Additional file 5 - Computational issues

Figures A19-A28 show the results for convergence and estimation quality of alternative optimizers.
Figure A19: Proportion of convergence in the random intercept generalized linear mixed-effects model. The proportions of convergence are for $p_i = 0.1$, $p_{i2} = 0.2$, $p_{i2} = 0.4$, $\theta = 0$, and $0 \leq \tau^2 \leq 1$ for sample sizes $n = 50, 100, 250, 100$ in each arm.
Figure A20: Proportion of convergence in the random intercept generalized linear mixed-effects model. The proportions of convergence are for \( p_{i_2} = 0.1, p_{i_2} = 0.2, p_{i_2} = 0.4, \theta = 1, \) and \( 0 \leq \tau^2 \leq 1 \) for sample sizes \( n = 50, 100, 250, 100 \) in each arm.
Figure A21: Proportion of convergence in the conditional generalized linear mixed-effects model with exact likelihood NCHGN. The proportions of convergence are for different optimizers and $p_{i2} = 0.4$, $\theta = 1$, $0 \leq \tau^2 \leq 1$ and sample sizes $n = 50, 100, 250, 1000$ in each arm.
Figure A22: Bias in estimation of $\tau^2$ in the conditional generalized linear mixed-effects model with exact likelihood NCHGN. The biases are for different optimizers and $p_{12} = 0.4$, $\theta = 1$, $0 \leq \tau^2 \leq 1$ and sample sizes $n = 50, 100, 250, 1000$ in each arm.
Figure A23: Bias in estimation of $\theta$ in the conditional generalized linear mixed-effects model with exact likelihood NCHGN. The biases are for different optimizers and $p_{12} = 0.4$, $\theta = 1$, $0 \leq \tau^2 \leq 1$ and sample sizes $n = 50, 100, 250, 1000$ in each arm.
Figure A24: Estimated coverage of $\theta$ in the conditional generalized linear mixed-effects model with exact likelihood. The coverages are given at the nominal 95% level and for different optimizers with $p_{r2} = 0.4$, $\theta = 1$, $0 \leq \tau^2 \leq 1$ and sample sizes $n = 50, 100, 250, 1000$ in each arm.
Figure A25: Proportion of convergence in the conditional generalized linear mixed-effects model with exact likelihood NCHGN. The proportions of convergence are for different optimizers for $p_{\tau^2} = 0.1$, $\theta = 1$, $0 \leq \tau^2 \leq 1$ and sample sizes $n = 50, 100, 250, 1000$ in each arm.
Figure A26: Bias of $\tau^2$ in the conditional generalized linear mixed-effects model with exact likelihood NCHGN. The biases are for different optimizers and $p_{12} = 0.1$, $\theta = 1$, $0 \leq \tau^2 \leq 1$ and sample sizes $n = 50, 100, 250, 1000$ in each arm.
Figure A27: Bias of $\theta$ in the conditional generalized linear mixed-effects model with exact likelihood NCHGN. The biases are for different optimizers and $p_{i2} = 0.1$, $\theta = 1$, $0 \leq \tau^2 \leq 1$ and sample sizes $n = 50, 100, 250, 1000$ in each arm.
Figure A28: Estimated coverage of $\theta$ in the conditional generalized linear mixed-effects model with exact likelihood. The coverages are given at the nominal 95% level and for different optimizers with $p_{12} = 0.1$, $\theta = 1$, $0 \leq \tau^2 \leq 1$ and sample sizes $n = 50, 100, 250, 1000$ in each arm.