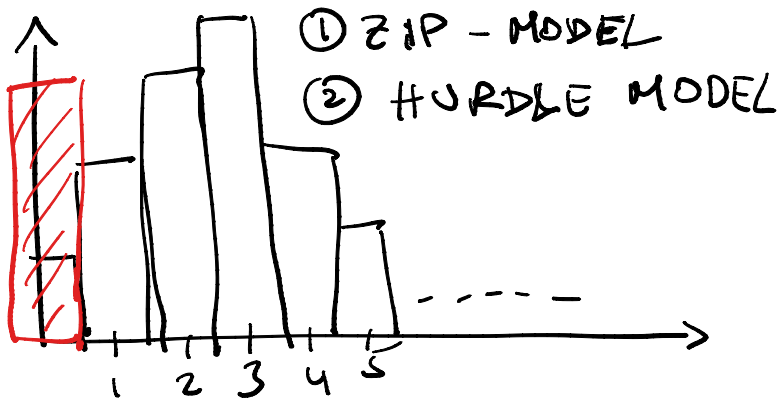


# TWO COMMON DEVIATIONS FROM THE POISSON

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ZIP (Zero-Inflated Poisson)

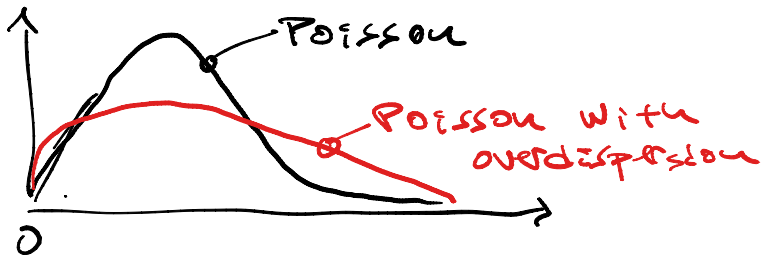


# OVERDISPERSION

\* Poisson mean =  $\lambda$

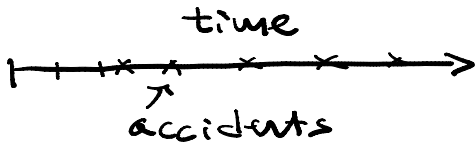
\* Poisson var =  $\lambda$

\* But sometimes,  $\text{Var} > \text{mean}$



- \* If at. risk is not accounted for, overdispersion might result
- \* If accidents are non-lethal,

Boda-Boda  
ms. crazy



Boda-Boda  
ms. careful



Standard assumption:

- \* Accidents occur independently, from many rare opportunities
- \* Can be broken by a few high-risk individuals
- \* Other example: Infectious diseases (why?)

Cfr. ICU capacity

- \* "Can" ~~re~~ allows overdispersion  
in GLM
- \* Negative binomial distribution
- \* Mixed effect GLM  
~~SEA~~ GLLMM

