# prediction & extrapolation

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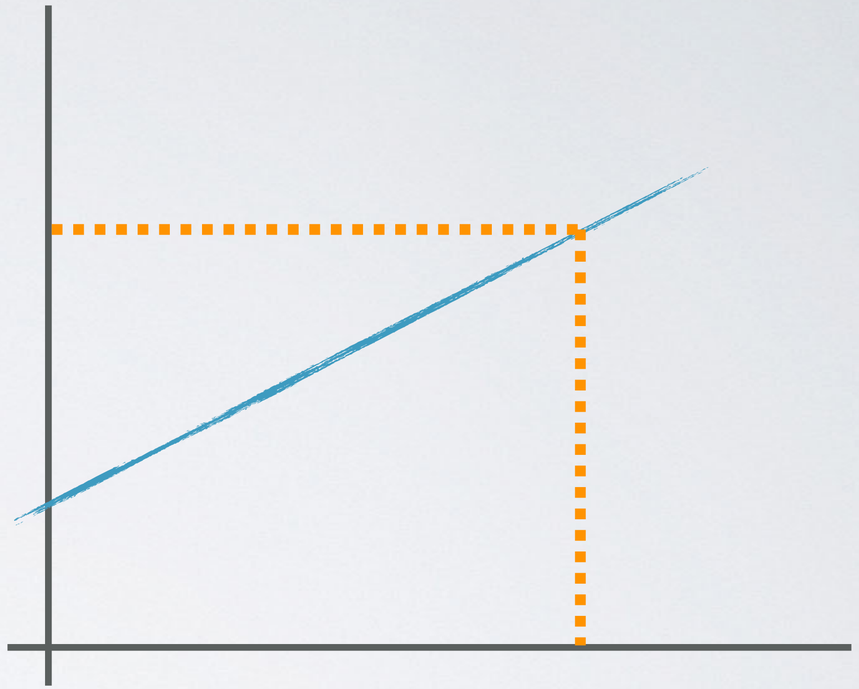
# prediction

- using the linear model to predict the value of the response variable for a given value of the explanatory variable is called prediction
- plug in the value of x in the linear model equation



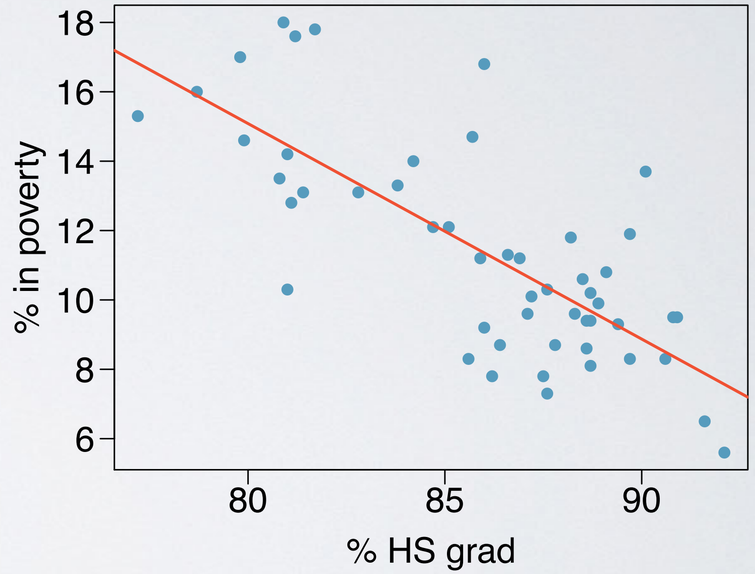
practice

According to the following linear model, what is the predicted % living in poverty in states where the HS graduation rate is 82%.

$$\widehat{\%\ in\ poverty} = 64.68 - 0.62\ \%\ HS\ grad$$

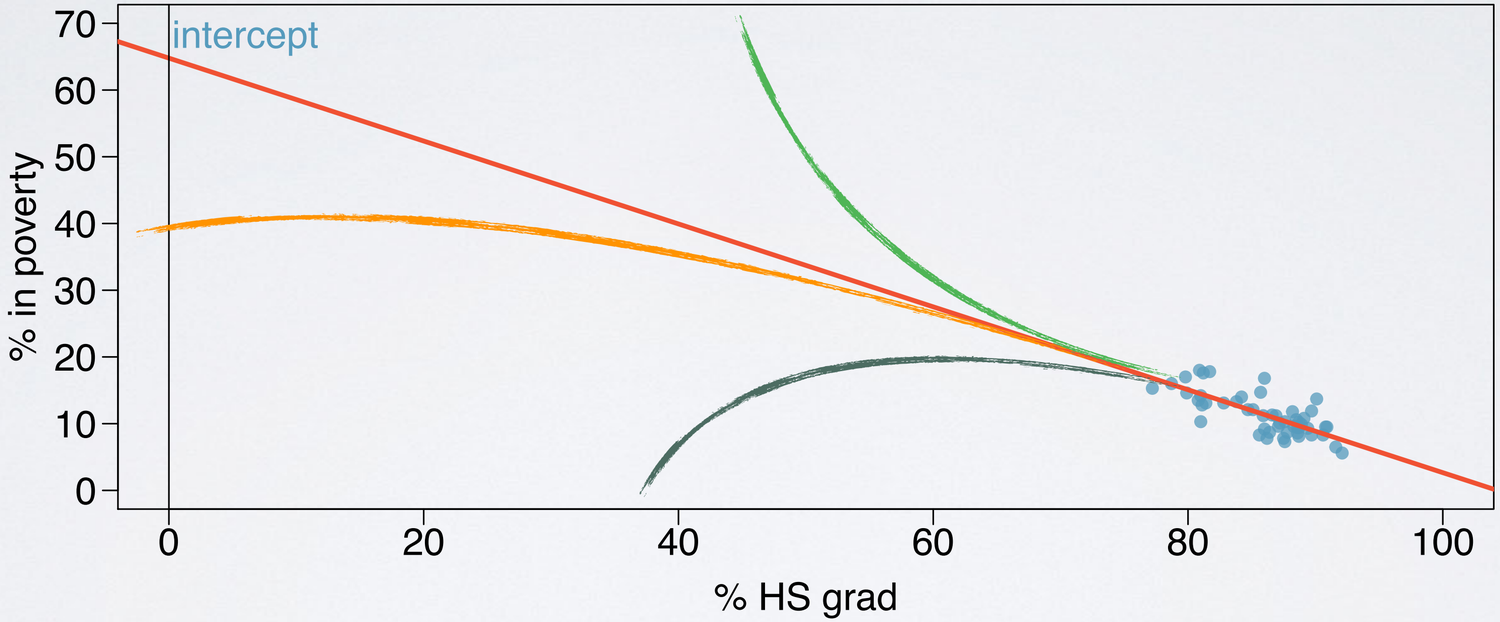
$$\widehat{\%\ in\ poverty} = 64.68 - 0.62 \times 82$$

$$= 13.84\ \%$$



# extrapolation

- applying a model estimate to values outside of the realm of the original data is called extrapolation
- sometimes the intercept might be an extrapolation



practice

According to the following linear model, what is the predicted % living in poverty in states where the HS graduation rate is 20%.

$$\widehat{\%\ in\ poverty} = 64.68 - 0.62\ \%\ HS\ grad$$