

1 group_simple.do

1.1 Estimate model

```
. // #1 estimate model
. use group_ten01, clear
(Gender differences in receiving tenure (Scott Long 20Mar2006).)
```

```
. logit tenure female f_year f_art f_prestige ///
> male m_year m_art m_prestige, nolog nocon
```

```
Logistic regression                Number of obs   =       2945
                                   LR chi2(8)         =           .
Log likelihood = -997.37099         Prob > chi2    =           .
```

tenure	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
female	-2.170159	.3925654	-5.53	0.000	-2.939574 -1.400745
f_year	.1279189	.0259314	4.93	0.000	.0770943 .1787435
f_articles	.0432632	.0115512	3.75	0.000	.0206233 .065903
f_prestige	-.3773776	.1491841	-2.53	0.011	-.6697731 -.0849821
male	-2.59702	.2889382	-8.99	0.000	-3.163328 -2.030711
m_year	.1361104	.0218654	6.22	0.000	.093255 .1789658
m_articles	.0855921	.0105261	8.13	0.000	.0649613 .106223
m_prestige	-.2515696	.0972236	-2.59	0.010	-.4421244 -.0610148

1.2 Compute predictions

```
. // #2 predictions with articles=10 and prestige=3
. * 2a for women
. qui prvalue, level(95) delta save ///
>     x(female=1 f_art=10 f_year=7 f_prestige=3 ///
>       male=0 m_art=0 m_year=0 m_prestige=0 )

. * 2b for men
.     prvalue, level(95) delta diff ///
>     x(female=0 f_art=0 f_year=0 f_prestige=0 ///
>       male=0 m_art=10 m_year=7 m_prestige=3 )
```

logit: Change in Predictions for tenure

Confidence intervals by delta method

	Current	Saved	Change	95% CI for Change	
Pr(y=1 x):	0.7415	0.1219	0.6196	[0.4911,	0.7481]
Pr(y=0 x):	0.2585	0.8781	-0.6196	[-0.7481,	-0.4911]

	female	f_year	f_articles	f_prestige	male
Current=	0	0	0	0	0
Saved=	1	7	10	3	0
Diff=	-1	-7	-10	-3	0

	m_year	m_articles	m_prestige
Current=	7	10	3
Saved=	0	0	0
Diff=	7	10	3

1.3 Compute predictions to plot

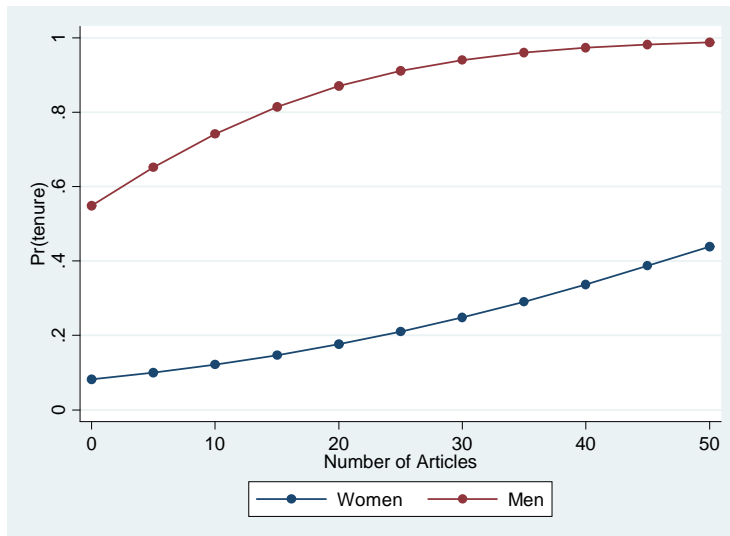
```

. // #3 compute set of predictions to graph
. * 3a loop through values for articles
. foreach art of numlist 0(5)50 {
  2.   * 3b compute predictions
.     qui prvalue, level(95) delta save ///
>       x(female=1 f_art='art' f_year=7 f_prestige=3 ///
>         male=0 m_art=0      m_year=0 m_prestige=0 )
  3.   qui prvalue, level(95) delta diff ///
>       x(female=0 f_art=0      f_year=0 f_prestige=0 ///
>         male=0 m_art='art' m_year=7 m_prestige=3 )
  4.   * 3c accumulate predictions
.     matrix x_art = nullmat(x_art), 'art'
  5.   matrix y_prm = nullmat(y_prm), pepred[2,2]
  6.   matrix y_prw = nullmat(y_prw), pepred[4,2]
  7.   matrix y_dc  = nullmat(y_dc) , pepred[6,2]
  8.   matrix y_up  = nullmat(y_up), peupper[6,2]
  9.   matrix y_lo  = nullmat(y_lo), pelower[6,2]
10. }

. * 3d transpose and move matrices into variables to plot
. mat x_art = x_art'
. mat y_dc  = y_dc'
. mat y_up  = y_up'
. mat y_lo  = y_lo'
. mat y_prm = y_prm'
. mat y_prw = y_prw'
. svmat x_art
. svmat y_dc
. svmat y_up
. svmat y_lo
. svmat y_prm
. svmat y_prw
. * 3e add variable labels
. label var x_art1 "Number of Articles"
. label var y_prm1 "Men"
. label var y_prw1 "Women"
. label var y_dc1  "Male-Female difference"
. label var y_up1 "95% confidence interval"
. label var y_lo1 "95% confidence interval"

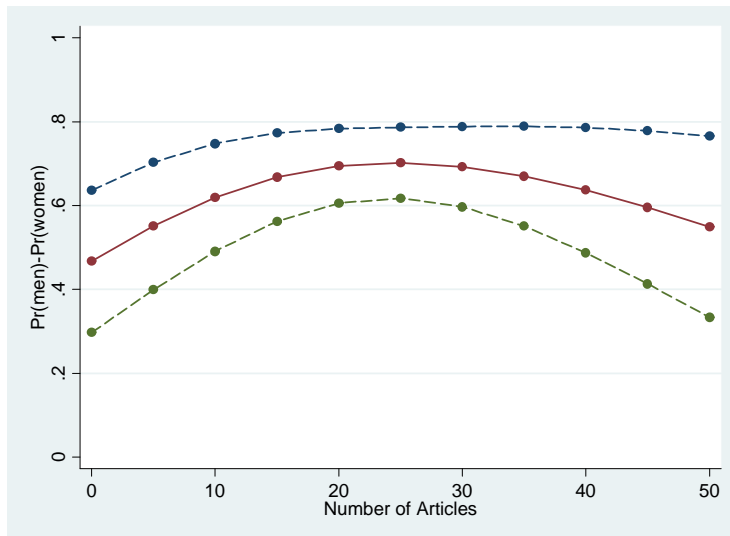
```

1.4 Simple plot of $\Pr(y=1)$



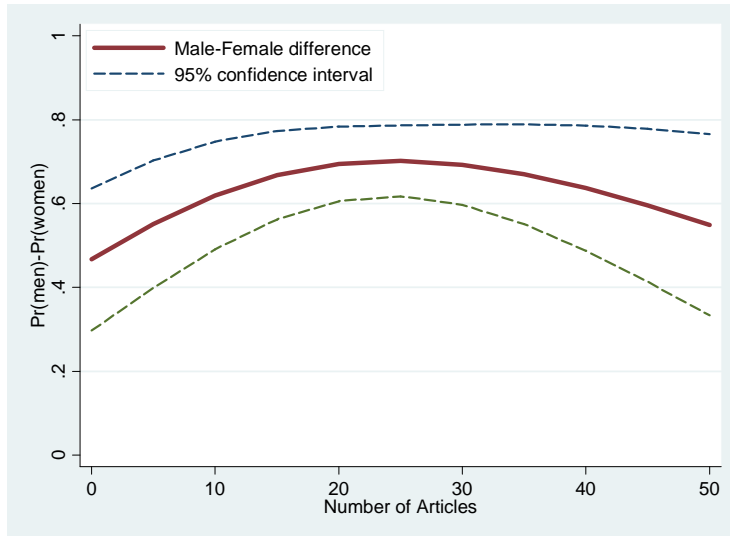
```
. * 4a predicted probabilities by gender  
. twoway (connected y_prw x_art) ///  
> (connected y_prm x_art) , ytitle(Pr(tenure))  
. graph export group_simple_pr.emf, replace
```

1.5 Simple plot of Δ



```
. * 4b discrete change with confidence intervals
. twoway (connected y_up x_art, clpat(dash) ) ///
>       (connected y_dc x_art, clpat(solid) ) ///
>       (connected y_lo x_art, clpat(dash) ) ///
>       , legend(off) ytitle(Pr(men)-Pr(women)) ylabel(0(.2)1)
. graph export group_simple_dc1.emf, replace
```

1.6 Fancier plot of Δ



```

. * 4c nicer discrete change with confidence intervals
. local optlegend "pos(11) order(2 1) ring(0) cols(1) region(ls(none))"
. twoway ///
>   (connected y_up x_art, msymbol(i) clpat(dash) clwidth(medthick) ) ///
>   (connected y_dc x_art, msymbol(i) clpat(solid) clwidth(thick) )    ///
>   (connected y_lo x_art, msymbol(i) clpat(dash) clwidth(medthick) ) ///
>   , legend('optlegend') ytitle(Pr(men)-Pr(women)) ylabel(0(.2)1)
. graph export group_simple_dc2.emf, replace

```

2 group_complex.do

2.1 Compute means

```
. // #1 compute means and rhs variable lists
. use group_ten01, clear
(Gender differences in receiving tenure (Scott Long 20Mar2006).)

. local rhs "year yearsq select articles prestige"
. local f_rhs "female"
. local m_rhs "male"

. * loop through variables and compute means by gender
. foreach v in `rhs' {
2.     qui sum `v'
3.     local mn_`v' = r(mean)
4.     qui sum `v' if female==1
5.     local mf_`v' = r(mean)
6.     qui sum `v' if male==1
7.     local mm_`v' = r(mean)
8.     local f_rhs "`f_rhs' f_`v'"
9.     local m_rhs "`m_rhs' m_`v'"
10. }
```

2.2 Estimate model

```
. // #2 estimate logit model
. logit tenure 'f_rhs' 'm_rhs', nolog nocon
```

```
Logistic regression                Number of obs   =       2945
                                   LR chi2(12)        =           .
Log likelihood = -918.07144         Prob > chi2     =           .
```

tenure	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
female	-4.207207	.630249	-6.68	0.000	-5.442473 -2.971942
f_year	.7685059	.1255128	6.12	0.000	.5225053 1.014507
f_yearsq	-.0417568	.0084699	-4.93	0.000	-.0583575 -.0251561
f_select	.0344378	.0683684	0.50	0.614	-.0995617 .1684373
f_articles	.0356986	.0119722	2.98	0.003	.0122335 .0591638
f_prestige	-.3481816	.152196	-2.29	0.022	-.6464803 -.0498829
male	-5.82375	.5041622	-11.55	0.000	-6.811889 -4.83561
m_year	1.071883	.1180005	9.08	0.000	.8406058 1.303159
m_yearsq	-.0654023	.0087056	-7.51	0.000	-.082465 -.0483397
m_select	.2107227	.0571501	3.69	0.000	.0987106 .3227349
m_articles	.0735537	.0107594	6.84	0.000	.0524656 .0946417
m_prestige	-.3770013	.103439	-3.64	0.000	-.579738 -.1742646

2.3 Compute predictions

```

. // #3 compute predictions at year 7 for values of articles and prestige
. * loop through prestige levels
. foreach p in 1 2 3 4 5 {
  2.   * loop through articles
.   foreach art of numlist 0(5)50 {
  3.     di _continue "'art' "
  4.     * female predictions
.     qui prvalue, level(95) delta save          ///
>     x(female=1 f_prestige='p' f_articles='art'  ///
>       f_year=7 f_yearsq=49 f_select='mn_select'  ///
>       male=0 m_prestige=0 m_articles=0          ///
>       m_year=0 m_yearsq=0 m_select=0          )
  5.     * male predictions
.     qui prvalue, level(95) delta diff          ///
>     x(female=0 f_prestige=0 f_articles=0        ///
>       f_year=0 f_yearsq=0 f_select=0          ///
>       male=1 m_prestige='p' m_articles='art'    ///
>       m_year=7 m_yearsq=49 m_select='mn_select' )
  6.     * save results for plotting
.     matrix x_art'p' = nullmat(x_art'p'), 'art'
  7.     matrix y_mal'p' = nullmat(y_mal'p'), pepred[2,2]
  8.     matrix y_fem'p' = nullmat(y_fem'p'), pepred[4,2]
  9.     matrix y_dc'p' = nullmat(y_dc'p'), pepred[6,2]
 10.    matrix y_dc'p'up = nullmat(y_dc'p'up), peupper[6,2]
 11.    matrix y_dc'p'lo = nullmat(y_dc'p'lo), pelower[6,2]
 12.  }
 13.
.   * move matrices into variables to plot
.   foreach v in x_art'p' y_dc'p' y_dc'p'up y_dc'p'lo y_fem'p' y_mal'p' {
 14.     matrix 'v' = 'v'[1,1...]'
 15.     matrix colname 'v' = 'v'
 16.     svmat 'v', names(col)
 17.  }
 18.
.   * add variable labels
.   label var x_art'p' "Number of Articles"
 19.   label var y_mal'p' "Men"
 20.   label var y_fem'p' "Women"
 21.   label var y_dc'p' "Male-Female difference"

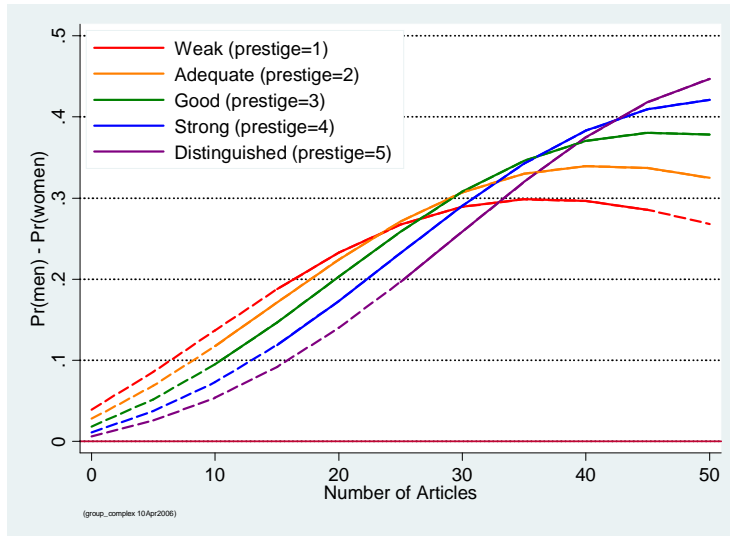
```

```
22.     label var y_dc'p'up "95% confidence interval"  
23.     label var y_dc'p'lo "95% confidence interval"  
24.  
. } // end of prediction loop
```

2.4 Create variables for plotting non-significant coefficients

```
. // #4 create variables when change is significant  
. * case as missing if not significant  
. foreach p in 1 2 3 4 5 {  
  2.     gen y_dc'p's = y_dc'p' if y_dc'p'lo>=0 & y_dc'p'lo!=.  
  3. }  
  
. label var y_dc1s "Weak (prestige=1)"  
. label var y_dc2s "Adequate (prestige=2)"  
. label var y_dc3s "Good (prestige=3)"  
. label var y_dc4s "Strong (prestige=4)"  
. label var y_dc5s "Distinguished (prestige=5)"
```

2.5 Create plot



```
. // #5 plots by prestige level
. * set up options
. local linesDCs "clpat(solid) clwidth(medthick)"
. local linesDCns "clpat(dash) clwidth(medthick)"
. local legend "pos(11) order(1 2 3 4 5) ring(0) cols(1) region(ls(none))"
. local ygrid "grid glcolor(black) glwidth(medium) glpattern(dot)"

. twoway ///
> (connected y_dc1s x_art1, 'linesDCs' msymbol(i) clcolor(red) ) ///
> (connected y_dc2s x_art2, 'linesDCs' msymbol(i) clcolor(orange) ) ///
> (connected y_dc3s x_art3, 'linesDCs' msymbol(i) clcolor(green) ) ///
> (connected y_dc4s x_art4, 'linesDCs' msymbol(i) clcolor(blue) ) ///
> (connected y_dc5s x_art5, 'linesDCs' msymbol(i) clcolor(purple) ) ///
> (connected y_dc1 x_art1, 'linesDCns' msymbol(i) clcolor(red) ) ///
> (connected y_dc2 x_art2, 'linesDCns' msymbol(i) clcolor(orange) ) ///
> (connected y_dc3 x_art3, 'linesDCns' msymbol(i) clcolor(green) ) ///
> (connected y_dc4 x_art4, 'linesDCns' msymbol(i) clcolor(blue) ) ///
> (connected y_dc5 x_art5, 'linesDCns' msymbol(i) clcolor(purple) ) ///
> , legend('legend') caption((group_complex 10Apr2006),size(tiny)) ///
> ytitle("Pr(men) - Pr(women)") xlabel(0(10)50) ///
> ylabel(.0(.1).5, 'ygrid') yline(0, lpattern(solid))

. graph export group_complex.emf, replace
```