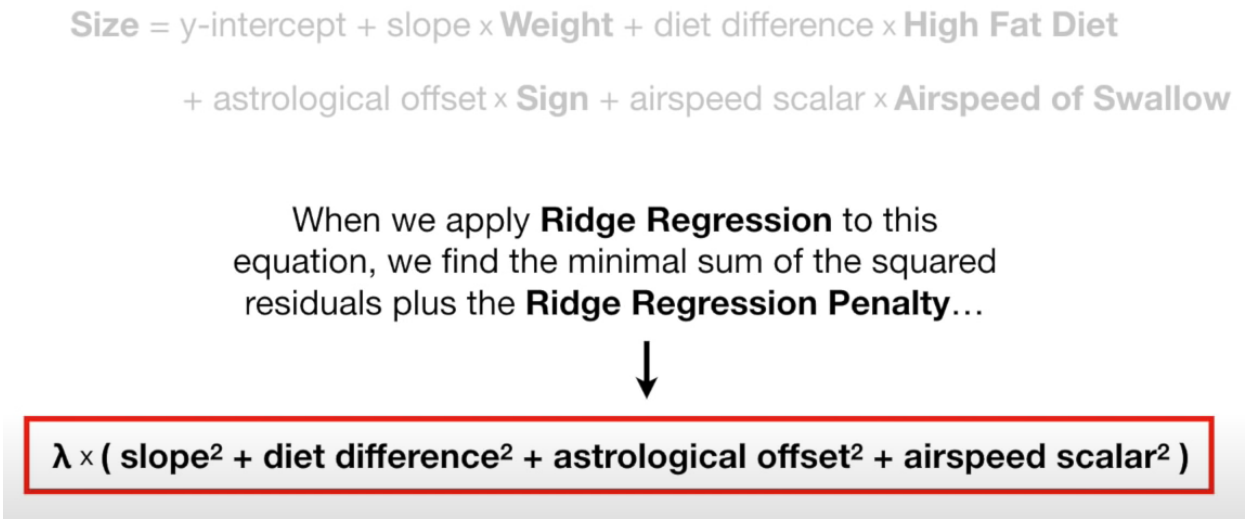
Lasso Regression和Ridge Regression非常相似，Ridge Regression适用的场景，Lasson Regression也可以使用。

不同的是惩罚项是λ*(参数的绝对值)

另外，在ridge regression中，当lambda越大时，斜率越接近0，但是不可能为0。而在lasson regression中，当λ很大时，斜率可以为0。

最大的不同点是，lasson regression可以排除掉一些无用的特征，即将特征对应的参数权重调为0.

假设例子中只有weight和high fat diet是有用的特征，ridge regression并不能将其他特征（如Sign, airspeed of Swallow）的参数权重置0，只能趋向于0。但lasson regression可以将无用的特征抛弃。



Size = y-intercept + slope x **Weight** + diet difference x **High Fat Diet**

+ astrological offset x **Sign** + airspeed scalar x **Airspeed of Swallow**

…and the larger we make **λ**…

…and these parameters might shrink a lot, but they will never be equal to 0.

λ (**slope²** + **diet difference²** + **astrological offset²** + **airspeed scalar²**)

Size = y-intercept + slope x **Weight** + diet difference x **High Fat Diet**

+ astrological offset x **Sign** + airspeed scalar x **Airspeed of Swallow**

In contrast, with **Lasso Regression**…

λ x(**|slope|** + **|diet difference|** + **|astrological offset|** + **|airspeed scalar|**)

Size = y-intercept + slope x **Weight** + diet difference x **High Fat Diet**

+ astrological offset x **Sign** + airspeed scalar x **Airspeed of Swallow**

…when we increase the value for **λ**…

…then these parameters will shrink a little bit…

λ (**|slope|** + **|diet difference|** + **|astrological offset|** + **|airspeed scalar|**)

Size = y-intercept + slope x **Weight** + diet difference x **High Fat Diet**

+ 0 x **Sign** + 0 x **Airspeed of Swallow**

…when we increase the value for **λ**…

…and these parameters will go all the way to 0…

λ (|slope| + |diet difference| + |astrological offset| + |airspeed scalar|)

Size = y-intercept + slope x **Weight** + diet difference x **High Fat Diet**

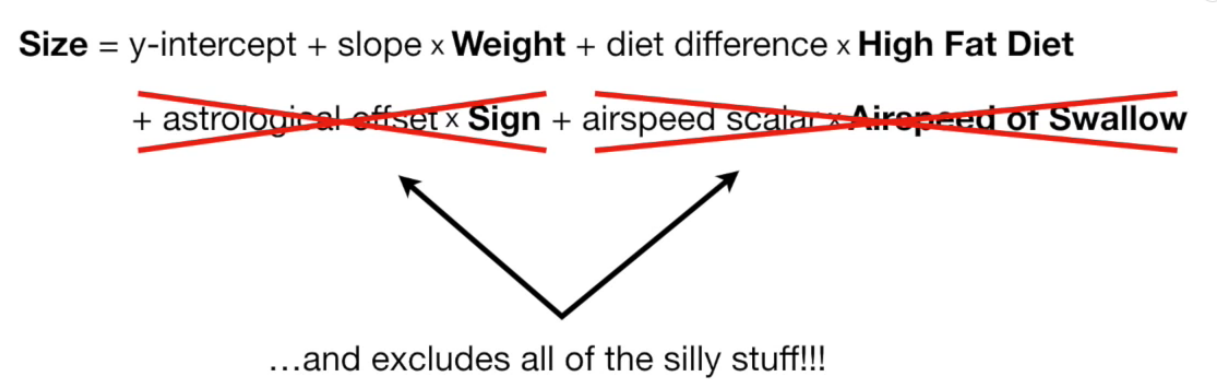
…when we increase the value for **λ**…

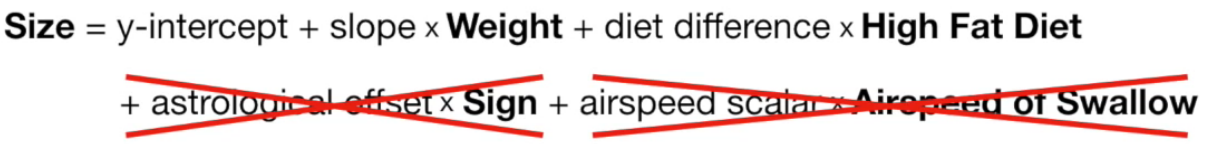
…and these terms go away…

λ (|slope| + |diet difference| + |astrological offset| + |airspeed scalar|)

Size = y-intercept + slope x **Weight** + diet difference x **High Fat Diet**

…and we're left with a way to predict **Size** that only includes **Weight** and **Diet**…





Since **Lasso Regression** can exclude useless variables from equations, it is a little better than **Ridge Regression** at reducing the **Variance** in models that contain a lot of useless variables.

lasson regression因为可以去掉某些无用的特征，可以使模型更简单，更容易解释。