Lecture 25: Linear Regression Part II

Chapter 7.2-7.4

Questions for Today: Example From Text

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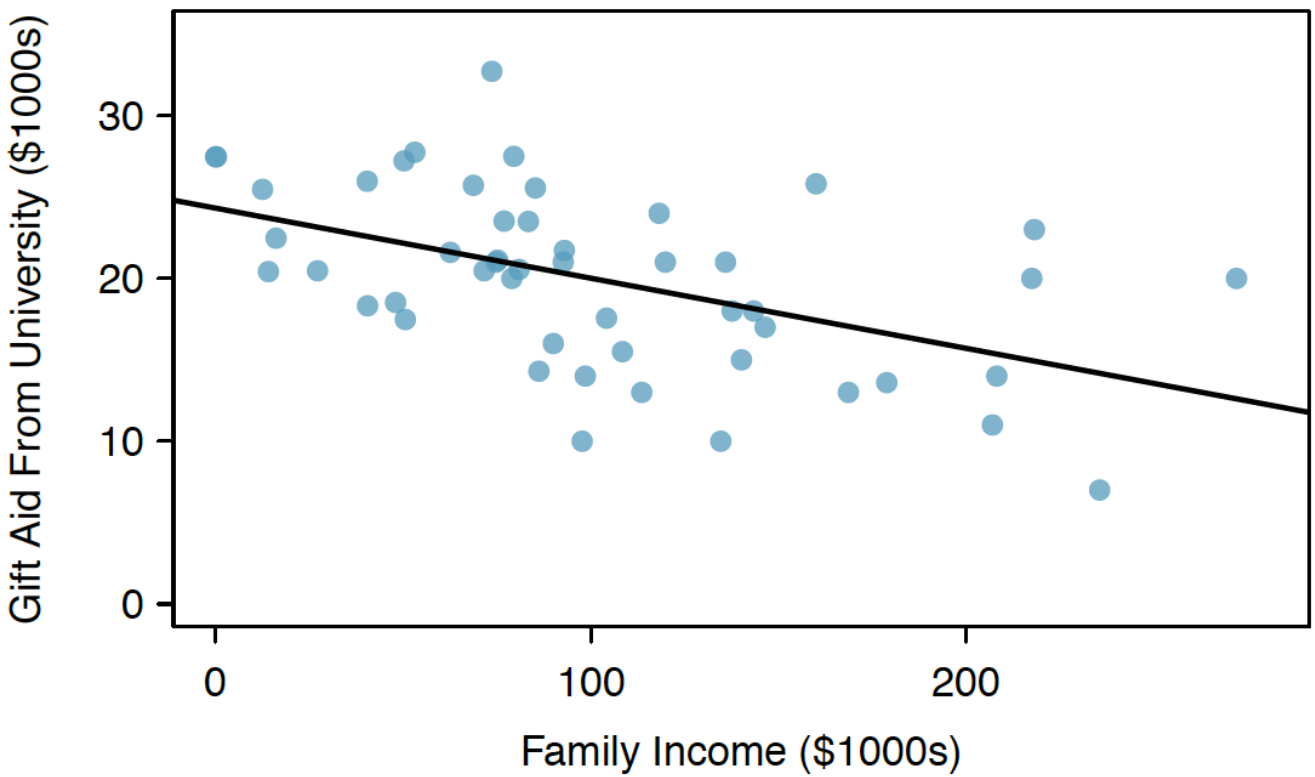
- Explanatory variable: family income
- Outcome variable: gift aid



Questions for Today: Example From Text

Using these values,

	family income in \$1000's (x)	gift aid in \$1000's (y)
mean	$\overline{x} = 101.8$	$\overline{y} = 19.94$
sd	$s_x = 63.2$	$s_y = 5.46$
		$R = -0.499$

Point Estimates of Intercept

Point Estimates of Slope

Extrapolate with Care

Extrapolation: extend the application of a method or conclusion to an unknown situation by assuming that existing trends will continue or similar methods will be applicable.

Categorical Predictor x With Two Levels

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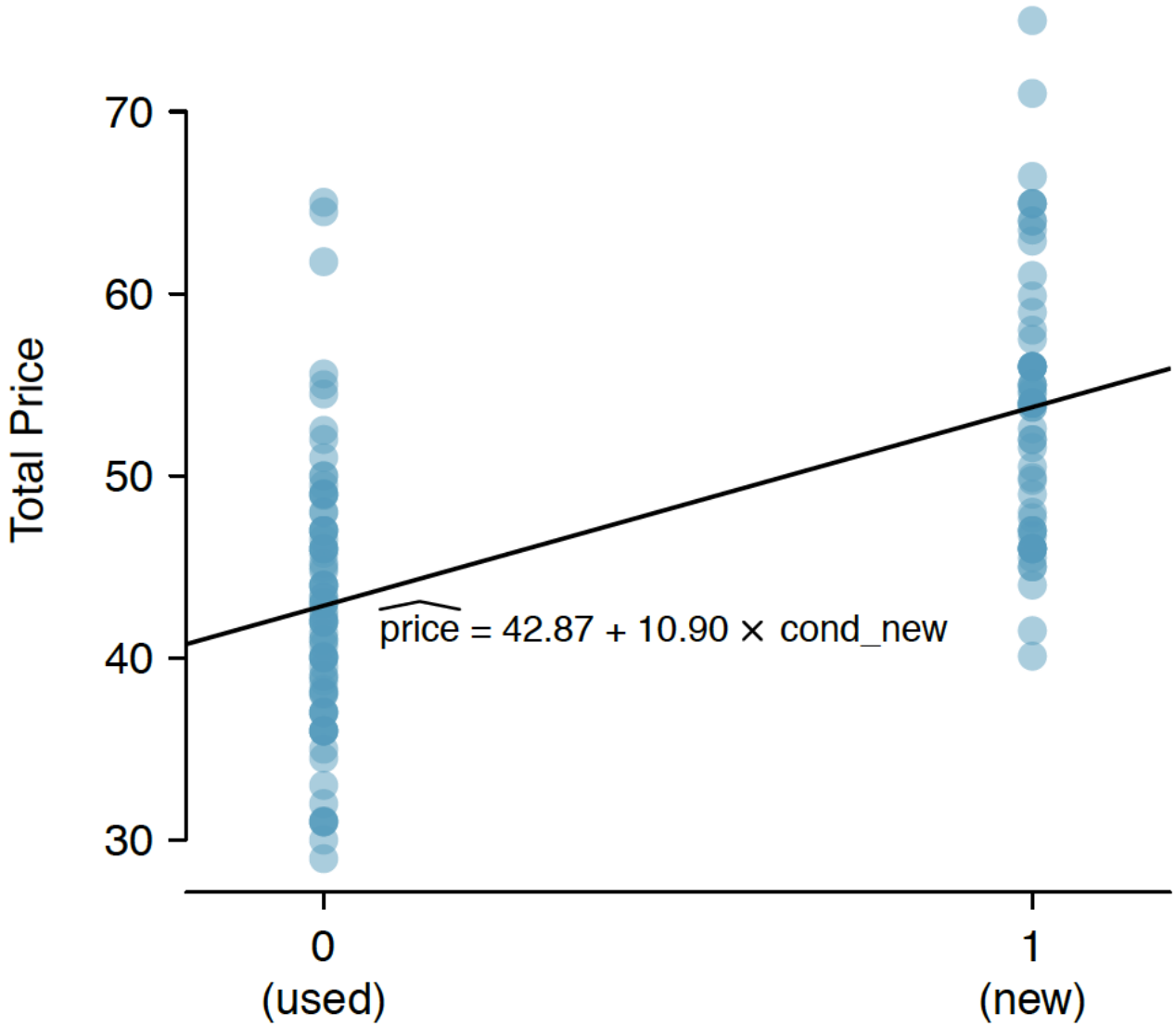
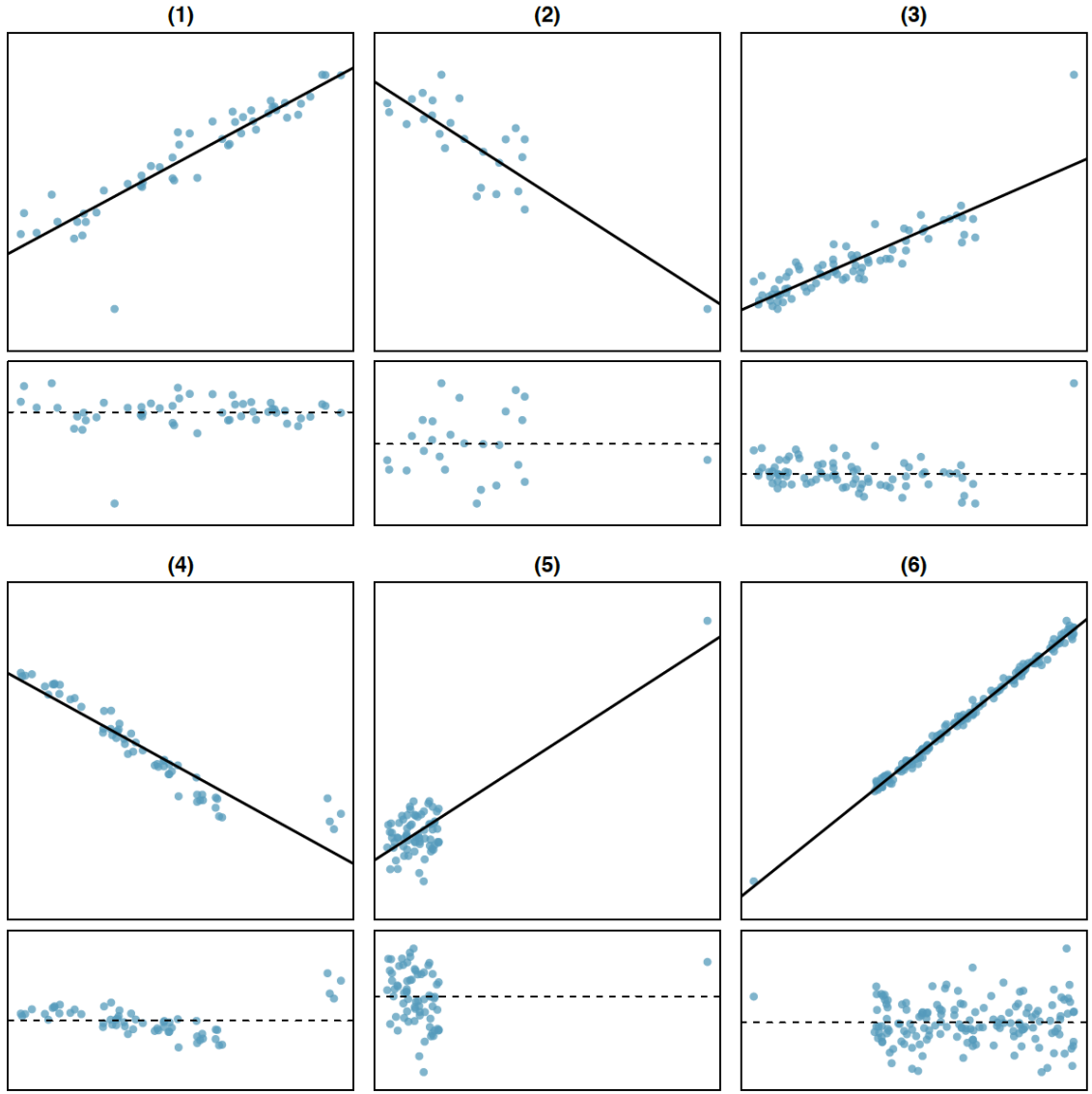


Categorical Predictor x With Two Levels

Types of Outliers in Linear Regression



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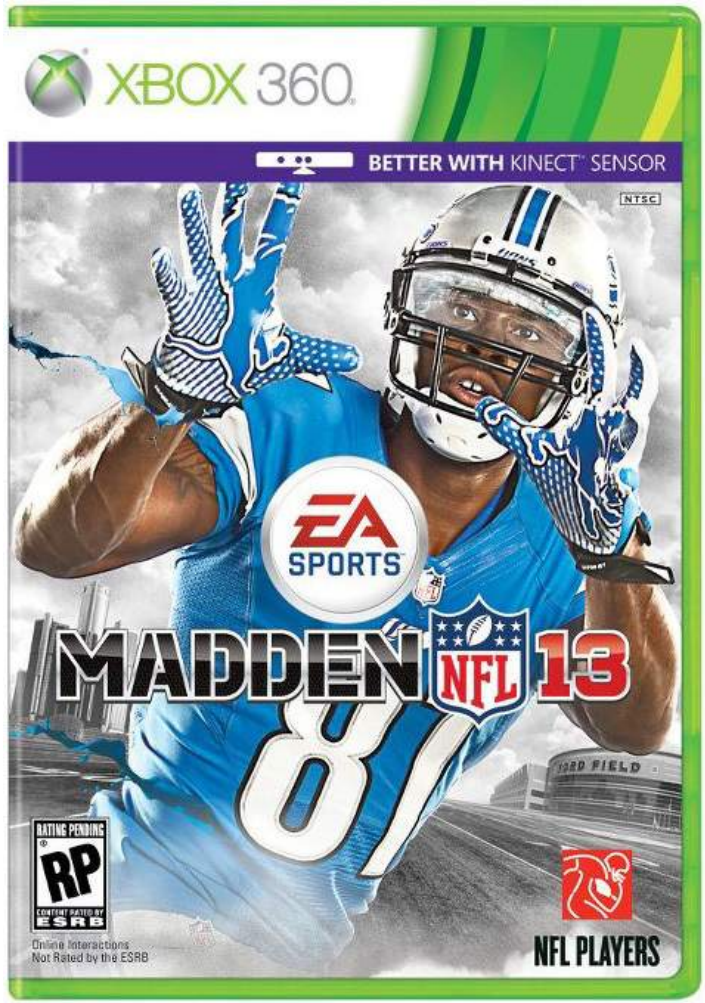
Points that fall horizontally away from the center of the cloud tend to pull harder on the line, so we call them points with high leverage, i.e. large influence.

Concept: Regression to the Mean

The Madden Curse. Many NFL players who feature on the cover of the video game Madden end up having subpar subsequent years, leading many to believe there is a curse.



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So while it looks like a curse, it is just players reverting back to their "mean" level of performance.

Next Time

Multiple Regression: As opposed to simple linear regression where there is only one predictor/explanatory variable x, we now consider many predictors $x_1, x_2, \ldots$