

```

1  capture log close
2  log using "C:\Users\jonni\Downloads\Jonathan Rius_ECON644_Replication Project Draft_.smcl",replace
3  version 17.0
4  clear all
5
6  /*=====
7  ECON 644
8  Replication Project Draft
9  Jonathan Rius
10 =====*/
11
12
13 *(1) - DONE
14
15 use "C:\Users\jonni\Downloads\TrafficCitations2001.dta", clear
16
17 describe
18
19 keep if mphover >= 10 // Filter the data
20
21 count
22
23 regress amount mphover
24
25 * Run the regression to extract coefficients
26
27 regress amount mph
28
29 * Store the intercept and slope in macros
30
31 local b0 = _b[_cons] // Intercept
32 local b1 = _b[mph] // Slope
33
34 * Generate a scatter plot with regression line and display the equation
35
36 twoway (scatter amount mph) (lfit amount mph), ///
37       title("Regression of Amount Over Ten MPH") ///
38       subtitle("Y = `b0' + `b1' * MPH") ///
39       xlabel(, grid) ylabel(, grid) legend(off)
40
41
42 *(2)- DONE
43
44 use "C:\Users\jonni\Downloads\TrafficCitations2001.dta", clear
45
46 * Filter observations with non-missing 'amount' and 'mphover'
47
48 drop if missing(amount) | missing(mphover)
49
50 * Calculate the expected fine based on the formula
51
52 gen expected_fine = 50 + 10 * (mphover - 10)
53
54 * Classify fines based on their relation to the formula
55
56 gen fine_category = ""
57 replace fine_category = "conforms" if amount == expected_fine
58 replace fine_category = "below" if amount < expected_fine
59 replace fine_category = "above" if amount > expected_fine
60
61 tabulate fine_category
62
63 * Create a bar chart to visualize the distribution

```

```

64 graph bar (count), over(fine_category) title("Distribution of Fines By Category")
65
66 *(3)
67
68 use "C:\Users\jonni\Downloads\GenFundRevenues2005.dta", clear
69
70 import delimited "C:\Users\jonni\Downloads\sub-est00int.csv", clear
71
72 keep if stname=="Massachusetts"
73
74 * Tabulate SUMLEV
75 tabulate sumlev
76
77 * Keep only observations where SUMLEV is 61
78 keep if sumlev==61
79
80 * Drop unnecessary variables
81 drop sumlev state county place cousub stname estimatesbase2000 poestimate2000 poestimate2001
poestimate2002 poestimate2003 poestimate2004 poestimate2006 poestimate2007 poestimate2008
poestimate2009 census2010pop poestimate2010
82
83 * Sort data by name
84 sort municipality
85
86 * Generate Municipality variable by removing " town"
87 generate Municipality = regexr(municipality," town","")
88
89 * Further clean Municipality by removing " city"
90 replace Municipality = regexr(Municipality," city","")
91
92 * Further clean Municipality by removing " Town"
93 replace Municipality = regexr(Municipality," Town","")
94
95 * Correct specific Municipality name
96 replace Municipality = "Manchester By The Sea" if Municipality=="Manchester-by-the-Sea"
97
98 * Order dataset by Municipality, first
99 order Municipality, first
100
101 * Drop Boston from dataset
102 drop if Municipality=="Boston"
103
104 * Save dataset
105
106 save "C:\Users\jonni\Downloads\Replication Project\sub-est00int.csv" , replace
107
108 use "C:\Users\jonni\Downloads\GenFundRevenues2005.dta", clear
109
110 use "C:\Users\jonni\Downloads\Replication Project\GenFundExpenditures2005_updated.dta", clear
111
112 save "C:\Users\jonni\Downloads\Replication Project\GenFundExpenditures2005_updated.dta", replace
113
114 * Merge fiscal and population data
115
116 use "C:\Users\jonni\Downloads\GenFundRevenues2005.dta", clear
117
118 merge 1:1 DORCode using "C:\Users\jonni\Downloads\Replication
Project\GenFundExpenditures2005_updated.dta", nogenerate
119
120 save "FIS and POP.dta", replace
121
122 use "C:\Users\jonni\OneDrive\Documents\FIS and POP.dta"
123

```

```

124 describe
125
126 * Merge Municipality data
127
128 merge 1:1 Municipality using "C:\Users\jonni\Downloads\Replication Project\sub-est00int.csv" ,
nogenerate
129
130 describe
131
132 save "MUN and POP.dta", replace
133
134 use "C:\Users\jonni\OneDrive\Documents\MUN and POP.dta"
135
136 describe
137
138 use "FIS and POP.dta"
139
140 use "MUN and POP.dta", clear
141
142 save "MUN and POP.dta", replace
143
144 *Now perform problem 3
145
146
147 use "MUN and POP.dta", clear
148
149 * Generate police budget per capita variables
150 gen police_budget_per_capita = Police / popestimate2005
151 gen police_budget_pc = Police / popestimate2005
152 gen fines_forfeitures_pc = FinesandForfeitures / popestimate2005
153
154 * Compute correlation and display it
155 corr police_budget_pc fines_forfeitures_pc
156
157 * Run regression to get the line equation
158 regress fines_forfeitures_pc police_budget_pc
159
160 * Scatter plot with a fitted regression line and correlation coefficient displayed
161 twoway (scatter fines_forfeitures_pc police_budget_pc) ///
162       (lfit fines_forfeitures_pc police_budget_pc), ///
163       title("Regression of Fines & Forfeitures Per Capita on Police Budget Per Capita") ///
164       xlabel(, grid) ylabel(, grid) ///
165       legend(off) note("Positive Correlation of +.293")
166
167
168
169 *(4)
170
171 use "C:\Users\jonni\Downloads\TrafficCitations2001.dta", clear
172
173 describe
174
175 rename locate2 Municipality
176
177 describe
178
179 save "C:\Users\jonni\Downloads\TrafficCitations2001.dta(2)", replace
180
181 use "C:\Users\jonni\Downloads\TrafficCitations2001.dta(2)", clear
182
183 * merge m:1 "C:\Users\jonni\Downloads\Replication Project\MUN and POP.dta"
184
185 use "C:\Users\jonni\OneDrive\Documents\MUN, POP, and Fines.dta"

```

```

186
187 save "C:\Users\jonni\OneDrive\Documents\MUN, POP, and Fines.dta",replace
188
189 * Now perform the problem
190
191 use "C:\Users\jonni\OneDrive\Documents\MUN, POP, and Fines.dta"
192
193 *I used revenue because it highly correlates with income, .6 to .9 correlation
194
195 gen federal_revenue_pc = FederalRevenue / popestimate2005
196
197 save "MUN_POP_Fines_with_FedRevPC.dta", replace
198
199 * First 25th percentile and down(lower income)
200
201 use "MUN_POP_Fines_with_FedRevPC.dta", clear
202
203 * Calculate the 25th percentile of federal_revenue_pc
204 sum federal_revenue_pc, detail
205 local p25 = r(p25)
206
207 * Keep only observations where federal_revenue_pc is BELOW the 25th percentile
208 keep if federal_revenue_pc <= `p25'
209
210 * Generate histogram for amount
211 histogram amount, percent title("Histogram of Amount (Below 25th Percentile, Low Income)")
212
213
214 * Test for unimodality
215
216 * Next 75th percentile and up(higher income)
217
218 use "MUN_POP_Fines_with_FedRevPC.dta",clear
219
220 * Calculate the 75th percentile of federal_revenue_pc
221 sum federal_revenue_pc, detail
222 local p75 = r(p75)
223
224 * Keep only observations where federal_revenue_pc is above the 75th percentile
225 keep if federal_revenue_pc > `p75'
226
227 * Generate histogram for amount
228 histogram amount, percent title("Histogram of Amount (Above 75th Percentile, High Income)")
229
230 * Test for unimodality
231
232
233 *(5)
234
235 use "C:\Users\jonni\Downloads\TrafficCitations2001.dta", clear
236
237 * Count the total number of unique officers
238 quietly levelsof officercode, local(all_officers)
239 local total_officers: word count `all_officers'
240
241 * Count the number of officers who have made at least one stop outside their home town
242 gen ever_outtown = (outtown == 1)
243 bysort officercode (ever_outtown): replace ever_outtown = ever_outtown[_N]
244
245 quietly levelsof officercode if ever_outtown == 1, local(outtown_officers)
246 local officers_with_outtown: word count `outtown_officers'
247
248 * Calculate the percentage of officers who stopped a vehicle outside their home town

```

```

249 local percentage_outtown = (`officers_with_outtown' / `total_officers') * 100
250
251 * Display the result
252 display "Percentage of local officers with at least one stop outside their home town: "
    `percentage_outtown'
253
254
255 *(6)
256
257 use "C:\Users\jonni\Downloads\TrafficCitations2001.dta",clear
258
259 * Create a new variable to indicate whether a ticket was issued
260 gen ticketed = !missing(amount)
261
262 * Compute probability of getting a ticket for local drivers
263 sum ticketed if outtown == 0
264 di "Local Ticket Probability: " r(mean) * 100
265
266 * Compute probability of getting a ticket for out-of-state drivers
267 sum ticketed if outstate == 1
268 di "Out-of-State Ticket Probability: " r(mean) * 100
269
270
271 * Compute average fine for cited local drivers
272 sum amount if outtown == 0 & ticketed == 1
273 di "Average Fine for Local Drivers: $" r(mean)
274
275 * Compute average fine for cited out-of-state drivers
276 sum amount if outstate == 1 & ticketed == 1
277 di "Average Fine for Out-of-State Drivers: $" r(mean)
278
279 *(7)
280
281
282 * Load your dataset
283 use "C:\Users\jonni\Downloads\Merged_Municipality_Data.dta",clear
284
285 gen female = (sex == "F")
286
287 * Generate summary statistics
288
289 summarize amount nowarn outstate outtown courtdistance mphover poestimate2005 black hispanic sex age
    statepol cdl2 female accemplp orloss01
290
291 use "C:\Users\jonni\Downloads\Merged_Municipality_Data.dta", clear
292
293 gen female = (sex == "F")
294
295 * Keep only rows where 'amount' is not missing
296 drop if missing(amount)
297
298 * Verify the dataset now only includes relevant rows
299
300 summarize amount nowarn outstate outtown courtdistance mphover poestimate2005 black hispanic sex age
    statepol cdl2 female accemplp orloss01
301
302 *(8)
303
304 * Load your dataset
305
306 use "C:\Users\jonni\Downloads\Merged_Municipality_Data.dta",clear
307
308 gen female = (sex == "F")

```

```

309
310 * Generate summary statistics
311
312 collapse (mean) amount nowarn outstate outtown courtdistance mphover popestimate2005 black hispanic
age statepol cdl2 female accemplp orloss01, by(Municipality)
313
314 summarize
315
316
317 *(9)
318
319 use "C:\Users\jonni\Downloads\Replication Project\Municipalities2001.dta", clear
320
321 describe
322
323 rename locate2 Municipality
324
325 save "C:\Users\jonni\Downloads\Replication Project\Municipalities2001.dta(1)",replace
326
327 * merge m:1 "C:\Users\jonni\Downloads\Replication Project\MUN and POP.dta"
328
329 use "C:\Users\jonni\Downloads\Merged_Municipality_Data.dta",clear
330
331 * Generate dependent variable: 1 if citation issued, 0 if warning
332 gen citation = (nowarn == 1)
333
334 * Generate log-transformed variables
335 gen log_age = log(age)
336
337 gen log_distance = log(courtdistance)
338
339 * Convert categorical variables
340 gen female = (sex == "F") // 1 for female, 0 for male
341
342 gen black_driver = (black == 1)
343
344 gen hispanic_driver = (hispanic == 1)
345
346 gen orloss01_outtown = orloss01 * outtown
347
348 gen orloss01_outstate = orloss01* outstate
349
350 gen orloss01_logdistance = orloss01* log_distance
351
352 * Generate interaction terms
353 gen log_age_female = log_age * female
354
355 gen state_police = (statepol == 1)
356 // 1 if state police issued ticket
357 gen cdl = (cdl2 == 1)
358 // 1 if driver has a commercial driver's license
359
360 gen statepol_outtown = state_police * outtown
361
362 gen statepol_outstate = state_police * outstate
363
364 gen statepol_logdistance = state_police * log_distance
365
366 gen accemplp_out= accemplp * outtown
367
368 gen accemplp_os= accemplp* outstate
369
370 gen accemplp_log = accemplp* log_distance

```

```

371
372 gen log_mphover = log(mphover)
373
374 * Did not get property value
375
376 save"MUN, POP, Fines and Variables.dta",replace
377
378 use "MUN, POP, Fines and Variables.dta",replace
379
380 gen citation_fixed = citation > 0
381
382 probit citation_fixed outtown outstate log_distance black_driver hispanic_driver log_age cdl
statepol_outtown statepol_outstate statepol_logdistance log_age_female orloss01_outtown
orloss01_outstate orloss01_logdistance log_mphover
383
384 *(10)
385
386 * Load the dataset
387 use "MUN, POP, Fines and Variables.dta", clear
388
389 gen citation_fixed = citation > 0
390
391 * Probit model for citation issuance (Column 1)
392 probit nowarn outtown log_distance , robust
393
394 probit citation_fixed outtown outstate log_distance black_driver hispanic_driver log_age cdl
statepol_outtown statepol_outstate statepol_logdistance log_age_female orloss01_outtown
orloss01_outstate orloss01_logdistance log_mphover
395
396 margins, dydx(*) post
397
398 *(11)
399
400 use "MUN, POP, Fines and Variables.dta", clear
401
402 gen intown = 1 - outtown
403 gen citation_fixed = citation > 0
404
405 gen town_size = .
406 replace town_size = 1 if popestimate2005 <= 5000
407 replace town_size = 2 if popestimate2005 > 5000 & popestimate2005 <= 20000
408 replace town_size = 3 if popestimate2005 > 20000 & popestimate2005 <= 50000
409 replace town_size = 4 if popestimate2005 > 50000 & popestimate2005 <= 100000
410 replace town_size = 5 if popestimate2005 > 100000
411
412 gen townsize1_intown = (town_size == 1) * intown
413 gen townsize2_intown = (town_size == 2) * intown
414 gen townsize3_intown = (town_size == 3) * intown
415 gen townsize4_intown = (town_size == 4) * intown
416
417 areg citation_fixed intown townsize1_intown townsize2_intown townsize3_intown townsize4_intown ///
outstate log_distance log_age_female orloss01_outtown orloss01_outstate orloss01_logdistance
log_mphover, absorb(Municipality) cluster(Municipality)
419
420 outreg2 using table5_results.doc, replace ctitle("Table 5 - Municipality Fixed Effects") dec(3)
421
422
423 *(12)
424
425 * I send a separte pdf for this, this is just a Summary*
426
427 log close
428

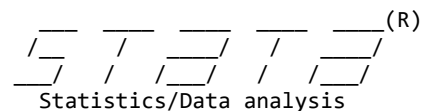
```

429

430

431

432



User: Jonathan Rius Assignment part 2

```

1 . use "C:\Users\jonni\Downloads\TrafficCitations2001.dta", clear
   name: <unnamed>
   log: C:\Users\jonni\Downloads\Jonathan Rius_ECON644_Replication Project
> Draft_.smcl
   log type: smcl
   opened on: 17 Feb 2025, 10:47:23

```

```

2 . version 17.0

```

```

3 . clear all

```

```

4 .

```

```

5 . /*=====
> ECON 644
> Replication Project Draft
> Jonathan Rius
> =====*/

```

```

6 .

```

```

7 .

```

```

8 . *(1) - DONE

```

```

9 .

```

```

10 . use "C:\Users\jonni\Downloads\TrafficCitations2001.dta", clear

```

```

11 .

```

```

12 . describe

```

Contains data from C:\Users\jonni\Downloads\TrafficCitations2001.dta

Observations: 68,357

Variables: 15

8 Jun 2021 15:49

Variable name	Storage type	Display format	Value label	Variable label
officercode	double	%18.0g		Officer code
statepol	byte	%9.0g		State trooper
dor_code	float	%8.0g		Department of Revenue code
locate2	str21	%21s		Municipality where citation issued
nowarn	byte	%9.0g		Driver fined
amount	int	%8.0g		Fine amount
mphover	byte	%8.0g		MPH over the speed limit
cdl2	byte	%9.0g		Commercial driver license
outstate	byte	%9.0g		Driver from out of state
outtown	byte	%9.0g		Driver from out of town
courtdistance	float	%9.0g		Distance to court
age	byte	%8.0g		Age imputed from year of birth, and date of the citation
sex	str1	%1s		F for female, M for male
black	byte	%8.0g		Black
hispanic	byte	%8.0g		Hispanic

Sorted by:

```

13 .
14 . keep if mphover >= 10 // Filter the data
    (3,141 observations deleted)

```

```

15 .
16 . count
    65,216

```

```

17 .
18 . regress amount mphover

```

Source	SS	df	MS	Number of obs	=	31,486
Model	50121346.6	1	50121346.6	F(1, 31484)	=	31842.62
Residual	49556871.9	31,484	1574.03354	Prob > F	=	0.0000
				R-squared	=	0.5028
				Adj R-squared	=	0.5028
Total	99678218.5	31,485	3165.89546	Root MSE	=	39.674

amount	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
mphover	6.939217	.0388871	178.44	0.000	6.862997	7.015438
_cons	3.364022	.7030664	4.78	0.000	1.985984	4.74206

```

19 .
20 . * Run the regression to extract coefficients
21 .
22 . regress amount mph

```

Source	SS	df	MS	Number of obs	=	31,486
Model	50121346.6	1	50121346.6	F(1, 31484)	=	31842.62
Residual	49556871.9	31,484	1574.03354	Prob > F	=	0.0000
				R-squared	=	0.5028
				Adj R-squared	=	0.5028
Total	99678218.5	31,485	3165.89546	Root MSE	=	39.674

amount	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
mphover	6.939217	.0388871	178.44	0.000	6.862997	7.015438
_cons	3.364022	.7030664	4.78	0.000	1.985984	4.74206

```

23 .
24 . * Store the intercept and slope in macros
25 .
26 . local b0 = _b[_cons] // Intercept
27 . local b1 = _b[mph] // Slope

```

```

28 .
29 . * Generate a scatter plot with regression line and display the equation
30 .
31 . twoway (scatter amount mph) (lfit amount mph), ///
    > title("Regression of Amount Over Ten MPH") ///
    > subtitle("Y = `b0' + `b1' * MPH") ///
    > xlabel(, grid) ylabel(, grid) legend(off)

32 .
33 .
34 . *(2)- DONE
35 .
36 . use "C:\Users\jonni\Downloads\TrafficCitations2001.dta", clear

37 .
38 . * Filter observations with non-missing 'amount' and 'mphover'
39 .
40 . drop if missing(amount) | missing(mphover)
    (36,683 observations deleted)

41 .
42 . * Calculate the expected fine based on the formula
43 .
44 . gen expected_fine = 50 + 10 * (mphover - 10)

45 .
46 . * Classify fines based on their relation to the formula
47 .
48 . gen fine_category = ""
    (31,674 missing values generated)

49 . replace fine_category = "conforms" if amount == expected_fine
    variable fine_category was str1 now str8
    (3,453 real changes made)

50 . replace fine_category = "below" if amount < expected_fine
    (7,412 real changes made)

51 . replace fine_category = "above" if amount > expected_fine
    (20,809 real changes made)

52 .
53 . tabulate fine_category

```

fine_category	Freq. Percent Cum.		
above	20,809	65.70	65.70
below	7,412	23.40	89.10
conforms	3,453	10.90	100.00
Total	31,674	100.00	

```

54 .
55 . * Create a bar chart to visualize the distribution
56 . graph bar (count), over(fine_category) title("Distribution of Fines By Categor
    > y")

57 .
58 . *(3)
59 .
60 . use "C:\Users\jonni\Downloads\GenFundRevenues2005.dta", clear

61 .
62 . import delimited "C:\Users\jonni\Downloads\sub-est00int.csv", clear
    (encoding automatically selected: ISO-8859-9)
    (20 vars, 81,625 obs)

63 .
64 . keep if stname=="Massachusetts"
    (81,089 observations deleted)

65 .
66 . * Tabulate SUMLEV
67 . tabulate sumlev

```

SUMLEV	Freq.	Percent	Cum.
40	1	0.19	0.19
50	14	2.61	2.80
61	351	65.49	68.28
71	53	9.89	78.17
157	64	11.94	90.11
162	53	9.89	100.00
Total	536	100.00	

```

68 .
69 . * Keep only observations where SUMLEV is 61
70 . keep if sumlev==61
    (185 observations deleted)

71 .
72 . * Drop unnecessary variables
73 . drop sumlev state county place cousub stname estimatesbase2000 poestimate2000
    > poestimate2001 poestimate2002 poestimate2003 poestimate2004 poestimate20
    > 06 poestimate2007 poestimate2008 poestimate2009 census2010pop poestimate20
    > 10

74 .
75 . * Sort data by name
76 . sort municipality

77 .

```

```

78 . * Generate Municipality variable by removing " town"
79 . generate Municipality = regexr(municipality," town","")

80 .
81 . * Further clean Municipality by removing " city"
82 . replace Municipality = regexr(Municipality," city","")
    (53 real changes made)

83 .
84 . * Further clean Municipality by removing " Town"
85 . replace Municipality = regexr(Municipality," Town","")
    (14 real changes made)

86 .
87 . * Correct specific Municipality name
88 . replace Municipality = "Manchester By The Sea" if Municipality=="Manchester-by
    > -the-Sea"
    (1 real change made)

89 .
90 . * Order dataset by Municipality, first
91 . order Municipality, first

92 .
93 . * Drop Boston from dataset
94 . drop if Municipality=="Boston"
    (1 observation deleted)

95 .
96 . * Save dataset
97 .
98 . save "C:\Users\jonni\Downloads\Replication Project\sub-est00int.csv" , replace
    file C:\Users\jonni\Downloads\Replication Project\sub-est00int.csv saved as
        .dta format

99 .
100 . use "C:\Users\jonni\Downloads\GenFundRevenues2005.dta", clear

101 .
102 . use "C:\Users\jonni\Downloads\Replication Project\GenFundExpenditures2005_upda
    > ted.dta", clear

103 .
104 . save "C:\Users\jonni\Downloads\Replication Project\GenFundExpenditures2005_upd
    > ated.dta", replace
    file C:\Users\jonni\Downloads\Replication
        Project\GenFundExpenditures2005_updated.dta saved

105 .
106 . * Merge fiscal and population data
107 .

```

```
108 . use "C:\Users\jonni\Downloads\GenFundRevenues2005.dta", clear
```

```
109 .
```

```
110 . merge 1:1 DORCode using "C:\Users\jonni\Downloads\Replication Project\GenFundE
> xpenditures2005_updated.dta", nogenerate
```

Result	Number of obs
Not matched	0
Matched	351

```
111 .
```

```
112 . save "FIS and POP.dta", replace
file FIS and POP.dta saved
```

```
113 .
```

```
114 . use "C:\Users\jonni\OneDrive\Documents\FIS and POP.dta"
```

```
115 .
```

```
116 . describe
```

Contains data from C:\Users\jonni\OneDrive\Documents\FIS and POP.dta

Observations: 351

Variables: 29 17 Feb 2025 10:47

Variable name	Storage type	Display format	Value label	Variable label
DORCode	str7	%9s		DOR Code
Municipality	str21	%21s		Municipality
FiscalYear	str4	%9s		Fiscal Year
Taxes	double	%10.0g		Taxes
ServiceCharges	long	%10.0g		Service Charges
LicensesandPe~s	long	%10.0g		Licenses and Permits
FederalRevenue	long	%10.0g		Federal Revenue
StateRevenue	double	%10.0g		State Revenue
RevenuefromOt~s	long	%10.0g		Revenue from Other Governments
SpecialAssess~s	long	%10.0g		Special Assessments
FinesandForfe~s	long	%10.0g		Fines and Forfeitures
Miscellaneous	long	%10.0g		Miscellaneous
OtherFinancin~s	long	%10.0g		Other Financing Sources
Transfers	long	%10.0g		Transfers
TotalRevenues	double	%10.0g		Total Revenues
Fiscal_Year	double	%10.0g		
General_Gover~t	long	%12.0g		
Police	long	%12.0g		
Fire	long	%12.0g		
Other_Public_~y	long	%12.0g		
Education	double	%10.0g		
Public_Works	long	%12.0g		
Human_Services	long	%12.0g		
Culture_and_R~n	long	%12.0g		
Fixed_Costs	long	%12.0g		
Intergovernme~s	long	%12.0g		
Other_Expendi~s	long	%12.0g		
Debt_Service	long	%12.0g		
Total_Expendi~s	double	%10.0g		

Sorted by: DORCode

```

117 .
118 . * Merge Municipality data
119 .
120 . merge 1:1 Municipality using "C:\Users\jonni\Downloads\Replication Project\sub
> -est00int.csv" , nogenerate
(variable Municipality was str21, now str26 to accommodate using data's
values)

```

Result	Number of obs
Not matched	1
from master	1
from using	0
Matched	350

```

121 .
122 . describe

```

Contains data from C:\Users\jonni\OneDrive\Documents\FIS and POP.dta
Observations: 351
Variables: 31 17 Feb 2025 10:47

Variable name	Storage type	Display format	Value label	Variable label
DORCode	str7	%9s		DOR Code
Municipality	str26	%26s		Municipality
FiscalYear	str4	%9s		Fiscal Year
Taxes	double	%10.0g		Taxes
ServiceCharges	long	%10.0g		Service Charges
LicensesandPermits	long	%10.0g		Licenses and Permits
FederalRevenue	long	%10.0g		Federal Revenue
StateRevenue	double	%10.0g		State Revenue
RevenuefromOtherGovernments	long	%10.0g		Revenue from Other Governments
SpecialAssessments	long	%10.0g		Special Assessments
FinesandForfeitures	long	%10.0g		Fines and Forfeitures
Miscellaneous	long	%10.0g		Miscellaneous
OtherFinancingSources	long	%10.0g		Other Financing Sources
Transfers	long	%10.0g		Transfers
TotalRevenues	double	%10.0g		Total Revenues
Fiscal_Year	double	%10.0g		
General_Government	long	%12.0g		
Police	long	%12.0g		
Fire	long	%12.0g		
Other_Public_Utilities	long	%12.0g		
Education	double	%10.0g		
Public_Works	long	%12.0g		
Human_Services	long	%12.0g		
Culture_and_Recreation	long	%12.0g		
Fixed_Costs	long	%12.0g		
Intergovernmental	long	%12.0g		
Other_Expenditures	long	%12.0g		
Debt_Service	long	%12.0g		
Total_Expenditures	double	%10.0g		
municipality	str57	%57s		Municipality
poestimate2005	long	%12.0g		POPESTIMATE2005

Sorted by: Municipality
Note: Dataset has changed since last saved.

```

123 .
124 . save "MUN and POP.dta", replace
    file MUN and POP.dta saved

125 .
126 . use "C:\Users\jonni\OneDrive\Documents\MUN and POP.dta"

127 .
128 . describe

```

Contains data from C:\Users\jonni\OneDrive\Documents\MUN and POP.dta
 Observations: 351
 Variables: 31 17 Feb 2025 10:47

Variable name	Storage type	Display format	Value label	Variable label
DORCode	str7	%9s		DOR Code
Municipality	str26	%26s		Municipality
FiscalYear	str4	%9s		Fiscal Year
Taxes	double	%10.0g		Taxes
ServiceCharges	long	%10.0g		Service Charges
LicensesandPe~s	long	%10.0g		Licenses and Permits
FederalRevenue	long	%10.0g		Federal Revenue
StateRevenue	double	%10.0g		State Revenue
RevenuefromOt~s	long	%10.0g		Revenue from Other Governments
SpecialAssess~s	long	%10.0g		Special Assessments
FinesandForfe~s	long	%10.0g		Fines and Forfeitures
Miscellaneous	long	%10.0g		Miscellaneous
OtherFinancin~s	long	%10.0g		Other Financing Sources
Transfers	long	%10.0g		Transfers
TotalRevenues	double	%10.0g		Total Revenues
Fiscal_Year	double	%10.0g		
General_Gover~t	long	%12.0g		
Police	long	%12.0g		
Fire	long	%12.0g		
Other_Public_~y	long	%12.0g		
Education	double	%10.0g		
Public_Works	long	%12.0g		
Human_Services	long	%12.0g		
Culture_and_R~n	long	%12.0g		
Fixed_Costs	long	%12.0g		
Intergovernme~s	long	%12.0g		
Other_Expendi~s	long	%12.0g		
Debt_Service	long	%12.0g		
Total_Expendi~s	double	%10.0g		
municipality	str57	%57s		Municipality
poestimate2005	long	%12.0g		POPESTIMATE2005

Sorted by: Municipality


```

129 .
130 . use "FIS and POP.dta"

131 .
132 . use "MUN and POP.dta",clear

133 .
134 . save "MUN and POP.dta", replace
    file MUN and POP.dta saved

135 .
136 . *Now perform problem 3
137 .
138 .
139 . use "MUN and POP.dta", clear

140 .
141 . * Generate police budget per capita variables
142 . gen police_budget_per_capita = Police / popestimate2005
    (1 missing value generated)

143 . gen police_budget_pc = Police / popestimate2005
    (1 missing value generated)

144 . gen fines_forfeitures_pc = FinesandForfeitures / popestimate2005
    (1 missing value generated)

145 .
146 . * Compute correlation and display it
147 . corr police_budget_pc fines_forfeitures_pc
    (obs=350)

```

	police~c fines_~c	
police_bud~c	1.0000	
fines_forf~c	0.2932	1.0000

```

148 .
149 . * Run regression to get the line equation
150 . regress fines_forfeitures_pc police_budget_pc

```

Source	SS	df	MS	Number of obs	=	350
Model	2524.61646	1	2524.61646	F(1, 348)	=	32.74
Residual	26835.1223	348	77.1124203	Prob > F	=	0.0000
				R-squared	=	0.0860
				Adj R-squared	=	0.0834
Total	29359.7387	349	84.1253259	Root MSE	=	8.7814

> —						
fines_forfeitu~c	Coefficient	Std. err.	t	P> t	[95% conf. interval	
> 1]						
> —						
police_budget_pc	.0313118	.0054723	5.72	0.000	.0205488	.04207
> 48						
_cons	-.2950592	.9064344	-0.33	0.745	-2.077838	1.487
> 72						
> —						

```

151 .
152 . * Scatter plot with a fitted regression line and correlation coefficient displ
    > ayed
153 . twoway (scatter fines_forfeitures_pc police_budget_pc) ///
    >      (lfit fines_forfeitures_pc police_budget_pc), ///
    >      title("Regression of Fines & Forfeitures Per Capita on Police Budget Pe
    > r Capita") ///
    >      xlabel(, grid) ylabel(, grid) ///
    >      legend(off) note("Positive Correlation of +.293")

154 .
155 .
156 .
157 . *(4)
158 .
159 . use "C:\Users\jonni\Downloads\TrafficCitations2001.dta", clear

160 .
161 . describe

```

Contains data from **C:\Users\jonni\Downloads\TrafficCitations2001.dta**

Observations: **68,357**

Variables: **15**

8 Jun 2021 15:49

Variable name	Storage type	Display format	Value label	Variable label
officercode	double	%18.0g		Officer code
statepol	byte	%9.0g		State trooper
dor_code	float	%8.0g		Department of Revenue code
locate2	str21	%21s		Municipality where citation issued
nowarn	byte	%9.0g		Driver fined
amount	int	%8.0g		Fine amount
mphover	byte	%8.0g		MPH over the speed limit
cdl2	byte	%9.0g		Commercial driver license
outstate	byte	%9.0g		Driver from out of state
outtown	byte	%9.0g		Driver from out of town
courtdistance	float	%9.0g		Distance to court
age	byte	%8.0g		Age imputed from year of birth, and date of the citation
sex	str1	%1s		F for female, M for male
black	byte	%8.0g		Black
hispanic	byte	%8.0g		Hispanic

Sorted by:

```

162 .
163 . rename locate2 Municipality

164 .
165 . describe

```

Contains data from C:\Users\jonni\Downloads\TrafficCitations2001.dta

Observations: 68,357

Variables: 15

8 Jun 2021 15:49

Variable name	Storage type	Display format	Value label	Variable label
officercode	double	%18.0g		Officer code
statepol	byte	%9.0g		State trooper
dor_code	float	%8.0g		Department of Revenue code
Municipality	str21	%21s		Municipality where citation issued
nowarn	byte	%9.0g		Driver fined
amount	int	%8.0g		Fine amount
mphover	byte	%8.0g		MPH over the speed limit
cdl2	byte	%9.0g		Commercial driver license
outstate	byte	%9.0g		Driver from out of state
outtown	byte	%9.0g		Driver from out of town
courtdistance	float	%9.0g		Distance to court
age	byte	%8.0g		Age imputed from year of birth, and date of the citation
sex	str1	%1s		F for female, M for male
black	byte	%8.0g		Black
hispanic	byte	%8.0g		Hispanic

Sorted by:

Note: Dataset has changed since last saved.

```

166 .
167 . save "C:\Users\jonni\Downloads\TrafficCitations2001.dta(2)",replace
    file C:\Users\jonni\Downloads\TrafficCitations2001.dta(2) saved as .dta format

168 .
169 . use "C:\Users\jonni\Downloads\TrafficCitations2001.dta(2)", clear

170 .
171 . * merge m:1 "C:\Users\jonni\Downloads\Replication Project\MUN and POP.dta"
172 .
173 . use "C:\Users\jonni\OneDrive\Documents\MUN, POP, and Fines.dta"

174 .
175 . save "C:\Users\jonni\OneDrive\Documents\MUN, POP, and Fines.dta",replace
    file C:\Users\jonni\OneDrive\Documents\MUN, POP, and Fines.dta saved

176 .
177 . * Now perform the problem
178 .
179 . use "C:\Users\jonni\OneDrive\Documents\MUN, POP, and Fines.dta"

180 .
181 . *I used revenue because it highly correlates with income, .6 to .9 correlation
182 .

```

```
183 . gen federal_revenue_pc = FederalRevenue / poestimate2005
    (99 missing values generated)
```

```
184 .
185 . save "MUN_POP_Fines_with_FedRevPC.dta", replace
    file MUN_POP_Fines_with_FedRevPC.dta saved
```

```
186 .
187 . * First 25th percentile and down(lower income)
188 .
189 . use "MUN_POP_Fines_with_FedRevPC.dta", clear
```

```
190 .
191 . * Calculate the 25th percentile of federal_revenue_pc
192 . sum federal_revenue_pc, detail
```

federal_revenue_pc				
Percentiles		Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	68,268
25%	0	0	Sum of wgt.	68,268
50%	0			
		Largest	Mean	6.744312
75%	3.928485	411.4178	Std. dev.	31.75556
90%	18.2836	411.4178	Variance	1008.416
95%	28.03545	411.4178	Skewness	11.51326
99%	62.76878	411.4178	Kurtosis	145.2955

```
193 . local p25 = r(p25)
```

```
194 .
195 . * Keep only observations where federal_revenue_pc is BELOW the 25th percentile
196 . keep if federal_revenue_pc <= `p25'
    (22,672 observations deleted)
```

```
197 .
198 . * Generate histogram for amount
199 . histogram amount, percent title("Histogram of Amount (Below 25th Percentile, L
    > ow Income)")
    (bin=43, start=3, width=16.790698)
```

```
200 .
201 .
202 . * Test for unimodality
203 .
204 . * Next 75th percentile and up(higher income)
205 .
206 . use "MUN_POP_Fines_with_FedRevPC.dta",clear
```

```

207 .
208 . * Calculate the 75th percentile of federal_revenue_pc
209 . sum federal_revenue_pc, detail

```

federal_revenue_pc				
	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	68,268
25%	0	0	Sum of wgt.	68,268
50%	0		Mean	6.744312
		Largest	Std. dev.	31.75556
75%	3.928485	411.4178		
90%	18.2836	411.4178	Variance	1008.416
95%	28.03545	411.4178	Skewness	11.51326
99%	62.76878	411.4178	Kurtosis	145.2955

```

210 . local p75 = r(p75)

211 .
212 . * Keep only observations where federal_revenue_pc is above the 75th percentile
213 . keep if federal_revenue_pc > `p75'
    (51,669 observations deleted)

214 .
215 . * Generate histogram for amount
216 . histogram amount, percent title("Histogram of Amount (Above 75th Percentile, H
    > igh Income)")
    (bin=39, start=7, width=13.282051)

217 .
218 . * Test for unimodality
219 .
220 .
221 . *(5)
222 .
223 . use "C:\Users\jonni\Downloads\TrafficCitations2001.dta", clear

224 .
225 . * Count the total number of unique officers
226 . quietly levelsof officercode, local(all_officers)

227 . local total_officers: word count `all_officers'

228 .
229 . * Count the number of officers who have made at least one stop outside their h
    > ome town
230 . gen ever_outtown = (outtown == 1)

```

```

231 . bysort officercode (ever_outtown): replace ever_outtown = ever_outtown[_N]
    (15,121 real changes made)

232 .
233 . quietly levelsof officercode if ever_outtown == 1, local(outtown_officers)

234 . local officers_with_outtown: word count `outtown_officers'

235 .
236 . * Calculate the percentage of officers who stopped a vehicle outside their hom
    > e town
237 . local percentage_outtown = (`officers_with_outtown' / `total_officers') * 100

238 .
239 . * Display the result
240 . display "Percentage of local officers with at least one stop outside their hom
    > e town: " `percentage_outtown'
    Percentage of local officers with at least one stop outside their home town: 91.
    > 67245

241 .
242 .
243 . *(6)
244 .
245 . use "C:\Users\jonni\Downloads\TrafficCitations2001.dta",clear

246 .
247 . * Create a new variable to indicate whether a ticket was issued
248 . gen ticketed = !missing(amount)

249 .
250 . * Compute probability of getting a ticket for local drivers
251 . sum ticketed if outtown == 0

```

Variable	Obs	Mean	Std. dev.	Min	Max
ticketed	15,551	.3107196	.4628031	0	1

```

252 . di "Local Ticket Probability: " r(mean) * 100
    Local Ticket Probability: 31.071957

```

```

253 .
254 . * Compute probability of getting a ticket for out-of-state drivers
255 . sum ticketed if outstate == 1

```

Variable	Obs	Mean	Std. dev.	Min	Max
ticketed	10,596	.6617592	.4731333	0	1

```

256 . di "Out-of-State Ticket Probability: " r(mean) * 100
    Out-of-State Ticket Probability: 66.175915

```

```

257 .
258 .
259 . * Compute average fine for cited local drivers
260 . sum amount if outtown == 0 & ticketed == 1

```

Variable	Obs	Mean	Std. dev.	Min	Max
amount	4,832	117.4901	57.0341	7	525

```

261 . di "Average Fine for Local Drivers: $" r(mean)
      Average Fine for Local Drivers: $117.49007

```

```

262 .
263 . * Compute average fine for cited out-of-state drivers
264 . sum amount if outstate == 1 & ticketed == 1

```

Variable	Obs	Mean	Std. dev.	Min	Max
amount	7,012	126.8398	54.84607	25	495

```

265 . di "Average Fine for Out-of-State Drivers: $" r(mean)
      Average Fine for Out-of-State Drivers: $126.83985

```

```

266 .
267 . *(7)
268 .
269 .
270 . * Load your dataset
271 . use "C:\Users\jonni\Downloads\Merged_Municipality_Data.dta",clear

```

```

272 .
273 . gen female = (sex == "F")

```

```

274 .
275 . * Generate summary statistics
276 .
277 . summarize amount nowarn outstate outtown courtdistance mphover popestimate2005
> black hispanic sex age statepol cdl2 female accemplp orloss01

```

Variable	Obs	Mean	Std. dev.	Min	Max
amount	31,674	122.0332	56.24517	3	725
nowarn	68,357	.4633615	.4986595	0	1
outstate	68,357	.1550097	.3619166	0	1
outtown	68,357	.7725032	.419219	0	1
courtdistance	68,306	58.92769	257.1379	5	5120.679
mphover	68,357	15.15779	5.083005	1	75
popestimate2005	68,268	31719.31	33080.21	80	178242
black	68,357	.0446041	.2064344	0	1
hispanic	68,357	.0349196	.1835776	0	1
sex	0				
age	68,357	35.46259	13.48696	12	98
statepol	68,357	.2694969	.4437017	0	1
cdl2	68,357	.0295361	.1693049	0	1
female	68,367	.3901297	.4877827	0	1
accemplp	11,955	.0366095	.0120067	.0134298	.0759184
orloss01	68,357	.0197346	.1390879	0	1

```

278 .
279 . use "C:\Users\jonni\Downloads\Merged_Municipality_Data.dta", clear

280 .
281 . gen female = (sex == "F")

282 .
283 . * Keep only rows where 'amount' is not missing
284 . drop if missing(amount)
      (36,693 observations deleted)

285 .
286 . * Verify the dataset now only includes relevant rows
287 .
288 . summarize amount nowarn outstate outtown courtdistance mphover popestimate2005
      > black hispanic sex age statepol cdl2 female acemplp orloss01

```

Variable	Obs	Mean	Std. dev.	Min	Max
amount	31,674	122.0332	56.24517	3	725
nowarn	31,674	1	0	1	1
outstate	31,674	.2213803	.4151825	0	1
outtown	31,674	.8474459	.3595629	0	1
courtdistance	31,642	73.61233	280.0897	5	5061.885
mphover	31,674	17.07906	5.790341	1	75
popesti~2005	31,606	32962.15	37586.21	235	178242
black	31,674	.0507356	.2194608	0	1
hispanic	31,674	.0469155	.2114611	0	1
sex	0				
age	31,674	33.44061	12.72899	12	98
statepol	31,674	.4449391	.4969669	0	1
cdl2	31,674	.0227947	.1492509	0	1
female	31,674	.3315338	.4707718	0	1
acemplp	6,700	.0337813	.0104022	.0134298	.0759184
orloss01	31,674	.0263307	.1601195	0	1

```

289 .
290 . *(8)
291 .
292 . * Load your dataset
293 .
294 . use "C:\Users\jonni\Downloads\Merged_Municipality_Data.dta",clear

295 .
296 . gen female = (sex == "F")

297 .
298 . * Generate summary statistics

```



```

299 .
300 . collapse (mean) amount nowarn outstate outtown courtdistance mphover popestima
> te2005 black hispanic age statepol cdl2 female accemplp orloss01, by(Municipal
> ity)

```

```

301 .
302 . summarize

```

Variable	Obs	Mean	Std. dev.	Min	Max
Municipality	0				
amount	336	121.4282	21.71826	62.5	225
nowarn	342	.5014019	.2484447	0	1
outstate	342	.1730789	.1572124	0	1
outtown	342	.8062295	.1477297	0	1
courtdista~e	342	57.40922	44.99832	5	296.1805
mphover	342	15.33678	2.265564	5	26
popesti~2005	350	16617.23	21590.45	80	178242
black	342	.0337695	.0362879	0	.3444181
hispanic	342	.03062	.0356504	0	.2162162
age	342	35.15384	3.764613	17	59.5
statepol	342	.2643299	.2850152	0	1
cdl2	342	.0341453	.035507	0	.3333333
female	352	.3574886	.12406	0	1
accemplp	26	.036018	.0143448	.0134298	.0759184
orloss01	342	.0321637	.1766933	0	1

```

303 .
304 .
305 . *(9)
306 .
307 . use "C:\Users\jonni\Downloads\Replication Project\Municipalities2001.dta", cle
> ar

```

```

308 .
309 . describe

```

Contains data from C:\Users\jonni\Downloads\Replication Project\Municipalities2001.dta

```

> 01.dta
Observations:      342
Variables:         7
8 Jun 2021 15:49

```

Variable name	Storage type	Display format	Value label	Variable label
dor_code	float	%8.0g		Department of Revenue code
locate2	str21	%21s		Municipality where citation issued
pop2001	long	%12.0g		Population in 2001
orloss01	byte	%9.0g		Override loss
pvalue	double	%14.0g		Property value amount
accemplp	float	%9.0g		Percent employees in hospitality industry
city2	str16	%16s		Court of jurisdiction

Sorted by: dor_code

```

310 .
311 . rename locate2 Municipality

312 .
313 . save "C:\Users\jonni\Downloads\Replication Project\Municipalities2001.dta(1)",
    > replace
    file C:\Users\jonni\Downloads\Replication Project\Municipalities2001.dta(1)
    saved as .dta format

314 .
315 . * merge m:1 "C:\Users\jonni\Downloads\Replication Project\MUN and POP.dta"
316 .
317 . use "C:\Users\jonni\Downloads\Merged_Municipality_Data.dta",clear

318 .
319 . * Generate dependent variable: 1 if citation issued, 0 if warning
320 . gen citation = (nowarn == 1)

321 .
322 . * Generate log-transformed variables
323 . gen log_age = log(age)
    (10 missing values generated)

324 .
325 . gen log_distance = log(courtdistance)
    (61 missing values generated)

326 .
327 . * Convert categorical variables
328 . gen female = (sex == "F") // 1 for female, 0 for male

329 .
330 . gen black_driver = (black == 1)

331 .
332 . gen hispanic_driver = (hispanic == 1)

333 .
334 . gen orloss01_outtown = orloss01 * outtown
    (10 missing values generated)

335 .
336 . gen orloss01_outstate = orloss01* outstate
    (10 missing values generated)

337 .
338 . gen orloss01_logdistance = orloss01* log_distance
    (61 missing values generated)

339 .
340 . * Generate interaction terms

```

```

341 . gen log_age_female = log_age * female
    (10 missing values generated)

342 .
343 . gen state_police = (statepol == 1)

344 . // 1 if state police issued ticket
345 . gen cdl = (cdl2 == 1)

346 . // 1 if driver has a commercial driver's license
347 .
348 . gen statepol_outtown = state_police * outtown
    (10 missing values generated)

349 .
350 . gen statepol_outstate = state_police * outstate
    (10 missing values generated)

351 .
352 . gen statepol_logdistance = state_police * log_distance
    (61 missing values generated)

353 .
354 . gen accemplp_out= accemplp * outtown
    (56,412 missing values generated)

355 .
356 . gen accemplp_os= accemplp* outstate
    (56,412 missing values generated)

357 .
358 . gen accemplp_log = accemplp* log_distance
    (56,420 missing values generated)

359 .
360 . gen log_mphover = log(mphover)
    (10 missing values generated)

361 .
362 . * Did not get property value
363 .
364 . save"MUN, POP, Fines and Variables.dta",replace
    file MUN, POP, Fines and Variables.dta saved

365 .
366 . use "MUN, POP, Fines and Variables.dta",replace

367 .
368 . gen citation_fixed = citation > 0

369 .

```

```

370 . probit citation_fixed outtown outstate log_distance black_driver hispanic_driv
> er log_age cdl statepol_outtown statepol_outstate statepol_logdistance log_age
> _female orloss01_outtown orloss01_outstate orloss01_logdistance log_mphover

```

```

Iteration 0: Log likelihood = -47161.331
Iteration 1: Log likelihood = -36709.715
Iteration 2: Log likelihood = -36635.993
Iteration 3: Log likelihood = -36635.974
Iteration 4: Log likelihood = -36635.974

```

Probit regression

```

Number of obs = 68,306
LR chi2(15) = 21050.71
Prob > chi2 = 0.0000
Pseudo R2 = 0.2232

```

Log likelihood = -36635.974

> _____		Coefficient	Std. err.	z	P> z	[95% conf. int	
> erval]							
> _____							
> outtown		.1920741	.0145786	13.18	0.000	.1635007	.2
> 206475							
> outstate		.3665316	.0243556	15.05	0.000	.3187956	.4
> 142676							
> log_distance		-.0503222	.0071573	-7.03	0.000	-.0643502	-.0
> 362942							
> black_driver		.0187977	.0261407	0.72	0.472	-.032437	.0
> 700325							
> hispanic_driver		.3445109	.029186	11.80	0.000	.2873075	.4
> 017144							
> log_age		-.3510981	.0143823	-24.41	0.000	-.3792868	-.3
> 229093							
> cdl		-.286034	.0322529	-8.87	0.000	-.3492485	-.2
> 228196							
> statepol_outtown		.4675001	.0366893	12.74	0.000	.3955903	.5
> 394099							
> statepol_outstate		-.253069	.0389672	-6.49	0.000	-.3294432	-.1
> 766947							
> statepol_logdistance		.2444853	.0121744	20.08	0.000	.2206239	.2
> 683467							
> log_age_female		-.0553477	.0031518	-17.56	0.000	-.0615251	-.0
> 491703							
> orloss01_outtown		.8654278	.094885	9.12	0.000	.6794566	1.
> 051399							
> orloss01_outstate		.0901368	.126858	0.71	0.477	-.1585003	.3
> 387739							
> orloss01_logdistance		-.1058172	.0349683	-3.03	0.002	-.1743538	-.0
> 372805							
> log_mphover		1.597595	.0184707	86.49	0.000	1.561394	1.
> 633797							
> _cons		-3.419803	.0730331	-46.83	0.000	-3.562945	-3
> .27666							
> _____							
>							

```

371 .
372 . *(10)
373 .
374 . * Load the dataset
375 . use "MUN, POP, Fines and Variables.dta", clear

376 .
377 . gen citation_fixed = citation > 0

378 .
379 . * Probit model for citation issuance (Column 1)
380 . probit nowarn outtown log_distance , robust

```

```

Iteration 0: Log pseudolikelihood = -47161.331
Iteration 1: Log pseudolikelihood = -45432.532
Iteration 2: Log pseudolikelihood = -45430.911
Iteration 3: Log pseudolikelihood = -45430.911

```

Probit regression

Number of obs = 68,306

Wald chi2(2) = 3083.59

Prob > chi2 = 0.0000

Pseudo R2 = 0.0367

Log pseudolikelihood = -45430.911

nowarn	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
outtown	.3298657	.0128793	25.61	0.000	.3046228	.3551085
log_distance	.1698326	.0047625	35.66	0.000	.1604983	.1791669
_cons	-.7959833	.0135133	-58.90	0.000	-.822469	-.7694977

```

381 .
382 . probit citation_fixed outtown outstate log_distance black_driver hispanic_driv
> er log_age cdl statepol_outtown statepol_outstate statepol_logdistance log_age
> _female orloss01_outtown orloss01_outstate orloss01_logdistance log_mphover

```

```

Iteration 0: Log likelihood = -47161.331
Iteration 1: Log likelihood = -36709.715
Iteration 2: Log likelihood = -36635.993
Iteration 3: Log likelihood = -36635.974
Iteration 4: Log likelihood = -36635.974

```

Probit regression

Number of obs = 68,306

LR chi2(15) = 21050.71

Prob > chi2 = 0.0000

Pseudo R2 = 0.2232

Log likelihood = -36635.974

> _____		Coefficient	Std. err.	z	P> z	[95% conf. int	
> erval]							
> _____							
outtown		.1920741	.0145786	13.18	0.000	.1635007	.2
> 206475	outstate	.3665316	.0243556	15.05	0.000	.3187956	.4
> 142676	log_distance	-.0503222	.0071573	-7.03	0.000	-.0643502	-.0
> 362942	black_driver	.0187977	.0261407	0.72	0.472	-.032437	.0
> 700325	hispanic_driver	.3445109	.029186	11.80	0.000	.2873075	.4

```

> 017144
      log_age | -.3510981 .0143823 -24.41 0.000 -.3792868 -.3
> 229093
      cdl | -.286034 .0322529 -8.87 0.000 -.3492485 -.2
> 228196
      statepol_outtown | .4675001 .0366893 12.74 0.000 .3955903 .5
> 394099
      statepol_outstate | -.253069 .0389672 -6.49 0.000 -.3294432 -.1
> 766947
      statepol_logdistance | .2444853 .0121744 20.08 0.000 .2206239 .2
> 683467
      log_age_female | -.0553477 .0031518 -17.56 0.000 -.0615251 -.0
> 491703
      orloss01_outtown | .8654278 .094885 9.12 0.000 .6794566 1.
> 051399
      orloss01_outstate | .0901368 .126858 0.71 0.477 -.1585003 .3
> 387739
      orloss01_logdistance | -.1058172 .0349683 -3.03 0.002 -.1743538 -.0
> 372805
      log_mphover | 1.597595 .0184707 86.49 0.000 1.561394 1.
> 633797
      _cons | -3.419803 .0730331 -46.83 0.000 -3.562945 -3
> .27666

```

```
> _____
```

383 .

384 . margins, dydx(*) post

Average marginal effects
Model VCE: OIM

Number of obs = 68,306

Expression: Pr(citation_fixed), predict()

dy/dx wrt: outtown outstate log_distance black_driver hispanic_driver log_age
cdl statepol_outtown statepol_outstate statepol_logdistance
log_age_female orloss01_outtown orloss01_outstate
orloss01_logdistance log_mphover

```

> _____
      dy/dx      Delta-method
      dy/dx      std. err.      z      P>|z|      [95% conf. int]
> erval]
> _____
      outtown | .0585542 .0044278 13.22 0.000 .0498759 .0
> 672325
      outstate | .1117379 .0073875 15.13 0.000 .0972587 .1
> 262172
      log_distance | -.0153408 .0021795 -7.04 0.000 -.0196126 -.
> 011069
      black_driver | .0057305 .0079689 0.72 0.472 -.0098883 .0
> 213493
      hispanic_driver | .1050248 .0088724 11.84 0.000 .0876352 .1
> 224145
      log_age | -.1070329 .0043294 -24.72 0.000 -.1155185 -.0
> 985474
      cdl | -.0871981 .0098162 -8.88 0.000 -.1064374 -.0
> 679587
      statepol_outtown | .1425183 .0111394 12.79 0.000 .1206856 .1
> 643511
      statepol_outstate | -.0771486 .0118667 -6.50 0.000 -.1004069 -.0
> 538903

```

statepol_logdistance		.0745318	.0036849	20.23	0.000	.0673095	.0
> 817542							
log_age_female		-.0168728	.0009547	-17.67	0.000	-.018744	-.0
> 150017							
orloss01_outtown		.2638274	.0288769	9.14	0.000	.2072297	.3
> 204251							
orloss01_outstate		.0274784	.0386727	0.71	0.477	-.0483187	.1
> 032754							
orloss01_logdistance		-.0322586	.0106582	-3.03	0.002	-.0531483	-.0
> 113688							
log_mphover		.4870302	.004748	102.58	0.000	.4777243	.4
> 963361							

> _____

```

385 .
386 . *(11)
387 .
388 . use "MUN, POP, Fines and Variables.dta", clear

389 .
390 . gen intown = 1 - outtown
    (10 missing values generated)

391 . gen citation_fixed = citation > 0

392 .
393 . gen town_size = .
    (68,367 missing values generated)

394 . replace town_size = 1 if popestimate2005 <= 5000
    (5,460 real changes made)

395 . replace town_size = 2 if popestimate2005 > 5000 & popestimate2005 <= 20000
    (26,024 real changes made)

396 . replace town_size = 3 if popestimate2005 > 20000 & popestimate2005 <= 50000
    (24,175 real changes made)

397 . replace town_size = 4 if popestimate2005 > 50000 & popestimate2005 <= 100000
    (9,877 real changes made)

398 . replace town_size = 5 if popestimate2005 > 100000
    (2,831 real changes made)

399 .
400 . gen townsize1_intown = (town_size == 1) * intown
    (10 missing values generated)

401 . gen townsize2_intown = (town_size == 2) * intown
    (10 missing values generated)

```

```
402 . gen townsize3_intown = (town_size == 3) * intown
    (10 missing values generated)
```

```
403 . gen townsize4_intown = (town_size == 4) * intown
    (10 missing values generated)
```

```
404 .
405 . areg citation_fixed intown townsize1_intown townsize2_intown townsize3_intown
    > townsize4_intown ///
    > outstate log_distance log_age_female orloss01_outtown orloss01_outstate or
    > loss01_logdistance log_mphover, absorb(Municipality) cluster(Municipality)
```

Linear regression, absorbing indicators	Number of obs	=	68,306
Absorbed variable: Municipality	No. of categories	=	342
	F(12, 341)	=	120.13
	Prob > F	=	0.0000
	R-squared	=	0.3523
	Adj R-squared	=	0.3489
	Root MSE	=	0.4024

(Std. err. adjusted for 342 clusters in Municipality)

```
> ality)
```

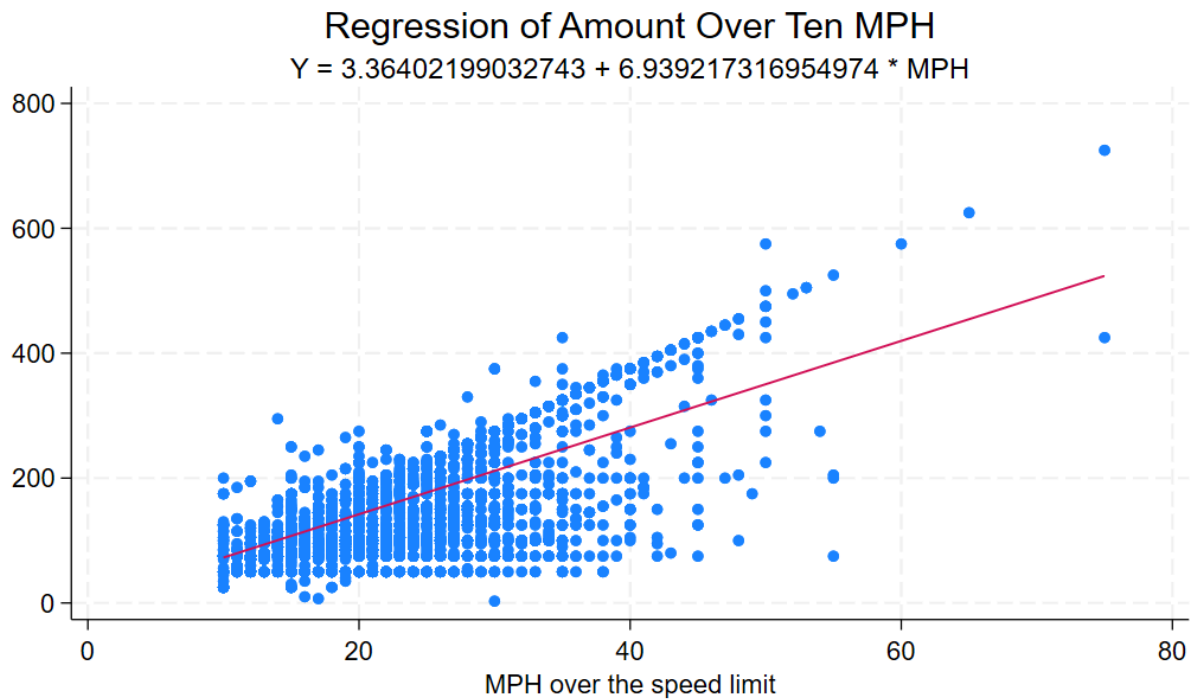
	Coefficient	Robust std. err.	t	P> t	[95% conf. int	
> _____						
citation_fixed						
> erval]						
> _____						
intown	-.0024127	.0341326	-0.07	0.944	-.0695496	.0
> 647242						
townsize1_intown	-.096721	.0468284	-2.07	0.040	-.1888299	-.0
> 046121						
townsize2_intown	-.1201648	.0378236	-3.18	0.002	-.1945618	-.0
> 457679						
townsize3_intown	-.0830405	.0382586	-2.17	0.031	-.1582932	-.0
> 077879						
townsize4_intown	-.0672959	.0408781	-1.65	0.101	-.1477008	.0
> 131091						
outstate	.0546988	.0093581	5.85	0.000	.0362919	.0
> 731056						
log_distance	.0272459	.0040478	6.73	0.000	.0192841	.0
> 352077						
log_age_female	-.0207588	.0012501	-16.61	0.000	-.0232176	-.0
> 182999						
orloss01_outtown	.1663175	.0846934	1.96	0.050	-.0002697	.3
> 329047						
orloss01_outstate	.0024327	.0404699	0.06	0.952	-.0771693	.0
> 820348						
orloss01_logdistance	-.0066184	.0130681	-0.51	0.613	-.0323226	.0
> 190858						
log_mphover	.4636513	.0187229	24.76	0.000	.4268244	.5
> 004783						
_cons	-.8066823	.0502192	-16.06	0.000	-.9054607	-.7
> 079038						
> _____						


```
406 .
407 . outreg2 using table5_results.doc, replace ctitle("Table 5 - Municipality Fixed
> Effects") dec(3)
table5_results.doc
dir : seeout

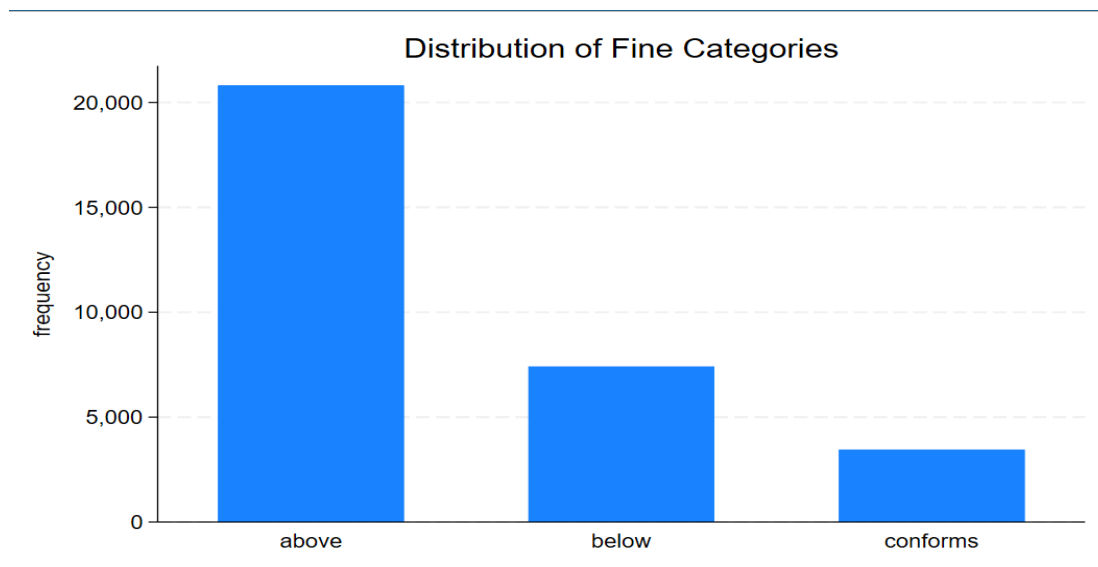
408 .
409 .
410 . *(12)
411 .
412 . * I send a seperate pdf for this, this is just a Summary*
413 .
414 . log close
      name: <unnamed>
      log: C:\Users\jonni\Downloads\Jonathan Rius_ECON644_Replication Project
> Draft_.smcl
      log type: smcl
      closed on: 17 Feb 2025, 10:47:52
```

Note: Charts available in the Log file

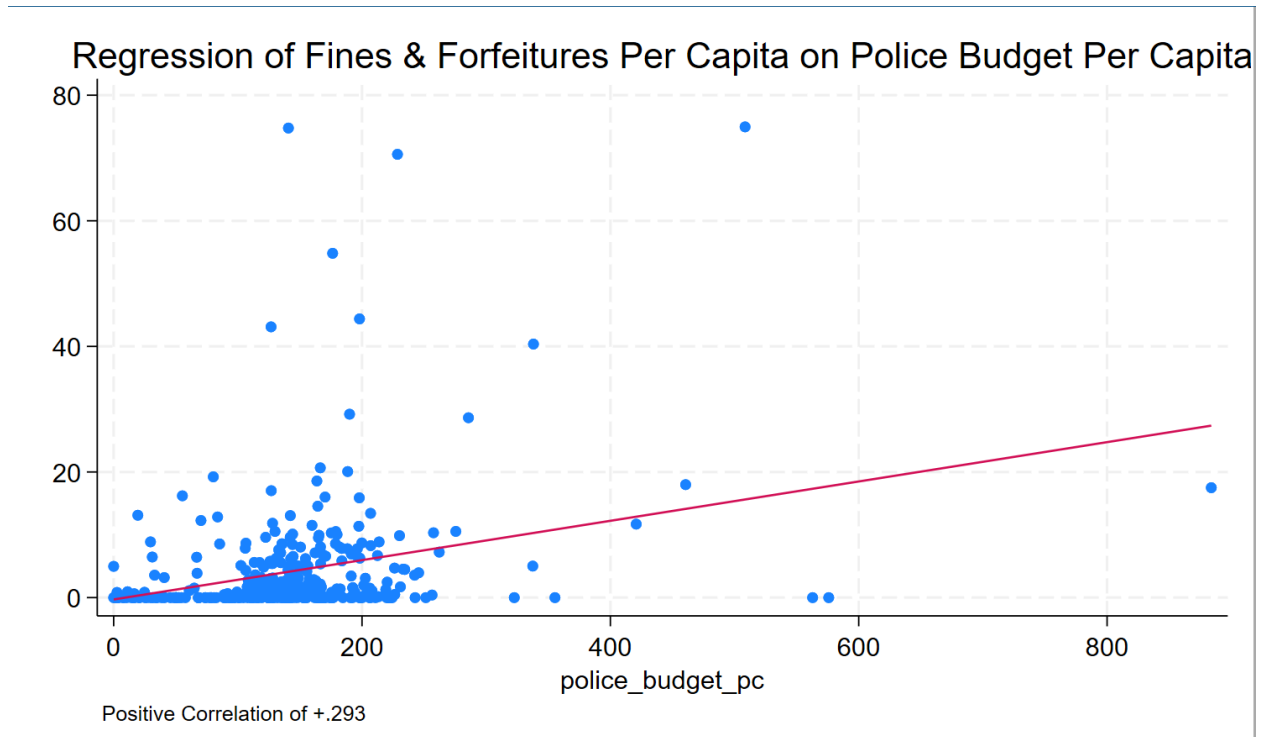
Problem 1



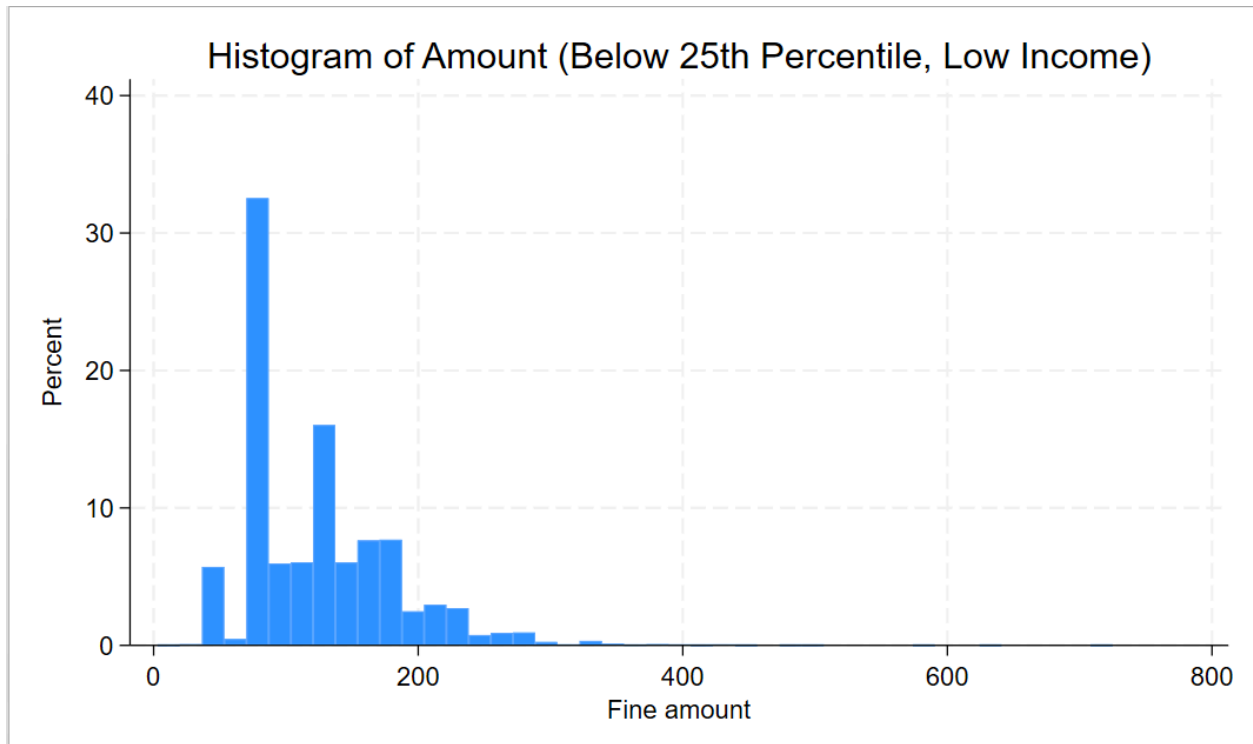
Problem 2



Problem 3



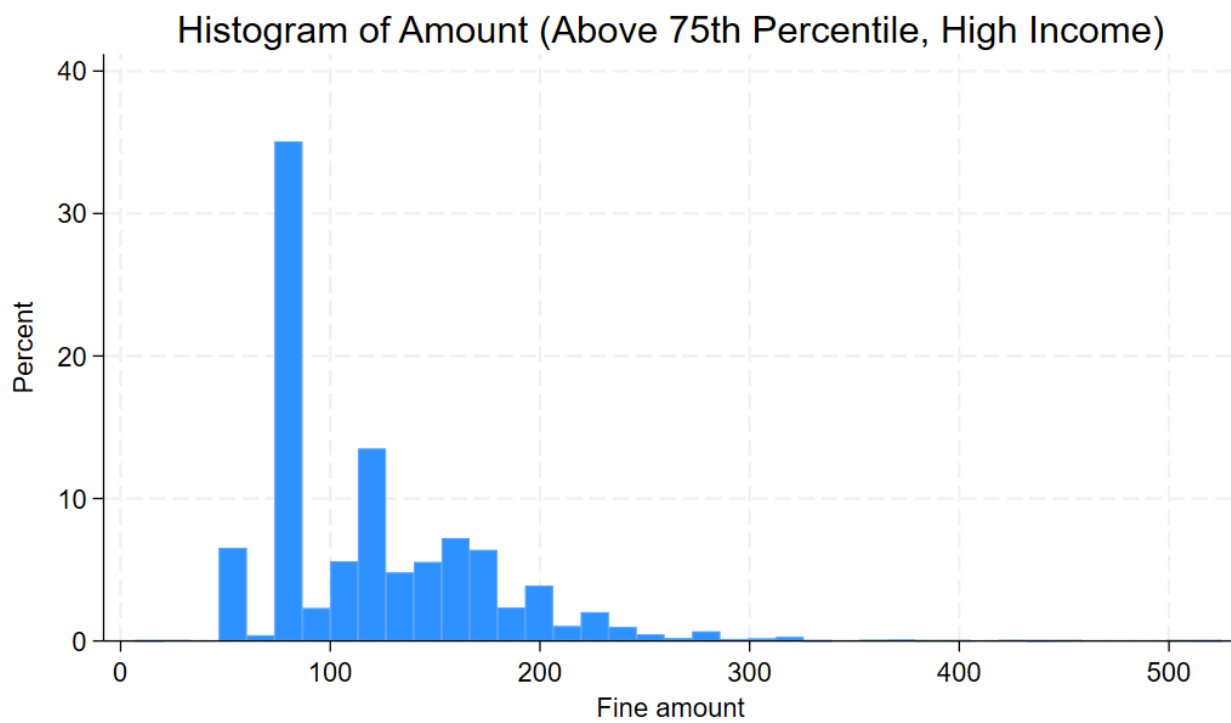
Problem 4



Diptest

n	dip
19956	0.0561

Low= Unimodal



Diptest

n	dip
8561	0.0570

Low= Unimodal

Research Question | Hypotheses

The research question is stated in the first paragraph, *“Can speeding tickets be explained solely by a driver’s excessive speed, or could they be seen as serving as supplemental local revenue, or reflecting officer preferences?”*

It hypothesizes that police officers;

1. May be agents of the state government, maximizing state revenues and targeting non- voters
2. Have personal preferences, such as targeting out of state drivers (due to their higher opportunity cost of going to court, many don’t go the court distance is too long ultimately generating more revenue for the state)

Data | Statistical Methods

The study uses data on all speeding traffic stops in Massachusetts over a two-month period in 2001. All citations, tickets, and warnings are issued using the same form, the Massachusetts Uniform Citation, for reference. The data include driver characteristics, location of stops, and information on municipal fiscal things, which allows for an analysis of both local and state police behavior. Particularly on citation behavior within the officer data.

Sample of Econometric Models

- Probit and Random Effects Probit Models: To estimate the probability of receiving a fine versus a warning.(Table 2A)
- Fixed Effects Models: A linear probability model with officer fixed effects
- Heckman Selection Models: “The Heckman model allows for a correlation of the error terms in equations (2) and (3)” Uses two multivariate models to model the determinants of the speeding amount

$$Cite_{ijk} = \beta_0 + \beta_2 Fiscal_j + \beta_3 DriverX_{ij} + Officer_k + \varepsilon_{ijk}.$$

-

Model used to test the hypothesis that drivers further away from the courthouse don’t challenge fines, and receive more tickets therefore generating more revenue from the state

Main Findings

Both hypotheses were proven, “Miles per hour in excess of the speed limit is not the sole determinant of whether an individual is fined; nor does it determine the dollar amount of the fine.”It goes on to state; the probability and dollar amount of speeding fines are negatively correlated with local tax revenues, out-of-town and out-of-state drivers are more likely to be fined, the distance from the driver’s residence to the court of jurisdiction positively affects the likelihood and amount of the fines, and there is some evidence of racial and gender disparities in ticket issuance, like the hispanic race which was mentioned in the study as receiving more fines than other races, for example.

Overall officers do have bias in citation submissions, with race, gender, out of town receivers and many more variables.