

# Correlation structure of social and sexual contact behaviour before the COVID-19 pandemic – an analysis using the German HaBIDS study

Poster Nr.



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If you model an infectious disease (spectrum) with more than one transmission route, you need to take the correlation structure of the respective two (or more) contact networks into account.

## BACKGROUND

Estimates of contact patterns are primarily obtained via contact surveys that typically focus on a single route of transmission. However, in specific situations (e.g., HIV/TB coinfection, mpox transmission, the effect of vaccines on overall *Neisseria* ecology), joint distributions of sexual and social contacts need to be parameterized. For these cases, it is necessary to understand if social and sexual contact patterns are correlated or can be modelled independently when considering a modelling framework that covers pathogens transmitted via both transmission routes.

We aimed to investigate the correlation between social and sexual contact patterns measured in the same individuals. While sexual contact patterns were measured for the 12 months preceding the survey, social contacts were recorded for the preceding 24 hours and might, thus, show higher variability than sexual contacts. We therefore also investigated if there was a difference in social contact patterns in two surveys that were conducted 19 to 35 weeks apart

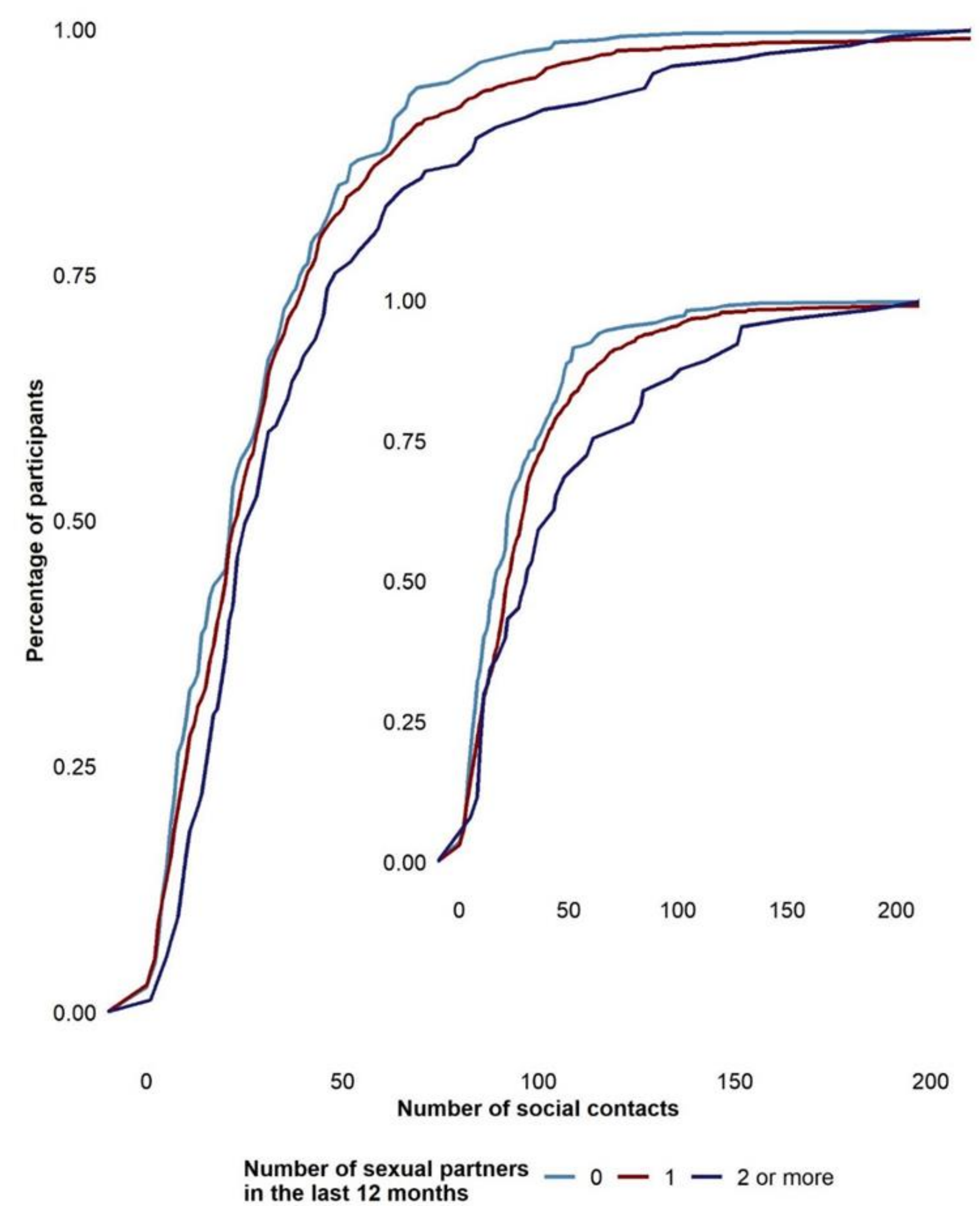
## METHODS

This analysis is based on data from the HaBIDS study. Using paper-based and web-based data collection, participants in HaBIDS were surveyed once for sexual contacts, while information on social contacts was collected in two phases with an individual median time difference of 22 (IQR 19-34) weeks. A total of 1,784 study participants provided information on at least one of the two social contact surveys, while 1,071 provided information on sexual contacts. We used a generalized linear mixed model based on a negative binomial regression to assess the interplay between sexual and social contacts, describe determinants of social contact patterns in Germany before the COVID-19 pandemic, examine the stability of contact patterns over time, and evaluate the effect of data collection mode.

## RESULTS

We found no relevant differences in the number of social contacts between surveys in the two phases (contact number ratio (CNR) 0.96, 95% CI 0.91–1.01). While higher numbers of contacts were reported on paper than online, both data collection modes led to qualitatively similar contact patterns with respect to age structures and contact settings. Participants with two or more opposite-sex sexual partners in the past 12 months had a higher number of social contacts (CNR 1.65 (95%CI 1.27-2.14) than those with either one (CNR 1.22 (95%CI 1.03-1.43) or zero opposite-sex sexual partners (reference).

## RESULTS CONTINUED



**Figure 1:** Participants' number of social contacts stratified by number of sexual partners in the last 12 months in HaBIDS maximized sample with group contacts (n=1071).

*NOTE:* The small figure embedded in the plot is based on participants aged over 30 years old.

## CONCLUSIONS

The observed correlation between social and sexual contacts suggests that independent modelling is not appropriate when both types of contacts need to be parameterized simultaneously. Contact patterns in our study were similar between paper-based and online data collection modes, suggesting that they can be used interchangeably.



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