Let's Consider the Equation of a Straight-line

Linear Regression

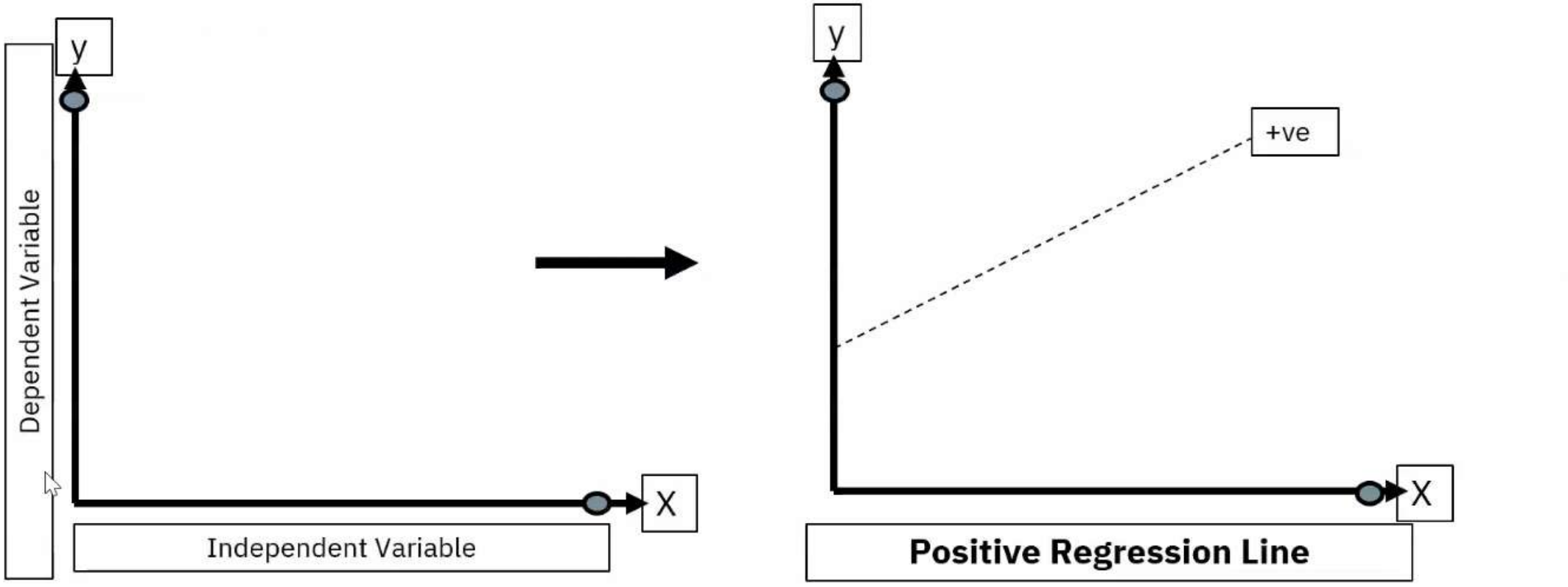
$$y = mx + c$$

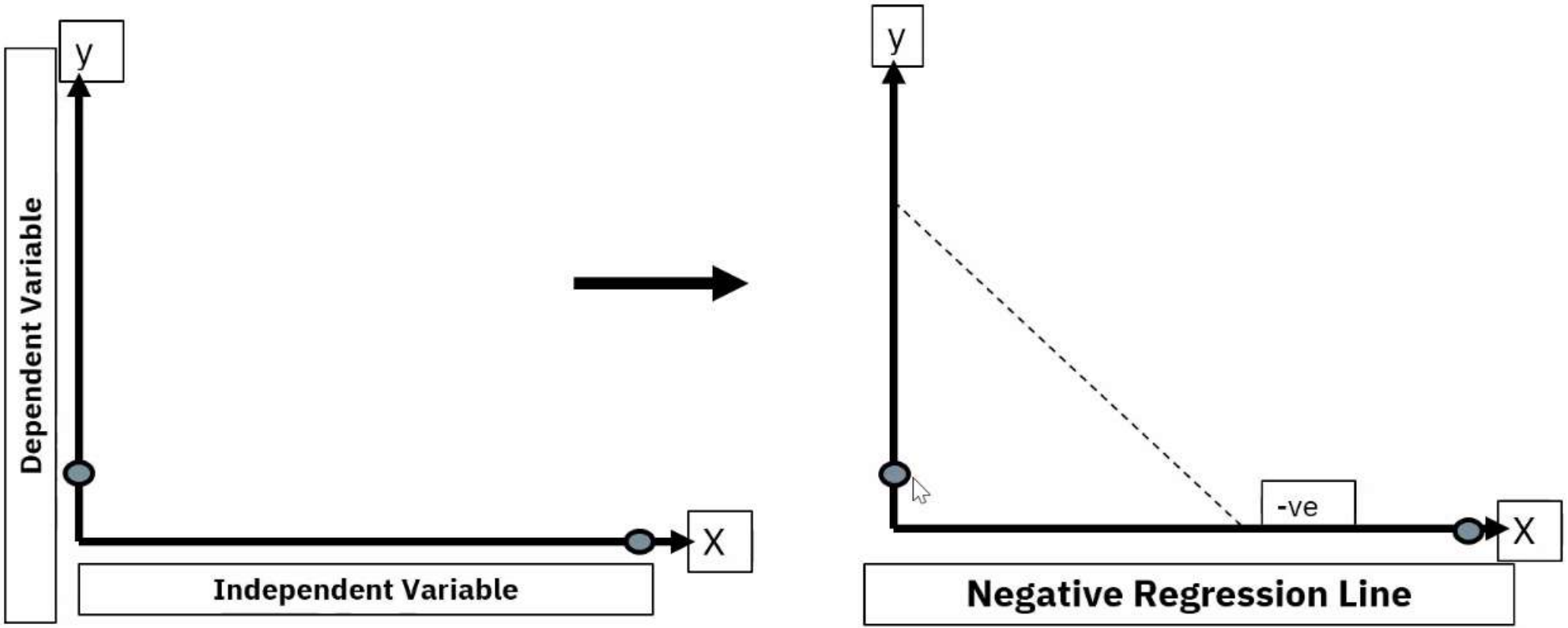
Dependent Variable

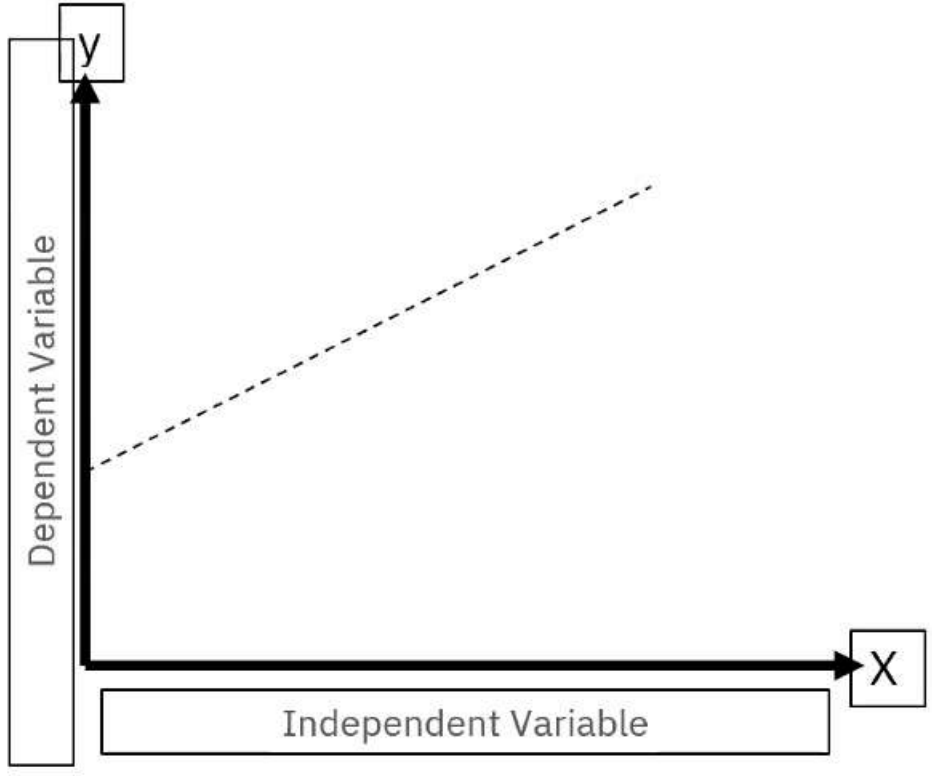
constant

Coefficient

$$y = a0 + a1x$$


y
Dependent Variable
X
Independent Variable
y
+ve
X
Positive Regression Line


y
Dependent Variable
X
Independent Variable
y
-ve
X
Negative Regression Line



x^=mean of independent variable
Y^ =mean of dependent variable
m= Slope of the line
c = constant

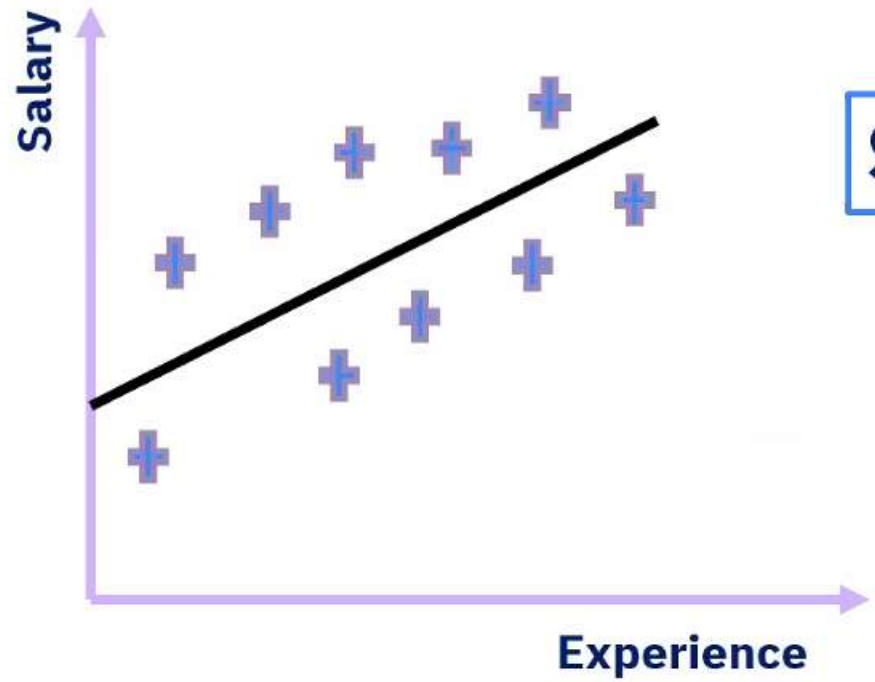
$$m = \sum \frac{(x - \hat{x})(y - \hat{y})}{(x - \hat{x})^2}$$

$$y = mX + c$$

Mean of y

Mean of x

Linear Regression

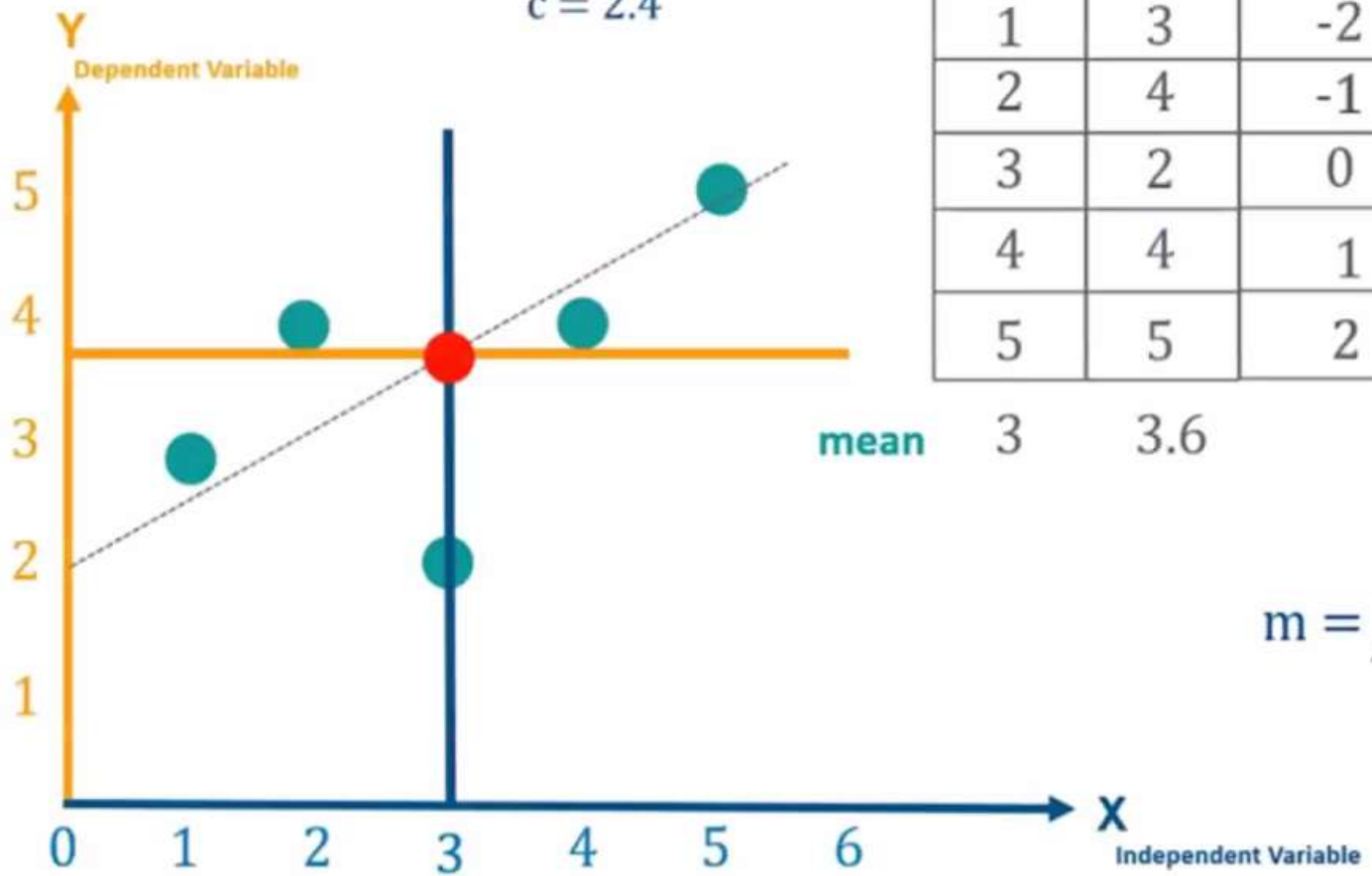


$$y = a0 + a1 * X$$

$$Salary = a0 + a1 * Experience$$

$y = mx+c$

$c = 2.4$



x	y	$x - \bar{x}$	$y - \bar{y}$	$(x - \bar{x})^2$	$(x - \bar{x})(y - \bar{y})$
1	3	-2	-0.6	4	1.2
2	4	-1	0.4	1	-0.4
3	2	0	-1.6	0	0
4	4	1	0.4	1	0.4
5	5	2	1.4	4	2.8
mean	3	3.6		$\Sigma = 10$	$\Sigma = 4$

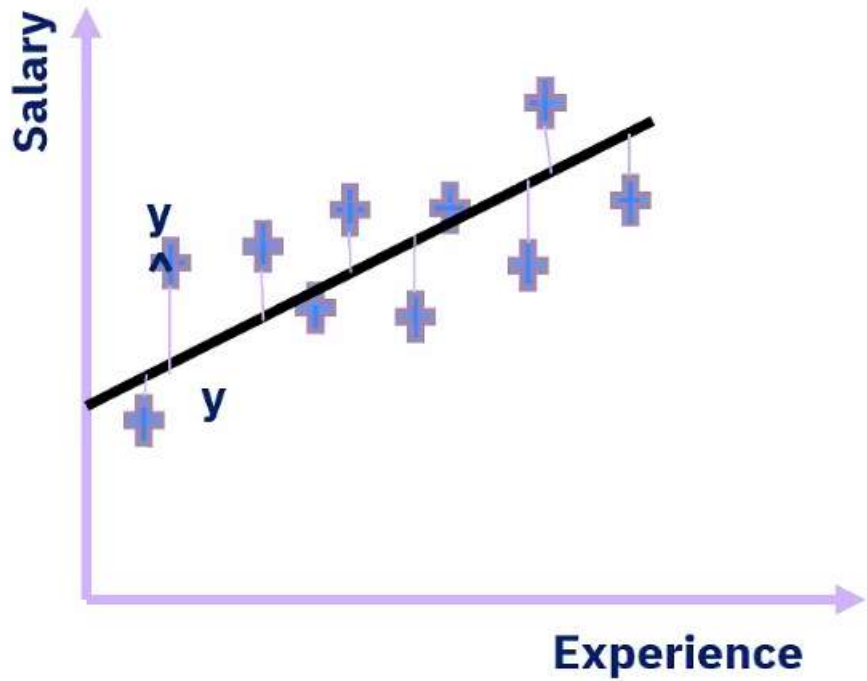
$$m = \sum \frac{(x - \bar{x})(y - \bar{y})}{(x - \bar{x})^2} = \frac{4}{10}$$

$m = 0.4$

$c = 2.4$

$y = 0.4x + 2.4$

Linear Regression



c=y-y^

c=(y-y^)

SUM(y-y^)^2

Minimum