# 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 (RT) 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 |

| Cow ID | Lactation | Mean Ind. RT in LWP | Mean Parity RT in LWP | Group | Parity |
|---|---|---|---|---|---|
| 1245 | 1 | 466.3435 | 489.9999 | below | primi |
| 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 |

| Cow ID | Lactation | Mean Ind. RT in LWP | Mean Parity RT in LWP | Group | Parity |
|---|---|---|---|---|---|
| 989 | 6 | 474.2016 | 473.1203 | above | multi |
| 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.

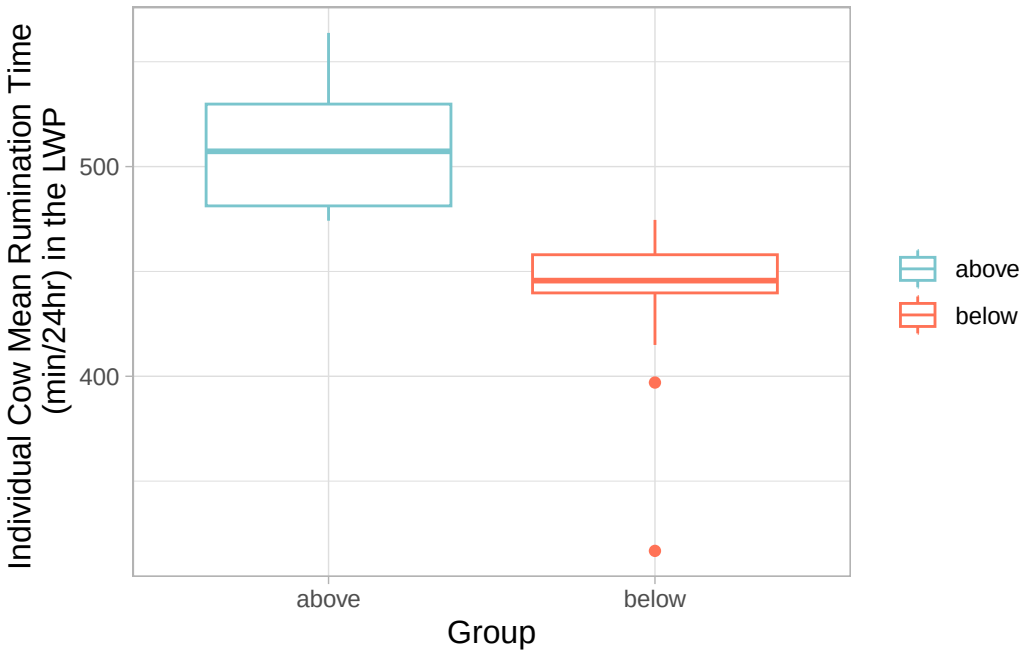


Figure 1: The box plot figure above shows the individual cow mean rumination time (min/24hr) in the last week of pregnancy (LWP) for both the above and below groups.

**Mean RT in the Week Before and Week After Calving**

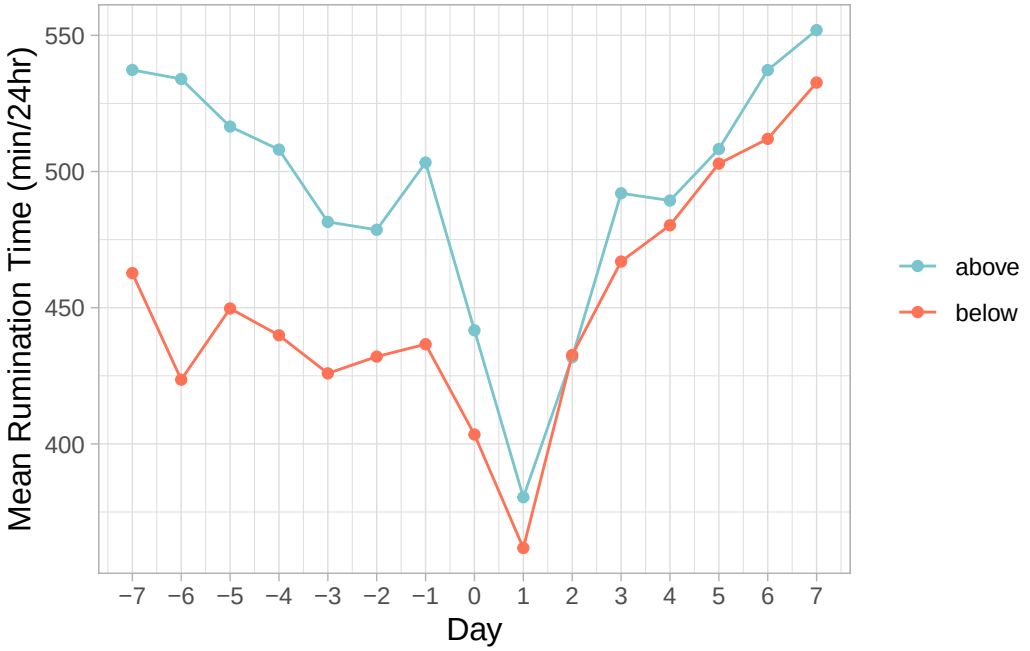


Figure 2: This time series plot is showing the mean rumination (RT) (min/24hr) from the above and below group from 7 days before and 7 days after relative to calving (day 0).

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

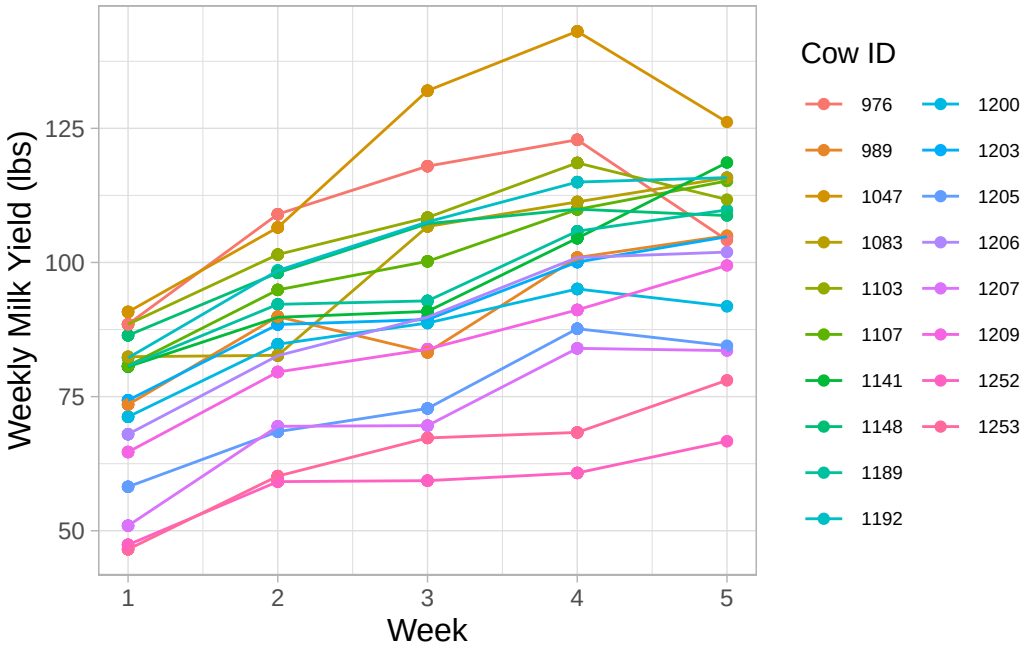


Figure 3: This time series plot shows the mean weekly milk yield (lbs) for each individual cow (primi- and multiparous) in the above group in the first five weeks into lactation. Calving is at the beginning of week 1.

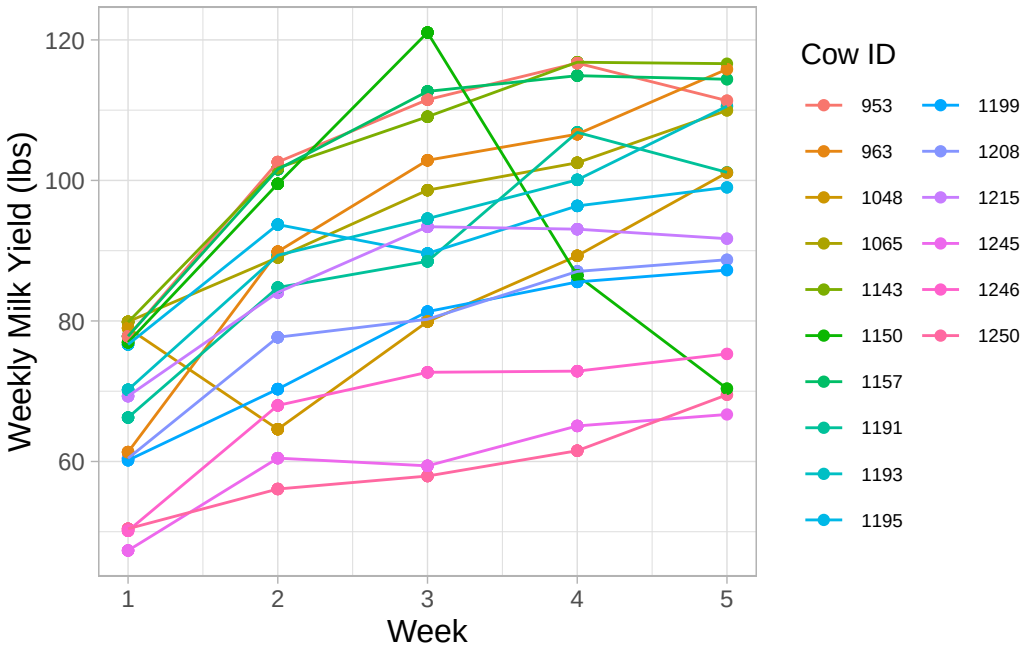


Figure 4: This time series plot shows the mean weekly milk yield (lbs) for each individual cow (primi- and multiparous) in the below group in the first five weeks into lactation. Calving is at the beginning of week 1.

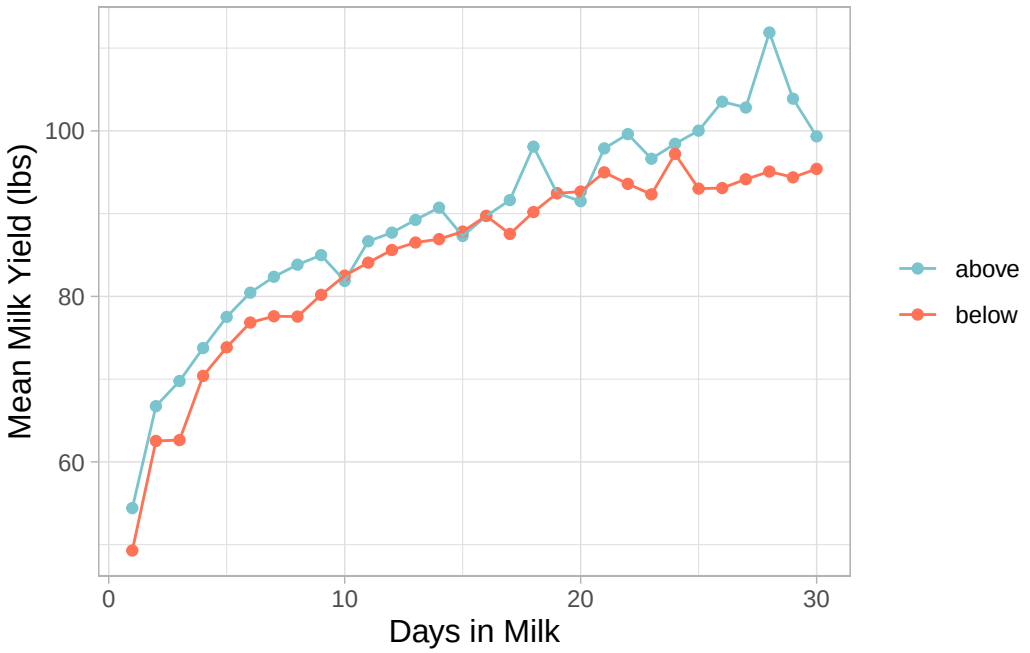


Figure 5: In this time series plot, it shows the mean milk yield (lbs) for the above and below groups (primi- and multiparous cows) in the first 30 days in milk (DIM). Calving is at day 0.