# Meeting 2 15-09-2021

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We first discussed the paper, we talked about how it was suitable for longitudinal studies with multiple patients (time series). The inference was done on three separate parts, temporal, contemporaneous, and between-subjects. The temporal graph is directed, but cyclic unfortunately. Regularization was done using LASSO, but exact estimation methods were not discussed.

We also talked about how we should steer away from philosophical discussions about what exactly causality is. We should address it but not delve deep into it (unless we want to).

We also talked about, given a VAR(1) model, how to estimate the edges (which indicate that they are helpful in predicting the time series). This should be a DAG (unless you need X to predict Y and Y to predict X).

Order of time series is most likely 100s or 1000s, so that should be considered when thinking about the complexity.

Richard will be joining in e.g. two weeks when we have landed a little bit more on the topic. In the next two weeks, it is smart to land down a bit and think of a more concrete topic or avenue to go down.

Interesting to investigate is also the PC algorithm, a variant of the IC algorithm of Pearl.

Naïve way to estimate model VAR(1):

**.** Estimate using **.**

Does this force directionality / sparsity of A?

Also, read papers on multiple time series networks (High-dimensional Autoregressive Generalized Linear Models and others at <http://pages.cs.wisc.edu/~raskutti/publication.html>).