		Cancer State	PSA	Biopsy	Surgery
Data	Outcome	η_i	$\mathbf{Y}_i$	$(B_{ij},\, R_{ij}),\, j=1,\ldots,J_i;$	$S_{ij}, j=1,\ldots,J_{S_i}$
	Covariates		$\mathbf{X}_i, \mathbf{Z}_i$	$(\mathbf{U}_{ij},\, \mathbf{V}_{ij}),\, j=1,\ldots,J_i$	$\mathbf{W}_{ij},\, j=1,\ldots,J_{S_i}$
Model		$\eta_i \sim Bern(\rho)$	$\check{\mathbf{b}}_i \vert \eta_i = k \sim MVN(\boldsymbol{\mu}_k, \Sigma)$ $\mathbf{b}_i = diag(\check{\mathbf{b}}_i \boldsymbol{\xi}^T)$ $\mathbf{Y}_i \sim MVN(\mathbf{X}_i\boldsymbol{\beta} + \mathbf{Z}_i\mathbf{b}_i, \sigma^2\mathbf{I}_{M_i})$	$B_{ij} \vert \eta_i = k \sim Bern\big(P(B_{ij}=1 \vert \mathbf{U}_{ij}(k), \boldsymbol{\nu})\big)$ $R_{ij} \vert \eta_i = k \sim Bern\big(P(R_{ij}=1 \vert \mathbf{V}_{ij}(k), \boldsymbol{\gamma})\big)$	$S_{ij} \vert \eta_i = k \sim$ $Bern\big(P(S_{ij}=1 \vert \mathbf{W}_{ij}(k), \boldsymbol{\omega})\big)$
Priors		$\rho \sim Beta(1,1)$	$\boldsymbol{\mu}_k \sim MVN(0, 10^2 \times \mathbf{I}_{D_Z}),\, k=0,1$ $\Sigma \sim InvWish(\mathbf{I}_{D_Z}, D_Z+1)$ $\xi_d \sim U(0,10),\, d=1,\ldots,D_Z$ $\boldsymbol{\beta} \sim N(0, 10^2 \times \mathbf{I}_{D_X})$ $\sigma^2 \sim U(0,10)$	$\boldsymbol{\nu} \sim MVN(0, 10^2 \times \mathbf{I}_{D_U})$ $\boldsymbol{\gamma} \sim MVN(0, 10^2 \times \mathbf{I}_{D_V})$	$\boldsymbol{\omega} \sim MVN(0, 10^2 \times \mathbf{I}_{D_W})$

Table 1: Model Summary. D_X is the length of vector $\mathbf{X}$ and $\mathbf{I}_{D_X}$ is the identity matrix with dimension D_X.