

SUPPLEMENTAL MATERIALS

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This supplement provides a “worked” example exploring some features of on-site assessments in a data file available through the Inter-university Consortium for Political and Social Research (ICPSR) at the University of Michigan. The file analyzed here is just one of several available for the specific study. Moreover, here I just analyze some specific variables in the targeted data file. The analysis illustrates the use of multilevel models.

APPENDIX A: STUDY CONTEXT

This chapter uses an ICPSR data set from Minneapolis St. Paul (McPherson et al., 2006). The original researchers were scholars at the Minnesota Crime Prevention Center. In the late 1970s, Marlys McPherson and Glenn Silloway received funding from the agency that later became the National Institute of Justice, to understand the roles of small commercial centers in neighborhood life, and how those centers affected and were affected by crime, disorder, informal control, and related matters like reactions to crime (McPherson & Silloway, 1986; McPherson et al., 2006). Those data were archived at the Interuniversity Consortium for Political and Social Research at the University of Michigan (icpsr.umich.edu). In the mid-1990s I received funding from the National Institute of Justice to re-analyze their data, and re-archived a number of their original data sets, also at ICPSR (Taylor, 2006). ICPSR also has made available on their site the final grant report that contains details of my analyses examining issues of crime, reactions to crime, and incivilities.¹ That report describes details of the study context.

Behavioral Observation Data File

The behavioral observation file is in the folder DS0002. The original researchers sampled 24 small commercial centers (SCCs) spread across both Minneapolis and St. Paul from a larger set of SCCS where they had collected land use, business and crime information. As I explain in my final report of the re-analyses (Taylor, 1996: 7; also available on the NCJRS website <https://www.ncjrs.gov/pdffiles1/nij/grants/179972.pdf>):

Researchers conducted extensive behavioral observations over several weeks [of one

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summer, either 1981 or 1982] in each SCC, classifying users by age, sex, race, and type of activity. The observations allow us to construct measures of social incivilities such as people hanging out. The observation times included weekday mornings (15% persons observed), weekday noon times (19% persons observed), weekday afternoons (17% persons observed), weekday rush hours (21% persons observed), Saturday mid days (20% persons observed) and a Friday or Saturday night starting around 10 PM (8% persons observed). In total, 7110 persons were counted in the 24 centers. Each center was visited for at least 48 and no more than 50 different observations during the summer period.

Observation and Coding Instructions

A section of a page from the use pattern observation form used by the Minneapolis researchers appears in Figure 1. This document appears in the ICPSR documentation that is part of the original study (Mcpherson et al., 2006: 231). Instructions on how to code and how to use the coding form appear there as well under the heading “use pattern observation schedule instructions” (Mcpherson et al., 2006: 251-259). Coding instructions like these are necessary to standardize data collection for on-site assessments. What is seen here is the final set of instructions. Typically, in a research project, an initial set of field instructions will be supplemented as the observation progresses, and unanticipated issues arise. From these instructions we learn:

- Each observation lasted about 15 minutes.
- The size of some of the centers required segmenting them into specific zones, and assigning one observer to each zone.
- Upon first arriving and beginning the observation, “the observer will begin coding by marking down all persons were in the center in a public space (not in a store) when the coding period begins. From that point on, s/he will code only those persons who arrive in his/her zone from outside the commercial center” (251).
- “Pedestrians should be tracked long enough to ensure placement into the most appropriate activity category. For example, if someone at first sight appears to be passing through, they must be visually followed until the coder is satisfied business was not entered” (251).

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- “When two or more individuals have arrived at the center, meet upon arrival in the center, or otherwise appear to be together, record the number and the group on the line opposite the first person in the group. Consecutive rows on the coding sheet are to be used to record all information about each individual member of the group” (251).
- “For each individual record use one activity described below which best describes the nature of their behavior while in the commercial center. Record only those who are pedestrians and not those who, for example, accompany others but remain in an automobile” (252).
- An individual was classified as using a business or service if he/she was “observed to enter a business service or other commercial establishment... Record only those who enter not those who exit. Included in this category those who are in the center to specifically use a public telephone or mail box” (252).

Researchers did not report inter-rater reliability of their observations. Given the complexity of the observation undertaking – recording over four dozen observations for each of 24 separate locations, some of which required multiple observers responsible for specific zones within a center – the lack of that information is understandable. One could, however, if one wished, treat multiple observations made at one center at the same-time-of-day-and-time-of-week as indicators of test-retest reliability of certain features of the behavioral profile of a center.

Where/how that might fit into one’s study purposes would depend.

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Record type 6 INTERSECTION (Stage II) 3 Page 1

ZONE CODE # 7 DATE DAY OF WEEK WEATHER

TIME CODE # 8 TIME START TIME STOP OBSERVER

Nth Person	9-10 Observed	11 SEX	12 RACE						13	14 LIFE STAGE				15 PRIMARY ACTIVITY						16-17 BUSINESS USE						18 POT. PROB. BEH.						
			0	1	2	3	4	5		6	0	1	2	3	0	1	2	3	4	5	6	0	1	2	3	4	5	6	0	1		
		M	F	WHITE	BLACK	HISPANIC	AM. INDIAN	ASIAN	OTHER	UNKNOWN	CHILD	TEEN	ADULT	SENIOR	BIZ/SERVICE	STATIONARY	WORKING	PASSING THRU	BUS STOP	DRIVE-UP USE	OTHER	GROCERY/7-11	RESTAURANT	BAR/LIQUOR	BANK	DRUG STORE	OTHER	COMMENT	NO	YES		
1																																
2																																
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																

Figure 1 Portion of coding sheet for behavioral observation. Source: (Mcpherson et al., 2006)

Although it is not discussed further here, the Minnesota Crime Prevention Center researchers also visited each SCC to record what businesses where there, to classify them, and to note business hours, two physical incivilities, and defensive modifications. The coding sheet they used appears in Figure 2. It is possible to link these economic and physical features with the observed patterns of pedestrians. That is not done here.

COMMERCIAL AREA OBSERVATION INSTRUMENT (Stage II)

Residential/Commercial Area I.D. Number _____ Area Intersection _____

Time _____ Date _____ Day of Week _____

Observer _____ Weather _____

Business Classification		Use Patterns	Condition		Defensive Modifications			
Type	Code #	Business Hours	Graffiti	Litter	Access Barriers	Alarm System & Warn.	Other Warning Stickers	Other
1.								
2.								
3.								
4.								
5.								
6.								

Figure 2 On site assessment coding form for businesses in sampled small commercial centers, business hours, assessed incivilities, and “defensive modifications.”

References

- Chambers, J. M., Cleveland, W. S., Kleiner, B., & Tukey, P. A. (1983). *Graphical methods for data analysis*. Belmont/Boston: Wadsworth/Duxbury.
- Hamilton, L. C. (1992). *Regression with graphics*. Pacific Grove, Calif.: Brooks/Cole.
- McPherson, M., & Silloway, G. (1986). The Role of the small commercial center in the urban neighborhood. In R. B. Taylor (Ed.), *Urban neighborhoods: Research and policy* (pp. 144-180). New York: Praeger.
- McPherson, M., Silloway, G., & Frey, D. (2006). *Crime, Fear, and Control in Neighborhood Commercial Centers: Minneapolis and St. Paul, 1970-1982*. University of Michigan: Inter-university Consortium for Political and Social Research [distributor]
- Taylor, R. B. (1996). *Responses to disorder: Relative impacts of neighborhood structure, crime and physical deterioration on residents and business personnel. Final Report (Grant 94-IJ-CX-0018, National Institute of Justice)*. Department of Criminal Justice, Temple University. [ONLINE: <https://www.ncjrs.gov/pdffiles1/nij/grants/179972.pdf>; accessed 6/22/2010].
- Taylor, R. B. (2006). *Impact of Neighborhood Structure, Crime, and Physical Deterioration on Residents and Business Personnel in Minneapolis-St. Paul, 1970-1982*. University of

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Michigan: Inter-university Consortium for Political and Social Research [distributor]

APPENDIX B: DO FILE: DATA PROCESSING AND RESULTS

```

1  * groff_handbook_2020_multilevel_006_REVISIED
2  * BRINGS IN ORIGINAL DATA FILE
3  * DOES BASIC FILE PROCESSING
4  * GENERATES VARIABLES AND RUNS FOR MULTILEVEL CHAPTER
5  *****
6  * SET UP COMMANDS - START
7  clear all
8  macro drop _all
9  set autotabgraphs on
10 set more off
11 capture log close _all
12 set linesize 150
13 translator set smcl2pdf tmargin 0.3
14 translator set smcl2pdf bmargin 0.3
15 translator set smcl2pdf rmargin 0.3
16 translator set smcl2pdf lmargin 0.5
17 translator set smcl2pdf fontsize 7
18 cls
19 * SET UP COMMANDS - END
20 *****
21 * Setting working directory and starting log file
22 cd "C:\PCW5\groff_2020\ICPSR_02371\DS0002"
23 log using groff_handbook_2020_multilevel_006_REVISIED.log, replace
24 cd "C:\PCW5\groff_2020\ICPSR_02371\DS0002"
25 *****
26
27
28 *****
29 *  FIXING MISSING VALUES IN ORIGINAL ICPSR DATA FILE AFTE CONVERTING TO STATA
30 *  START
31 *****
32 *  bring in beh obs data file
33 clear all
34 use "C:\PCW5\groff_2020\ICPSR_02371\DS0002\MSP_BEH_OBS_DS0002.dta"
35
36 tolower CENTERCO-MAXGROUP
37
38 describe
39 summ
40
41 * cleaning up missing values
42
43 recode ntpersn(99=.)
44 tab ntpersn, missing
45
46 recode grpssize (99=.)
47 tab grpssize, missing
48
49 tab1 sex-bususe1, missing
50 tab1 sex-bususe1, missing nolabel
51
52 recode sex-bususe1 (9=.)
53 tab1 sex-bususe1, missing
54
55 * saving file with missing values fixed
56 save msp_beh_obs_v_bb.dta, replace
57
58 *****
59 *  FIXING MISSING VALUES IN ORIGINAL ICPSR DATA FILE AFTE CONVERTING TO STATA
60 *  END
61 *****
62
63 *****

```

```

64 * bringing in the file that already has missing values fixed
65 * additional data processing
66 * BEGIN
67 *****
68 clear all
69 use msp_beh_obs_v_bb.dta
70
71 summ
72 describe
73
74 ***
75 * make a white dummy variable
76 gen whitedum=0
77 replace whitedum=1 if(race==0)
78 replace whitedum=. if(race==.)
79 tab whitedum race, missing
80 label var whitedum "1 = white pedestrian 0 = other"
81
82 ***
83 * make a kid or teen pedestrian dummy variable
84 gen kidrteen=0
85 replace kidrteen=1 if(age<=1)
86 replace kidrteen=1 if age==.
87 tab kidrteen age, missing nolabel
88 label var kidrteen "1 = kid or teen 0 = other"
89
90 ***
91 * looking at the raw relationship
92 * in table form
93 tab primbiz kidrteen, col lrchi
94
95 ***
96 * some additional variables
97
98 * centerco is the place variable - level 2 identifier
99 * going to sort on that
100 sort centerco
101
102 * create a kidrteen variable that is just the commercial center averages
103 * this is just the level 2 variation in this predictor
104 by centerco: egen x_kidrteen=mean(kidrteen)
105 label var x_kidrteen "SCC level proportion kid/teen pedestrians"
106
107 ***
108 * creating a centered version of x_kidrteen
109 center x_kidrteen
110 label var c_x_kidrteen "overall centered version of SCC means on kidrteen"
111
112 * create a curvilinear component of ecological kidrteen
113 gen sq_x_kidrteen=c_x_kidrteen*c_x_kidrteen
114 label var sq_x_kidrteen "squared proportion teens at SCC level"
115 corr sq_x_kidrteen c_x_kidrteen
116 graph twoway (scatter sq_x_kidrteen c_x_kidrteen) (lfit sq_x_kidrteen c_x_kidrteen)
117
118 * level 2 variation in the outcome
119 * creating a level 2 variable
120 by centerco: egen x_primbiz=mean(primbiz)
121 label var x_primbiz "SCC level proportion pedestrians using a business or service"
122
123 * create a kidrteen variable reflecting just within center variation
124 * this is just the level 1 variation in this predictor
125 by centerco: center kidrteen, gen(wi_kidrteen)
126 label var wi_kidrteen "within center variation kidrteen"

```

```

127
128 * do same for primbiz
129 * this is just the level 1 variation in this outcome
130 by centerco: center primbiz, gen(wi_primbiz)
131 label var wi_primbiz "within center variation primbiz"
132
133 ***
134 * look at descriptives for the two variables
135 * raw form level 2 form level 1 form
136 statsmat primbiz kidrteen x_primbiz x_kidrteen wi_primbiz wi_kidrteen, st(n min max mean sd)
137
138 ***
139 * save updated unit level file
140 save msp_beh_obs_v_dd.dta, replace
141
142 *****
143 * additional data processing
144 * END
145 *****
146
147 *****
148 * CREATING AN ECOLOGICAL FILE COLLAPSED TO THE SMALL COMMERCIAL CENTERS
149 * START
150 *****
151
152 collapse (mean) x_alone=alone x_whited=whitedum ///
153         x_prbiz=primbiz ///
154         x_child=child ///
155         x_teen=teen ///
156         x_kidrteen=kidrteen ///
157         (sd) sd_alone=alone sd_whited=whitedum ///
158         sd_prbiz=primbiz ///
159         , by(centerco)
160
161 label var x_prbiz "center mean proportion primarily business users"
162 label var x_child "center mean proportion children"
163 label var x_teen "center mean proportion teens"
164 label var x_kidrteen "center mean proportion teens or children"
165
166 * save collapsed file
167 save msp_beh_obs_v_dd_collapse.dta, replace
168
169 * add one more varuiabke to collapsed file and then re save
170 clear all
171 use msp_beh_obs_v_dd_collapse.dta, replace
172 * going to create a group mean centered version of * center level kidrteen
173 sort centerco
174 by centerco: center x_kidrteen
175 label var c_x_kidrteen "center level centered kidrteen - by commerical area"
176
177 * now create squared version of scc centered kidrteen
178 gen sq_kidrteen=c_x_kidrteen*c_x_kidrteen
179 label var sq_kidrteen "squared scc level centered kidrteen"
180 graph twoway scatter sq_kidrteen c_x_kidrteen
181
182 * save
183 save msp_beh_obs_v_ee_collapse.dta, replace
184
185 *****
186 * CREATING AN ECOLOGICAL FILE COLLAPSED TO THE SMALL COMMERCIAL CENTERS
187 * END
188 *****
189

```

```

190 *****
191 * merge collapsed SCC level file and unit level file
192 * START
193 *****
194 clear all
195 use msp_beh_obs_v_dd.dta
196 * do merge
197 merge m:1 centerco using msp_beh_obs_v_ee_collapse.dta
198
199 * save merged file
200 notes: v dd has center mean and sd variables on some things
201 save msp_beh_obs_v_ee.dta, replace
202
203 *****
204 * merge collapsed SCC level file and unit level file
205 * END
206 *****
207
208 *****
209 * looking at bivariate relationships
210 *   at both pedestrian and center level
211 *   between key predictor - child or teen pedestrian
212 *   and key outcome - primarily business user
213 * START
214 *****
215
216 * look at pedestrian level link between kidrteen and primbiz
217 clear all
218 use msp_beh_obs_v_ee.dta
219 tab primbiz kidrteen, col lrchi
220
221 * let's look at center level connection between kidrteen and primbiz
222 clear all
223 use msp_beh_obs_v_ee_collapse.dta, replace
224 sort x_kidrteen
225 list x_kidrteen centerco
226 tab centerco, nolabel
227 tab centerco
228 list x_kidrteen if(centerco!=990)
229
230 * level 2 SCC level relationship
231 * all SCCs
232 graph twoway (lowess x_prbiz x_kidrteen) || (scatter x_prbiz x_kidrteen) || (qfit x_prbiz x_kidrteen )
233 graph save x_prbiz_x_kidrteen.gph, replace
234
235 * same graph without 38th and 4th
236 graph twoway (lowess x_prbiz x_kidrteen) || (scatter x_prbiz x_kidrteen) || (qfit x_prbiz x_kidrteen )
   if(centerco!=990)
237 graph save x_prbiz_x_kidrteen_lt_minus_990.gph, replace
238
239 *****
240 * looking at bivariate relationships
241 *   at both pedestrian and center level
242 *   between key predictor - child or teen pedestrian
243 *   and key outcome - primarily business user
244 * END
245 *****
246
247 *****
248 *
249 *
250 *   ON TO THE MONOLEVEL AND MIXED MODELS
251 *

```

```

252 *
253 *****
254
255 *****
256 * descriptives
257 *   look at descriptives for the two variables
258 *   raw form level 2 form level 1 form
259 * begin
260 *****
261
262 clear all
263 use msp_beh_obs_v_ee.dta
264 statsmat primbiz kidrteen x_primbiz x_kidrteen wi_primbiz wi_kidrteen, st(n min max mean sd)
265
266 *****
267 * descriptives
268 *   look at descriptives for the two variables
269 *   raw form level 2 form level 1 form
270 * end
271 *****
272
273 *****
274 * ANOVA model
275 * begin
276 *****
277 ***
278 *       monolevel
279 logit primbiz , or
280
281 ***
282 *       mixed effects
283 melogit primbiz || centerco: , or
284
285 ***
286 * getting a measure of lack of fit
287 estat ic
288
289 ***
290 * getting proportion of outcome at level 2
291 estat icc
292
293 ***
294 * now predicting eb means for primbiz at commercial center level
295 predict pred_biz
296 label var pred_biz "eb_mean_predicted prim_biz"
297
298 ***
299 * graph eb means prim_biz versus center means
300 * shows eb adjustments
301 graph bar x_primbiz pred_biz, over(centerco, sort(1))
302 graph save bar_x_prim_biz_pred_biz.gph, replace
303 *
304 * went in and made adjustments to graph
305 *
306 * saved as revised
307 * appears in text
308 *
309 ***
310 * getting descriptive statistics on raw and EB adjusted means
311 summ x_primbiz pred_biz
312
313 ***
314 * saving the file

```

```

315 notes: v ee has predicted outcome score from anova
316 save msp_beh_obs_v_ee.dta, replace
317
318 *****
319 * ANOVA model
320 * end
321 *****
322
323 *****
324 * looking at effects of age mix on primarily business/service user
325 * begin
326 *****
327 ***
328 * plain logit monolevel
329 logit primbiz kidrteen, or
330
331 ***
332 * multilevel - raw variable
333 melogit primbiz kidrteen ||centerco: , or
334
335 ***
336 * multilevel - level 1 and level 2 impacts separated
337 melogit primbiz x_kidrteen wi_kidrteen ||centerco: , or
338
339 ***
340 * multilevel - level 1 and level 2 impacts separated
341 * linear and curvilinear impacts of level 2 kidrteen
342 melogit primbiz c_x_kidrteen sq_x_kidrteen wi_kidrteen ||centerco: , or
343 melogit primbiz c_x_kidrteen sq_x_kidrteen wi_kidrteen ||centerco: ,
344
345 *****
346 * looking at effects of age mix on primarily business/service user
347 * end
348 *****
349
350 *****
351 * now create a collapsed file with observed and eb mean scores at center level
352 * begin
353 *****
354
355 collapse (mean) primbiz pred_biz kidrteen ///
356 , by(centerco)
357
358 * save collapsed file
359 save msp_beh_obs_v_ff_collapsed.dta, replace
360 clear all
361 use msp_beh_obs_v_ff_collapsed.dta
362
363 *****
364 * now create a collapsed file with observed and eb mean scores at center level
365 * end
366 *****
367
368 *****
369 * further descriptive examinations
370 * begin
371 *****
372
373 ***
374 * list true means and eb adjusted means
375 sort primbiz
376 list centerco primbiz pred_biz
377

```

```
378 * looking at the level-2 relationship between young peds and biz peds.
379
380 graph twoway (lowess primbiz kidrteen) || (scatter primbiz kidrteen)|| (qfit primbiz kidrteen ) || (
  lfit primbiz kidrteen )
381 graph save x_prbiz_x_kidrteen.gph, replace
382
383 * worked on graph to create revised version
384
385 *****
386 * further descriptive examinations
387 * end
388 *****
389
390 log close
391 exit
392 *****
393
394
395
```

APPENDIX C: LOG FILE: RESULTS

```

1 -----
2 name: <unnamed>
3 log:
4   C:\PCW5\groff_2020\ICPSR_02371\DS0002\groff_handbook_2020_multilevel_006_REVISED.1
5   og
6 log type: text
7 opened on: 23 Feb 2021, 20:15:34
8
9 . cd "C:\PCW5\groff_2020\ICPSR_02371\DS0002"
10 C:\PCW5\groff_2020\ICPSR_02371\DS0002
11
12 . *****
13 .
14 . *****
15 . * FIXING MISSING VALUES IN ORIGINAL ICPSR DATA FILE AFTE CONVERTING TO STATA
16 . * START
17 . *****
18 . * bring in beh obs data file
19 . clear all
20
21 . use "C:\PCW5\groff_2020\ICPSR_02371\DS0002\MSP_BEH_OBS_DS0002.dta"
22 .
23 . tolower CENTERCO-MAXGROUP
24
25 .
26 . describe
27
28 Contains data from C:\PCW5\groff_2020\ICPSR_02371\DS0002\MSP_BEH_OBS_DS0002.dta
29   obs:          7,096
30   vars:          46                      15 JUN 2020 18:01
31 -----
32
33 -----
34
35 -----
36
37 -----
38
39 -----
40
41 -----
42
43 -----
44
45 -----
46
47 -----
48
49 -----
50
51 -----
52
53 -----
54
55 -----
56
57 -----
58
59 -----
60
61 -----

```

variable name	storage type	display format	value label	variable label
centerco	double	%12.0g	CENTERCO	SMALL COMMERCIAL CENTER CODE
zone	double	%12.0g	ZONE	ZONE FROM SCC
timecode	double	%12.0g	TIMECODE	TIME OF OBSERVATION
nthpersn	double	%12.0g	NTHPERSN	NTH PERSON OBSERVED
grpsize	double	%12.0g	GRPSIZE	SIZE OF GROUP OBSERVED
sex	double	%12.0g	SEX	SEX OF PEDESTRIAN
race	double	%12.0g	RACE	RACE OBSERVED
age	double	%12.0g	AGE	AGE
primary	double	%12.0g	PRIMARY	PRIMARY ACTIVITY
bususel	double	%12.0g	BUSUSE1	BUSINESS USED
usegroc	double	%12.0g	USEGROC	DUMMY VARIABLE: USE GROCERY
userest	double	%12.0g	USEREST	DUMMY VARIABLE: USE RESTAURANT
usebar	double	%12.0g	USEBAR	DUMMY VARIABLE: USE BAR
usebank	double	%12.0g	USEBANK	DUMMY VARIABLE: USE BANK
usedrug	double	%12.0g	USEDRUG	DUMMY VARIABLE: USE DRUG STORE
useothr	double	%12.0g	USEOTHR	DUMMY VARIABLE: USE OTHER BUSINESS
primbiz	double	%12.0g	PRIMBIZ	DUMMY VARIABLE: BIZ/SERVICE
primstnr	double	%12.0g	PRIMSTNR	DUMMY VARIABLE: STATIONARY
primwork	double	%12.0g	PRIMWORK	DUMMY VARIABLE: WORKING
primpass	double	%12.0g	PRIMPASS	DUMMY VARIABLE: PASSING THRU
primbus	double	%12.0g	PRIMBUS	DUMMY VARIABLE: AT BUS STOP
primdriv	double	%12.0g	PRIMDRIV	DUMMY VARIABLE: DRIVE UP USE
primothr	double	%12.0g	PRIMOTHR	DUMMY VARIABLE: OTHER
racewhit	double	%12.0g	RACEWHIT	DUMMY VARIABLE: RACE WHITE
raceafra	double	%12.0g	RACEAFRA	DUMMY VARIABLE: RACE AFRICAN AMERICAN
racehisp	double	%12.0g	RACEHISP	DUMMY VARIABLE: RACE HISPANIC
raceindn	double	%12.0g	RACEINDN	DUMMY VARIABLE: RACE AM INDIAN

```

62 raceasn double %12.0g RACEASN DUMMY VARIABLE: RACE ASIAN
63 racenonw double %12.0g RACENONW DUMMY VARIABLE: RACE NONWHITE
64 alone double %12.0g ALONE DUMMY VARIABLE: ALONE
65 groupgt3 double %12.0g GROUPGT3 DUMMY VARIABLE: GROUP > 3
66 singlew double %12.0g SINGLEW DUMMY VARIABLE: SINGLE WOMAN
67 sexmale double %12.0g SEXMALE DUMMY VARIABLE: MALE
68 wkdayam double %12.0g WKDAYAM DUMMY VARIABLE: WEEKDAY AM
69 wkdaynoo double %12.0g WKDAYNOO DUMMY: WEEKDAY NOON
70 wkdayaft double %12.0g WKDAYAFT DUMMY: WEEKDAY AFTERNOON
71 wkdayrus double %12.0g WKDAYRUS DUMMY: WEEKDAY RUSH HOURS
72 satmidda double %12.0g SATMIDDA DUMMY: SATURDAY MIDDAY
73 wkndnite double %12.0g WKNDNITE DUMMY: WEEKEND NIGHT
74 child double %12.0g CHILD DUMMY: CHILD
75 teen double %12.0g TEEN DUMMY: TEEN
76 adult double %12.0g ADULT DUMMY: ADULT
77 senior double %12.0g SENIOR DUMMY: SENIOR
78 nonpurps double %12.0g NONPURPS DUMMY: NONPURPOSEFUL
79 mnngroup double %12.0g AVERAGE GROUP SIZE IN CENTER
80 maxgroup double %12.0g LARGEST GROUP SEEN IN CENTER
81 -----

```

```

82 Sorted by:
83     Note: Dataset has changed since last saved.
84

```

```

85 . summ
86

```

	Variable	Obs	Mean	Std. Dev.	Min	Max
88	-----+-----					
89	centerco	7,096	556.8715	303.4766	40	990
90	zone	7,096	1.556229	.6831883	1	3
91	timecode	7,096	3.36429	1.550799	1	6
92	nthpersn	7,096	15.8075	11.22591	1	99
93	grpssize	7,096	1.651776	3.009511	1	99
94	-----+-----					
95	sex	7,096	.5088782	1.083247	0	9
96	race	7,096	.3547069	1.335703	0	9
97	age	7,096	1.947999	1.147096	0	9
98	primary	7,096	1.041432	1.731514	0	9
99	bususel	7,096	5.354425	3.716023	0	9
100	-----+-----					
101	usegroc	7,096	.1971533	.3978771	0	1
102	userest	7,096	.0724352	.2592254	0	1
103	usebar	7,096	.0397407	.1953631	0	1
104	usebank	7,096	.0239572	.1529265	0	1
105	usedrug	7,096	.0405862	.1973436	0	1
106	-----+-----					
107	useothr	7,096	.1667136	.3727463	0	1
108	primbiz	7,096	.6777057	.4673879	0	1
109	primstnr	7,096	.0163472	.1268159	0	1
110	primwork	7,096	.070885	.2566507	0	1
111	primpass	7,096	.1495209	.3566263	0	1
112	-----+-----					
113	primbus	7,096	.0486189	.2150852	0	1
114	primdriv	7,096	.0121195	.1094272	0	1
115	primothr	7,096	.0145152	.11961	0	1
116	racewhit	7,096	.8613303	.3456259	0	1
117	raceafra	7,096	.0889233	.2846531	0	1
118	-----+-----					
119	racehisp	7,096	.0080327	.0892709	0	1
120	raceindn	7,096	.0073281	.0852959	0	1
121	raceasn	7,096	.0163472	.1268159	0	1
122	racenonw	7,096	.1206313	.3257213	0	1
123	alone	7,096	.6481116	.477593	0	1
124	-----+-----					
125	groupgt3	7,096	.054115	.2262604	0	1
126	singlew	7,096	.2354848	.4243313	0	1

127	sexmale		7,096	.5937148	.4911736	0	1
128	wkdayam		7,096	.1503664	.3574554	0	1
129	wkdaynoo		7,096	.1886979	.391296	0	1
130	-----						
131	wkdayaft		7,096	.1713641	.3768534	0	1
132	wkdayrus		7,096	.2080045	.4059087	0	1
133	satmidda		7,096	.1989853	.3992651	0	1
134	wkndnite		7,096	.0825817	.2752684	0	1
135	child		7,096	.0815953	.2737664	0	1
136	-----						
137	teen		7,096	.1000564	.3000963	0	1
138	adult		7,096	.7043405	.4563708	0	1
139	senior		7,096	.0978016	.2970671	0	1
140	nonpurps		7,096	.1803833	.3845335	0	1
141	mngroup		7,096	1.569302	.1745081	1.3409	2.197
142	-----						
143	maxgroup		7,096	6.168405	2.055939	4	9

```

144
145 .
146 . * cleaning up missing values
147 .
148 . recode nthpersn(99=.)
149 (nthpersn: 2 changes made)
150
151 . tab nthpersn, missing
152

```

NTH PERSON	OBSERVED	Freq.	Percent	Cum.
156	1	287	4.04	4.04
157	2	284	4.00	8.05
158	3	280	3.95	11.99
159	4	281	3.96	15.95
160	5	278	3.92	19.87
161	6	276	3.89	23.76
162	7	272	3.83	27.59
163	8	268	3.78	31.37
164	9	266	3.75	35.12
165	10	259	3.65	38.77
166	11	252	3.55	42.32
167	12	249	3.51	45.83
168	13	244	3.44	49.27
169	14	231	3.26	52.52
170	15	228	3.21	55.74
171	16	217	3.06	58.79
172	17	206	2.90	61.70
173	18	200	2.82	64.52
174	19	191	2.69	67.21
175	20	180	2.54	69.74
176	21	176	2.48	72.22
177	22	170	2.40	74.62
178	23	156	2.20	76.82
179	24	149	2.10	78.92
180	25	143	2.02	80.93
181	26	131	1.85	82.78
182	27	117	1.65	84.43
183	28	107	1.51	85.94
184	29	101	1.42	87.36
185	30	97	1.37	88.73
186	31	89	1.25	89.98
187	32	84	1.18	91.16
188	33	79	1.11	92.28
189	34	69	0.97	93.25
190	35	65	0.92	94.17
191	36	53	0.75	94.91
192	37	47	0.66	95.57

193	38		40	0.56	96.14
194	39		35	0.49	96.63
195	40		35	0.49	97.13
196	41		28	0.39	97.52
197	42		25	0.35	97.87
198	43		21	0.30	98.17
199	44		20	0.28	98.45
200	45		16	0.23	98.68
201	46		11	0.16	98.83
202	47		10	0.14	98.97
203	48		9	0.13	99.10
204	49		8	0.11	99.21
205	50		8	0.11	99.32
206	51		7	0.10	99.42
207	52		5	0.07	99.49
208	53		4	0.06	99.55
209	54		4	0.06	99.61
210	55		4	0.06	99.66
211	56		3	0.04	99.70
212	57		2	0.03	99.73
213	58		2	0.03	99.76
214	59		2	0.03	99.79
215	60		2	0.03	99.82
216	61		2	0.03	99.84
217	62		2	0.03	99.87
218	63		2	0.03	99.90
219	64		1	0.01	99.92
220	65		1	0.01	99.93
221	66		1	0.01	99.94
222	67		1	0.01	99.96
223	68		1	0.01	99.97
224	.		2	0.03	100.00

```

225 -----+-----
226      Total |      7,096      100.00

```

```

227
228 .
229 . recode grpsize (99=.)
230 (grpsize: 6 changes made)

```

```

231
232 . tab grpsize, missing

```

233	SIZE OF				
234	GROUP				
235	OBSERVED		Freq.	Percent	Cum.
236					
237					
238	1		4,599	64.81	64.81
239	2		1,611	22.70	87.51
240	3		496	6.99	94.50
241	4		260	3.66	98.17
242	5		55	0.78	98.94
243	6		24	0.34	99.28
244	7		23	0.32	99.61
245	9		22	0.31	99.92
246	.		6	0.08	100.00

```

247 -----+-----
248      Total |      7,096      100.00

```

```

249
250 .
251 . tab1 sex-bususel, missing
252
253 -> tabulation of sex

```

254	SEX OF				
255	PEDESTRIAN		Freq.	Percent	Cum.
256					
257					
258	Male		4,213	59.37	59.37

Female		2,792	39.35	98.72
Unknown		91	1.28	100.00
-----+-----				
Total		7,096	100.00	

-> tabulation of race

RACE OBSERVED		Freq.	Percent	Cum.
-----+-----				
White		6,112	86.13	86.13
African American		631	8.89	95.03
Hispanic		57	0.80	95.83
Amerindian		52	0.73	96.56
Asian		116	1.63	98.20
Unknown		128	1.80	100.00
-----+-----				
Total		7,096	100.00	

-> tabulation of age

AGE		Freq.	Percent	Cum.
-----+-----				
Child		579	8.16	8.16
Teen		710	10.01	18.17
Adult		4,998	70.43	88.60
Senior Citizen		694	9.78	98.38
Unknown		115	1.62	100.00
-----+-----				
Total		7,096	100.00	

-> tabulation of primary

PRIMARY ACTIVITY		Freq.	Percent	Cum.
-----+-----				
Biz/service		4,809	67.77	67.77
Stationary		116	1.63	69.41
Working		503	7.09	76.49
Passing thru		1,061	14.95	91.45
Bus stop		345	4.86	96.31
Drive up use		86	1.21	97.52
Other		103	1.45	98.97
Unknown		73	1.03	100.00
-----+-----				
Total		7,096	100.00	

-> tabulation of bususel

BUSINESS USED		Freq.	Percent	Cum.
-----+-----				
Grocery/7-11		1,399	19.72	19.72
Restaurant		514	7.24	26.96
Bar/liquor		282	3.97	30.93
Bank		170	2.40	33.33
Drug store		288	4.06	37.39
Other		1,183	16.67	54.06
Unknown		3,260	45.94	100.00
-----+-----				
Total		7,096	100.00	

. tab1 sex-bususel, missing nolabel

-> tabulation of sex

SEX OF	
--------	--

```

325 PEDESTRIAN | Freq. Percent Cum.
326 -----+-----
327 0 | 4,213 59.37 59.37
328 1 | 2,792 39.35 98.72
329 9 | 91 1.28 100.00
330 -----+-----
331 Total | 7,096 100.00
332
333 -> tabulation of race
334
335 RACE |
336 OBSERVED | Freq. Percent Cum.
337 -----+-----
338 0 | 6,112 86.13 86.13
339 1 | 631 8.89 95.03
340 2 | 57 0.80 95.83
341 3 | 52 0.73 96.56
342 4 | 116 1.63 98.20
343 9 | 128 1.80 100.00
344 -----+-----
345 Total | 7,096 100.00
346
347 -> tabulation of age
348
349 AGE | Freq. Percent Cum.
350 -----+-----
351 0 | 579 8.16 8.16
352 1 | 710 10.01 18.17
353 2 | 4,998 70.43 88.60
354 3 | 694 9.78 98.38
355 9 | 115 1.62 100.00
356 -----+-----
357 Total | 7,096 100.00
358
359 -> tabulation of primary
360
361 PRIMARY |
362 ACTIVITY | Freq. Percent Cum.
363 -----+-----
364 0 | 4,809 67.77 67.77
365 1 | 116 1.63 69.41
366 2 | 503 7.09 76.49
367 3 | 1,061 14.95 91.45
368 4 | 345 4.86 96.31
369 5 | 86 1.21 97.52
370 6 | 103 1.45 98.97
371 9 | 73 1.03 100.00
372 -----+-----
373 Total | 7,096 100.00
374
375 -> tabulation of bususel
376
377 BUSINESS |
378 USED | Freq. Percent Cum.
379 -----+-----
380 0 | 1,399 19.72 19.72
381 1 | 514 7.24 26.96
382 2 | 282 3.97 30.93
383 3 | 170 2.40 33.33
384 4 | 288 4.06 37.39
385 5 | 1,183 16.67 54.06
386 9 | 3,260 45.94 100.00
387 -----+-----
388 Total | 7,096 100.00
389
390 .

```

```

391 . recode sex-bususel (9=.)
392 (sex: 91 changes made)
393 (race: 128 changes made)
394 (age: 115 changes made)
395 (primary: 73 changes made)
396 (bususel: 3260 changes made)

```

```

397
398 . tab1 sex-bususel, missing
399

```

```

400 -> tabulation of sex
401

```

SEX OF	Freq.	Percent	Cum.
PEDESTRIAN			
Male	4,213	59.37	59.37
Female	2,792	39.35	98.72
.	91	1.28	100.00
Total	7,096	100.00	

```

410
411 -> tabulation of race
412

```

RACE OBSERVED	Freq.	Percent	Cum.
White	6,112	86.13	86.13
African American	631	8.89	95.03
Hispanic	57	0.80	95.83
Amerindian	52	0.73	96.56
Asian	116	1.63	98.20
.	128	1.80	100.00
Total	7,096	100.00	

```

423
424 -> tabulation of age
425

```

AGE	Freq.	Percent	Cum.
Child	579	8.16	8.16
Teen	710	10.01	18.17
Adult	4,998	70.43	88.60
Senior Citizen	694	9.78	98.38
.	115	1.62	100.00
Total	7,096	100.00	

```

435
436 -> tabulation of primary
437

```

PRIMARY	Freq.	Percent	Cum.
ACTIVITY			
Biz/service	4,809	67.77	67.77
Stationary	116	1.63	69.41
Working	503	7.09	76.49
Passing thru	1,061	14.95	91.45
Bus stop	345	4.86	96.31
Drive up use	86	1.21	97.52
Other	103	1.45	98.97
.	73	1.03	100.00
Total	7,096	100.00	

```

451
452 -> tabulation of bususel
453

```

BUSINESS	Freq.	Percent	Cum.
USED			

457	Grocery/7-11		1,399	19.72	19.72
458	Restaurant		514	7.24	26.96
459	Bar/liquor		282	3.97	30.93
460	Bank		170	2.40	33.33
461	Drug store		288	4.06	37.39
462	Other		1,183	16.67	54.06
463	.		3,260	45.94	100.00
464	-----+-----				
465	Total		7,096	100.00	

```

467 .
468 . * saving file with missing values fixed
469 . save msp_beh_obs_v_bb.dta, replace
470 file msp_beh_obs_v_bb.dta saved
471
472 .
473 . *****
474 . *   FIXING MISSING VALUES IN ORIGINAL ICPSR DATA FILE AFTE CONVERTING TO STATA
475 . *   END
476 . *****
477 .
478 . *****
479 . * bringing in the file that already has missing values fixed
480 . * additional data processing
481 . * BEGIN
482 . *****
483 . clear all
484
485 . use msp_beh_obs_v_bb.dta
486
487 .
488 . summ
489

```

490	Variable		Obs	Mean	Std. Dev.	Min	Max
491	-----+-----						
492	centerco		7,096	556.8715	303.4766	40	990
493	zone		7,096	1.556229	.6831883	1	3
494	timecode		7,096	3.36429	1.550799	1	6
495	nthpersn		7,094	15.78404	11.14022	1	68
496	grpsize		7,090	1.569394	1.018406	1	9
497	-----+-----						
498	sex		7,005	.3985724	.4896393	0	1
499	race		6,968	.1958955	.6469061	0	4
500	age		6,981	1.831829	.7103984	0	3
501	primary		7,023	.9587071	1.537531	0	6
502	bususel		3,836	2.256257	2.156044	0	5
503	-----+-----						
504	usegroc		7,096	.1971533	.3978771	0	1
505	userest		7,096	.0724352	.2592254	0	1
506	usebar		7,096	.0397407	.1953631	0	1
507	usebank		7,096	.0239572	.1529265	0	1
508	usedrug		7,096	.0405862	.1973436	0	1
509	-----+-----						
510	useothr		7,096	.1667136	.3727463	0	1
511	primbiz		7,096	.6777057	.4673879	0	1
512	primstnr		7,096	.0163472	.1268159	0	1
513	primwork		7,096	.070885	.2566507	0	1
514	primpass		7,096	.1495209	.3566263	0	1
515	-----+-----						
516	primbus		7,096	.0486189	.2150852	0	1
517	primdriv		7,096	.0121195	.1094272	0	1
518	primothr		7,096	.0145152	.11961	0	1
519	racewhit		7,096	.8613303	.3456259	0	1
520	raceafra		7,096	.0889233	.2846531	0	1
521	-----+-----						
522	racehisp		7,096	.0080327	.0892709	0	1

```

523      raceindn |          7,096      .0073281      .0852959          0          1
524      raceasn |          7,096      .0163472      .1268159          0          1
525      racenonw |          7,096      .1206313      .3257213          0          1
526      alone |          7,096      .6481116      .477593          0          1
527 -----+-----
528      groupgt3 |          7,096      .054115      .2262604          0          1
529      singlew |          7,096      .2354848      .4243313          0          1
530      sexmale |          7,096      .5937148      .4911736          0          1
531      wkdayam |          7,096      .1503664      .3574554          0          1
532      wkdaynoo |          7,096      .1886979      .391296          0          1
533 -----+-----
534      wkdayaft |          7,096      .1713641      .3768534          0          1
535      wkdayrus |          7,096      .2080045      .4059087          0          1
536      satmida |          7,096      .1989853      .3992651          0          1
537      wkndnite |          7,096      .0825817      .2752684          0          1
538      child |          7,096      .0815953      .2737664          0          1
539 -----+-----
540      teen |          7,096      .1000564      .3000963          0          1
541      adult |          7,096      .7043405      .4563708          0          1
542      senior |          7,096      .0978016      .2970671          0          1
543      nonpurps |          7,096      .1803833      .3845335          0          1
544      mngroup |          7,096      1.569302      .1745081      1.3409      2.197
545 -----+-----
546      maxgroup |          7,096      6.168405      2.055939          4          9
547
548 . describe
549
550 Contains data from msp_beh_obs_v_bb.dta
551   obs:          7,096
552   vars:          46                      23 Feb 2021 20:15
553 -----+-----
554
555      storage      display      value
556 variable name    type      format      label      variable label
557 -----+-----
557 centerco      double      %12.0g      CENTERCO      SMALL COMMERCIAL CENTER CODE
558 zone          double      %12.0g      ZONE          ZONE FROM SCC
559 timecode      double      %12.0g      TIMECODE      TIME OF OBSERVATION
560 nthpersn      double      %12.0g      NTHPERSON     NTH PERSON OBSERVED
561 grpsize       double      %12.0g      GRPSIZE       SIZE OF GROUP OBSERVED
562 sex           double      %12.0g      SEX           SEX OF PEDESTRIAN
563 race          double      %12.0g      RACE          RACE OBSERVED
564 age           double      %12.0g      AGE           AGE
565 primary       double      %12.0g      PRIMARY       PRIMARY ACTIVITY
566 bususel       double      %12.0g      BUSUSE1       BUSINESS USED
567 usegroc       double      %12.0g      USEGROC       DUMMY VARIABLE: USE GROCERY
568 userest       double      %12.0g      USEREST      DUMMY VARIABLE: USE RESTAURANT
569 usebar        double      %12.0g      USEBAR        DUMMY VARIABLE: USE BAR
570 usebank       double      %12.0g      USEBANK       DUMMY VARIABLE: USE BANK
571 usedrug       double      %12.0g      USEDURG       DUMMY VARIABLE: USE DRUG STORE
572 useothr       double      %12.0g      USEOTHR       DUMMY VARIABLE: USE OTHER BUSINESS
573 primbiz       double      %12.0g      PRIMBIZ       DUMMY VARIABLE: BIZ/SERVICE
574 primstnr      double      %12.0g      PRIMSTNR      DUMMY VARIABLE: STATIONARY
575 primwork      double      %12.0g      PRIMWORK      DUMMY VARIABLE: WORKING
576 primpass      double      %12.0g      PRIMPASS      DUMMY VARIABLE: PASSING THRU
577 primbus       double      %12.0g      PRIMBUS       DUMMY VARIABLE: AT BUS STOP
578 primdriv      double      %12.0g      PRIMDRIV      DUMMY VARIABLE: DRIVE UP USE
579 primothr      double      %12.0g      PRIMOTHR      DUMMY VARIABLE: OTHER
580 racewhit      double      %12.0g      RACEWHIT      DUMMY VARIABLE: RACE WHITE
581 raceafra      double      %12.0g      RACEAFRA      DUMMY VARIABLE: RACE AFRICAN AMERICAN
582 racehisp      double      %12.0g      RACEHISP      DUMMY VARIABLE: RACE HISPANIC
583 raceindn      double      %12.0g      RACEINDN      DUMMY VARIABLE: RACE AM INDIAN
584 raceasn       double      %12.0g      RACEASN       DUMMY VARIABLE: RACE ASIAN
585 racenonw      double      %12.0g      RACENONW      DUMMY VARIABLE: RACE NONWHITE
586 alone         double      %12.0g      ALONE         DUMMY VARIABLE: ALONE

```

```

587 groupgt3      double %12.0g    GROUPGT3    DUMMY VARIABLE: GROUP > 3
588 singlew      double %12.0g    SINGLEW     DUMMY VARIABLE: SINGLE WOMAN
589 sexmale      double %12.0g    SEXMALE     DUMMY VARIABLE: MALE
590 wkdayam      double %12.0g    WKDAYAM     DUMMY VARIABLE: WEEKDAY AM
591 wkdaynoo      double %12.0g    WKDAYNOO    DUMMY: WEEKDAY NOON
592 wkdayaft      double %12.0g    WKDAYAFT    DUMMY: WEEKDAY AFTERNOON
593 wkdayrus      double %12.0g    WKDAYRUS    DUMMY: WEEKDAY RUSH HOURS
594 satmidda      double %12.0g    SATMIDDA    DUMMY: SATURDAY MIDDAY
595 wkndnite      double %12.0g    WKNDNITE    DUMMY: WEEKEND NIGHT
596 child         double %12.0g    CHILD       DUMMY: CHILD
597 teen          double %12.0g    TEEN        DUMMY: TEEN
598 adult         double %12.0g    ADULT       DUMMY: ADULT
599 senior        double %12.0g    SENIOR      DUMMY: SENIOR
600 nonpurps      double %12.0g    NONPURPS    DUMMY: NONPURPOSEFUL
601 mnngroup      double %12.0g             AVERAGE GROUP SIZE IN CENTER
602 maxgroup      double %12.0g             LARGEST GROUP SEEN IN CENTER
603 -----

```

```

604 Sorted by:
605
606 .
607 . ***
608 . * make a white dummy variable
609 . gen whitedum=0
610
611 . replace whitedum=1 if(race==0)
612 (6,112 real changes made)
613
614 . replace whitedum=. if(race==.)
615 (128 real changes made, 128 to missing)
616
617 . tab whitedum race, missing
618

```

		RACE OBSERVED						
whitedum		White	African A	Hispanic	Amerindia	Asian	.	Total
0	856	0	631	57	52	116	0	
1	6,112	6,112	0	0	0	0	0	
.	128	0	0	0	0	0	128	
Total	7,096	6,112	631	57	52	116	128	

```

627
628 . label var whitedum "1 = white pedestrian 0 = other"
629
630 .
631 . ***
632 . * make a kid or teen pedestrian dummy variable
633 . gen kidrteen=0
634
635 . replace kidrteen=1 if(age<=1)
636 (1,289 real changes made)
637
638 . replace kidrteen=1 if age==.
639 (115 real changes made)
640
641 . tab kidrteen age, missing nolabel
642

```

		AGE					
kidrteen		0	1	2	3	.	Total
0		0	0	4,998	694	0	5,692
1		579	710	0	0	115	1,404

```

648 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
649      Total |      579      710      4,998      694      115 |      7,096
650
651 . label var kidrteen "1 = kid or teen 0 = other"
652
653 .
654 . ***
655 . * looking at the raw relationship
656 . * in table form
657 . tab primbiz kidrteen, col lrchi
658
659 +-----+
660 | Key |
661 |-----|
662 | frequency |
663 | column percentage |
664 +-----+
665
666 DUMMY |
667 VARIABLE: | 1 = kid or teen 0 =
668 BIZ/SERVIC | other
669 E | 0 1 | Total
670 -----+-----+-----+-----+
671 No | 1,677 610 | 2,287
672 | 29.46 43.45 | 32.23
673 -----+-----+-----+-----+
674 Yes | 4,015 794 | 4,809
675 | 70.54 56.55 | 67.77
676 -----+-----+-----+-----+
677 Total | 5,692 1,404 | 7,096
678 | 100.00 100.00 | 100.00
679
680 likelihood-ratio chi2(1) = 97.2904 Pr = 0.000
681
682 .
683 . ***
684 . * some additional variables
685 .
686 . * centerco is the place variable - level 2 identifier
687 . * going to sort on that
688 . sort centerco
689
690 .
691 . * create a kidrteen variable that is just the commercial center averages
692 . * this is just the level 2 variation in this predictor
693 . by centerco: egen x_kidrteen=mean(kidrteen)
694
695 . label var x_kidrteen "SCC level proportion kid/teen pedestrians"
696
697 .
698 . ***
699 . * creating a centered version of x_kidrteen
700 . center x_kidrteen
701 (generated variables: c_x_kidrteen)
702
703 . label var c_x_kidrteen "overall centered version of SCC means on kidrteen"
704
705 .
706 . * create a curvilinear component of ecological kidrteen
707 . gen sq_x_kidrteen=c_x_kidrteen*c_x_kidrteen
708
709 . label var sq_x_kidrteen "squared proportion teens at SCC level"
710
711 . corr sq_x_kidrteen c_x_kidrteen
712 (obs=7,096)
713

```

```

714 | sq_x_k~n c_x_ki~n
715 -----+-----
716 sq_x_kidrt~n | 1.0000
717 c_x_kidrteen | 0.5089 1.0000
718
719
720 . graph twoway (scatter sq_x_kidrteen c_x_kidrteen) (lfit sq_x_kidrteen c_x_kidrteen)
721
722 .
723 . * level 2 variation in the outcome
724 . * creating a level 2 variable
725 . by centerco: egen x_primbiz=mean(primbiz)
726
727 . label var x_primbiz "SCC level proportion pedestrians using a business or service"
728
729 .
730 . * create a kidrteen variable reflecting just within center variation
731 . * this is just the level 1 variation in this predictor
732 . by centerco: center kidrteen, gen(wi_kidrteen)
733 (generated variables: wi_kidrteen)
734
735 . label var wi_kidrteen "within center variation kidrteen"
736
737 .
738 . * do same for primbiz
739 . * this is just the level 1 variation in this outcome
740 . by centerco: center primbiz, gen(wi_primbiz)
741 (generated variables: wi_primbiz)
742
743 . label var wi_primbiz "within center variation primbiz"
744
745 .
746 . ***
747 . * look at descriptives for the two variables
748 . * raw form level 2 form level 1 form
749 . statsmat primbiz kidrteen x_primbiz x_kidrteen wi_primbiz wi_kidrteen, st(n min max
mean sd)
750
751 n min max mean sd
752 primbiz 7096 0 1 .67770575 .4673879
753 kidrteen 7096 0 1 .19785795 .39841254
754 x_primbiz 7096 .27350429 .82894737 .67770575 .15404018
755 x_kidrteen 7096 .06837607 .45833334 .19785795 .08047852
756 wi_primbiz 7096 -.82894737 .72649574 -2.558e-09 .44127437
757 wi_kidrteen 7096 -.45833334 .93162394 3.370e-10 .39019964
758
759 .
760 . ***
761 . * save updated unit level file
762 . save msp_beh_obs_v_dd.dta, replace
763 file msp_beh_obs_v_dd.dta saved
764
765 .
766 . *****
767 . * additional data processing
768 . * END
769 . *****
770 .
771 . *****
772 . * CREATING AN ECOLOGICAL FILE COLLAPSED TO THE SMALL COMMERCIAL CENTERS
773 . * START
774 . *****
775 .
776 . collapse (mean) x_alone=alone x_whited=whitedum ///
777 > x_prbizz=primbiz ///
778 > x_child=child ///

```

```

779 >             x_teen=teen ///
780 >             x_kidrteen=kidrteen ///
781 >         (sd) sd_alone=alone sd_whited=whitedum ///
782 >         sd_prbiz=primbiz ///
783 >         , by(centerco)
784
785 .
786 . label var x_prbiz "center mean proportion primarily business users"
787
788 . label var x_child "center mean proportion children"
789
790 . label var x_teen "center mean proportion teens"
791
792 . label var x_kidrteen "center mean proportion teens or children"
793
794 .
795 . * save collapsed file
796 . save msp_beh_obs_v_dd_collapse.dta, replace
797 file msp_beh_obs_v_dd_collapse.dta saved
798
799 .
800 . * add one more varuiabke to collapsed file and then re save
801 . clear all
802
803 . use msp_beh_obs_v_dd_collapse.dta, replace
804
805 . * going to create a group mean centered version of * center level kidrteen
806 . sort centerco
807
808 . by centerco: center x_kidrteen
809 (generated variables: c_x_kidrteen)
810
811 . label var c_x_kidrteen "center level centered kidrteen - by commerical area"
812
813 .
814 . * now create squared version of scc centered kidrteen
815 . gen sq_kidrteen=c_x_kidrteen*c_x_kidrteen
816
817 . label var sq_kidrteen "squared scc level centered kidrteen"
818
819 . graph twoway scatter sq_kidrteen c_x_kidrteen
820
821 .
822 . * save
823 . save msp_beh_obs_v_ee_collapse.dta, replace
824 file msp_beh_obs_v_ee_collapse.dta saved
825
826 .
827 . *****
828 . * CREATING AN ECOLOGICAL FILE COLLAPSED TO THE SMALL COMMERCIAL CENTERS
829 . * END
830 . *****
831 .
832 . *****
833 . * merge collapsed SCC level file and unit level file
834 . * START
835 . *****
836 . clear all
837
838 . use msp_beh_obs_v_dd.dta
839
840 . * do merge
841 . merge m:1 centerco using msp_beh_obs_v_ee_collapse.dta
842 (label CENTERCO already defined)
843
844         Result                                # of obs.

```

```

845 -----
846 not matched                                0
847 matched                                7,096  (_merge==3)
848 -----
849
850 .
851 . * save merged file
852 . notes: v dd has center mean and sd variables on some things
853
854 . save msp_beh_obs_v_ee.dta, replace
855 file msp_beh_obs_v_ee.dta saved
856
857 .
858 . *****
859 . * merge collapsed SCC level file and unit level file
860 . * END
861 . *****
862 .
863 . *****
864 . * looking at bivariate relationships
865 . *      at both pedestrian and center level
866 . *      between key predictor - child or teen pedestrian
867 . *      and key outcome - primarily business user
868 . * START
869 . *****
870 .
871 . * look at pedestrian level link between kidrteen and primbiz
872 . clear all
873
874 . use msp_beh_obs_v_ee.dta
875
876 . tab primbiz kidrteen, col lrchi
877
878 +-----+
879 | Key      |
880 |-----|
881 | frequency |
882 | column percentage |
883 +-----+
884
885 DUMMY |
886 VARIABLE: | 1 = kid or teen 0 =
887 BIZ/SERVIC | other
888 E | 0 1 | Total
889 -----+-----+-----+
890 No | 1,677 610 | 2,287
891 | 29.46 43.45 | 32.23
892 -----+-----+-----+
893 Yes | 4,015 794 | 4,809
894 | 70.54 56.55 | 67.77
895 -----+-----+-----+
896 Total | 5,692 1,404 | 7,096
897 | 100.00 100.00 | 100.00
898
899 likelihood-ratio chi2(1) = 97.2904 Pr = 0.000
900
901 .
902 . * let's look at center level connection between kidrteen and primbiz
903 . clear all
904
905 . use msp_beh_obs_v_ee_collapse.dta, replace
906
907 . sort x_kidrteen
908
909 . list x_kidrteen centerco
910

```

```

911      +-----+
912      | x_kidr~n      centerco |
913      |-----|
914      1. | .0683761    15th and Nic |
915      2. | .1026253    Selby and We |
916      3. | .1138614    Como and 15t |
917      4. | .1258278    Randolph and |
918      5. | .1311475    54th and Nic |
919      |-----|
920      6. | .1519824    Grand and Fa |
921      7. | .1656442    50th and Bry |
922      8. | .171875     38th and 23r |
923      9. | .18429      Johnson and |
924      10. | .1847134    38th and Gra |
925      |-----|
926      11. | .1854103    Marshall and |
927      12. | .1860465    48th and Chi |
928      13. | .202454     White Bear a |
929      14. | .2089552    Grand and Ha |
930      15. | .2091691    60th and Por |
931      |-----|
932      16. | .2380952    54th and Chi |
933      17. | .2425629    Randolph and |
934      18. | .2577319    50th and Xer |
935      19. | .2578125    Third and Ma |
936      20. | .2697369    Thomas and H |
937      |-----|
938      21. | .269953     Baker and Sm |
939      22. | .2807692    28th and 4th |
940      23. | .3333333    Penn and Ced |
941      24. | .4583333    38th and 4th |
942      +-----+

```

```

943
944 . tab centerco, nolabel
945

```

SMALL				
COMMERCIAL				
CENTER CODE	Freq.	Percent	Cum.	
40	1	4.17	4.17	
60	1	4.17	8.33	
140	1	4.17	12.50	
160	1	4.17	16.67	
170	1	4.17	20.83	
200	1	4.17	25.00	
260	1	4.17	29.17	
310	1	4.17	33.33	
350	1	4.17	37.50	
450	1	4.17	41.67	
590	1	4.17	45.83	
610	1	4.17	50.00	
640	1	4.17	54.17	
670	1	4.17	58.33	
730	1	4.17	62.50	
740	1	4.17	66.67	
750	1	4.17	70.83	
770	1	4.17	75.00	
810	1	4.17	79.17	
830	1	4.17	83.33	
910	1	4.17	87.50	
950	1	4.17	91.67	
970	1	4.17	95.83	
990	1	4.17	100.00	
Total	24	100.00		

```

977 . tab centerco
978
979     SMALL COMMERCIAL CENTER |
980         CODE |           Freq.      Percent      Cum.
981 -----|-----
982 White Bear and Sherwood StP |           1         4.17         4.17
983   Thomas and Hamline StP |           1         4.17         8.33
984   Marshall and Cleveland StP |           1         4.17        12.50
985     Grand and Fairview StP |           1         4.17        16.67
986     Grand and Hamline StP |           1         4.17        20.83
987       Selby and Western |           1         4.17        25.00
988   Randolph and Hamline StP |           1         4.17        29.17
989   Randolph and Milton StP |           1         4.17        33.33
990     Baker and Smith StP |           1         4.17        37.50
991     Third and Maria StP |           1         4.17        41.67
992   Penn and Cedar Lake Mpls |           1         4.17        45.83
993     50th and Xerxes Mpls |           1         4.17        50.00
994     50th and Bryant Mpls |           1         4.17        54.17
995     38th and Grand Mpls |           1         4.17        58.33
996     48th and Chicago Mpls |           1         4.17        62.50
997     54th and Chicago Mpls |           1         4.17        66.67
998     54th and Nicollet Mpls |           1         4.17        70.83
999     60th and Portland Mpls |           1         4.17        75.00
1000     38th and 23rd Mpls |           1         4.17        79.17
1001     15th and Nicollet Mpls |           1         4.17        83.33
1002       Como and 15th Mpls |           1         4.17        87.50
1003   Johnson and 29th Mpls |           1         4.17        91.67
1004     28th and 4th Mpls |           1         4.17        95.83
1005     38th and 4th Mpls |           1         4.17       100.00
1006 -----|-----
1007                               Total |           24       100.00
1008

```

```

1009 . list x_kidrteen if(centerco!=990)
1010

```

```

1011   +-----+
1012   | x_kidr~n |
1013   |-----|
1014   1. | .0683761 |
1015   2. | .1026253 |
1016   3. | .1138614 |
1017   4. | .1258278 |
1018   5. | .1311475 |
1019   |-----|
1020   6. | .1519824 |
1021   7. | .1656442 |
1022   8. | .171875 |
1023   9. | .18429 |
1024  10. | .1847134 |
1025   |-----|
1026  11. | .1854103 |
1027  12. | .1860465 |
1028  13. | .202454 |
1029  14. | .2089552 |
1030  15. | .2091691 |
1031   |-----|
1032  16. | .2380952 |
1033  17. | .2425629 |
1034  18. | .2577319 |
1035  19. | .2578125 |
1036  20. | .2697369 |
1037   |-----|
1038  21. | .269953 |
1039  22. | .2807692 |
1040  23. | .3333333 |
1041   +-----+
1042

```

```

1043 .
1044 . * level 2 SCC level relationship
1045 . * all SCCs
1046 . graph twoway (lowess x_prbiz x_kidrteen) || (scatter x_prbiz x_kidrteen) || (qfit
x_prbiz x_kidrteen )
1047
1048 . graph save x_prbiz_x_kidrteen.gph, replace
1049 (file x_prbiz_x_kidrteen.gph saved)
1050
1051 .
1052 . * same graph without 38th and 4th
1053 . graph twoway (lowess x_prbiz x_kidrteen) || (scatter x_prbiz x_kidrteen) || (qfit
x_prbiz x_kidrteen ) if(centerco!=990)
1054
1055 . graph save x_prbiz_x_kidrteen_lt_minus_990.gph, replace
1056 (file x_prbiz_x_kidrteen_lt_minus_990.gph saved)
1057
1058 .
1059 . *****
1060 . * looking at bivariate relationships
1061 . *      at both pedestrian and center level
1062 . *      between key predictor - child or teen pedestrian
1063 . *      and key outcome - primarily business user
1064 . * END
1065 . *****
1066 .
1067 . *****
1068 . *
1069 . *
1070 . *      ON TO THE MONOLEVEL AND MIXED MODELS
1071 . *
1072 . *
1073 . *****
1074 .
1075 . *****
1076 . * descriptives
1077 . *      look at descriptives for the two variables
1078 . *      raw form level 2 form level 1 form
1079 . * begin
1080 . *****
1081 .
1082 . clear all
1083
1084 . use msp_beh_obs_v_ee.dta
1085
1086 . statsmat primbiz kidrteen x_primbiz x_kidrteen wi_primbiz wi_kidrteen, st(n min max
mean sd)
1087
1088           n           min           max           mean           sd
1089   primbiz       7096           0           1       .67770575       .4673879
1090   kidrteen       7096           0           1       .19785795       .39841254
1091   x_primbiz       7096       .27350429       .82894737       .67770575       .15404018
1092   x_kidrteen       7096       .06837607       .45833334       .19785795       .08047852
1093   wi_primbiz       7096      -.82894737       .72649574      -2.558e-09       .44127437
1094   wi_kidrteen       7096      -.45833334       .93162394       3.370e-10       .39019964
1095
1096 .
1097 . *****
1098 . * descriptives
1099 . *      look at descriptives for the two variables
1100 . *      raw form level 2 form level 1 form
1101 . * end
1102 . *****
1103 .
1104 . *****
1105 . * ANOVA model

```

```

1106 . * begin
1107 . *****
1108 . ***
1109 . *              monolevel
1110 . logit primbiz , or
1111
1112 Iteration 0:   log likelihood = -4460.4514
1113 Iteration 1:   log likelihood = -4460.4514
1114
1115 Logistic regression               Number of obs   =       7,096
1116                                LR chi2(0)         =         0.00
1117                                Prob > chi2         =         .
1118 Log likelihood = -4460.4514       Pseudo R2      =       0.0000
1119
1120 -----
1121      primbiz |           Odds   Std. Err.      z    P>|z|     [95% Conf. Interval]
1122 -----+-----
1123      _cons |    2.102755    .0534115    29.26   0.000    2.000633    2.210089
1124 -----
1125
1126 .
1127 . ***
1128 . *              mixed effects
1129 . melogit primbiz || centerco: , or
1130
1131 Fitting fixed-effects model:
1132
1133 Iteration 0:   log likelihood = -4471.6478
1134 Iteration 1:   log likelihood = -4460.4579
1135 Iteration 2:   log likelihood = -4460.4514
1136 Iteration 3:   log likelihood = -4460.4514
1137
1138 Refining starting values:
1139
1140 Grid node 0:   log likelihood = -4135.6044
1141
1142 Fitting full model:
1143
1144 Iteration 0:   log likelihood = -4135.6044   (not concave)
1145 Iteration 1:   log likelihood = -4133.0374
1146 Iteration 2:   log likelihood = -4132.4008
1147 Iteration 3:   log likelihood = -4132.3053
1148 Iteration 4:   log likelihood = -4132.2865
1149 Iteration 5:   log likelihood = -4132.2865
1150
1151 Mixed-effects logistic regression               Number of obs   =       7,096
1152 Group variable:           centerco              Number of groups =        24
1153
1154                                Obs per group:
1155                                min =           132
1156                                avg =          295.7
1157                                max =           512
1158
1159 Integration method: mvaghermite                Integration pts. =         7
1160
1161                                Wald chi2(0)       =         .
1162 Log likelihood = -4132.2865                    Prob > chi2    =         .
1163 -----
1164      primbiz |           Odds   Std. Err.      z    P>|z|     [95% Conf. Interval]
1165 -----+-----
1166      _cons |    2.070114    .2795805     5.39   0.000    1.588674    2.697453
1167 -----+-----
1168 centerco   |
1169   var(_cons)|    .417968    .1258118                .2316991    .7539832
1170 -----
1171 Note: Estimates are transformed only in the first equation.

```

```

1172 LR test vs. logistic model: chibar2(01) = 656.33      Prob >= chibar2 = 0.0000
1173
1174 .
1175 . ***
1176 . * getting a measure of lack of fit
1177 . estat ic
1178
1179 Akaike's information criterion and Bayesian information criterion
1180
1181 -----
1182      Model |          N    ll(null)    ll(model)      df          AIC          BIC
1183 -----+-----
1184      . |          7,096          .    -4132.287        2    8268.573    8282.308
1185 -----
1186 Note: BIC uses N = number of observations. See [R] BIC note.
1187
1188 .
1189 . ***
1190 . * getting proportion of outcome at level 2
1191 . estat icc
1192
1193 Intraclass correlation
1194
1195 -----
1196      Level |          ICC    Std. Err.    [95% Conf. Interval]
1197 -----+-----
1198      centerco |    .1127256    .0301064    .0657943    .1864518
1199 -----
1200
1201 .
1202 . ***
1203 . * now predicting eb means for primbiz at commercial center level
1204 . predict pred_biz
1205 (option mu assumed)
1206 (predictions based on fixed effects and posterior means of random effects)
1207 (using 7 quadrature points)
1208
1209 . label var pred_biz "eb_mean_predicted prim_biz"
1210
1211 .
1212 . ***
1213 . * graph eb means prim_biz versus center means
1214 . * shows eb adjustments
1215 . graph bar x_primbiz pred_biz, over(centerco, sort(1))
1216
1217 . graph save bar_x_prim_biz_pred_biz.gph, replace
1218 (file bar_x_prim_biz_pred_biz.gph saved)
1219
1220 . *
1221 . * went in and made adjustments to graph
1222 . *
1223 . * saved as revised
1224 . * appears in text
1225 . *
1226 . ***
1227 . * getting descriptive statistics on raw and EB adjusted means
1228 . summ x_primbiz pred_biz
1229
1230      Variable |          Obs          Mean    Std. Dev.          Min          Max
1231 -----+-----
1232      x_primbiz |          7,096    .6777058    .1540402    .2735043    .8289474
1233      pred_biz |          7,096    .6782293    .1497207    .281558    .8233974
1234
1235 .
1236 . ***
1237 . * saving the file

```

```

1238 . notes: v ee has predicted outcome score from anova
1239
1240 . save msp_beh_obs_v_ee.dta, replace
1241 file msp_beh_obs_v_ee.dta saved
1242
1243 .
1244 . *****
1245 . * ANOVA model
1246 . * end
1247 . *****
1248 .
1249 . *****
1250 . * looking at effects of age mix on primarily business/service user
1251 . * begin
1252 . *****
1253 . ***
1254 . * plain logit monolevel
1255 . logit primbiz kidrteen, or
1256
1257 Iteration 0:   log likelihood = -4460.4514
1258 Iteration 1:   log likelihood = -4412.0111
1259 Iteration 2:   log likelihood = -4411.8062
1260 Iteration 3:   log likelihood = -4411.8062
1261
1262 Logistic regression               Number of obs   =       7,096
1263                                LR chi2(1)         =       97.29
1264                                Prob > chi2          =       0.0000
1265 Log likelihood = -4411.8062      Pseudo R2       =       0.0109
1266
1267 -----
1268      primbiz | Odds Ratio   Std. Err.      z    P>|z|      [95% Conf. Interval]
1269 -----+-----
1270      kidrteen |   .5436735   .0332671   -9.96   0.000   .4822293   .6129468
1271      _cons    |   2.394156   .0696106   30.03   0.000   2.261537   2.534553
1272 -----
1273 Note: _cons estimates baseline odds.
1274
1275 .
1276 . ***
1277 . * multilevel - raw variable
1278 . melogit primbiz kidrteen ||centerco: , or
1279
1280 Fitting fixed-effects model:
1281
1282 Iteration 0:   log likelihood = -4421.5383
1283 Iteration 1:   log likelihood = -4411.8138
1284 Iteration 2:   log likelihood = -4411.8062
1285 Iteration 3:   log likelihood = -4411.8062
1286
1287 Refining starting values:
1288
1289 Grid node 0:   log likelihood = -4074.8634
1290
1291 Fitting full model:
1292
1293 Iteration 0:   log likelihood = -4074.8634 (not concave)
1294 Iteration 1:   log likelihood = -4072.3777
1295 Iteration 2:   log likelihood = -4070.2591
1296 Iteration 3:   log likelihood = -4069.7245
1297 Iteration 4:   log likelihood = -4069.7242
1298
1299 Mixed-effects logistic regression   Number of obs   =       7,096
1300 Group variable:      centerco       Number of groups =        24
1301
1302                                Obs per group:
1303                                min =           132

```

```

1304                                     avg =      295.7
1305                                     max =      512
1306
1307 Integration method: mvaghermite           Integration pts. =      7
1308
1309                                     Wald chi2(1) =      127.24
1310 Log likelihood = -4069.7242               Prob > chi2 =      0.0000
1311 -----
1312      primbiz | Odds Ratio   Std. Err.      z    P>|z|    [95% Conf. Interval]
1313 -----+-----
1314      kidrteen |   .4758117   .0313298   -11.28   0.000   .4182036   .5413555
1315      _cons    |   2.448267   .340962    6.43    0.000   1.863437   3.216642
1316 -----+-----
1317 centerco     |
1318   var(_cons) |   .4392137   .1320998                .243593   .7919304
1319 -----
1320 Note: Estimates are transformed only in the first equation.
1321 Note: _cons estimates baseline odds (conditional on zero random effects).
1322 LR test vs. logistic model: chibar2(01) = 684.16      Prob >= chibar2 = 0.0000
1323
1324 .
1325 . ***
1326 . * multilevel - level 1 and level 2 impacts separated
1327 . melogit primbiz x_kidrteen wi_kidrteen ||centerco: , or
1328
1329 Fitting fixed-effects model:
1330
1331 Iteration 0:   log likelihood = -4408.7516
1332 Iteration 1:   log likelihood = -4399.5599
1333 Iteration 2:   log likelihood = -4399.5529
1334 Iteration 3:   log likelihood = -4399.5529
1335
1336 Refining starting values:
1337
1338 Grid node 0:   log likelihood = -4073.2452
1339
1340 Fitting full model:
1341
1342 Iteration 0:   log likelihood = -4073.2452   (not concave)
1343 Iteration 1:   log likelihood = -4070.7633
1344 Iteration 2:   log likelihood = -4069.7349
1345 Iteration 3:   log likelihood = -4069.5613
1346 Iteration 4:   log likelihood = -4069.5604
1347 Iteration 5:   log likelihood = -4069.5604
1348
1349 Mixed-effects logistic regression           Number of obs =      7,096
1350 Group variable:      centerco               Number of groups =      24
1351
1352                                     Obs per group:
1353                                     min =      132
1354                                     avg =      295.7
1355                                     max =      512
1356
1357 Integration method: mvaghermite           Integration pts. =      7
1358
1359                                     Wald chi2(2) =      127.59
1360 Log likelihood = -4069.5604               Prob > chi2 =      0.0000
1361 -----
1362      primbiz | Odds Ratio   Std. Err.      z    P>|z|    [95% Conf. Interval]
1363 -----+-----
1364      x_kidrteen |   1.251499   2.109414     0.13   0.894   .0459961   34.05176
1365      wi_kidrteen |   .4751237   .031304   -11.29   0.000   .4175654   .5406161
1366      _cons      |   2.002191   .7540281     1.84   0.065   .9570661   4.188604
1367 -----+-----
1368 centerco      |
1369   var(_cons)  |   .4332071   .130344                .2402065   .7812793

```

```

1370 -----
1371 Note: Estimates are transformed only in the first equation.
1372 Note: _cons estimates baseline odds (conditional on zero random effects).
1373 LR test vs. logistic model: chibar2(01) = 659.98      Prob >= chibar2 = 0.0000
1374
1375 .
1376 . ***
1377 . * multilevel - level 1 and level 2 impacts separated
1378 . * linear and curvilinear impacts of level 2 kidrteen
1379 . melogit primbiz c_x_kidrteen sq_x_kidrteen wi_kidrteen ||centerco: , or
1380
1381 Fitting fixed-effects model:
1382
1383 Iteration 0:   log likelihood = -4230.9596
1384 Iteration 1:   log likelihood = -4225.2565
1385 Iteration 2:   log likelihood = -4225.2524
1386 Iteration 3:   log likelihood = -4225.2524
1387
1388 Refining starting values:
1389
1390 Grid node 0:   log likelihood = -4070.9567
1391
1392 Fitting full model:
1393
1394 Iteration 0:   log likelihood = -4070.9567   (not concave)
1395 Iteration 1:   log likelihood = -4065.1802
1396 Iteration 2:   log likelihood = -4064.4115
1397 Iteration 3:   log likelihood = -4064.2696
1398 Iteration 4:   log likelihood = -4064.2674
1399 Iteration 5:   log likelihood = -4064.2674
1400
1401 Mixed-effects logistic regression                Number of obs      =       7,096
1402 Group variable:      centerco                    Number of groups   =        24
1403
1404                                         Obs per group:
1405                                             min =        132
1406                                             avg =       295.7
1407                                             max =        512
1408
1409 Integration method: mvaghermite                 Integration pts.   =         7
1410
1411                                         Wald chi2(3)       =       140.03
1412 Log likelihood = -4064.2674                    Prob > chi2        =       0.0000
1413 -----
1414      primbiz | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
1415 -----+-----
1416   c_x_kidrteen |   48.90201   82.13363     2.32  0.021    1.818388   1315.124
1417  sq_x_kidrteen |   1.23e-16   1.23e-15    -3.66  0.000    3.70e-25   4.10e-08
1418   wi_kidrteen |   .4749693   .0312935   -11.30  0.000    .4174301   .5404397
1419      _cons |   2.584634   .3231313     7.60  0.000    2.022934   3.302299
1420 -----+-----
1421 centerco      |
1422   var(_cons) |   .2703844   .0838186                .1472689   .4964234
1423 -----
1424 Note: Estimates are transformed only in the first equation.
1425 Note: _cons estimates baseline odds (conditional on zero random effects).
1426 LR test vs. logistic model: chibar2(01) = 321.97      Prob >= chibar2 = 0.0000
1427
1428 . melogit primbiz c_x_kidrteen sq_x_kidrteen wi_kidrteen ||centerco: ,
1429
1430 Fitting fixed-effects model:
1431
1432 Iteration 0:   log likelihood = -4230.9596
1433 Iteration 1:   log likelihood = -4225.2565
1434 Iteration 2:   log likelihood = -4225.2524
1435 Iteration 3:   log likelihood = -4225.2524

```

```

1436
1437 Refining starting values:
1438
1439 Grid node 0: log likelihood = -4070.9567
1440
1441 Fitting full model:
1442
1443 Iteration 0: log likelihood = -4070.9567 (not concave)
1444 Iteration 1: log likelihood = -4065.1802
1445 Iteration 2: log likelihood = -4064.4115
1446 Iteration 3: log likelihood = -4064.2696
1447 Iteration 4: log likelihood = -4064.2674
1448 Iteration 5: log likelihood = -4064.2674
1449
1450 Mixed-effects logistic regression Number of obs = 7,096
1451 Group variable: centerco Number of groups = 24
1452
1453 Obs per group:
1454 min = 132
1455 avg = 295.7
1456 max = 512
1457
1458 Integration method: mvaghermite Integration pts. = 7
1459
1460 Wald chi2(3) = 140.03
1461 Log likelihood = -4064.2674 Prob > chi2 = 0.0000
1462
1463 -----
1464      primbiz |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
1465 -----+-----
1466      c_x_kidrteen |    3.889818   1.679555     2.32   0.021    .5979506    7.181686
1467      sq_x_kidrteen |   -36.63349  10.01189    -3.66   0.000   -56.25642   -17.01055
1468      wi_kidrteen |   -0.7445051  .0658854   -11.30   0.000   -0.8736381  -.6153721
1469      _cons |    .949584   .1250201     7.60   0.000    .704549    1.194619
1470 -----+-----
1471      centerco |
1472      var(_cons) |    .2703844   .0838186             .1472689    .4964234
1473 -----+-----
1474 LR test vs. logistic model: chibar2(01) = 321.97 Prob >= chibar2 = 0.0000
1475
1476 . *****
1477 . * looking at effects of age mix on primarily business/service user
1478 . * end
1479 . *****
1480 .
1481 . *****
1482 . * now create a collapsed file with observed and eb mean scores at center level
1483 . * begin
1484 . *****
1485 .
1486 . collapse (mean) primbiz pred_biz kidrteen ///
1487 > , by(centerco)
1488
1489 .
1490 . * save collapsed file
1491 . save msp_beh_obs_v_ff_collapsed.dta, replace
1492 (note: file msp_beh_obs_v_ff_collapsed.dta not found)
1493 file msp_beh_obs_v_ff_collapsed.dta saved
1494
1495 . clear all
1496
1497 . use msp_beh_obs_v_ff_collapsed.dta
1498
1499 .
1500 . *****
1501 . * now create a collapsed file with observed and eb mean scores at center level

```

```

1502 . * end
1503 . *****
1504 .
1505 . *****
1506 . * further descriptive examinations
1507 . * begin
1508 . *****
1509 .
1510 . ***
1511 . * list true means and eb adjusted means
1512 . sort primbiz
1513
1514 . list centerco primbiz pred_biz
1515
1516 +-----+
1517 | centerco      primbiz      pred_biz |
1518 |-----|
1519 1. | 15th and Nic      .2735042735      .281558 |
1520 2. | 38th and 4th      .4318181818      .4403667 |
1521 3. | Randolph and      .4635761589      .476452 |
1522 4. | White Bear a      .527607362      .5363588 |
1523 5. | 38th and Gra      .5414012739      .5497446 |
1524 |-----|
1525 6. | Selby and We      .584725537      .5870738 |
1526 7. | Grand and Ha      .5870646766      .5917415 |
1527 8. | 54th and Chi      .612244898      .6170647 |
1528 9. | Como and 15t      .6138613861      .6173654 |
1529 10. | Penn and Ced      .6212121212      .6259503 |
1530 |-----|
1531 11. | 50th and Xer      .6288659794      .6308753 |
1532 12. | Third and Ma      .69140625      .691383 |
1533 13. | 28th and 4th      .6923076923      .692251 |
1534 14. | Baker and Sm      .6971830986      .6970399 |
1535 15. | 50th and Bry      .717791411      .7161223 |
1536 |-----|
1537 16. | Marshall and      .7294832827      .7282733 |
1538 17. | Johnson and      .7371601208      .735705 |
1539 18. | Grand and Fa      .781938326      .7797088 |
1540 19. | 38th and 23r      .8125      .8097192 |
1541 20. | 54th and Nic      .8196721311      .8165463 |
1542 |-----|
1543 21. | 48th and Chi      .8226744186      .8181571 |
1544 22. | Randolph and      .823798627      .8201792 |
1545 23. | 60th and Por      .8280802292      .8233974 |
1546 24. | Thomas and H      .8289473684      .8185707 |
1547 +-----+
1548
1549 .
1550 . * looking at the level-2 relationship between young peds and biz peds.
1551 .
1552 . graph twoway (lowess primbiz kidrteen) || (scatter primbiz kidrteen) || (qfit primbiz
kidrteen ) || (lfit primbiz kidrteen )
1553
1554 . graph save x_prbiz_x_kidrteen.gph, replace
1555 (file x_prbiz_x_kidrteen.gph saved)
1556
1557 .
1558 . * worked on graph to create revised version
1559 .
1560 . *****
1561 . * further descriptive examinations
1562 . * end
1563 . *****
1564 .
1565 . log close
1566 name: <unnamed>

```

1567 log:
C:\PCW5\groff_2020\ICPSR_02371\DS0002\groff_handbook_2020_multilevel_006_REVISED.1
og
1568 log type: text
1569 closed on: 23 Feb 2021, 20:15:52
1570 -----

1571