ESM204-Assignment3

Geoffrey Cook & Tara Jagadeesh

5/16/2019

```
###############################################################
# Question 1
###############################################################
# Create a linear probability model that predicts a respondent's probability of voting 'yes' on the bal
###############################################################

# Probability of voting 'YES'
### Not sure if all we need to have here are the coefficients but if so, this seems to give those to us

p_yes <- lm(vote ~ age+income+NEP+risk+bid, data = whales)
summary(p_yes)
```

Call: lm(formula = vote ~ age + income + NEP + risk + bid, data = whales)

Residuals: Min 1Q Median 3Q Max -1.1078 -0.4242 0.1755 0.2968 0.7925

Coefficients: Estimate Std. Error t value Pr(>|t|)
(Intercept) 0.1196977 0.1198911 0.998 0.319
agetofifty 0.0099816 0.0633105 0.158 0.875
agetoforty -0.0201190 0.0623958 -0.322 0.747
agetosixty -0.0162261 0.0595666 -0.272 0.785
agetothirty 0.0204401 0.0578269 0.353 0.724
incomeone_percent 0.0088282 0.0598973 0.147 0.883
incomepoor 0.0027386 0.0649833 0.042 0.966
incomerich 0.0074891 0.0682176 0.110 0.913
incomevery_rich 0.0467922 0.0674876 0.693 0.488
NEP 0.0158639 0.0020887 7.595 1.58e-13 *** risk 0.0007445 0.0008363 0.890 0.374
bid -0.0010699 0.0006585 -1.625 0.105
— Signif. codes: 0 '' ***0.001*** '' *0.01* '' 0.05 '.' 0.1 '' 1

Residual standard error: 0.4291 on 488 degrees of freedom Multiple R-squared: 0.1201, Adjusted R-squared: 0.1003 F-statistic: 6.055 on 11 and 488 DF, p-value: 2.549e-09

```
# Making a table for the linear model results
table_p_yes <- stargazer(p_yes)
```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Wed, May 22, 2019 - 22:09:52

1. Create a linear probability model that predicts a respondent's probability of voting 'yes' on the ballot based on their age, income, NEP score, the risk reduction offered by the program, and the cost of the program to that respondent. Show the model and interpret the regression coefficients

The following is the linear regression equation: Y_yes = 0.1196977 + (0.0099816*agetofifty) + (-0.0201190*agetoforty) + (-0.0162261*agetosixty) + (0.0204401*agetothirty) + (0.0088282*incomeone_percent) + (0.0027386*incomepoor) + (0.0074891*incomerich) + (0.0467922*incomevery_rich) + (0.0158639*NEP) + (0.0007445*risk) + (-0.0010699*bid)

2. Based on this regression, what can you say about the value of a single prevented whale death? (Hint: Think about how risk reduction for all whales translates into the number of whale deaths avoided

Table 1:

	Dependent variable:
	vote
agetofifty	0.010
	(0.063)
agetoforty	−0.020
	(0.062)
agetosixty	−0.016
	(0.060)
agetothirty	0.020
	(0.058)
incomeone_percent	0.009
	(0.060)
incomepoor	0.003
	(0.065)
incomerich	0.007
	(0.068)
incomevery_rich	0.047
	(0.067)
NEP	0.016***
	(0.002)
risk	0.001
	(0.001)
bid	−0.001
	(0.001)
Constant	0.120
	(0.120)
Observations	500
R^2	0.120
Adjusted R^2	0.100
Residual Std. Error	0.429 (df = 488)
F Statistic	6.055*** (df = 11; 488)
Note:	*p<0.1; **p<0.05; ***p<0.01

Based on this equation, assuming a 20% reduction in whale strike likelihood saves 5 whales, the value of each whale saved under this assumption is approximately $2.78.