CASE Campy (Main) **02441 Applied Statistics and Statistical Software**

Background

The last some years Campylobacter has been the leading cause of enteric infections in Denmark. The same is observed in most developed and developing countries. Previously Salmonella was the predominant but implementation of control strategies has decreased the number of cases and in the meanwhile the number of human cases of campylobacteriosis has increased. The main human risk for acquiring a Campylobacter infection is from eating undercooked meat or cross-contaminated food.

A pronounced seasonality in the number of infections with Campylobacter is observed. The ambition is to reduce the number of Campylobacter infections in broilers which should lead to a reduction of human cases. One important problem is how to reduce the observed seasonality? One solution would be to have winter all year round - but that is rather unlikely. One step on the way to an answer is to investigate if one or more climatic variables can explain the seasonality and especially trying to describe the part not explained directly by the climatic variables, i.e. are the residuals independent?

The primary task is to explain the variation in the proportion of positive flocks per week using climatic variables. Secondly, if time permits, it is of interest to see if there are regional differences.

Data

The study period is 1998 through 2007. The reason for this time-span is that a national monitoring program for Campylobacter in Danish broiler flocks at slaughter was initiated January 1 1998. In the beginning of the slaughter line ten birds from each flock or batch were examined for Campylobacter by cloacal swabs. If one or more swabs from the same batch were positive the batch was labelled positive.

Climate data was provided by the Danish Meteorological Institute (DMI). The variables are weekly country wide averages. This is in the file climate.txt

Description of variables in climate.txt:

year : Year
week : Week within year
aveTemp : Average weekly temperature (C)
maxTemp : Maximum weekly temperature (C)
sunhours : Hours of sunshine per week (h)
relHum : Average weekly relative humidity (%)
daysPrecip : Days with precipitation per week
precip : Precipitation per week (mm)

The data for campylobacter in broiler flocks are the result of the lead in to this case. Later on the following additional columns will be made available:

total : Number of broiler flocks slaughtered per week
pos : How many of those flocks were positive
total1 - total8: Number of broiler flocks slaughtered per week and per region
pos1-pos8 : How many of those were positive – again per region.