Foundations of Data Science:
Logistic regression -
Multiple logistic regression

Principle of multiple logistic regression

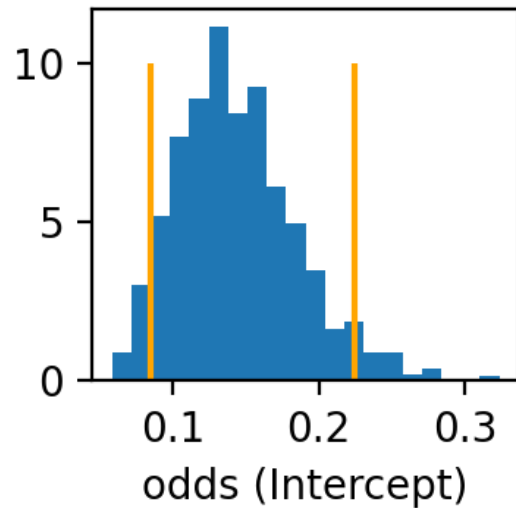Indep variables $\qquad x^{(1)} \quad -$ Age

$\qquad\qquad\qquad\qquad x^{(2)} \quad -$ Employment

$\qquad\qquad\qquad\qquad \vdots \qquad\qquad \vdots$

$$P(Y=1 \mid x^{(1)}, x^{(2)}, \dots) = f(\beta_0 + \beta_1 x^{(1)} + \beta_2 x^{(2)} + \dots)$$

Multiple logistic regression applied to credit e.g.

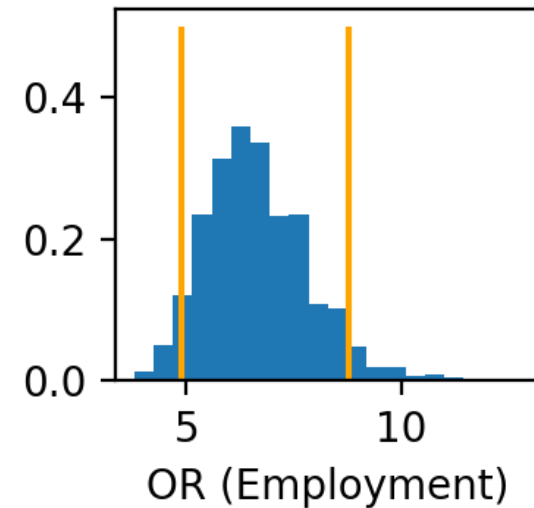|	Variable	Coefficient	Odds or OR
$\hat{\beta}_0$	Intercept	-1.969	0.140
$\hat{\beta}_1$	Age	0.029	1.030
$\hat{\beta}_2$	Employed	1.881	6.562

Bootstrap confidence intervals

$e^{\hat{\beta}_0}$ $e^{\hat{\beta}_1}$ $e^{\hat{\beta}_2}$
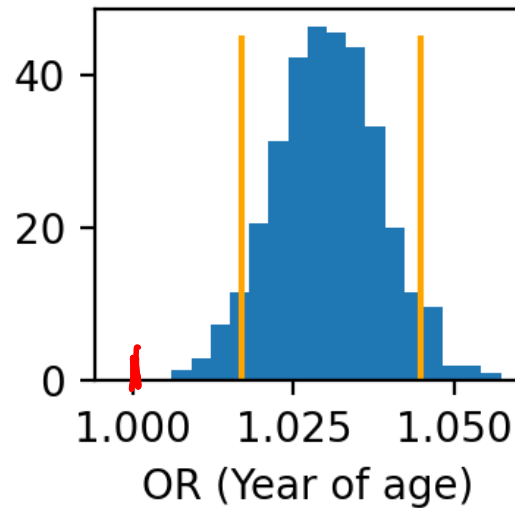
$R = 1000$

$n = 653$

$P \leq 0.001$

H_0 : Age does not affect credit approval

H_a : Age doe affect credit approval in some way.

$H_0 \Rightarrow e^{\hat{\beta}_1} = 1$