

# Running R Analysis Code

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We knit to show the output of running the analysis code.

```
#####  
# DEMOCRATIC PEACE Survey 4 CODE  
  
#The primary statement of our analysis plan is in our pre-analysis plan in Open  
#Science Framework Storage. In this GitHub repo, we have also included  
#partially complete code and simulated data related to our pre-analysis plan;  
#the pre-analysis plan supersedes the code in any areas of ambiguity or difference.  
  
images_directory = NULL  
output_print = TRUE  
return_main = FALSE  
# save images by specifying a images directory  
# this is data simulated from Qualtric's "test survey" function  
if (output_print) {  
  print(paste0("Complied Date and Time: ", Sys.time()))  
}
```

```
## [1] "Complied Date and Time: 2015-07-01 12:15:53"
```

```
d4 <- read_spss(system.file("extdata", "confounding_democratic_peace_4_sim.sav",  
                           package = "confounding"))  
d <- d4[d4$workerid != "",] # only completed responses  
#####3  
# Treatment Assignments Variables  
# Democracy Vignette  
d$Z <- ifelse(d$d03==1 | d$d07==1 | d$d08==1 |  
             d$d09==1 | d$d10==1 | d$d13==1 | d$d14==1, 1, 0)  
d$Z[is.na(d$Z)] <- 0  
d$Z <- factor(x = d$Z, labels = c("Non-democracy", "Democracy"))  
# Vignette Types  
d$V <- c()  
# Basic  
d$V[d$d02==1 | d$d03==1] <- 1  
# Controlled Details  
d$V[d$d04==1 | d$d05==1 | d$d06==1 |  
    d$d07==1 | d$d08==1 | d$d09==1 |  
    d$d10==1 | d$d11==1] <- 2  
# ENE  
d$V[d$d12==1 | d$d13==1 | d$d14==1 | d$d15==1] <- 3  
# make a factor for d$V  
d$V <- factor(x = d$V, labels = c("Basic", "Controlled Details", "ENE"))  
d <- d[!is.na(d$V),]  
# size of data set  
if (output_print) {  
  dim(d)  
}
```

```
## [1] 198 171
```

```
#####  
# Placebo Test C: Regions of the World  
  
# 1) Dimension Reduction  
d$NoAm <- region.lab(d$regions_1_1_Group, d$regions_2_1_Group)  
d$WeEu <- region.lab(d$regions_1_4_Group, d$regions_2_4_Group)  
d$MiEa <- region.lab(d$regions_1_6_Group, d$regions_2_6_Group)  
d$SuAf <- region.lab(d$regions_1_7_Group, d$regions_2_7_Group)  
d$EaAs <- region.lab(d$regions_1_8_Group, d$regions_2_8_Group)  
d$CeAs <- region.lab(d$regions_1_9_Group, d$regions_2_9_Group)  
d$region <- d$NoAm+d$WeEu-d$MiEa-d$SuAf  
# standardized  
d$region.s <- vscale(var = d$region, vig = d$V)  
# regression: standardized  
region.s <- myreg(Y = d$region.s, Z = d$Z, V = d$V)
```

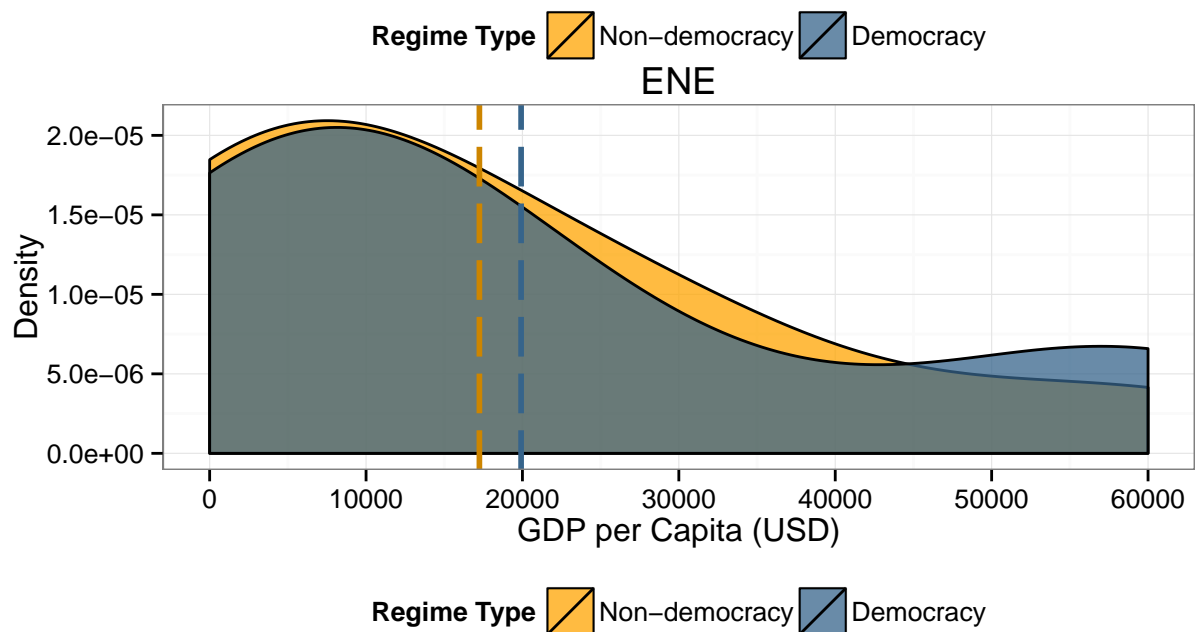
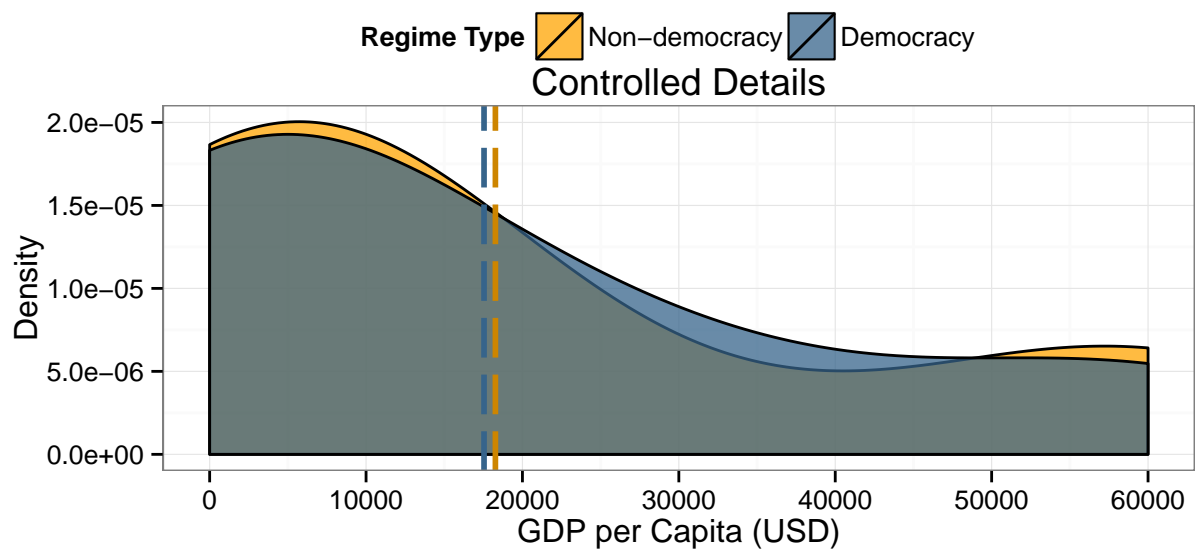
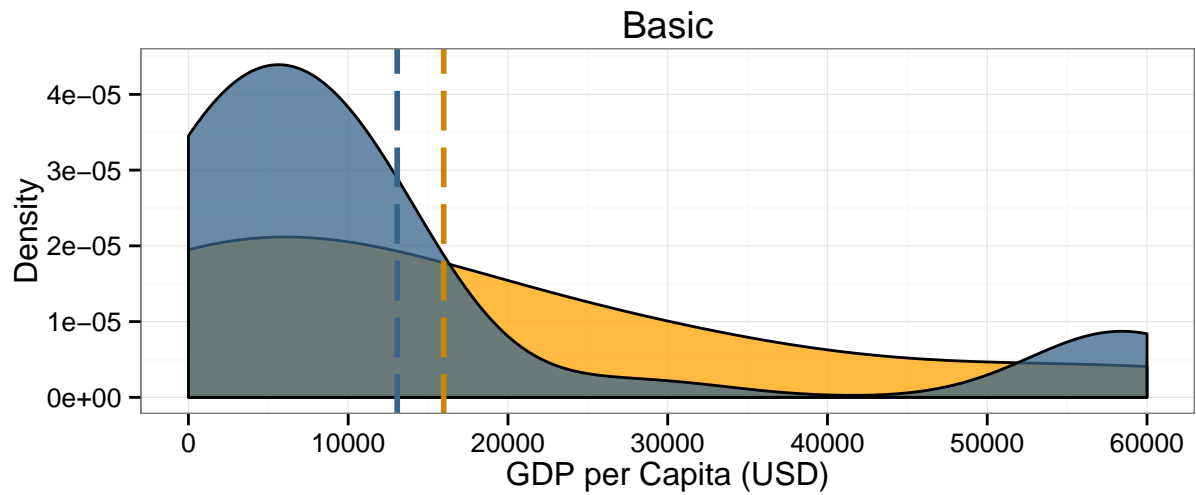
```
## Loading required package: sandwich
```

```
colnames(region.s) <- c("Coef", "SE")  
# regression: non-standardized  
region.n <- myreg(Y = d$region, , Z = d$Z, V = d$V)  
colnames(region.n) <- c("Coef", "SE")  
# regression with dummy variables and interactions  
region.1 <- robustse(lm(formula = region ~ Z + V + Z:V, data = d))  
region.2 <- robustse(lm(formula = region.s ~ Z + V + Z:V, data = d))  
if (output_print) {  
  print("Placebo Test C: Regions of the World")  
  print(region.s)  
  print(region.n)  
  print(region.1)  
  print(region.2)  
}
```

```
## [1] "Placebo Test C: Regions of the World"  
##           Coef           SE  
## [1,]  0.1601764 0.2525493  
## [2,]  0.1683116 0.2541643  
## [3,] -0.1477916 0.2486409  
##           Coef           SE  
## [1,]  0.1486742 0.2344140  
## [2,]  0.1764706 0.2664850  
## [3,] -0.1800357 0.3028875  
##  
## t test of coefficients:  
##  
##           Estimate Std. Error t value Pr(>|t|)  
## (Intercept)    -0.242424    0.176944  -1.3701   0.1723  
## ZDemocracy      0.148674    0.234414   0.6342   0.5267  
## VControlled Details 0.242424    0.285056   0.8504   0.3961  
## VENE            0.363636    0.264383   1.3754   0.1706  
## ZDemocracy:VControlled Details 0.027796    0.354914   0.0783   0.9377
```

```
## ZDemocracy:VENE          -0.328710    0.383002 -0.8582    0.3918
##
##
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.0788561  0.1906332  -0.4137   0.6796
## ZDemocracy       0.1601764  0.2525493   0.6342   0.5267
## VControlled Details -0.0078499  0.2859670  -0.0275   0.9781
## VENE            0.1538548  0.2496906   0.6162   0.5385
## ZDemocracy:VControlled Details 0.0081353  0.3583024   0.0227   0.9819
## ZDemocracy:VENE    -0.3079680  0.3544058  -0.8690   0.3859
```

```
#####
# Placebo Test D: GDP per Capita
d$gdp <- ifelse(is.na(d$gdp_1), d$gdp_2, d$gdp_1)
# relabel
# real-world median values for each interval
qog <- read.dta(system.file("extdata", "qog_bas_ts_jan15.dta",
                           package = "confounding"))
r_gdp <- qog$gle_cgdp[c(qog$year==2005)]
d$gdp <- relab(old.var = d$gdp, old.labs = 1:7,
              new.labs = c(median(r_gdp[r_gdp < 500], TRUE),
                           median(r_gdp[r_gdp > 500 & r_gdp < 1001], TRUE),
                           median(r_gdp[r_gdp > 1000 & r_gdp < 5001], TRUE),
                           median(r_gdp[r_gdp > 5000 & r_gdp < 10001], TRUE),
                           median(r_gdp[r_gdp > 10000 & r_gdp < 20001], TRUE),
                           median(r_gdp[r_gdp > 20000 & r_gdp < 40001], TRUE),
                           median(r_gdp[r_gdp > 40000], TRUE)))
# standardize
d$gdp.s <- vscale(var = d$gdp, vig = d$V)
# graphing distribution
for (j in 1:3) {
  my_ggplot <- myden(Y=d$gdp, V=d$V, Z=d$Z, v = j, x.limits=c(0, 60000),
                    x.breaks=seq(0,60000,10000),
                    x.labels=seq(0,60000,10000),
                    title=levels(d$V)[j], xlab="GDP per Capita (USD)")
  if (!is.null(images_directory)) {
    ggsave(paste0(images_directory, "/gdp", j, ".pdf"), width=5, height=3.5)
  } else if (output_print) {
    print(my_ggplot)
  }
}
```



```

# regression: standardized
gdp.s <- myreg(Y = d$gdp.s, Z = d$Z, V = d$V)
colnames(gdp.s) <- c("Coef", "SE")
# regression: non-standardized
gdp.n <- myreg(Y = d$gdp, Z = d$Z, V = d$V)
colnames(gdp.n) <- c("Coef", "SE")
# regression with dummy variables and interactions
gdp.1 <- robustse(lm(formula = gdp ~ Z + V + Z:V, data = d))
gdp.2 <- robustse(lm(formula = gdp.s ~ Z + V + Z:V, data = d))
if (output_print) {
  print("Placebo Test D: GDP per Capita")
  print(gdp.s)
  print(gdp.n)
  print(gdp.1)
  print(gdp.2)
}

```

```

## [1] "Placebo Test D: GDP per Capita"
##           Coef           SE
## [1,] -0.15634747 0.2530683
## [2,] -0.03314614 0.2524164
## [3,]  0.13301169 0.2488952
##           Coef           SE
## [1,] -2909.028 4708.633
## [2,]  -727.535 5540.367
## [3,]  2666.414 4989.470
##
## t test of coefficients:
##
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        15976.8      3362.0   4.7521 3.937e-06 ***
## ZDemocracy                        -2909.0      4708.6  -0.6178   0.5374
## VControlled Details                 2294.6      5279.6   0.4346   0.6643
## VENE                               1271.5      4709.1   0.2700   0.7874
## ZDemocracy:VControlled Details     2181.5      7271.0   0.3000   0.7645
## ZDemocracy:VENE                     5575.4      6860.5   0.8127   0.4174
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        0.076971    0.180695   0.4260   0.6706
## ZDemocracy                        -0.156347    0.253068  -0.6178   0.5374
## VControlled Details              -0.059896    0.258934  -0.2313   0.8173
## VENE                             -0.144470    0.244347  -0.5912   0.5551
## ZDemocracy:VControlled Details    0.123201    0.357432   0.3447   0.7307
## ZDemocracy:VENE                   0.289359    0.354954   0.8152   0.4160

```

```

#####
# Placebo Test E: Religion
d$religion <- ifelse(is.na(d$religion_1), d$religion_2, d$religion_1)

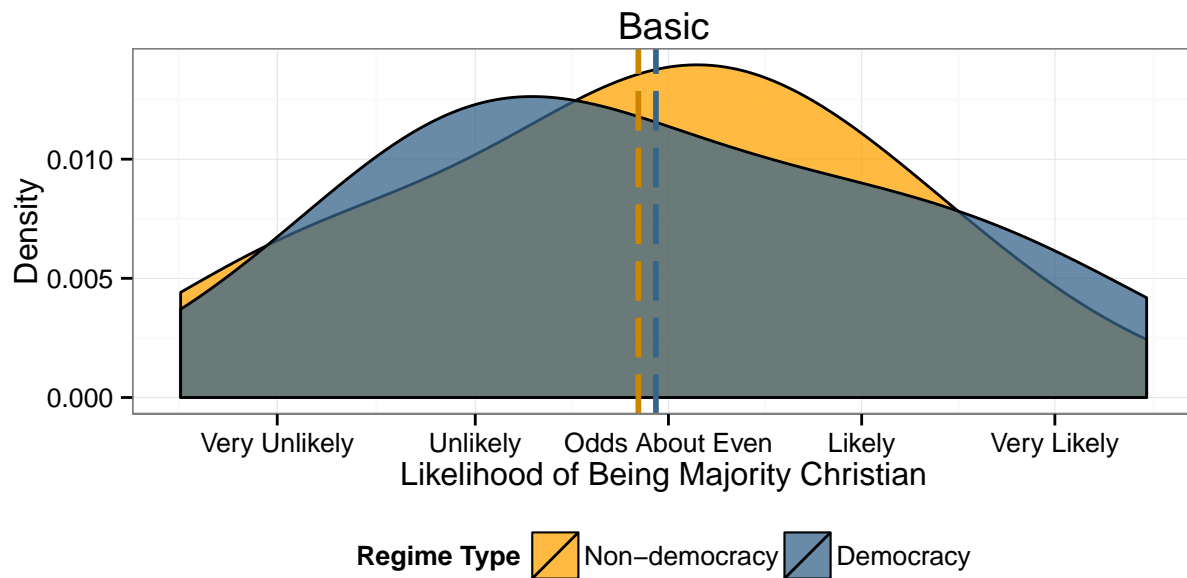
```

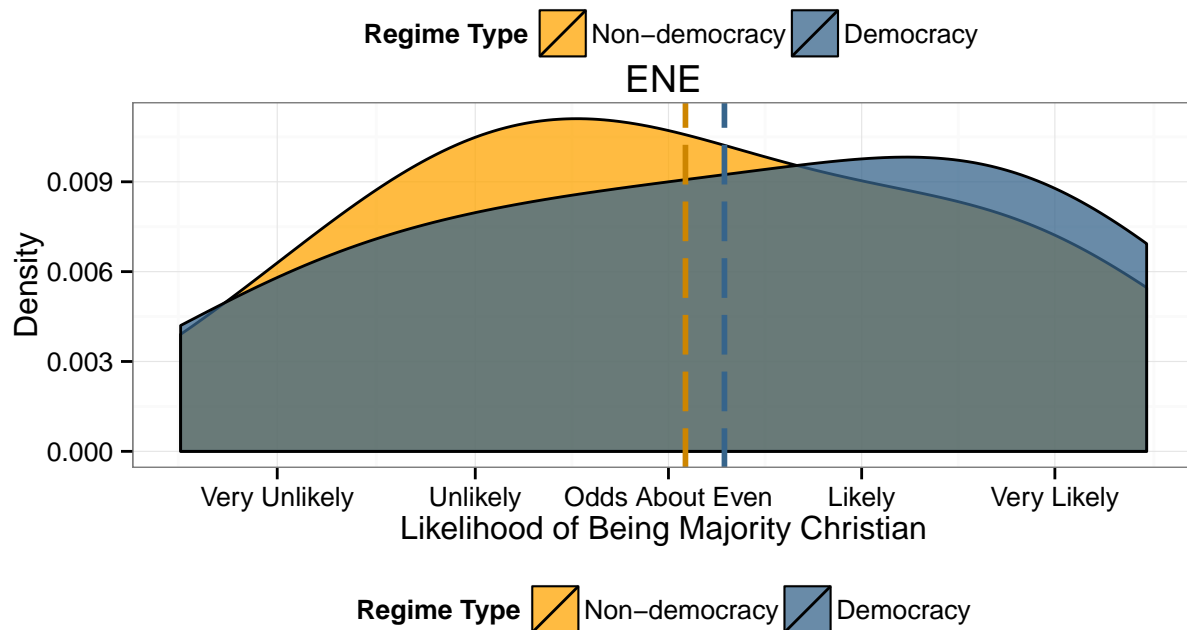
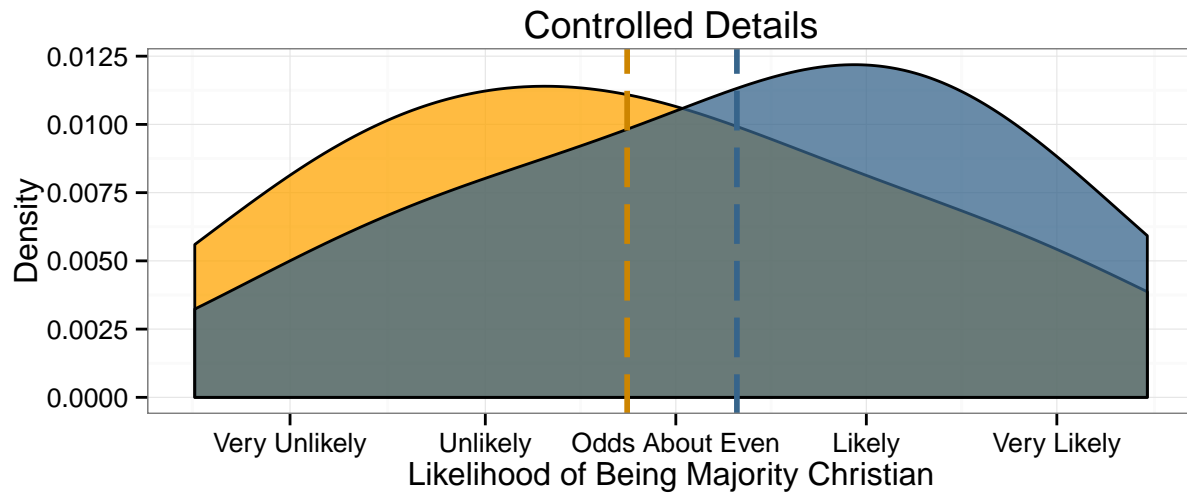
```

# relabel
probint <- c(mean(0:20), mean(21:40), mean(41:60), mean(61:80), mean(81:100))
likelylab <- c("Very Unlikely", "Unlikely", "Odds About Even",
              "Likely", "Very Likely")
d$religion <- relab(old.var = d$religion, old.labs = 1:5,
                  new.labs = probint)

# standardize
d$religion.s <- vscale(var = d$religion, vig = d$V)
# graphing distribution
for (j in 1:3) {
  my_ggplot <- myden(Y=d$religion, V=d$V, Z=d$Z, v = j, x.limits=c(0, 100),
                    x.breaks=probint,
                    x.labels=likelylab,
                    title=levels(d$V)[j],
                    xlab="Likelihood of Being Majority Christian")
  if (!is.null(images_directory)) {
    ggsave(paste0(images_directory, "/religion", j, ".pdf"), width=5, heigh=3.5)
  } else if (output_print) {
    print(my_ggplot)
  }
}

```





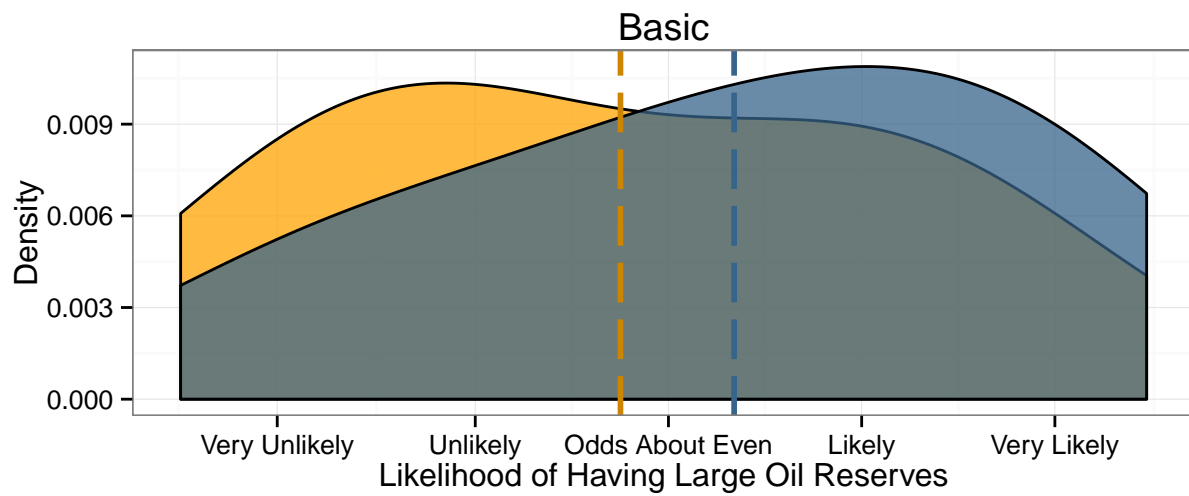
```
# regression: standardized
religion.s <- myreg(Y = d$religion.s, Z = d$Z, V = d$V)
colnames(religion.s) <- c("Coef", "SE")
# regression: non-standardized
religion.n <- myreg(Y = d$religion, Z = d$Z, V = d$V)
colnames(religion.n) <- c("Coef", "SE")
# regression with dummy variables and interactions
religion.1 <- robustse(lm(formula = religion ~ Z + V + Z:V, data = d))
religion.2 <- robustse(lm(formula = religion.s ~ Z + V + Z:V, data = d))
if (output_print) {
  print("Placebo Test E: Religion")
  print(religion.s)
  print(religion.n)
  print(religion.1)
  print(religion.2)
}
```



```
## [1] "Placebo Test E: Religion"
##      Coef      SE
## [1,] 0.07482884 0.2541112
## [2,] 0.42048668 0.2466398
## [3,] 0.13978928 0.2490289
##      Coef      SE
## [1,] 1.824337 6.195266
## [2,] 11.521140 6.757816
## [3,] 4.036542 7.190935
##
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      47.3788      4.1833 11.3257 <2e-16 ***
## ZDemocracy         1.8243      6.1953  0.2945  0.7687
## VControlled Details -1.9882      6.4729 -0.3072  0.7591
## VENE               4.8788      6.4332  0.7584  0.4492
## ZDemocracy:VControlled Details  9.6968      9.1678  1.0577  0.2915
## ZDemocracy:VENE       2.2122      9.4916  0.2331  0.8160
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.036839      0.171587 -0.2147  0.8302
## ZDemocracy       0.074829      0.254111  0.2945  0.7687
## VControlled Details -0.179776      0.248879 -0.7223  0.4710
## VENE            -0.034099      0.241015 -0.1415  0.8876
## ZDemocracy:VControlled Details  0.345658      0.354124  0.9761  0.3302
## ZDemocracy:VENE       0.064960      0.355792  0.1826  0.8553
```

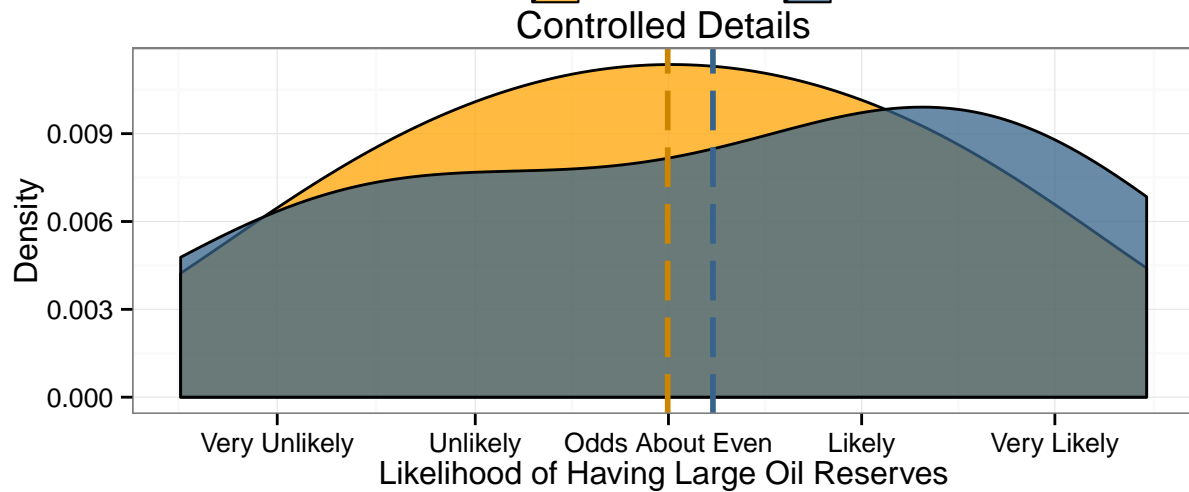
```
#####
# Placebo Test F: Oil Reserves
d$oil <- ifelse(is.na(d$oil_1), d$oil_2, d$oil_1)
# relabel
d$oil <- relab(old.var = d$oil, old.labs = 1:5,
              new.labs = rev(probint))
d$oil.o <- relab(old.var = ifelse(is.na(d$oil_1), d$oil_2, d$oil_1),
                old.labs = 1:5,
                new.labs = probint)
# standardize
d$oil.s <- vscale(var = d$oil.o, vig = d$V)
# graphing distribution
for (j in 1:3) {
  my_ggplot <- myden(Y=d$oil, V=d$V, Z=d$Z, v = j, x.limits=c(0, 100),
                    x.breaks=probint,
                    x.labels=likelylab,
                    title=levels(d$V)[j],
                    xlab="Likelihood of Having Large Oil Reserves")
  if (!is.null(images_directory)) {
    ggsave(paste0(images_directory, "/oil", j, ".pdf"), width=5, height=3.5)
  } else if (output_print) {
```





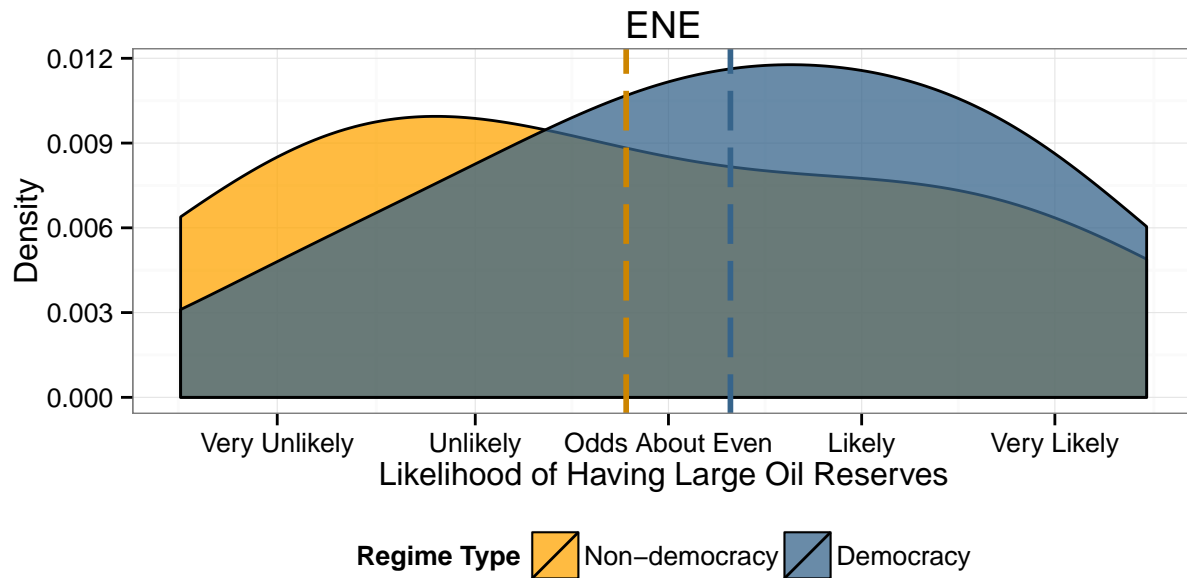
```
print(my_ggplot)
}
}
```



**Regime Type**  Non-democracy  Democracy



**Regime Type**  Non-democracy  Democracy

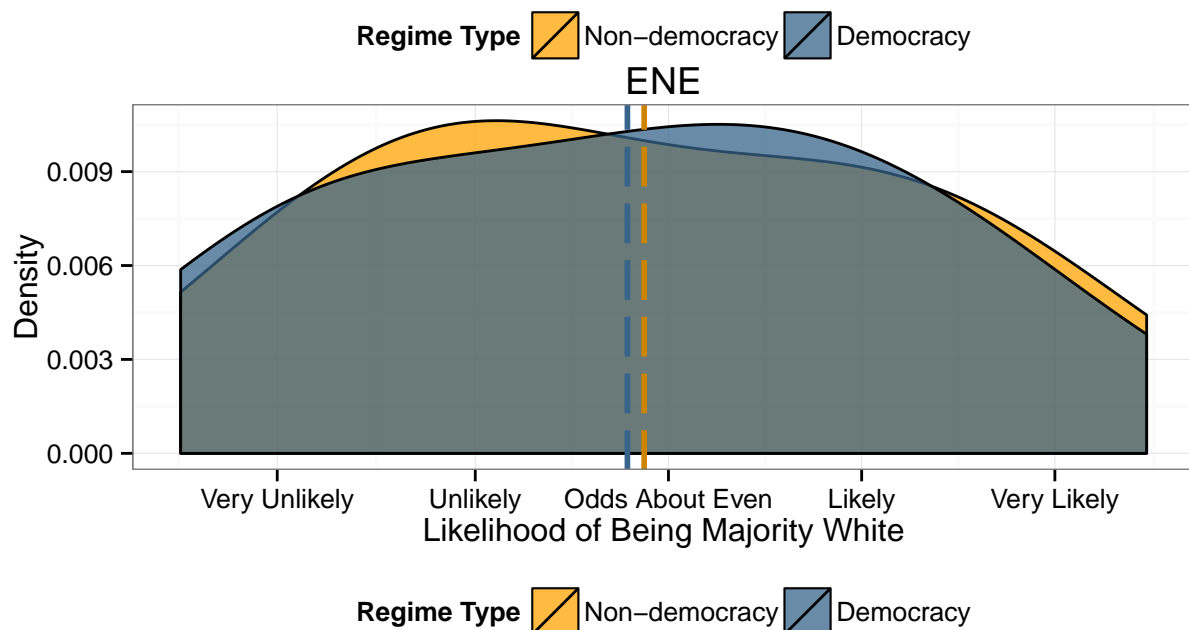
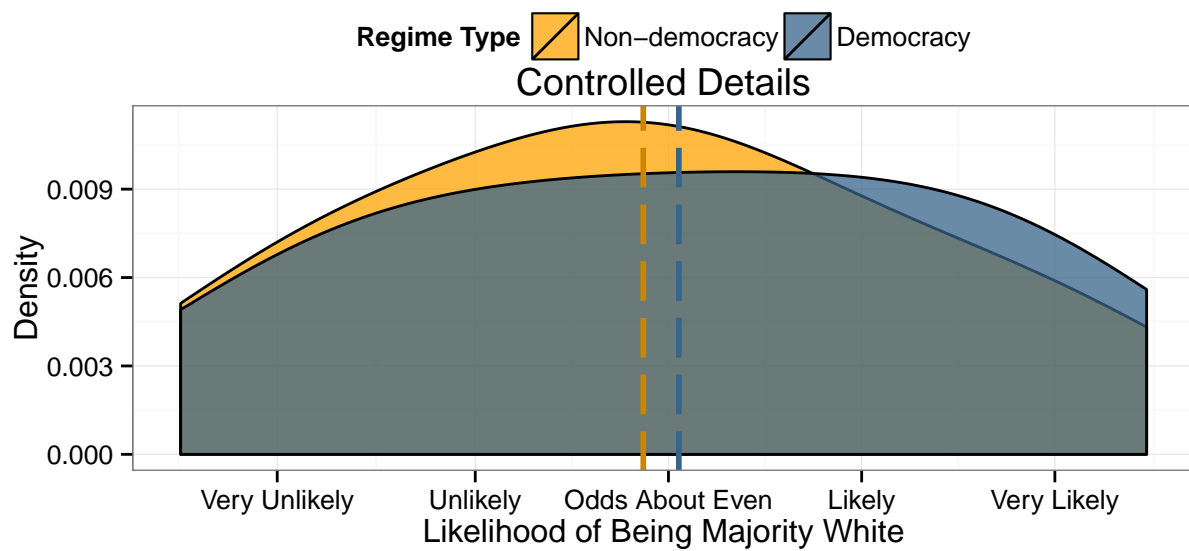
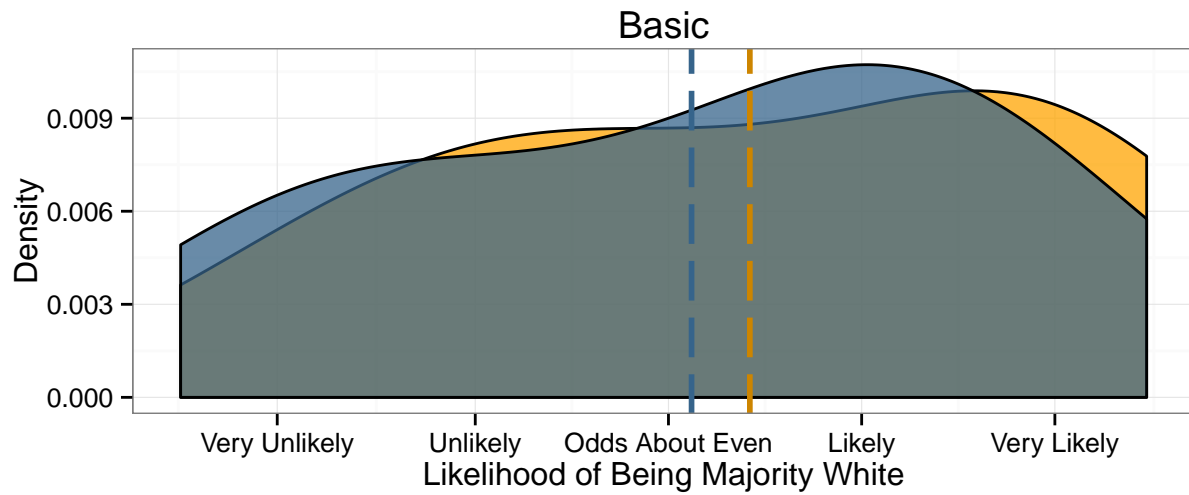


```
# regression: standardized
oil.s <- myreg(Y = d$oil.s, Z = d$Z, V = d$V)
colnames(oil.s) <- c("Coef", "SE")
# regression: non-standardized
oil.n <- myreg(Y = d$oil, Z = d$Z, V = d$V)
colnames(oil.n) <- c("Coef", "SE")
# regression with dummy variables and interactions
oil.1 <- robustse(lm(formula = oil ~ Z + V + Z:V, data = d))
oil.2 <- robustse(lm(formula = oil.s ~ Z + V + Z:V, data = d))
if (output_print) {
  print("Placebo Test F: Oil Reserves")
  print(oil.s)
  print(oil.n)
  print(oil.1)
  print(oil.2)
}
```

```
## [1] "Placebo Test F: Oil Reserves"
##           Coef          SE
## [1,] -0.4076571 0.2486310
## [2,] -0.1647790 0.2499047
## [3,] -0.3692040 0.2462073
##           Coef          SE
## [1,] 11.766572 7.201284
## [2,]  4.681066 7.238951
## [3,] 10.790553 7.147319
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)    45.53030     5.02989   9.0520  <2e-16 ***
## ZDemocracy      11.76657     7.20128   1.6340   0.1039
## VControlled Details  4.89157     6.92716   0.7061   0.4810
## VENE            0.59091     7.42386   0.0796   0.9366
## ZDemocracy:VControlled Details -7.08551    10.21082  -0.6939   0.4886
```

```
## ZDemocracy:VENE          -0.97602   10.14607 -0.0962   0.9235
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.200693   0.173373   1.1576   0.2485
## ZDemocracy     -0.407657   0.248631  -1.6396   0.1027
## VControlled Details -0.115807   0.238905  -0.4847   0.6284
## VENE           -0.013335   0.255691  -0.0522   0.9585
## ZDemocracy:VControlled Details 0.242878   0.352519   0.6890   0.4917
## ZDemocracy:VENE    0.038453   0.349908   0.1099   0.9126
```

```
#####
# Placebo Test G: White
d$white <- ifelse(is.na(d$white_1), d$white_2, d$white_1)
# relabel
probint <- c(mean(0:20), mean(21:40), mean(41:60), mean(61:80), mean(81:100))
likelylab <- c("Very Unlikely", "Unlikely", "Odds About Even",
               "Likely", "Very Likely")
d$white <- relab(old.var = d$white, old.labs = 1:5,
                 new.labs = probint)
# standardize
d$white.s <- vscale(var = d$white, vig = d$V)
# graphing distribution
for (j in 1:3) {
  my_ggplot <- myden(Y=d$white, V=d$V, Z=d$Z, v = j, x.limits=c(0, 100),
                    x.breaks=probint,
                    x.labels=likelylab,
                    title=levels(d$V)[j],
                    xlab="Likelihood of Being Majority White")
  if (!is.null(images_directory)) {
    ggsave(paste0(images_directory, "/white", j, ".pdf"), width=5, height=3.5)
  } else if (output_print) {
    print(my_ggplot)
  }
}
```



```

# regression: standardized
white.s <- myreg(Y = d$white.s, Z = d$Z, V = d$V)
colnames(white.s) <- c("Coef", "SE")
# regression: non-standardized
white.n <- myreg(Y = d$white, Z = d$Z, V = d$V)
colnames(white.n) <- c("Coef", "SE")
# regression with dummy variables and interactions
white.1 <- robustse(lm(formula = white ~ Z + V + Z:V, data = d))
white.2 <- robustse(lm(formula = white.s ~ Z + V + Z:V, data = d))
if (output_print) {
  print("Placebo Test G: White")
  print(white.s)
  print(white.n)
  print(white.1)
  print(white.2)
}

```

```

## [1] "Placebo Test G: White"
##           Coef      SE
## [1,] -0.20233728 0.2526181
## [2,]  0.12857638 0.2510474
## [3,] -0.06263601 0.2498651
##           Coef      SE
## [1,] -6.033617 7.532971
## [2,]  3.682904 7.190930
## [3,] -1.734848 6.920589
##
## t test of coefficients:
##
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   58.9242      5.3234 11.0688 <2e-16 ***
## ZDemocracy                    -6.0336      7.5330  -0.8010  0.4241
## VControlled Details          -11.0336      7.3061  -1.5102  0.1326
## VENE                         -10.9394      7.2519  -1.5085  0.1331
## ZDemocracy:VControlled Details  9.7165     10.4142   0.9330  0.3520
## ZDemocracy:VENE                4.2988     10.2294   0.4202  0.6748
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                   0.099612     0.178521   0.5580  0.5775
## ZDemocracy                    -0.202337     0.252618  -0.8010  0.4241
## VControlled Details          -0.165849     0.249779  -0.6640  0.5075
## VENE                         -0.067827     0.251956  -0.2692  0.7881
## ZDemocracy:VControlled Details  0.330914     0.356147   0.9291  0.3540
## ZDemocracy:VENE                0.139701     0.355315   0.3932  0.6946

```

```

#####
# Placebo Test H: Military Capability
d$force <- ifelse(is.na(d$force_1), d$force_2, d$force_1)

```

```

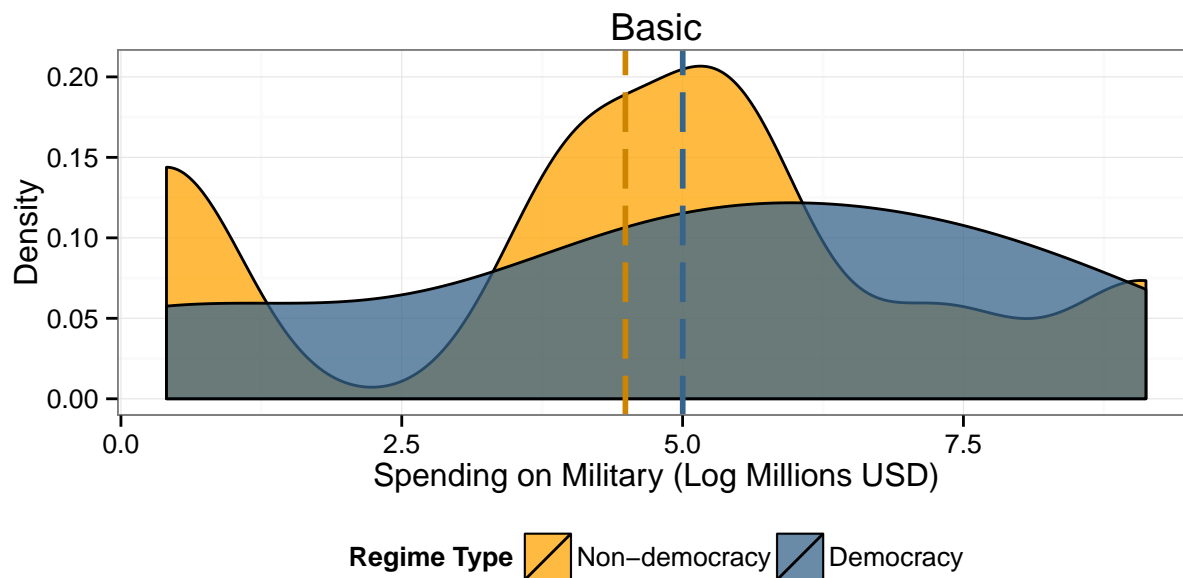
# relabel
# real-world median values in each interval
nmc <- read.csv(system.file("extdata", "NMC_v4_0.csv",
                           package = "confounding"))
r_exp <- nmc$milex[nmc$year == 2005]/1000
d$force <- relab(old.var = d$force, old.labs = 1:5,
               new.labs = c(median(r_exp[r_exp >= 0 & r_exp <= 30], TRUE),
                           median(r_exp[r_exp > 30 & r_exp <= 120], TRUE),
                           median(r_exp[r_exp > 120 & r_exp <= 600], TRUE),
                           median(r_exp[r_exp > 600 & r_exp <= 3500], TRUE),
                           median(r_exp[r_exp > 3500], TRUE)))

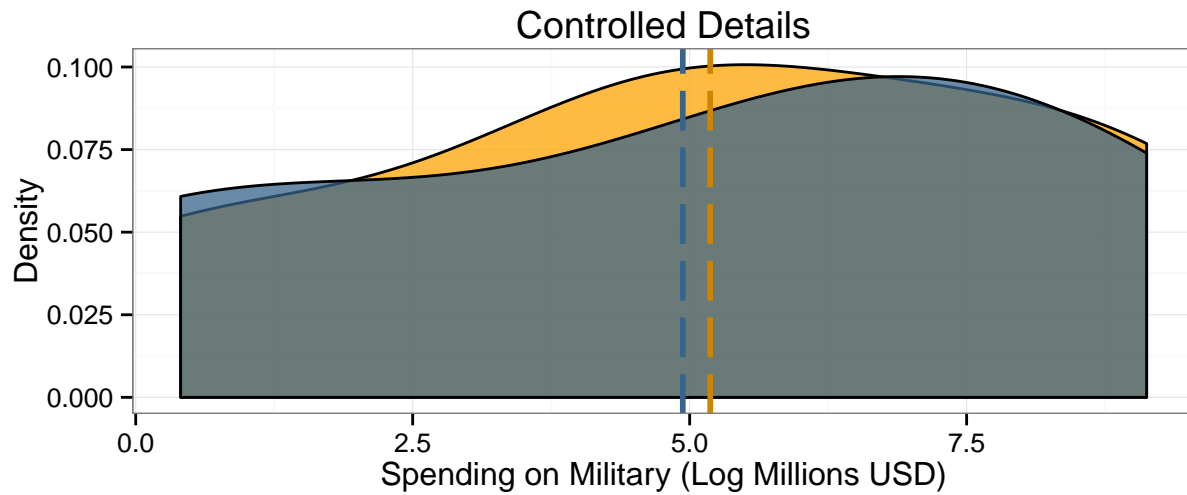
# ordinal coding
d$force.o <- ifelse(is.na(d$force_1), d$force_2, d$force_1)
d$force.o <- relab(old.var = d$force.o, old.labs = 1:5, new.labs = 0:4)

# standardize
d$force.s <- vscale(var = d$force, vig = d$V)

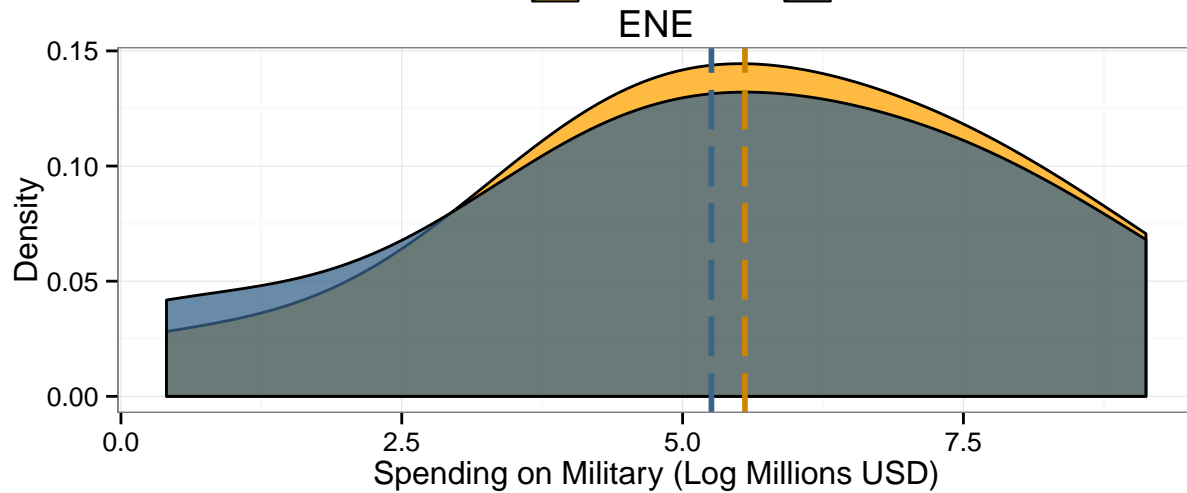
# graphing distribution
for (j in 1:3) {
  my_ggplot <- myden(Y=log(d$force), V=d$V, Z=d$Z, v = j,
                    title=levels(d$V)[j],
                    xlab="Spending on Military (Log Millions USD)")
  if (!is.null(images_directory)) {
    ggsave(paste0(images_directory, "/force", j, ".pdf"), width=5, height=3.5)
  } else if (output_print) {
    print(my_ggplot)
  }
}

```





**Regime Type** ▨ Non-democracy ▨ Democracy



**Regime Type** ▨ Non-democracy ▨ Democracy

```
# regression: standardized
force.s <- myreg(Y = d$force.s, Z = d$Z, V = d$V)
colnames(force.s) <- c("Coef", "SE")
# regression: non-standardized
force.n <- myreg(Y = d$force, Z = d$Z, V = d$V)
colnames(force.n) <- c("Coef", "SE")
# regression: ordinal coding
force.o <- myreg(Y = d$force.o, Z = d$Z, V = d$V)
colnames(force.o) <- c("Coef", "SE")
# regression with dummy variables and interactions
force.1 <- robustse(lm(formula = force ~ Z + V + Z:V, data = d))
force.2 <- robustse(lm(formula = force.s ~ Z + V + Z:V, data = d))
if (output_print) {
  print("Placebo Test H: Military Capability")
  print(force.s)
  print(force.n)
  print(force.o)
}
```

```

print(force.1)
print(force.2)
}

```

```

## [1] "Placebo Test H: Military Capability"
##           Coef           SE
## [1,]  0.08493721 0.2537556
## [2,] -0.13166803 0.2526287
## [3,] -0.01842706 0.2500269
##           Coef           SE
## [1,]  251.80161 752.2741
## [2,] -480.00092 920.9678
## [3,]  -53.27406 722.8472
##           Coef           SE
## [1,]  0.26893939 0.3353349
## [2,] -0.05698529 0.3798853
## [3,] -0.11942959 0.3070541
##
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      1331.15      528.50   2.5187  0.01259 *
## ZDemocracy        251.80      752.27   0.3347  0.73820
## VControlled Details 1206.61      881.11   1.3694  0.17246
## VENE              261.17      739.69   0.3531  0.72442
## ZDemocracy:VControlled Details -731.80      1189.16 -0.6154  0.53902
## ZDemocracy:VENE      -305.08      1043.28 -0.2924  0.77028
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.041815    0.178272 -0.2346   0.8148
## ZDemocracy      0.084937    0.253756  0.3347   0.7382
## VControlled Details 0.109644    0.263022  0.4169   0.6772
## VENE            0.051166    0.252635  0.2025   0.8397
## ZDemocracy:VControlled Details -0.216605    0.358069 -0.6049   0.5459
## ZDemocracy:VENE    -0.103364    0.356238 -0.2902   0.7720

```

```

#####
# Placebo Test I: Military Alliance
d$allies <- ifelse(is.na(d$alliance_1), d$alliance_2, d$alliance_1)
# relabel
d$allies <- relab(old.var = d$allies, old.labs = 1:5,
                  new.labs = probint)
# standardize
d$allies.s <- vscale(var = d$allies, vig = d$V)
# graphing distribution
for (j in 1:3) {
  my_ggplot <- myden(Y=d$allies, V=d$V, Z=d$Z, v = j, x.limits=c(0, 100),
                    x.breaks=probint,

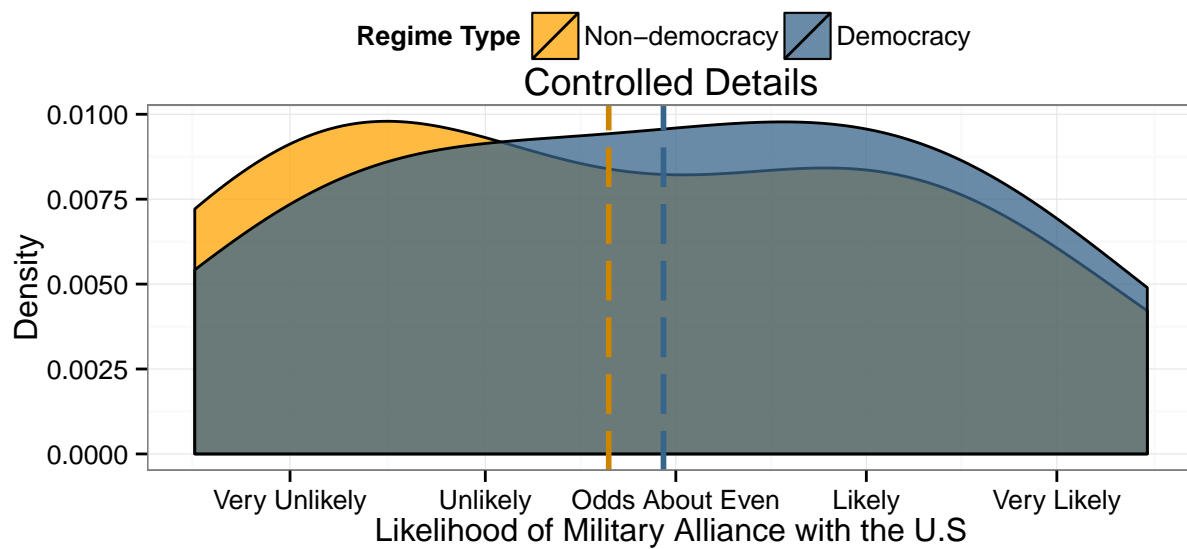
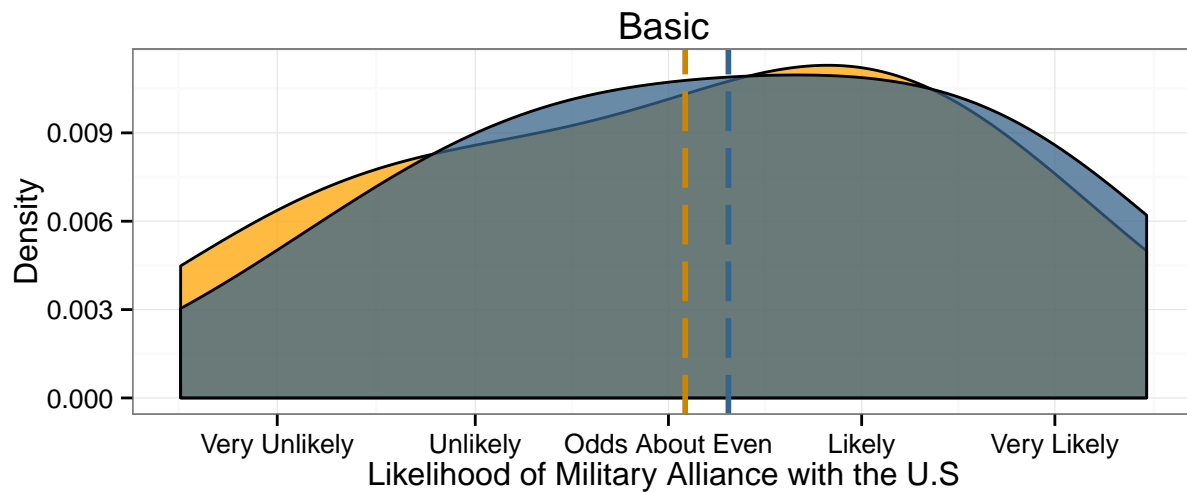
```



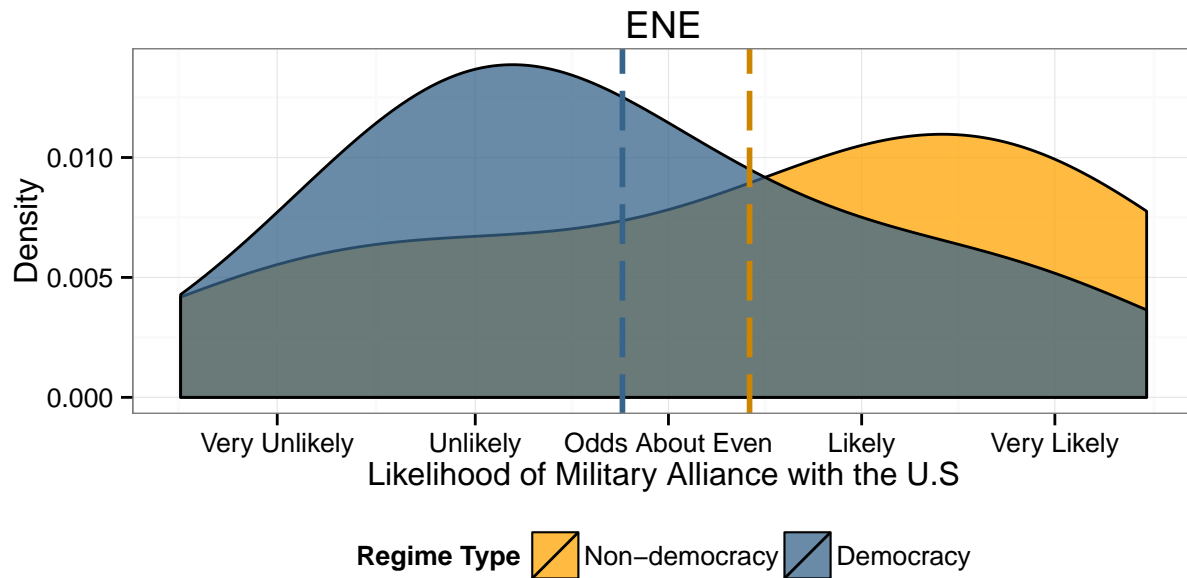
```

        x.labels=likelylab,
        title=levels(d$V)[j],
        xlab="Likelihood of Military Alliance with the U.S")
if (!is.null(images_directory)) {
  ggsave(paste0(images_directory, "/allies", j, ".pdf"), width=5, heigh=3.5)
} else if (output_print) {
  print(my_ggplot)
}
}

```



Regime Type ▨ Non-democracy ▨ Democracy



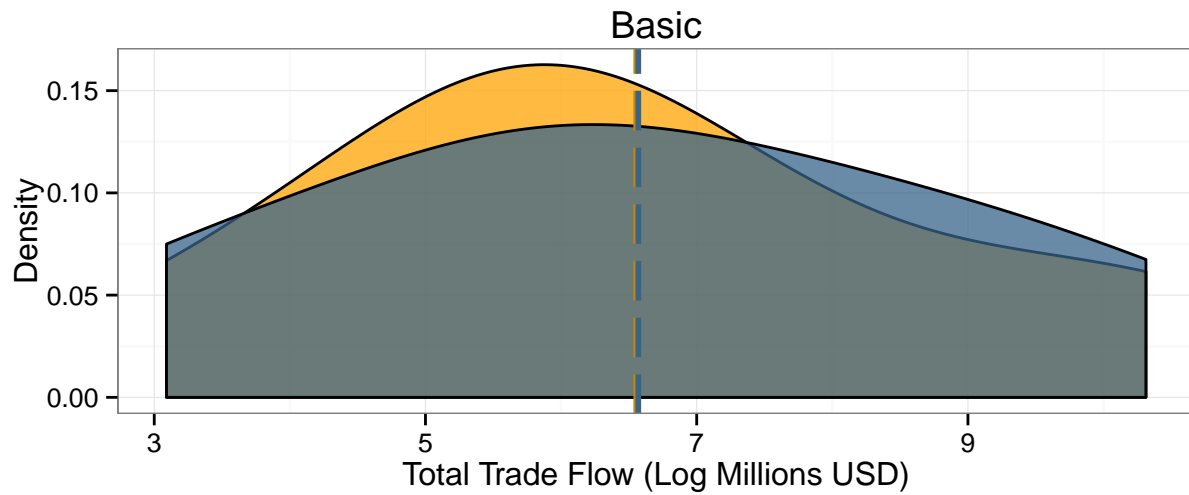
```
# regression: standardized
allies.s <- myreg(Y = d$allies.s, Z = d$Z, V = d$V)
colnames(allies.s) <- c("Coef", "SE")
# regression: non-standardized
allies.n <- myreg(Y = d$allies, Z = d$Z, V = d$V)
colnames(allies.n) <- c("Coef", "SE")
# regression with dummy variables and interactions
allies.1 <- robustse(lm(formula = allies ~ Z + V + Z:V, data = d))
allies.2 <- robustse(lm(formula = allies.s ~ Z + V + Z:V, data = d))
if (output_print) {
  print("Placebo Test I: Military Alliance")
  print(allies.s)
  print(allies.n)
  print(allies.1)
  print(allies.2)
}
```

```
## [1] "Placebo Test I: Military Alliance"
##           Coef           SE
## [1,]  0.1652385 0.2529708
## [2,]  0.1931431 0.2511993
## [3,] -0.4574741 0.2440324
##           Coef           SE
## [1,]   4.475852 6.852277
## [2,]   5.752757 7.481958
## [3,] -13.158645 7.019275
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)    52.2273     4.8957 10.6680 < 2e-16 ***
## ZDemocracy      4.4759     6.8523  0.6532  0.51441
## VControlled Details -8.7741     7.3480 -1.1941  0.23391
## VENE            6.6667     7.3460  0.9075  0.36527
## ZDemocracy:VControlled Details  1.2769    10.1456  0.1259  0.89998
```

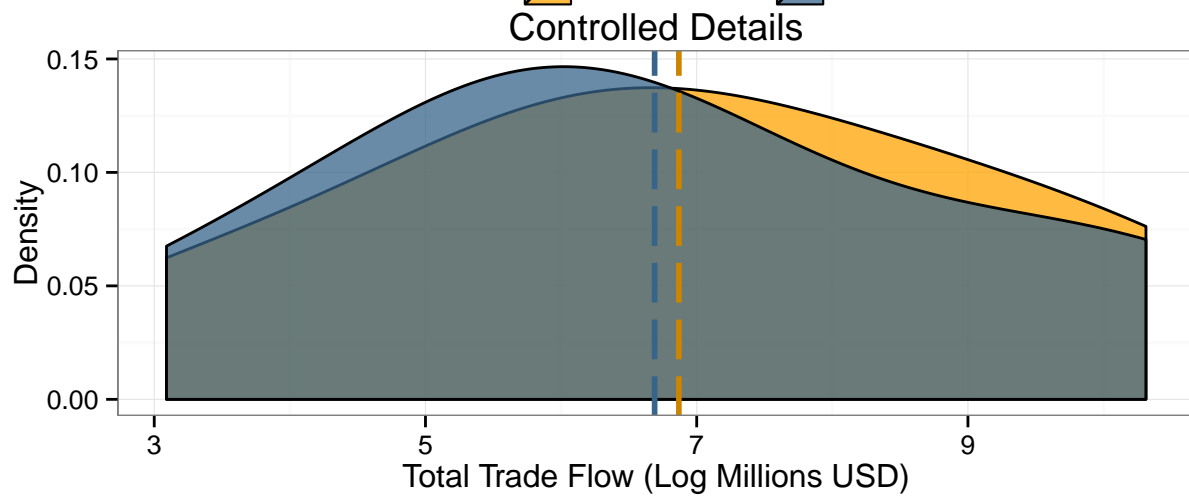
```
## ZDemocracy:VENE          -17.6345      9.8094 -1.7977  0.07379 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.081348   0.180738  -0.4501  0.65315
## ZDemocracy       0.165238   0.252971   0.6532  0.51441
## VControlled Details -0.018150   0.257896  -0.0704  0.94397
## VENE            0.313499   0.262531   1.1941  0.23390
## ZDemocracy:VControlled Details 0.027905   0.356504   0.0783  0.93769
## ZDemocracy:VENE   -0.622713   0.351491  -1.7716  0.07804 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
#####
# Placebo Test J: Trade with the U.S.
d$trade <- ifelse(is.na(d$trade_1), d$trade_2, d$trade_1)
# relabel
# get real-world median values for each interval
cow_trade <- read.csv(system.file("extdata", "dyadic_trade_3.0.csv",
                                package = "confounding"))
cow_trade <- cow_trade[cow_trade$importer1=="United States of America" &
                      cow_trade$year==2005,]
r_trade <- cow_trade$flow1 + cow_trade$flow2
d$trade <- relab(old.var = d$trade, old.labs = 1:5,
                new.labs = c(median(r_trade[r_trade >= 0 & r_trade <= 100], TRUE),
                             median(r_trade[r_trade > 100 & r_trade <= 350], TRUE),
                             median(r_trade[r_trade > 350 & r_trade <= 1500], TRUE),
                             median(r_trade[r_trade > 1500 & r_trade <= 10000], TRUE),
                             median(r_trade[r_trade > 10000], TRUE)))

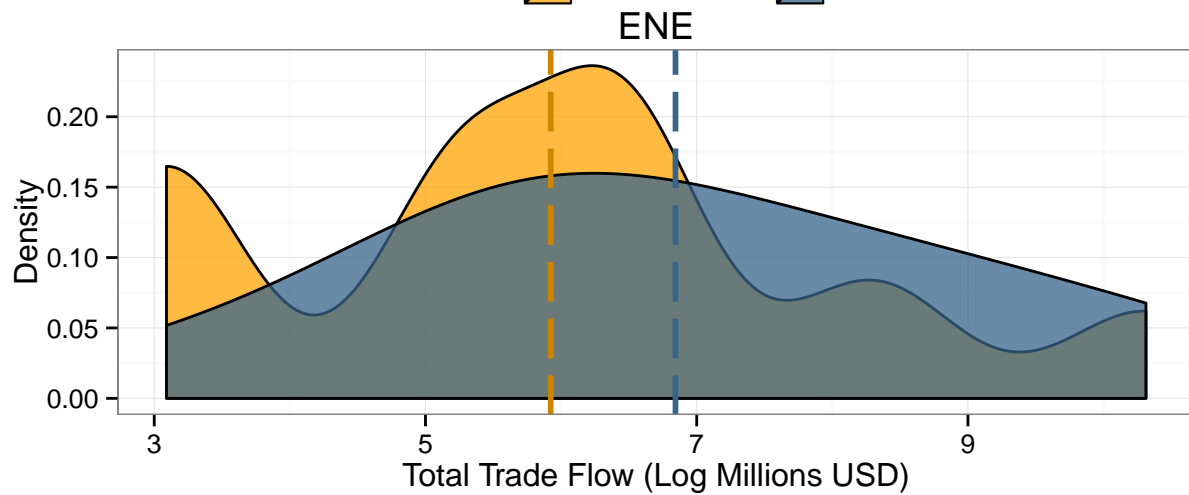
# ordinal coding
d$trade.o <- ifelse(is.na(d$trade_1), d$trade_2, d$trade_1)
d$trade.o <- relab(old.var = d$trade.o, old.labs = 1:5, new.labs = 0:4)
# standardize
d$trade.s <- vscale(var = d$trade, vig = d$V)
# graphing distribution
for (j in 1:3) {
  my_ggplot <- myden(Y=log(d$trade), V=d$V, Z=d$Z, v = j,
                    title=levels(d$V)[j],
                    xlab="Total Trade Flow (Log Millions USD)")
  if (!is.null(images_directory)) {
    ggsave(paste0(images_directory, "/trade", j, ".pdf"), width=5, height=3.5)
  } else if (output_print) {
    print(my_ggplot)
  }
}
```



**Regime Type** ▨ Non-democracy ▨ Democracy



**Regime Type** ▨ Non-democracy ▨ Democracy



**Regime Type** ▨ Non-democracy ▨ Democracy

```

# regression: standardized
trade.s <- myreg(Y = d$trade.s, Z = d$Z, V = d$V)
colnames(trade.s) <- c("Coef", "SE")
# regression: non-standardized
trade.n <- myreg(Y = d$trade, Z = d$Z, V = d$V)
colnames(trade.n) <- c("Coef", "SE")
# regression: ordinal coding
trade.o <- myreg(Y = d$trade.o, Z = d$Z, V = d$V)
colnames(trade.o) <- c("Coef", "SE")
# regression with dummy variables and interactions
trade.1 <- robustse(lm(formula = trade ~ Z + V + Z:V, data = d))
trade.2 <- robustse(lm(formula = trade.s ~ Z + V + Z:V, data = d))
if (output_print) {
  print("Placebo Test J: Trade with the U.S.")
  print(trade.s)
  print(trade.n)
  print(trade.o)
  print(trade.1)
  print(trade.2)
}

```

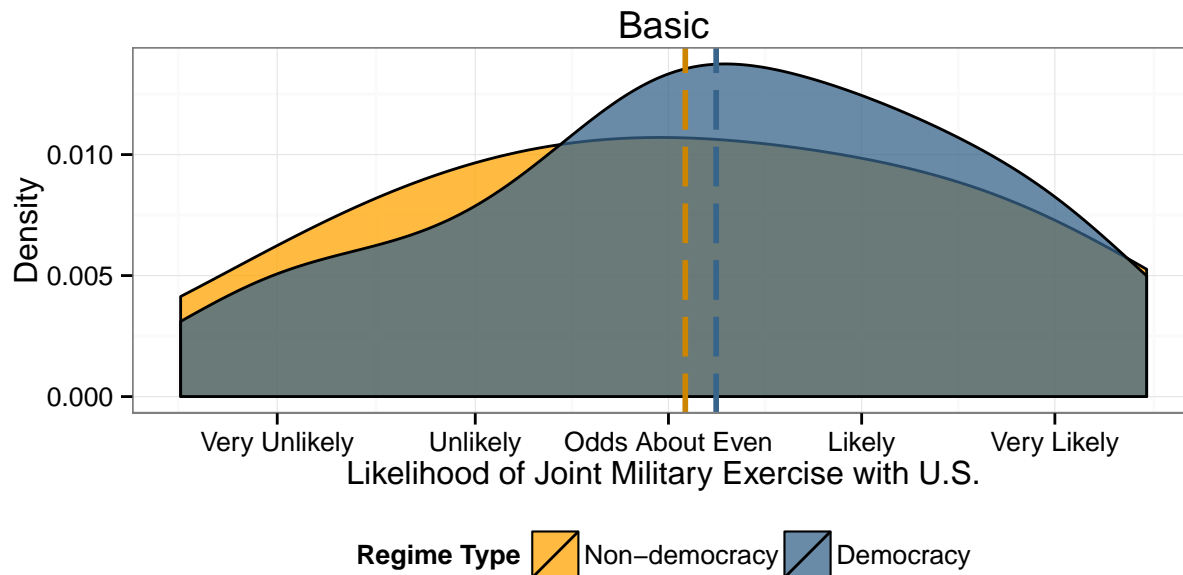
```

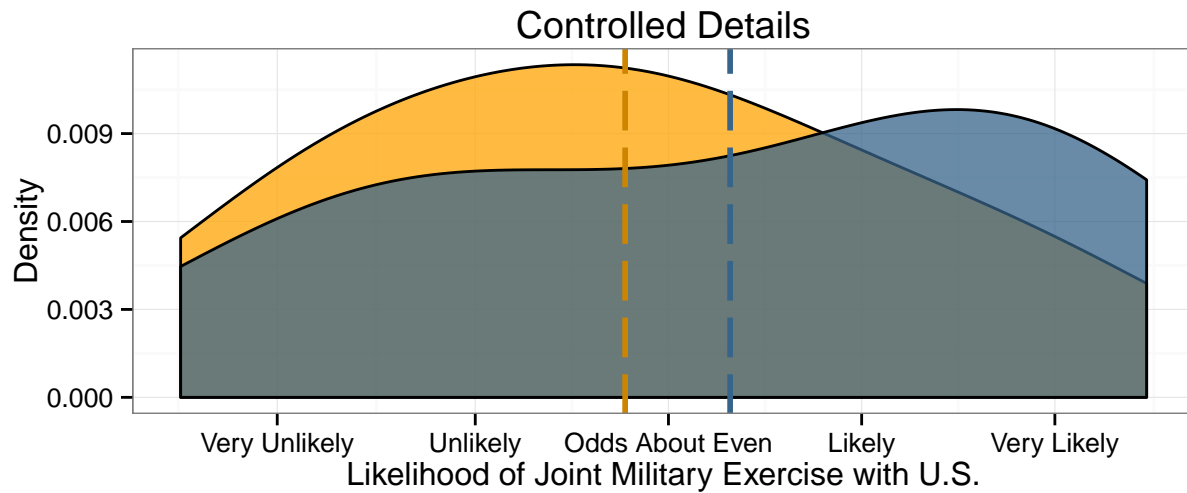
## [1] "Placebo Test J: Trade with the U.S."
##           Coef           SE
## [1,] -0.02910450 0.2536858
## [2,]  0.01445917 0.2516975
## [3,]  0.22183651 0.2477203
##           Coef           SE
## [1,] -322.4503 2810.599
## [2,]  169.1992 2945.329
## [3,] 2127.7175 2375.978
##           Coef           SE
## [1,]  0.02840909 0.3342382
## [2,] -0.12500000 0.3359297
## [3,]  0.51247772 0.3060060
##
## t test of coefficients:
##
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        6093.96      2041.75   2.9847 0.003208 **
## ZDemocracy                       -322.45       2810.60  -0.1147 0.908782
## VControlled Details                645.07       2905.31   0.2220 0.824526
## VENE                             -2624.60       2550.56  -1.0290 0.304760
## ZDemocracy:VControlled Details    491.65       4071.17   0.1208 0.904004
## ZDemocracy:VENE                   2450.17       3680.32   0.6657 0.506371
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        0.014328      0.184289   0.0777  0.9381
## ZDemocracy                       -0.029104      0.253686  -0.1147  0.9088

```

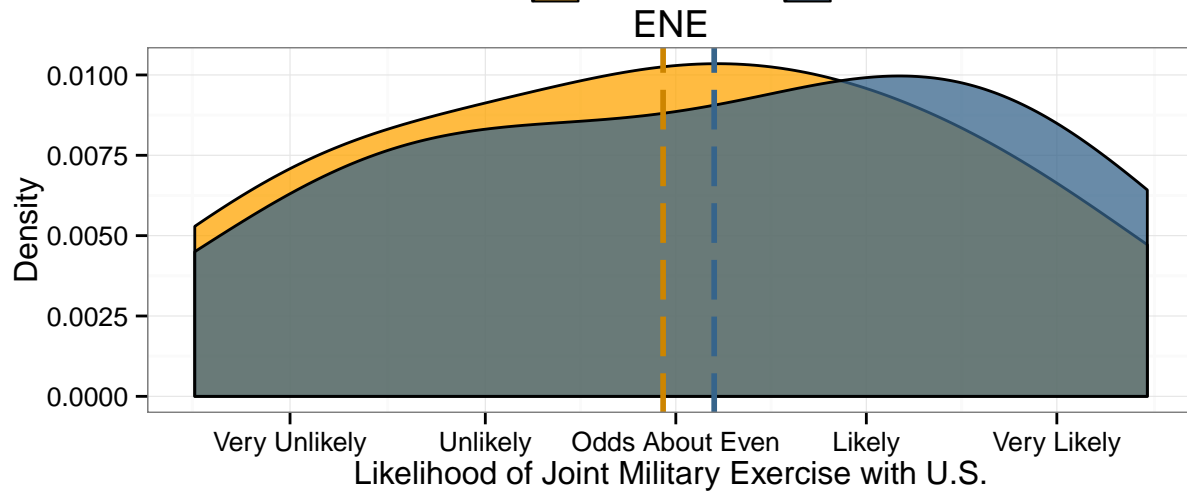
```
## VControlled Details      -0.021777  0.255266 -0.0853  0.9321
## VENE                    -0.126902  0.243643 -0.5209  0.6031
## ZDemocracy:VControlled Details  0.043564  0.357363  0.1219  0.9031
## ZDemocracy:VENE          0.250941  0.354573  0.7077  0.4800
```

```
#####
# Placebo Test K: Joint Military Exercise
d$exercise <- ifelse(is.na(d$exercise_1), d$exercise_2, d$exercise_1)
# relabel
d$exercise <- relab(old.var = d$exercise, old.labs = 1:5,
                    new.labs = probint)
# standardize
d$exercise.s <- vscale(var = d$exercise, vig = d$V)
# graphing distribution
for (j in 1:3) {
  my_ggplot <- myden(Y=d$exercise, V=d$V, Z=d$Z, v = j, x.limits=c(0, 100),
                    x.breaks=probint,
                    x.labels=likelylab,
                    title=levels(d$V)[j],
                    xlab="Likelihood of Joint Military Exercise with U.S.")
  if (!is.null(images_directory)) {
    ggsave(paste0(images_directory, "/exercise", j, ".pdf"), width=5, height=3.5)
  } else if (output_print) {
    print(my_ggplot)
  }
}
```





**Regime Type**  Non-democracy  Democracy



**Regime Type**  Non-democracy  Democracy

```
# regression: standardized
exercise.s <- myreg(Y = d$exercise.s, Z = d$Z, V = d$V)
colnames(exercise.s) <- c("Coef", "SE")
# regression: non-standardized
exercise.n <- myreg(Y = d$exercise, Z = d$Z, V = d$V)
colnames(exercise.n) <- c("Coef", "SE")
# regression with dummy variables and interactions
exercise.1 <- robustse(lm(formula = exercise ~ Z + V + Z:V, data = d))
exercise.2 <- robustse(lm(formula = exercise.s ~ Z + V + Z:V, data = d))
if (output_print) {
  print("Placebo Test K: Joint Military Exercise")
  print(exercise.s)
  print(exercise.n)
  print(exercise.1)
  print(exercise.2)
}
```

```

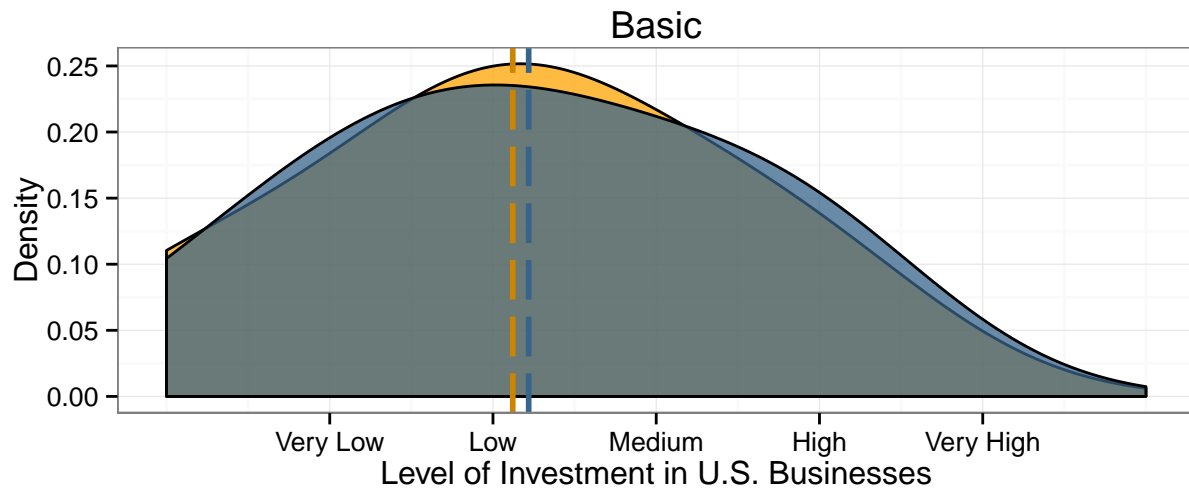
## [1] "Placebo Test K: Joint Military Exercise"
##      Coef      SE
## [1,] 0.1206982 0.2532047
## [2,] 0.3636525 0.2467163
## [3,] 0.1827483 0.2487917
##      Coef      SE
## [1,]  3.195076 6.702737
## [2,] 10.866728 7.372421
## [3,]  5.362745 7.300786
##
## t test of coefficients:
##
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      52.2424     4.8915 10.6802 <2e-16 ***
## ZDemocracy         3.1951     6.7027  0.4767  0.6341
## VControlled Details -6.2268     6.9360 -0.8978  0.3704
## VENE              -3.0758     7.0686 -0.4351  0.6640
## ZDemocracy:VControlled Details  7.6717     9.9639  0.7699  0.4423
## ZDemocracy:VENE       2.1677     9.9110  0.2187  0.8271
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -0.059421    0.184783 -0.3216  0.7481
## ZDemocracy       0.120698    0.253205  0.4767  0.6341
## VControlled Details -0.127915    0.247437 -0.5170  0.6058
## VENE            -0.033317    0.253737 -0.1313  0.8957
## ZDemocracy:VControlled Details  0.242954    0.353527  0.6872  0.4928
## ZDemocracy:VENE       0.062050    0.354979  0.1748  0.8614

#####
# Placebo Test L: Foreign Direct Investment
sizelab <- c("Very Low", "Low", "Medium", "High", "Very High")
d$invest <- ifelse(is.na(d$invest_1), d$invest_2, d$invest_1)
# relabel
d$invest <- relab(old.var = d$invest, old.labs = 1:5,
                 new.labs = 0:4)
# standardize
d$invest.s <- vscale(var = d$invest, vig = d$V)
# graphing distribution
for (j in 1:3) {
  my_ggplot <- myden(Y=d$invest, V=d$V, Z=d$Z, v = j, x.limits=c(0, 6),
                    x.breaks=1:5,
                    x.labels=sizelab,
                    title=levels(d$V)[j],
                    xlab="Level of Investment in U.S. Businesses")
  if (!is.null(images_directory)) {
    ggsave(paste0(images_directory, "/invest", j, ".pdf"), width=5, height=3.5)
  } else if (output_print) {
    print(my_ggplot)
  }
}

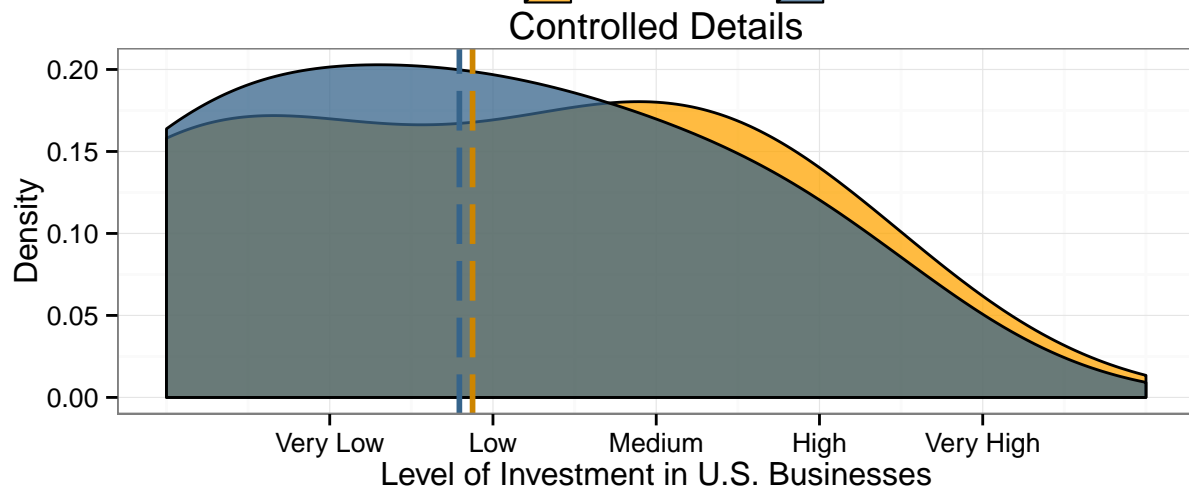
```



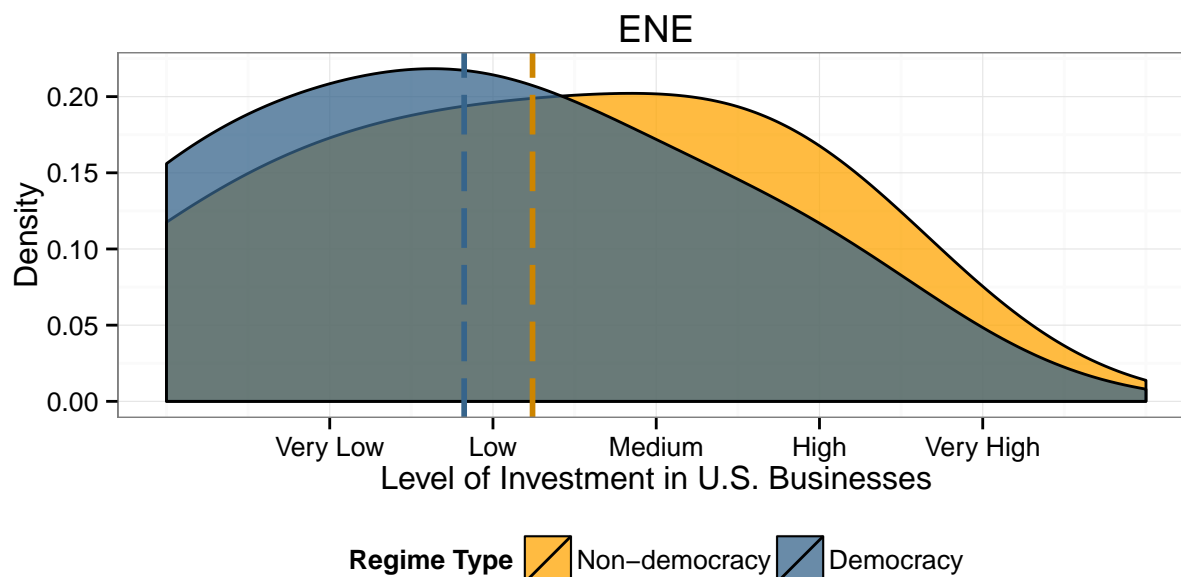
}



Regime Type Non-democracy Democracy



Regime Type Non-democracy Democracy



```
# regression: standardized
invest.s <- myreg(Y = d$invest.s, Z = d$Z, V = d$V)
colnames(invest.s) <- c("Coef", "SE")
# regression: non-standardized
invest.n <- myreg(Y = d$invest, Z = d$Z, V = d$V)
colnames(invest.n) <- c("Coef", "SE")
# regression with dummy variables and interactions
invest.1 <- robustse(lm(formula = invest ~ Z + V + Z:V, data = d))
invest.2 <- robustse(lm(formula = invest.s ~ Z + V + Z:V, data = d))
if (output_print) {
  print("Placebo Test L: Foreign Direct Investment")
  print(invest.s)
  print(invest.n)
  print(invest.1)
  print(invest.2)
}
```

```
## [1] "Placebo Test L: Foreign Direct Investment"
##           Coef           SE
## [1,]  0.07609962 0.2537989
## [2,] -0.05412239 0.2525435
## [3,] -0.29405010 0.2473334
##           Coef           SE
## [1,]  0.09753788 0.3252974
## [2,] -0.08088235 0.3774096
## [3,] -0.41889483 0.3523437
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)      2.121212   0.228606   9.2789  <2e-16 ***
## ZDemocracy         0.097538   0.325297   0.2998   0.7646
## VControlled Details -0.246212   0.361697  -0.6807   0.4969
## VENE               0.121212   0.341721   0.3547   0.7232
## ZDemocracy:VControlled Details -0.178420   0.498253  -0.3581   0.7207
```

```
## ZDemocracy:VENE -0.516433 0.479546 -1.0769 0.2829
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
## Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.037464 0.178360 -0.2100 0.8339
## ZDemocracy 0.076100 0.253799 0.2998 0.7646
## VControlled Details 0.065346 0.258825 0.2525 0.8009
## VENE 0.186684 0.252193 0.7402 0.4601
## ZDemocracy:VControlled Details -0.130222 0.358039 -0.3637 0.7165
## ZDemocracy:VENE -0.370150 0.354384 -1.0445 0.2976
```

```
#####
```

```
# Make Coefficient Plot
```

```
#### standardized
```

```
res.s <- data.frame(rbind(region.s, gdp.s, religion.s, white.s,
                           oil.s, force.s, allies.s, trade.s, exercise.s, invest.s))
```

```
names(res.s) <- c("coef", "se")
```

```
res.s$v <- rep(levels(d$v), 10)
```

```
# vignette labels
```

```
res.s$v2 <- factor(res.s$v, levels=levels(factor(res.s$v)))
```

```
res.s$v3 <- factor(res.s$v, levels=rev(levels(factor(res.s$v))))
```

```
p.labs <- c("C: Most Likely Region",
           "D: GDP per Capita",
           "E: Likelihood of Being Majority Christian",
           "F: Likelihood of Being Majority White",
           "G: Likelihood of Having Large Oil Reserves",
           "H: Military Spending*",
           "I: Likelihood of Military Alliance with U.S.*",
           "J: Trade with U.S.*",
           "L: Likelihood of Joint Military Exercise with U.S.**",
           "L: Level of Investment in U.S. Businesses**")
```

```
p.labs.func <- function(x, times=3) {rep(p.labs[x],times)}
```

```
res.s$placebo <- unlist(lapply(1:length(p.labs), p.labs.func))
```

```
# ggplot
```

```
f <- ggplot(res.s, aes(x=coef,y=v3,shape=v2,color=v2))
```

```
f <- f+geom_vline(xintercept=0, linetype="longdash")+
  geom_errorbarh(aes(xmax = coef + 2.576*se,
                    xmin = coef - 2.576*se),
                size=0.6, height=0) +
  geom_errorbarh(aes(xmax = coef + 1.96*se,
                    xmin = coef - 1.96*se),
                size=1.0, height=0)+
  geom_point(stat="identity",size=3.5,fill="white")+
  scale_color_manual(name="Vignette Type",
                    values=c("firebrick3","forestgreen","dodgerblue3"))+
  scale_shape_manual(name="Vignette Type",values=c(21,22,23))
```

```
my_ggplot_main <- f + facet_wrap( ~ placebo, ncol=1)+
  theme_bbttop()+
  xlab("Standardized Difference (Dem-NonDem)")+
```

```

    ylab(""))+scale_y_discrete(breaks=NULL)
  if (!is.null(images_directory)) {
    my_ggplot_main
    ggsave(paste0(images_directory, "/coef_plot_main_s", ".pdf"),
            height=7, width=5.5,dpi = 600)
  }

#####
# Seemingly Unrelated Regression
r_c <- region.s ~ Z
r_d <- gdp.s ~ Z
r_e <- religion.s ~ Z
r_f <- oil.s ~ Z
r_g <- white.s ~ Z
r_h <- force.s ~ Z
r_i <- allies.s ~ Z
r_j <- trade.s ~ Z
r_k <- exercise.s ~ Z
r_l <- invest.s ~ Z
for (i in 1:3) {
  fitsur <- systemfit(list(r.c = r_c, r.d = r_d, r.e = r_e,
                           r.f = r_f, r.g = r_g, r.h = r_h,
                           r.i = r_i, r.j = r_j, r.k = r_k,
                           r.l = r_l), data = d[d$V==levels(d$V)[i],])

  summary(fitsur)
  restriction <- c("r.c_ZDemocracy = 0", "r.d_ZDemocracy = 0",
                  "r.e_ZDemocracy = 0", "r.f_ZDemocracy = 0",
                  "r.g_ZDemocracy = 0", "r.h_ZDemocracy = 0",
                  "r.i_ZDemocracy = 0", "r.j_ZDemocracy = 0",
                  "r.k_ZDemocracy = 0", "r.l_ZDemocracy = 0")

  # joint tests
  joint <- linearHypothesis(fitsur, restriction,
                            test = "Chisq", white.adjust = TRUE)

  if (output_print) {
    print("Joint Test")
    print(joint)
  }
}

```

```

## [1] "Joint Test"
## Linear hypothesis test (Chi^2 statistic of a Wald test)
##
## Hypothesis:
## r.c_ZDemocracy = 0
## r.d_ZDemocracy = 0
## r.e_ZDemocracy = 0
## r.f_ZDemocracy = 0
## r.g_ZDemocracy = 0
## r.h_ZDemocracy = 0
## r.i_ZDemocracy = 0
## r.j_ZDemocracy = 0
## r.k_ZDemocracy = 0
## r.l_ZDemocracy = 0

```

```

##
## Model 1: restricted model
## Model 2: fitsur
##
##   Res.Df Df   Chisq Pr(>Chisq)
## 1      640
## 2      630 10 5.2278      0.8755
## [1] "Joint Test"
## Linear hypothesis test (Chi^2 statistic of a Wald test)
##
## Hypothesis:
## r.c_ZDemocracy = 0
## r.d_ZDemocracy = 0
## r.e_ZDemocracy = 0
## r.f_ZDemocracy = 0
## r.g_ZDemocracy = 0
## r.h_ZDemocracy = 0
## r.i_ZDemocracy = 0
## r.j_ZDemocracy = 0
## r.k_ZDemocracy = 0
## r.l_ZDemocracy = 0
##
## Model 1: restricted model
## Model 2: fitsur
##
##   Res.Df Df   Chisq Pr(>Chisq)
## 1      650
## 2      640 10 7.3646      0.6906
## [1] "Joint Test"
## Linear hypothesis test (Chi^2 statistic of a Wald test)
##
## Hypothesis:
## r.c_ZDemocracy = 0
## r.d_ZDemocracy = 0
## r.e_ZDemocracy = 0
## r.f_ZDemocracy = 0
## r.g_ZDemocracy = 0
## r.h_ZDemocracy = 0
## r.i_ZDemocracy = 0
## r.j_ZDemocracy = 0
## r.k_ZDemocracy = 0
## r.l_ZDemocracy = 0
##
## Model 1: restricted model
## Model 2: fitsur
##
##   Res.Df Df   Chisq Pr(>Chisq)
## 1      660
## 2      650 10 9.8588      0.453

#####
# Treatment Measure 1
# full democracy
d$R1_1 <- multiq(v1 = d$dem_a_1, v2 = d$dem_b_1, v3 = d$dem_c_1)

```

```

d$R1_1 <- relab(old.var = d$R1_1, old.labs = 1:5, new.labs = probint)
# democracy
d$R1_2 <- multiq(d$dem_a_2, d$dem_b_2, d$dem_c_2)
d$R1_2 <- relab(old.var = d$R1_2, old.labs = 1:5, new.labs = probint)
# semi-democracy
d$R1_3 <- multiq(d$dem_a_3, d$dem_b_3, d$dem_c_3)
d$R1_3 <- relab(old.var = d$R1_3, old.labs = 1:5, new.labs = probint)
# semi-autocracy
d$R1_4 <- multiq(d$dem_a_4, d$dem_b_4, d$dem_c_4)
d$R1_4 <- relab(old.var = d$R1_4, old.labs = 1:5, new.labs = probint)
# full autocracy
d$R1_5 <- multiq(d$dem_a_5, d$dem_b_5, d$dem_c_5)
d$R1_5 <- relab(old.var = d$R1_5, old.labs = 1:5, new.labs = probint)
# normalize
for (i in 1:nrow(d)) {
  s <- d$R1_1[i] + d$R1_2[i] + d$R1_3[i] + d$R1_4[i] + d$R1_5[i]
  d$R1_1[i] <- d$R1_1[i]/s
  d$R1_2[i] <- d$R1_2[i]/s
  d$R1_3[i] <- d$R1_3[i]/s
  d$R1_4[i] <- d$R1_4[i]/s
  d$R1_5[i] <- d$R1_5[i]/s
}
# check the probabilities sum up to 1
d$R1_sum <- d$R1_1 + d$R1_2 + d$R1_3 + d$R1_4 + d$R1_5
# impute Polity score
d$R1 <- 10*d$R1_1+mean(6:9)*d$R1_2+mean(1:5)*d$R1_3+
  mean(-5:0)*d$R1_4+mean(-10:-6)*d$R1_5
# regression
R1 <- myreg(Y = d$R1, Z = d$Z, V = d$V)
colnames(R1) <- c("Coef", "SE")

# Treatment Measure 2: Characteristics of Democracy
d$R2 <- psum(d$demchar_1, d$demchar_4, d$demchar_5, d$demchar_6,
  d$demchar_7, d$demchar_8, na.rm=F)
# regression
R2 <- myreg(Y = d$R2, Z = d$Z, V = d$V)
colnames(R2) <- c("Coef", "SE")

if (output_print) {
  print("Treatment Measures")
  print(R1)
  print(R2)
}

```

```

## [1] "Treatment Measures"
##           Coef          SE
## [1,] -0.3308519 0.4249397
## [2,]  0.1981326 0.4214983
## [3,] -0.2430484 0.4168359
##           Coef          SE
## [1,] -0.4895833 0.3419870
## [2,] -0.1783088 0.3518564
## [3,]  0.1256684 0.3627364

```

```
#####
# ITT estimate of democracy on support for military action
d$support <- ifelse(is.na(d$support_1), d$support_2-1, d$support_1-1)
# coding #1: set "don't know" to NA
d$support[d$support>4] <- NA
support <- myreg(Y = d$support, Z = d$Z, V = d$V)
colnames(support) <- c("Coef", "SE")
# coding #2: set "don't know" to 2
d$support2 <- d$support
d$support2[is.na(d$support2)] <- 2
support2 <- myreg(Y = d$support2, Z = d$Z, V = d$V)
colnames(support2) <- c("Coef", "SE")
if (output_print){
  print(support)
  print(support2)
}
```

```
##           Coef          SE
## [1,]  0.4428571 0.4004440
## [2,] -0.3342857 0.4423551
## [3,]  0.5517241 0.3623997
##           Coef          SE
## [1,]  0.4024621 0.3567723
## [2,] -0.2702206 0.3499254
## [3,]  0.4803922 0.3128743
```

```
#####
# IV estimate of democracy on support for military action
# using coding 1 for support
iv.res1 <- myreg.iv(Y = d$support[!is.na(d$support)],
                    D = d$R1[!is.na(d$support)],
                    Z = d$Z[!is.na(d$support)],
                    V = d$V[!is.na(d$support)])
colnames(iv.res1) <- c("Coef", "SE")
# using coding 2 for support
iv.res2 <- myreg.iv(Y = d$support2[!is.na(d$support2)],
                    D = d$R1[!is.na(d$support2)],
                    Z = d$Z[!is.na(d$support2)],
                    V = d$V[!is.na(d$support2)])
colnames(iv.res2) <- c("Coef", "SE")

if (output_print) {
  print("IV: don't know as NA")
  print(iv.res1)
  print("IV: don't know as neither support nor oppose")
  print(iv.res2)
}
```

```
## [1] "IV: don't know as NA"
##           Coef          SE
## [1,] -1.952295 4.374428
## [2,] -1.555698 4.255146
## [3,] -2.320928 4.736104
```

```
## [1] "IV: don't know as neither support nor oppose"
##           Coef           SE
## [1,] -1.216442  1.898364
## [2,] -1.363837  3.567633
## [3,] -1.976529  3.641081
```

```
#####
# Balance Tests

# clean up
d$college <- ifelse(d$educ > 3, 1, 0)
d$democrat <- ifelse(d$partyid < 3, 1, 0)
d$age_num <- ifelse(d$age=="older than 100", 101, d$age+18)
d$male <- ifelse(d$sex == 1, 1, 0)

# balance tests
for (i in 1:3) {
  b1 <- robustse(lm(as.numeric(Z)-1 ~ college, data = d[d$V==levels(d$V)[i],]))
  b2 <- robustse(lm(as.numeric(Z)-1 ~ democrat, data = d[d$V==levels(d$V)[i],]))
  b3 <- robustse(lm(as.numeric(Z)-1 ~ age_num, data = d[d$V==levels(d$V)[i],]))
  b4 <- robustse(lm(as.numeric(Z)-1 ~ male, data = d[d$V==levels(d$V)[i],]))
  b5 <- robustse(lm(as.numeric(Z)-1 ~ poliid_1, data = d[d$V==levels(d$V)[i],]))
  overall <- felm(as.numeric(Z)-1 ~ college + democrat + age_num +
                  male + poliid_1, data = d[d$V==levels(d$V)[i],])
  b_overall <- summary(object = overall, robust = TRUE)
  if (output_print) {
    print("Balance Tests")
    print(b1)
    print(b2)
    print(b3)
    print(b4)
    print(b5)
    print(b_overall)
  }
}
```

```
## [1] "Balance Tests"
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.535714   0.097740  5.4810 7.924e-07 ***
## college      -0.076255   0.129010 -0.5911  0.5566
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.469388   0.072780  6.4494 1.802e-08 ***
## democrat      0.093112   0.150986  0.6167  0.5397
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```



```

##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.4234636 0.1603617 2.6407 0.01042 *
## age_num      0.0012510 0.0026925 0.4646 0.64380
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.456522 0.075074 6.0810 7.727e-08 ***
## male         0.122426 0.141177 0.8672 0.3891
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.527931 0.126370 4.1777 9.237e-05 ***
## poliid_1    -0.011577 0.036090 -0.3208 0.7494
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## Call:
## febm(formula = as.numeric(Z) - 1 ~ college + democrat + age_num + male + poliid_1, data = d[
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.6265 -0.4652 -0.3596  0.4945  0.6522
##
## Coefficients:
##           Estimate Robust s.e t value Pr(>|t|)
## (Intercept) 0.427726 0.216415 1.976 0.0528 .
## college     -0.072347 0.133414 -0.542 0.5897
## democrat     0.084590 0.147556 0.573 0.5686
## age_num      0.001204 0.002731 0.441 0.6610
## male         0.119467 0.138189 0.865 0.3908
## poliid_1    -0.005272 0.036820 -0.143 0.8866
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5174 on 59 degrees of freedom
## Multiple R-squared(full model): 0.02765 Adjusted R-squared: -0.05476
## Multiple R-squared(proj model): 0.02765 Adjusted R-squared: -0.05476
## F-statistic(full model, *iid*):0.3355 on 5 and 59 DF, p-value: 0.8894
## F-statistic(proj model): 0.389 on 5 and 59 DF, p-value: 0.8544
##
##

```

```

## [1] "Balance Tests"
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.483871   0.092748  5.2171 2.093e-06 ***
## college      0.058986   0.126948  0.4646   0.6438
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.510638   0.074501  6.8541 3.352e-09 ***
## democrat    0.015677   0.142022  0.1104   0.9124
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.431482   0.160594  2.6868 0.009181 **
## age_num      0.001471   0.002573  0.5717 0.569520
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.512821   0.082144  6.2429 3.876e-08 ***
## male         0.005698   0.129302  0.0441   0.965
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.563989   0.122915  4.5884 2.137e-05 ***
## poliid_1    -0.016362   0.035270 -0.4639   0.6443
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## Call:
##   felm(formula = as.numeric(Z) - 1 ~ college + democrat + age_num +
##         male + poliid_1, data = d[
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.6033 -0.5022  0.3609  0.4750  0.5922
##

```

```

## Coefficients:
##           Estimate Robust s.e t value Pr(>|t|)
## (Intercept)  0.4501921  0.2176995   2.068   0.043 *
## college      0.0492732  0.1369000   0.360   0.720
## democrat     0.0008204  0.1490234   0.006   0.996
## age_num      0.0014958  0.0027227   0.549   0.585
## male         0.0237794  0.1398577   0.170   0.866
## poliid_1     -0.0188332  0.0356610  -0.528   0.599
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5209 on 60 degrees of freedom
## Multiple R-squared(full model): 0.0123   Adjusted R-squared: -0.07001
## Multiple R-squared(proj model): 0.0123   Adjusted R-squared: -0.07001
## F-statistic(full model, *iid*):0.1494 on 5 and 60 DF, p-value: 0.9795
## F-statistic(proj model): 0.1609 on 5 and 60 DF, p-value: 0.9758
##
##
## [1] "Balance Tests"
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.562500   0.090524  6.2138 4.138e-08 ***
## college      -0.105357   0.125332 -0.8406   0.4036
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.442308   0.070225  6.2984 2.95e-08 ***
## democrat     0.291026   0.141059  2.0632   0.0431 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.4235289  0.1795327  2.3591  0.02134 *
## age_num      0.0013875  0.0027748  0.5000  0.61873
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.487179   0.082144  5.9308 1.273e-07 ***
## male         0.048535   0.127675  0.3801   0.7051
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

```
##
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.461395   0.118568  3.8914 0.0002373 ***
## poliid_1    0.015748   0.034413  0.4576 0.6487654
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## Call:
##   felm(formula = as.numeric(Z) - 1 ~ college + democrat + age_num +      male + poliid_1, data = d[
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.8156 -0.4422  0.1260  0.4905  0.6945
##
## Coefficients:
##           Estimate Robust s.e t value Pr(>|t|)
## (Intercept)  0.323189   0.212291   1.522   0.1331
## college      -0.093117   0.124382  -0.749   0.4570
## democrat      0.302628   0.136783   2.212   0.0307 *
## age_num       0.001286   0.002910   0.442   0.6600
## male          0.040964   0.127336   0.322   0.7488
## poliid_1      0.024005   0.034658   0.693   0.4912
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.502 on 61 degrees of freedom
## Multiple R-squared(full model): 0.08189   Adjusted R-squared: 0.006631
## Multiple R-squared(proj model): 0.08189   Adjusted R-squared: 0.006631
## F-statistic(full model, *iid*):1.088 on 5 and 61 DF, p-value: 0.3761
## F-statistic(proj model): 1.299 on 5 and 61 DF, p-value: 0.2762

# return main coefficient plot
survey4_analyze(output_print = FALSE, return_main = TRUE)
```

Vignette Type ○ Basic □ Controlled Details ◇ ENE

