Population regression model

#1

$$Y_i = B_0 + B_1 X_i + u_i$$

Y = math test scores

X = district expenditures per student

OLS line without estimates

$$\hat{Y}_i = \hat{B}_0 + \hat{B}_1 X_i$$

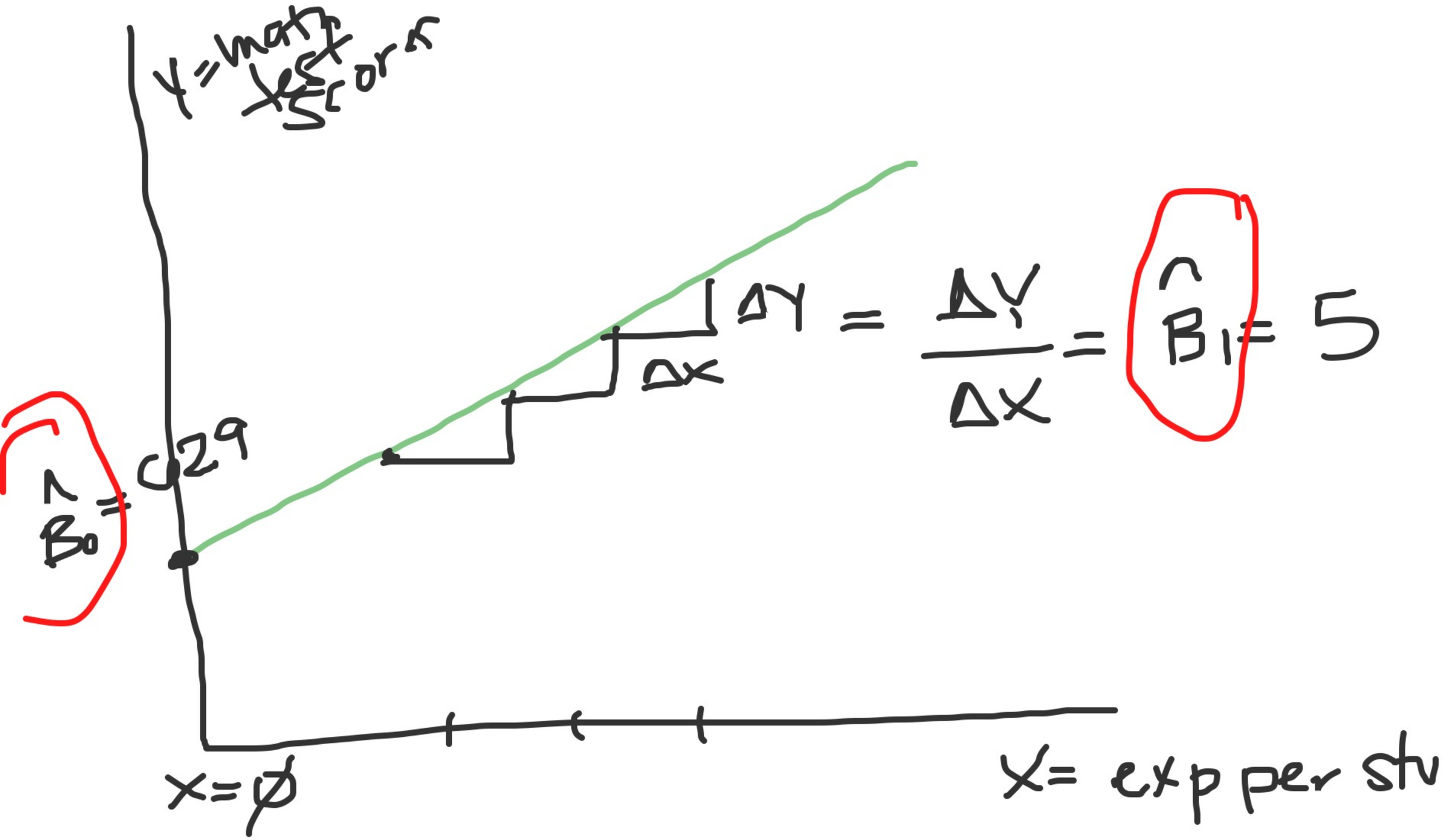
OLS line with estimates

$$\hat{Y} = 629 + 5 X_i$$

$\hat{B}_0 =$ The average math test score for a school district with zero expenditures per student is 629

$\hat{B}_1 =$ On average, a $1000 increase in expenditures per student is associated 5 point increase in district average math test

Graphing our OLS prediction line



Predict y when x=5

$$\hat{Y} = 629 + 5X_i \qquad X = 5$$

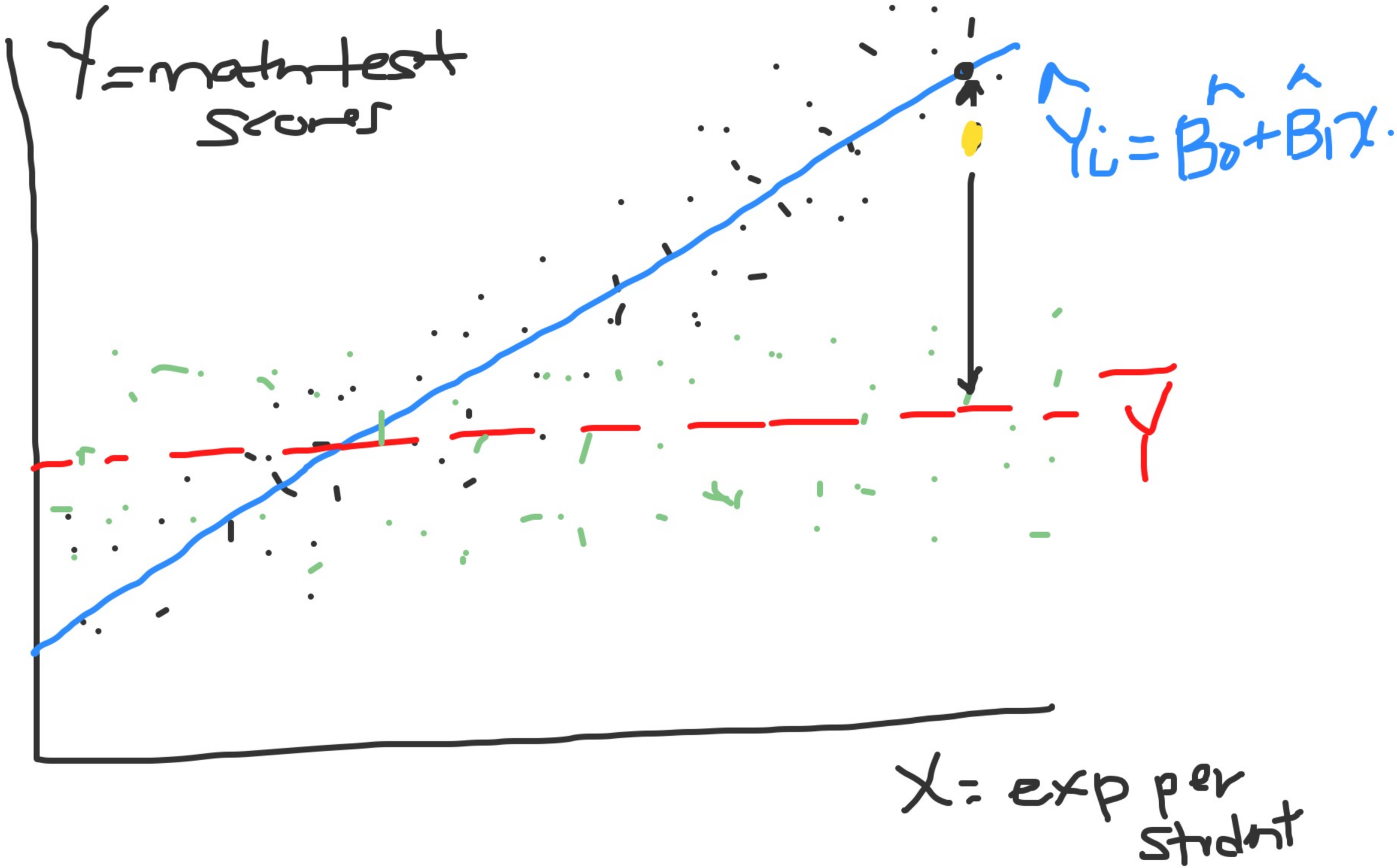
$$E(Y|X=5) = 629 + 5(5)$$

$$= 629 + 25$$

$$= 654$$

Predicted average district math Test score for a district with $5,000 expenditure per student is 654

What does Rsquared measure?



Components of Rsquared