Simulation results

General model:

$$\mu(t|Z) = f(t, \beta_0^\top Z) g(\gamma_0^\top Z),$$

where for fixed $x \in \mathbb{R}$, $f(\cdot, x)$ is an unspecified density function on $[0, \tau]$, and $g(x)$ is unknown but monotone in x. We assume $\|\beta_0\| = \|\gamma_0\| = 1$.

Simulation settings used in the paper:

- Z is generated from a multivariate truncated normal distribution satisfying $Z \sim N_2(0, I_2)$ and $\|Z\| \le 1$.
- Censoring time is an exponential distribution with mean $10 \cdot (1 + |z_1|)$.
- Recurrent event times are generated from Poisson process with rate functions:

  M1: $\mu(t|Z) = \mu_0(t) \exp(\gamma_0^\top Z)$
    - $\mu_0(t) = \frac{2}{1+t}$.
    - $\beta_0 = (\beta_1, \beta_2) = (0, 0)$, $\gamma_0 = (\gamma_1, \gamma_2) = (0.28, 0.96)$.

  M2: $\mu(t|Z) = \mu_0(t) + \alpha_0^\top Z$
    - $\mu_0(t) = e^{0.1t}$.
    - $\beta_0 = \gamma_0 = \alpha_0 = (0.6, 0.8)$.

  M3: $\mu(t|Z) = \mu_0\{t \exp(\alpha_0^\top Z)\}$
    - $\mu_0(t) = e^{-t}$.
    - $\beta_0 = \gamma_0 = \alpha_0 = (0.6, 0.8)$.

  M4: $\mu(t|Z) = \mu_0\{t, \exp(\beta_0^\top Z)\} \exp(\gamma_0^\top Z)$
    - $\mu_0(t, x) = \frac{t \cdot (1-t)^{1+x}}{B(2, 1+x)}$
    - $\beta_0 = (0.6, 0.8)$, $\gamma_0 = (0.28, 0.96)$

- Set $\tau = 10$ for **M1, M2, M3** and $\tau = 1$ for **M4**.
- **M1-ind** solves γ_0 under shape-independence.

Table 1: Point estimator (PE) and empirical standard error (ESE) for **M1** to **M4**. Sample size is $n = 200$, with 1000 replications. **M1-ind** assumes $\beta_0 = (0, 0)$ and shape-independence.

	M1		**M1-ind**		**M2**		**M3**		**M4**	
	PE	ESE	PE	ESE	PE	ESE	PE	ESE	PE	ESE
β_1	0.187	0.655			-0.583	0.208	-0.584	0.170	-0.578	0.274
β_2	0.215	0.701			-0.788	0.206	-0.791	0.189	-0.774	0.267
γ_1	0.278	0.057	0.277	0.051	0.592	0.062	-0.595	0.119	0.276	0.090
γ_2	0.959	0.016	0.959	0.014	0.801	0.055	-0.787	0.114	0.957	0.025