Lameness Data Analysis Report

Template Dairy

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Introduction

This is an summary of the hoof trimming and lesions data from Jan 2023 to Dec 2023. Historical data was used starting from 5 years back to determine the lesion history of cows trimmed in the last year.

Of note in this report you will at times see the data split out into the following categories:

- *All Cases:*
  - Includes all occurrences of a lesion.
  - A cow could have had the lesion once or 5 times in the past year and all them are included.
  - This category is important as it shows how many lame cows the go through the chute.
- *First Cases:*
  - Includes only cows that had a lesion for the first time in the past year.
  - I consider this category the most important category as it tells us how many lame cows we are creating.
  - The difference between *first cases* and *all cases* paints a picture of the number of chronic cows.
- *Second Cases:*
  - Includes only cows that had a lesion for the second time in the past year.
  - This category includes cows that will eventually become chronic cows but also some cows that might just have needed a bit more time to heel.
  - Three or more cases:
    * Includes cows that had a lesion three or more times in the past year.
    * These are the chronic cows and once we need to manage appropriately.

Additionally, tables and figures will be presented broken down by lactation group, months or across DIM categories.

Timing of Trimming

Figure 1 compares when cows get trimmed in each lactation and their lameness history between regions.

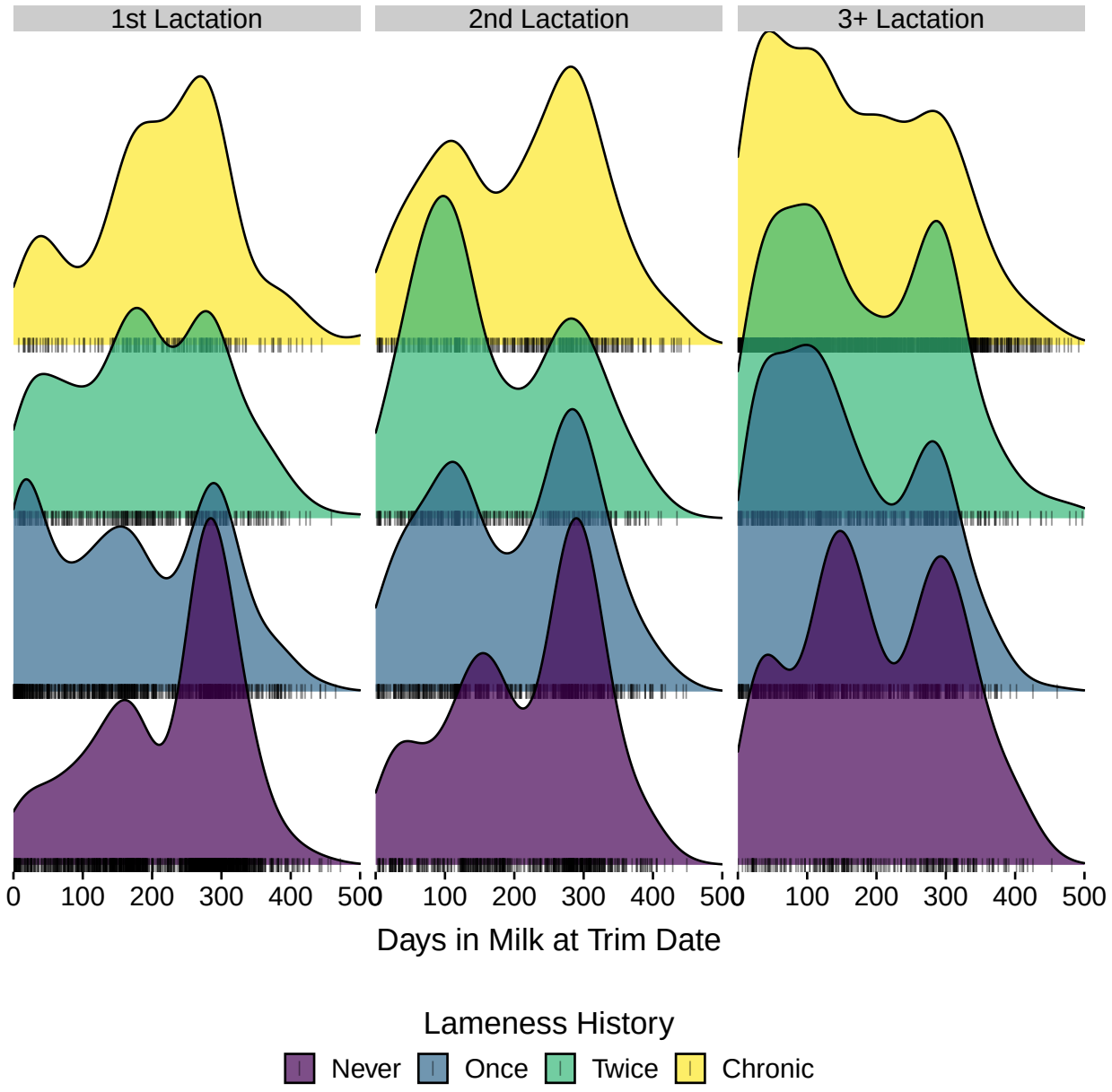

Figure 1: Distribution when trimming happens during lactation. Note: Height of curves are relative to each individual category

Time to Lesion After a Routine Trimming

Figure 2 shows how soon after a normal hoof trimming cows with no history of lesions have a hoof trimming with a lesion.

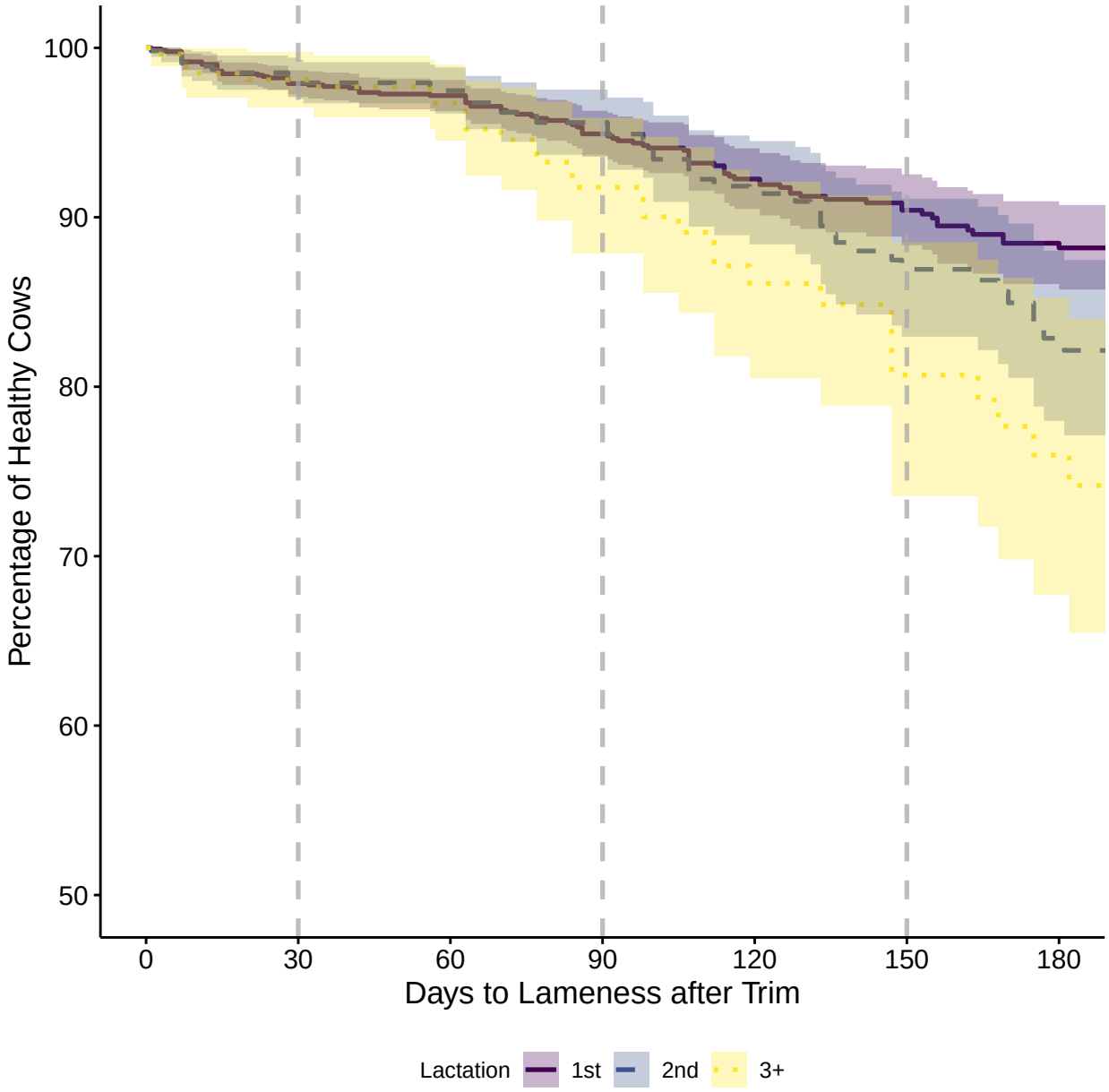

Figure 2: Cows start to have more lesions XX days after their hoof trimming.

Table 1 displays the % of cows with no history of lesions at trimming that become lame at specific time points after trimming.

Table 1: Time to lameness after routine hoof trimming at specific time points

Lactation	**% Lame (Confidence Interval) at**			
	30 Days	**60 Days**	**120 Days**	**180 Days**
1	2.1% (1.3%, 2.9%)	2.8% (1.9%, 3.7%)	7.7% (5.9%, 9.5%)	12% (9.3%, 14%)
2	1.9% (0.7%, 3.0%)	2.5% (1.2%, 3.9%)	8.6% (5.5%, 12%)	17% (12%, 22%)
3+	1.9% (0.2%, 3.5%)	3.3% (1.0%, 5.5%)	14% (7.9%, 20%)	24% (15%, 32%)

Lesion Comparison

The frequency of lesions types for 1st cases and all cases is shown in Figure 3. The most common lesion is …….

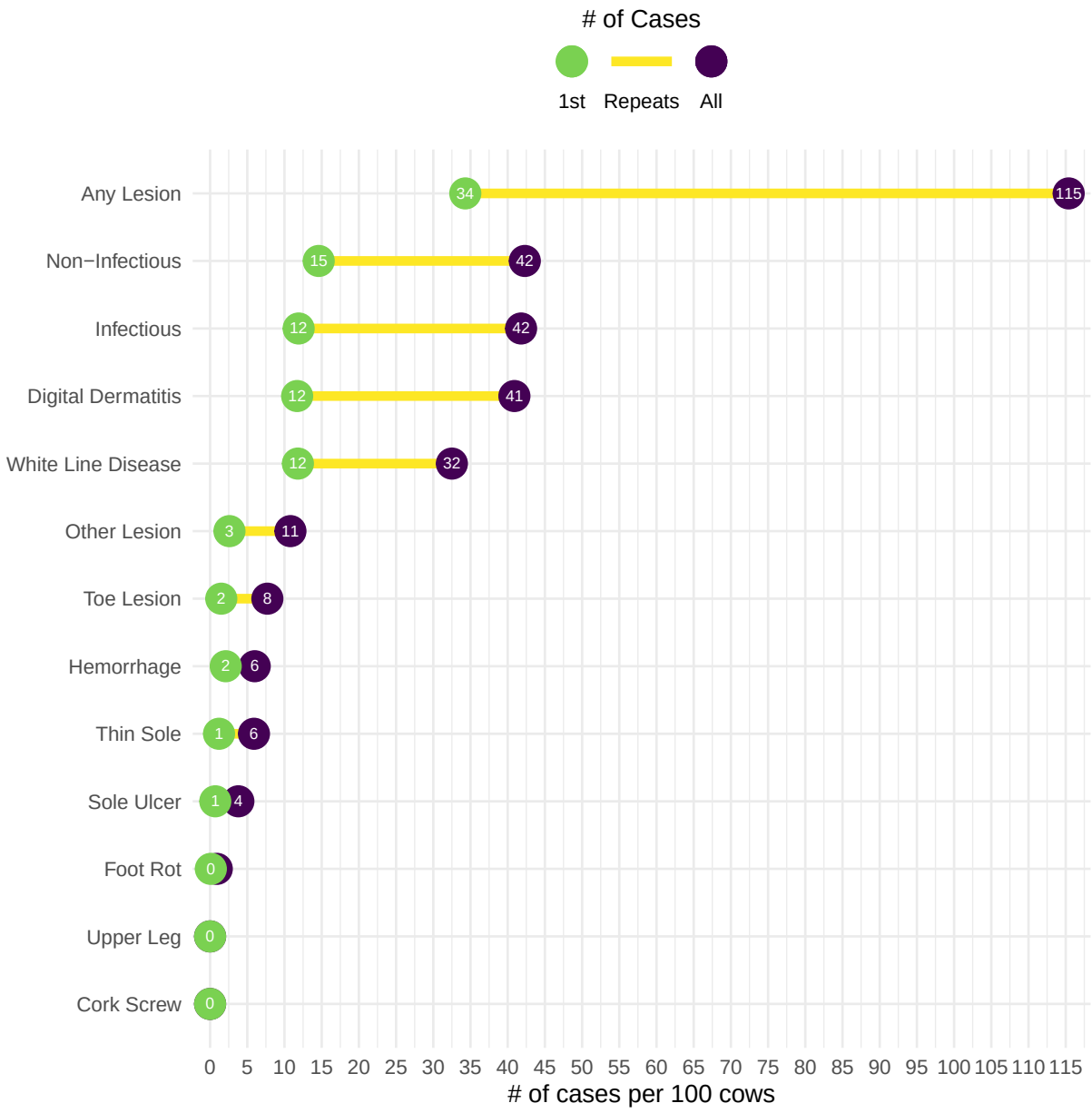

Figure 3: Comparision of Lesions in the past year

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Lesions by Lactations

The frequency of lesions types for 1st cases and all cases by lactation is shown in Figure 4. It is clear that the incidence of 1st cases goes down as lactation number increases but the number of repeat cases increases.

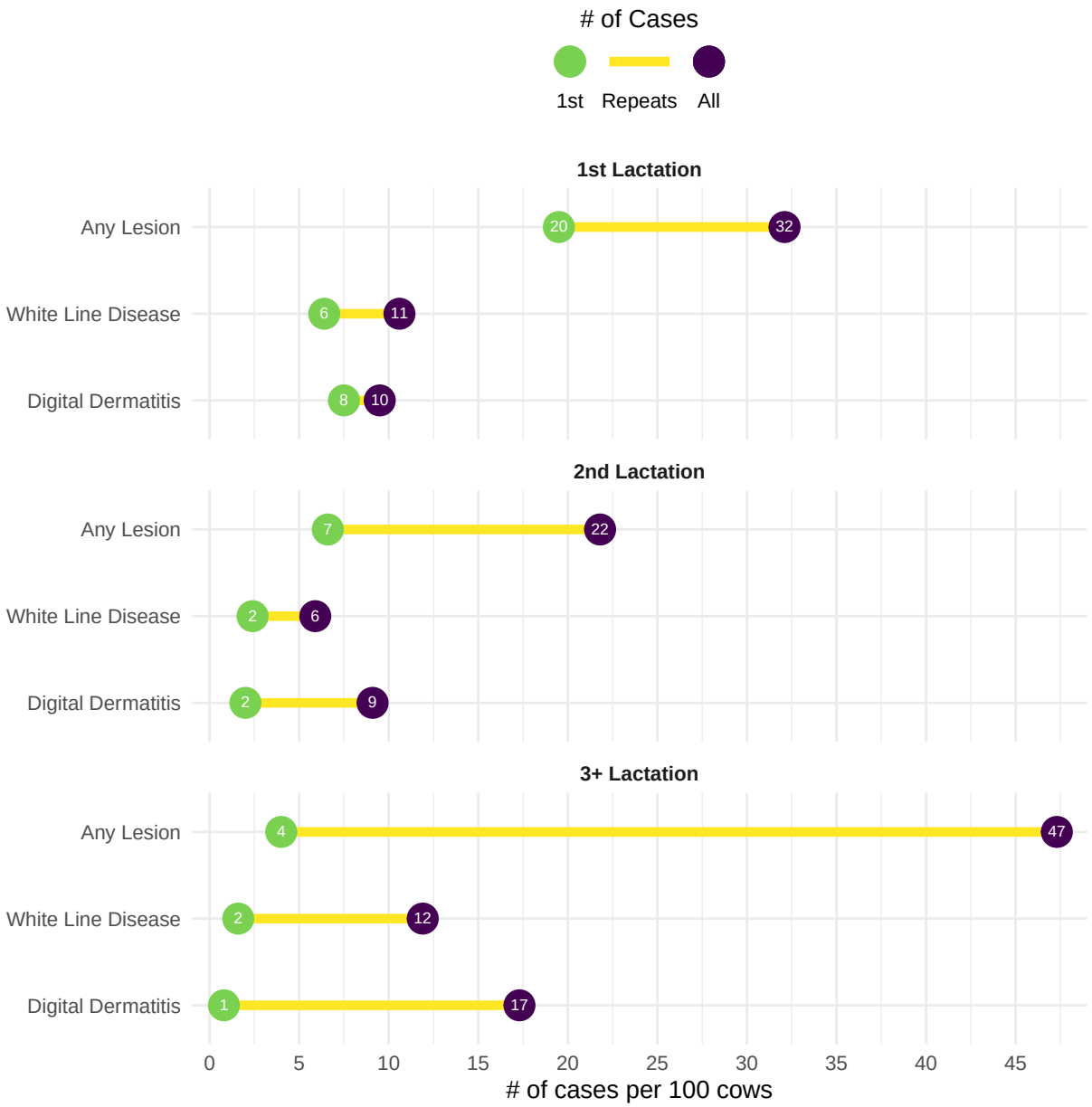

Figure 4: Comparision of Lesions by lactation group in the past year

What is success rate of lesion?

Table 2 shows the % of cows in the last year that had a lesion and repeated that lesions. This is at the cow level not necessarily repeated on the same leg.

Table 2: Repeat % for 1st, 2nd and 3rd Cases.

Repeating Case	**Repeat %**			
	DD	**WLD**	**Sole Ulcer**	**Footrot**
1st to 2nd	11.7	23.3	11.1	9.5
2nd to 3rd	21.5	29.7	31.6	50.0
3rd to 4th	18.3	19.6	11.1	

DIM Distribution of Infectious lesions across lactations

Figure 5 shows when cows are getting infectious lesions in each lactation category. The graphs shows the DIM distribution (% of total for each category) of 1st, 2nd life time lesions, and a total. The ideal graph has no peaks meaning that cases are not just found at trimming.

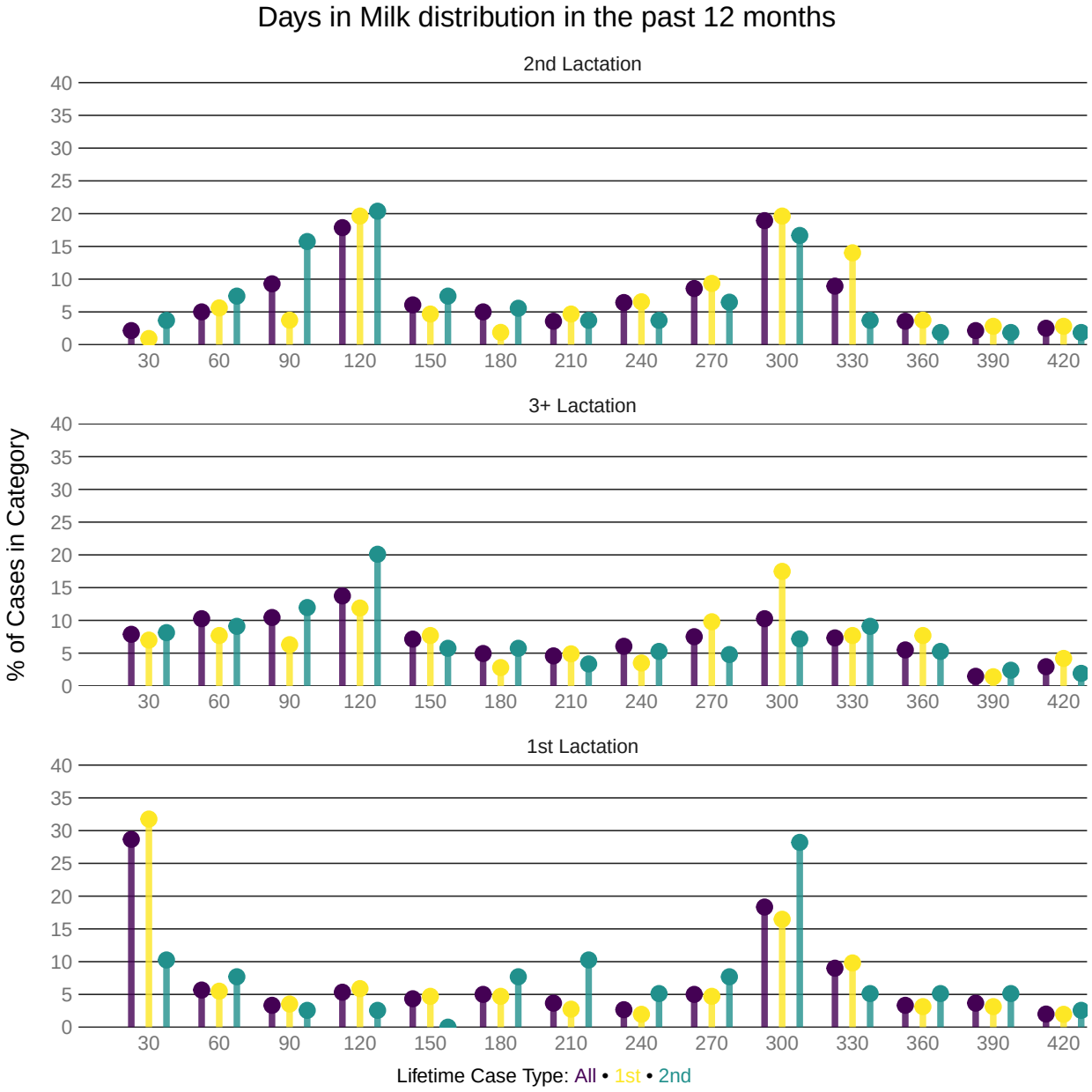

Figure 5: DIM distribution pattern of infectious lesions.

DIM Distribution of Non-Infectious lesions across lactations

Figure 6 shows when cows are getting non-infectious lesions. The graphs shows the DIM distribution (% of total) of 1st, 2nd life time lesions, and a total.

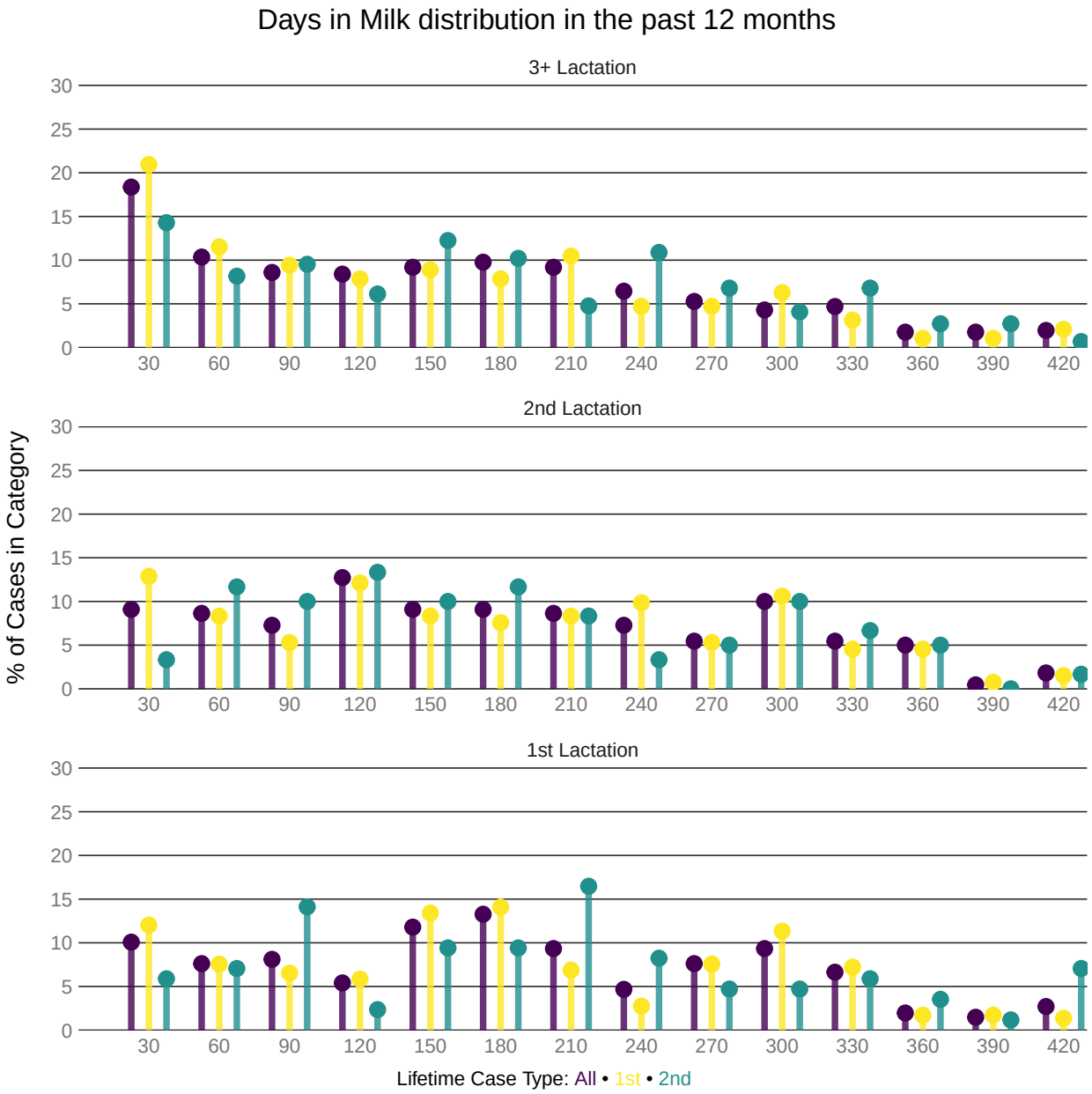

Figure 6: DIM distribution pattern of non-infectious lesions.

Impact of Season for Infectious lesions

Figure 7 Shows the seasonal pattern of infectious lesions.

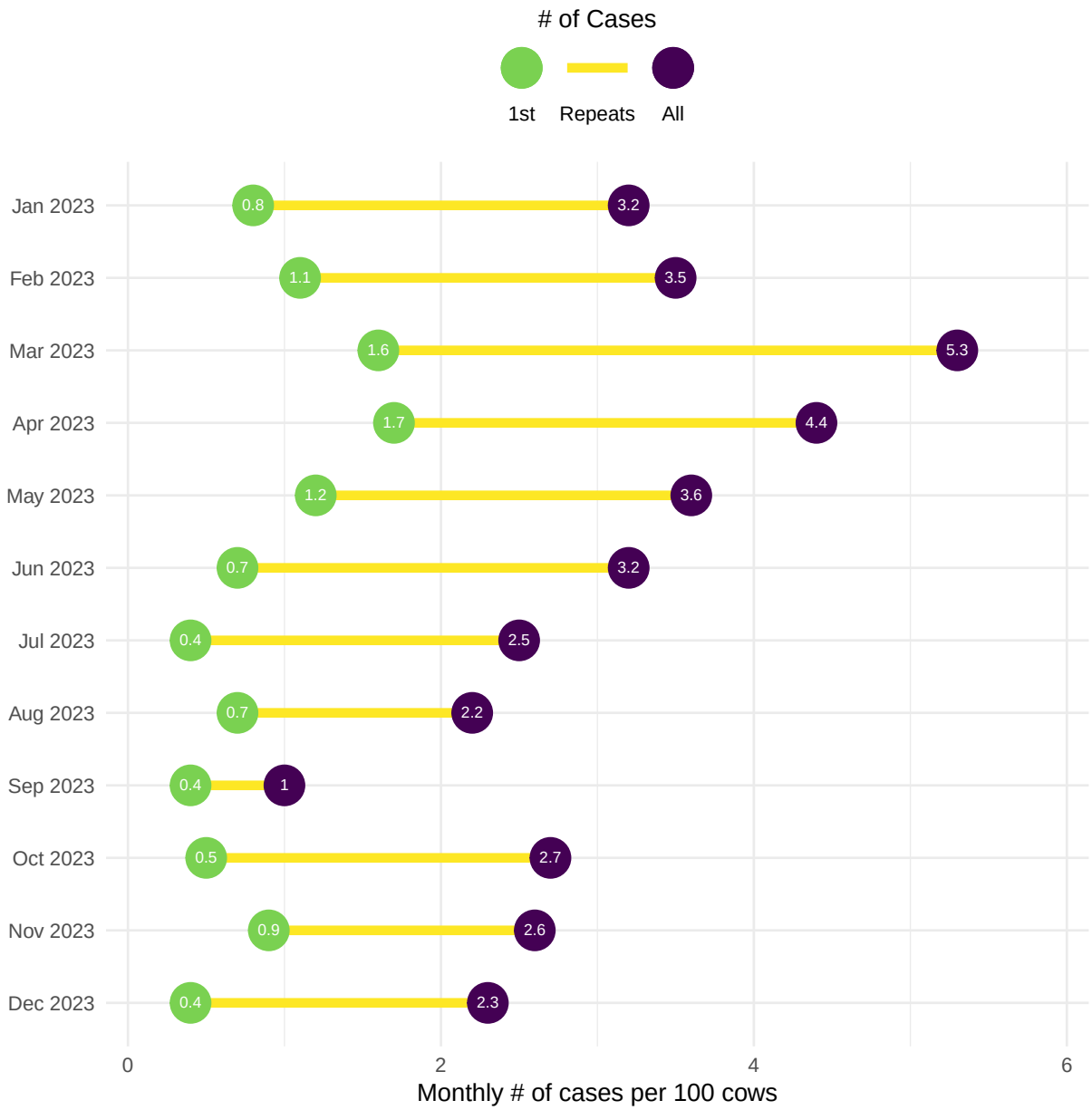

Figure 7: Seasonal Occurence of Lesions Current Year

Impact of Season for Non-Infectious lesions

Figure 8 shows the impact of season for non-infectious lesions.

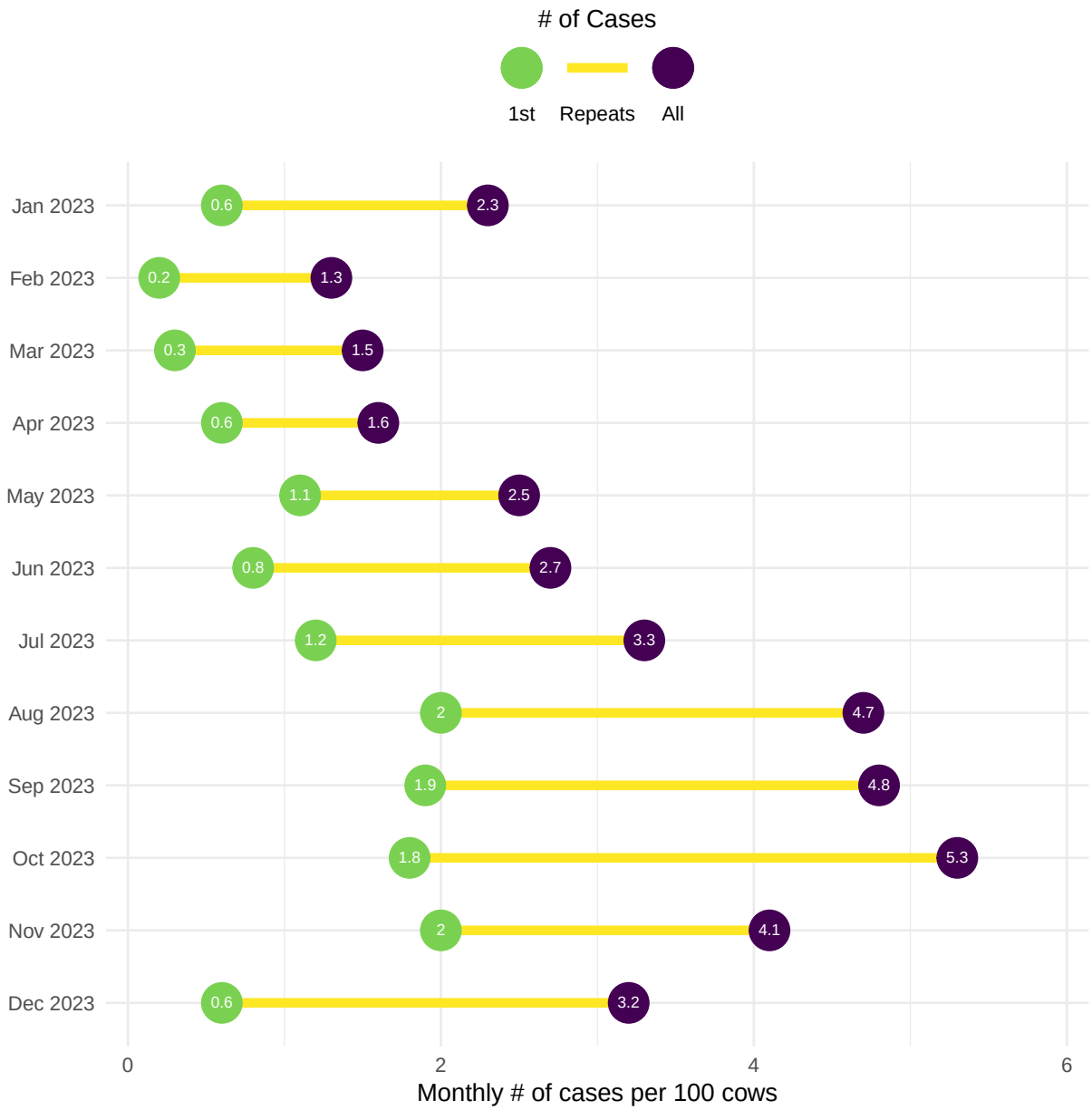

Figure 8: Seasonal Occurence of Lesions Current Year

Time to next lesion after 1st Non-Infectious lesion

Figure 9 and Table 3 show that across lactation how much time it takes for cow to get any other lesion after her first non-infectious lesion.

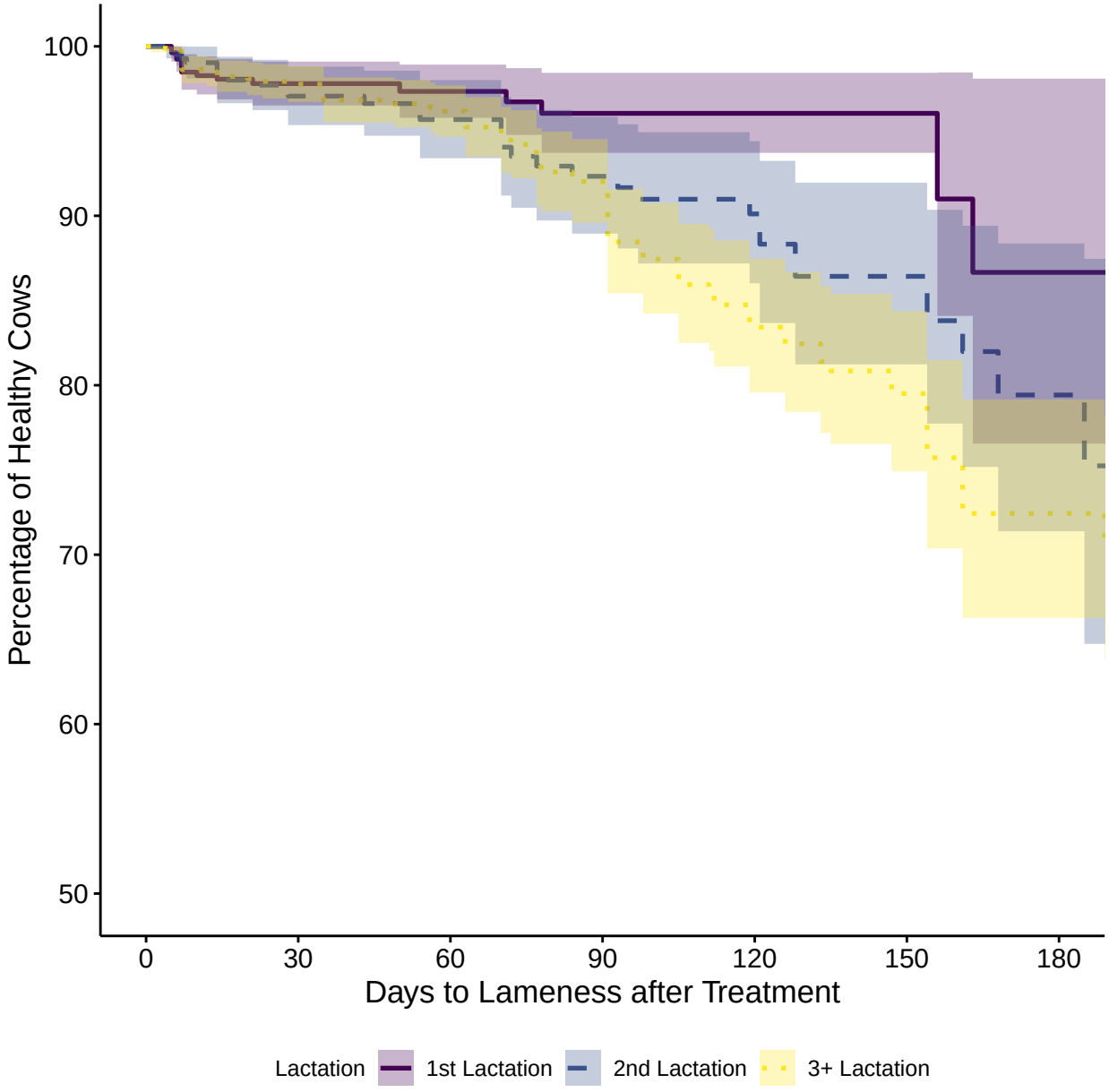

Figure 9: Faster time to lameness after first lesion for older cows.

Table 3: Time to lameness after a cow's first non infectious lesion at specific time points

Lactation	**% Lame (Confidence Interval) at**			
	90 Days	**120 Days**	**150 Days**	**180 Days**
1	4.0% (1.6%, 6.3%)	4.0% (1.6%, 6.3%)	4.0% (1.6%, 6.3%)	13% (1.9%, 23%)
2	7.7% (4.2%, 11%)	9.9% (5.6%, 14%)	14% (8.0%, 19%)	21% (12%, 29%)
3+	8.0% (5.5%, 10%)	17% (13%, 20%)	20% (16%, 25%)	28% (21%, 34%)

Survival of cows after treatment for lesions

The following figures illustrate how quickly after a lesion diagnosis cows are culled (sold/died). These figures are survival curves and have % of cows still alive on the *y axis* and time since the lesion on the *x axis*. These graphs have 4 different curves on them to show the difference between cows that have never had any lesion (healthy), and cows with one, two or three or more lifetime cases of the specific lesion. Lines that are higher indicate cows that do not get culled as fast. The shading around the line indicates the precision around the estimate of the line. Typically if the shading overlaps we consider the lines similar with no evidence of a difference.

The tables following the graphs give the number of cows culled after 30, 120, and 180 days to give a sense of the numerical values behind the curves.

Survival Curve of Cows with Non-infectious Lesions

From Figure 10 it is clear from that cows with lesions get culled faster than cows with no lesions at hoof trimming.

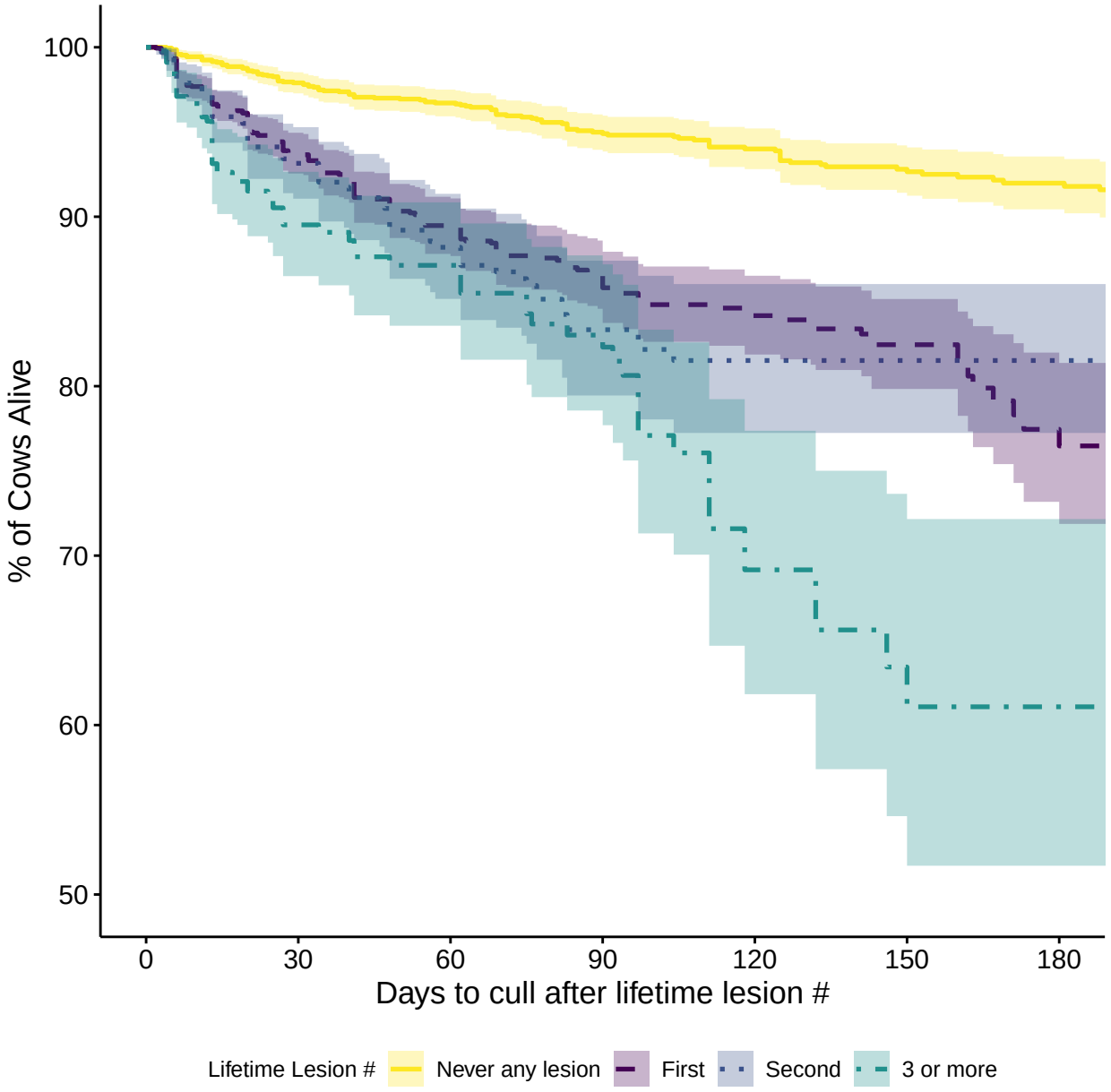

Figure 10: Cows with lesoins get culled faster and survival is worse for each repeated case.

Non-Infectious Culling Tables

Table 4 gives the percentage of cows that left the herd 30, 120, and 180 days after lesion diagnosis across the different lifetime lesion categories.

Table 4: Cows with lesions have a higher culling probability and this increases with each repeated case

Lifetime Lesion History	**% Culled (Confidence Interval) at**		
	30 Days	**120 Days**	**180 Days**
Never any lesion	2.1% (1.5%, 2.7%)	6.0% (4.8%, 7.2%)	8.0% (6.4%, 9.6%)
Once	6.3% (5.0%, 7.4%)	16% (13%, 18%)	24% (19%, 28%)
Twice	6.8% (4.7%, 8.9%)	18% (14%, 23%)	18% (14%, 23%)
3 or more times	10% (7.3%, 14%)	31% (23%, 38%)	39% (28%, 48%)

Survival Curves of Cows with DD

From Figure 11 it is clear that cows with DD leave faster then cows with no lesion at hoof trimming.

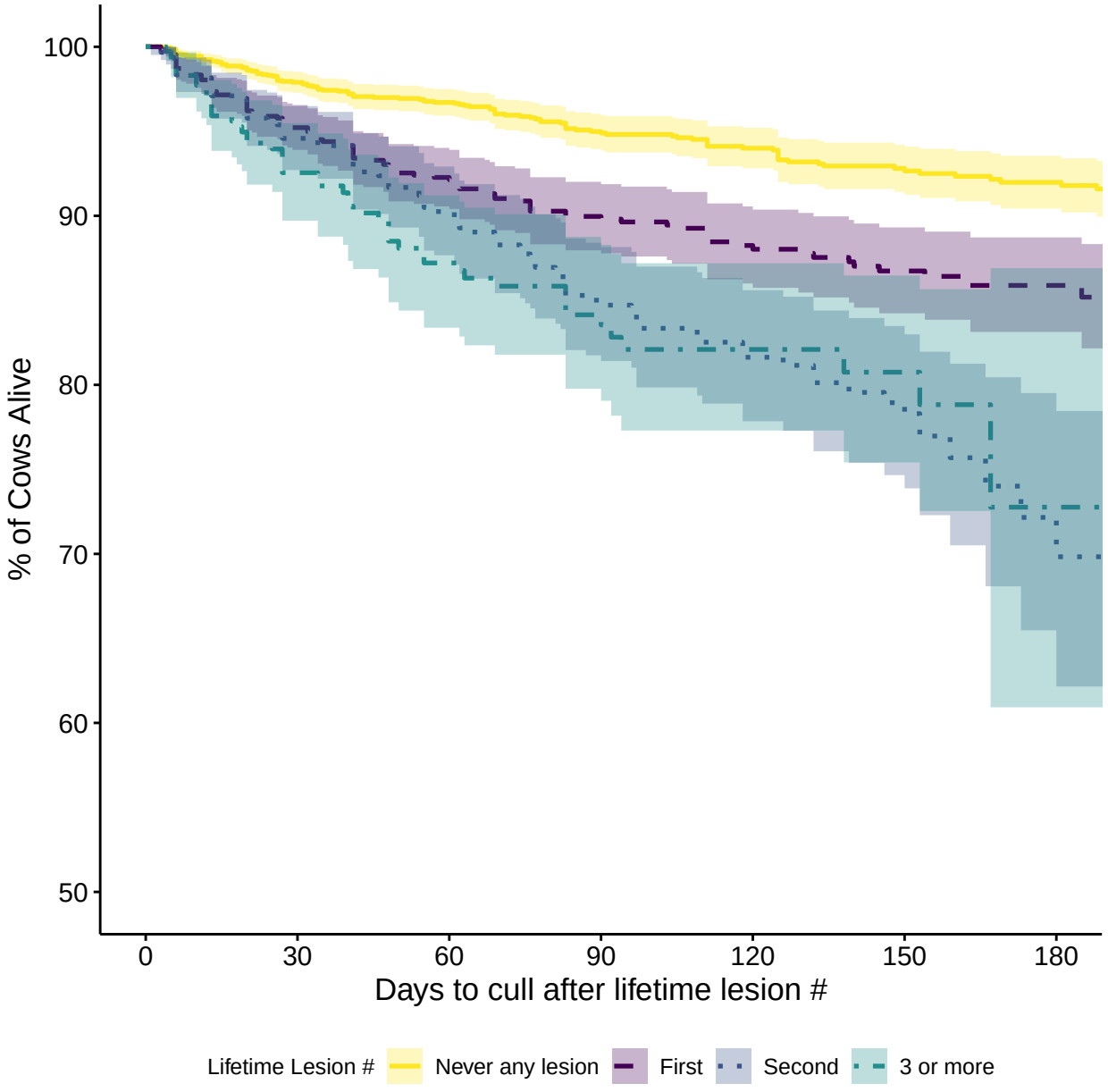

Figure 11: Cows with DD get culled faster than healthy cows and it increases with each case.

DD Culling Tables

Table 5 gives the percentage of cows that left the herd 30, 120, and 180 days after lesion diagnosis across the different lifetime lesion categories.

Table 5: Cows with DD have a similar culling probability compared to healthy cows.

Lifetime Lesion History	**% Culled (Confidence Interval) at**		
	30 Days	**120 Days**	**180 Days**
Never any lesion	2.1% (1.5%, 2.7%)	6.0% (4.8%, 7.2%)	8.0% (6.4%, 9.6%)
Once	4.8% (3.4%, 6.1%)	12% (9.6%, 14%)	14% (11%, 17%)
Twice	5.4% (3.5%, 7.3%)	18% (14%, 22%)	30% (22%, 38%)
3 or more times	7.4% (4.5%, 10%)	18% (13%, 23%)	27% (13%, 39%)

Table 6: Leg Distribution of Lesions

Which Legs do lesion occur on?

Table 6 summarizes which leg lesions occur on on each site. This table is at the bottom as I don't always use it but for this herd it is weird that RH is so much different than LH