

EXAM C QUESTIONS OF THE WEEK

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Week of June 26/06

You are given the following grouped data on 100 losses based on underlying loss random variable X :

Interval	Number of Losses
$(0, 100]$	a
$(100, 200]$	b
$(200, 500]$	c
$(500, 1000]$	d

a , b , c and d are non-negative integers.

You are also given $E[X \wedge 100] = 80$, $E[X \wedge 200] = 120$ and $E[X \wedge 300] = 137.5$.

Find $F_{100}(500)$ the empirical estimate estimate of the distribution function value $F_X(500)$.

Solution can be found below.

Week of June 26/06 - Solution

If we find a , b , and c , then $F_{100}(500) = \frac{a+b+c}{100}$.

$$E[X \wedge 100] = \frac{50a + 100(100-a)}{100} = 100 - .5a = 80 \rightarrow a = 40.$$

$$E[X \wedge 200] = \frac{40(50) + 150b + 200(60-b)}{100} = 140 - .5b = 120 \rightarrow b = 40.$$

$$E[X \wedge 300] = \frac{40(50) + 40(150) + \frac{c}{3}(250) + (20 - \frac{c}{3})(300)}{100} = 140 - \frac{.5c}{3} = 137.5 \rightarrow c = 15.$$

$$\text{Then } F_{100}(500) = \frac{40+40+15}{100} = .95.$$