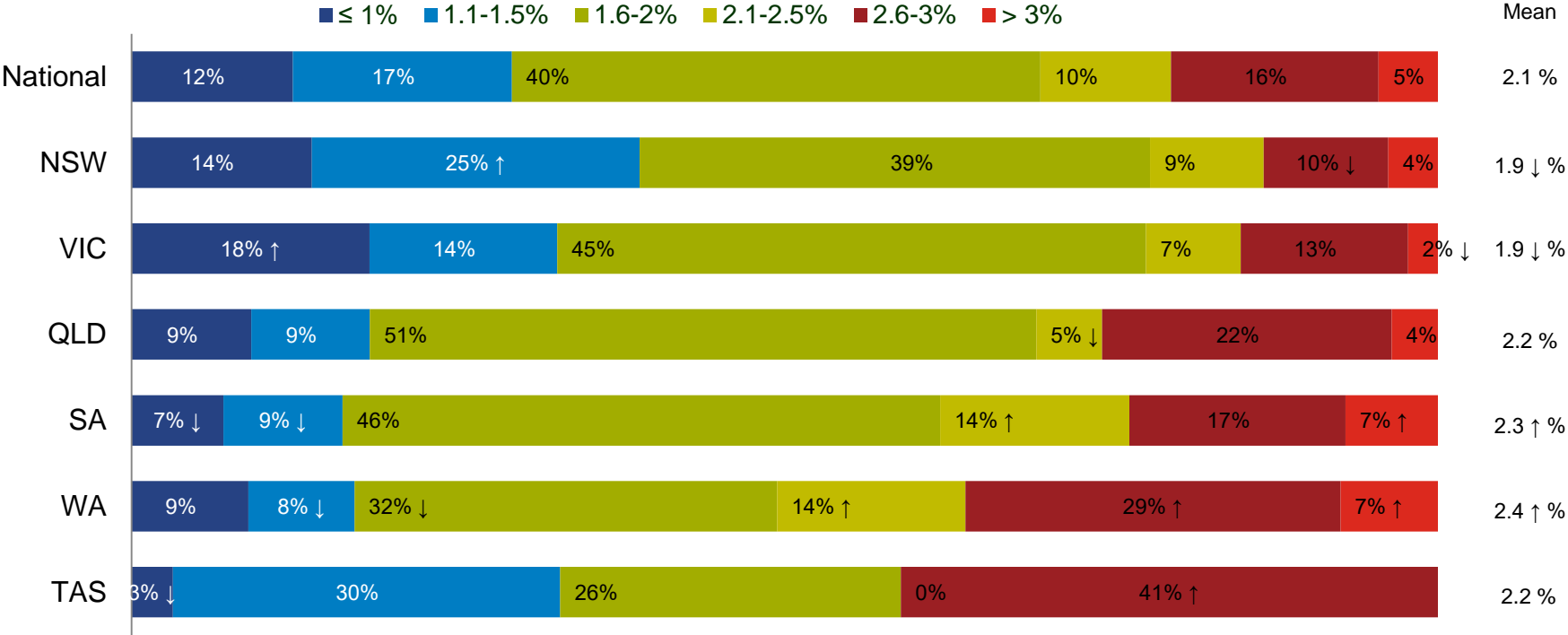


Q10: How many weeks do you join your Merino ewes to your Merino rams?

On average, producers were using around 2 rams per 100 maiden ewes joined



Joining % - rams to maiden ewes



Q11: What is your ram joining percentage for Merino rams to Merino maiden ewes?

Joining percent for maiden ewes – by flock size

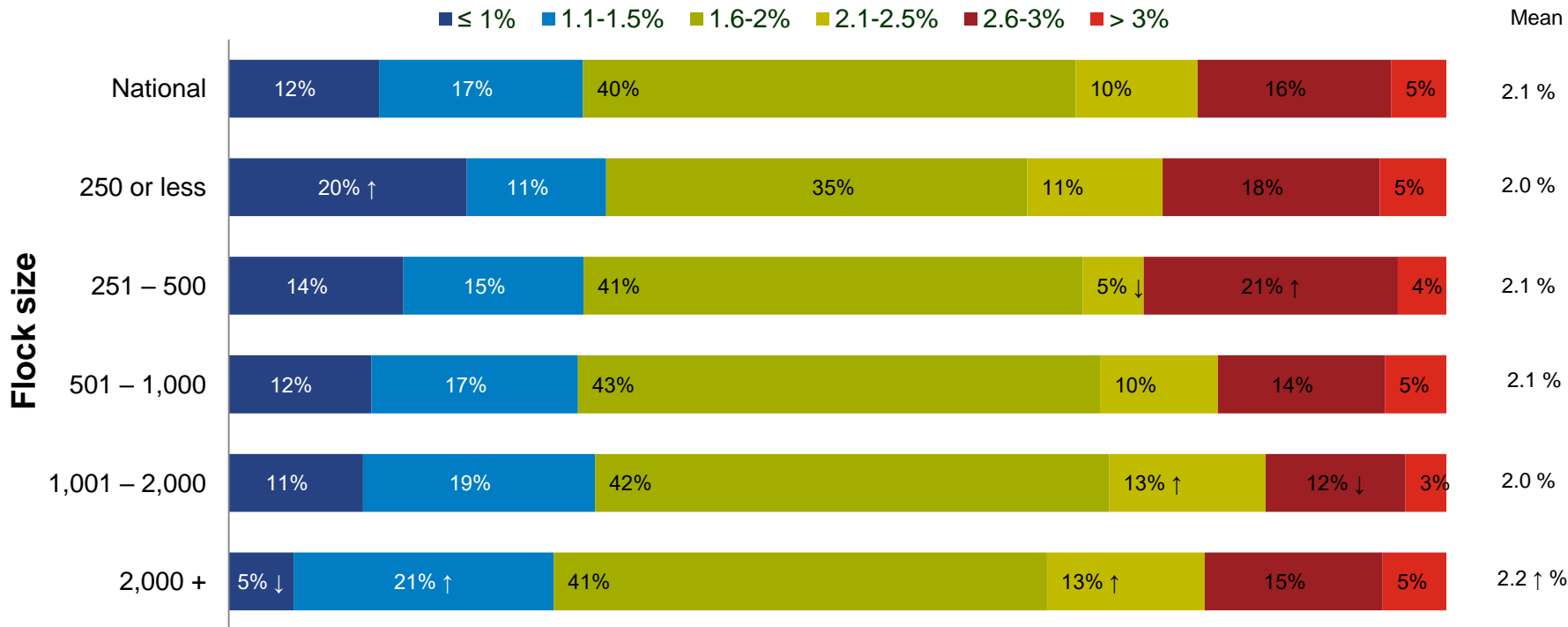


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Joining % - rams to maiden ewes by flock size

■ ≤ 1%
 ■ 1.1-1.5%
 ■ 1.6-2%
 ■ 2.1-2.5%
 ■ 2.6-3%
 ■ > 3%



Q11: What is your ram joining percentage for Merino rams to Merino maiden ewes?

S6 Total number of Merino breeding ewes

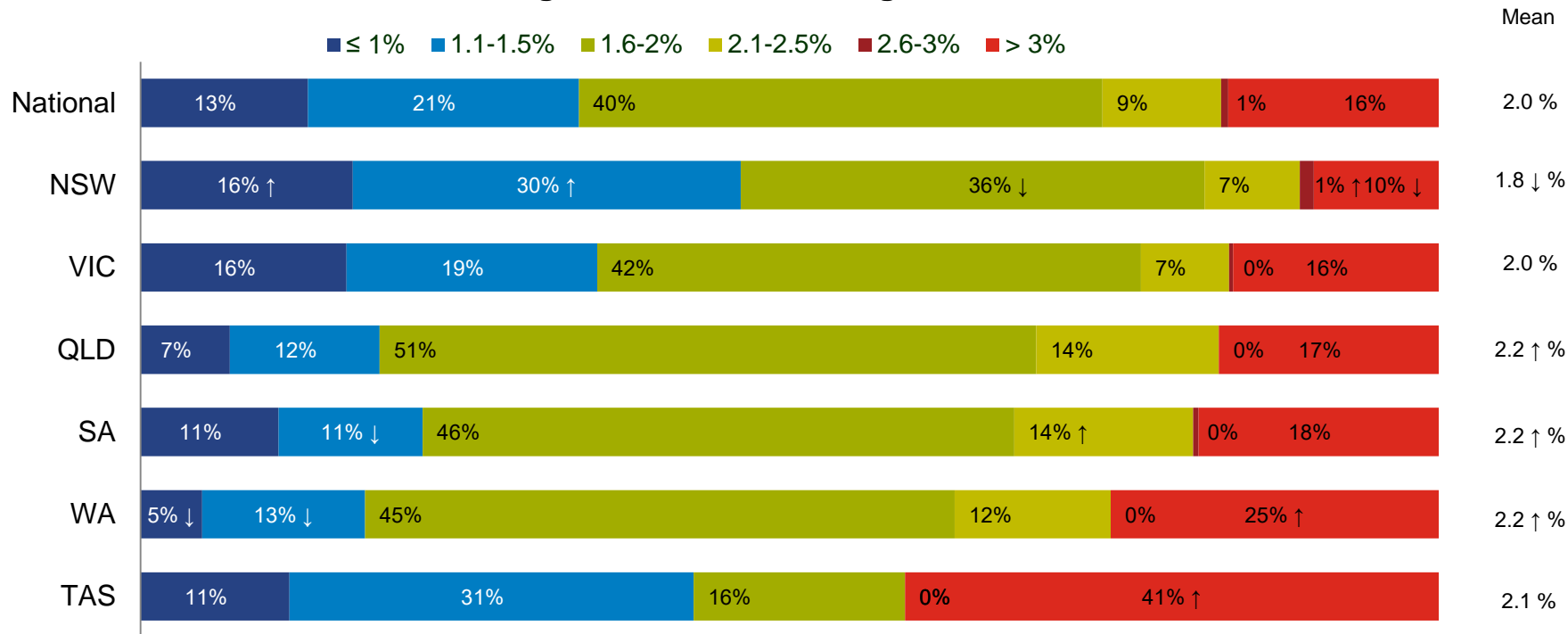
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Base: All respondents: n = 1200

Producers were using slightly fewer rams with their mixed age ewes.



Joining % - rams to mixed aged ewes

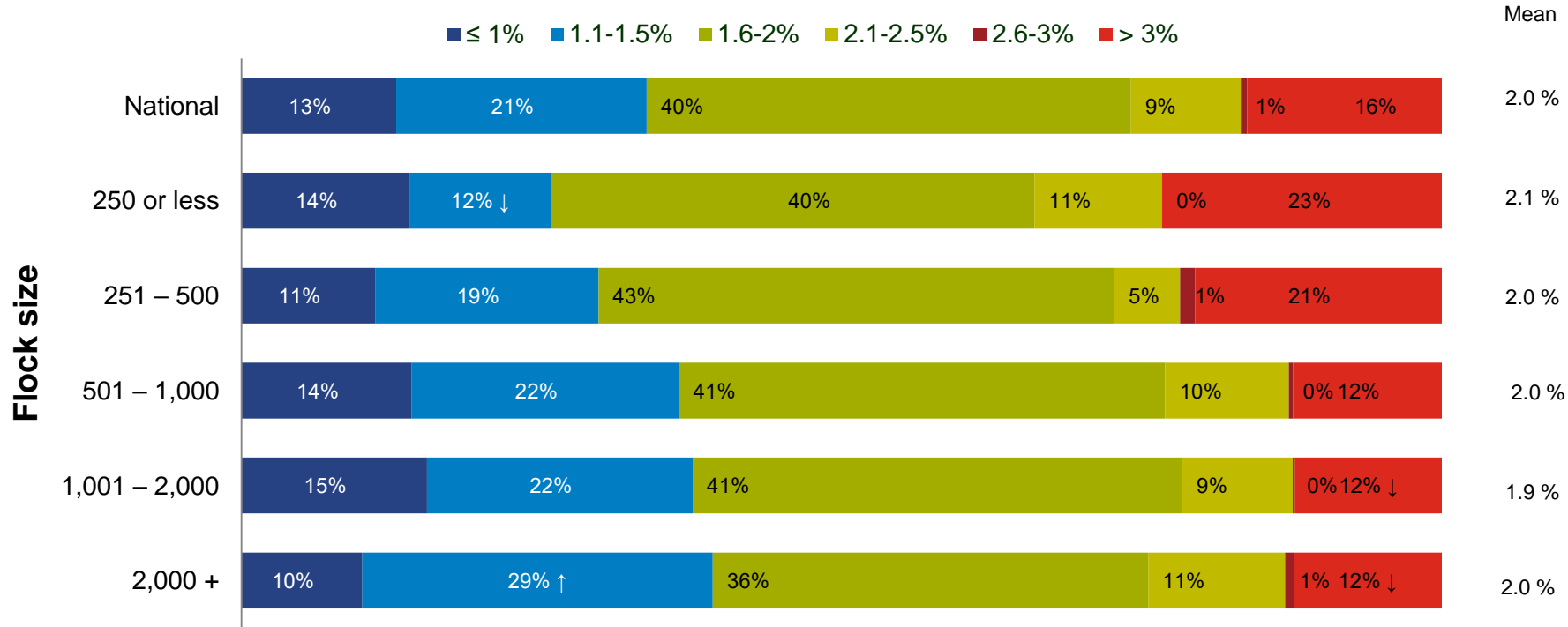


Q12: What is your ram joining percentage for Merino rams to Merino mixed aged ewes?

Joining percent for mixed age ewes – by flock size



Joining % - rams to mixed age ewes by flock size



Q12: What is your ram joining percentage for Merino rams to Merino mixed aged ewes?

S6 Total number of Merino breeding ewes

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Base: All respondents: n = 1200

The large majority of rams were bought in rather than being bred



% rams bought and bred



Validation: 2014 CRC report found 66% of wool producers buy rams and 38% breed their own

Q13: What proportion of your Merino rams do you buy and/or breed?

Large producers are more likely to breed their own sires than smaller producers.



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% rams bought or bred by flock size



Q13: What proportion of your Merino rams do you buy and/or breed?

S6 Total number of Merino breeding ewes

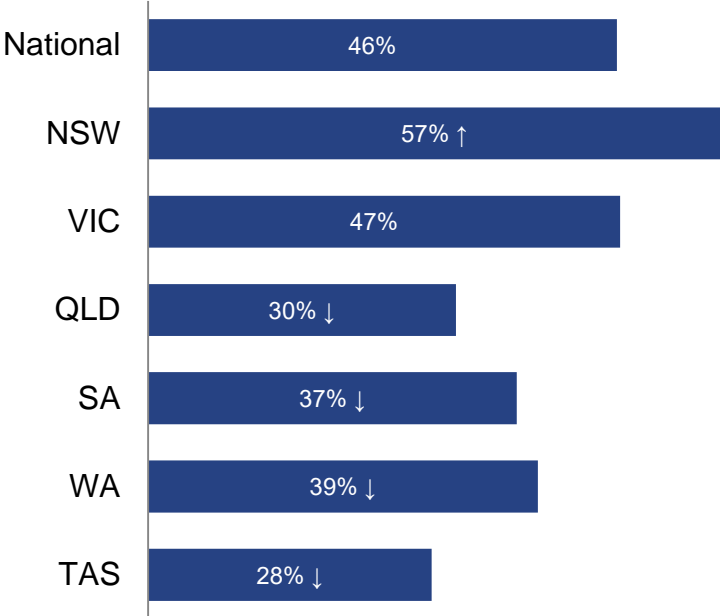
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Base: All respondents: n = 1200

Almost half of producers were pregnancy scanning their ewes with the highest adoption seen in NSW and VIC



% producers who pregnancy scan ewes

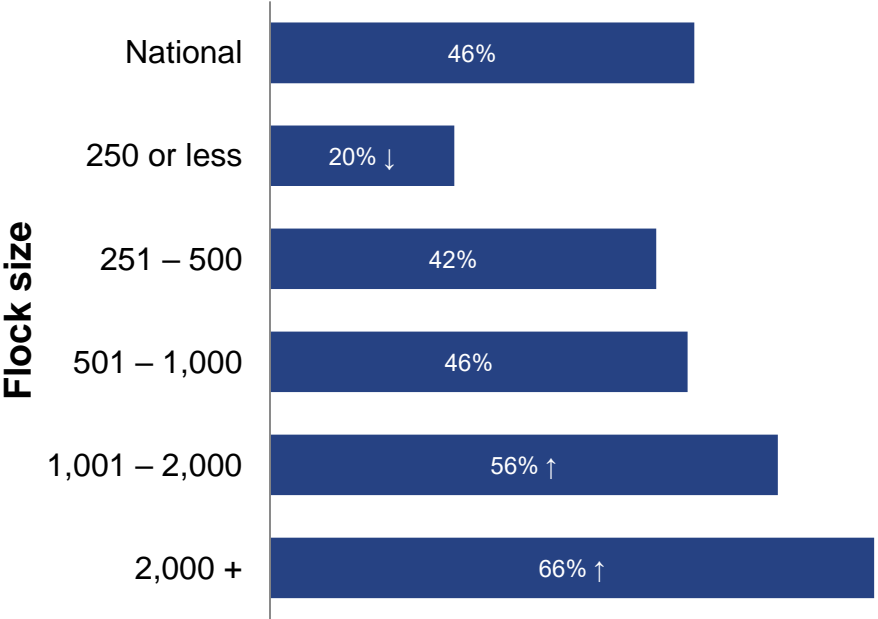


Q14: Do you pregnancy scan your ewes?

Adoption of pregnancy scanning is associated with higher flock size



% of producers who pregnancy scan ewes by flock size

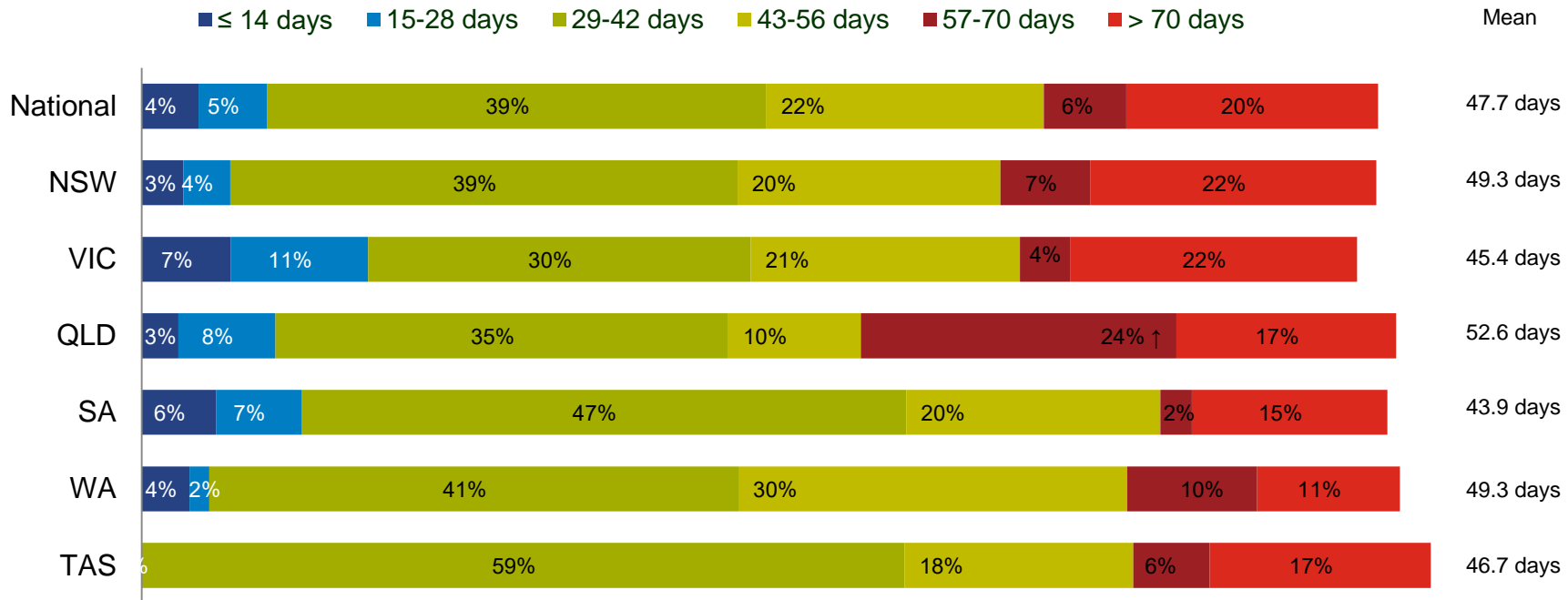


Q14: Do you pregnancy scan your ewes?
S6 Total number of Merino breeding ewes

Producers were looking to scan their ewes 48 days after ram removal



Number of days ewes scanned after rams removed



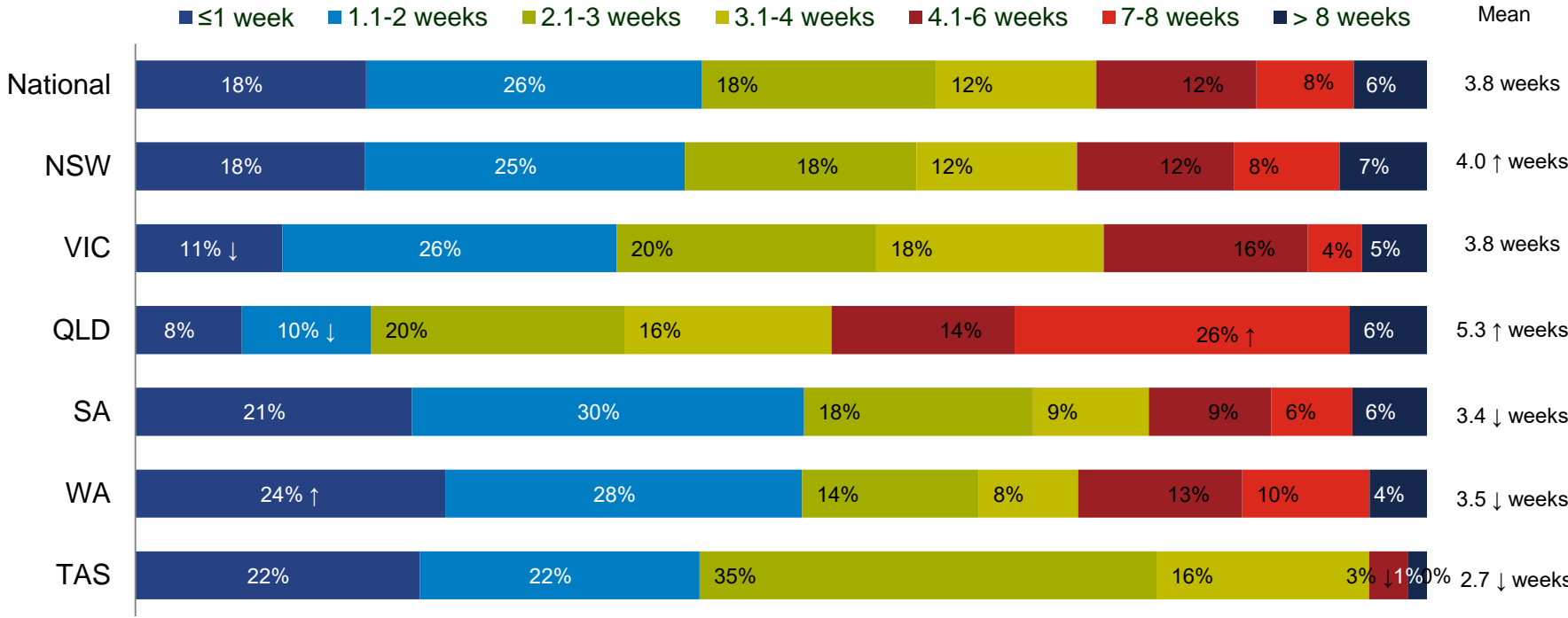
Q15: How many days post removal of rams before you start scanning?

6. Lamb Marking and Vaccination

There is a high degree of variation in the age of the youngest lambs being marked across all states



Age of youngest lambs marked

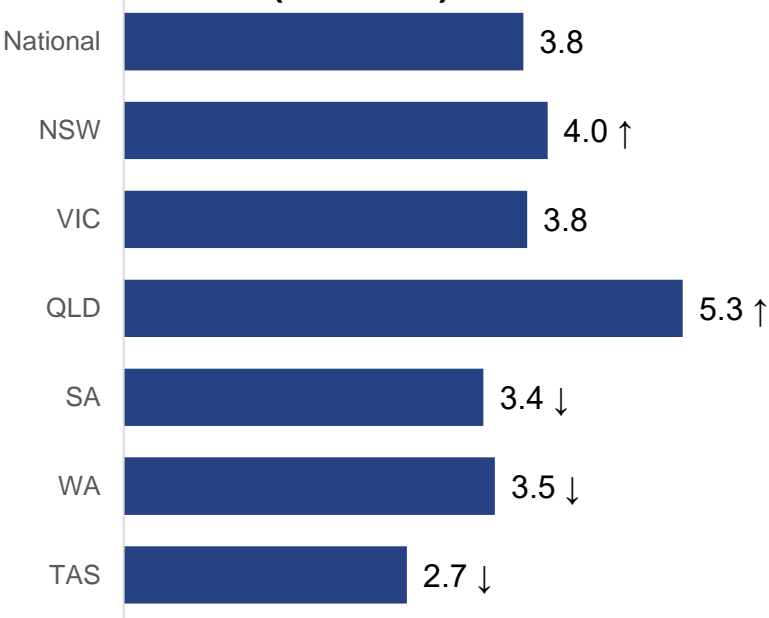


Q16: When marking, what is the age of the youngest Merino lamb, in weeks?

The age of the youngest lambs at marking was significantly lower in TAS and higher in QLD compared with the National average



Average age of the youngest lamb at marking (in weeks)

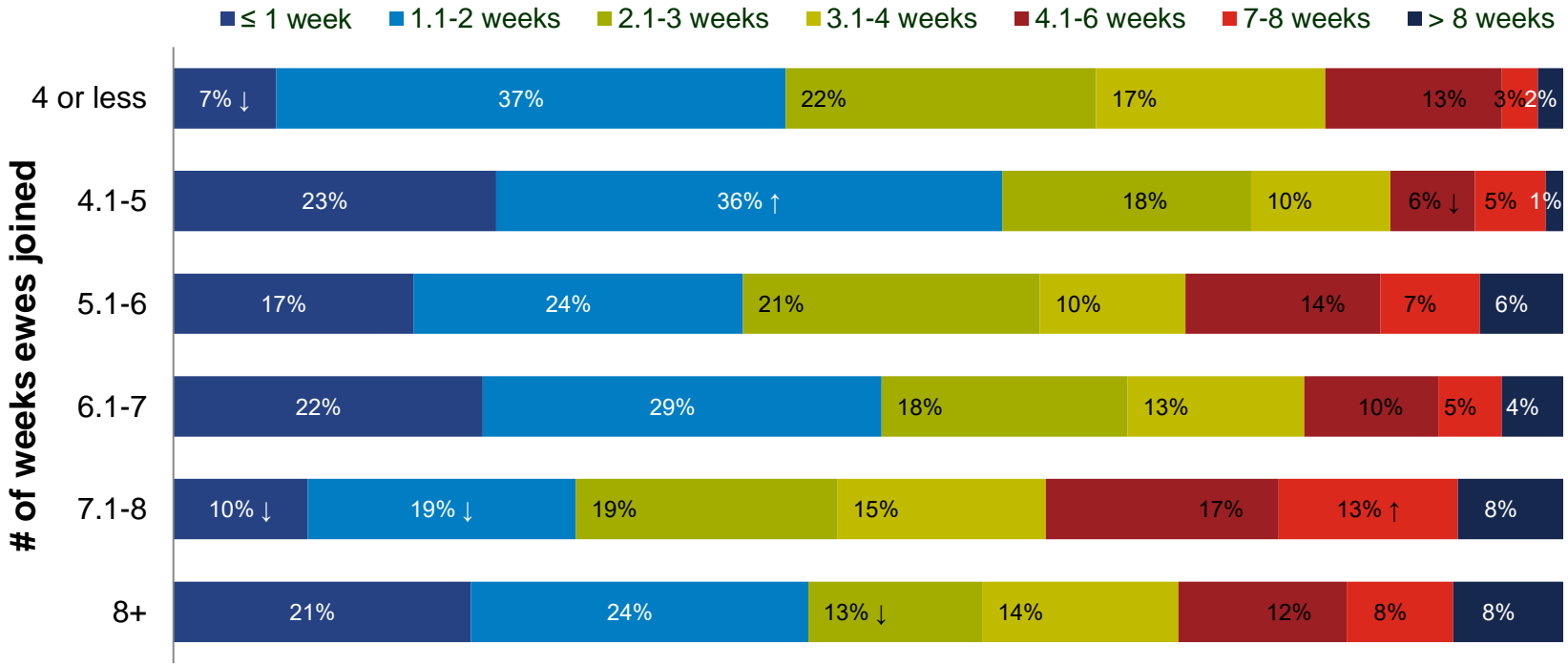


Q16: When marking, what is the age of the youngest Merino lamb, in weeks?

There tends to be more younger lambs than older lambs with shorter joining periods



Age of youngest lamb marked



Q16: When marking, what is the age of the youngest Merino lamb, in weeks?

Q10: How many weeks do you join your Merino ewes to your Merino rams?

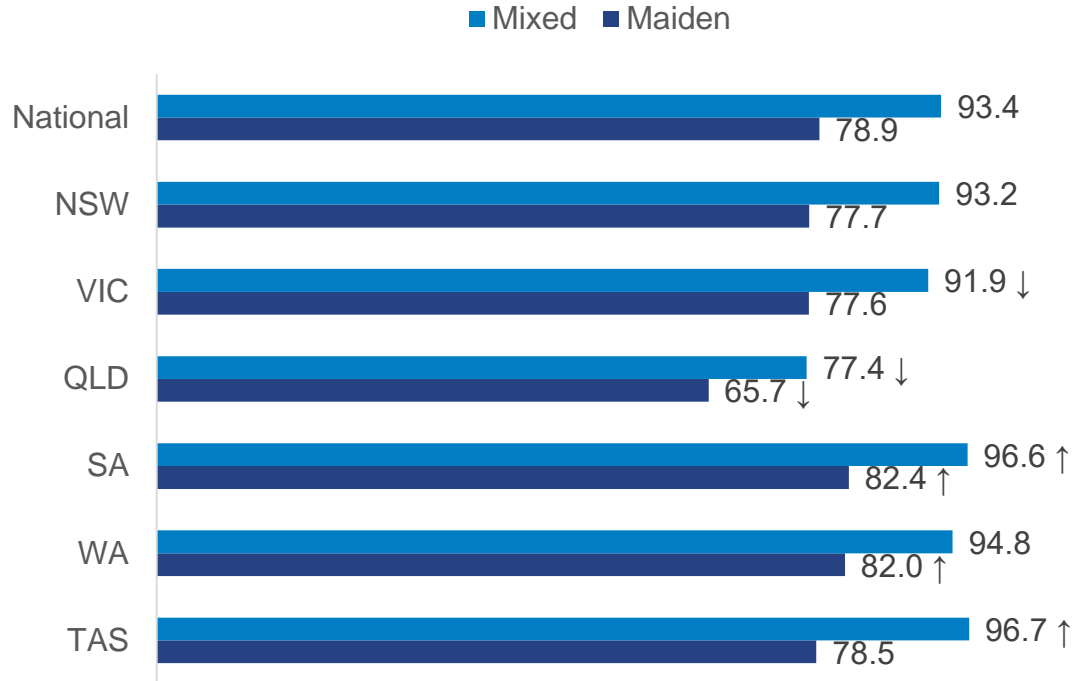
Mixed aged ewes had higher marking percentage than maiden ewes



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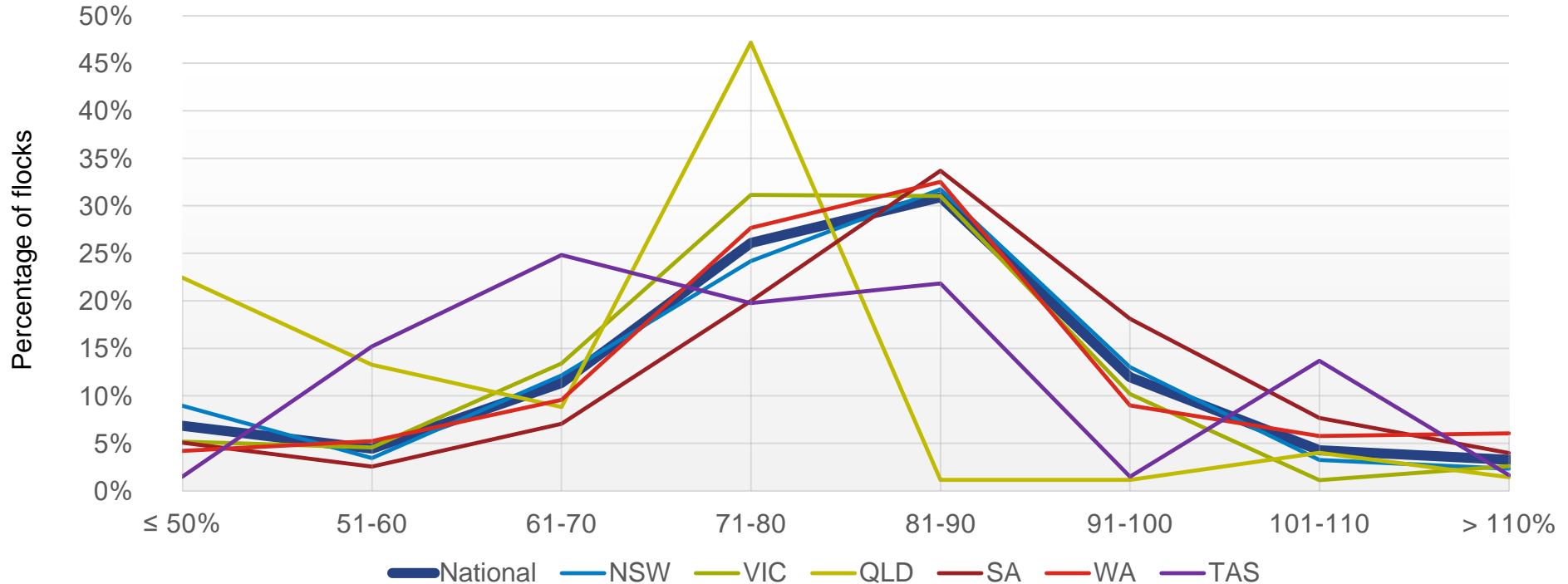
Average marking % for mixed age and maiden ewes



Q17: Over the last 10 years, what would be your average maiden ewe lamb marking percent?
Q18: Over the last 10 years, what would be your average mixed age ewe lamb marking percent?
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There is a wide variation in maiden ewe marking % within each State

Mixed age ewe marking %

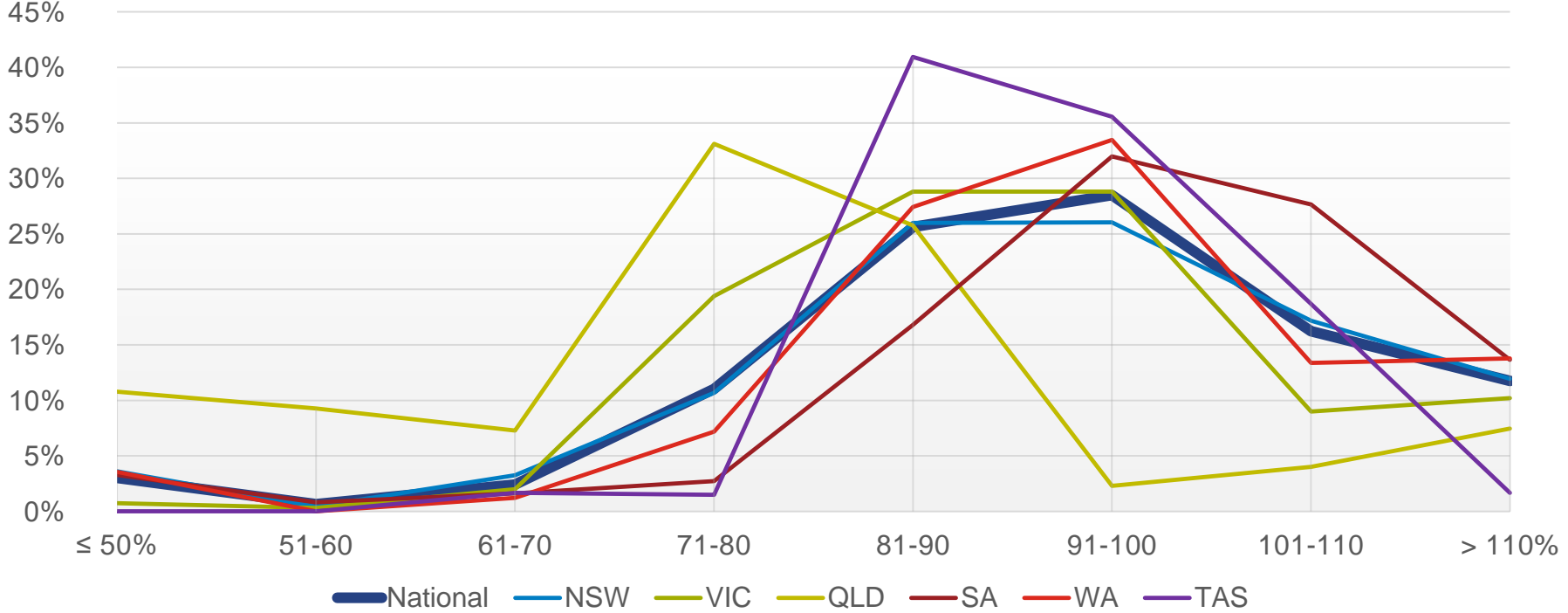


Q17: Over the last 10 years, what would be your average maiden ewe lamb marking percent?

The average mixed age ewes marking percentage is higher compared to maiden ewes with a greater tendency to achieve and exceed 100% marking rates



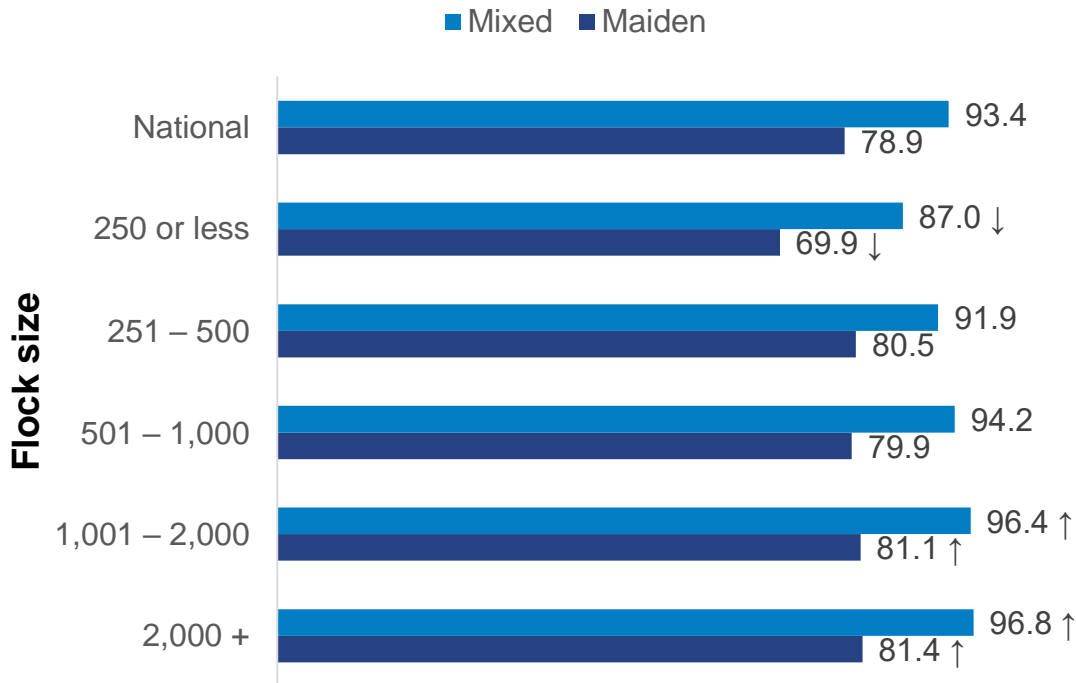
Mixed age ewes marking %



Q18: Over the last 10 years, what would be your average mixed age ewe lamb marking percent?

Larger producers tended to have higher marking percentages

Average marking % for mixed and maiden ewes by flock size

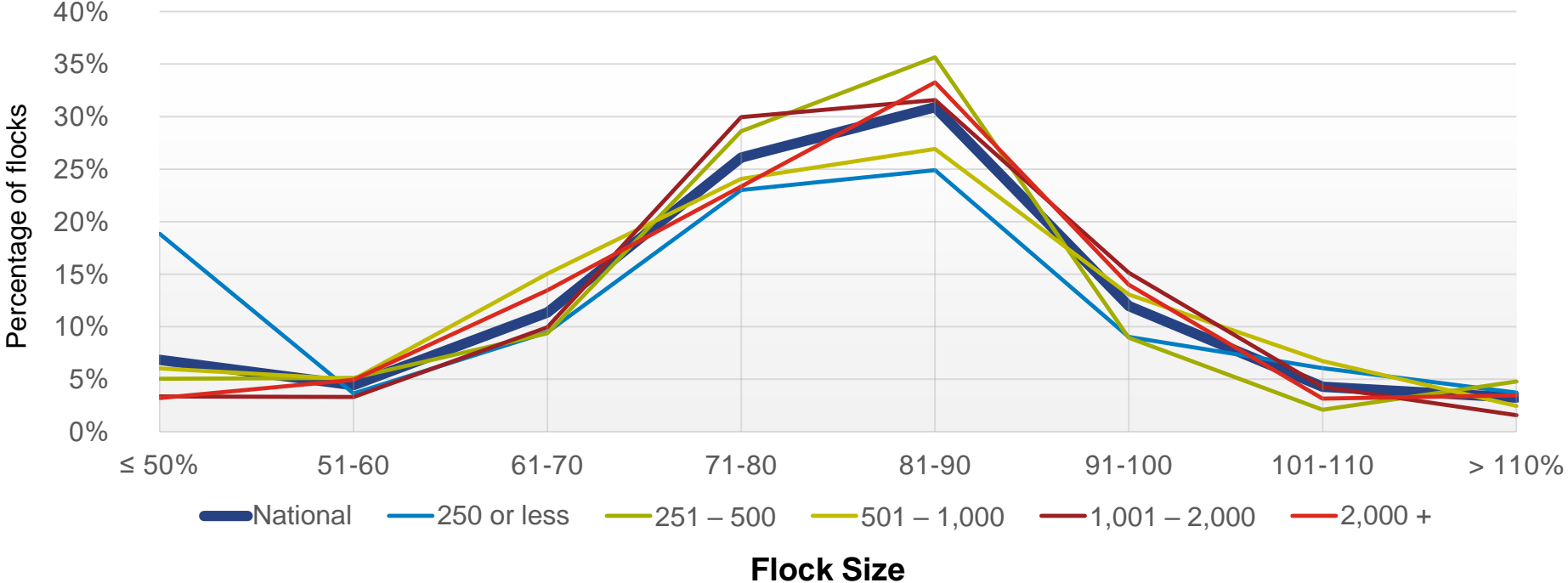


Q17: Over the last 10 years, what would be your average maiden ewe lamb marking percent?
Q18: Over the last 10 years, what would be your average mixed age ewe lamb marking percent?
S6 Total number of Merino breeding ewes
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Maiden ewe marking & was not associated with flock size



Maiden ewe marking % by flock size

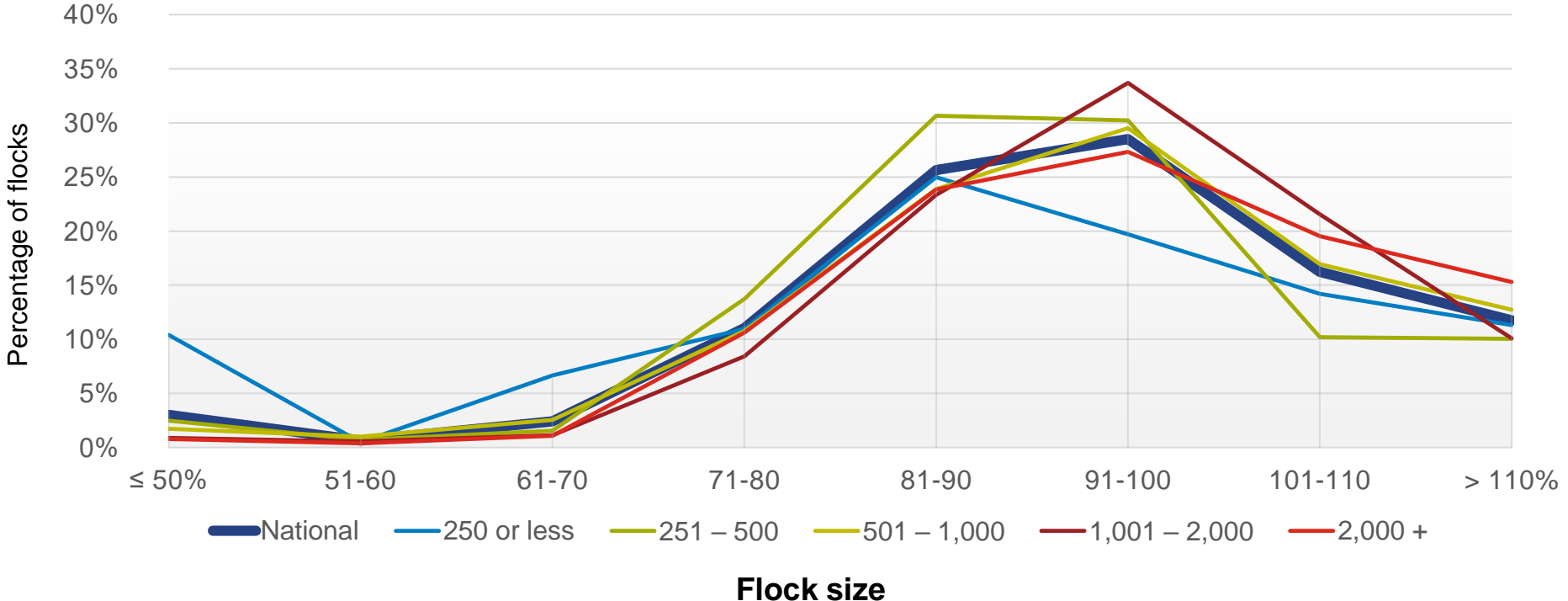


Q17: Over the last 10 years, what would be your average maiden ewe lamb marking percent?
 S6 Total number of Merino breeding ewes
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Mixed age ewe marking % was not associated with flock size



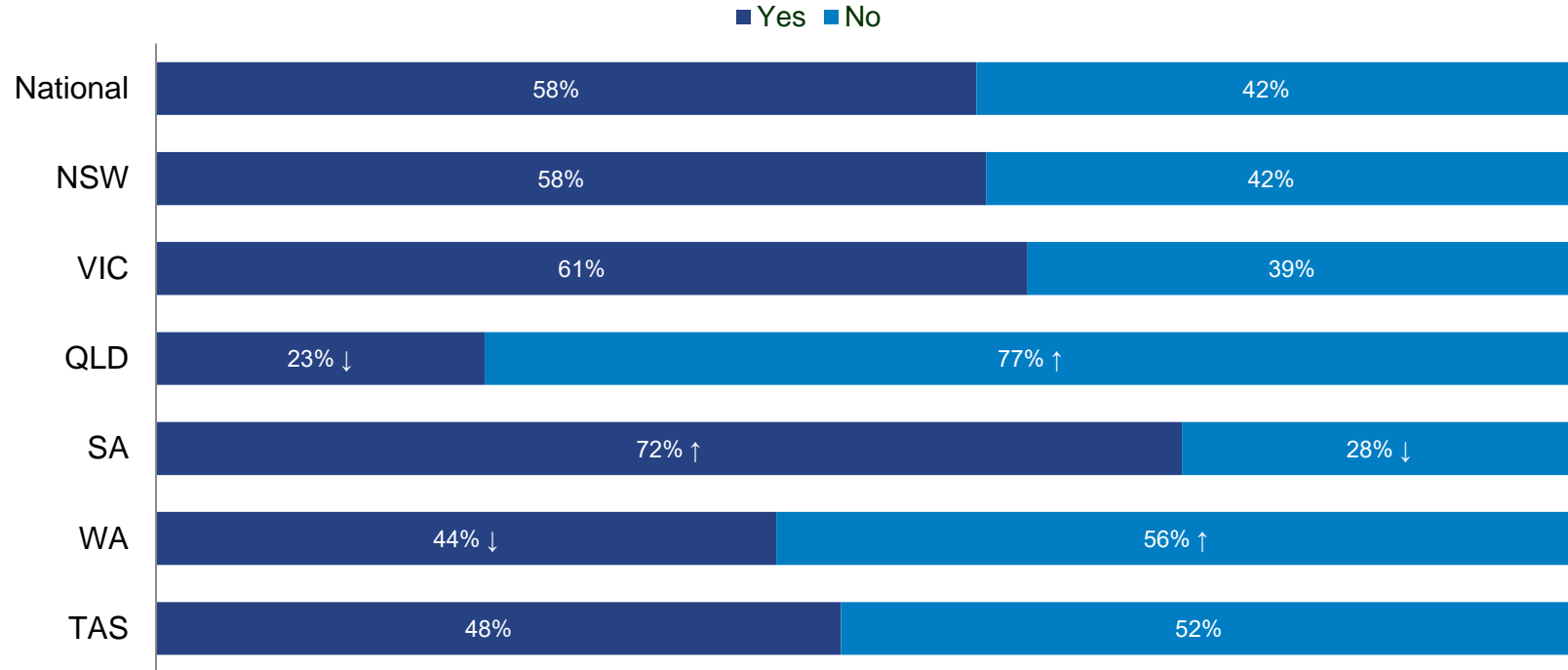
Mixed age ewe marking % by flock size



Q18: Over the last 10 years, what would be your average mixed age ewe lamb marking percent?
 S6 Total number of Merino breeding ewes
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Nationally 58% of producers vaccinate their ewes with highest adoption in SA and lowest in QLD

% producers vaccinate their ewes pre-lambing

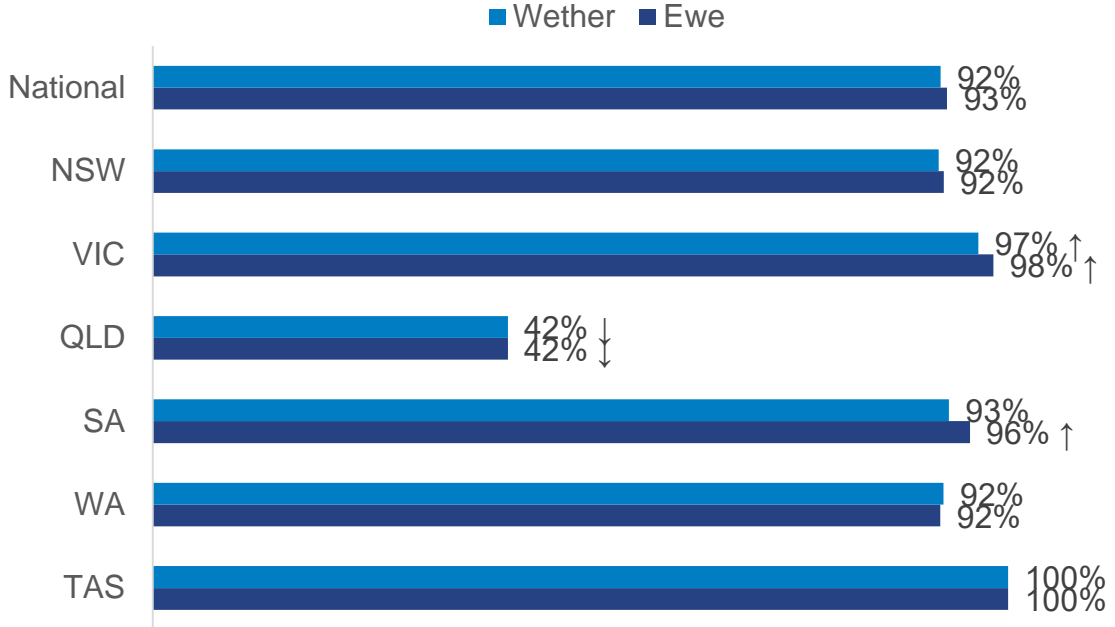


Q24: Do you do a pre-lambing vaccination?

Nearly all lambs were vaccinated at marking except in QLD, with no differences between ewe and wether lambs



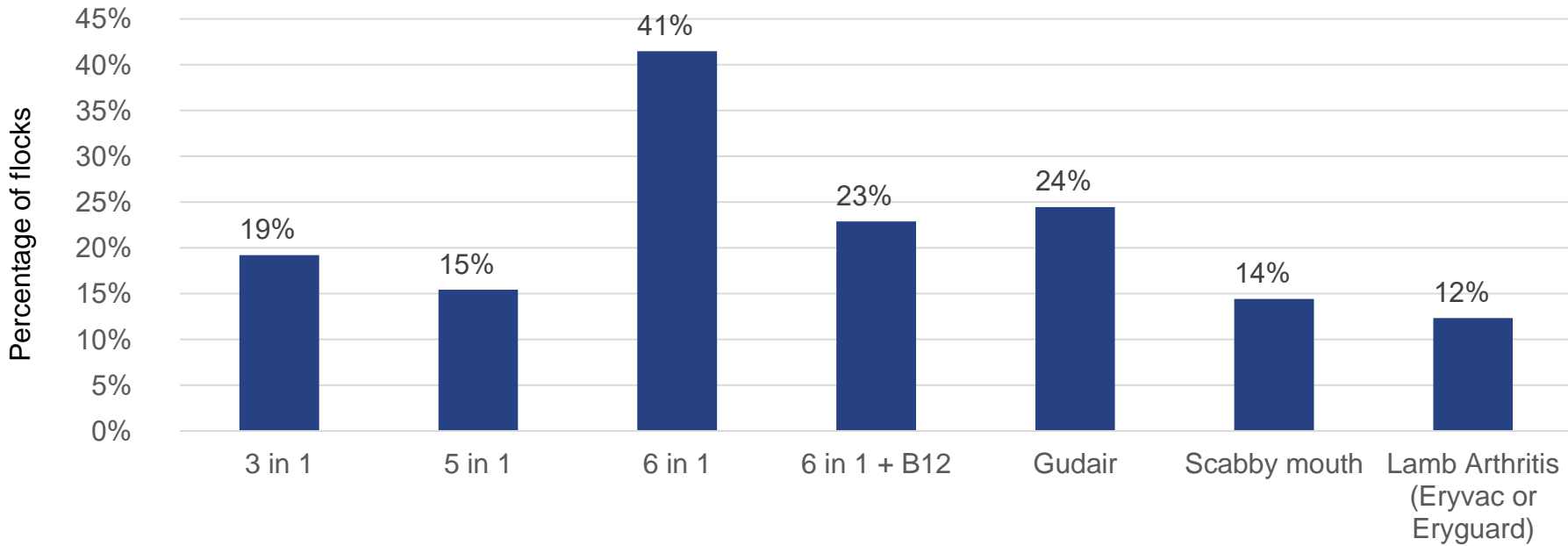
% producers vaccinating ewe and wether lambs at marking



Q19: Do you vaccinate your **ewe** lambs at lamb marking?
 Q21: Do you vaccinate your **wether** lambs at lamb marking?

The most common vaccine used for ewe lambs was 6 in 1, but producers also used a wide range of other vaccines

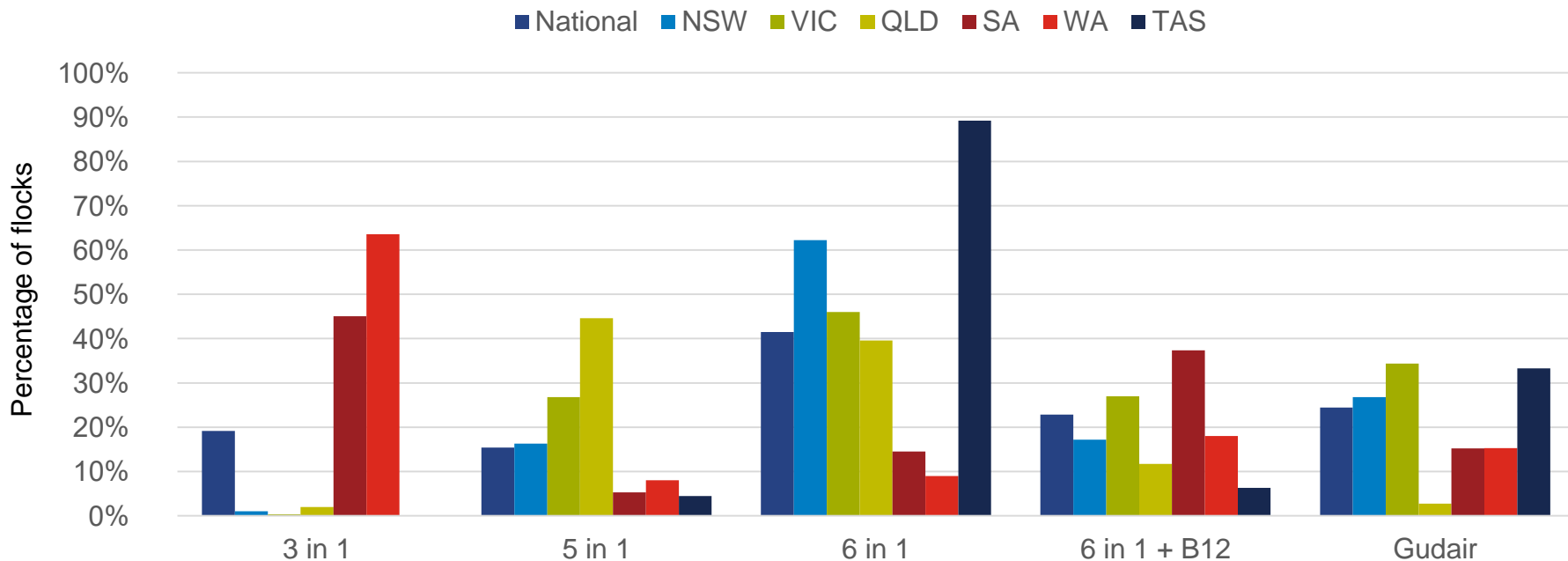
Vaccines used for ewe lambs nationally



Q20: What vaccines do you use on your ewe lambs?

Vaccines used for ewe lambs differed between States

Vaccines used for ewe lambs

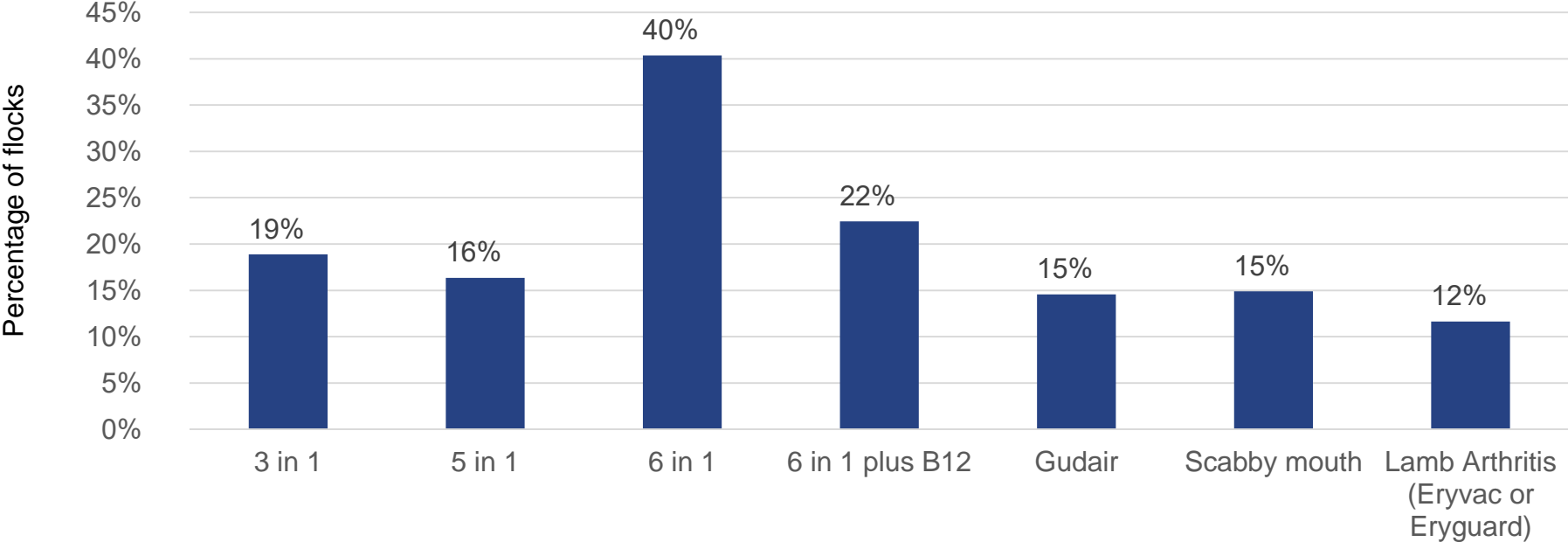


Q20: What vaccines do you use on your ewe lambs?

Producers chose similar vaccines for the wether lambs and ewe lambs



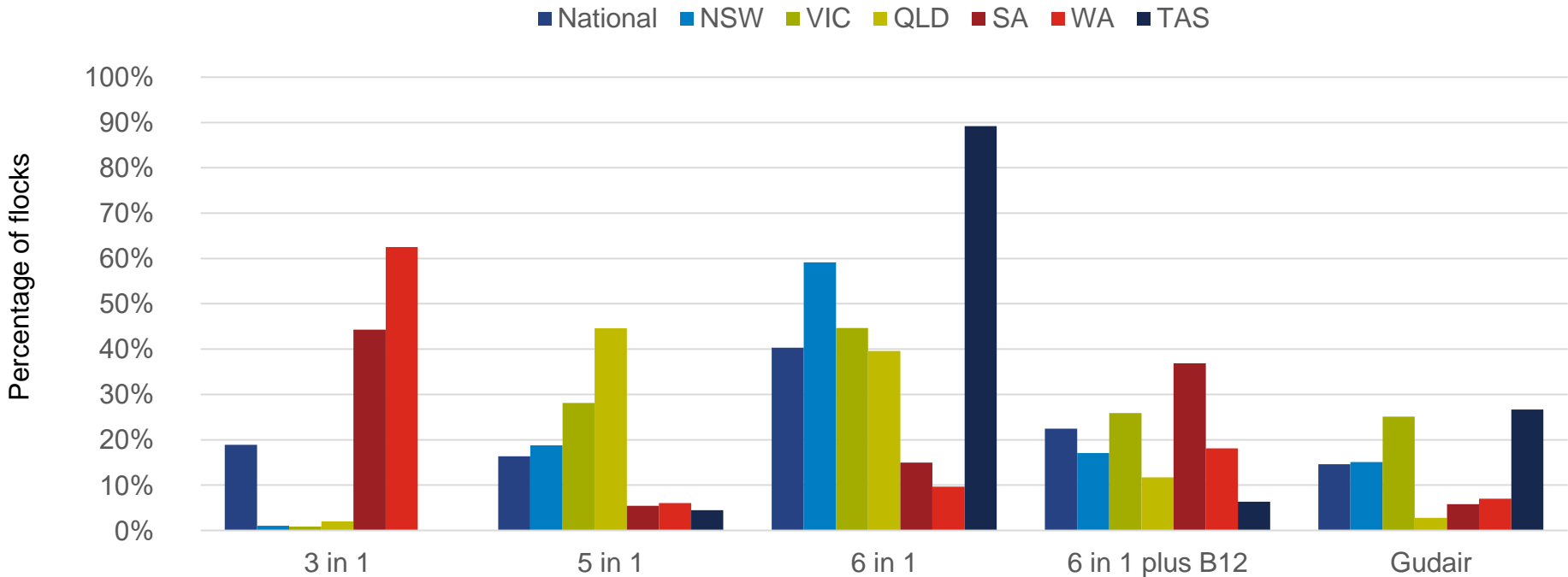
Vaccines used for wether lambs nationally



Q22: What vaccines do you use on your **wether** lambs?

No significant difference between vaccines for ewes and wethers were seen with a wide range of vaccines adopted across the states

Vaccines used for wether lambs

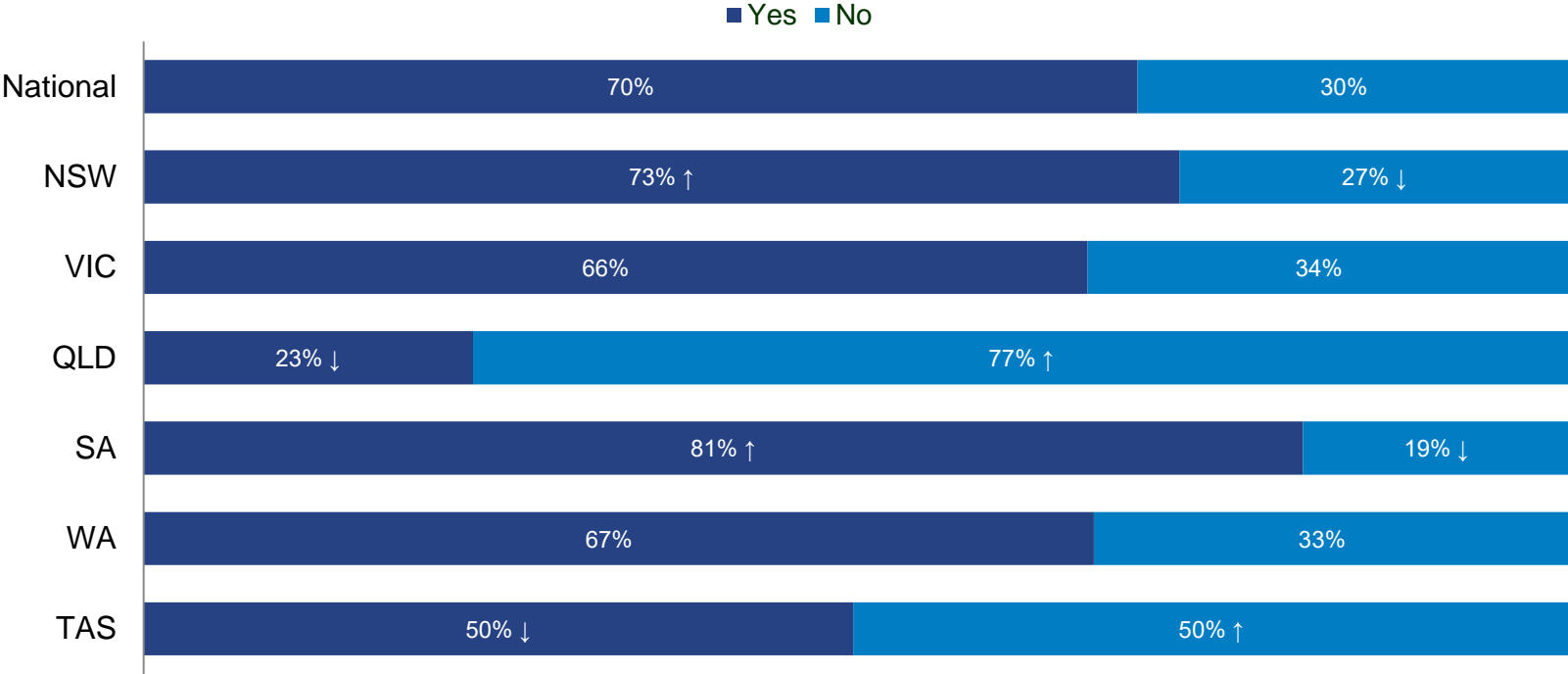


Q22: What vaccines do you use on your **wether** lambs?

Adoption of vaccinating lambs at weaning is highest in SA and lowest in QLD



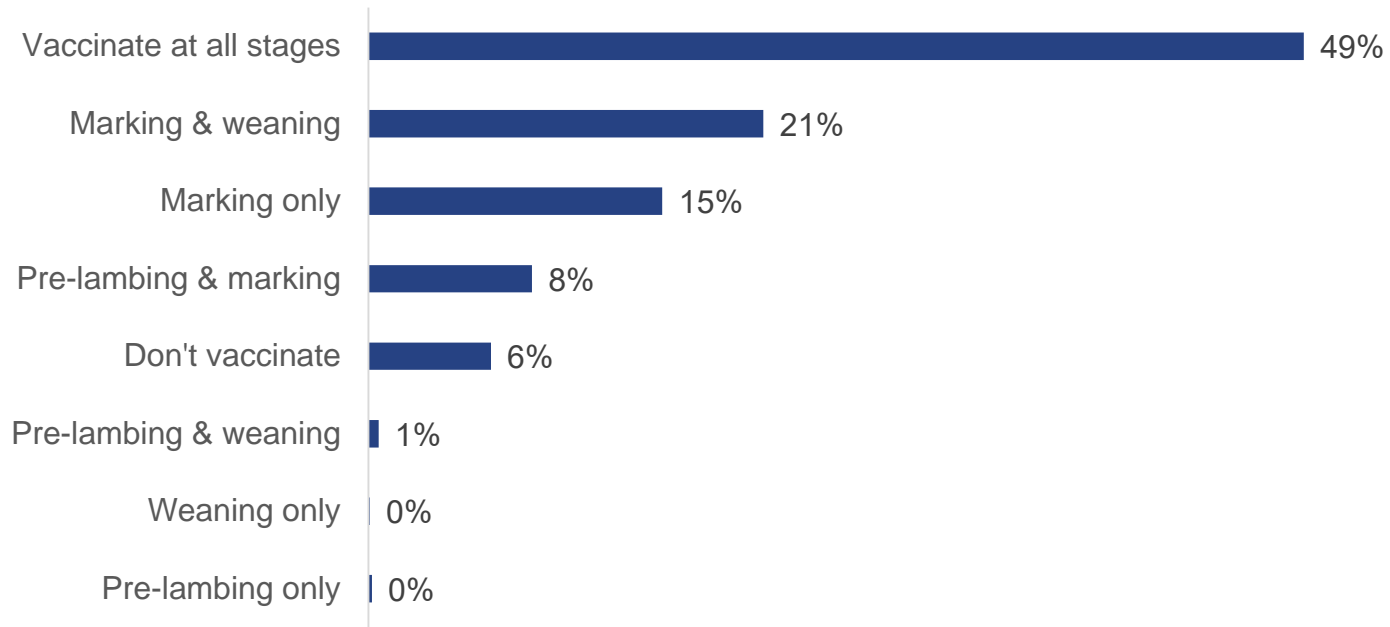
% producers who vaccinate lambs at weaning



Q23: Do you vaccinate your lambs at weaning?

Half of all producers were vaccinating at all three stages including pre lambing, marking and weaning

Vaccination schedule for producers national



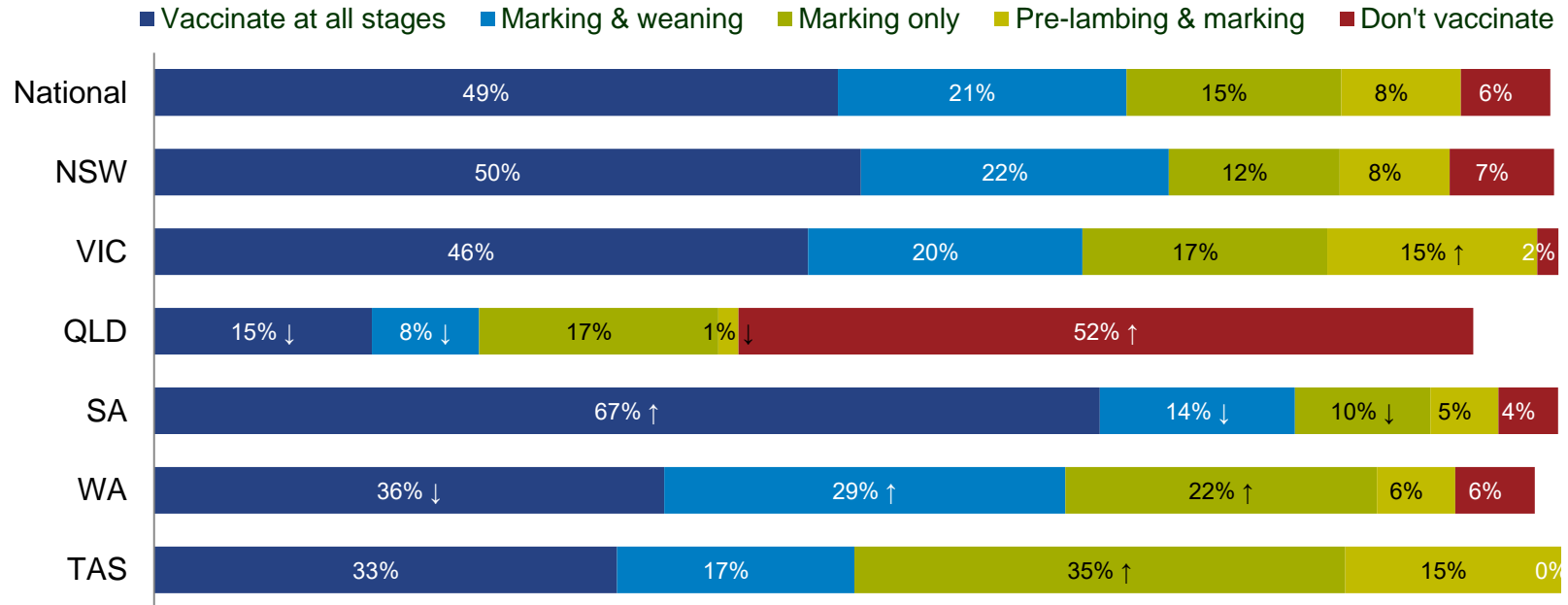
Q19: Do you vaccinate your **ewe** lambs at lamb marking?

Q23: Do you vaccinate your lambs at weaning?

Q24: Do you do a pre-lambing vaccination?

SA producers were most likely to vaccinate at all 3 stages. QLD producers had the lowest vaccination rates overall

Vaccination schedule for producers



Q19: Do you vaccinate your ewe lambs at lamb marking?

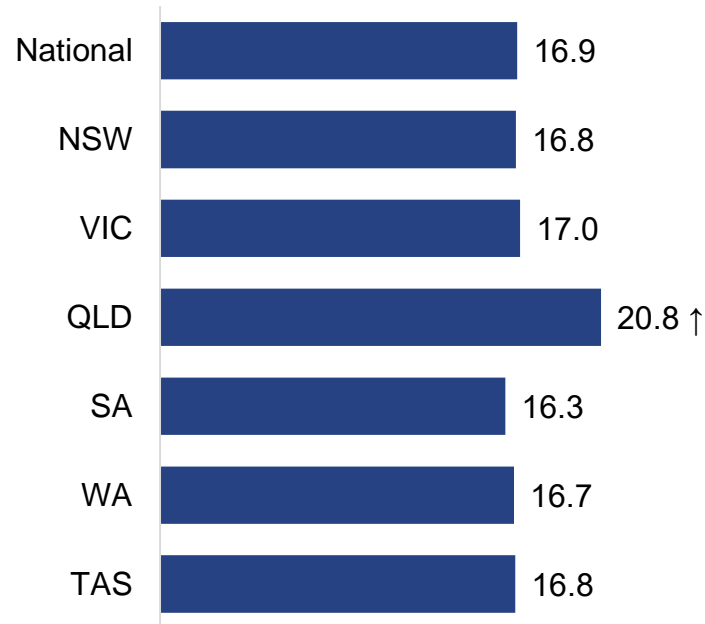
Q23: Do you vaccinate your lambs at weaning?

Q24: Do you do a pre-lambing vaccination?

7. Weaning

On average the oldest Merino lamb being weaned is consistently around 17 weeks across the states with the exception of QLD

Average oldest age of lambs weaned

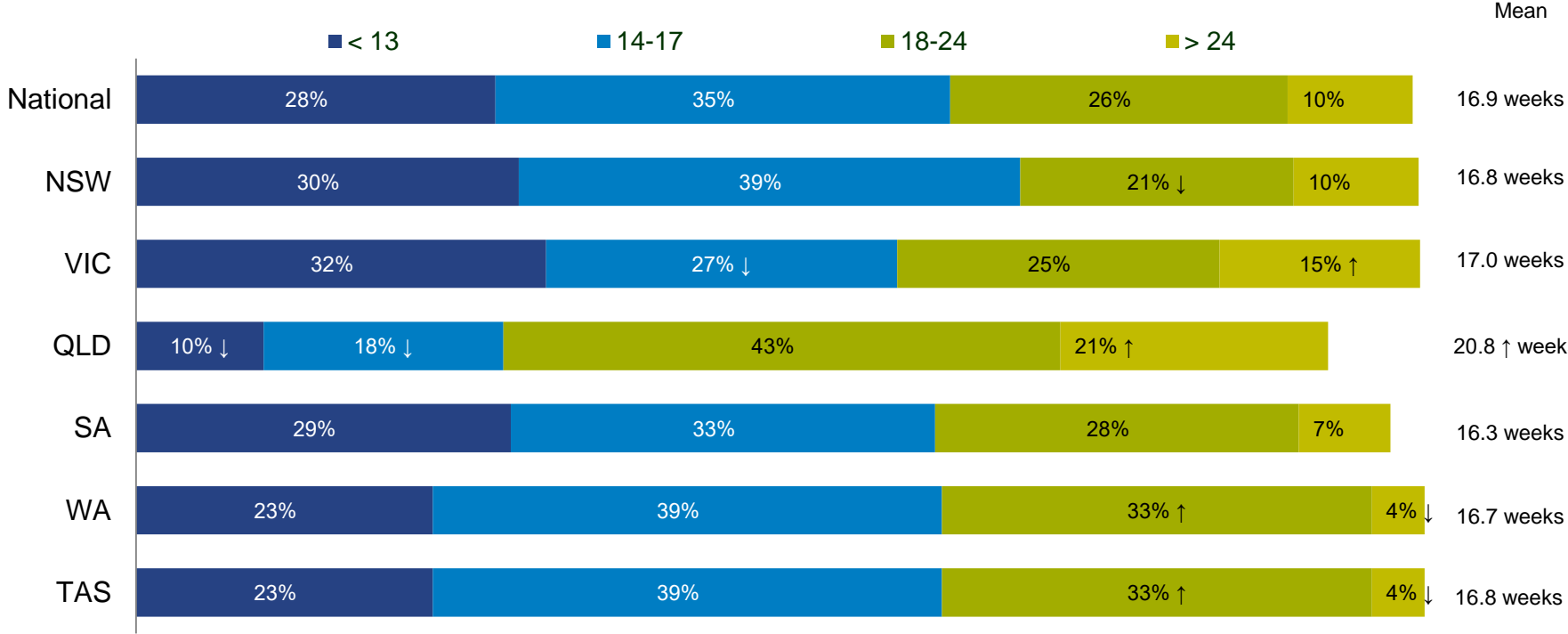


Q25: What is the oldest age of Merino lambs being weaned, in weeks?

There is wide variation in the age of oldest lambs weaned



Age of oldest lambs at weaned



Q25: What is the oldest age of Merino lambs being weaned, in weeks?

8. Mulesing

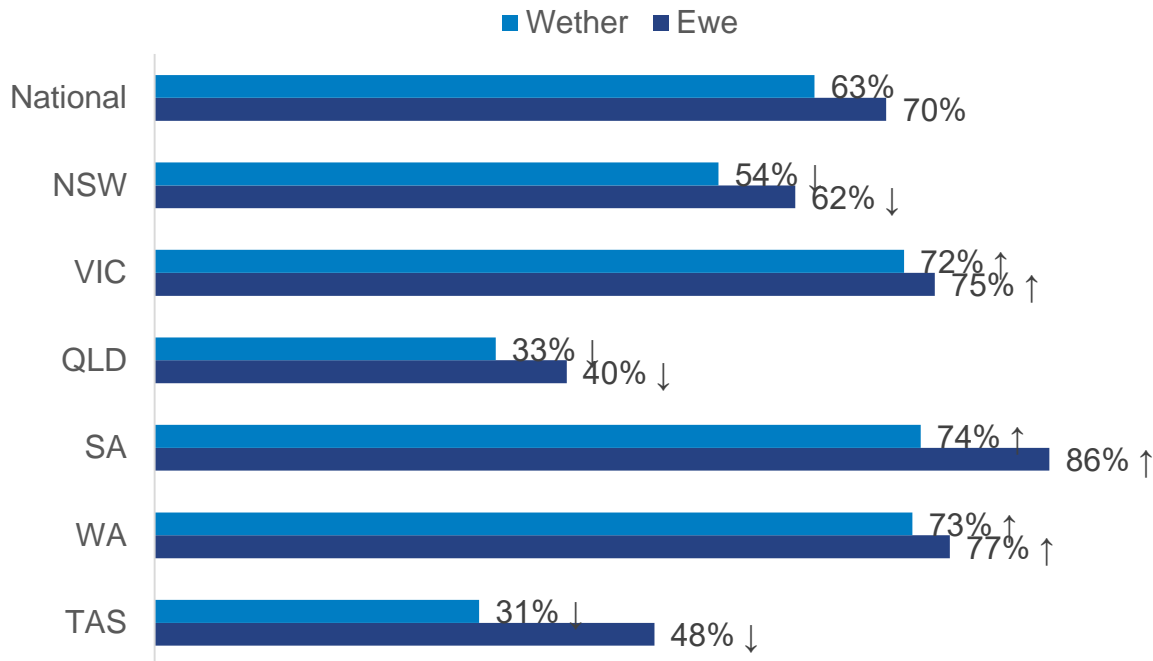
The majority of producers were still choosing to mules their lambs, however the incidence in QLD and TAS is much lower



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% of producers choosing to mules their lambs in 2017



Validation:

2014 CRC report found **83%** of Merino lambs were mulesed

2013/14 AWI MLA Wool and Lamb Forecasting Survey found **73%** of Merino lambs were mulesed

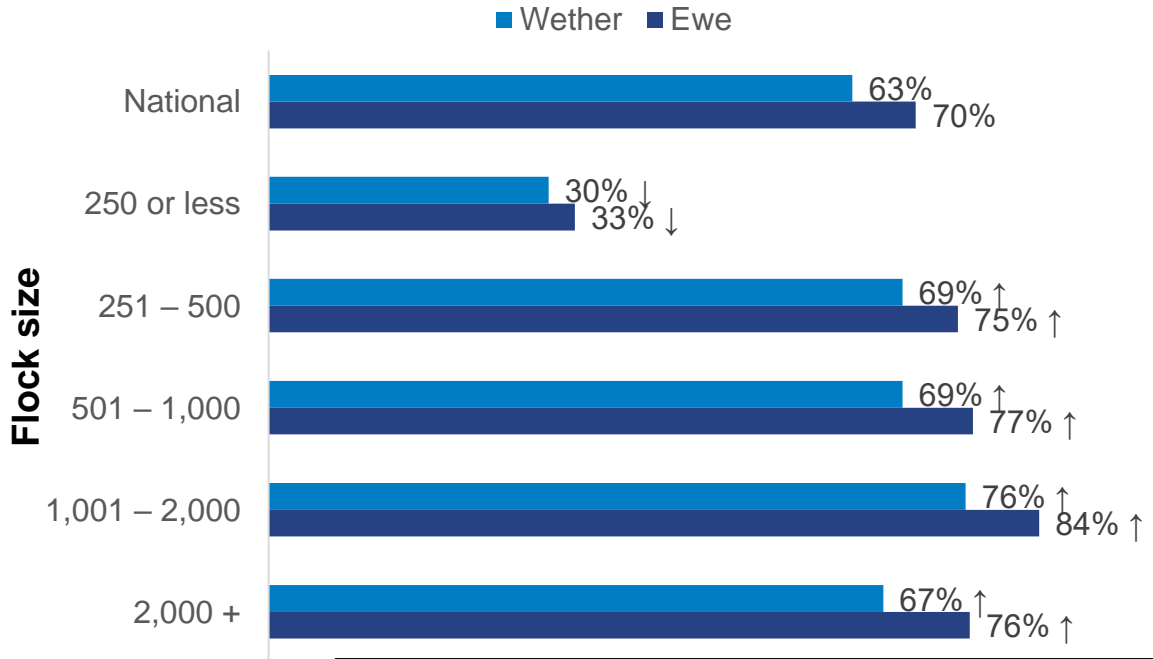
Estimates from the current study were that **77%** of Merino ewe lambs and **66%** of Merino wether lambs were mulesed

Q28: Did you mules your Merino **ewe** lambs in 2017?
Q32: Did you mules your Merino **wether** lambs in 2017?

The smaller producers tended not to mules their lambs



% of producers mulesing their lambs by flock size



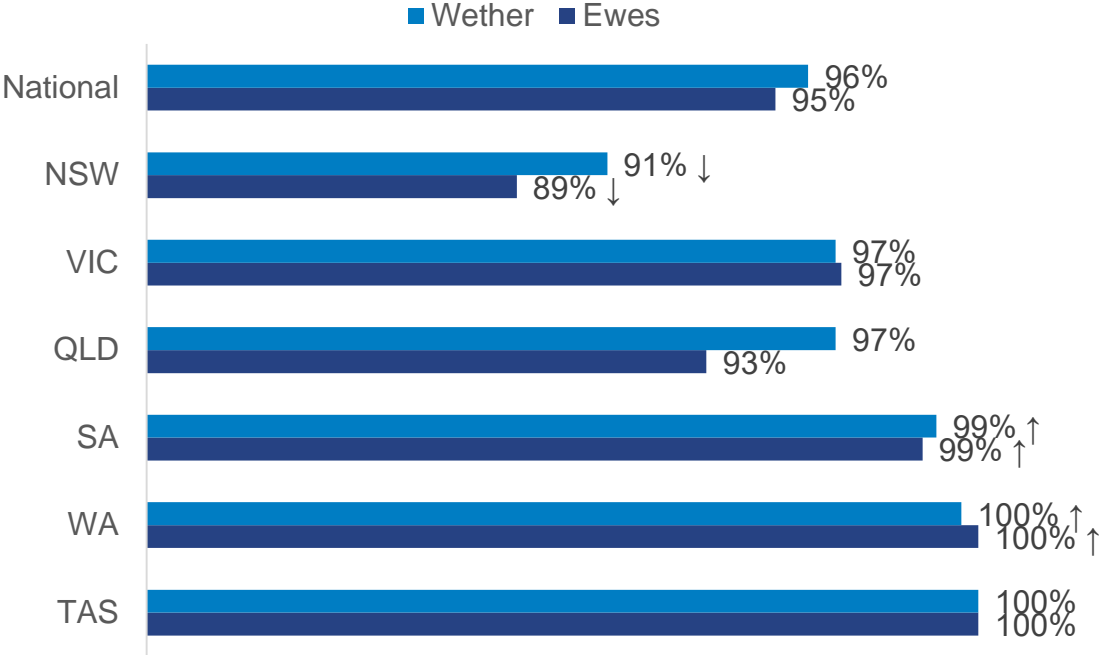
Validation:
 2014 CRC report found **83%** of Merino lambs were mulesed
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 Estimates from the current study were that **77%** of Merino ewe lambs and **66%** of Merino wether lambs were mulesed

Q28: Did you mules your Merino **ewe** lambs in 2017?
 Q32: Did you mules your Merino **wether** lambs in 2017?

Nearly all producers that mules lambs do so at marking



% of producers choosing to mules their lambs at marking



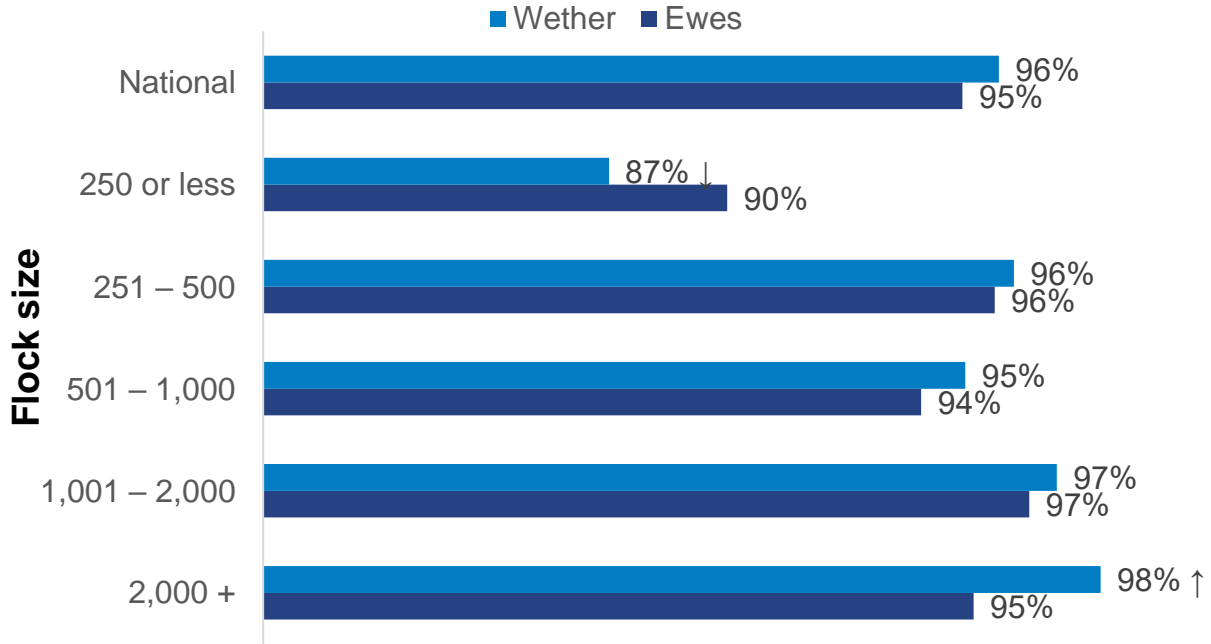
Q29: Did you mule your ewes at marking or post weaning?
Q33: Did you mule your wethers at marking or post weaning?

Base: Those respondents who muled ewes: n = 894
Base: Those respondents who muled wethers: n = 796

The smaller producers tend to mules wethers less compared to the national average



% of producers mulesing at marking by flock size



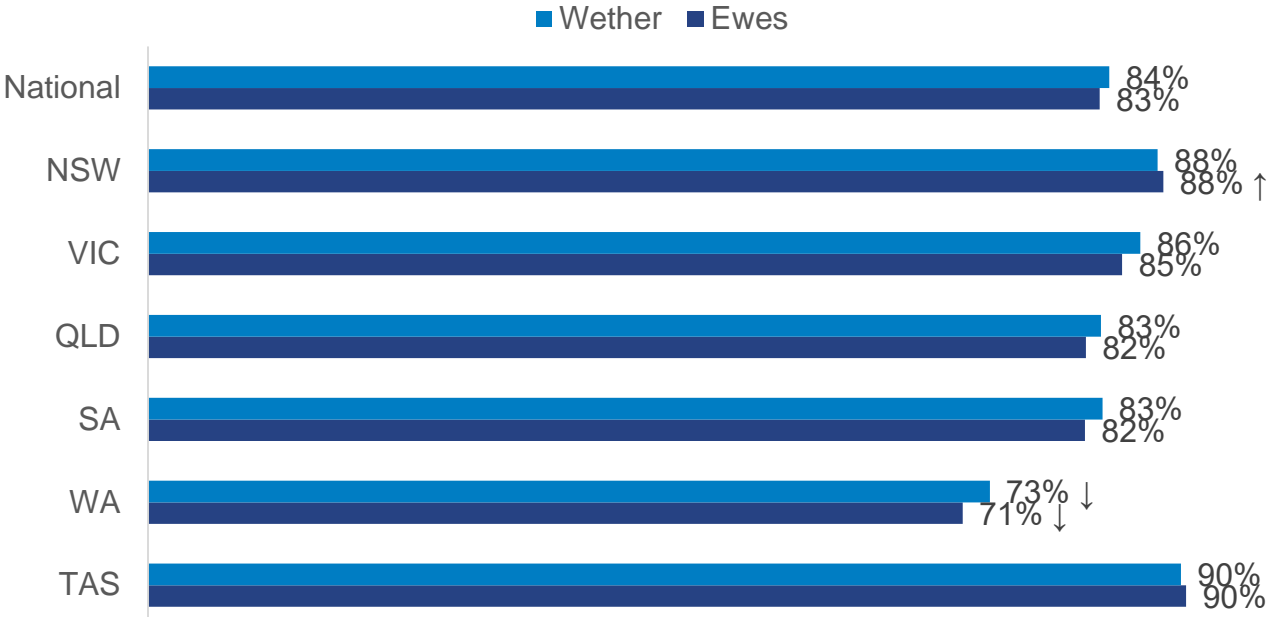
Q29: Did you mules your ewes at marking or post weaning?
 Q33: Did you mules your wethers at marking or post weaning?
 S6 Total number of Merino breeding ewes
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Base: Those respondents who mulesed ewes: n = 894
 Base: Those respondents who mulesed wethers: n = 796
 Base: All respondents: n = 1200

The vast majority of producers who mules were using pain relief for mulesing



% of producers providing pain relief when mulesing



Validation:
 2014 CRC report found **61%** of mulesed lambs were treated with pain relief
 2013/14 AWI MLA Wool and Lamb Forecasting Survey found **77%** of Merino lambs mulesed received pain relief
 Estimates from the current study were that **85%** of mulesed lambs were treated with pain relief

Q30: Did you use pain relief on your **ewe** lambs for mulesing in 2017?

Q34: Did you use pain relief on your **wether** lambs for mulesing in 2017?

Smaller producers were less likely to use pain relief for mulesing than larger producers



% of producers providing pain relief when mulesing by flock size



Validation:
 2014 CRC report found **61%** of mulesed lambs were treated with pain relief
 2013/14 AWI MLA Wool and Lamb Forecasting Survey found **77%** of Merino lambs mulesed received pain relief
 Estimates from the current study were that **85%** of mulesed lambs were treated with pain relief

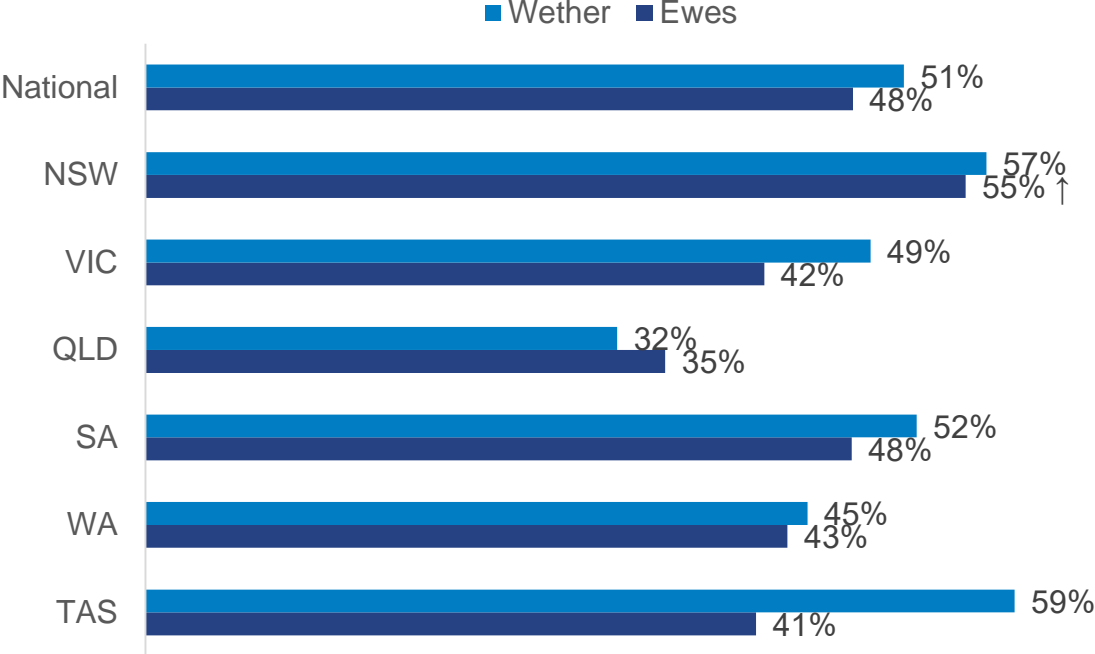
Q30: Did you use pain relief on your **ewe** lambs for mulesing in 2017?

Q34: Did you use pain relief on your **wether** lambs for mulesing in 2017?

Amongst producers that mules, around half had decreased their mules size in the last 10 years



% of producers adopting a smaller mules size in the last 10 years



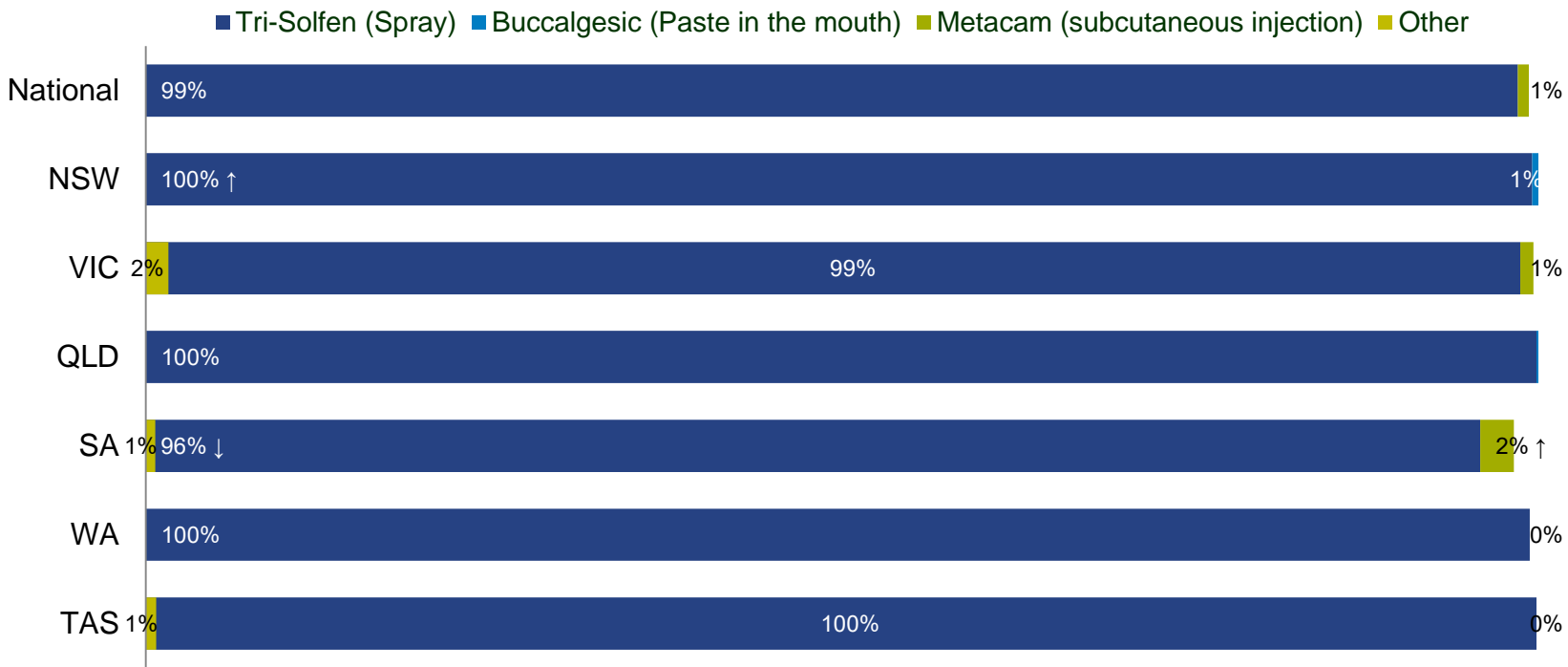
Q31: In the last 10 years, have you decreased the size of your ewe lamb mules?
 Q35: In the last 10 years, have you decreased the size of your wether lamb mules?

Base: All respondents mulesing ewes: n = 894
 Base: All respondents mulesing wethers: n = 796

Tri-Solfen was by far the most used pain relief product on the market



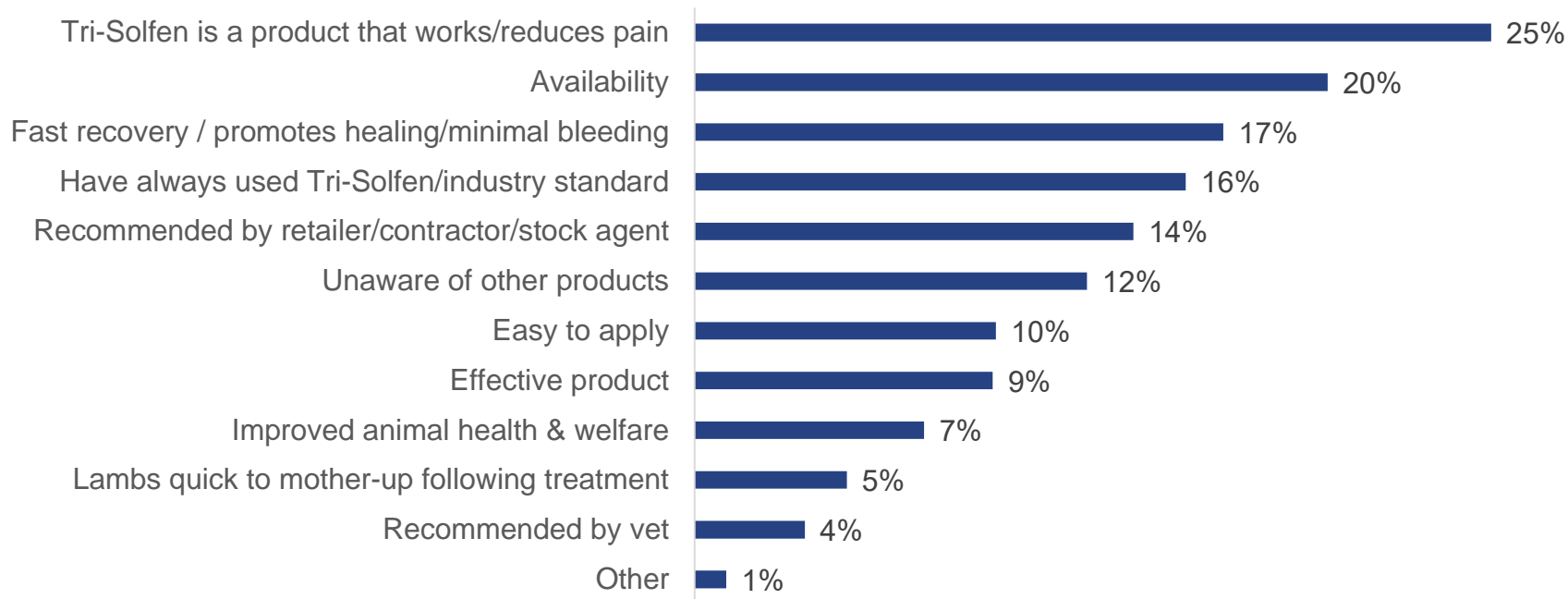
Pain relief products used at mulesing



Q36: What pain relief product/s did you use?

Reasons why producers chose to use Tri-Solfen was because they believe it works and is more readily available

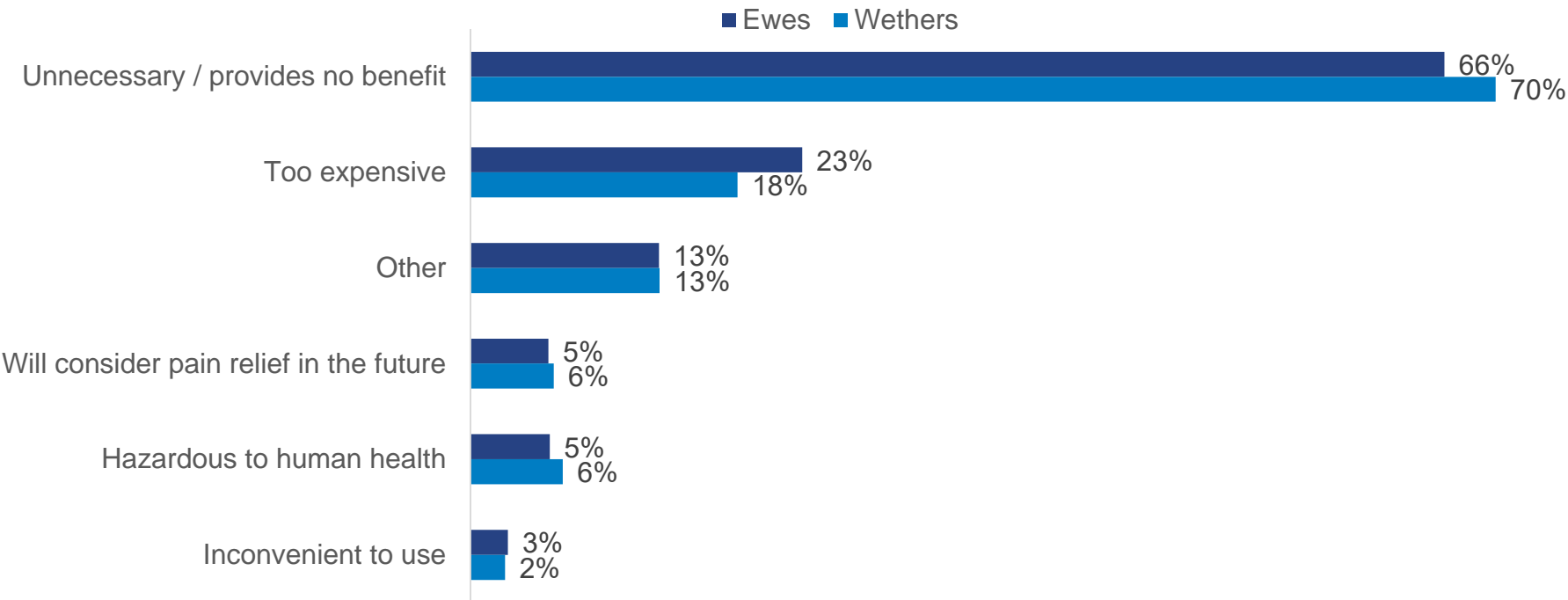
Reasons why producers use Tri-Solfen



Q37: Why did you use Tri-Solfen?

The main barrier to using pain relief for mulesing was the perception of no benefit from the practice

Reasons why producers did not use pain relief



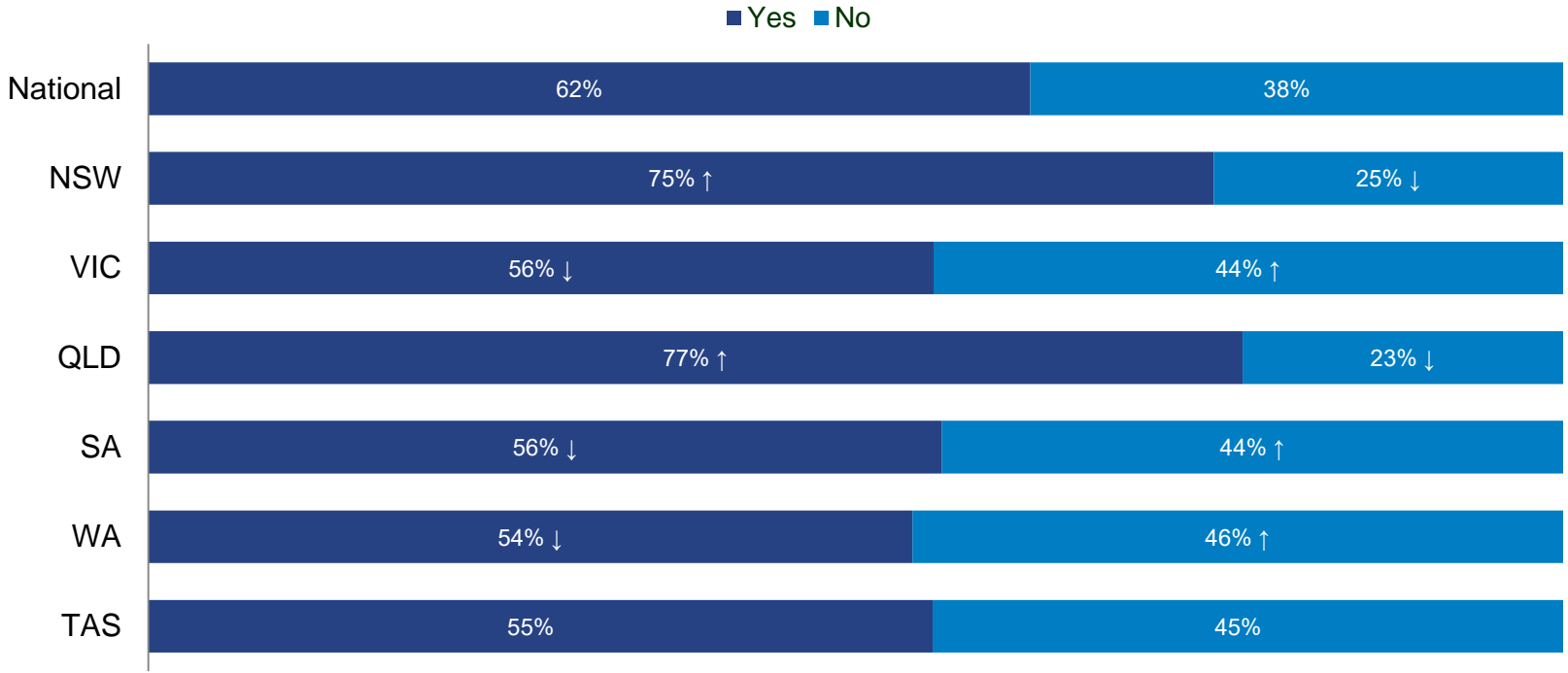
Q38: Why didn't you use pain relief for mulesing **ewe** lambs?
Q38: Why didn't you use pain relief for mulesing **wether** lambs?

Base: All respondents mulesing ewes without pain relief: n = 142
Base: All respondents mulesing wethers without pain relief: n = 120

Well over half of producers were using fly protection products at mulesing



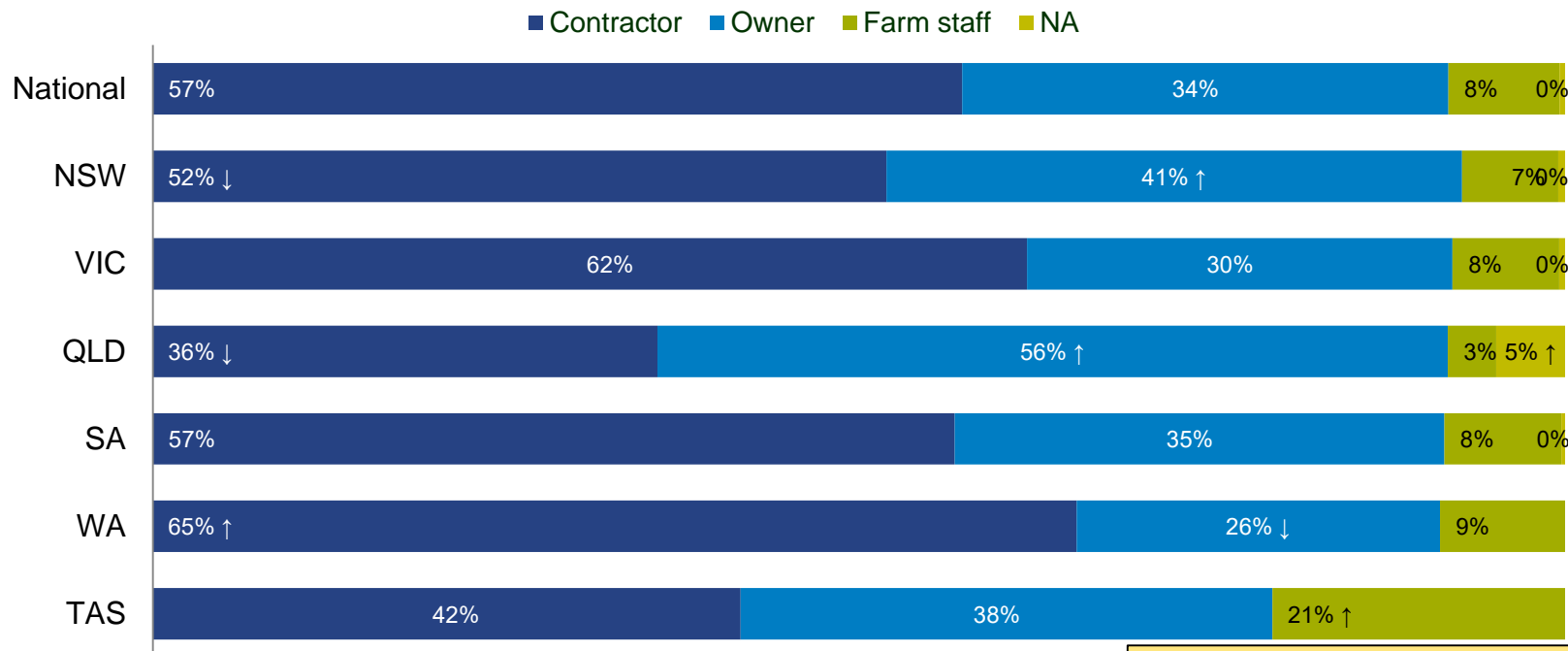
% of producers using fly protection at mulesing



Q39: Did you use a fly prevention product at mulesing?

Contractors were the primary choice for mulesing operators in most states with QLD and TAS having a greater tendency for owners to carry out the operation

Mulesing operator



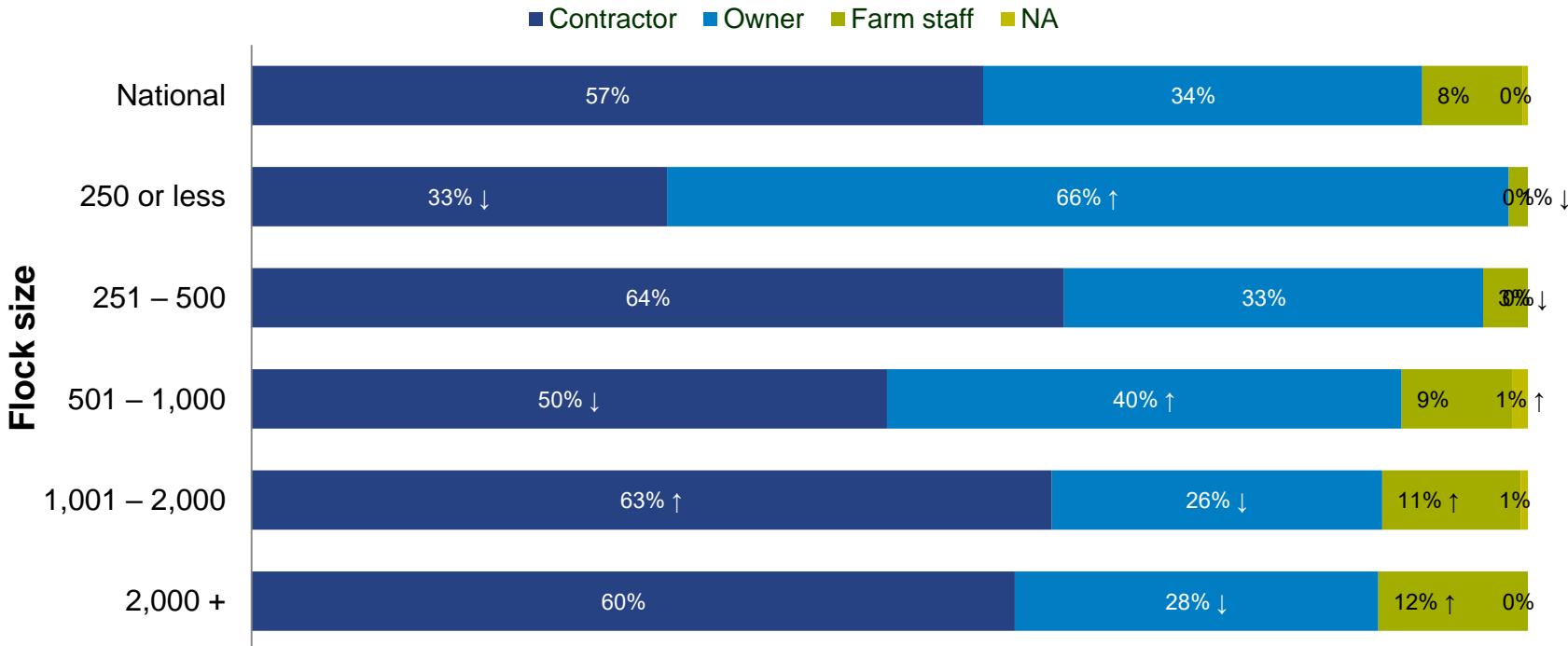
Validation: 2014 IPMS report found 56% of producers are using contractors for mulesing

Q40: Who performed the mules operation on your lambs?

Small producers were more likely to perform mulesing themselves



Mulesing operator by flock size



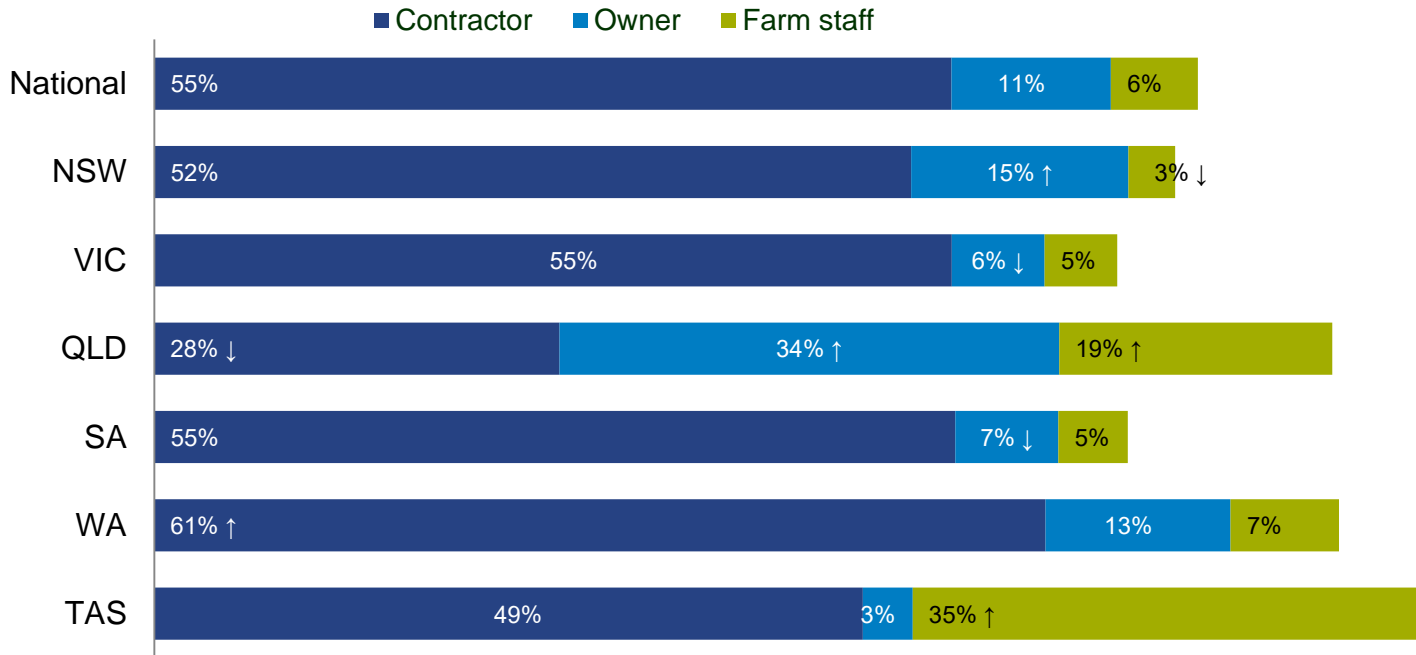
Q40: Who performed the mulesing operation on your lambs?
 S6 Total number of Merino breeding ewes
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Base: All respondents mulesing: n = 893
 Base: All respondents: n = 1200

Half of the mulesing contractors used by producers were nationally accredited



% of accredited mulesing operators

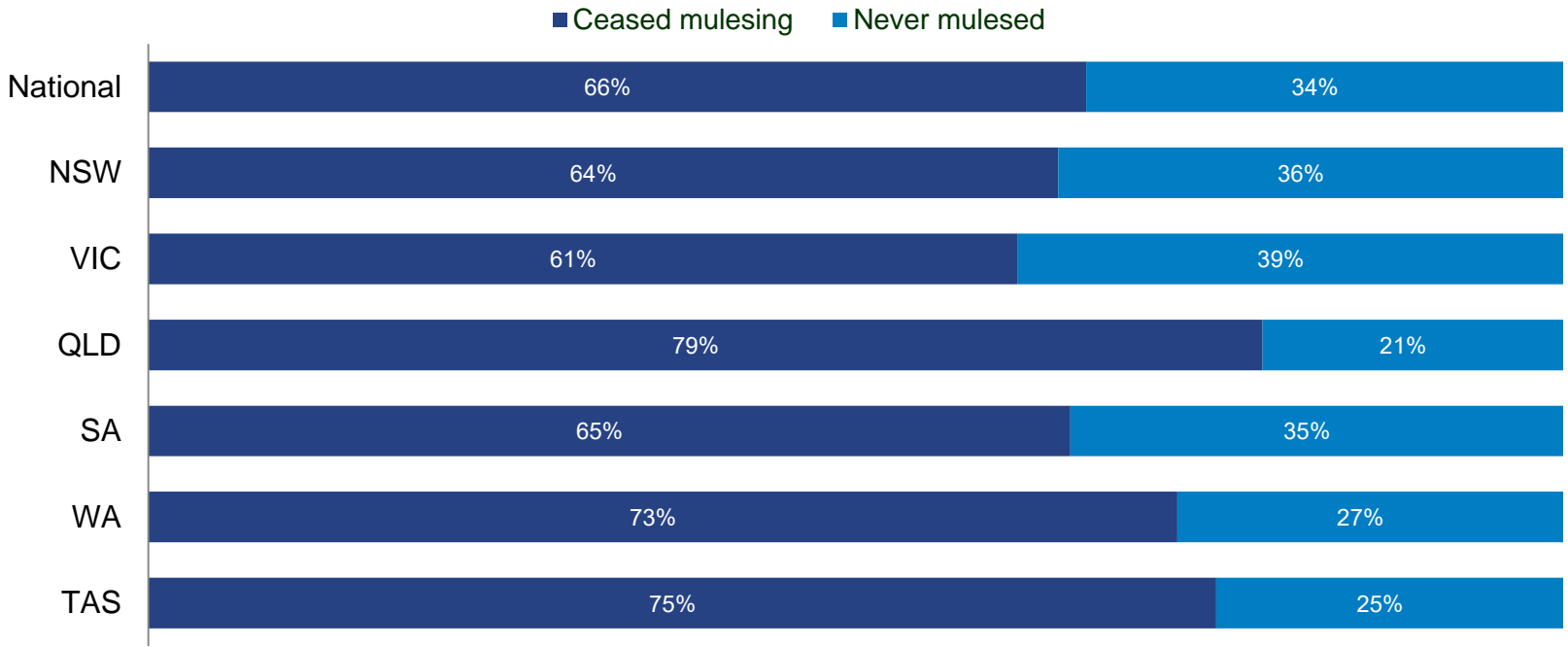


Q41: Are **you** a National Mulesing Accredited Operator?
 Q41: Are your **Farm Staff** a National Mulesing Accredited Operator?
 Q41: Is your **Contractor** a National Mulesing Accredited Operator?

Of the producers not mulesing in 2017, 1 in 3 have never mulesed while 2 in 3 have chosen to discontinue the practice



% of non-mulesing producers that have ceased or never mulesed

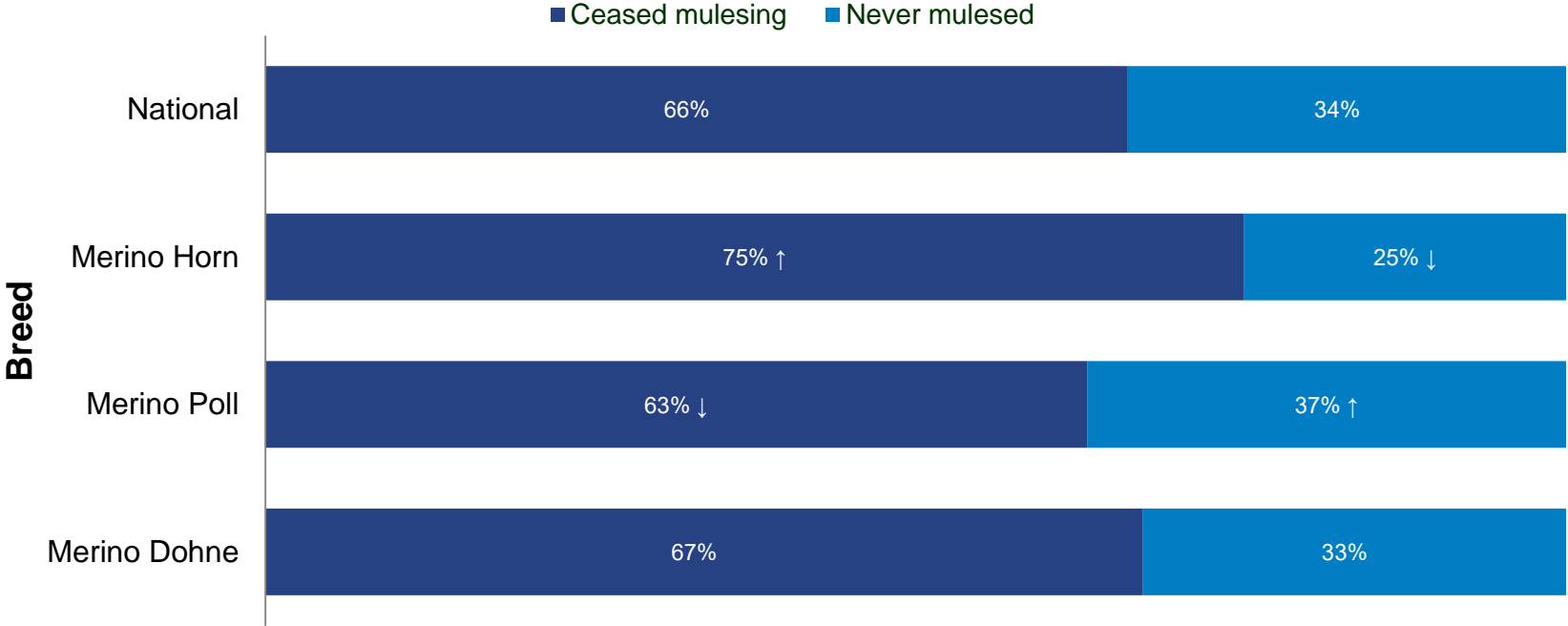


Q42: Have you ceased mulesing your ewe and wether lambs or did you never mules them?

There are small differences seen between horned Merinos, polled Merinos and Dohnes



% of non-mulesing producers that have ceased or never mulesed

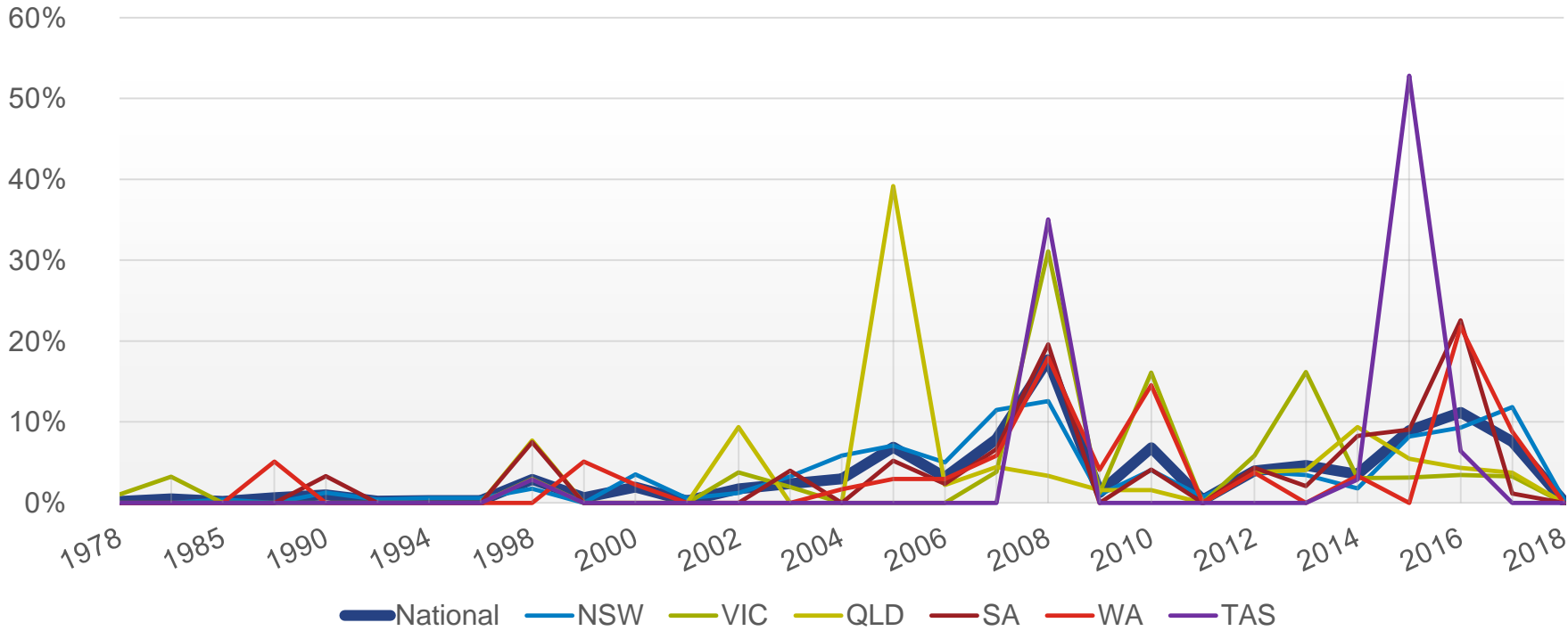


Q42: Have you ceased mulesing your ewe and wether lambs or did you never mules them?
 S4: What is your sheep flock, Horn, Poll or Dohne?
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Base: All respondents who did not mules in 2017: n = 404
 Base: All respondents: n = 1200

Over the last 15 years, there have been a number of spikes in producers opting to stop mulesing their lambs

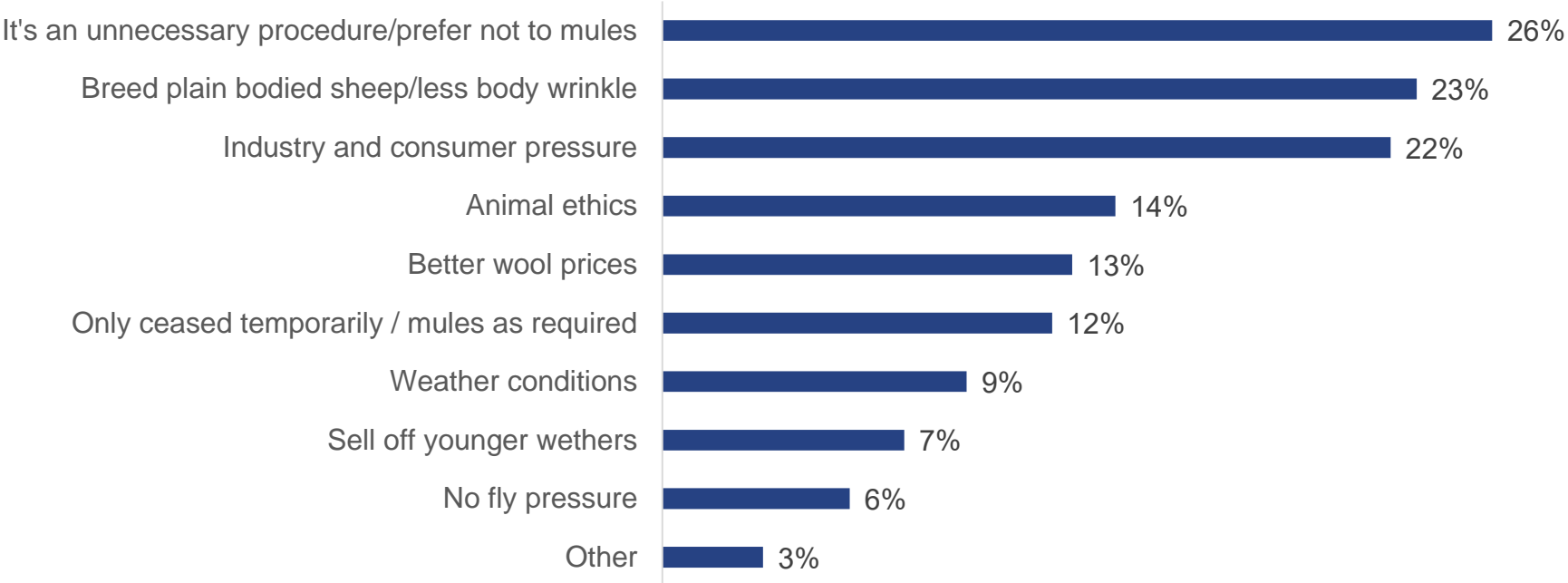
Of those producers who had ceased mulesing, when did they stop



Q43: What year did you cease mulesing?

Those that have ceased mulesing cited lack of necessity, breeding less wrinkled sheep and industry/consumer pressure as the main drivers

Why did you cease mulesing national results



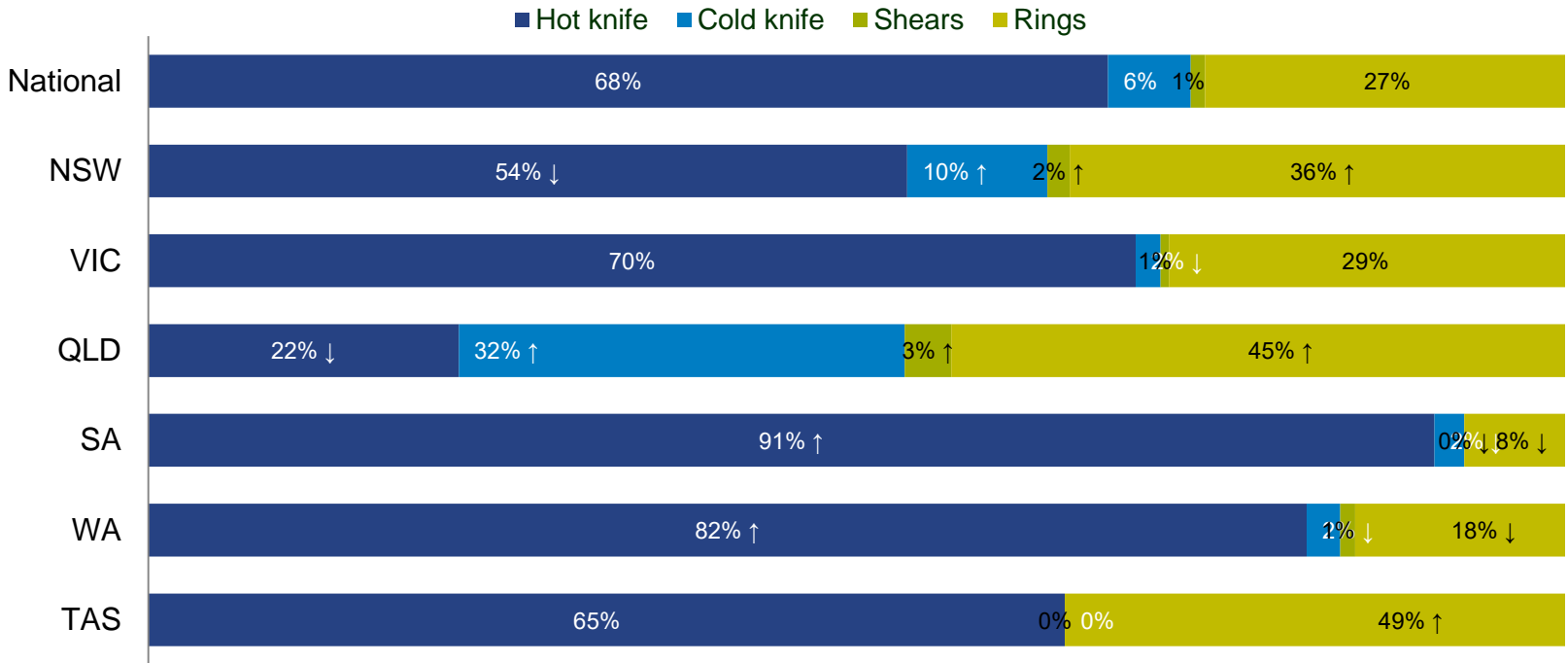
Q44: Why did you cease mulesing?

9. Tail Docking and Castration

The Hot knife method was the most popular method of tail docking ewe lambs, except in QLD



Tail docking method for ewes

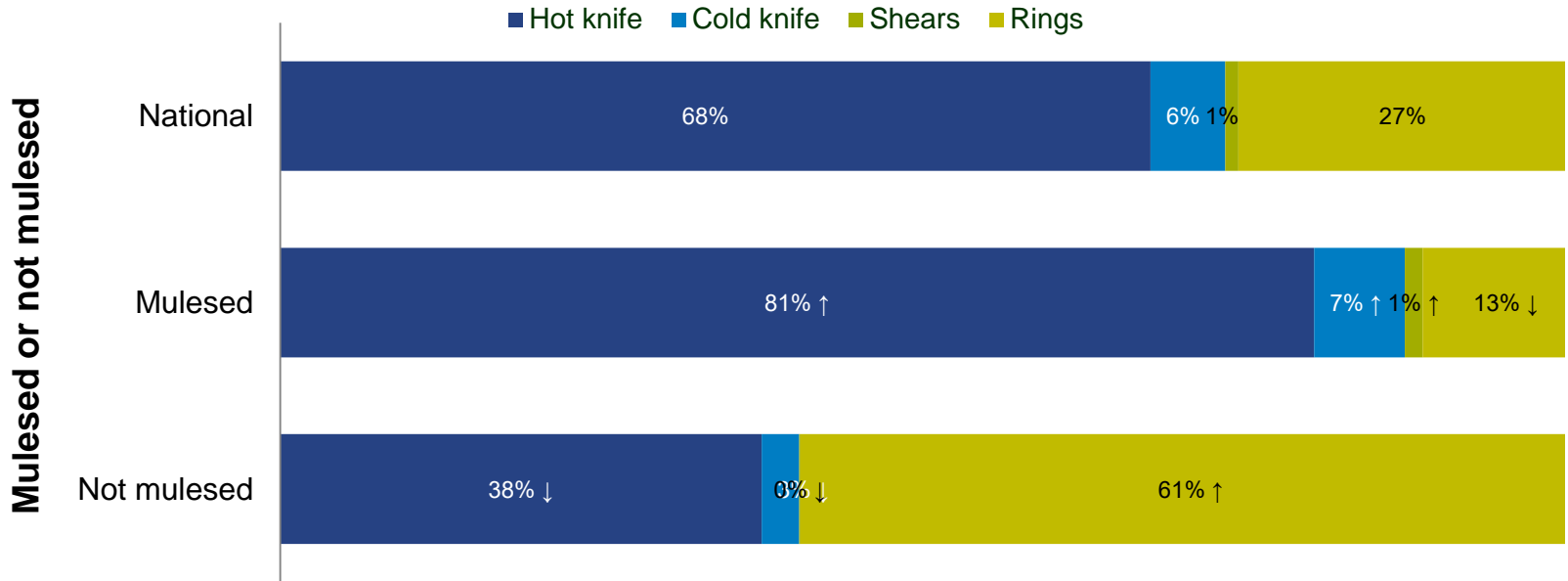


Q45: What method do you use to tail dock Merino ewes?

Lambs that were not mulesed tend to be tail docked with rings while Hot knife was more popular for those being mulesed



Tail docking method for ewes by mulesing practice

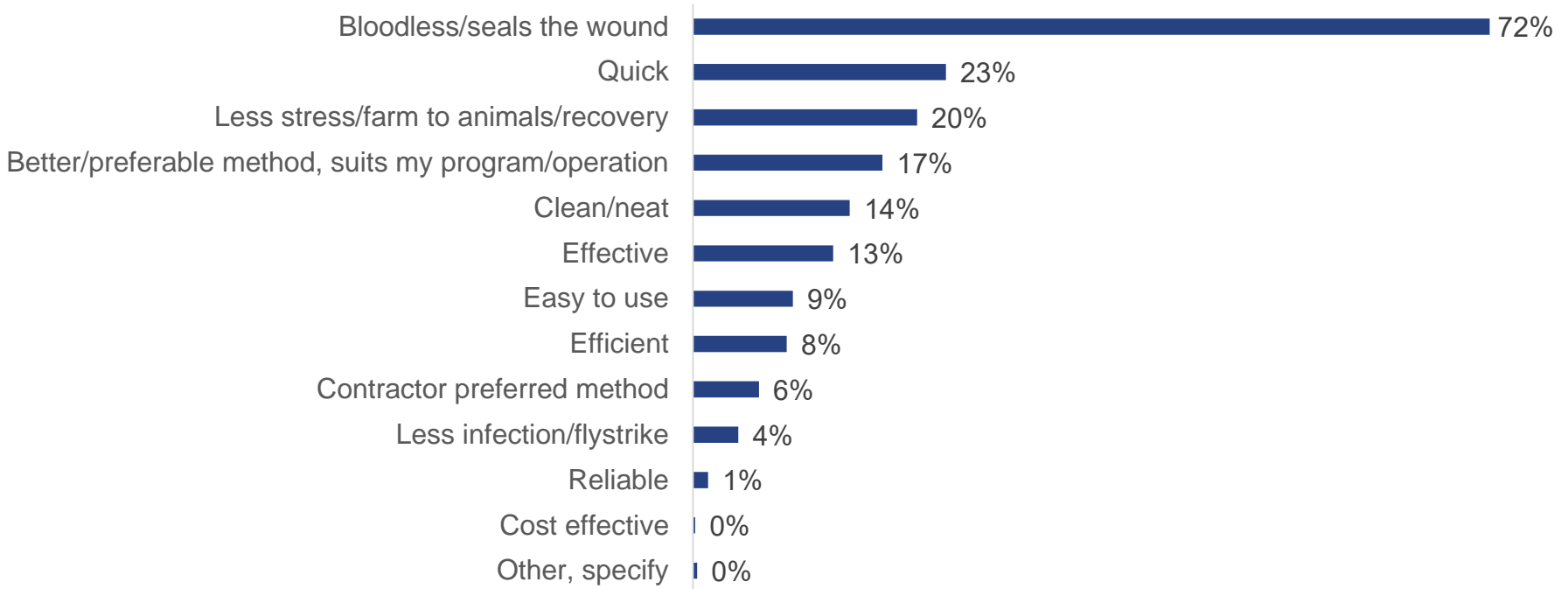


Q45: What method do you use to tail dock Merino ewes?

Q28: Did you mules your Merino ewe lambs in 2017?

Producers chose the hot knife method for docking ewe lambs because it is seen as bloodless, quick and less stressful

Hot knife method reasons for use on ewes - national results

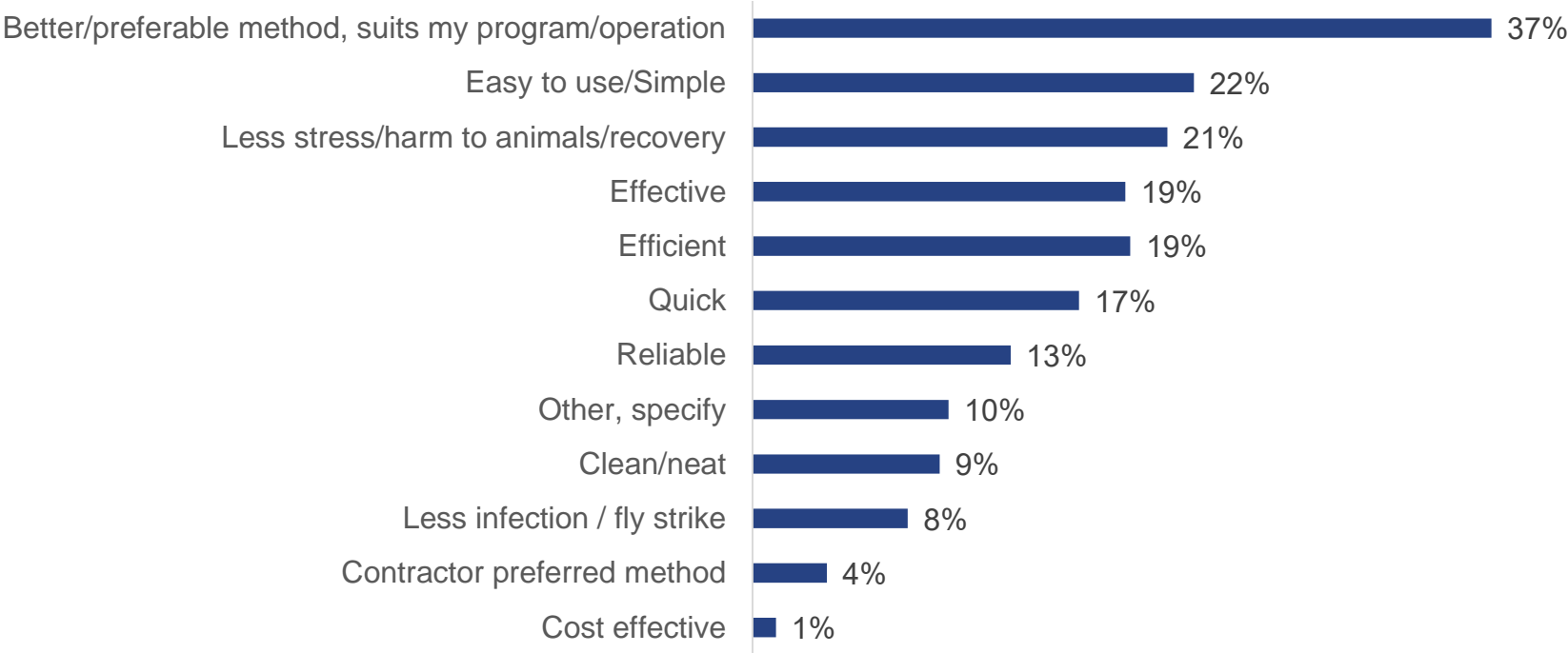


Q46: Why did you use the **HOT KNIFE** method on your Merino ewes?

Producers chose the cold knife method for docking, as it suited them, was easy to perform and was less stressful on lambs



Cold knife method reasons for use on ewes - national results

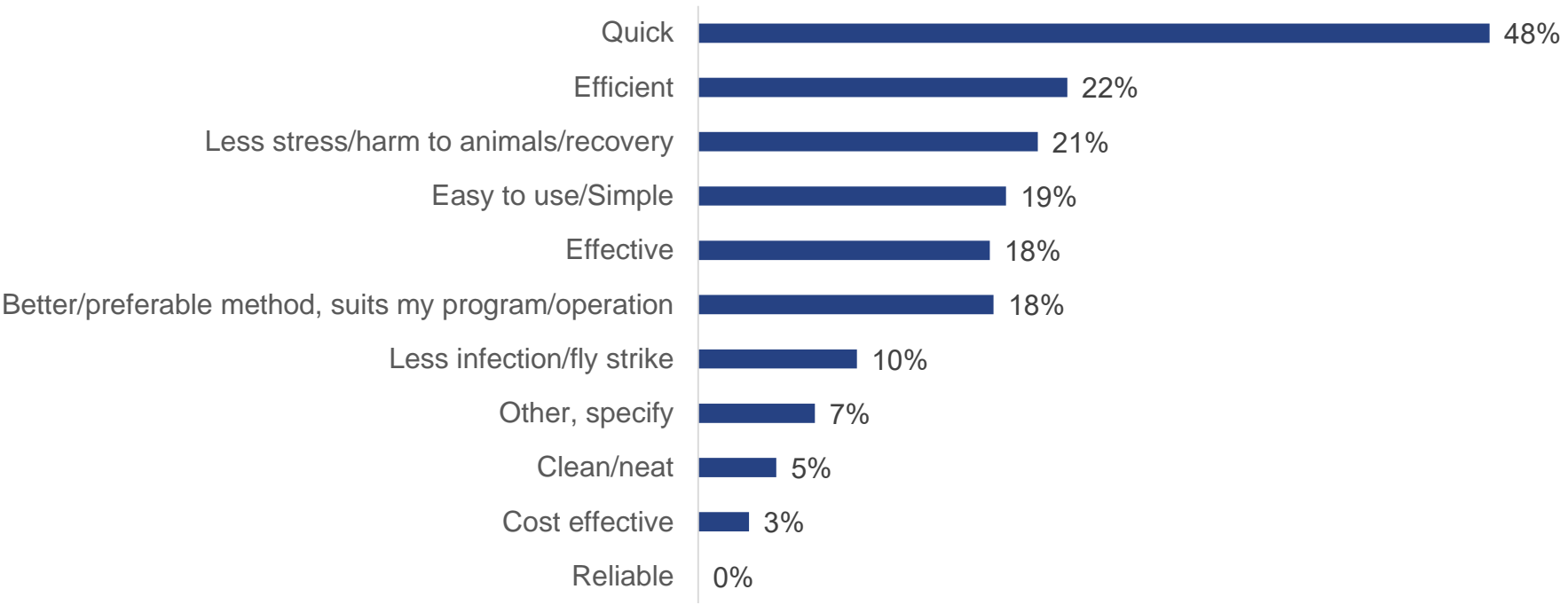


Q46: Why did you use the **COLD KNIFE** method on your Merino ewes?

A small proportion of producers chose the shears method for docking as it was quick and efficient



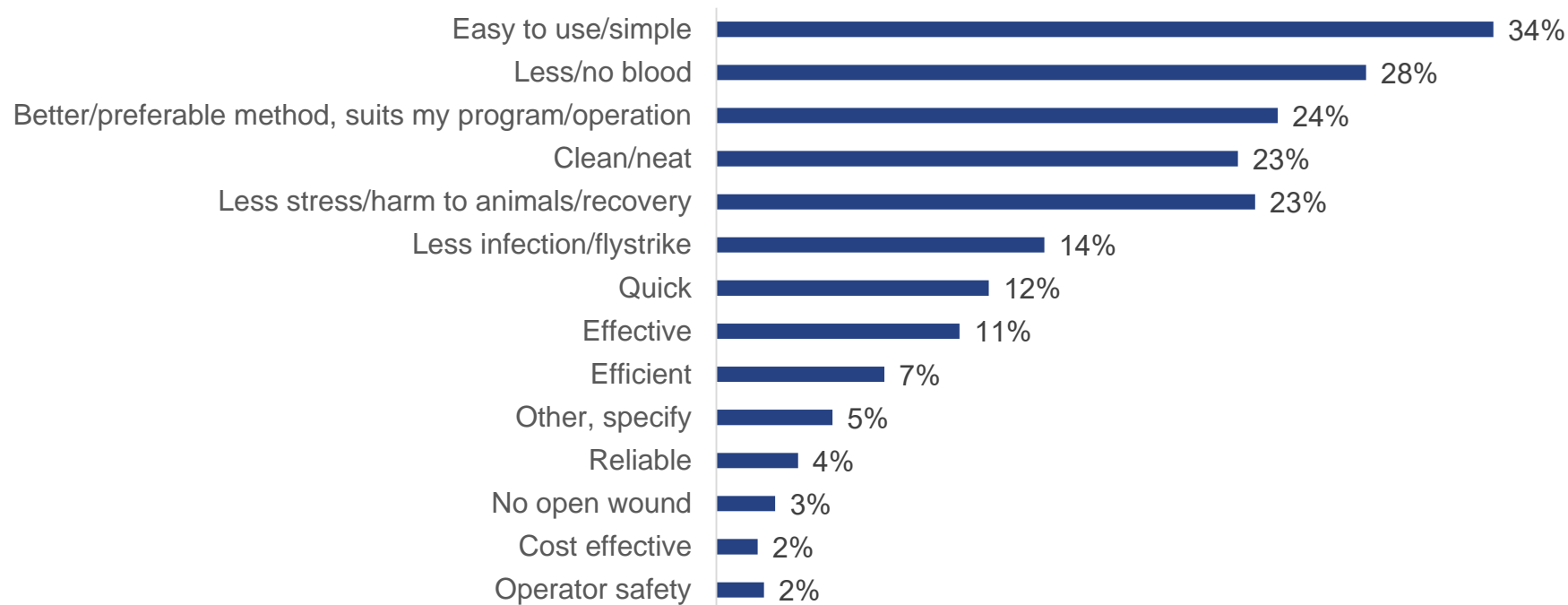
Shears method reasons for use on ewes - national results



Q46: Why did you use the **Shears** method on your Merino ewes?

Producers chose the ring method of docking because it was simple, bloodless and more suitable for their operation

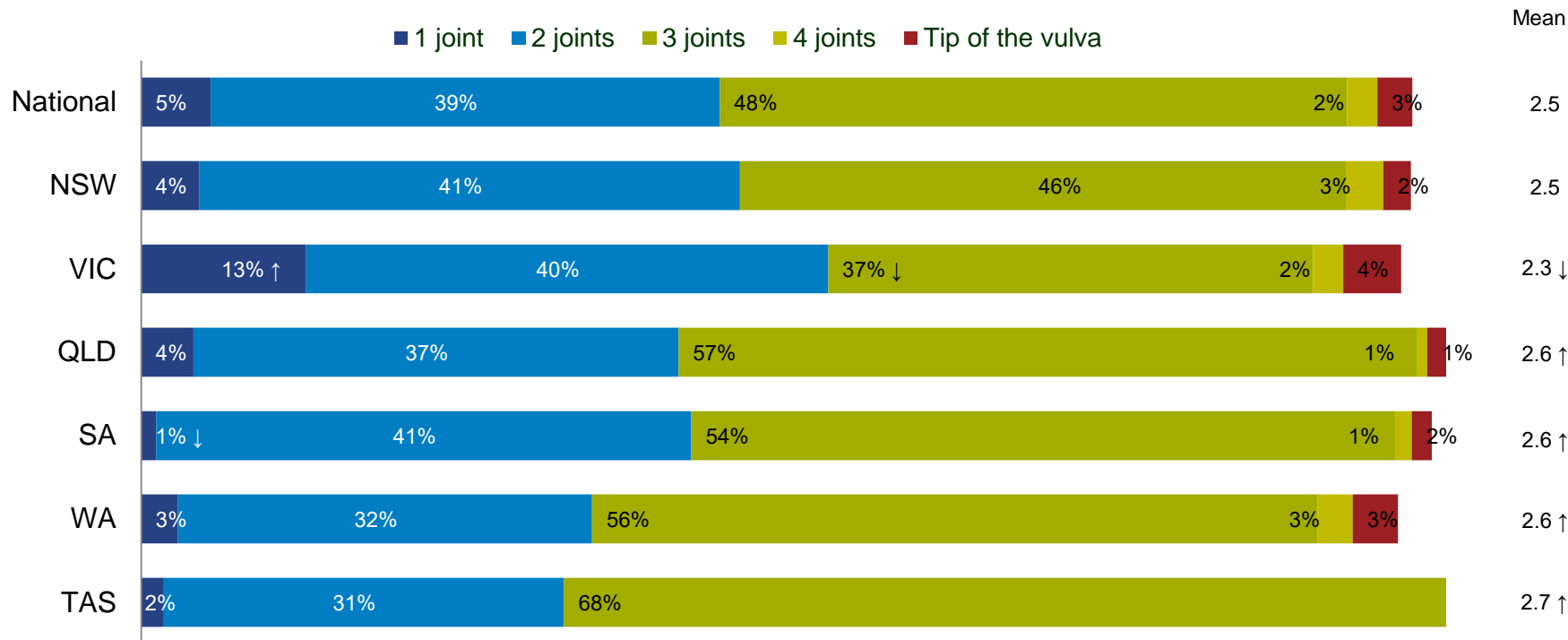
Rings method reasons for use on ewes - national results



Q46: Why did you use the **RINGS** method on your Merino ewes?

The majority of ewes tails were docked at either the second or third joint

Ewe lambs tail docking length

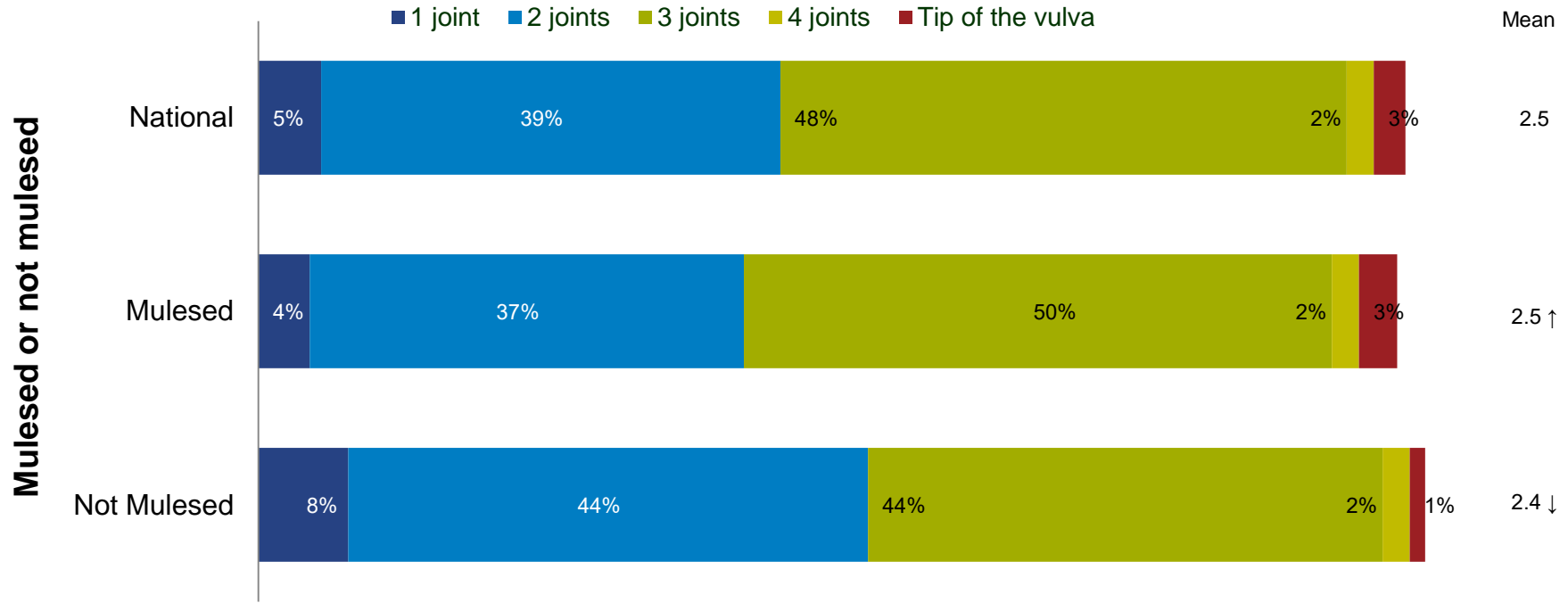


Q47: At what length do you dock ewe lambs' tails?

There was little difference in tail length between mulesed and not mulesed ewes



Ewe lambs tail docking length



Q47: At what length do you dock ewe lambs' tails?
 Q28: Did you mules your Merino ewe lambs in 2017?

Base: All respondents: n = 1197
 Base: All respondents: n = 1200

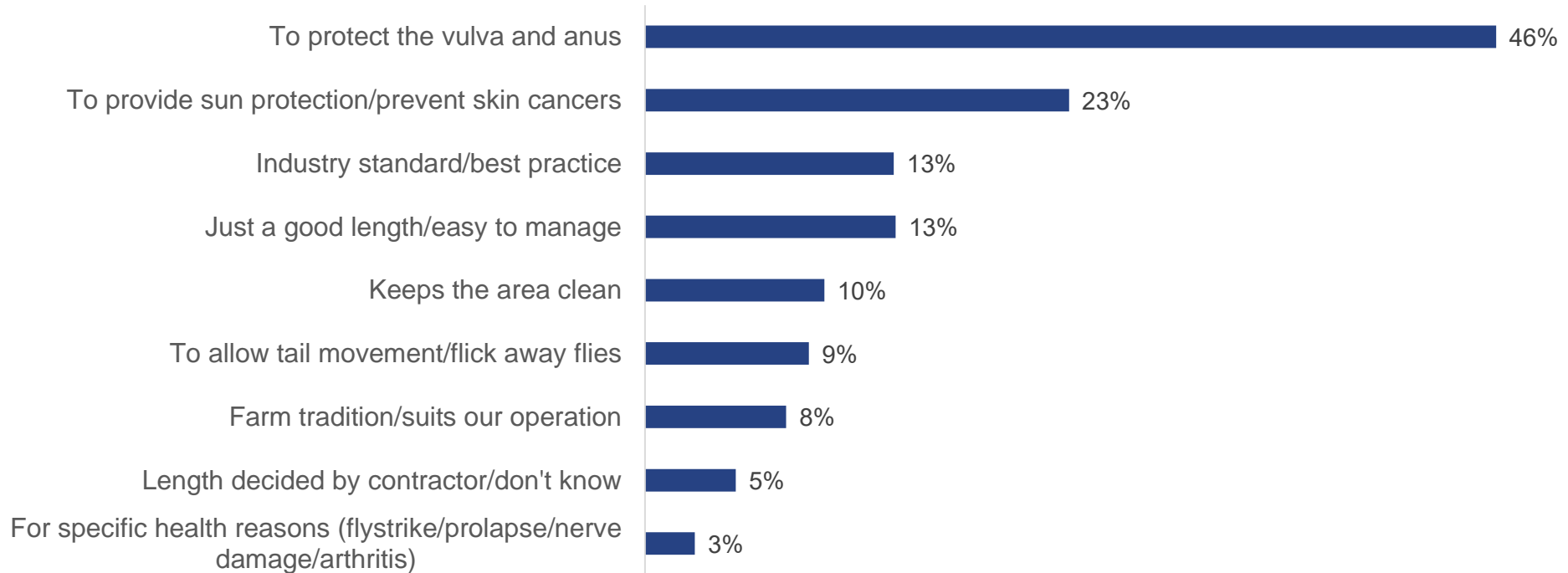
Protective factors were the main criteria for selecting ewe tail length



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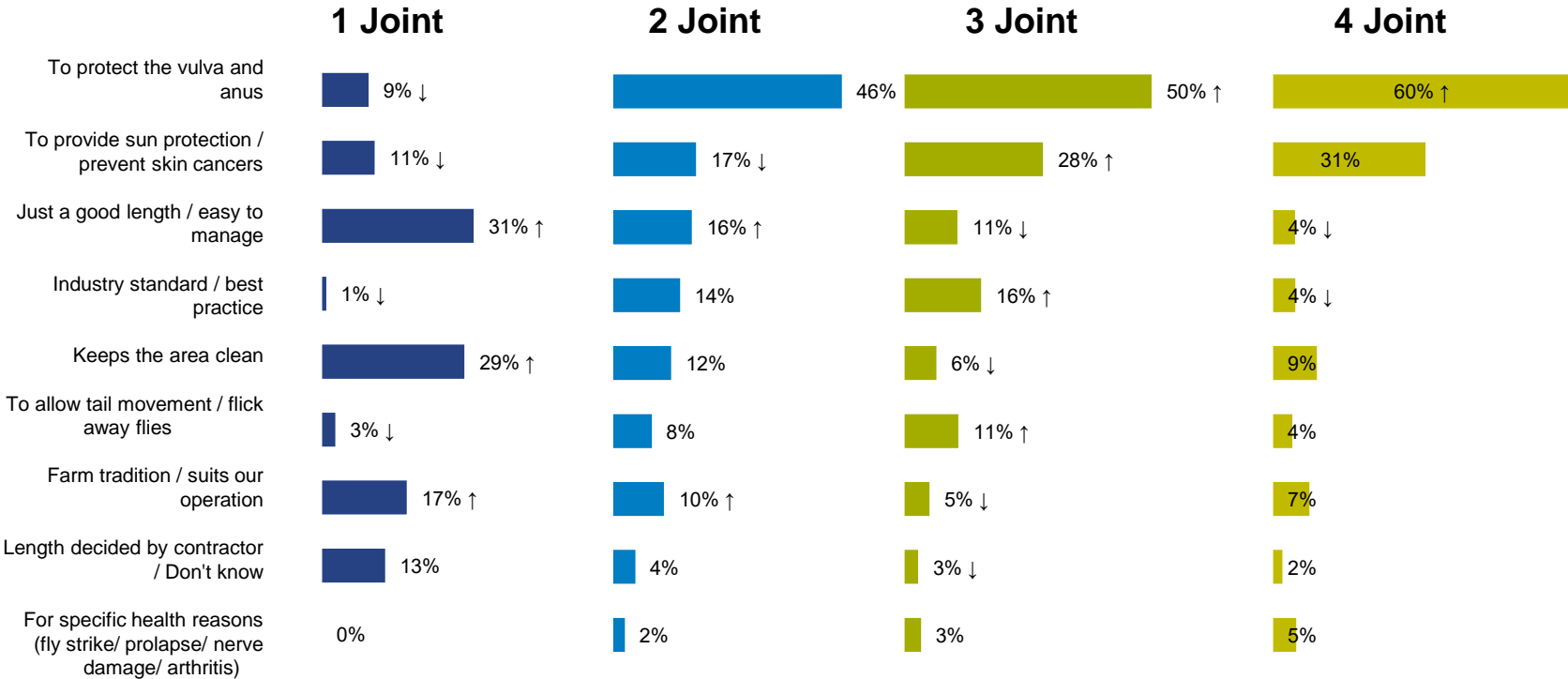


Reason for ewe tail length national results



Q48: Why did you choose this tail length for your ewes?

Those docking ewe tails at joints 2, 3 or 4 put more importance on protective factors than those docking at joint 1

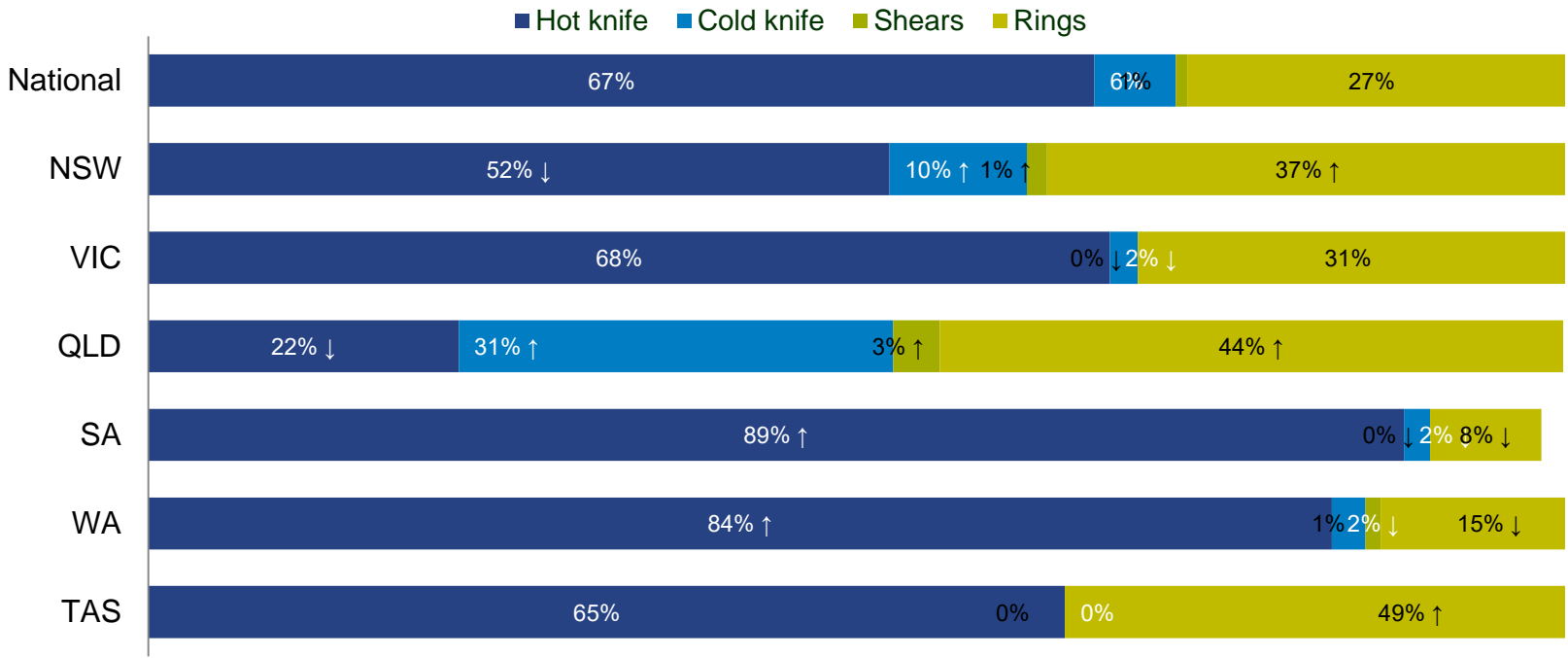


Q48: Why did you choose this tail length for your ewes?

Most wethers were docked by the hot knife method, although rings and the cold knife method were more popular in QLD



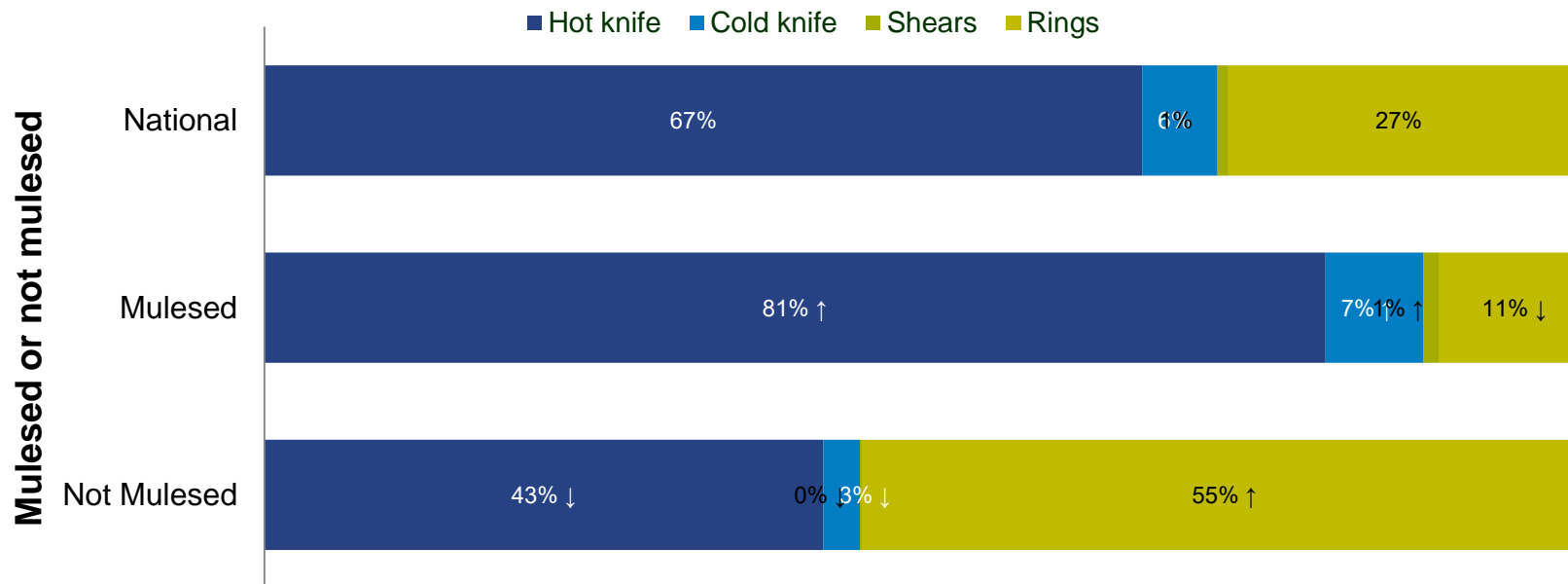
Tail docking method wethers



Q49: What method do you use to tail dock Merino wethers?

As seen for ewe lambs, producers who mulesed wethers preferred the hot knife method for docking, with non mulesers more inclined to use rings

Wether tail docking method by mulesing practice

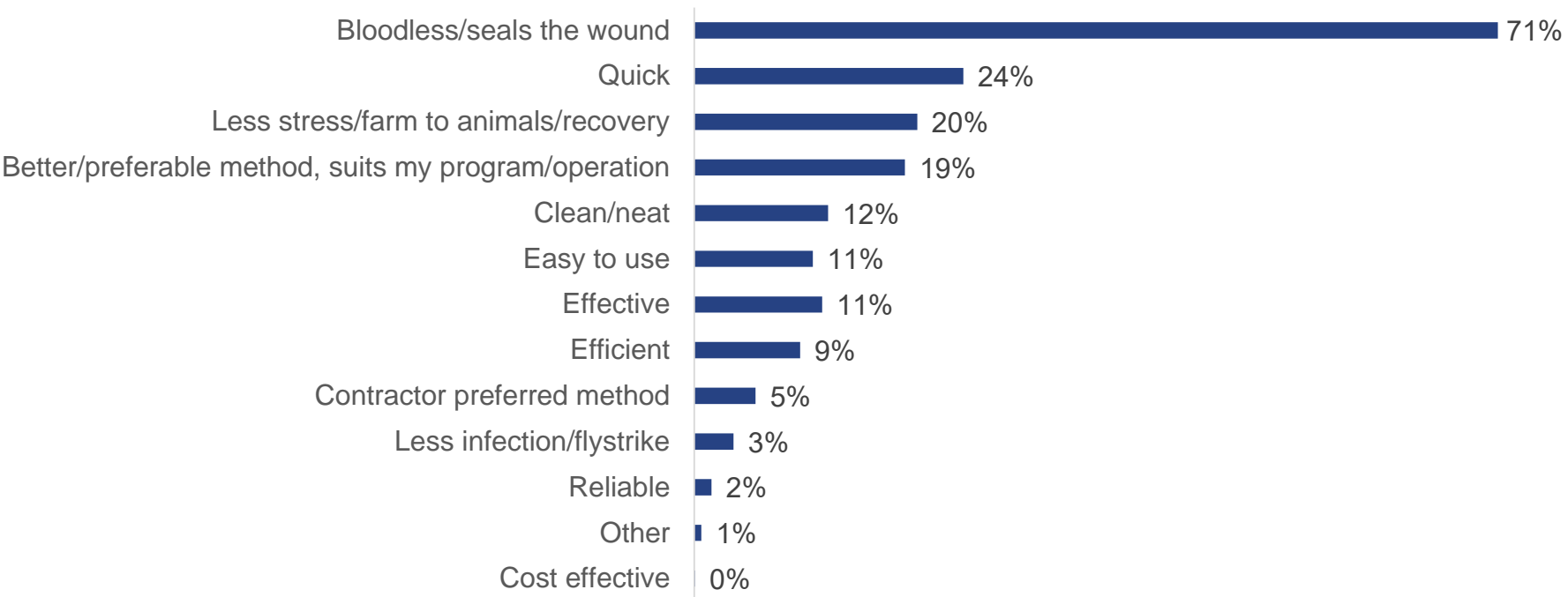


Q49: What method do you use to tail dock Merino **wethers**?

Q32: Did you mulese your Merino **wether** lambs in 2017?

Similar to ewes, the hot knife method was utilised as it was bloodless, quick and caused less stress

Hot knife use reasons on wethers national results

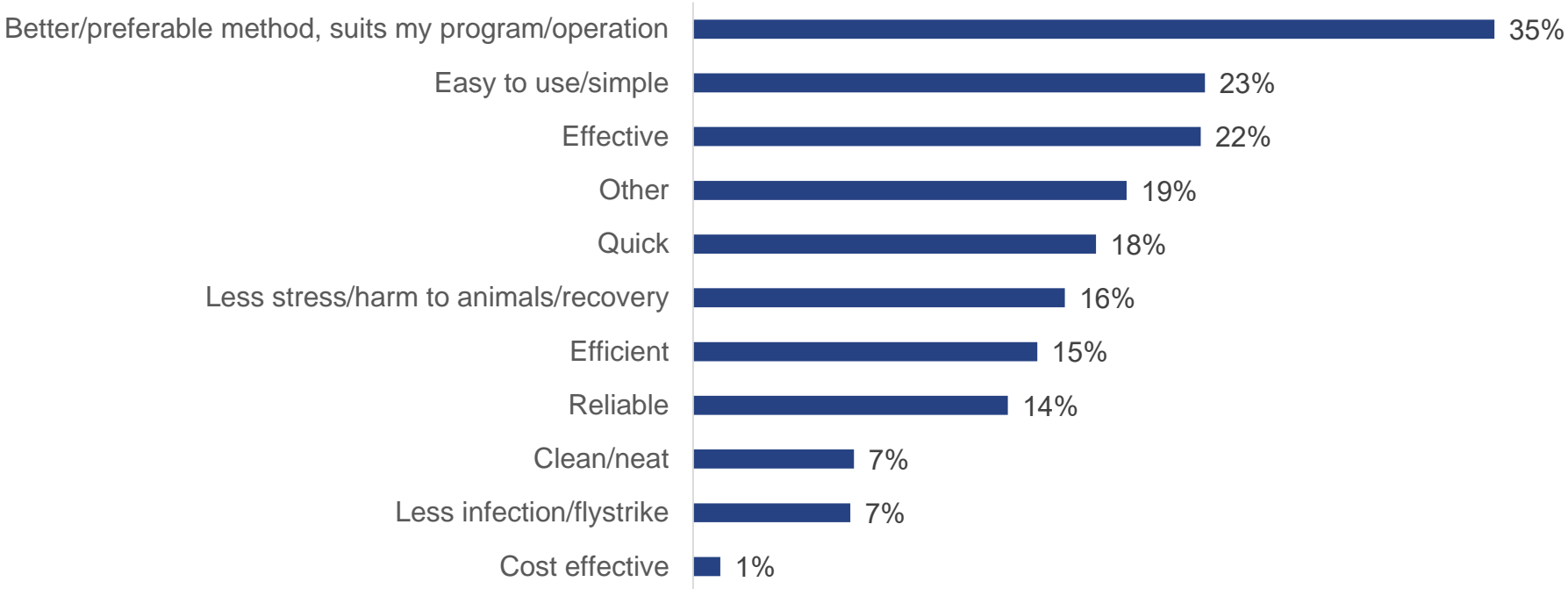


Q50: Why did you use the **HOT KNIFE** method on your Merino **wethers**?

Although less frequently used, the cold knife was preferred as it was easy and effective



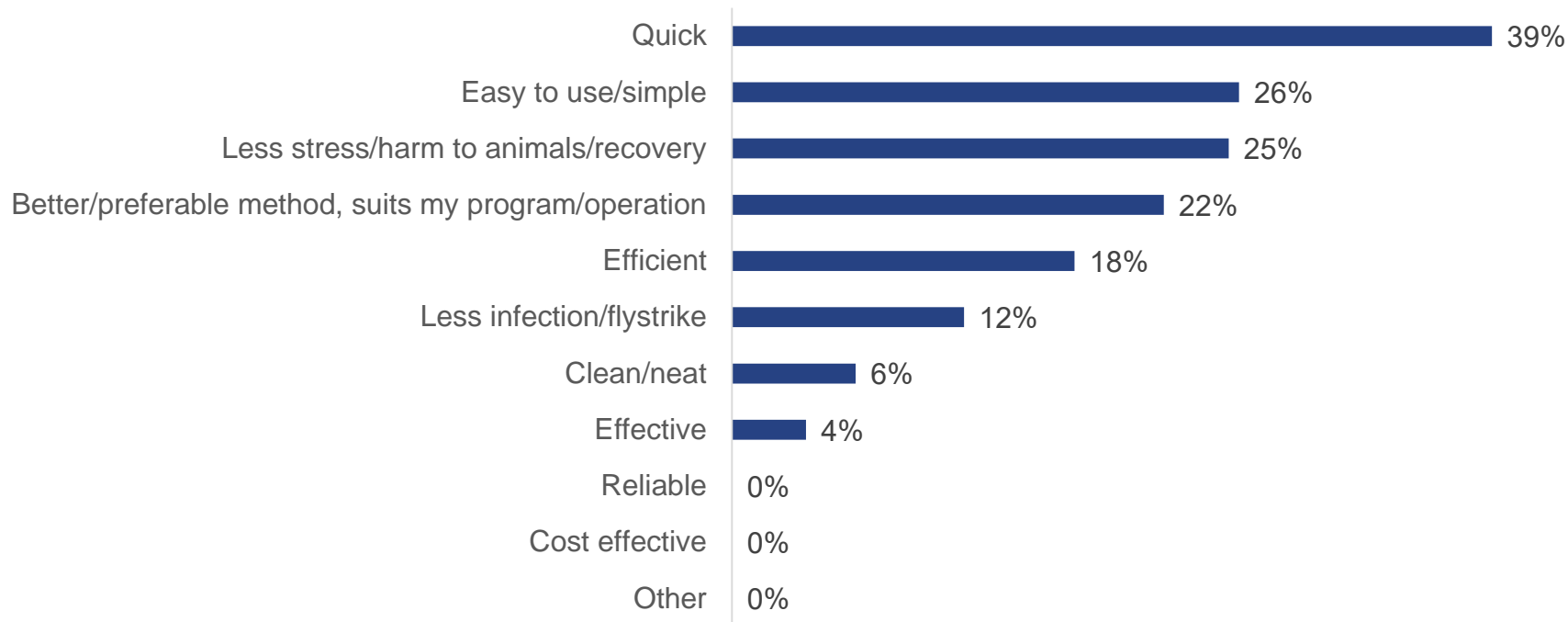
Cold knife use reasons on wethers national results



Q50: Why did you use the **COLD KNIFE** method on your Merino **wethers**?

A small number of producers used the shears method. Their main reason for choosing it was that it was quick, easy and less stressful

Shears use reasons on wethers national results

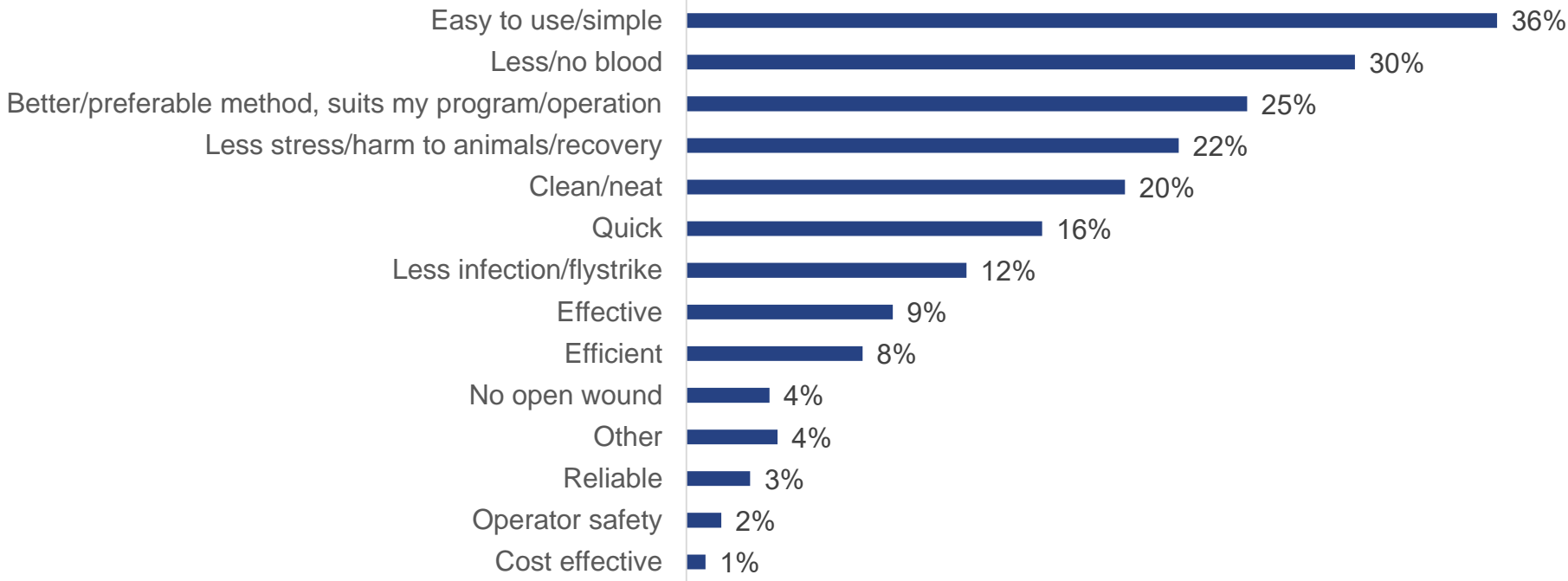


Q50: Why did you use the **Shears** method on your Merino **wethers**?

As for ewes, producers who used rings to dock wethers saw this method as easy, bloodless and better suited to their operation



Rings use reasons on wethers national results

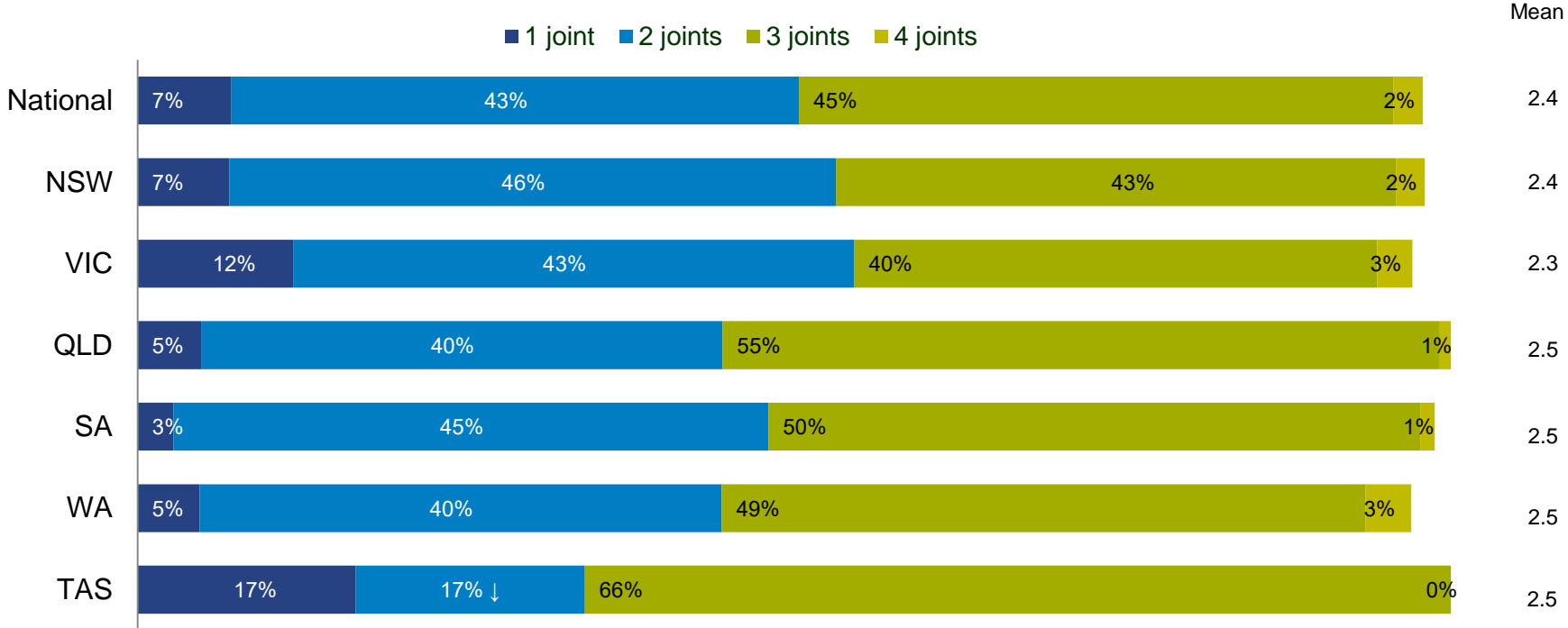


Q50: Why did you use the **RINGS** method on your Merino **wethers**?

As was the case with ewes, most producers elected to dock wethers at either the second or third joint



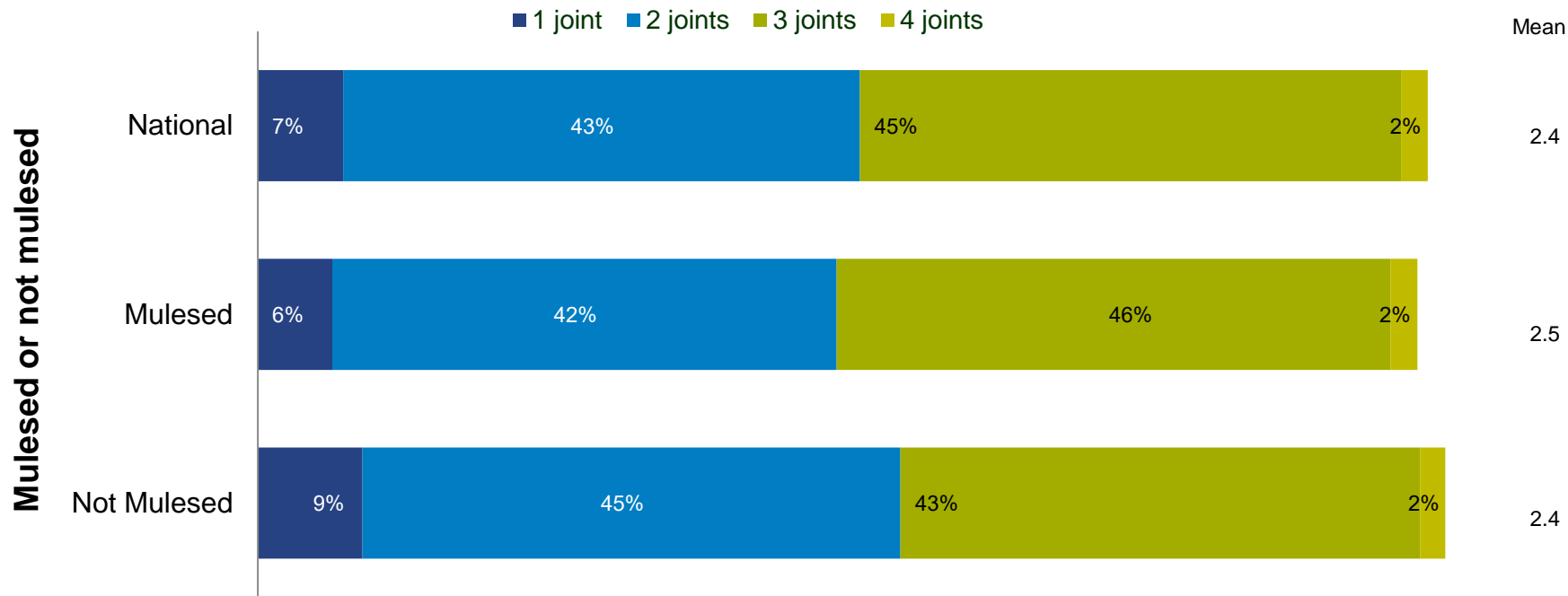
Wethers lambs tail docking length



Q51: At what length do you dock **wether** lambs' tails?

Mulesing status had no effect on tail docking lengths of wether lambs

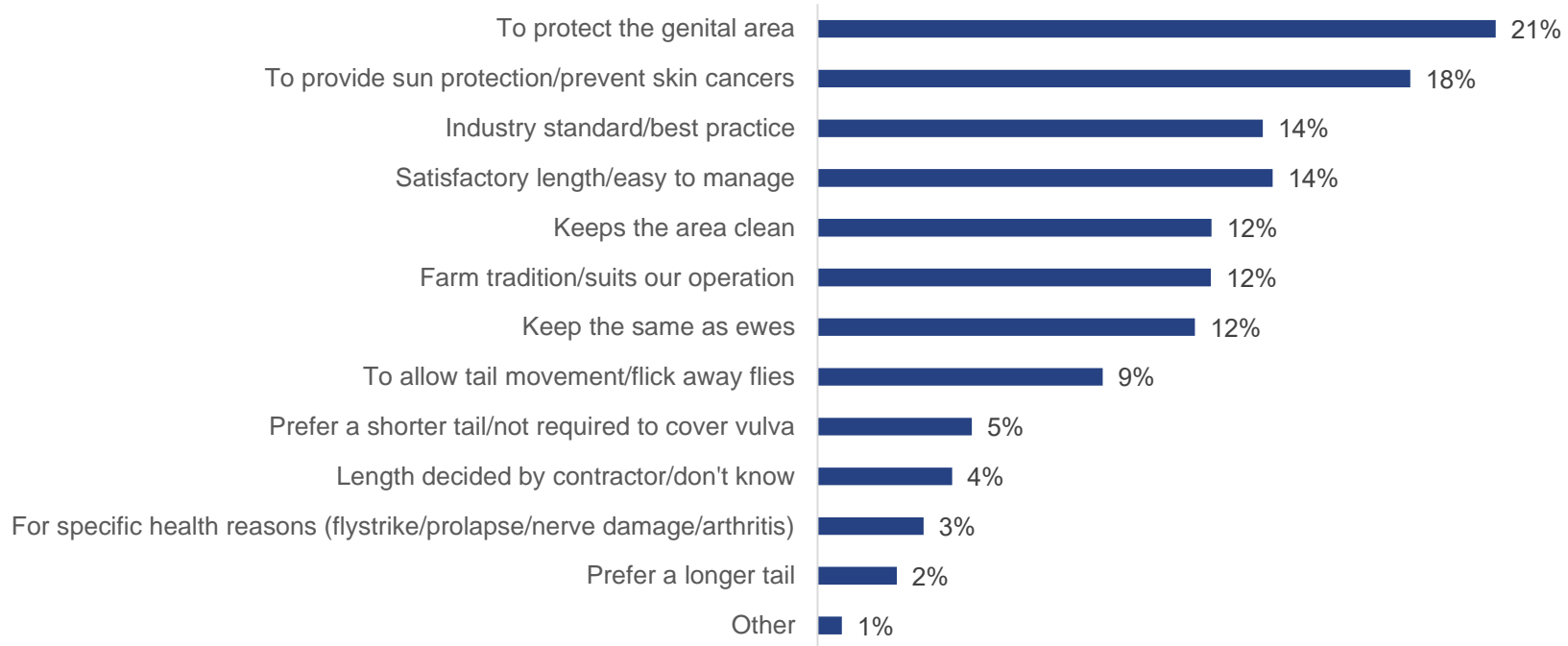
Wether lambs tail docking length by mulesing practice



Q51: At what length do you dock **wether** lambs' tails?
Q32: Did you mulesing your Merino **wether** lambs in 2017?

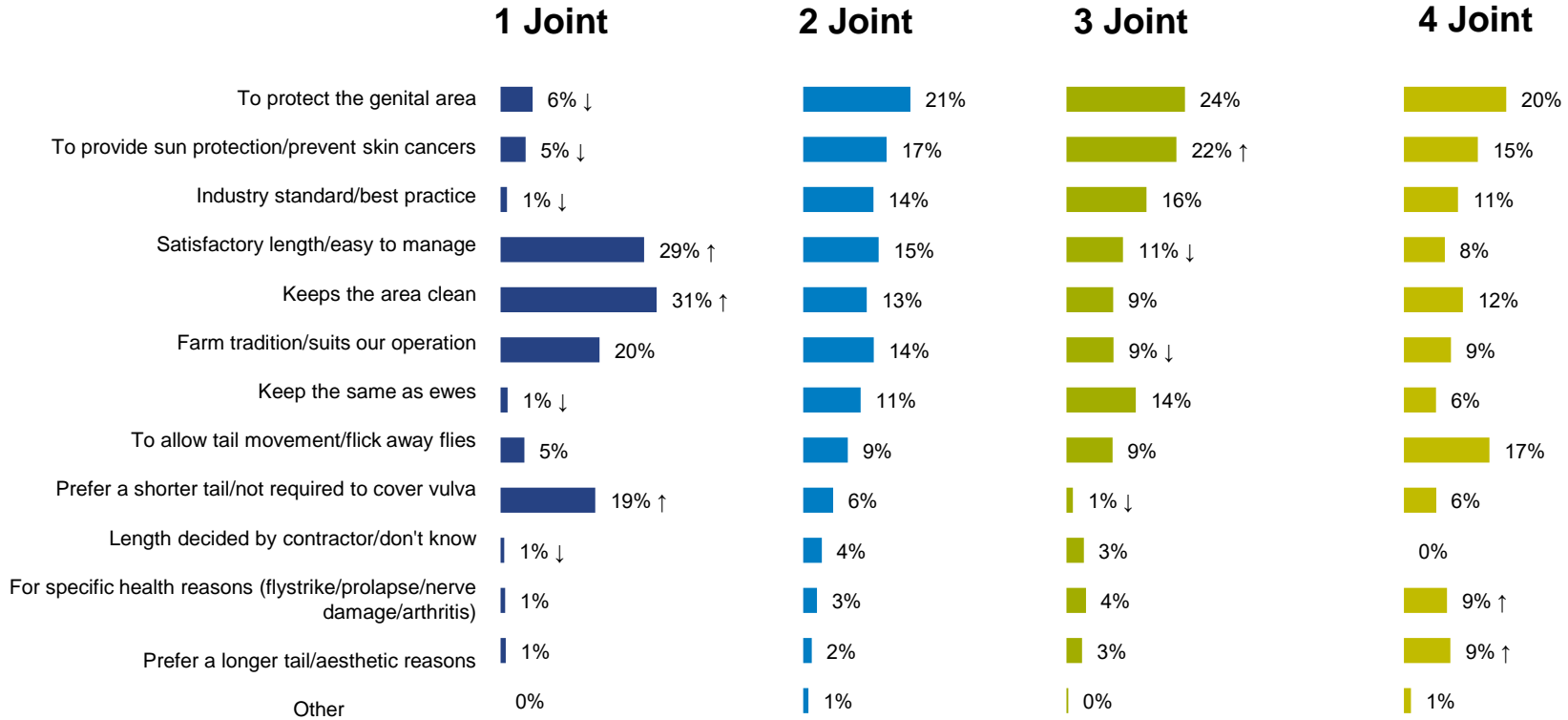
Protective factors were the main criteria cited for selecting tail length

Reason for wether tail length - national results



Q52: Why did you choose this tail length for your **wethers**?

Producers docking wethers tails at joint 2, 3 and 4 put more weight on protective factors than those docking at joint 1

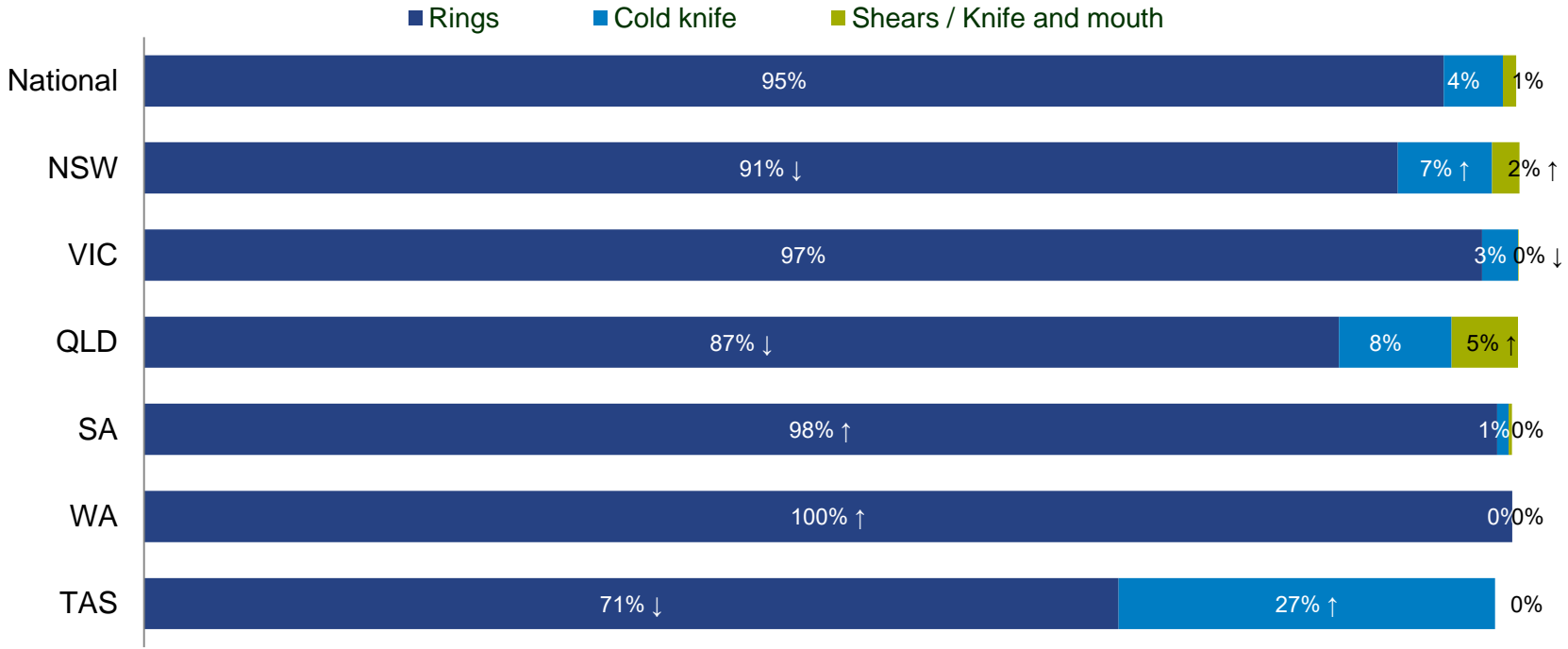


Q52: Why did you choose this tail length for your **wethers**?

Nearly all producers used rings to castrate their wethers



Castration method wethers

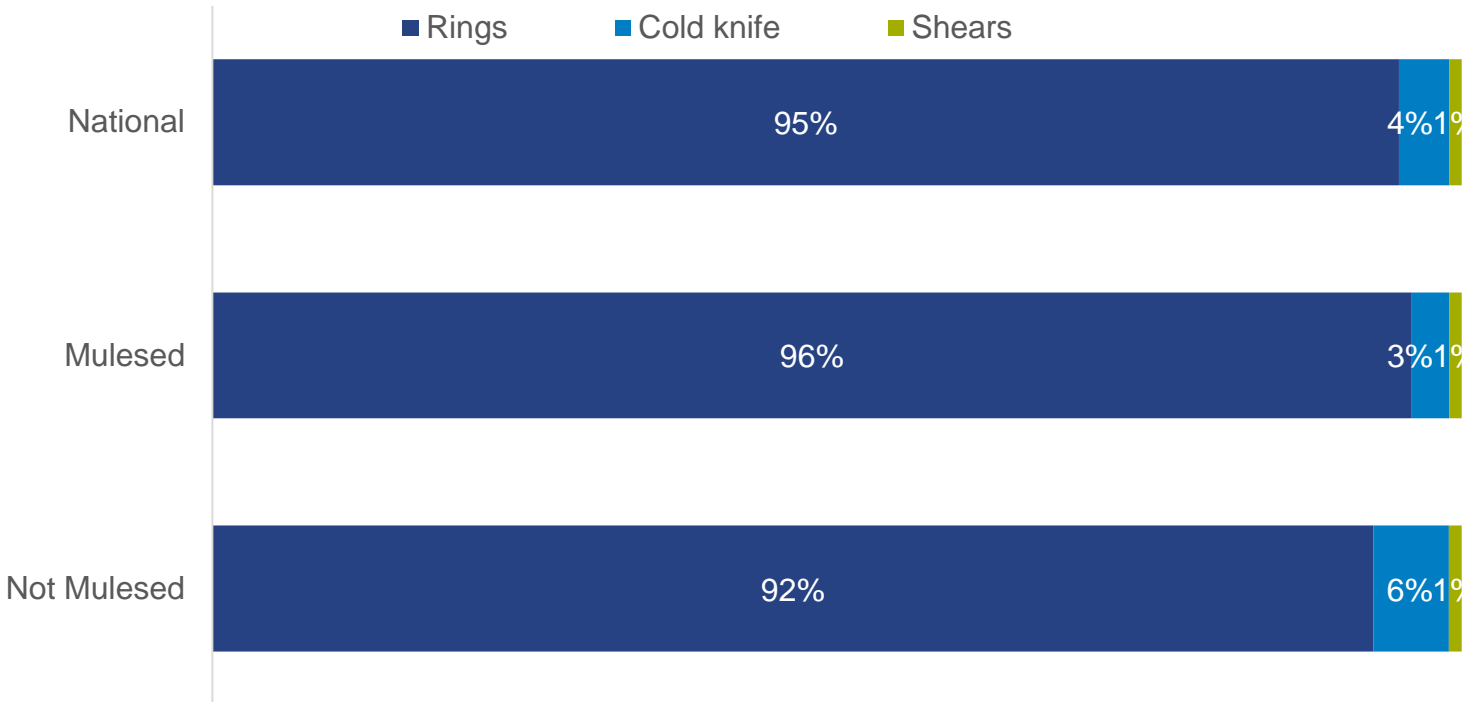


Q53: What method do you use to castrate Merino wethers?

Mulesing practice did not influence producers castration method



Castration method wethers



Q53: What method do you use to castrate Merino **wethers**?

Q32: Did you mules your Merino **wether** lambs in 2017?

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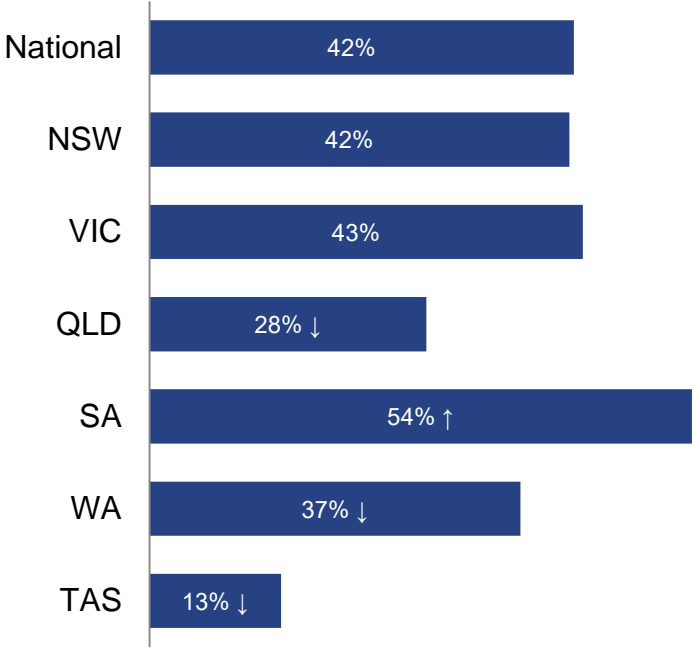
*Graph excludes other and don't know results

Base: All respondents: n = 1200

Less than half of producers used pain relief for castration and docking, with the exception of SA where the majority used pain relief



% producers castrating and/or docking lambs with pain relief 2017



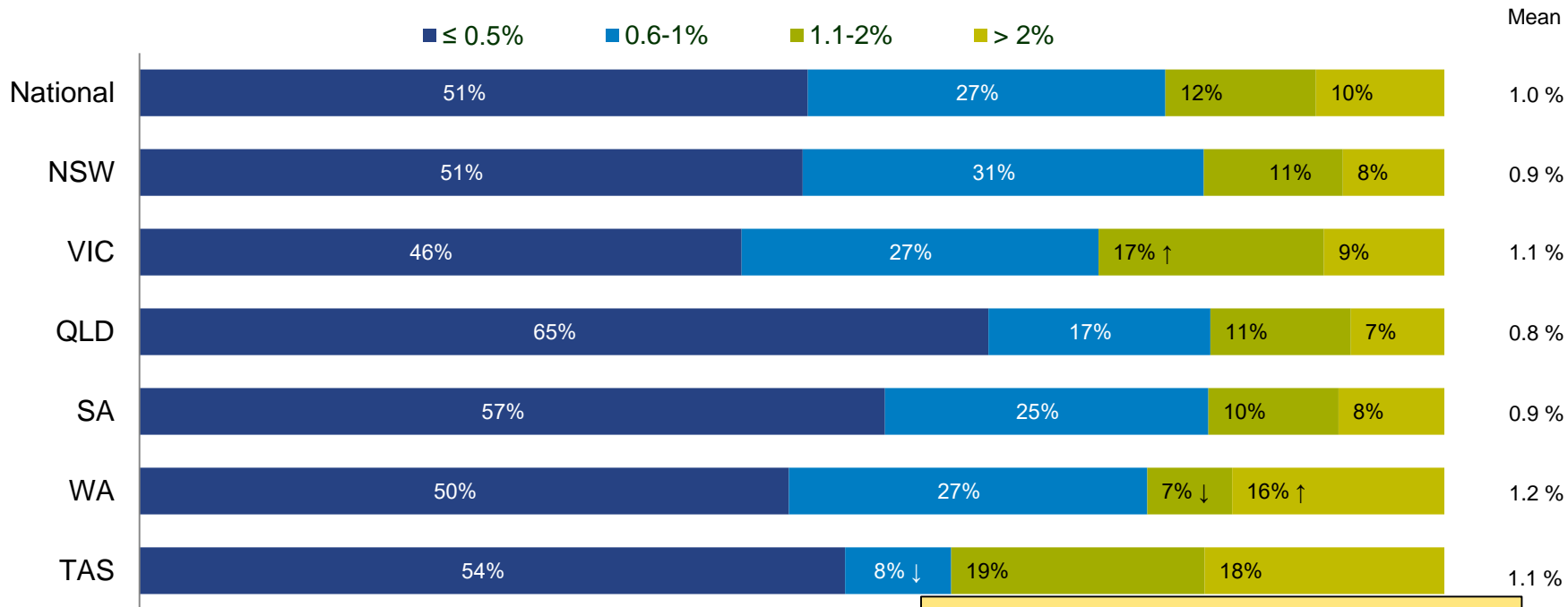
Q54: Did you use pain relief for tail docking and castration in 2017?

10. Flystrike

1% of mixed age Merino ewes get breech strike annually



% mixed ewes get breech strike



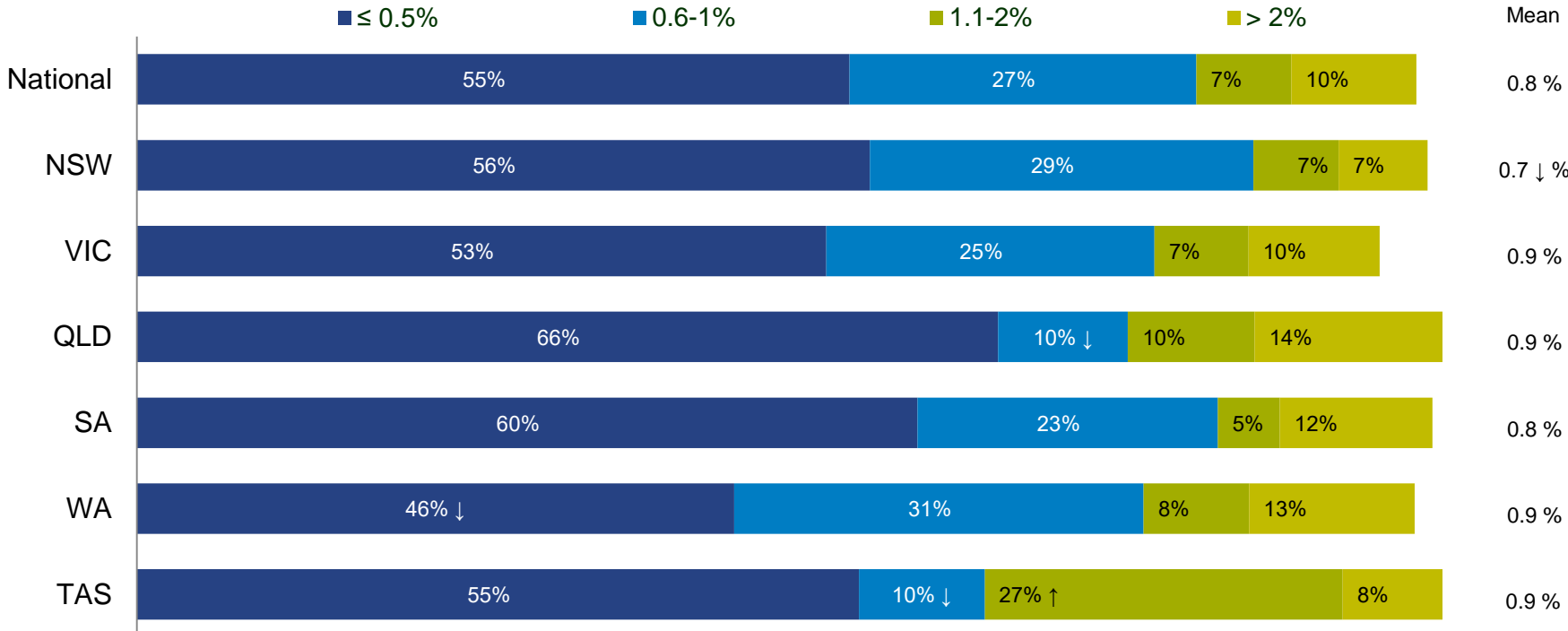
Validation: 2014 IPMS report found producers had 4.1% of ewes with breech strike

Q57: In an average year, what percent of your mixed aged Merino ewes get breech strike?

Most producers will wait until approximately 1% of their sheep are struck before performing flystrike prevention



% sheep struck before using flystrike prevention



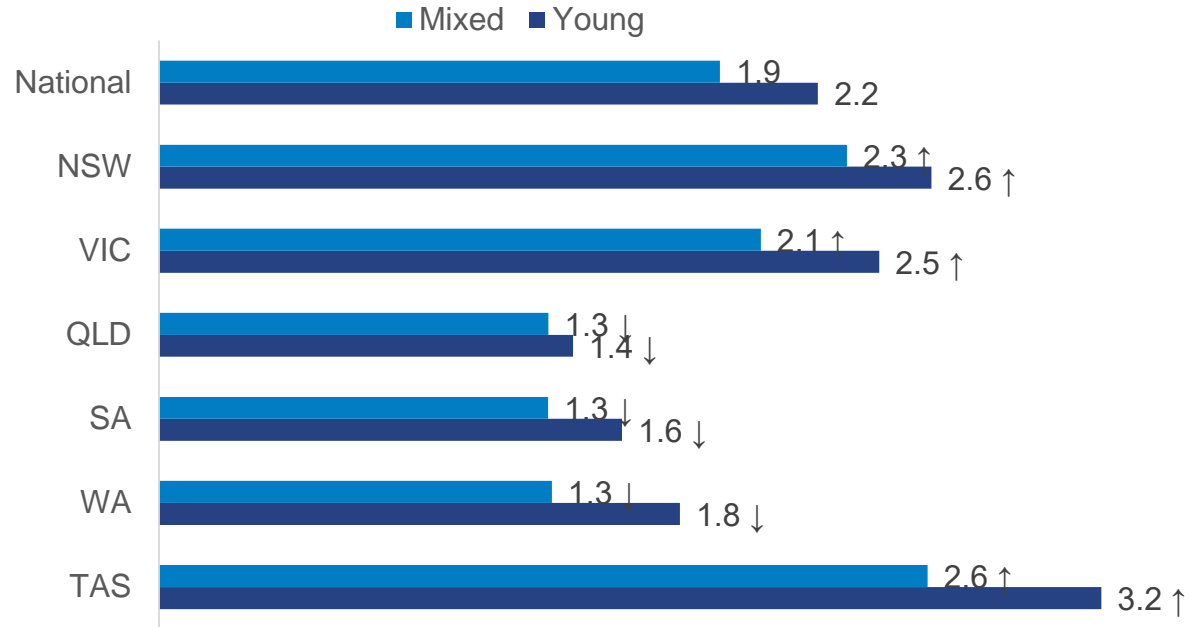
Q58: What percent of Merino sheep in the mob will get struck before you treat the mob for flystrike prevention?

11. Drenching

Young ewes were being drenched slightly more often than mixed age ewes



Number of time mixed age and young ewes are drenched each year

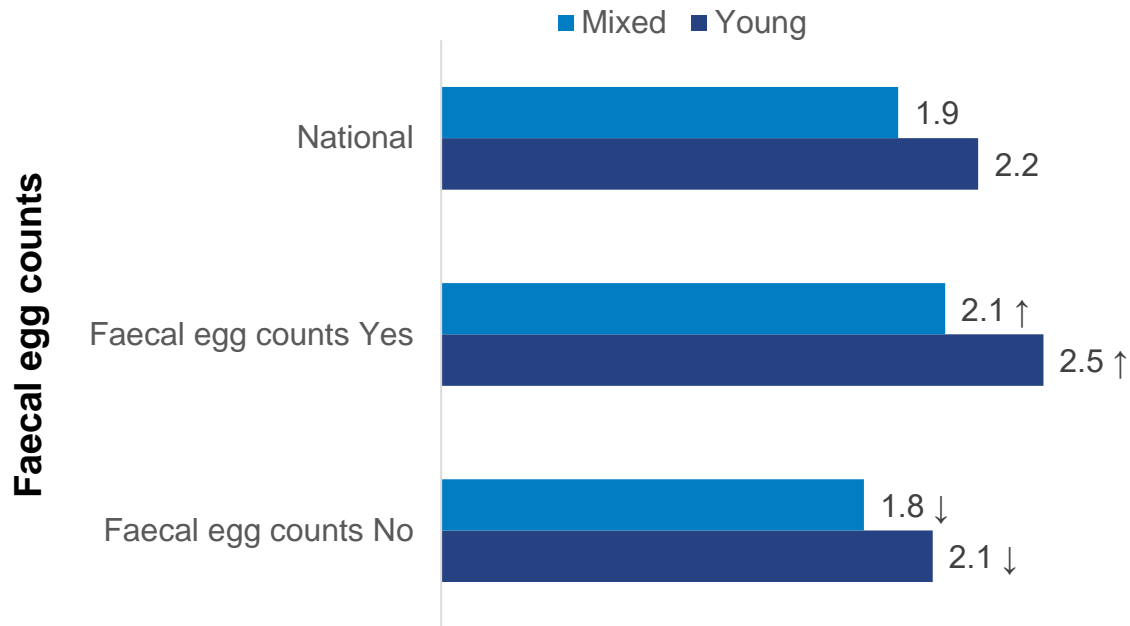


Validation: 2014 IPMS report found producers treated their maiden ewes on average 1.8 times per year and adults 2.7 times.

Q59: How many times a year do you drench your mixed age Merino ewes?
 Q60: How many times a year do you drench your young ewes from weaning to joining?

Those producers who drench more often are more likely to do faecal egg counts

Number of times mixed age and young ewes are drenched per year by faecal egg count practice



Q59: How many times a year do you drench your mixed age Merino ewes?

Q60: How many times a year do you drench your young ewes from weaning to joining?

Q61: Did you do any faecal egg counts on any of your Merino sheep in 2017?

Ewes in high rain fall zones were drenched more frequently than those in more arid zones



Region	Young Ewes	Mixed Ewes
NSW Hunter and Northern	3.8	3.7
NSW North Western	2.4	2.2
NSW South Eastern	3.2	2.8
NSW South Eastern Extra	2.9	1.9
NSW Central West	2.4	2
NSW Western Division	1.3	0.9
NSW Murray and Murrumbidgee	2	1.7
VIC Barwon & Central Highlands	2.7	2.2
VIC Gippsland	3.5	3.7
VIC Loddon and Goulburn	2.4	1.9
VIC Ovens Murray	2.7	2.4
VIC Western District	3.3	3
VIC Wimmera and Mallee	1.8	1.4

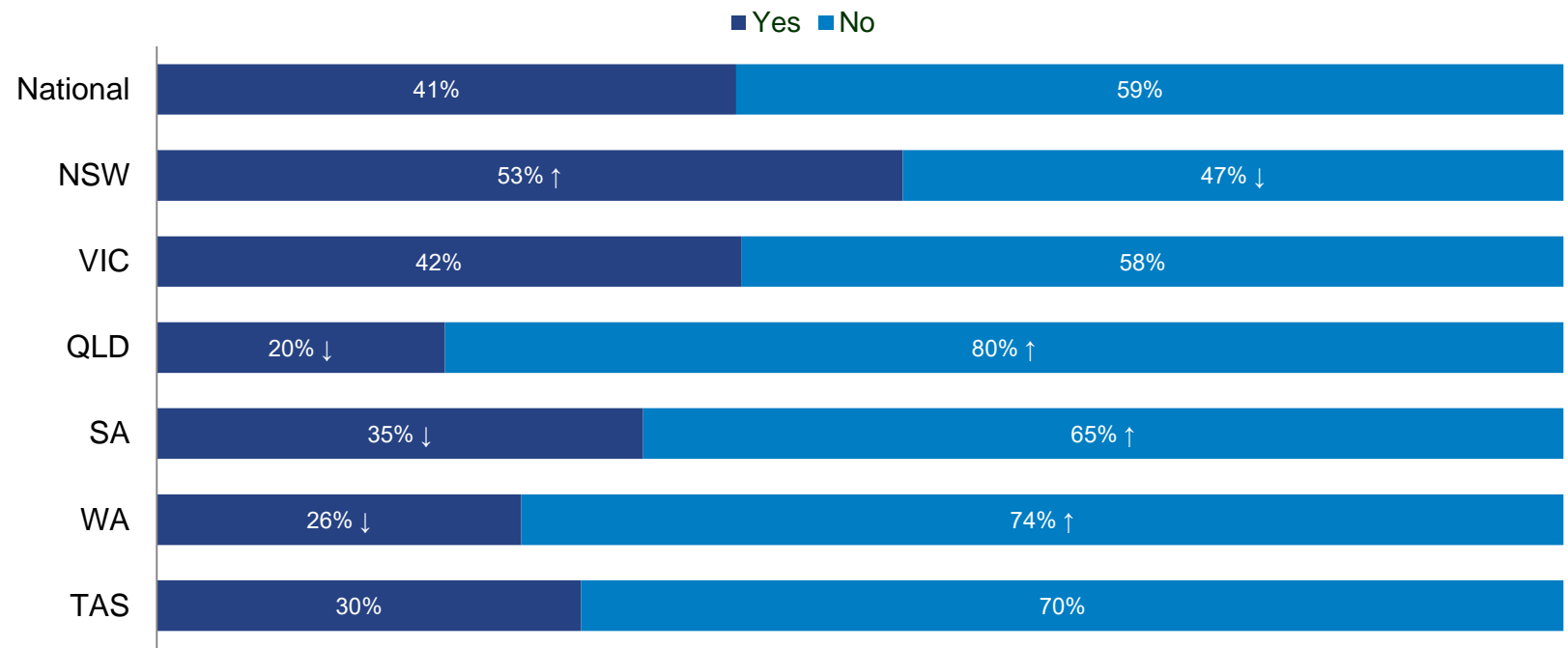
Region	Young Ewes	Mixed Ewes
QLD Central Queensland	0.9	0.7
QLD Central Queensland Extra	1.4	1.4
QLD Southern Queensland	1.9	1.8
SA Murray Lands	1.4	1.1
SA Outer Adelaide	2.1	1.9
SA South East	2.1	2
SA Eyre Yorke and North	1.5	1.1
SA Eyre Yorke and North Extra	1	0.8
WA South	2.2	1.6
WA Central Midlands	1.2	0.9
WA Central Midlands Extra	2	2
TAS Tasmania	3.2	2.6
Total	2.2	1.9

Q59: How many times a year do you drench your mixed age Merino ewes?
 Q60: How many times a year do you drench your young ewes from weaning to joining?

Less than half of all producers are using faecal egg counts to monitor the worm burden in their flocks although the incidence is higher in NSW



% of producers using faecal egg counts



Validation: 2014 CRC report found 45% of wool producers conducted faecal egg counts

Use of faecal egg counts varies widely between regions

State	Region	% using faecal egg counts
NSW	Hunter and Northern	57%
NSW	North Western	55%
NSW	South Eastern	66%
NSW	South Eastern Extra	0%
NSW	Central West	52%
NSW	Western Division	11%
NSW	Murray and Murrumbidgee	45%
VIC	Barwon & Central Highlands	49%
VIC	Gippsland	67%
VIC	Loddon and Goulburn	42%
VIC	Ovens Murray	24%
VIC	Western District	60%
VIC	Wimmera and Mallee	27%

State	Region	% using faecal egg counts
QLD	Central Queensland	9%
QLD	Central Queensland Extra	0%
QLD	Southern Queensland	30%
SA	Murray Lands	22%
SA	Outer Adelaide	60%
SA	South East	60%
SA	Eyre Yorke and North	25%
SA	Eyre Yorke and North Extra	16%
WA	WA South	34%
WA	Central Midlands	14%
WA	Central Midlands Extra	0%
TAS	Tasmania	30%
National	Average	41%

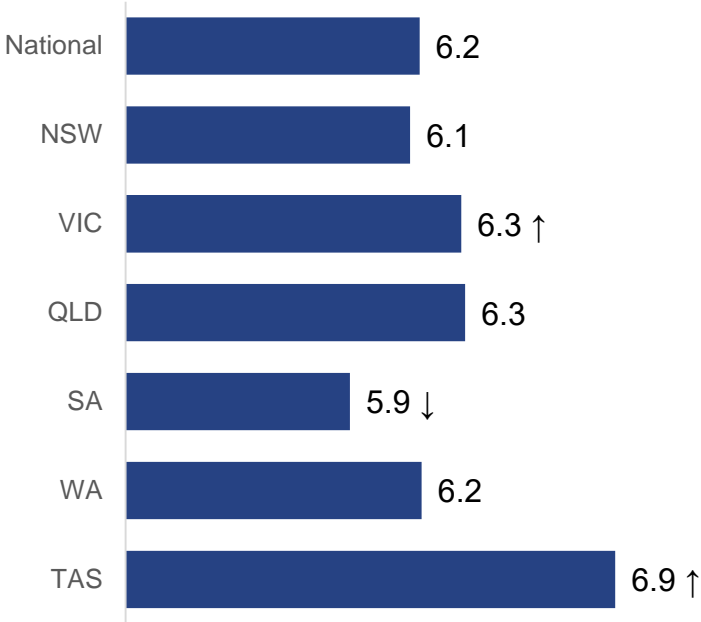
Q61: Did you do any faecal egg counts on any of your Merino sheep in 2017?

12. Sheep Sales

Most producers opt to sell cast for age ewes at 6 years of age, however, producers in TAS tend to hold onto their ewes longer



Age CFA's sold

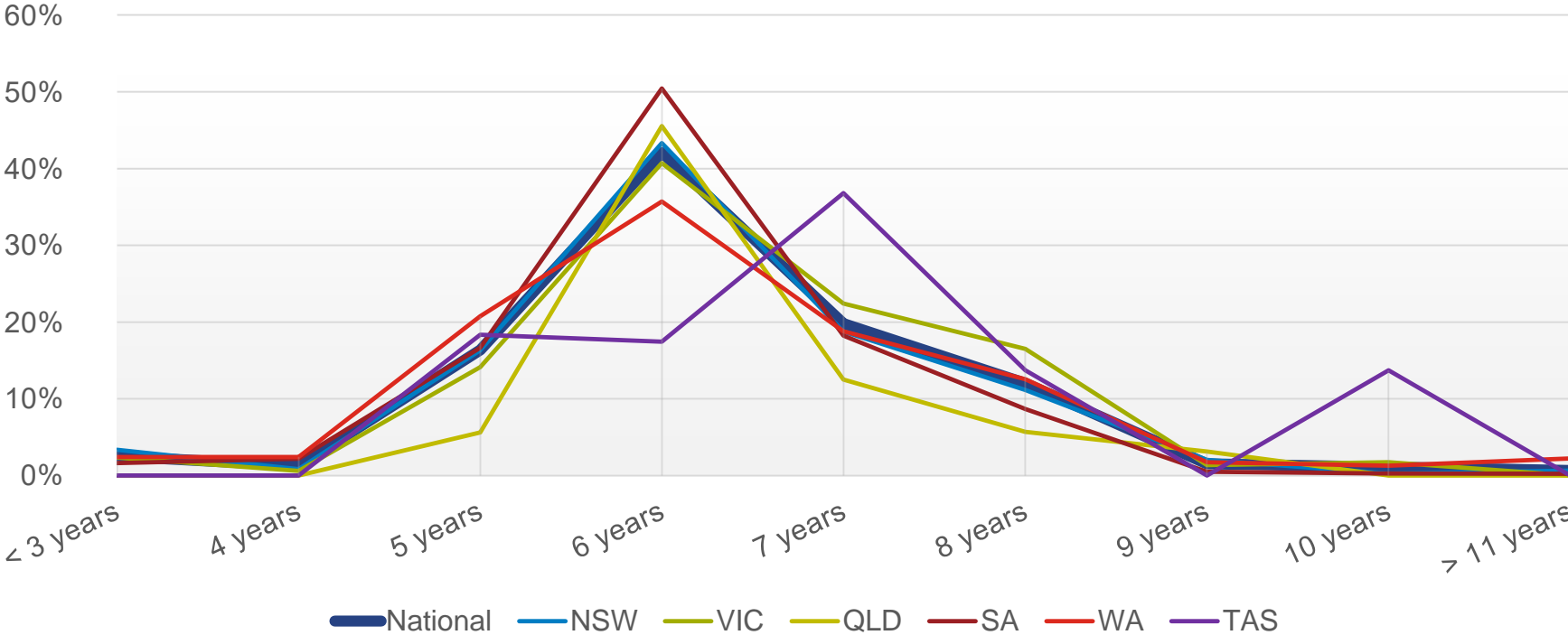


Q62: At what age do you typically sell your cast for age ewes?

Producers in most states chose to sell cast for age ewes at 6 years of age however, in TAS it was predominantly 7 years



Age of CFA's sold

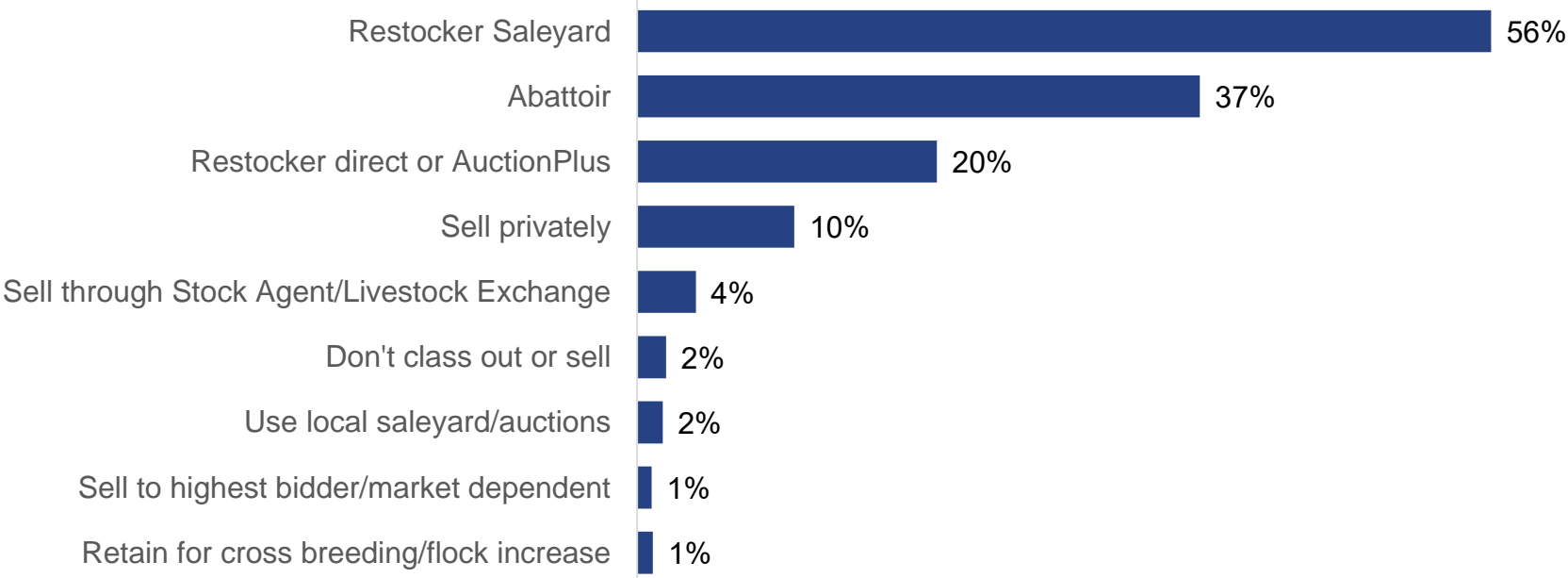


Q62: At what age do you typically sell your cast for age ewes?

Saleyards and abattoirs were the main method of selling cast for age ewes



Method CFA's sold national results

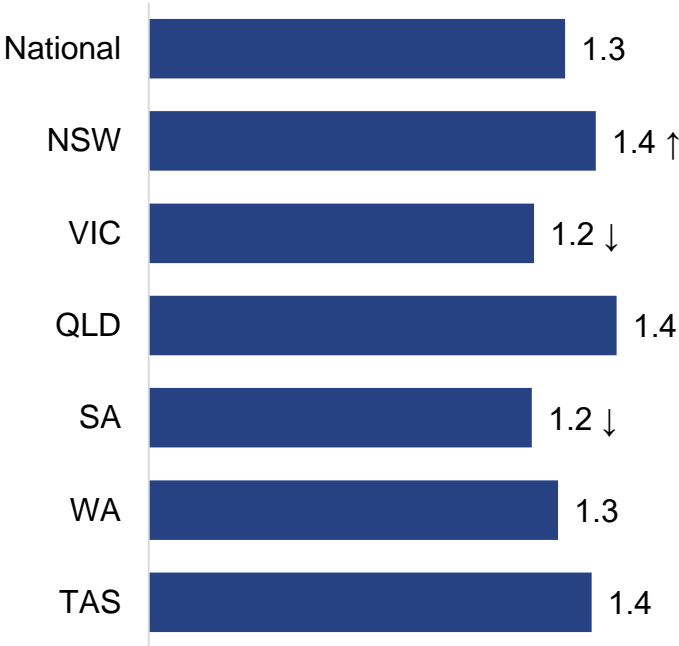


Q63: Which method do you use to sell your cast for age ewes?

Young ewes were consistently classed out at a little over 1 year of age



Age young ewes classed out

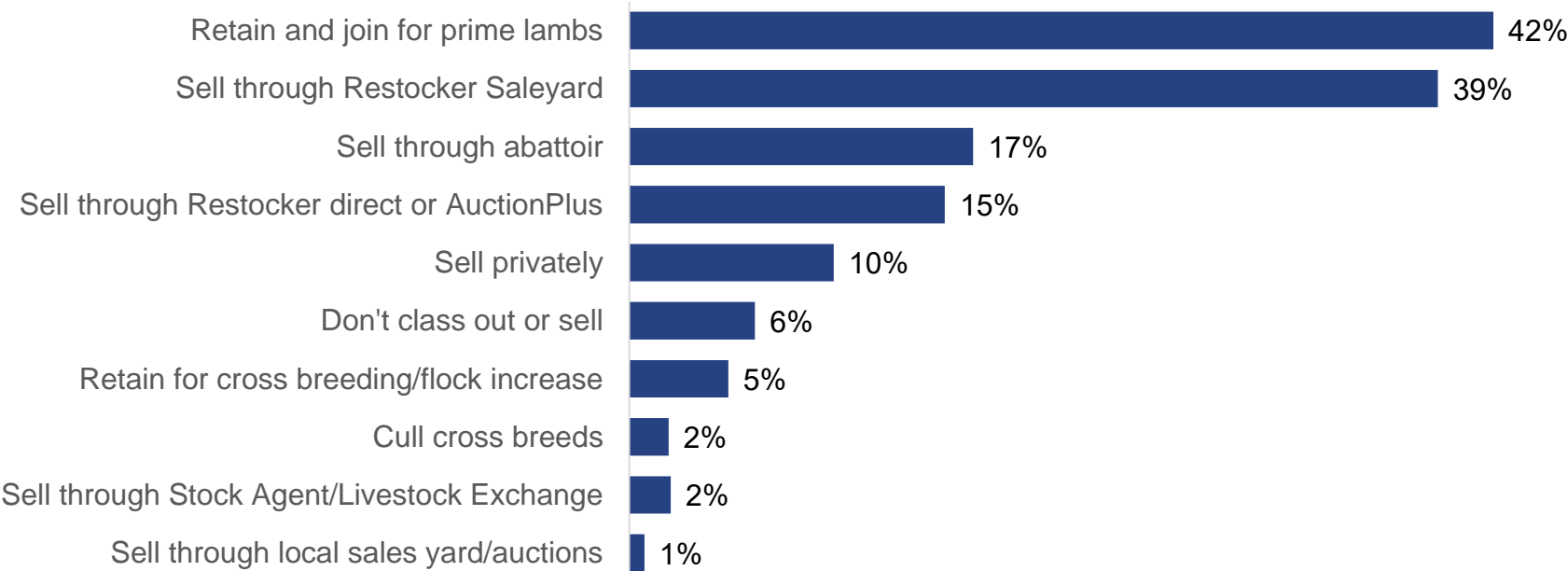


Q64: At what age do you typically class out your young Merino ewes, in years?

Classed out young ewes were predominantly retained and rejoined or sold through the saleyards



Destination of young classed out ewes national results

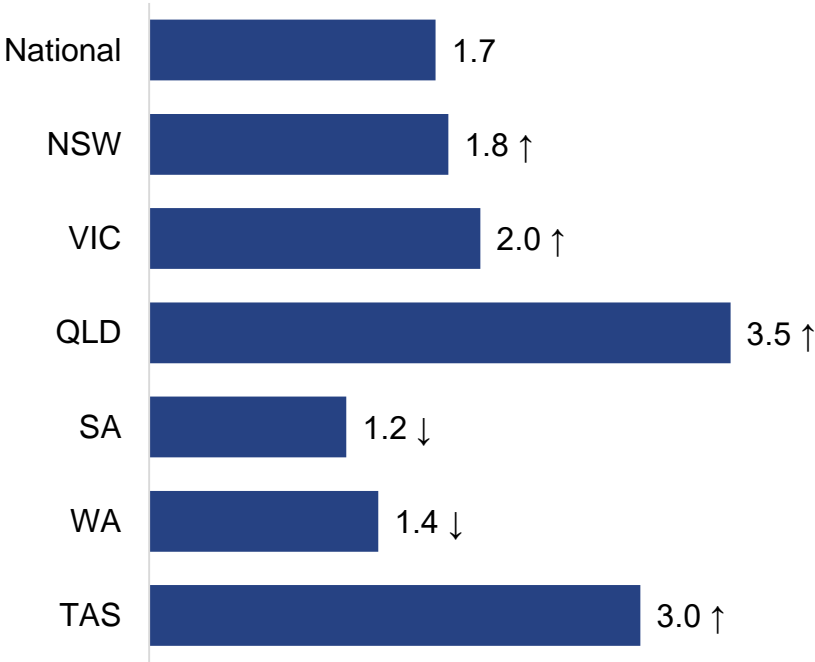


Q65: What do you generally do with your young classed out ewes?

Wethers were generally sold at 1 year old however, producers in TAS and QLD had a tendency to hold onto wethers longer



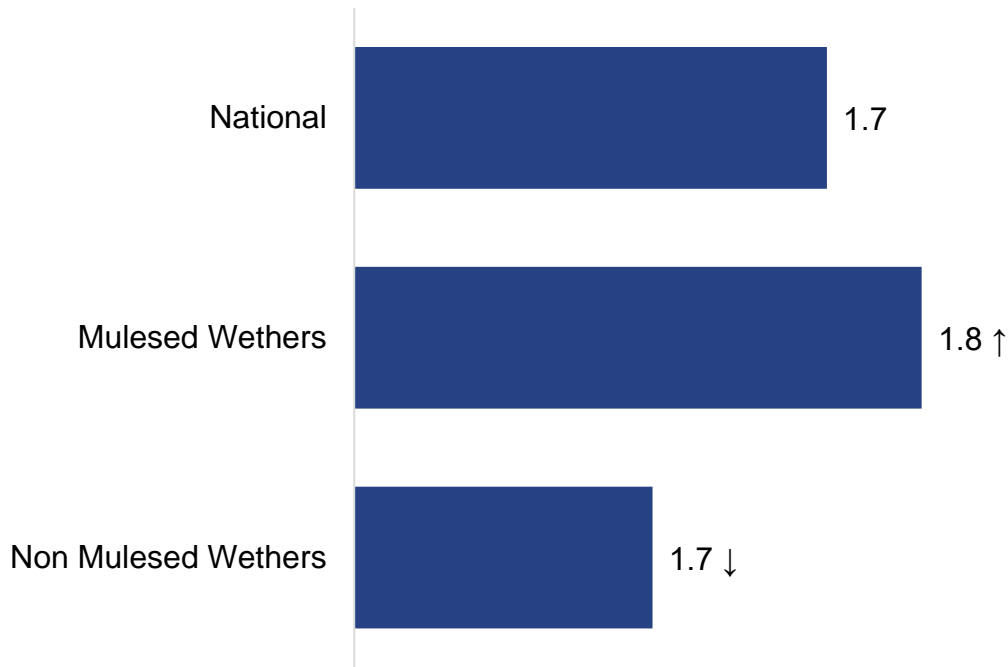
Age wethers sold



Q66: At what age do you typically sell your wethers?

There was very little difference in age of sale between mulesed and non mulesed wethers

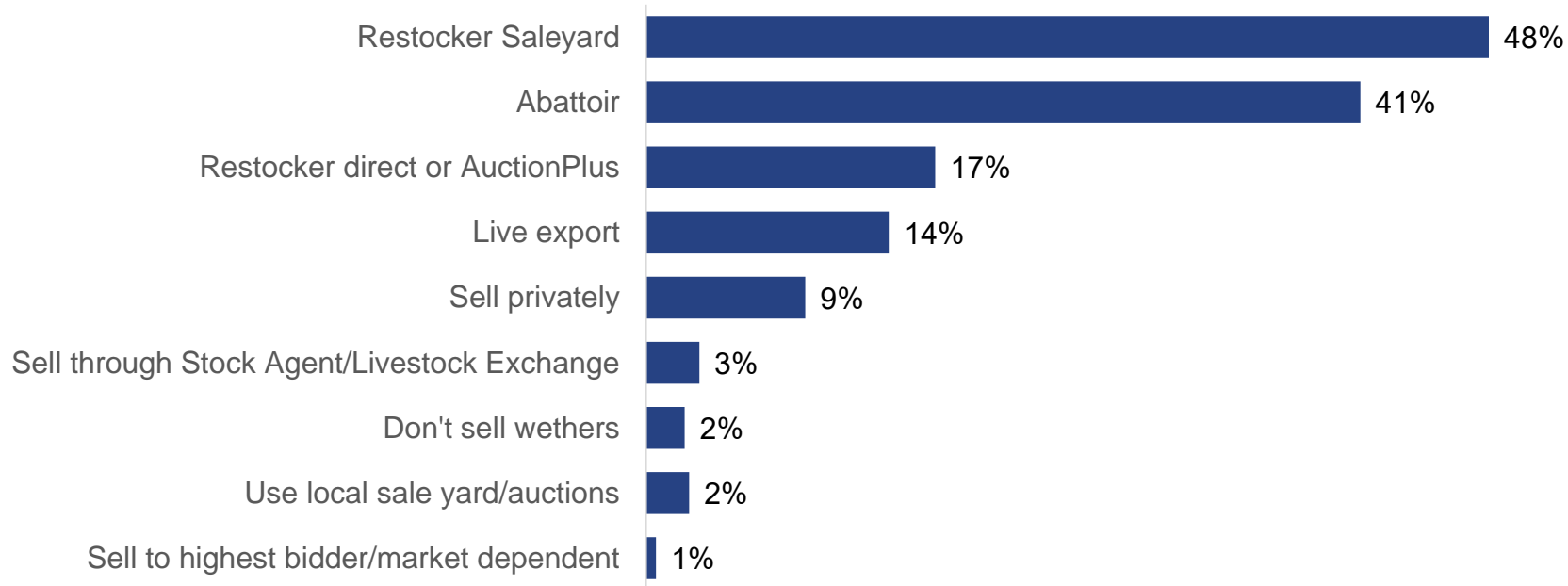
Age of wethers sold by mulesing practice



Q66: At what age do you typically sell your wethers?

Wethers were generally sold through saleyards or abattoirs

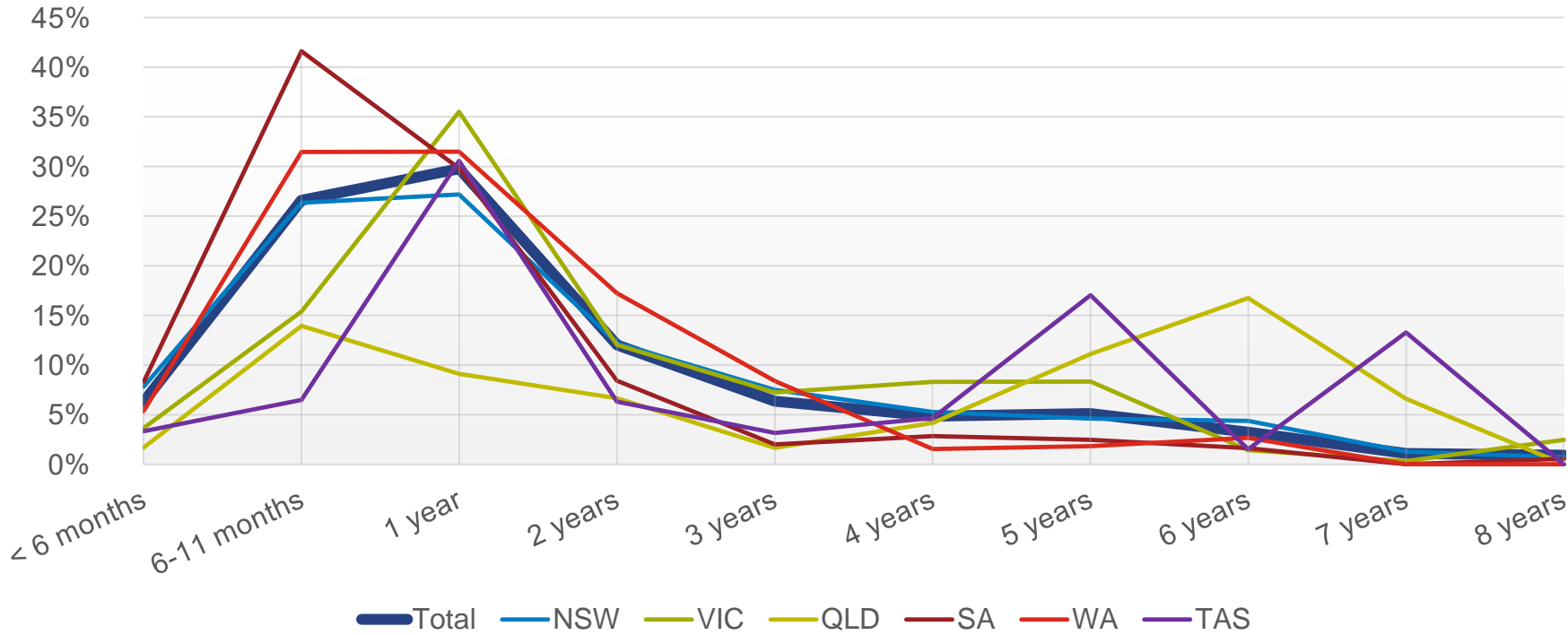
Method wethers sold national results



Q67: Which method do you use to sell your wethers?

Wethers were generally sold at 1 year old however, in some states, wethers are held longer before being sold

Age wethers sold



Q66: At what age do you typically sell your wethers?

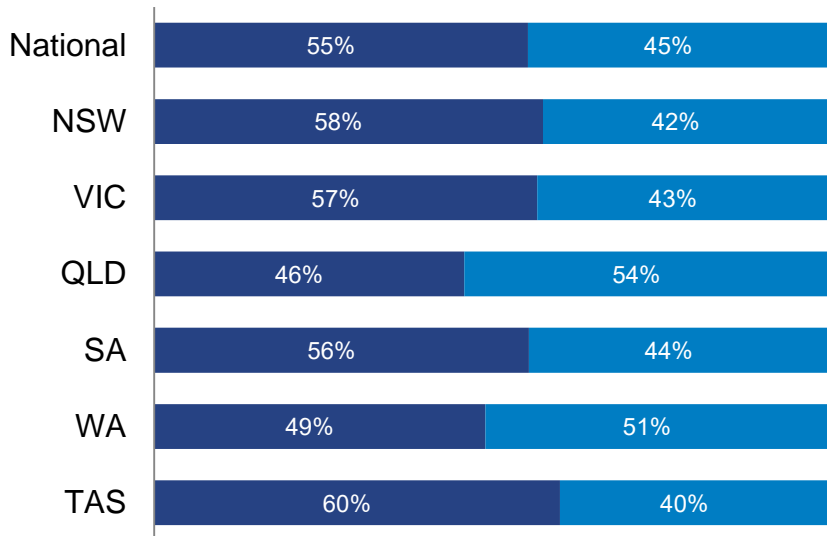
13. Communication

Approximately half of all producers surveyed were aware of the Flyboss website with half of these visiting the site



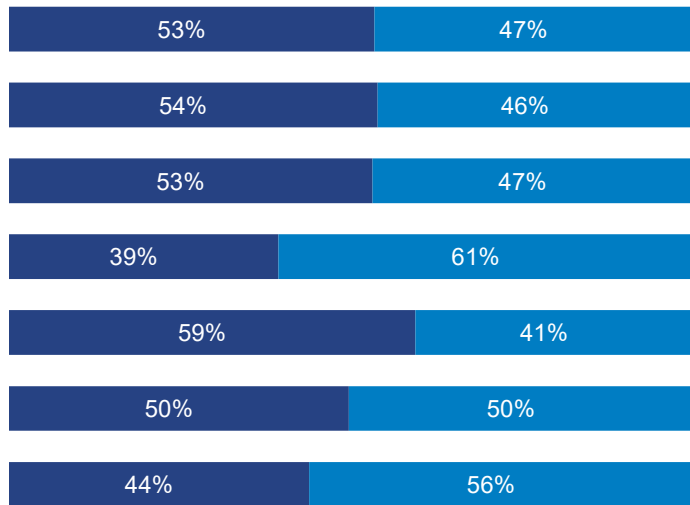
Have you ever heard of Flyboss?

■ Yes ■ No



Have you visited the website?

■ Yes ■ No



Validation: The 2014 IPMS report found 49% of producers have heard of the Flyboss website, and of those, 28% have visited the site. In the 2014 CRC report, 34% of producers were aware of the site

Q68: Have you ever heard of the following websites? Flyboss

Q69: Have you ever visited the Flyboss website?

3 of the top 4 regions for producers visiting the Flyboss website were in VIC



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Region	% heard of Flyboss	% visited site
NSW Hunter and Northern	68%	54%
NSW North Western	63%	47%
NSW South Eastern	61%	69%
NSW South Eastern Extra	9%	0%
NSW Central West	45%	52%
NSW Western Division	57%	33%
NSW Murray and Murrumbidgee	52%	50%
VIC Barwon & Central Highlands	50%	72%
VIC Gippsland	55%	74%
VIC Loddon and Goulburn	62%	56%
VIC Ovens Murray	65%	35%
VIC Western District	72%	70%
VIC Wimmera and Mallee	47%	28%

Region	% heard of Flyboss	% visited site
QLD Central Queensland	38%	36%
QLD Central Queensland Extra	70%	0%
QLD Southern Queensland	52%	42%
SA Murray Lands	65%	55%
SA Outer Adelaide	69%	66%
SA South East	56%	74%
SA Eyre Yorke and North	55%	56%
SA Eyre Yorke and North Extra	39%	45%
WA South	55%	45%
WA Central Midlands	40%	59%
WA Central Midlands Extra	0%	
TAS Tasmania	60%	45%
Average	55%	53%

Q68: Have you ever heard of the following websites? Flyboss

Q69: Have you ever visited the Flyboss website?

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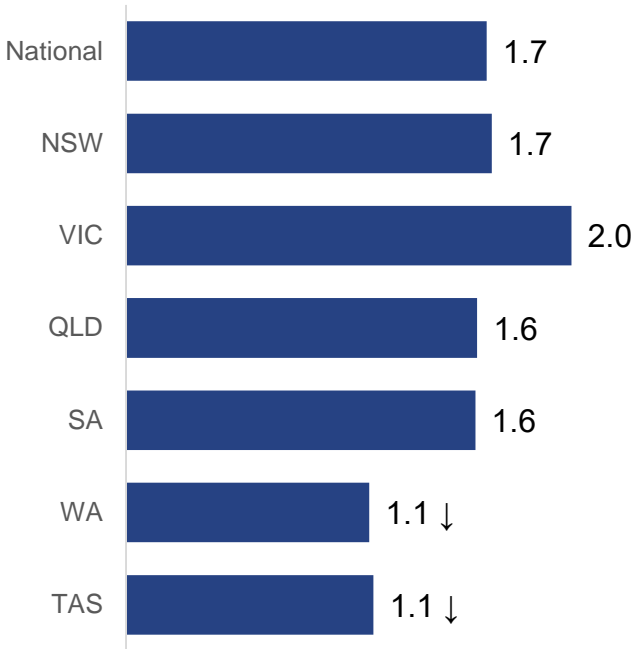
Base: All respondents: n = 1200

Base: All respondents who have heard of the site: n = 701

Most producers visiting the Flyboss website have visited the site more than once (in total)



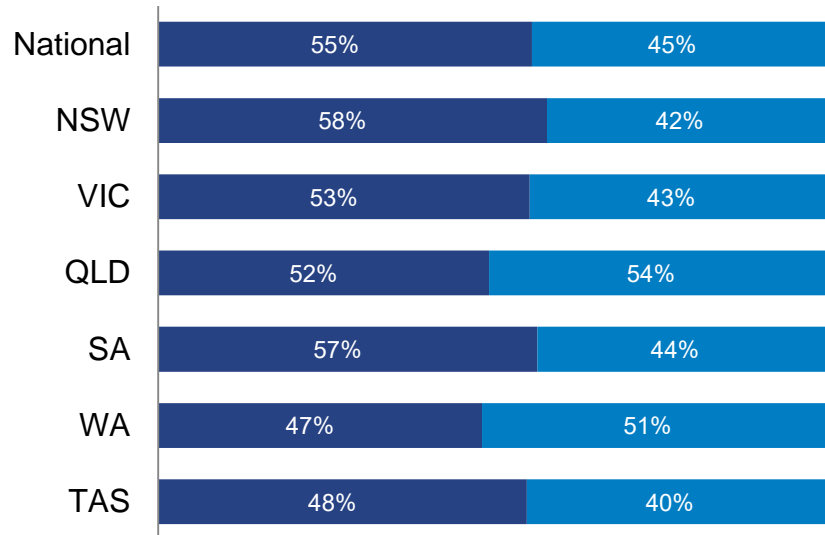
Flyboss number of visits



Approximately half of all producers surveyed were aware of the Liceboss website with over half of these visiting the site

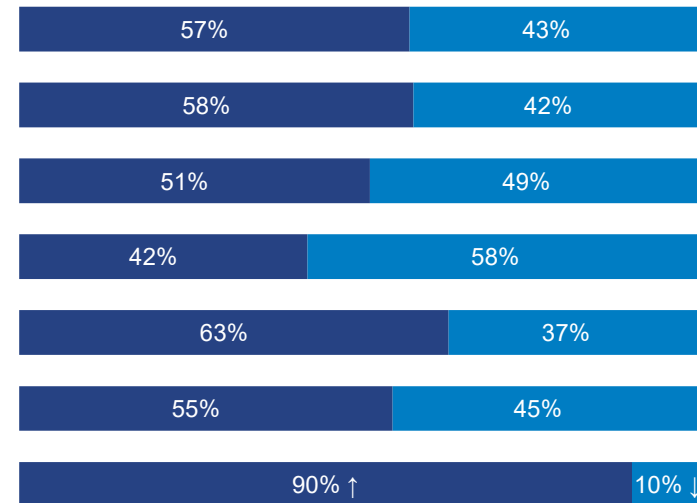
Have you ever heard of Liceboss?

■ Yes ■ No



Have you visited the website?

■ Yes ■ No



Validation: The 2014 IPMS report found 51% of producers have heard of the Liceboss website, and of those, 30% have visited the site. In the 2014 CRC report, 37% of producers were aware of the site

Q68: Have you ever heard of the following websites? Liceboss

Q69: Have you ever visited the Liceboss website?

Outer Adelaide and South East SA had 2 of the strongest combination of Liceboss awareness and website visits



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Region	% heard of Liceboss	% visited site
NSW Hunter and Northern	64%	59%
NSW North Western	63%	52%
NSW South Eastern	60%	69%
NSW South Eastern Extra	9%	0%
NSW Central West	50%	46%
NSW Western Division	69%	78%
NSW Murray and Murrumbidgee	53%	57%
VIC Barwon & Central Highlands	50%	60%
VIC Gippsland	55%	74%
VIC Loddon and Goulburn	57%	57%
VIC Ovens Murray	51%	45%
VIC Western District	59%	78%
VIC Wimmera and Mallee	49%	24%

Region	% heard of Liceboss	% visited site
QLD Central Queensland	34%	41%
QLD Central Queensland Extra	100%	0%
QLD Southern Queensland	67%	44%
SA Murray Lands	74%	58%
SA Outer Adelaide	69%	78%
SA South East	63%	72%
SA Eyre Yorke and North	53%	54%
SA Eyre Yorke and North Extra	37%	53%
WA South	52%	53%
WA Central Midlands	40%	58%
WA Central Midlands Extra	0%	
TAS Tasmania	48%	90%
Total	55%	57%

Q68: Have you ever heard of the following websites? Liceboss

Q69: Have you ever visited the Liceboss website?

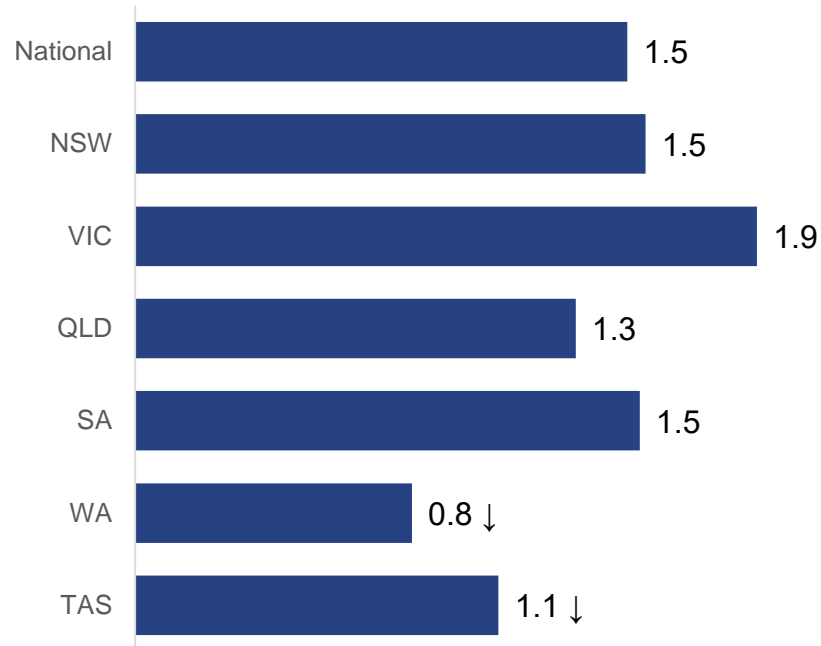
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Base: All respondents: n = 1200

Base: Those aware of Liceboss website : n = 699

Many producers visiting the Liceboss website have visited more than once (in total)

Liceboss # of visits

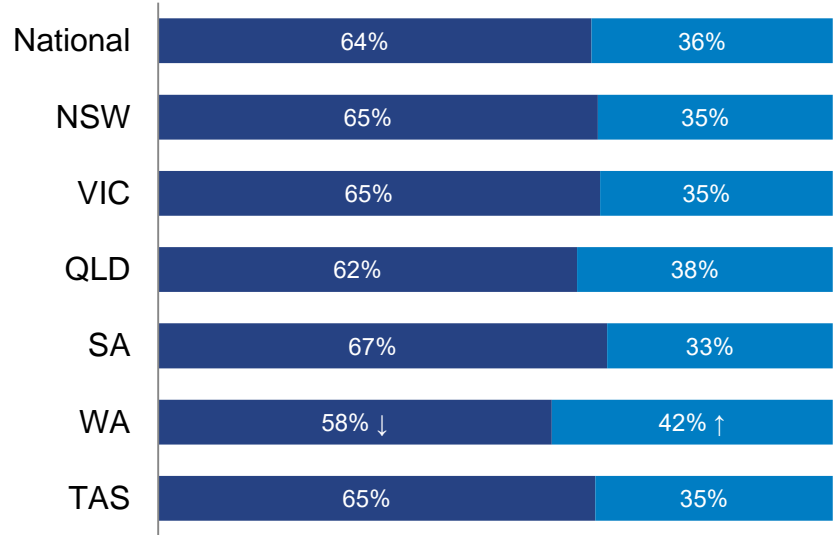


The Wormboss website has the highest awareness and visitation incidence of all three “boss” sites



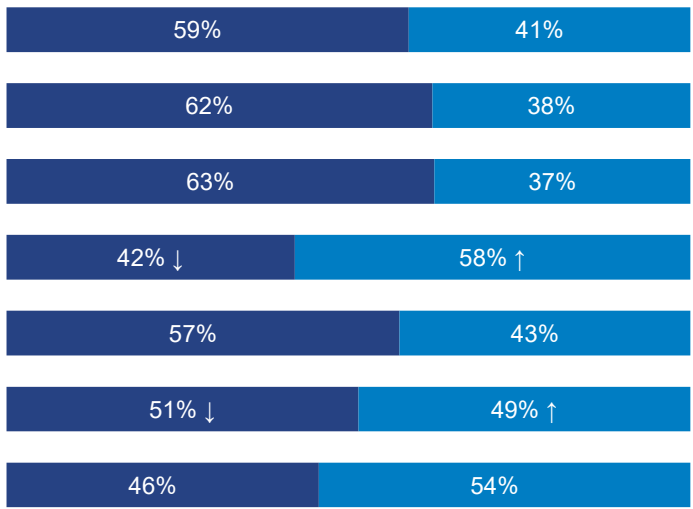
Have you ever heard of Wormboss?

■ Yes ■ No



Have you visited the website?

■ Yes ■ No



Validation: The 2014 IPMS report found 59% of producers have heard of the Wormboss website, and of those, 35% have visited the site. In the 2014 CRC report, 55% of producers were aware of the site

Base: All respondents: n = 1200

Base: All respondents aware of the site: n = 806

Q68: Have you ever heard of the following websites? Wormboss

Q69: Have you ever visited the Wormboss website?

The Western District of VIC had a higher level of Wormboss awareness and website visits compared to other regions



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Region	% heard of Wormboss	% visited site
NSW Hunter and Northern	78%	72%
NSW North Western	72%	55%
NSW South Eastern	70%	68%
NSW South Eastern Extra	9%	0%
NSW Central West	55%	56%
NSW Western Division	71%	30%
NSW Murray and Murrumbidgee	55%	63%
VIC Barwon & Central Highlands	57%	61%
VIC Gippsland	67%	67%
VIC Loddon and Goulburn	68%	63%
VIC Ovens Murray	86%	27%
VIC Western District	94%	72%
VIC Wimmera and Mallee	50%	58%

Region	% heard of Wormboss	% visited site
QLD Central Queensland	42%	28%
QLD Central Queensland Extra	100%	0%
QLD Southern Queensland	78%	49%
SA Murray Lands	81%	53%
SA Outer Adelaide	71%	82%
SA South East	78%	65%
SA Eyre Yorke and North	65%	48%
SA Eyre Yorke and North Extra	43%	42%
WA South	67%	51%
WA Central Midlands	46%	52%
WA Central Midlands Extra	0%	
TAS Tasmania	65%	46%
Average	64%	59%

Q68: Have you ever heard of the following websites? Wormboss

Q69: Have you ever visited the Wormboss website?

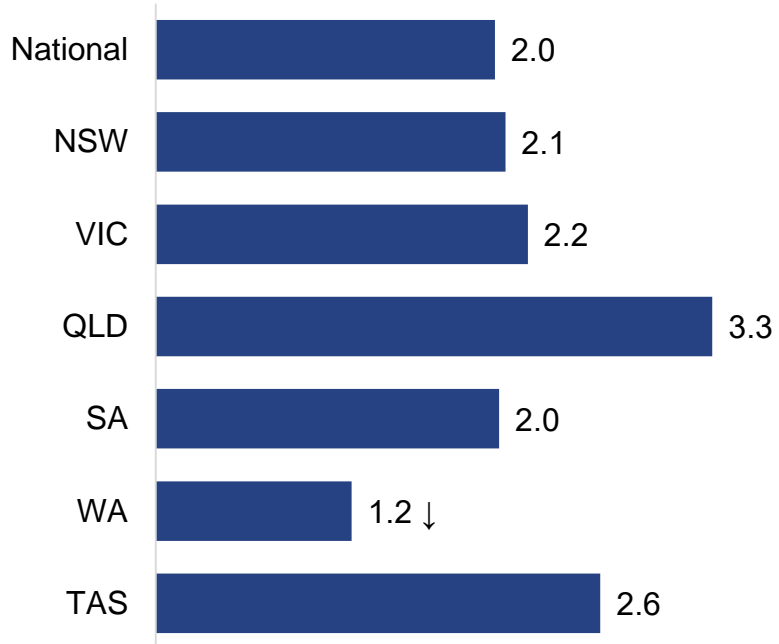
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Base: All respondents: n = 1200
Base: All respondents aware of the site: n = 806

On average, producers have visited the Wormboss website twice (in total)



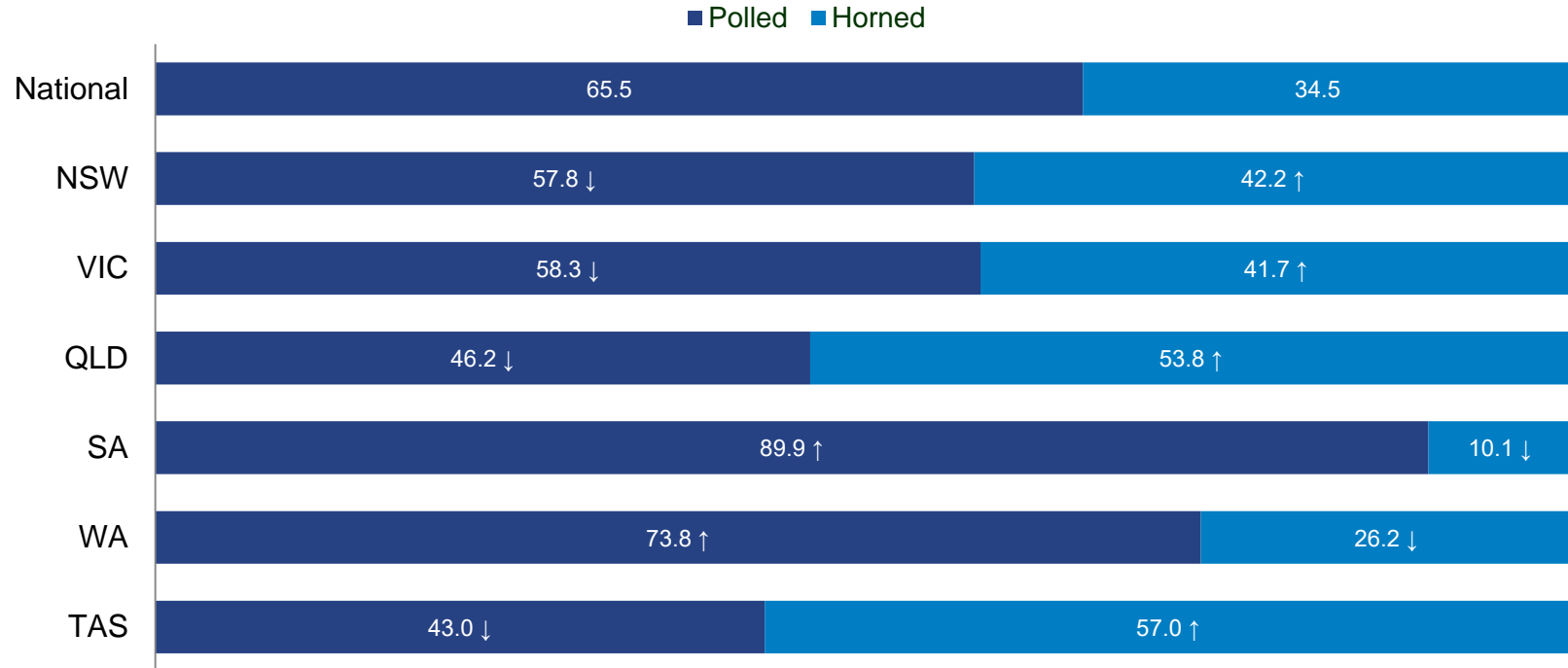
Wormboss # of visits



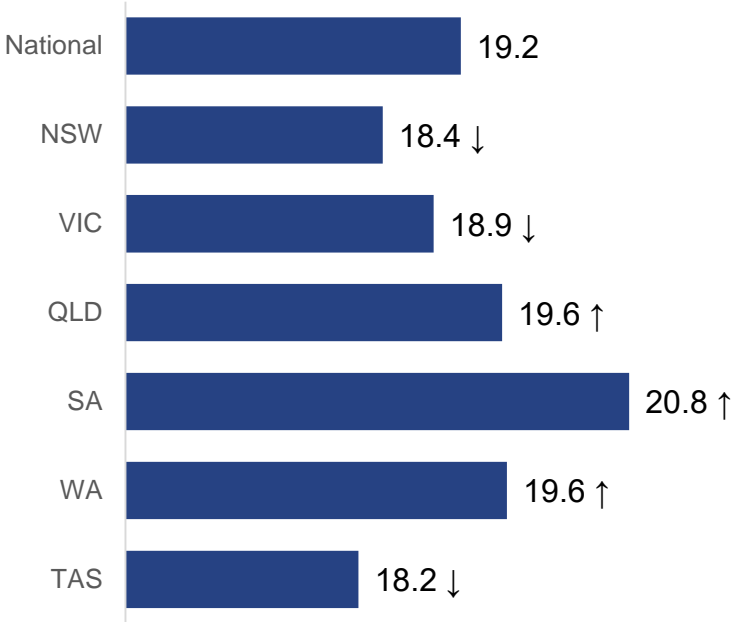
Appendix 1: Merino Flock Demographics

Polled Merinos now account for 2/3^{rds} of the total Merino numbers. Polled Merinos are most popular in SA and WA

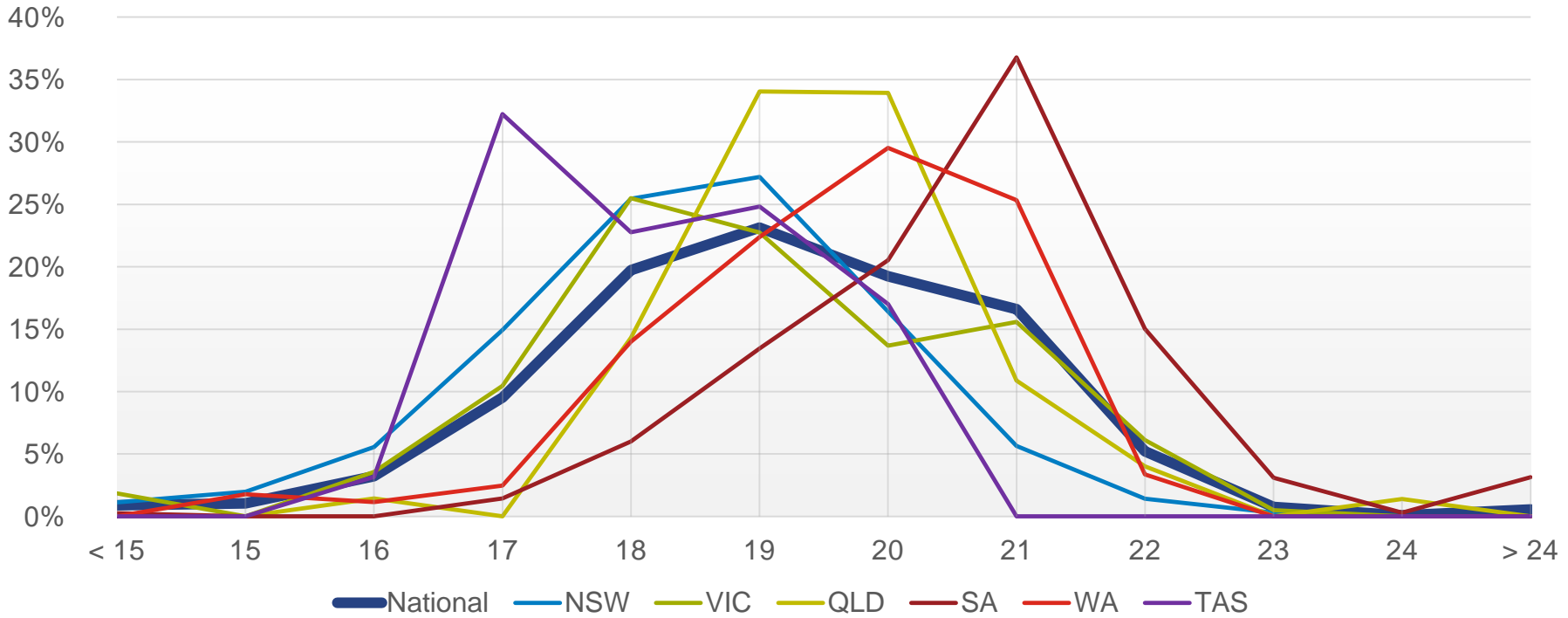
% Horned or Polled



Average Adult Ewe Micron

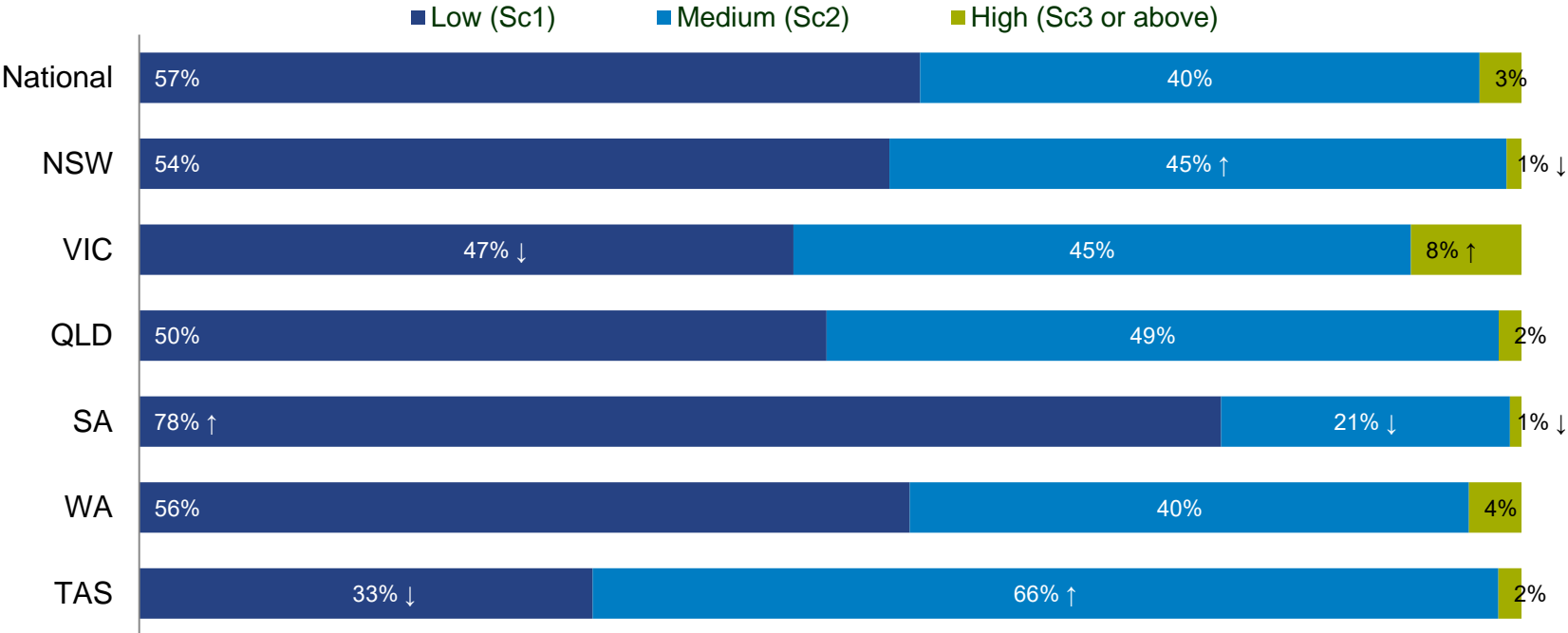


Adult Ewe Micron



Q4: What is your average adult Merino ewe micron?

Average mixed age ewe body wrinkle

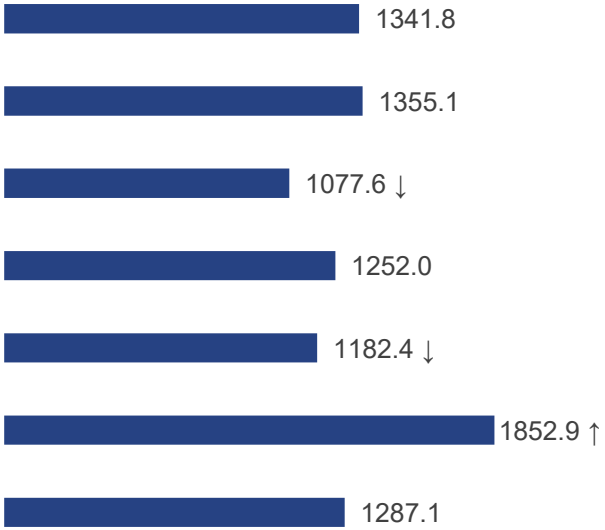


Q5: Which of the following best describes your average mixed age ewe body wrinkle?

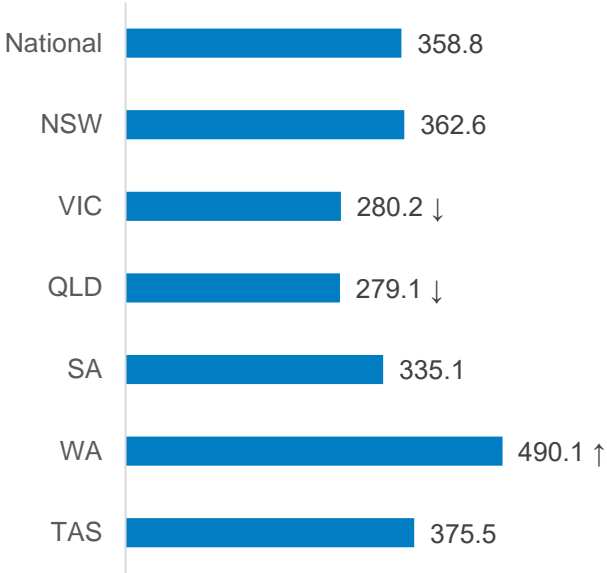
Numbers of Ewes Joined



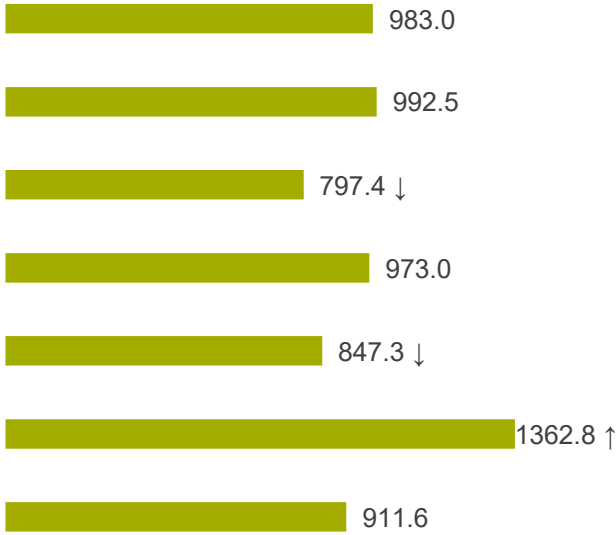
Total # of ewes joined



of maiden ewes joined



of mixed ewes joined

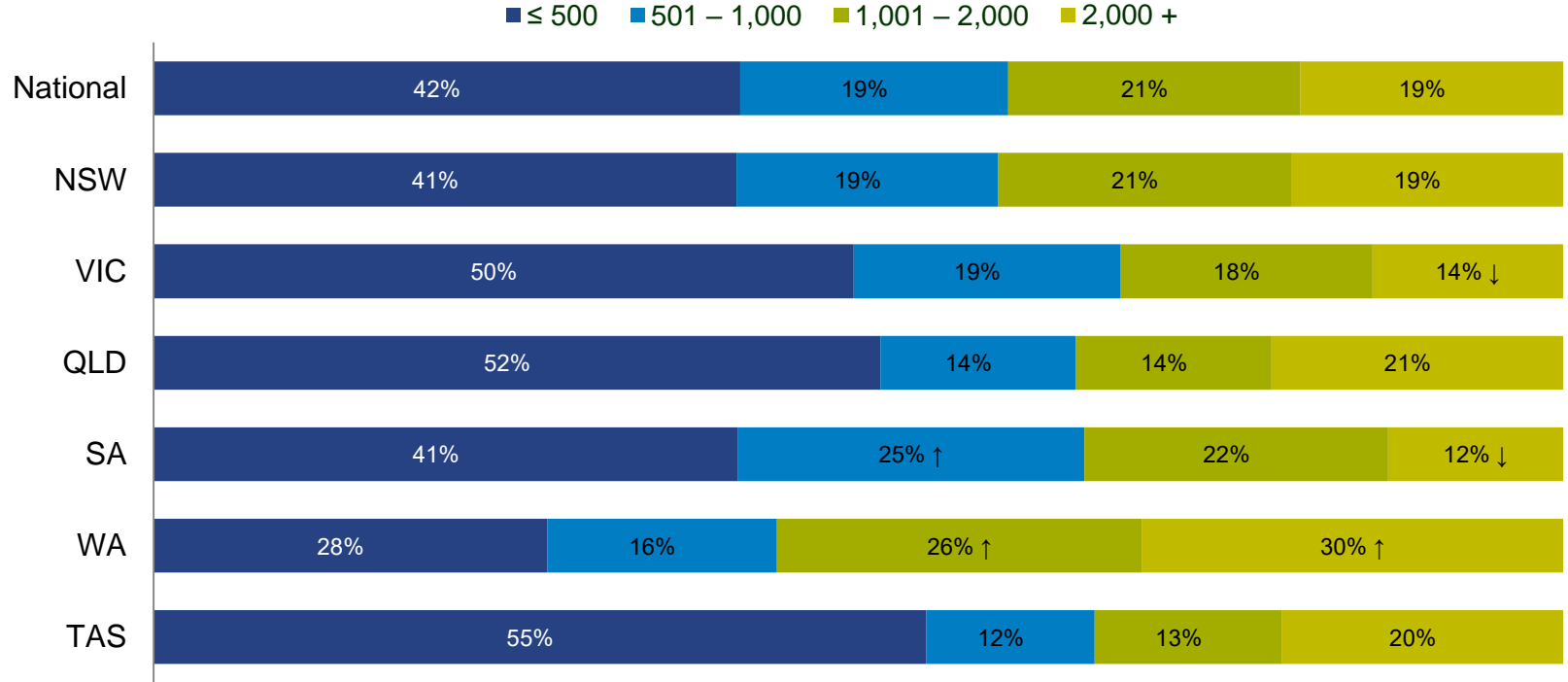


S5: In 2017 how many maiden, mixed and the total number of ewes you joined?

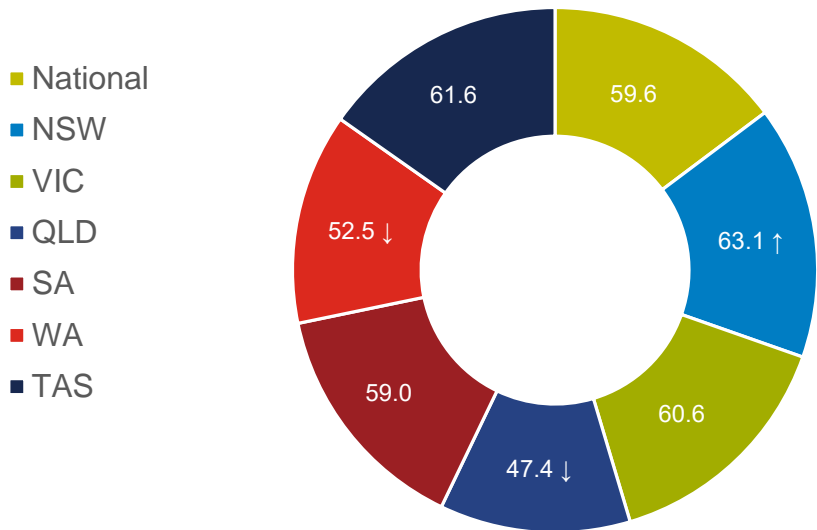
42% of Ewe flocks have less than 500 ewes, 19% have more than 2,000 ewes



Ewe Flock Size

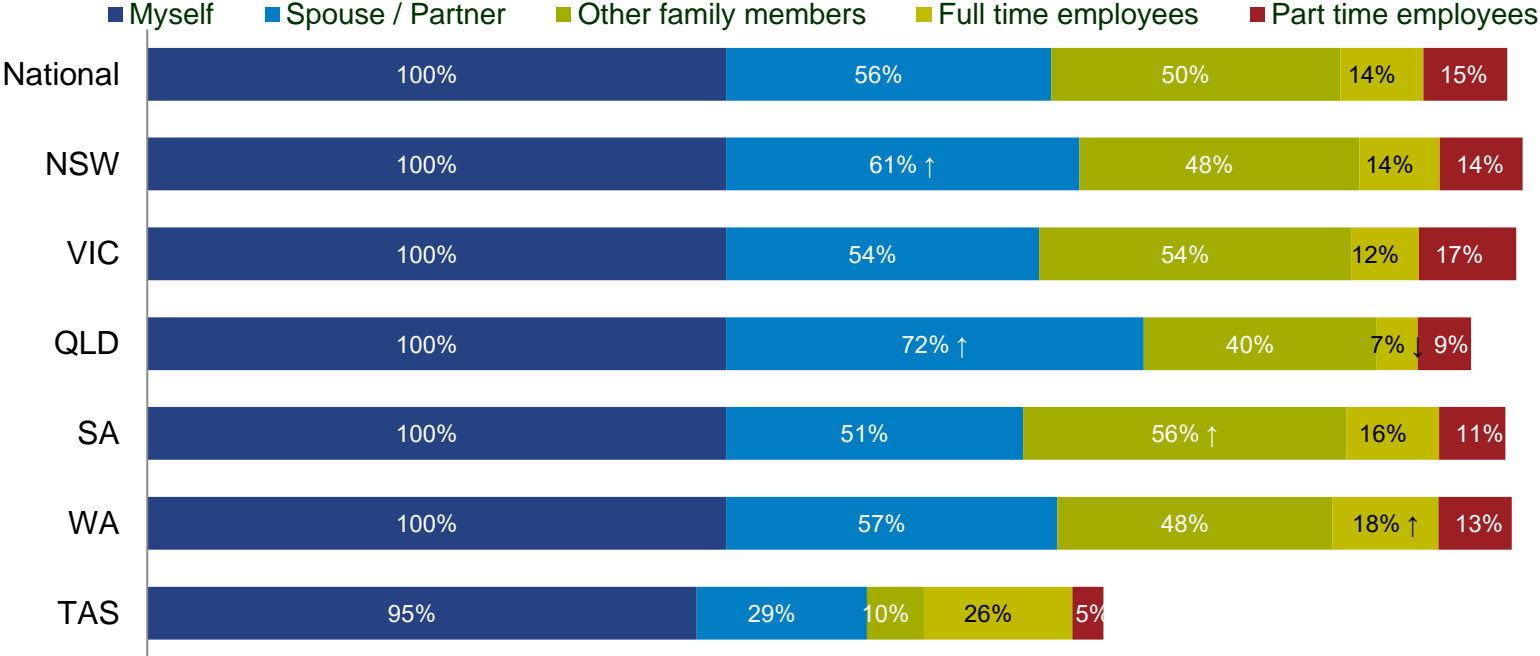


% income from sheep



Appendix 2: Wool Producer Demographics

People involved in the Sheep operation



Q1a: Which of the following people are involved in your sheep operation?

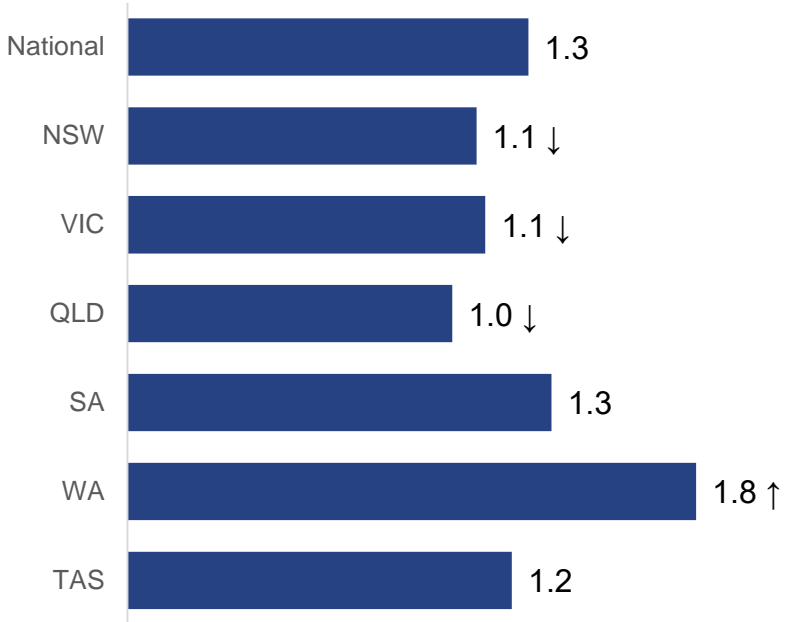
People involved in the Sheep operation



Full Time Equivalents – Average Number



of FTE's involved

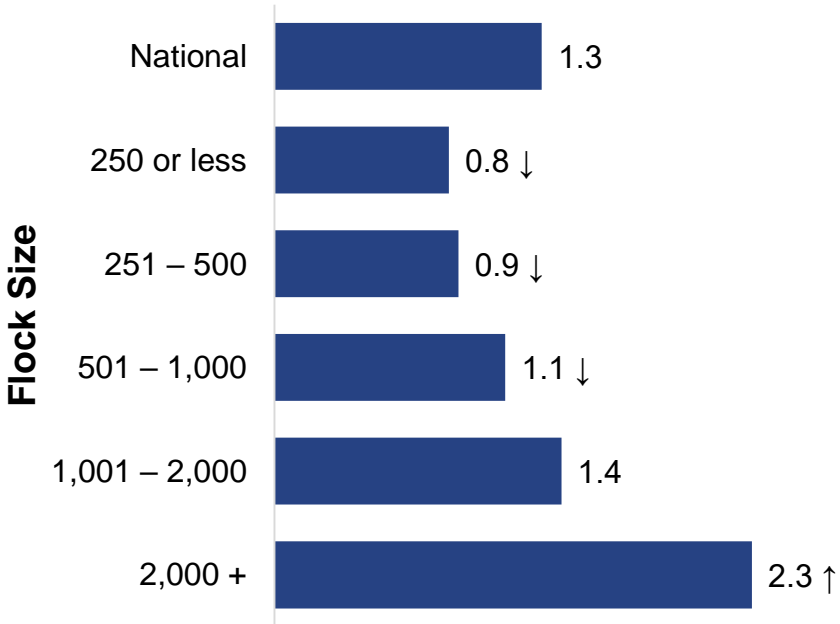


Q2: How many full time equivalent employees do you have in your farm operation?

Full Time Equivalents – Average Number by Flock Size



Number of FTE's involved



Q2: How many full time equivalent employees do you have in your farm operation?
S6 Total number of Merino breeding ewes
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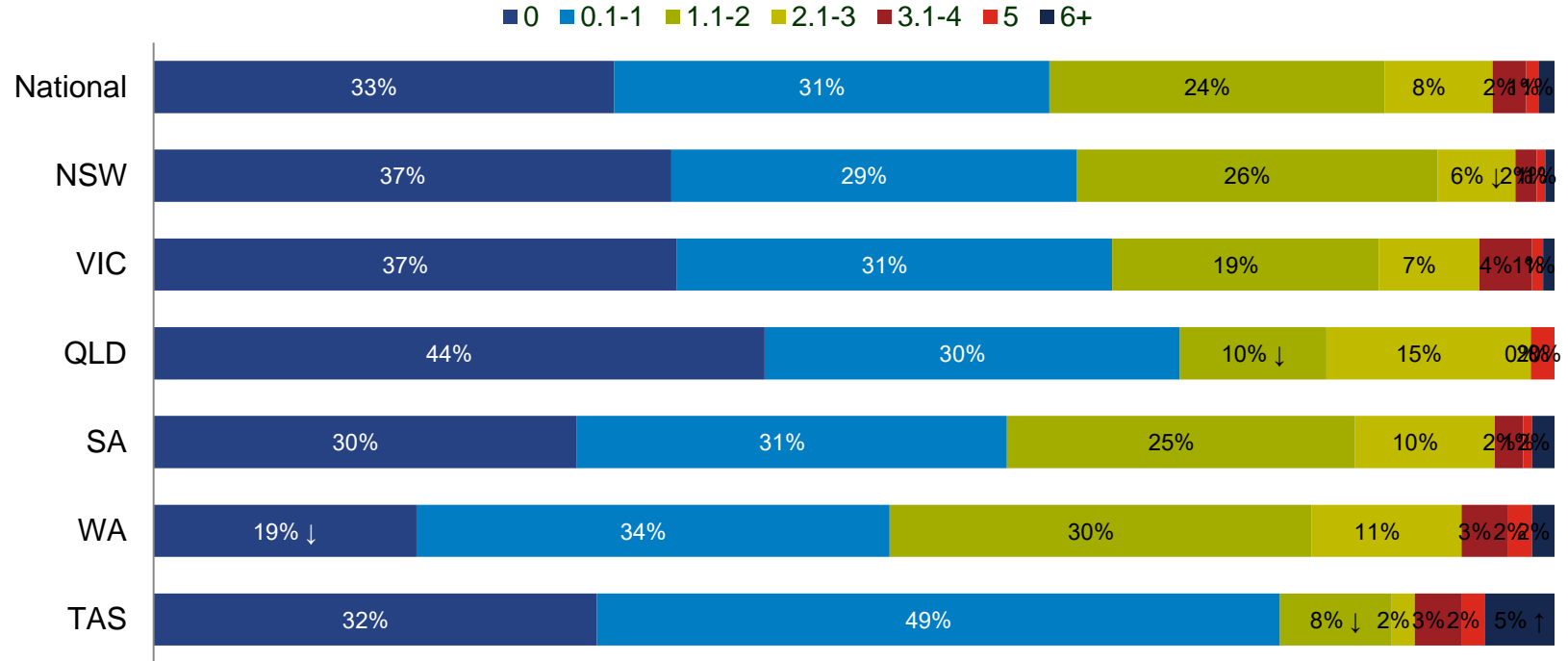
Full Time Equivalents - Frequency



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of FTE's involved



Q2: How many full time equivalent employees do you have in your farm operation?

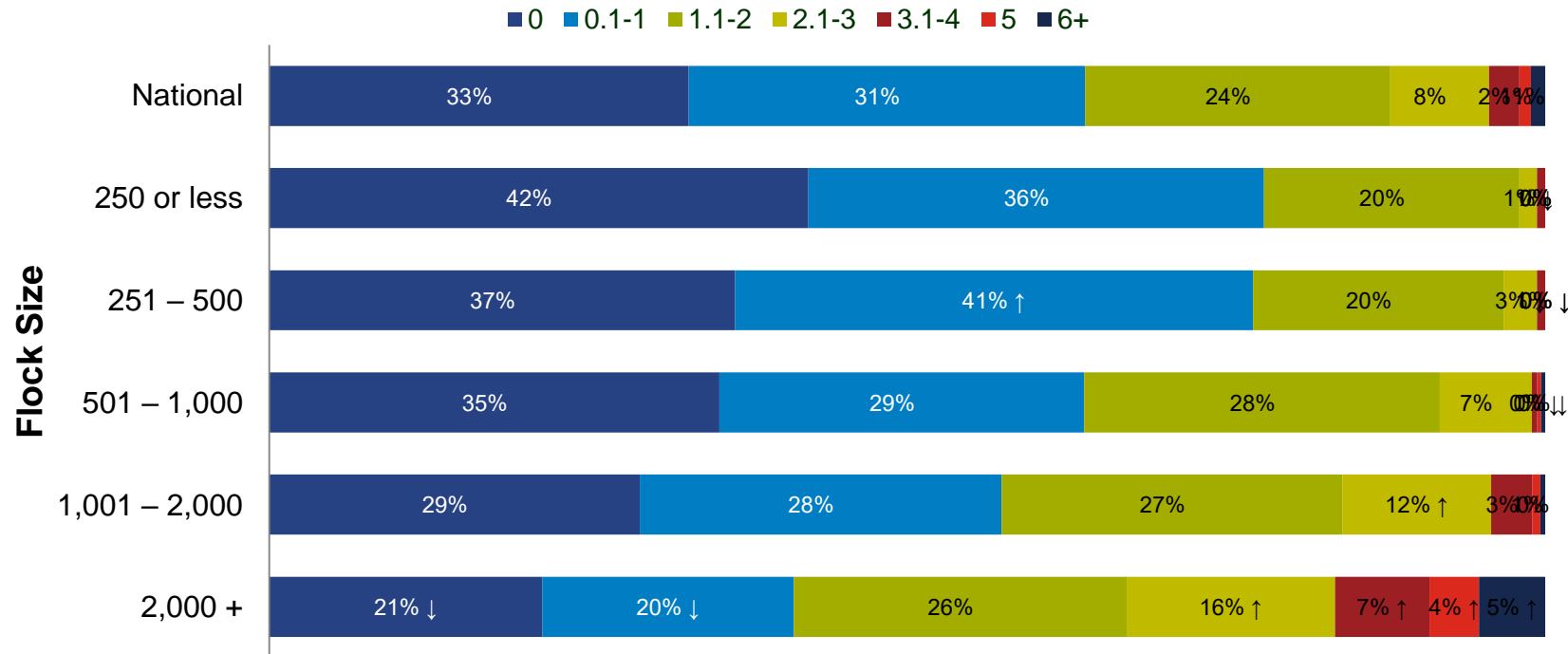
Full Time Equivalents – Frequency by Flock Size



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of FTE's involved



Q2: How many full time equivalent employees do you have in your farm operation?

S6 Total number of Merino breeding ewes

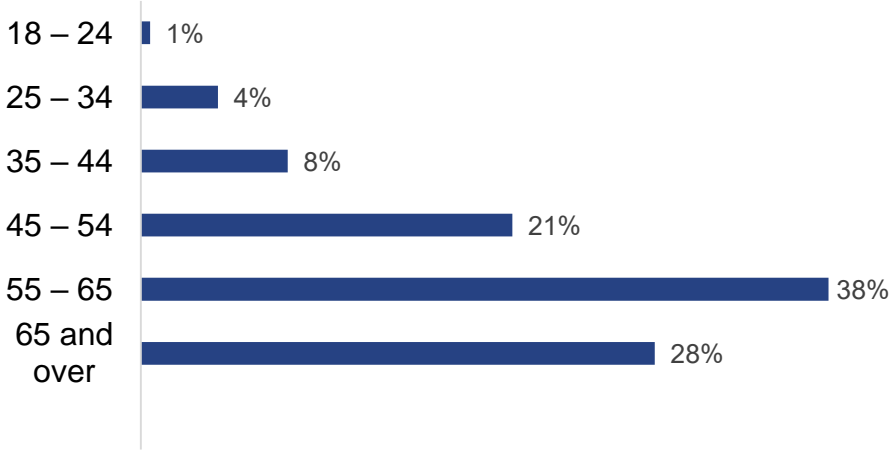
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Base: All respondents: n = 1200

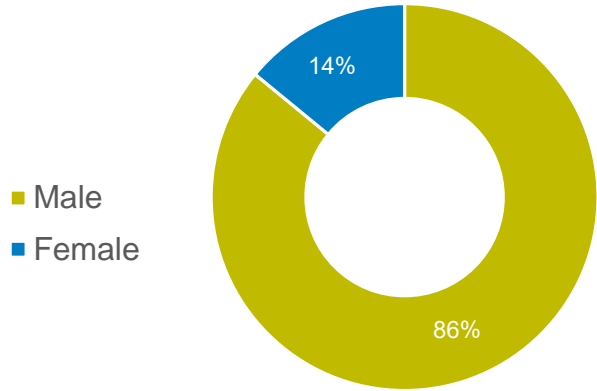
Respondent Age and Gender



Age



Gender

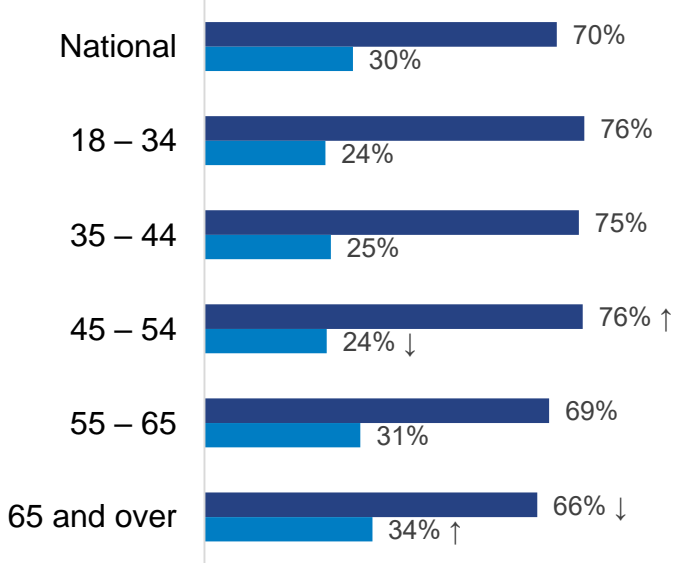


Mulesing Practice by Respondent Age



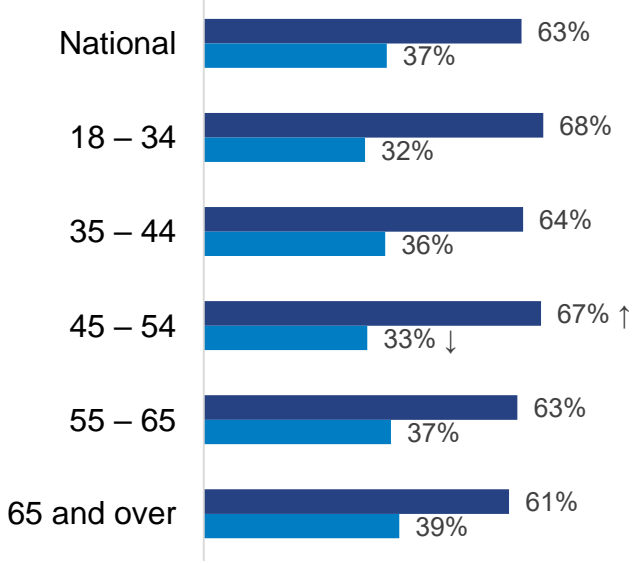
Ewe lambs

■ Mulesed ■ Not Mulesed



Wether lambs

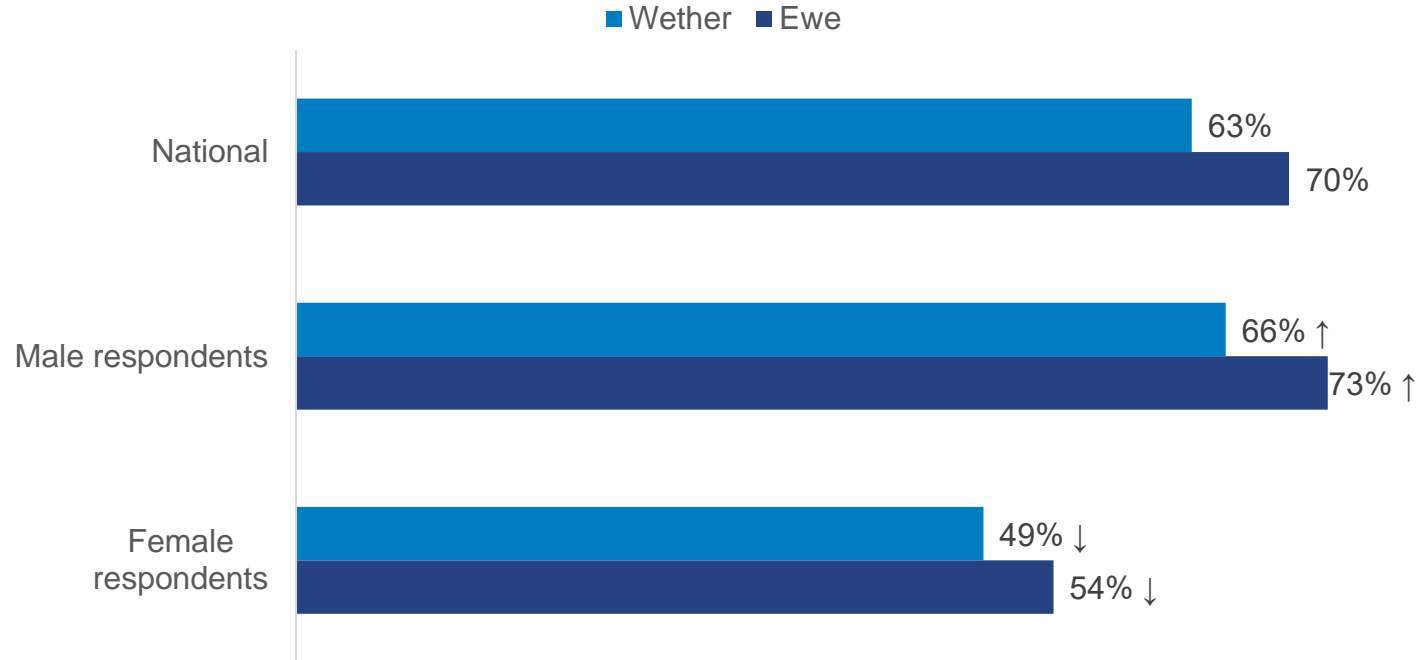
■ Mulesed ■ Not Mulesed



Q71: Age?
 Q28: Did you mules your Merino **ewe** lambs in 2017?
 Q32: Did you mules your Merino **wether** lambs in 2017?
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Female respondents were less likely to mules their lambs than male respondents

% of producers choosing to mules their lambs in 2017



Q28: Did you mule your Merino **ewe** lambs in 2017?
Q32: Did you mule your Merino **wether** lambs in 2017?

Appendix 3: Detailed Methodology and Sampling

Why conduct this research?



Segmentation

Earlier surveys did not separate Merino and prime lamb practices and Mules and Non Mules practices



New Products

New pain relief products on the market so needed a baseline of product adoption



Full range of practices

Monitor whole range of “Merino” on-farm practices over time



Quantify Non Mules Exploratory Findings

Highlight the key practices often mentioned in the interviews of 40 Non Mules businesses



Validation

Validation of anecdotal information, eg use of rings on tail when mulesing



Better Reconciliation

Better reconcile practices, ie % rams bred on farm v rams purchased

Questionnaire Design

- The questionnaire was designed in conjunction with AWI to address relevant Merino husbandry procedures including low, medium and high priority KPIs. Where possible, questions were designed to be consistent with previous surveys conducted by AWI, MLA and the Sheep CRC for comparison and validation purposes. This was sometimes difficult however due to differences in target audiences (Merino and non-Merino), class of stock (ewes and wethers) and age of stock (maiden ewes and mixed ewes). The current survey also needed to address topics and practices that were not covered in previous surveys
- A draft questionnaire was piloted with 26 Merino producers on 7 and 8 February 2018. The average survey length was 25:13 minutes with the longest being 41:07 and the shortest 16:54. The script was clear and flowed well. The original survey length was budgeted at 20 minutes but given the importance of additional questions and that no significant respondent burden would be incurred with a 25 minute versus a 20 minute survey, AWI increased the budget to cover the additional survey length

Respondent Selection

- Respondents were drawn from a fully profiled, commercial database of over 100,000 rural producers. AWI's member database was not used due to privacy and potential bias considerations. An nth number, random selection process was used to select respondents
- Respondents had to be primary decision maker regarding sheep husbandry practices on their property, have income from sheep, and be running either Merino Horn, Merino Poll or Merino Dohne. Producers with only non-Merino flocks were excluded from the survey. There was no minimum flock size or minimum / maximum respondent age requirements

Fieldwork

- Fieldwork was conducted from 9 February – 17 April 2018. Interviewing was primarily conducted in the evening between 5.30 pm and 8.30 pm with adjustments made for each state's time zone. Some daytime interviewing was also conducted for pre-arranged callbacks and a rotating schedule of non-respondent callbacks. Up to three attempts were made to each telephone number
- A total of 8,657 calls were made with 3,348 conversations held with individual producers. Of this, there were 1,200 completes, 867 refusals and 1,281 callbacks giving a response rate of 35.8%. This is a significantly higher response rates than most producer surveys (particularly given the 25 minute length and lack of incentive) and partly reflects the inclusion of AWI in the introduction which encouraged participation

Sample Design and Weighting

- Population data from the Australian Bureau of Statistic's (ABS) 2015/16 census was used for the sample design. The population of Merino producers by 26 MLA regions (Figure 1) and four flock size categories was used to stratify the sample of 1,200 producers to create quotas for surveying. Note that in the 2015/16 census, ABS excluded any producer who did not have an Estimated Value of Agricultural Operations (EVAO) of \$40,000 or more per annum. The ABS population was therefore adjusted to account for the significant number of smaller producers (flock sizes of less than 250 head) that were excluded from the census
- Survey results were then weighted to the adjusted ABS population for each region and each flock size category to ensure representativeness of the results (Table 1). Samples achieved against regional quotas are presented in Table 2
- To check for any biases between weighted and unweighted results, a comparison was made for key questions (Table 3). While for many questions the responses were almost identical, some differences were apparent. The unweighted sample had a higher proportion of larger producers and some practices were more widely adopted by larger producers (eg pregnancy scanning, mulesing, use of hot knife). The unweighted data therefore has the potential to overestimate the adoption of some practices. Weighting to the national distribution of flock size was therefore warranted for analysis and reporting

Coding of Open Responses

- Thematic coding was used to group responses to all open ended questions into like categories so that frequencies could be reported. Alternatively, where questions were identical to previous surveys, the code frames from those studies were used so that direct comparisons of frequencies could be made across surveys

Interpretation of Results

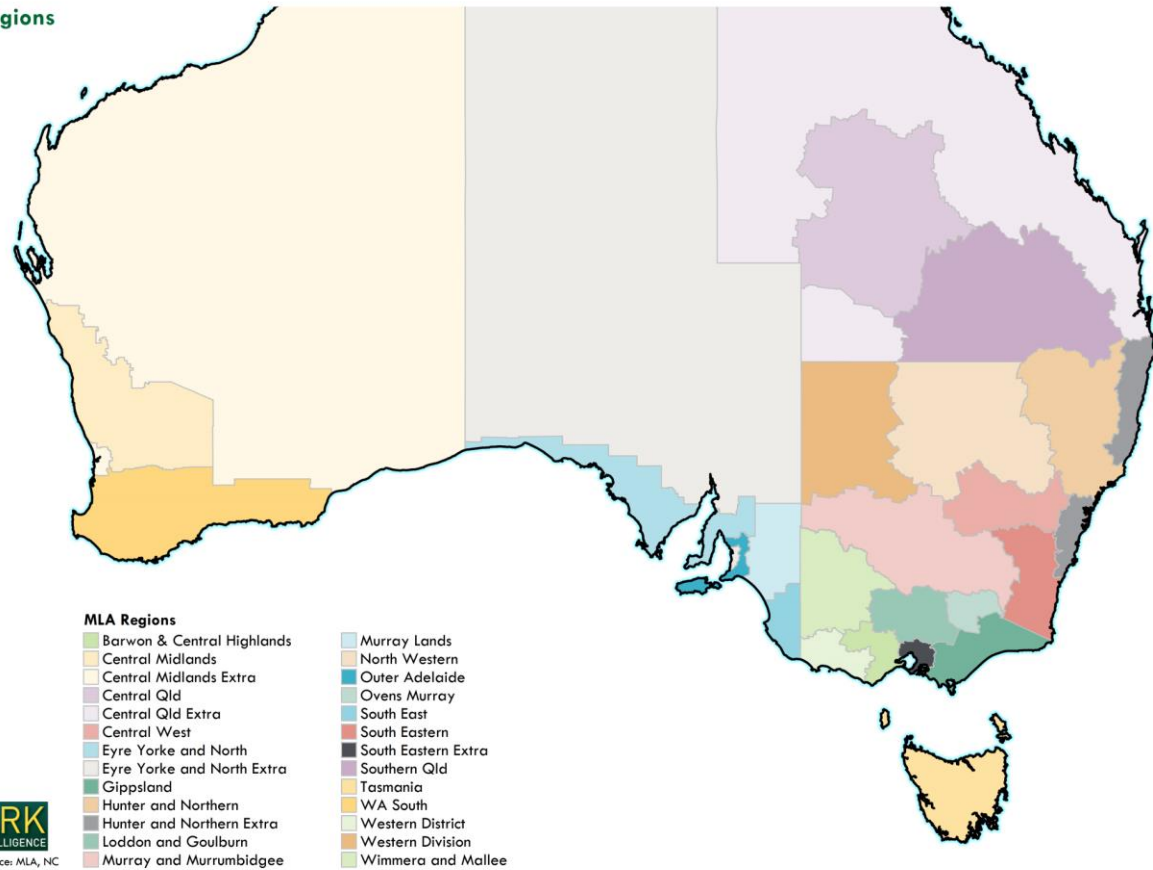
- It should be noted that the results presented in this study are derived from a survey (as opposed to a census when all members of a population are captured). Survey results are used to make inferences about the total population
- As all surveys are subject to errors, a survey result should not be treated as a single value but rather as the midpoint of the likely range that the true population result would lie within. The range around the survey result is the "margin of error"
- For example, a survey result of 50% may have a margin of error of plus or minus 3 percentage points ie 47% - 53%. The margin of error depends on the sample size (smaller sample sizes have larger errors) and the actual sample result (a result closer to 50% has a larger percentage error). Due to a high margin of error associated with a small sample, results based on a small sample in the analysis should be treated with caution. Care should be taken with any results from a sample of less than 30
- The margin of errors for different sample sizes and different survey results are presented in Table 4. The matrix is based on a 95% confidence level, that is, you are 95% confident that the true result (the result derived from interviewing the entire population) would be in the range specified in the table
- To aid the reader in identifying statistical differences between demographic groups, data points on charts in the report have been highlighted with an up (↑) or down (↓) symbol. The up arrow indicates that the result is statistically higher than the result for the total (national) sample at a 95% confidence level. The down arrow indicates the result is statistically lower than the total sample result. Similar highlights are used in the Excel tables.

Methodology (3/7)

Figure 1: MLA Regions Used for Sample Design



MLA Regions



Due to seasonal and growing condition variability throughout Australia and even within states, Australia was divided into 26 sheep producing regions so that husbandry practices could be reported at a regional level. These regions are the same as those used by Kynetec for the AWI MLA Wool and Sheepmeat Survey

Of the 26 sheep producing regions, 7 are located in NSW, 7 in Victoria, 5 in SA, 3 in WA, 3 in Queensland and 1 in Tasmania.

The sample of 1,200 was stratified by region and flock size. Results were then weighted ((by region and flocksize) to the population of Merino Breeding Ewe producers in 2015/16 provided by the ABS in the latest census but adjusted upwards to account for the ABS's minimum cutoff of \$40,000 EVAO.



Table 1: Population of Merino Breeding Ewe Producers

State	MLA Region	< 500 hd	500 - 999 hd	1,000 - 1,999 hd	2,000 hd +	Total
NSW	Central West	448	257	272	135	1,112
NSW	Hunter and Northern	652	277	240	147	1,315
NSW	Hunter and Northern Extra	14	0	1	0	16
NSW	Murray and Murrumbidgee	925	434	484	464	2,306
NSW	North Western	758	312	438	435	1,944
NSW	South Eastern	671	325	351	371	1,717
NSW	South Eastern Extra	53	17	5	7	83
NSW	Western Division	44	1	7	113	165
VIC	Barwon and Central Highlands	314	117	135	97	663
VIC	Gippsland	141	34	38	29	243
VIC	Loddon and Goulburn	661	275	231	131	1,299
VIC	Ovens Murray	107	40	20	5	171
VIC	Western District	321	131	184	252	888
VIC	Wimmera and Mallee	937	347	306	161	1,752
QLD	Central Qld	128	41	38	81	289
QLD	Central Qld Extra	53	3	3	7	65
QLD	Southern Qld	210	47	53	51	361
SA	Eyre Yorke and North	539	326	267	102	1,234
SA	Eyre Yorke and North Extra	341	207	164	91	802
SA	Murray Lands	248	168	143	50	609
SA	Outer Adelaide	307	148	104	75	635
SA	South East	217	130	181	176	704
WA	Central Midlands	449	292	415	308	1,464
WA	Central Midlands Extra	35	19	27	16	96
WA	WA South	606	304	564	819	2,294
TAS	Tasmania	330	72	80	120	603
AUST	Total	9,510	4,325	4,751	4,244	22,829

Methodology (4/7)



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Table 2: Regional Quotas and Samples Achieved

Region	Quota	Sample Achieved
NSW Hunter and Northern	91	93
NSW North Western	84	83
NSW South Eastern	99	98
NSW South Eastern Extra	2	2
NSW Central West	96	99
NSW Western Division	35	24
NSW Murray and Murrumbidgee	57	62
VIC Barwon & Central Highlands	55	45
VIC Gippsland	12	12
VIC Loddon and Goulburn	54	55
VIC Ovens Murray	11	11
VIC Western District	27	30
VIC Wimmera and Mallee	52	52

Region	Quota	Sample Achieved
QLD Central Queensland	14	20
QLD Central Queensland Extra	2	3
QLD Southern Queensland	29	29
SA Murray Lands	46	46
SA Outer Adelaide	23	23
SA South East	20	20
SA Eyre Yorke and North	115	114
SA Eyre Yorke and North Extra	60	60
WA South	95	100
WA Central Midlands	95	93
WA Central Midlands Extra	1	1
TAS Tasmania	25	25
Total	1,200	1,200

Methodology (6/7)



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Table 3: Selected Weighted and Unweighted Results Comparison

Question	Weighted Result	Unweighted Result
Q3. Merino Horned	34.5%	35.6%
Q3. Merino Polled	65.5%	64.4%
S5. Ewes joined 2017 (mean)	1,342	1,870
Q4. Adult ewe micron (mean)	19.2	19.3
Q7. Adult ewe staple length (mean)	92.2 mm	92.4 mm
Q8. Kg wool cut per head ewes (mean)	5.4 kg	5.6 kg
Q10. Weeks ewes joined (mean)	7.9	7.6
Q12. Ram joining % for mixed ewes	2.0%	2.0%
Q14. Pregnancy scan ewes	46%	51%
Q18. Mixed ewe marking percent	93.4%	94.6%
Q24. Pre-lambing vaccination	58%	59%
Q32. Mules wether lambs in 2017	63%	66%
Q34. Use pain relief on wether lambs	84%	85%
Q45. Use hot knife to tail dock ewes	68%	72%

Table 4: Interpretation of Results

Sample	Survey Result									
	5%/95%	10%/ 90%	15%/85%	20%/80%	25%/75%	30%/70%	35%/65%	40%/60%	45%/55%	50%
25	9	12	14	16	17	18	19	19	20	20
50	6	8	10	11	12	13	14	13	14	14
75	5	7	8	9	10	10	11	11	11	11
100	4	6	7	8	9	9	10	10	10	10
200	3	4	5	6	6	6	7	7	7	7
300	3	4	4	5	5	5	6	6	6	6
400	2	3	4	4	4	5	5	5	5	5
500	2	3	3	3	4	4	4	4	4	4
600	2	2	3	3	3	4	4	4	4	4
700	2	2	3	3	3	3	4	4	4	4
800	2	2	2	3	3	3	3	3	3	3
900	1	2	2	3	3	3	3	3	3	3
1,200	1	2	2	2	2	3	3	3	3	3

As a guide to interpretation, a survey result of 30% from a sample of 1,200 respondents (ie National) would have a margin of error of 3 percentage points, that is, you are 95% confident that the true answer would lie between 27% and 33%. A result of 30% from a sample of 205 respondents (eg Victoria) would have a higher error of plus / minus 6%

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