

Supplementary material for “Maximum approximate likelihood estimation of general continuous-time state-space models”

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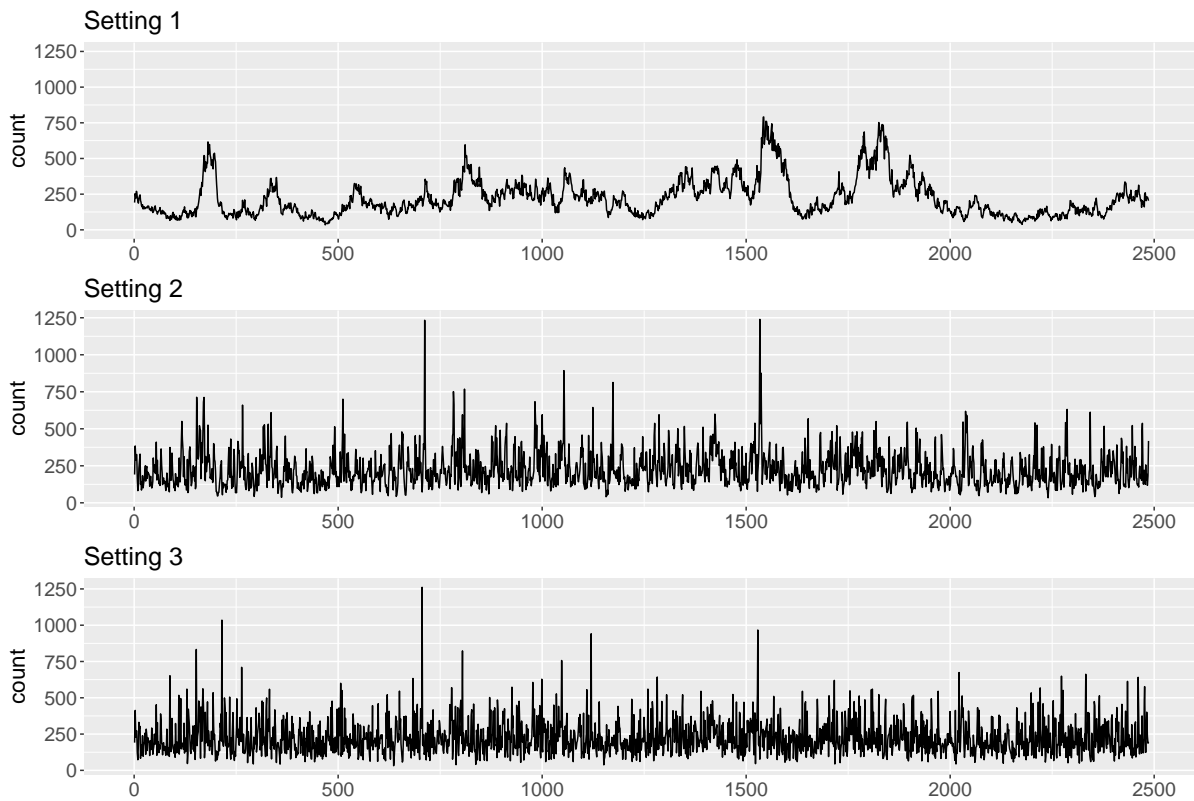


Figure A1: Simulated time series of irregularly spaced observations for each of the three simulation settings described in Section 3 of the main manuscript. The observations are generated by the same observation process, while the parameters of the underlying state process differ between the settings.

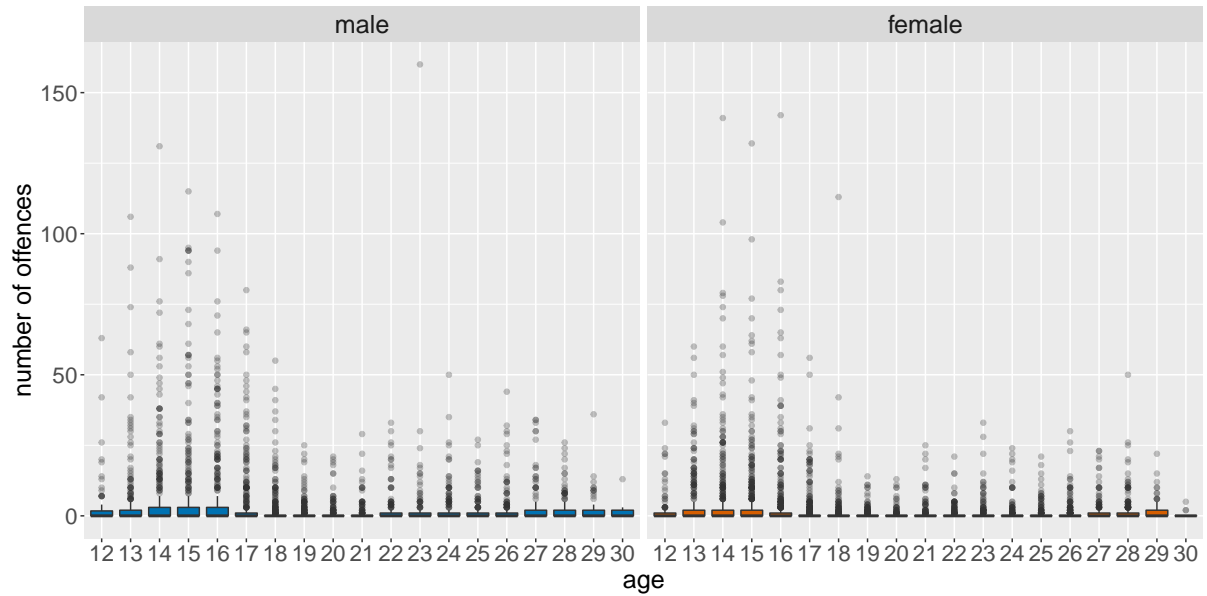


Figure A2: Boxplots of the number of offences committed in the twelve months prior to the survey, for different age classes and both gender.

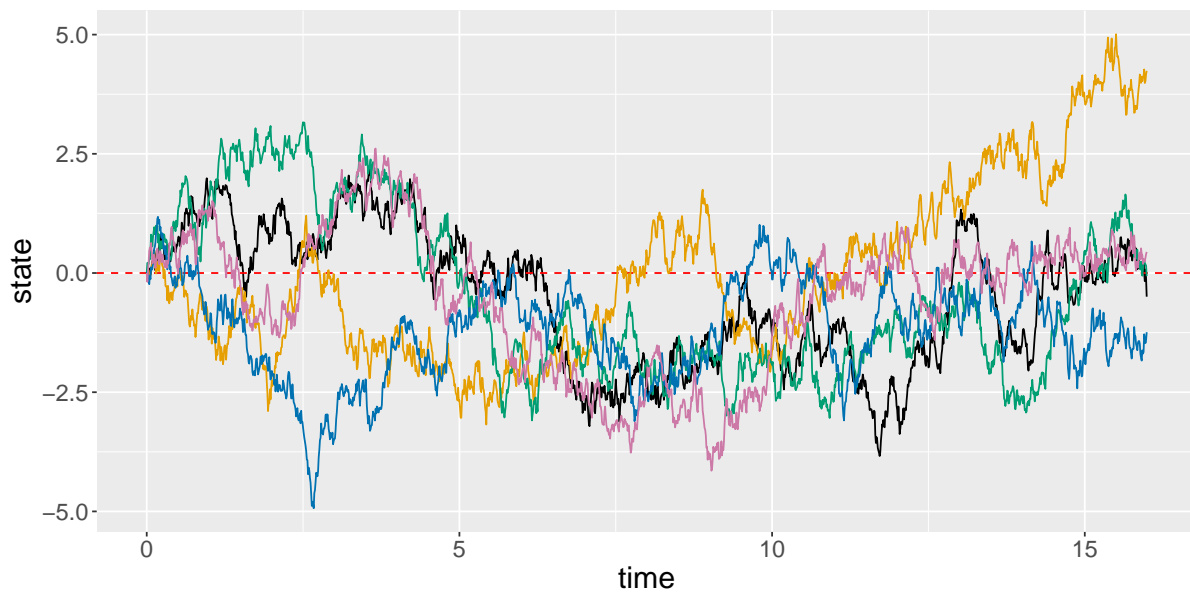


Figure A3: Simulation of possible state trajectories for the study period of 16 years based on the estimated parameters of the OU process. The red dashed line indicates the intercept around which the processes fluctuate. The graphs were obtained by application of the Euler-Maruyama scheme with initial value 0 and step length 0.01.

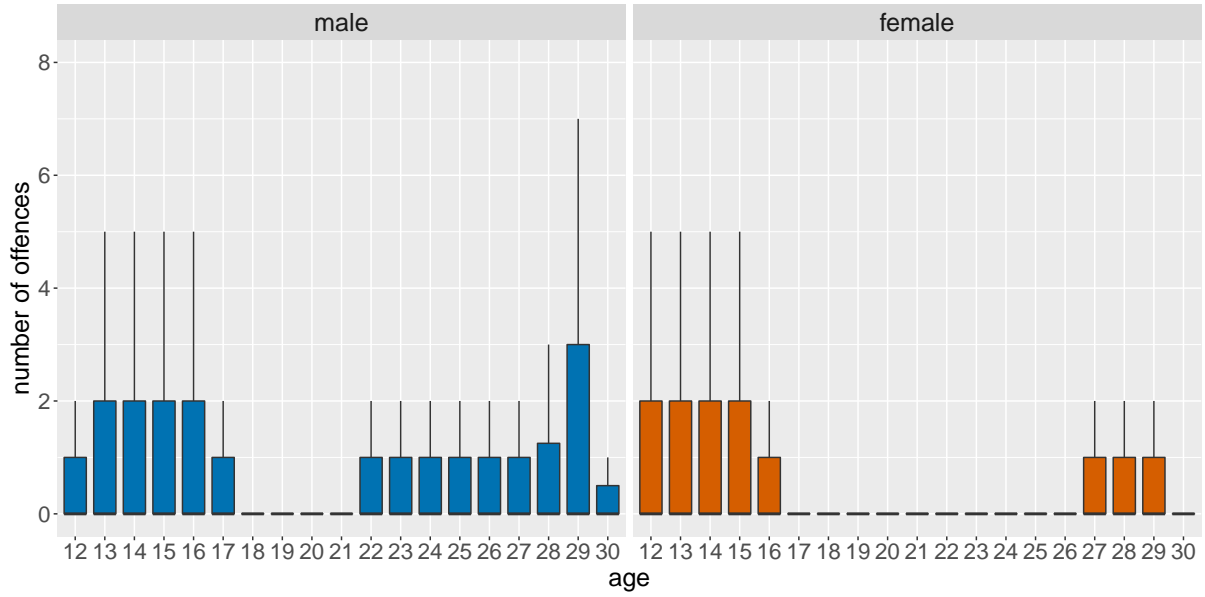


Figure A4: Boxplots of the simulated observations for different age classes and both gender, based on the fitted continuous-time SSM of the case study. Outliers have been removed from the plot for clarity.

model	no. of parameters	AIC	Δ AIC
SSM	19	31405.13	—
2-state HMM	21	31417.81	12.68
3-state HMM	26	31160.53	-244.60
4-state HMM	33	31079.18	-325.95
5-state HMM	42	31072.58	-332.55

Table A1: Number of parameters, AIC values, and differences in AIC values compared to the SSM for 2- to 5-state continuous-time HMMs fitted to the number of offences observed in the case study.