

Complex Linear Regression

Scatter Plots:

x1 seems like it has a positive slope on the top half and negative on the bottom. I'd guess it has a positive slope, based on the top half of the data points. If so, it's a pretty steep slope.

x2 is mostly just a blob, but there might be a very slight negative slope in there.

x3 looks pretty much the same as x2, but has a higher range on the x axis.

Same with x4, but a possible positive slope this time.

x5 seems like it has a medium negative slope.

x6 also looks like it has a negative slope, but less than x5.

x7 is kind of like a diamond shape. I could see it being a positive or negative slope.

Either way, it's very steep.

x8 has a very steep positive slope. The top half of the points are grouped tightly but the bottom half are more spread out.

x9 is another diamond shape, but the points are more spread out this time. Slightly less steep (than x7) positive or negative slope.

x10 is like an upside down x8. I'd say it has a negative slope.

x11 could be positive or negative, but my guess is positive.

x12 has a positive slope. It might be the steepest of the bunch.

Histograms: x1-6 are all flat, x7-12 are all bell-curved.

MSE loss obtained on the training data:

645607888.58

MSE loss obtained on the testing data:

656209719.79

Linear model coefficients:

2276.49	317.77	2295.46	-328.19
-4570.02	-1840.86	-426.18	12975.85
1110.80	-11678.66	1037.74	12693.67

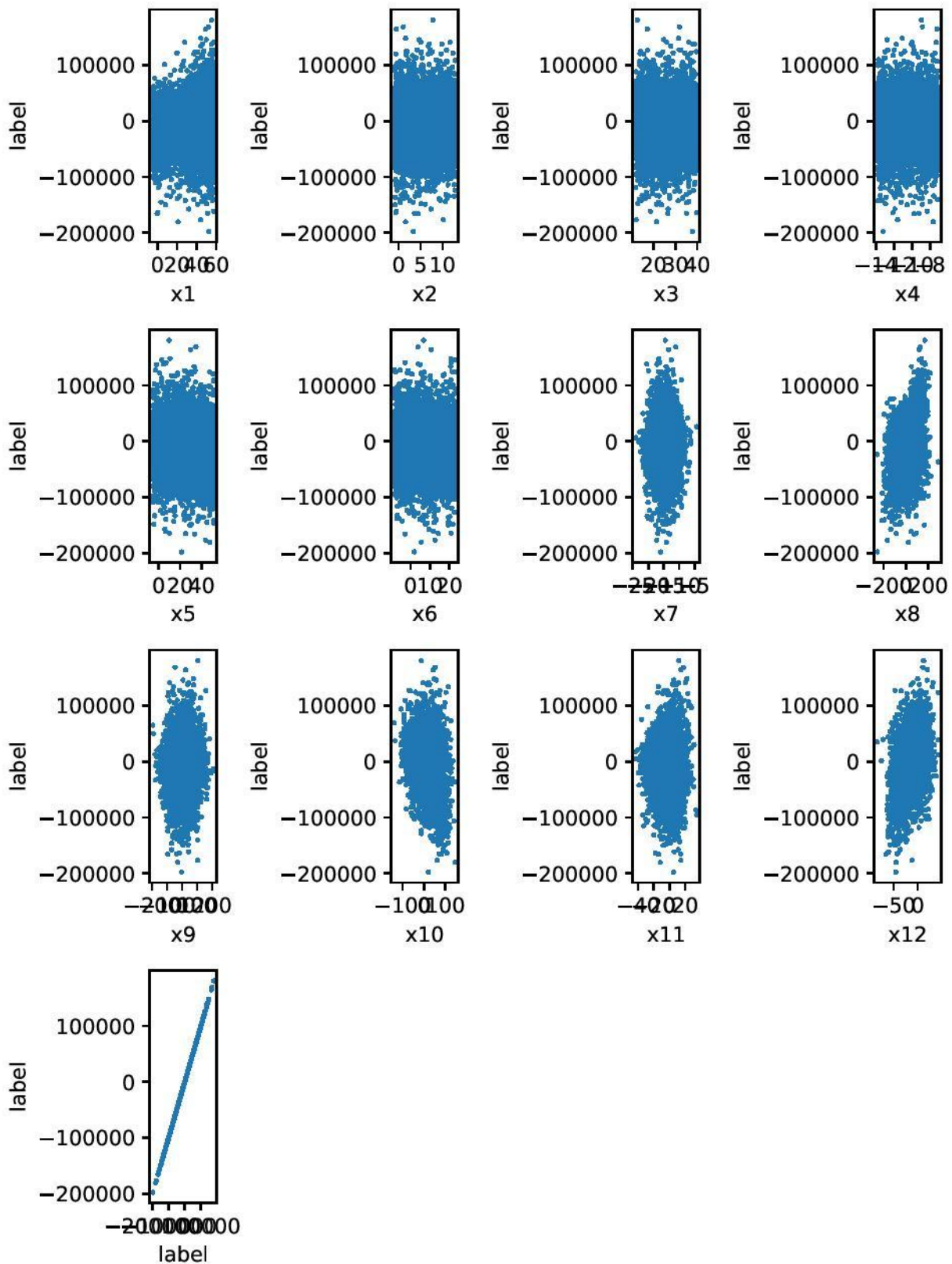
Model function:

$$\begin{aligned} & -1753.80 + (126.31 \cdot x_1) + (79.06 \cdot x_2) + (285.44 \cdot x_3) + \\ & (-167.81 \cdot x_4) + (-276.83 \cdot x_5) + (-202.89 \cdot x_6) + \\ & (-180.99 \cdot x_7) + (204.03 \cdot x_8) + (21.56 \cdot x_9) + \\ & (-307.22 \cdot x_{10}) + (101.43 \cdot x_{11}) + (794.98 \cdot x_{12}) \end{aligned}$$

Comparisons to guesses:

x2 and x3 both have positive slopes, but x3 is much steeper. x4 is negative. I was wrong about the diamond shapes; x7 has a shallow negative slope and x9 is steeper than it. I was almost right about x12 being the steepest; x8 is slightly steeper.

Label vs. Features



Feature Histograms

