BIOL806_results/figures

Results

Data Organizing and Cleaning

All codes to creating the tables, figures and data frames can be found here https://github.com/1006kay/Biol_806_FinalProject.git on github.

Above and Below Groups from Mean Rumination Time in the Last Week of Pregnancy

To account for parirty, primiparous (1st lactation) and multiparous (2 lactation) cows were grouped together to obtain mean rumination time for their last week of pregnancy (LWP), which consisted of days -7 to -1 relative to calving (day 0). For primiparous cows, the mean RT in the LWP was 489.99 min/24hr. For multiparous cows, the mean RT in the LWP was 473.12 min/24hr. In table 1, it shows the cows that were enrolled in the data collection process that had an individual mean RT that was below parity (primi- or multiparous) average. Also included in table 1, is the lactation each cow is currently in. The sample size of cows placed in the below group is $n = 16$. Table 2 includes the same metrics listed in table 1, however this table shows the cows that had a greater mean RT in the LWP than the parity RT average. The sample size of cows placed in the above group is $n = 18$.

Table 1: This table shows the distribution of cows that belong in the below group based off of their rumination time (RT) in their last week of pregnancy. The primiparous cows (n=5) were grouped together to find the primiparous mean RT (4.89.99 min/24hr) and the multiparous cows (n=29) were grouped together to find the multiparous mean RT (473.12 min/24hr).

Cow ID	Lactation	Mean Ind. RT in LWP	Mean Parity RT in LWP	Group	Parity
1250	1	444.1329	489.9999	below	primi
1246	1	474.5828	489.9999	below	primi
1245	1	466.3435	489.9999	below	primi

Cow ID	Lactation	Mean Ind. RT in LWP	Mean Parity RT in LWP	Group	Parity
1215	2	452.2185	473.1203	below	multi
1208	2	444.5366	473.1203	below	multi
1199	2	414.9472	473.1203	below	multi
1195	2	397.0047	473.1203	below	multi
1193	2	466.6102	473.1203	below	multi
1191	2	316.7326	473.1203	below	multi
1157	3	462.7568	473.1203	below	multi
1150	3	446.1355	473.1203	below	multi
1143	3	456.3694	473.1203	below	multi
1065	4	445.1048	473.1203	below	multi
1048	5	441.6824	473.1203	below	multi
963	7	455.0059	473.1203	below	multi
953	7	433.9651	473.1203	below	multi

Table 2: This table shows the distribution of cows that belong in the above group based off of their rumination time (RT) in their last week of pregnancy. The primiparous cows (n=5) were grouped together to find the primiparous mean RT (4.89.99 min/24hr) and the multiparous cows (n=29) were grouped together to find the multiparous mean RT (473.12 min/24hr).

Cow ID	Lactation	Mean Ind. RT in LWP	Mean Parity RT in LWP	Group	Parity
1253	1	549.8919	489.9999	above	primi
1252	1	515.0486	489.9999	above	primi
1209	2	536.9909	473.1203	above	multi
1207	2	481.2637	473.1203	above	multi
1206	2	532.1750	473.1203	above	multi
1205	2	478.9041	473.1203	above	multi
1203	2	481.2478	473.1203	above	multi
1200	2	522.5576	473.1203	above	multi
1192	2	522.7118	473.1203	above	multi
1189	2	499.5291	473.1203	above	multi
1148	3	489.7752	473.1203	above	multi
1141	3	563.7630	473.1203	above	multi
1107	4	519.2403	473.1203	above	multi
1103	4	494.5288	473.1203	above	multi
1083	4	537.4015	473.1203	above	multi
1047	5	478.9204	473.1203	above	multi
989	6	474.2016	473.1203	above	multi

Cow ID	Lactation	Mean Ind. RT in LWP	Mean Parity RT in LWP	Group	Parity
976	6	474.2066	473.1203	above	multi

In figure 1, shows the distribution of cows individual rumination time after assigning groups, above or below, based off of the mean RT in the last week of pregnancy. Based off of figure, the above group shows that there are no outliers, the overall shape has some symmetric distribution of individual mean RT since the median line is centered while the whiskers are not evenly distributed, and has a higher median when compared to the below group. As for the below group, it is showing two outliers below the median of the group, as well as the shape of this group is not symmetric as the median is not centered but the whiskers are similar in length.

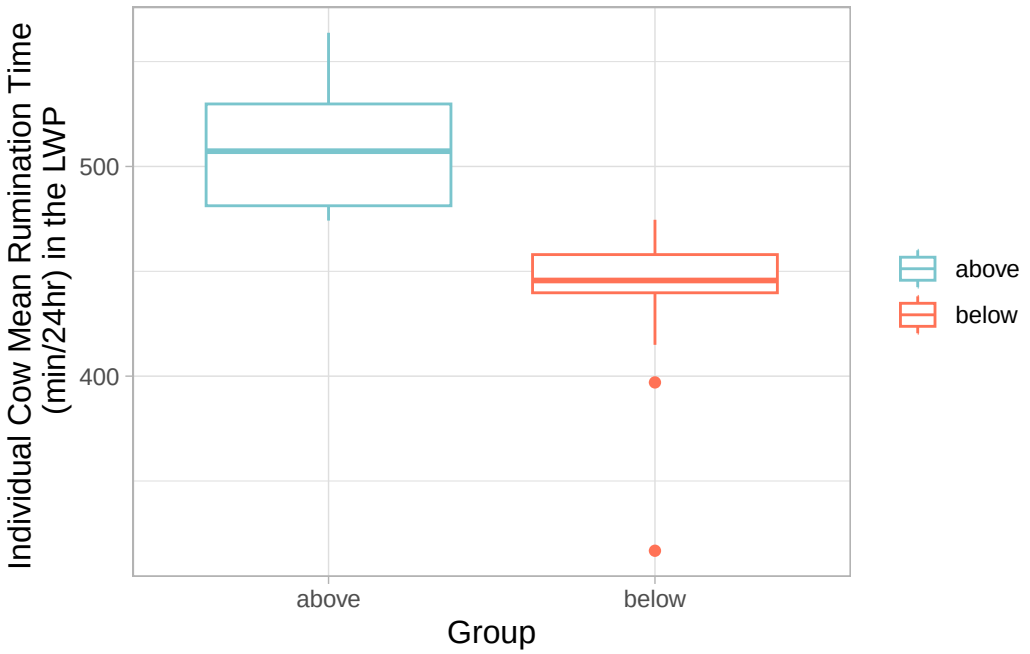

Figure 1: The box plot figure above shows the individual cow mean rumination time (min/24hr) in the last week of pregnancy (LWP) for both the above and below groups.

Mean Rumination Time in the Week Before and Week After Calving

In figure 2, it shows mean rumination time (min/24hr) by day relative to calving. The below group has decreased mean rumination time from day -7 to day 1, when compared to the above group. After calving at day 0, the below group still has a slight decrease in mean

rumination time is comparison to the above group. However, at day 2, both teh above and below groups have a similar mean rumination time just above 425 min/24hr. Both groups have a similar pattern of mean rumination time throughout, meaning around calving, rumination time decreases, then increases days after.

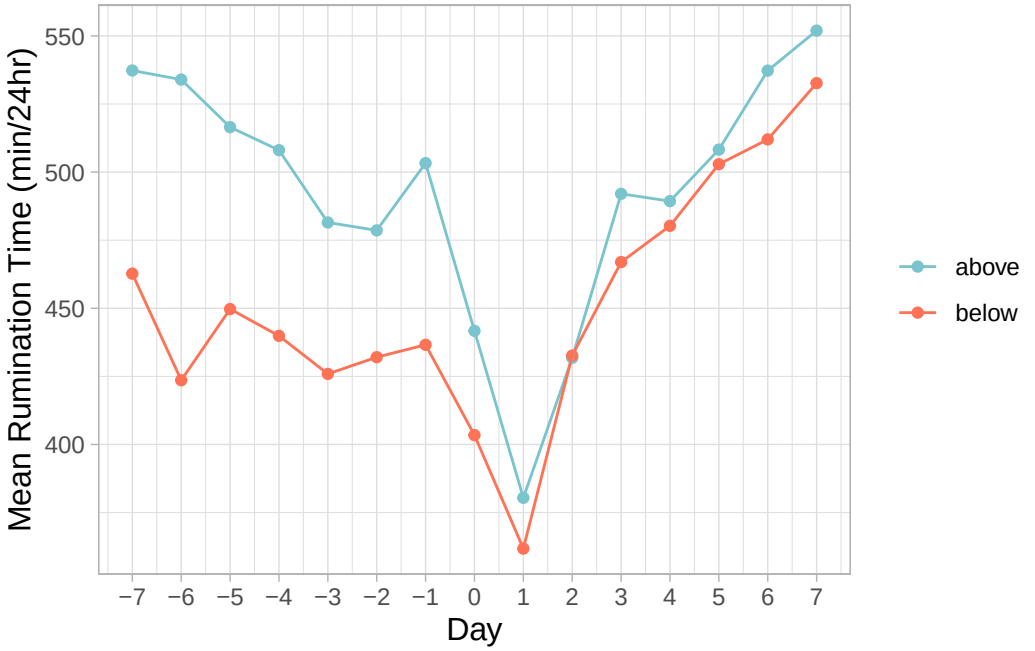

Figure 2: This time series plot is showing the mean rumination (RT) (min/24hr) from the above and below group from 7 days before and 7 days after relative to calving (day 0).

Above and Below Groups Milk Yield in first 30 days in milk (DIM)

In figure 3, it shows the weekly milk yield (MY)(lbs) for the above group in the first 5 weeks in lactation. Based off of the graph, all cows have a similar trend throughout the 5 weeks, increasing as the weeks increase. Cow 989 has a slight decrease at week 3 but increases after.

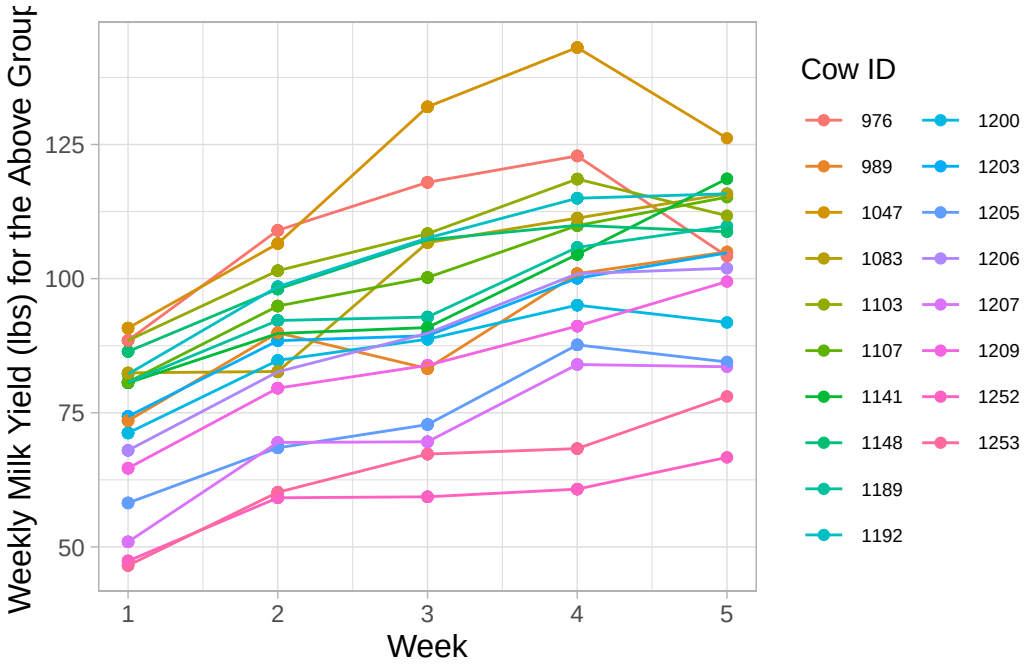

Figure 3: This time series plot shows the mean weekly milk yield (lbs) for each individual cow (primi- and multiparous) in the above group in the first five weeks into lactation. Calving is at the beginning of week 1.

In figure 4, it shows the weekly milk yield (MY)(lbs) for the below group in the first 5 weeks in lactation. Based off of this graph, there are a some cows that have a decrease in weekly milk yield.

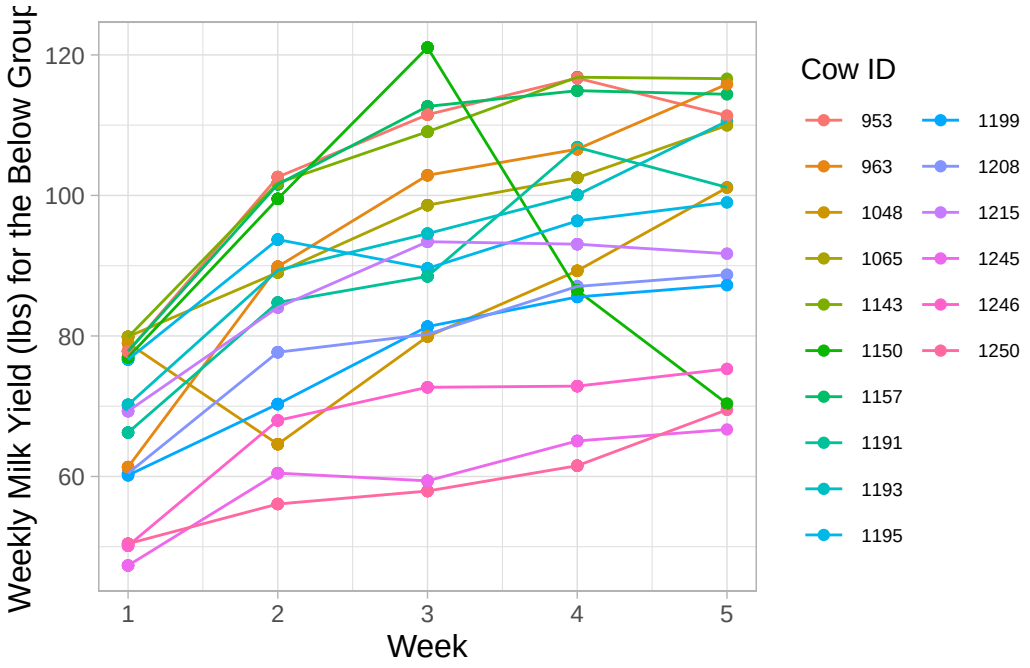

Figure 4: This time series plot shows the mean weekly milk yield (lbs) for each individual cow (primi- and multiparous) in the below group in the first five weeks into lactation. Calving is at the beginning of week 1.

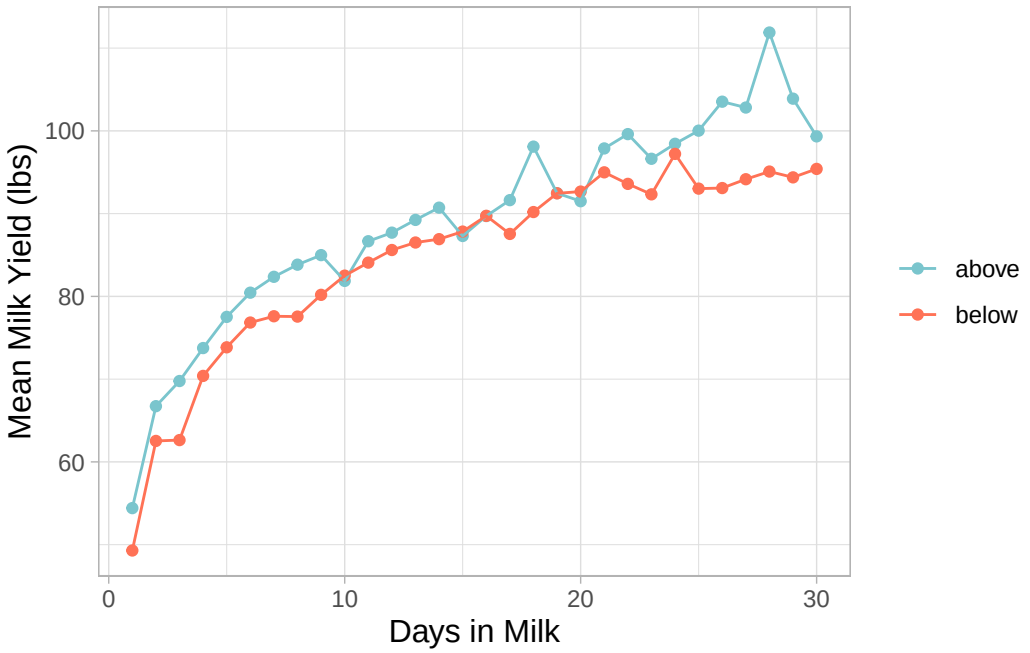

Figure 5: In this time series plot, it shows the mean milk yield (lbs) for the above and below groups (primi- and multiparous cows) in the first 30 days in milk (DIM). Calving is at day 0.