Y:
diagnostic indicators

Time (T)
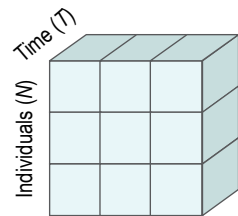
Individuals (N)

Diseases (D)

$Y \in N \times D \times T$

G:
covariates
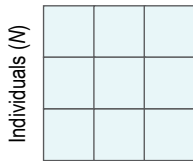
Individuals (N)

Covariates (P)

$G \in N \times P$

E:
event or censor times
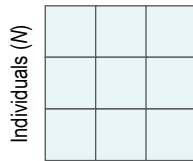
Individuals (N)

Event or censor times (E)

$E \in N \times D$

Φ:
disease logits

Time (T)

Signatures (K)

Diseases (D)

$\Phi \in K \times D \times T$
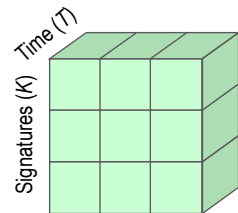
Λ:
individual loading

Time (T)

Individuals (N)

Signatures (K)

$\Lambda \in N \times K \times T$
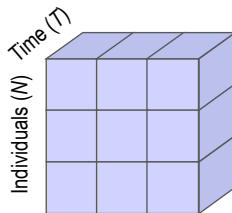
Ψ:
signature disease association

Signatures (K)
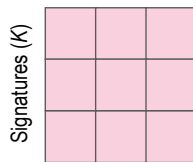
Diseases (D)

$\Psi \in K \times D$

$$\Pi_{idt} = \mathbf{k} \cdot \sum_k \text{softmax}(\Lambda_{ikt}) \cdot \sigma(\phi_{kdt})$$