MILK! HOW MUCH!!??!!!

Are cows producing more milk now, compared to 14 years ago and what is the predicted production for next year?

The data chosen to look at for this assessment is the monthly milk production of cows (in pounds per cow) from January 2004 to December 2017. I chose this question because Milk and dairy products play an important role in a healthy, balanced diet. They are rich sources of calcium which is easily absorbed by the body. This mineral, along with other nutrients present in dairy foods, such as protein, magnesium and phosphorus, is essential to build and maintain strong bones. Milk will become increasingly important to us as a society, especially as the population continues to grow, so it is really important that the production of milk is keeping up with the growth of our population.

Hypothesis:

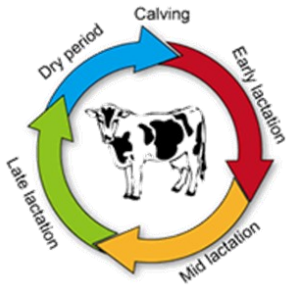
I hypothesise that yearly milk production will continue to increase into the next year. Also having greater average milk production compared to the previous year.

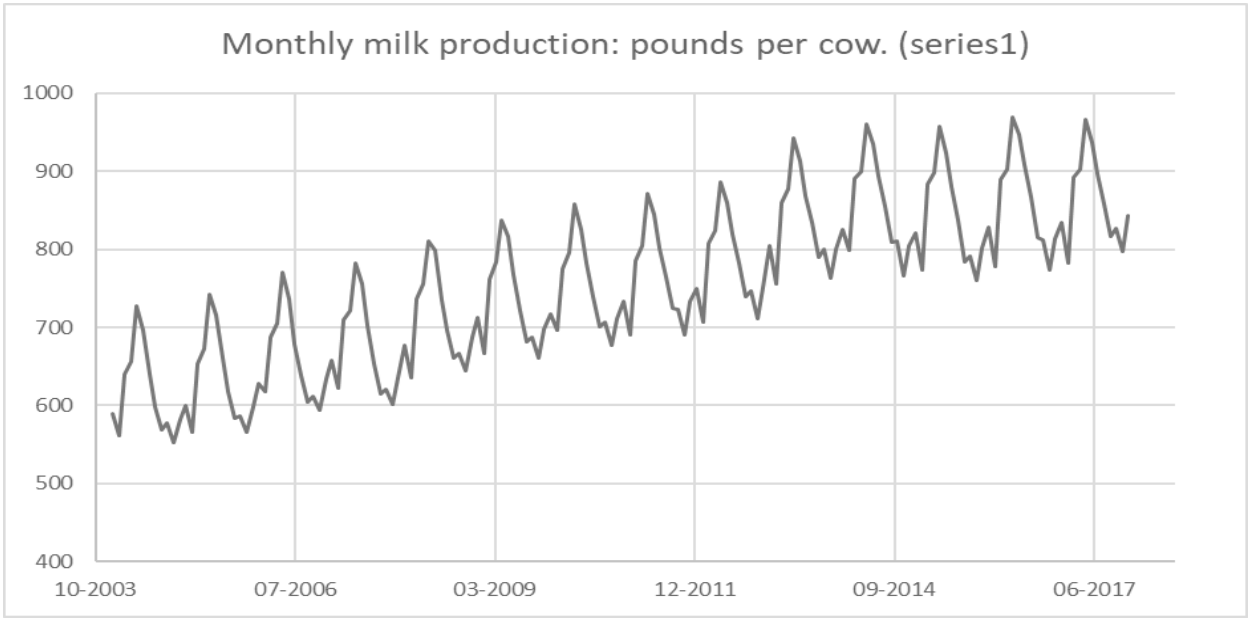
Variables:

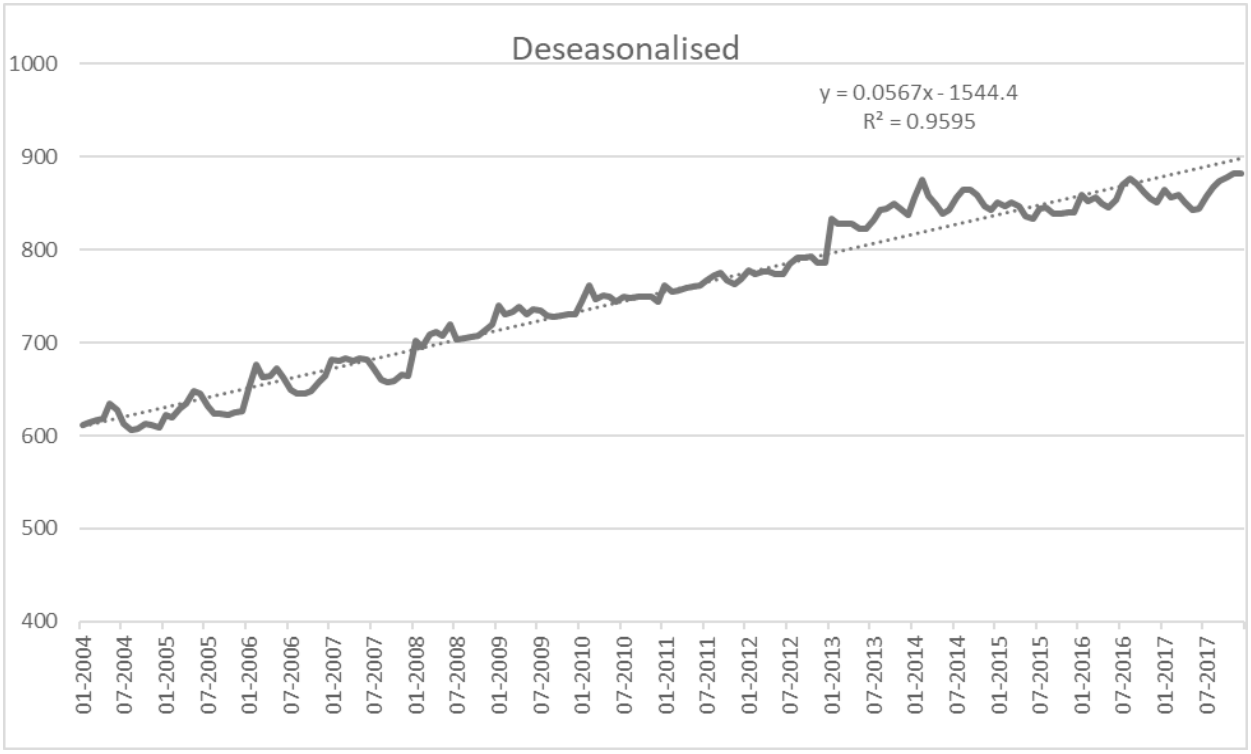
In the data set, we are exploring, there are two variables. The first is the amount of milk that is produced by pounds per cow, this is recorded from 400 to 1000. Because we are exploring time series data, the second variable will be time based. The second variable is the months/years that was used to record the amount of milk produced. The variables start on the 1st of January in 2004 and it ends in the last year, on December 2017.

The production of milk is cyclic as seen in the above graph. this is because Dairy cows follow a consistent cycle of changes in appetite, milk production and live weight following calving. An example of this can be seen in the image below.

The cycle is over a period of a year. Starting around January/ February and ending in Decem-







Prediction:

We can see that the trend line continues to increase for the 2018 year. At the end of 2018 it is predicted that milk production will reach over 900L, pounds per cow.

When looking at the data we can also see that as we get closer to 2017 and 2018 the data starts to dip away from the trend line. this could also signal an upcoming drop in milk production that the line has not yet accounted for. This would match up with the prediction made from the AHDB that said that milk production for 2018/19 will be slightly lower than the previous year.

The trend line and prediction is only a "prediction" after all, so there is always the possibility of it being incorrect to what actually happens in the upcoming year.

Conclusion:

In this investigation, we set out to answer whether milk production will continue to grow into the next year. We set out to answer this question, by first trying to smooth out the data. We did this to try and get a more accurate prediction.

We started off by using 3,5 and 7 mean smoothing. This was good, but it was still to cyclical, and I wanted it to be smoother. So next we tried to deseasonalise the data, and this gave us a really flat graph. From this graph we could fit a trend line, and from this we could make our prediction.

It was predicted that milk production would indeed continue to grow into 2018.

But this "estimate" could be wrong as there is a dip away from the trend line, closer to 2018 and the AHDB that said that milk production for 2018/19 will be slightly lower than the previous year.