Statistics/Data Analysis

```
      name:  <unnamed>
       log:  C:\Users\k19056473\Downloads\crime.smcl
  log type:  smcl
 opened on:  14 Dec 2019, 15:36:42

1 . use "C:\Users\k19056473\Downloads\crime8.dta"

2 .
3 . *A) DD table
4 . mean(crime) if treat==1 & policy6==0

Mean estimation                   Number of obs   =         24

------------------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       crime |   4.332612   .3224739      3.665524      4.9997
------------------------------------------------------------------------------

5 . mean(crime) if treat==1 & policy6==1

Mean estimation                   Number of obs   =         24

------------------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       crime |   3.837862   .2890618      3.239892    4.435832
------------------------------------------------------------------------------

6 . mean(crime) if treat==0 & policy6==0

Mean estimation                   Number of obs   =        144

------------------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       crime |   2.005973   .0454096      1.916212    2.095734
------------------------------------------------------------------------------

7 . mean(crime) if treat==0 & policy6==1

Mean estimation                   Number of obs   =        144

------------------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       crime |   1.979886   .0424463      1.895983    2.063789
------------------------------------------------------------------------------

8 .
9 . mean(police) if treat==1 & policy6==0

Mean estimation                   Number of obs   =         24

------------------------------------------------------------------------------
             |       Mean   Std. Err.     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      police |   180.5045   14.67938      150.1379    210.8711
------------------------------------------------------------------------------
```

```
10. mean(police) if treat==1 & policy6==1
```

Mean estimation Number of obs = **24**

	Mean	Std. Err.	[95% Conf.	Interval]
police	**254.9631**	**17.98709**	**217.754**	**292.1722**

```
11. mean(police) if treat==0 & policy6==0
```

Mean estimation Number of obs = **144**

	Mean	Std. Err.	[95% Conf.	Interval]
police	**83.28747**	**2.330027**	**78.68172**	**87.89322**

```
12. mean(police) if treat==0 & policy6==1
```

Mean estimation Number of obs = **144**

	Mean	Std. Err.	[95% Conf.	Interval]
police	**86.42138**	**2.293265**	**81.8883**	**90.95446**

```
13.
14. xi: reg crime i.policy6*i.treat, cluster (borough)
i.policy6          _Ipolicy6_0-1       (naturally coded; _Ipolicy6_0 omitted)
i.treat            _Itreat_0-1         (naturally coded; _Itreat_0 omitted)
i.pol~6*i.treat    _IpolXtre_#_#       (coded as above)
```

Linear regression

Number of obs	**336**
F(3, 27)	**6.17**
Prob > F	**0.0025**
R-squared	**0.5000**
Root MSE	**.74261**

(Std. Err. adjusted for **28** clusters in borough)

crime	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
_Ipolicy6_1	**-.0260872**	**.0329402**	**-0.79**	**0.435**	**-.0936749**	**.0415005**
_Itreat_1	**2.326638**	**.7921296**	**2.94**	**0.007**	**.7013228**	**3.951954**
IpolXtre~1	**-.468662**	**.1221057**	**-3.84**	**0.001**	**-.7192022**	**-.2181217**
_cons	**2.005973**	**.1100892**	**18.22**	**0.000**	**1.780089**	**2.231858**

```
15. xi: reg police i.policy6*i.treat, cluster (borough)
i.policy6          _Ipolicy6_0-1       (naturally coded; _Ipolicy6_0 omitted)
i.treat            _Itreat_0-1         (naturally coded; _Itreat_0 omitted)
i.pol~6*i.treat    _IpolXtre_#_#       (coded as above)
```

Linear regression

Number of obs	**336**
F(3, 27)	**400.04**
Prob > F	**0.0000**
R-squared	**0.6053**
Root MSE	**39.486**

(Std. Err. adjusted for **28** clusters in borough)

police	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
_Ipolicy6_1	**3.133912**	**.9666851**	**3.24**	**0.003**	**1.150438**	**5.117386**
_Itreat_1	**97.21702**	**36.18587**	**2.69**	**0.012**	**22.96975**	**171.4643**
IpolXtre~1	**71.32471**	**6.208705**	**11.49**	**0.000**	**58.5855**	**84.06392**
_cons	**83.28747**	**5.745385**	**14.50**	**0.000**	**71.49891**	**95.07603**

16.
17. *B) OLS model
18. gen lnCrime=ln(crime)

19. gen lnPolice=ln(police)

20. xi: reg lnCrime post lnPolice, cluster (borough)

Linear regression

Number of obs	=	**2,912**
F(2, 27)	=	**171.36**
Prob > F	=	**0.0000**
R-squared	=	**0.8751**
Root MSE	=	**.12458**

(Std. Err. adjusted for **28** clusters in borough)

lnCrime	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
post	**-.0518378**	**.0098931**	**-5.24**	**0.000**	**-.0721368**	**-.0315388**
lnPolice	**.7845985**	**.0449926**	**17.44**	**0.000**	**.6922813**	**.8769158**
_cons	**-2.761793**	**.2006687**	**-13.76**	**0.000**	**-3.173531**	**-2.350055**

21. xi: reg lnCrime post lnPolice

Source	SS	df	MS		
Model	**316.325899**	**2**	**158.162949**	Number of obs	= **2,912**
Residual	**45.1497844**	**2,909**	**.015520723**	F(2, 2909)	= **10190.44**
Total	**361.475683**	**2,911**	**.124175776**	Prob > F	= **0.0000**
				R-squared	= **0.8751**
				Adj R-squared	= **0.8750**
				Root MSE	= **.12458**

lnCrime	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
post	**-.0518378**	**.005405**	**-9.59**	**0.000**	**-.0624359**	**-.0412397**
lnPolice	**.7845985**	**.0054998**	**142.66**	**0.000**	**.7738147**	**.7953824**
_cons	**-2.761793**	**.0248858**	**-110.98**	**0.000**	**-2.810588**	**-2.712997**

22.
23. *C) Change in police
24. gsort borough week

25. gen lagpolice=lnPolice[_n-52] if week>52
(1,456 missing values generated)

26. gen ChLnPolice= lnPolice-lagpolice
(1,456 missing values generated)

```
27. gen interac= treat*post

28.
29. reg ChLnPolice post interac, cluster (borough)
```

Linear regression

Number of obs	**1,456**
F(2, 27)	**44.95**
Prob > F	**0.0000**
R-squared	**0.0665**
Root MSE	**.09342**

(Std. Err. adjusted for **28** clusters in borough)

ChLnPolice	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
post	**.0225148**	**.00902**	**2.50**	**0.019**	**.0040074**	**.0410222**
interac	**.0761882**	**.0114292**	**6.67**	**0.000**	**.0527374**	**.099639**
_cons	**.0001565**	**.0072416**	**0.02**	**0.983**	**-.0147019**	**.015015**

```
30.
31.
32. *D) Change in crime
33. gen lagcrime=lnCrime[_n-52] if week>52
  (1,456 missing values generated)

34. gen ChLnCrime= lnCrime- lagcrime
  (1,456 missing values generated)

35.
36. reg ChLnCrime post interac, cluster (borough)
```

Linear regression

Number of obs	**1,456**
F(2, 27)	**8.88**
Prob > F	**0.0011**
R-squared	**0.0338**
Root MSE	**.11428**

(Std. Err. adjusted for **28** clusters in borough)

ChLnCrime	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
post	**.0408456**	**.0114755**	**3.56**	**0.001**	**.0172998**	**.0643914**
interac	**-.0564072**	**.0239375**	**-2.36**	**0.026**	**-.105523**	**-.0072915**
_cons	**-.0417577**	**.0102882**	**-4.06**	**0.000**	**-.0628674**	**-.020648**

```
37.
38. *E) IV estimation
39. ivregress 2sls ChLnCrime post (ChLnPolice = interac), cluster (borough) first
```

First-stage regressions

Number of obs	**1,456**
N. of clusters	**28**
F(**2, 1453**)	**44.95**
Prob > F	**0.0000**
R-squared	**0.0665**
Adj R-squared	**0.0652**
Root MSE	**0.0934**

ChLnPolice	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
post	.0225148	.00902	2.50	0.013	.0048213	.0402084
interac	.0761882	.0114292	6.67	0.000	.0537687	.0986077
_cons	.0001565	.0072416	0.02	0.983	-.0140485	.0143615

Instrumental variables (2SLS) regression

Number of obs	=	1,456
Wald chi2(2)	=	12.65
Prob > chi2	=	0.0018
R-squared	=	.
Root MSE	=	.14117

(Std. Err. adjusted for 28 clusters in borough)

ChLnCrime	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
ChLnPolice	-.7403672	.3815604	-1.94	0.052	-1.488212	.0074775
post	.0575149	.0161838	3.55	0.000	.0257952	.0892346
_cons	-.0416418	.0125918	-3.31	0.001	-.0663213	-.0169624

Instrumented: ChLnPolice
Instruments: post interac

40.