A w_u (probability)

varying generation time distributions

support m

u (d)

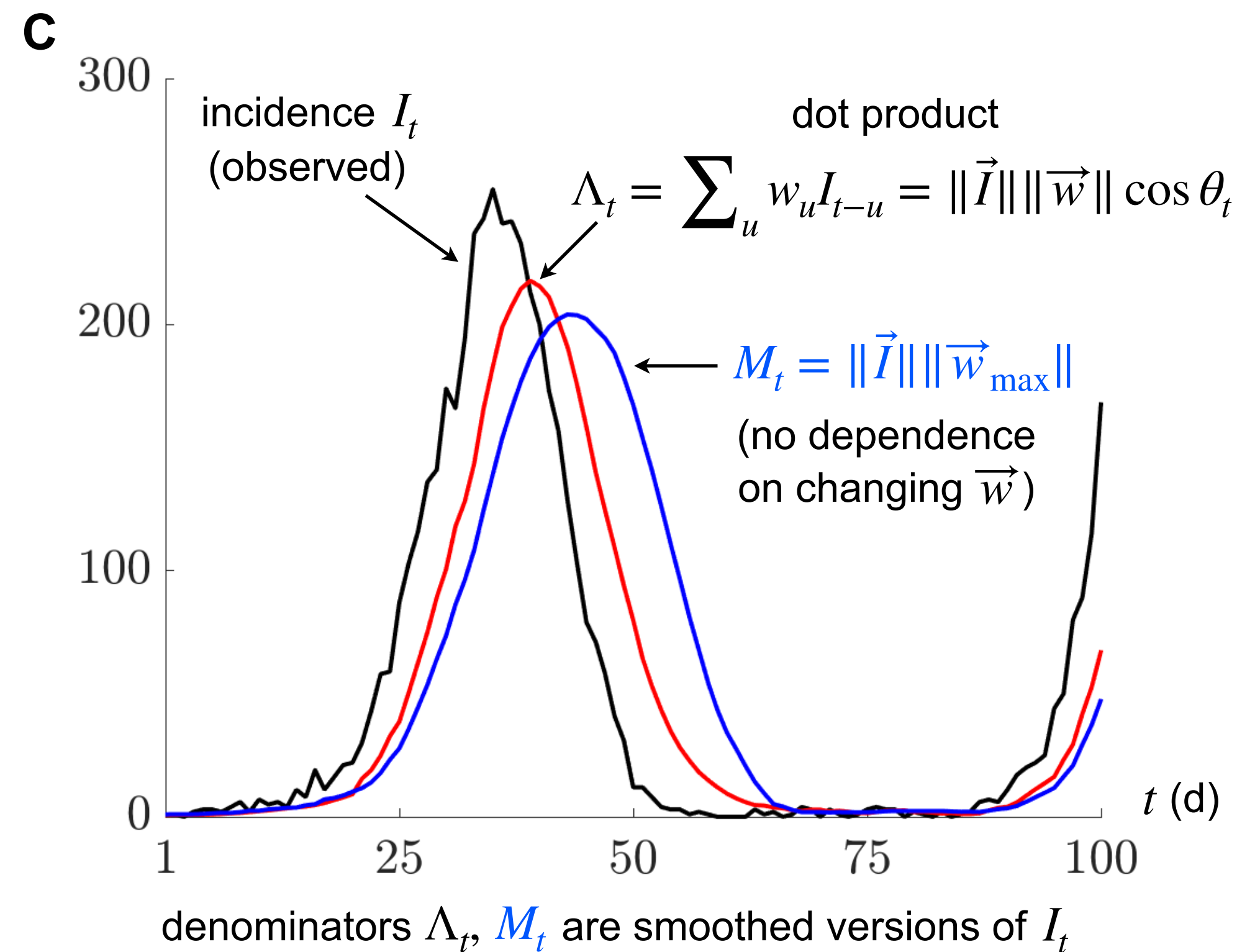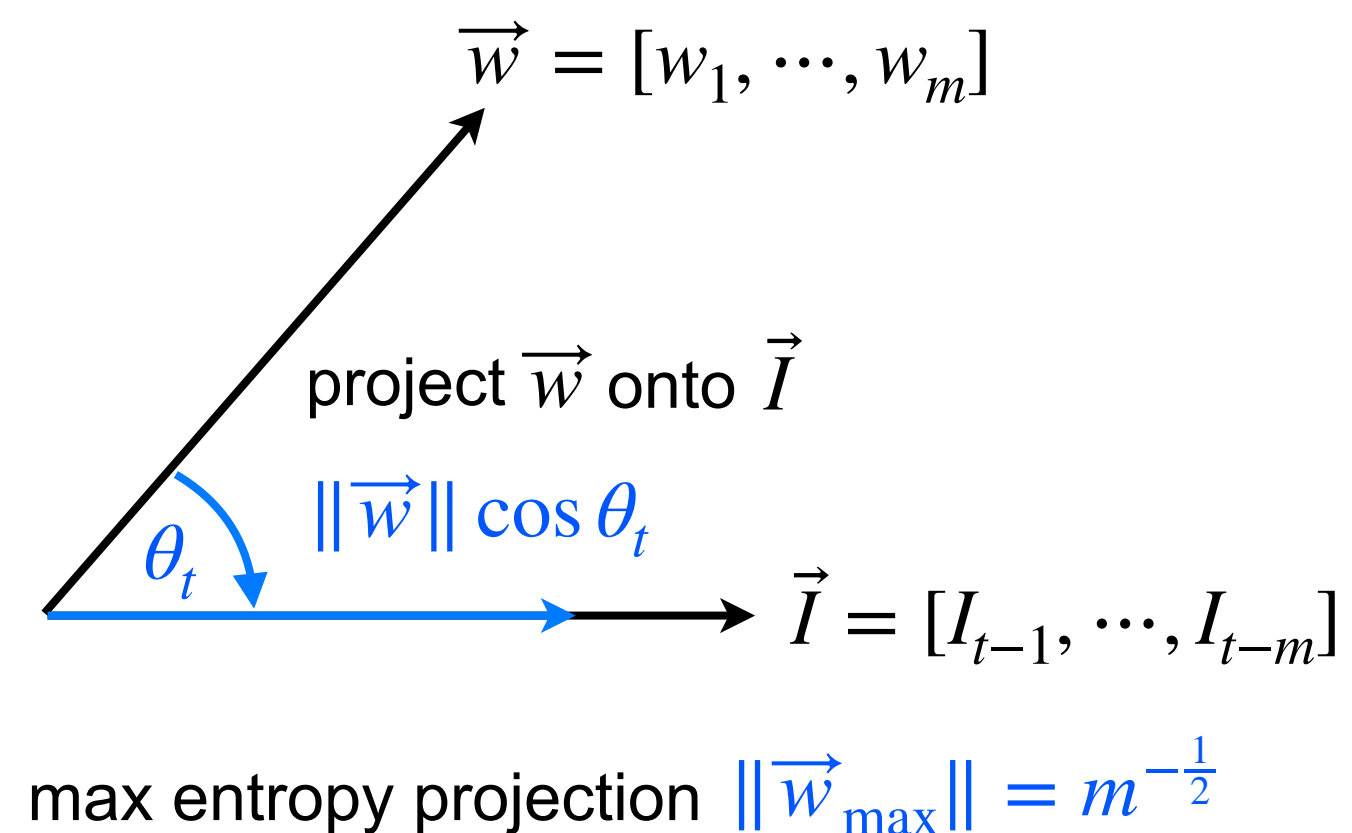2-norm

$$\|X\| = \left(\sum_u X_u^2\right)^{\frac{1}{2}}$$

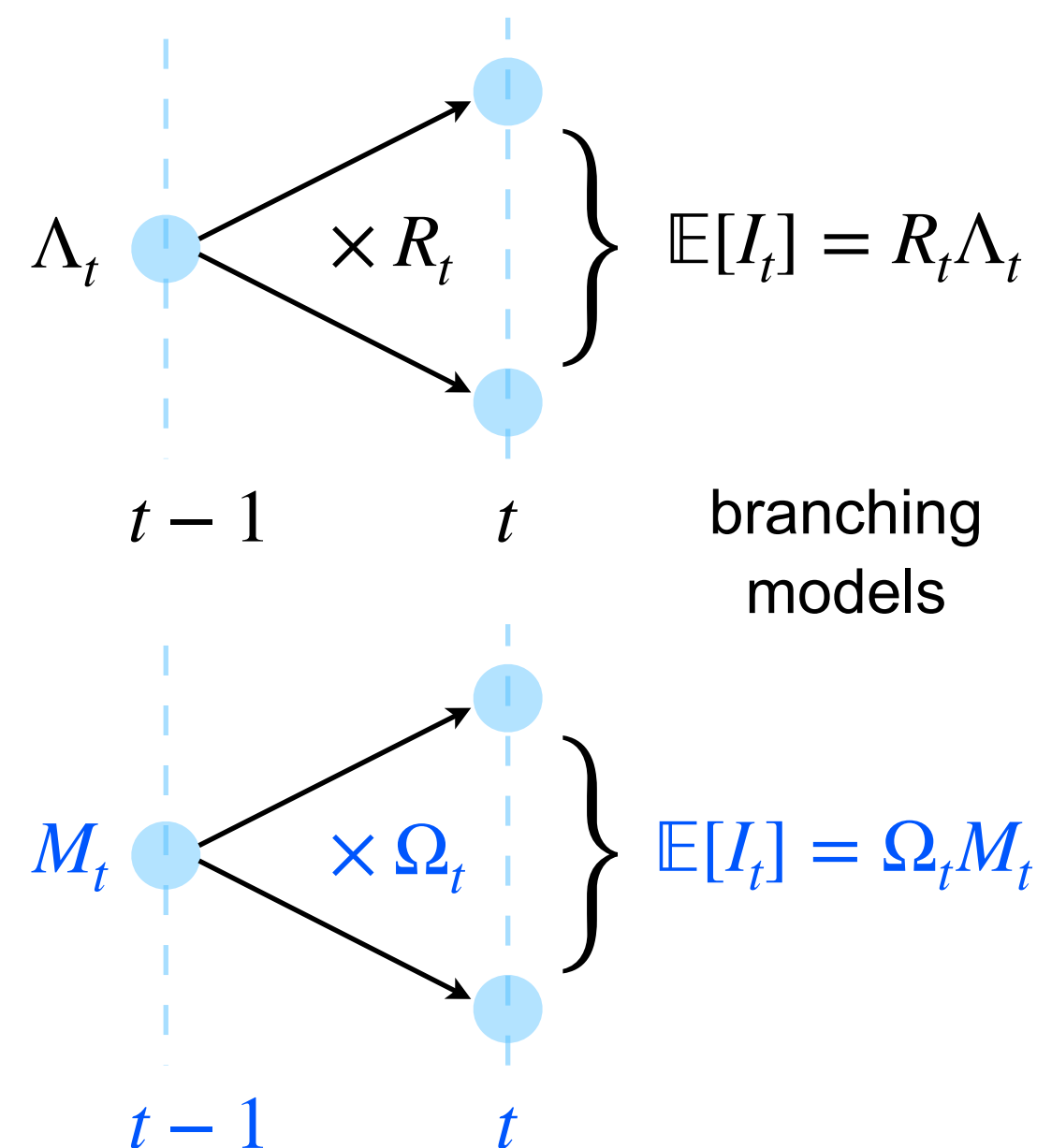constraint

$$\sum_u w_u = 1$$

B represent time series as vectors

$$\vec{w} = [w_1, \cdots, w_m]$$

project $\vec{w}$ onto $\vec{I}$

$$\|\vec{w}\| \cos\theta_t$$

θ_t

$$\vec{I} = [I_{t-1}, \cdots, I_{t-m}]$$

max entropy projection $\|\vec{w}_{\max}\| = m^{-\frac{1}{2}}$

C

incidence I_t (observed)

dot product

$$\Lambda_t = \sum_u w_u I_{t-u} = \|\vec{I}\|\|\vec{w}\| \cos\theta_t$$

$$M_t = \|\vec{I}\|\|\vec{w}_{\max}\|$$

(no dependence on changing $\vec{w}$)

t (d)

denominators Λ_t, M_t are smoothed versions of I_t

D transmissibility depends on denominator

$$\Lambda_t \quad \times R_t \quad \mathbb{E}[I_t] = R_t \Lambda_t$$

$t-1 \qquad t$

branching models

$$M_t \quad \times \Omega_t \quad \mathbb{E}[I_t] = \Omega_t M_t$$

$t-1 \qquad t$

Ω_t more robust to uncertainty or changing $\vec{w}$