

SUM OF INDEPENDENT RVs

For integer-valued  $X, Y$ :  $P_Z(z) = (P_X * P_Y)(z) = \sum_{k \in \mathbb{Z}} P_X(k) P_Y(z-k)$

For continuous  $X, Y$ :  $f_Z(z) = (f_X * f_Y)(z) = \int_{\mathbb{R}} f_X(\tau) f_Y(z-\tau) d\tau$

Generally, these convolutions are tedious to compute. This motivates the defin

