

## Lecture 9: Linear regression

Ciaran Evans

## Previously: hypothesis testing and power

Suppose we have a sample  $X_1, \dots, X_n \stackrel{iid}{\sim} N(\mu, 1)$ , and we want to test the hypotheses

$$H_0 : \mu = 0 \quad H_A : \mu \neq 0$$

Calculate  $p$ -value, reject when  $p < \alpha$  for pre-specified  $\alpha$ .

**Power function:**

$$\text{Power}(\mu) = P(\text{reject } H_0 | \mu)$$

**Question:** How does power change as a function of  $\mu$  and  $n$ ?

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