Project 2

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1 Introduction

In this paper we bla bla

1.1 Predicting crime rate based on education level

1.1.1 Seeing if there is relationship

We saw if there was a relationship by plotting bla bla with kernel smoother.

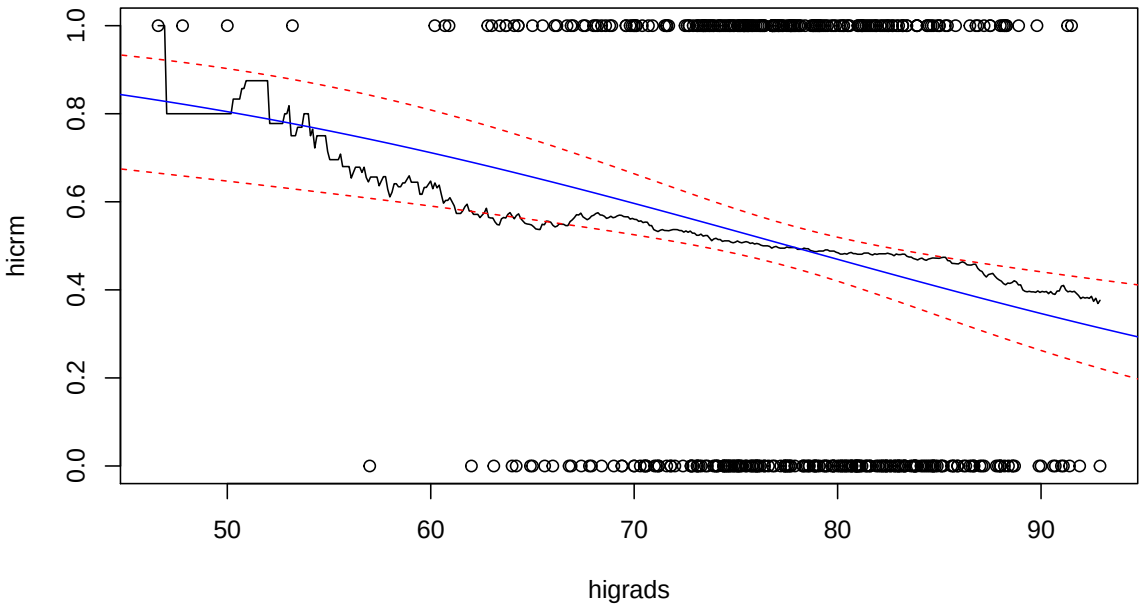

Figure 1: Bla bla

Seems to be relationship!

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1.1.2 Confidence intervals and significance

Report the beta-estimates together with their confidence intervals and test whether the amount of adults with 12 years in school has a significant effect on the probability of having a higher than median crime rate

Table 1: Test

	Estimate	2.5 %	97.5 %
β_0	3.8662638	1.5272516	6.2700660
β_1	-0.0498261	-0.0805824	-0.0198895

Table 2: Test

	P-value
β_0	0.0004357
β_1	0.0004092

Significance!

1.1.3 Change in odds

Estimate the relative change in the odds (odds ratio) of having a high crime rate, with confidence interval, when the amount of higrads is increased by 1 (percent), and when it is increased by 10 (percent).

If higrads increases 1%, odd decreases by 4.9% If higrads increases 10%, odd decreases by 39.2%

1.1.4 Predict

Use the model to predict the probability, with confidence interval, of having a high crime rate in a county where the amount of higrads is 65 (percent), and where it is 85 (percent).

Table 3: Test

Higrads	Probability	2.5 %	97.5 %
65	0.6519376	0.5481793	0.7430377
85	0.4087936	0.3415559	0.4796259

Use the model to predict, for each of the counties, whether it would be expected to have a low or a high crime rate (predicted probability below or above 0.5) and calculate the sensitivity and specificity for this model.

Sensitivity is the proportion of the true successes that have been correctly classified as successes (true positive). Specificity is the proportion of the true failures that have been correctly classified as failures (true negatives).

Sensitivity was 55%

Specificity was 58.2%