Statistical analysis

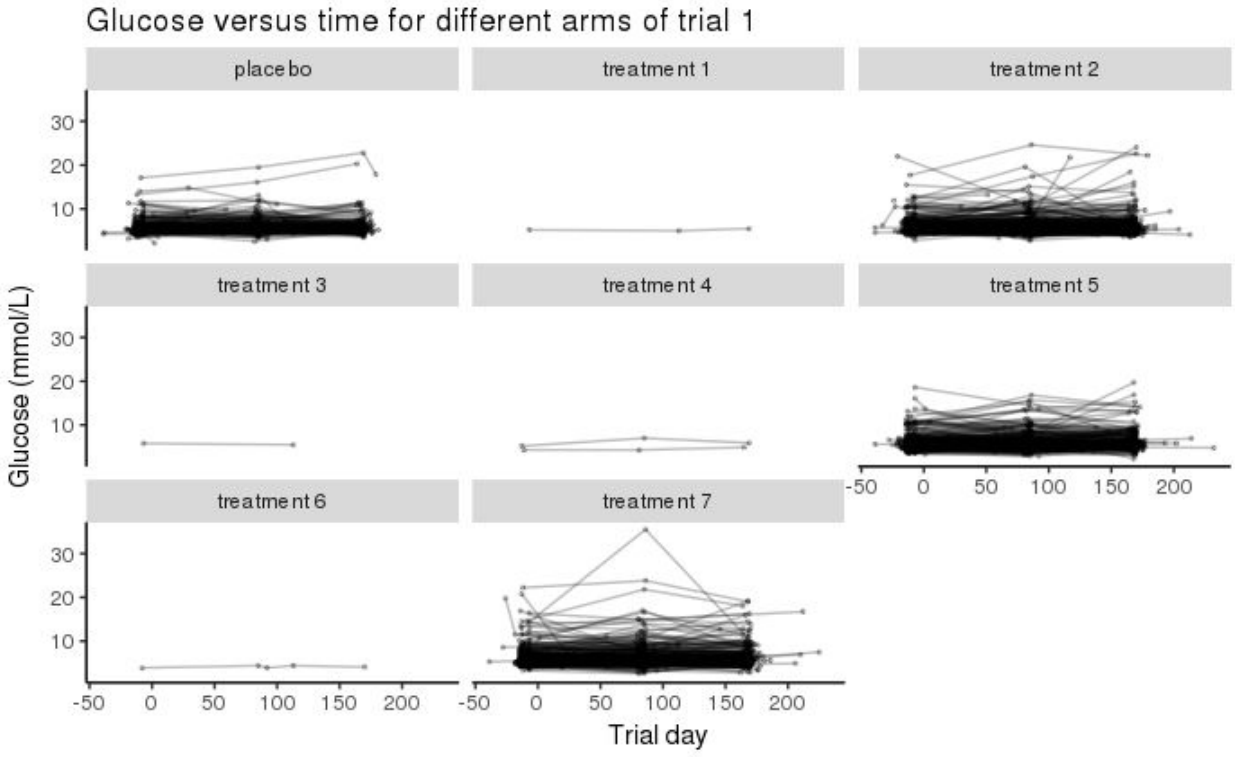
Selecting the three biggest trials (by number of patients) and examining glucose levels in different groups of patients

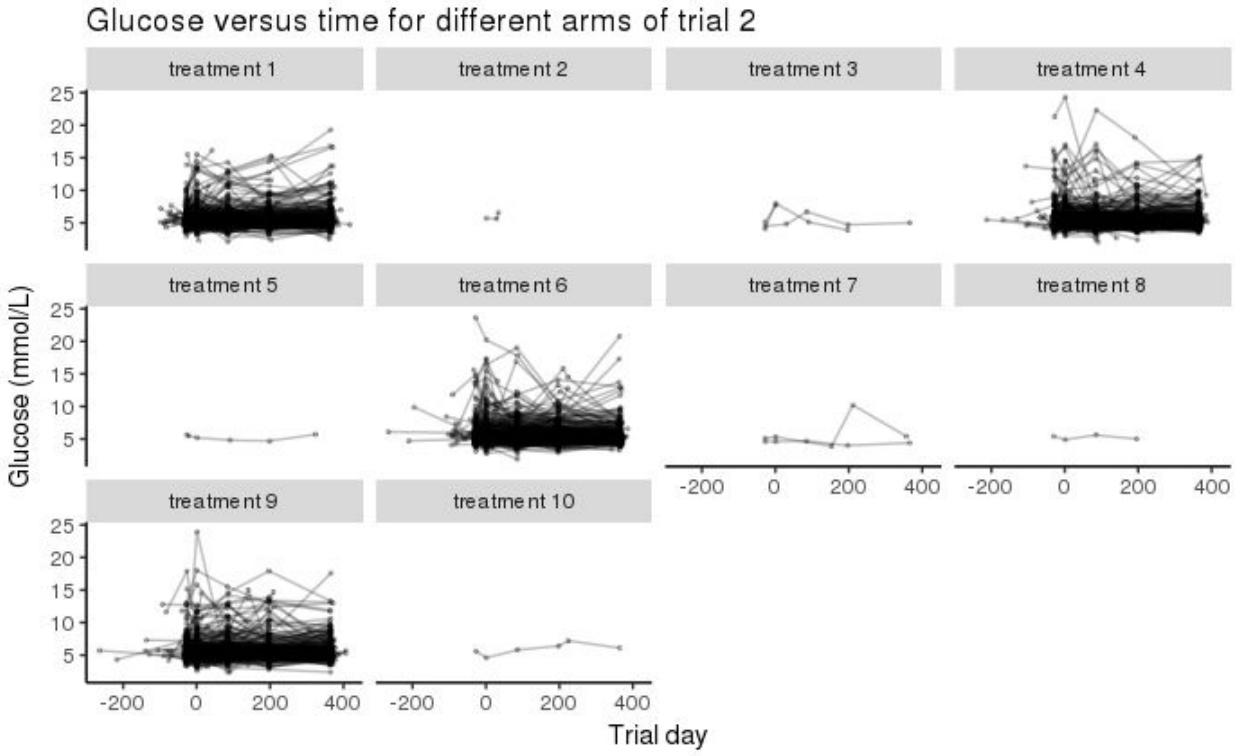
The three trials with the most patients were selected for further examination of glucose levels:

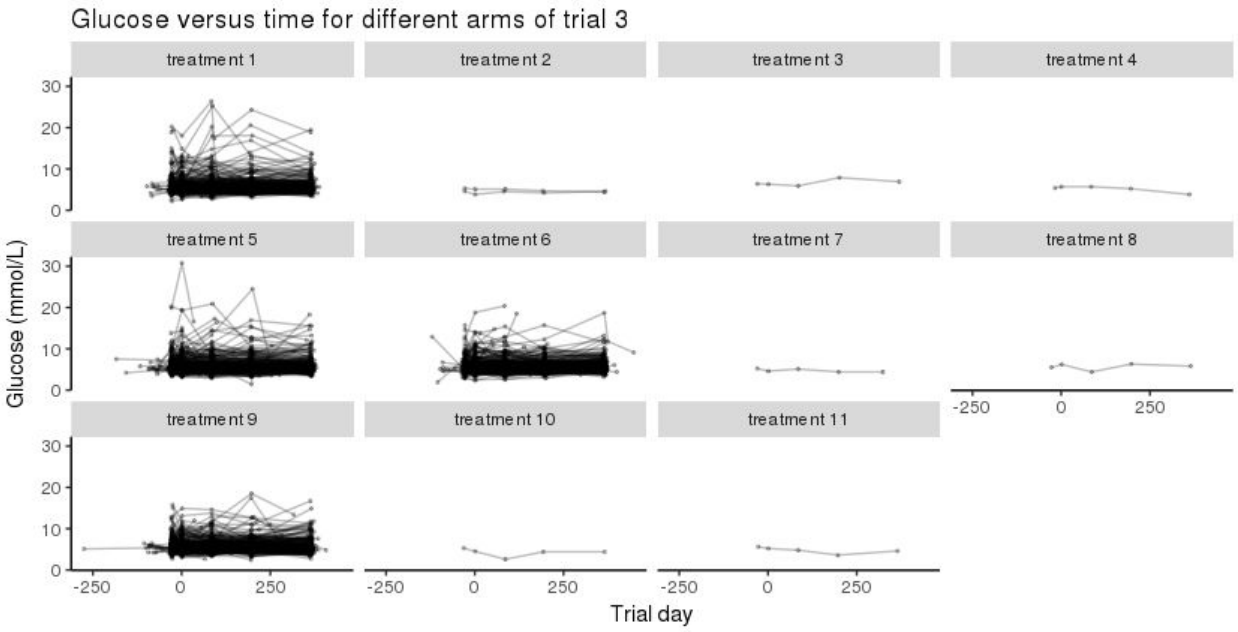
Therapy Area	Indication	Phase	No of patients
Respiratory	Chronic Obstrucitve Pulmonary Disease	Phase IIIA	1532
Respiratory	Chronic Obstrucitve Pulmonary Disease	Phase IIIA	1633
Respiratory	Chronic Obstrucitve Pulmonary Disease	Phase IIIA	1622

These trials are all in the same disease area and indication but are testing different medicines (these cannot be identified in this project). They were carried out in different geographies and with different patients.

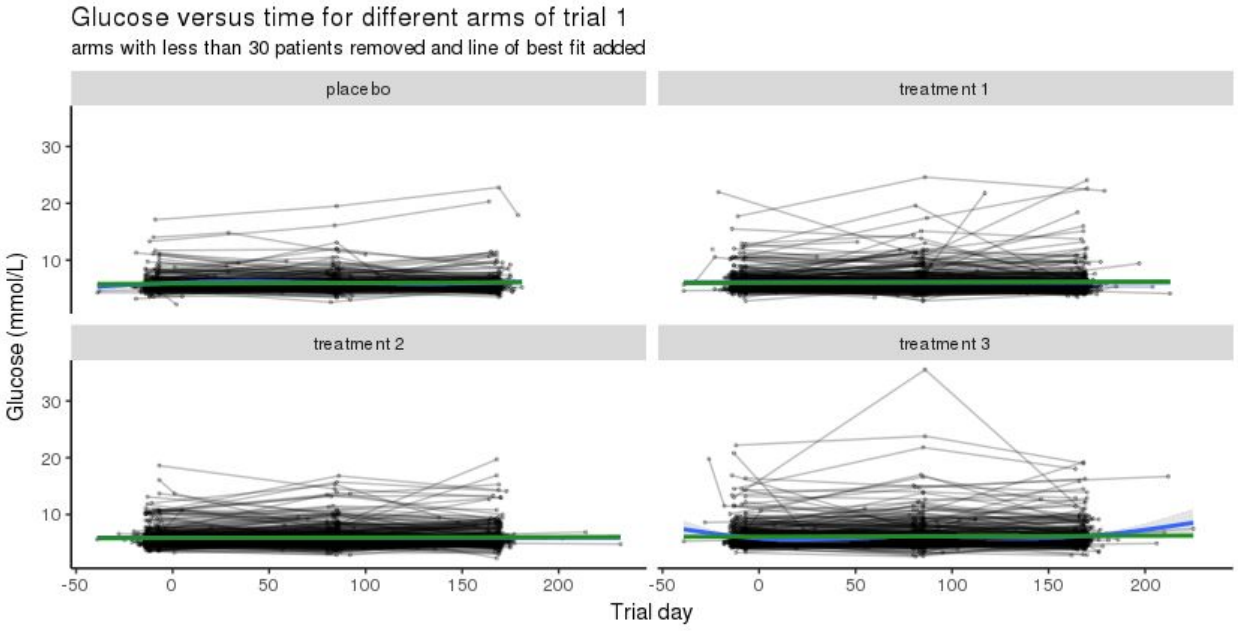
Initial plots were made of these three trials. The variable actarm was used to split the data into separate plots. Actarm is the arm of the trial the patient was assigned to. In one arm, a patient receives a certain dosage of the medicine on trial or the placebo. Pharma companies do this so they can test different concentrations to see if an increased dose has a better effect. There should be no change in glucose in patients who are on the placebo. The data is split this way so it will be clear if there's one particular dose that is affecting glucose. The actarm labels have been replaced with blind treatment labels.

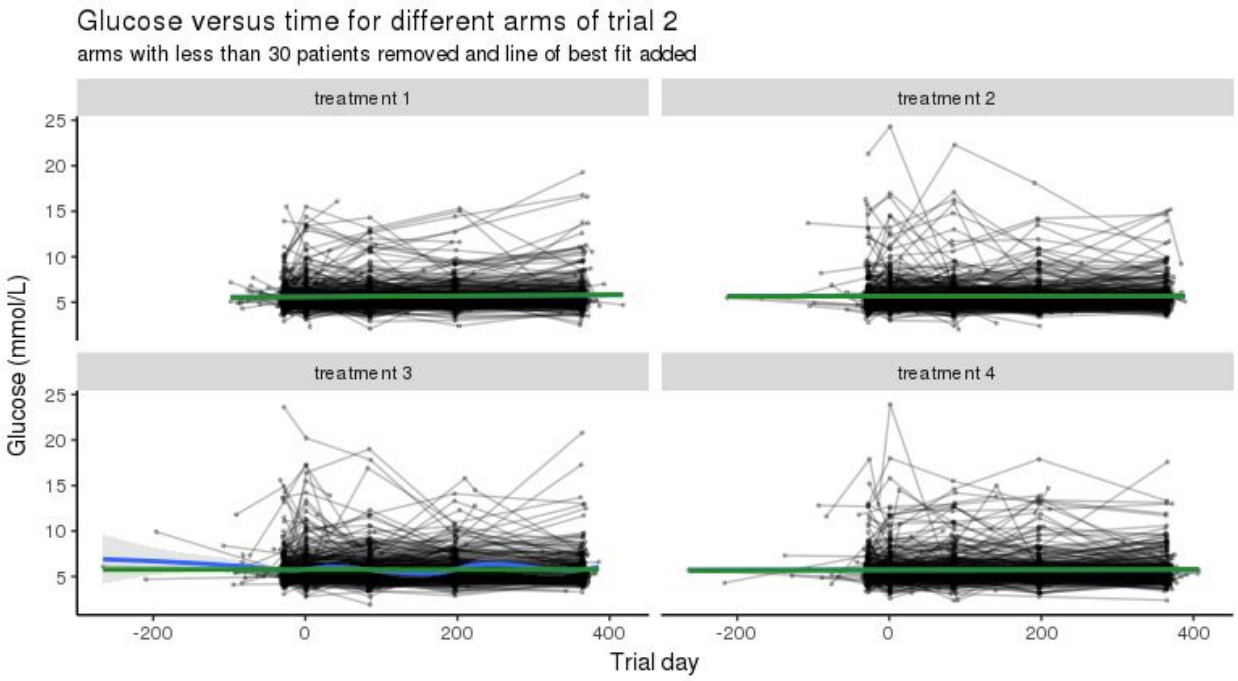

Glucose versus time for different arms of trial 1
placebo
treatment 1
treatment 2
treatment 3
treatment 4
treatment 5
treatment 6
treatment 7
Glucose (mmol/L)
Trial day

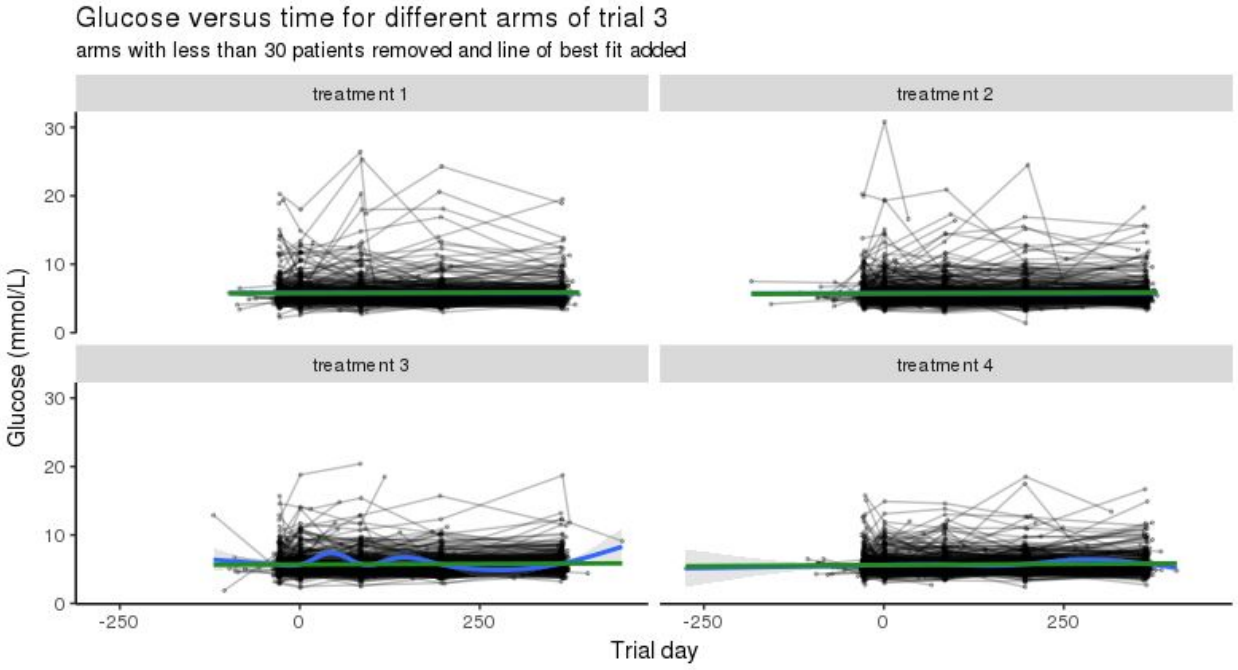

Glucose versus time for different arms of trial 2
treatment 1
treatment 2
treatment 3
treatment 4
treatment 5
treatment 6
treatment 7
treatment 8
treatment 9
treatment 10
Glucose (mmol/L)
Trial day



From the initial plots it's clear there are some arms of the trials that only have one patient. These will not be useful for modelling so are removed. A crude linear model is also added to the remaining plots to see if it looks like there are any trends in the glucose levels.







These crude models seem to show there is nothing strange happening with the glucose but models are created for these trials to check.