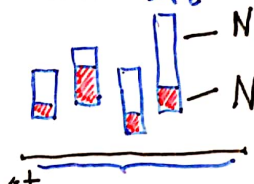
price histogram



ΔP_i — price diff in price bucket i in Δt

N_i – total auctions in price bucket i in Δt

$N_{i,s}$ – total sold auctions in price bucket i in Δt

N – total auctions in Δt

N_s – total sold auctions in Δt

Notation: $P(sell|\Delta P_i) = P(sell \mid P_i \le p \le P_i + \Delta P_i)$ – probability to sell for the price in bucket i.

Using Bayes and total probability:

$$P(sell|\Delta P_i) = \frac{P(\Delta P_i|sell) \times P(sell)}{P(\Delta P_i|sell) \times P(sell) + P(\Delta P_i|\overline{sell}) \times P(\overline{sell})} \quad (1)$$

$$P(sell) = \frac{N_s}{N} \; ; \; P(\overline{sell}) = \frac{N - N_s}{N}$$

$$P(\Delta P_i|sell) = \frac{N_{i,s}}{N_s} \; ; \; P(\Delta P_i|\overline{sell}) = \frac{N_i - N_{i,s}}{N - N_s} \quad (2)$$

$$P(sell|\Delta P_i) = \frac{1}{1 + \frac{N_i - N_{i,s}}{N_{i,s}} \times \frac{N - N_s}{N_s}} \quad (3)$$