

# Ordinal Dependent Variables

Week 18

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# What are ordinal dependent variables?

# Ordered logit and probit regression

# Ordered logit and probit in R

```
library(foreign)
dat <- read.dta("https://stats.idre.ucla.edu/stat/data/ologit.dta")
head(dat)
```

```
##           apply pared public  gpa
## 1    very likely      0      0 3.26
## 2 somewhat likely      1      0 3.21
## 3      unlikely      1      1 3.94
## 4 somewhat likely      0      0 2.81
## 5 somewhat likely      0      0 2.53
## 6      unlikely      0      1 2.59
```

# Ordered logit and probit in R

Below we use the `polr` function from the MASS package to estimate an ordered logistic regression model.

```
library(MASS)
library(texreg)
m1 <- polr(apply ~ pared + public + gpa, data = dat,
           method = "logistic", Hess=TRUE)

m2 <- polr(apply ~ pared + public + gpa, data = dat,
           method = "probit", Hess=TRUE)

m3 <- glm(as.numeric(apply) ~ pared + public + gpa,
           data = dat)
```

# Ordered logit and probit in R

```
##
## =====
##               Model 1           Model 2           Model 3
## -----
## pared                1.05 ***           0.60 ***           0.36 ***
##                   (0.27)           (0.16)           (0.09)
## public              -0.06              0.01              0.02
##                   (0.30)           (0.17)           (0.10)
## gpa                  0.62 *             0.36 *             0.19 *
##                   (0.26)           (0.16)           (0.09)
## unlikely|somewhat likely    2.20 **           1.30 **
##                   (0.78)           (0.47)
## somewhat likely|very likely  4.30 ***           2.50 ***
##                   (0.80)           (0.48)
## (Intercept)                                0.91 ***
##                                       (0.25)
## -----
## AIC                727.02           727.50           798.34
## BIC                746.98           747.45           818.29
## Log Likelihood     -358.51          -358.75          -394.17
## Deviance           717.02           717.50           168.08
## Num. obs.          400              400              400
## =====
```