

Calculating Variance of Continuous Frequency Distribution

Data Science and A.I. Lecture Series

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15-30	18					
30-45	35					
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75-90	45					
90-105	20					
105-120	8					
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Class Interval	f_i	MidValues(x_i)	$u_i = \frac{x_i - A}{h}$	$f_i u_i$	u_i^2	$f_i u_i^2$
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30-45	35	37.5	-2	-70	4	140
45-60	42	52.5	-1	-42	1	42
60-75	50	67.5	0	0	0	0
75-90	45	82.5	1	45	1	45
90-105	20	97.5	2	40	4	80
105-120	8	112.5	3	24	9	72
	$N = \sum f_i = 230$			$\sum f_i u_i = -105$		

Here

$A=67.50$ and $h=15$

Find the variance of continuous frequency distribution.

Class Interval	f_i	MidValues(x_i)	$u_i = \frac{x_i - A}{h}$	$f_i u_i$	u_i^2	$f_i u_i^2$
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Variance formula is $Var(X) = h^2 \left(\left(\frac{1}{N} \sum_{i=1}^n f_i u_i^2 \right) - \left(\frac{1}{N} \sum_{i=1}^n f_i u_i \right)^2 \right)$

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Plugin all values we will have $Var(X) = (15)^2 \left[\frac{733}{230} - \left(\frac{-105}{230} \right)^2 \right] = 669.93$