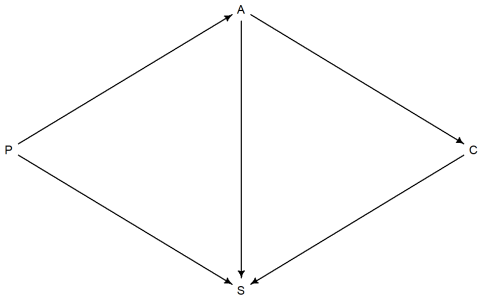
Tilde Idun, Sofie Mosegaard,
Manuela Thomasen and Laura Rahbek
Study group 9

Report - Portfolio 2



In this assignment we have investigated and dagged the relationship between how many alcoholic drinks a given person consumes and the quality of their sleep. Further, we included the effect of whether or not the person has consumed a caffeinated drink within five hours of going to bed, as well as whether or not the person has attended a party.
Party directly affects both the amount of alcohol consumed and sleep quality; which creates a fork. Caffeine consumption is affected by how much alcohol the person has consumed and as caffeine further affects sleep quality this creates a pipe going from alcohol to caffeine and ending in sleep. Additionally, caffeine consumption is independent of party given that we know the amount of consumed alcohol.

We modelled the phenomenon, by using our simulated data. We found that conditional interdependencies implied by the DAG were also present in the model. We plotted multiple linear regression models in our investigation of the conditional interdependencies. When including all our predictors, our data is compatible with our DAG (cf. the tables of task 3 in the markdown).

Since a fork between P, A and S is present, we had to close the back door to account for the confounding variable P. This can be observed when we compare the model that accounts for P (closed back door) and the model that doesn't account for P (open back door). The model which doesn't account for P returns a greater effect of A on S than the true effect. This creates false inference.

Furthermore, we simulate data that doesn't fit the proposed DAG and run the original model (closed back door model) on this new data. By doing this we show that if the assumptions of our DAG are not compatible with the actual data, then we will not infer reliable results that align with the true effects.