Computer Assignment 1a Econometrics, Sep 2017

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III

a.

	Coefficient	**Standard error**
constant	0.2696	0.0432
bicyclestolen_ever	0.1411	0.0754

If a person's bike has ever been stolen, their perception of the chance that their bike will be stolen in the next 30 days being very unlikely increases by approximately 14.11%-point.

A 1% increase in bicyclestolen_ever results in a .1411%-point increase in perception_person_low.

b.

The size of the estimated coefficient for bicyclestolen_ever decreases by approximately 0.07, which is nearly 50%. The standard error increases by 0.03, thus it nearly remains the same value.

The variable international could be related to their perception of their bike being stolen in the upcoming 30 days because their behavior of using a bike may differ from a non-international, further, the bikes of internationals may be newer than the bikes of non-internationals, causing them to be more careful with their bike. Also, Dutch people may have more experience in carrying their bike in the Netherlands, they may have a better perception of where not to park their bike.

International may related to bicyclestolen_ever as well, as internationals may not have had a bike for the largest part of their life while most Dutch people are likely to have had a bike for a great part of their life.

c.

If bicycle owners were victimized before, they might indeed become more careful, which in turn decreases the perceived likelihood of their bike being stolen. This, however, is part of actual effect being analyzed; the victimized relative to the non-victimized bike owners are more careful as a result of having their bike stolen. So, being more careful is actually one of the mechanisms that drives the treatment effect that decreases the perceived likelihood of their bike being stolen.

IV

a.

There are two potential outcomes, measured by the perception of risk of bicycle theft. The first potential outcome is the outcome for the group that has been subjected to the treatment of being asked to recall the last instance of bicycle theft before answering the question measuring their risk

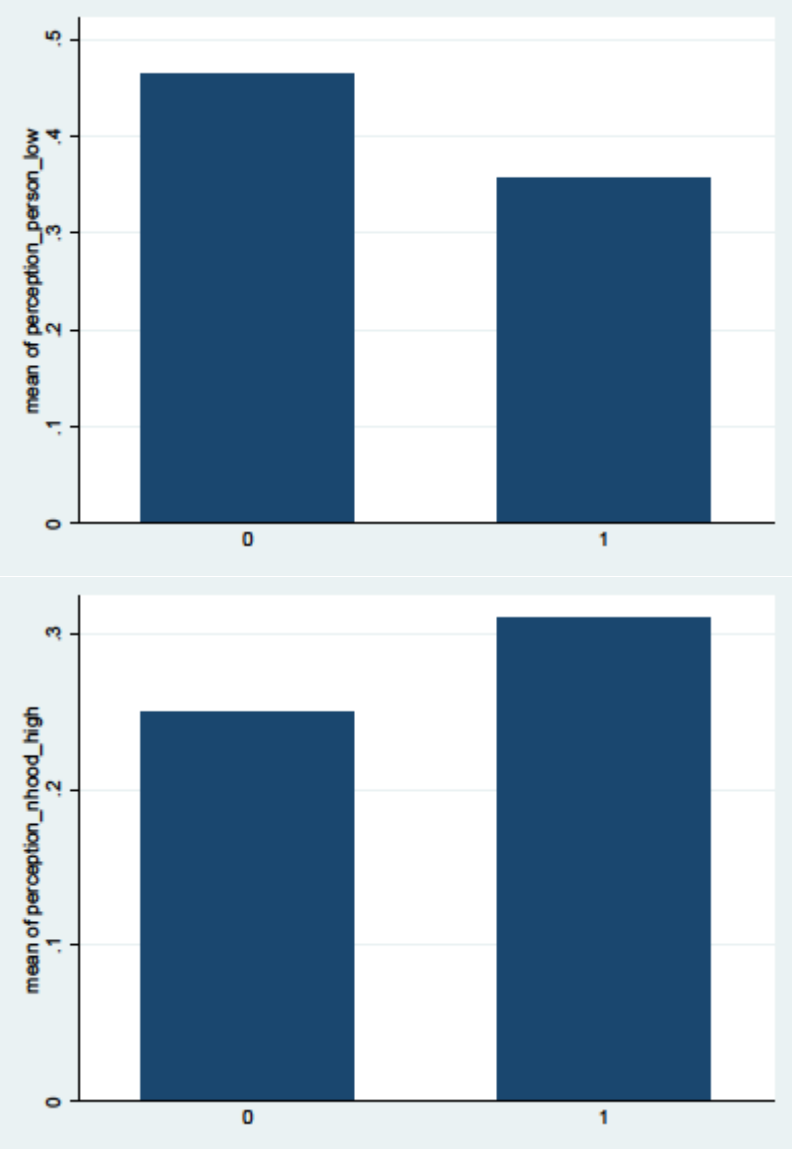
perception. The other potential outcome is that of the group who was first asked about their risk perception of bicycle theft before being made to recall the last instance of their bicycle being stolen.

The causal effect is the difference between the treated group and the counterfactual, in this instance being the effect of the recall of their last instance of bicycle theft on risk perceptions. The intuition being that fresh memory of the theft might increase the perceived risk.

b.

There cannot be any adverse selection since the research design is based on random selection into treatment. Theoretically causing the treatment and control groups to be perfectly comparable. So therefore there is no selection bias.

c.



According to the first graph, the mean perception of a surveyed individuals' bicycle being stolen in the next 30 days being 'very unlikely' conditional on not being treated is higher than the same mean conditional on being treated.

The second graph suggest that the mean perception of bicycle theft occurring in the neighborhood 'frequently' conditional on an individual not being treated is lower than the same mean conditional on being treated.

Thus, if an individual is recalled of their bicycle being stolen before being asked about their risk perceptions, the perceived risk of their bicycle being stolen is higher. Furthermore, the recall of their bicycle being stolen increases the perceived frequency of bicycle thefts in the neighborhood.

d.

For the regression on *perception_person_low* we get the following results:

	Coefficient	**Standard error**
constant	0.0715	0.2186
treatment	-0.1048	0.1242
own_bicycle	0.6173	0.2629
frequentuser	-0.2528	0.1926

For the regression on *perception_nhood_high* we get the following results:

	Coefficient	**Standard error**
constant	0.1719	0.2112
treatment	0.0552	0.1200
own_bicycle	0.0100	0.2540
frequentuser	0.0853	0.1860

e.

The data shows the same effect of the treatment as explained above when elaborating on the graphs in question **c**.

In the case that an individual is treated (*treatment = 1*), it is 10.48 percentage-point less likely that you think you are personally 'very unlikely' to be a victim of bicycle theft in the next 30 days.

And in the case that an individual is treated (*treatment = 1*), it is 5.52 percentage-point more likely that you think bicycle theft occurs 'frequently' in your neighborhood.

Even though the first coefficient is negative and the second is positive, the difference makes sense to us. In the first case the survey answer analyzed was the low perception of bicycle theft risk, which is expected to be chosen less if treated. This explains the negative coefficient. In the second case the survey answer with a high perception of risk is analyzed, which is expected to be chosen more if treated. This explains the positive coefficient.

f.

For the first regression, dividing the coefficient by the mean of the control group we get that the percentage decrease from being treated, thus the estimated causal effect equals $-\frac{.1047679}{.40625} \approx -0.2579$. This means that in the case of being treated, an individual is approximately 25% less likely to choose the option "very unlikely" when regarding the likeliness of their bicycle being stolen in the next 30 days. In our opinion, this effect is quite substantial.

For the second regression, we use the same method. The causal estimated causal effect now equals $\frac{.055207}{.25} \approx 0.2208$. This means that in the case of being treated, an individual is approximately 22% more likely to choose the option "frequently" when regarding the perceived frequency of bicycle theft in their neighborhood. In our opinion, this effect is quite substantial too.

g.

Both regression results show no statistically significant effects on the outcome variables. Therefore we cannot reject the null hypothesis of the treatment having no effect. This means that there is no evidence of the treatment having any effect on the outcomes of the perception of risk as well as the perception of frequency of bicycle theft.

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name: **<unnamed>**
log: **C:\Users\u1265889\Downloads\Econometrics1a.smcl**
log type: **smcl**
opened on: **1 Sep 2017, 16:52:39**

```
 1 . do "C:\Users\u1265889\Downloads\Computerassignment1econometrics1 (1).do"

 2 . * Computer Assignment 1a Econometrics, Sep 2017
 3 . * Joost Bouten, Fons Strik, Twan Vissers
 4 .
 5 . *Question I
 6 . use "C:\Users\u1265889\Downloads\ca1a_2017.dta", clear
   ( )

 7 .
 8 . *Question II (a)
 9 . histogram likelihood if own_bicycle==1, discrete
   (start=1, width=1)

10 .
11 . tab likelihood if own_bicycle==1
```

How likely do you think you personally are to be a victim of bicycle theft in th	Freq.	Percent	Cum.
Very likely	1	0.58	0.58
Fairly likely	26	15.20	15.79
Fairly unlikely	90	52.63	68.42
Very unlikely	54	31.58	100.00
Total	171	100.00	

```
12 .
13 . tab likelihood if own_bicycle==1, miss
```

How likely do you think you personally are to be a victim of bicycle theft in th	Freq.	Percent	Cum.
Very likely	1	0.58	0.58
Fairly likely	26	15.20	15.79
Fairly unlikely	90	52.63	68.42
Very unlikely	54	31.58	100.00
Total	171	100.00	

```
14 .
15 . tab likelihood if own_bicycle==1, nolabel
```

How likely do you think you personally are to be a victim of bicycle theft in th

	Freq.	Percent	Cum.
1	**1**	**0.58**	**0.58**
2	**26**	**15.20**	**15.79**
3	**90**	**52.63**	**68.42**
4	**54**	**31.58**	**100.00**
Total	**171**	**100.00**	

```
16 .
17 . gen perception_person_low=(likelihood==4)

18 . gen perception_nhood_high=(freq_nhood==3)

19 .
20 . label var perception_person_low "'Very unlikely' victim of bicycle theft in nx
   > t 30 days"

21 . label var perception_nhood_high "'Frequently' bicycle theft occurs in n'hood"

22 .
23 . summ perception_nhood_high
```

Variable	Obs	Mean	Std. Dev.	Min	Max
perception~h	**189**	**.1481481**	**.3561903**	**0**	**1**

```
24 . summ perception_person_low if own_bicycle==1
```

Variable	Obs	Mean	Std. Dev.	Min	Max
perception~w	**171**	**.3157895**	**.4661947**	**0**	**1**

```
25 .
26 . summ perception_nhood_high, detail
```

'Frequently' bicycle theft occurs in n'hood

Percentiles		Smallest		
1%	**0**	**0**		
5%	**0**	**0**		
10%	**0**	**0**	Obs	**189**
25%	**0**	**0**	Sum of Wgt.	**189**
50%	**0**		Mean	**.1481481**
		Largest	Std. Dev.	**.3561903**
75%	**0**	**1**		
90%	**1**	**1**	Variance	**.1268716**
95%	**1**	**1**	Skewness	**1.980887**
99%	**1**	**1**	Kurtosis	**4.923913**

```
27 . summ perception_person_low if own_bicycle==1, detail
```

'Very unlikely' victim of bicycle theft in nxt 30 days

Percentiles		Smallest		
1%	**0**	**0**		
5%	**0**	**0**		
10%	**0**	**0**	Obs	**171**
25%	**0**	**0**	Sum of Wgt.	**171**

50%	**0**		Mean	**.3157895**
		Largest	Std. Dev.	**.4661947**
75%	**1**	**1**		
90%	**1**	**1**	Variance	**.2173375**
95%	**1**	**1**	Skewness	**.7925939**
99%	**1**	**1**	Kurtosis	**1.628205**

```
28 .
29 . *Question II (b)
30 . tab treatment female, col
```

Key
frequency *column percentage*

treatment	female 0	1	Total
0	**55** **45.08**	**33** **49.25**	**88** **46.56**
1	**67** **54.92**	**34** **50.75**	**101** **53.44**
Total	**122** **100.00**	**67** **100.00**	**189** **100.00**

```
31 . tab treatment international, col
```

Key
frequency *column percentage*

treatment	Considers him/herself internat. student 0	1	Total
0	**41** **44.09**	**47** **48.96**	**88** **46.56**
1	**52** **55.91**	**49** **51.04**	**101** **53.44**
Total	**93** **100.00**	**96** **100.00**	**189** **100.00**

```
32 . tab treatment moved_notrecent, col
```

Key
frequency *column percentage*

treatment	Moved to current address more than 3 yrs ago 0	1	Total
0	**69**	**19**	**88**
	48.59	**40.43**	**46.56**
1	**73**	**28**	**101**
	51.41	**59.57**	**53.44**
Total	**142**	**47**	**189**
	100.00	**100.00**	**100.00**

```
33 .
34 . bys treatment: summ age
```

-> treatment = 0

Variable	Obs	Mean	Std. Dev.	Min	Max
age	**87**	**23.55172**	**3.098231**	**20**	**42**

-> treatment = 1

Variable	Obs	Mean	Std. Dev.	Min	Max
age	**93**	**22.88172**	**2.042215**	**20**	**31**

```
35 .
36 . ttest female, by(treatment)
```

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	**88**	**.375**	**.0519034**	**.4868973**	**.2718363**	**.4781637**
1	**101**	**.3366337**	**.0472558**	**.4749153**	**.2428794**	**.4303879**
combined	**189**	**.3544974**	**.034888**	**.4796313**	**.285675**	**.4233197**
diff		**.0383663**	**.0700723**		**-.0998676**	**.1766002**

diff = mean(**0**) - mean(**1**) t = **0.5475**
Ho: diff = 0 degrees of freedom = **187**

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = **0.7077** Pr(|T| > |t|) = **0.5847** Pr(T > t) = **0.2923**

```
37 . * There is no significant difference in proportion of student being female bet
   > ween treatment and control group
38 .
39 . *Question III (a)
40 .
41 . regres perception_person_low bicyclestolen_ever if own_bicycle==1
```

Source	SS	df	MS		
				Number of obs	= **171**
				F(1, 169)	= **3.50**
Model	**.750318732**	**1**	**.750318732**	Prob > F	= **0.0630**
Residual	**36.1970497**	**169**	**.214183726**	R-squared	= **0.0203**
				Adj R-squared	= **0.0145**
Total	**36.9473684**	**170**	**.217337461**	Root MSE	= **.4628**

```
------------------------------------------------------------------------------
perception_perso~w |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Inter
> val]
-------------------+----------------------------------------------------------
bicyclestolen_ever |   .1411491   .0754134     1.87   0.063    -.0077245    .290
> 0226
             _cons |   .2695652   .0431563     6.25   0.000     .1843703    .354
> 7601
------------------------------------------------------------------------------
```

```
42 .
43 . *Question III (b)
44 . regres perception_person_low bicyclestolen_ever international if own_bicycle==
   > 1
```

```
      Source |       SS           df       MS      Number of obs   =       171
-------------+----------------------------------   F(2, 168)       =      5.24
       Model |  2.16823212         2  1.08411606   Prob > F        =    0.0062
    Residual |  34.7791363       168  .207018668   R-squared       =    0.0587
-------------+----------------------------------   Adj R-squared   =    0.0475
       Total |  36.9473684       170  .217337461   Root MSE        =    .45499

------------------------------------------------------------------------------
perception_perso~w |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Inter
> val]
-------------------+----------------------------------------------------------
bicyclestolen_ever |   .0736294   .0785018     0.94   0.350    -.0813477    .228
> 6065
     international |  -.1929134   .0737127    -2.62   0.010    -.3384359   -.047
> 3909
             _cons |   .3853132   .0612882     6.29   0.000      .264319    .506
> 3075
------------------------------------------------------------------------------
```

```
45 .
46 . *Question IV
47 . drop if bicyclestolen_ever==0
(128 observations deleted)

48 .
49 . *Question IV (c)
50 . graph bar perception_person_low if own_bicycle==1, over(treatment)

51 . graph export "M:\Graph1.pdf", as(pdf) replace
(file M:\Graph1.pdf written in PDF format)

52 . graph bar perception_nhood_high, over(treatment)

53 . graph export "M:\Graph2.pdf", as(pdf) replace
(file M:\Graph2.pdf written in PDF format)

54 .
55 . *Question IV (d)
56 . regres perception_person_low treatment own_bicycle frequentuser
```

```
      Source |       SS           df       MS      Number of obs   =        61
-------------+----------------------------------   F(3, 57)        =      1.93
       Model |  1.31971327         3  .439904423   Prob > F        =    0.1354
    Residual |  13.0081556        57  .228213256   R-squared       =    0.0921
-------------+----------------------------------   Adj R-squared   =    0.0443
       Total |  14.3278689        60  .238797814   Root MSE        =    .47772
```

perception~w	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
treatment	-.1047679	.1242038	-0.84	0.402	-.3534817	.143946
own_bicycle	.6173149	.2628981	2.35	0.022	.0908706	1.143759
frequentuser	-.2528231	.1925645	-1.31	0.194	-.6384268	.1327806
_cons	.0715182	.2185933	0.33	0.745	-.3662074	.5092438

```
57 . regres perception_nhood_high treatment own_bicycle frequentuser
```

Source	SS	df	MS		
Model	.121768106	3	.040589369	Number of obs	= 61
Residual	12.140527	57	.212991701	F(3, 57)	= 0.19
				Prob > F	= 0.9024
Total	12.2622951	60	.204371585	R-squared	= 0.0099
				Adj R-squared	= -0.0422
				Root MSE	= .46151

perception~h	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
treatment	.055207	.1199902	0.46	0.647	-.1850692	.2954833
own_bicycle	.0100376	.2539793	0.04	0.969	-.4985471	.5186224
frequentuser	.0853199	.1860317	0.46	0.648	-.2872022	.4578421
_cons	.1718946	.2111776	0.81	0.419	-.2509812	.5947704

```
58 .
59 . *Question IV (f): We use the means of the following variables as a baseline to
   >  get the percentage decrease as provided in question f
60 . sum perception_person_low if treatment==0
```

Variable	Obs	Mean	Std. Dev.	Min	Max
perception~w	32	.40625	.4989909	0	1

```
61 . sum perception_nhood_high if treatment==0
```

Variable	Obs	Mean	Std. Dev.	Min	Max
perception~h	32	.25	.4399413	0	1

```
62 .
63 .
end of do-file

64 . log close
      name:  <unnamed>
       log:  C:\Users\u1265889\Downloads\Econometrics1a.smcl
  log type:  smcl
 closed on:   1 Sep 2017, 16:54:36
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