Joint analysis of national surveillance data and external data and modelling of disease spread.

Background

Campylobacter and cryptosporidium are two types of germs that can make people feel sick in their stomachs. You can get Campylobacter from eating meat that is not cooked well, or from drinking water that is not clean. You can get Cryptosporidium from drinking dirty water, not washing your hands after touching dirty things, or swallowing water from swimming pools. Both germs can make you feel bad with symptoms like stomach pain, diarrhoea, and fever.

Aim

We're trying to understand why some people get sick with campylobacter and cryptosporidium more often than others. We're using a big database of information about people who got sick between 2014 and 2022 in England, and other information like weather, census, and farming data.

We're looking at things like where people live to see if living near a farm, or somewhere in the countryside makes them more likely to be sick. We're also looking at whether certain times of the year, like when it's really hot or rainy, make people more likely to get sick.

If we figure out why people get sick more often in certain places or times, we might be able to help stop people from getting sick in the future. We could use what we learn to make better rules for keeping people healthy.

The Issue

It's important to study campylobacter and cryptosporidium because these germs can make people sick, and we want to learn more about how they spread so we can stop more people from getting sick in the future. Lots of people get sick from these germs every year (about 289,000), and it can be very expensive to get better, and it can also make people miss school or work. So, by studying these germs, we can help people stay healthy and save money.

Approach

To find out why some people in certain places get sick, we will look at factors like how many animals live in an area, how many people live there, and what the average household income is. We will use a special maths method to help us understand how these factors are related to getting sick.

We're also going to use some maths to see if the number of people who get sick is related to the weather. We'll look at data about people who got sick in different places and compare it to the weather in that place.

We'll also study how cases are spread out in England. We'll use a computer program to create a map that shows where the cases are, and if they happen more in one area than others. We'll group areas with similar patterns together and see if there are any differences between them. All of this will help us understand more about these germs and prevent more people from getting sick in the future.

Public Involvement

We can talk to people who live in the places where we are studying the germs. We can go to events or groups and tell them about our research and ask for their ideas. This will help people understand how to stay healthy and avoid getting sick. It will also help us learn from their experiences and knowledge.