

$$\lim_{\varepsilon \rightarrow 0} \frac{P(X(t) > u, M_\varepsilon(t))}{P(M_\varepsilon(t))} \quad P(\lim_{\delta \rightarrow 0} \dots)$$

choose  $\delta = \varepsilon$

$$\lim_{\varepsilon \rightarrow 0} \frac{\frac{1}{\varepsilon} P(X(t) > u, M_\varepsilon(t))}{\frac{1}{\varepsilon} P(\dots)} = \int F_\varepsilon(u) d(M(t)) dt$$

$$= \int \frac{d(X(t) > u, M_\varepsilon(t))}{d(M_\varepsilon(t))}$$

$$\int \frac{d(X(t) > u, M(t))}{d(M(t))} d(M(t)) dt$$