PSRM_Replication.R

tristanhightower

2023-09-20

```
#PSRM Replication Files
#
#The Population Ecology of Interest Groups and Counter-Mobilization:
#Reproductive Rights Organizations in the United States, 1920-1985.
#
#Tristan M. Hightower (2023)

#Change working directory for data loading

setwd("~/Desktop/PSRM Replication")

#Load libraries
library(readr)
library(imputeTS)
```

```
## Registered S3 method overwritten by 'quantmod':
##   method            from
##   as.zoo.data.frame zoo
```

```
library(readxl)
library(MASS)
library(stargazer)
```

```
##
## Please cite as:
```

```
##  Hlavac, Marek (2022). stargazer: Well-Formatted Regression and Summary Statistics Tables.
```

```
##  R package version 5.2.3. https://CRAN.R-project.org/package=stargazer
```

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.1     v purrr     1.0.1
## v forcats   1.0.0     v stringr   1.5.0
## v ggplot2   3.4.3     v tibble    3.2.1
## v lubridate 1.9.2     v tidyr     1.3.0
```

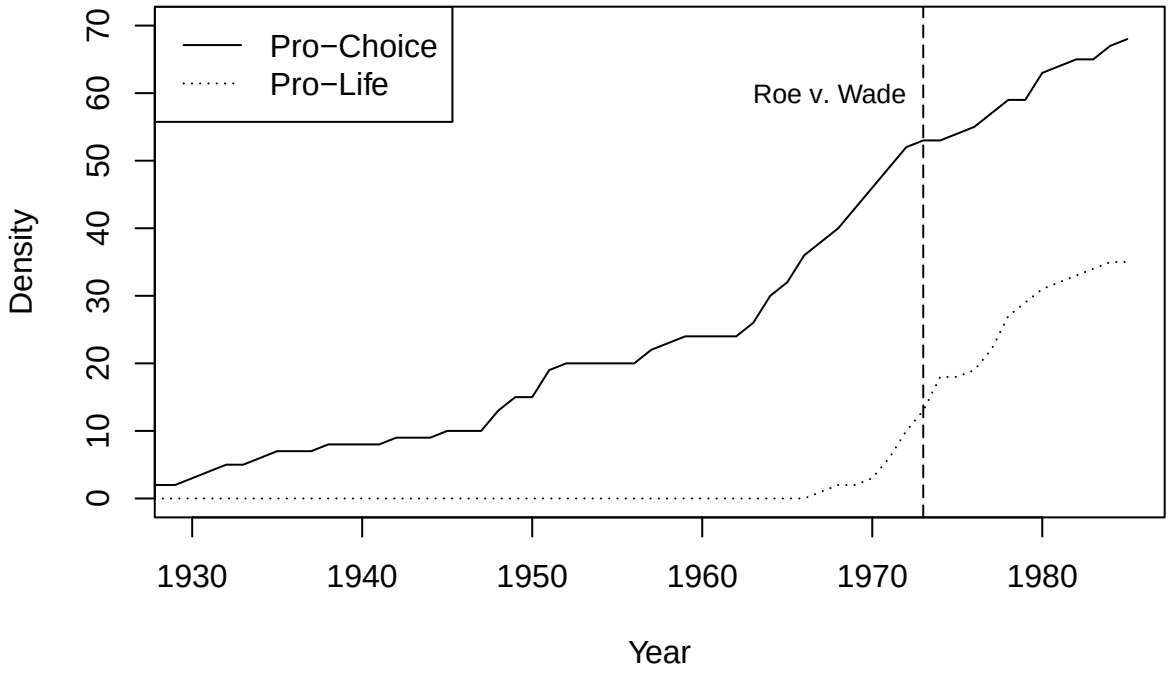
```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## x dplyr::select() masks MASS::select()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(growthcurver)
```

```
#Load Data
groups <- read_csv("PSRM_Replication.csv")
```

```
## Rows: 66 Columns: 21
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## dbl (21): Year, Choice_founding, Choice_density, Choice_densitysq, Life_foun...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
#Descriptive Figure 1

plot(groups$Year,groups$Choice_density, type = "l", xlab = "Year",
     ylab = "Density", xlim = c(1930,1985), ylim = c(0,70))

lines(groups$Year, groups$Life_density, lty = 3)

legend("topleft",
       legend=c("Pro-Choice", "Pro-Life"),
       lty=c(1,3))


abline(v=1973, lty = 5)
text(1967.5,60,"Roe v. Wade", cex = .8)
```




```
#Run Models
m1<-glm.nb(groups$Life_founding~groups$Life_density+groups$Life_densitysq+
             groups$Choice_density+groups$Choice_densitysq+groups$Abortion_ratio+
             groups$M_BA+groups$W_BA)
```

```
## Warning in theta.ml(Y, mu, sum(w), w, limit = control$maxit, trace =
## control$trace > : iteration limit reached
```

```
## Warning in theta.ml(Y, mu, sum(w), w, limit = control$maxit, trace =
## control$trace > : iteration limit reached
```

```
m2<-glm.nb(groups$Choice_founding~groups$Choice_density+groups$Choice_densitysq+
             groups$Life_density+groups$Life_densitysq+groups$Abortion_ratio+groups$M_BA+groups$W_BA)
```

```
## Warning in theta.ml(Y, mu, sum(w), w, limit = control$maxit, trace =
## control$trace > : iteration limit reached

## Warning in theta.ml(Y, mu, sum(w), w, limit = control$maxit, trace =
## control$trace > : iteration limit reached
```

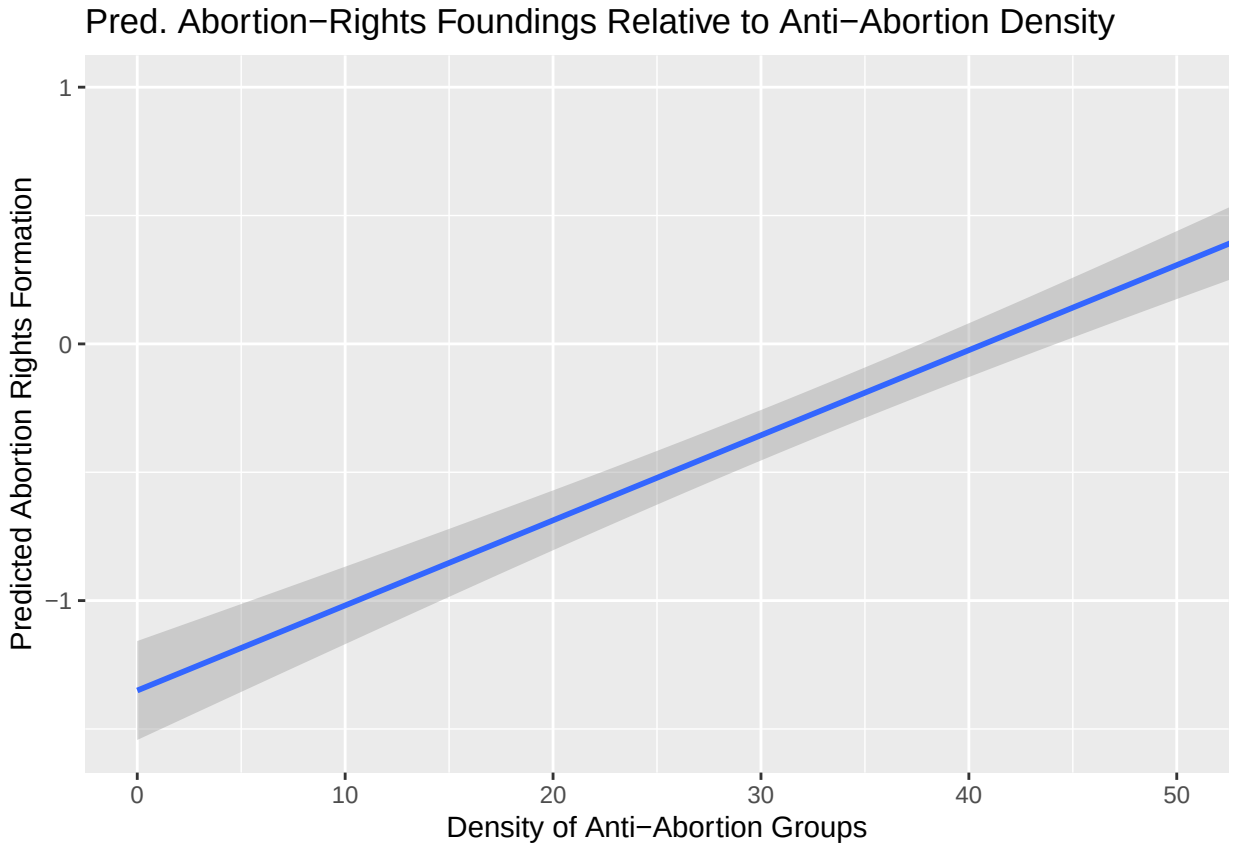
```
#Create Table 1

stargazer(m1,m2, type = "text",
          column.labels = c("Anti-Abortion","Abortion-Rights"),
          dep.var.labels.include = F, dep.var.caption = "DV: Group Formation",
          covariate.labels = c("Anti-Abortion", "Anti-Abortion Sq.",
                               "Abortion Rights", "Abortion Rights Sq.",
                               "Abortion Ratio", "Male BA Degrees","Female BA Degrees"),
          notes = "Negative binomial regression with standard errors in parentheses.")
```

```
##
## ==================================================================================
##                                          DV: Group Formation
##                     ---------------------------------------------------------------
##                               Anti-Abortion                  Abortion-Rights
##                                    (1)                             (2)
## ----------------------------------------------------------------------------------
## Anti-Abortion                     0.113                          -0.609**
##                                  (0.258)                         (0.299)
##
## Anti-Abortion Sq.                 0.003                          0.013***
##                                  (0.006)                         (0.005)
##
## Abortion Rights                  1.181*                          0.283**
##                                  (0.640)                         (0.118)
##
## Abortion Rights Sq.              -0.011*                          -0.001
##                                  (0.006)                         (0.001)
##
## Abortion Ratio                    0.001                           0.018*
##                                  (0.012)                         (0.011)
##
## Male BA Degrees                  -1.122                          -0.520**
##                                  (1.296)                         (0.238)
##
## Female BA Degrees                 0.293                           -0.387
##                                  (1.256)                         (0.391)
##
## Constant                         -18.473                          1.611
##                                 (15.318)                         (1.236)
##
## ----------------------------------------------------------------------------------
## Observations                       66                              66
```

```
## Log Likelihood                  -27.960                          -74.953
## theta                  25,229.360 (528,093.700)         13,587.290 (212,777.800)
## Akaike Inf. Crit.               71.920                           165.907
## ================================================================================
## Note:                                                 *p<0.1; **p<0.05; ***p<0.01
##                     Negative binomial regression with standard errors in parentheses.
```

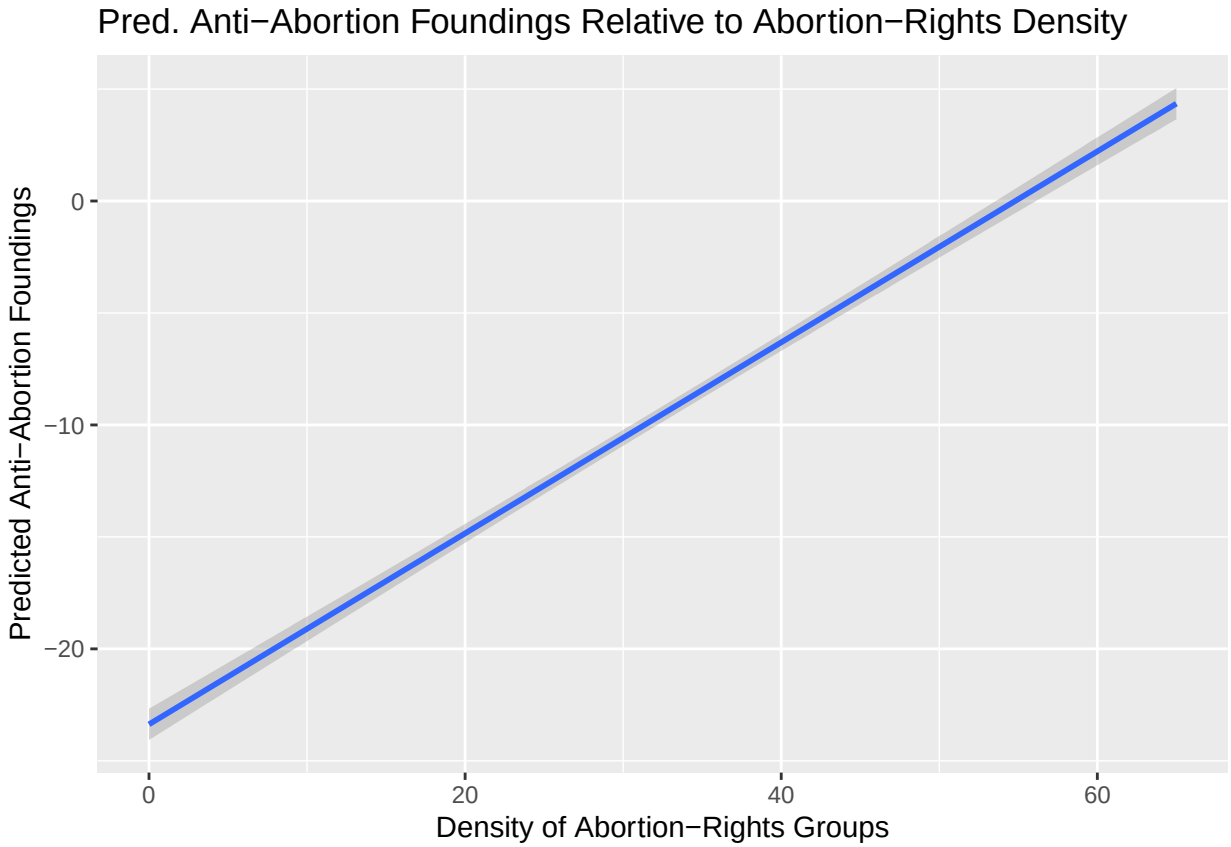
```
#Predictions

predictions <- data.frame("Choice_density" = 0:65, "Life_density" = 0:65, "Abortion_ratio"= mean(groups
predictions$Life_densitysq<-(predictions$Life_density)^2
predictions['Choice_foundings']<-NA
predictions$Choice_densitysq<-(predictions$Choice_density)^2

predictions['Life_foundings']<-NA

predictions$Choice_foundings<-predict(m2,newdata=predictions)
predictions$Life_foundings<-predict(m1,newdata=predictions)

#Plotting Predictions


#Figure 2, publication
ggplot(predictions, aes(Life_density,Choice_foundings)) +
  geom_smooth(level = .9, method = "lm") +
  xlab("Density of Anti-Abortion Groups")+
  ylab("Predicted Abortion Rights Formation")+
  labs(title = "Pred. Abortion-Rights Foundings Relative to Anti-Abortion Density") +
  coord_cartesian(xlim = c(0,50))
```

```
## `geom_smooth()` using formula = 'y ~ x'
```

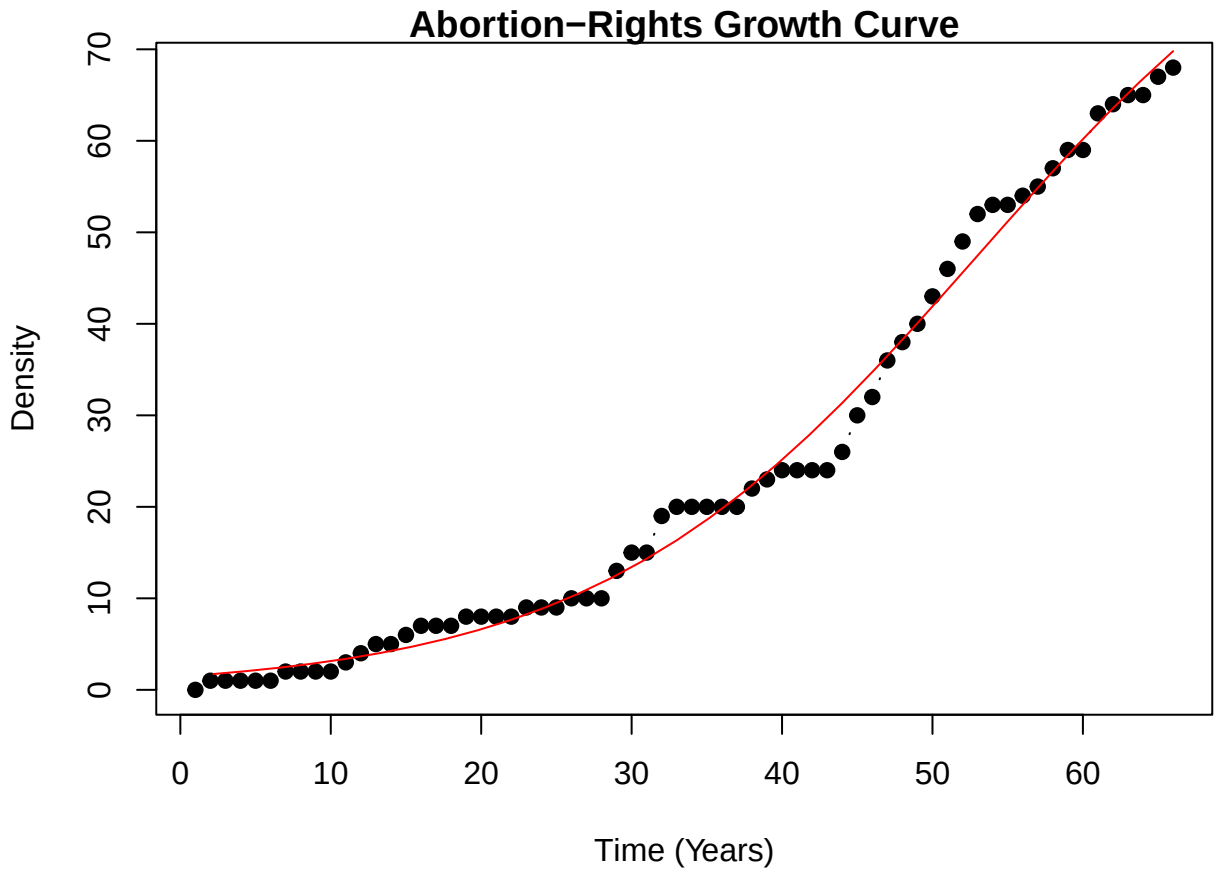



```
#Figure 3, publication
ggplot(predictions, aes(Life_density, Life_foundings)) +
  geom_smooth(level = .9, method = "lm") +
  xlab("Density of Abortion-Rights Groups")+
  ylab("Predicted Anti-Abortion Foundings")+
  labs(title = "Pred. Anti-Abortion Foundings Relative to Abortion-Rights Density")
```

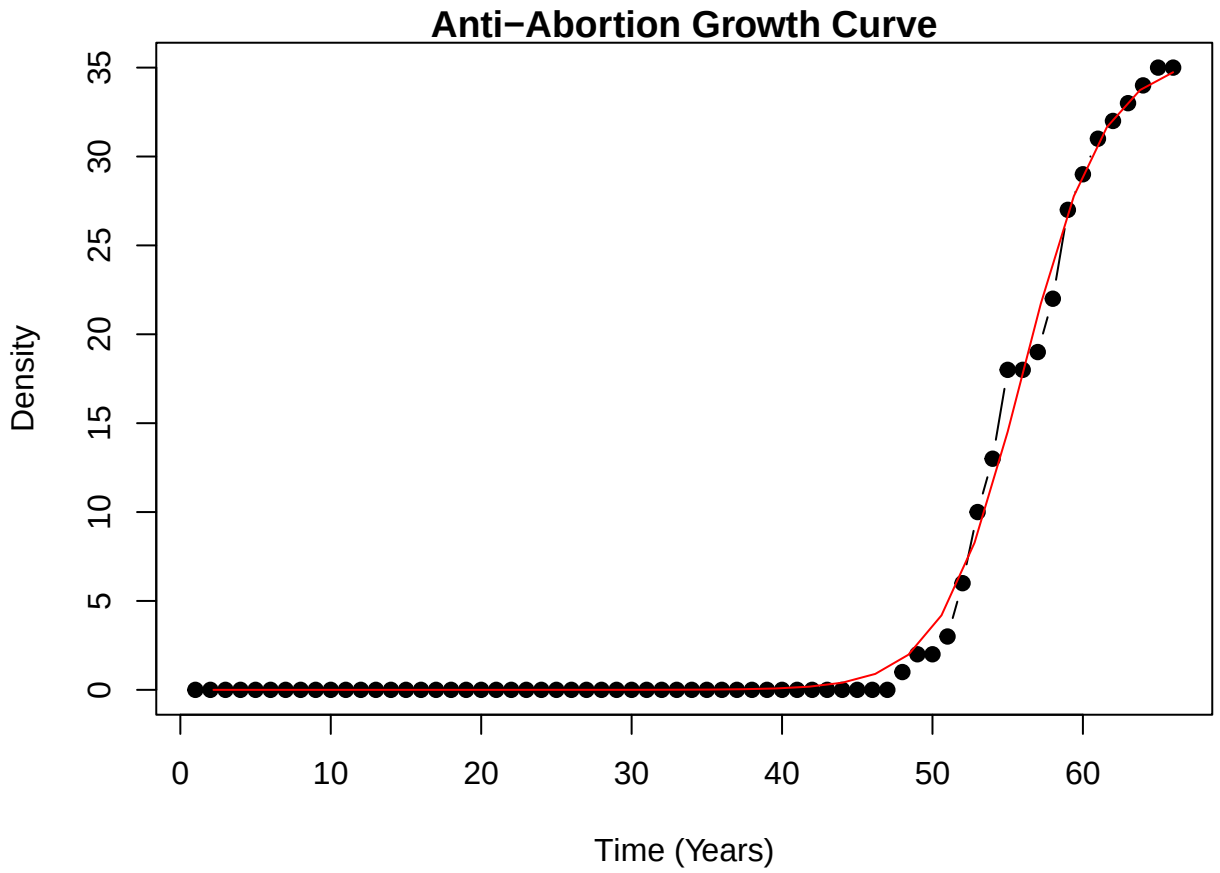
```
## `geom_smooth()` using formula = 'y ~ x'
```




```
###Appendices###

#Creating figures 4 and 5 using growthcurver 'Summarize_Growth' function

#creating blank dataset into 'd2'
groups$time<-c(1:66)
d2<-groups$time
d2<-as.data.frame(d2)
colnames(d2)<-"time"
d2$choice<-groups$Choice_density
d2$life<-groups$Life_density

#running model for abortion rights
gc_fit_choice<-SummarizeGrowth(d2$time,d2$choice)

#Creating Figure 4
plot(gc_fit_choice, xlab = "Time (Years)", ylab = "Density", main = "Abortion-Rights Growth Curve")
```




```
#running model for anti-abortion
gc_fit_life<-SummarizeGrowth(d2$time,d2$life)


#Creating Figure 5
plot(gc_fit_life, ylab="Density", xlab = "Time (Years)", main = "Anti-Abortion Growth Curve")
```




```
#Creating Table 2
groups2<-groups[groups$Year>1966,]
m3<-glm.nb(groups2$Life_founding~groups2$Life_density+groups2$Life_densitysq+groups2$Abortion_ratio)
```

```
## Warning in theta.ml(Y, mu, sum(w), w, limit = control$maxit, trace =
## control$trace > : iteration limit reached

## Warning in theta.ml(Y, mu, sum(w), w, limit = control$maxit, trace =
## control$trace > : iteration limit reached
```

```
m4<-glm.nb(groups2$Life_founding~groups2$Choice_density+groups2$Choice_densitysq+groups2$Abortion_ratio)
```

```
## Warning in theta.ml(Y, mu, sum(w), w, limit = control$maxit, trace =
## control$trace > : iteration limit reached

## Warning in theta.ml(Y, mu, sum(w), w, limit = control$maxit, trace =
## control$trace > : iteration limit reached
```

```
stargazer(m3,m4,dep.var.caption = "DV: Anti-Abortion Group Formation",dep.var.labels.include = F,
          type = "text", covariate.labels = c("Anti-Abortion", "Anti-Abortion Sq.", "Abortion Rights",
                                              "Abortion Rights Sq.", "Abortion Ratio"),
          omit = c("Constant"), omit.stat = "theta", notes = "Negative binomial regression with SEs in p
```

```
##
## ==========================================================================
##                                DV: Anti-Abortion Group Formation
##                       ------------------------------------------------------
##                                  (1)                          (2)
```

```
## ------------------------------------------------------------------------
## Anti-Abortion                  0.356
##                               (0.231)
##
## Anti-Abortion Sq.            -0.007**
##                               (0.004)
##
## Abortion Rights                                          0.844**
##                                                          (0.420)
##
## Abortion Rights Sq.                                      -0.008**
##                                                          (0.003)
##
## Abortion Ratio                -0.007                     -0.00001
##                               (0.008)                    (0.004)
##
## ------------------------------------------------------------------------
## Observations                    19                         19
## Log Likelihood                -29.701                    -29.526
## Akaike Inf. Crit.             67.403                     67.051
## ========================================================================
## Note:                                        *p<0.1; **p<0.05; ***p<0.01
##                      Negative binomial regression with SEs in parentheses.
```