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Project Proposal and Specifications

Our group has been given the partner topic of whether birth weight correlates with other weights, such as weaning weights, winter weights, and sale weights. This topic is interesting because it will give Silvies insight into how big a goat might grow in its lifetime which will help inform Silvies on how to properly treat each goat. Our other topic was researched and chosen by us and asks the question: do kidd deaths rates correspond to certain months or seasons? We believe that after further researching the death rates, we will help give Silvies valuable insight into when and potentially why their kidds die the most. This will help them to figure out preventative measures so they can preserve as many goats as possible during big death rate spikes.

The relevant data available to our group is as follows: birth weights, weaning weights, winter weights, sale weights, and death dates (day, month, year). From this data, we are still looking to use it to observe and find certain correlations. We hope to see if a goat's weight at birth determines when they should be weaned off their dams, how much they bulk up during winter, and how much they're sold for in the end. Additionally, if a goat weighs under a certain minimum during a time of year where we discover there are more likely goat deaths, will they be likely to perish earlier on? To uncover these seasonal factors, we are going to be gathering all time seasonal deaths (the average and the total) and make comparisons between yearly seasonal death rates

to estimate trends over time. We can hopefully showcase all years recorded, specific years with differences, the average, and the total.

A few questions we hope to explore involve the two topics. One is the main topic: Do birth weights correlate with any specific weight afterwards (weaning, winter, sale)? Next, we want to examine whether birth weights during a particular season would be predictive of a goat's performance later in life and in their life expectancy. Would this data be particularly useful in the long run? Finally, we want to see if goats are more likely to die during months and seasons. Does the time of year and season goats were born in similarly affect their chances of survival?

Each of the data points we have identified that we want to use in our study is beneficial in working towards the goal of identifying sustainability problems and promoting positive change. The weaning weights, winter weights, and sale weights are important to identifying sustainability problems when compared to the birth weights of each goat because we can use the correlation between them to identify positives and negatives. For example, if we see that the correlation between birth weights and sale weights is high, we can identify which goats are more likely to sell more when the time comes to sell the goats. The reason why the death rates are important for sustainability is because we can use those death rates to identify when, such as which season or month, and why the goats are dying. This will help make us aware of each death so we can try to prevent it from happening and try to maintain each goat for as long as possible.

The sustainability issues that we will be tackling will be from the proposed topic and from our own chosen topic. The proposed topic wants to investigate the correlation

between birth weights and various other weights. The sustainability issues that can arise from this is that there might not be a correlation between the weights and that could lead to it being harder to manage how each goat will be handled. Without proper handling information for each goat, Silvies could potentially be handling their goat suboptimally. Even though there is unlikely to be no correlation between the weights, it is still a possibility that we have to look out for when examining the data. For our chosen topic, we want to look at the death rates of the kidds at Silvies. The sustainability issue that can come from this is that if there is no specific time period or season when the kidds are dying the most, it will be almost impossible to tell where the problem is and will be very hard to fix. This is harmful to Silvies because they will be unable to prevent these deaths without the proper information and will lead to many unnecessary kidd deaths.

Given that the goal of our database is to help the stakeholder better understand and utilize the data that has been collected, we want our project to include practical user interactions. This functionality will allow the user to make more informed predictions which in turn will help make decisions going forward. One such function of our completed project will be the ability to predict the weight of goats at different times. What this would look like in practice is the actor tells the system that they want to estimate the future growth/weight of a goat, which will cause the system to prompt the user to enter the goat's birth weight (and if more data is available, the user could input that as well). After the actor enters the appropriate data, the system will predict future weaning, winter, and sale weights of the goat by comparing the user data to the data in our database. Additionally, the system will produce a graphical representation of the

projected weight to illustrate how the projection compares with the existing data. Another important user interaction will be the ability to compare death rates between years. When the actor tells the system to compare death rates, the system will ask the actor to provide the specific years they are looking to compare. After the actor gives the years to the system, it will search the database for those years and provide the average, total, and differences in death rates in return. At this point, the actor has the ability to fine tune their specifications to a smaller time scale, for example looking solely at the winter death rates of these years. As a result, the system will provide specific data to give the most useful information it can. If the actor had input a year that was out of range of the data we have access to, the system would inform them that one of the years they requested was invalid and prompt them to enter a year that we have data for. Once the user enters a valid year, the use case will continue with its calculations and comparisons.